Struggle for Regulatory Power between States and the US Federal Government: The Case of Workers' Compensation Insurance 1930-2000

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Abstract. This paper contributes to our understanding of the power struggle for regulatory control between the states and the US federal government, especially during the *Progressive* and *Great Society* eras. By focusing on one substantial social insurance program – workers' compensation insurance – the effects of competition between the federal government and the states over regulatory control are demonstrated. Calls for greater generosity in the early 1970s, and the threat of a federal takeover of workers' compensation insurance induced dramatic and lasting changes. States reacted to the federal government's recommendations and neighboring states' actions by raising benefit levels. A comprehensive index of expected monetary wage-replacement benefits across the US between 1930 and 2000 is constructed to demonstrate the variation over time and across states.
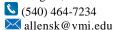
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1. Introduction

During the twentieth century the US dramatically increased the role of government in the economy. This growth in government occurred for myriad reasons and resulted in the expansion of both federal government spending and state government regulation. Early in the twentieth century before the massive rise in interstate commerce, states embraced the role of regulating workplaces, establishing acceptable standards, and creating safety nets for those in need. However, with the rise of crises viewed as national threats, such as the Great Depression and the World Wars, Higgs (1985; 1987) and others arguethatthe federal government responded to these episodes with drastic increases in spending on programs that persisted long after the emergencies were resolved. Thus, the United States' changing economic circumstances, especially during the *Progressive* and *Great Society* eras, meant that state legislators and national politicians had to compete for relevance and the extent of their political power.

To illustrate the struggle for regulatory power between individual states and the US federal government, we turn to the case of workers' compensation insurance. Workers' compensation insurance provides an ideal case study because it was rapidly adopted by nearly every state, it impacts the vast majority of employees, it

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dramatically altered workplaces, and it is among the first social insurance programs in the United States. Moreover, even though workers' compensation benefits substantially impact injured workers, very few studies examine the variationin benefits.

Since their inception in the early 1900s, workers' compensation insurance programs have provided protection for American workers and limited employers' liability. State legislatures - ever mindful of the goals of competing interest groups[1] - are responsible for the scope and generosity of these regulations. Over time, states have acknowledged the seriousness of occupational diseases, the importance of wage-replacement, rehabilitation and medical care, as well as the need to provide coverage for nearly all employees including those with previous injuries.

This paper focuses on thepolitical economy of monetary wage-replacement benefits that states mandate employers to pay to their workers injured on the job. By constructing an index of these benefits and using political and economic variables to explain the variation, this paper provides meaningful insights into the political history of workers' compensation insurance benefits.

Using a constructed comprehensive index of real, monetary "expected" benefits of workers' compensation, three noteworthy features emerge. First, the real, monetary "expected" benefits of workers' compensation vary both across states and over time as illustrated by theconstructed comprehensive index. In real terms, average benefits declined between 1940 and 1950, but rose substantially during the 1970s and then remained steady in the 1980s and 1990s. Second, calls for greater generosity in the early 1970s, and the threat of a federal takeover of workers' compensation insurance induced dramatic and lasting changes. States raised benefit levels and increasingly linked them to state average weekly wages – instead of writing statutes in nominal dollar amounts –to mitigate the future impacts of inflation. Third, state-level political and economic data reveal that the "compulsory" nature of state workers' compensation statutes and the level of expected benefits in neighboring states are crucial to understanding benefit changes over time. States' average earnings play a less significant role.

2. History and Related Literature on Workers Compensation Benefits

Nearly all states adopted workers' compensation programs between 1910 and 1930.[2] Fishback & Kantor (1995; 1998; 2000) argue this transition to social insurance from the existing negligence liability system was embraced by states because each interest group had something to gain. There were compromises and arguments about exemptions and benefit levels, but ultimately employers, workers, and insurers all benefitted from the *initial* adoption of workers' compensation.

Workers' compensation benefits and coverage have changed dramatically since 1930, and like many social insurance programs, have faced increasing criticism in the past few decades. Critics of workers' compensation insurance have consistently argued at various points in time that individual state programs were inadequate and did not provide injured workers with sufficient benefits.[3]

In the middle and late 1960s, a combination of factors contributed to fundamental changes in workplaces across the country. President Johnson's "Great Society" agenda included a wide-range of programs and policies to improve economic justice in America. President Johnson famously sought to eliminate poverty and racial discrimination. His programs also sought to protect the environment and conditions in industrial workplaces, including mines. The interest in regulating mines extends naturally from the stated goals since mines have

significant environmental impacts, a history of turbulent race relations, and had a reputation for employing workers with few or no economic alternatives.

The US Bureau of mines was established in 1910; however, it had no ability to coerce or enforce compliance and thus did little to protect workers (Fishback, 1992; Graebner, 1976). The Bureau collected data and conducted research, but did not have the authority to inspect mines until 1941. Increasing appropriations per worker led to accident reductions: by 1949 accident rates were half their 1930s levels. In 1952, The Federal Coal Mine Safety Act gave the Bureau the ability to issue withdrawal orders and issue violation notices. By the late 1960s, advocates for reform argued that legislation had not adjusted to reflect the latest changes in mining technology nor had it properly responded the latest medical research. In particular, most states did not mandate compensation for "black lung" in spite of the documented connection with exposure to coal dust. Moreover, accident rates had not dropped since the late 1940s (Fishback, 1992).

In September 1968, President Johnson sent a bill to congress that would have created stiffer penalties for violations and increased inspectors' authority to close dangerous mines.[4] The bill was initially buried until a major mine disaster returned mine safety to the national conscience.

