Impact Measures of

Federal Mediation and Conciliation Service

Activities

1999-2004

November 2005

Report to the Federal Mediation and Conciliation Service

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Executive Summary

FMCS Mediation Benefits American Workers and Businesses

Between 1999 and 2004, Federal Mediation and Conciliation Service (FMCS) mediation saved American workers and businesses more than $9.0 billion. These savings average $1.5 billion annually and impact more than 308,000 workers. In the absence of FMCS activity there would be an estimated 71.2 percent increase in the cost of work stoppages and a 76.1 percent increase in the number of jobs affected by work stoppages. Average annual savings come from:

- $80.7 million in retained company profits;
- $640.5 million in retained bargaining unit member earnings;
- $781.8 million in retained workers' earnings among ancillary industries.

FMCS Mediation Prevents Work Stoppages

Without FMCS mediation, it is estimated that the number of work stoppages in an average year would have risen approximately 61 percent, from 343 to 511 incidents. Among the estimated 1,265 work stoppages prevented by FMCS activity, annual savings averaged $1.3 billion, including $69.9 million in retained company profits, $548.8 million in retained bargaining unit member earnings, and $666.5 million in retained earnings among workers in ancillary industries.

Early FMCS Intervention Is Key to Reducing Work Stoppage Duration

Analysis of data from the six-year period covered by the study shows that the expected duration of a work stoppage was 32 days when FMCS mediation occurred prior to contract expiration. When FMCS was not involved in or was first involved in negotiations after the contract expiration date, the expected work stoppage duration was 59 days—84.4 percent higher.

The longer a work stoppage lasts the greater the loss to workers and businesses. By reducing the duration of work stoppages, FMCS mediation created an average annual savings of $217.9 million—$10.8 million in retained company profits, $91.7 million in retained bargaining unit member earnings, and $115.4 million in retained earnings among workers in ancillary industries. For every four days after the contract expiration date that FMCS is not involved in a contract renegotiation, another day is added to the length of any work stoppage that occurs.

Work Stoppages Are Costly for Workers and Businesses

Between 1999 and 2004, work stoppages cost workers and companies more than $12.7 billion and impacted nearly 2.4 million workers. On an annual basis, work stoppages carried an average cost of $2.1 billion. These costs include:

- $86.9 million in company lost profits;
- $1.0 billion in bargaining unit member lost earnings;
- $1.0 billion in workers' lost earnings among ancillary industries;
- 164,000 employees involved in a work stoppage; and
- 241,000 workers who were indirectly impacted by a work stoppage.

In total, FMCS mediation reduced the cost of work stoppages to workers and businesses by 41.6 percent, and reduced the number of impacted workers by 43.2 percent.

FMCS Can Further Reduce Work Stoppage Durations

To help reduce the duration of work stoppages that do occur, FMCS should consider disseminating information contained in this report to educate union and employer representatives of the cost of a stoppage in their specific industry. Additional research might also prove helpful in determining the impact of a work stoppage in a particular industry. Future research could include the analysis of labor contract specific information—such as the timing of unfair labor practice charges, grievance filings, and previous participation in FMCS mediation activities—to identify negotiations that are highly likely to result in a work stoppage before the stoppage occurs. This system can also help mediators focus on negotiations that would potentially cause the most disruption to economic activity.

Estimates Represent a Conservative Approach and Likely Underestimate Direct Costs

Estimating the private cost of work stoppages is a difficult task given the complex and dynamic nature of the national economy. EPF's analysis will tend to overestimate work stoppage costs in situations where some or all employees voluntarily return to work before the end of a strike. Mitigating this overestimate is the un-tallied cost of salaried or other employees assuming the workload of striking or locked out bargaining unit members. Since EPF calculated losses only among input providing, or ancillary, companies, this analysis does not include the cost to output-receiving companies, which can be substantial. Thus, while the EPF cost estimate of the 2002 west coast dockworkers strike (direct and ancillary) is approximately $57 million, contemporary estimates that included losses among companies dependent upon the goods shipped through the port, had estimates lying between $1 billion and $140 million per day.

FMCS Data Overview

The National Labor Management Relations Act of 1947 requires that parties to a collective bargaining agreement notify each other and FMCS prior to the expiration of that agreement. One or both parties carry out this notification by filing a notice to the mediation agency, or F-7 form.[1] Airline and railroad industries are covered by the Railway Labor Act of 1926 and therefore are not included in this analysis.

Disputes between employers and unions are traditionally classified as involving rights or interests. Interest-based disputes arise from conflict between the individual economic interests of employers and unions, while rights-based disputes arise from interpretations of labor agreement terms or public statutes (Spielmans, 1939). An interest-based dispute may occur when, for example, a company wishes to invest its profit in capital improvements while the union wishes to increase its members' compensation. Once a labor contract is signed, the parties may later disagree about the interpretation of the agreement and feel that certain rights afforded them under the current contact or public statute have been violated. This instance is an example of a rights-based dispute.

Interpreting Spielmans' definitions in the context of the FMCS data, "interest-based" mediation is classified as either "collective bargaining" (renewal of a labor contract) or "initial contract" (labor contract for a newly recognized or certified bargaining unit) mediation, while "rights-based" mediation is classified as "grievance" mediation. Between 1999 and 2004, collective bargaining cases represented 87.4 percent of the 26,106 cases opened by FMCS in the average fiscal year. [2] (See Table 1.)

Table 1: FMCS Mediation Cases Issued in Fiscal Years 1999-2004

Case Characteristics	1999	2000	2001	2002	2003	2004
Case Numbers Issued	**25,836**	**26,518**	**25,226**	**25,570**	**26,973**	**26,513**
Mediation Case Type						
Collective Bargaining (%)	88.8	87.5	86.9	87.5	86.8	87.2
Initial Contract (%)	8.6	8.8	9.3	7.7	7.4	6.4
Grievance (%)	2.6	3.8	3.8	4.8	5.9	6.4
Sector Breakdown						
Public (%)	7.1	7.5	7.8	8.4	7.5	7.5
Private (%)	92.9	92.5	92.2	91.6	92.5	92.5

Source: Employment Policy Foundation tabulation of FMCS data.

By 2004, the share of initial contract and grievance mediation cases had dropped to 6.4 percent each. This parity resulted from a 24 percent decrease in the number of initial contract mediation cases and a 155 percent increase in grievance mediation cases between 1999 and 2004. Since six years of data are not sufficient to determine if this change is permanent or results from normal data fluctuations, this change is worth monitoring over the next few years.[3]

Public sector cases average 7.6 percent of the total and include federal, state, and local government employee bargaining units. Federal employees and public employees in many states do not have the right to strike and cannot be locked out, so many public sector cases where FMCS cannot affect a resolution are ultimately settled by special federal or state impasse boards. (*e.g.*: Federal Services Impasse Panel.) Similarly, FMCS may not record public sector work stoppages in states where state law requires the use of state mediators, which leads to a slight undercount of these stoppages.

