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PUBLIC INTEREST COMMENT

THE UNINTENDED CONSEQUENCES OF THE FRA'S MINIMUM TRAIN CREW SIZE RULE

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Train Crew Size Safety Requirements
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In this comment, I address the efficacy of this proposed rule primarily from an economic point of view. The Federal Railroad Administration (FRA), in July of this year, proposed a rule setting minimum sizes for train crews.[1] This rule is unlikely to increase safety, because the increased personnel costs will require cuts elsewhere. There are countervailing risks the FRA needs to include in its analysis. Two offsetting effects, in particular, warrant consideration: deterred investment in infrastructure, including track and equipment maintenance, and deterred investment in safety-enhancing technology and innovation. By requiring a greater expenditure on additional personnel, this proposal may induce some railroads to reallocate scarce resources away from those activities that are historically associated with improved safety, such as track and equipment maintenance or investments into technologies that further automate the operations that train crews currently perform. Because investment, and the safety it can create, stems from financial performance, any new safety rule necessarily creates a tradeoff. The additional safety that the new rule creates must be weighed against the losses in safety caused by deterred investment.

The lack of evidence that the proposal would actually make any operations safer is also a matter of concern. Even if there were no safety tradeoffs from deterred investment, the FRA's basis for this

1. Train Crew Size Safety Requirements, 87 Fed. Reg. 65021 (proposed October 27, 2022) (to be codified at 49 C.F.R. pt. 218).

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proposal amounts to little more than speculation tied to a failure to collect data and safety records on any operations that already use one-person crews. Any credible estimation of the net effect of the proposed rule would need to consider losses to safety caused by an induced diminution of track and equipment maintenance or other safety-enhancing investments, such as further automation. Given the proven record of maintenance and infrastructure investments on safety rates—reviewed in detail later in this comment—this proposed rule may not only be ineffective in reducing accident rates, but it may also actually increase the net accident rate. It is primarily because of these unintended consequences that I recommend that the FRA withdraw its proposed rule.

SUMMARY OF THE PROPOSED RULE

The FRA proposes, among other things, to require a minimum size of train crew staffs. The proposed rule would require all railroad operations to have a minimum crew of two people unless the operation was granted a specific exception from the FRA.[2] The proposed rule also describes the process for receiving such an exception, including some of the evidence that the FRA would require a railroad to submit in order to earn one.[3]

COUNTERVAILING RISKS AND THE DETERMINANTS OF RAILROAD SAFETY

In its 2011 publication entitled *Regulatory Impact Analysis: A Primer*, the Office of Management and Budget (OMB) explains that OMB *Circular A-4* directs agencies to identify countervailing risks that a proposed rule would create: "A countervailing risk is an adverse economic, health, safety, or environmental consequence that results from a regulatory action and is not already accounted for in the direct cost of the action (e.g., adverse safety impacts from more stringent fuel-economy standards for light trucks). As with other benefits and costs, an effort should be made to quantify and monetize both ancillary benefits and countervailing risks."[4]

Given the record of railroad safety improvement over the past four decades, the FRA needs to consider how any intervention might undermine the forces that have driven the industry's safety improvement. Furthermore, the FRA should consider whether this proposed rule would, by potentially undermining those forces, produce a countervailing risk that could offset or even overwhelm any positive safety effects that the rule creates.

The most prominent feature of the safety record of the modern railroad industry in the United States is the improvement in safety that began around the time of the Staggers Act of 1980.[5] The Staggers Act removed various economic restrictions placed on railroads by the Interstate Commerce Commission over the preceding decades. Before this regulatory reform, economic regulations diminished the financial incentives of railroads to invest in those activities that increase safety. As a recent study notes,

> Under normal market circumstances, railroads have relatively strong financial incentives to operate safely. Railroad accidents harm railroads' own property, employees, shippers' goods, shipper-owned railcars, and third parties. Firms have a direct incentive to prevent accidents that harm their

2. Train Crew Size Safety Requirements, 87 Fed. Reg. 65021 (proposed October 27, 2022) (to be codified at 49 C.F.R. pt. 218).
3. Train Crew Size Safety Requirements, 87 Fed. Reg. 45564, 45584–86 (proposed July 28, 2022) (to be codified at 49 C.F.R. pt. 218).
4. Office of Management and Budget, *Regulatory Impact Analysis: A Primer*, 2011, 7.
5. Jerry Ellig and Patrick A. McLaughlin, "The Regulatory Determinants of Railroad Safety," *Review of Industrial Organization* 49, no. 2 (2016): 371–98.

