From John Burton's Workers' Compensation Resources

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FEATURED TOPICS

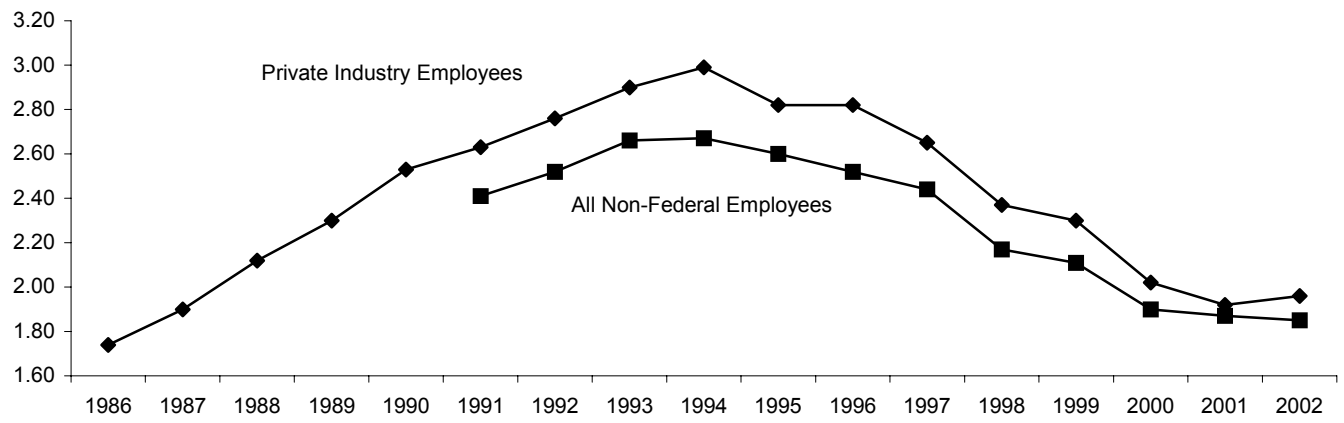
Summary of the Contents

Private sector employers increased their expenditures on workers' compensation in 2002 to 1.96 percent of gross earnings (or payroll) in 2002, an increase from 1.92 percent in 2001. As shown in Figure WCC, the most striking development in the private sector in 2002 is that the increase reverses a seven-year trend of declining costs. The peak for private industry employers occurred in 1994, when costs were 2.99 percent of payroll. The decline through 2001 was the longest sustained period of decline in employer costs relative to payroll in at least 50 years.

While workers' compensation costs increased in 2002 for private sector employers, a more comprehensive set of employers—namely all employers other than the federal government—continued to experience a decline in workers' compensation costs in 2002, dropping to 1.85 percent of payroll from 1.87 percent of payroll in 2001. For non-federal employers, the decline in workers' compensation costs relative to payroll continued for an eight year in 2002.

Jason Solomon presents a thoughtful examination of the legal aspects of cumulative trauma disorders (CTDs). He recounts the bargain in the design of original workers' compensation statutes early in the 20th century: workers agreed to accept workers' compensation benefits and to forego tort suits (thus providing limited liability for employers) in exchange for a no-fault program for which employees were eligible even when they could not meet the legal tests for tort actions. Paradoxically, the recent tightening of compensability standards in workers' compensation programs and the evolution of tort law over the 20th century means that, for conditions such as CTDs, it is easier for a plaintiff to establish negligence in a tort suit than to meet the legal tests for workers' compensation benefits. Solomon proposes some provocative solutions that would restore the original bargain underlying workers' compensation.

Figure WCC - Workers' Compensation Costs as a Percentage of Gross Earnings, 1986-2002



Source: Tables 1 and 2, "Workers' Compensation Costs for Employers: Divergent Trends for 2002."

Workers' Compensation Costs for Employers: Divergent Trends for 2002

by John F. Burton, Jr.

The 2002 data on the employers' costs of workers' compensation present mixed messages about recent trends, depending on the sector of the economy examined and the measure of costs being utilized.[1] Workers' compensation costs as a percentage of gross earnings (payroll) increased in the private sector in 2002, reversing a trend of declining costs that began in 1995. As shown in Figure A, employers' expenditures on workers' compensation in private industry represented 1.74 percent of payroll in 1986, increased in each of the next eight years until peaking at 2.99 percent of payroll in 1994, then declined for seven years until reaching 1.92 percent of payroll in 2001. The increase in costs for private sector employers to 1.96 percent in 2002 still leaves costs lower than in any year in the 1990s.

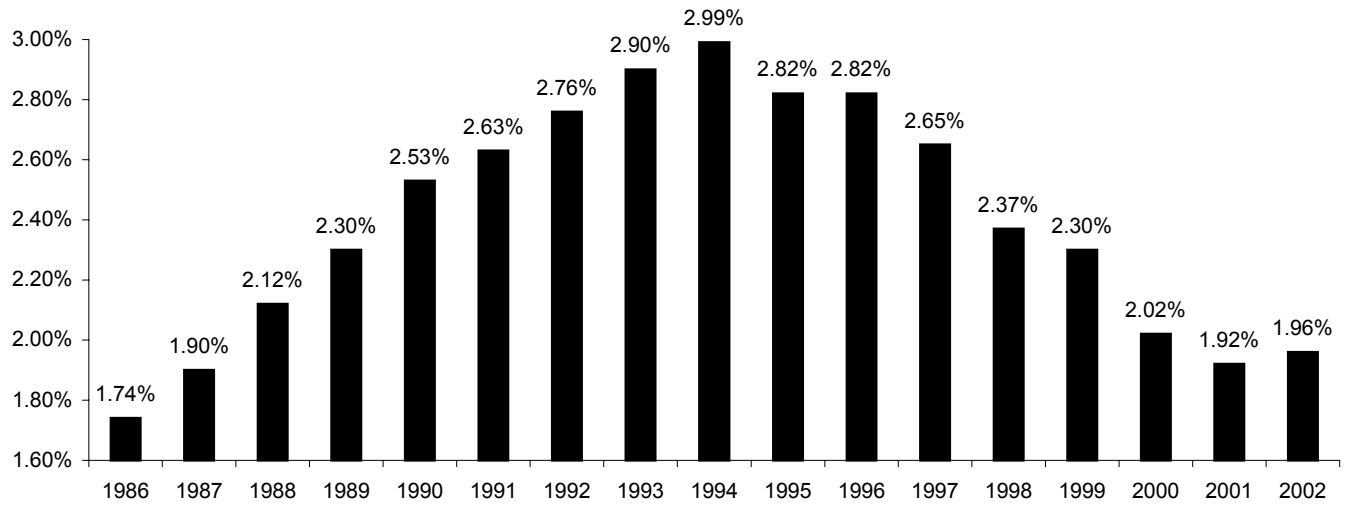
Workers' compensation costs for all non-federal employees, a category that includes private industry employees along with state and local government employees, represented 2.41 percent of payroll in 1991,[2] increased to a peak of 2.67 percent in 1994, and then declined from 1994 to 2002, when it was 1.85 percent of payroll (*see* Figure B). The non-federal category, which includes approximately 95 percent of employees in the private and public sectors, has a pattern in the last decade that in general resembles the trends in the private sector.

The employees who account for the difference between the private sector and the entire non-federal sector are in the state and local government sector. This sector's workers' compensation costs started at 1.49 percent of payroll in 1991, peaked in 1995 at 1.59 percent of payroll, dropped to 1.34 percent of payroll in 2000, rebounded to 1.42 percent of payroll in 2001, and then declined in 2002 to 1.37 percent of payroll (*see* Figure C). The state and local government sector is thus distinctive because workers' compensation costs as a percentage of payroll peaked later (in 1995) than in the private sector and because the costs declined in 2002 in the state and local government sector while costs increased in the private sector in 2002.

Costs per Hour Worked

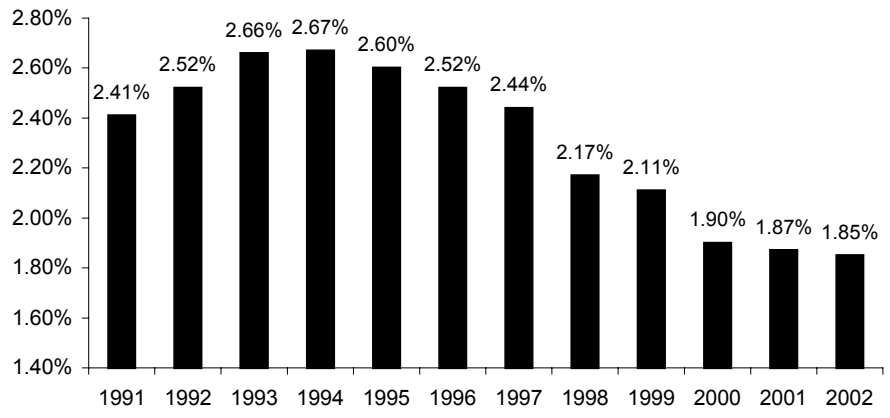
An alternative measure of the employers' costs of workers' compensation is expenditures on the program in dollars per hour worked. Using this measure of employers' costs for the private sector, the costs began at $0.19 per hour in 1986, increased to $0.41 per hour in 1994, declined in most years until reaching $0.33 per hour in 2000 and 2001, and

Figure A - Workers' Compensation Costs as a Percentage of Gross Earnings, Private Industry Employees, 1986-2002



Source: Tables 1 and 2.

Figure B - Workers' Compensation Costs as a Percentage of Gross Earnings, All Non-Federal Employees, 1991-2002



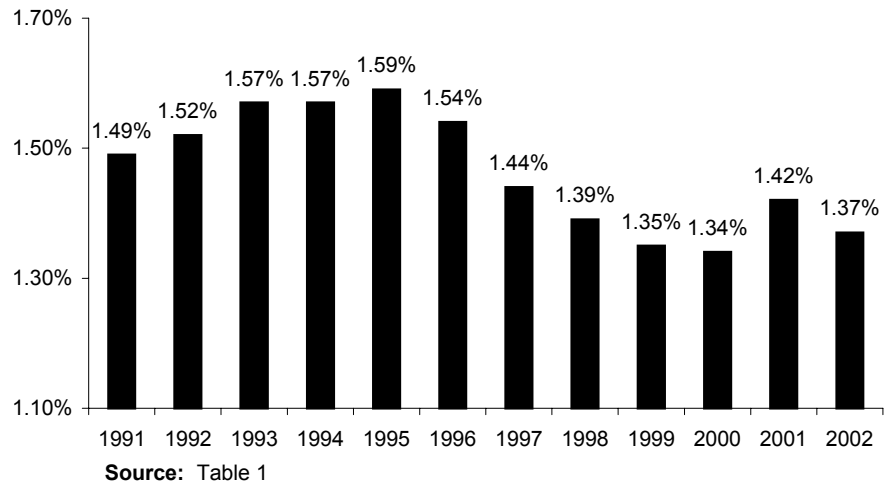
Source: Table 1.

then increased to $0.35 per hour in 2002 (see Figure D).

