

Models for Reducing Workers' Compensation Litigation

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ABSTRACT

This article examines permanent partial disability claims in two highly litigious workers' compensation systems and two less litigious systems. Adjudicators in the two litigious systems appear to "split the difference" between assessments of physical impairment by physicians. This encourages employers and insurers to rely on physicians who typically find few or no physical limitations. In turn, injured workers seek out attorneys who identify physicians to provide more generous assessments. In the two less litigious systems, adjudicators do not "split the difference," and partisan physicians rarely provide medical assessments. Other attributes of the less litigious systems also reduce the value of partisan physicians and of attorneys.

Introduction

In the search to contain workers' compensation costs, efforts to reform state workers' compensation systems have become more common. Reform advocates cite unnecessary litigation as among the most prominent cost-drivers. Litigation also delays the delivery of benefits to injured workers, and litigation costs are deducted from their benefits. We have conducted studies of the litigation process in four states—two with high levels of litigation and two with much lower levels (Boden 1986, 1987, 1988; Boden, Kern, and Gardner, 1991). The contrast provides evidence about which system features encourage or discourage litigation. This article describes the evidence and the studies from which it comes.

We begin with a brief overview of the data used in the four studies, followed by a summary of features common to the two litigious systems and those shared by the two less litigious systems. From there, we turn to the at-

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tributes that distinguish litigious and nonlitigious systems, analyzing how they either encourage or discourage legal dispute.

The Studies

These studies of four states' workers' compensation systems focus on the resolution of back injury claims with permanent partial disability (PPD). Employers pay PPD benefits to workers who never fully recover from their injuries. Generally, medical or vocational experts evaluate the extent of disability or expected wage loss. The parties frequently disagree about the extent of impairment or disability, typically expressed as a percentage. PPD back injuries are the most commonly litigated and the most costly, so, if a workers' compensation system can avoid litigation in these cases, it can do so for most other types of claims.

We studied dispute resolution in two litigious systems (Maryland and New Jersey) and two less litigious systems (Wisconsin and Oregon). Table 1 presents data on the rate of attorney involvement and other litigation measures in each of the four states. The litigious systems are typical of many in the United States, in which resolution of permanent partial disability claims regularly involves attorneys and partisan experts. Still, a select number of states have designed systems that deliver PPD benefits without regular resort to attorneys and partisan experts—and their attendant costs and delays.

Table 1
Measures of Litigiousness: Lower-Back
Permanent Partial Disability Claims

	<i>Worker Represented by Attorney</i>		<i>Disputed^a</i>		<i>Awarded at Hearing</i>		<i>Resolved by Voluntary Payment^b</i>	
	%	S.D.	%	S.D.	%	S.D.	%	S.D.
Oregon	50	50	45	50	12	33	49	50
Wisconsin ^c	32	47	24	43	3	6	76	43
Maryland	92	27	94	24	53	50	1	1
New Jersey	100	0	100	0	62 ^d	48	0	0

Note: S.D. = standard deviation.

^a Resolved by settlement, stipulation agreement, or award at hearing.

^b Payment of PPD by defendant, no appeal, and no attorney involved.

^c Wisconsin has two PPD systems. The one in this table contains system features that reduce disputes and litigation. The other lacks these features and achieves litigation rates found in typical systems.

^d This overstates the proportion of New Jersey claims in which the parties could not reach voluntary resolution, because some of these claims are really settlements that require formal judicial approval (see Boden, 1987, p. 15).

We collected detailed data from representative samples of claim files of insurers in the four states and examined how claims were resolved. Our data include information on injury severity, litigation, impairment evaluation, medical treatment, and benefit payments. The number of claims studied varies from 204 in Maryland to 336 in Oregon. The studies reflect Maryland's system in 1985, New Jersey's and Wisconsin's in 1986, and Oregon's in 1989. Based on

these data and interviews with workers' compensation experts in these states, we learned how the features of the two litigious systems encouraged legal disputes over the payment of permanent partial disability benefits. Similarly, we learned how the two less litigious systems avoided these disputes.

How Typical Systems Encourage Litigation

The Maryland and New Jersey systems appear to provide incentives for injured workers to seek legal representation and to discourage the voluntary resolution of permanent partial disability claims.

First, neither system provides clear guidance about how to assess permanent impairment. Physicians have wide latitude in assessing impairment, and insurers lack clear guidance about the PPD benefits they owe. So, they are unlikely to pay permanent partial disability benefits voluntarily except for the most severe injuries.

Faced with more than one medical assessment of permanent impairment, adjudicators in both systems appear to "split the difference." This encourages employers to rely on physicians who typically report that workers have little or no permanent disability. Otherwise, if the case were litigated, the adjudicator would average a generous defense impairment assessment with an assessment from a physician chosen by the worker's attorney, and benefit payments would be higher.

Splitting the difference encourages injured workers to seek legal representation. Attorneys identify physicians whose more generous ratings can counterbalance the conservative ratings of defense-chosen physicians. Without their own physician opinions, injured workers must rely only on the ratings of defense physicians, accepting a lower final payment. Even if the adjudicator's preferred outcome were the central determinant of the award, as Farber's (1981) model would suggest, the system could still provide the worker with incentives to hire an attorney, guaranteeing a liberal disability evaluation. This undermines a central goal of workers' compensation—to provide benefits administratively and without recourse to attorneys.

