

**Submission to the National Assembly Committee on Land, Infrastructure and
Transport, Republic of Korea**

Review of the South Korean Safe Rates System

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This report argues that South Korean Safe Rates should be made permanent and extended to more sectors. This would allow cargo owners (shippers and consignees), trucking companies, and truck owner-operators to predict costs reliably and develop strategic changes necessary to adapt to the Safe Rates system. If they do this, it will increase predictability, stability, safety, profitability, and therefore the sustainability of South Korea's road freight transport industry. With a long-term plan like this, the government can begin to adjust data collection so that it collects the kind of data that will make it possible to protect commercial motor transport and public safety.

The Safe Rates System in South Korea passed into law in 2018. In 2019, the first Safe Rates Committee met to negotiate safe rates. By law, the Committee includes all interested parties, including the trucking industry (trucking companies), what Americans in the supply chain sector call "cargo owners" (customers of trucking transport services who act as shippers and consignees), the relevant union, and public interest members appointed by the government. The first negotiated safe rates came into effect at the beginning of 2020. The definition of safe rates in the law, as translated, is

"The minimum freight rates necessary to ensure traffic safety by preventing overwork, speeding, and overloading by guaranteeing owner-operator truck drivers fair freight rates by adding a fair margin to the safe trucking cost."¹

The Safe Rates System includes just two segments of the South Korean trucking industry: container hauling and bulk cement. The vehicles used in these segments are "special motor vehicles", in the South Korean truck classification system.² According to the Korea Transport

¹ Article 2.13, Trucking Transport Business Act.

² Motor Vehicle Management Act. Korean link:

<https://www.law.go.kr/lsSc.do?section=&menuId=1&subMenuId=15&tabMenuId=81&eventGubun=060101&quer>

Institute (KOTI), there are 3,477,982 freight motor vehicles, of which 367,755 (11%) are registered commercial freight motor vehicles, which are called “commercial” because the public hires their services.³ Separately, 102,928 are special motor vehicles and of these, 63,918 are commercial special motor vehicles. Finally, of these, 27,200 are specialized for containers and cement (43% of commercial special motor vehicles). This means that less than 1% of all freight and special vehicles are covered by the law, and the law covers only roughly 6.3% of all commercial motor vehicles.

The tiny fraction of trucks covered by the Act, and the similarly small fraction of commercial trucks actually covered by the Act, as well as the short duration of this test period, means that attempts to measure the safety effect by using national safety statistics, as KOTI has valiantly attempted to do, will be impossible. Any safety effect on this small group of carriers will be swamped in broad safety data collected by the government. As may be gleaned from my discussion of research conducted in the United States below, Korean government safety data are too broad to allow statistically significant measures of safety. As just one example of this, without reliable data on driving time and non-driving work time, the significance of accident statistics is difficult to determine. Some of these trucking companies are operating very short distances and spending a great deal of time interacting with customers within various South Korean cities, making crashes per kilometer of exposure more likely, while others will be hauling the full length and breadth of the nation and hardly interacting with customers at all. Second, the short time frame—barely two years—does not allow enough time to see changed outcomes to be reflected in the data. As the report submitted to the South Korean National Assembly by Professor David Peetz shows, the only real way to determine whether there has been a significant safety effect over a short time is to compare national outcomes with state or provincial outcomes when a policy has been in effect at the local level for years, as it has been in the Australian state of New South Wales. This is not possible in South Korea because the national Safe Rates law, which is the subject of discussion in the Korean National Assembly, is the only such law in South Korea and it has been in effect for a very short time.

The passage and quick repeal of the Road Safety Remuneration Act, to which Professor Peetz refers, is an important touchstone for understanding how to approach the South Korean version of Safe Rates. The review of the South Korean Safe Rates system commissioned by the Korean Ministry of Land, Infrastructure and Transport and conducted by the Korea Transport Institute (“Safe Rates System: Performance Analysis and Measures for Improvement”) addresses this in Chapter 2 (“Introduction and Operation of the Trucking Safe Rates System”). It is important here to clarify what happened in Australia because these South Korean government institutions have cited this experience.