Workers' compensation costs per hour worked for all non-federal government employees were $0.32 in 1991 (the first year with available data), increased to $0.39 in 1994, declined to $0.33 in 2000, and then increased to $0.35 in 2002 (see Figure E).

The employers' costs of workers' compensation per hour worked in the state and local government sector were $0.26 in 1991 (the first year with data), increased to $0.31 in 1994, fluctuated in a narrow band between $0.30 and $0.31 per hour from 1994 to 2000, and finally "spurted" to $0.34 per hour in 2001 and 2002 (see Figure F).

Figure C - Workers' Compensation Costs as a Percentage of Gross Earnings, State and Local Government Employees, 1991-2002



Source: Table 1

Source of the Information

The information contained in Tables 1 and 2 and Figures A through F is based on data published by the Bureau of Labor Statistics (BLS), which is a part of the U.S. Department of Labor.[3] Data are available since 1986 for private sector employers' expenditures per hour on employees' total remuneration, and (as shown in Table 1, Panel A and Table 2) on a number of components of remuneration, including wages and salaries, paid leave, insurance, and legally required benefits (including separate information on workers' compensation).[4] Comparable data pertaining to state and local government employees (Table 1, Panel B) and to all non-federal employees (Table 1, Panel C) are available for the period 1991 to 2002.

The only employees not included in this BLS data series are federal government, agriculture, and household workers, who in aggregate account for only about 5 percent of all employees. Of the 95 percent of all employees who are included in the BLS data, private industry employees clearly predominate (82 percent of all employees), whereas state and local government employees account for the remaining 13 percent of all employees.[5]

Private Industry Employees

The data for private industry employees that are presented in Panel A of Table 1 further explain the BLS data series. In 2002, private sector employers spent, on average, $21.71 per hour worked on *total remuneration* (row 1). The $21.71 of total remuneration included *gross earnings* of $17.86 per hour (row 2) and *benefits other than pay* of $3.86 per hour (row 6).[6] *Gross earnings*, or *payroll*, included wages and salaries ($15.80 per hour; row 3), paid leave ($1.44 per hour; row 4), and supplemental pay ($0.62 per hour; row 5). *Benefits other than pay* included insurance ($1.40 per hour; row 7), retirement benefits ($0.63 per hour;

Table 1 - Total Remuneration, Wages and Salaries, and Workers' Compensation, 1991-2002
(In Dollars Per Hours Worked)

Panel A: Private Industry Employees		1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
(1)	Total Remuneration	15.40	16.14	16.70	17.08	17.10	17.49	17.97	18.50	19.00	19.85	20.81	21.71
(2)	Gross Earnings	12.55	13.06	13.43	13.69	13.81	14.19	14.69	15.19	15.62	16.37	17.16	17.86
(3)	Wages and Salaries	11.14	11.58	11.90	12.14	12.25	12.58	13.04	13.47	13.87	14.49	15.18	15.80
(4)	Paid Leave	1.05	1.09	1.11	1.11	1.09	1.12	1.14	1.16	1.20	1.28	1.37	1.44
(5)	Supplemental Pay	0.36	0.39	0.42	0.44	0.47	0.49	0.51	0.56	0.55	0.60	0.61	0.62
(6)	Benefits Other Than Pay	2.85	3.07	3.26	3.39	3.29	3.31	3.29	3.31	3.38	3.48	3.65	3.86
(7)	Insurance	1.01	1.12	1.19	1.23	1.15	1.14	1.09	1.10	1.13	1.19	1.28	1.40
(8)	Retirement Benefits	0.44	0.46	0.48	0.52	0.52	0.55	0.55	0.55	0.57	0.59	0.62	0.63
(9)	Legally Required Benefits	1.40	1.47	1.55	1.60	1.59	1.59	1.62	1.63	1.65	1.67	1.73	1.80
(9A)	Workers' Compensation	(0.33)	(0.36)	(0.39)	(0.41)	(0.39)	(0.40)	(0.39)	(0.36)	(0.36)	(0.33)	(0.33)	(0.35)
(10)	Other Benefits	*	0.02	0.04	0.04	0.03	0.03	0.03	0.03	0.03	0.03	0.02	0.03
(11)	Workers' Compensation as Percent of Remuneration	2.14%	2.23%	2.34%	2.40%	2.28%	2.29%	2.17%	1.95%	1.89%	1.66%	1.59%	1.61%
(12)	Workers' Compensation as Percent of Gross Earnings	2.63%	2.76%	2.90%	2.99%	2.82%	2.82%	2.65%	2.37%	2.30%	2.02%	1.92%	1.96%
Panel B: State and Local Employees		**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**
(1)	Total Remuneration	22.31	23.49	24.44	25.27	24.86	25.73	26.58	27.28	28.00	29.05	30.06	31.29
(2)	Gross Earnings	17.48	18.40	19.07	19.71	19.48	20.16	20.90	21.53	22.19	23.08	23.94	24.83
(3)	Wages and Salaries	15.52	16.39	17.00	17.57	17.31	17.95	18.61	19.19	19.78	20.57	21.34	22.14
(4)	Paid Leave	1.75	1.80	1.86	1.94	1.95	1.99	2.06	2.11	2.17	2.26	2.34	2.43
(5)	Supplemental Pay	0.21	0.21	0.21	0.20	0.22	0.22	0.23	0.23	0.24	0.25	0.26	0.26
(6)	Benefits Other Than Pay	4.84	5.08	5.36	5.57	5.38	5.56	5.69	5.76	5.81	5.97	6.13	6.46
(7)	Insurance	1.63	1.84	2.02	2.15	2.03	2.07	2.09	2.15	2.22	2.38	2.56	2.82
(8)	Retirement Benefits	1.85	1.82	1.87	1.90	1.78	1.90	1.95	1.94	1.91	1.84	1.73	1.74
(9)	Legally Required Benefits	1.34	1.40	1.44	1.49	1.55	1.56	1.61	1.63	1.64	1.70	1.78	1.84
(9A)	Workers' Compensation	(0.26)	(0.28)	(0.30)	(0.31)	(0.31)	(0.31)	(0.30)	(0.30)	(0.30)	(0.31)	(0.34)	(0.34)
(10)	Other Benefits	0.02	0.02	0.03	0.03	0.02	0.03	0.04	0.04	0.04	0.05	0.06	0.06
(11)	Workers' Compensation as Percent of Remuneration	1.17%	1.19%	1.23%	1.23%	1.25%	1.20%	1.13%	1.10%	1.07%	1.07%	1.13%	1.09%
(12)	Workers' Compensation as Percent of Gross Earnings	1.49%	1.52%	1.57%	1.57%	1.59%	1.54%	1.44%	1.39%	1.35%	1.34%	1.42%	1.37%
Panel C: All Non-Federal Employees		**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**
(1)	Total Remuneration	16.45	17.27	17.88	18.30	18.21	18.68	19.22	19.76	20.29	21.16	22.15	23.15
(2)	Gross Earnings	13.30	13.89	14.29	14.58	14.62	15.05	15.59	16.11	16.57	17.33	18.14	18.91
(3)	Wages and Salaries	11.81	12.33	12.68	12.95	12.98	13.36	13.85	14.30	14.72	15.36	16.07	16.76
(4)	Paid Leave	1.16	1.20	1.22	1.23	1.21	1.24	1.27	1.30	1.34	1.42	1.51	1.59
(5)	Supplemental Pay	0.33	0.36	0.39	0.40	0.43	0.45	0.47	0.51	0.51	0.55	0.56	0.56
(6)	Benefits Other Than Pay	3.16	3.38	3.59	3.72	3.59	3.64	3.63	3.66	3.73	3.83	4.00	4.24
(7)	Insurance	1.10	1.23	1.32	1.37	1.28	1.27	1.23	1.25	1.29	1.36	1.46	1.61
(8)	Retirement Benefits	0.65	0.67	0.70	0.73	0.70	0.75	0.75	0.75	0.76	0.77	0.78	0.80
(9)	Legally Required Benefits	1.39	1.46	1.53	1.58	1.58	1.59	1.62	1.63	1.65	1.67	1.73	1.80
(9A)	Workers' Compensation	(0.32)	(0.35)	(0.38)	(0.39)	(0.38)	(0.38)	(0.38)	(0.35)	(0.35)	(0.33)	(0.34)	(0.35)
(10)	Other Benefits	0.02	0.02	0.04	0.04	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
(11)	Workers' Compensation as Percent of Remuneration	1.95%	2.03%	2.13%	2.13%	2.09%	2.03%	1.98%	1.77%	1.72%	1.56%	1.53%	1.51%
(12)	Workers' Compensation as Percent of Gross Earnings	2.41%	2.52%	2.66%	2.67%	2.60%	2.52%	2.44%	2.17%	2.11%	1.90%	1.87%	1.85%

Notes: * = $0.01 or less
(1) Table 1 and the text of this article use the term "remuneration" in place of the term "compensation" that is used in the BLS publications, and use the term "All non-federal Employees" in place of the term "Civilian workers'" that is used in the BLS publications.
(2) Total remuneration (row 1) = gross earnings (row 2) + benefits other than pay (row 6).
(3) Gross earnings (row 2) = wages and salaries (row 3) + paid leave (row 4) + supplemental pay (row 5).
(4) Benefits other than pay (row 6) = insurance (row 7) + retirement benefits (row 8) + legally required benefits (row 9) + other benefits (row 10).
(5) Workers' compensation (row 9A) is one of the legally required benefits (row 9).
(6) Workers' compensation as percent of remuneration (row 11) = workers' compensation (row 9A)/total remuneration (row 1).
(7) Workers' compensation as percent of gross earnings (row 12) = workers' compensation (row 9A)/gross earnings (row 12).
(8) Results in rows (2), (6), (11), and (12) were calculated by Florence Blum and John F. Burton, Jr.

Sources: Data in rows (1), (3) to (5), and (7) to (10) of Panels A, B, and C:
1991-1999: U.S. Department of Labor, 2000a, Tables 1, 3, 5, 17, 19, 21, 33, 35, 37, 49, 51, 53, 65, 67, 69, 81, 83, 85, 97, 99, 101, 112, 114, 116, 126, 128, 130
2000: U.S. Department of Labor, 2000b, Tables 1, 3, and 5.

