The Federal Railroad Administration's Train Horn Rule

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Summary

Numerous communities across the United States imposed bans on the sounding of train whistles at highway-rail grade crossings beginning in the late 1970s to address complaints and concerns of nearby residents about noise from train whistles. In 1990, a Federal Railroad Administration (FRA) study of train whistle bans in Florida showed a positive correlation between nighttime whistle bans and the number of accidents at highway-rail crossings. In 1994, partially in response to the FRA study, Congress enacted the Swift Rail Development Act (P.L. 103-440), which directed FRA to issue a regulation on the sounding of train horns at grade crossings.

Reducing the number of accidents and injuries at rail grade crossings has been a federal concern for decades. Accidents at highway-rail grade crossings are one of the leading causes of railroad-related deaths and injuries, accounting for nearly 40% of railroad-related deaths.

On June 24, 2005, FRA's Rule on the Use of Locomotive Horns at Highway-Rail Grade Crossings took effect. The rule requires that locomotive horns be sounded at all public highway-rail grade crossings, except where there is no significant risk to persons, where supplementary safety measures fully compensate for the absence of the warning provided by the horn, or where sounding the horn as a warning is not practical. FRA exempted the Chicago region from the rule, pending a re-analysis of grade-crossing accident data for that area. That exemption remains in effect.

The number of deaths from grade-crossing collisions has declined by around 30% since the train horn rule took effect. However, grade-crossing fatalities were already declining prior to adoption of the rule, and there has also been a significant decline in most other types of highway deaths since 2005. The impact of the rule on highway fatalities is thus unclear. In 2012, there were 271 grade-crossing fatalities.

The rule preempts all state and local laws dealing with bans on the sounding of locomotive horns at crossings ("whistle bans"), affecting roughly 2,000 bans in 260 localities. Communities may create "quiet zones" in which the sounding of locomotive horns is banned (except in an emergency); in some cases, these new quiet zones may not require any safety improvements by the community, but in other cases communities will have to provide safety improvements in order to establish a quiet zone. As of April 2013, FRA had received 549 notifications from communities that had established, or intended to establish, a quiet zone. Grade-crossing improvements to reduce the risk of accidents or to implement quiet zones are eligible expenses under several federal highway programs. Selection of projects for such funding is generally made by state highway administrations, subject to federal approval.

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Introduction

On June 24, 2005, 11 years after Congress directed the Federal Railroad Administration (FRA) to issue a regulation on the sounding of train horns at grade crossings, FRA's Rule on the Use of Locomotive Horns at Highway-Rail Grade Crossings[1] took effect.[2] The train horn rule requires that locomotive horns be sounded at all public highway-rail grade crossings,[3] except where there is no significant risk to persons, where supplementary safety measures fully compensate for the absence of the warning provided by the horn, or where sounding the horn as a warning is not practical. The rule implemented a congressional mandate in Title III, Section 302, of P.L. 103-440 (codified as 40 U.S.C. 20153). FRA exempted the Chicago region from the rule, pending a re-analysis of grade-crossing accident data for that area.[4] The Chicago area includes 45% of the nationwide population FRA estimated to be potentially affected should pre-existing bans on sounding train horns at road crossings ("whistle bans") be eliminated as a result of this regulation.

The FRA train horn rule preempted roughly 2,000 existing state and local whistle bans.[5] The rule allows communities to establish "quiet zones" where the sounding of locomotive horns can be banned, provided that the risk of grade-crossing collisions is below a certain level or that the community provides safety measures that compensate for the absence of the warning provided by the train horn. In some cases communities may establish quiet zones without making any safety improvements; in other cases, communities will be required to make safety improvements to grade crossings in order to obtain FRA approval to establish a quiet zone.

Background

The United States has approximately 250,000 highway-rail at-grade crossings.[6] Collisions at these intersections are typically responsible for nearly 40% of all railroad-related deaths. The vast majority of grade-crossing collisions are caused by motorists, and the vast majority of injuries and deaths resulting from these collisions are experienced by motorists.