[y=%EC%9E%90%EB%8F%99%EC%B0%A8%EA%B4%80%EB%A6%AC%EB%B2%95#undefined](https://www.law.go.kr/LSW/eng/engLsSc.do?menuId=2§ion=lawNm&query=Vehicle&x=0&y=0#liBgcolor21); English link: <https://www.law.go.kr/LSW/eng/engLsSc.do?menuId=2§ion=lawNm&query=Vehicle&x=0&y=0#liBgcolor21>

³ In the US, the term “for hire” appears to match the Korean term “commercial”. “For hire” trucks haul freight for customers; they do not haul their own freight. As in the US, a large fraction of all trucks also is “not for hire”, or not offering freight-hauling services to the public. See Burks, Stephen V.; Michael H. Belzer; KWAN Quon; Stephanie G. Pratt and Sandra Shackelford. 2010. Trucking 101: An Industry Primer. Washington: Transportation Research Board. <http://onlinepubs.trb.org/onlinepubs/circulars/ec146.pdf>

The KOTI report bases its conclusions on Australian safe rates by citing from the PricewaterhouseCoopers report that the Australian government used to justify repealing their own safe rates program, passed into law through the Road Safety Remuneration Act (RSRA) 2012, which created the Road Safety Remuneration Tribunal to implement the Act. In fact, the Liberal-National Coalition opposed the concept of safe rates and engaged PricewaterhouseCoopers to provide evidence in opposition to the law before it was passed.

The Department of Education, Employment and Workplace Relations commissioned PwC before the Road Safety Remuneration Act passed to develop a benefit cost analysis that would determine whether the proposed RSRA would be efficient from an economic perspective. PwC estimated at the time that the costs would outweigh the benefits with a ratio similar to the ratio it found in the 2016 analysis.⁴

Back in power, the Liberal-National Coalition commissioned PwC to conduct another study, again to provide justification for repeal of the law. This study very closely replicated the 2011 study; similarly, it was purpose-driven and not scientific research. Specifically, the Liberal-National government asked PwC to compare costs and benefits, as they had done for their 2011 Regulatory Impact Statement.

Since the Road Safety Remuneration Act (RSRA) passed in 2012 only began operations at the beginning of 2013, the period PwC reviews can only be the first year due to normal start-up lags, and especially data lags. With the Department of Employment commissioning the report on 27 June 2015 and PwC completing the report on December 31, 2015, PwC not only began its review only eighteen months after the RSRT began functioning but could use at most one complete year of safety and other performance data. Despite this lack of data, in the report PwC heroically estimates both costs and benefits of the RSRT over a fifteen-year span by extrapolating sketchy data for the first year all the way to 2027. It is easy to see the arbitrariness of this fifteen-year "forecast" in Table 29, which estimates flat incremental "assumed" regulatory costs for fifth through fifteenth year and, in Table 30, inestimable "assumed" regulatory benefits in terms of safety. PwC never shows its work, so readers cannot determine the methodology used for these estimates.

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By engaging the same consulting firm for the current analysis, and by not engaging competent social scientists (of which Australia has many), the Department of Employment risked serious confirmation bias,⁵ which it appears to have achieved. While the fact that the 2016 report confirms the results estimated by PwC in that 2011 report

⁴ **PricewaterhouseCoopers Australia**. 2011. "Road Safety Remuneration System: Regulatory Impact Statement," Canberra: Department of Education, Employment and Workplace Relations, 95. Document available from this author on request.

⁵ **Nickerson, Raymond S.** 1998. "Confirmation Bias: A Ubiquitous Phenomenon in Many Guises." *Review of General Psychology*, 2(2), 175-220

doesn't prove confirmation bias, combining their strong recommendation that the costs exceed the benefits by almost exactly the same numbers with the errors in their analysis suggests that confirmation bias has played an important role. While an evaluation of the 2011 report is beyond the scope of this review, presumably PwC made the same errors resulting in the same invalid result it found in the present study.

