

SURFACE TRANSPORTATION BOARD

DECISION

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

REVIEW OF COMMODITY, BOXCAR, AND TOFC/COFC EXEMPTIONS

Digest:<sup>1</sup> The Board seeks public comment concerning a new approach its Office of Economics has developed for possible use in considering class exemption and revocation issues.

Decided: September 29, 2020

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. Review of Commodity, Boxcar & TOFC/COFC Exemptions (NPRM), EP 704 (Sub-No. 1) (STB served Mar. 23, 2016) (with Board Member Begeman dissenting). The NPRM also invited interested parties to file comments regarding the possible revocation of other commodity class exemptions. On March 19, 2019, to permit informal discussions with interested parties, the Board waived the general prohibition on ex parte communications in effect when the proceeding was initiated. Review of Commodity, Boxcar & TOFC/COFC Exemptions, EP 704 (Sub-No. 1) (STB served Mar. 19, 2019). 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.<sup>2</sup>

BACKGROUND

As part of the Railroad Revitalization and Regulatory Reform Act of 1976, Pub. L. No. 94-210, 90 Stat. 31, 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, Pub. L. No. 96-448, 94 Stat. 1895 (Staggers Act), and, although additional changes have been made to the provision with

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<sup>1</sup> The digest constitutes no part of the decision of the Board but has been prepared for the convenience of the reader. It may not be cited to or relied upon as precedent. See Policy Statement on Plain Language Digests in Decisions, EP 696 (STB served Sept. 2, 2010).

<sup>2</sup> The Board also invites interested parties to comment on potential use of the new approach in future proceedings.

respect to the process and timing of exemption proceedings, the substantive standard has remained unchanged since the Staggers Act. The exemption provision, now codified at 49 U.S.C. § 10502, 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. The agency may revoke an exemption (partially or completely) if the agency later determines that application of a provision of part A is necessary to carry out the RTP. See 49 U.S.C. § 10502(d).

The agency has exempted from most regulation, as a class, the transportation by rail of numerous commodities,<sup>3</sup> finding that such regulation was not necessary to carry out the RTP. See 49 C.F.R. §§ 1039.10, 1039.11. The agency has also exempted rail operations provided in connection with trailer-on-flatcar/container-on-flatcar (TOFC/COFC) services, truck operations provided as part of a continuous intermodal movement that includes rail TOFC/COFC service, and the rail transportation of all commodities in single-line boxcar service. See 49 C.F.R. §§ 1090.2, 1039.14.<sup>4</sup>

#### February 2011 Hearing and NPRM.

In response to informal inquiries questioning the relevance or necessity of some existing commodity exemptions, the Board held a public hearing in Docket No. EP 704 in February 2011 to explore the continued utility of, and the issues surrounding, the various commodity exemptions under 49 C.F.R. §§ 1039.10 and 1039.11, the boxcar exemption under 49 C.F.R. § 1039.14, and the TOFC/COFC exemption under 49 C.F.R. part 1090. The Board received written comments from numerous interested parties, including railroad interests, shipper interests, and government agencies and officials; additionally, 21 parties testified at the hearing.

After considering the oral testimony and written comments, data from the Confidential Carload Waybill Sample (CCWS) between 1992-2013,<sup>5</sup> and other industry information, the

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<sup>3</sup> See Rail Gen. Exemption Auth.—Nonferrous Recyclables, 3 S.T.B. 62 (1998); Rail Gen. Exemption Auth.—Pet. of AAR to Exempt Rail Transp. of Selected Commodity Groups, 9 I.C.C.2d 969 (1993); Exemption from Regulation—Rail Transp. Frozen Food, 367 I.C.C. 859 (1983); Liquid Iron Chloride, 367 I.C.C. 347 (1983); Rail Gen. Exemption Auth.—Miscellaneous Agric. Commodities, 367 I.C.C. 298 (1983); Rail Gen. Exemption Auth.—Fresh Fruits & Vegetables, 361 I.C.C. 211 (1979). The exemptions set forth in 49 C.F.R. § 1039.11 are subject to certain exclusions (e.g., specific movements for which a finding of market dominance has been made).

<sup>4</sup> The exemptions set forth in §§ 1039.10, 1039.11, and 1039.14 do not apply to the regulation of demurrage (except the regulation of demurrage related to intermodal transportation).

<sup>5</sup> The Board reviewed a 22-year period of CCWS data, beginning with information filed in 1992 and ending with data filed in 2013—the most recent on file with the Board at the time of issuance of the NPRM.

Board issued the NPRM proposing to revoke the commodity exemptions for the following Standard Transportation Commodity Code (STCC)<sup>6</sup> groups: STCC No. 14-2, crushed or broken stone or rip rap; 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. The Board noted that the dynamics of the particular transportation markets for those commodity groups appeared to have changed significantly since the exemptions were first promulgated. NPRM, EP 704 (Sub-No. 1), slip op. at 4. The Board also indicated that reestablishing regulatory oversight of these commodities might be necessary to carry out the RTP. Id. (citing 49 U.S.C. § 10101(5), (6), (12)).

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)<sup>7</sup> over the previous 22 years. Id. The Board, however, explained that while R/VC ratios in excess of the rate reasonableness market dominance threshold of 180% did not, standing alone, establish market power or an abuse of such power, the ratios have long been used by the Board as one indication of market power; the Board stated that it was appropriate to rely on the data as supporting evidence. Id. at n.7. The Board focused its proposal more broadly on whether “the competitive landscape has changed significantly enough to indicate that renewed regulation is needed to carry out the RTP.” Id. at 4. The NPRM requested public comment addressing the proposed exemption revocations, including information about changes to the competitive landscape and market conditions since the class exemptions were granted and additional relevant data (e.g., modal market share data). Id. at 1, 4, 10-11. The NPRM also invited interested parties to file comments regarding the possible revocation of other commodity class exemptions. Id. at 4.

#### Parties’ Comments.

In response to the NPRM, the Board received numerous comments from various interested parties, including railroad interests, shipper interests, and government agencies and officials.<sup>8</sup> Railroad interests generally opposed the proposed commodity revocations. As part of

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<sup>6</sup> STCCs are numerals used to identify commodities and groupings of commodities. The initial two digits represent a broad commodity grouping; subsequent numbers indicate smaller sub-groupings or individual commodities.

<sup>7</sup> While the NPRM uses the term “potentially captive traffic,” this decision refers to traffic with R/VC ratios of 180% or greater as “R/VC 180 traffic.”

<sup>8</sup> The Board received comments from: the Association of American Railroads (AAR); the American Short Line and Regional Railroad Association (ASLRRA); BNSF Railway Company (BNSF); Norfolk Southern Railway Company (NSR); Union Pacific Railroad Company (UP); CSX Transportation, Inc. (CSXT); Kansas City Southern; the U.S. Department of Transportation; the National Industrial Transportation League (NITL); the Rail Customer Coalition (RCC); the Freight Rail Customer Alliance (FRCA); AK Steel Corporation (AK Steel); the Steel Manufacturers Association & American Iron and Steel Institute (SMA/AISI);

their various general objections, railroad interests raised concerns about whether the data and information cited in the NPRM warranted revocation of the commodities at issue. In particular, they questioned shippers' reliance on the Board's R/VC figures, arguing that R/VC ratios are not a reliable indicator of market power. (AAR Reply 2-6; CSXT Reply 2-3; NSR Reply 3-4, 16, 23-24.)<sup>9</sup>

Shippers broadly supported the Board's proposal, agreeing that there had been a shift in the competitive landscape of the commodities included in the NPRM, as evidenced by the Board's analysis of CCWS data showing large increases in the amount of traffic with R/VC ratios of 180% or greater for these commodities. (FRCA Comments 1; RCC Comments 1-2; PCA Comments 7; SMA/AISI Comments 16-17; ISRI Comments 1, 5; AK Steel Comments 5; TCS Comments 6.) Shippers argued that the railroad interests' criticisms regarding the use of R/VC data in the analysis of railroad market power lack merit, noting that the Board's use of R/VC ratios is consistent with precedent as well as the railroads' own practices. (AF&PA/P&FITC Reply 12-22; NITL Reply 8-16; PCA Reply 6-7; SMA/AISI Reply 8-15; ISRI Reply 11-13.) AF&PA and WCG filed comments arguing that the exemption for forest and paper products, and the boxcar exemption as it applies to rail shipments of forest products, should be revoked. (AF&PA Comments 1; WCG Comments 5-7.)<sup>10</sup>

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Wisconsin Central Group (WCG); the American Forest & Paper Association (AF&PA); the Paper & Forest Industry Transportation Committee (P&FITC); Graniterock; Texas Crushed Stone Company (TCS); the Portland Cement Association (PCA); the California Construction and Industrial Material Association; the Institute of Scrap Recycling Industries, Inc. (ISRI); SA Recycling (SAR); SMART/Transportation Division, New York Legislative Board; and Alliance Recycling Group. The Board also received a letter submitted by U.S. Senator Roger F. Wicker, Chairman of the Committee on Commerce, Science, and Transportation; a letter submitted by U.S. Senator Amy Klobuchar, U.S. Senator Tammy Baldwin, U.S. Senator Bill Cassidy, and then-U.S. Senator David Vitter; and a letter submitted by U.S. Representative Chuck Fleischmann and then-Representative John J. Duncan, Jr.

<sup>9</sup> In addition, NSR filed comments arguing that the following commodities should be granted exemptions from regulation: industrial sand; anhydrous ethyl alcohol; specialty cleaning/polishing/sanitation preparations/household bleaches; phosphate fertilizer solution; gasoline or jet or high volatile petroleum fuels; kerosene excluding jet fuels and asphalt; asphalt or tar saturated felts, boards, or roofing; and asphalt sheathings, shingles, or sidings. (NSR Comments 42-43.)

<sup>10</sup> Specifically, AF&PA and WCG contend that revocation is appropriate for pulpwood logs; pulpwood or other wood chips; lumber, rough or dressed; plywood or veneer or built-up wood; strand board wood products; wood particle board; special industrial paper; fibreboard, paperboard or pulpboard; and paper waste or scrap.

Ex Parte Meetings.

On February 22, 2019, AF&PA and ISRI jointly filed a petition pursuant to 49 C.F.R. § 1117.1 requesting that the Board waive its prohibition on ex parte communications in effect when the proceeding was initiated so that interested stakeholders could meet with Board members to discuss the issues raised in this proceeding. (Pet. 1.) On March 19, 2019, the Board concluded there was good cause to waive the prohibition on ex parte communications in this proceeding for the limited purpose of permitting parties to have discussions with Board members so that the agency could develop a more complete record. Review of Commodity, Boxcar & TOFC/COFC Exemptions, EP 704 (Sub-No. 1), slip op. at 2 (STB served Mar. 19, 2019). The Board established a three-month period for ex parte communications (March 19-June 17, 2019) and established procedures for the submission and posting of memoranda summarizing such communications and the submission of responsive written comments. Id. at 2-3.

During the ex parte communication period, individual Board members and various Board staff met with representatives of the following parties: SMA; AISI; ASLRRRA; ISRI; Sadoff Iron & Metal Co.; Tri-State Iron & Metal Co.; Packaging Corp.; Verso Corp.; AF&PA; AAR; International Paper Co.; PCA; Reserve Management Group; Schnitzer Steel Industries, Inc.; Georgia Pacific LLC; Tucson Iron & Metal; Rocky Mountain Recycling Inc.; Sims Group USA Holding Corp.; TMS International Corp.; Domtar Corp.; SAR; Consolidated Scrap Resources, Inc.; and Escalation Consultants, Inc. Written comments on the summary memoranda were submitted by ISRI, AAR, NSR, AF&PA, and BNSF.

## DISCUSSION

Understanding market conditions is important when considering commodity exemptions and revocation of commodity exemptions. Although not required by statute, the Board has specifically considered market power in some of its past exemption revocation decisions under § 10502(d), including commodity class exemptions. See, e.g., Rail Gen. Exemption Auth.—Nonferrous Recyclables, 3 S.T.B. 62, 65 (1998) (concluding that the nature of the recyclables transportation market was “highly competitive”). But see, e.g., BNSF Ry.—Temporary Trackage Rights Exemption—Union Pac. R.R., FD 35963 (Sub-No. 1), slip op. at 2 (STB served Dec. 17, 2015) (granting partial revocation of an exemption because it would “promot[e] RTP policy goals”); S. Plains Switching, Ltd.—Acquis. Exemption—BNSF Ry., FD 33753 (Sub-No. 1), slip op. at 2 (STB served Sept. 15, 2006) (revocation is appropriate “if we find that: regulation is necessary to carry out the rail transportation policy of 49 U.S.C. [§] 10101; or revocation is necessary to ensure the integrity of the Board’s processes”). Here, as part of its RTP analysis, the NPRM explained that the Board would be considering changes in market conditions regarding the commodities at issue. NPRM, slip op. at 4 (concluding that “the dynamics of the particular transportation markets appear to have changed...significantly since the exemptions were first promulgated...[and] point toward an increased likelihood of railroad market power”).

The Board appreciates the many comments submitted in this proceeding, and is committed to ensuring that a robust analysis be conducted when determining whether to proceed with any commodity exemptions or exemption revocations. In response to concerns raised about

the prior analysis, the Board directed OE to give further consideration to the issue. In doing so, OE has developed a new approach to help the Board evaluate market conditions by taking into account a variety of metrics related to or indicative of rail transportation competition. The Board is considering application of the approach in this proceeding and seeks comment on whether it could provide a useful analysis of the metrics for a particular commodity, and therefore give the Board a helpful tool for evaluating market conditions, including changes to such conditions, that might warrant exemption or exemption revocation. The approach uses a variety of new quantitative and qualitative data and analyses (see Appendix A).<sup>11</sup>

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). Among other limitations, the approach does not itself consider the potential for pipeline transportation alternatives, given that none of the commodities at issue are capable of being transported via pipeline, and does not consider whether there are physical limitations that might prevent a commodity from being shipped by otherwise-available truck transportation alternatives. For example, the record suggests paperboard rolls exceeding 100 inches in height are too large to allow the necessary room to maneuver them into a truck. Paperboard rolls of this size and larger apparently have become increasingly common, rendering this a more prominent issue than at previous times. When applicable and appropriate, the Board would also take this type of information into account.

Most fundamentally, the approach does not seek to answer the ultimate qualitative question of whether a commodity's regulation is necessary to carry out the RTP. Nevertheless, the breadth of relevant data considered under the approach's overall umbrella demonstrates its potential usefulness in considering questions of market conditions in the exemption and revocation contexts. The Board therefore seeks public comment concerning whether and how the approach could be used in this proceeding.

The approach has three primary components: the "Geographic Modal Influence Model," the "Indicator Dashboard," and the "Data Visualization." These components are generally set forth below, and are described more fully in Appendix A. To aid consideration of the approach, an example of its application using hydraulic cement (STCC 32411) is set forth in Appendix B.<sup>12</sup>

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<sup>11</sup> The approach is similar in some respects to the proposal presented by the American Chemistry Council in Docket Nos. EP 722 and EP 761.

<sup>12</sup> The Board will make the workpapers underlying Appendices B and C (excepting third-party proprietary information) and the source code underlying the various components of

The Indicator Dashboard results for all commodities on the record in this proceeding are included in Appendix C.

### Geographic Modal Influence Model (GMIM)

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.<sup>13</sup> The GMIM is premised on the proximity of potential alternative transportation options as well as the feasibility of moving commodity-specific carloads by alternative modes. The GMIM uses several data sources<sup>14</sup> to identify lanes in which the rail transportation market may be influenced by competitive pressure from water carriers or other rail carriers.<sup>15</sup>

Potential water carrier alternatives are evaluated under the “water carrier influence model,” in which the model’s algorithm identifies, for each railroad freight station,<sup>16</sup> the nearest port facility on the relevant large-scale waterway system and calculates the distance from the station to the port.<sup>17</sup> The algorithm then applies a mileage screen, which has been tentatively set at 30 miles,<sup>18</sup> to identify which ports are located within a distance that could reasonably serve as

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the approach available to interested parties under an appropriate confidentiality agreement. See 49 C.F.R. § 1244.9.

<sup>13</sup> Each commodity is examined at the 5-digit STCC level or a more granular level.

<sup>14</sup> The GMIM uses railroad freight station data drawn from the CCWS, as well as additional data derived from the Centralized Station Master and the Mark Register. Port facility data is drawn from information about the national waterway network compiled by the U.S. Army Corps of Engineers Institute for Water Resources, as well as watershed boundary data in the North American Atlas—Basin Watersheds dataset.

<sup>15</sup> Potential competition from direct trucking alternatives is taken into account in the Indicator Dashboard component of the approach.

<sup>16</sup> Each station is organized by railroad and Freight Station Accounting Code (FSAC). FSACs are unique numbers supplied by rail carriers to identify freight stations and are required to be shown on all waybills. These numbers are a means of (1) accurate and economical revenue apportionment among carriers, (2) verification of interline movements, and (3) compilation of statistical data. Each freight station handles traffic of one or more shippers.

<sup>17</sup> Ports are considered viable if they transported any commodity, though transportation of the specific commodity at issue is not required as a simplifying assumption. Appendix A contains additional information relating to the GMIM algorithm and a full discussion of the approach’s simplifying assumptions and their potential impacts.

<sup>18</sup> The GMIM’s mileage screens, in the context of both the water carrier influence model and the railroad influence model discussed below, are calculated using linear miles. The mileage screens assume 30 miles represents a reasonable distance for feasible truck transloading, and the screens do not vary by commodity. Appendix A identifies ways in which the screens might be over- or under-inclusive of truck transloading options. Recognizing that the assumption might

a proxy for the radius of potential truck transload services.<sup>19</sup> Next, a list of origin-destination (OD) station pairs (alternatively referred to as lanes) is generated for 1992 and 2018.<sup>20</sup> The GMIM then uses these datasets to determine the presence of potential intermodal influence for each waybill OD freight station pair by compiling a list of the nearest ports<sup>21</sup> at the origin railroad freight station and at the destination railroad freight station. The GMIM then tests whether any of the origin railroad station ports within 30 miles and the destination railroad station ports within 30 miles are located on the same large-scale waterway system. Only lanes falling within these parameters are found to have potential intermodal competitive influences for purposes of subsequent components of the approach.

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<sup>22</sup> in the relevant years of analysis (1992 or 2018).<sup>23</sup> A list of commodity-specific OD pairs is generated for the same year. The GMIM then uses these datasets to

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not hold for all rail transportation markets, and also that generalized models often require simplification, the Board invites public comment on the 30-mile screens, including whether and how they should vary by commodity.

<sup>19</sup> If a port on a given large-scale waterway system does not meet the mileage screen, it is not considered in subsequent elements of the water carrier modal influence model.

<sup>20</sup> The approach uses the 1992 baseline throughout to mirror the baseline used in the NPRM, see supra note 5, and uses 2018 throughout as it is the most recent year of CCWS data currently available.

<sup>21</sup> The list of ports was compiled using 2019 data. Appendix A identifies ways in which the port data might be over- or under-inclusive.

<sup>22</sup> Given potentially unique loading and unloading facilities, the GMIM considers similar traffic to be of the same 5-digit STCC level as the traffic at issue. Thus, unlike the water carrier influence model, the railroad influence model limits alternatives to lanes that carry the same commodity. Appendix A identifies ways in which that assumption might be over- or under-inclusive of potential rail alternatives. The Board invites public comment on how best to design alternative lanes in both the water carrier and railroad influence models.

<sup>23</sup> Not only does the GMIM consider the presence of other freight stations within 30 miles, it deems a freight station as part of a potential intramodal alternative to itself if it is served by more than one rail carrier. The railroad influence model therefore also considers the presence of direct rail competition. The Board is cognizant of the fact that each freight station is unique to a single railroad carrier when observed in the CCWS, and that the data may not fully reflect the unique operating characteristics of a given location. On the one hand, a single shipper facility could be served by at least two freight stations governed by at least two railroads, even when each of the railroads use the same facilities to receive and tender rail cars. On the other hand, a single freight station could be associated with more than one shipper. For purposes of this analysis, each unique combination of railroad and FSAC is considered a distinct freight station.

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). The model then assesses the feasibility of each alternative commodity-specific lane in relation to the incumbent commodity-specific lane by determining whether the alternative commodity-specific lane used the same rail carriers as the incumbent commodity-specific lane.<sup>24</sup> 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.

### Indicator Dashboard

The Indicator Dashboard is designed to summarize key output metrics relevant to the qualitative and quantitative evaluation of the market conditions governing a commodity. These output metrics are drawn from the GMIM and analysis of the CCWS, and they are used to assign a commodity an “Overall Dashboard Signal” of “weak,” “moderate,” or “strong.”<sup>25</sup> 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. The Board would not expect that the Indicator Dashboard (or the approach as a whole) could fully answer the question of whether revocation or exemption is appropriate, given the market-specific issues, among other matters, that might also need consideration.

The Indicator Dashboard first applies two initial screens. Initial Screen One is based on the percentage of CCWS commodity-specific carloads<sup>26</sup> that are R/VC 180 traffic, calculated using 2018 CCWS data.<sup>27</sup> If that percentage is below 5%, the commodity is assigned an Overall Dashboard Signal of “weak.”<sup>28</sup> Initial Screen Two is based on the percentage of rail cars moving

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<sup>24</sup> The model evaluates both local shipments, which use the same rail carrier at origin and destination, as well as interline shipments, which use more than one rail carrier.

<sup>25</sup> In certain cases, the commodity is assigned an Overall Dashboard Signal of “insufficient.” See infra note 40.

<sup>26</sup> Carload traffic refers to non-TOFC/COFC traffic, including unit train, multi-car, single-car, and in some cases less-than-carload traffic.

<sup>27</sup> Again, the approach uses 2018 throughout as it is the most recent year of CCWS data currently available.

<sup>28</sup> 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. There, for example, the Overall Dashboard Signal pursuant to Initial Screen One would be deemed “strong” if the

in intermodal traffic, again using 2018 data. If that percentage is above 40%, the commodity is likewise assigned an Overall Dashboard Signal of “weak.”<sup>29</sup>

If a commodity is not assigned a “weak” Overall Dashboard Signal pursuant to either of the initial screens, it is analyzed along eight metrics referred to as “indicators.” These indicators are used to assign the Overall Dashboard Signal. A pair of these indicators compare R/VC ratios for a given commodity with R/VC ratios for all carload traffic—one for 2018, the other over time:<sup>30</sup>

- The “All Traffic in Most Recent Year R/VC Indicator” compares R/VC ratios for a given commodity with the R/VC ratios for all carload traffic, using 2018 data.
- The “All Traffic R/VC Change Indicator” compares the percentage point change in R/VC ratios for a given commodity between 1992 and 2018 with the percentage point change in R/VC ratios for all carload traffic between 1992 and 2018.

For a given commodity, each of these two indicators is given a “weak” designation if the commodity R/VC metric is more than 5 percentage points below the R/VC metric for all carload traffic, a “strong” designation if the commodity R/VC metric is more than 5 percentage points above the R/VC metric for all carload traffic, and a “moderate” designation if the commodity

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percentage of R/VC 180 traffic is 5% or below, suggesting a potentially strong case for exemption. Aside from flipping the logic for the strength of the screens and indicators, the Indicator Dashboard calculations are the same for both the revocation and exemption versions.

<sup>29</sup> 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. The Board invites public comment on the 5% and 40% strength designation thresholds.

<sup>30</sup> The Board acknowledges that the record includes criticisms concerning the use of R/VC ratios. (See, e.g., AAR Reply 2-6.) While the Board views R/VC ratios as contributing to the analysis, the approach uses a companion Indicator Dashboard generated by substituting revenue per car (RPC) values, stated in inflation-adjusted dollars, for each indicator that uses R/VC ratios. The results of the two versions of the Indicator Dashboard are compared to determine whether they generate a consistent signal. The Board is cognizant of the fact that certain parties in this proceeding have suggested the use of metrics based on revenue per ton mile (RPTM) calculations. (See, e.g., TCS Reply, Attach. (Statement of Highroad Consulting, Ltd.)) The Board invites public comment on the potential use of RPTM metrics in this proceeding.

R/VC metric is within 5 percentage points above or below the R/VC metric for all carload traffic.<sup>31</sup>

Three additional pairs of indicators are designed to reflect current levels as well as changes in the transportation market for the particular commodity at issue. Again, for each pair, one uses 2018 data while the other uses data over time:

- The “Competitive Influence in Most Recent Year Indicator” calculates the proportion of commodity-specific carloads that are not found to have any modal influences assigned by the GMIM (for railroad and water carrier influences) and by a CCWS data analysis determining whether the length of haul exceeds 500 miles (for direct trucking influence).<sup>32</sup>
- The “Competitive Influence Change Indicator” calculates the percentage point change from 1992 to 2018 in the proportion of commodity-specific carloads that similarly are not found to have any modal influences assigned by the GMIM and by the CCWS analysis concerning whether the length of haul exceeds 500 miles.<sup>33</sup>

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<sup>31</sup> The strength designation for these indicators is based on a variety of calculations (upper and lower quartiles, median, and average R/VC ratios) performed on the CCWS data for the commodity traffic and for all carload traffic. Quartiles, medians, and averages were selected as reasonable measures to capture the tendency of the entire population of values. The specific calculations are more fully explained in Appendix A.

<sup>32</sup> More specifically, the strength designation for the “Competitive Influence in Most Recent Year Indicator” is based on comparisons—using 2018 data—of three traffic metrics for carloads for a given commodity to those same metrics for all carload traffic: (1) the percentage of carloads which are longer haul moves exceeding 500 miles (the percentage for the commodity at issue compared to the same figure for all carload traffic); (2) the percentage of carloads which do not have GMIM modal influences (the percentage for the commodity at issue compared to the same value for all carload traffic); (3) the percentage of carloads which are longer haul moves exceeding 500 miles and which do not have GMIM modal influences (the percentage for the commodity at issue compared to the same value for all carload traffic).

<sup>33</sup> More specifically, the strength designation for the “Competitive Influence Change Indicator” is based on comparisons—using 1992 and 2018 data—of three traffic metrics for carloads for a given commodity to those same metrics for all carload traffic: (1) the rate of change, from 1992 to the 2018, in the percentage of carloads which are longer haul moves exceeding 500 miles (the rate of change for the commodity at issue compared to the same value for all carload traffic); (2) the rate of change, from 1992 to 2018, in the percentage of carloads which do not have GMIM modal influences (the rate of change for the commodity at issue compared to the same value for all carload traffic); (3) the rate of change, from 1992 to 2018, in the percentage of carloads which are longer haul moves exceeding 500 miles and which do not have GMIM modal influences (the rate of change for the commodity at issue compared to the same value for all carload traffic).