In addition, if the parties perceive that adjudicators place much more weight on the physician ratings than on other facts, voluntary resolution is discouraged. Farber's (1981) analysis of interest arbitration shows (using utility functions with constant risk aversion) that the size of the contract zone shrinks as the adjudicator's weight on the parties' positions increases. In our article, the adversarial physician ratings are formally equivalent to the parties' positions. If the parties believe that the final outcomes are very sensitive to these ratings, the contract zone is likely to be small and a negotiated settlement difficult to reach.

Third, by encouraging disagreement between the medical experts, typical workers' compensation systems affect the incentives for voluntary resolution in several ways. First, they increase the bargaining range between the parties and thereby increase the costs of reaching agreement. If the costs of adjudication increase more slowly than the bargaining range, the probability of voluntary resolution will decline (Danzon and Lillard, 1983). Alternatively, when

there is a large difference in medical evaluations, each party may discount the value of the other side's medical rating and be less willing to "give in" to the other side in a voluntary resolution (Stevens, 1966).

Features of Less Litigious Systems

Several attributes of the less litigious systems in Wisconsin and Oregon provide incentives to employers and insurers to pay PPD benefits promptly. These features also reduce the value of attorneys to workers below their value in typical systems.

- In less litigious systems, the rules provide employers and insurers with reasonable certainty about what they owe and provide injured workers with reasonable certainty about what they should expect to receive.

- Practices and rules encourage the use of nonpartisan experts in the evaluation process.

- Adjudicators do not split the difference.

- The workers' compensation agency plays an active role in ensuring that insurers and employers pay PPD benefits in a timely manner.

The rest of this article presents the analysis of the resolution of lower-back PPD claims that led us to these conclusions.

Splitting the Difference in Two Systems

To a great extent, adjudicator behavior governs the parties' decisions to litigate and to settle litigated claims (see, for example, Landes, 1971; Gould, 1973; Bloom, 1981). A central determinant of litigiousness is the extent to which adjudicators split the difference between the final positions of the parties (Bazerman and Farber, 1985; Bloom, 1986; Farber and Bazerman, 1986). This mechanical compromise behavior can provide incentives to intensify disputes and reduce incentives to resolve disputes voluntarily (Stevens, 1966; Farber and Katz, 1979; Bloom, 1981).

Our studies of both Maryland and New Jersey produced strong evidence of mechanical compromise behavior. This evidence is based on our estimates of the parameters of what the interest arbitration literature has called the "equitable settlement" model (Farber, 1981):

$$y_f = (1 - \gamma)y_a + \gamma [\alpha y_c + (1 - \alpha)y_d] + e, \quad (1)$$

where $0 < \alpha < 1$, $0 < \gamma < 1$,

y_f = final disability rating,

y_a = adjudicator's independent estimate of disability,

y_c = claimant physician rating, and

y_d = defense physician rating.

In this specification, γ is the relative weight the adjudicator places on the medical ratings, and α is the weight on the claimant medical rating relative to the defense rating.

If the adjudicator's independent evaluation of the degree of permanent disability varies with a vector of severity measures, X , then

$$y_a = \beta X + w \quad (2)$$

and, therefore,

$$y_f = \beta(1 - \gamma) X + \gamma [\alpha y_c + (1 - \alpha)y_d] + u, \quad (3)$$

where $u = e + (1 - \gamma)w$. If we observe X , y_c , and y_d , then α , β , and γ can be estimated.

If adjudicators engage in mechanical compromise behavior, their reliance on the adversarial medical ratings does not become greater as the ratings approach complete agreement. That is, $\gamma'(y_c - y_d) = 0$. The value of γ' provides evidence about the existence of mechanical compromise behavior. If the weight on the adversarial physician ratings does not decline as they diverge, the hypothesis of mechanical compromise behavior is supported.

If $\gamma \neq 1$ in equation (3), then we can reject the hypothesis that adjudicators are splitting the difference; $\gamma = 1$ is consistent with mechanical compromise behavior.¹ In both Maryland and New Jersey, we find evidence of mechanical compromise behavior.

The Maryland System

Table 2 displays ordinary least squares estimates of final permanent partial disability ratings in Maryland lower-back injury cases awarded at hearing. We model the final rating as a function of the defense physician rating, the claimant physician rating, and factors reflecting injury severity: whether the worker was hospitalized but did not undergo back surgery, whether back surgery was done, the duration of temporary disability (in months), and the worker's age. Although medical treatment does not directly measure physical impairment, people who need more intensive medical care usually have more severe back injuries than those who do not. We also include age as a measure of severity because older workers may find it more difficult to recover from their injuries. The estimates are corrected for heteroscedasticity using White's (1980) heteroscedasticity-consistent covariance matrix.

Only one severity factor (the duration of temporary disability) has a direct impact on the final rating for awarded claims that is statistically significant at $p < 0.10$ (Table 2, column 1); but estimates of the impact of both claimant and defense ratings are large and statistically significant. Removing the severity measures from the regression barely reduces its explanatory power. On the other hand, basing the estimate of the final rating on the severity measures alone (Table 2, column 3) leads to a much larger reduction in R^2 .