AWest Virginia coal mine explosion in November 1968 killed 78 miners and brought workplace safety back into the national spotlight (Thomason, et. al. 2001). The West Virginia mine disaster was particularly controversial because the mine had been repeatedly cited for over 25 serious federal violations in the months leading up to the accident. However, the federal inspector did not exercise the authority to shut down operations.[5] After the accident, the cause was resuscitated by President Johnson and Secretary of the interior Stewart Udall, and eventually in 1969 the Federal Coal Mine Health and Safety Act was passed.[6]

After Johnson left office, the Nixon administration clearly viewed workplace safety as crucial to its agenda as well, adding additional powers for government regulation in subsequent legislation. In response, the federal government expanded mine safety regulations, but also expanded its interest in workplace hazards of all types, eventually passing the separate Occupational Safety and Health Act of 1970. As part of the 1970 legislation, the federal government appointed a special National Commission to assess the overall efficacy and adequacy of all workers' compensation programs in the United States.[7]

The National Commission outlined numerous recommendations including compulsory coverage for all workers with no occupational or numerical exemptions; full coverage of all work-related diseases; full medical and physical rehabilitation services without arbitrary limits; greater flexibility for employees filing interstate claims; adequate weekly cash benefits for temporary total, permanent total, and death cases; and the elimination of arbitrary limits on the duration or sum of benefits.[8] The National Commission provided specific guidelines for what it deemed "adequate" cash benefits and even provided a timeline for states to achieve certain benchmarks. Moreover, the commission also estimated the additional costs (as a percentage of the 1972 costs) of implementing the new recommendations. These costs were not trivial; the median extra cost of meeting the essential recommendations by 1973 was 23 percent. Meeting all the 1975 recommendations required a median extra cost of 43 percent.[9]

Importantly, the commission strongly encouraged federal action against those states still not in compliance with its recommendations by 1975. Federal oversight would have meant reduced political power for state legislatures, and therefore legislators had incentive to meet the commission's recommendations. In addition, federal oversight would have also enabled the prospect of re-opening previously

denied claims. This could have led to significantly higher costs for states as claims could then be required using the much more generous federal standards.

The National Commission's report suggested that states maintain authority over workers' compensation; however, there is reason to believe that states viewed this with considerable concern. In fact, there was a congressional bill that would have "among other things, give[n] every employee or surviving spouse whose claim for Workers' Compensation benefits had been denied prior to 1976, the right to re-file their claims under federal standards. Since virtually no states [in 1974 had] benefits equal to those which would apply under the provisions of S. 2008 thousands of claims could [have been] reopened to the possible tune of many millions payable in new benefits."[10]

Despite the significant impact that workers' compensation benefits have on injured workers, very few studies have addressed the underlying reasons for the discrepancies in benefit levels across states. The most pertinent studies on workers' compensation benefit levels are those of Danzon (1988), Fishback & Kantor (1995, 1998, 2000) and Butler & Appel (1990).

In Danzon's (1988) cross-sectional analysis of benefits in the 1970s and 1980s, she developed a theoretical median voter model to express the choices workers would make if their insurance situations were considered pure private goods. Danzon highlighted four findings relevant to the political economy story.[11] First, general equilibrium effects mattered: there existed a negative correlation between the percentage of low-income families in a state and its level of benefits. Second, her estimates suggested that earnings levels and unionization do *not* play a significant role in determining the maximum weekly benefits. Third, she observed that benefits are lower in states that have higher proportions of employees working in small establishments.[12] Fourth, states with high percentages of agricultural and service workers tended to have higher weekly workers' compensation benefits.

In contrast to Danzon's general equilibrium, median voter model, Fishback & Kantor (1998, 2000) formulated separate objective functions for workers and for employers in a partial equilibrium approach. Fishback & Kantor (investigating the era from 1910 to 1930) suggested that legislators acted to appease influential interest groups. Employers in risky industries were effective in convincing lawmakers to keep benefits relatively low. Employers were also able to lobby for lower benefits in states where wages were on the rise. Yet, in states with active, organized labor, employers were less successful in keeping benefits down. Fishback and Kantor also highlighted the importance of the political progressives in determining benefit levels.[13]

Additional insights into the changes in workers' compensation benefits in the modern era are reported by Butler & Appel (1990). Their study considered the trends in state benefit adjustments for a subset of the United States between 1955 and 1985.[14] They modeled the probability that inflation-adjusted benefits would increase.[15] Thus, they tested whether each variable made a positive increase in the real benefit more likely. They concluded that benefit changes in workers' compensation were sensitive to political pressures and not the result of aggregate economic trends or attempts by legislators to achieve some target wage replacement. Benefits tended to grow when a neighboring state increases its benefits, when inflation rose, and where (group) self-insurance has been possible. Moreover, they noted statistical significance in the level and trend of benefit increases from 1972 - when the National Commission on State Workmen's Compensation Laws issued its report – to 1985.

3. The Path of Expected Monetary Benefits

Which states have the most generous workers' compensation benefits? How has the level of benefits changed over time? These seem like simple questions; however, the answersare surprisingly difficult to generalize. The actual monetary benefits mandated in each state depend on several factors including the specific type and duration of injury, the previous income of the injured worker, and how many dependents were supported by the injured worker.[16] Injuries are broadly classified as temporary total, permanent partial, permanent total, and fatalities.[17] Most workers' compensation studies only use the state's maximum weekly payment for temporary total disabilities without incorporating the other types or their durations.[18] This paper uses a more comprehensive measure similar to that used by Fishback and Kantor (1995, 1998, 2000).

The comprehensive index for each state is based on the amount a worker earning the national average wage, $\bar{w}$, would expect to receive in compensation should he sustain an on-the-job injury. The measure represents an "expected" benefit since it is the net present value of the stream of payments that a worker would receive if injured in each state. The index is calculated by weighting the net present value of payments for each injury type by the empirical probabilities of those injury types and is adjusted for inflation. The construction of the index is outlined by equations (1) and (2) below.

In a given year, each state has its own formula for determining benefits for each injury type: B_{ist}. In most cases, this amount is a percentage (usually 66 percent) of the worker's pre-injury, pre-tax earnings, subject to weekly maximums, minimums, and waiting periods. Moreover, states differ in the number of weeks they allow for payments of different classes of impairment even within an injury-type.[19] The benefit measure is expected net present value of future payments for the three most common injury categories. Equation 1 details the formula for each injury type, and equation 2 weights the injuries types by their probability of occurring and converts the values to constant dollars. Figure 1 illustrates the changing path of the benefits.[20]

$$B_{ist} = \sum_{j}^{N_{ist}} \frac{1}{(1+r)^j} \left[b_{istj}(\bar{w}_t, \bar{F}) \right] \tag{1}$$

$$Real\ WC\ Benefit\ Index_{st} = \left(\frac{cpi_{1967}}{cpi_t}\right) \cdot \sum_{i}^{3} prob_{it} \cdot \left[B_{ist}(\bar{w}_t, \bar{F}) \right] \tag{2}$$

i indexes injury-type: $i \in$ {temporary total; permanent partial; fatality}
s indexes state
t indexes year
j indexes the payments for each injury type.
r denotes the discount rate
b denotes the injury-type specific payments mandated by the law.
N_{ist} denotes the maximum number of payments for injury-type i, in state s, in year t
$\bar{w}_t$ denotes national average wage in year t
$\bar{F}$ denotes family characteristics, including marital status and number of dependents.
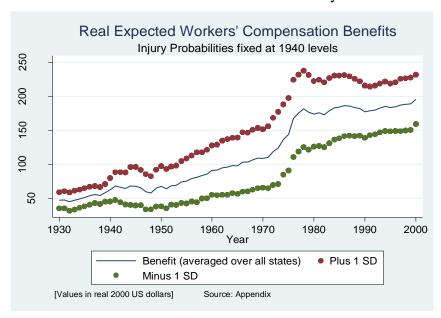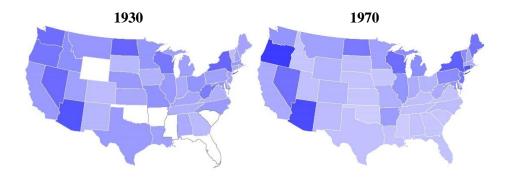
Figure 1: *Real Expected Worker' Compensations Benefit*

