NETS®
Network of Employers for Traffic Safety

Cost of Motor Vehicle Crashes to Employers 2019

Costs by Selected Risk Factors

- Seat Belt Use
- Alcohol Use
- Distracted Driving
- Speeding

Costs by State and Industry

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The Cost of Motor Vehicle Crashes to Employers - 2019

Acknowledgments

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About NETS

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NETS is a 501(c)(3) organization, a partnership between the U.S. Federal government and the private sector. Established in 1989, NETS is dedicated to improving the safety of employees, their families, and members of the communities in which they live and work by preventing traffic crashes that occur on- and-off the job. Board member companies include Acertus, Chubb Insurance, ConEdison, Inc., Hess Corp., Johnson & Johnson, Liberty Mutual Insurance, Toyota Motor North America, and UPS. In addition, NHTSA and the National Institute for Occupational Safety and Health (NIOSH) serve as federal liaisons to the board of directors.

NETS is a member of the United Nations Road Safety Collaboration which provides guidance to the Second Decade of Action for Road Safety 2021-2030 global initiative.

Introduction

This report is provided for employers to understand the cost of crashes incurred by their occupational fleets, in addition to the on- and off-the-job costs of crashes for all their employees and their employees' dependents. Knowing an occupational fleet's costs enables management to develop a business case that supports an investment in fleet safety. Knowing the on- and off-the-job crash costs for all employees and their dependents provides employers with justification to invest in employee-wide safe driving programs.

Data sources from which the updated cost estimates in this report were synthesized are listed below in the Summary section under *Methods*.

Disclaimer

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Summary

Methods

Cost estimates in this report were synthesized from several data sources. Data sources included (see Reference section at the end of this report for specific resources):

- 2016-2018 NHTSA's Fatality Analysis Reporting System (FARS);
- 2018 Services Office summary data;
- *The Insurance Fact Book, 2020;*
- *Highway Statistics 2018;*
- The 2017 National Household Travel Survey (McGuckin and Fucci, 2018);
- The 2016-2018 Censuses of Fatal Occupational Injuries (CFOI) and Surveys of Occupational Injury and Illness (SOII); and,
- Zaloshnja and Miller (2006)

It should be noted that incident data is from 2018, the most recent data year available. However, the costs are expressed in 2019 dollars, the most recent final prices available.

Employer crash costs were adjusted to specific states using ratios of state-to-national costs. Medical and composite-item state price adjusters were calculated from the Council for Community and Economic Research (CCER) Cost of Living Index. A wage adjustment factor was calculated from estimates of personal income per capita by state from the 2018 American Community Survey.

Report Overview

This report updates the national estimates of employer costs of crashes presented in NETS previous report, *The Cost of Motor Vehicle Crashes to Employers – 2015*, which provides motor vehicle injury costs to employers on a national, state-by-state and industry basis.

Employers incur costs for crashes that occur both on- and off-the-job. Based on an analysis of FARS and CFOI data, it was determined that in 2018, motor vehicle crashes killed more than 1,800 people and injured 379,000 while they were working. More than half of the injuries forced people to miss work. Overall, on-the-job crash injuries (fatal and nonfatal) amounted to 9.7 percent of all crash injuries on public roads.

In 2018: 1,800 fatalities and 379,000 injuries occurred while on-the-job.

The analysis completed for this report shows that motor vehicle crash injuries on- and off-the-job cost employers $72.2 billion in 2018 (*Table 2*). Of this cost, 46 percent resulted from off-the-job injuries to workers and their dependents. The remainder resulted from on-the-job crashes.

Table 2. Employer's Motor Vehicle Crash Costs (in millions of 2018 dollars)			
	On the job	Off the job	All
Health Fringe Benefit Costs	7,100	28,920	36,020
Non-Fringe Costs	31,920	4,300	36,220
TOTAL	39,020	33,220	72,240

Total cost of crashes to employers = $72.2 billion

Health fringe/fringe benefit costs and non-fringe costs are described in more detail below. As an overview, non-fringe costs including property damage, workplace disruption, and liability accounted for $36.2 billion of the total costs in 2018. The remaining $36.0 billion were health-related fringe benefit payments including sick leave, health insurance and insurance covering work losses. These fringe benefit payments were roughly equally split between health care (medical) expenses and wage replacement (e.g., through sick leave and life insurance). Of these fringe benefit costs, off-the-job crash injuries totaled $28.9 billion, accounting for 80 percent of the health-related fringe benefit bill.

This report also includes total costs for motor vehicle crashes related to seat belt use, alcohol-use, distracted driving, and speeding. In 2018, the total employer cost (both on-the-job and off-the-job) of motor vehicle crashes where at least one driver was alcohol-impaired was $8.0 billion; injuries to those who were not wearing their seat belt cost employers $7.4 billion; distracted driving cost employers $18.8 billion; and speeding cost employers $9.8 billion. Unrestrained crash injuries in 2018 for on-the-job employees cost employers approximately $750 million in fringe benefit costs, while $4.4 billion in fringe benefit costs resulted from crash injuries to unrestrained employees and their benefit-eligible dependents off-the-job.