The impact of claimant medical ratings appears to be less than the impact of defense ratings. Yet, the hypothesis that the physician ratings are equally

¹ An observational study cannot rule out the possibility that the parties choose their positions to be equidistant from the adjudicator's preferred outcome (Farber, 1981). Only if the parties' ratings and the facts are orthogonal and all relevant facts are known to the researcher can one unambiguously distinguish splitting the difference from tactical behavior.

Table 2

Maryland Final Disability Ratings: Awarded Lower-Back Permanent Partial Disability Claims, Two Physician Ratings, Ordinary Least Squares (N = 64)

Variable	(1)		(2)		(3)	
	Coefficient	S.E.	Coefficient	S.E.	Coefficient	S.E.
Constant	0.49	2.13	-0.46	0.98	5.41*	2.46
Claimant Rating	0.36*	0.06	0.45*	0.05	---	---
Defense Rating	0.42*	0.14	0.60*	0.12	---	---
Claimant Hospitalized	3.32	2.01	---	---	6.92*	2.38
Surgery	3.65	2.29	---	---	12.99*	2.29
Months of Temporary Disability	0.21**	0.12	---	---	0.78*	0.12
Claimant's Age	0.01	0.05	---	---	0.05	0.07
R ²	0.87		0.85		0.76	
σ	4.01		4.09		5.22	

Note: S.E. = standard error.

* Significant at 0.05 level.

** Significant at 0.10 level.

weighted cannot be rejected. The value of the F-statistic for this hypothesis is $F(1,57) = 0.15$, which is not significant at $p = 0.70$. In addition, the hypothesis that adjudicators equally weight the adversarial ratings ($\alpha = 0.5$) and that they ignore the severity measures ($\gamma = 1$) cannot be rejected at $p = 0.21$, with $F(5,57) = 1.47$.

Physician credibility. If the adversarial physicians strongly disagree, the credibility of their ratings could be weakened in the eyes of the adjudicator. Adjudicators thus may base their judgments more on the facts of a claim and less on the ratings (Farber and Katz, 1979; Bazerman and Farber, 1985; Farber and Bazerman, 1986). To test whether greater disagreement reduces adjudicators' reliance on the adversarial ratings, we estimated equation (4) with non-linear least squares using awarded claims from our Maryland data.

$$y_i = (1 - \gamma_1 - \gamma_2 D) \beta X + (\gamma_1 + \gamma_2 D)[\alpha y_c + (1 - \alpha)y_d] + u, \quad (4)$$

where D = the claimant's rating minus the defense rating, and

u = error term.

The hypothesis that $\gamma_2 = 0$ was tested for all adjudicated claims with defense and claimant ratings, and it could not be rejected at $p < 0.50$, with $F(1,55) = 0.39$. Maryland adjudicators appeared to split the difference even when the adversarial physicians strongly disagreed.

The New Jersey System

The evidence for mechanical compromise behavior in New Jersey is almost as compelling as that in Maryland. Differences in statute and in practices have led to differences in the meaning and use of physician evaluations in the two systems. Yet both systems rely heavily on adversarial physician ratings to determine permanent partial disability benefits.

New Jersey recognizes two types of lower-back impairment: orthopedic and neuropsychiatric (Boden, 1987). Orthopedic impairment was alleged in all cases in our data, but neuropsychiatric impairment was alleged in about 50 percent. New Jersey statute requires each type of impairment to be added to derive the injured worker's PPD rating. Interviews with New Jersey experts suggested that adjudicators often expect claimants' physicians to double their "true" assessment of impairment and defense physicians to halve theirs.

Given this information, if New Jersey adjudicators mechanically compromised between the parties' positions, they would use the following rule: add the orthopedic and neuropsychiatric ratings where both exist to derive the defense and claimant's ratings. Then double the defense rating, halve the claimant's rating, and split the difference. The statistical analysis suggests that this rule is broadly applied in New Jersey—explicitly and implicitly.

Table 3 displays ordinary least squares estimates of final permanent partial disability ratings in New Jersey lower-back injury cases resolved by adjudication or by voluntary agreement by the parties to a set of facts; for example, the permanent partial disability rating.² The final rating is modeled as a function of the physician ratings and the severity factors described above. We have also included a variable indicating whether neuropsychiatric ratings were present. We use this variable to capture effects that are not purely additive. For example, adjudicators may perceive an overlap in the impairment described by the orthopedic and neuropsychiatric ratings and may decide on a PPD rating less than the sum of the two types of impairment. As in Table 2, the estimates are corrected for heteroscedasticity using White's (1980) heteroscedasticity-consistent covariance matrix.

The variation in final ratings is explained very well by the independent variables, with $R^2 = 0.87$. As in Maryland, the adversarial physician ratings alone explain only a little less of the variation in outcomes, with $R^2 = 0.83$. We tested the hypothesis that the coefficients of all severity measures are zero for claims with claimant and defense ratings, but it was rejected, with $F(5,83) = 3.68$, $p < 0.01$.

Our estimates of the coefficient of the claimant's rating are close to 0.25, and our estimates of the coefficient of the defense rating are close to 1.00. This supports the hypothesis that New Jersey's adjudicators doubled the defense rating, halved the claimant's rating, and split the difference. New Jersey's adjudicators appeared to engage in mechanical compromise behavior, although the dispute resolution language was different from Maryland's (Gibbons, 1988).