Reducing the number of injuries and deaths resulting from grade-crossing collisions has been a federal concern for decades. Congress has provided more than $4.1 billion since 1974 specifically for grants to states to reduce the risks of grade crossings,[7] and reducing risks at public grade

[1] 49 C.F.R. 222. The rule also amends 49 C.F.R. 229.

[2] Congress directed that there should be a one-year gap between publication of the final rule and its effective date. FRA published the interim final rule on December 18, 2003 (68 *Federal Register* 70586), and published a revised final rule on April 22, 2005 (70 *Federal Register* 21844). Amendments and clarifications to the final rule were published on August 17, 2006 (71 *Federal Register* 47614). FRA considered that publication of the interim final rule on December 18, 2003, started the clock on the one-year delay in the final rule taking effect, so that the rule could take effect 60 days after its publication on April 22, 2005.

[3] Intersections where a public highway and a railway cross at the same level.

[4] 49 C.F.R. 222.3(c). Chicago-area officials disputed FRA's statistical approach to establish the level of risk at grade crossings.

[5] 70 *Federal Register* 21882.

[6] 68 *Federal Register* 70587.

[7] 68 *Federal Register* 70605. This funding came from the Federal Highway Administration "Section 130" program. Although highway-rail grade-crossing safety improvements are an eligible expense under several federal highway programs, most of the federal money spent for that purpose has come from the Section 130 program that is dedicated to (continued...)

crossings is an eligible expense under several federal highway funding programs.[8] This funding has resulted in the installation of around 30,000 active warning devices at grade crossings, and the closing of many other crossings, since 1974.[9]

Both the number and rate of incidents and deaths at grade crossings have declined significantly over time. Between 1994 and 2003, the decade prior to publication of the FRA interim final rule, the number of annual highway-rail grade-crossing incidents fell from 4,892 to 2,909 (-41%), and the annual number of deaths in these incidents fell from 626 to 325 (-48%).[10] These decreases occurred in spite of growth in both train and auto traffic. According to the Inspector General of the Department of Transportation, the primary sources of the reduction in grade-crossing collisions in the decade prior to the new rule were the permanent closing of about 41,000 grade crossings and the installation of active warning signals (flashing lights and automatic gates) at about 4,000 grade crossings.[11]

The number of deaths from grade-crossing collisions has declined by around 30% since the train horn rule took effect, from 358 in 2005 to around 250 annually since 2009 (see **Figure 1**).[12] There has also been a significant decline in most other types of highway deaths since 2005. The number of vehicle miles traveled each year has fallen due to high gasoline prices and a sluggish economy. It is not certain that the recent decline in grade-crossing deaths will persist if driving activity resumes its historical growth rate.

(...continued)

that purpose. "In fact, the primary reason that a separate grade crossing safety improvement program was begun in 1973 was that highway safety, and especially crossing safety, received limited priority for available highway dollars." Statement of Edward R. Hamberger, President and Chief Executive Officer, Association of American Railroads, submitted to the U.S. House of Representatives, Committee on Transportation and Infrastructure, Subcommittee on Railroads, Hearing on Grade Crossing Safety, July 21, 2005, pp. 11-12.

[8] Generally, public funds cannot be used for safety improvements at private crossings, which represent around 40% of all grade crossings. In 2012, 32 of the 271 grade-crossing fatalities (12%) were at private crossings. FRA has looked at the issue of improving safety at private crossings; see *Private Highway-Rail Grade Crossing Safety Research and Inquiry Volume I*, DOT/FRA/ORD-10/02, February 2010.

