# ECONOMIC INCENTIVES AND MARKET PRESSURE:
WHY MARKETS REQUIRE "SAFE RATES" REGULATION

Senate Rural and Regional Affairs and Transport References Committee
Senate Standing Committee on Rural and Regional Affairs and Transport
Parliament of Australia

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TRUCK FATALITIES RISING AGAIN
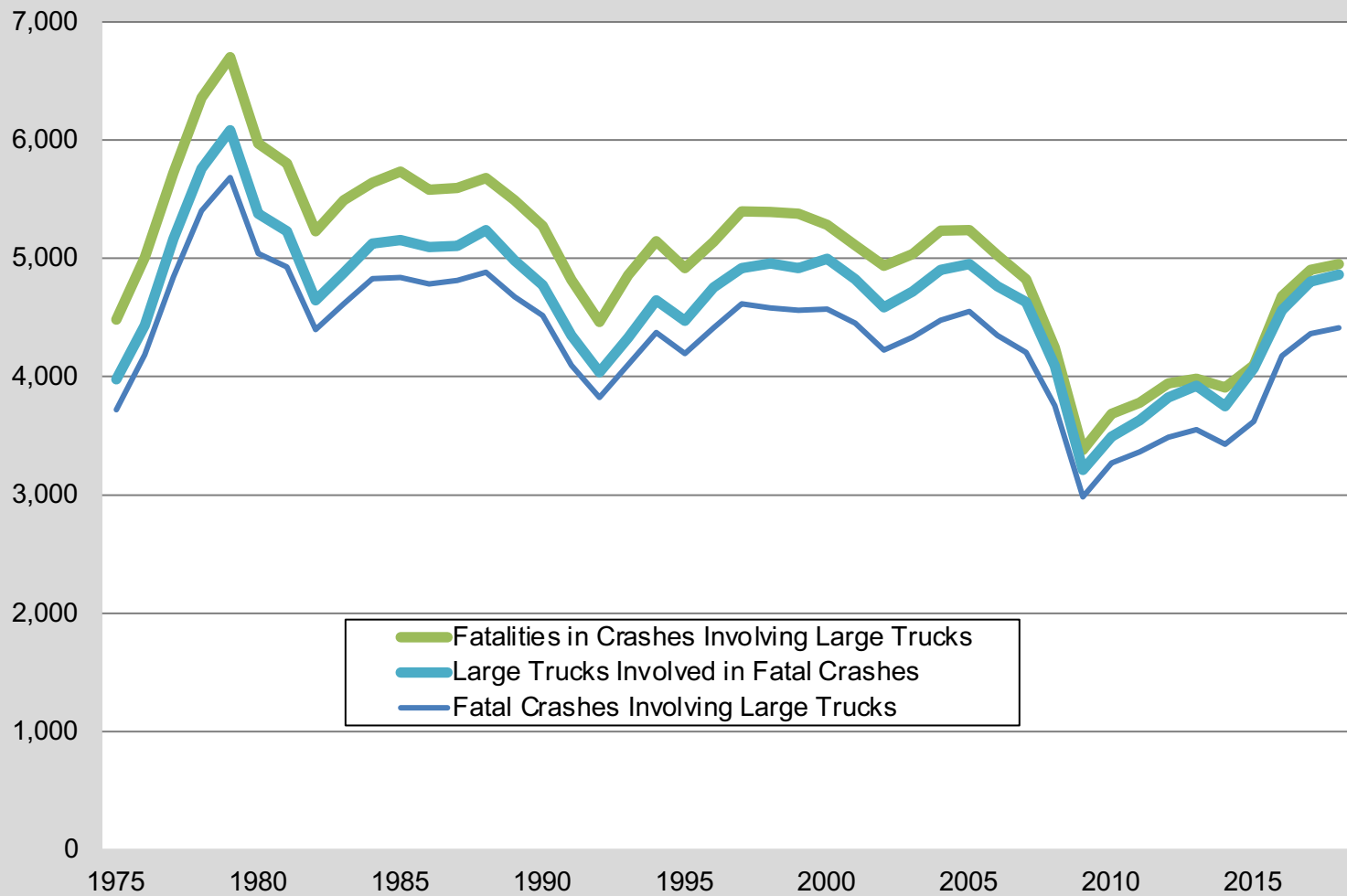
Source: Large Truck and Bus Crash Facts 2018 (September 2020)

BANG FOR THE BUCK?

- Millions of dollars spent to reduce crashes and fatalities

- Yet crashes and fatalities still increase

- What can we do differently?

- **Recognize that large trucks operate in a market and are subject to the market's complex system**

INDUSTRIAL ORGANIZATION AND INSTITUTIONS INFLUENCE SAFETY AND HEALTH

- "The Human Cost of Amazon's Fast, Free Shipping"
  - *NY Times* September 5, 2019
  - https://www.nytimes.com/2019/09/05/us/amazon-delivery-drivers-accidents.html
- "How Amazon hooked America on fast delivery while avoiding responsibility for crashes"
  - *ProPublica's* Big Story September 5, 2019
  - https://features.propublica.org/amazon-delivery-crashes/how-amazon-hooked-america-on-fast-delivery-while-avoiding-responsibility-for-crashes/
- "The Cost of Next-Day Delivery"
  - *BuzzFeed* August 31, 2019
  - https://www.buzzfeednews.com/article/carolineodonovan/amazon-next-day-delivery-deaths
- "Inside Documents Show How Amazon Chose Speed Over Safety in Building Its Delivery Network"
  - ProPublica December 23, 2019
  - https://www.propublica.org/article/inside-documents-show-how-amazon-chose-speed-over-safety-in-building-its-delivery-network

AMAZON PASSES THE COST OF "FAST FREE SHIPPING" TO THE PUBLIC

- Basic principle in economics:
Any cost not captured in price is <u>external to the market</u>
  - Economists call these external costs "externalities"
  - An externality is not an efficient use of resources
- External costs are not paid by buyers or sellers
- In trucking, society subsidizes these external safety and health costs in the form of death, injury, and property damage on the highway

LOW FREIGHT RATES => LOW COMPENSATION
VULNERABLE WORKERS => VULNERABLE PUBLIC

- The cargo owner or client, which is Amazon in this case, controls part time, on-demand work

- Amazon subcontracts its delivery business
  - Subcontracting deflects liability
    - for crashes
    - for death, injury, and property damage
  - Subcontracting drives down rates
  - Work that is subcontracted to individuals (a.k.a. "gig work") takes advantage of unregulated chain of responsibility

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WHAT COSTS ARE EXTERNALIZED?