Physician credibility. As in Maryland, mechanical compromise behavior in New Jersey seems unaffected by the disparity between adversarial ratings. We estimated equation (4) for New Jersey using nonlinear least squares. The

² Because of New Jersey administrative practices, we could not distinguish between adjudicated claims and voluntary agreements by the parties to a set of facts (see Boden, 1987, p. 16). Thus, we could not examine adjudicated claims in isolation.

Table 3

New Jersey Final Disability Ratings: Lower-Back Permanent Partial Disability Claims, Two Physician Ratings, Ordinary Least Squares (N = 90)

Variable	(1)		(2)		(3)	
	Coefficient	S.E.	Coefficient	S.E.	Coefficient	S.E.
Constant	-1.21	-0.60	-0.26	1.08	2.21	1.89
Claimant Rating	0.29*	0.04	0.27*	0.04	---	---
Defense Rating	1.04*	0.17	1.21*	0.13	---	---
Claimant Hospitalized	3.01**	1.59	---	---	10.52*	1.45
Surgery	7.28*	2.28	---	---	21.53*	1.76
Months of Temporary Disability	-0.34*	0.11	---	---	0.36*	0.09
Claimant's Age	0.02	0.05	---	---	0.16*	0.05
Neuropsychiatric Ratings Present	-4.84*	1.58	---	---	---	---
R ²	0.87		0.83		0.65	
σ	4.83		5.25		7.68	

Note: S.E. = standard error.

* Significant at 0.05 level.

** Significant at 0.10 level.

data do not support the hypothesis that physician disagreement reduces the impact of physician ratings on final outcomes, with $F(2,80) < 0.0001$, $p > 0.99$.

Reducing Litigation in Oregon and Wisconsin

The Oregon and Wisconsin systems have achieved much lower rates of litigiousness for permanent partial disability than the systems in Maryland and New Jersey. They did so by implementing system features that combine to create reasonable certainty about what is owed, stimulate prompt payment by employers and insurers, and discourage the use of partisan experts in favor of treating physicians. In both systems, injured workers and employers or insurers often have little or nothing to gain from litigation.

Oregon and Wisconsin: Similar Features

Written PPD guidelines. For back injuries, Wisconsin's written permanent partial disability guidelines apply only to functional impairment from injuries involving surgery. They require minimum impairment ratings of 5 percent or more for workers with these injuries. Oregon's guidelines are more complex than Wisconsin's; they assess loss of earning capacity, not just impairment.

Reliance on treating physicians. In the workers' compensation system in place in Oregon in 1989, state-employed evaluators initially determined the degree of permanent partial disability. This function typically fell to insurers and employers in Wisconsin. By law and in practice, evaluators in Oregon and adjudicators in both Oregon and Wisconsin relied heavily on impairment assessments by treating physicians. In both states, when a treating physician report was present, the adjudicator generally relied on it. Treating physicians

provided reports in 95 percent of lower-back PPD claims in Oregon and 75 percent in Wisconsin. Between 9 and 15 percent of the time, adjudicators in Oregon decided that impairment in an area was higher or lower than all expert assessments. But when their decisions were within the range of expert assessments and treating physician reports were present, adjudicators agreed with treating physicians 71 to 89 percent of the time, depending on the area being assessed. In the Wisconsin impairment system, our data included only five adjudicated claims with treating physician ratings present. In four of these, the adjudicator's permanent partial disability rating was the same as the treating physician's; in the fifth, it was 2.5 points from the treating physician rating but 15 points from the adversarial rating.

Both Oregon and Wisconsin give the injured worker the right to choose the treating physician. So the worker might choose the treating physician to be a partisan claimant expert. If treating physicians were acting as partisan claimant experts, we would expect their assessments to be more generous than partisan defense reports in almost every claim.

The Oregon data do not support this hypothesis. We compared defense and treating physician assessments of range of motion in claims where both were present. About half the time, defense ratings were lower than treating physician ratings (see Table 4). Yet they gave equal assessments in one-fifth of claims, and treating physician ratings were below defense ratings one-third of the time. For disc disorders and strength, the exact proportions differ, but the general pattern holds: treating physicians' reports were lower than defense reports in a significant minority of claims, and the defense expert report was a little less likely to be higher than lower.

Table 4
Expert Reports on Loss of Range of Motion: Oregon Claims
with Both Treating and Defense Reports, 1989 (N = 70)

	<i>Percent of Claims</i>
Treating Physician Lower	31
Both Reports the Same	18
Defense Physician Lower	51

In Wisconsin, treating physicians provided impairment ratings that averaged above defense ratings and below claimant ratings. This suggests that physician behavior in Wisconsin may have been more partisan than in Oregon. Still, we cannot tell whether observed disparities were caused by selection of cases in which defense and claimant physicians were hired, the partisan nature of defense and claimant ratings, or bias of treating physicians. Workers' compensation claim managers in Wisconsin told us that treating physicians rarely act as patient advocates when they provide impairment ratings. In fact, they related that some surgeons tend to give low impairment ratings, because doing otherwise would imply that their surgery was unsuccessful.

No splitting the difference. Adjudicators in Oregon seldom compromised among expert reports. We looked at adjudicator decisions for three important factors in the permanent partial disability guidelines: range of motion, release to return to work, and strength. For all three, adjudicators selected a rating in accord with at least one expert assessment more than 75 percent of the time when impairment in the area was rated.