Approximately 74 percent of all notices are assigned as cases to FMCS mediators. The remaining notices are not assigned as cases due to a variety of factors. The most common reason for not assigning a case is limited economic impact due to the small size of the bargaining unit. In 2004, there were 6,143 unassigned cases that involved bargaining units of fewer than 15 members. The majority of the remaining unassigned cases were duplicate entries.

In the average year, nearly 81 percent of all cases assigned to FMCS mediators are closed after the parties reach an agreement, although FMCS may not have been actively involved in each of these cases. Of assigned cases, 30.6 percent involved one or more meetings with FMCS mediators, which is the criteria EPF used to determine whether FMCS was active in a case. Between 1999 and 2004, FMCS participation in active cases averaged 2.6 meetings each. About 104 days passed from case assignment to FMCS' official closing of the case. On average, it took 64 days from the first meeting with a mediator until the official closing of the case.[4] Table 2 provides an annual summary of FMCS activity among cases assigned to mediators.

Table 2: FMCS Activity in Cases Assigned to Mediators, 1999-2004

Case Activity	1999	2000	2001	2002	2003	2004
Unassigned / Duplicate Cases	6,986	7,134	6,187	6,417	7,258	6,583
Assigned to Field Offices	18,850	19,384	19,040	19,153	19,716	19,930
Assignment Outcome						
1) Agreement Reached (%)	81.2	80.2	80.2	79.6	80.8	82.6
-without FMCS Meetings (%)	72.2	69.2	66.8	66.9	68.2	72.9
-with FMCS Meetings (%)	27.8	30.8	33.2	33.1	31.8	27.1
Avg. Number of Meetings	2.8	2.7	2.7	2.6	2.6	2.5
Days Case Open to Close	114	107	114	100	106	82*
Days 1st Meeting to Close	59	61	64	65	67	65
2) Referred to State/Federal Agency (%)	1.2	1.2	1.3	1.6	1.4	1.3
3) Employer / Union Problems (%)	3.7	3.5	3.8	3.8	3.6	2.1
4) Unresolved or Admin. Closed (%)	10.7	11.1	10.8	11.4	11.1	11.5
5) Not in FMCS Jurisdiction (%)	3.2	4.0	3.9	3.6	3.1	2.5

*This result is likely the result of a software change at the end of fiscal year 2004 which required FMCS to review and close many inactive cases sooner than in previous years.

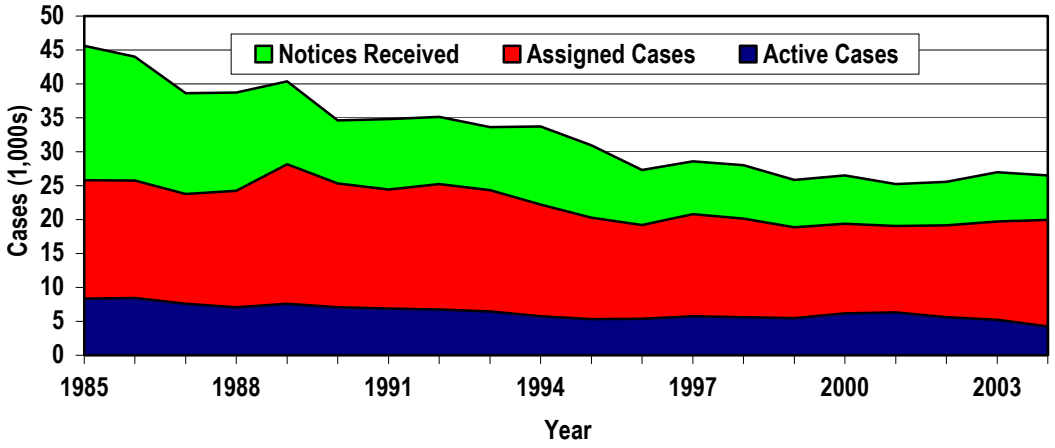
Source: Employment Policy Foundation analysis of FMCS data.

On average, 19.2 percent of assigned cases are closed without an agreement being reached. Each year, FMCS transfers approximately 1.3 percent of these cases to a state or federal agency. One agency that FMCS typically transfers cases to is the Federal Service Impasses Panel, which resolves impasses between federal agencies and unions representing federal employees.

Other reasons for closing a case include problems with the union's status as the employees' collective bargaining agent, such as decertification, or the employer ceasing operations. Employer or union problems are responsible for an average of 3.4 percent of closed cases. FMCS closes an additional 11.1 percent of assigned cases at the fiscal year end due to a lack of resolution or activity among the parties. Many of these administratively closed cases are re-opened in the following fiscal year.[5]

The number of statutory collective bargaining notices received by FMCS from employers and unions has held relatively steady in recent years, averaging 26,700 between 1996 and 2004. Similarly, the ratio of statutory notices to assigned and active cases has been relatively stable between 1996 and 2004. Figure 1 illustrates that despite this recent stability, union and employer F-7 notices have declined by 42 percent since 1985, from 45,607. In 2004, these represented 75 percent and 16 percent of all statutory notices, respectively.

Figure 1: Trends in FMCS Collective Bargaining Mediation, 1985-2004



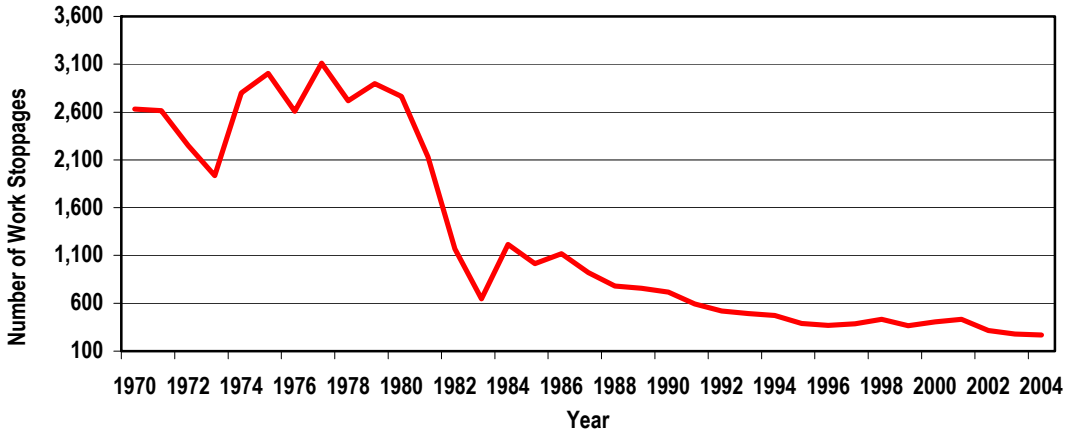
Source: Employment Policy Foundation analysis of FMCS data.