Employer costs of motor vehicle crash injuries varied widely by state and industry. These costs exceeded $5 billion in each of the nation's four most populous states—California, Florida, New York and Texas. Costs per employee were highest in the trucking, special trades construction, local and inter-urban transportation, and oil and gas extraction industries. When comparing costs between states and industries, note that differences in injury severity, the age of the workforce, regional and local characteristics, and the completeness of reporting play a significant role in the variance.

Prevention is critical to control health care costs arising from injuries. This report demonstrates that by increasing restraint use and reducing alcohol-impaired driving, speeding and distracted driving, employers can greatly reduce health care costs related to motor vehicle crashes.

Report Conclusions

Employers pay for crashes that happen both on- and off-the-job. Implementing fleet safety programs not only protects employees but can also be a profitable investment of time and resources by helping employers control costs and making roads safer for everyone. In addition, fleet safety programs can reduce health care expenses to employers without reducing the benefits offered to employees. The information in this report can be used to develop a business case to justify investments in a road safety program for occupational fleet drivers and all employees.

The Cost of Motor Vehicle Crashes

It should be noted that incident data is from 2018, the most recent data year available. However, the costs are expressed in 2019 dollars, the most recent final prices available.

Total Costs to Employers by State and Industry

This report provides motor vehicle injury costs to employers on a national, state-by-state, and industry basis. It excludes active-duty military personnel.

Costs Covered by Employers

Employer costs resulting from motor vehicle crashes fall into two categories: health fringe benefit costs and non-fringe costs.

Health Fringe Benefit Costs:
The costs of fringe benefits paid because of illness and injury of employees and their dependents. This includes contributions to Workers' Compensation medical and disability insurance, health insurance, sick leave, Social Security disability insurance, life insurance and private disability insurance, as well as insurance administration costs and overhead.

Non-fringe Costs:
Include motor vehicle property damage and liability insurance, crash-related legal expenses and the costs of unreimbursed vehicle damage and replacement. In addition, employers pay taxes to help fund police, fire, and ambulance services. Employers lose productivity when employees suffer injuries preventing them or their coworkers from working at full capacity. Recruiting and training workers to replace fatally injured or permanently disabled employees also raises the cost employers pay for injuries.

Employer Costs Extend Beyond the Company Door

Employers pay for injuries that occur to their employees and their dependents both on- and off-the-job. Employers also pay for injuries incurred by non-employees involved in work-related crashes (crashes involving a vehicle on employer business but excluding crashes during commuting). Based on an analysis of FARS and CFOI data, it was determined that in 2018, motor vehicle crashes killed more than 1,800 people and injured 379,000 while they were working. As *Table 1* shows, more than half of the injuries resulting from motor vehicle crashes in 2018 forced people to miss work. Overall, on-the-job crash injuries (fatal and nonfatal) amounted to about 7.5 percent of all crash injuries on public roads. On-the-job drivers also were involved in 965,000 crashes without injuries.

Some on-the-job incidents did not occur on public roads. This report includes those incidents since countermeasures and corporate safety management systems apply to both on-road and off-road incidents. The Census of Fatal Occupational Injuries (CFOI) also does not differentiate worker pedestrian deaths on- and off-public roads.

The 2019 economic costs of U.S. highway crashes, excluding the cost imposed on society by travel delays and wage-risk premiums (i.e., extra wages workers demand when accepting jobs with high risks of death in road crashes or other circumstances), was $278 billion (in 2019 dollars). Employers paid 26 percent of these costs. They shared the costs of highway crashes with government, private passenger vehicle insurers and individual crash victims (Blincoe et al., 2015, inflated to 2019 dollars and adjusted for changes from 2010 in fatal and injury crash counts).

Table 1. Annual Number of Fatalities and Injuries of Workers, Their Dependents and Bystanders Resulting from Motor Vehicle Crashes – 2018*

	INJURIES			
	On the job*	Bystander in Work-Related At-Fault Crash**	Other Off the job	All
Fatal	1,826	4,149	26,759	32,734
Nonfatal	379,000	226,000	3,302,000	3,907,000
Lost Work Days	201,000	120,000	1,750,000	2,071,000
No Lost Work Days	178,000	106,000	1,552,000	1,836,000
Total	380,826	230,149	3,328,759	3,939,734

* Excludes 438,300 people injured in non-work crashes who were not workers or their dependents. Includes 56,810 on-the-job crash injuries and 274 deaths that did not occur on public roads such as the driver of a forklift that rolled over in a warehouse or a worker hit by a refuse truck at a landfill. Excludes off-road crashes involving active-duty military personnel.
** For example, a pedestrian or recreational driver hit by a heavy truck

Including off-road crashes, motor vehicle crashes on- and off-the-job cost employers $72.2 billion in 2018 (*Table 2*). Of that, $36.0 billion was comprised of fringe benefit costs and $36.2 billion of non-fringe costs. Approximately half of the costs resulted from off-the-job injuries to workers and their dependents. Crashes involving property damage only (i.e., with no one injured or killed) accounted for $3.8 billion of the total costs.