Table 2 - Total Remuneration, Wages and Salaries, and Workers' Compensation, 1986-1990 (In Dollars Per Hours Worked)

Panel A: Private Industry Employees		1986	1987	1988	1989	1990
(1)	Total Remuneration	13.25	13.42	13.79	14.28	14.96
(2)	Gross Earnings	10.90	11.08	11.32	11.72	12.24
(3)	Wages and Salaries	9.67	9.83	10.02	10.38	10.84
(4)	Paid Leave	0.93	0.93	0.97	1.00	1.03
(5)	Supplemental Pay	0.30	0.32	0.33	0.34	0.37
(6)	Benefits Other Than Pay	2.36	2.35	2.47	2.56	2.72
(7)	Insurance	0.73	0.72	0.78	0.85	0.92
(8)	Retirement Benefits	0.50	0.48	0.45	0.42	0.45
(9)	Legally Required Benefits	1.11	1.13	1.22	1.27	1.35
(9A)	Workers' Compensation	(0.19)	(0.21)	(0.24)	(0.27)	(0.31)
(10)	Other Benefits	0.02	0.02	0.02	0.02	*
(11)	Workers' Compensation as Percent of Remuneration	1.43%	1.56%	1.74%	1.89%	2.07%
(12)	Workers' Compensation as Percent of Gross Earnings	1.74%	1.90%	2.12%	2.30%	2.53%

Notes:
* = $0.01 or less
(1) Table 1 and the text of this article use the term "remuneration" in place of the term "compensation" that is used in the BLS publications, and use the term "All non-Fedreal Employees" in place of the term "Civilian workers" used in the BLS publications.
(2) Total remuneration (row 1) = gross earnings (row 2) + benefits other than pay (row 6).
(3) Gross earnings (row 2) = wages and salaries (row 3) + paid leave (row 4) + supplemental pay (row 5).
(4) Benefits other than pay (row 6) = insurance (row 7) + retirement benefits (row 8) + legally required benefits (row 9) + other benefits (row 10).
(5) Workers' compensation (row 9A) is one of the legally required benefits (row 9).
(6) Workers' compensation as percent of remuneration (row 11) = workers' compensation (row 9A) / total remuneration (row 1).
(7) Workers' compensation as percent of gross earnings (row 12) = workers' compensation (row 9A) / gross earnings (row 12).
(8) Results in rows (2), (6), (11), and (12) were calculated by Florence Blum and John F. Burton, Jr.

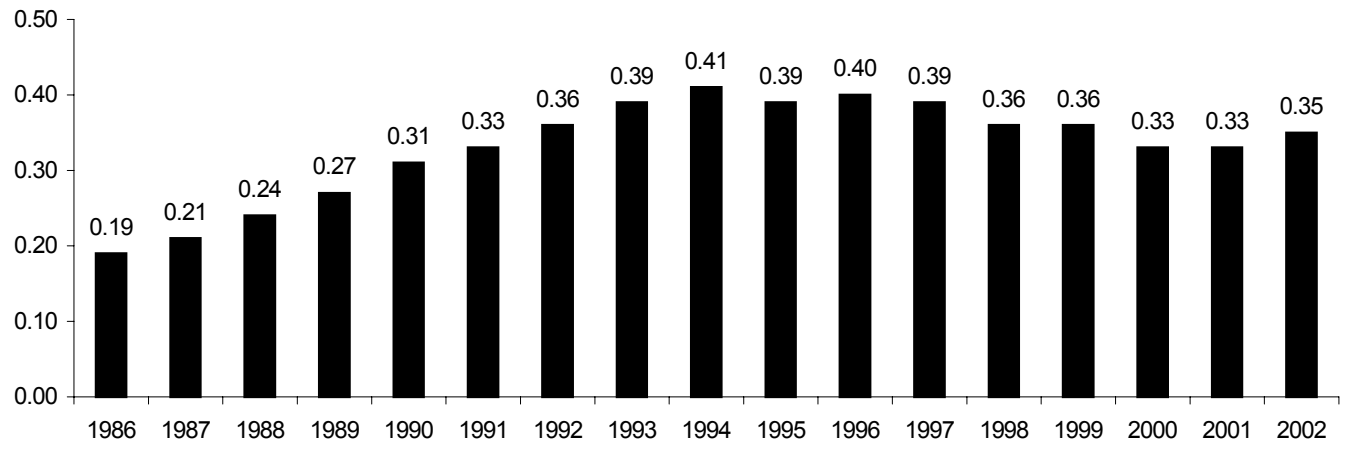
Sources:
Data in rows (1), (3) to (5), and (7) to (10):
U.S. Department of Labor, 2000a, Tables 140, 150, 158, 165, 169.

row 8), legally required benefits ($1.80 per hour; row 9), and other benefits ($0.03 per hour; row 10). *Workers' compensation*, which averaged $0.35 per hour worked (row 9A), is one of the legally required benefits (row 9).[7]

The BLS data in Table 1 indicate that private sector employers' workers' compensation expenditures ($0.35 per hour) were 1.61 percent of total remuneration (row 11) and 1.96 percent of gross earnings (row 12) in 2001. The results for the years 1991 to 2002 are shown in Figure A and Panel A of Table 1. Table 2 and Figure A show the results for the years 1986 to 1990.

Workers' compensation costs as a percentage of gross earnings (or payroll) is the most common comparison used in the workers' compensation literature. The BLS data indicate that workers' compensation costs as a percentage of payroll in the private sector increased noticeably between 1986 and 1994, but not in a steady progression. Workers' compensation costs represented 1.74 percent of payroll in 1986; increased at

Figure D - Workers' Compensation Costs for Private Industry Employees, 1986-2002 (In Dollars per Hours Worked)



Source: Tables 1 and 2.

least 0.10 percent of payroll each year between 1987 and 1993; and grew at a somewhat more modest rate (0.09 percent) between 1993 and 1994. Workers' compensation costs as a percent of payroll then plunged from 2.99 percent of payroll in 1994 to 1.92 percent in 2001, before increasing modestly to 1.96 percent of payroll in 2002.

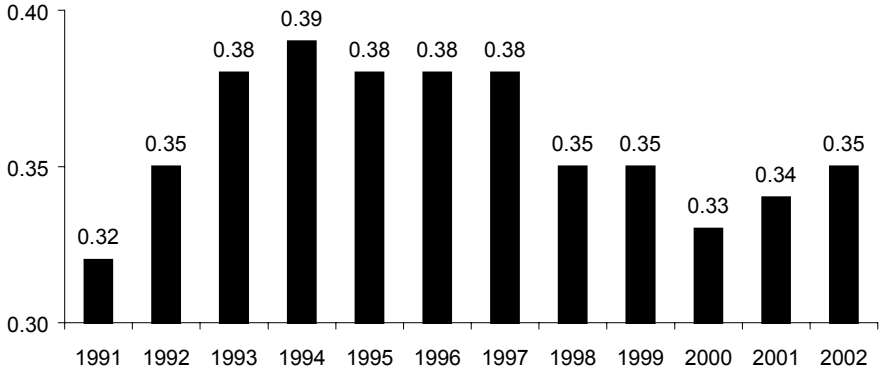
State and Local Government Employees

The BLS data with respect to state and local government employees' remuneration are only available since 1991. As shown in Panel B of Table 1, in 1991 state and local government employers expended $22.31 per hour worked on total remuneration, a figure that increased to $31.29 per hour in 2002.

There are several interesting differences between the employer expenditure patterns in the state and local government sector (Panel B of Table 1) and in the private sector (Panel A). In 2002, for example, the state and local sector had higher figures than the private sector for gross earnings per hour ($24.83 vs. $17.86); benefits other than pay ($6.46 vs. $3.86); and, therefore, total remuneration ($31.29 vs. $21.71). For the first time in the history of the data series that began in 1991, workers' compensation expenditures per hour worked in 2001 were higher in the state and local government sector than in the private sector ($0.34 vs. $0.33, respectively), but state and local costs dropped below those in the private sector again in 2002 ($0.34 vs. $0.35).

Even though workers' compensation costs per hour worked were roughly equal in the state and local sector and in the private sector, because of the higher wages in the government sector, workers' compensation costs as a percentage of gross wages and salaries in 2002 were lower in the state and local government sector than in the private sector (1.37 percent vs. 1.96 percent), as they have been each year from 1991 to 2002. The gap between the two sectors was growing from 1991 to 1994 (a 1.14 percent difference to a 1.42 percent difference). However, the gap between the private and the state and local government sectors for workers' compensation costs as a percentage of payroll narrowed between 1994 and 2002 (when there was only a 0.59 percent difference).

Figure E - Workers' Compensation Costs for All Non-Federal Employees, 1991-2002 (In Dollars per Hour Worked)



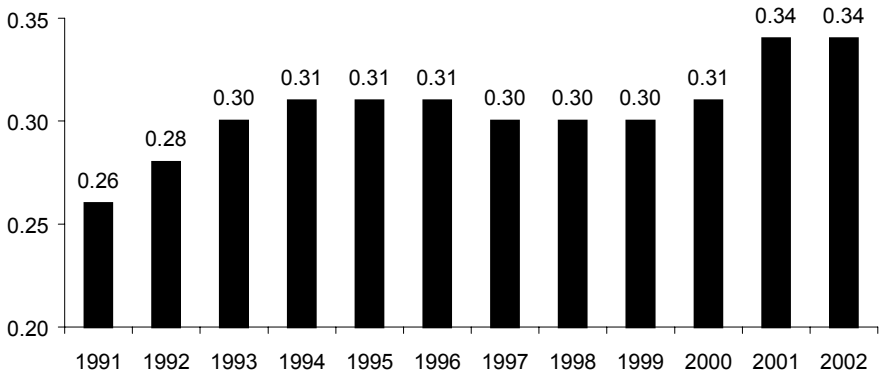
Source: Table 1.

All Non-Federal Employees

The most comprehensive variant of the BLS data, the data for all non-federal employees, is shown in Panel C of Table 1. Available since 1991, this grouping covers about 95 percent of all U.S. employees, as previously noted.

In 1991, total remuneration per hour worked averaged $16.45 per hour

Figure F - Workers' Compensation Costs for State and Local Government Employees, 1991-2002 (In Dollars per Hour Worked)



Source: Table 1.

and gross earnings (payroll) averaged $13.30 per hour. Workers' compensation expenditures were $0.32 per hour in 1991, which represented 2.41 percent of payroll. The percentage of payroll devoted to workers' compensation for all non-federal employees increased until its peak in 1994 (2.67 percent of payroll), and has since decreased each year to its 2002 level (1.85 percent of payroll), as shown in Figure B.

