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Mandated Crew Sizes Don't Make Trains Safer

by

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I. Introduction and Summary

A cardinal rule of government regulation is that rules should address real problems (or opportunities) and should deal with those problems directly in a way that is both efficient and effective. Unfortunately, that is not the case with current proposed railway legislation. The Railway Safety Act, recently introduced by Representative Chris Deluzio (D-PA) and Senator Maria Cantwell (D-WA), would raise costs for railroads without addressing the fundamental issues behind derailments and other accidents. Its most controversial provision would require most trains to have a crew of at least two people. This requirement would not enhance safety and is traditionally the subject of collective bargaining. It is mainly aimed at union allies concerned about job losses due to automation.

In this *Perspectives*, I look at the main provisions of the Railway Safety Act and explain why it should not pass. I then examine some of the problems that the bill purports to prevent, particularly a serious incident in East Palestine, Ohio, in February 2023. I show that only one of the Act's requirements might have prevented the accident. The other requirements would have had no effect. I then analyze safety data to show the lack of evidence that two-person crews are safer than one-person crews, and that overall rail safety has been steadily improving, both on its own and in relation to rail's main competitor, trucking.

This safety progress is due to the railroads' approach to safety, which utilizes access to electronic data, deep analysis of the link between data and train safety, and timely communication to rail employees. In a second paper I will further develop this theme by demonstrating the rail industry's strong record on improving safety, the future role of artificial intelligence (AI) in

freight transportation, the challenge to regulators to balance public safety with faster innovation, and some recent developments in rail safety.

II. Problems With the Railway Safety Act

The Railway Safety Act was first introduced in March 2023 by Senator Sherrod Brown (D-OH) and then-Senator JD Vance (R-OH) shortly after the derailment in East Palestine. It was the subject of hearings and passed out of a Senate committee by a vote of 16-11 two months later. No further action was taken.

Senator Maria Cantwell (D-WA) introduced the Bipartisan Railway Safety Act of 2026 (RSA) in the Senate on February 24, 2026.[1] Representative Chris Deluzio (D-PA) introduced a companion bill on March 3, 2026.[2] The Railway Safety Act is backed by the White House, although there is uncertainty about the strength of its endorsement and the strategy for getting it passed. The heavy regulation and high cost of the bill, especially the requirement for a two-person crew, would normally not get the support of Republicans who tend to be skeptical of government interference in the markets. For example, the Senate Commerce Committee's Chairman Senator Ted Cruz (D-TX) opposes it. However, the support of Vice President JD Vance may cause some Republicans to support the Act.

Several provisions of the Railway Safety Act are problematic. Its supporters seem more concerned with checking boxes that may or may not be related to the type of safety issues involved in the East Palestine derailment. Some of its requirements have also been imposed by regulation. The Act would merely codify them into legislation, making it much more difficult to amend them should the current momentum toward greater safety continue. A recent report by the Congressional Research Service discusses many of them.[3]

High-Hazard Flammable Trains The train that derailed in East Palestine was carrying vinyl chloride, a hazardous material (hazmat). Much of the damage done from the incident was the result of a decision to burn off the hazardous materials after the derailment. An investigation by the National Transportation Safety Board (NTSB) later determined that this was a mistake.[4]

According to the Congressional Research Service, 7.2% of the total tons hauled by freight railroads in 2017 and 7.5% of railroad ton-miles consisted of hazmat.[5] The bill expands the list of chemicals that trigger existing safety requirements, subjecting them to the same precautions as

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[1] U.S. Senate Committee on Commerce, Science, & Transportation, "Cantwell, Husted, Colleagues Reintroduce Bipartisan Railway Safety Act," Press Release, February 24, 2026, https://www.commerce.senate.gov/2026/2/cantwell-husted-colleagues-reintroduce-bipartisan-railway-safety-act.
[2] Congressman Chris Deluzio, "Deluzio, Colleagues Introduce Bipartisan Railway Safety Act of 2026," Press Release, March 3, 2026, https://deluzio.house.gov/media/press-releases/deluzio-colleagues-introduce-bipartisan-railway-safety-act-2026.
[3] Ben Goldman, "Freight Rail Safety Issues In the 119th Congress," Congressional Research Service, R47911, August 1, 2025, https://www.congress.gov/crs-product/R47911.
[4] National Transportation Safety Board, "Norfolk Southern Railway Derailment and Hazardous Materials Release," RIR-24-05, February 3, 2023, https://www.ntsb.gov/investigations/AccidentReports/Reports/RIR2405%20CORRECTED.pdf.
[5] Ben Goldman, "Freight Rail Safety Issues In the 119th Congress."

flammable liquid trains. For some frequently traveled routes this could be an onerous requirement which contributes little toward safety.