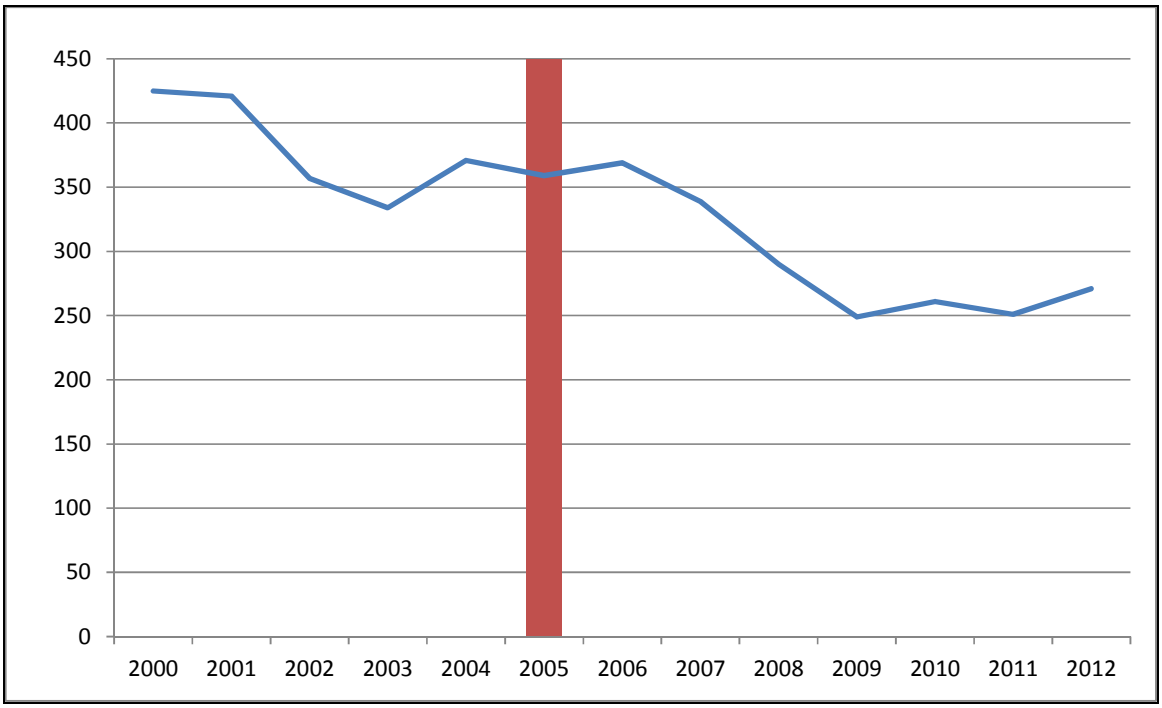
[9] Joseph H. Boardman, Administrator, Federal Railroad Administration, United States Department of Transportation, Testimony before the Subcommittee on Railroads, Committee on Transportation and Infrastructure, United States House of Representatives, July 21, 2005, p. 17.

[10] Office of the Inspector General, United States Department of Transportation, *Audit of the Highway-Rail Grade Crossing Safety Program*, MH-2004-065, June 16, 2004, p. 2.

[11] Kenneth M. Mead, Inspector General, Department of Transportation, Testimony before the Subcommittee on Railroads, Committee on Transportation and Infrastructure, United States House of Representatives, July 21, 2005, CC-2005-060, p. 1.

[12] Figures from a query of Section 2.08 (Highway-Rail Crossing Accident Trends), FRA Office of Safety Analysis http://safetydata.fra.dot.gov/officeofsafety/.

Figure 1. Highway-Rail Grade-Crossing Deaths, 2000-2012



Source: Data from Federal Railroad Administration, Office of Safety Analysis, Section 5.11 (Hwy/Rail Incidents Summary Tables, various years).

Note: The vertical bar marks implementation of the train horn rule.