Table 2. Employer's Motor Vehicle Crash Costs (in millions of 2019 dollars)

	On-the-job	Off-the-job	All
Health Fringe Benefit Costs	7,100	28,920	36,020
Non-Fringe Costs	31,920	4,300	36,220
TOTAL	39,020	33,220	72,240

* Includes $3.8 billion for crashes involving property damage only.

Employer Health Fringe Benefit Spending

Motor vehicle crashes cost employers $36 billion in health fringe benefits in 2018 (*Table 3*). The fringe benefit payments were roughly equally split between health care (medical) expenses and wage replacement (e.g., sick leave and life insurance).

Table 3 illustrates the importance of employers addressing off-the-job injuries in order to achieve health-related cost savings. Off-the-job crash injuries cost $28.9 billion, or 80 percent of motor vehicle crash health-related fringe benefit costs. Motor vehicle crashes accounted for four percent of employer health-related fringe benefit costs.

Table 3. Employer Health-Related Fringe Benefit Costs from Motor Vehicle Crashes (in millions of 2019 dollars)

	Crash Injuries		
	On the job	Off the job	All
Workers' Compensation	5,010	0	5,010
Medical	2,810	0	2,810
Disability	2,200	0	2,200
Health Insurance	70	13,740	13,810
Disability Insurance	0	630	630
Life Insurance	70	1,010	1,080
Insurance Administration	700	2,030	2,730
Insurance Overhead	40	250	290
Social Security	180	1,670	1,850
Sick Leave	1,030	9,580	10,610
TOTAL	7,100	28,910	36,010

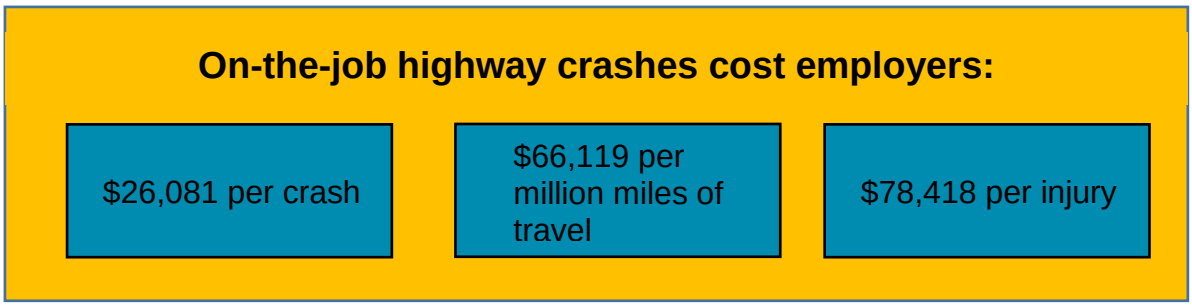
Fleet Safety Programs Can Produce Savings

Employer costs per on-the-job crash, per on-the-job crash injury and per million vehicle-miles of travel enable employers to estimate their injury burden and the potential savings of fleet safety programs. These unit costs are averages calculated from total costs and actual incidents. Employers can estimate their cost burden by multiplying the costs in *Table 4* by their total crashes, crash injuries or millions of vehicle-miles of travel. For example, the estimated cost of on-the-job crashes (which includes property damage only, injury, and fatal crashes) for a company that had 1,000 crashes would be 1,000 x $26,081 = $26,081,000.

On-the-job highway crashes cost employers:

- $26,081 per crash (includes property damage only, injury, and fatal crashes);
- $66,119 per million vehicle-miles of travel (M VMT); and,
- $78,418 per injury.

Cost of Motor Vehicle Crashes to Employers – 2019



NETS annual benchmark report analysis shows that fleet safety elements effective in reducing losses associated with motor vehicle crashes include such practice as top-level management commitment to traffic safety programs; identifying and addressing high risk drivers; mandatory seat belt policies; addressing fatigue in fleets; and safety outreach that extends safety efforts beyond the company door. Further information on implementing or advancing a fleet safety program can be found in *NETS' Comprehensive Guide to Road Safety™* and is available free of charge as a download at www.trafficsafety.org. The guide has global applicability and is for employers of large or small fleets of all vehicle types with new, developing, or advanced road safety programs.