Conclusion

The BLS information on total remuneration, gross earnings, and benefits other than pay (including workers' compensation) have some advantages over other sources of data on national workers' compensation trends. One significant advantage, compared to the annual data prepared by the National Academy of Social Insurance (NASI), is timeliness: the most recent NASI data pertain to 2000, while BLS data for 2002 are already available.[8] The BLS data are also disaggregated by region, major industry group, occupational group, establishment employment size, and bargaining status—useful distinctions that are not available in the NASI data.

...both sources of data indicate that the employers' costs of workers' compensation measured as a percent of payroll have substantially declined since the first half of the 1990s.

The BLS data also have their limitations when compared to the NASI data. The NASI data, for example, provide state-specific information on benefit payments that distinguish among the types of insurance arrangements (private carriers, state funds, and self-insurers) and that distinguish between medical and cash benefit payments. The NASI national data also include the federal sector, which are missing from the BLS data.

The NASI data and BLS data are thus, to a considerable degree, complementary and, as such, both sources of information are valuable. One problem, however, is that the two data series are not entirely consistent with one another. For example, the NASI data for 2000 (the latest year with data available from that source) indicate that the employers' costs of workers' compensation were 1.25 percent of covered payroll for employers in all sectors (including the federal government); the BLS data for all non-federal employees in 2000 yield an estimation of workers' compensation costs for that group of 1.90 percent of payroll.[9] In addition, the NASI data showed 1990 as the peak year (with employers' costs at 2.18 of payroll). The BLS data (as shown in Table 1) for all non-federal employees showed continuing increases in workers' compensation costs as a percent of payroll through 1994, with a decrease in costs only beginning in 1995. But even though the NASI and BLS data have different peak years, both sources of data indicate that the employers' costs of workers' compensation measured as a percent of payroll have substantially declined since the first half of the 1990s.

ENDNOTES

1. U.S. Department of Labor 2002. The data are from the survey conducted in March 2002. The BLS uses the current-cost approach. That is, the costs do not pertain to the costs for the previous year. Rather, annual costs are based on the current price of the benefits and current plan provisions as of March 2002. The annualized cost of these March 2002 benefits are then divided by the annual hours worked to yield the cost per hour worked for each benefit, including workers' compensation benefits. Thus, if the annual workers' compensation premium per worker is $800 and the employee works 2,000 hours per year, the workers' compensation cost is $0.40 per hour worked. For further explanation of the BLS data, see Appendix A of U.S. Department of Labor 2000a.

2. Data on workers' compensation costs as a percentage of gross earnings for all non-federal employees are only available since 1991.

3. Citations to the U.S. Department of Labor publications containing the data used to prepare this article are provided in the references.

4. This article uses the term "remuneration" in place of the term "compensation" that is used in the BLS publications in order to more clearly distinguish between workers' compensation and remuneration.

5. U.S. Department of Labor 1999. See Chart 1, "Coverage of the Employment Cost Index, Total Civilian Employment, 1998." Comparable data for 2002 are not yet available, but should not differ much from the 1998 data.

6. The terms "gross earnings" and "benefits other than pay" are not used in the BLS publications. These terms are used here to make the base for calculating workers' compensation costs as a percentage of payroll comparable to measures used in other publications. Relating workers' compensation costs to "gross wages" (which is straight-time hourly wages plus paid leave and supplemental pay) is based on advice in an April 7, 1995 letter to me from Mr. Albert Schwenk, Supervisory Economist, Division of Employment Cost Trends, Bureau of Labor Statistics, U.S. Department of Labor. I appreciate this suggestion from Mr. Schwenk.

7. The parentheses around the workers' compensation figures in row 9A of each panel in Table 1 and in Table 2 are to show that these figures are included in the legally required benefits figures in row 9 of each panel.

8. Mont, Burton, Reno, and Thompson (2002).

9. The differences in the employers' costs of workers' compensation as a percentage of payroll are greater than is immediately obvious. The NASI data relate the employers' costs for workers' compensation only to the payroll of employers who are covered by state or federal workers' compensation programs. The costs would be a lower percentage if the base were payroll for all employers (whether covered or not), which is the base that the BLS data use.

REFERENCES

Mont, Daniel, John F. Burton, Jr., Virginia Reno, and Cecili Thompson. 2002. *Workers' Compensation: Benefits, Coverage, and Costs, 2000.* Washington, D.C.: National Academy of Social Insurance.

U.S. Department of Labor, Bureau of Labor Statistics. 1999. *Employment Cost Indexes, 1975-98.* Washington, D.C.: U.S. Department of Labor.

U.S. Department of Labor, Bureau of Labor Statistics. 2000a. *Employer Costs for Employee Compensation*, 1986-99. Bulletin 2526. Washington, D.C.: U.S. Department of Labor.

U.S. Department of Labor, Bureau of Labor Statistics. 2000b. *Employer Costs for Employee Compensation - March 2000.* USDL: 00-186, June 29, 2000. Washington, D.C.: U. S. Department of Labor.

U.S. Department of Labor, Bureau of Labor Statistics. 2001. *Employer Costs for Employee Compensation – March 2001.* USDL: 01-194, June 29, 2001. Washington, D.C.: U.S. Department of Labor.

U.S. Department of Labor, Bureau of Labor Statistics. 2002. *Employer Costs for Employee Compensation – March 2002.* USDL: 02-346. June 19, 2002. Washington, D.C.: U.S. Department of Labor.

Fulfilling the Bargain: How the Science of Ergonomics Can Inform the Laws of Workers' Compensation

by Jason M. Solomon

Introduction

Jonathan Cibula used to work for Wal-Mart, now the world's largest private employer. He worked the night shift at one of their distribution centers in Virginia, and his assignment one night, with a co-worker, was to lift 1,200 air conditioners, weighing 100 pounds each, and put them on a conveyor belt. He threw out his back that night, had to leave work early, and ended up in the emergency room. Imagine his confusion when Wal-Mart and their insurance company successfully challenged his workers' compensation claim on the ground that he had not proven that his injury was an "accident," as opposed to a cumulative trauma injury.[1] In some sense, of course, Wal-Mart was right. The injury was no accident; it was precisely the expected result of performing his job as it had been assigned.

If Cibula were confused, we would have to forgive his lack of workers' compensation expertise. He might have assumed, quite correctly, that workers' compensation was supposed to be insurance for people who get hurt or sick from doing their job.

By the end of the twentieth century, cumulative trauma disorders (CTDs) had become the fastest-growing occupational injury or disease. CTDs now account for greater than 60 percent of all occupational illnesses in the United States, afflicting an estimated 1.8 million American workers per year,[2] and the annual compensable costs for these disorders is estimated to be $20 billion.[3] Further, CTDs make up a significant portion of workers' compensation claims[4] and tend to be the most frequently litigated of all workers' compensation claims, often leading to significant delays for the injured employee in receiving medical care.[5]

While the number of reported cumulative trauma injuries has grown, a new and valuable discipline surrounding workplace design—commonly known as "ergonomics"—has become available to employers in order to prevent such injuries. Ergonomics encompasses such traditional "preventive" measures as employee education on proper posture, as well as more significant changes such as job rotation to minimize the risk of injury for repetitive motion, hiring more workers, and slowing down the rate of production. Several studies of ergonomics in individual workplaces show that ergonomic changes have increased worker productivity by up to 25 percent, and have reduced the cost of sick leave, staff turnover, and workers' compensation.[6]

My position is that judges in workers' compensation cases should use ergonomic evidence and the lens of the original workers' compensation "bargain" in deciding close cases about "work-relatedness," particularly in cases involving CTDs. As it is commonly understood, state statutes creating workers' compensation consist of a bargain between employees and employers: Employees gave up their common-law right to sue employers in tort for workplace injuries, but were guaranteed a right to recovery under workers' compensation without having to prove fault, while employers agreed to more certain recovery by employees for work-related injuries, but with a limit on damages. But an analysis of cases in workers' compensation and tort reveals that this bargain is betrayed for workers with CTDs, with claimants in tort with these medical conditions often finding it easier to prove liability as compared to those receiving workers' compensation. Ultimately, I propose a burden-shifting framework for determining work-relatedness that achieves the initial intent of workers' compensation while taking advantage of contemporary advances in science and health.

The Original Bargain: State Workers' Compensation Regimes

In the nineteenth century, employers had limited responsibility to compensate employees for harm suffered in the workplace. Although in principle an employer was liable in a tort suit for harm resulting from the firm's negligence, there were legal defenses that could shield the negligent employer from liability. For ex-

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ample, the worker assumed the risk of injury if it was an expected occupational hazard. The initial efforts at reform resulted in employer liability acts, which removed these affirmative defenses. However, workers still had to prove negligence, which was such a formidable requirement that most workers were still unsuccessful in their suits, and so the employer liability act approach was abandoned except for the railroads, where this variant of a modified tort system is still used. Under the fault-based tort system, workers were generally unsuccessful in their suits, which made the remedy unattractive to them, while employers were unhappy with the occasional suits in which juries made large damage awards.[7]

The workers' compensation "bargain" between employers and employees was intended to be simple: In exchange for immunity from tort actions, employers would provide employees with swift, though limited, compensation for work-related injuries. Both sides gained from this trade-off. Employers received a measure of protection from sizable jury verdicts for workplace injuries, while employees significantly increased their chance of receiving compensation.[8] Employers could no longer try to demonstrate that they were not at fault, or assert one of the "unholy trinity" of affirmative defenses—assumption of risk, contributory negligence, and the fellow-servant rule. Both sides lost something as well, of course: Employees necessarily capped their potential compensation,[9] and employers agreed to compensate workers more readily. Both sides also achieved a measure of predictability: Employees ostensibly received a guarantee of compensation, employers could purchase insurance at fixed prices to cover the costs of workplace injuries, and both sides—along with society—avoided the transaction costs and uncertainty of litigation.[10] This balancing embraced the original bargain.

Betraying the Bargain: The Divergence of Workers' Compensation from the Tort System

Until the past two decades, CTDs were rarely considered compensable injuries under workers' compensation. In fact, they were mostly considered the "aches and pains" of life, or natural "wear-and-tear," rather than occupational injuries or illnesses. Concurrent with the expansion of occupational disease coverage, some jurisdictions began to recognize cumulative trauma injuries as compensable. In order to do so, these jurisdictions liberally construed statutory requirements that an injury be caused "by accident"[11] at a definite time and place, or that an occupational disease be "unique to employment or the particular occupation."[12] But in other jurisdictions, CTDs have often not been able to overcome these barriers. It has become increasingly clear that jobs with recognized ergonomic hazards will have the *expected* result of injury, but injuries by definition are "unexpected" and "by accident." And the kinds of symptoms reported by many workers with CTDs—aching, pain or tingling in the hands or wrists—were seen as common to many occupations, or part of the "natural aging process."