- The “Length of Haul in Most Recent Year Indicator” measures, for a given commodity, the average length of haul for carload traffic in 2018 CCWS data.<sup>34</sup>
- The “Length of Haul Change Indicator” measures the percentage change in average length of haul for commodity-specific carload traffic between 1992 and 2018.<sup>35</sup>
- The “Competitive Influence R/VC Difference in Most Recent Year Indicator” measures, for a given commodity, the difference between the R/VCs of carload traffic with and without GMIM-assigned modal influences, using 2018 CCWS data.<sup>36</sup>
- The “Competitive Influence R/VC Difference Change Indicator” measures, for a given commodity, the percentage point change from 1992 to 2018 in differences between the R/VCs of carload traffic with and without GMIM-assigned modal influences.<sup>37</sup>

For all but the “Length of Haul in Most Recent Year Indicator,” each of the final six indicators is given a “weak” designation if the commodity-specific metric is more than 5 percentage points below the metric for all carload traffic, a “strong” designation if the commodity-specific metric is more than 5 percentage points above the metric for all carload traffic, and a “moderate” designation if the commodity-specific metric is within 5 percentage points above or below the metric for all carload traffic. 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, a “strong” designation if the average length of haul for the commodity-specific carload traffic is above 1,000 miles, and a “moderate” designation if

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<sup>34</sup> More specifically, the strength designation for the “Length of Haul in Most Recent Year Indicator” is based on a comparison—using 2018 data—of the average length of haul for the carload traffic for a given commodity to thresholds of 500 and 1,000 miles.

<sup>35</sup> More specifically, the strength designation for the “Length of Haul Change Indicator” is based on a comparison—using 1992 and 2018 data—of the rate of change in the average length of haul for the carload traffic for a given commodity to the same rate of change figure for all carload traffic.

<sup>36</sup> The proportion of traffic exceeding 500 miles is not part of the calculation for this indicator or the following one. Longer haul traffic typically has lower R/VC ratios, so including a factor that captures longer haul traffic could obscure the impact of GMIM-assigned modal influences on R/VC ratios.

<sup>37</sup> The strength designations for the “Competitive Influence R/VC Difference in Most Recent Year Indicator” and the “Competitive Influence R/VC Difference Change Indicator” are based on a variety of calculations (upper and lower quartiles, median, and average R/VC markup ratios) performed on the CCWS data for the commodity-specific carload traffic and for all carload traffic. Quartiles, medians, and averages are reasonable figures to capture the tendency of the entire population of values. The specific calculations are more fully explained in Appendix A.

the average length of haul for the commodity-specific carload traffic is between 500 and 1,000 miles.<sup>38</sup>

Each indicator is evaluated individually and given a score of 0, 1, or 2 (correlating to a “weak,” “moderate,” or “strong” designation, respectively).<sup>39</sup> These scores are then averaged across indicators to arrive at an Overall Dashboard Signal: “weak” if the average score is below 0.67; “moderate” if the average score is between 0.67 and 1.33; and “strong” if the average score is above 1.33.<sup>40</sup>

### Data Visualization

The third component of the approach uses two basic visualization structures—a bivariate distribution matrix and several types of violin plots—to illustrate market conditions and changes thereto for a given commodity over time.

The bivariate distribution matrix uses scatter plots to visually convey patterns in the relationship between pairs of commodity-specific variables, allowing for simultaneous review of changes over time to commodity-specific carload traffic metrics such as length of haul, tons per car, RPC, and R/VC ratios juxtaposed for 1992 and 2018 CCWS data.<sup>41</sup> Each matrix includes two types of plots: (1) pairwise two-variable scatter plots, which document the relationship

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<sup>38</sup> The Indicator Dashboard’s length of haul metrics are calculated using CCWS rail miles. 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. Appendix A identifies ways in which the mileages might be over- or under-inclusive of direct trucking options. The Board understands that the assumptions might not hold for all rail transportation markets and invites public comment on these mileage figures, including whether and how they should vary by commodity.

<sup>39</sup> Though these scores are assigned equal weight as part of the Overall Dashboard Signal, they are 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. Among other considerations, the Board might consider the degree of strength or weakness underlying a designation, and it might consider some indicators as more significant than others.

<sup>40</sup> In the event there is no data to calculate one of the indicators, that indicator is assigned an “indeterminate” designation. If one or two indicators are so designated, the Overall Dashboard signal is calculated without regard to those indicators. If more than two indicators are so designated, the commodity is assigned an Overall Dashboard Signal of “insufficient.”

<sup>41</sup> The visualizations use a random sample of 100 waybill data records from 1992, and a random sample of 100 waybill data records from 2018. Graph readability is enhanced by passing the data through an outlier screen. Any waybill record with an outlier in at least one field, defined by being outside three standard deviations of the mean, is removed.

between each distinct pair of variables<sup>42</sup> and (2) single-variable probability densities, which demonstrate the statistical likelihood of a sample observation at a given value.<sup>43</sup> The single-variable probability densities focus on the changes between 1992 and 2018 probability densities, which are plotted on the same figure. These juxtaposed probability density curves evaluate, for a given commodity, the interplay between variables related to the sampled waybill movements' R/VC ratio or its RPC value, such as changes in length of haul or tons per car, which could be used to help show or understand market conditions and potential changes thereto over time.

Finally, the approach uses violin plots<sup>44</sup> to evaluate trends in the rail transportation market for a commodity over time by plotting changes in the distribution of R/VC ratios, RPC, and length of haul for all commodity traffic and R/VC 180 commodity traffic in 1992 and 2018. Specifically, the violin plots use KDE curves for R/VC, RPC, and length of haul variables, which are weighted on expanded CCWS carload values.<sup>45</sup> After controlling for outlier data (any observations beyond three standard deviations of the mean), a KDE curve is plotted for each carload observation. The violin plots also identify data grouping quartiles horizontally inside each KDE curve, with corresponding quartiles for all carload traffic, labeled in the margins of each plot. Drawing from the GMIM and CCWS analysis, the 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.

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<sup>42</sup> For example, the relationship between mileage and R/VC ratios, or the relationship between mileage and tons per car.

<sup>43</sup> The plots use Kernel Density Estimation (KDE), which begins with a number line scaled to each output variable's values and then draws a curve for each sampled waybill observation by calculating the sum of the curve area at a given point on the number line.

<sup>44</sup> As a general matter, violin plots reflect the probability density of a given variable (e.g., R/VC or RPC) segmented by other variables (e.g., waybill year, length of haul, or the presence of intermodal and/or intramodal competition, as assigned by the GMIM and CCWS analysis).

<sup>45</sup> The violin plot probability curve weighting differs slightly from the bivariate distribution matrix probability curve weighting, which is configured on waybill sample observations rather than expanded carloads. Each waybill sample observation is associated with a number of carloads for that movement. However, the CCWS data is, by definition, a sample. To generate 100% of the traffic population, the carloads for each waybill sample observation are expanded by traffic-specific factors. The violin plot probability curve weighting is developed using expanded carloads to represent 100% of the traffic population.

The Board seeks public comment on the approach in advance of any formal action. As noted above, the Board does not anticipate that this approach would serve as a mechanical test for determining whether the commodity exemptions at issue should be revoked or whether a new exemption should be issued, but as a potential tool for evaluating market conditions governing a commodity, including changes in such conditions over time. The Board therefore seeks public comment concerning whether and how the approach should be used in the present commodity class exemption revocation proceeding. Initial comments are due on or before December 4, 2020. Replies to initial comments are due on or before January 4, 2021. A protective order was entered in this proceeding on July 29, 2016. Pleadings containing confidential information must be filed under seal, along with public versions with confidential information redacted.

It is ordered:

1. Initial comments are due on or before December 4, 2020. Replies to initial comments are due on or before January 4, 2021.
2. This decision is effective on its service date.

By the Board, Board Members Begeman, Fuchs, and Oberman.

## Appendix A

### Data Sources Used and Description of Approach

#### Data Sources

- 1992 Confidential Carload Waybill Sample (CCWS) data
- 2018 CCWS data
- U.S. Army Corps of Engineers (USACE) Institute for Water Resources Port Facilities Data
  - Provides necessary latitude and longitude coordinates of ports.
- U.S. Geological Survey's North American Atlas Basin Watersheds Dataset (Watersheds)
  - Provides watershed boundary Geographic Information Systems (GIS) data to relate specific navigable waterways in the USACE data to larger navigable waterways.
- Centralized Station Master (CSM) and Mark Register (Marks)
  - Enables application of latitude and longitude coordinates to railroad freight stations which appear in the CCWS data.
- Bureau of Economic Analysis Gross Domestic Product Implicit Price Deflator
  - Used to index revenues and variable costs from the 1992 CCWS to 2018 values to model price level inflation.

#### Geographic Modal Influence Model (GMIM)

##### 1. Use ArcGIS to Operationalize Latitude and Longitude

- Create a list of all railroad freight stations, by rail carrier and FSAC, that handled traffic in each relevant year (1992 and 2018) using the CCWS data, with latitude and longitude coordinates from the CSM and Marks data. This is the freight stations list.
- Create a list of all ports that handled any commodities, with latitude and longitude coordinates, using the USACE data published in 2019. This is the ports list.
- Upload the stations list and ports list into ArcGIS.
- Using ArcGIS Pro, apply a watershed to each port. Classify each watershed into one of five waterway systems: (1) Atlantic Ocean, (2) Pacific Ocean, (3) Great Lakes, (4) Mississippi River, and (5) Gulf of Mexico.
- Use ArcGIS to identify the nearest port on each waterway for every station in the stations list, and calculate the distances in miles between those stations and ports.
- For each waybill year and for each station, use ArcGIS to identify each alternative freight station that exists within 30 miles of such station and moved any traffic in the waybill year.

##### 2. Identify Lanes

- Create lanes for a given year by identifying unique combinations of originating railroad freight station and terminating railroad freight station.

- Create commodity-specific lanes for a given year by identifying unique combinations of originating railroad freight station, terminating railroad freight station, and commodity at the 5-digit Standard Transportation Commodity Code (STCC) level for all traffic in that year of the CCWS.

**3. Evaluate Lanes for Water Carrier Alternatives**

- For each lane, identify the closest ports on each of the five waterway systems using the results from the ArcGIS analysis.
- Determine if there is a port within 30 miles of the originating railroad freight station on the same waterway as a port within 30 miles of the terminating railroad freight station.
- If so, the original lane is deemed to have a viable water carrier alternative, and all movements within that lane for the year of the CCWS being evaluated are coded as having a water carrier alternative.

**4. Evaluate Commodity-Specific Lanes for Rail Alternatives**

- For each commodity-specific lane, evaluate which stations handled the same 5-digit STCC within 30 miles of the originating railroad freight station and 30 miles of the terminating railroad freight station using the results from the ArcGIS analysis. These are potential alternative railroad freight stations. If any of the potential alternative railroad freight stations are a commodity-specific lane origin-destination pair, then these lanes move to the next analysis phase.
- Evaluate the potential alternative commodity-specific lanes to see if the railroad originating the traffic and the railroad terminating the traffic in the alternative commodity-specific lane both differ from the railroad in the original commodity-specific lane.
- If there is at least one such alternative commodity-specific lane, then the original commodity-specific lane is deemed to have a viable rail alternative, and all movements within that commodity-specific lane for the year of the CCWS being evaluated are coded as having a rail alternative.

**Indicator Dashboard**

**1. Determine the Overall Dashboard Signal from the Initial Screens (if possible)**

- The Overall Dashboard Signal is the final result of the Indicator Dashboard analysis, which suggests whether there is a “weak,” “moderate,” or “strong” case for revoking the exemption for the commodity at issue.<sup>46</sup>

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<sup>46</sup> The approach uses these designations 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. The Board would not expect that the Indicator Dashboard (or the approach as a whole) could fully answer the question of whether revocation or exemption is appropriate, given the market-specific issues, among other matters, that might also need consideration.

- There are two initial screens that may determine the Overall Dashboard Signal without considering the indicators.
- Initial Screen One: percentage of commodity-specific carloads of R/VC 180 traffic using data from the most recent CCWS (2018)
  - If this percentage is less than 5%, the commodity is assigned an Overall Dashboard Signal of “weak” and there is no need to consider the indicators in Step 2.
- Initial Screen Two: percentage of rail cars moving in intermodal traffic using data from the most recent CCWS (2018)
  - If this percentage is more than 40%, the commodity is assigned an Overall Dashboard Signal of “weak” and there is no need to consider the indicators in Step 2.
- If a commodity is not assigned a “weak” Overall Dashboard Signal pursuant to either of the initial screens, evaluate the indicators in the next step to assign the Overall Dashboard Signal.

**2. If No Overall Dashboard Signal is Determined via the Initial Screens, Proceed to Evaluate the Indicators**

- If no Overall Dashboard Signal is determined via the initial screens, proceed to an evaluation of the indicators.
- There are eight indicators, which are based on rates and traffic characteristics and are either evaluated at their 2018 levels or how they have changed from 1992 to 2018.
- Indicator 1: All Traffic in Most Recent Year R/VC Indicator
  - This indicator compares R/VC ratios for a given commodity with R/VC ratios for all carload traffic, using data from the most recent CCWS (2018).
  - Calculate R/VC ratios for a particular commodity at (1) the upper quartile, (2) the lower quartile, (3) the median, and (4) the average, and compare them to those values for all carload traffic.
  - Commodity values within 5 percentage points of the value for all carload traffic generate a “moderate” signal and receive a score of 1. Commodity values lower than that generate a “weak” signal and receive a score of 0. Commodity values higher than that generate a “strong” signal and receive a score of 2.
  - Determine the signal generated by this indicator by averaging the scores received through all four calculations (upper quartile, lower quartile, median, and average).
    - If the average score is less than 0.67, the indicator generates a “weak” signal. If the average score is more than 1.33, the indicator generates a “strong” signal. If the average score is in between, the indicator generates a “moderate” signal.
    - If there is no data to calculate the indicator for a particular commodity, the indicator is designated as “indeterminate.”
- Indicator 2: All Traffic R/VC Change Indicator

- This indicator compares the percentage point change in the R/VC ratios for a given commodity from 1992 to 2018 with the percentage point change in R/VC ratios for all carload traffic from 1992 to 2018.
- The signal generated by this indicator is calculated the same way as for Indicator 1 (All Traffic in Most Recent Year R/VC Indicator).
- Indicator 3: Competitive Influence in Most Recent Year
  - This indicator calculates the proportion of commodity-specific carloads that are not found to have any modal influences assigned by the GMIM and that exceed a 500-mile length of haul using the most recent year of CCWS data (2018).
  - Calculate the proportion of carloads for a particular commodity in which (1) the length of haul is over 500 miles in the most recent year; (2) there is no railroad or water carrier influence identified in the GMIM in the most recent year; and (3) the length of haul is over 500 miles and there is no railroad or water carrier influence identified in the GMIM in the most recent year. Compare these values to the values for all carload traffic.
  - Commodity values within 5 percentage points of the value for all carload traffic generate a “moderate” signal and receive a score of 1. Values lower than that generate a “weak” signal and receive a score of 0. Values higher than that generate a “strong” signal and receive a score of 2.
  - Determine the signal generated by this indicator by averaging the scores received through all three calculations. An average score greater than 1.33 means the indicator generates a “strong” signal. An average score less than 0.67 means the indicator generates a “weak” signal. Otherwise, the indicator generates a “moderate” signal.
- Indicator 4: Competitive Influence Change
  - This indicator calculates the percentage point change from 1992 to 2018 in the proportion of carloads for a given commodity that are not found to have any modal influences assigned by the GMIM and that exceed a 500-mile length of haul.
  - The signal generated by this indicator is calculated the same way as for Indicator 3 (Competitive Influence in Most Recent Year).
- Indicator 5: Length of Haul in Most Recent Year
  - This is the average length of haul in 2018 for a given commodity.
  - There are no other values to calculate for this indicator, and therefore no need to average scores across multiple values. It is also not compared to the corresponding value for all carload traffic. Instead, it is compared to absolute thresholds.
  - If the value is less than 500 miles, the indicator generates a “weak” signal. If the value is more than 1,000 miles, the indicator generates a “strong” signal. If the value is in between, the indicator generates a “moderate” signal.
- Indicator 6: Length of Haul Change
  - This is the percentage change in average length of haul from 1992 to 2018 for a given commodity.

- There are no other values to calculate for this indicator, and therefore no need to average scores across multiple values. However, the value for a given commodity is compared to the value for all carload traffic instead of absolute thresholds.
- If the commodity value is within 5 percentage points of the value for all carload traffic, the indicator generates a “moderate” signal. If the commodity value is lower than that, the indicator generates a “weak” signal. If the commodity value is higher than that, the indicator generates a “strong” signal.
- Indicator 7: Competitive Influence R/VC Difference in Most Recent Year
  - This is the difference between the R/VC for traffic without a railroad or water carrier influence and the R/VC for traffic with a railroad or water carrier influence in 2018 for a particular commodity.
  - The signal generated by this indicator is calculated in the same way as Indicator 1 (All Traffic in Most Recent Year R/VC Indicator).
- Indicator 8: Competitive Influence R/VC Difference Change
  - This is the percentage point change in the difference between the R/VC for traffic with a railroad or water carrier influence and the R/VC for traffic without a railroad or water carrier influence from 1992 to 2018 for a particular commodity.
  - The signal generated by this indicator is calculated in the same way as Indicator 1 (All Traffic in Most Recent Year R/VC Indicator).

**3. If No Overall Dashboard Signal is Determined via the Initial Screens, Use Evaluation of the Indicators to Determine the Overall Dashboard Signal**

- If no Overall Dashboard Signal is determined via the initial screens, the signals generated by the indicators are used to determine the Overall Dashboard Signal in the same way that the signals from the individual values were used to determine the signal of each indicator.
  - “Weak” signals receive a score of 0, “moderate” signals receive a score of 1, and “strong” signals receive a score of 2.
  - The scores are averaged across the eight Indicators. If the average score is less than 0.67, the Overall Dashboard Signal is designated as “weak.” If the average score is more than 1.33, the Overall Dashboard Signal is designated as “strong.” If the average score is in between, the Overall Dashboard Signal is designated as “moderate.”
- If more than two indicators are designated “indeterminate,” then the Overall Dashboard Signal is designated “insufficient.”

**4. Create Alternate Indicator Dashboard with RPC Values**

- The alternate version of the Indicator Dashboard with RPC performs all the same calculations as the steps for the Indicator Dashboard described above, except RPC figures are used in place of R/VC ratios. The indicators that are different in the alternate version are:
  - All Traffic Most Recent RPC
  - All Traffic RPC Change

- Competitive Influence RPC Difference in Most Recent Year
- Competitive Influence RPC Difference Change

## Data Visualization

### 1. Use Python to Process CCWS Data into Data Visualization Structures for Each Commodity at the 5-digit STCC Level

- Bivariate Distribution Matrix
  - Shows length of haul, tons per car, RPC, and R/VC ratios for 1992 and 2018 CCWS data
  - Shows paired two-variable scatter plots and single-variable probability densities
  - Uses 100 randomly sampled movements from each waybill year, removing outliers more than three standard deviations from the mean
- Violin Plots
  - Uses kernel density estimates weighted by expanded carloads to show the distribution of R/VC ratios, RPC, and length of haul for different subsets of the 1992 and 2018 CCWS traffic
    - Outliers more than three standard deviations of the mean are removed
  - Draws lines showing the lower quartile, median, and upper quartile values for each subset of the CCWS traffic
    - Drawn for the particular commodity within the violin plots as well as for all carload traffic in the margins for context
  - Includes a summary table showing 1992, 2018, and percent change values for average length of haul, number of waybills, carloads, and revenue
  - The twelve subsets of the CCWS for each commodity include:
    - All Records by Year
    - R/VC 180 Traffic Records by Year
    - Haul Length by Year (above and below 500 miles)
    - Railroad or Water Carrier Influence by Year
    - Railroad Influence by Year
    - Water Carrier Influence by Year
    - Railroad or Water Carrier Influence on Shorter Haul Moves by Year
    - Railroad Influence on Shorter Haul Moves by Year
    - Water Carrier Influence on Shorter Haul Moves by Year
    - Railroad or Water Carrier Influence on Longer Haul Moves by Year
    - Railroad Influence on Longer Haul Moves by Year
    - Water Carrier Influence on Longer Haul Moves by Year

## Over-Inclusive vs Under-Inclusive Assumptions

- Throughout the approach, there are instances where data limitations and other constraints require the use of simplifying assumptions. These assumptions, described below, at

times cause the evaluations to be over-inclusive or under-inclusive as to which observations are categorized as having modal influences.

- The latitude and longitude coordinates for stations from the CSM do not perfectly match the list of CCWS stations in each year of the study.
  - Under-inclusive in that there may be some stations that exist but do not have coordinates to be evaluated, or where the database may be outdated in a way that misrepresents a station as being too far away.
  - Over-inclusive in that the database may be outdated in a way that misrepresents a station as being closer than it actually is.
  - Proxy nearby stations are used in situations where this occurs. These assumptions could result in both over- and under-inclusive situations in terms of measured distances, resulting in a net outcome without much impact on the analysis. However, the primary effect of this approach is likely to make the analysis more inclusive.
- The latitude and longitude coordinates for ports from the USACE are not available in an older vintage, so the approach assumes the same ports that exist in 2019 existed in 2018 and 1992.
  - Under-inclusive where additional ports existed in each year.
  - Over-inclusive where no ports existed in each year.
- Ports are only considered as potential alternatives if they are listed as shipping any commodity.
  - Over-inclusive if some ports cannot handle certain commodities, though in theory it is possible some ports could be incentivized to build out that capability. There may also be some commodities for which barge would never be a viable alternative.
  - Under-inclusive because the approach depends on the accuracy of the USACE data. There could be ports which handled (or could handle) commodities that were not correctly reported in the USACE data.
- Waterways are defined as distinct collections of watersheds, and a viable alternative must have a port on the same waterway at origin and destination.
  - Under-inclusive in that two nearby ports on different sides of a waterway border would not be considered a viable alternative (e.g., a movement from the east side of the tip of Florida to the west side of the tip of Florida would not be considered viable since it would be from the Atlantic waterway to the Gulf waterway).
  - Over-inclusive in that distance, route, and direction of the current is not considered when evaluating a viable route (e.g., a movement could exist from North Dakota to Minnesota where there is a viable alternative on the Mississippi River, even though that would mean taking a much longer circuitous route downriver to Missouri and then upriver to Minnesota).
- 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.
  - Under-inclusive in that there may be some commodities and shippers that are able to go farther, among other possibilities for truck transload alternatives.
  - Over-inclusive in that there may be some commodities and shippers where even a very short truck transload is not possible, or truck transload options may not be viable at all. The approach also calculates straight line distance between a station

and the alternative, so the highway miles would likely actually be longer than 30 miles.

- The approach assumes trucking becomes feasible enough to exert competitive pressure if the distance for the move in the waybill is under 500 miles.
  - Under-inclusive in that there are some commodities and shippers that may have a viable truck alternative for longer distances.
  - Over-inclusive in that there are some commodities and shippers that may only have a viable truck alternative for shorter distances, or for which a truck option is not viable at all.
- The approach requires that a viable rail alternative station have traffic moving in that year.
  - 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.
  - Over-inclusive because potentially anomalous data could establish a lane where one otherwise may not have existed. The presence of traffic is the only threshold, while the actual physical route characteristics, investment, or operating capabilities of the alternative lane could not feasibly handle the needs of the incumbent lane.
- The approach also requires that, for rail alternatives, a viable alternative station had traffic moving in that year of the same commodity at the 5-digit STCC level.
  - Under-inclusive in that there are likely cases where any traffic moving would signify a viable route, regardless of what commodity is being moved, or where only specific commodities could not move on that route (e.g., if an alternative only had movements of barley in a given year and the incumbent move is of corn, it would not be considered viable even though they are both very similar grain commodities).
  - Over-inclusive if there are any cases where commodities are sufficiently different at the 7-digit STCC level where certain tracks or stations could handle one commodity within the same 5-digit STCC but not another.
- The approach allows multi-carrier moves to be considered as an alternative regardless of whether the original move was a multi-carrier move or not. Similarly, the approach allows the alternative to involve short line railroads even if the original move did not.
  - Under-inclusive in that the approach only includes multi-carrier moves that actually occurred. It does not create novel multi-carrier routes using railroads that interchanged at the same junction but never interchanged with one another.
  - Over-inclusive because multi-carrier moves may not be a perfect substitute for an existing single carrier move due to the additional costs and delays associated with introducing a junction into the movement. Similarly, a short line railroad and incumbent Class I railroad may have capacity, service, or other differences. For example, a Class I might not provide the same level of service (e.g., frequency, spotting, blocking) that could be available through an incumbent short line railroad.

- The approach does not treat Rule 11<sup>47</sup> (rebill) moves differently from other moves. Rebill moves appear in the CCWS as movements from origin to destination, even though they are actually just sections of an entire move for which each segment was billed separately.
  - Under-inclusive in that there may be some cases where there is no viable alternative which replaces the segment captured in the rebill move, but there may have been a viable alternative from the movement's actual origin to its actual destination.
  - Over-inclusive in that there could be cases where the approach finds a viable alternative that replaces the segment captured in the rebill move, but where one may not exist to complete the other segments of the move.

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<sup>47</sup> Rule 11 is an accounting procedure under the Railway Accounting Rules promulgated by the Association of American Railroad's accounting division. Rule 11 refers to the practice of separately billing for rail charges by each carrier in a through movement. Policy Alts. to Increase Competition in the R.R. Indus., EP 688, slip op. at 4 n.5 (STB served Apr. 14, 2009).

## Appendix B

### Example of Indicator Dashboard and Data Visualization Components as Applied to Hydraulic Cement (STCC 32411)

#### Indicator Dashboard Using R/VC Ratios

Commodity		Overall Dashboard	Initial Screens		Indicators							
STCCS	STCC Name	Signal	RVC 180	Intermodal	All Traffic Recent RVC	All Traffic RVC Change	Comp Inf Recent	Comp Inf Change	Length of Haul Recent	Length of Haul Change	Comp RVC Recent Diff	Comp RVC Diff Change
32411	Hydraulic Cement, Natural, Portland or	Moderate	52.2%	0.4%	Strong	Strong	Weak	Weak	Moderate	Strong	Moderate	Weak

Looking at the Indicator Dashboard results for hydraulic cement, 52.2% of the carloads are R/VC 180 traffic (greater than Initial Screen One’s 5% threshold), and 0.4% of the carloads are moving as intermodal traffic (less than Initial Screen Two’s 40% threshold). As a result, neither of the initial screens send a “weak” signal, and the analysis proceeds to the indicators.

Both of the R/VC indicators send “strong” signals, meaning that R/VC ratios tended to be more than 5 percentage points higher for hydraulic cement than for all carload traffic in 2018, and they tended to see increases that were more than 5 percentage points above the increases for all carload traffic from 1992 to 2018. The “Length of Haul Change Indicator” also generated a “strong” signal for hydraulic cement, as the average length of haul increased by more than 5 percentage points above the increase for all carload traffic.

However, these “strong” signals were balanced by “weak” signals from both of the competitive influence indicators. This means the proportion of hydraulic cement traffic which was on longer haul moves and/or which didn’t have any railroad or water carrier alternatives tended to be more than 5 percentage points below those proportions for all carload traffic, and those values tended to change by 5 percentage points less than for all carload traffic from 1992 to 2018. The “Competitive Influence R/VC Difference Change Indicator” also sent a “weak” signal, meaning the change in the markup for traffic without rail or water carrier alternatives was more than 5 percentage points less for hydraulic cement than it was for all carload traffic.