Wayside Defect Detectors A major focus of the Railway Safety Act is to reduce the number of train derailments. The East Palestine incident was caused by a wheel bearing failing due to heat. Railroads had implemented the technology to spot overheated bearings on their own initiative. As described below, the equipment had detected the overheating but did not react in time to prevent the derailment. The RSA requires trains to space hotbox detectors an average of every 15 miles. The freight rail industry has volunteered to move toward a 15-mile average and to stop and inspect any train with a bearing measuring 170 degrees over ambient temperature. Past voluntary standards were 25 miles. It is not known whether this change would have alerted the East Palestine crew in time. An earlier version of the bill would have required spacing every ten miles.

Crew Size The bill would codify the current regulation requiring at least two employees on virtually every train. As we will see later, there is no evidence that two-person crews result in fewer derailments than one-person crews. In fact, the train at East Palestine had a three-person crew aboard. None of them was in a position to prevent the derailment. The justification in a summary of the Railway Safety Act provided by Senator Cantwell suggests the extra staff member could help with the emergency response rather than preventing the incident in advance.[6] The main beneficiaries of this requirement are the rail unions, which get to preserve the jobs of their members against the long-term trend toward automation.

Other Provisions Other provisions of the Act raise penalties for violating regulations, require longer inspections by trained mechanics, reimburse local firefighters who respond to an emergency, and speed the introduction of newer tank cars.

The press release announcing introduction of the RSA quoted one union supporter saying "[t]he Class I railroads continue to move in the wrong direction by running longer trains, holding fewer and shorter inspections, and having an over-reliance on automation."[7] Note that none of these alleged errors directly relates to crew size or the derailment in East Palestine.

III. The Derailment in East Palestine

Given its central role in justifying support for the Railway Safety Act and tighter regulation, it is important to review exactly what happened that day. As pointed out above, the train actually had a three-person crew on board. However, there is no evidence that any member of the crew could have done anything to either speed the detection of the danger to the train or respond to the derailment after it happened.

[6] "The Railway Safety Act," https://www.commerce.senate.gov/services/files/D1EB880A-BF63-426D-B8FF-5C04FF99B681.
[7] U.S. Senate Committee on Commerce, Science, & Transportation, "Cantwell, Husted, Colleagues Reintroduce Bipartisan Railway Safety Act."

According to the National Transportation Safety Board's official investigation, the cause of the derailment was an overheated bearing on one of the cars.[8] The railroad had installed hotbox detectors along the train track. These sensors measured the temperature of each wheel as it passed by at normal speed. The system in this case produced three critical measurements that day. The first reading included a measurement of 38°F over ambient temperature on one of the bearings of a hopper car. About 34 minutes later, a camera spotted a fire on the same car. A few minutes later the same bearing was measured at 103°F over ambient temperature. Following company policy, the hotbox sent a non-critical alert to the advance train control desk but did not broadcast an alarm to the train's crew. About 39 minutes later another detector measured the bearing at 263°F above ambient temperature and immediately transmitted a critical alarm. This caused the crew to immediately stop the train to inspect the wheelset that triggered the alarm. They discovered that several cars had derailed and started a fire.

Three things are noteworthy about the derailment. First, any chance of preventing the derailment depended on the presence of the hotbox detectors. These had been installed on a voluntary basis by the railways as a means of improving safety and protecting their employees, equipment, communities, and cargo. Second, it is not clear what, if anything, the existing crew (including the third member) could have done to prevent the accident. They had limited ability to observe problems from where they were. Finally, while the event is tragic, the industry's post-event activity reduced any long-term costs. During the cleanup, Norfolk Southern removed a vast amount of water and earth to the point where testing shows no trace of chemicals. No one died from the event.

The NTSB's investigators made several recommendations.[9] These recommendations focus on targeted technical improvements rather than broad operational mandates, including expanding the use of locomotive cameras (which unions oppose), research and improvements in bearing detectors, guidance on "vent and burn" procedures, and the phase out of older tank cars. None of the recommendations had anything to do with crew size. Norfolk Southern adopted all four of the recommendations addressed to it. As of 2026 the Federal Railroad Administration had implemented few of the ten addressed to it.

IV. The Implementation of Positive Train Control

Despite the controversy about the Railway Safety Act, the government has not been inactive in imposing mandates. As discussed above, many parts of the RSA have already been adopted through rulemaking. More importantly, the Rail Safety Improvement Act of 2008 required most passenger and mainline tracks to implement Positive Train Control (PTC). The industry estimated that installation would cost $13 billion over ten years. PTC is designed to prevent a number of possible accidents automatically and to override cases of human error.