We reviewed the Oregon claims individually, looking for instances in which evaluators' ratings fell between the ratings implied by expert reports. We classified these as possible compromises. By this test, adjudicators compromised in at most 10 percent of adjudicated claims.

When a Wisconsin adjudicator faces two expert ratings in a functional impairment case, the law requires "final offer" adjudication, constraining the adjudicator to select a rating close to one or the other, but not an intermediate position. In Wisconsin cases with multiple impairment ratings, adjudicators' decisions were within 2.5 points of one. This pattern is very different from that found in states like Maryland and New Jersey, where adjudicators typically split the difference between disparate expert reports.

Agency oversight. In both Oregon and Wisconsin, the workers' compensation agency tracks claims, confirming that employers and insurers are providing permanent partial disability benefits based on treating physician assessments. Both states provide for penalties when PPD benefits are not paid promptly.³ And both inform the worker, employer, and insurer in writing of the benefits due the worker.

Voluntary payment. One consequence of the features of the Wisconsin and Oregon dispute resolution systems is that employers and insurers frequently pay PPD benefits voluntarily. In the Wisconsin system, employers and insurers made voluntary PPD payments in 80 percent of lower-back PPD claims; in the 1989 Oregon system, this number was almost 100 percent. In both cases, workers were less likely to seek out attorneys because they were paid timely benefits based on treating physician assessments.

Litigation. Many of the claims in both systems were resolved by the initial voluntary payment. No legal dispute over the degree of permanent disability arose; if an attorney was involved, another issue was in dispute. As shown in Table 1, two-thirds of Wisconsin lower-back PPD claims were resolved by voluntary payment and without attorney involvement. This was true for about half of the lower-back permanent partial disability claims in Oregon.

The Impact of PPD Guidelines in Wisconsin

Written PPD guidelines clarify the amount of permanent partial disability benefits due. In a system like Wisconsin's, guidelines should encourage employers and insurers to pay PPD benefits voluntarily, relying only on treating

³ Of course, the employer or insurer can allege that the treating physician assessment is unreasonable and provide its own evaluation. Still, at a hearing, the adjudicator presumes that the treating physician rating is correct.

physician evaluations. This, in turn, should lead to less attorney representation and more frequent resolution without litigation.

Wisconsin provides an excellent testing ground for this hypothesis. For back injuries, its PPD guidelines apply only to injuries involving surgery, requiring minimum permanent disability ratings of 5 percent or more for workers with these injuries. We can look, then, at surgery claims to see if employers and insurers voluntarily pay benefits more often and if the parties litigate less frequently. Without Wisconsin's guidelines, we might expect claims involving back surgery to be disputed more frequently, because the injuries are often more severe and benefits higher than for other claims.

The probability of voluntary payment. First, we test the hypothesis that Wisconsin's permanent partial disability guidelines encourage more frequent voluntary payment by employers and insurers. This is supported by the probit estimates displayed in Table 5, column 1. The coefficients indicate that employers and insurers are more likely to make voluntary payments for claims with back surgery than for those without surgery. Using the estimates in Table 5, we calculated the expected probability of receiving a voluntary PPD payment for a hypothetical average worker with and without back surgery. In each category, we attributed to the worker average age and average duration of temporary disability. These calculations suggest that a 37-year-old worker with back surgery who lost 12 months from work would have an 80 percent probability of receiving a voluntary PPD payment. This probability would be only 50 percent for a worker with the same characteristics who was hospitalized without surgery.

Table 5
Probit Estimates of Voluntary Payment and Attorney Representation:
Wisconsin Lower-Back Permanent Partial Disability Claims

Variable	(1)		(2)	
	Voluntary Payment (N = 264)		Attorney Representation (N = 251)	
	Estimate	S.E.	Estimate	S.E.
Constant	0.40	0.32	3.35*	0.76
Age	-0.015**	0.008	-0.028*	0.01
Hospitalized (No Surgery)	0.27	0.24	0.11	0.36
Back Surgery	-0.44*	0.19	-0.091	0.26
Temporary Disability (in Months)	0.018*	0.006	0.019*	0.01
Voluntary PPD Payment	---	---	-3.39*	0.53
Log-Likelihood	-142.82		-158.34	
Log-Likelihood (Restricted Slopes)	-181.11		-182.9	

Note: S.E. = standard error.

* Significant at 0.05 level.

** Significant at 0.10 level.

Probability of attorney representation. Workers who were paid permanent disability benefits voluntarily were less likely to seek the assistance of an attorney than those who have received no permanent disability benefits. In Table 5, column 2, we model the probability of attorney representation as a function of injury severity and voluntary payment. Voluntary payment of permanent disability benefits is the factor most strongly associated with attorney representation. Other things being equal, when a voluntary payment was made, attorney representation and consequent legal dispute became much less likely.

Differences between Oregon and Wisconsin

Despite the similarities between the Oregon and Wisconsin systems, half of Oregon's lower-back PPD claims were litigated, compared with one-third of Wisconsin's. This suggests that features of the Oregon system encouraged the parties to litigate. Some of these were elements of the evaluation guidelines themselves; others were elements of the appeals process. Both are instructive to policy-makers in other states who are contemplating the adoption of formal evaluation guidelines.