Finally, while in several places in the report PwC acknowledges that the government's mandate includes driver health as well as safety, the report contains no evidence that PwC even attempted to analyze the health effects of long hours that low rates compel drivers—especially owner-drivers—to work. Health effects of long work hours are costly, and truckies must drive long hours when their rates of pay are low. Diabetes and cardiac disease, as well as other stress-related endocrine disorders, are common among truck drivers who work long hours, often for low remuneration, under great stress. These occupational illnesses and disorders are extremely expensive to treat and may shorten drivers' work lives, shifting enormous costs to Australian society. These costs likely far exceed the costs of crashes.^{6 7}

The government did not release the report until a week before the April 2016 repeal. The calculation that the cost to government of administering the RSRA exceeded benefits over a fifteen-year time horizon incorporated the sunk costs of program setup, and the sunk costs swamped the marginal costs, making the PwC analysis both faulty and disingenuous. PwC also ignored the macroeconomic benefits that would have been derived by increased truck driver spending power. While this report would have been adequate for business analysis focused on future profits, it was not an appropriate analysis for public policy trying to determine the net benefits to everyone in society.

⁶ For a critique of a faulty regulatory evaluation performed in support of extending U.S. truck drivers' legal hours of work to 84, see **Belzer, Michael H.** 2008. "Truck Driver Hours of Service, Interim Final Rule; 72 Fr 71247, December 17, 2007 [Comments]," Regulations.gov. Washington: U.S. Department of Transportation, 26. https://www.researchgate.net/publication/346652598_Truck_Driver_Hours_of_Service_Interim_Final_Rule_72_FR_71247_December_17_2007. The faulty regulatory evaluation ignored health costs, for example, which regulation requires them to include. While the study referenced here is a critique of a faulty benefit cost analysis for U.S. regulation, methods used and health cost issues are similar to those used in Australia.

⁷ These passages are excerpted from a critique of the PwC report, written the weekend before the repeal. **Belzer, Michael H.** 2016, pages 1-2. "Evaluating the PwC "Review of the Road Safety Remuneration System", Detroit: Wayne State University. This report is attached as an appendix to the current report. https://www.researchgate.net/publication/335192796_Evaluating_the_PwC_Review_of_the_Road_Safety_Remuneration_System. For a copy of the PwC report, see **PricewaterhouseCoopers.** 2016. "Review of the Road Safety Remuneration System," Commonwealth Department of Employment, ix; 125. <https://apo.org.au/sites/default/files/resource-files/2016/01/apo-nid62462-1193761.pdf>.

Why should policy makers think Safe Rates will improve safety and productivity?⁸

In the United States, research on the explicit relationship between compensation and safety began with a contract awarded by the Office of Motor Carriers of the Federal Highway Administration of the U.S. Department of Transportation (the U.S. DOT government body now known as the Federal Motor Carrier Safety Administration [FMCSA]) to consulting company SAIC, and subcontracted to the University of Michigan, in about 1995. This contract funded the first major systematic U.S. research on what is now known as “safe rates”. The goal of this research was to establish this relationship for regulatory purposes.

The output of this research program was “Paying for Safety: An Economic Analysis of the Effect of Compensation on Truck Driver Safety”.⁹ This report was the first in the U.S. to establish the general relationship between commercial motor vehicle driver compensation and safety, with a specific focus on trucking. The report used multiple datasets—some proprietary and some public—to establish the link between pay and safety.

One study included in the report used data from the second largest truckload carrier of general freight in the U.S., J.B. Hunt. The carrier had a very high turnover rate (96%) and a very high crash rate,¹⁰ and decided it needed to pay more money to hire experienced truck drivers and reduce their crashes. One big motivation for the carrier was the need to serve supply chain customers reliably and avoid being subject to a “race to the bottom” based on the lowest cost. In other words, the carrier wanted to be a first-tier service provider for the 21st century and decided to raise compensation to reduce turnover, reduce truck crashes, and increase reliability and productivity. Raising compensation by about 38% reduced turnover by 50% and reduced crashes about 50%, with large crashes declining four-fold in just one year. The study used a Cox proportional hazards event history analysis of approximately 11,540 unscheduled over-the-road dry-van tractor-trailer drivers observed for an average of 9.2 months each, estimating crash probability on a month-to-month basis. The results of this study, at the individual driver level, showed a much lower probability of driver crash for each increment of higher driver pay. Indeed, for every ten percent in pay rate we found a 34 percent reduction in the probability of crash in any given month of employment. Pay raises also were important, as a 10 percent pay raise was associated with a 6 percent lower probability of crash.¹¹

⁸ Full documentation of this research agenda can be found on <https://www.michaelbelzer-saferates.com/> and on my university profile: go.wayne.edu/michael-belzer.