- Fatigue and fatigue-related illness, injury, and crashes

- Stress-related illness, injury and crashes

- Costs associated with fatigue and stress is transferred to victims, including highway users and workers

- ➔ Economic costs include, in addition to these risks, a damaged market, unpaid taxes, under-insured vehicles and drivers, disregard for the public, driver "shortages", and driver turnover

COMPETITION DRIVES CARRIERS TO LOWEST PRICE

- Transport is a commodity
  - Every unit is indistinguishable from another
  - Commodity production drives competition
- Lowest price drives carriers to lowest cost
- Lowest cost drives freight rates down
- Lowest cost squeezes drivers. Society gets:
  - Unqualified, dangerous drivers
  - Dangerous workplace pressure
  - Dangerous and unhealthy hours of work
- Outsourcing reinforces cost-cutting, amplifying stress

WORK STRESS AND CRASHES

- The stresses associated with work as a CMV driver put drivers at significant OHS baseline risk
  - Irregular schedules
  - Economic pressures
  - Fatigue and exceedingly long work hours
- Stresses associated with "Just In Time" logistics
  - Pressure for rapid and scheduled delivery
 - Pressure to cut cost

US TRUCKERS WORK LONG HOURS

- 1997 US truck stop survey conducted by University of Michigan Trucking Industry Program (UMTIP) showed <u>median</u> non-union driver worked 65 hours/week
  - 55% of drivers <u>not paid</u> for non-driving labor like loading/unloading
  - 70% of drivers <u>not paid</u> for waiting or other on-the-job time
- US National Institute for Occupational Safety and Health (NIOSH) 2010 survey shows <u>median</u> *employee* driver (almost all non-union) works 60 hrs/week
  - *Employee* drivers <u>average</u> 63 hours of work per week
  - On average, 22% of all driver time is unpaid (10.5 hours of work/week)
  - On average, 27% of *employee* drivers' work week is unpaid labor
- NIOSH 2010 survey also shows 20% exceed 75 hours/week
- Surveys show long-haul drivers regularly work an impossible and illegal number of hours.

DRIVERS IN BLACK WORK EXCESSIVE HOURS

Number of drivers
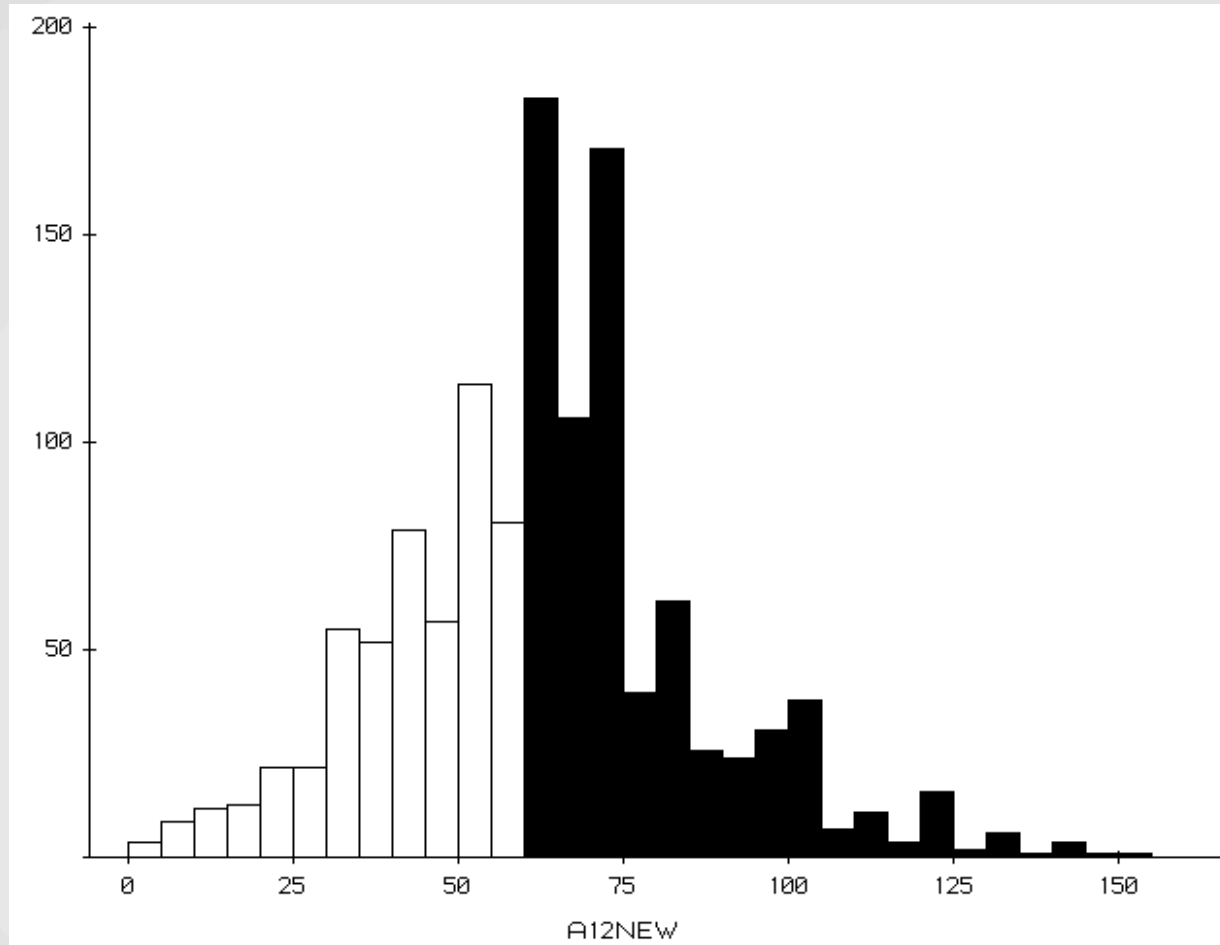
Hours worked/week

- Median: 60 hours
- Average: 61.5 hours
- n = 1,254 long haul truck drivers

WHY SO MANY HOURS?

- If the regulations restrict commercial motor vehicle (CMV) drivers to 60 hours of work per week, why do half of all long-haul drivers exceed this limit?

- How do carriers and drivers get around the rules?

- How do US Department of Transportation Federal Motor Carrier Safety Administration (FMCSA) regulations continue to effectively permit excessive hours?

- In the US, the answer rests in conflicting definitions of "work".

DOL-FLSA DEFINITION OF WORK

- The US Department of Labor (DOL) defines work according to the Fair Labor Standards Act (FLSA).

- Under FLSA, **all time during which employees work** for an employer, **including waiting time**, is payable:

  – Unless employer frees the worker from work for specific time and <u>employee knows in advance</u> work time's start and end; **and**

  – Unless worker has <u>practical freedom</u> to leave the place of work to go about his/her personal activity; **and**

  – Unless worker is not engaged in the <u>work for which he/she was hired</u>, including being available for a call.