Difficult-to-measure factors. Certain elements in Oregon's evaluation guidelines were difficult to measure objectively. These factors invited disagreement and increased uncertainty about how much was due in PPD payments. For example, the evaluators and adjudicators usually agreed on objective factors like age, education, and back surgery. But in 40 to 70 percent of cases, they disagreed on other factors, among them range of motion, strength, and chronic limitations of repetitive motion. Table 6 shows the extent and direction of disagreement. Formal evaluation guidelines that rely heavily on range of motion or other factors that are measured subjectively are unlikely to reduce litigation to the levels of more objective guidelines.

Wisconsin's evaluation rules, on the other hand, consider primarily whether the worker has had back surgery. This is an objective and easily measured factor. It does not, by itself, capture the full extent of impairment, but it establishes a common baseline, an initial point of agreement among medical experts.

Potential for large disparities. Two aspects of Oregon's formula for determining PPD benefits mean that small differences in expert opinion translate into large differences in payments. First, one factor—chronic limitation of repetitive motion—was evaluated on an all-or-nothing basis: yes or no, with 5 points added if yes. Second, several factors were multiplied together to compute the disability rating. A small change in one factor when multiplied by a large value for the other can have a large impact on the ultimate rating. Given that disability evaluation is as much art as science, guidelines that contain thresholds, multiplicative formulas, or other features that produce large payment changes for small differences in opinion breed litigation because they disproportionately raise the stakes in controversy. Wisconsin has no comparable formula.

State-employed evaluators. In Oregon's 1989 workers' compensation system, state-employed evaluators initially determined the degree of permanent partial disability. Table 7 displays an ordinary least squares estimate of evaluators'

Table 6
 Changes from Evaluator to Adjudicator:
 Oregon Awarded Claims, 1989

	Percent of Claims		
	Decreased	Unchanged	Increased
Permanent Partial Disability Rating (N = 138)	11	9	80
Impairment Rating* (N = 138)	11	15	75
Chronic Condition*	0	31	69
Range of Motion*	14	54	32
Surgery and Disc Disorders	11	77	12
Ankylosis	1	99	0
Compression	1	99	0
Other	0	100	0
Labor-Market Rating* (N = 86)**	21	31	48
Age-Education Factor*	12	63	26
Skill Factor*	0	84	16
Formal Education*	2	88	9
Age Factor	0	95	5
Training Factor*	15	80	5
Strength Factor*	13	56	31

Note: Some rows do not add to 100 percent due to rounding.

* The proportion increased was significantly different from the proportion decreased. Disparities at least this large between the proportion increased and the proportion decreased would occur less than 5 percent of the time in similar data if referees increased ratings as often as they decreased them.

** Changes in labor-market ratings were calculated only for those claims that were eligible for labor market points at both the initial determination and at the hearing. The labor market rating applies only when the impairment rating is positive and the injured worker has not returned to usual and customary employment.

disability ratings for lower-back PPD claims in Oregon. Table 8 displays the coefficients of probit estimates of the probability that workers would appeal an evaluator's rating. One of the independent variables is the extent to which the expected evaluator's rating (from the coefficients in Table 7) exceeded the observed rating. As the observed rating fell relative to the expected rating, injured workers became more likely to appeal.

When hearings were held, adjudicators conducted *de novo* review. Even if adjudicators did not hear new evidence, they could change the evaluators' ratings. Oregon did not have a mechanism with which to create consistency among evaluators and adjudicators. The two groups did not have common supervisors; nor did one group supervise the other. Neither the workers' compensation agency nor the two groups had a means of creating incentives to develop consistency. And the guidelines were sufficiently ambiguous to allow different interpretations.

Wisconsin's final-offer adjudication rule, in conjunction with Wisconsin's reliance on treating physician ratings, provides incentives for adjudicators in Wisconsin to award permanent disability in accordance with the same treating physician ratings relied on by employers and insurers. The Wisconsin system

Table 7
Ordinary Least Squares Estimates of Oregon
Evaluators' Disability Ratings (N = 315)

<i>Variable</i>	<i>Coefficient</i>	<i>Standard Error</i>
Constant	-1.92	1.73
Age	0.19*	0.04
Hospitalized (No Surgery)	3.77*	1.81
Back Surgery	3.90*	1.13
Temporary Disability (in Months)	0.14*	0.07
Return to Modified Work	7.75*	1.18
No Return to Work	15.39*	1.13

Source: Boden, Kern, and Gardner (1991).

Note: $\sigma = 7.58$; $R^2 = 0.52$.

* Significant at 0.05 level.

Table 8
Probit Estimates of the Probability a Worker Appeals an
Evaluator's Permanent Partial Disability Rating (Oregon) (N = 315)

<i>Variable</i>	<i>Coefficient</i>	<i>Standard Error</i>
Constant	-0.674	0.379
Age	-0.005	0.009
Hospitalized (No Surgery)	-0.326	0.441
Back Surgery	-0.28	0.214
Temporary Disability (in Months)	-0.029*	0.014
Return to Modified Work	0.230	0.244
No Return to Work	0.626*	0.214
Pre-evaluation Attorney Representation	1.670*	0.215
Date of Attorney Involvement Unknown	6.956	347.8
Observed Minus Expected Evaluator's Rating	-0.027*	0.011

Source: Boden, Kern, and Gardner (1991).