These data support an analysis of Bureau of Labor Statistics (BLS) contract data by Rich and Tracy (1999) which found that contract durations increased among bargaining units that had contract durations in the 75th and 90th percentiles. Rich and Tracy, incidentally, find evidence that longer contracts coincide with reduced inflation uncertainty starting in the mid-1980s.

Work Stoppage Impacts

FMCS data indicate that a total of 266 public and private sector work stoppages began in fiscal year 2004. As illustrated in Figure 2, this number represents the lowest number of total work stoppages since 1970: a decrease of almost 90 percent. A 1991 analysis by the Government Accountability Office (GAO) indicated a post-1970 peak in work stoppages of 3,111 in 1977. Only 10 years later the number of work stoppages had dropped to 921, and the number of stoppages beginning each year has trended steadily lower ever since.

Figure 2: Work Stoppages Beginning Each Fiscal Year, 1970-2004



Source: Employment Policy Foundation compilation of FMCS data (1970-2004).

Work stoppages in bargaining units with at least 1,000 members are relatively rare and have declined rapidly since the mid 1970s. Bureau of Labor Statistics (BLS) data note a decline of more than 95 percent—from 381 stoppages in 1970 to just 17 in 2004. Although BLS and FMCS statistics on large work stoppages are not exactly equivalent, FMCS data also reflect a similar decline. (See Table 3.) Between 1999 and 2004, stoppages among these so-called "large" bargaining units represented just 6.8 percent of all work stoppages.

Table 3: Work Stoppages by Bargaining Unit Size, 1999-2004

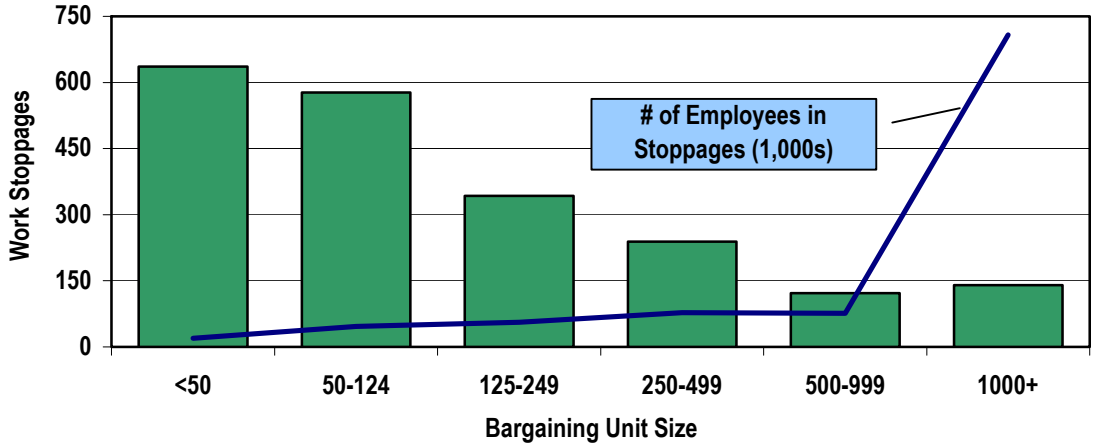
BU Size	1999	2000	2001	2002	2003	2004	1999-2004
1 to 49	106	123	118	104	100	85	636
50 to 124	108	115	130	74	82	68	577
125 to 249	55	60	89	59	42	38	343
250 to 499	46	53	40	38	29	33	239
500 to 999	24	21	27	20	14	16	122
1000+	24	34	27	18	11	26	140
Total	**363**	**406**	**431**	**313**	**278**	**266**	**2,057**

Source: Employment Policy Foundation analysis of FMCS data.

An important distinction between FMCS and BLS statistics is that BLS stops tracking a work stoppage as soon as the number of workers involved drops below 1,000. On the other hand, FMCS continues to track large work stoppages even if involvement in the stoppage drops below 1,000 workers. Another important difference arises from the time period used by each agency: FMCS work stoppage data covers the federal fiscal year, ending September 30, while BLS statistics cover the calendar year.

Bargaining units with fewer than 125 members were involved in nearly 60 percent of all work stoppages between 1999 and 2004. (See Figure 3.)[6] However, with only a total of 66,196 members involved, most of these work stoppages likely had a limited national impact. By contrast, work stoppages in bargaining units of 1,000 or more included nearly 708,000 members from 1999 through 2004. These represent over 72 percent of all union members involved in work stoppages over the six year period studied.

Figure 3: Work Stoppages & Employees Affected, 1999-2004



Source: Employment Policy Foundation analysis of FMCS data.

Because large work stoppages are few and easily monitored, government agencies such as BLS have historically only tracked work stoppages involving bargaining units of 1,000 or more members. Appendix C contains a yearly breakdown of work stoppages by

bargaining unit size and number of bargaining unit members directly affected by work stoppages.

Between 1999 and 2004, work stoppages that involved bargaining units of 1,000 or more members lasted an average of 40 days. (See Table 4.) Stoppages in smaller-sized bargaining units averaged between 42 and 57 days. Statistically, there was no significant relationship between the size of the bargaining unit and the duration of the work stoppage.

Table 4: Average Days in Work Stoppage by Unit Size, 1999-2004

BU Size	1999	2000	2001	2002	2003	2004	1999-2004
1 to 49	54	55	54	50	80	51	57
50 to 124	38	48	63	60	78	41	54
125 to 249	49	40	43	42	49	26	42
250 to 499	46	63	46	43	48	36	48
500 to 999	135	26	28	58	50	22	55
1000+	46	64	25	19	77	18	40
Average	52	51	50	49	70	38	52

Source: Employment Policy Foundation analysis of FMCS data.

The average duration of work stoppages varies greatly by industry. Table 5 demonstrates that work stoppages, on average, lasted more than 70 days in the mining and transportation industries. Stoppages in the state and local government grouping averaged only 20 days in length. An important factor to consider in the government employee data is that the federal and many state governments do not allow strikes or lockouts. Thus, the majority of stoppage activity in the state and local government occurs at the local level and most commonly involves disputes in public education facilities. The relatively short duration of these work stoppages is likely a function of the intense public pressure placed on school employees and administrators to quickly resolve their issues. Parental support for striking schoolteachers, for example, is likely to be inversely proportional to the number of vacation days that the parent loses as the work stoppage progresses.