➔ All time is payable if worker is located away from employer's place of work

➔ All time is payable if wait time is part of employee's regular work.

➔ In any other industry, that includes break and sleep time

DOT-FMCSA DEFINITION OF WORK

- **Waiting time** is **non-work** time if:
  - "The driver is relieved of all duty and responsibility for the care and custody of the vehicle, its accessories, and any cargo or passengers it may be carrying."
  - "During the stop, and for the duration of the stop, the driver [is] at liberty to pursue activities of his/her own choosing."
    - ➔ Companies may interrupt driver's free time and sleep time; drivers must be available.
    - ➔ Off duty time during a shift may have indeterminate start and end time; the driver never knows.
    - ➔ Reality: **"Off duty" drivers lack "practical freedom"** and are tied to the job
- FMCSA regulations allow carriers to **order drivers to log non-driving DOL-FLSA-defined work time as off duty**.
  - This explains why drivers log unpaid work time off duty.
  - Since FMCSA has no position on driver pay, grounds for definitions are quite different.
  - Results are inconsistent with policy goal to limit hours of work.

THESE DEFINITIONS ARE INCONSISTENT. TIME IS MONEY

- Economic theory predicts that workers will trade labor for leisure as their earnings increase.

- We rarely see this in labor market data but long hours in trucking makes it observable.

"WHY DO TRUCK DRIVERS WORK SUCH LONG HOURS?"
Belzer and Sedo (2018)

- Our research tests the "Target Earnings Hypothesis".
  - Workers seek target earnings to pay their bills
  - Drivers work to reach their earnings targets
  - Drivers will reduce work time after reaching their targets
- We want to predict working hours as a function of wage rates and various control variables
- We expect to find that reduced work time
  - reduces crashes
  - reduces injury and illness

DATA

- UMTIP Driver Survey Data 1997-98
  - Truck stop survey included 233 employee drivers paid by the mile (piecework)
  - We excluded owner-drivers, hourly paid drivers, and contractors
- Employee drivers worked an average of 64.5 hours per week with a minimum of 25 and a maximum of 126
- Drivers earned an average of US28.6¢ per mile (US45¢/mi in today's dollars — 5% less than today)
- Drivers averaged 13.7 years of experience
- Average company tenure of 3.5 years

TWO-STAGE LEAST-SQUARES REGRESSION STAGE 1: ESTIMATE PAY RATES

We first estimate the wage rate based on the information we have on the drivers (see Table 1).

$$Rate_i = \beta_1 + \beta_2 X_{i2} + \beta_3 X_{i3} + \ldots \beta_K X_{iK} + \varepsilon_i$$

- $Rate_i$ is the mileage rate for the ith driver
- X's represent characteristics of the driver and job that are relevant to determining the mileage rate
- β's are the parameters to estimate
- ε summarizes the random components and unobserved characteristics of the individual driver and job.

TABLE 1: MILEAGE RATE EQUATION

This model estimates the mileage rates for all drivers. The model is highly significant.

Variable	Estimate	Standard Error	t-value
Constant	0.241***	0.016	14.918
Experience	0.002**	0.001	2.133
Experience^2	-4.1E-05	0.000029	-1.437
Tenure	0.004**	0.0017	2.049
Tenure^2	-0.00011**	0.000054	-1.972
HS Degree	0.000574	0.008	0.076
Union	0.097**	0.057	1.726
White	0.016**	0.008	1.858
Union by White	-0.04	0.058	-0.695
Previous Moving Violation	0.007	0.007	1.051
Medium Firm	0.013**	0.006	2.065
Large Firm	0.026***	0.009	3.164
Private Carriage	-0.020	0.010	-1.900
Dry van	-0.008	0.007	-1.221
Miles per Dispatch	-0.00002***	0.000006	-3.276
Unpaid Time	-0.010	0.008	-1.192
Paid Days Off	0.001**	0.0004	2.071

Sample Size	233	Dependent variable:	Mileage Rate
R-squared:	0.385	Rbar-squared:	0.340
Residual SS:	0.431	Std error of est:	0.045
F(16,216):	8.457	Probability of F:	0.000

TWO-STAGE LEAST-SQUARES REGRESSION STAGE 2: ESTIMATE WEEKLY HOURS

In the second stage, we use the fitted wage to estimate the hours of work <u>at each wage rate</u>.

$$\text{Hours}_i = \gamma_1 + \gamma_2 * W_i + \gamma_3 W_i^2 + \gamma_4 Z_{i4} + \ldots \; \gamma_K Z_{iK} + \varepsilon_i$$

- Hours_i are the <u>weekly hours</u> of the ith driver

- W_i is the <u>fitted wage</u> of the ith driver <u>from the wage estimation equation</u>

- Z's represent characteristics of the driver and job that influence the number of hours worked

- ε_i captures the random components of the hours worked not included in the explanatory variables

TABLE 2: WEEKLY HOURS OF WORK EQUATION

**We add the estimated wage rate from the first equation into this hours of work equation.**

Variable	Estimate	Standard Error	t-value
Constant	-116.29**	52.88	-2.199
Fitted Rate	776.75**	370.8	2.095
Fitted Rate^2	-1266.30**	637.3	-1.987
Age	3.119***	0.849	3.674
Age^2	-0.035***	0.001	-3.578
Married	-4.853*	2.548	-1.905
Other Income ($1,000)	0.021	0.067	0.348
% Night Driving	9.241	5.598	1.651
% Non-Driving Time	-21.820**	9.788	-2.229
Unpaid Time	11.066***	3.441	3.216
Union	10.842	9.372	1.157
Miles per Dispatch	0.0007	0.002	0.313
Private Carriage	-4.082	3.464	-1.178
Tenure	-0.365*	0.201	-1.820
Last Home	-0.006	0.125	-0.045

This allows us to predict the hours drivers will work based on their wage rates.