Figure 1 highlights some of the important ways that expected benefits have changedduring this time period. First, overall real benefits rose between 1930 and 2000 in absolute terms and the variation across states grew. Second, benefits surged during the 1970s. Third, Figure 1 suggests that benefits became more generous in virtually all decades. Finally, while real absolute benefit levels are higher in 2000 than in 1930, real earnings have also grown considerably. To see the relative changes in benefits we compare the real benefits to real earnings directly in Figure 2 below.

The relative generosity of states declines between 1940 and 1950, remainssteady between 1950 and 1970, and then increases between 1970 and 1980. The generosity increases further between 1980 and 1990, but then declines slightly in 2000. States average benefits are relatively greater in 2000 than in 1930; however, the growth path of benefits was not smooth.[21]

Thus, relative workers' compensation benefits show variation across states, and over time. Following a brief review of related literature, the empirical analysis addresses the political economy underlying the path of these benefit levels up to 2000.
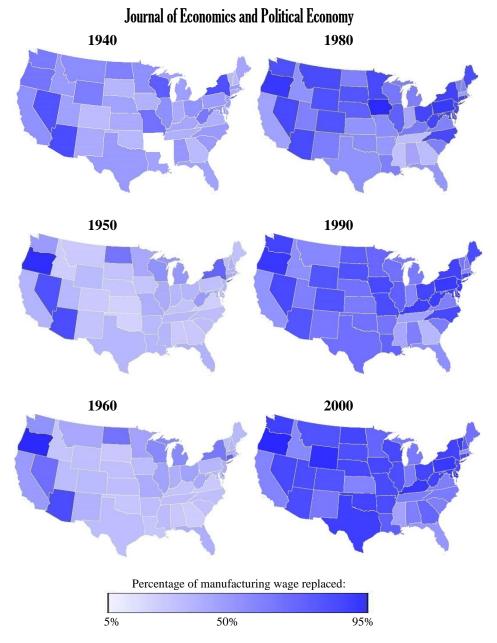
1930   **1970**

1940   **1980**

1950   **1990**

1960   **2000**

Percentage of manufacturing wage replaced:

5%   50%   95%

Figure 2: *Expected Workers' Compensation Benefits*
(as a Percentage of the Annual Average Earnings in Manufacturing)

4. Variables and the Rationale for Varying Benefits:

This paper examines all of the continental United States, covers much longer time horizon and utilizes a more comprehensive benefit measure to capture the complexity of benefits by incorporating types of injuries, their frequencies, and the variation in the duration of cash payments that states mandate. State workers' compensation insurance laws specify the treatment of workers injured "out of and in the course of" their employment.[22] The monetary benefits – determined in guidelines set by state statute – are frequently updated, usually providing more generous benefits. Yet, despite continuing attention, benefits exhibit persistent differences across states. The empirical strategy is to use pooled OLS and state-fixed effects regressions to estimate the marginal effects that political and economic variables have on the real expected monetarybenefits of workers' compensation illustrated in Figures 1 and 2 from 1940 to 2000. The nature of the

pooled cross-section time-series dataset allows for the estimation of state-fixed effects to control for unobservable, time invariant state characteristics.[23]

The vehement call (from the 1972 National Commission) for greater benefits was followed by two distinct observations. First, nearly all states promptly increased their benefits. Second, almost none of the states fully met all of the National Commission's 1973 or 1975 recommendations. Between 1972 and 1980, states went from complying with an average of 6.9 to 12.0 of the 19 essential recommendations (Robinson et al. 1987). As of 2004, the United States collectively had only achieved about 12.8 of the committee's 19 essential recommendations (Whittington, 2004). So, states rapidly responded, but perhaps primarily as a way of appeasing the government. The inclusion of a neighboring state variable allows us to infer the extent to which states were following their peers instead of following the guidelines established by the national commission.

Throughout this time period, unions were often effective at maintaining high wage levels – often high enough to hit the weekly maximum limits for workers' compensation – and lobbied for greater benefits. Labor unions' public statements advocate higher, more generous benefits to protect workers. For this reason, one would expect greater union strength to be positively correlated with benefits. I include the percentage of unionized workers within states to examine their role.[24]

During the initial development of social insurance the political power of the progressives played a key role in bringing issues of worker welfare to the political agenda of policymakers. Therefore, several political variables are incorporated to assess the relevance of political party in determining benefits. The state legislatures directly determine state laws (in conjunction with governors) and the United States senators and representatives provide insight into the state's prevailing political attitudes.[25] These measures include the political composition of state legislatures and the governor's political affiliation. Specifically, these are measured as the percentage of democrats in each house of the state legislature; percentage of 3rd party legislators in each house of the state legislature, and indicators for democratic governor and Southern democratic governor.[26]

Another possible explanation for variation in benefit levels may stem from differences in the types of employment within states. For example, states with a significant number of workers employed in dangerous manufacturing occupations may be willing to devote considerably more effort toward the goal of increasing benefits for seriously injured workers. To assess this possibility, we include the proportional structure of employment in broad industry categories. However, the expected effects are not obvious here, since the employers and workers in these forms of employment may have contrasting objectives. States with significant amounts of mining may likely possess firms that strongly advocate relatively low dollar limits on the maximum payments to injured workers in order to keep their insurance costs low, while mine workers would seek higher limits on the payments to injured workers.