V. Industry Safety Data Shows Trains Are Safer Than Trucks

Imposing costly rules on railroads in pursuit of minimal impacts on safety may actually reduce safety by causing shippers to switch to trucks, which have a significantly poorer safety record.

[8] National Transportation Safety Board, "Norfolk Southern Railway Derailment and Hazardous Materials Release."
[9] Ibid.

Trains are far safer than trucks, even though rail incidents get much more attention than truck crashes.

Another focus of the East Palestine derailment is that it was carrying hazardous materials. This caused an evacuation and treatment of soil and water. The RSA expands notification and treatment requirements for trains carrying hazmat. However, a 2023 paper cautions that:

> [T]here is little that either the DOT nor Congress has proposed that would improve the safety of transporting hazardous chemicals in a way that would be anything close to cost-effective, and the likely outcome of making railroads spend billions of dollars with little purpose would be to expose U.S. residents to a greater risk of being affected by accidents involving the transport of hazardous materials by moving more goods being transported by trucks.[10]

A report by R Street quantifies the difference. Between 1975 and 2021 hazardous materials transported by truck caused over 16 times as many fatalities as materials transported by rail, despite only carrying twice as much hazardous material.[11] Trucks have caused nearly three times as much property damage as rail incidents since 2000.[12]

Rail has other advantages over trucks. Greenhouse gas emissions by rail are one-tenth that of trucks. Trucking also causes between 1.2 and 8.5 times more pollutants compared to hauling the same freight by rail.[13] Finally, rail costs roughly one-third as much as shipping by truck.[14] In summary, trucks cause more accidents, more greenhouse gases, more noise, and more social costs in the form of roadway deterioration than rail.

VI. The Lack of Evidence Showing Staffing Size Improves Safety

Perhaps most damaging to the rationale of the proposed bill is the Federal Railroad Administration's (FRA) own admission that it lacks any information that would link the two-person rule to better safety, including fewer derailments. The most significant of these admissions occurred as part of the FRA's rule establishing constraints on train crew sizes. On March 15, 2016, the FRA proposed new rules that would set minimum crew sizes.[15] It withdrew this proposal on May 29, 2019, concluding that "no regulation of train crew staffing is necessary

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[10] Michael Gorman, "The Proposed Rail Safety Act Would Have a Dubious Effect on Rail Safety," SSRN. May 10, 2023, https://papers.ssrn.com/sol3/p-apers.cfm?abstract_id=4438622.
[11] Philip Rossetti, "Narrow Rules on Rail Will Produce Unintended Consequences in Transportation," R Street, May 4, 2023, https://www.rstreet.org/commentary/narrow-rules-on-rail-will-produce-unintended-consequences-in-transportation/.
[12] Michael F. Gorman, "Truck Crashes Involving Hazardous Chemicals Are More Frequent, Even As Train Derailments Capture Headlines," PBS, February 21, 2023, https://www.pbs.org/newshour/nation/truck-crashes-involving-hazardous-chemicals-are-more-frequent-even-as-train-derailments-capture-headlines.
[13] Philip Rossetti, "Narrow Rules on Rail Will Produce Unintended Consequences in Transportation."
[14] Ibid.
[15] Federal Railroad Administration, "Train Crew Staffing: Notice of Proposed Rulemaking," Department of Transportation, *Federal Register*, March 15, 2016, https://www.federalregister.gov/documents/2016/03/15/2016-05553/train-crew-staffing.

or appropriate for railroad operations to be conducted safely at this time."[16] It went on to find that rail safety data did not support a train crew staffing rule.

The withdrawal further stated that:

> [D]espite studying this issue in-depth and performing extensive outreach to industry stakeholders and the general public, FRA's statement in the [Notice of Proposed Rulemaking] that it "cannot provide reliable or conclusive statistical data to suggest whether one-person crew operations are generally safer or less safe than multiple-person crew operations" still holds true today.[17]

And finally, "FRA does not have information that suggests that there have been any previous accidents involving one-person crew operations that could have been avoided by adding a second crewmember."[18] The withdrawal also quoted the National Transportation Safety Board as saying: "there is insufficient data to demonstrate that accidents are avoided by having a second qualified person in the cab. In fact, the NTSB has investigated numerous accidents in which both qualified individuals in a two-person crew made mistakes and failed to avoid an accident."[19]

Overall, the Department of Transportation claims to recognize that integrating technology and automation has the potential to increase productivity, assist freight movement, create new jobs, and, most important, significantly improve safety by reducing accidents caused by human error.[20] This is a different approach than that used by either FRA or RSA. It is integral to the railroad industry's own initiatives to enhance rail safety.