The ability to get compensation for a CTD varies considerably from state to state. A recent national survey on the treatment of CTDs under workers' compensation laws found that compensation for a CTD claim is "very likely" in ten states; "likely" in fifteen states; "fair" in fifteen states; and "case-by-case" in ten states.[13] Some of this divergence stems from variations in the statutes, but much of it simply reflects confusion over how to classify those disorders that have no simple medical explanation, and do not fit neatly into either the "accident" or "disease" categories that the statutes create.[14] In some jurisdictions, cumulative trauma injuries often go uncompensated, even though they would likely be recognized as the employer's responsibility in the tort system. And as Burton and Spieler point out, "even in jurisdictions that nominally compensate these injuries, many claims go uncompensated."[15]

In the last decade, the business community and insurance industry have argued—with some accompanying success in state legislatures—that the increased range of compensable injuries and accompanying benefit payments has tilted the terms of the bargain too far toward employees.[16] But the relevant comparison, in assessing the balance of the bargain, is not between the scope of workers' compensation today versus the scope during times past. The relevant comparison is what employers would be held liable for in today's tort system, and whether that is reflected in the scope of the workers' compensation system today. As McCluskey has observed, "[i]f one takes the more plaintiff-oriented contemporary tort system, rather than the 19th-century tort system, as the baseline, then workers' overall gain from the bargain is less substantial."[17] Indeed, workers' compensation jurisprudence has betrayed the original bargain—more certain but limited recovery—by often making it more difficult to prove compensability for legitimate, work-related injuries under workers' compensation than under the tort system.

The Nature of The Causation Inquiry

The causation inquiry in personal injury tort cases differs in important ways from the causation inquiry in workers' compensation cases. These differences have particularly significant implications for CTD claimants. The traditional causation inquiry in tort consists of two parts—"cause in fact" and "proximate cause." The "cause in fact" is also known as "but for" causation, indicating the idea that "but for" the defendant's action or inaction, the harm would not have occurred. Generally plaintiffs can satisfy this requirement fairly easily. On

the other hand, the "proximate cause" question—essentially a glorified inquiry into policy considerations to decide whether the defendant should be held liable for his action—raises much more complex questions. Plaintiffs frequently must overcome the burden of demonstrating that the harm was "foreseeable" enough for the defendant's action or inaction to be considered the "proximate cause" of the harm.

The requirement in virtually all workers' compensation statutes that the injury or illness "arise in the course of employment" has commonly been translated to mean that the injury or illness be "work-related." In terms of tort principles, "work-relatedness" stands in for causation—the question being whether the work activity was responsible for the illness or injury. This tort-style causation inquiry tends to be where all the "action" in workers' compensation litigation takes place. But the "work-related" requirement in workers' compensation cases is dealt with somewhat differently than causation in tort.

Many workers' compensation jurisdictions use the two-part legal and medical causation inquiry. In a sense, it mirrors the two-pronged causation inquiry in tort—with medical causation the equivalent of "but for" causation, and legal causation another way of discussing "proximate cause." In lay terms, the medical and "but for" causation inquiries both ask the question: if not for the factor in question (here, the work activity), would the plaintiff/claimant be injured? Meanwhile, the legal and "proximate cause" inquiries ask: should the defendant (here, the employer) be held responsible for the harm? But while legal causation tends to be glossed over in workers' compensation cases, the issue of medical causation tends to turn many workers' compensation hearings—especially those involving CTDs—into a "battle of dueling doctors" that is not particularly enlightening as to the ultimate legal question of whether the employer and its insurance company should be held responsible.

This problem is compounded by the fact that doctors and lawyers tend to have very different understandings of what constitutes causation. In medicine, causation is discoverable by scientific proof, while in law, causation is a means of assigning the burden of persuasion based on policy considerations. It is commonly observed that medical causation is a more demanding standard than legal causation,[18] but the inquiries are also simply different. One doctor, recognizing this distinction, refused to take a position on the question of causation in a workers' compensation case, stating: "I feel that whether this repetitive trauma is considered to be a cause of her ruptured disc or not is a legal question rather than a medical one."[19] The focus on medical causation in workers' compensation cases is particularly harmful to CTD claimants because of the multiple factors inevitably involved in such injuries.

The treatment of multiple causal factors is another important area where workers' compensation diverges from tort law. According to black-letter tort law, the existence of more than one cause for an injury does not excuse any particular defendant from liability if that defendant's action or omission was a "substantial factor" in causing the harm.[20] The language of workers' compensation decisions, however, reveals quite a different approach.

Workers' compensation judges often discuss the issue of causation as if there were only one cause for each injury—an approach that may have made sense under the industrial-accident paradigm but is divorced from the medical reality of occupational diseases and CTDs. Pinpointing one causal factor is next to impossible for multi-factor disorders like cumulative trauma injuries. It is often difficult, for example, to identify the extent to which an injury is the result of work-related cumulative trauma over several years, or the result of the "natural aging process."

To take the prototypical industrial accident as an example, the lack of a safety guard on a machine can be quite clearly the cause of a worker losing a finger. In contrast, the development of a CTD by someone who works in a poultry processing plant, for example, might be primarily due to her work activities, but contributed to secondarily by the regular activity of fishing, gardening, or picking up and holding a young child. Under the "substantial factor" test of tort law, the work activities would no doubt be enough to hold the employer liable, but under workers' compensation, judges often hold in such a scenario that the plaintiff has not carried her burden of proof in showing that the injury was work-related.

The critical question is: Who will bear the risk of the medical uncertainty? Certainly traditional tort law, where the plaintiff carries the burden of proof, places the risk of uncertainty on the plaintiff. And workers' compensation statutes, by and large, do the same by placing the burden of proof on the claimant to prove that the injury was work-related. Within that context, however, judges deciding workers' compensation cases must consider *how* claimants can carry their burden of proof in light of the original bargain—that compensability (or liability in tort) would be easier to prove under workers' compensation laws than under common law.

Permissible Inferences: Evidence To Prove Causation

Inferring Causation From Circumstantial Evidence. Given the nature of CTDs, inferences—as opposed to direct proof—are necessary to establish medical causation. An examination of common-law tort cases indicates that judges and juries are much more willing to make infer-

ences about the causal link between work activities and an employee's injury than judges in the workers' compensation system.[21] These inferences can be seen in some workers' compensation cases, but they are the exception. In the common-law cases, the courts allow inferences from circumstantial evidence to prove that work activities caused CTDs.[22] For example, in a Texas case, a group of employees from a major meatpacking plant brought a negligence claim against their employer, who did not participate in Texas' workers' compensation system, charging that their work conditions caused them to develop CTDs. The plaintiffs were allowed to prove causation with circumstantial evidence—presenting evidence of the ergonomic risk factors in the meatpacking plant where they worked, and the medical records of the doctors who examined them.[23] This is precisely the type of inference that is typically denied in CTD cases under workers' compensation—where proving compensability is supposed to be easier than in tort. In addition, employees who bring product liability claims against the manufacturer of a product that causes a work-related CTD are often able to get to a jury on causation without direct evidence.[24]

The inability to use circumstantial evidence in workers' compensation is compounded by the requirements of objective medical evidence. Workers' compensation judges will often deny benefits for CTDs based on a lack of "objective medical findings"—a requirement that is often written into statute and rarely used in common-law tort cases. Cumulative trauma injuries, by definition, occur gradually and often without symptoms that are either visible or "objective" in the sense of being measurable on medical tests. This problem is itself compounded by many employees' lack of awareness of the nature of cumulative trauma injuries. Nonetheless, there is little doubt that repetitive work activities often play a substantial role in the appearance of CTDs.

Inferring Causation From Negligence. Another problem in proving causation under workers' compensation is that not having to prove "fault" or negligence may actually be a detriment to employees, and even to employers in some cases. It is well recognized that the negligence and causation inquiries are not completely separate, but are merely ways of answering the overall question: Should a defendant be held responsible for harm caused to a plaintiff? Indeed, the ability of plaintiffs to infer causation from evidence of negligence is an important contemporary development in tort law doctrine—one that is not available to claimants in the "no-fault" workers' compensation system.

In workers' compensation cases, judges often deny compensation to claimants who rely on what appears to be a "fault"-based argument against the employer for compensability. In the controversial case *Waskiewicz v. General Motors Corp.*, for example, the Maryland Court of Appeals specifically rejected the claimant's argument as too heavily based on employer "fault." As the court explained,

> we must assume that Mr. Waskiewicz's argument before us is founded on the notion that the employer's actions in removing him from and then reassigning him to the repetitive motion work were the significant events triggering a new claim.... GM's "fault" impliedly underlies Mr. Waskiewicz's entire theory of recovery. Workers' compensation is a "no-fault" system, rendering the very foundation of Mr. Waskiewicz's argument quite shaky.[25]

This case is a good example of a workers' compensation claim where the claimant would have had a significantly better chance of recovery had he been able to litigate fault, either instead of causation or as a factor weighing in favor of compensability. Indeed, the *Waskiewicz* court explicitly acknowledges this, and implicitly acknowledges that Mr. Waskiewicz is failed by an overly formalistic reading of the statute:

> We recognize that the recent aggravation of Mr. Waskiewicz's disability occurred at least in part because GM knowingly removed him from light duty and placed him at risk of such aggravation by assigning him back to an assembly-line job where his duties would include repetitive hand motions. Were the issue before us a question of equity rather than statutory law, GM would surely not fare so well.[26]

Despite the "no-fault" label on the workers' compensation system, decisions assigning fault to the employee, and therefore denying compensation, pervade the system. In a particularly egregious twenty-first century example, a major railroad genetically tested the blood of workers who filed workers' compensation claims for carpal tunnel syndrome in an attempt to demonstrate that the injury was the fault of the workers' own genes.[27] Try to explain the "no-fault" nature of workers' compensation to Gye Lee, a Korean man who used to work as a "meat scooper" on an assembly line making bacon for Valleydale Foods in Virginia. When a belt came loose on the assembly line, he injured two of his fingers trying to fix it, and, to add insult to injury, Valleydale and its insurance company contested his subsequent workers' compensation claim before the state commission and the Virginia Court of Appeals, arguing that the injury was Lee's fault because he had violated the employer's written safety policy that employees are not to put their hands in the machinery. Lee won his case, but not without a fight.[28]

Enhanced Procedural and Substantive Burdens in Workers' Compensation Cases

In the face of the medical uncertainty surrounding cumulative trauma disorders, the burden of

proof, resting on the claimant to prove work-relatedness by a "preponderance of the evidence," is often decisive in workers' compensation cases. There are many workers' compensation cases where it is clear that if the plaintiff had the benefit of a presumption of work-relatedness, the result would be different. This commonly occurs when there is conflicting medical testimony that is given equal weight by the judge. In such a situation, the judge will often say that the claimant loses because she has not carried her burden of proof. Since the employer is bound to present a medical expert who will say that the injury is not work-related, this scenario occurs quite frequently.