Note: Log-likelihood = -127.82; Log-likelihood (restricted slopes) = -192.84.

* Significant at 0.05 level.

promotes consistency between initial payments and adjudicators' decisions and thus reduces incentives to litigate.

Wisconsin's Typical System

We believe that the features we have described explain the relatively low levels of litigation in Wisconsin and Oregon. An alternative explanation is that a climate of cooperation in these states is responsible for their nonadversarial systems. Conveniently, Wisconsin offers us a way to distinguish between these hypotheses.

About 25 percent of workers who receive permanent partial disability benefits in Wisconsin are paid for loss of earning capacity. To qualify for these benefits, the worker, at the time of maximum medical improvement, must have sustained an earnings loss of 15 percent of preinjury earnings or more. Wisconsin law requires that earning capacity benefits be at least as large as functional

impairment benefits. Wisconsin's alternative permanent partial disability system, its earning capacity system, does not share with its functional impairment system the features that provide incentives for nonadversarial disability evaluation and initial payment of permanent disability benefits. PPD guidelines require minimum functional impairment ratings of 5 percent for workers with back surgery. The active oversight of the workers' compensation agency has focused on encouraging initial payment of functional impairment claims based on treating physician evaluations. The workers' compensation agency does not have routine procedures to determine when earning capacity benefits should be paid, to notify injured workers who may be entitled to these benefits, or to encourage initial payment by employers and insurers. The Wisconsin statute does not require judges to apply final-offer adjudication to earning capacity claims.

Because payment of earning capacity benefits is not automatic, injured workers usually need the assistance of the workers' compensation agency or an attorney to learn about and procure earning capacity benefits. They are less likely to hire an attorney if functional impairment benefits have been paid initially, a more frequent occurrence (because of the minimum rating guidelines) among those who have had back surgery. If injured workers hire attorneys and wish to pursue earning capacity benefits, they obtain the services of vocational experts. Employers and insurers also typically hire their own vocational experts. Because dueling adversarial experts are used and final-offer adjudication does not apply, vocational ratings provide the basis for more legal dispute than physician ratings of functional impairment.

The highly adversarial nature of disability evaluation for earning capacity claims is reflected in other aspects of their disposition. Injured workers hire an attorney in 89 percent of earning capacity claims. On the other hand, only 32 percent of those with functional impairment benefits are represented by an attorney (see Table 9). Compared with 24 percent of functional impairment claims, 87 percent of earning capacity claims involve legal dispute over the extent of permanent disability. Fourteen percent of earning capacity claims are awarded at hearing, compared with 3 percent of functional impairment claims. Initial payment of permanent disability benefits is much less common among earnings capacity claims when compared with functional impairment claims. In 80 percent of functional impairment back claims, there is an initial payment of permanent disability by the employer or insurer; 76 percent are eventually resolved by conceded payment. Although 34 percent of workers receiving earning capacity benefits receive initial payment of some permanent disability benefits, one-third of these initial payments are based on functional impairment alone; that is, only 13 percent of workers eventually receiving earning capacity benefits receive *initial payment* of earning capacity benefits.

Conclusion

We have shown a surprising degree of similarity between the two typical, litigious systems we have studied. In Maryland and New Jersey, adversarial

Table 9
Measures of Litigiousness: Wisconsin Lower-Back
Permanent Partial Disability Claims

<i>PPD System</i>	<i>Worker Represented by Attorney %</i>	<i>Disputed^a %</i>	<i>Awarded at Hearing %</i>	<i>Resolved by Voluntary Payment^b %</i>
Dispute Reduction	32	24	3	76
Typical	89	87	14	13

^a Resolved by settlement, stipulation agreement, or award at hearing.

^b Payment of PPD by defendant, no appeal, and no attorney involved.

experts characteristically assess the extent of disability. Neither state provides guidelines for assessing permanent disability. The partisan experts give widely varying assessments. Most workers hire attorneys and most claims are litigated. Adjudicators provide incentives for extreme adversarial ratings by splitting the difference between the partisan expert opinions. The workers' compensation agency rarely takes action until someone requests a hearing.

The workers' compensation systems in Wisconsin and Oregon are quite different from those in Maryland and New Jersey. The systems in Wisconsin and Oregon more successfully avoid litigation and share some features.

1. *In the less litigious systems, rules provide employers and insurers with reasonable certainty about what they owe and provide injured workers with reasonable certainty about what they should expect to receive.* When such certainty exists, insurers and employers frequently make voluntary payments of permanent disability benefits, and workers accept these payments without seeking legal representation. Wisconsin and Oregon both created a more certain environment, but used different approaches. Wisconsin used evaluation guidelines that required workers with certain conditions to receive at least a stated disability rating. Oregon provided an evaluation formula that listed the factors to be considered, provided scores for each factor, and required that the scores be combined using a specific formula. The result of this formula determined the amount owed. In both states, employers and insurers typically made voluntary payments, and resolution of permanent partial disability claims without attorney involvement was common. Litigation was more frequent in Oregon than in Wisconsin, partly because Oregon's PPD guidelines left more room for dispute than Wisconsin's. In Maryland and New Jersey, litigation was the rule, not the exception. In addition, a minority of Wisconsin permanent partial disability claims flowed through an alternative PPD system without guidelines. This system also had typical outcomes, including rates of attorney involvement comparable to those in Maryland and New Jersey.