Lastly, there are two “moderate” signals sent by the “Length of Haul in Most Recent Year Indicator” and the “Competitive Influence R/VC Difference in Most Recent Year Indicator.” The former means the average length of haul for hydraulic cement in 2018 was between 500 and 1,000 miles. The latter means the markup for hydraulic cement traffic without rail or water carrier alternatives tended to fall within 5 percentage points of the markup for all carload traffic.

Overall, hydraulic cement tended to have higher R/VC ratios which increased more than other traffic and lengths of haul that increased more than other traffic. However, it also tended to have less traffic without modal influences (as assigned by the GMIM and CCWS analyses) to exert competitive pressure, and that traffic tended to not increase as much. The markup associated with traffic without modal influences also did not increase as much as other traffic. All the other metrics measured by the indicators tended to be similar to other traffic. Once the values assigned to these indicators are averaged, the Overall Dashboard Signal becomes

“moderate” for hydraulic cement.<sup>48</sup> This means there is moderate evidence that an exemption revocation could be warranted. The full Data Visualization analysis then provides additional information on the market conditions that might support or weaken the case for exemption revocation.

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<sup>48</sup>  $2+2+0+0+1+2+1+0=10$ ,  $8/8=1$ , and  $0.67 < 1 < 1.33$ , which means the Overall Dashboard Signal is “moderate.”

## Indicator Dashboard Using RPC Values

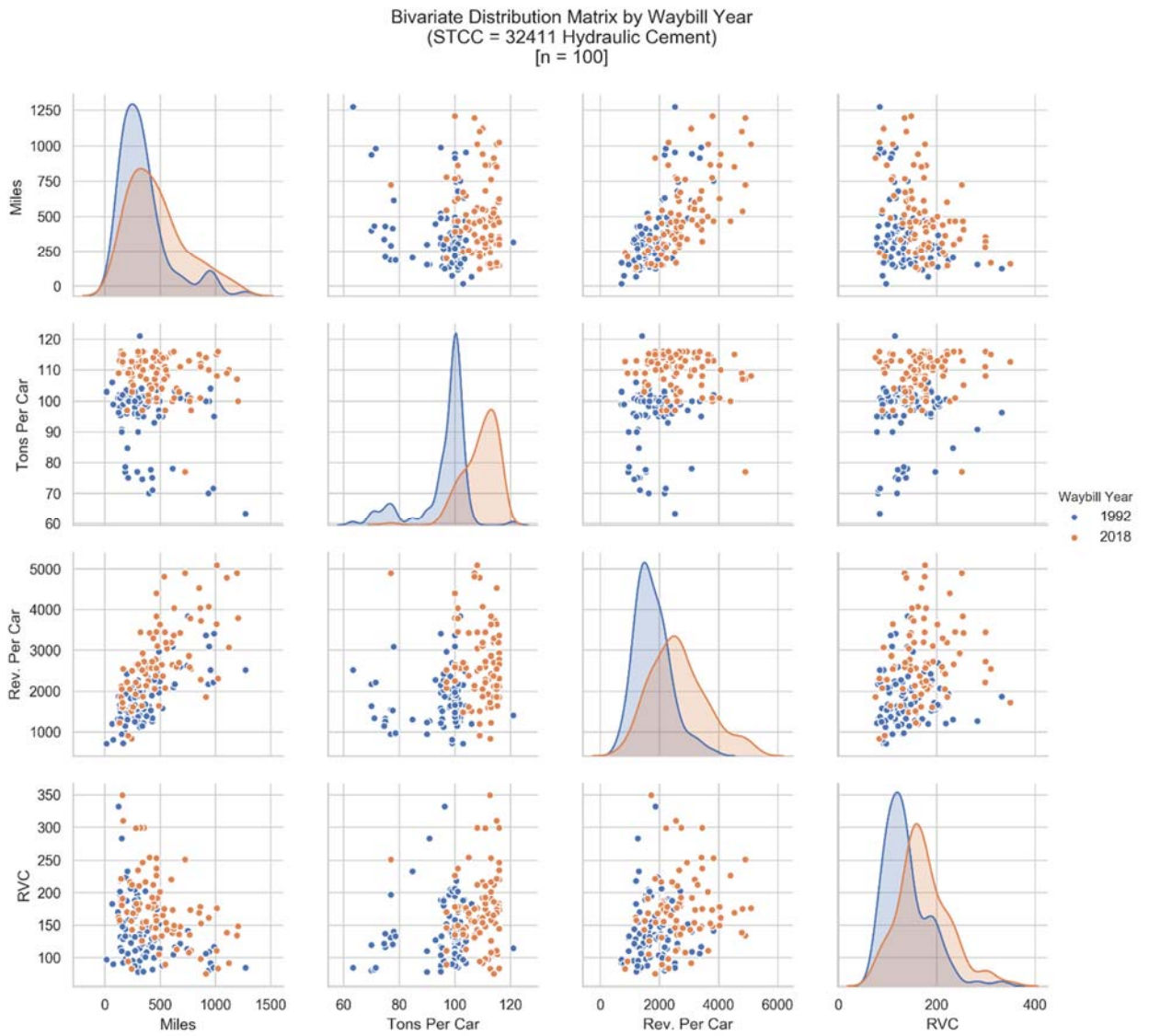
Commodity		Overall Dashboard	Initial Screens		Indicators							
STCCS	STCC Name	Signal	2018 % of Cars	2018 %	All Traffic	All Traffic	Comp Inf	Comp Inf	Length of Haul	Length of Haul	Comp RPC	Comp RPC
			RVC 180	Intermodal	Recent RPC	RPC Change	Recent	Change	Recent	Change	Recent Diff	Diff Change
32411	Hydraulic Cement, Natural, Portland or	Moderate	52.2%	0.4%	Weak	Strong	Weak	Weak	Moderate	Strong	Weak	Moderate

Note that when the Indicator Dashboard calculations are run for RPC rather than R/VC ratios, there is now a “weak” signal for the “All Traffic in Most Recent Year RPC Indicator” and the “Competitive Influence RPC Difference in Most Recent Year Indicator.” This means the values for both of those indicators tended to be more than 5 percentage points below the corresponding values for all carload traffic. The “Competitive Influence RPC Difference Change Indicator” also becomes “moderate,” meaning that value tended to be within 5 percentage points of all carload traffic. RPCs may send different signals than R/VC ratios for various reasons. Because RPCs tend to be higher as length of haul increases and hydraulic cement had less than half the average length of haul of all carload traffic in 2018, it is not surprising that it sends a weaker signal than R/VC ratios. However, the signals generated by the changes in RPCs are consistent with those generated by the changes in R/VC ratios, and the Overall Dashboard Signal once the scores of each of the indicators are averaged is still a “moderate” signal.<sup>49</sup>

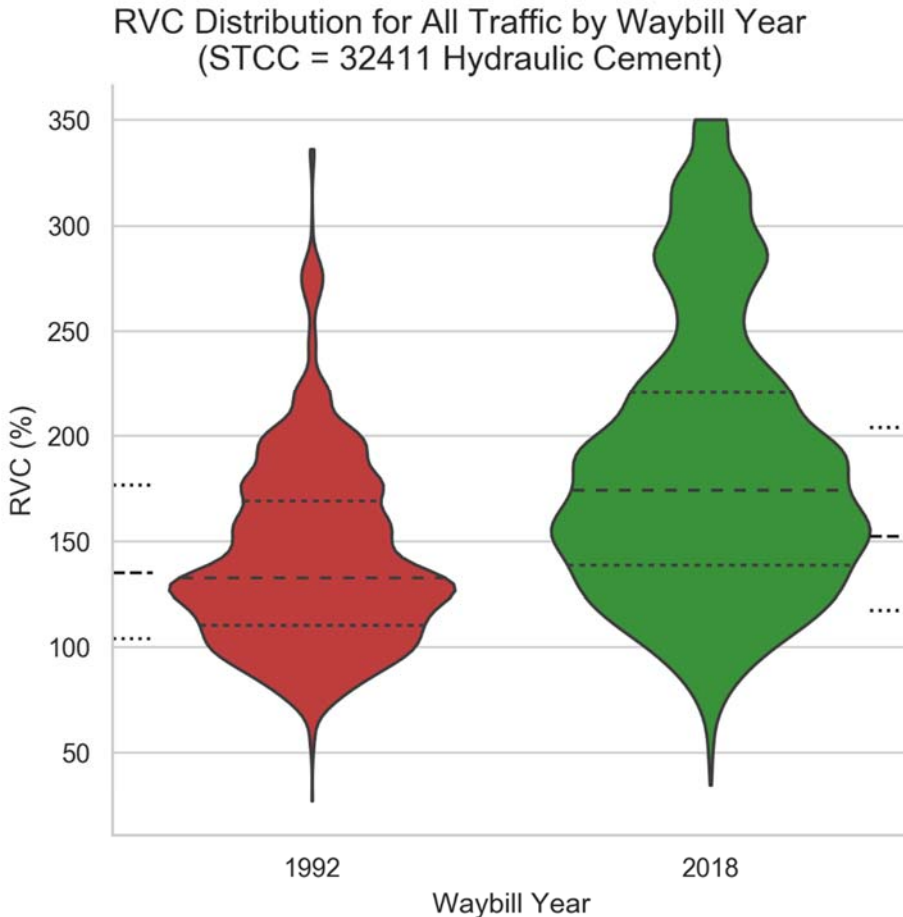
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<sup>49</sup>  $0+2+0+0+1+2+0+1=6$ ,  $6/8=0.75$ , and  $0.67 < 0.75 < 1.33$ , which means the Overall Dashboard Signal is “moderate.”

**Data Visualization**



Among the results shown in the Bivariate Distribution Matrix, there has been a shift from 1992 to 2018 towards heavier cars with more variance in tons per car. There has also been an upward shift, corresponding at least in part, in RPC and R/VC ratios.

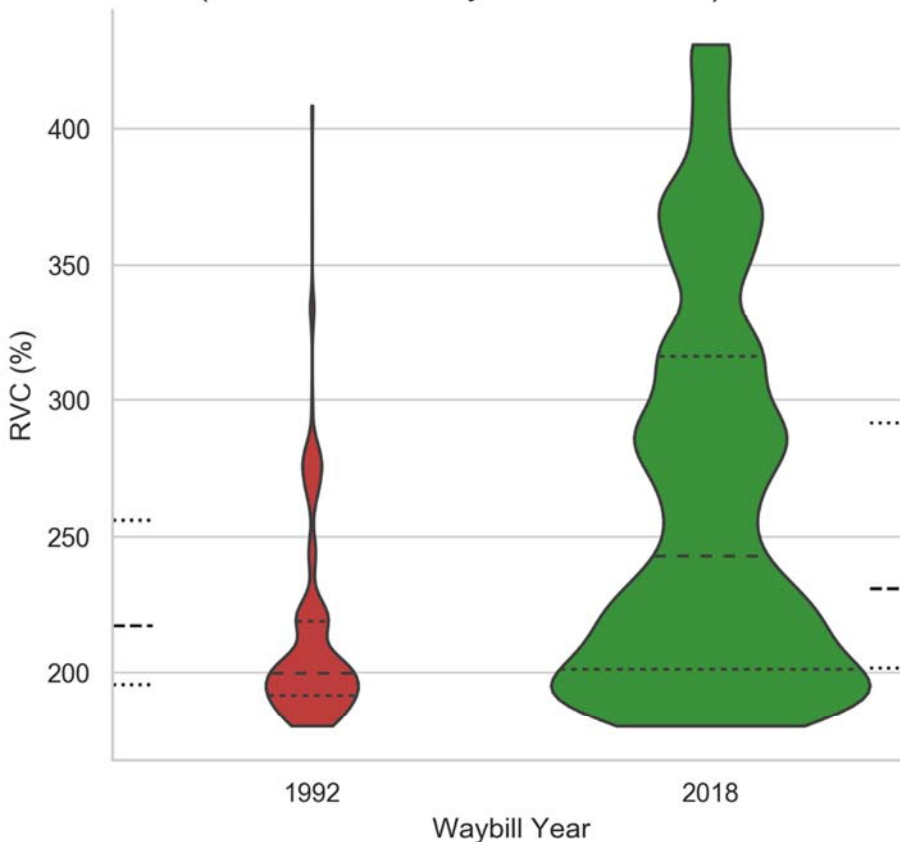


Item	1992	2018	Change
Avg. Haul Length (Mi.)	364.5	508.7	39.6%
No. of Waybills	3,081	3,966	28.7%
Cars	173,198	216,614	25.1%
Revenue	\$311,459,999	\$561,897,456	80.4%

Large R/VC ratio increases lifted the median quartile R/VC ratio in 2018 up to the vicinity of the upper quartile R/VC ratio for 1992. The lower quartile R/VC ratio moved in 2018 up towards the median R/VC ratio in 1992. This lift signified an additional 25% of the hydraulic cement traffic in 2018 was above the median R/VC ratio from 1992. R/VC ratios at each quartile were higher for hydraulic cement than for all carload traffic in 2018, whereas they had been lower than for all carload traffic in 1992.<sup>50</sup>

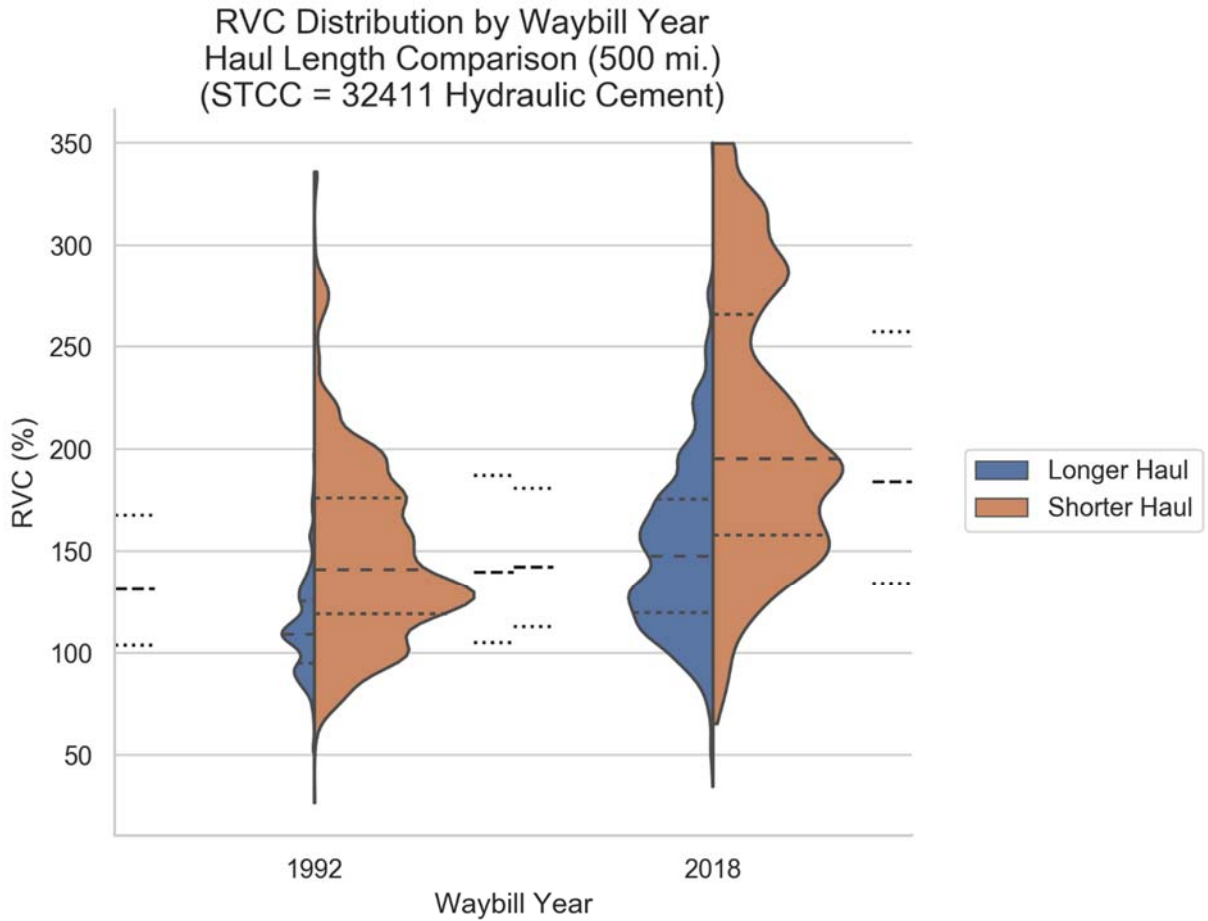
<sup>50</sup> Quartiles for the commodity in a given year are drawn as dotted lines within the violin plot, while quartiles for all carload traffic in a given year are drawn as dotted lines in the margins.

RVC Distribution for R/VC 180 Traffic by Waybill Year  
(STCC = 32411 Hydraulic Cement)



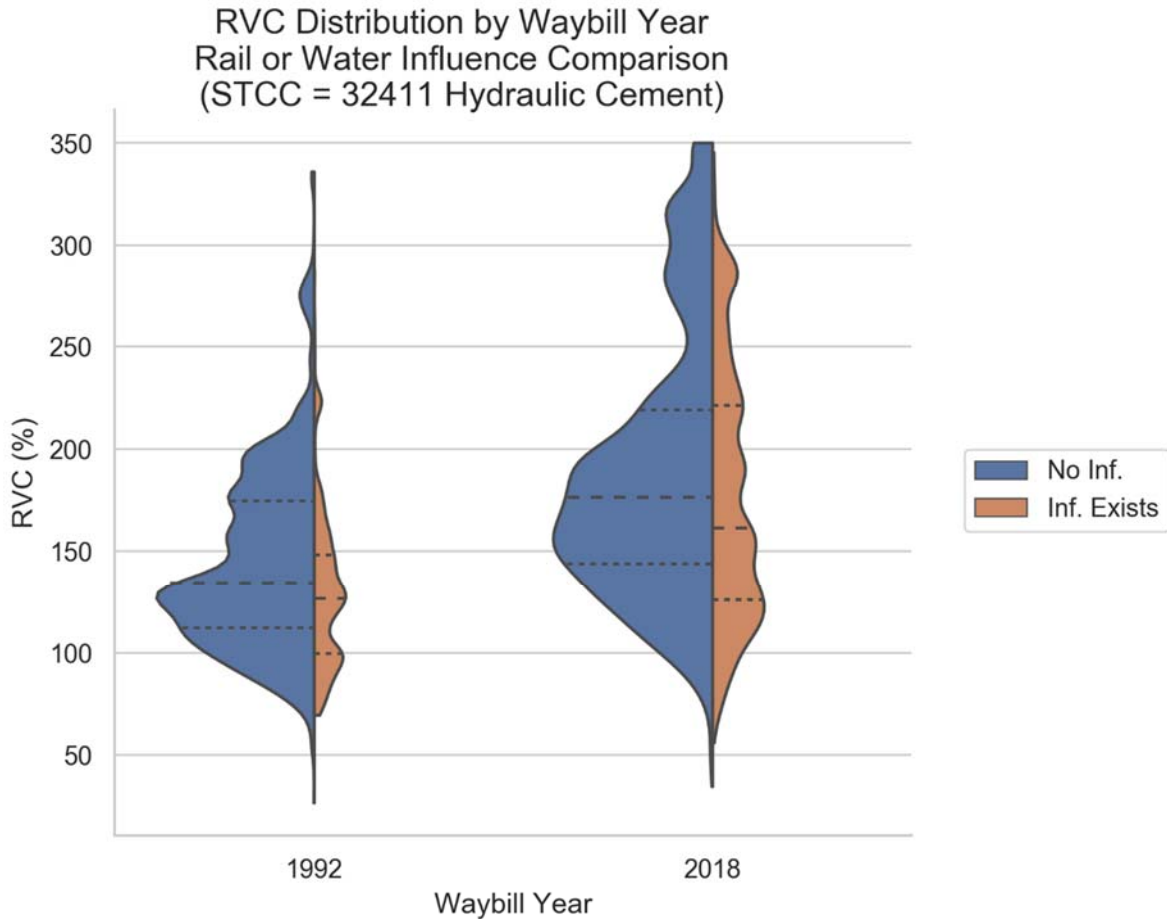
Item	1992	2018	Change
Avg. Haul Length (Mi.)	247.0	357.4	44.7%
No. of Waybills	379	1,612	325.3%
Cars	30,728	113,012	267.8%
Revenue	\$56,939,063	\$283,584,498	398.0%

There were more than four times as many R/VC 180 traffic movements in 2018 as there were in 1992 for hydraulic cement. Also, hydraulic cement R/VC 180 traffic moved at significantly higher R/VC ratios in 2018. These increases for R/VC 180 traffic were similar to the increases observed for hydraulic cement overall.



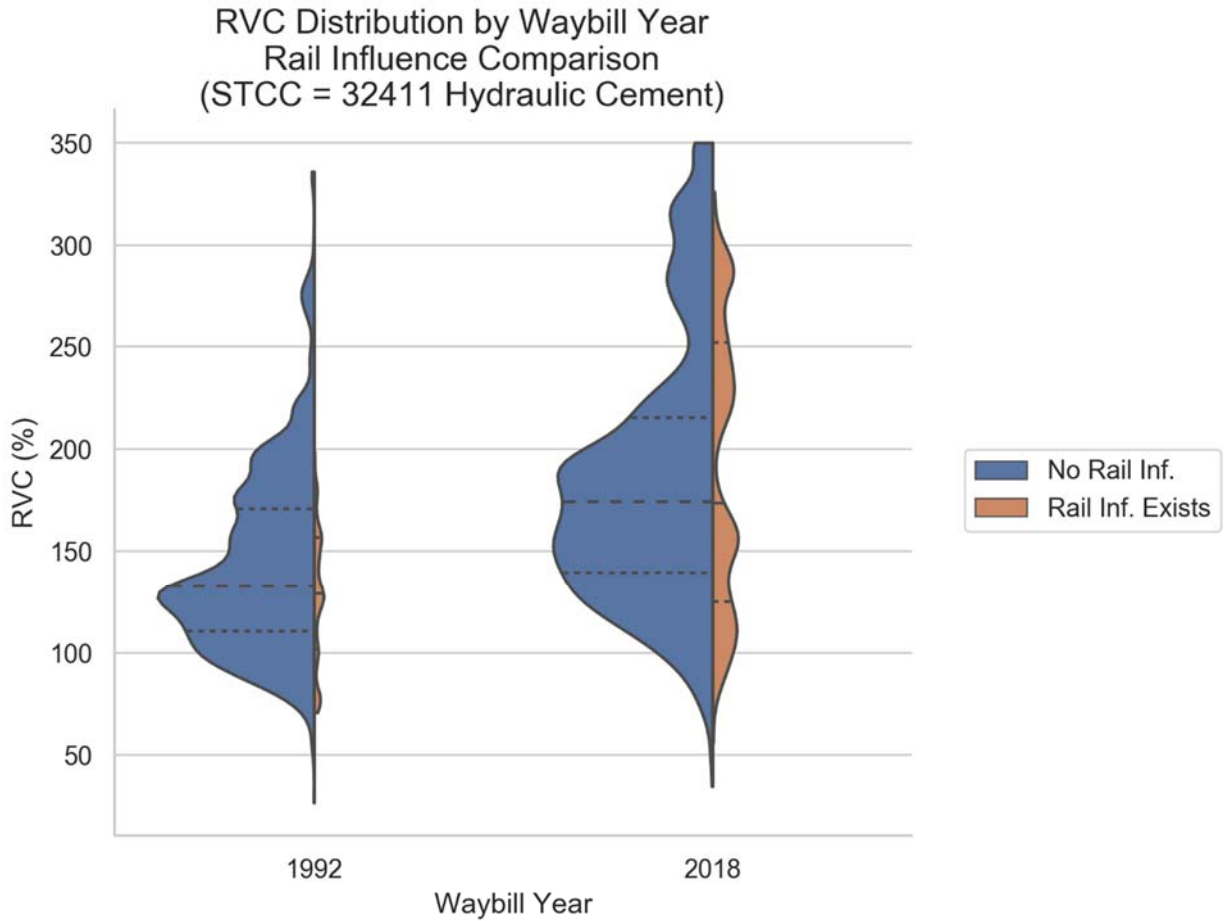
Item	1992	1992	2018	2018
Modal Influence	No Inf.	Inf. Exists	No Inf.	Inf. Exists
Avg. Haul Length (Mi.)	774.8	271.3	809.2	309.6
No. of Waybills	570	2,511	1,580	2,386
Cars	29,420	143,778	76,778	139,836
Revenue	\$78,765,302	\$232,694,697	\$258,260,090	\$303,637,366

Longer haul traffic volumes more than doubled for hydraulic cement from 1992 to 2018, while shorter haul traffic volumes decreased. This shift towards longer haul movements would tend to make trucking a less viable transportation alternative.



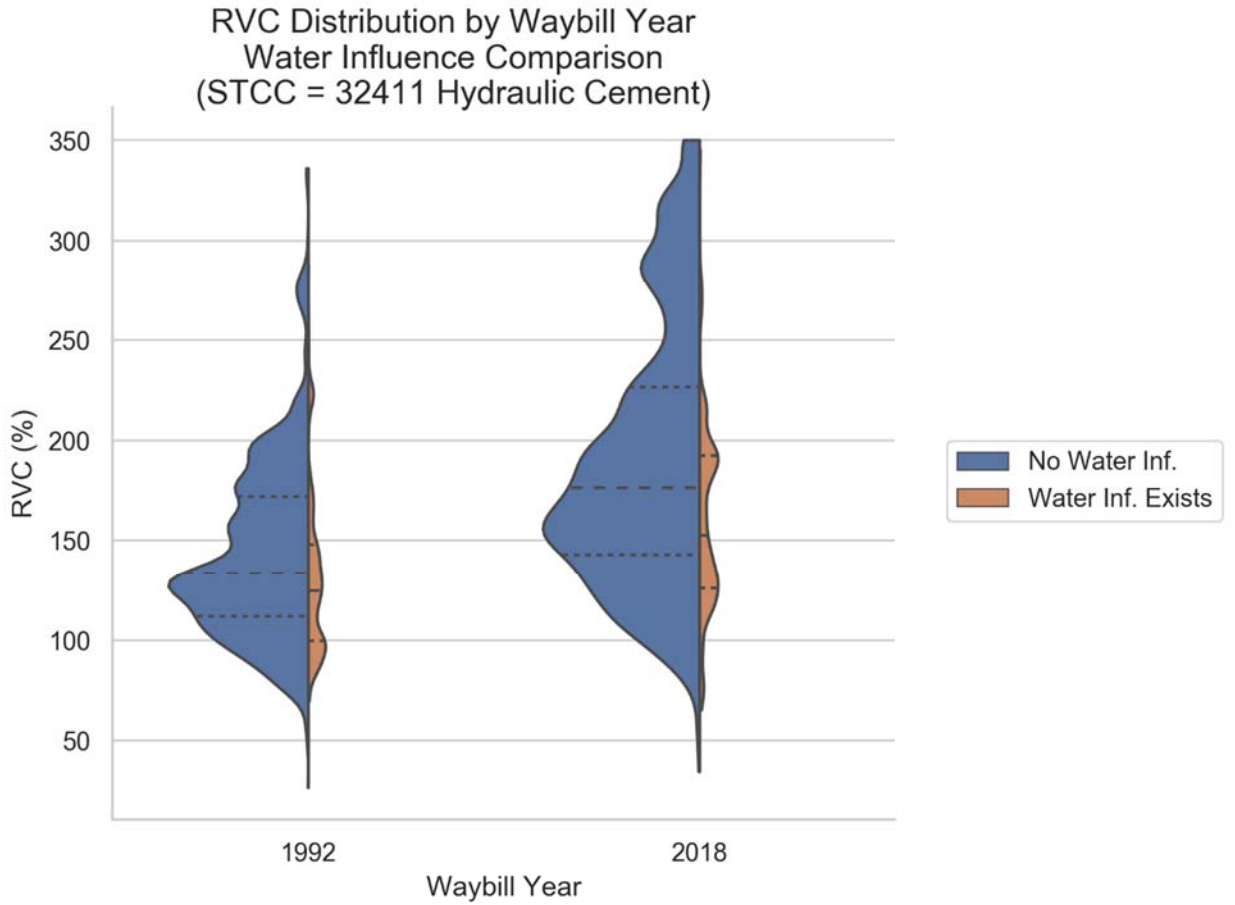
Item	1992	1992	2018	2018
Modal Influence	No Inf.	Inf. Exists	No Inf.	Inf. Exists
Avg. Haul Length (Mi.)	386.8	273.5	538.4	419.0
No. of Waybills	2,474	607	2,978	988
Cars	144,346	28,852	167,342	49,272
Revenue	\$267,171,134	\$44,288,865	\$448,366,816	\$113,530,640

Traffic which has a railroad or water carrier influence identified in the GMIM grew at a faster rate from 1992 to 2018 than traffic without such influences for hydraulic cement. However, R/VC ratios increased regardless of whether railroad or water carrier influences existed such that the 2018 median R/VC ratio was higher than 150% and the 2018 upper quartile R/VC ratio was higher than 200% for both groups of traffic.