⁹ **Belzer, Michael H.; Daniel A. Rodriguez and Stanley A. Sedo.** 2003. "Paying for Safety: An Economic Analysis of the Effect of Compensation on Truck Driver Safety," Washington, DC: United States Department of Transportation, Federal Motor Carrier Safety Administration, 111; appendices. September. https://ai.fmcsa.dot.gov/CarrierResearchResults/PDFs/PayAndSafety_Report.pdf and https://www.researchgate.net/publication/242737359_Paying_for_Safety_An_Economic_Analysis_of_the_Effect_of_Compensation_on_Truck_Driver_Safety.

¹⁰ Small crashes involved relatively minor damage to the vehicle, which were documented in the trucking company’s driver-level record. We defined “large” crashes as crashes with significant cost exceeding \$3,000 (approximately \$5,500 in 2022 dollars).

¹¹ In addition to the foregoing research report, see the following publications: **Rodriguez, Daniel A.; Marta Rocha; Asad J. Khattak and Michael H. Belzer.** 2003. "Effects of Truck Driver Wages and Working Conditions on Highway

Trucking companies might be concerned that paying higher wages to drivers would just lead to lower profits and lower productivity. A study of J.B. Hunt's profitability showed that the decision to pay drivers more money—paying for safe, experienced drivers—yielded higher profits. Experienced drivers were easier to recruit, and experienced drivers not only had lower recruiting and retention cost, as well as lower casualty cost, but were more productive than less expensive less skilled drivers. In fact, that study found that while Hunt paid experienced drivers a much higher mileage rate, these drivers produced 1,000 more revenue miles each month, compared with lower paid drivers, during every month of the study. These higher revenue miles meant that the net present value to J.B. Hunt of higher paid truck drivers was more than \$10,000 per year greater than the net present value of lower paid drivers.¹²

A second important part of this research project used a proprietary survey of driver compensation, in combination with a privately funded survey of compensation for non-driving labor time, and benchmarked those results against the FMCSA's Motor Carrier Management Information System (MCMIS) data. That study found that at the mean, 10% higher driver compensation (mileage rates, safety bonus, company-paid health and life insurance, anticipated raise in pay rate, and unpaid non-driving labor time per trip) was associated with a 9.1% lower crash rate for each firm in the data set. This nearly 1:1 lower crash rate for motor carriers very strongly suggested that carriers that pay more money (and especially carriers that pay for non-driving labor) will have lower crash rates.¹³

From 2000 to 2003, the U.S. Department of Transportation conducted the Large Truck Crash Causation Data study, which collected data on 967 crashes involving large trucks.¹⁴ While data collection was supposed to include data on compensation, the data collectors failed to collect any meaningful data. However, their study did collect data on work pressure. Work pressure is related to safety because work pressure is part of an employment package and it is an important characteristic of the job, just like wages, hours, and other conditions of work. I created a work pressure index and analyzed those data to see whether work pressure—an

Safety: Case Study." *Transportation Research Record*, Freight Policy, Economics, and Logistics; Truck Transportation (1833), 95-102: <https://doi.org/10.1177/001979390605900202>; and **Rodriguez, Daniel A.; Felipe Targa and Michael H. Belzer.** 2006. "Pay Incentives and Truck Driver Safety: A Case Study." *Industrial and Labor Relations Review*, 59(2), 205-25. <https://doi.org/10.1177/001979390605900202>

¹²**Faulkner, Michael R. and Michael H. Belzer.** 2019. "Returns to Compensation in Trucking: Does Safety Pay?" *The Economic and Labour Relations Review*, 30(2), 262-84.