Table 4. Costs to Employers per Million Vehicle-Miles of Travel (M VMT) and Costs per On-the-Job Highway Crash and Injury (in 2019 dollars)

	Per M VMT	Per Crash*	Per PDO Crash	Per Injury**	Per Fatality	Per Nonfatal Injury
Health Fringe Benefit Costs	12,180	4,744	0	18,638	555,844	16,050
Other Direct Costs	23,462	7,661	3,914	17,228	149,424	16,591
Liability for Losses by Others	30,478	13,677	1,569	42,552	46,114	42,535
TOTAL	66,119	26,081	5,483	78,418	751,382	75,176

*Includes property damage only, injury, and fatal crashes.
**Includes both fatal and nonfatal injuries.

Tables 5 and 6 show what safety belt non-use cost employers. Restraint non-use by on-the-job employees cost employers $1.7 billion in 2018. Off-the-job restraint non-use by employees and their benefit-eligible dependents cost employer $5.7 billion. Costs per employee injured or killed in a crash on-the-job averaged $62,770 for those unrestrained, far exceeding the $33,150 cost if restrained. The comparable figures for crashes off-the-job – where employers are not liable for costs incurred by people injured by their employees or for most permanent disability of their employees – are much lower: $8,550 versus $5,500.

Table 5. Employer's Costs of Safety Belt Non-Use in 2018 (In millions of 2019 dollars)			
	Highway Crash		
	On-the-job	Off-the-job	All
Health Fringe Benefit Costs	748	4,413	5,161
Non-Fringe Costs	986	1,296	2,282
TOTAL	1,734	5,710	7,444

Table 6. Employer's Costs per Occupant Injured or Killed in a Crash by Restraint Use (In millions of 2019 dollars)				
	On-the-job		Off-the-job	
	Unrestrained	Restrained	Unrestrained	Restrained
Health Fringe Benefit Costs	27,080	15,160	6,610	4,310
Non-Fringe Costs	35,690	17,990	1,940	1,190
TOTAL	62,770	33,150	8,550	5,500

In 2018, only 1.6 percent of alcohol-involved drivers in crashes were on-the-job. The total employer cost (both on-the-job and off-the-job) of motor vehicle crashes with an alcohol-impaired employee or dependent driving was $8.0 billion (*Table 7*). Out of this, $6.5 billion came from off-the-job alcohol involvement.

Employer costs of alcohol-related crashes = $8 billion

Table 7. Employer's Costs of Alcohol-Involved Motor Vehicle Crashes in 2018 (In millions of 2019 dollars)			
	Highway Crash		
	On-the-job	Off-the-job	All
Health Fringe Benefit Costs	323	4,792	5,114
Non-Fringe Costs	1,158	1,746	2,904
TOTAL	1,481	6,538	8,018

The employer cost of distracted driving crashes was $18.8 billion in 2018 (*Table 8*). More than one-quarter of the costs resulted from crashes involving employees and their benefit-eligible dependents while off-the-job.

Employer costs of distracted driving crashes = $18.8 billion

Table 8. Employer's Costs of Distracted Driving Crashes in 2018 (In millions of 2019 dollars)			
	Highway Crash		
	On-the-job	Off-the-job	All
Health Fringe Benefit Costs	1,568	3,599	5,167
Non-Fringe Costs	12,359	1,305	13,664
TOTAL	13,927	4,904	18,831

Cost of Motor Vehicle Crashes to Employers – 2019

Speed-related crashes cost employers $9.8 billion in 2018 (*Table 9*). The majority of costs resulted from off-the-job crashes.

Employer costs of speed-related crashes = $9.8 billion

Table 9. Employer's Costs of Speed-Related Motor Vehicle Crashes in 2018 (In millions of 2019 dollars)			
	Highway Crash		
	On-the-job	Off-the-job	All
Health Fringe Benefit Costs	456	5,022	5,478
Non-Fringe Costs	2,564	1,778	4,342
TOTAL	3,020	6,800	9,820

The following risk behaviors, seat belt non-use, distracted driving, alcohol-impaired driving, and speed affected the frequency and severity of crashes. *Table 10* shows average employer costs per nonfatal crash injury on- and off-the-job by behavior. The costs were highest for people in alcohol-related crashes and for unrestrained occupants.

The employer's cost of a traffic fatality, as well as the cost of a property damage only crash, was the same regardless of whether one of these risk factors caused the crash.

Table 10. Employer's Costs per Nonfatal Injury by Crash Circumstances and Whether On-the-Job (in 2019 dollars)		
	Highway Crash	
	On-the -job	Off-the-job
Any Person Injured	102,155	6,815
Any Occupant	99,072	6,175
Unrestrained	109,460	8,330
Restrained	97,046	5,755
In Distracted Driving Crash	100,310	6,417
In Speed-Related Crash	102,241	7,221
In Alcohol-Related Crash	128,031	14,785

Employer Costs of Crashes by State

Table 11 details employer costs of motor vehicle crash injuries, on- and off-the-job, by state. Costs exceeded $5 billion in each of the nation's four most populous states—California, Florida, New York, and Texas.