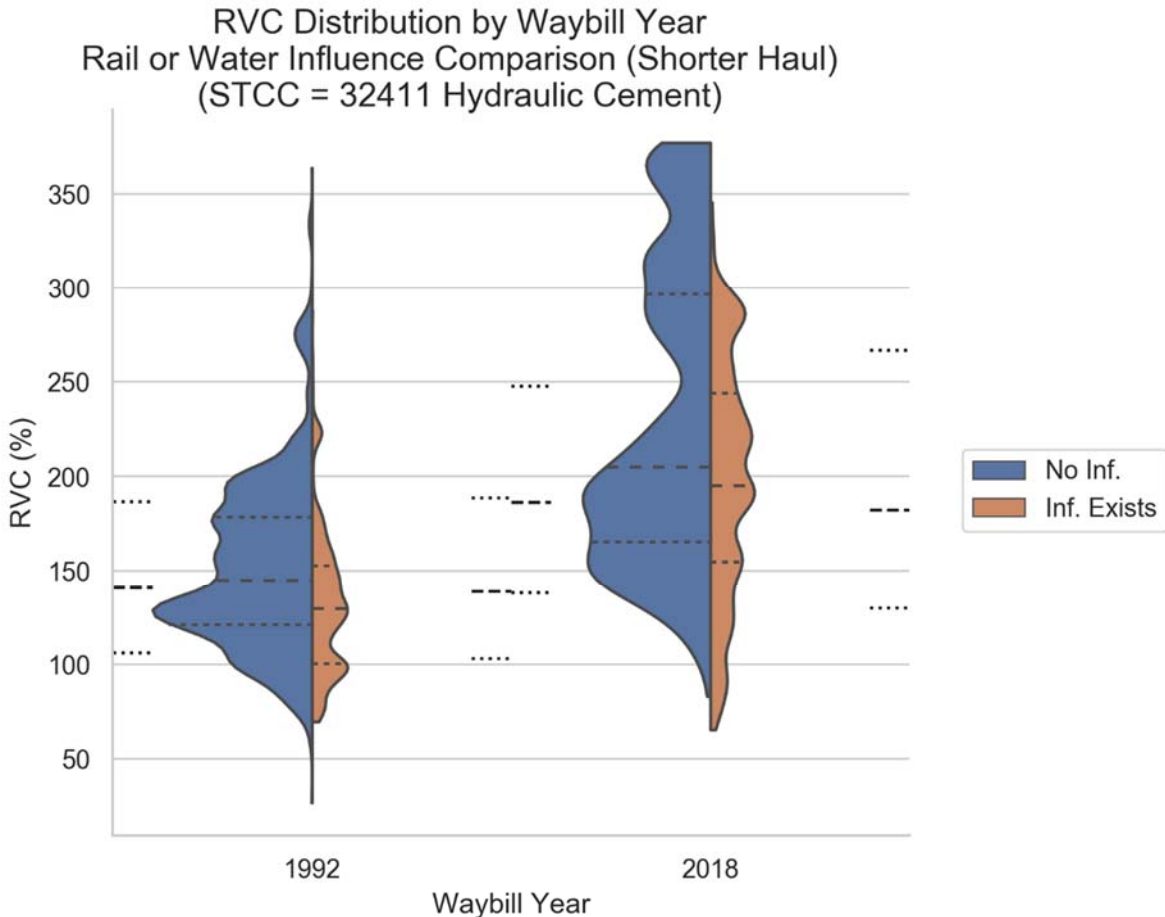
Item	1992	1992	2018	2018
Modal Influence	No Inf.	Inf. Exists	No Inf.	Inf. Exists
Avg. Haul Length (Mi.)	372.1	274.7	519.5	438.0
No. of Waybills	2,839	242	3,438	528
Cars	163,206	9,992	187,922	28,692
Revenue	\$296,068,996	\$15,391,003	\$494,808,136	\$67,089,320

The results for traffic with rail influences are similar to the results for railroad or water carrier influences, though the 2018 upper quartile R/V C ratio for traffic with railroad influences is even closer to 250%.



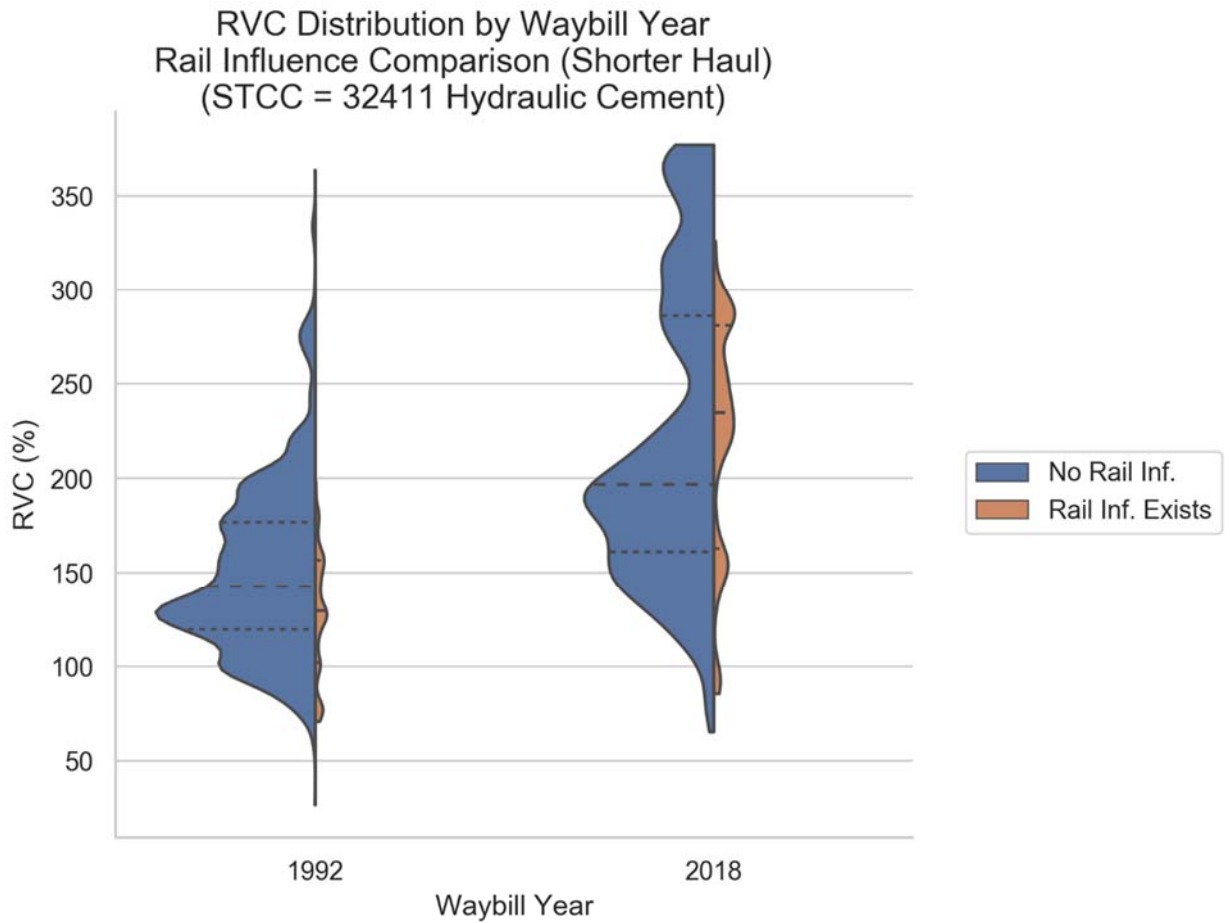
Item	1992	1992	2018	2018
Modal Influence	No Inf.	Inf. Exists	No Inf.	Inf. Exists
Avg. Haul Length (Mi.)	376.9	272.3	523.3	397.1
No. of Waybills	2,714	367	3,506	460
Cars	154,178	19,020	196,034	20,580
Revenue	\$282,372,423	\$29,087,576	\$515,456,136	\$46,441,320

The results for traffic with water carrier influences are similar to the results for railroad or water carrier influences, though the 2018 upper quartile R/VC ratio for traffic with water carrier influences is slightly below 200%.



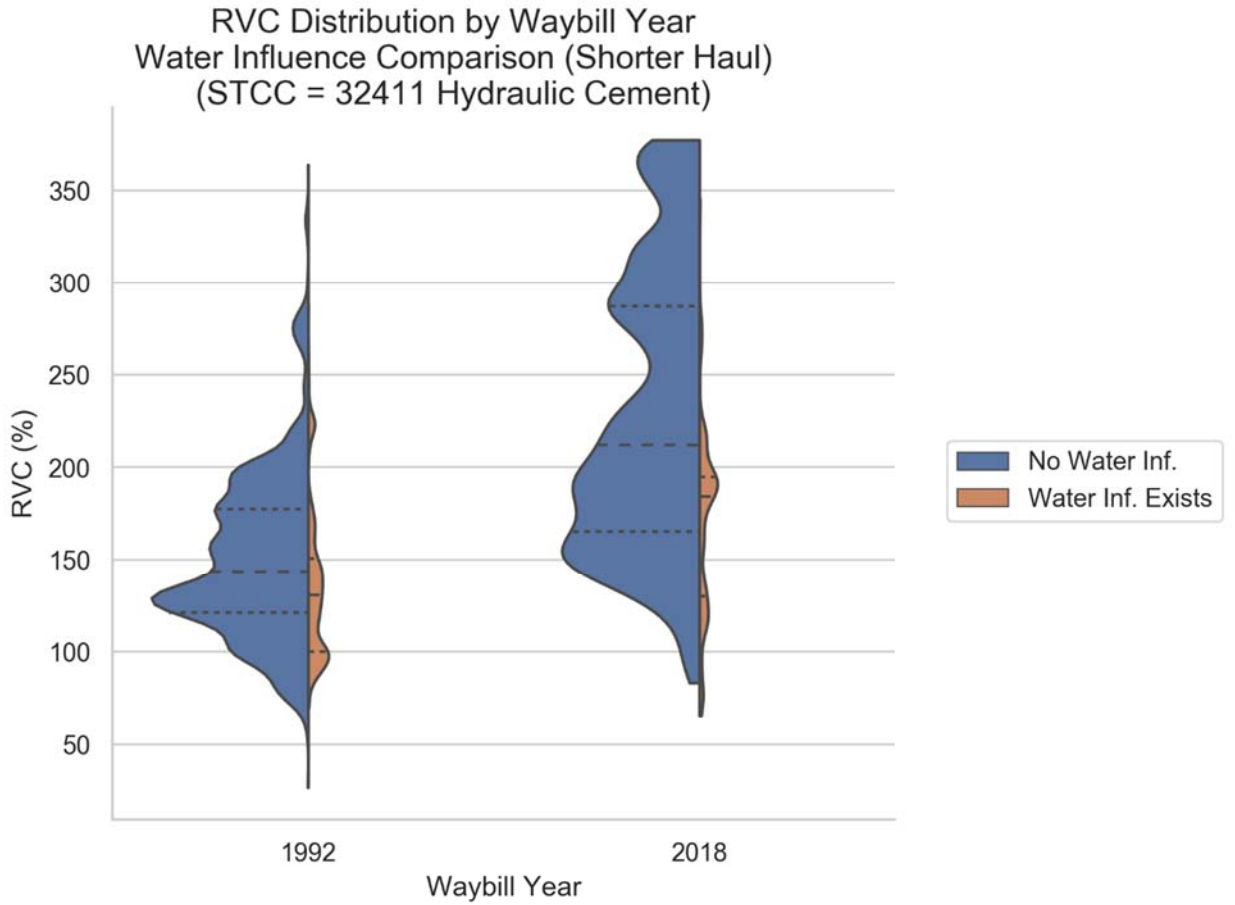
Item	1992	1992	2018	2018
Modal Influence	No Inf.	Inf. Exists	No Inf.	Inf. Exists
Avg. Haul Length (Mi.)	279.4	243.4	323.0	277.0
No. of Waybills	1,949	562	1,690	697
Cars	117,474	26,304	105,420	34,456
Revenue	\$194,248,391	\$38,446,306	\$232,764,214	\$70,916,432

Looking at just shorter haul moves below 500 miles, the upward shift in R/VC ratios are even more pronounced. The median R/VC ratios for both groups are around 200% in 2018, and the upper quartile R/VC ratio for traffic without railroad or water carrier influences is almost at 300%. Shorter haul traffic does tend to have higher R/VC ratios. However, in 2018 all quartiles for hydraulic cement traffic with and without influences are now above their corresponding values for all carload traffic, except for the upper quartile of traffic with influences.



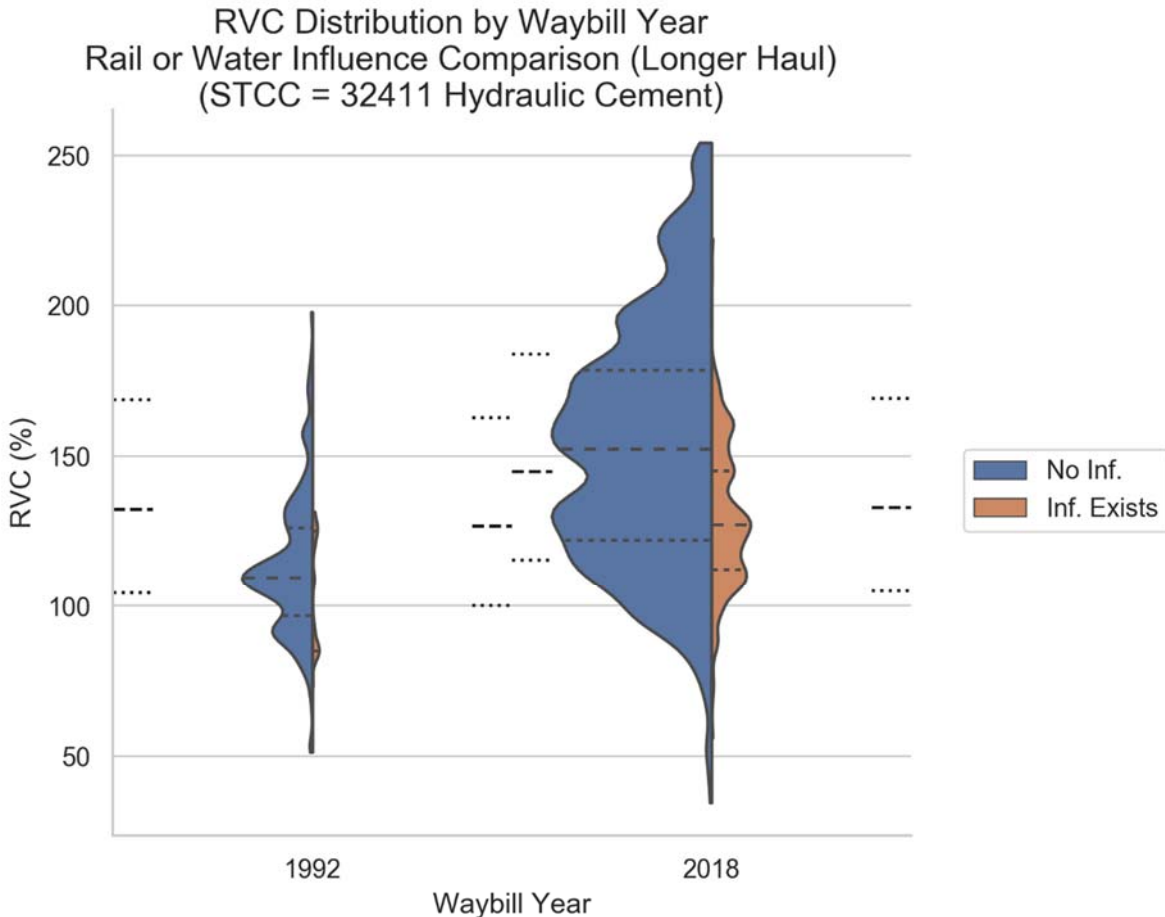
Item	1992	1992	2018	2018
Modal Influence	No Inf.	Inf. Exists	No Inf.	Inf. Exists
Avg. Haul Length (Mi.)	271.4	270.6	317.7	263.5
No. of Waybills	2,273	238	2,027	360
Cars	133,946	9,832	120,244	19,632
Revenue	\$217,593,926	\$15,100,771	\$261,411,594	\$42,269,052

The results for shorter haul traffic with railroad influences are similar to the results for shorter haul traffic with railroad or water carrier influences, though there is a smaller share of shorter haul traffic with railroad influences.



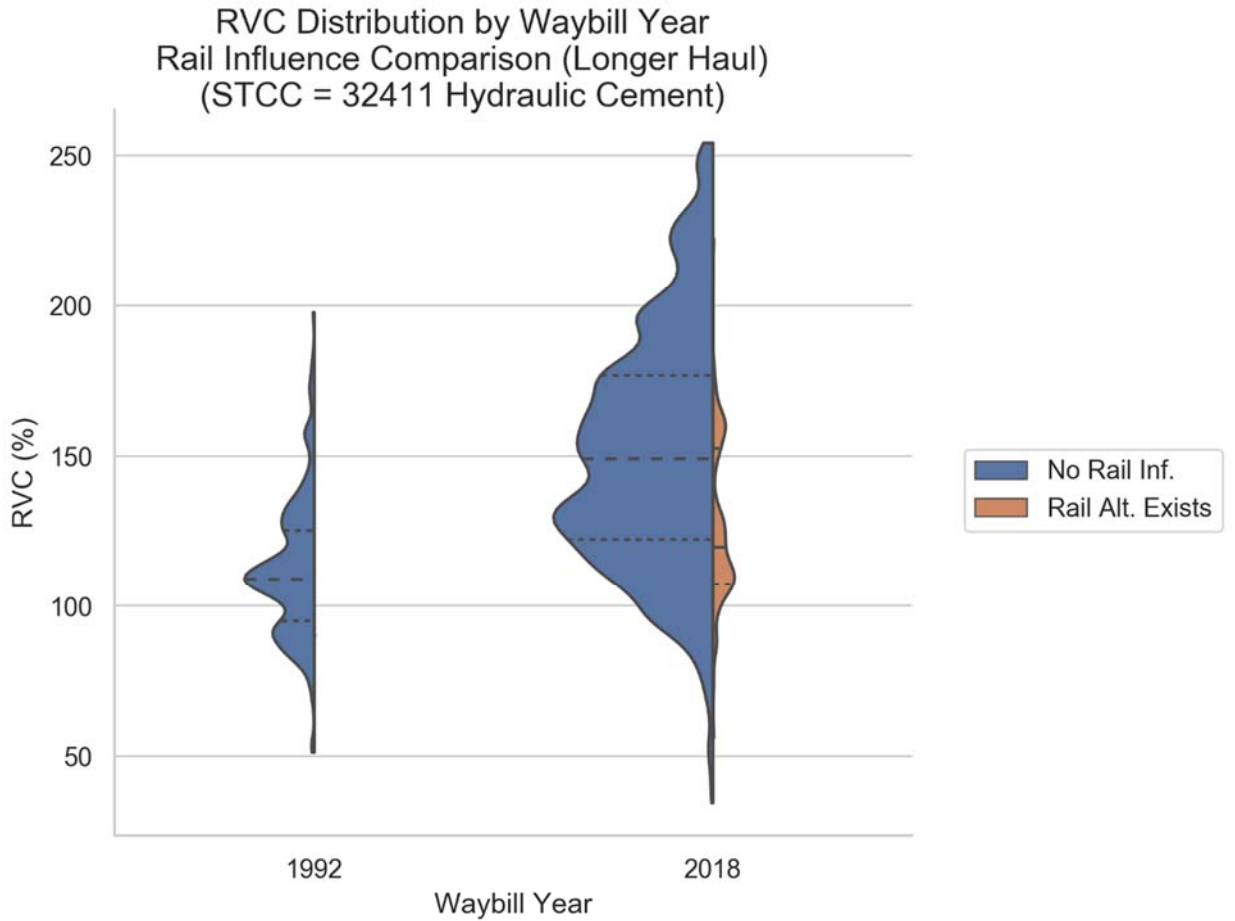
Item	1992	1992	2018	2018
Modal Influence	No Inf.	Inf. Exists	No Inf.	Inf. Exists
Avg. Haul Length (Mi.)	278.5	223.2	312.5	291.4
No. of Waybills	2,185	326	2,050	337
Cars	127,146	16,632	125,052	14,824
Revenue	\$209,159,448	\$23,535,249	\$275,033,266	\$28,647,380

The results for shorter haul traffic with water carrier influences are similar to the results for shorter haul traffic with railroad or water carrier influences, though there is a smaller share of shorter haul traffic with water carrier influences.



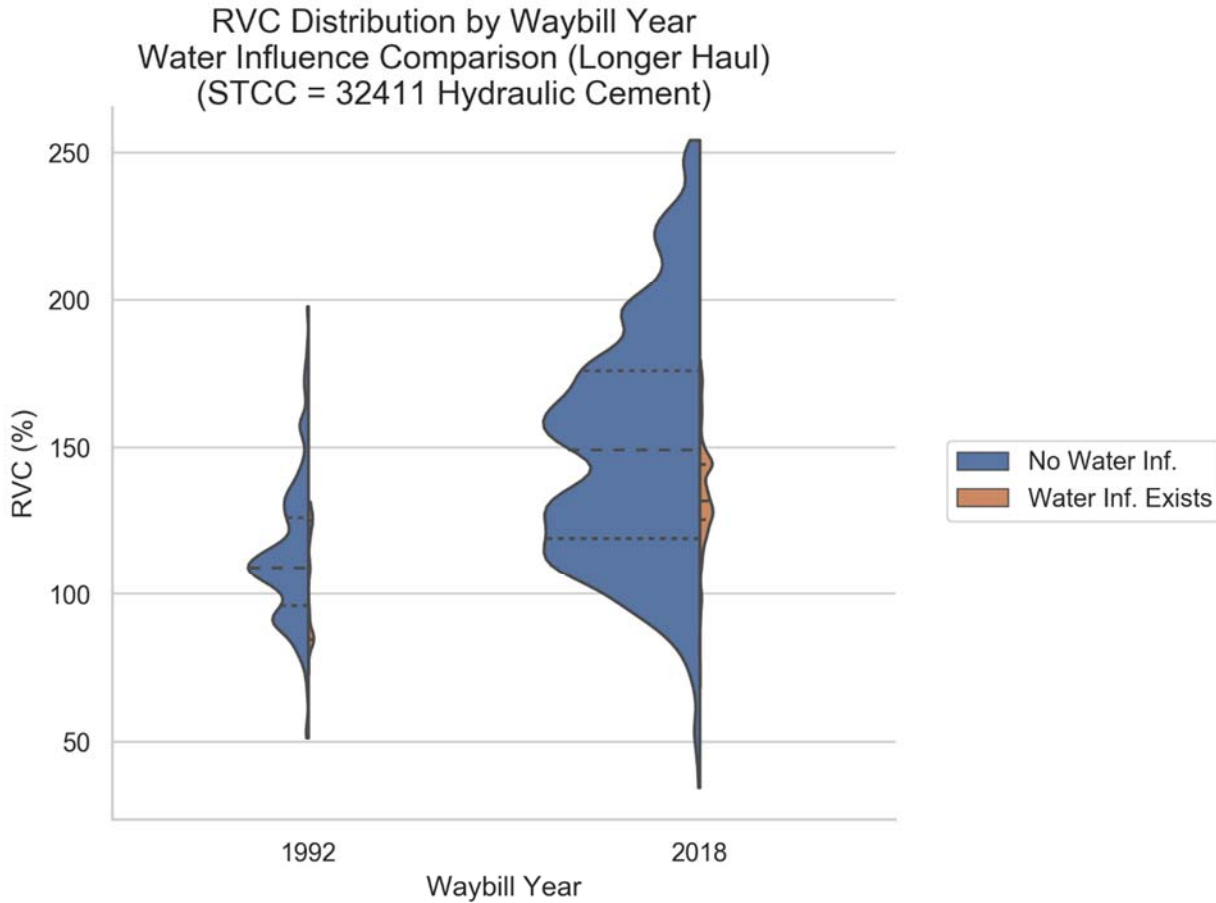
Item	1992	1992	2018	2018
Modal Influence	No Inf.	Inf. Exists	No Inf.	Inf. Exists
Avg. Haul Length (Mi.)	786.0	650.0	827.8	759.6
No. of Waybills	526	45	1,307	293
Cars	26,912	2,548	62,682	14,896
Revenue	\$72,969,912	\$5,842,559	\$216,701,522	\$42,722,128

The difference in R/VC ratios between traffic with and without railroad or water carrier influences becomes much more pronounced for hydraulic cement traffic in 2018. The upper quartile R/VC ratio for traffic with influences is about the same as the median R/VC ratio for traffic without influences. The 2018 R/VC ratios at each quartile for traffic with influences also tend to be lower than the corresponding R/VC ratios for all carload traffic, whereas the R/VC ratios for traffic without influences tends to be higher.