Sample Size:	233	Dependent variable:	Hours per Week
R-squared:	0.164	Rbar-squared:	0.111
Residual SS:	63611.8	Std error of est:	17.082
F (14,218):	3.061	Probability of F:	0.000

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# LABOR SUPPLY CURVE FOR LONG-DISTANCE TRUCK DRIVERS
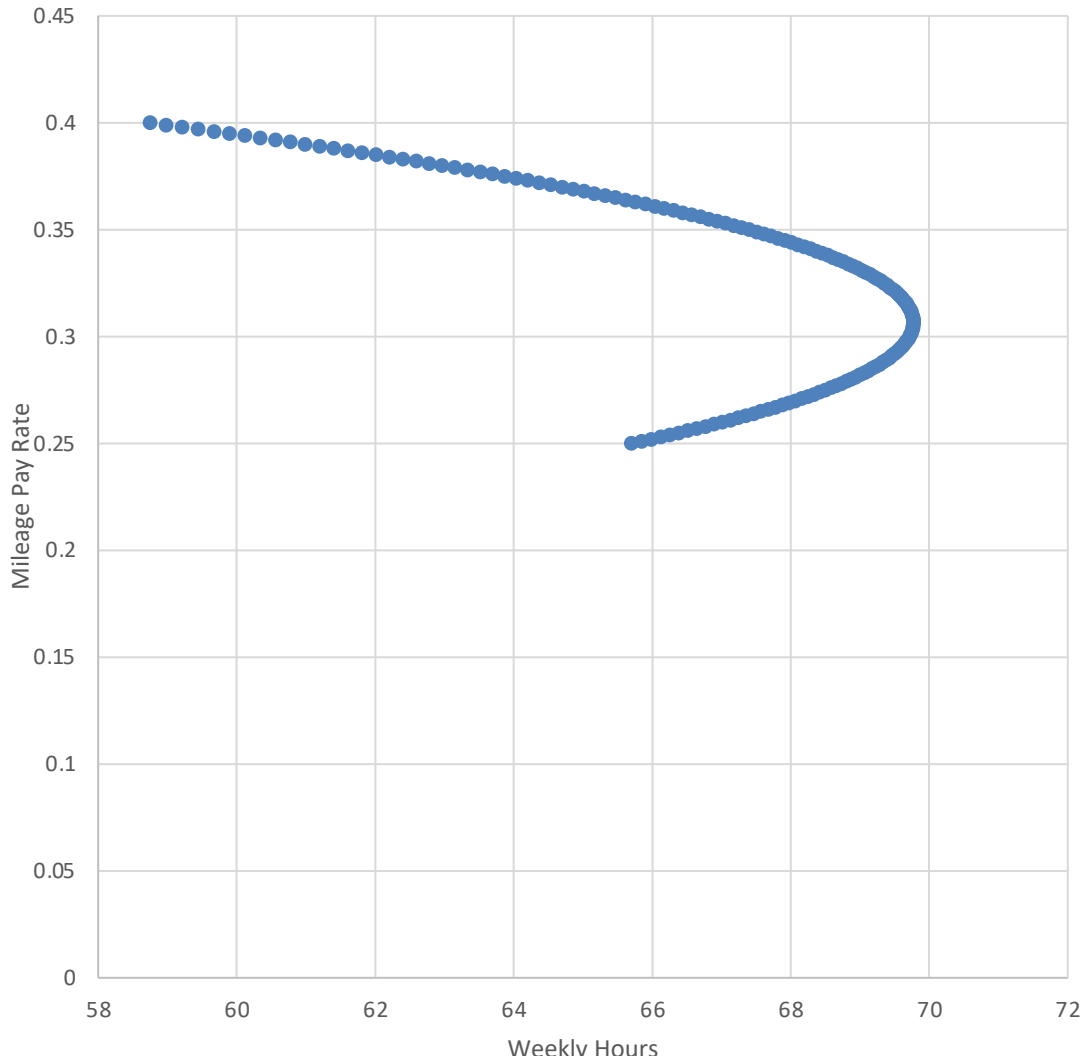
We estimate that drivers would work 60 hours at just less than US40¢/mile in 1997 dollars (US60¢/mile in 2017 dollars).

Higher paid drivers will reduce hours of work, leading to greater health and safety.

"SAFE RATES AND UNPAID LABOR:
NON-DRIVING PAY & TRUCK DRIVER WORK HOURS"

Kudo and Belzer, *Economic and Labour Relations Review* (December 2019)
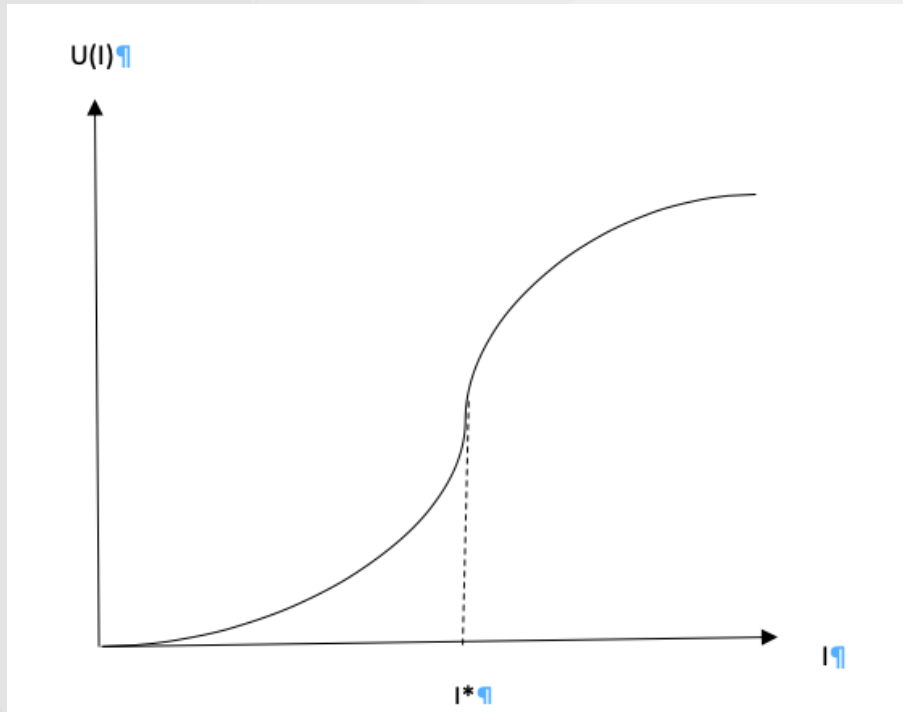
Economic theory:

- Workers trade labor and leisure.
- This theoretical model of the utility function shows the point of regime change, I*.

  I* is the level of income at which marginal utility of income decreases acutely if income exceeds it.

I* is tradeoff-point for wages and working time.

ORDINARY LEAST SQUARES (OLS) STATISTICAL MODEL

Data: *NIOSH Long Haul Truck Driver Survey*

$\ln(\textbf{WH}) = \alpha + \beta_1 \times \textbf{nondriving} + \beta_2 \times \ln(\textbf{MileageRate}) + \beta_3 \times \text{LTL} + \beta_4 \times \text{Team} + \beta_5 \times \text{Union} + \beta_6 \times \text{EnclosedVan} + \beta_7 \times \text{white} + \beta_8 \times \text{HighSchool} + \beta_9 \times \text{age} + \beta_{10} \times \text{age}^2 + \epsilon$,
where:

- $\ln(\text{WH})$: natural logarithm of **weekly work hours**
- Nondriving: pay (in piecework) for **nondriving labor**
- $\ln(\text{MileageRate})$: natural log of **estimated mileage rate**.
  - NIOSH data only allow us to divide all annual earnings by annual mileage estimate, so mileage rate is noisy & inflated.
  - We cannot separate driving time from non-driving time.
- We would have used two-stage least squares, but weak instruments left the F-ratio of the first stage at less than 2 and the R^2 smaller than 0.10.

