



Does contracting with owner operators lead to worse safety outcomes for US motor carriers? Evidence from the Motor Carrier Management Information System

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ABSTRACT

Using data from the Motor Carrier Management Information System, we model crashes as a function of firm characteristics, with a focus on the employment relationship. We find that very small firms (one driver, one truck) and firms that contract with owner operators have fewer crashes than employee-only companies, once other firm characteristics and exposure are controlled. Additionally, though very small firms are more likely to have severe crashes, we find no relationship between the share of owner operators and crash severity.

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1. Introduction

Over 30 years after economic deregulation of US interstate trucking, industry regulation remains, primarily focused on safety. While it is true that trucking safety statistics have improved over time (see [Appendix A](#)), there are two key trends to note. First, the crash rates have largely leveled out since the mid 1990s. The number of fatalities involving heavy trucks has ranged from 4200 to 4500 since 1990. Adjusting for exposure, fatalities per 100 million vehicle miles traveled (VMT) dropped from nearly 5 at the end of economic regulation (1975–1980) to 2.4 in 1995 and since then has ranged from 1.9 to 2.4. Second, trucks account for a disproportionate share of the crashes on the road. The overall crash rate per 100 million VMT in 2008 was 1.24 versus 1.87 for trucks (FMCSA).¹

The lack of continued improvements in truck crash rates has generated renewed interest in both economic and safety regulation. Some parties have focused on revamping the federal Hours of Service regulations governing truck drivers' time. Others have called for new forms of economic regulation, particularly focused on owner operators – truck drivers who own their trucks and contract to carriers (as opposed to employee truck drivers)² ([Cassidy, 2010](#)).

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¹ We consider 2008 since the figures from 2009 are preliminary and have been the source of some dispute.

² Though some owner operators have operating authority, it is much more common for these drivers to contract with carriers.

The call for 'reregulation' has largely centered around port drayage and has focused on a mandate that drayage drivers be employees of trucking firms, rather than owner operators, who currently dominate this market segment. While the justification for altering the employment structure of port drayage was initially environmentally based, "clean truck" programs have been successfully implemented in Long Beach and Seattle (among other ports) without restructuring the employment relationship of drivers. The Port of Los Angeles, whose Clean Truck Program included an employee driver mandate, has been engaged in litigation for years due to this requirement and continues to allow owner operators to call at the terminals on the Port's property. As the environmental justification has not borne fruit, the argument in favor of employee mandates has switched focus to safety concerns (truck maintenance costs and economic pressures leading to increased risky behavior of drivers). A bill to mandate employee drayage drivers is currently in the California Legislature and may be reintroduced in 2012. A similar bill has been introduced, but not passed, in Congress. The focus on regulating the employment relationship due to safety-based considerations merits an analysis of whether using independent contractors leads to worse safety outcomes.

This study approaches this question in two ways. First, we use the Motor Carrier Management Information System (MCMIS) Census database along with MCMIS Crash data to assess whether owner operators and firms that contract with owner operators are involved in more crashes than employee-only firms. Second, we analyze specific crashes to test whether firms that contract with owner operators are more likely to be involved in severe crashes,

controlling for other firm and crash characteristics. While the legislation previously mentioned focuses on owner operators involved in port operations, we take a more general approach to look at owner operators across the trucking industry.

2. The use of owner operators in motor carriage

The use of owner operators varies considerably across firms, even within relatively homogeneous market segments. For example, in 2009 owner operators comprised 13% of the driver workforce at JB Hunt, 22% at Swift, and 100% at Landstar. All three firms are ranked in the top 10 of the for-hire segment of trucking.³ They all also specialize in truckload (TL) carriage (Transport Topics, 2009).⁴

Motor carriers' use of owner operator labor is a function of both supply and demand forces. On the demand side, this choice has its roots in a firm's "make or buy" decision-making. Firms are more likely to "make" (produce in-house) services when there are possibilities of hold-up from arm's-length transactions. Given the competitive labor market in trucking, there is little reason to believe that individual owner operators would have hold-up power relative to firms. This lack of hold-up should increase the share of owner operators in the trucking labor force (Baker and Hubbard, 2004). Firms often "buy" services that they would have difficulty monitoring in-house. Advances in monitoring technology (such as GPS) have substantially improved the efficacy of monitoring drivers at a relatively low cost, implying that firms, all else equal, should increase the use of employee drivers.