own property. Railroad employees and labor unions are well-informed about safety hazards and have strong incentives to negotiate contracts that force railroads to internalize the costs that accidents impose on employees (Savage, 1998, pp. 77–90). The Federal Employers Liability Act (FELA) makes railroads financially responsible for injuries to workers and increases workers' ability to recover damages by removing many defenses that railroads had under common law (Squires, 2000, pp. 106–07).[6]

However, before the implementation of the Staggers Act, economic regulations created an environment far from "normal market circumstances." Because these regulations reduced railroads' profitability, investment was depressed, particularly in maintenance.[7] A portion of railroads in poor financial health engaged in risky bankruptcy behavior, deferring risk-reducing activities such as track and equipment maintenance because shareholders could avoid full responsibility for a major accident by declaring bankruptcy.[8]

A primary lesson from the era of economic regulation is that regulations that diminish the financial health of railroads can inadvertently induce greater accident risk. Since those days of economic regulation, the railroad safety record in the United States has improved dramatically. The total number of train accidents on the systems of the major freight railroads fell from over 11,000 in 1978 to 1,867 in 2013, even while revenue ton-miles doubled. Even accounting for FRA safety regulations, the aforementioned study estimates that "approximately 89% of the reduction in the accident rate from 1978 to 2013 was because of the Staggers Act" because the act "eased many of the constraints on investment and operations that undermined safety."[9] Any regulations—even safety regulations—that hinder such investments as those that have driven the remarkable improvements in railroad safety since the Staggers Act could have the perverse effect of increasing the accident rate.

Firms' investment decisions are strongly related to their financial performance, as a large body of economic literature indicates.[10] The strength of that relationship alone should serve as a warning that this proposed rule could reduce investment in safety-increasing activities, such as track and equipment maintenance. For some railroads, the proposed rule will likely create a financial constraint on those investments that are empirically associated with safety improvements. For example, investment in track is negatively correlated with the track-related accident rate, although it is worth noting that this relationship does not hold for investment related to compliance with federal track standards.[11]

Although the FRA recognizes that compliance with this proposed rule would be costly to railroads, it does not consider that those costs could introduce countervailing risks by constraining how railroads may allocate scarce resources. By potentially inducing one or more railroads to reallocate expenditures

6. Ellig and McLaughlin, "Regulatory Determinants of Railroad Safety," 377.
7. Theodore E. Keeler, *Railroads, Freight, and Public Policy* (Washington, DC: Brookings Institution, 1983); Ian Savage, *The Economics of Railroad Safety* (Boston, MA: Kluwer Academic Publishers, 1998), 23.
8. Vicki M. Bier et al., *Effects of Deregulation on Safety: Implications Drawn from the Aviation, Rail, and United Kingdom Nuclear Power Industries* (Norwell, MA: Kluwer Academic Publishers, 2003), 4–6; Devra Golbe, "Product Safety in a Regulated Industry: Evidence from Railroads," *Economic Inquiry* 21 (1983): 39–52; Savage, *Economics of Railroad Safety*, 111.
9. Ellig and McLaughlin, "Regulatory Determinants of Railroad Safety," 387, 391.
10. See the following for examples: Alberto Alesina et al., "Regulation and Investment," *Journal of the European Economic Association* 3, no. 4 (2005): 791–825; Bentley Coffey, Patrick A. McLaughlin, and Pietro Peretto, "The Cumulative Cost of Regulations," *Review of Economic Dynamics* 38 (2020): 1–21; John W. Dawson, "Regulation, Investment, and Growth across Countries," *Cato Journal* 26, no. 3 (2006): 489–509; Birungi Korutaro and Nicholas Biekpe, "Effect of Business Regulation on Investment in Emerging Market Economies," *Review of Development Finance* 3, no. 1 (2013): 41–50.
11. Scott M. Dennis, "Changes in Railroad Track Accident Rates," *Transportation Quarterly* 56, no. 4 (2002): 161–74.

from track or other infrastructure investments associated with safety improvement to activities required by this proposal, the FRA will create a countervailing risk that may offset the safety outcomes that are the proposed rule's ostensible purpose.