The train horn rule was prompted by industry consolidation since the 1980s, which led to a reduction in railroad track mileage and heavier use of the remaining network.[13] The increasing number of train movements on lines that remained in use, combined with growing sensitivity on the part of communities toward noise levels in the environment, resulted in a number of communities banning the sounding of train horns at intersections. In 1984 the state of Florida authorized local communities to ban the sounding of horns by intrastate railroads[14] at night at intersections equipped with flashing lights and bells, crossing gates, and signs warning motorists that trains' horns would not be sounded at night. By 1989, Florida communities had banned the nighttime use of train horns at 511 of 600 eligible intersections.[15]

A 1990 FRA study found that there were almost three times as many collisions after the bans were established, while the daytime collision rates were virtually unchanged. FRA concluded that banning the sounding of train horns at grade crossings created a safety risk. The agency issued an emergency order in 1991 ending train horn bans in Florida. In the two years after that order, night-time collision rates dropped to near pre-ban levels.[16]

[13] Total railroad mileage fell from 175,909 miles to 139,118 miles just between 1990 and 2009. See Federal Highway Administration, *Freight Facts and Figures 2012*, p. 19.

[14] The ban affected Florida East Coast Railway, an intrastate rail carrier, but not CSX, a national rail carrier.

[15] 68 *Federal Register* 70588.

[16] Ibid.

The Florida study led FRA to do a similar nationwide study. That study, published in 1995, identified 2,122 public grade crossings where train horn bans had been in place at some time between 1988 and 1994 (not counting the 511 crossings in the Florida study). It concluded that crossings with train horn bans "averaged 84% more collisions than similar crossings with no bans."[17]

In response to the evidence of increased risk of injuries and death from bans on the use of train horns at intersections, Congress increased the availability of federal funding to install automatic warning gates at crossings. In FY2000, for example, the Federal Highway Administration (FHWA) made $155 million available specifically for grade-crossing safety, and an additional $368 million of federal highway safety funding was available for states to use on grade-crossing improvements, at their discretion.[18] In addition, in 1994 Congress mandated that FRA regulate the use of train horns at intersections, requiring their use except in certain situations at FRA's discretion.[19] FRA's 2005 train horn rule implemented that congressional mandate.

FRA's Train Horn Rule

FRA describes the rule as "a safety rule that implements as well as minimizes the potential negative impacts of a Congressional mandate to blow train whistles and horns at all public crossings."[20] It requires that locomotive horns be sounded at public highway-rail grade crossings, while providing exceptions to this requirement. The regulation preempts state and local train whistle bans.

The rule did not establish a new safety standard. FRA noted that prior to publication of the rule, train horns were already being sounded at more than 98% of public grade crossings; thus, the rule formalized an already prevailing industry standard. The majority of the text of the rule deals with exceptions to the requirement that train horns be sounded at all public grade crossings, and particularly with procedures for establishing quiet zones. The terms of the exceptions are intended to balance the risk of removing one safety measure (the sounding of the train horn) by adding other safety measures. However, under some circumstances communities can ban the sounding of train horns at grade crossings without additional safety improvements, where adequate safety features are already in place or where the risk of accidents is below one of the thresholds established in the regulation.

Requirements for Establishing Quiet Zones

In permitting exceptions to the law requiring the sounding of train horns at crossings, FRA sought "to ensure that quiet zones, while providing for quiet at grade crossings, also continue to provide the level of safety for motorists and rail employees and passengers that existed before the quiet zones were first established, or in the alternative, the level of safety provided by the average gated public crossing where locomotive horns are routinely sounded."[21] Thus, the rule seeks to

[17] 68 *Federal Register* 70589. The study was updated in 2000, with similar conclusions.

[18] 68 *Federal Register* 70606.

[19] P.L. 103-440, Section 302.

[20] 68 *Federal Register* 70658.

[21] 70 *Federal Register* 21871.

compensate for the risk that silencing train horns at grade crossings will lead to additional train-vehicle collisions by generally requiring additional safety measures.