Contracting with owner operators also reduces the firms' up-front capital costs. Firms do pay for the cost of capital – obviously owner operator drivers should be paid enough to cover the cost of their trucks – however, they are paying for the cost of capital per load, not making an initial investment in a fleet. Firms are also somewhat protected from variability in insurance and fuel costs. While owner operators should be paid an amount that covers their costs in an efficient market, information asymmetries and lack of market power among drivers may result in a lag between the onset of increased costs of insurance and fuel and the corresponding rate increases passed along to drivers. There is also a possibility that driver's mis-price their services due to lack of information (Peoples and Peteraf, 1995). Finally, firms may use owner operators to accommodate seasonal changes in shipping demand.

Aside from the cost-smoothing justifications for contracting with owner operators, firms also avoid paying for benefits and do not face collective bargaining problems with owner operators. The self-employed are not allowed to form a union under current anti-trust laws, though the Teamsters are currently attempting to organize port owner operator drivers. There is more general concern in the industry that owner operators are, in fact, employees who own their trucks (Hamelin and Patrick, 1999).

Considering only the demand-side of the market for owner operators overlooks the fact that some drivers have a preference to be owner-operators. Existing research finds that personal characteristics influence a driver's decision to become an owner operator rather than an employee driver (Lafontaine and Masten, 2002; Peoples and Peteraf, 1995).

While the "optimal" level of owner operator utilization is beyond the scope of this paper, there are some stylized facts regarding the use of owner operators that merit emphasis. First, the

make-buy trade-off clearly suggests different levels of owner operator contracting by different carriers. Some of this variation is likely explained by type of operation (length of haul, commodities transported, etc.), but, even within narrowly defined segments of the market, firms have different managerial strategies that lead to different levels of owner operator usage. That the truckload segment of the industry, arguably a perfectly competitive market, consists of firms with appreciably different reliance on owner operators, suggests that firms have different human resources strategies for achieving efficiency in providing transportation services and that these strategies have proven successful over the long run. Second, there is a well-documented driver turnover problem. During the early 2000s turnover in excess of 100% was common. This fell to 30% during the recession of 2008 and rose to 70% in spring 2011 (Transport Topics, 2011). Given the sheer amount of available jobs resulting from this turnover, if drivers did not have a preference to be owner operators, they could find work as employee drivers. This suggests that the presence of an owner operator labor force is the result of rational supply and demand decisions.

3. Safety in trucking

The difference in safety outcomes between owner operators and employee drivers is not theoretically clear. Owner operators place their own capital at risk when engaging in risky behavior, which should dictate that they act more safely than employee drivers. However, owner operators are also under economic pressure to cover both fixed and variable costs, which may tend to increase their risky behavior. While Corsi et al. (1984) find that owner operators have higher crash rates than employee drivers, more recent studies do not directly address the role of the employment relationship in safety outcomes. We briefly review the existing literature, with an eye toward how the findings may apply to our analysis of owner operator usage.

The Large Truck Crash Causation Study released in 2007 by the FMCSA proposes classifying crash causation into three categories: motor vehicle problems (e.g. brake problems or cargo shifts), environmental factors (e.g. road conditions and weather), and driver factors (e.g. speeding, fatigue, work pressure). Most truck safety studies use similar categories, with a particular focus on the role of driver characteristics in crashes (Loeb et al., 1994).

Across these studies, driver factors generally include age, experience, gender, alcohol and drug use, fatigue, Hours Of Service regulations compliance, driver error, health and speed. There is no existing research that health, alcohol and drug use, or driver error systematically differs by employment relationship. Jones and Stein (1987) find that younger drivers are more likely to be involved in crashes and Kaneko and Jovanis (1992) find that experience (highly correlated with age) is negatively related to driver accidents. In a survey primarily comprised of long-haul truck drivers, Belman et al. (2004) find that owner operators are older and more experienced, on average, than employee drivers, which would suggest that owner operators have better safety outcomes.

Exposure clearly matters. Drivers who drive more hours (and more miles) are more likely to be involved in accidents (Jones and Stein, 1987; Kaneko and Jovanis, 1992; Corsi et al., 1988). Belman et al. (2004) find that, at the mean, owner operators drive fewer hours and miles per year than employee drivers, again suggesting owner operators, on average, would be safer due to lower levels of exposure. The same study, however, finds that, at the upper end of the distribution, owner operators drive more than employee drivers; at the 90th percentile owner operators worked 82 h in a 7 day period, versus 80 h for the top 10% of employee drivers. Thus,

³ For-hire firms are firms whose primary business is providing trucking services.

⁴ TL firms transport full container loads from origin to destination, as opposed to less than truckload (LTL) firms who specialize in transporting smaller loads through regional consolidation/deconsolidation centers.

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