Additionally, the state's administrative structure for workers' compensation may impact mandated benefit levels. In particular, the presence of a state 'fund' that sells insurance policies to employers represents a bureaucratic body that likely possesses political objectives quite different from those of private insurers. All states have a workers' compensation agency to carry out administrative duties and coordinate different aspects of the program. However, states that operate separate 'funds' provide employers an alternative (or in some cases the exclusive) source of insurance.[27] As government agencies, these state funds do not have the same incentives for profit-maximization as private insurers. With different objectives, state funds may be more likely to serve as advocates for

injured workers.[28] Krueger & Burton (1989) find that "…after controlling for factors such as the benefit level and injury rate workers' compensation insurance costs are higher in states that have state-operated insurance funds competing with private carriers than in states with only private insurance carriers."

If workers' compensation benefits are a normal good, then as real earnings rise, so should the demand for higher benefits. A positive coefficient on real average weekly earnings (for manufacturing workers) would reflect some influence from workers. The models presented use lagged real average weekly earnings in an attempt to avoid simultaneity.[29] Accident rates, firm size, and value-added are also included as explanatory economic variables.

Finally, I include measures of state insurance regulation such as the ability of employers to "opt-out" of workers' compensation programs altogether (to choose common-law remedies instead) or to seek protection through some form of self-insurance.[30] This ability to opt-out could have given large firms a bargaining chip. As long as they had the right to opt-out, they could keep benefits low by threatening to opt-out of the system if the benefits rose too high. If large firms with lower accident risk threatened to opt-out, then the state's private workers' compensation premiums might rise relative to benefits because the high risk firms would be left in the pool that remains. This adverse selection issue would give them some clout.

5. Results: Higher benefits and Federal versus State conflict

The regression models are reported in Tables 1 and 2. These explore the influences of neighboring states' benefits, earnings, political controls, workers' compensation administrative structure, and other economic controls - including accident rates, firm size, productivity, and industry - on the real level of expected benefits.

Table 1: *Real Expected Benefits: 1940-2000*
(Dependent Variable: Natural Logarithm of Real Expected Workers' Compensation Benefit Index)

	(1)		(2)		(3)	
LN EARNINGS	0.349	(1.76)*	0.360	(1.87)*	0.324	(1.76)*
ACCIDENT RATE	-0.004	(-1.77)*	-0.003	(-1.17)	-0.004	(-1.85)*
FIRM SIZE	-0.002	(-1.54)	-0.003	(-1.6)	-0.002	(--0.71)
VALUE-ADDED/$10M	-0.063	(-1.25)	-0.070	(-1.36)	-0.022	(-0.46)
UNIONIZATION	0.010	(2.42)***	0.011	(3.18)***	0.008	(1.64)
DEMOCRATIC	0.002	(1.24)	0.002	(1.43)	0.001	(1.31)
OTHER PARTY	0.010	(1.76)	0.008	(1.34)	0.003	(0.55)
GOVERNOR (D)	0.026	(0.84)	0.023	(0.87)	0.010	(0.46)
GOVERNOR (D)*SOUTH	-0.169	(-2.06)**	-0.162	(-2.06)**	-0.071	(-1.5)
ELECTIVE	-0.077	(-1.25)	-0.066	(-1.07)	-0.178	(-2.76)***
FUND	0.045	(0.75)	0.069	(1.14)	0.059	(0.86)
Year Dummies	YES		YES		YES	
Industry Controls	NO		YES		YES	
State Fixed-Effects	NO		NO		YES	
N	2889		2889		2889	
Adjusted R-Square	0.7571		0.7738		0.8740	

Notes: For all models estimated in Tables 1 and 2: Each observation is for a state-year. The 'LN EARNINGS' variable is natural logarithm of lagged weekly earnings. Industry controls include: percentage of state employment in (1) mining; (2) construction; (3) manufacturing; (4) transportation; (5) finance, insurance and real estate; (6) services; (7) wholesale and retail trade; and (8) government sector employment. Some industry values are unavailable between 1940 and 1948, and thus Illinois, Michigan, and Minnesota are not included in the analysis during these years. The LN EARNINGS and VALUE-ADDED variables were converted to real US dollars using the 1967 Consumer Price

Index. Political variables (DEMOCRATIC and OTHER PARTY) are measured as proportions. Nebraska is omitted from the analysis since its legislature is non-partisan. The variable FIRM SIZE is measured as employees per establishment in manufacturing. Mississippi doesn't enact workers' compensation until 1948, so it enters the dataset in 1949. Robust, state-clustered, t- One, two and three asterisks denote significance at confidence levels above 90 percent, 95 percent, and 99 percent, respectively.

Regressions 1 and 2 are presented for comparison purposes, but the state fixed-effect models are preferred.[31] Regression 3 adds state fixed effects. Regression 4 adds the average lagged value of benefits in neighboring states. The inclusion of state fixed-effects enables inferences about how various economic and political factors influence these benefits. Year effects are included to control for economic shocks or other year-specific events that are common to all states and to capture the upward trend in benefits.[32]

Table 2: *Real Expected Benefits: 1940-2000*
(Dependent Variable: Natural Logarithm of Real Expected Workers' Compensation Benefit Index)

	(4)		(5)	
LN NEIGHBOR (BENEFITS)	0.337	(3.47)***	0.138	(1.23)
LN EARNINGS	0.352	(1.85)*	0.250	(1.22)
ACCIDENT RATE	-0.003	(-1.40)	-0.003	(-1.17)
FIRM SIZE	-0.002	(-0.92)	-0.002	(-0.70)
VALUE-ADDED/$10M	-0.005	(-0.12)	-0.050	(-0.83)
UNIONIZATION	0.008	(1.59)	0.010	(1.82)*
DEMOCRATIC	0.002	(1.43)	0.002	(1.64)*
OTHER PARTY	0.005	(1.16)	0.006	(2.10)**
GOVERNOR (D)	0.016	(0.81)	0.007	(0.29)
GOVERNOR (D)*SOUTH	-0.065	(-1.41)	-0.073	(-0.97)
ELECTIVE	-0.174	(-2.71)***	-0.239	(-3.35)***
FUND	0.049	(0.79)	-0.013	(-0.12)
Interactions of AFTER1972 indicator and				
LN NEIGHBOR (BENEFITS)			0.345	(2,25)**
LN EARNINGS			0.315	(0.92)
ACCIDENT RATE			-0.002	(-0.68)
FIRM SIZE			0.001	(0.58)
VALUE-ADDED/$10M			0.020	(0.31)
UNIONIZATION			-0.015	(-2.34)**
DEMOCRATIC			-0.000	(-0.28)
OTHER PARTY			-0.028	(-1.26)*
GOVERNOR (D)			0.004	(-0.11)
*GOVERNOR (D)*SOUTH*			0.060	(0.68)
ELECTIVE			0.142	(1.74)*
FUND			0.063	(0.59)
Year Dummies		YES		YES
Industry Controls		YES		YES
State Fixed-Effects		YES		YES
N		2809		2809
Adjusted R-Square		0.8776		0.8844