Table 5: Average Days in Work Stoppage by Industry, 1999-2004

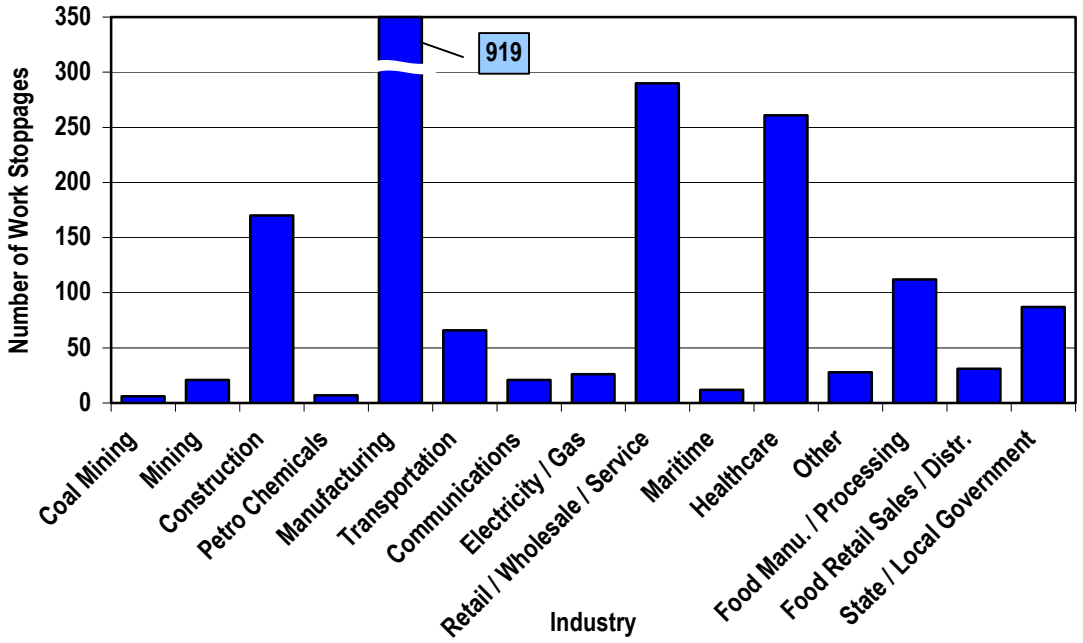
Industry	1999	2000	2001	2002	2003	2004	1999-2004
Coal Mining	0	39	0	65	0	7	37
Mining	29	21	13	36	243	81	76
Construction	96	33	56	25	41	11	44
Petro-Chemicals	43	3	5	3	0	82	43
Manufacturing	56	54	54	70	58	50	57
Transportation	14	268	67	34	63	19	73
Communications	74	30	16	0	88	7	33
Electricity / Gas	15	24	55	38	6	26	33
Retail / Wholesale / Service	31	38	89	43	109	34	56
Maritime	19	6	0	8	164	100	58
Healthcare	60	28	33	12	93	31	39
Other	4	133	25	15	13	17	38
Food Manufacture/Processing	68	62	39	64	63	29	56
Food Retail Sales/Distribution	50	46	44	0	104	56	58
State / Local Government	21	18	13	27	34	10	20
All Industries	**52**	**51**	**50**	**48**	**70**	**38**	**52**

Source: Employment Policy Foundation analysis of FMCS data.

Work stoppage durations in smaller industry groups are highly variable when measured year-to-year. Some of this variation is due to the small number of stoppages in the sector, meaning that a lengthy work stoppage by even a few employees can dramatically affect that industry's average. In 2003 for example, there were 3 maritime work stoppages. Among these, a 426-day stoppage by 62 Teamsters in Providence, RI brought the average duration of stoppages in this industry to 164 days.

As shown in Figure 4, the manufacturing sector saw the greatest number of work stoppages between 1999 and 2004 with 919 total stoppages, followed by the retail, wholesale, and service sector. The smallest numbers of work stoppages were in the coal mining, petro-chemical, and maritime sectors. Appendix E provides an annual breakdown of work stoppages in each industry.

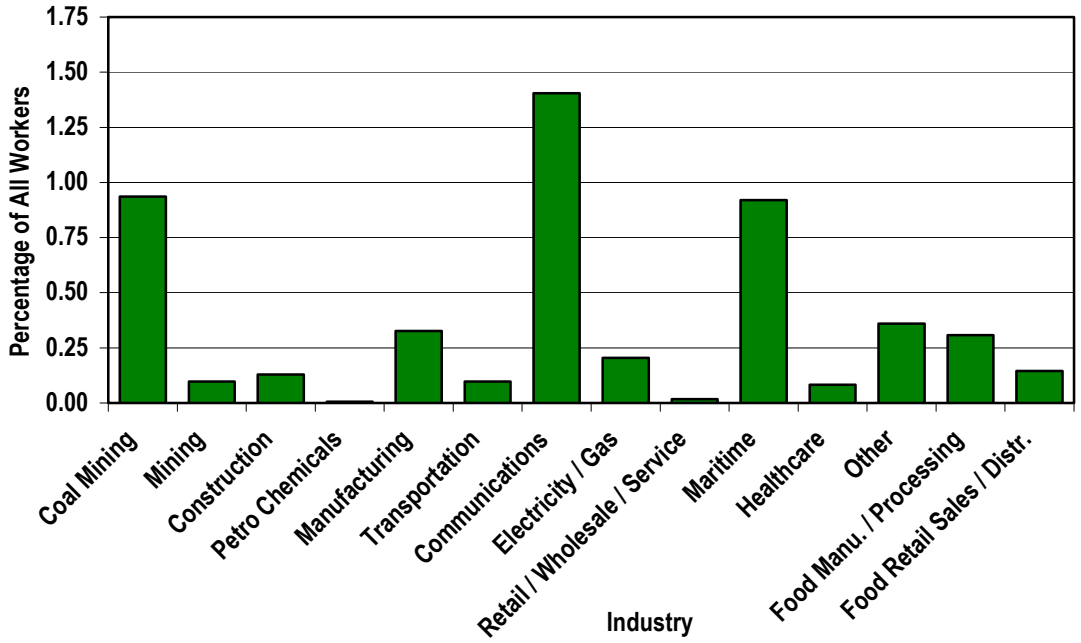
Figure 4: Total Work Stoppages by Industry, 1999-2004



Source: Employment Policy Foundation analysis of FMCS data

In the average year, approximately 0.14 percent of all employed workers in the U.S. are directly involved in a work stoppage. Since employment varies widely across different industries, merely tallying work stoppages or the number of employees involved in each may under- or over-estimate the actual importance of stoppages in that industry. Figure 5 presents the result of dividing the number of employees involved in work stoppages by total employment in the industry. The resulting fraction provides a weighted measure of how deeply work stoppages penetrate each industry.