Item	1992	1992	2018	2018
Modal Influence	No Inf.	Inf. Exists	No Inf.	Inf. Exists
Avg. Haul Length (Mi.)	777.1	521.7	815.7	811.9
No. of Waybills	567	4	1,432	168
Cars	29,300	160	68,518	9,060
Revenue	\$78,522,239	\$290,232	\$234,603,382	\$24,820,268

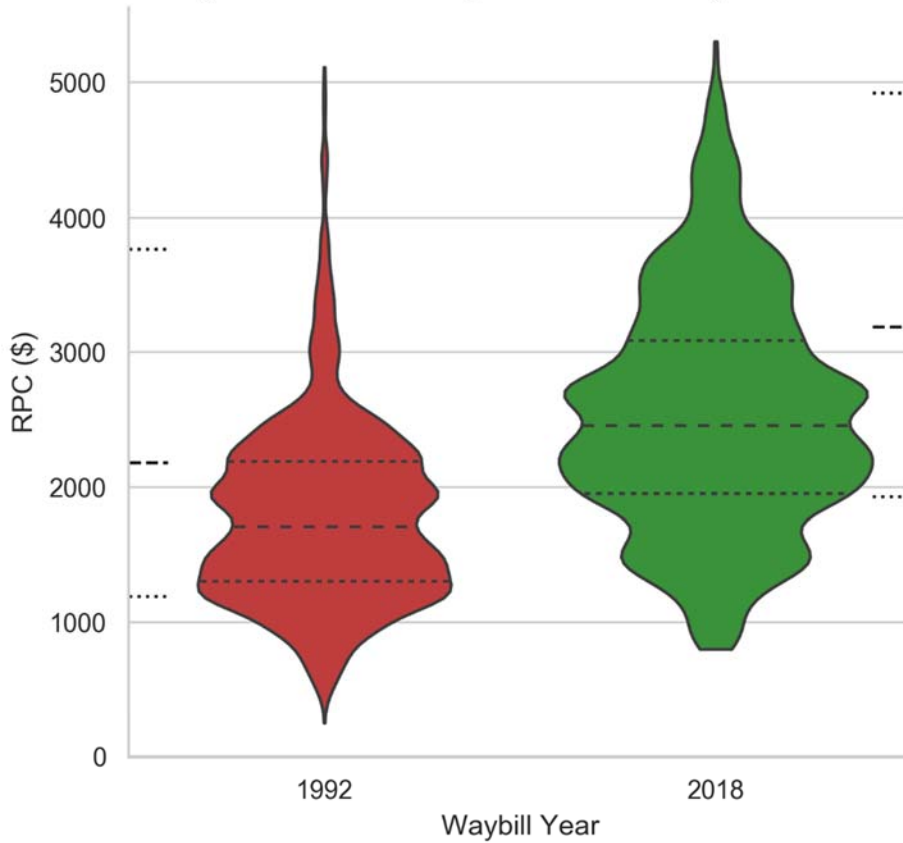
The results for longer haul traffic with rail influences are similar to the results for longer haul traffic with railroad or water carrier influences, though there is a smaller share of longer haul traffic with railroad influences.



Item	1992	1992	2018	2018
Modal Influence	No Inf.	Inf. Exists	No Inf.	Inf. Exists
Avg. Haul Length (Mi.)	784.1	662.6	826.0	689.3
No. of Waybills	530	41	1,475	125
Cars	27,072	2,388	71,742	5,836
Revenue	\$73,260,144	\$5,552,327	\$241,521,790	\$17,901,860

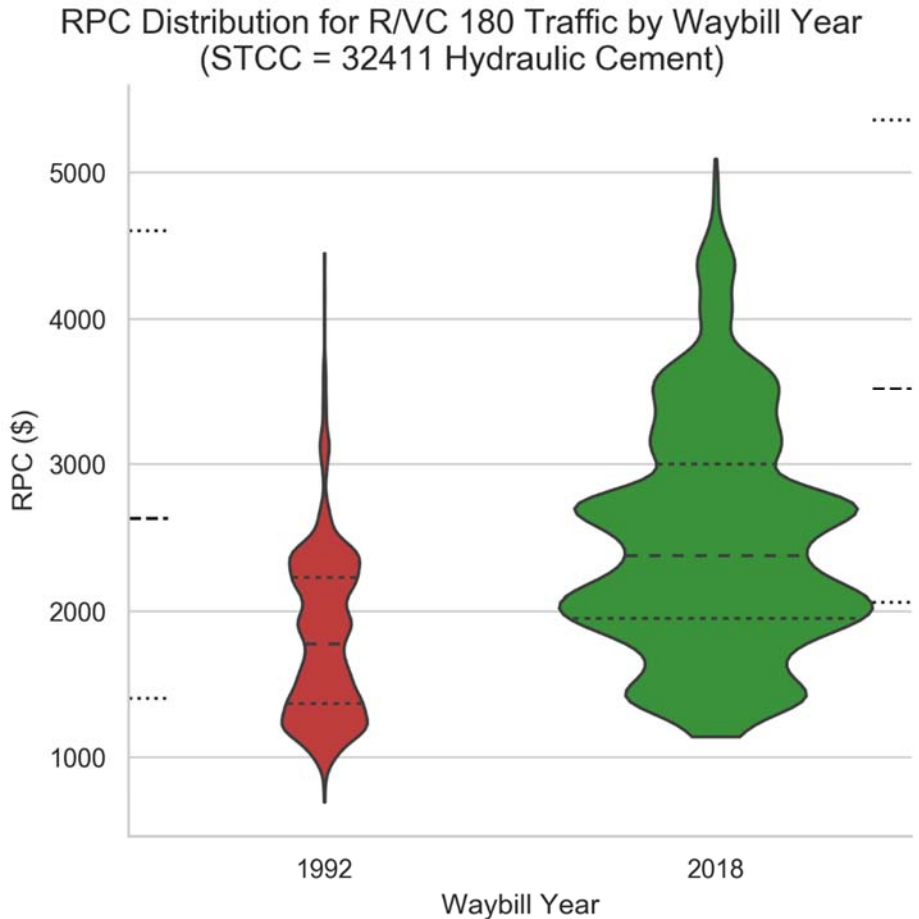
The results for longer haul traffic with water carrier influences are similar to the results for longer haul traffic with railroad or water carrier influences, though there is a smaller share of longer haul traffic with water carrier influences.

RPC Distribution for All Traffic by Waybill Year  
(STCC = 32411 Hydraulic Cement)



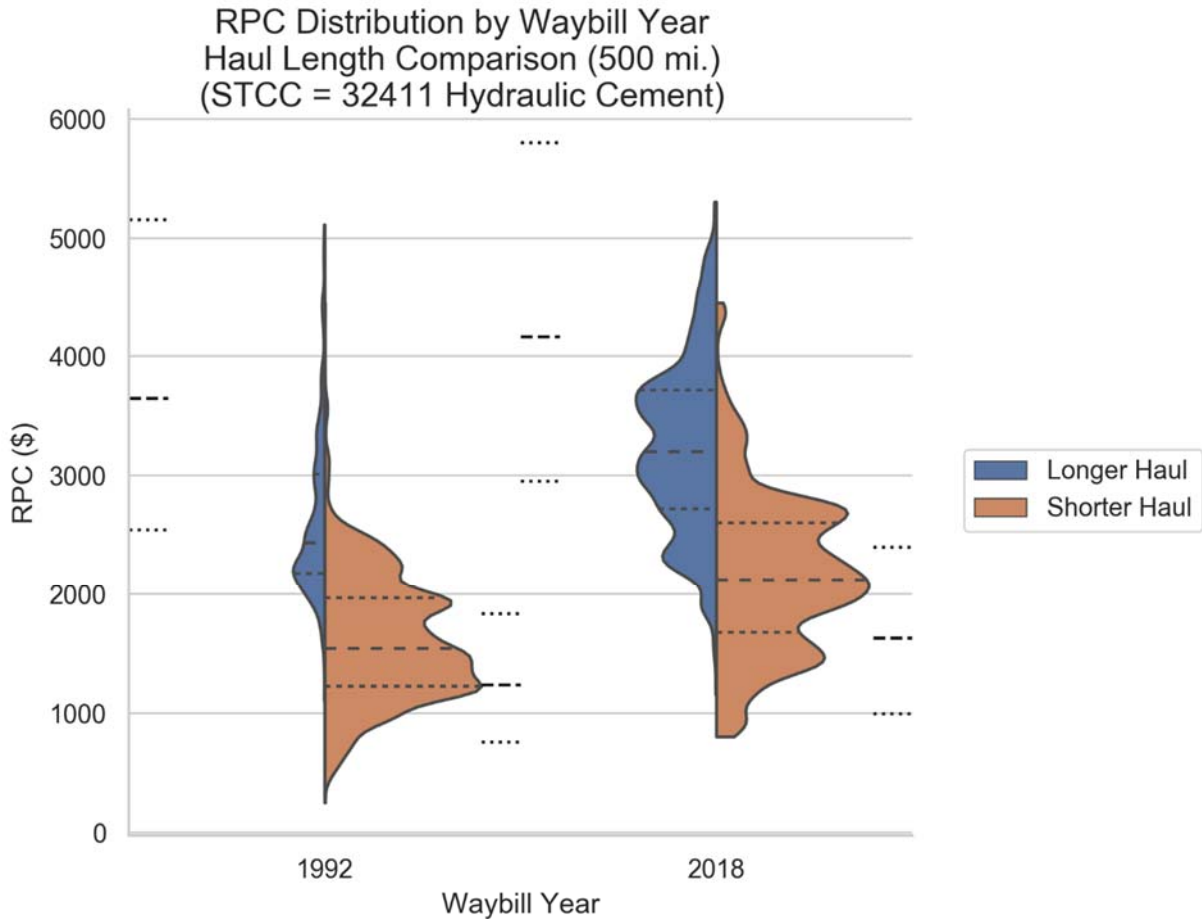
Item	1992	2018	Change
Avg. Haul Length (Mi.)	364.5	508.7	39.6%
No. of Waybills	3,081	3,966	28.7%
Cars	173,198	216,614	25.1%
Revenue	\$311,459,999	\$561,897,456	80.4%

Rates are also rising for hydraulic cement over time in terms of RPC, though the RPCs at each quartile now tend to be lower than the corresponding values for all carload traffic in both years.



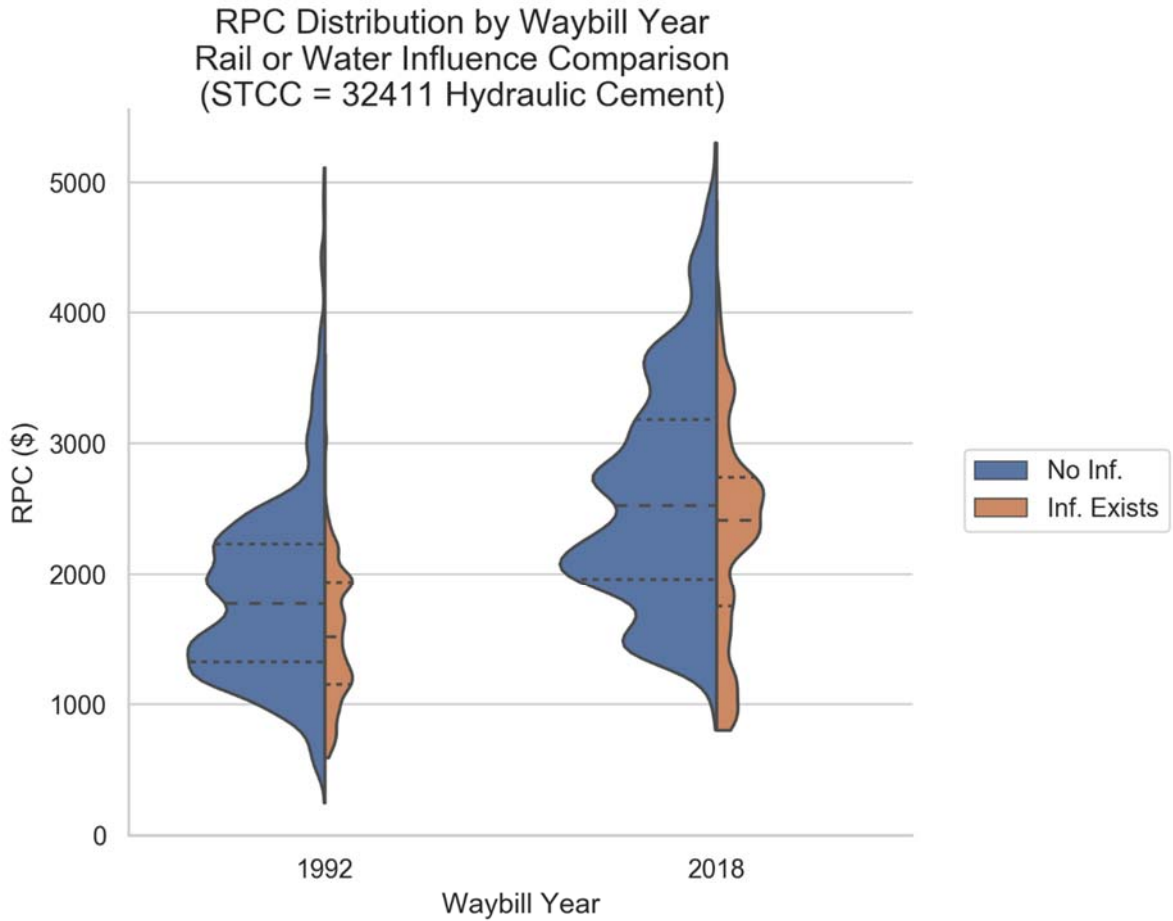
Item	1992	2018	Change
Avg. Haul Length (Mi.)	247.0	357.4	44.7%
No. of Waybills	379	1,612	325.3%
Cars	30,728	113,012	267.8%
Revenue	\$56,939,063	\$283,584,498	398.0%

The trends in the RPCs for hydraulic cement R/VC 180 traffic are similar to the results for all hydraulic cement traffic, except that the difference between the RPCs at each quartile for hydraulic cement and for all carload traffic are even more pronounced.



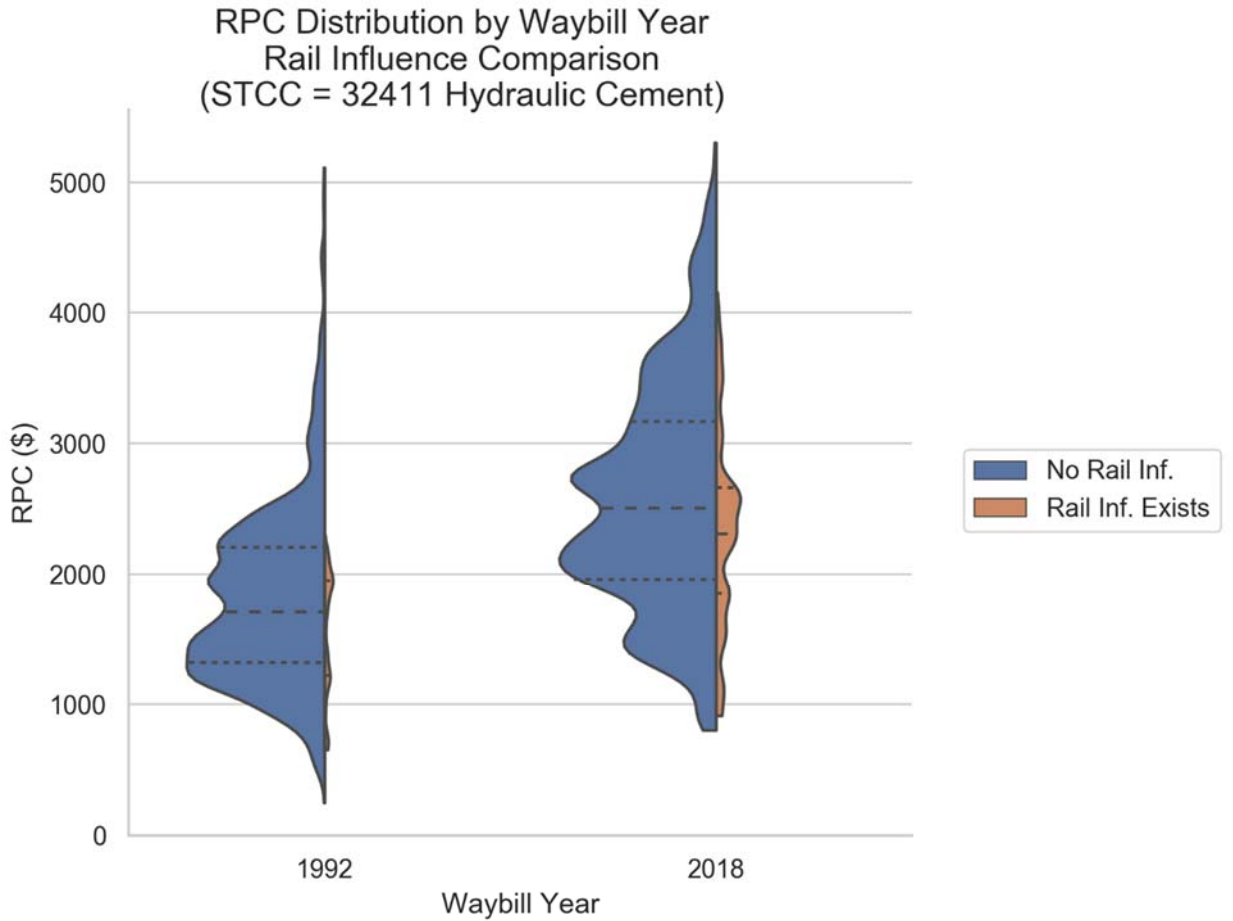
Item	1992	1992	2018	2018
Modal Influence	No Inf.	Inf. Exists	No Inf.	Inf. Exists
Avg. Haul Length (Mi.)	774.8	271.3	809.2	309.6
No. of Waybills	570	2,511	1,580	2,386
Cars	29,420	143,778	76,778	139,836
Revenue	\$78,765,302	\$232,694,697	\$256,260,090	\$303,637,366

RPCs for shorter haul hydraulic cement traffic are much lower than those for longer haul traffic, as would be expected since railroads earn more revenue on longer moves. However, the RPCs for longer haul hydraulic cement traffic are much lower at each quartile than the corresponding RPCs for all carload traffic, compared to being slightly higher for shorter haul traffic.



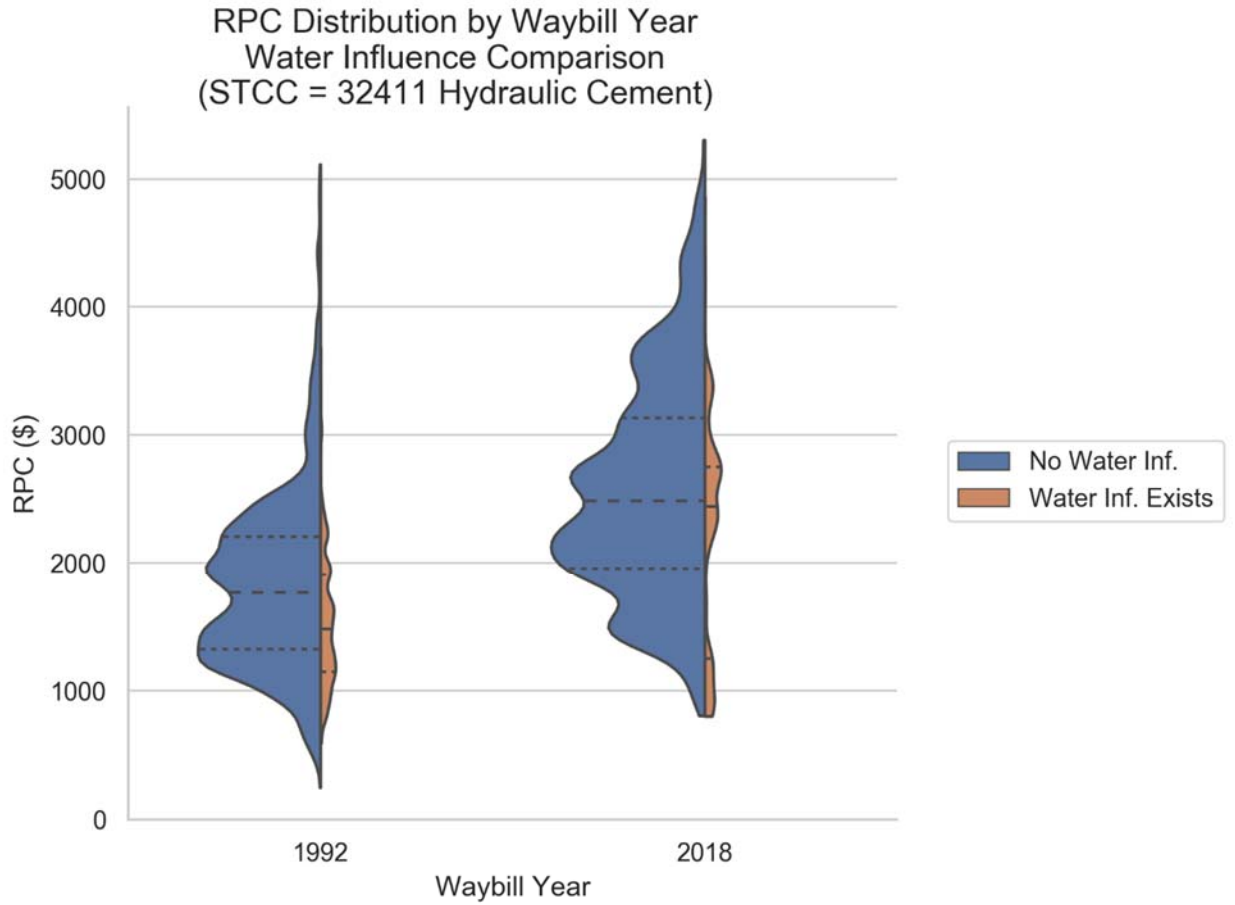
Item	1992	1992	2018	2018
Modal Influence	No Inf.	Inf. Exists	No Inf.	Inf. Exists
Avg. Haul Length (Mi.)	386.8	273.5	538.4	419.0
No. of Waybills	2,474	607	2,978	988
Cars	144,346	28,852	167,342	49,272
Revenue	\$267,171,134	\$44,288,865	\$448,366,816	\$113,530,640

Similar to the results for R/VC ratios, RPCs for hydraulic cement have risen from 1992 to 2018 regardless of whether they had rail or water influences identified in the GMIM.



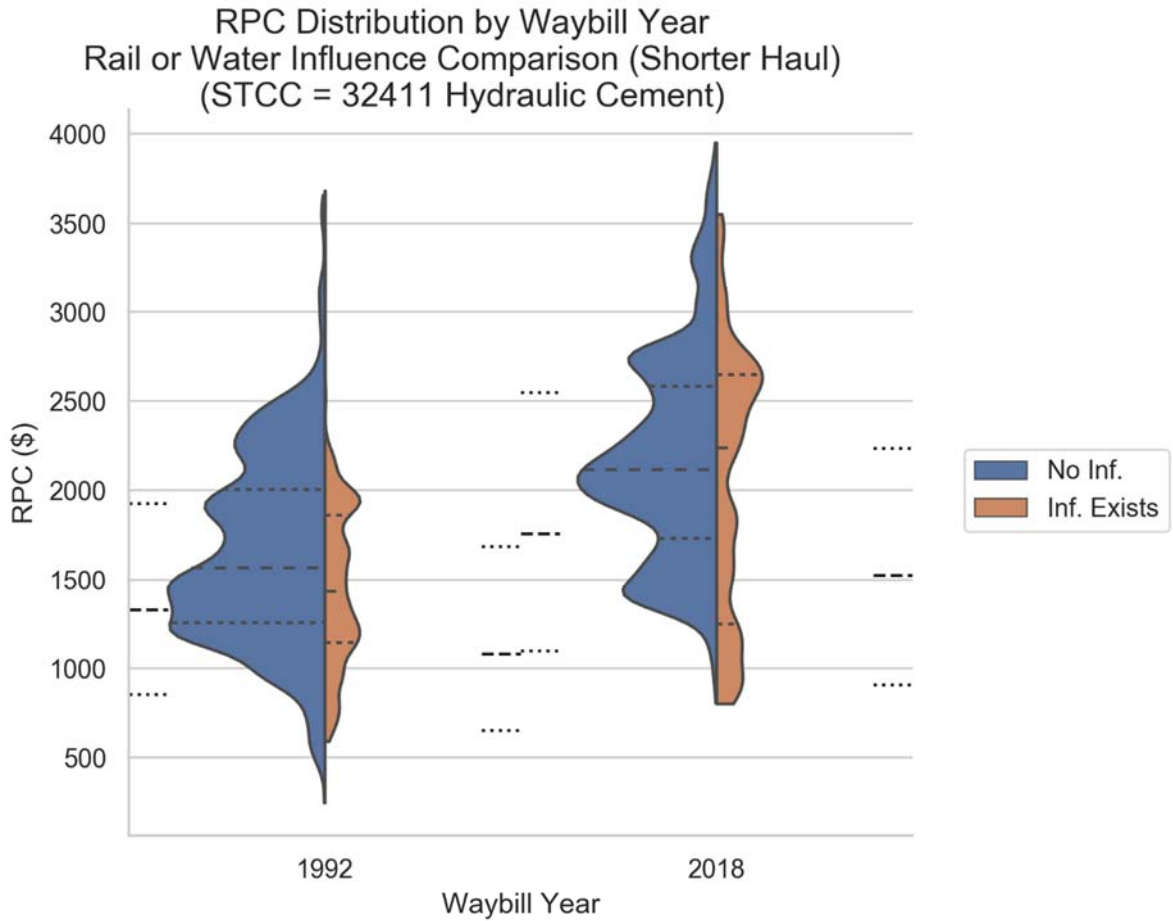
Item	1992	1992	2018	2018
Modal Influence	No Inf.	Inf. Exists	No Inf.	Inf. Exists
Avg. Haul Length (Mi.)	372.1	274.7	519.5	438.0
No. of Waybills	2,839	242	3,438	528
Cars	163,206	9,992	187,922	26,692
Revenue	\$296,068,996	\$15,391,003	\$494,808,136	\$67,089,320

The results for traffic with railroad influences are similar to the results for railroad or water carrier influences, though there is a smaller share of traffic with railroad influences.