REGRESSION RESULTS

Table 3: The Results for the Work Hours Equations

Dependent Variable=ln(Weekly Work Hours)

Variables	Model (1)	Model (2)	Model (3)
Intercept	4.08***	4.10***	4.51***
Non-driving Pay	-0.093***	-0.089***	-0.089***
ln(Mileage Rate)	-0.029	-0.023	-0.022
LTL		-0.10**	-0.10**
N	715	715	715
F-statistic	4.34**	2.67**	2.10*
R-squared	0.012	0.022	0.034
Adjusted R-squared	0.0093	0.013	0.018

Notes: ***p<0.01; **p<0.05; *p<0.1. All p values are for two-tailed tests. Non-driving pay distinguishes drivers who are paid for non-driving duties at least in part from those who are not paid for non-driving duties at all. If non-driving pay is paid, drivers are not necessarily paid for all non-driving duties. As long they are paid for some non-driving duties, the variable equals one. ln(Mileage Rate) is the natural log of the ratio of (Annual Income/Annual Miles Driven). Enclosed Van distinguishes drivers who drives enclose vans from those who drives other trucks. Education distinguishes drivers who have a high school diplom from those who do not have one. Male distinguishes male drivers form female drivers.

WHAT DOES THIS TELL US?

- Paying drivers for all their work time – which includes all non-driving work time – predicts that drivers will work fewer hours.

- The high degree of significance means we are 99% sure that our estimate is accurate.

- If drivers are paid for their non-driving work, the trucking companies and cargo owners/clients for which they haul freight will avoid delaying the drivers and will get them back on the road.

- The same labor-leisure tradeoff theory that underlies the Belzer & Sedo paper shows how non-driving pay predicts work hours and explains why paying for all driver time is essential.

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"THE ASSOCIATION BETWEEN TRUCK DRIVER COMPENSATION AND SAFETY PERFORMANCE"

Kudo and Belzer, *Safety Science* (120) 2019

- We again use *NIOSH Long Haul Truck Driver Survey* data
- We use the efficiency wage theory, which predicts that better wages attract better and more stable workers
- This theory also predicts higher paid drivers will be safer
- This also uses the same theory of the labor-leisure tradeoff that underlies the Belzer & Sedo paper, which shows that pay rates predict work hours
- We want to predict the expected number of moving violations in past 12 months
- We use a zero-inflated negative binomial regression because of the number of null observations

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Table 2
Results for the negative binomial regressions.

Variables	Coefficient	Std Dev
Intercept	0.23	1.03
ln(Pay/Mile)	−0.31**	0.15
Retirement Benefit	−0.23	0.21
Health Insurance	−0.40**	0.20
Non-driving Pay	−0.21	0.18
Annual Work Weeks	−0.024	0.017
LTL	−0.16	0.22
Team	0.12	0.25
Type	−0.21	0.18
Married	−0.070	0.17
White	−0.28	0.18
Male	0.46	0.39
Union	−1.73	1.06
Edu	−0.13	0.21
Experience	−0.0027	0.027
Experience^2	−0.0001	0.0007
N	704	
Degree of Freedom	688	
Pearson Chi-Square	695.98	
AIC (smaller is better)	966.33	
BIC (smaller is better)	1043.80	

Notes: ***$p < .01$; **$p < .05$; *$p < .1$. All p values are for two-tailed test.

Only **mileage pay rate** and **employer-provided health insurance** predict moving violations, our safety measure.

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CONCLUSION:
HIGHER PAID DRIVERS ARE SAFER

- Higher compensation is associated with a lower probability of having moving violations (an indicator of safety performance).

- Employer-paid health insurance is associated with a lower probability of having violations.

"PAY INCENTIVES AND TRUCK DRIVER SAFETY: A CASE STUDY"

Rodriguez, Targa, and Belzer, 2006
following
**Belzer, Rodriguez, and Sedo, 2002**

DATA AND ANALYSIS

- Approximately 96,000 driver observation months for one year before and one year after major wage increase of 39.1%.
  - Hunt retained safe drivers, terminated unsafe drivers, and hired experienced drivers
- Implemented Cox Regression ("survival analysis") to determine the probability of a driver crash month-to-month
- Used experience, tenure, performance (in miles), demographic and operational variables, driver turnover, and driver pay rate and pay raises to predict crash probability
- We measure crash severity by actuarial cost of crash.