Figure 5: Industry Share of Workers in Work Stoppages, 1999-2004



Source: Employment Policy Foundation analysis of FMCS data.

For example, the 919 strikes in the manufacturing industry indicated in Figure 4 create the impression that work stoppages are a very serious problem in manufacturing. However, despite the large number of stoppages, these involved an average of only 39,000 workers each year from a work force of more than 12 million (Appendix F). In certain respects, a small number of work stoppages in the coal mining, communication, and maritime industries may have a far greater impact on the national economy than a large number of work stoppages in the manufacturing, healthcare, and service industries. This impact can be thought of as the leverage or force that an industry exerts on the broader economy.

Work Stoppage Cost Estimates

One downside to the 1,000-plus bargaining unit restriction used by BLS is that it summarily dismisses the leverage effect that relatively small groups of workers may have on the national economy. Standardization, competition, and "just-in-time" inventory systems mean that many industries today carry only nominal inventory, typically from a limited number of suppliers. Thus, a 10-day strike by 10 machinists may have a greater impact on the economy than a 100-day strike by 10,000 schoolteachers.

To fully understand how leverage in an industry's supply chain can impact the economy, it is extremely important to distinguish between the economic or public and private costs of work stoppages. Private costs are those borne by the direct participants in the form of lost wages and lost profits. Economic costs, or the net change to national output, are

those borne by the economy as a whole. Thus, while a work stoppage may cost an individual firm and its employees quite dearly, offsetting gains by other firms and their employees will not create a noticeable loss in the industry and society as a whole. (Neumann and Reder, 1984).

Economic theory predicts that companies and their employees will attempt to minimize the losses from work stoppages. If a company, for example, senses that a contract negotiation may end in a strike it may build inventories to use in weathering the stoppage; shift work onto managers to temporarily replace the lost production; or simply hire replacement workers. Bargaining unit members for their part may minimize disruption to their earnings by drawing from their union strike or state unemployment funds; using personal savings; finding alternative employment; or returning to work before the stoppage has ended.

Economic theory also predicts that the national economy will feel few, if any, long-term effects from work stoppages. Neumann and Reder (1984), for example, estimated that the economic cost of work stoppages from 1955 through 1977 was zero for 44 out of the 63 manufacturing industries studied. For the remaining 19 manufacturing industries they found that work stoppages did create an economic cost, but that these were relatively small.

From a purely theoretical viewpoint this finding makes sense: in a highly competitive industry, work stoppages will have no net long-term economic cost since production and employment at other companies will dynamically expand to fill any production void. At the other extreme, work stoppages in monopolistic or less competitive industries will have a net economic cost since the remaining companies, if any, will not have the capacity or interest to respond quickly.

To illustrate this point, consider the following two companies, one that manufactures concrete blocks and one that manufactures jet engines. The concrete block industry is highly competitive—the technology is relatively straightforward, the capital equipment and raw inputs are inexpensive, the labor is comparatively low skilled and un-specialized, and the end product is standardized across the industry. The jet engine industry represents the polar opposite—the technology is highly advanced and evolving, the capital equipment and raw inputs are expensive, the labor force is highly skilled and possesses unique talents, and the end product is highly specialized.

A 200-day stoppage at each company will produce dramatically different results in the national economy. Competitors in the concrete block industry will use their existing inventory to cover lost production in the short-run and within a few weeks will have been able to interview, hire, and train new employees and increase production. Most suppliers and consumers within the industry are unlikely to notice any short- or long-run changes in price or supply. However, a work stoppage in the jet engine company is likely to paralyze the entire supply chain. Firms that make compressor blades will not ship their product and aircraft manufacturers will not be able to deliver aircraft orders.

Thus, it appears that the economic losses from work stoppages are linked to the competitiveness of firms within an industry. One common way of measuring market competition is through the use of the Herfindahl-Hirschman Index (HHI). The HHI is the sum of the squared market share of each firm competing in a given market. The index can range from a minimum of zero in a perfectly competitive market to a maximum of 10,000 in a monopoly. One caveat is that concentration ratios are sensitive to the precise definition of the industry and geographic area: they tend to rise for narrowly defined industries and regions and fall for broadly defined ones.

One common use of the HHI is by the U.S. Department of Justice (DOJ) for evaluating mergers. The DOJ considers a HHI score of less than 1,000 to reflect a competitive marketplace, a score of between 1,000 and 1,800 to reflect a moderately concentrated marketplace, and a score of 1,800 or greater to reflect a highly concentrated marketplace. Mergers that increase the HHI by more than 100 points in concentrated markets or by more than 50 points in highly concentrated markets typically raise antitrust concerns.[7]

Following the two companies from the previous example, EPF obtained HHI numbers from the 1997 Economic Census for concrete block and brick manufacturers (NAICS 327331) and aircraft engine and engine parts manufacturers (NAICS 336412).[8] The HHI for these respective industries were 69.8 and 2,057.5. Relaxing the industry definition to the 4-digit NAICS code level gave indices of 40.7 and 1,636.9, respectively, showing that the HHI in this instance is quite robust. These results provide evidence that, under the DOJ standards, the concrete block manufacturer operates in a highly competitive environment and the costs of any work stoppage will be limited to private ones. In contrast, the jet engine manufacturer operates in a highly concentrated industry and a certain proportion of the economic costs will be "felt" by the economy.

Unfortunately, the lack of detailed standard industry coding within the FMCS data and HHI estimates that are generally limited to goods-producing industries forestalls a more detailed exploration of how market concentration may actually impact public (as opposed to private) costs. For this reason the following analysis will focus on the private costs of work stoppages.

Direct Cost Estimates

Work stoppages directly impact earnings among companies and their employees. During stoppages employees do not work and thus forgo wages, which are the product of hourly wage rates and the duration of the strike in hours. For employers, production lost during the work stoppage directly impacts company profit. These profits can be calculated as the product of the stoppage duration in hours, the number of employees, and the average industry profit per employee-hour.

Since the FMCS tracks only the number of bargaining unit members directly involved in the work stoppage and the duration of the stoppage in days, EPF estimated average values for employees' hourly wage rate and the number of work hours lost using Current Population Survey (CPS) data. These results are derived from the U.S. Department of

Labor's Bureau of Labor Statistics March Supplement survey of approximately 60,000 households. Only records that indicated full-time employment of 52 weeks duration and 35 or more hours worked in a typical week, not including vacation and sick leave, were used in generating the industry averages.