The development of new technologies, some of which could increase safety, can also be hindered by regulations. For example, economic regulations of railroads that deterred investment also slowed the development and adoption of new technologies and practices that improve safety, such as car retarders and automated switching.[12] Improved finances can lead to greater investment not only in track and infrastructure but also in safety-enhancing new technologies. The hindrance of development of these technologies is another countervailing risk that the FRA should consider.

The most relevant technologies today are those that lead to more automation. In his book, *The Cure in the Code*, Peter Huber relays a saying about autopilot on airplanes: "The first autopilot kept a plane cruising at steady speed and altitude; the cockpit of the future, it is said, will have a pilot, a computer, and a dog, the dog there to bite the pilot if he touches the computer."[13] The point is twofold: first, using computers to control flight operations can create safer flights, and second, human error will eventually become the greatest threat to safety. The use of automation to reduce accidents caused by human error has a proven track record across all modes of transportation. Mandating crew sizes not only risks hindering further development of innovative technologies that can deliver greater safety, but it could also create a less-safe operating environment in the long term by deflecting scarce resources from known safety-enhancing uses like track maintenance to other, less effective uses.

Still, it's easy to understand the basic logic of this proposed minimum crew size rule. After all, why wouldn't two people create a safer train operation than just one? To see why other investments can be more effective, consider the role of the human operator in other modes of transportation. Many decades ago, the introduction and widespread adoption of airplane autopilot precipitated a 90 percent reduction in the pilot-attributable crash rate.[14]

Like with the other modes of transportation, and as mentioned earlier, railroad safety has dramatically improved over the past several decades. How much of that improvement is due to increased automation of particular tasks or operations? Indeed, because Positive Train Control (PTC) has been fully implemented, as announced by the FRA in 2020, this question is all the more relevant. According to the FRA, PTC systems "are designed to prevent train-to-train collisions, over-speed derailments, incursions into established work zones, and movements of trains through switches left in the wrong position."[15] These systems use computers and software to intervene and prevent an accident in cases where human error might cause one. In other words, PTC automates some portion of operations and improves safety by reducing reliance on humans. The proposed minimum crew size rule, on the other hand, runs precisely counter to the logic of PTC and efforts in other modes to improve safety by increasing automation and decreasing opportunities for human error.

12. Mark Aldrich, "A Mighty Rough Road: The Deterioration of Work Safety on American Railroads, 1955–75," *Labor History* 46, no. 3 (2005): 320–21.
13. Peter W. Huber, *The Cure in the Code: How 20th Century Law Is Undermining 21st Century* Medicine (New York: Basic Books, 2013), xv.
14. Tasha Keeney, "Autonomous Vehicles Will Reduce the Chances of Dying in an Auto Accident by over 80%," ARK Invest, August 18, 2015, https://ark-invest.com/articles/analyst-research/autonomous-vehicle-safety, n6.
15. "Positive Train Control (PTC)," Federal Railroad Administration, last updated December 12, 2022, https://railroads.dot.gov/research-development/program-areas/train-control/ptc/positive-train-control-ptc.

Furthermore, in addition to ignoring countervailing risks introduced by this proposed rule, the FRA has not presented any substantive evidence that requiring additional crew members would produce safety benefits.

CONCLUDING REMARKS

If the likely safety benefits were empirically demonstrable and the ensuing consequences on investment were relatively muted, the net effect of a new rule could be an increase in safety. However, in the case of this proposed rule, the FRA has given little consideration to some important countervailing risks that the proposed rule could generate: potential effects on investment and the degree to which those effects on investment would affect safety. This shortcoming not only indicates that the FRA is either unaware of or unconcerned with the actual net effect of this rule on safety, but it also demonstrates a substantial deviation from the directions of OMB regarding the assessment of benefits and costs.[16] Because of the unintended but foreseeable consequences posed by the rule and because of the FRA's failure to show that one-person crews create a safety hazard, I recommend that the FRA withdraw its proposed rule.

16. Office of Management and Budget, *Circular A-4*, September 17, 2003; Office of Management and Budget, *Regulatory Impact Analysis*.