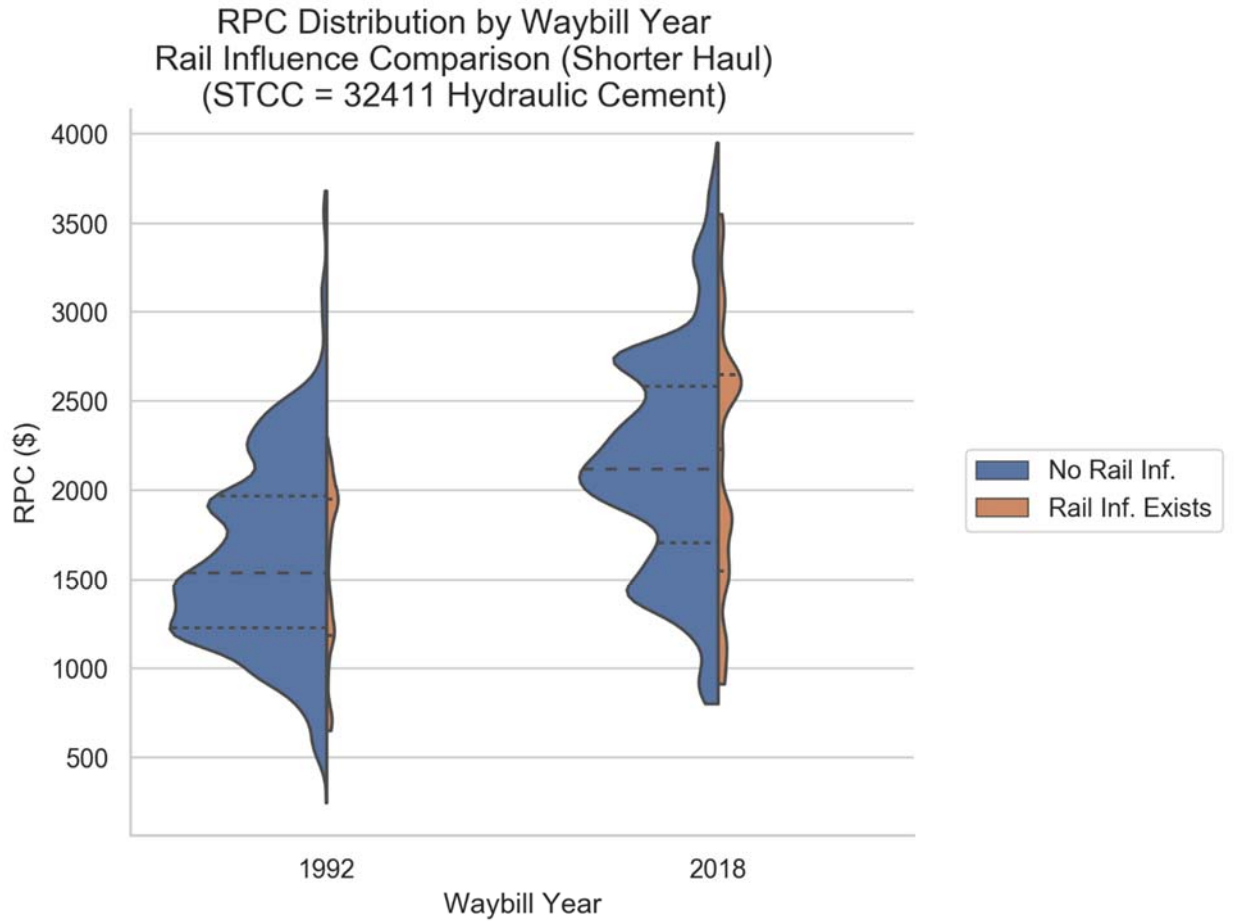
Item	1992	1992	2018	2018
Modal Influence	No Inf.	Inf. Exists	No Inf.	Inf. Exists
Avg. Haul Length (Mi.)	376.9	272.3	523.3	397.1
No. of Waybills	2,714	367	3,506	460
Cars	154,178	19,020	196,034	20,580
Revenue	\$282,372,423	\$29,087,576	\$515,456,136	\$46,441,320

The results for traffic with water carrier influences are similar to the results for railroad or water carrier influences, though there is a smaller share of traffic with water carrier influences.



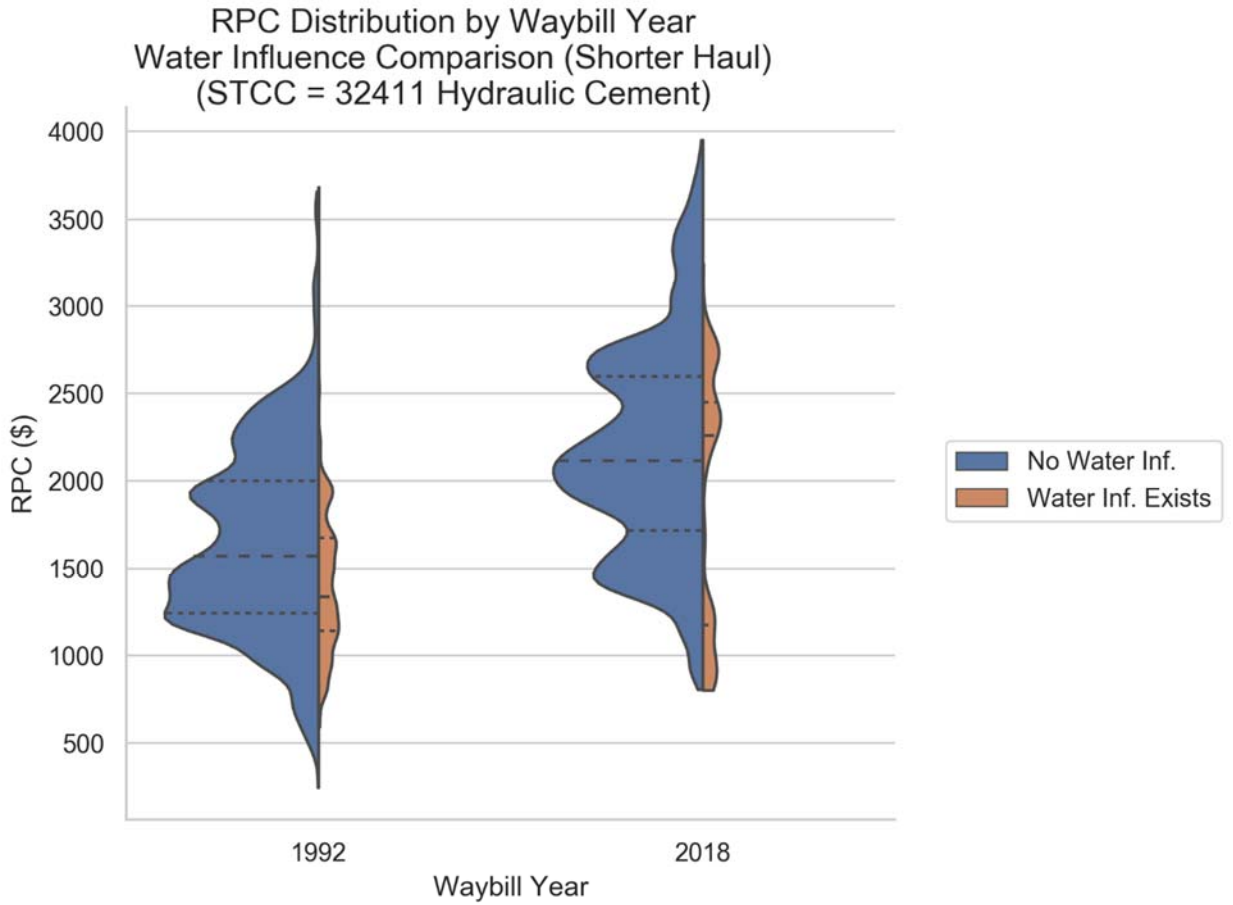
Item	1992	1992	2018	2018
Modal Influence	No Inf.	Inf. Exists	No Inf.	Inf. Exists
Avg. Haul Length (Mi.)	279.4	243.4	323.0	277.0
No. of Waybills	1,949	562	1,690	697
Cars	117,474	26,304	105,420	34,456
Revenue	\$194,248,391	\$38,446,306	\$232,764,214	\$70,916,432

The results for shorter haul traffic with railroad or water carrier influences indicate hydraulic cement traffic tends to have higher RPCs than all carload traffic in both years, regardless of whether they had railroad or water carrier influences. However, the RPCs do not reach as high levels as with all traffic, because railroads do not earn as much revenue on shorter moves.



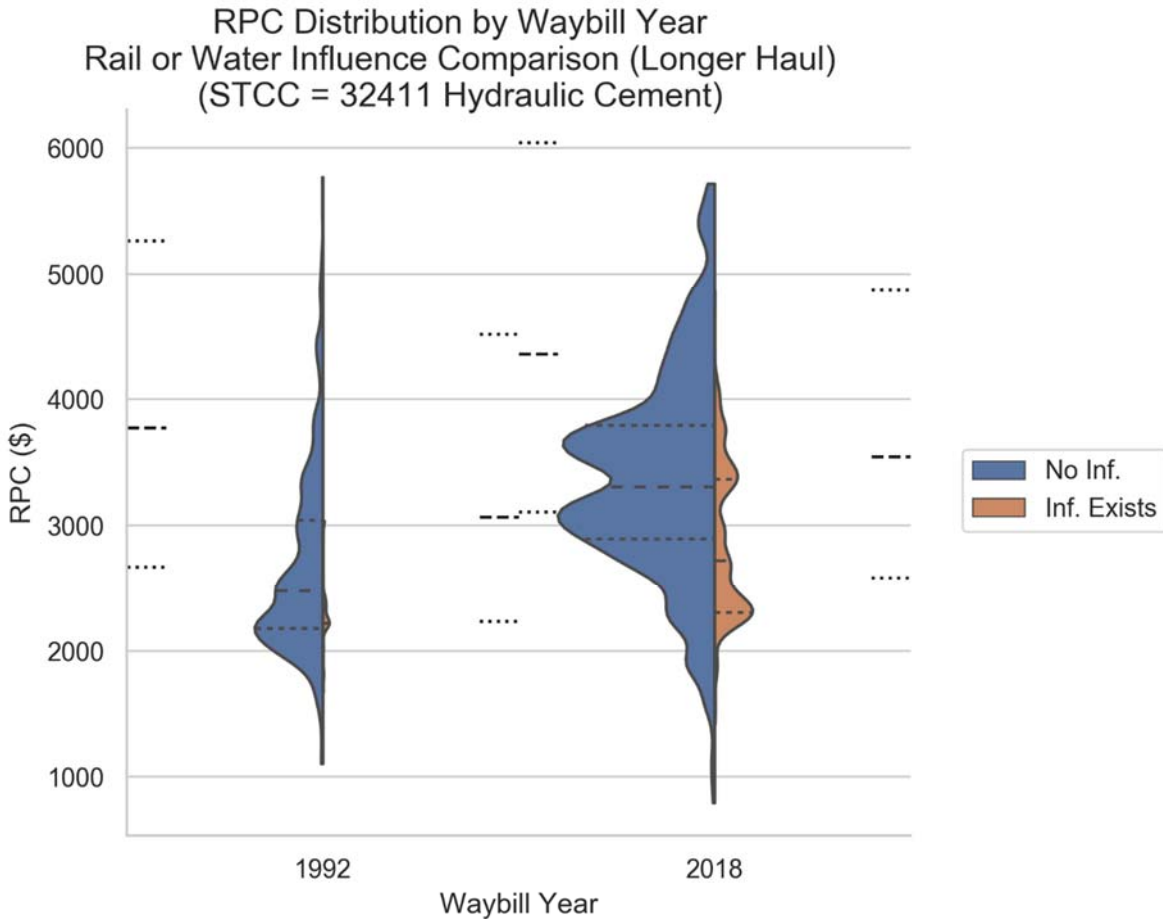
Item	1992	1992	2018	2018
Modal Influence	No Inf.	Inf. Exists	No Inf.	Inf. Exists
Avg. Haul Length (Mi.)	271.4	270.6	317.7	263.5
No. of Waybills	2,273	238	2,027	360
Cars	133,946	9,832	120,244	19,632
Revenue	\$217,593,926	\$15,100,771	\$261,411,594	\$42,269,052

The results for shorter haul traffic with railroad influences are similar to the results for railroad or water carrier influences, though there is a smaller share of traffic with railroad influences.



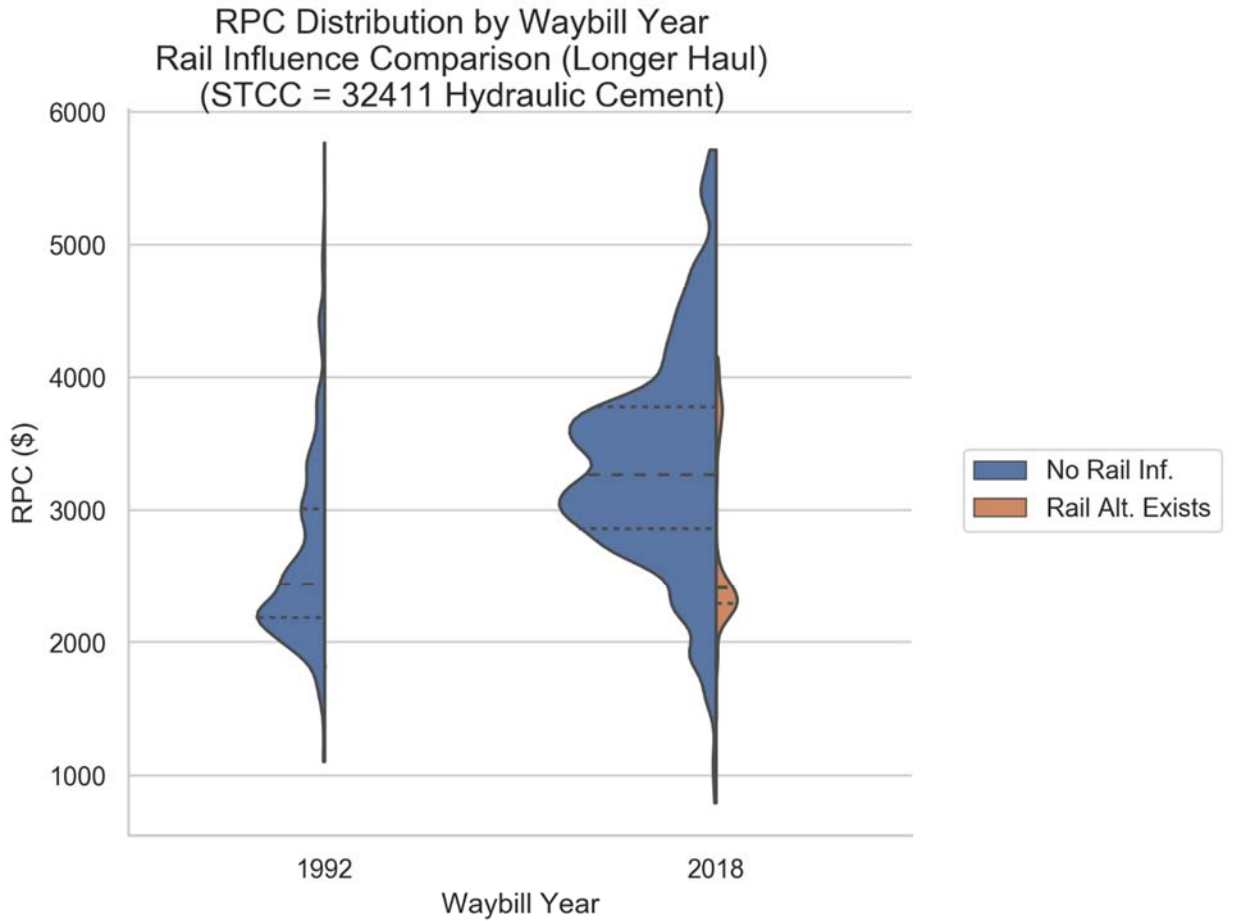
Item	1992	1992	2018	2018
Modal Influence	No Inf.	Inf. Exists	No Inf.	Inf. Exists
Avg. Haul Length (Mi.)	278.5	223.2	312.5	291.4
No. of Waybills	2,185	326	2,050	337
Cars	127,146	16,632	125,052	14,824
Revenue	\$209,159,448	\$23,535,249	\$275,033,266	\$28,647,380

The results for shorter haul traffic with water carrier influences are similar to the results for railroad or water carrier influences, though there is a smaller share of traffic with water carrier influences.



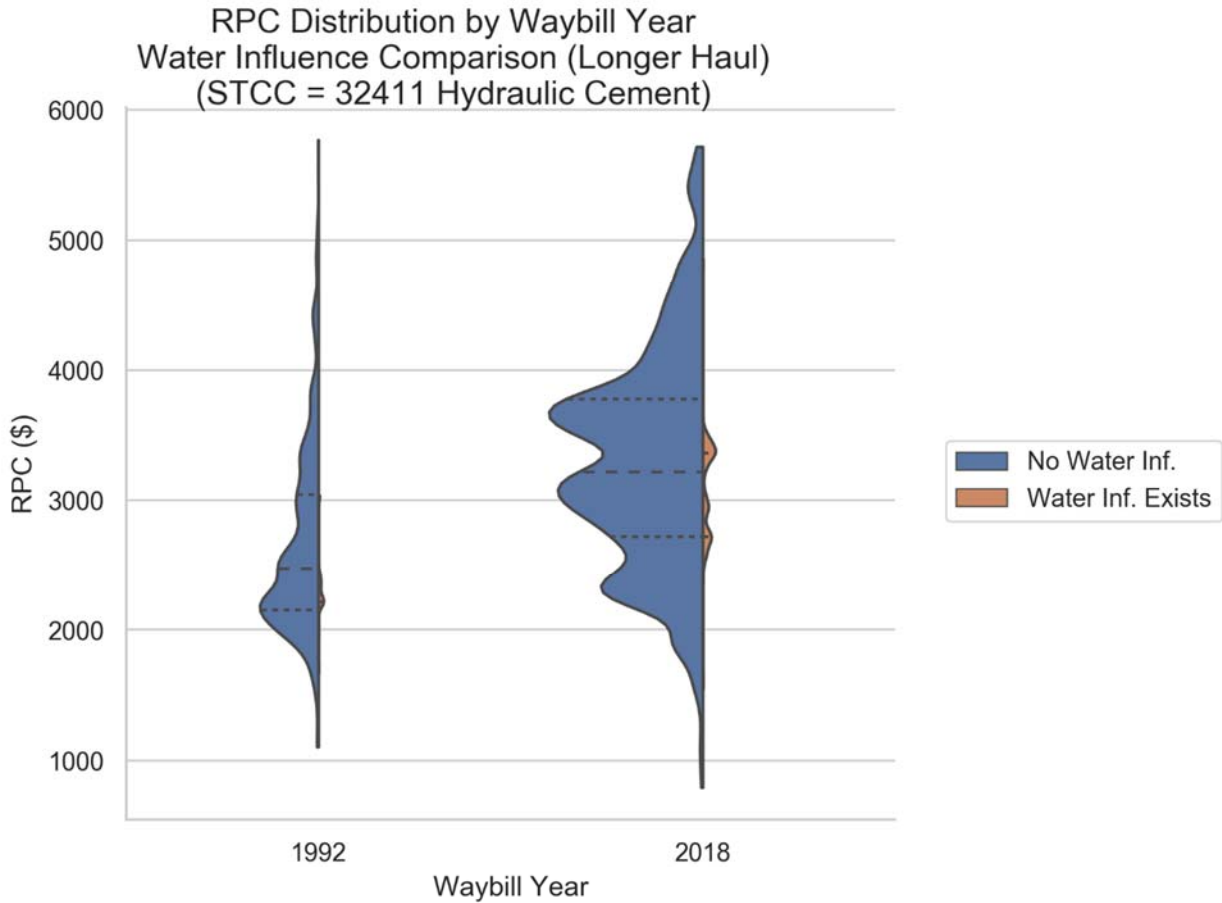
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Modal Influence	No Inf.	Inf. Exists	No Inf.	Inf. Exists
Avg. Haul Length (Mi.)	786.0	650.0	827.8	759.6
No. of Waybills	526	45	1,307	293
Cars	26,912	2,548	62,682	14,896
Revenue	\$72,969,912	\$5,842,559	\$216,701,522	\$42,722,128

The results for longer haul traffic with railroad or water carrier influences indicate hydraulic cement traffic tends to have much lower RPCs than all carload traffic in both years, regardless of whether they had railroad or water carrier influences. With shorter haul traffic, it had been higher. Note that the RPCs are concentrated at higher levels for longer haul traffic, because railroads earn more revenue on longer moves.



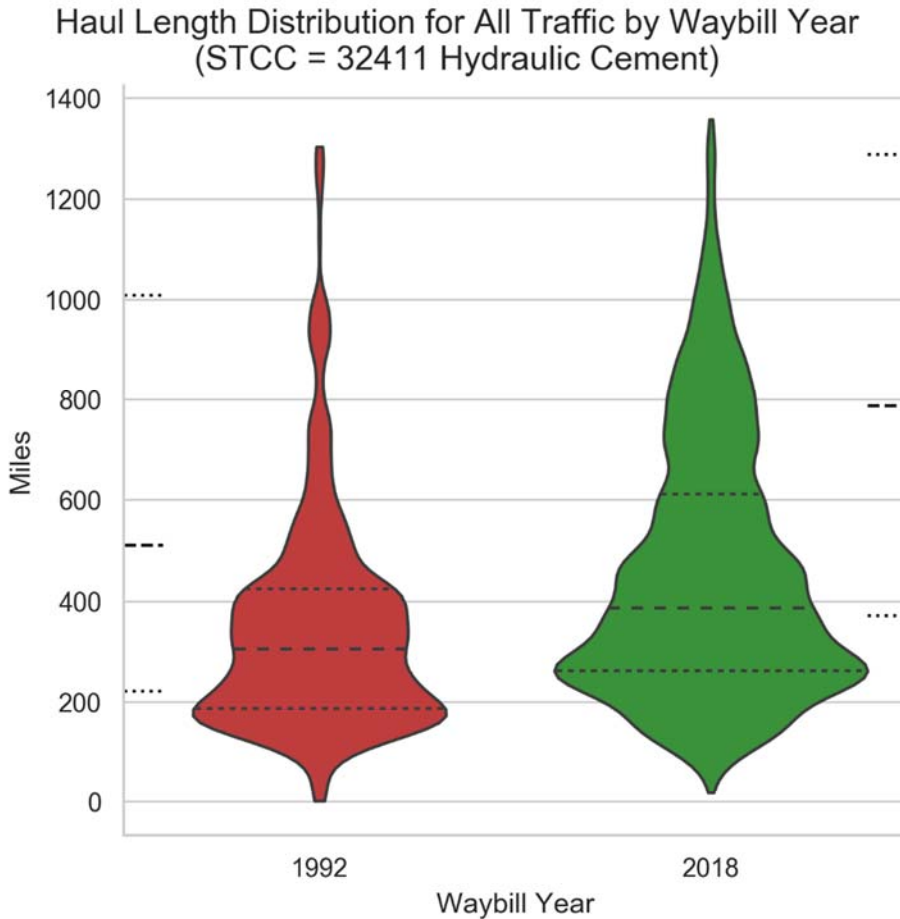
Item	1992	1992	2018	2018
Modal Influence	No Inf.	Inf. Exists	No Inf.	Inf. Exists
Avg. Haul Length (Mi.)	777.1	521.7	815.7	811.9
No. of Waybills	567	4	1,432	168
Cars	29,300	160	68,518	9,060
Revenue	\$78,522,239	\$290,232	\$234,603,382	\$24,820,268

The results for longer haul traffic with railroad influences are similar to the results for railroad or water carrier influences, though there is a much smaller share of traffic with railroad influences.



Item	1992	1992	2018	2018
Modal Influence	No Inf.	Inf. Exists	No Inf.	Inf. Exists
Avg. Haul Length (Mi.)	784.1	662.6	826.0	689.3
No. of Waybills	530	41	1,475	125
Cars	27,072	2,388	71,742	5,836
Revenue	\$73,260,144	\$5,552,327	\$241,521,790	\$17,901,860

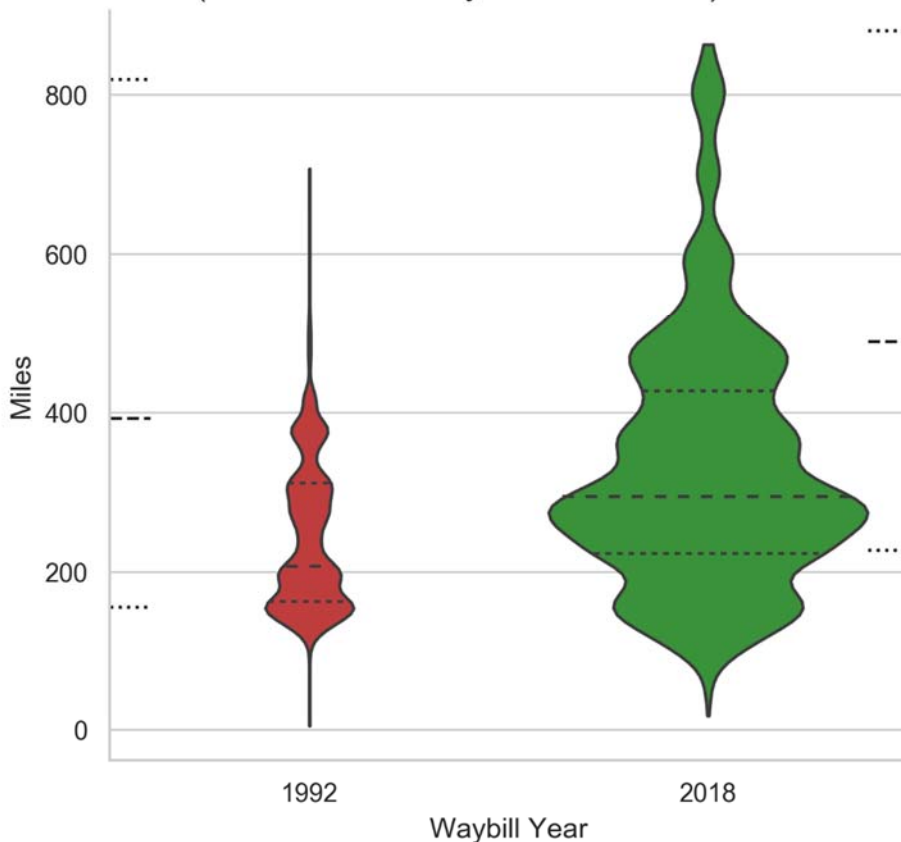
The results for longer haul traffic with water carrier influences are similar to the results for railroad or water carrier influences, though there is a much smaller share of traffic with water carrier influences.