CRASH RISK DECLINES 50%-75% IMMEDIATELY AFTER PAY RAISE
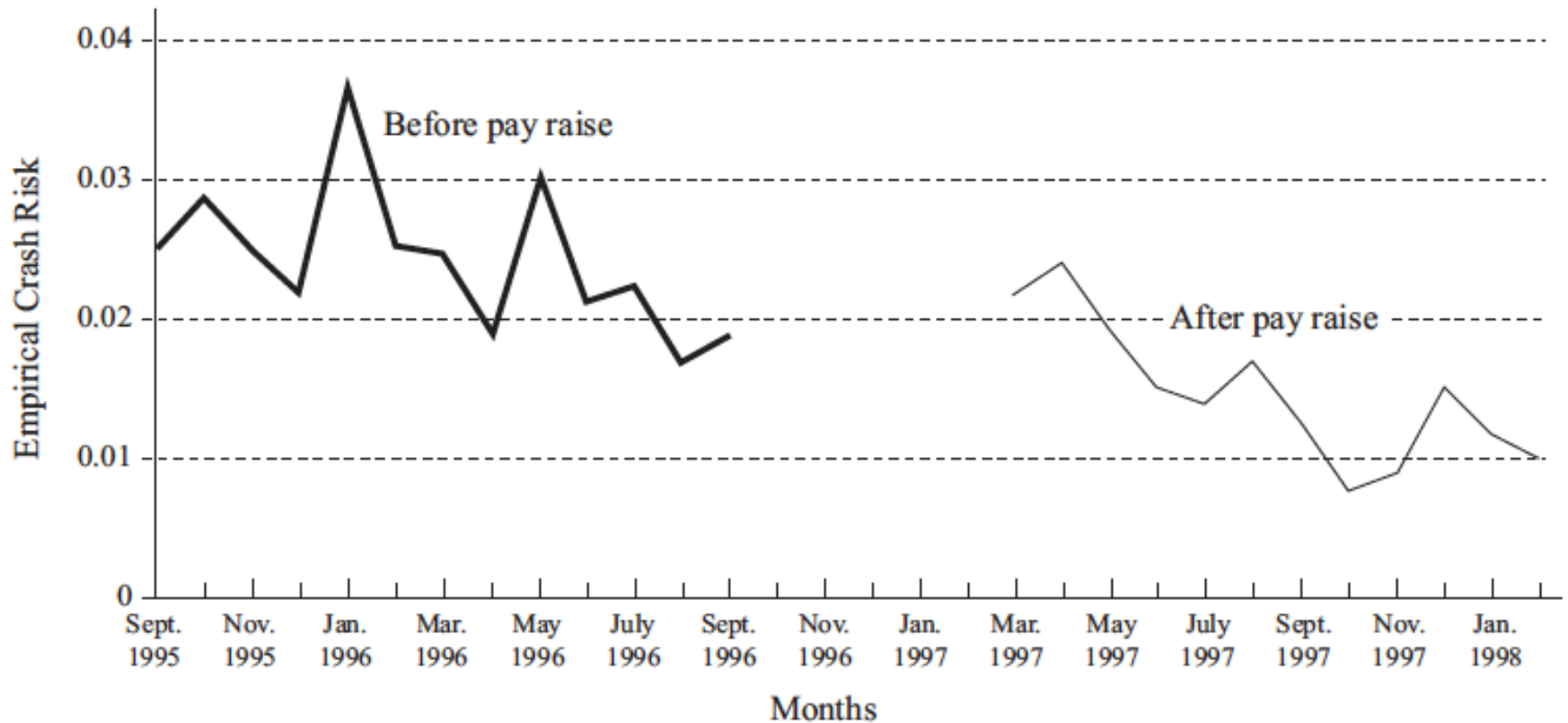
RESULTS

- At the mean
  - US1¢ higher driver pay at hire is associated with 8% lower chance of driver quit
  - Each 1,000 miles driven per month is associated with US$381 greater earnings and 23.5% lower turnover
  - 1% higher pay results in 1.33% lower crash probability
  - Biggest reduction in crash probability occurs at the lower pay rates
  - Higher driver age and experience – a result from paying higher wages – also leads to greater safety

HOURS OF SERVICE COMPLIANCE, PAY INCENTIVES, AND SAFETY:
EVIDENCE FROM U.S. INTRASTATE CARRIERS

Ju and Belzer (2021 working paper)

This paper is a key portion of

Ju Shengyang. 2019. "Empirical Study of Basic Violations, Pay Incentives, and Safety: Evidence from U.S. Intrastate Carriers," Economics. Detroit, Michigan: Wayne State University, ProQuest Dissertations Publishing, 95.

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MEASURING THE RELATIONSHIP BETWEEN REGULATORY VIOLATIONS, PAY INCENTIVES, AND CRASHES

DATA

Motor Carrier Management Information System (MCMIS)

US Federal Motor Carrier Safety Administration (FMCSA)

and

Average earnings data from the Bureau of Labor Statistics (BLS) of the U.S. Department of Labor

CRASH ESTIMATION

Crashes are a function of violations in MCMIS

- Hourly wages, measured as:
  state average hourly pay rates for drivers of heavy trucks

- Working time

- Unsafe driving

- Driver fitness

- Substance abuse

- Vehicle maintenance

controlling for:

- Population density of state

- Hazmat

- State vehicle miles traveled

- Trucking company size, measured by number of power units

ESTIMATED RESULTS

Variable	Poisson Parameter Estimate	Pr > |t|	NB - preferred Parameter Estimate	Pr > |t|
Intercept	-0.02	0.98	0.30	0.88
HOS	**0.09**	<.0001	**0.25**	**0.01**
UNSAFE	0.04	0.11	0.22	0.01
DR_FIT	0.03	0.18	0.02	0.75
SUBT	0.12	0.26	0.33	0.63
VM	0.01	<.0001	0.04	<.0001
lwage	**-3.09**	<.0001	**-3.16**	<.0001
lPop_density_m2	0.13	<.0001	0.19	<.0001
LVMT	0.61	<.0001	0.56	<.0001
HM_FLAG2	0.97	<.0001	0.77	0.01
Dispersion	1		17.37	
Log Likelihood	-5199.2		-2088.4	
Full Log Likelihood	-8115.6		-5004.9	
AIC (smaller is better)	16251.2		10031.8	

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WHAT DOES THIS MEAN?

- Working time matters
  - An increase of 1 carrier-level hour-of-service (HOS) violation in the trucking company's MCMIS record adds 1.28 more crashes; this is the marginal impact of reducing HOS violations.
  - Remember: work hours are inversely related to pay rates, so fewer HOS violations comes from working fewer illegal hours
  - Working time and pay are two halves of the same coin
- Vehicle maintenance matters
  - Effect is small but significant
- **The effect of hourly wages is huge**
  - **1% higher hour wages correspond to 3.16% fewer crashes**
  - **This is 3:1 ratio**, by far the biggest effect in this model
  - Consistent with all prior research, economic factors far outweigh all others factors that predict crashes

DOES SAFETY PAY?

"SAFE RATES AND RETURN ON INVESTMENT"