The minimum requirement for a quiet zone is that every public highway-rail grade crossing in the proposed quiet zone corridor must have flashing lights and gates that control traffic over the crossing. There are three alternatives available to a community wanting to establish a quiet zone:

- The community can institute supplementary safety measures at each public crossing in the quiet zone. These measures, specified in the rule, physically reduce the risk of motorists being involved in a collision with a train at a grade crossing. They may include closing the crossing to highway traffic permanently or during the hours when the whistle ban is in effect; making it more difficult for motorists to drive around a lowered gate by blocking approach lane(s) to the crossing; installing a four-quadrant gate system such that gates block both approach and departure lanes from the crossing; or installing a median that prevents a motorist from swerving out of an approach lane that is blocked by a lowered gate.
- If the accident risk for the quiet zone is less than or equal to the national average risk of accidents at grade crossings equipped with flashing lights and automatic gates where train horns are sounded, known as the "Nationwide Significant Risk Threshold," the community can establish a quiet zone without implementing additional safety measures. Otherwise, the community must use alternative measures to reduce the level of risk to the national average, including a systematic program of monitoring and enforcing traffic laws at crossings; a public education and awareness campaign about the risks of grade-crossing accidents; photo enforcement; or any of the supplementary safety measures specified above.
- The community can implement safety measures that reduce the risk of grade-crossing collisions in the quiet zone, as measured by an FRA index, to no more than the level of risk prior to creation of the quiet zone.

Quiet zones that are qualified by the second criterion, comparison to the national average risk of grade-crossing accidents, must be reviewed each year. The average itself is recalculated each year, so a quiet zone that qualified by having a risk below the nationwide average may fall out of compliance if the nationwide average declines. In such a case, a community would be required to implement additional safety measures or to eliminate the quiet zone.[22]

Communities may get a proposed quiet zone approved in two ways. The quiet zone may qualify for automatic FRA approval, without detailed review, if it meets the first or third condition listed above. If the community qualifies a quiet zone under the second condition, FRA must conduct a full review of its risk-reduction measures before granting approval.

[22] The first update to the Nationwide Significant Risk Threshold, which was not completed until almost two years after the Final Rule, resulted in an increase in the Threshold. Federal Railroad Administration, Department of Transportation, "Notice of Adjustment of the Nationwide Significant Risk Threshold," 72 *Federal Register* 14850 (March 29, 2007). The second annual recalculation lowered the threshold back to roughly the level prior to the 2007 recalculation; see 73 *Federal Register* 30661 (May 28, 2008).

Impacts of the Rule

FRA estimated that 66% of the approximately 2,000 whistle ban crossings in existence at the time the rule was finalized could qualify for conversion to quiet zones without any improvements, while the remaining 34% would require supplementary or alternative safety measures to maintain their existing ban.[23] The Chicago area, which is currently exempt from the rule, represents roughly 385 of the approximately 2,000 existing whistle bans.[24] As of April 2013, FRA reports having received 549 applications for quiet zones.[25]

FRA estimated that prior to the issuance of the regulation 9.4 million people were affected by train horn noise, and the agency estimated that the rule would eliminate the existing noise impact on 3.4 million of those people by reducing the loudness of train horns, reducing the amount of time they are sounded, and by leading to the establishment of quiet zones.[26] On the other hand, elimination of pre-rule whistle bans would expose people in those areas to increased noise levels; assuming a worst-case situation in which no quiet zones were established after the rule took effect (i.e., all existing whistle bans were eliminated), FRA estimated that 445,611 persons would experience increased noise levels due to train horns sounding at all public highway-rail grade crossings. Of that number, 46% of those people were in one state (Illinois), and 34% of the total were in a single county (Cook County, IL).[27]

FRA asserted that the rule would reduce existing train horn noise levels over time through limiting the maximum sound level for train horns to 110 decibels and limiting the duration of sounding horns at grade crossings to no more than 15-20 seconds. Prior to the rule, locomotive horns did not have a maximum noise level; many operated at 111 decibels. Also, prior to the rule, the standard industry practice was for locomotive engineers to begin sounding the train horn one-quarter mile from the intersection. If a train was going less than 45 miles per hour, as trains often do in heavily populated areas with numerous grade crossings, the train horn would have been sounded for longer than 20 seconds.