Costs per employee varied widely by state. They were highest in Georgia, Maine and Louisiana, and lowest in Connecticut, Montana, Colorado and Nebraska. Differences in injury severity, age of workforce, regional and local characteristics, and completeness of reporting caused the variance. Critically, the methods for calculating state costs (documented in the Appendix) ignore differences in nonfatal injury severity between states. This weakness likely produces cost estimates that are too low in rural states relative to urban states because urban states typically have lower average speeds and consequently less severe injuries.

Cost of Motor Vehicle Crashes to Employers – 2019

Differences in labor force participation rates and family size between states may cause employer costs per employee to vary even if safety levels and prices were equal. Cost differences between states may reflect price and income variations more than differences in safety. Finally, differences between states may result from differing completeness of reporting of occupational or crash injuries rather than actual differences in injury rates.

Table 12 provides estimates of employer costs of alcohol-involved injuries by state. These estimates account for regional differences in alcohol-impaired driving. They were obtained by assuming that the ratio between employer's costs of alcohol use and fatalities involving Blood Alcohol Content (BAC) levels at or above .08 remain the same across the states.

Table 11. Annual Employer Costs of On- and Off-the-Job Motor Vehicle Crash Injuries by Expense Category by State*

(In **Millions of 2019 Dollars**, and costs per employee are in **2019 Dollars**)

	EXPENSE CATEGORY					EXPENSE CATEGORY			
STATE	Health Fringes	Non Fringe	TOTAL	Per Employee	STATE	Health Fringes	Non Fringe	TOTAL	Per Employee
USA	36,015	30,030	68,045	470	MS	491	364	855	730
AK	92	70	166	490	MT	27	17	44	90
AL	558	454	1,043	520	NC	1,540	1,131	2,671	620
AR	355	284	658	540	ND	67	47	114	290
AZ	726	600	1,366	490	NE	87	63	150	150
CA	4,500	4,108	8,877	520	NH	97	72	169	240
CO	196	148	354	140	NJ	864	708	1,572	380
CT	25	12	37	20	NM	278	211	489	570
DC	133	133	275	810	NV	410	343	753	610
DE	108	90	204	490	NY	2,829	2,349	5,178	580
FL	3,212	2,641	6,031	690	OH	1,344	1,043	2,387	450
GA	2,526	2,048	4,710	1,080	OK	428	318	746	430
HI	130	117	255	410	OR	633	494	1,127	630
IA	250	191	454	280	PA	768	608	1,376	230
ID	197	132	338	460	RI	88	68	156	310
IL	1,266	1,063	2,400	400	SC	226	157	383	190
IN	594	475	1,101	370	SD	57	41	98	230
KS	251	191	455	320	TN	854	662	1,516	540
KY	295	230	540	280	TX	3,340	2,633	5,973	500
LA	879	720	1,647	840	UT	348	275	623	460
MA	522	452	1,004	310	VA	894	701	1,595	400
MD	665	611	1,318	450	VT	32	24	56	170
ME	377	307	706	1,070	WA	515	399	914	280
MI	893	725	1,665	390	WI	553	410	963	340
MN	370	303	692	250	WV	259	197	456	610
MO	703	549	1,288	460	WY	55	40	95	330

*Excludes $3,800 million for crashes involving property damage only.

Table 12. Employer's Costs of On- and Off-the-Job Alcohol-Involved Motor Vehicle Crashes by State (In millions of 2019 dollars)

STATE	TOTAL COST	STATE	TOTAL COST
USA	8,018	Missouri	167
Alabama	156	Montana	59
Alaska	29	Nebraska	45
Arizona	222	Nevada	71
Arkansas	85	New Hampshire	39
California	1,050	New Jersey	105
Colorado	146	New Mexico	80
Connecticut	99	New York	277
Delaware	21	North Carolina	299
District of Columbia	8	North Dakota	21
Florida	579	Ohio	204
Georgia	269	Oklahoma	98
Hawaii	33	Oregon	138
Idaho	47	Pennsylvania	244
Illinois	236	Rhode Island	17
Indiana	154	South Carolina	206
Iowa	57	South Dakota	30
Kansas	59	Tennessee	159
Kentucky	92	Texas	1,062
Louisiana	149	Utah	42
Maine	32	Vermont	12
Maryland	94	Virginia	176
Massachusetts	109	Washington	141
Michigan	192	West Virginia	38
Minnesota	84	Wisconsin	152
Mississippi	105	Wyoming	24

Employer Costs of Crashes by Industry

Employer costs of on-the-job motor vehicle crashes by industry are shown in *Table 13*. As expected, costs per employee were higher for industries where motor vehicles are used intensively and exposure to risk is greater. Costs per employee were highest in the trucking, special trades construction, transit, and oil and gas extraction industries. Costs were assigned by vehicle type involved in the crash. Heavier vehicles have smaller fatality costs but higher property damage costs. The SOII obtained reports on less than 25 percent of survivors of on-the-road occupational crashes with work loss. The reported cases were used to infer the distribution of unreported cases. Thus, cost variations between industries should be compared cautiously as they may result from differing completeness of reporting.