2. *Practices and rules encourage the use of nonpartisan experts in the evaluation process.* In Wisconsin and Oregon, nonpartisan disability assessments were the rule. In both states, treating physicians provided the majority of disability evaluations on which the parties and adjudicators rely. "Dueling" partisan experts were the exception. But in Maryland and New Jersey and in Wisconsin's typical system, the parties commonly hired adversarial experts.

3. *Adjudicators do not split the difference.* In typical litigious states, splitting the difference between partisan experts is the norm. In its dispute reduction system, Wisconsin prohibited splitting the difference. Instead, the statute compelled adjudicators to use "final-offer" adjudication: if there were multiple, conflicting expert opinions, the adjudicator was required to choose a rating close to one, rather than split the difference. A party won, under this process, by having a more credible expert. In practice, both sides recognized that relying on the assessment of a credible treating physician was the most sensible course of action. Adjudicators in Oregon, in practice, elected not to split the difference. This had an effect similar to the final offer adjudication rule in Wisconsin.

4. *The workers' compensation agency plays an active role in ensuring that insurers and employers pay PPD benefits in a timely manner. The agency also ensures that workers understand what they can expect.* Where insurers and employers make timely payments of amounts that workers expect, cases are resolved promptly and without litigation (see also Borba and Appel, 1987). In typical litigious states, the posture of the agency is passive in this regard. The agency stands ready to provide dispute resolution services when requested by the parties, but does little to prevent disputes. By contrast, in Wisconsin and Oregon, the agencies monitored the process and, upon maximum medical improvement, obtained evaluations from treating physicians that they used to compute what the worker was owed. The agency then notified workers, employers, and insurers of this amount and insisted that, within a stated time frame, either the employers or insurers pay this amount or file a notice of contest. The agency monitored compliance and regularly penalized noncompliance. Within this structure, insurers and employers frequently and promptly tendered voluntary payments of PPD. When the worker received a check that matched what the agency told him or her to expect, the case was usually resolved. By helping the worker to navigate the complex system and to understand what to expect, the agency reduced the need to seek legal representation.

Individually, each of these four features helps to reduce litigation. But the whole is much greater than the sum of its parts. Each feature increases the effectiveness of the others.

References

- Bazerman, Max H. and Henry S. Farber, 1985, Arbitrator Decision Making: When Are Final Offers Important? *Industrial and Labor Relations Review*, 39: 76-89.
- Bloom, David E., 1981, Is Arbitration Really Compatible with Bargaining? *Industrial Relations*, 20: 233-244.
- Bloom, David E., 1986, Empirical Models of Arbitrator Behavior under Conventional Arbitration, *Review of Economics and Statistics*, 48: 578-585.
- Boden, Leslie I., 1986, *Use of Medical Evidence: Low-back Permanent Partial Disability Claims in Maryland* (SP-86-1) (Cambridge, Mass.: Workers' Compensation Research Institute).

- Boden, Leslie I., 1987, *Use of Medical Evidence: Low-back Permanent Partial Disability Claims in New Jersey* (WC-87-5) (Cambridge, Mass.: Workers' Compensation Research Institute).
- Boden, Leslie I., 1988, *Reducing Litigation: Evidence from Wisconsin* (WC-88-7) (Cambridge, Mass.: Workers' Compensation Research Institute).
- Boden, Leslie I., D. E. Kern, and J. A. Gardner, 1991, *Reducing Litigation: Using PPD Guidelines and State Evaluators in Oregon* (WC-91-3) (Cambridge, Mass.: Workers' Compensation Research Institute).
- Boden, Leslie I., 1992, Dispute Resolution in Workers' Compensation, *Review of Economics and Statistics*, 74: 493-502.
- Borba, Philip S. and David A. Appel, 1987, The Propensity of Permanently Disabled Workers to Hire Lawyers, *Industrial and Labor Relations Review*, 40(3): 418-429.
- Danzon, Patricia M. and Lee Lillard, 1983, Settlement Out of Court: The Disposition of Medical Malpractice Claims, *Journal of Legal Studies*, 12: 345-377.
- Farber, Henry S., 1981, Splitting-the-Difference in Interest Arbitration, *Industrial and Labor Relations Review*, 35: 70-77.
- Farber, Henry S. and Max H. Bazerman, 1986, The General Basis of Arbitrator Behavior: An Empirical Analysis of Conventional and Final-Offer Arbitration, *Econometrica*, 54: 819-844.
- Farber, Henry S. and Harry C. Katz, 1979, Interest Arbitration, Outcomes, and the Incentive to Bargain, *Industrial and Labor Relations Review*, 33: 55-61.
- Gibbons, Robert, 1988, Learning in Equilibrium Models of Arbitration, *American Economic Review*, 78: 896-912.
- Gould, John P., 1973, The Economics of Legal Conflicts, *Journal of Legal Studies*, 2: 279-300.
- Landes, William M., 1971, An Economic Analysis of the Courts, *Journal of Law and Economics*, 14: 61-108.
- Stevens, Carl M., 1966, Is Compulsory Arbitration Compatible with Bargaining? *Industrial Relations*, 5: 38-52.
- White, Halbert, 1980, A Heteroscedasticity Consistent Covariance Matrix and a Direct Test for Heteroscedasticity, *Econometrica*, 48: 817-838.

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