In recent years, often as a reaction to growing claims for CTDs, state legislatures—and in some cases, judges—have acted to raise the procedural burden of proof necessary for compensability beyond what would be required in tort. A few states have required as much as "clear and convincing evidence" that the injury is work-related in order to grant relief.[29] In tort, of course, the standard for proving causation—and all elements of the claim—is "preponderance of the evidence." Again, this creates a perverse situation—contrary to the original bargain—in which workers' compensation claims are significantly more difficult to prove than tort claims. Indeed, meeting the standard of "clear and convincing evidence" has proved nearly impossible for cumulative trauma injuries. Because the injury is generally not visible, and occurs gradually, the causal factors are particularly difficult to isolate.

Distinct from the procedural burden of proof, some legislatures and judges have also imposed increased substantive standards of causation. Some states have required that work be a "major contributing factor" or account for more than fifty percent of the cause of the injury—greater than the "substantial factor" or "foreseeability" tests used to determine proximate cause in tort. Because cumulative trauma disorders are generally multi-causal, it is extremely difficult to show that work activities—or any one causal agent—accounted for more than fifty percent of the cause of injury. Moreover, most jurisdictions require a "probability," not just a "possibility," that work activities caused the disease or injury. The impact of the recent statutory changes is clear: Workers often will not recover on workers' compensation claims that would result in employer liability if adjudicated as tort claims.[30]

Restoring the Bargain: A Set of Proposals for CTD Cases Under Workers' Compensation

Using the "Original Bargain" Lens in Workers' Compensation Cases

Courts have used the "original bargain" theory in a number of workers' compensation cases as a "purposive" method of statutory interpretation. With this interpretive method, judges look to the statute's purpose and act as "faithful agents" of—or "cooperative partners" with—the legislature in making decisions. In doing so, judges have taken notice of the remedial nature of workers' compensation statutes and, in many states, concluded that the statute should be liberally construed in favor of the employee. Indeed, judges in at least one state have already narrowly interpreted recent restrictions on CTD compensability in order to uphold the remedial intent of the original statute.[31] And judges in other jurisdictions have used the "original bargain" lens to indicate that the legislature intended the compensation of workplace injuries to be adjudicated in the workers' compensation system, not the tort system.[32]

But the nature of the workers' compensation "original bargain"—and its common-law roots—has another set of related implications. First, because workers' compensation statutes displaced the common-law tort system, judges should be reluctant to construe workers' compensation statutes such that they do not provide an adequate substitute for the rights the claimant would have at common law. Indeed, early in the history of workers' compensation jurisprudence, the Supreme Court implied that there might be due process limits to the elimination of common-law tort claims.[33] More recently, the Ohio and Oregon Supreme Court have used the right to a remedy, guaranteed in state constitutions, to limit the "exclusive remedy" doctrine of workers' compensation.[34] This method of interpretation is familiar from other contemporary contexts such as judicial scrutiny of the waiver of common-law rights through private contract in the employment relationship.

Admittedly, the original bargain lens suggested here is counterintuitive. Most originalist forms of interpretation look to the state of the common law at the time when the statute was enacted. Indeed, the groundbreaking *Smothers* decision from the Oregon Supreme Court employed such a method by relying on the state of the common law at the time the remedy clause in the state Bill of Rights was enacted.[35] Despite the logic of such an approach in the state constitutional context, workers' compensation laws themselves, as statutes that displace and supplement the common law, should generally be interpreted with reference to the *current* state of the common law. This method of interpretation is premised on a particular understanding of the bargain: not as a static, one-time settlement occurring when the workers' compensation laws were originally passed in the early part of the twentieth century, but as an ongoing trade-off between employees and employers—one that makes it easier to prove liability, but limits the amount of damages.[36] In essence, every current worker, by participating in the workers' compensation system, is trading his com-

mon-law right to bring a tort suit for the swift but limited remedy of workers' compensation.

The implication of this understanding of the bargain is clear: Workers' compensation jurisprudence must keep pace with developments in common-law tort jurisprudence such that it remains easier to prove compensability in workers' compensation than in the tort system. When workers' compensation laws were first passed, the mechanism for achieving easier compensability was to remove the requirement that plaintiffs prove fault. But contemporary developments in tort law, particularly the ability to use ergonomic evidence to demonstrate negligence and causation, can put CTD claimants at a distinct disadvantage under workers' compensation compared to tort law. If common-law jurisprudence recognizes new methods of scientific evidence, such as epidemiology or ergonomics, as legitimate ways of allowing inferences of causation, then workers' compensation judges should follow suit. Otherwise, both employees and employers—depending on the case and the issue—could face disadvantages under workers' compensation in ways that stray from the original bargain of guaranteed compensability but limited damages.[37]

An example of how judges can use the "original bargain" lens helps illustrate a way out of this dilemma. In jurisdictions that have raised the procedural burden of proof for certain injuries to "clear and convincing evidence," courts are likely to face the question of whether uncontradicted, credible medical testimony about the possibility that work activities caused the claimant's injury, combined with credible evidence and testimony from the claimant about his work activities, is sufficient for the claimant to carry his burden of proof. The answer is not evident from the statutory language alone. Because of the heightened burden of proof, and the common-law requirement in most jurisdictions that medical testimony indicate a "probability" of work-relatedness, many jurisdictions may be reluctant to grant benefits under this scenario.

The "original bargain" lens sheds light on how to resolve this question. Recognizing that the original bargain was intended to provide greater certainty of recovery to employees, while limiting the amount of recovery, judges should assume that the legislature could not have intended to make it more difficult for claimants with legitimate, work-related injuries to prove compensability. The higher burden of proof is ostensibly designed to prevent fraudulent claims, not deny legitimate ones. If the judge is convinced that the injury was work-related, then she must award benefits. However, current workers' compensation jurisprudence about the requirements of medical causation and the ability to draw inferences about causation can make such an award difficult.

Exploiting the Value of Ergonomic Evidence

Ergonomics offers a potential way out of the conundrum for workers' compensation judges trying to obey the statutory requirement that the claimant prove work-relatedness, while fulfilling the original bargain of quick but limited compensation for legitimate work-related injuries. By demonstrating the risk factors present in a particular workplace, ergonomic evidence can allow a fact-finder to infer that work activities caused the injury. Crediting such evidence would require a greater receptivity to inferences than many workers' compensation judges have demonstrated, but these kinds of inferences are frequently allowed in common-law tort claims, in occupational disease claims, and even by some workers' compensation judges facing CTD claimants.

As the common-law tort cases demonstrate, ergonomic evidence can give rise to an inference of causation in CTD cases. Indeed, ergonomics can play a critical role in both prongs of the legal and medical causation inquiry under workers' compensation. For medical causation, testimony from a doctor or ergonomist regarding the presence of risk factors in a claimant's work activities that are known to cause CTDs can give rise to an inference that the work activity was "in fact" a substantial factor in causing the injury. In determining legal causation, the equivalent of the "proximate cause" or foreseeability inquiry, the claimant can present evidence that the employer either knew that the claimant's work activities were likely to cause CTDs based on the existence of an in-house ergonomic program, or should have known based on industry norms or government standards. Such inferences, increasingly common with the acceptance of ergonomics in common-law tort jurisprudence, are equally permissible and necessary in workers' compensation cases.

The potential role of ergonomics in determining the compensability of CTDs is analogous to that of epidemiology in assessing claims of occupational disease from toxic chemical exposure. Like CTDs, occupational diseases from toxic chemical exposure develop gradually, often take time to manifest themselves, and rarely offer visible signs of the causative agent. By comparing levels of disease among the population exposed to the toxic substance to a corresponding control group, epidemiological evidence offers a way to demonstrate to the fact-finder that it is more likely than not that exposure to the toxic substance caused the harm. Although there has been controversy surrounding the use of epidemiological evidence, its acceptance has grown as judges and commentators have recognized that it is often the only credible means of presenting evidence on causation of occupational diseases.[38]

Like epidemiological evidence in occupational disease cases, ergonomic evidence can be used to convince

workers' compensation judges that CTDs are work-related. Ergonomic studies can show that workplaces with job rotation, tasks that are performed differently, or increased numbers of workers can have lower rates of CTDs. And specific, job-based ergonomic assessments can demonstrate that the particular claimant's work could have been done differently, with a decreased risk of developing a CTD. For example, there is considerable evidence that an increase in the speed of the production line has led to a significant rise in CTDs among workers at many factories, a subject of recent labor disputes involving, for example, workers who make caps for Major League Baseball outside Buffalo and those who make cars for Honda in central Ohio.[39] This kind of evidence—like epidemiological evidence—can give rise to an inference that the work activity caused the injury.

Allowing these kinds of inferences enables workers' compensation law to take advantage of new scientific techniques in order to make more accurate determinations of what injuries or illnesses should be compensable. This approach is also consistent with the original bargain because it takes account of common-law developments in how causation can be proven, and provides greater certainty for the compensability of legitimate, work-related CTDs.

Shifting the Burden Towards Employers in CTD Cases

In order to uphold the original bargain for CTDs, workers' compensation judges should employ a burden-shifting framework on the issue of "work-relatedness" analogous to that used for employment discrimination claims. Under this proposal, which could be employed by judges as a matter of common law, the claimant would have the burden of establishing a prima facie case that the injury or illness was work-related. This could be established with medical or ergonomic testimony that there is a *substantial possibility* that the injury is work-related, along with credible testimony from the claimant. Judges should explicitly take into account the difficulty in proving medical causation, allowing the claimant to use inferences and circumstantial evidence. Because of the nature of CTDs, undisputed medical opinions on causation are entitled to particular deference, regardless of the presence of "objective medical findings."

Establishing a prima facie case would create a rebuttable presumption that the injury was work-related. The burden would then shift to the employer to prove that the injury was not related to the claimant's work activities. Besides introducing evidence of non-work causes, the employer could then present evidence of ergonomic improvements already made in the workplace that benefited the claimant, before the injury occurred, shifting the burden back to the claimant. This burden-shifting approach would bring workers' compensation systems closer to the original vision of efficient compensability of legitimate claims.