EPF also estimated the average profit per employee-hour for each industry from the U.S. Department of Labor's Bureau of Economic Analysis National Income and Product Accounts (NIPA) tables.[9] Table 6 presents the annual averages for each of the three main variables estimated from the NIPA tables and CPS March supplement data. The number of work stoppages in each industry weights the estimates in Table 6. In the table, the result of the recession starting in March 2001 and the subsequent recovery can most clearly be seen in the work hours per day and corporate profit per worker-hour columns.

Table 6: Estimated Key Hourly Variables by Year, 1999-2004

Year	Work Hours* (hours/day)	Profit ($/hour)	Wage ($/hour)
1999	6.23	2.93	17.13
2000	6.24	2.80	17.39
2001	6.17	1.51	18.66
2002	6.20	1.62	19.62
2003	6.18	2.07	19.67
2004	6.23	2.41	20.12

*See endnote 10

Source: Employment Policy Foundation tabulation of BLS & BEA data

Due to slight differences in the way FMCS and the Department of Labor define industries, EPF recoded the CPS data to better reflect FMCS' industry groupings, then aggregated data by FMCS industry code. For example, FMCS identifies a separate "petro-chemical" industry where the Department of Labor includes this within the manufacturing sector.

As indicated in Table 7, employees in the mining and transportation industries worked the most hours each day, averaging between 6.5 and 7 hours. All other industries averaged between 6 and 6.3 hours each day, the equivalent of 42 to 44 hours per week. Hourly equivalent wages ranged from a high of $23.68 in gas and electric utility industries to a low of $11.18 in food retail sales and distribution industries. Profits per employee-hour varied widely by industry, from a high of $15.92 in the electricity and gas industry to an imputed value of $0 in the communications industry.[11] An annual breakdown of earnings and working hours appears in Appendix G.

Table 7: Estimated Key Hourly Variables by Industry, 1999-2004

Industry	Work Hours (hours/day)	Profit ($/hour)	Wage ($/hour)
Coal Mining	6.87	2.86	22.11
Mining	6.96	10.38	20.46
Construction	6.17	2.75	17.18
Petro-Chemicals	6.25	9.48	22.84
Manufacturing	6.19	1.12	19.20
Transportation	6.56	0.79	16.20
Communications	6.22	0.00	23.50
Electricity / Gas	6.07	15.92	23.68
Retail / Wholesale / Service	6.26	3.66	19.32
Maritime	6.29	1.26	18.96
Healthcare	6.07	1.20	18.50
Other (mostly higher Education)	6.15	0.41	16.74
Food Manu. / Processing	6.24	7.14	15.29
Food Retail Sales / Distrib.	6.19	2.01	11.18
Federal / State / Local Gov.	6.10	0.00	19.90

Source: Employment Policy Foundation analysis of BLS & BEA data.

The direct cost to employers and bargaining unit members for all work stoppages between 1999 and 2004 are shown in Table 8. Stoppages in 2000 had the greatest impact on earnings, with 406 work stoppages resulting in 172.6 million lost work hours and totaling over $3.3 billion in lost earnings. Lost company profits ranged from $21.8 million in 2002 to $147.9 million in 2004. The total direct cost of all 2,057 U.S. work stoppages between 1999 and 2004 was $6.6 billion.

Table 8: Estimated Direct Costs of Work Stoppages by Year, 1999-2004

Year	Hours (1,000s)	Wages ($1,000s)	Profits ($1,000s)	Total ($1,000s)
1999	44,496	777,792	105,217	883,010
2000	172,570	3,206,881	143,322	3,350,203
2001	23,751	436,140	59,344	495,484
2002	17,686	341,702	21,819	363,522
2003	17,079	329,192	43,486	372,678
2004	71,501	954,527	147,948	1,102,475
Total	347,083	6,046,234	521,137	6,567,371

Source: Employment Policy Foundation analysis of FMCS data.

Direct costs of work stoppages by industry between 1999 and 2004 range from $1.1 million in the petro-chemical industry to $1.740 billion among manufacturers (See Table 9.) Among all industries, employee wages are responsible for 92 percent of all costs and company profits constitute 8 percent of the total.

Table 9: Estimated Direct Costs of Stoppages by Industry, 1999-2004

Industry	Hours (1,000s)	Wages ($1,000s)	Profits ($1,000s)	Total ($1,000s)
Coal Mining	309	6,280	844	7,124
Mining	1,156	23,257	14,322	37,579
Construction	6,655	112,941	18,595	131,536
Petro-Chemicals	38	809	323	1,132
Manufacturing	85,865	1,580,272	159,783	1,740,055
Transportation	25,569	382,720	37,847	420,567
Communications	67,244	1,556,068	0	1,556,068
Electricity / Gas	1,778	41,212	30,302	71,514
Retail / Wholesale / Serv.	11,775	229,586	43,248	272,834
Maritime	1,007	19,181	2,593	21,774
Healthcare	11,891	219,771	13,913	233,685
Other	52,350	801,348	20,085	821,433
Food Manu. / Processing	6,681	99,207	43,750	142,957
Food Retail Sales / Distrib.	65,114	789,201	135,531	924,732
Federal / State / Loc. Gov.	9,649	184,380	0	184,380

Source: Employment Policy Foundation analysis of FMCS data

Indirect Cost Estimates

Work stoppages also indirectly impose costs on companies that provide goods and services to the company experiencing the work stoppage. Stoppages negatively affect the output and earnings of companies that depend upon the stopped company's output to produce their own product or service. This section of the study uses the Bureau of Economic Analysis' (BEA) second generation Regional Input-Output Multipliers (RIMS II) to estimate the financial cost of work stoppages to input-providing, or ancillary, companies.

Since estimates can only be generated for companies that supply inputs to the company experiencing the work stoppage, great care should be taken when interpreting RIMS II data. For example, if a concrete block manufacturer experiences a work stoppage, RIMS II multipliers can be used to estimate the cost to companies that supply aggregate, cement mix, heavy equipment, professional services, and other inputs. RIMS II multipliers cannot be used in this case to estimate the cost to a building contractor who must obtain an alternative supply of blocks.

To create the indirect cost estimates, EPF acquired multipliers for RIMS II aggregate industries in each U.S. state. Individual work stoppages were then matched by year, state, and industry to the corresponding RIMS II direct effect earnings and employment multiplier.[12] Since FMCS' industry codes represent fairly broad groupings, they do not allow for an exact match with the more detailed NAICS industry codes used by BEA. Due to the inordinately large amount of time that would be required to obtain more than

2,000 exact industry codes, EPF selected RIMS II multipliers within industry groups that appeared to best correspond with the FMCS industry.