Faulkiner and Belzer 2019

following
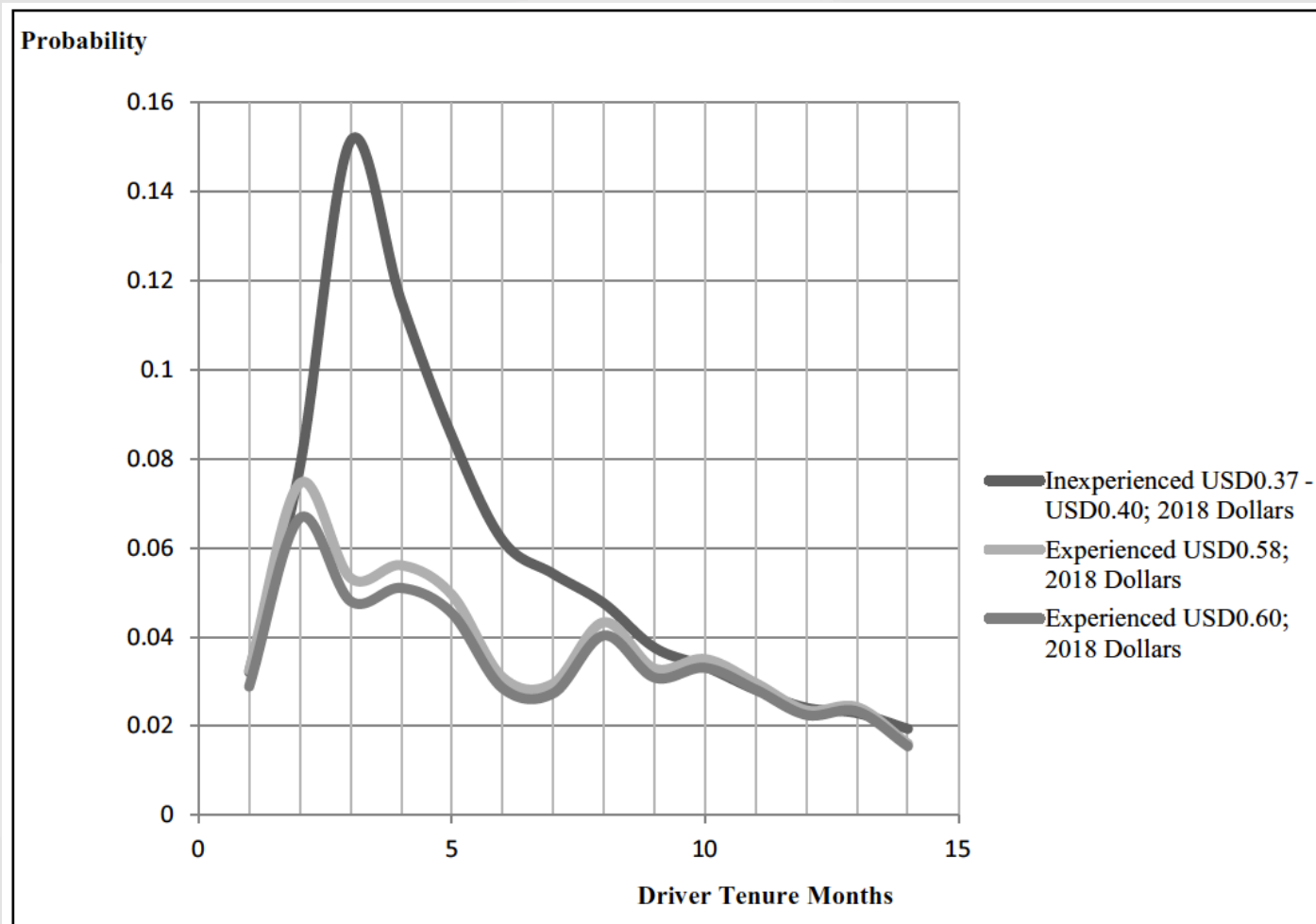
Belzer, Rodriguez, and Sedo, 2002 and

Rodriguez, Targa, and Belzer, 2006

Uses the same JB Hunt data that we used to show that higher pay leads to safety.

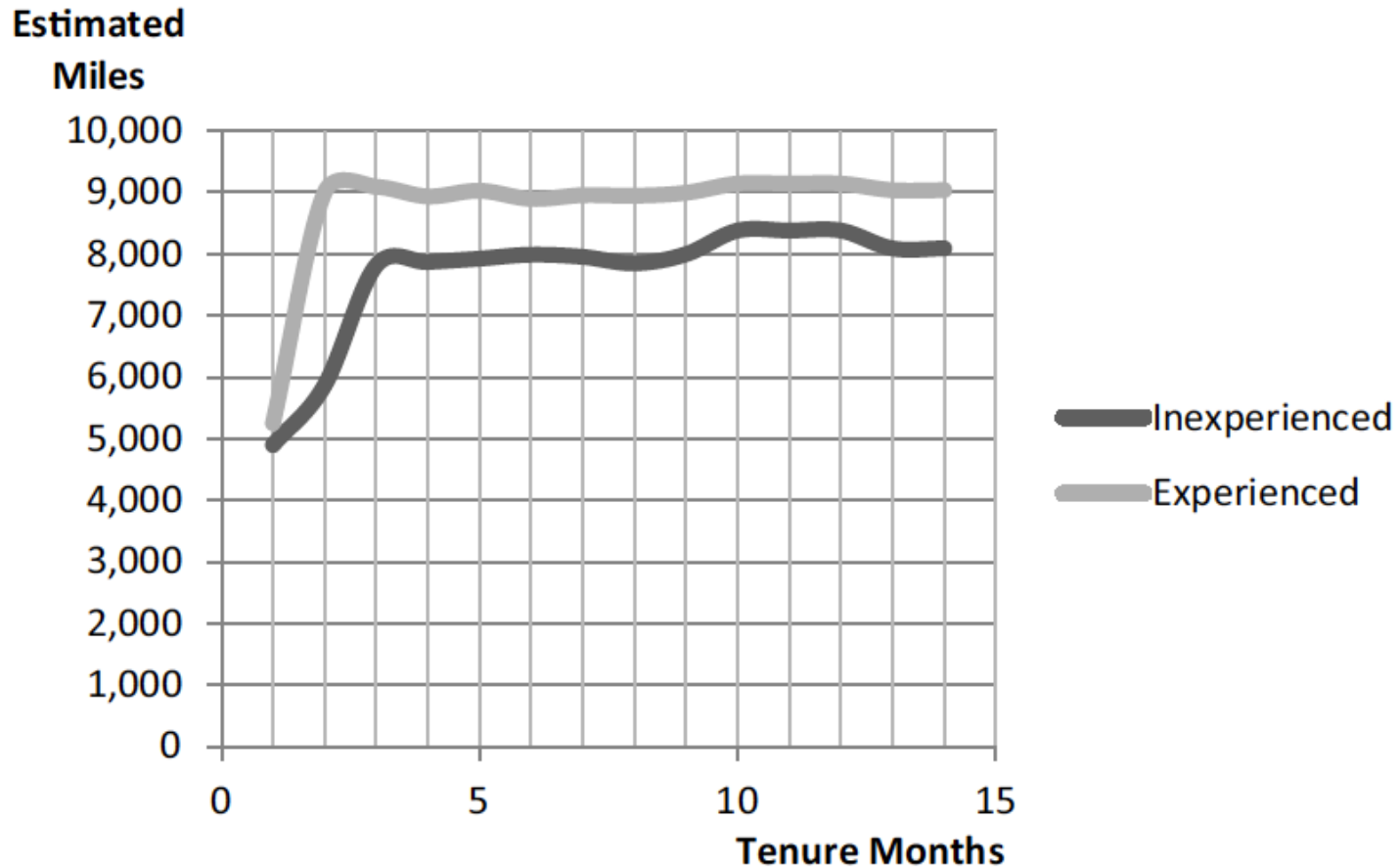**This paper makes the "business case" for safety.**

HIGHER PAID EXPERIENCED DRIVERS ARE SAFER

Hazard rate for crashes by driver type at hire

DRIVER PRODUCTIVITY BY EXPERIENCE

HIGHER PAID EXPERIENCED DRIVERS ARE MORE PRODUCTIVE AND STABLE

- More productive: about 1,000 more miles/week

- More stable: significantly higher retention rate
  - Lower search, training, hiring cost
  - How much lower? After 12 months:
    - Only 28% of lower paid inexperienced-at-hire drivers were still working for Hunt
    - Between 62% and 70% of higher paid experienced-at-hire drivers still worked for Hunt

- Fleets with lower turnover are safer because workers on new jobs are less safe.