Indeed, there are existing examples of burden-shifting schemes in workers' compensation law—either written into the statute or created by common law. The District of Columbia's workers' compensation statute, for example, contains a presumption of work-relatedness for all claims.[40] Courts have held that to invoke the presumption, a claimant need only present some evidence of an injury and of a work-related event that has the potential to result in or contribute to the injury. Once the presumption is triggered, the burden shifts to the employer to produce substantial evidence that the disability was not work-related. Tennessee also has a workers' compensation approach, formulated by judges through common law, that takes account of medical realities. In Tennessee, a doctor's testimony that work activities "could be" the cause of the injury establishes a prima facie case that, combined with the testimony of the claimant, can be enough to support an award of benefits in the absence of contrary evidence from the employer.[41]

This proposal has the benefit of taking full advantage of the potential of ergonomics to demonstrate work-relatedness as epidemiological evidence has done in occupational disease cases. It accounts for the medical uncertainty surrounding cumulative trauma disorders in a way that places the cost of such uncertainty on the employer, not the employee, for reasons familiar from tort law theory: The employer is the cheapest cost avoider and insurer, and is best able to spread costs. The proposed burden-shifting framework would also be more faithful to the fundamental nature of the "original bargain," by recognizing a wider range of claims as compensable but limiting individual compensation amounts.

Some might argue that this proposed burden-shifting approach would simply turn a workers' compensation hearing that would now be a "battle of the dueling doctors" into a battle of the dueling ergonomists. This change, however, would be a welcome development for policy and institutional reasons. With the current system's focus on medical causation, workers' compensation disputes often turn on technical and uncertain medical questions, providing little incentive for employers to act to prevent injuries.[42] In contrast, disputes over how best to design healthy workplaces create powerful incentives for employers to pay close attention to ergonomics. Employers will be on notice that attention to injury prevention will count in their favor, while a lack of attention to ergonomics can be used to hold them responsible under workers' compensation. Further, from an institutional competence perspective, judges are simply better equipped to evaluate steps that employers could have taken in the workplace than they are to evaluate competing medical opinions on what caused a complex type of injury.

Reviving the Exclusive Remedy Doctrine

The lack of compensation for CTDs might not be a problem if workers could bring tort actions for injuries outside the scope of the workers' compensation system. Properly understood with reference to the original bargain, the "exclusive remedy" doctrine should operate as a self-correcting mechanism to insure that the workers' compensation system keeps pace with the common law in tort. If CTDs, for example, are not compensable under workers' compensation, then workers should be able to bring a tort claim—without being barred by the "exclusive remedy" doctrine. Indeed, this is happening already in states like Oregon and Ohio. If employers begin facing increasing liability under tort from injuries or illnesses occurring in the workplace, then they will no doubt pressure state legislatures to explicitly cover such claims under the terms of the workers' compensation statutes.[43] This precise chain of events occurred in the past with occupational diseases and is unfolding today, increasingly, with psychological injuries. In the context of cumulative trauma disorders, however, improper application of the "exclusive remedy" doctrine has, in addition to leaving workers without a remedy, disabled the system's mechanism for evolution and self-correction.

CONCLUSION

The original bargain of workers' compensation was premised on the assumptions that for work-related injuries, causation was relatively easy to prove, and that removing the fault requirement eliminated the biggest obstacle to compensability for plaintiffs. For the paradigmatic industrial accident, this premise was no doubt true. But for cumulative trauma disorders, causation can be quite difficult to prove, especially since workers' compensation jurisprudence emphasizes medical causation.

Workers' compensation judges should not hesitate to use the applied science of ergonomics to infer that an injury is work-related and therefore compensable. Under the burden-shifting framework presented here, judges can make use of such inferences for the benefit of both employees and employers, achieving results that more closely adhere to the original bargain. Although workers' compensation statutes were written in the early part of the twentieth century, their application and interpretation must be adapted to modern-day understandings of science, medicine, and the workplace. Judicial reliance on the principles of ergonomics to inform the laws of workers' compensation would be an important step towards achieving that goal.

ENDNOTES

1. *Cibula v. Wal-Mart*, 95 O.I.C. 170-40-83, 1995 WL 1064370 (Virginia Workers' Compensation Commission) (July 5, 1995).

2. Eve Tahmincioglu, "Battling Job-Related Aches and Pains," *New York Times*, Jan. 3, 2001, at G1.

3. Awwad J. Dababneh et al., "Impact of Added Rest Breaks on the Productivity and Well Being of Workers," 44 *Ergonomics* 164 (2001) (citing Bureau of Labor Statistics data).; Robin Herbert et al., "Carpal Tunnel Syndrome and Workers' Compensation Among an Occupational Clinic Population in New York State," 35 *Am. J. Indus. Med.* 335, 336 (1999) (citing a 1996 National Council on Compensation Insurance study of forty states that reported 2.5 times more missed work days on average for CTD claimants than for those with other illnesses and injuries).

4. Emily A. Spieler, "Perpetuating Risk? Workers' Compensation and the Persistence of Occupational Injuries," 31 *Hous. L. Rev.* 119, 149 n.113 (1994) (citing a survey by one major insurer that showed that forty-five percent of claim payments were for CTDs).

5. A recent study found that nearly 80 percent of workers' compensation claimants with carpal tunnel syndrome had their claim challenged by the insurance company or received no response at all. Herbert et al., *supra*, at 340. Indeed, many challenged CTD claims take more than a year to resolve. *Id.*

6. E.g., U.S. Gen. Accounting Office, *Worker Protection: Private Sector Ergonomics Programs Yield Positive Results*, Report Number HEHS-97-163, (Aug. 1997) (describing elements of ergonomics programs at several private-sector employers).

7. John F. Burton and Daniel J.B. Mitchell. Forthcoming 2002. "Employee Benefits and Social Insurance: The Welfare Side of Employment Relations," and sources cited therein, in *From Industrial Relations to Human Resources and Beyond: The Evolving Management of Employee Relations*, eds. Bruce E. Kaufman, Richard A. Beaumont, and Roy B. Helfgott. Armonk, NY: W. E. Sharpe; Terry Thomason et al. 2001. *Workers' Compensation: Benefits, Costs, and Safety Under Alternative Insurance Arrangements*, 5. Kalamazoo, MI: Upjohn Institute for Employment Relations.

8. Lawrence M. Friedman & Jack Ladinsky, "Social Change and the Law of Industrial Accidents," 67 *Colum. L. Rev.* 50, 69-70 (1967); Ellen R. Peirce & Terry Morehead Dworkin, "Workers' Compensation and Occupational Disease: A Return to Original Intent," 67 *Or. L. Rev.* 649, 653 (1988); Alice M. Thomas, "The Law of Workers' Compensation: Defining Accidental Injury," 30 *How. L.J.* 515, 515 (1987).

9. Less commented on in discussions of the "original bargain" is that employees gave up the ability to have their right to compensation determined by a jury. Most commentators treat this simply as a matter of dollars—jury verdicts are likely to be higher than administrative law judges' awards. But there is also the difference of jury members being more likely to identify with the claimant and understand the realities of the work environment and the physical demands of many blue-collar jobs.

10. Transaction and litigation costs are actually often quite high in workers' compensation cases, undermining one of the main goals of the original "bargain." See, e.g., *Williams Co. v. Lawrence*, 824 P.2d 1134, 1137 (Okla. 1992) ("We are not unmindful of the significant length of time many of these cases necessitate to reach a final adjudication."); *Zurn Indus. v. Workers' Comp. Appeal Bd.*, 755 A.2d 108, 109 (Pa. Commw. Ct. 2000) ("When Anthony Bottoni filed a simple Workers'

Compensation claim in 1986, we doubt he would have expected it to drag on into the new millennium.").

11. For CTDs, there is often no specific "accident" that activates the symptoms. As one cabinetmaker explained when testifying as to when his injury occurred, "[T]hat was hard for me to distinguish because we use sanders and hand tools a lot and a lot of times you would experience strain. It was just like if you hold something at an angle a lot or the drills or the sanders a lot, you'd get like a fatigue and a strain." *McKeever Custom Cabinets v. Smith*, 379 N.W.2d 368, 371 (Iowa 1985). In response to this problem, many jurisdictions have essentially read out the "accident" requirement or interpreted it as simply requiring an unexpected occurrence or result.

12. Peirce & Dworkin, *supra*, at 660–61. For jurisdictions that write such a definition into their statute, see, e.g., Ala. Code § 25-5-110(4) (2000); N.J. Stat. Ann. § 34:15-31(a) (West 2000).

13. Ctr. for Office Tech., *Report on State Treatment of Cumulative Trauma Disorders* 1 (Jan. 22, 1999). The Center for Office Technology is a Washington organization, funded by several major corporations, that promotes "voluntary" solutions to ergonomic issues. The survey also found that in twenty states, CTDs are specifically recognized by statute; in eighteen states, either carpal tunnel syndrome is recognized by statute or CTDs are included in the occupational disease or injury definition; and thirteen states do not recognize CTDs.

14. Different jurisdictions deal with this problem in different ways. See, for example, the Alabama Workers' Compensation Act, where the statutory definition of injury caused by an accident includes cumulative trauma disorders. Ala. Code § 25-5-1 (9) (2000). In other jurisdictions, courts have made this decision on an ad hoc basis. See, e.g., *Fruehauf Corp. v. Workmen's Comp. Appeals Bd.*, 68 Cal. 2d 569, 576 (Cal. 1968) (deciding that California statutory definition of "occupational disease" includes CTDs); *Duvall v. ICI Ams.*, Inc., 621 N.E.2d 1122, 1125 (Ind. Ct. App. 1993) (upholding the Board's finding that plaintiff's carpal tunnel syndrome—caused by daily trauma to her hand and wrist—was an injury, not a disease, for purposes of the workers' compensation statute).

15. John F. Burton, Jr. & Emily A. Spieler. 1998. "Compensation for Disabled Workers: Workers' Compensation." In *New Approaches To Disability in the Workplace*, Terry Thomason et al. eds., 205, 224. Madison, WI: Industrial Relations Research Association.

16. The continued rhetoric of a "cost crisis" in workers' compensation is inconsistent with the most recent data. A recent report found that as a share of covered payroll, employers' costs in 2000 had declined by about 43 percent since 1990. See Daniel Mont, John F. Burton, Jr., Virginia Reno, and Cecili Thompson. 2002. *Workers' Compensation: Benefits, Coverage, and Costs, 2000 New Estimates*. Washington, DC: National Academy of Social Insurance. This report (table 13) shows that employers' costs per $100 of payroll peaked at $2.18 in 1990 and declined to $1.25 in 2000, which is a 43 percent decline. For critical analysis of these changes to state workers' compensation statutes, see James Ellenberger, "The Battle over Workers' Compensation," *Working USA*, Sept.–Oct. 1999, at 23.