The following example from the FMCS data illustrates how the lack of precise coding and the geographic focus may influence the direct effect estimates. Table 10 displays information for a small New Jersey cement mix company that experienced a 109-day work stoppage by its 12 unionized employees in 2004. In the FMCS coding system, this company was placed in the "Manufacturing" industry grouping. Using the FMCS industry grouping and the state-level multiplier, EPF estimated the total earnings and employment losses among ancillary companies to be $253,000 and 17 jobs.

Table 10: Estimates for NJ Cement Mix Company Work Stoppage, 2004

Multiplier Type	Direct Effect	Multiplier	Estimates	Difference (%)
National - FMCS Industry	Earnings	4.0371	$512,790	102.70
	Employment	4.0498	37 jobs	109.22
NJ State –FMCS Industry	Earnings	2.4983	$252,976	
	Employment	2.4577	17 jobs	
NY-NJ Region -FMCS Industry	Earnings	2.4608	$246,644	(2.50)
	Employment	2.4904	18 jobs	2.24
NY-NJ Region –NAICS Industry	Earnings	2.0431	$176,119	(30.38)
	Employment	2.2184	15 jobs	(16.42)

Source: Employment Policy Foundation analysis.

When using the same industry code but for the entire nation, the first two data rows in Table 10 indicate that using national multipliers will likely overstate the earnings and employment losses by more than 100 percent. Evaluating the same company but at the regional level and with a more precise NAICS industry code, the original estimate may overstate both employment and earnings by as much as 30 and 16 percent, respectively.

It is important to note that RIMS II multipliers can be very sensitive to how one defines the economic region. If, for example, the concrete block company purchased many of its raw inputs from firms in neighboring economic regions, then the impact on its suppliers should be calculated using a broader region. Estimates may also be very sensitive to the way the industry is defined. Thus, all other conditions being equal, a work stoppage at a concrete block manufacturer may have a different impact than an otherwise identical stoppage at concrete pipe manufacturer.

Table 11 tallies the indirect costs of all work stoppages between 1999 and 2004 using state-level broad industry estimates. Work stoppages that began in 2000 cost employees among input-supplying companies more than $3.7 billion dollars and reduced employment by nearly 598,000 positions. This finding for 2000 bears a little more examination since it is more than double the size of the next largest year and appears to be approximately 10 times the size of least impacted year in the study period.

In 2000, a national 183-day strike by media scriptwriters accounts for $2.2 billion and 101,000 jobs.[13] Similarly, a 1,100-day strike by 2,000 Overnite Transportation Company employees had indirect impacts of $375 million and 4,000 jobs among its suppliers. These two work stoppages alone account for nearly $2.6 billion and 105,000 jobs in 2000.

Table 11: Indirect Work Stoppage Costs by Year, 1999-2004

	Indirect Costs	
Year	Earnings ($1,000s)	Employment
1999	896,481	138,251
2000	3,672,152	597,704
2001	476,000	136,607
2002	461,289	164,958
2003	329,595	70,092
2004	267,260	338,643

Source: Employment Policy Foundation analysis of FMCS data.

Between 1999 and 2004, company and employee earnings among input-supplying companies were affected the most in the manufacturing and communications industries and the least in petro-chemical and coal mining. (See Table 12.) Appendix I contains an annual breakdown of the costs for each industry

Table 12: Indirect Work Stoppage Costs by Industry, 1999-2004

	Indirect Costs	
Year	Earnings ($1,000s)	Employment
Coal Mining	6,664	4,479
Mining	20,160	5,101
Construction	107,198	59,608
Petro-Chemicals	800	1,825
Manufacturing	1,983,267	401,109
Transportation	440,653	20,227
Communications	2,190,803	594,456
Electricity / Gas	51,858	18,535
Retail / Wholesale / Service	197,030	82,798
Maritime	62,689	70,852
Healthcare	157,019	51,895
Other	566,607	29,770
Food Manu. / Processing	213,031	79,194
Food Retail Sales / Distrib.	977,088	42,991

Source: Employment Policy Foundation analysis of FMCS data.

Total Work Stoppage Costs

Table 13 details the total cost of work stoppages to companies and their employees, which is the sum of the direct and indirect costs. Since RIMS II multipliers do not include the governmental sector, indirect costs are based upon 1,887 work stoppages rather than the 2,057 work stoppages tallied in the direct costs section. Total costs follow the general results for the direct and indirect costs estimates, particularly in 2000, with more than $7 billion in total costs. This amount is more than one-half the sum of all other years included in this analysis.

Table 13: Total Work Stoppage Cost Estimates, 1999-2004

	Direct		Indirect		Total	
Year	Earnings ($1,000s)	Employment	Earnings ($1,000s)	Employment	Earnings ($1,000s)	Employment
1999	883,010	96,648	896,481	138,251	1,779,490	234,899
2000	3,350,203	386,328	3,672,152	597,704	7,022,355	984,032
2001	495,484	112,330	476,000	136,607	971,484	248,937
2002	363,522	79,430	461,289	164,958	824,811	244,388
2003	372,678	53,166	329,595	70,092	702,273	123,258
2004	1,102,475	255,285	267,260	338,643	1,369,735	593,928

Source: Employment Policy Foundation analysis of FMCS data.

Total work stoppage costs were similar to those in the manufacturing and communications sectors, each having more than $3.7 billion in total costs between 1999 and 2004. (See Table 14.) Work stoppages in the petro-chemical sector by far had the smallest work stoppage costs between 1999 and 2004, with 2,716 jobs and $2.6 million in total earnings losses.

Table 14: Total Work Stoppage Cost Estimates by Industry, 1999-2004

Industry	Direct Earnings ($1,000s)	Direct Employment	Indirect Earnings ($1,000s)	Indirect Employment	Total Earnings ($1,000s)	Total Employment
Coal Mining	7,124	4,108	6,295	4,479	13,419	8,587
Mining	37,579	2,590	20,181	5,101	57,760	7,691
Construction	131,536	52,636	106,313	59,067	237,848	111,703
Petro-Chemicals	1,132	648	1,471	2,068	2,603	2,716
Manufacturing	1,740,055	235,232	2,032,706	408,824	3,772,762	644,056
Transportation	420,567	14,895	440,145	20,343	860,712	35,238
Communications	1,556,068	286,476	2,190,803	599,062	3,746,871	885,538
Electricity / Gas	71,514	6,707	52,584	19,213	124,098	25,920
Retail / Wholesale / Srvc	272,834	67,264	176,993	77,097	449,826	144,361
Maritime	21,774	11,200	59,412	70,852	81,186	82,052
Healthcare	233,685	66,605	149,186	51,481	382,870	118,086
Other	821,433	55,152	566,140	29,731	1,387,573	84,883
Food Manu. / Processing	142,957	31,980	235,852	87,491	378,809	119,471
Food Retail Sales / Distr.	924,732	98,643	64,696	11,447	989,428	110,090
Federal / St. / Local Gov.	184,380	49,051	0	0	184,380	49,051

Source: Employment Policy Foundation analysis of FMCS data.