Notes: Each observation is for a state-year. The 'LN NEIGHBOR (BENEFITS)' variable is natural logarithm of average expected benefits for that state's (contiguous) neighboring states and is lagged one year. The 'LN EARNINGS' variable is natural logarithm of lagged weekly earnings. Industry controls include: percentage of state employment in (1) mining; (2) construction; (3) manufacturing; (4) transportation; (5) finance, insurance and real estate; (6) services; (7) wholesale and retail trade; and (8) government sector employment. Some industry values are unavailable between 1940 and 1948, and thus Illinois, Michigan, and Minnesota are not included in the analysis during these years. The LN EARNINGS, LN NEIGHBOR (BENEFITS), and VALUE-ADDED variables were converted to real US dollars using the 1967 Consumer Price Index. Political variables (DEMOCRATIC and OTHER PARTY) are measured as proportions. Nebraska is omitted from the analysis since its legislature is non-partisan. The variable FIRM SIZE is measured as employees per establishment in

manufacturing. Mississippi doesn't enact workers' compensation until 1948, so it enters the dataset in 1949. Regressions 4 and 5 omit 80 observations to prevent collinearity. Robust, state-clustered, t-Statistics are given in parentheses. One, two and three asterisks denote significance at confidence levels above 90 percent, 95 percent, and 99 percent, respectively.

The empirical models are informed by the previous papers in the literature, yet an important aspect of the modeling approach is motivated by the implicit federal government intervention that occurred in 1972. Regression 5 (in Table 2) illustrates the differing impacts of the key variables before and after the report of the National Commission on Workmen's Compensation Laws issued in July of 1972. To investigate the changes occurring after 1972, regression 5 includes interactions with each of the key variables and an indicator dummy (*AFTER 1972*) that enables comparisons before and after 1972. The National Commission's report had an economically (and statistically) significant impact on state legislatures' decisions about benefits. The shift in signs for several of the coefficients,suggests that states dramatically changed their attitude toward benefits. Prior to 1972, states with 'elective,' opt-out clauses were significantly less generous in their benefits. Similarly, before 1972, benefits were higher in Democratic and unionized states. So, what happened after 1972? The previously 'elective' states changed their ways and boosted their monetary benefits. The Democratic and more unionized states exhibited relatively less growth in their generosity.

The neighbor state benefits variable (in regressions 4 and 5)suggests that states do care what the benefits are in their neighbors' states. This is consistent with the idea – proposed by Butler and Appel – that states' actions are best responses to the benefit changes made by neighboring legislatures. Regression 5 suggests that this best-responding behavior took place primarily after the National Commission's report in 1972.

5.1 State Workforce and Workplace Characteristics

Lagged real average weekly earnings are included as an explanatory variable to reflect the workers' ability to consume normal goods.[33] The results show that higher expected benefits are associated with higher earnings in all specifications except in regression 5. However, while regression 5 has an imprecise coefficient for earnings its sign remains positive.[34]

If legislators were purely concerned with the preferences of employers, then benefits should be independent of earnings. It seems clear then that legislators were more responsive to workers' demands after 1972 and this makes sense given the commission's report and the threat by Congress to nationalize workers' compensation.

5.2 State Political Climate

Several variables are included to gauge the political climate within the state and the composition of the state legislators. Benefits are determined by state statute, so these variables are included to determine if political party affiliation has a systematic influence on the level of workers' compensation benefits. There is very weak evidence that Democratic or 3rd party legislatures raised benefits compared with Republican legislatures. Moreover, regression 5 implies that if states with a greater proportion of Democratic and 3rd party representation mandated higher benefits, then it was only before 1972.[35]

5.3 Insurance Regulation and Administrative Structure

The models each include two indicators that convey information about the administration of workers' compensation insurance. These are ELECTIVE and FUND.[36] The ELECTIVE variable identifies the states that permit employers to opt-out of workers' compensation insurance coverage for their workers. Between 1930 and 1972 approximately half the states allowed employers the chance to opt-

out of workers' compensation insurance coverage.[37] However, after 1972, states rapidly phased-out the "elective" coverage, and with a few exceptions, workers' compensation was mandatory by 1977. In each regression model, elective has a negative impact on benefits. By maintaining optional statutes, firms have greater freedom of choice. Yet, since the alternative to workers' compensation insurance is negligence liability, the decision to "opt-out" was not taken by many firms. Nonetheless, employers may have viewed the option as helpful in negotiations over workers' compensation insurance premiums.[38] Firms generally sought low mandated benefits in order to maintain low insurance premiums, so legislatures may have been appeasing firms by making the law elective. Moreover, the opt-out clause gave firms a threat point. As long as they had the right to opt-out, they could keep benefits low by threatening to opt-out of the system if the benefits rose to high. Regression 5, which allows separate effects for the post-1972 era, shows that, on average, states permitting elective coverage, lagged behind other states prior to 1972, but boosted the generosity of benefits after 1972.[39]

6. Conclusion

This paper utilized state workers' compensation laws in each state to construct a comprehensive index of monetary wage-replacement benefits. These benefits vary both across states and over time. Benefits declined between 1940 and 1950, but they rose substantially during the 1970s, and remained fairly stable in the 1980s and 1990s.

Workers' compensation benefits are determined by state legislatures; however, the empirical analysis reveals that state-level politics played little role. Instead, it was the Federal government's threat to take over the system that prompted states to increase their benefits. States improved the generosity of benefits in the 1970s – in response to the 1972 National Commission on Workers' Compensation *and* to the changes made by their neighbor states. Prior to 1972, states with a workers' compensation opt-out clause tended to pay lower benefits. After 1972, those less generous states narrowed the benefits gap.

Also during the 1970s, a majority of states linked their benefit amounts to state average weekly wages in order to keep pace with inflation. As the federal government's impetus for a takeover subsided, so did the urgency to meet all of the National Committee's recommendations. There is some evidence that states with higher wages tended to have higher benefits. However, state political composition, unionization rates, accident rates, firm size, and states' administrative structure do not substantially influence benefit levels after controlling for time-invariant state effects.