Cost of Motor Vehicle Crashes to Employers – 2019

Table 13. Employer's Costs of Crashes by Industry (In 2019 dollars) Note: based on CFOI and SOII counts by industry using North American Industry Classification System (NAICS) industry categories.

Industry	Health Fringe	Non-Fringe	Total	Cost/Employee
Agriculture, Fishing & Hunting	345,621,294	1,113,243,501	1,458,864,795	602
Forestry & Logging	23,095,950	105,213,924	128,309,874	104
Mining	101,456,696	326,798,795	428,255,491	549
Metal Mining	0	0	0	0
Coal Mining	2,223,376	949,732	3,173,108	50
Oil & Gas Extraction	15,483,246	49,881,645	65,364,891	838
Nonmetallic Minerals	2,779,220	1,187,165	3,966,385	39
Construction	572,042,252	2,071,276,241	2,643,318,493	245
General Building Contractors	60,189,440	193,878,563	254,068,003	54
Heavy Construction	191,625,732	693,965,382	885,591,114	176
Special Trades Contractors	317,827,154	1,181,678,288	1,499,505,442	1,383
Manufacturing	191,412,844	697,585,012	888,997,856	57
Food & Kindred Products	35,082,866	127,694,378	162,777,244	90
Textile Mill Products	0	0	0	0
Lumber & Wood Products	12,044,308	38,804,959	50,849,267	113
Printing & Publishing	6,291,600	28,661,472	34,953,072	71
Stone, Clay, Glass & Concrete	53,626,522	214,464,985	268,091,507	564
Primary Metal Industries	0	0	0	0
Fabricated Metal Products	10,685,964	34,911,726	45,597,690	37
Industrial Machinery & Equipment	12,044,308	38,804,959	50,849,267	42
Transportation Equipment	3,438,938	11,076,686	14,515,624	6
Transportation, Warehousing & Public Utilities	1,247,666,114	4,350,526,913	5,598,193,027	774
Trucking	801,288,604	2,580,940,954	3,382,229,558	3,458
Transit	278,830,114	1,199,078,107	1,477,908,221	1,168
Scenic and Sightseeing	0	0	0	0
Couriers and Messengers	109,616,632	435,107,884	544,724,516	675
Air, Rail and Water	38,841,000	176,940,720	215,781,720	228
Utilities	4,446,752	1,899,464	6,346,216	6
Warehousing	23,720,232	101,173,683	124,893,915	197
Wholesale Trade	451,518,378	1,857,257,475	2,308,775,853	631
Retail Trade	343,873,326	1,442,604,762	1,786,478,088	108
General Merchandise Stores	6,291,600	28,661,472	34,953,072	57
Food and Beverage Stores	12,599,250	57,396,060	69,995,310	22
Automotive Dealers	79,973,814	350,553,498	430,527,312	212
Apparel & Accessory Stores	0	0	0	0
Furniture & Home Furnishings	5,166,432	16,651,587	21,818,019	36
Eating & Drinking Places	157,207,316	684,034,022	841,241,338	89
Services	1,652,766,654	7,205,645,841	8,858,412,495	114
Finance & Insurance	21,114,226	87,007,264	108,121,490	15
Real Estate & Rental and Leasing	74,478,042	297,980,766	372,458,808	117
Information	211,875,284	939,958,883	1,151,834,167	421
Hotels	10,061,682	38,951,967	49,013,649	34
Personal Services	37,970,964	159,208,926	197,179,890	74
Business Services	202,477,694	862,727,198	1,065,204,892	57
Automotive Repair	40,532,292	143,340,426	183,872,718	137
Amusement & Recreation	21,670,070	87,244,697	108,914,767	63
Health Services	573,935,558	2,541,140,372	3,115,075,930	189
Legal Services	38,405,982	168,074,823	206,480,805	123
Educational Services	34,635,900	157,784,328	192,420,228	37
Social Services	208,036,764	933,946,062	1,141,982,826	396

Conclusions

Including insurance expenses, employer health care (medical) spending for motor vehicle crashes totaled $19 billion in 2018. Another $17 billion was spent on sick leave and life and disability insurance for crash victims.

Protecting employees from motor vehicle crash injuries can be a valuable investment of time and resources. Alcohol-impaired driving crashes cost employers $8.0 billion annually and injuries to unrestrained occupants cost employers $7.4 billion in 2018. Employer costs of distracted driving and speed-related crashes resulted in even higher costs at $18.8 billion and $9.8 billion in 2018.