Continuing Issues

Several of the issues that contributed to the protracted rulemaking process for the train horn rule may continue to be of interest to Congress.

[23] FEIS, Table 4-6: Crossing Improvements to Maintain Pre-Rule Quiet Zones.

[24] 68 *Federal Register* 70613.

[25] Federal Railroad Administration, *Quiet Zone Locations by City and State*, April 12, 2013 (http://www.fra.dot.gov/eLib/details/L04490). This documents lists applications received, not quiet zones approved.

[26] FRA, Train Horn Rule Final Environmental Impact Statement, p. 4-3.

[27] Ibid., p. 4-9 to 4-10. The potential impact on the residents of Cook County has been forestalled by the temporary exemption to the rule granted to the Chicago area. That exemption is still in place.

Preemption of Local Decision-Making

During the adoption process in 2003-2005, many local governments asserted that the train horn rule was an unfair preemption of their authority.[28] Many claimed that the basic responsibility for deciding when a whistle ban is justified should reside with local government. FRA acknowledged that whistle bans established prior to the rule reflected a policy choice made by local communities in weighing the risks of grade-crossing accidents against the quality of life of residents. FRA observed that it was mandated by Congress to require the sounding of train horns at intersections to promote public safety, and that its regulations sought to minimize the potential negative impacts of that mandate.

Federal Funding for Grade-Crossing Safety Improvements

Federal funding is available to reduce the risk of grade-crossing collisions. The primary source of this funding is FHWA grant programs, which normally provide funds to state departments of transportation to be spent according to state priorities, within general federal guidelines. Some programs are intended specifically to reduce hazards at railway-highway grade crossings; in other programs, reducing grade-crossing hazards is one among many eligible uses of funding. See **Table 1** for a list of potential federal funding sources.

Table 1. Sources of Federal Funding for Grade-Crossing Safety Improvements

Program	DOT Administration	Annual Authorization (millions)	Funding Distribution	Notes
Railway-Highway Crossings ("Section 130") Program	FHWA	$220	Formula grants to states	At 23 U.S.C. 130. At least 50% of funding to be used for protective devices at crossings.
Highway Safety Improvement Program (HSIP)	FHWA	$2,390 (FY13) $2,410 (FY14)	Formula grants to states	The $220 million for the Railway-Highway Crossings Program is a takedown from this program. Grade-crossing safety improvements are one of many eligible uses of the balance of HSIP funds.
Surface Transportation Program (STP)	FHWA	$10,005 (FY13) $10,090 (FY14)	Formula grants to states	Grade-crossing safety improvements are one of many eligible uses.

Note: The 2012 surface transportation authorization act, Moving Ahead for Progress in the 21st Century (MAP-21, P.L. 112-141), consolidated a number of highway programs.

[28] National League of Cities, Letter to the Federal Railroad Administration regarding the Interim Final Rule on the Use of Locomotive Horns at Highway-Rail Grade Crossings, April 19, 2004, p. 2. Available from http://www.regulations.gov under Docket #6439.

At the time FRA adopted the train horn rule, the federal government maintained a large number of surface transportation funding programs, many of them narrowly tailored to specific goals established by Congress. However, FRA emphasized that funding the improvements necessary to establish quiet zones would be principally a state and local obligation, because "it is unlikely that most improvements undertaken under this Rule would withstand the priority ranking requirement for safety projects under Federal-aid highway programs." FRA observed that federal grade-crossing risk reduction funding "is subject to strict requirements for ranking the priority of projects on a State-wide basis,"[29] based on anticipated accident reduction benefits, the anticipated cost and effectiveness of warning device options, and the availability of funding.[30] As establishing a quiet zone may produce little or no improvement in the level of safety at grade crossings, since any safety improvements provided are compensating for the increase in risk from banning the sounding of train horns, FRA pointed out that any improvements may be "approximately neutral with respect to safety"[31] and would therefore have difficulty qualifying for federal funding.