RETURN ON INVESTMENT (ROI):
Measured as Expected Net Present Value

- ROI shows that high pay for experienced drivers pays off
  - Lower paid inexperienced drivers: **-25% lower NPV**
  - Higher paid experienced drivers: **285% higher NPV**
- **E(NPV) to the firm of higher paid experienced drivers is $10,474 greater than E(NPV) of lower paid inexperienced drivers, and stable over multiple years.**

DETENTION TIME:
Extra Time During Which Cargo Owners Hold Up Driver Pickup or Delivery

SOURCES

- Office of the Inspector General. (2018) "Estimates Show Commercial Driver Detention Increases Crash Risks and Costs, but Current Data Limit Further Analysis."

- Dunn NJ, Hickman JS, Soccolich S, et al. (2014) "Driver Detention Times in Commercial Motor Vehicle Operations". Washington: Federal Motor Carrier Safety Administration, xiv; 49.

- Speltz E and Murray D. (2019) "Driver Detention Impacts on Safety and Productivity". American Transportation Research Institute.

DETENTION TIME ADDS MORE RISK

- Office of the Inspector General (DOT-OIG) of the US DOT performed "detention time" study in 2017.

  - "Detention" defined as holding up driver more than two hours loading and/or unloading

  - OIG reports this is "industry standard"; measures only excess time

- Two-hour "industry standard" was created during the regulated era (before 1980), when tariffs allowed two hours of loading or unloading before cargo owner incurred "demurrage" charge.

  - Collective bargaining contracts required payment for all work time according to FLSA definition of work, not FMCSA definition of work.

  - Most drivers were paid for all time because 60% were Teamsters.

- After deregulation, unionization dropped by about 90% and shippers still expected two-hours free time.

  - Non-union trucking companies could not collect from cargo owners and stopped paying drivers.

  - Declining union bargaining power meant fewer drivers could collect.

DETENTION TIME AND ELBs

- Electronic logbooks (ELBs) cannot determine driver activity
- They record only that the truck is stopped.
  - FMCSA allows carriers to tell drivers to log off duty when they get to shipper or receiver.
  - FMCSA requires drivers to report location at each change of duty, but does <u>not</u> require that drivers report their activity.
  - FMCSA inspectors have to take their word that they really are off duty. This is trust without verification.
- Drivers log off duty what FLSA defines as work time because they don't get paid for it and because their bosses tell them to do it
  - FMCSA permits this if company authorizes it.
  - This is why surveys show most drivers exceed 60 hrs.

DETENTION TIME AND LOGGING

- Economic principle behind detention
    - People will consume an infinite amount of a free good
    - Shippers and receivers have no incentive to conserve free carrier delay time and labor delay time.
- American Trucking Associations (ATA) currently estimates the average length of haul at about 550 miles
    - **This means average driver <u>may load and unload</u> once/day**
    - **Means on average, drivers give away up to four hours/day free time**
- Unpaid delay time values carrier (truck) and driver delay time at zero
    - Detention kicks in after two hours, technically, BUT
    - Carriers and workers have weak bargaining power
    - Hard to collect because there is no enforcement mechanism

OIG DETENTION TIME STUDY RESULTS

- **First 15-minute detention beyond 2 hours** increases the average expected crash rate by **6.2%**.
  - Causes one additional crash per 1,000 power units
  - Causes 6,509 additional crashes per year
  - Crashes may increase just because detention time increases
  - <u>Every 5 percentage point increase in proportion of stops resulting in detention is associated with a 4.7% expected crash rate increase</u>
- 2014 FMCSA detention study found that
  - 10% of all stops experienced 2+ hours detention time
    - Drivers may experience unlimited repeated 2-hour stops
  - For 2+ hour stops, delay time averaged 1.4 hours
    - This means 10% of all stops had <u>total</u> stop time 3.4 hours
    - Smaller carriers had more delay than larger carriers

DETENTION TIME COSTS MONEY

- Detention is associated with <u>between $1.1 billion and $1.3 billion lower annual earnings for for-hire CMV drivers</u> in the truckload sector.
  - That's between $1,281 and $1,534 per driver per year
  - Helps to explain labor shortage

- Detention <u>reduces motor carrier net income</u> by $250.6 to $302.9 million per year

- Unpaid delay time contributes to excessive driver labor time

- Excessive labor times drives up crash risk

POLICY IMPLICATIONS

- <u>Higher pay rates and pay for all work time</u> will reduce drivers' incentives to work illegal hours
  - Drivers more likely will log all work time
  - This will reduce hours and improve safety
- <u>Requiring pay for all labor time</u> would reduce incentive to log unpaid work time off duty
  - Driver incentives will line up with policy objectives
  - Carriers cannot whipsaw drivers
  - Cargo owners and clients cannot whipsaw carriers
  - Neither can race to the bottom for cheap labor
  - Might make truck driving attractive again

SUMMING UP

- The low road costs the economy billions of dollars yearly
  - Wasted time for drivers and carriers
  - Major contribution to the perceived "driver shortage"
- Encourages inefficient use of all resources
  - Wastes both labor and capital
  - Reduces Gross Domestic Product (GDP)
- Expensive safety and health cost also reduces GDP
- This explains why economic forces explain safety and health outcomes
- Economic approach to safety and health points the way to policy solutions
- Safe rates will save lives, allocate resources efficiently, and grow the economy

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SUPPLEMENTAL RESOURCES

Regulations

- Fair Labor Standards Act (FLSA)
    - https://www.employmentlawhandbook.com/flsa/fair-labor-standards-act-time-suffered-or-permitted-to-work/
    - https://www.law.cornell.edu/cfr/text/29/chapter-V
    - https://www.law.cornell.edu/cfr/text/29/part-785/subpart-C
- Federal Motor Carrier Safety Administration Regulations on Hours of Service for Drivers: https://www.ecfr.gov/cgi-bin/retrieveECFR?gp=1&ty=HTML&h=L&mc=true&=PART&n=pt49.5.395 and Guidance: https://www.fmcsa.dot.gov/regulations/title49/part/395

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