Fleet safety programs are a viable alternative for employers to reduce and control costs associated with vehicle crashes without reducing the benefits offered to employees. Information on how to develop a fleet safety program can be found in *NETS' Comprehensive Guide to Road Safety™.* Additional safe driving resources can also be found in NETS' Drive Safely Work Week™ Campaigns. All of these resources, along with *NETS' Guide to Defensive Driver Training™* and *NETS' Recommended Road Safety Best Practices™,* are available for download at no cost from NETS' website, www.trafficsafety.org.

Finally, the large employer costs due to off-the-job crashes suggest that employers can influence safe driving within the community by implementing "work-life programs" in the workplace, which in turn provides safe driving information and resources to employees' families and community members. Employers may also see a reduction in off-the-job crashes and therefore costs through promotion and support of safe driving measures within the community such as graduated licensing for youth, booster seat, bicycle helmet, and primary safety belt laws, plus enforcement efforts like intensive sobriety checkpoints and reducing service to over-the-limit and underage drinkers.

Appendix

Incidence Estimation

In general, the computations in this report used the peer-reviewed methods in Zaloshnja and Miller (2006). Both fatal and nonfatal motor vehicle crash injuries were estimated by state and industry. The state fatality estimation used two data sets: the National Highway Traffic Safety Administration's (NHTSA's) Fatality Analysis Reporting System (FARS), primarily 2018 data and the U.S. Bureau of Labor Statistics' (BLS') 2018 Census of Fatal Occupational Injuries (CFOI), Table A-6 (Fatal occupational injuries resulting from transportation incidents and homicides by occupation, all United States).

Occupational crash fatalities by state were obtained from 2018 FARS with the exception of counts of vehicle occupants, pedestrians and bicyclists killed on the job, which are the average annual FARS count for 2016-2018 adjusted upward to the 2018 Census of Fatal Occupational Injuries total including deaths not on public roads. Off-the-job motor vehicle-related fatalities were computed by subtracting the state occupational highway fatality estimates from the 2018 FARS state totals under age 65. The calculations assumed that the number of people over age 65 equaled the number of people who were not workers or dependents of workers.

The number of nonfatal occupational motor vehicle injuries was computed using: States' most recent reports of crash statistics; 2018 Insurance Services Office summary data; *The Insurance Fact Book, 2020* (Insurance Information Institute, 2020); 2010 police-reported state nonfatal injury counts (Blincoe et al, 2015 and NHTSA online reports), and the 2018 CFOI ratio of crash deaths on versus off public roads.

The number of injured on-the-job motor vehicle crash survivors by state was computed in four stages. The computation started from national and state-by-state estimates of crash injury victims from Blincoe et al. (2015). The estimates were adjusted upward by the ratio from NHTSA's Crash Report Sampling System of people injured in police-reported crashes in 2018 versus 2010. From these injury counts and FARS fatality counts, the number of injured crash survivors per crash fatality by state was computed. Finally, that ratio was multiplied by the CFOI/FARS estimates of on-the-job motor vehicle fatalities by state. (This calculation assumes that the CFOI percentage of crash fatalities and injuries that occur on public roads, 81 percent, does not vary between states.)

To distribute the injured survivors of on-the-job crashes by industry, the Bureau of Labor Statistics' Survey of Occupational Injury and Illness (SOII) distribution of survivors of lost-workday occupational injuries by two-digit North American Industry Classification System (NAICS) code was used. The SOII data by source (e.g., motor vehicle) exclude medically treated survivors without workdays lost, whom the 1987-1992 National Health Interview Survey estimated were 47 percent of the total (Zaloshnja and Miller, 2006). They also do not cover all workers. Notably, they exclude self-employed truck

and taxi drivers. Beyond its under-coverage problem, the SOII appears to under-count motor vehicle crash injuries. It records only 40,000 of the estimated 200,000 injured survivors who lost days from work due to on-the-job crashes.

Incidence of commercial vehicle crashes used to calculate cost per crash was estimated from aggregated data purchased from the Insurance Services Office (ISO).

Cost Estimation

Medical, productivity, emergency services, property damage, legal, and non-liability insurance claims processing costs came from Blincoe et al. (2015). These costs were extrapolated from 2010 to 2019 dollars using the employment cost index and consumer price index — all items and medical care. Employer crash costs were adjusted to specific states using ratios of state to national costs. The medical and composite state price adjusters were aggregated to the state level from Council for Community and Economic Research (*CCER) Cost of Living Index* values for 2018 for all-items and 2014 for medical care from participating metropolitan areas. The state wage adjusters and employment by state used in computing costs per employee in *Table 10* came from Bureau of Labor Statistics compilations of 2018 Current Population Survey data. Future costs were converted to present value using a 3 percent discount rate. The calculations assume that costs per nonfatal motor vehicle injury on- and off-public roads are equal. Costs related to crash-caused traffic delays of commercial vehicles or employees not involved in crashes were excluded from the cost estimates.