In 2012, Congress reauthorized federal surface transportation programs. In the legislation, Congress consolidated many separate highway grant programs into a much smaller number of programs with broad scope. This consolidation reduced the number of programs for which grade-crossing safety is an eligible expense, but did not reduce the overall amount of funding for which grade-crossing safety is an eligible expense. Also, Congress left intact the Railway-Highway Crossings Program, which provides money specifically for grade-crossing safety. As noted in **Table 1**, states can also use their federal Highway Safety Improvement Program and Surface Transportation Program funds to improve the safety of grade crossings. But states typically have many highway projects competing for these funds. Priorities for funds received under these programs are set by metropolitan planning organizations and state departments of transportation, and projects must be in a state's statewide transportation improvement program or a metropolitan planning organization's transportation improvement program to be eligible for federal funding.

These plans typically include far more projects than can be funded with current resources. Thus, to receive funding, a grade-crossing improvement project would have to be high on the list of priorities in a state's transportation improvement plan or in a metropolitan planning organization's transportation improvement plan; otherwise, the project, although listed in the plan, might have such a low priority that it might not receive funding for years, if ever. In the past, Members of Congress used earmarks to direct funds to specific transportation projects; currently, earmarking is constrained, but even if a project were to be earmarked, it would have to be in a state or metropolitan transportation improvement plan to be eligible for federal funding.

During the FRA rulemaking process, commenters raised objections to federal funding for establishing quiet zones, because establishing a quiet zone is a quality-of-life improvement, not a safety improvement.[32] Some commenters criticized the rule on the grounds that it would reduce safety overall by leading states to divert funding away from higher-risk crossings to pay for improvements required to maintain existing whistle bans at lower-risk crossings.[33] They asserted

[29] 68 *Federal Register* 70605.

[30] United States Department of Transportation, *Rail-Highway Crossing Resource Allocation Procedure User's Guide*, 3rd edition, August 1987, p. 1.

[31] 68 *Federal Register* 70605.

[32] 68 *Federal Register* 70605.

[33] Letter from John Kravcik, Vice Chair, Chicago Area Transportation Study Council of Mayors Executive Committee, to Kenneth M. Mead, Inspector General, United States Department of Transportation, October 5, 2004, p. 3. Available from http://www.regulations.gov under Docket #6439.

that this process would tend to divert resources from improving those crossings in rural areas where active safety technologies (such as warning lights and gates) have not yet been installed, to crossings in urban areas that already have warning lights and gates but which may have to implement additional safety measures to preserve whistle bans. As noted above, FRA asserted that the requirements of the federal grade-crossing safety grant program should limit such diversion.

The Role of Motorists in Grade-Crossing Collisions

Most public highway-rail grade-crossing collisions are due to risky behavior or poor judgment on the part of motorists. In many cases, motorists fail to stop at grade crossings when the warning signal is activated, and in some cases they even drive around activated warning gates.[34] In light of this, FRA received many comments on the rule arguing that residents of communities should not be subject to the noise of train horns in an effort to protect irresponsible people from the consequences of their actions. In addition to noting that the sounding of train horns was mandated by Congress, FRA asserted that "it is appropriate to protect even the unwise from the consequences of their misdeeds where those consequences are especially severe—and where society as a whole may bear the burden of those consequences."[35] The agency also noted that grade-crossing accidents caused by irresponsible drivers often harm innocent victims, such as passengers in those drivers' cars, railroad employees and passengers, other drivers, and people living nearby.

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[34] The Department of Transportation Inspector General analyzed grade-crossing incident reports for the period 1994-2003, and found that 94% of the collisions were due to motorist behavior. Office of the Inspector General, United States Department of Transportation, *Audit of the Highway-Rail Grade Crossing Safety Program*, MH 2004 065, June 16, 2004.

[35] 68 *Federal Register* 70594.