

Research Results



Assessing the Benefits of Alternative Compliance

The Problem

While the 2009 large truck fatal crash rate was the lowest in U.S. DOT-recorded history, the raw data for total truck-involved fatalities has not experienced the same dramatic declines. At the same time, stakeholders in the industry continue to question whether current regulatory requirements, safety metrics and evaluation tools completely and accurately depict a carrier's safety performance. In response, government research and private sector investments into alternative safety tools have increased over the last several years, predicated on the notion that non-traditional "Alternative Compliance" (AC) tools can help to reduce truck-involved crashes, injuries and fatalities.



Research Goal

This ATRI-initiated research commenced with a comprehensive review of trucking safety data, which confirmed that opportunities exist to improve safety through modifications to traditional compliance. A primary objective of the study was to provide a

blueprint for a pilot program through research corroboration of potential AC activities.

Other research objectives included:

- analyzing public data to validate the application of AC in the trucking industry;
- documenting safety compliance programs, regulations, policies and procedures across the trucking industry that are presently utilized to effect safety outcomes;
- examining government and industry research to identify various AC safety tool efficacies, strategies and devices used to improve truck safety; and
- evaluating and mapping AC tools to a larger AC certification concept.

Methodology

The primary research methodology utilized in this study centered on the identification and mapping of comparative safety performance data associated with traditional and non-traditional safety tools, programs and strategies. The ATRI research team used research and data collected through an extensive synthesis of the literature, as well as from discussions with industry and safety experts, to develop an exploratory framework that evaluates the merits of various AC strategies that would likely enhance safety within the trucking industry.

Findings

Under the current safety compliance system (i.e. compliance reviews [CR], safety audits and roadside inspections), the downward trend line for total fatalities is not extraordinary. However, there are a

variety of alternative safety-related strategies being used by carriers that appear promising for reducing crashes and fatalities more dramatically. ATRI researchers developed a metaphorical “tool box” of AC safety-enhancing options.

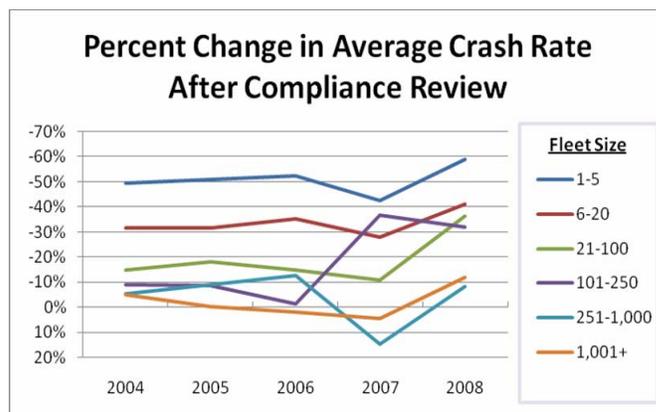
Tool box components represented an initial group of AC strategies that have adequate supporting research to document truck safety impacts, including return-on-investment (ROI). These include the Employer Notification System (ENS), electronic onboard recorders (EOBRs), fatigue management programs (FMP), commercial driver drug and alcohol testing using hair, simulator-based training, speed limiters/governors, forward collision warning systems (FCWS), lane departure warning systems (LDWS), roll stability control systems (RSCS) and tire pressure monitoring systems (TPMS). Although not an exhaustive list, these are the types of tools that could populate an AC program.

ATRI researchers then provided evidence that the previously listed AC tools could be meaningfully integrated into, or supplant, existing and historical systems. A practical guide was developed for incorporating an AC program into Compliance, Safety, Accountability (CSA) scores, Motor Carrier Safety Status Measurement System (SafeStat) ratings and Inspection Selection System (ISS) values. Furthermore, benefits and limitations were discussed in detail, with an emphasis on incentive-based valuations for carriers to proactively address safety by investing in AC programs and tools – thus shifting responsibility from state and federal regulators to the carriers themselves.

Finally, traditional compliance efforts were evaluated in their current form. ATRI utilized carrier CRs as a proxy of traditional compliance, as a CR audits a carrier’s compliance with existing regulations, policies and management tools. Following this logic, large data sets were analyzed to examine carrier safety during pre- and post-CR time periods and these data were stratified with respect to fleet size.

Among the most salient findings, ATRI discovered that, while crash rates are notably lower following CRs for small fleets, this safety benefit diminishes (and even disappears) as fleet size increases. For instance, between years 2004 and 2008, carriers with 1-5 power units experienced a sizeable reduction in crash rates following a CR (mean = 51%). Similarly, carriers with 6-20 and 21-100 power units also saw crash rate reductions following a CR,

though only by 32 and 18 percent, respectively. Larger carriers, however, seemed to benefit least from a CR. In 2004, carriers with fleet sizes of 251-1,000 and 1,000 or more had crash rate reductions of five percent or less, suggesting that the CRs were not highly beneficial for these fleet groups. By 2007, both large and very large carrier groups had experienced *higher* crash rates after receiving a CR intervention.



Based on these and other analyses, it is suggested that larger fleets may benefit more from AC than their smaller counterparts. However, a pilot study is proposed to further assess differences between crash rates by carrier sizes and the impact that different AC tools would have on safety outcomes. The research design required for such a study is outlined by ATRI in the full report.

Nonetheless, enough evidence exists to warrant further consideration of an AC program and ATRI has outlined the critical activities needed to develop and certify such a program. Although the research did not identify all of the resources necessary to effectively implement, manage and enforce the program, preliminary needs were identified, including financial constraints, additional training/staffing, technology devices and enabling legislation. For each gap, one or more potential solutions were proposed.

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