Item	1992	2018	Change
Avg. Haul Length (Mi.)	364.5	508.7	39.6%
No. of Waybills	3,081	3,966	28.7%
Cars	173,198	216,614	25.1%
Revenue	\$311,459,999	\$561,897,456	80.4%

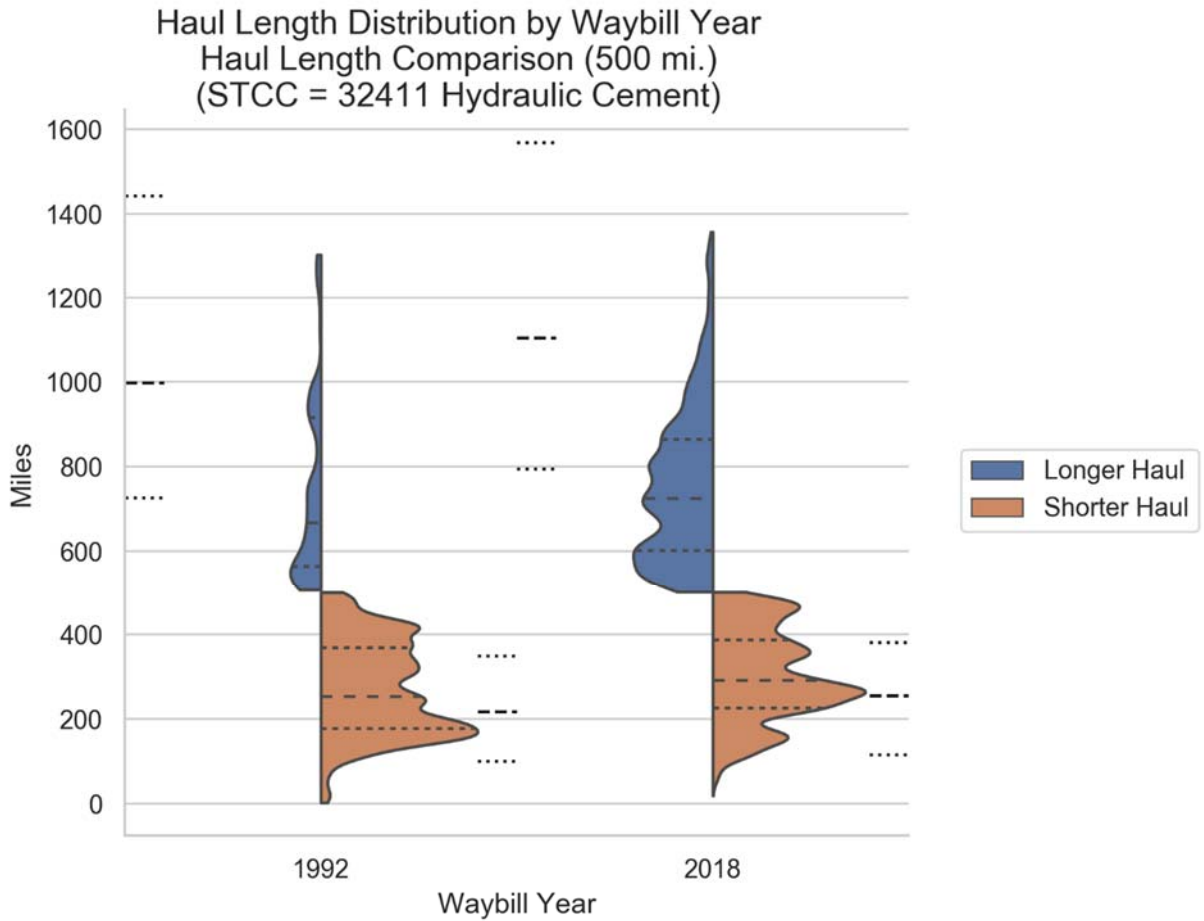
Hydraulic cement traffic is much more concentrated at movements at the higher end of its distribution in 2018 than it was in 1992, with the median mileage in 2018 about at the same level as the upper quartile mileage in 1992. The mileage at each quartile for hydraulic cement is still lower than the corresponding mileage for all carload traffic.

Haul Length Distribution for R/VC 180 Traffic by Waybill Year  
(STCC = 32411 Hydraulic Cement)



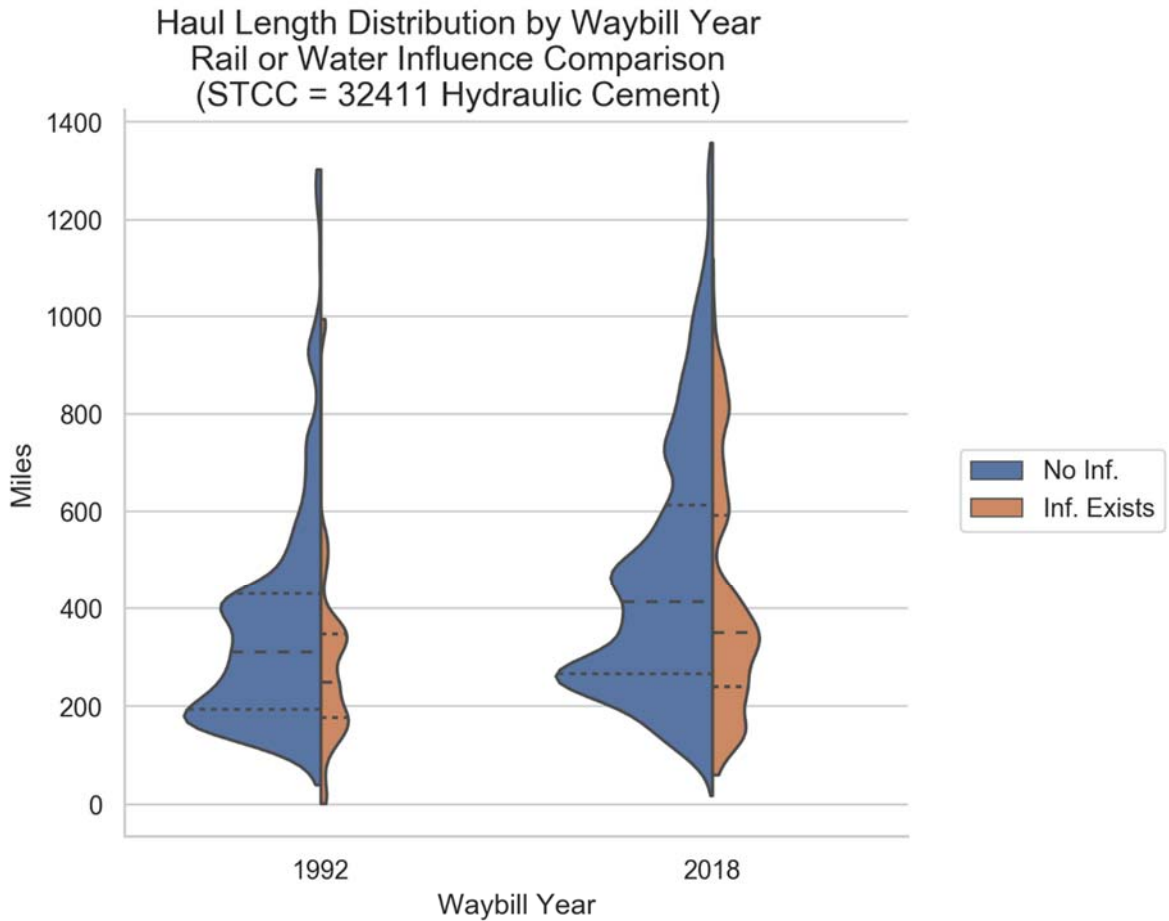
Item	1992	2018	Change
Avg. Haul Length (Mi.)	247.0	357.4	44.7%
No. of Waybills	379	1,612	325.3%
Cars	30,728	113,012	267.8%
Revenue	\$56,939,063	\$283,584,498	398.0%

The same trend towards longer miles is also true for hydraulic cement R/VC 180 traffic.



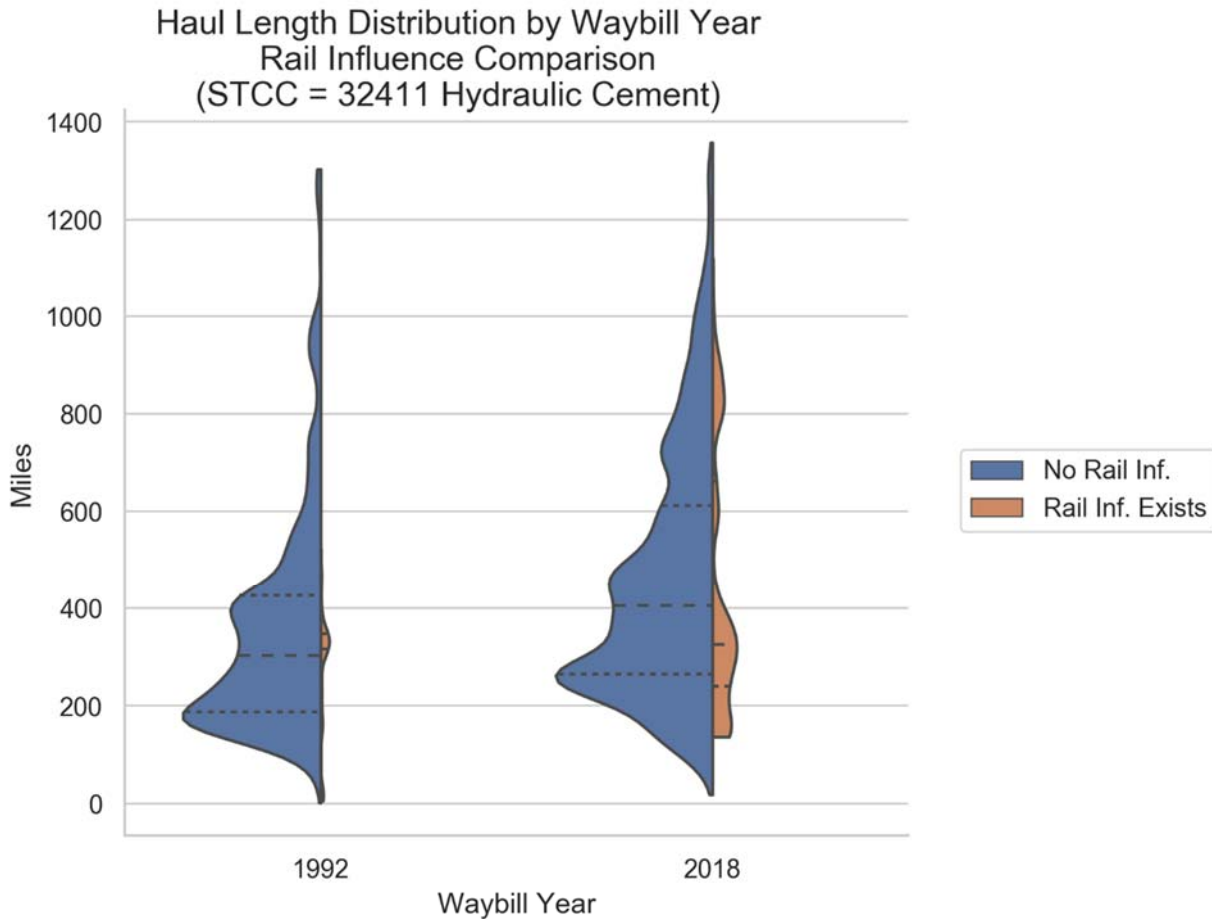
Item	1992	1992	2018	2018
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No. of Waybills	570	2,511	1,580	2,386
Cars	29,420	143,778	76,778	139,836
Revenue	\$78,765,302	\$232,694,697	\$258,260,090	\$303,637,366

Longer haul moves of hydraulic cement tend to be much shorter than longer haul moves of all carload traffic, whereas its shorter haul moves tend to be slightly longer.



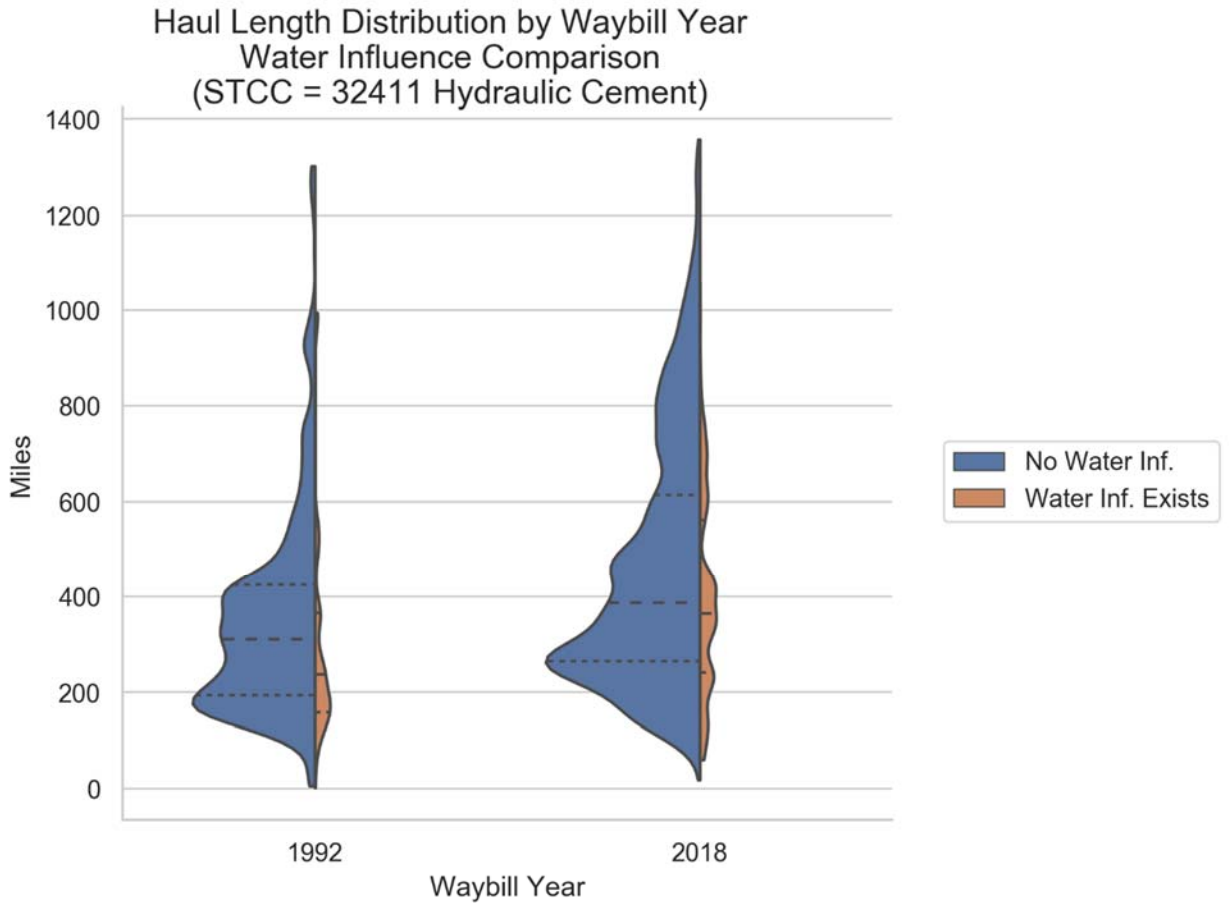
Item	1992	1992	2018	2018
Modal Influence	No Inf.	Inf. Exists	No Inf.	Inf. Exists
Avg. Haul Length (Mi.)	386.8	273.5	538.4	419.0
No. of Waybills	2,474	607	2,978	988
Cars	144,346	28,852	167,342	49,272
Revenue	\$267,171,134	\$44,288,865	\$448,366,816	\$113,530,640

Hydraulic cement traffic without any railroad or water carrier influences tend to have higher mileages than those with influences in each year, and the length of haul has gone up over time regardless of whether the traffic has railroad or water carrier influences.



Item	1992	1992	2018	2018
Modal Influence	No Inf.	Inf. Exists	No Inf.	Inf. Exists
Avg. Haul Length (Mi.)	372.1	274.7	519.5	438.0
No. of Waybills	2,839	242	3,438	528
Cars	163,206	9,992	187,922	28,692
Revenue	\$296,068,996	\$15,391,003	\$494,808,136	\$67,089,320

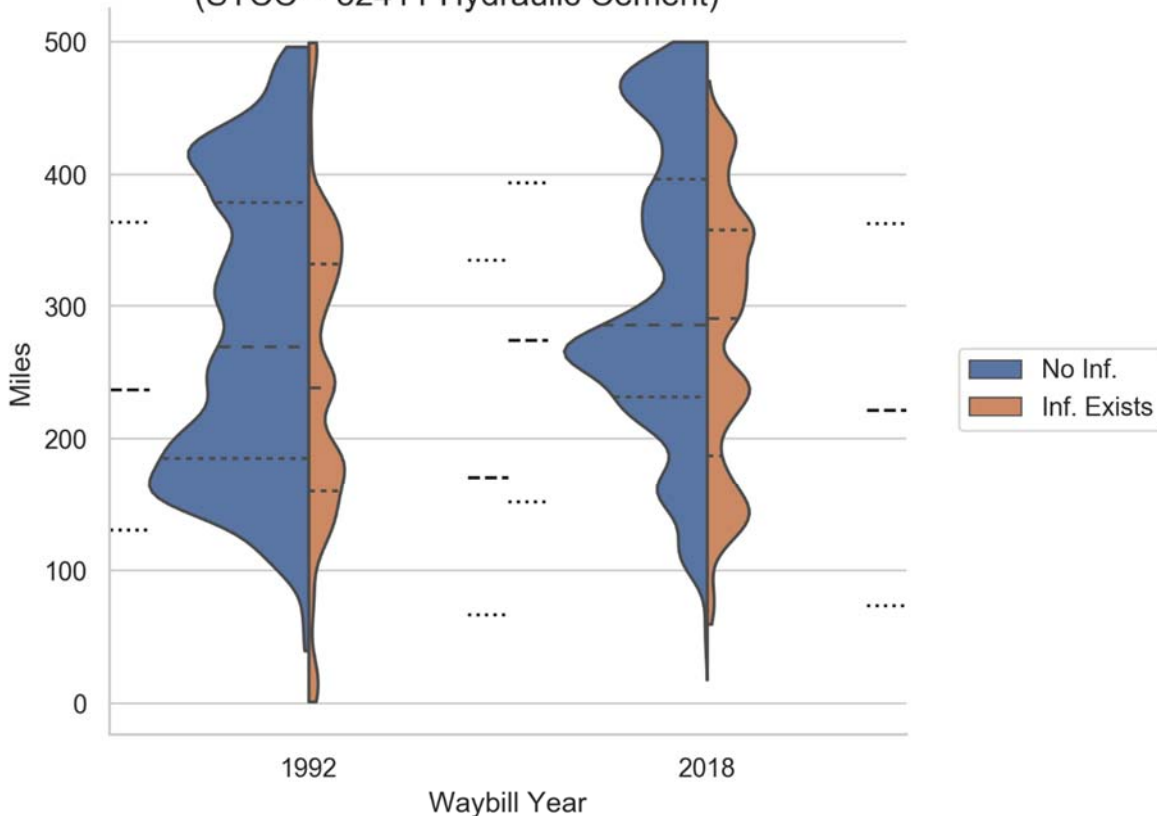
Hydraulic cement traffic with railroad influences actually had a slightly higher median mileage than traffic without railroad influences, though there was significantly less of that traffic.



Item	1992	1992	2018	2018
Modal Influence	No Inf.	Inf. Exists	No Inf.	Inf. Exists
Avg. Haul Length (Mi.)	376.9	272.3	523.3	397.1
No. of Waybills	2,714	367	3,506	460
Cars	154,178	19,020	196,034	20,580
Revenue	\$282,372,423	\$29,087,576	\$515,456,136	\$46,441,320

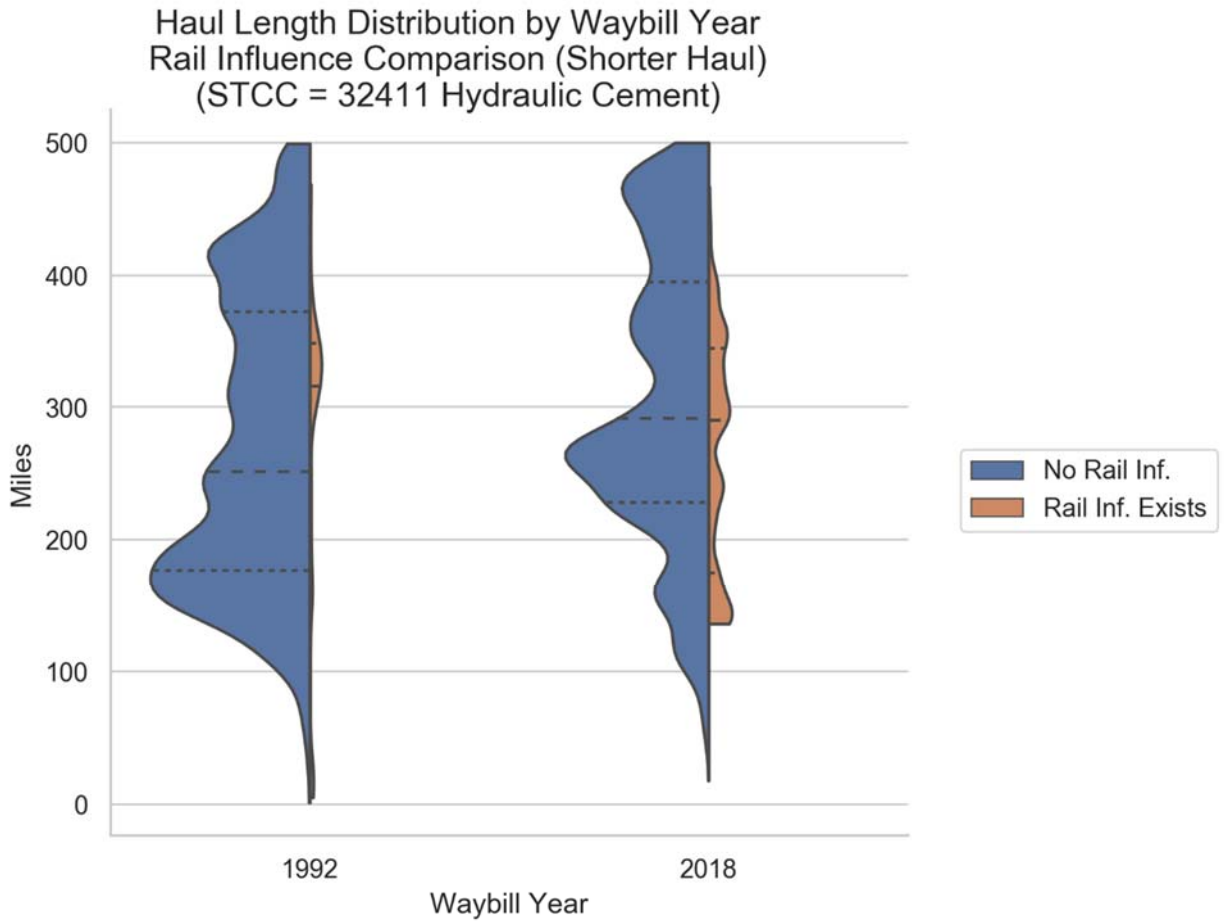
Hydraulic cement traffic with water carrier influences was more similar to the results with railroad or water carrier influences.

Haul Length Distribution by Waybill Year  
 Rail or Water Influence Comparison (Shorter Haul)  
 (STCC = 32411 Hydraulic Cement)



Item	1992	1992	2018	2018
Modal Influence	No Inf.	Inf. Exists	No Inf.	Inf. Exists
Avg. Haul Length (Mi.)	279.4	243.4	323.0	277.0
No. of Waybills	1,949	562	1,690	697
Cars	117,474	26,304	105,420	34,456
Revenue	\$194,248,391	\$38,446,306	\$232,764,214	\$70,916,432

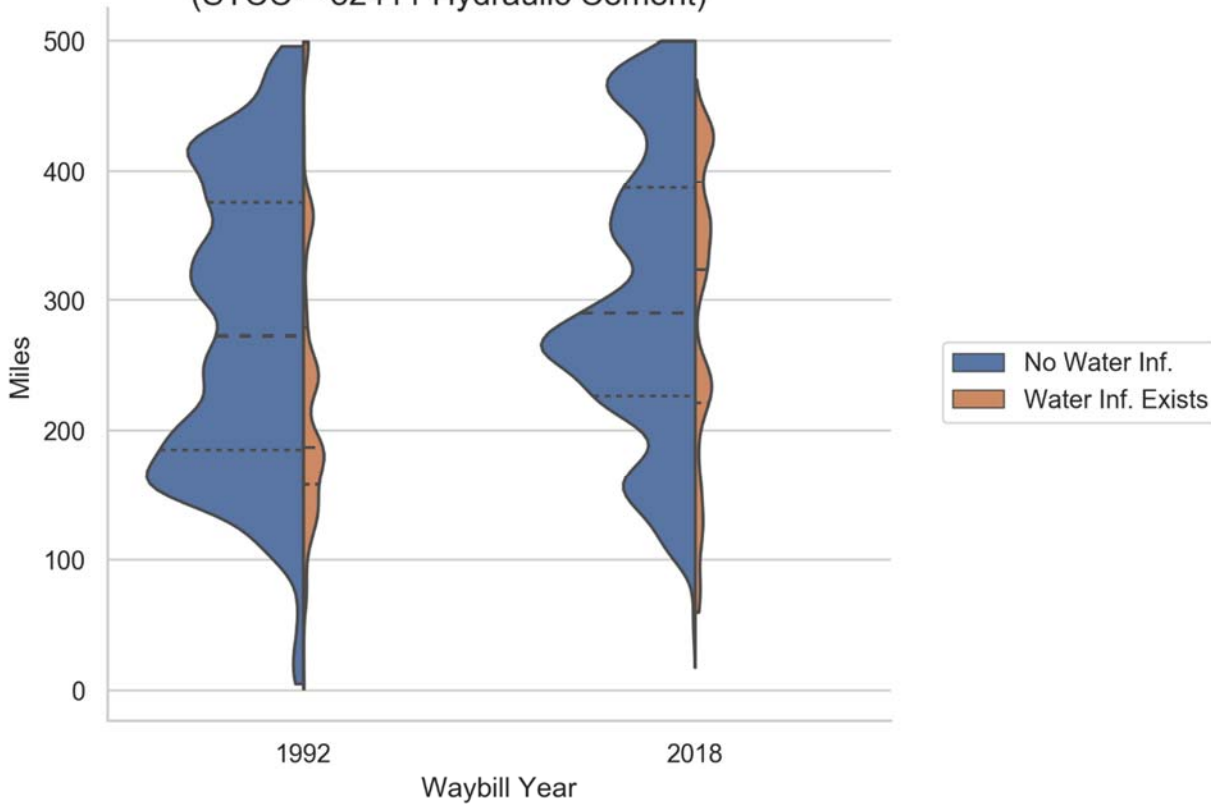
In 2018, shorter haul hydraulic cement traffic had about the same median mileage regardless of whether railroad or water carrier influences were present, though traffic with influences still had lower upper and lower quartile mileages.



Item	1992	1992	2018	2018
Modal Influence	No Inf.	Inf. Exists	No Inf.	Inf. Exists
Avg. Haul Length (Mi.)	271.4	270.6	317.7	263.5
No. of Waybills	2,273	238	2,027	360
Cars	133,946	9,832	120,244	19,632
Revenue	\$217,593,926	\$15,100,771	\$261,411,594	\$42,269,052

In 2018, shorter haul hydraulic cement traffic had about the same median mileage regardless of whether railroad influences were present, though traffic with railroad influences still had lower upper and lower quartile mileages.