Total employer health fringe benefit costs were computed following the methods in Miller (1992) and Zaloshnja and Miller (2006). Sources of data were as follows: sick leave, health and other insurance, and Workers' Compensation per hour worked from the National Compensation Survey (Bureau of Labor Statistics, 2018), National Academy of Social Insurance (2019), and American Council of Life Insurance (2020). The tax payments shown assume, perhaps optimistically, that police, fire, and emergency medical services would require less vehicles and staffing if crashes were eliminated. Liability payments per on-the-job crash were estimated from the Insurance Services Office data, rectified to match the $17.8 billion total commercial liability claims costs for 2018 (Insurance Information Institute, 2020).

Prior to 2015, NETS reports on cost of crashes included wage-risk premiums which measure the extra wages workers demand when accepting jobs with high risks of death in road crashes or other circumstances. This concept was abstract and the costs were not linked to individual crashes. Therefore, those costs were dropped from the current report except to the extent they affect liability insurance payments.

Employer costs of speed-related, distracted driving, and alcohol-involved motor vehicle crashes were estimated by applying payer estimates by cost category to incidence and cost information by injury severity in Blincoe et al. (2015), along with 2018 counts tabulated from FARS. A similar approach was taken on restraint nonuse, except that the incidence calculations also used NHTSA estimates of persons saved by belts. The

percentage of each type of crash that was on-the-job was obtained from 2018 FARS data. Employer costs of alcohol-involved injuries by state (*Table 12*) were allocated in proportion to alcohol-involved fatalities. This procedure assumed the percentage of impaired driving that was on the job did not vary between states.

The number of employees and crash fatality and injury risks by industry was accessed from the 2018 CFOI and SOII.

References

American Community Survey, 2018. https://www.census.gov/acs/www/data/data-tables-and-tools/data-profiles/2018/

American Council of Life Insurance. ***2019 Life Insurers Fact Book***, Washington, DC, 2020.

Blincoe, Lawrence J., Miller, T.R., Zaloshnja, E., Lawrence, B.A. ***The Economic and Societal Impact of Motor Vehicle Crashes, 2010 (Revised),*** Washington DC: National Highway Traffic Safety Administration, May 2015.

Bureau of Labor Statistics. ***Employee Benefits in the United States – March 2020***, https://www.bls.gov/ncs/ebs/benefits/2020/employee-benefits-in-the-united-states-march-2020.pdf .

Bureau of Labor Statistics. ***Census of Fatal Occupational Injuries 2018, Employed persons by detailed industry, sex, race, and Hispanic or Latino ethnicity***. Washington, DC: U.S. Department of Labor. URL: https://www.bls.gov/cps/aa2018/cpsaat18.xlsx (accessed October 2020).

Bureau of Labor Statistics. ***Census of Fatal Occupational Injuries 2018, Fatal occupational injuries resulting from transportation incidents and homicides, all United States, 2018***. Washington, DC: U.S. Department of Labor. URL: https://www.bls.gov/iif/oshwc/cfoi/cftb0323.xlsx (accessed October 2020).

Council for Community and Economic Research. ***CCER Cost of Living Index,*** Arlington, Virginia, various years.

Insurance Information Institute. ***The Insurance Fact Book 2020***, New York City, 2020.

McGuckin, N. A. Fucci, A. ***Summary of Travel Trends: 2017 National Household Travel Survey,*** Report FHWA-PL-18-019, 2018.

Miller, Ted R. ***The Cost of Injuries to Employers: A NETS Compendium***, National Highway Traffic Safety Administration, Grant R49/CCR303675-02, 1992.

National Academy of Social Insurance, www.NASI.org-2017_%ofnonFedJobsCoveredByUnempInsurThatGetW/C-WokersComp:BenesCostsCoverag-10-2019-https://www.nasi.org/sites/default/files/nasiRptWkrsComp201710_31%20final(1).pdf .

Network of Employers for Traffic Safety. ***The Economic Burden of Traffic Crashes on Employers - 2015***, 2017.

Network of Employers for Traffic Safety. ***NETS' Comprehensive Guide to Road Safety***, 2014.

National Highway Traffic Safety Administration, Fatality Analysis Reporting System, URL: https://www.nhtsa.gov/research-data/fatality-analysis-reporting-system-fars, (accessed August 2020)

National Highway Traffic Safety Administration**. Traffic Safety Fact, Alcohol Impaired Driving, 2018 Data,** 2018 URL: https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812864

National Highway Traffic Safety Administration**. Traffic Safety Facts Annual Report Tables, URL:** https://cdan.nhtsa.gov/tsftables/tsfar.htm#, Accessed October 2020

Zaloshnja, E., Miller, T.R. The Employer Costs of Motor Vehicle Crashes, ***International Journal of Injury Control and Safety Promotion***, 13:3, 145-150, 2006.