Acknowledgements

Notes

[1] Employers demand affordable insurance premiums, workers desire fair and sufficient benefit payments, and insurers want to avoid problems of moral hazard.

[2] All but two states had adopted laws by 1940, and Mississippi was the last to adopt in 1948.

[3] States do not mandate employers to pay 100% of pre-injury wages avoid problems of moral hazard. As a result, arguments that benefits are too generous are rare.

[4] "Disaster in the Mines." *New York Times*, November 23, 1968.

[5] Bureau of mines official, Allan Sherman, later confessed that the agency had become complacent.

[6] The bill also received support from US Representative Ken Hechler of West Virginia and US Senator Gaylord Nelson of Wisconsin, both Democrats vocal about safety issues.

[7] The commission had fifteen members appointed by the President from among members of State workmen 's compensation boards, representatives of insurance carriers, business, labor, members of the medical profession having experience in industrial medicine or in workmen 's compensation cases, educators having special expertise in the field of workmen's compensation, and representatives of the general public. In addition, the Secretary of Labor, the Secretary of Commerce, and the Secretary of Health, Education, and Welfare served as ex officio members.

[8] For a more thorough summary of the essential recommendations of National Commission on State Workmen's Compensation Laws see the appendix table.

[9] The essential recommendations or benchmarks for 1975 were more generous than those outlined for 1973. See Appendix Table A1 for more detail.

[10] See Armstrong (1974). The Senate Bill, S. 2008, known as the Williams-Javits bill, would have forced federal oversight of workers' compensation for states not complying with the recommendations made by the National Commission.

[11] Danzon tested her comparative statics empirically with data from 37 states for the years 1970, 1975, 1980, and 1985. Danzon's sample of states excludes those which have monopoly state funds or those which set their own rates since the data were acquired from NCCI (National Council on Compensation Insurance).

[12] This result was anticipated since the relative costs of administering insurance are inversely related to firm size.

[13] The power of the political reform movements are assessed by including measures of political party shifts in state legislatures.

[14] Butler and Appel do not include benefits from fatalities and permanent partial disabilities in their analysis.

[15] Unfortunately, estimating a probit model does not enable any inferences to be made regarding the magnitude of the corresponding change in the benefit.

[16] This study examines the 48 contiguous states; some states require all employers to insure through the state fund, others allow employers to purchased insurance through private insurers, and other states enable private insurers to compete with the state fund. For example, in 2000, 5 of the 50 states had a monopoly fund, 24 states had only private insurers, and 21 states had competitive funds.

[17] Permanent total disabilities are combined with fatalities here since permanent total disabilities are very rare and are similar in monetary value to fatality benefits. A permanent partial injury would include the loss of a finger, for example. A "thrown-out back" would be an example of a temporary total disability, assuming the employee could fully recover.

[18] Influential works in this category include Chelius (1977), Danzon (1988), Viscusi and Moore (1987), Moore and Viscusi (1990), and Gruber and Krueger (1991).

[19] See the Appendix for a more thorough explanation of the real expected benefit index.

[20] Figure 1 is based on injury probabilities fixed at 1940 levels, and Figure A1 – in the appendix – is computed with injury probabilities adjusted yearly.

[21] In Figure 3, darker shading indicates greater generosity. See also Figures A2, A3, and A4, in the appendix for comparisons between states in 1930, 1970, and 2000.

[22] In other words, the workers injured at home or while not serving as employees are ineligible for compensation.

[23] These fixed-effects might include longstanding attitudes toward labor, government intervention, or the role and regulation of private insurers.

[24] Some unions may have rationally pursued low state-mandated benefits for all workers and simultaneously sought to provide union insurance plans with high accident benefits as a means of attracting workers to join the unions. At the turn of the century, the AFL was said to be neutral on adopting workers' compensation for this reason (Fishback & Kantor 2000). However, by 1909 they were actively supporting workers' compensation, and I have found no narrative evidence that their position has reversed since. Limited information on unionization by state necessitates the use of interpolation. The procedures utilized are described in the Appendix.

[25] In addition to the regression models presented in the tables, some earlier, preliminary models included measures of voting traits of each state's US congressional leaders. These measures were

developed by Keith Poole (2000, 2001) and Poole and Rosenthal (1997). These quantitative variables assign a two-dimensional value for each member of congress to represent each leader's political "coordinates" or viewpoint and are derived from actual votes cast. The variables reflect the states' political attitudes even though US senators and representatives do not directly adjust the compensation benefits within their states. However, these political coordinates lack a natural interpretation, and since United States congress members do not directly determine workers' compensation benefits they can only provide a representation of state political attitudes. Adding these variables to the analysis does not add much explanatory power, and the other variables in the coefficients for the model are robust to the inclusion of Poole's measures.

[26] Southern democrats are usually perceived as significantly more conservative than other democrats therefore the democratic percentage measure is interacted with a southern dummy. Southern states include Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, and Virginia.

[27] Nevada, North Dakota, Ohio, Washington, West Virginia, and Wyoming had state funds that were the exclusive providers of workers' compensation insurance in those states during the period of this study. However, Nevada switched to private insurance provision in 2000. Many states have only privately sold insurance, and several states added state funds to compete with private insurers in the late 1990s. Competing state 'funds' were established Oklahoma (1934), Oregon (1966), Minnesota (1984), Hawaii (1997), Kentucky (1996), Louisiana (1997), Maine (2000), Missouri (1997), New Mexico (1999), Rhode Island (1999), and Texas (1997)

[28] Unfortunately, the impact of state funds is difficult to separately identify since there is almost no variation in state administrative schemes over time. Since 1930, only a dozen states have altered their insurance arrangements, and nine of these twelve changes have been made since 1997. These recent adjustments were most likely done in hopes of mitigating costs and usually involved the state forming a state fund to compete with private insurers.

[29] This approach should be effective provided that the errors are not serially correlated. Moreover, previous regressions (not shown) also used real personal income per capita; however, it is strongly correlated with real average weekly earnings and impacts the models in a very similar way.

[30] Presumably, the ability for employers to "self-insure" for purposes of workers' compensation might be important, but there is little variation in this measure since most states permit sufficiently large employers to self-insure.

[31] All of the resulting regression coefficients are presented with their corresponding robust, state-clustered t-statistics. This is done to avoid overstating the significance levels that can be inherent in OLS standard errors when serial correlation is present.

[32] The coefficient estimates for the other explanatory variables remain similar if a time trend is used in lieu of year dummies.