<https://journals.sagepub.com/doi/10.1177/1035304619833859>

¹³ **Belzer, Michael H.; Daniel A. Rodriguez and Stanley A. Sedo.** 2002. "Paying for Safety: An Economic Analysis of the Effect of Compensation on Truck Driver Safety," Washington, DC: United States Department of Transportation, Federal Motor Carrier Safety Administration, pages 64-71.

¹⁴ **Council, Forrest M.; Michael H. Belzer; John R. Billing; Kenneth L. Campbell; James W. Dally; Anne T. McCartt; Hugh W. McGee; A. James McKnight; Jack Stuster; Steven J. Vaughn, et al.** 2003. "Letter Report to Federal Motor Carrier Safety Administration Administrator Annette M. Sandberg," Washington, DC: Transportation Research Board, 66. See https://www.trb.org/publications/reports/tccs_sept_2003.pdf and see also <https://www.fmcsa.dot.gov/safety/research-and-analysis/large-truck-crash-causation-study-ltccs-analysis-series-using-ltccs>

indicator that economic pressure contributes to crash likelihood—predicted crashes. The database is enormous and complex, with about 1,000 variables on each of these crashes, distributed across 49 separate relations, of which 34 were concatenated for this analysis. The results were striking, as driver aggressiveness, fatigue, experience with the class of vehicle, payment of safety bonus, hours driving, mileage pay for the trip during which a crash happened, and the work pressure index strongly predicted the probability that crash investigators would find that the commercial truck driver's last action (or inaction) was responsible for the fact that the crash occurred. The signs all pointed in the right direction, with better pay and conditions predicting that truck drivers would not be associated with the action but for which the crash would not have occurred.¹⁵

Neither the U.S. Department of Census nor the U.S. Department of Transportation collects accurate data on truck driver working hours. The lack of such data has prompted one private research organization and a U.S. government entity that studies worker occupational safety and health to collect their own data. In 1997, the University of Michigan Trucking Industry Program (UMTIP), the private research organization, collected data on hundreds of long-distance truck drivers across the U.S. Midwest. This survey, like all surveys, depended on respondents' common understanding of the definition of "work", and the lack of accurate definitions made it hard to collect a uniformly understood measure of working time. These data, collected at randomly selected truck stops, confirmed what Census surveys did not: truck drivers work unusually long hours, averaging about 65 hours of work per week.¹⁶

The results of this survey prompted our research team to ask *why* truck drivers work such long hours. Using these data, we used a two-stage least-squares statistical model to estimate the relationship between pay rates and working time—the number of hours truck drivers will work based on estimates of their earnings. We estimated the commercial truck drivers' pay rates in the first stage based on worker characteristics. Our estimate was statistically significant. We then used that estimate of earnings to estimate the number of hours they are likely to work. The results yielded statistically significant results that show the relationship between pay rates and hours worked. While this tradeoff is a concept taught in basic labor economics, it is unusual to see this in the data because people rarely work such long hours and rarely are presented with this tradeoff, due to working time regulations that are effective in industries other than trucking. These regulations are extremely weak for trucking in the U.S., leading to a chronic truck driver recruiting and retention problem that often is misunderstood as a labor shortage.

¹⁵ **Belzer, Michael H.** 2018. "Work-Stress Factors Associated with Truck Crashes: An Exploratory Analysis." *The Economic and Labour Relations Review*, 29(3), 289-307. <https://journals.sagepub.com/doi/pdf/10.1177/1035304618781654>. For the full report to the U.S. Department of Transportation Federal Motor Carrier Safety Administration, see https://www.researchgate.net/publication/358009359_Large_Truck_Crash_Causation_Study_Analysis_DTRS57-04-D30043_TRACX_Report_of_Analysis_Truck_Crashes_and_Work-Related_Factors_Associated_with_Drivers_and_Motor_Carriers.

¹⁶ **Belman, Dale L.; Kristen A. Monaco and Taggart J. Brooks.** 2004. *Sailors of the Concrete Sea: A Portrait of Truck Drivers' Work and Lives*. East Lansing, Mich.: Michigan State University Press.

