

Citation

Haviland, A., Burns, R., Gray, W., Ruder, T., & Mendeloff, J. (2010). What kinds of injuries do OSHA inspections prevent? *Journal of Safety Research*, 41(4), 339–345.

Highlights

- The study's objective was to determine whether OSHA inspections that resulted in penalties or citations prevented specific types of workplace injuries.
- The study used a regression model to compare the changes in the workplace injuries in single-facility manufacturing firms that had received an inspection that resulted in a penalty or citation to changes in firms that had not received a penalty or citation. The group of firms that had not received a penalty or citation combined two types of firms: firms that had not been inspected and firms that received inspections that did not result in a penalty or citation.
- The study found that inspections that imposed penalties were associated with statistically significant reductions in the rates of all types of injuries examined. Among the specific citations studied, only citations for violating the general standard for personal protective equipment were associated with reduced injury rates.
- The quality of the causal evidence presented in this study is low. This means we are not confident that OSHA inspections that resulted in penalties or citations caused the reductions in workplace injuries.

OSHA Enforcement Activities and Outcomes

The study examined the effect of having an OSHA inspection that resulted in a penalty at any time during the preceding two years on the rates of different types of workplace injuries. It also examined the effect of having an OSHA inspection that resulted in a citation for a violation of specific OSHA standards (regardless of whether the violation was severe enough to result in a penalty) on workplace injury rates. The violations examined included those related to machine guarding, personal protective equipment, electrical wiring, forklift trucks, and fire extinguishers. Injuries were classified according to their relationship to OSHA standards: struck by, caught in, high fall, eye abrasion, and toxic exposure were classified as "more related to standards," and exertion, struck against, and fall same level were classified as "less related to standards."

Features of the Study

The study used a regression model to compare the changes in the workplace injuries in single-facility manufacturing firms that had received an inspection that resulted in a penalty or citation to changes in firms that had not received a penalty or citation. The group of firms that had not received a penalty or citation combined two types of firms: firms that had not been inspected and firms that received

inspections that did not result in a penalty or citation. For the analysis of specific citations, the study used a similar model to compare the changes in workplace injuries in manufacturing firms that had received an inspection that resulted in a citation for violations of OSHA standards to those firms that had not been inspected and firms that had received an inspection that did not result in a citation. The models included controls for changes in employment, industry, and year. The models did not distinguish between firms that were not inspected and those that were inspected but did not receive a penalty or citation.

The authors used data from the Pennsylvania Unemployment Insurance System, the Pennsylvania Workers' Compensation System, and the OSHA Integrated Management Information System for 5,720 single-facility manufacturing firms in Pennsylvania between 1997 and 2005.

Findings

- Inspections that imposed penalties were associated with statistically significant reductions in the types of injuries that are more related to OSHA standards (4.1 percent) and those that are less related to OSHA standards (7.2 percent).
- Among the specific citations studied, only citations for violating the general standard for personal protective equipment were associated with reduced injury rates.

Considerations for Interpreting the Findings

In this study, the estimated differences between firms in the changes in injury rates may not be caused by the inspections, penalties, and citations. The differences in injury rates could reflect underlying differences in safety levels or other factors between the firms being compared. For example, about 25 percent of the inspections examined in this study were triggered by a complaint of a workplace hazard. Therefore, the firms that received inspections likely had more underlying workplace hazards, on average, than firms that were not inspected. Similarly, firms that received a penalty or citation likely had more egregious safety violations than those that were inspected and did not receive a penalty or citation. In the absence of inspections, firms with more hazards and safety violations may have experienced different changes in injury rates as conditions deteriorated or because management would have made improvements to address unsafe working conditions.

Causal Evidence Rating

The quality of the causal evidence presented in this study is low. This means we cannot be confident that the reductions in injury rates were caused by the OSHA inspection, penalty, or citation. To provide more convincing causal evidence of the effect of inspections that meets CLEAR criteria, the study could have examined only firms that received inspections at random. To provide more convincing causal evidence on the effect of penalties, the study would have to examine only firms that received penalties at random or use some underlying random variation in the receipt of penalties (which may not exist). This would give us confidence that the differences in outcomes between the firms that were inspected (and/or received penalties) and those that were not was attributable to the inspection (and/or penalty) and not underlying safety or other factors at the firm.