[33] The lagged values of earnings are used to avoid the downward bias that could result if there are compensating differences in labor markets that would cause earnings to fall in response to a rise in workers' compensation benefits. The correlation coefficient between real personal income per capita and lagged real average weekly earnings is 0.72. Alternative specifications have also included real personal income per capita instead of earnings. When real personal income per capita is substituted for real average weekly earnings the corresponding coefficient behaves remarkably similarly both in terms of sign and statistical significance.

[34] Using the coefficients in regression 5, prior to 1972, the benefit elasticity with respect to earnings was 0.250 and imprecisely estimated. However, the post 1972 elasticity was higher by 0.315 for a total elasticity of 0.565.[34] If LN EARNINGS is not also interacted in model 5, but nothing else changes in the specification, then the elasticity point estimate is 0.412 with a robust t-Statistic of 2.33 suggesting that earnings remain important.

[35] The impact of Southern Governor's political affiliation is minimal in Regressions 1 and 2, but is not statistically significant once state fixed-effects are included.

[36] States with a 'fund' did not exhibit benefits statistically different from other states.

[37] ELECTIVE equals one if employers within the state have the right to "opt-out" of workers' compensation insurance and zero otherwise.

[38] Negligence liability would have increased uncertainty and may have increased overall costs since employers would probably not have been able to use the three common law defenses: assumption of risk, contributory negligence, and the fellow servant doctrine.

[39] Figure A6 in the appendix provides further evidence to suggest that following the National Commission's report in 1972, the variation in benefits at the national level diminished. This is consistent with the idea that the 1972 federal threat was to counter previous influences and thus compressed the variation in benefits.

Appendix

Index of Expected Workers' Compensation Benefits

This index is designed to represent the generosity of workers' compensation benefits at the state level. Each state law consists of numerous parameters that specify the benefit duration and amount depending on the injury type (temporary total, permanent partial, permanent total, or death), the worker's pre-injury earnings, and in many instances, the status of the worker's spouse and dependents. In order to represent the expected benefits in a simple and meaningful way, an expected net present-value is constructed for an "average" worker. This is done by assigning a probability to each injury type, and then computing the stream of indemnity payments associated with each injury. The probabilities are used as the weights to combine the streams of payments, forming a scalar that represents the net present-value of expected benefits. Permanent total disabilities are combined with fatalities since they are very rare and similar in monetary value to fatality benefits. (For instance, in the early sixties, a mere 0.1 percent of all injuries resulted in permanent total disability according to the February 1962, *Monthly Labor Review*.)

The "average" worker was assumed to have a wife and two dependent children, ages 8 and 10. In death cases, where widowed spouses were entitled to benefits, the widow(er) was assumed to live for 30 additional years. It was further assumed that the "average" worker in each state earned the national average manufacturing wage. The discounting of payment streams was done at an interest rate of 5 percent. While lump-sum payments have become rare in the modern era, state statutes that specifically address converting payments to lump-sums usually call for discounting at 4, 5, or 6 percent interest.

Temporary total disabilities enter the index through an assumed 5 week (35 day) injury. Permanent partial disabilities are represented by the loss of a hand. Where states make a distinction, the "major" hand is assumed. This value is adjusted since complete hand loss is more severe than the typical permanent partial injury. Some states allow for payment of both temporary total and permanent partial benefits during the initial weeks of a permanent partial injury when a worker is initially recovering. The benefit measure also incorporates delayed payments due to waiting periods and retroactive payments. In most situations the weekly benefit is a function of the worker's gross-wages. However, for cases where benefits were based on "after-tax" or "spendable" earnings, then effective tax rates for the average worker were assumed to be 15 percent (for 1970-2000), 10 percent (for 1950-1969) and 5 percent (for years prior to 1950).

Benefit values are given on an annual basis. Parameters of the laws that determine these benefits (maximum weekly payments, minimum weekly payments, etc.) come from two primary sources. First, the US Chamber of Commerce published "Analysis of Workmen's Compensation Laws" bi-annually between 1948 and 1968, and annually thereafter. Second, for earlier years, information was gathered either directly from state session laws or from periodic summaries published in the *Monthly Labor Review*. The injury probabilities come from the National Safety Council and are published in *Accident Facts* (for years 1921-1998) and *Injury Facts* (for years 1999-2000).
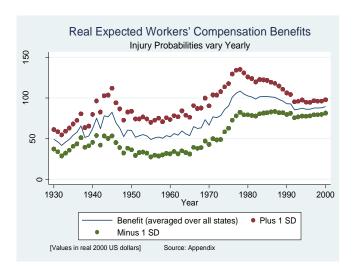
The assumptions pertaining to the "average" worker are ostensibly valid and are similar to those found used in the work of Fishback and Kantor. The national average wage is utilized (in lieu of a state average wage) in part so that variation in the index is driven by differences in the state benefit parameters, and it is done in part to avoid excess endogeneity with state average wages which are used as an explanatory variable.

Unionization Index

Unionization is measured as membership as a percentage of total non-agricultural employment. The index provides a value for each state for each year. However, state-specific percentages are not available in all years. For this reason, the unobserved years between observations are determined by interpolation. The interpolation procedure is slightly more sophisticated than straight-line interpolation since information on unionization at the national level is available for all years in the study. Specifically, this is done by forming the ratio of each state's percentage of union workers to the national
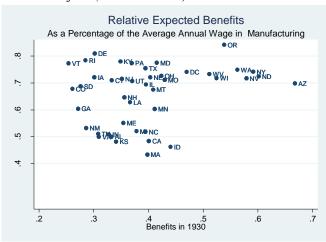
average. Straight-line interpolation is then done for these ratios, and for missing years the state's percentage is estimated by multiplying the interpolated ratio by the national average for that year. Thus, this measure replaces missing values, but the changes from year-to-year move in proportion to the national average.[39] The national average values for all of the United States are reported in Troy and Sheflin (1984) for 1929 through 1983, and by the Bureau of Labor for 1983 through 2000. The state-specific values are reported in 1939 and 1952 by Troy (1957) and in 1964, 1968, 1970, 1972, 1974, 1976, 1978, 1980, 1983, 1998, 1999, and 2000 by the Directory of US Labor Organizations, Bureau of National Affairs, or Bureau of Labor Statistics.

Figure A1.

In contrast, to Figure 1 in the text, Figure A1 above allows the injury probabilities to vary by year. From this perspective benefits peaked closer to 1980. The difference in the figures appears because of the declining likelihood of death and permanent disability in the modern era.