Unfortunately, a judge overturned FRA's withdrawal for not following notice-and-comment procedures under the Administrative Procedures Act. The FRA responded by finalizing a new rule on April 2, 2024.[21]

VII. Experience Shows One-Person Crews Are Safe

Given the union's position, one might be surprised to learn that one-person crew sizes have not adversely impacted rail safety, both in the United States and in other countries. Within the U.S., passenger trains, including Amtrack, operate with only one crew member. The Association of American Railroads has commissioned studies on the role of crew size. A study of crews in both the U.S. and abroad concluded that: "single-person crew operations are widespread in the world

[16] Federal Railroad Administration, "Train Crew Staffing: Notice of Proposed Rulemaking Withdrawal," Department of Transportation, *Federal Register*, May 29, 2019, https://www.federalregister.gov/documents/2019/05/29/2019-11088/train-crew-staffing.
[17] Ibid.
[18] Ibid.
[19] Ibid.
[20] Ibid.
[21] U.S. Department of Transportation, "Biden-Harris Administration Announces Final Rule on Train Crew Size Safety Requirements to Improve Rail Safety," April 2, 2024, https://www.transportation.gov/briefing-room/biden-harris-administration-announces-final-rule-train-crew-size-safety-requirements.

and appear to be as safe as multiple-person crew operations, even on complex systems running many mixed freight and passenger trains per day…"[22]

A second Oliver Wyman study concentrated on Europe. The study first determined that Europe's interconnected standard gauge network is comparable to that in the U.S. In fact, in some respects, such as cross-country trips, rail speeds, and intermix of passenger and rail shipments, the European network is more complicated. The authors found that most European railroads operated with one-person crews. This was true even in the absence of advanced train control technology. The report found that:

> Most European railroads have used single-person crews on freight trains for decades, predating advanced train control technology. They use single-person crews despite the fact that Europe has twice the train density, far more passengers sharing the network with freight, and far more control transactions per route-kilometer – and yet suffers no reduction in crew-related safety.[23]

VIII. Other Non-Regulatory Incentives Promoting Rail Safety

There seems to be a hidden assumption that, in the absence of regulation, railroads lack a strong incentive to improve safety and that those harmed by accidents have no recourse for help. Both assumptions are false.

A significant portion of a railroad's worth is tied up in its physical property; the equipment, tracks, signaling equipment, and sensors needed to run on a daily basis. The replacement cost of damaged equipment can be very high. Lost business due to delays can be even costlier. In addition, the rail company is responsible for the costs incurred in responding to an accident. With respect to third-parties, any costs due to the railway's negligence, including damage to property, health, income, and other harms, is protected by tort law. Finally, negative publicity and loss of reputation can lower the company's market value. The final cost to Norfolk Southern is estimated to be $2.2 billion.[24] This is one reason why the rail industry continues to pursue safety improvements on its own initiative.

IX. Conclusion

Safety improvements in the rail industry should be a never-ending policy goal. Both regulators and industry should constantly communicate regarding the discovery of better technology, implementing it efficiently, and measuring results. Modern technology promises to help managers improve results by collecting data, processing it, communicating it properly, and

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[22] Oliver Wyman, "Analysis of North American Freight Rail Single-Person Crews: Safety and Economics," Association of American Railroads, February 3, 2015, https://www.aar.org/wp-content/uploads/2022/06/AAR-Oliver-Wyman-Crew-Size-2015-Report.pdf.

[23] Oliver Wyman, "Assessment of European Railways: Characteristics and Crew-Related Safety, June 15, 2016, Exhibit 4, Comments of the Association of American Railroads, Federal Railroad Administration, Train Crew Size Safety Requirements, https://downloads.regulations.gov/FRA-2021-0032-13056/attachment_3.pdf.

[24] Mike Gautner, "Norfolk Southern Bill for East Palestine Derailment Reaches $2.2 B," 21WFMJ, January 29, 2025 , https://www.wfmj.com/news/local-news/norfolk-southern-bill-for-east-palestine-derailment-reaches-2-2b/article_75171f42-98bd-5d03-92e9-507457eca572.html.

monitoring the response. Over several decades modern technology has improved both safety and efficiency. In the process it incidentally has also tended to eliminate some jobs. Compared to humans, sensors, processors, and communication channels collect data faster and more precisely, process the data quicker and without human error, and initiate a response almost instantaneously.

The Federal Railroad Administration can, and in some cases has, imposed some of the Railway Safety Act's policies using its rulemaking authority. Other provisions have very little to do with safety and therefore would not produce the results promised. The two-person rule is a good example. Its main purpose is to preserve union jobs even at the expense of delaying the continued progress toward mechanization. Continued rail safety is an important goal. But the proposed Railway Safety Act is the wrong solution.

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