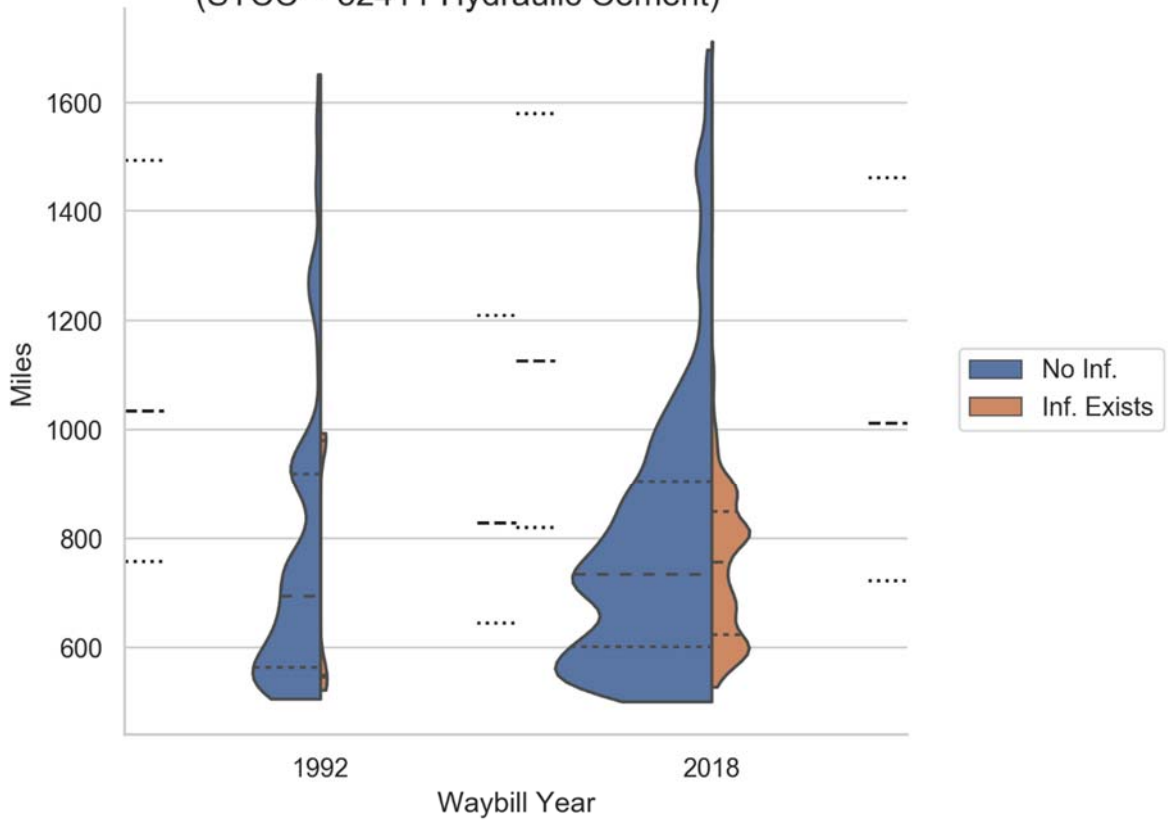
Haul Length Distribution by Waybill Year  
 Water Influence Comparison (Shorter Haul)  
 (STCC = 32411 Hydraulic Cement)



Item	1992	1992	2018	2018
Modal Influence	No Inf.	Inf. Exists	No Inf.	Inf. Exists
Avg. Haul Length (Mi.)	278.5	223.2	312.5	291.4
No. of Waybills	2,185	326	2,050	337
Cars	127,146	16,632	125,052	14,824
Revenue	\$209,159,448	\$23,535,249	\$275,033,266	\$28,647,380

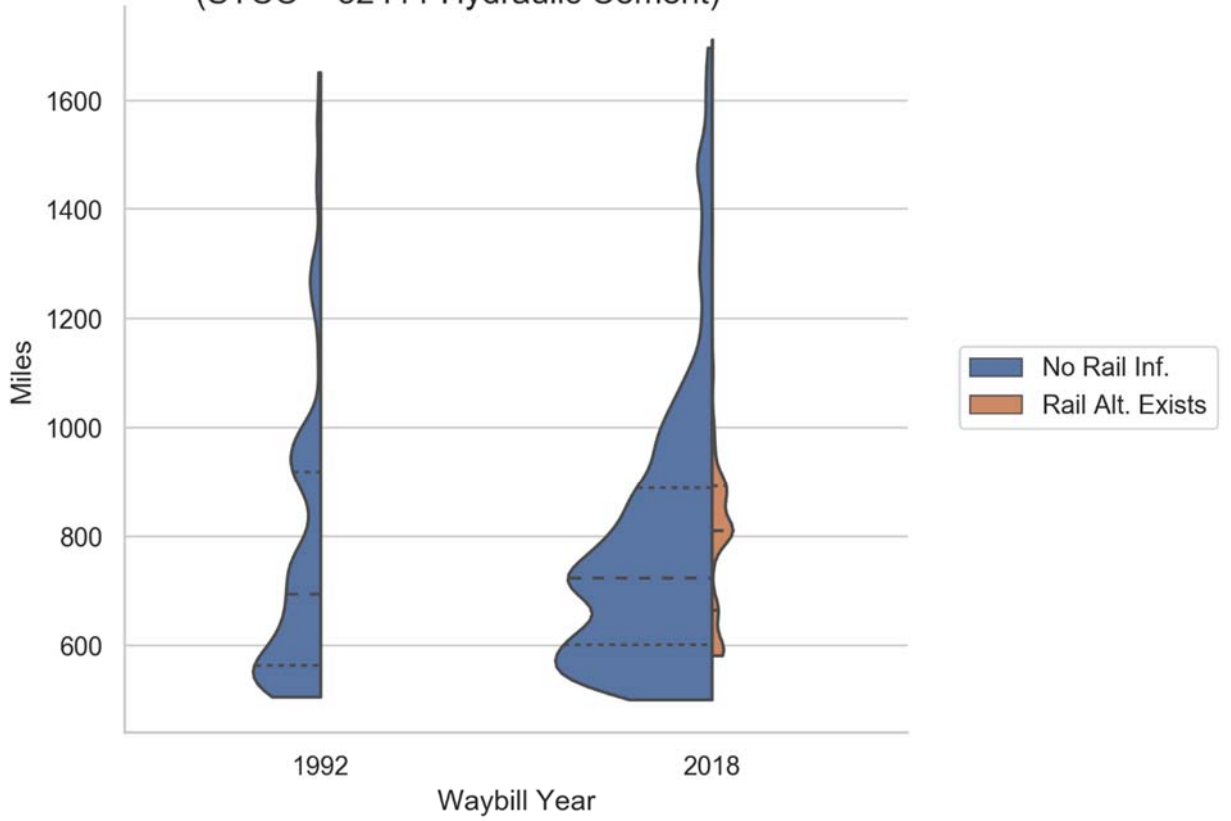
In 2018, shorter haul hydraulic cement traffic had about the same upper and lower quartile mileages regardless of whether water carrier influences were present, though traffic with water carrier influences had a slightly higher median mileage.

Haul Length Distribution by Waybill Year  
 Rail or Water Influence Comparison (Longer Haul)  
 (STCC = 32411 Hydraulic Cement)



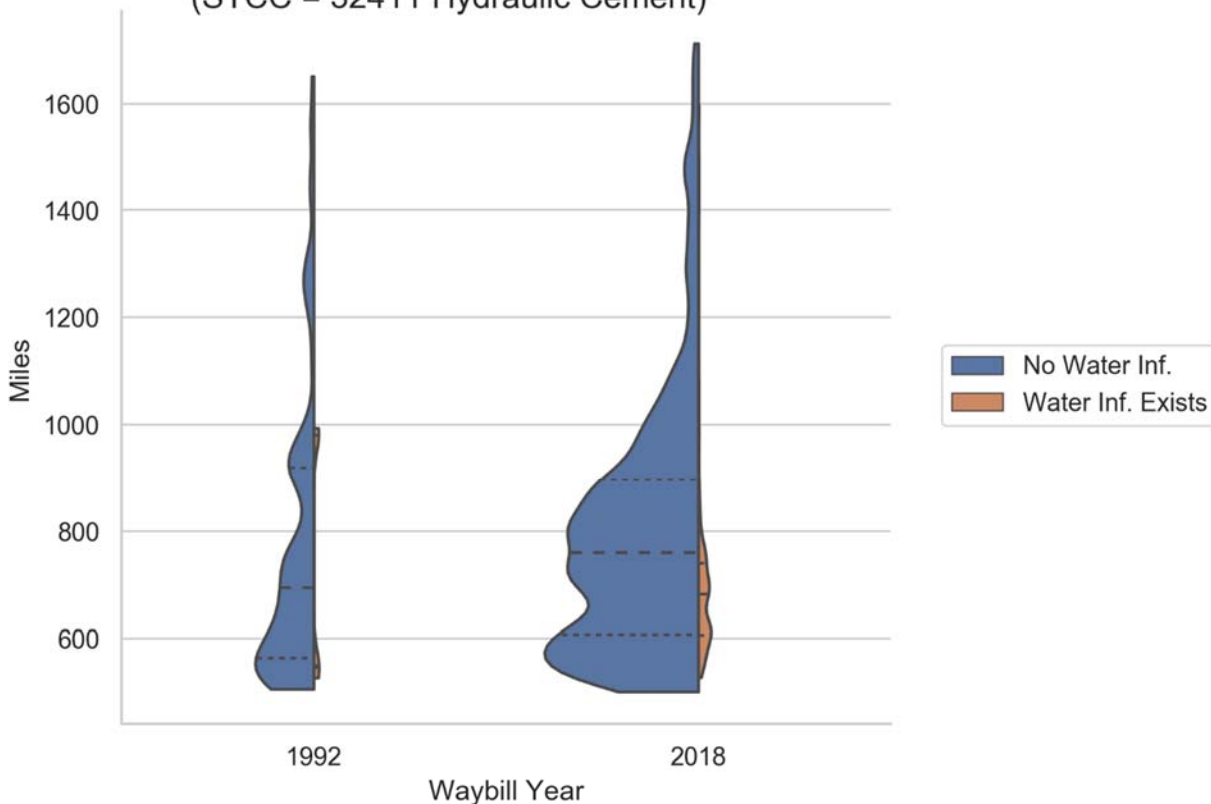
Item	1992	1992	2018	2018
Modal Influence	No Inf.	Inf. Exists	No Inf.	Inf. Exists
Avg. Haul Length (Mi.)	786.0	650.0	827.8	759.6
No. of Waybills	526	45	1,307	293
Cars	26,912	2,548	62,682	14,896
Revenue	\$72,969,912	\$5,842,559	\$216,701,522	\$42,722,128

Haul Length Distribution by Waybill Year  
 Rail Influence Comparison (Longer Haul)  
 (STCC = 32411 Hydraulic Cement)



Item	1992	1992	2018	2018
Modal Influence	No Inf.	Inf. Exists	No Inf.	Inf. Exists
Avg. Haul Length (Mi.)	777.1	521.7	815.7	811.9
No. of Waybills	567	4	1,432	168
Cars	29,300	160	68,518	9,060
Revenue	\$78,522,239	\$290,232	\$234,603,382	\$24,820,268

Haul Length Distribution by Waybill Year  
 Water Influence Comparison (Longer Haul)  
 (STCC = 32411 Hydraulic Cement)



Item	1992	1992	2018	2018
Modal Influence	No Inf.	Inf. Exists	No Inf.	Inf. Exists
Avg. Haul Length (Mi.)	784.1	662.6	826.0	689.3
No. of Waybills	530	41	1,475	125
Cars	27,072	2,388	71,742	5,836
Revenue	\$73,260,144	\$5,552,327	\$241,521,790	\$17,901,860

In 2018, the mileages for hydraulic cement traffic with water carrier influences tended to be lower than hydraulic cement traffic without water carrier influences. The lower quartile mileage was about the same, but the upper quartile mileage for traffic with water carrier influences was below the median mileage for traffic without water carrier influences.

## Appendix C

### Complete Indicator Dashboard Results

The following four versions of the Indicator Dashboard show the complete results for the commodities to consider for exemption revocation using R/VC ratios, the commodities to consider for exemption revocation using RPC, the commodities to consider adding to the exemption list using R/VC ratios, and the commodities to consider adding to the exemption list using RPC.<sup>51</sup> The Data Visualizations for each of these commodities will be made available upon request. Again, the approach uses these strength designations 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. The Board would not expect that the Indicator Dashboard (or the approach as a whole) could fully answer the question of whether revocation or exemption is appropriate, given the market-specific issues, among other matters, that might also need consideration.

#### Commodities to Consider for Exemption Revocation Using R/VC Ratios

STCCS	Commodity	Overall Dashboard	Initial Screens		Indicators								
			Signal	2018 % of Cars RVC 180	2018 % Intermodal	All Traffic Recent RVC	All Traffic RVC Change	Comp Inf Recent	Comp Inf Change	Length of Haul Recent	Length of Haul Change	Comp RVC Recent Diff	Comp RVC Diff Change
-	All Carload Traffic	-	37.6%	46.1%	-	-	-	-	-	-	-	-	-
14211	Agricultural Limestone, Broken or Crushed	Weak	50.7%	1.2%	Moderate	Strong	Weak	Weak	Weak	Weak	Weak	Indeterminate	Indeterminate
14212	Fluxing Limestone or Stone, Broken or	Weak	100.0%	0.0%	Strong	Strong	Weak	Weak	Weak	Weak	Weak	Indeterminate	Indeterminate
14213	Dolomite, Broken or Crushed	Weak	37.1%	0.0%	Moderate	Weak	Weak	Weak	Weak	Weak	Weak	Strong	Indeterminate
14219	Broken or Crushed Stone or Riprap, Nec	Moderate	59.7%	0.1%	Strong	Strong	Weak	Weak	Weak	Weak	Moderate	Strong	Strong
24114	Pulpwood Logs	Weak	11.8%	3.4%	Weak	Strong	Weak	Weak	Weak	Weak	Strong	Weak	Weak
24115	Pulpwood or Other Wood Chips	Weak	17.6%	0.3%	Weak	Weak	Weak	Weak	Weak	Weak	Strong	Weak	Weak
24211	Lumber, Rough or Dressed	Moderate	19.6%	4.1%	Weak	Strong	Strong	Weak	Strong	Weak	Weak	Moderate	Weak
24321	Plywood or Veneer or Built-up Wood	Strong	26.7%	12.1%	Moderate	Strong	Strong	Moderate	Strong	Weak	Strong	Strong	Strong
24991	Strand Board Wood Products	Insufficient	20.5%	0.0%	Moderate	Indeterminate	Strong	Indeterminate	Strong	Indeterminate	Moderate	Moderate	Indeterminate
24996	Wood Particle Board	Strong	26.4%	3.1%	Moderate	Strong	Strong	Moderate	Strong	Moderate	Moderate	Moderate	Moderate
26217	Special Industrial Paper	Weak	29.7%	97.2%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
26311	Fibreboard, Paperboard or Pulpboard	Moderate	22.3%	2.6%	Weak	Strong	Strong	Weak	Strong	Moderate	Moderate	Moderate	Weak
29914	Coke Produced From Coal	Strong	57.0%	0.0%	Strong	Strong	Weak	Weak	Moderate	Strong	Strong	Strong	Strong
32411	Hydraulic Cement, Natural, Portland or	Moderate	52.2%	0.4%	Strong	Strong	Weak	Weak	Moderate	Strong	Moderate	Moderate	Weak
32412	Ready-mix Cement or Concrete, Dry	Weak	Indeterminate	100.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
33121	Steel Ingot or Semi Finished Shapes	Weak	34.3%	1.9%	Weak	Moderate	Weak	Weak	Moderate	Strong	Strong	Weak	Weak
33122	Iron or Steel Plates	Moderate	38.9%	1.5%	Moderate	Strong	Strong	Weak	Strong	Strong	Weak	Weak	Weak
33123	Iron or Steel Sheet or Strip	Moderate	27.0%	4.9%	Weak	Weak	Weak	Moderate	Moderate	Weak	Strong	Strong	Strong
33124	Iron or Steel Bars, Bar Shapes or Rods	Strong	47.7%	1.9%	Strong	Strong	Strong	Strong	Moderate	Moderate	Weak	Weak	Strong
33125	Structural Shapes or Piling Products	Moderate	50.4%	0.0%	Strong	Strong	Strong	Weak	Strong	Weak	Weak	Weak	Weak
33126	Iron or Steel Pipe, Tubes or Fittings	Strong	58.1%	6.3%	Strong	Strong	Strong	Strong	Strong	Weak	Strong	Strong	Weak
33127	Tin Mill Products	Moderate	31.1%	7.2%	Moderate	Strong	Weak	Weak	Moderate	Weak	Strong	Strong	Strong
33128	Railway Track Material	Moderate	65.2%	1.6%	Strong	Strong	Weak	Weak	Moderate	Weak	Moderate	Strong	Strong
33129	Primary Iron or Steel Products, Nec	Weak	0.0%	54.5%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
37111	Motor Passenger Cars, Assembled	Weak	13.0%	0.3%	Weak	Weak	Moderate	Weak	Strong	Weak	Weak	Weak	Weak
37112	Motor Trucks or Truck Tractors, Assembled	Weak	19.1%	0.0%	Weak	Weak	Moderate	Weak	Moderate	Weak	Strong	Weak	Weak
37143	Motor Vehicle Frames	Moderate	82.0%	0.0%	Strong	Moderate	Weak	Weak	Weak	Weak	Moderate	Strong	Strong
40211	Iron or Steel Scrap, Wastes or Tailings	Moderate	36.6%	4.7%	Moderate	Strong	Weak	Strong	Moderate	Strong	Weak	Weak	Moderate
40241	Paper Waste or Scrap	Moderate	14.9%	24.2%	Weak	Strong	Strong	Strong	Moderate	Weak	Weak	Weak	Weak

<sup>51</sup> All commodities on the record in this proceeding are included.

### Commodities to Consider for Exemption Revocation Using RPC Values

STCCS	Commodity	Overall Dashboard	Initial Screens		Indicators							
			Signal	2018 % of Cars	2018 %	All Traffic	All Traffic	Comp Inf	Comp Inf	Length of Haul	Length of Haul	Comp RPC
	STCC Name		RVC 180	Intermodal	Recent RPC	RPC Change	Recent	Change	Recent	Change	Recent Diff	Diff Change
-	All Carload Traffic	-	37.6%	46.1%	-	-	-	-	-	-	-	-
14211	Agricultural Limestone, Broken or Crushed	Weak	50.7%	1.2%	Weak	Weak	Weak	Weak	Weak	Weak	Indeterminate	Indeterminate
14212	Fluxing Limestone or Stone, Broken or	Weak	100.0%	0.0%	Weak	Weak	Weak	Weak	Weak	Weak	Indeterminate	Indeterminate
14213	Dolomite, Broken or Crushed	Weak	37.1%	0.0%	Weak	Weak	Weak	Weak	Weak	Weak	Weak	Indeterminate
14219	Broken or Crushed Stone or Riprap, Nec	Weak	59.7%	0.1%	Weak	Weak	Weak	Weak	Weak	Weak	Weak	Strong
24114	Pulpwood Logs	Weak	11.8%	3.4%	Weak	Strong	Weak	Weak	Weak	Strong	Weak	Moderate
24115	Pulpwood or Other Wood Chips	Weak	17.6%	0.3%	Weak	Weak	Weak	Weak	Weak	Strong	Weak	Moderate
24211	Lumber, Rough or Dressed	Strong	19.6%	4.1%	Strong	Strong	Strong	Weak	Strong	Weak	Moderate	Strong
24321	Plywood or Veneer or Built-up Wood	Strong	26.7%	12.1%	Strong	Strong	Strong	Moderate	Strong	Weak	Strong	Strong
24991	Strand Board Wood Products	Insufficient	20.5%	0.0%	Strong	Indeterminate	Strong	Indeterminate	Strong	Indeterminate	Strong	Indeterminate
24996	Wood Particle Board	Strong	26.4%	3.1%	Strong	Strong	Strong	Moderate	Strong	Moderate	Moderate	Weak
26217	Special Industrial Paper	Weak	29.7%	97.2%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
26311	Fibreboard, Paperboard or Pulpboard	Moderate	22.3%	2.6%	Strong	Strong	Strong	Weak	Strong	Moderate	Weak	Weak
29914	Coke Produced From Coal	Moderate	57.0%	0.0%	Weak	Strong	Weak	Weak	Moderate	Strong	Weak	Strong
32411	Hydraulic Cement, Natural, Portland or	Moderate	52.2%	0.4%	Weak	Strong	Weak	Weak	Moderate	Strong	Weak	Moderate
32412	Ready-mix Cement or Concrete, Dry	Weak	Indeterminate	100.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
33121	Steel Ingot or Semi Finished Shapes	Weak	34.3%	1.9%	Weak	Strong	Weak	Weak	Moderate	Strong	Weak	Weak
33122	Iron or Steel Plates	Strong	38.9%	1.5%	Strong	Strong	Strong	Weak	Strong	Weak	Strong	Strong
33123	Iron or Steel Sheet or Strip	Moderate	27.0%	4.9%	Strong	Weak	Weak	Moderate	Moderate	Weak	Strong	Moderate
33124	Iron or Steel Bars, Bar Shapes or Rods	Moderate	47.7%	1.9%	Strong	Strong	Strong	Strong	Moderate	Moderate	Weak	Weak
33125	Structural Shapes or Piling Products	Strong	50.4%	0.0%	Strong	Strong	Strong	Weak	Strong	Weak	Strong	Strong
33126	Iron or Steel Pipe, Tubes or Fittings	Strong	58.1%	6.3%	Strong	Strong	Strong	Strong	Strong	Weak	Strong	Strong
33127	Tin Mill Products	Moderate	31.1%	7.2%	Strong	Weak	Weak	Weak	Moderate	Weak	Strong	Strong
33128	Railway Track Material	Moderate	65.2%	1.6%	Strong	Strong	Weak	Weak	Moderate	Weak	Strong	Strong
33129	Primary Iron or Steel Products, Nec	Weak	0.0%	54.5%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
37111	Motor Passenger Cars, Assembled	Weak	13.0%	0.3%	Weak	Weak	Moderate	Weak	Strong	Weak	Weak	Weak
37112	Motor Trucks or Truck Tractors, Assembled	Weak	19.1%	0.0%	Weak	Weak	Moderate	Weak	Moderate	Weak	Weak	Weak
37143	Motor Vehicle Frames	Weak	82.0%	0.0%	Weak	Weak	Weak	Weak	Weak	Weak	Weak	Weak
40211	Iron or Steel Scrap, Wastes or Tailings	Moderate	36.6%	4.7%	Weak	Strong	Weak	Strong	Moderate	Strong	Weak	Strong
40241	Paper Waste or Scrap	Moderate	14.9%	24.2%	Weak	Strong	Strong	Strong	Moderate	Weak	Weak	Weak

**Commodities to Consider Adding to Exemption List Using R/VC Ratios**

Commodity		Overall Dashboard	Initial Screens		Indicators							
STCC	STCC Name	Signal	RVC 180	2018 % Intermodal	All Traffic Recent RVC	All Traffic RVC Change	Comp Inf Recent	Comp Inf Change	Length of Haul Current Level	Length of Haul Change	Comp RVC Recent Diff	Comp RVC Diff Change
-	All Carload Traffic	-	37.6%	46.1%	-	-	-	-	-	-	-	-
1441310	Industrial Sand	Weak	48.9%	1.1%	Weak	Weak	Weak	Weak	Moderate	Weak	Strong	Strong
26211	Newsprint	Moderate	15.9%	28.5%	Strong	Strong	Weak	Weak	Weak	Weak	Strong	Strong
26212	Ground Wood Paper Uncoated	Moderate	16.3%	24.3%	Strong	Strong	Weak	Moderate	Weak	Weak	Moderate	Moderate
26218	Sanitary Tissue Stock	Strong	57.1%	95.6%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
26471	Sanitary Tissues or Health Products	Strong	Indeterminate	100.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
26611	Insulating Board	Insufficient	Indeterminate	Indeterminate	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
26612	Construction Paper	Strong	Indeterminate	100.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
26613	Wallboard	Strong	50.0%	50.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
26614	Insulating Material	Strong	Indeterminate	100.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
26615	Construction Panels, Partitions	Strong	Indeterminate	100.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
26619	Building Paper or Building Board, Nec	Insufficient	37.5%	0.0%	Weak	Indeterminate	Weak	Indeterminate	Moderate	Indeterminate	Indeterminate	Indeterminate
2818446	Anhydrous Ethyl Alcohol	Moderate	34.8%	0.0%	Strong	Weak	Weak	Strong	Weak	Strong	Weak	Weak
28422	Specialty Cleaning Bleaches	Strong	88.2%	83.7%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2871450	Phosphate Fertilizer Solution	Weak	51.6%	0.0%	Weak	Weak	Weak	Strong	Moderate	Strong	Weak	Weak
29111	Gasoline or Jet or High Volatile Petroleum	Moderate	36.1%	2.0%	Strong	Weak	Strong	Weak	Moderate	Weak	Moderate	Weak
29112	Kerosene Exc. Jet Fuels	Strong	0.0%	50.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2911610	Asphalt	Weak	35.3%	0.2%	Weak	Weak	Weak	Weak	Weak	Weak	Strong	Strong
29521	Asphalt or Tar Saturated Felts, Boards or	Strong	66.7%	76.9%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
29523	Asphalt Sheathings, Shingles or Sidings	Moderate	46.7%	12.7%	Weak	Weak	Weak	Moderate	Moderate	Strong	Strong	Strong

### Commodities to Consider Adding to Exemption List Using RPC Values

STCC	Commodity	Overall Dashboard	Initial Screens		Indicators							
			Signal	2018 % of Cars	2018 %	All Traffic	All Traffic	Comp Inf	Comp Inf	Length of Haul	Length of Haul	Comp RPC
-	All Carload Traffic	-	RVC 180	Intermodal	Recent RPC	RPC Change	Recent	Change	Current Level	Change	Recent Diff	Diff Change
1441310	Industrial Sand	Weak	48.9%	1.1%	Weak	Weak	Weak	Weak	Moderate	Weak	Strong	Moderate
26211	Newsprint	Weak	15.9%	28.5%	Weak	Weak	Weak	Weak	Weak	Weak	Moderate	Weak
26212	Ground Wood Paper Uncoated	Weak	16.3%	24.3%	Weak	Weak	Weak	Moderate	Weak	Weak	Strong	Strong
26218	Sanitary Tissue Stock	Strong	57.1%	95.6%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
26471	Sanitary Tissues or Health Products	Strong	Indeterminate	100.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
26611	Insulating Board	Insufficient	Indeterminate	Indeterminate	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
26612	Construction Paper	Strong	Indeterminate	100.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
26613	Wallboard	Strong	50.0%	50.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
26614	Insulating Material	Strong	Indeterminate	100.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
26615	Construction Panels, Partitions	Strong	Indeterminate	100.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
26619	Building Paper or Building Board, Nec	Insufficient	37.5%	0.0%	Weak	Indeterminate	Weak	Indeterminate	Moderate	Indeterminate	Indeterminate	Indeterminate
2818446	Anhydrous Ethyl Alcohol	Moderate	34.8%	0.0%	Weak	Strong	Weak	Strong	Weak	Strong	Weak	Weak
28422	Specialty Cleaning Bleaches	Strong	88.2%	83.7%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2871450	Phosphate Fertilizer Solution	Moderate	51.6%	0.0%	Weak	Strong	Weak	Strong	Moderate	Strong	Moderate	Moderate
29111	Gasoline or Jet or High Volatile Petroleum	Moderate	36.1%	2.0%	Strong	Weak	Strong	Weak	Moderate	Weak	Strong	Strong
29112	Kerosene Exc. Jet Fuels	Strong	0.0%	50.0%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2911610	Asphalt	Weak	35.3%	0.2%	Weak	Moderate	Weak	Weak	Weak	Weak	Moderate	Moderate
29521	Asphalt or Tar Saturated Felts, Boards or	Strong	66.7%	76.9%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
29523	Asphalt Sheathings, Shingles or Sidings	Moderate	46.7%	12.7%	Weak	Weak	Weak	Moderate	Moderate	Strong	Moderate	Moderate