We found that at the lowest wage rate, truck drivers will increase their hours of work in order to reach their “target earnings” (the total earnings they need to pay their bills). As their pay rates rise, they come closer to their targets. When they reach this target, at around 70 hours per week, they start to reduce their hours and reduce their hours to 60 at around 60 cents per mile in 2018 dollars. This demonstrates clearly that there is a tradeoff between working hours and pay rates, and the higher pay rates rise, the more likely workers will reduce their hours to preserve their health and safety, as well as maintain their personal and family lives. In sum, truck drivers work long hours simply to pay their bills—not to get rich.¹⁷

The U.S. National Institute for Occupational Safety and Health (NIOSH) updated the UMTIP survey, to some extent, conducting an extensive survey of thousands of truck drivers in truck stops across the U.S. They found, very similarly, that on average truck drivers worked about 62 hours per week, with half of all drivers working more than 62 hours and the top 20% of long-distance truck drivers working more than 79 hours per week. They also found an association between these long work hours and unfavorable outcomes for occupational safety and health.^{18 19}

Our research team conducted three studies using the NIOSH data to determine the relationship between compensation and both safety and health.²⁰ In one study, we found that pay for non-driving labor is associated with fewer hours worked. Fewer working hours, as we have seen elsewhere, is associated with lower fatigue and lower incidence of crashes.²¹ In a second study, we found that the truck drivers’ mileage rate and payment for health insurance was associated with fewer moving violations.²² In a third study, we looked at driver health. We found that high

¹⁷ Belzer, Michael H. and Stanley A. Sedo. 2018. "Why Do Long Distance Truck Drivers Work Extremely Long Hours?" *The Economic and Labour Relations Review*, 29(1), 59–79.

¹⁸ Birdsey, Jan; William K. Sieber; CHEN Guang X.; Edward M. Hitchcock; Jennifer E. Lincoln; Akinori Nakata; Cynthia F. Robinson and Marie H. Sweeney. 2015. "National Survey of Us Long-Haul Truck Driver Health and Injury: Health Behaviors." *Journal of Occupational and Environmental Medicine*, 57(2), 210-6.

CHEN Guang X.; W. Karl Sieber; Jennifer E. Lincoln; Jan Birdsey; Edward M. Hitchcock; Akinori Nakata; Cynthia F. Robinson; James W. Collins and Marie H. Sweeney. 2015. "NIOSH National Survey of Long-Haul Truck Drivers: Injury and Safety." *Accident Analysis & Prevention*, (85), 66–72.

Sieber, W. Karl; Cynthia F. Robinson; Jan Birdsey; Guang X. Chen; Edward M. Hitchcock; Jennifer E. Lincoln; Akinori Nakata and Marie H. Sweeney. 2014. "Obesity and Other Risk Factors: The National Survey of U.S. Long-Haul Truck Driver Health and Injury." *American Journal of Industrial Medicine*, 57(6), 615-26.

¹⁹ For additional analysis and resources on the relationship between long hours and work stress on truck driver occupational health and safety, see Saltzman, Gregory M. and Michael H. Belzer. 2007. "Truck Driver Occupational Safety and Health: 2003 Conference Report and Selective Literature Review," Washington, DC: U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health (NIOSH), 117, CD with supporting documents.
<http://www.cdc.gov/niosh/docs/2007-120/>.

²⁰ We thank NIOSH for allowing us to use these data for research.

²¹ Kudo, Takahiko and Michael H. Belzer. 2019. "Safe Rates and Unpaid Labour: Non-Driving Pay and Truck Driver Work Hours." *The Economic and Labour Relations Review*, 30(4), 532–48.

²² Kudo, Takahiko and Michael H. Belzer. 2019. "The Association between Truck Driver Compensation and Safety Performance." *Safety Science*, 120, 447-55.

blood pressure, which is associated with cardiovascular disease and stroke, is associated with longer work hours.²³