17. Martha T. McCluskey, "The Illusion of Efficiency in Workers' Compensation Reform," 50 *Rutgers L. Rev.* 657, 896 (1998).

18. Kent Louis Brown. 1971. *Medical Problems and the Law*, 204–05. Springfield, IL: Thomas. (Explaining that most medical practitioners do not understand the difference between probable and possible as distinguished by the law); Douglas Danner & Elliot L. Sagall, "Medicolegal Causation: A Source of Professional Misunderstanding," 3 *Am. J.L. & Med.* 303, 304–05 (1977) (distinguishing the legal standard for cause from the more demanding requirement of scientific proof sought by the medical profession); Donna H. Smith, Note, "Increased Risk of Harm: A New Standard for Sufficiency of Evidence of Causation in Medical Malpractice Cases," 65 *B.U. L. Rev.* 275, 279 (1985) ("Physicians, unaware of the difference between medical certainty and legal certainty, will not testify that a result was certain to follow. They fail to understand that legal causation requirements are less demanding than scientific proof of medical causation.").

19. *W. Elec. Co. v. Workers' Comp. Appeals Bd.*, 99 Cal. App. 3d 629, 635 n.1 (Cal. Ct. App. 1979).

20. W. Page Keeton et al. eds. 1984. *Prosser and Keeton on the Law of Torts*, 5th ed., 268. St. Paul, MN: West Publishing Co. ("If the defendant's conduct was a substantial factor in causing the plaintiff's injury, it follows that he will not be absolved from liability merely because other causes have contributed to the result, since such causes, innumerable, are always present.").

21. Compare *Prosser and Keeton on the Law of Torts*, *supra*, at 270 ("Circumstantial evidence, expert testimony, or common knowledge may provide a basis from which the causal sequence may be inferred." (footnotes omitted)) with, e.g., *Decker v. Square D Co.*, 1998 MOWCLR (LRP) LEXIS 58, at *6–*7 (Mo. App. 1998) (stating that "[t]he evidence must establish a direct causal link between a worker's workplace or job duties and the injury-causing disease."); *Eaton v. Quincy*, 1999 Ill. Wrk. Comp. LEXIS 44, at *23 (Indus. Comm'n of Ill. May 28, 1999) (Kinnaman, J., dissenting) ("In this case the majority finds that a firefighter who sits underneath the engine's siren every time he is out on a call has not proven sufficient exposure to noise to win compensation for the resulting hearing loss. The finding defies common sense and the weight of the evidence."); *Santos v. Bernan Foods, Inc.*, 1998 N.J. Wrk. Comp. LEXIS 96, at *21–*22 (N.J. Div. Wrk. Comp. Oct. 5, 1998) (finding doctor's explanation "unconvincing" that claimant's serious joint condition was related to having worked in a freezer for more than twenty years).

22. E.g., *Aparicio v. Norfolk & W. Ry. Co.*, 84 F.3d 803, 812 (6th Cir. 1996) (holding, in FELA case, that deposition of railroad's medical director permitted the inference that a person exposed to a risk factor for injury or illness may develop the injury or illness as a result); *Schaefer v. Union Pac. R. R.*, 10 F. Supp. 2d 1240, 1248 (D. Wyo. 1998) (acknowledging that the jury can infer the railroad's breach of duty in FELA case, but holding that the plaintiff has not produced even a "scintilla" of evidence).

23. *Gutierrez v. Excel Corp*,.106 F.3d 683, 689 (5th Cir. 1997) (sufficient exposure to ergonomic risk factors and medical evidence of CTD can allow jury to infer, without direct evidence, that the work environment caused the injury); but see *Excel v. Apodaca*, 45 Tex. Sup. Ct. J. 962 (Tex. June 27, 2002) (in a similar case, reversing jury verdict in favor of employee on the ground that ergonomic evidence

was not sufficient to establish "but for" causation).

24. E.g., *Bone v. Ames Taping Tool Sys., Inc.*, 179 F.3d 1080, 1082 (8th Cir. 1999) (reversing district court's grant of summary judgment to defendant on causation); *Tenbarge v. Ames Taping Tool Sys., Inc.*, 128 F.3d 656, 658 (8th Cir. 1997) (same); *Rice v. United Parcel Serv. Gen. Servs. Co.*, 43 F. Supp. 2d 1134, 1146 (D. Or. 1999) (denying defendants' motion for summary judgment on issue of proximate cause).

25. 679 A.2d 1094, 1100 (Md. 1996).

26. *Id.* at 1101. For an example from the employer's perspective, see *Derr Constr. Co. v. Bennett*, 873 S.W.2d 824, 826 (Ky. 1994) (upholding the Board's rejection of the employer's "fault based" argument that it should not be liable for medical expenses related to disability predating the specific workplace incident).

27. See Tamar Lewin, "Commission Sues Railroad to End Genetic Testing in Work Injury Cases," *New York Times*, Feb. 10, 2001, at A10.

28. *Valleydale Foods, Inc. v. Lee*, 2002 WL 53895 (Va. App. 2002). Indeed, Virginia's workers' compensation statute has a provision barring compensation where the injury is caused by "the employee's willful breach of any reasonable rule ... adopted by the employer and brought, prior to the accident, to the knowledge of the employee."

29. For example, the Alabama Workers' Compensation Act, as amended in 1992, specifies that cases involving injuries which have resulted from "gradual deterioration or cumulative physical stress disorders" will be deemed compensable only upon a finding of "clear and convincing proof" that the injuries were work-related. Ala. Code § 25-5-81(c) (2000).

30. For a critical overview of both the substantive and procedural changes, see McCluskey, *supra*, at 788-808.

31. For example, one Louisiana court argued that it was inconsistent with the purpose of the "workers' compensation scheme" to deny the claims of workers who were "worn down by their work rather than immediately crippled by it." *Dyson v. State Employees Group Benefits Program*, 610 So. 2d 953, 956 (La. Ct. App. 1992). Critics say that such judges are flouting the intent of the legislature. See Denis Paul Juge et al., "Cumulative Trauma Disorders - The Disease of the 90's: An Interdisciplinary Analysis," 55 *La. L. Rev.* 895, 898 (1995).

32. E.g., *Driscoll v. Gen. Nutrition Corp.*, 752 A.2d 1069, 1076 (Conn. 2000) ("[I]t is an essential part of the workers' compensation bargain that an employee . . . relinquishes his or her potentially large common-law tort damages in exchange for relatively quick and certain compensation."); *Vigliotti v. K-mart Corp.*, 680 So. 2d 466, 467 (Fla. Dist. Ct. App. 1996) ("We see nothing, however, in the extensive revisions to the Workers' Compensation Law to indicate the Legislature intended to broaden tort liability of employers in this fashion as a solution to the workers' compensation crisis."); *Union Underwear Co. v. Scearce*, 896 S.W.2d 7, 8 (Ky. 1995) ("The primary purpose of the workers' compensation statute is the elimination of common-law actions for personal injuries growing out of industrial operations.").

33. *N.Y. Ctr. R.R. Co. v. White*, 243 U.S. 188, 201 (1917) ("Nor is it necessary, for the purposes of the present case, to say that a State might, without violence to the constitutional guaranty of 'due process of law,' suddenly set aside all common-law rules respecting liability as between employer and employee, without providing a reasonably just substitute.").

34. See *Brady v. Safety-Kleen Corp.*, 576 N. E.2d 722, 731 (Ohio 1991) (J. Douglas, concurring); *Smothers v. Gresham Transfer, Inc.*, 23 P.3d 333 (Or. 2001).

35. *Smothers.*, 23 P.3d at 359-360.

36. Note, "Exceptions to the Exclusive Remedy Requirements of Workers' Compensation Statutes," 96 *Harv. L. Rev.* 1641, 1656–57 (1983).

37. Samuel Estreicher, "Judicial Nullification: Guido Calabresi's Uncommon Common Law for a Statutory Age," 57 *N.Y.U. L. Rev.* 1126, 1134 (1982); John G. Culhane, "The Emperor Has No Causation: Exposing a Judicial Misconstruction of Science," 2 *Widener L. Symp. J.* 185, 203 n.98 (1997).

38. E.g., Jack B. Weinstein, "Preliminary Reflections on the Law's Reaction to Disasters," 11 *Colum. J. Envtl. L.* 1, 10 n.24 (1986); "Developments in the Law—Toxic Waste Litigation," 99 *Harv. L. Rev.* 1458, 1603 (1986); Michael Dore, Comment, "A Proposed Standard For Evaluating the Use of Epidemiological Evidence in Toxic Tort and other Personal Injury Cases," 28 *How. L.J.* 677, 692–93 (1985).

39. Greenhouse, Steven. "Derby: Strike Ends At Baseball Cap Maker." *New York Times* (June 5, 2002) at B7; Hakim, Danny. "Auto Union and Honda Dispute Safety Record at Plants in Ohio." *New York Times* (June 26, 2002) at C1.

40. It states that any claim for compensation "shall be presumed, in the absence of evidence to the contrary: (1) [To come] within the provisions of this chapter." D.C. Code Ann. § 36-321(1) (1981). A few other jurisdictions have used a presumption of work-relatedness, thereby leaving it to the employer to disprove any causal connection between the employment and the disability. See, e. g., *Peirce & Dworkin, supra*, at 678 (citing New York, Pennsylvania, Florida); *Dir., Office of Workers' Comp. Programs v. Greenwich Collieries*, 512 U.S. 267, 280 (1994) ("In part due to Congress' recognition that claims such as those involved [under the Longshore and Harbor Workers' Compensation Act and the Black Lung Benefits Act] would be difficult to prove, claimants in adjudications under these statutes benefit from certain statutory presumptions easing their burden.").

41. E.g., *Tenn. Prot. & Advocacy, Inc. v. Greene*, 2000 Tenn. LEXIS 589, at *11 (Tenn. Oct. 24, 2000) (justifying rule on the basis that "medical witnesses are rarely, if ever, able to state their opinions on medical causation with reasonable certainty").

42. There is already a financial incentive for employers because workers' compensation insurance is experience-rated, which means that the premium charged depends on the level of benefit payments. But the empirical evidence regarding the success of experience rating as a prevention tool is mixed. See Terry Thomason et al., *supra,*at 11.

43. Burton and Spieler, *supra*, at 221 (discussing the Virginia legislature's amendment to the workers' compensation statute to provide "nominal, but very narrow" coverage for CTDs).

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