Figure A2. *Relative Benefits: (1930 vs. 2000)*

Real benefits improved relative to real earnings across the nation between 1930 and 2000. All states are above the 45 degree line (not shown here) implying that benefits represent a higher proportion of earnings in 2000 than in 1930. Some states clearly advanced more than others. (States higher on the vertical axis were relatively more generous in 2000. States higher on the horizontal axis were relatively more generous in

1930.) States like Vermont, Rhode Island and Delaware are notably more generous than in the past, while Arizona, Idaho, and Massachusetts are consistent in their relative generosity.
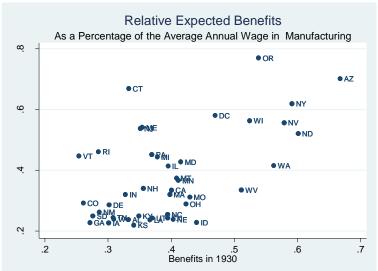
Figure A3. *Relative Benefits: (1930 vs. 1970)*

Figure A3 provides a look at how states ranked prior to the surge in benefits that occurred during the mid- and late-1970s. In 1970, most states – all but 14 – were providing lower benefits relative to real earnings compared with their 1930 levels. The exceptions (including most of New England, Oregon, Washington D.C., Wisconsin, Michigan, and Pennsylvania) raised statutory benefits enough to keep up with inflation. Yet the majority of states placed little attention on maintaining the relative generosity of benefits. Mandated benefits were typically established as fixed dollar amounts within state statutes, so decisions by the state legislatures not to change nominal benefit levels meant an effective decrease in real benefit levels.
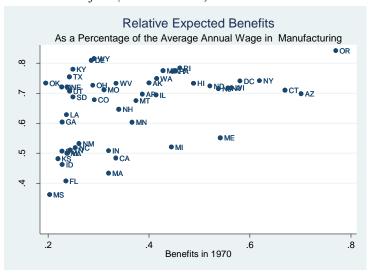
Figure A4. *Relative Benefits: (1970 vs. 2000)*

Figure A4 compares 1970 to 2000. There are dramatic increases in the generosity in nearly all states.[39] However, as more states raise benefits, there is a shake up in the relative "rankings" as well. Oregon continues to be remarkably generous, but nine of the top ten

most generous states from 1970 fell out of the top ten in 2000. There is shake-up at the bottom as well. Only six of the ten least generous in 1970 remained in that bottom quintile in 2000.[39] This shuffling of the generosity rankings means that states did not merely decide to increase their benefits by the same percentages. Instead, states' revisited the proverbial drawing board. In the early 1970s, all states received the same national "recommendations," yet their responses varied considerably both in generosity and the timeliness of their updated mandates.
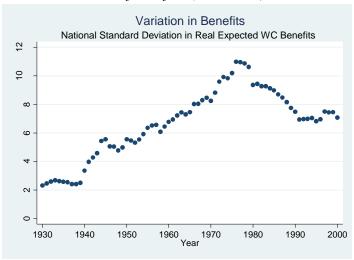
Figure A5. *Standard Deviation of Benefits: (1930-2000)*

Figures A5 and A6 demonstrate the variation in benefits across all states. The standard deviation of benefits rose until the mid-1970s before declining in the 1980s. However, the coefficient of variation (shown below in A6) illustrates that by 2000, there was actually less variation in benefits across states than in any year since 1930. This is consistent with the hypothesis that federal interventions force states to adopt "one-size-fits-all" policies.
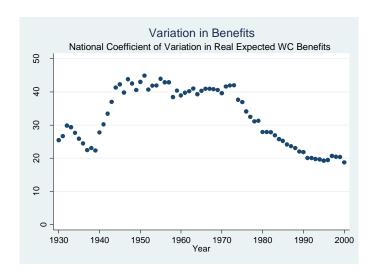
Figure A6. *Coefficient of Variation for Benefits: (1930-2000)*

Table A1. *The National Commission on State Workmen's Compensation Laws:*
Summary of the Essential Recommendations from the 1972 Report

Compulsory Coverage:
- *Workmen's compensation should be compulsory and no waivers should be permitted.*

No Occupational or Numerical Exemptions:
- *Employers should not be exempted from workmen's compensation because of the number of their employees.*
- *Coverage for farm-workers should be adopted in two stages: Agricultural employers with annual payrolls over $1,000 should provide coverage by July 1, 1973. Farm-workers should be covered on the same basis as all other employees by July 1, 1975.*
- *All household workers and all casual workers should be covered at least to the extent that they are covered by Social Security by July 1, 1975.*
- *Workmen's compensation coverage should be mandatory for all government employees.*
- *There should be no exemptions for any class of employees, such as professional athletes or employees of charitable organizations.*

Full Coverage of Work-Related Diseases:
- *All States should provide full coverage of work-related diseases.*

Full Medical and Physical Rehabilitation Services without Arbitrary Limits:
- *There should be no statutory limits of time or dollar amount for medical care or rehabilitation services for any work-related impairment.*
- *The right to medical and physical rehabilitation benefits should not terminate by the mere passage of time.*

Employee's Choice of Jurisdiction for Filing Interstate Claims:
- *All employees or their survivors should be given the choice of filing a workmen's compensation claim in the State where the injury or death occurred, or where the employment was principally localized, or where the employee was hired.*

Adequate Weekly Cash Benefits for Temporary Total, Permanent Total, and DeathCases:
- *Temporary total disability benefits, permanent total disability benefits, and death benefits should each be at least two-thirds of the worker's gross weekly wage, subject to the State's maximum weekly benefits.*
- *The maximum weekly benefit for temporary total disability, permanent total disability, and death should each be at least two-thirds of the State's average weekly wage by July 1, 1973. The maximum should be at least 100 percent of the State's average weekly wage by July 1, 1975.*
- *The definition of permanent disability used in most states should be retained. However, in those few states which permit the payment of permanent total disability benefits to workers who retain substantial earning capacity, the Commission's benefit proposals should apply only to those cases which meet the test of permanent total disability used in most states.*

No Arbitrary Limits on Duration or Sum of Benefits:
- *Total disability benefits should be paid for the duration of the worker's disability, or for life, without limitations as to dollar amount or time.*

Death benefits should be paid to a widow or widower for life or until remarriage. In the event of remarriage two years' benefits should be paid in lump-sum to the widow or widower. Benefits for a dependent child should continue at least until the child reaches 18, or beyond if actually dependent, or until at least 25 if enrolled as a full-time student at an accredited educational institution.

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