Finally, one additional study currently is in working paper form and is under review at a prominent safety journal. This study, presented in preliminary form at the 2020 Transportation Research Board meeting in Washington DC, uses the MCMIS data mentioned above in combination with data from Current Employment Statistics (CES) published by the U.S. Bureau of Labor Statistics. We estimate crash rates of intrastate trucking companies using the CES estimates of pay at the state level as well as the effects of FMCSA's six Behavior Analysis and Safety Improvement Categories (BASICS) on crashes. BASICS include Unsafe Driving, Hours-of-Service Compliance, Vehicle Maintenance, Controlled Substances/Alcohol, Hazardous Materials Compliance, and Driver Fitness. We limit our analysis to intrastate carriers and use the state average wage for "Heavy and Tractor-Trailer Truck" drivers as a proxy for wages. While admittedly this proxy is "noisy" because it is just an average wage for each state's truck drivers, we find strongly significant results. Truck driver hours of service violations, drug and alcohol violations, vehicle maintenance violations, and average pay all are significant predictors of trucking company crash rates, but we find that 1% higher hourly wages correspond to 3.16% fewer crashes. This 3:1 effect of wages on crashes is by far the largest effect of any independent variable in the model; the parameter is 30 times as high as the nearest individual BASIC, which is truck driver hours of service, and ten times as high as all BASICS combined. Although the data are noisy and this state-level average pay rate does not control for true hours of work,²⁴ this suggests wages play a very strong effect.²⁵

Safe Rates: Emerging United States Policy

Consistent with the U.S. Department of Transportation's urging in its 2022 supply chain assessment,²⁶ Congressman Andy Levin (D-MI-09), member of the House Education and Labor Committee and the House Labor Caucus, introduced the *Guaranteeing Overtime for Truckers Act*. This Act would repeal a provision in the 1938 Fair Labor Standards Act, which applies to almost all other production workers, that exempts truck drivers from the 40-hour work week. This provision is often called the "overtime" provision because the FLSA requires that U.S.

²³ **Kudo, Takahiko and Michael H. Belzer.** 2020. "Excessive Work Hours and Hypertension: Evidence from the NIOSH Survey Data." *Safety Science*, 129 (Article 104813).

²⁴ Census does not collect valid working time data on truck drivers, except for intrastate drivers paid by the hour rather than paid piecework, so truck driver pay rates based on Census data must be interpreted with caution.

²⁵ See "Pay Rates and Motor Carrier Safety: Testing Intrastate Trucking Companies Using MCMIS." Transportation Research Board Meeting, Truck and Bus Safety Committee (Committee ACS60). January 15, 2020. Presentation posted on <https://www.michaelbelzer-saferates.com>. The working paper is available upon request from the authors.

²⁶ President Biden's Trucking Action Plan, embedded within a supply chain initiative, aims to solve the truck driver recruitment and retention problem that has plagued the trucking industry for 35 years. See especially item #40 in U.S. Department of Transportation. 2022. "Supply Chain Assessment of the Transportation Industrial Base," Freight and Logistics. Washington: U.S. Department of Transportation, 104. This recommendation urges the U.S. Congress to amend the Fair Labor Standards Act to fully include truck drivers.

<https://www.transportation.gov/supplychains>.

employers pay most workers time-and-one-half (a fifty percent wage premium) for all working time greater than 40 hours per week. This law discourages employers from requiring employees to work excessively long hours, while encouraging employers to hire more workers and create more jobs. Repealing that provision of the law would require trucking companies, for the first time, to record all hours of work under the U.S. Department of Labor's definition of work,²⁷ which would be the first step toward "safe rates" law in the U.S.

Conclusion

The historic Safe Rates law in South Korea should be modified to broaden coverage to the rest of the commercial trucking industry that uses large trucks, and should be extended. The best solution is to make it permanent so that cargo owners (shippers and consignees), trucking companies, and truck owner-operators can reliably predict costs and develop strategic changes necessary to adapt to the Safe Rates system. If they do this, it will increase predictability, stability, safety, profitability, and therefore the sustainability of South Korea's road freight transport industry. With a long-term plan like this, the government can begin to adjust data collection so that it collects the kind of data that will make it possible to test the effectiveness of Safe Rates.

²⁷ See <https://andylevin.house.gov/sites/evo-subsites/andylevin.house.gov/files/evo-media-document/041322%20GOT%20Truckers%20One-Page.pdf>. For the language of the bill, see: https://andylevin.house.gov/sites/evo-subsites/andylevin.house.gov/files/evo-media-document/LEVIMI_068%20Guaranteeing%20Overtime%20for%20Truckers%20Act.pdf.