Work Stoppage Incidence and Duration

The rapid decline in the number of work stoppages over the past 25 years provides evidence of a fundamental shift in the conditions that contribute to them. Cramton and Tracy (1998), most notably, find evidence of a structural change following President Reagan's firing and replacement of the Professional Air Traffic Controller's Organization (PATCO) members in late 1981. Their most important finding is that unions have shifted from the strike to the holdout as the primary threat to the employer during contract negotiations. Holdouts occur when a labor union and employer continue to negotiate after the contract expiration date without first resorting to a strike or lockout.

While the FMCS data used in this study do not cover the period examined by Cramton and Tracy, there is evidence that holdout use has continued to increase since the early 1990s, when they reported a 60 percent holdout rate among large bargaining units. As shown in Table 15, holdouts occurred in an average of 91 percent of all collective bargaining negotiations between 1999 and 2003, with negotiations continuing past the contract expiration date an average of 163 days. For 2004, the holdout rate lies closer to Cramton and Tracy's finding, which more likely results from changes in the way FMCS records its data than a sudden decrease in holdout use as a bargaining tool.

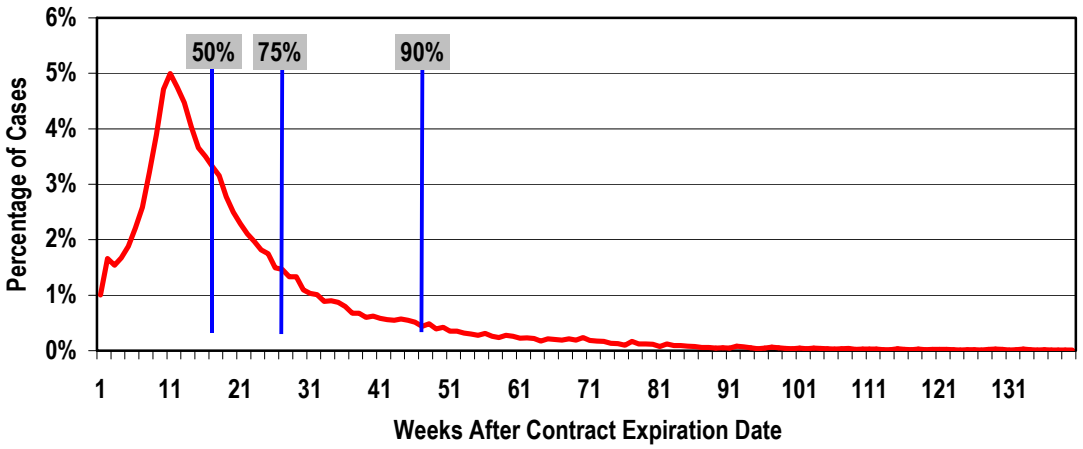
Table 15: Collective Bargaining Contract Holdouts, 1999-2004

Cases	1999	2000	2001	2002	2003	2004
No Holdout	1,011	1,441	1,011	1,225	1,590	6,107
Holdout	12,649	12,263	12,369	11,985	11,937	8,217
—Holdout (%)	92.6	89.5	92.4	90.7	88.2	57.4
—Average Days	158	155	178	162	162	107

Source: Employment Policy Foundation analysis of FMCS data.

Figure 6 indicates the percentage of all contract negotiations that conclude in each week after the contract expiration date. The large spike in cases at 11 weeks after expiration suggests that the parties negotiating a contract tend not to succeed until they are well into any extension. Again, this result approximates another of Cramton and Tracy's: that the contract settlement rate remained roughly flat for one month after its expiration. This lag may be amplified in the FMCS data since FMCS mediators may not be immediately notified of a completed negotiation or may take several weeks to close a case. Thus, a negotiation that ends 3 days after a contract expires may not be officially recorded for a number of weeks.[14] Approximately 50 percent of all negotiations conclude within 17 weeks of the contract expiration date.

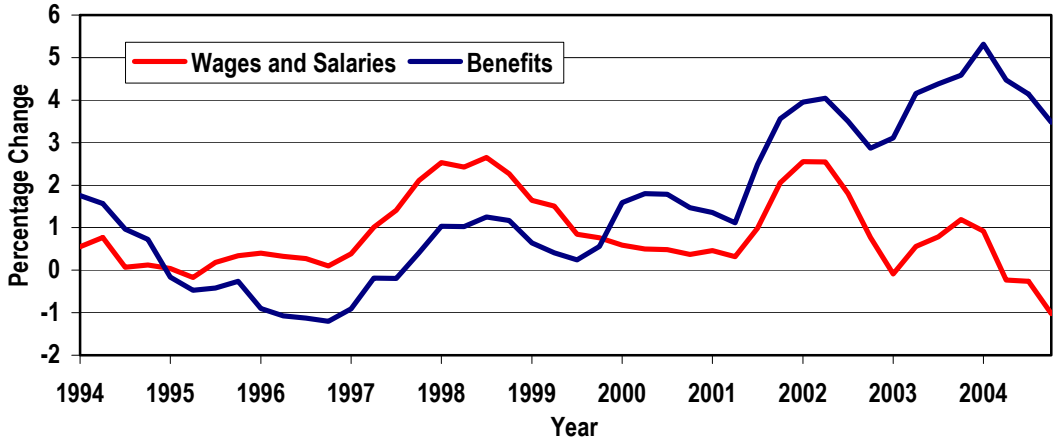
Figure 6: Percentage of Completed Negotiations, 1999-2004



Source: Employment Policy Foundation analysis of FMCS data.

While the shift in union and employer bargaining strategies certainly explains some of the reduction in work stoppage activity, structural changes in the U.S. economy also have had an effect on the incidence of work stoppages. These are generally related to movement away from highly unionized manufacturing industries as engines of economic growth and towards the less unionized technology and service industries. In addition to these structural changes, low inflation, low interest rates, and increases in negotiated union member benefits have partially compensated for stagnant wage growth in the 1990s. (See Figure 7.)

Figure 7: Inflation-Adjusted Change in Wages and Benefits, 1994-2004



Source: Employment Policy Foundation tabulation of Employment Cost Index data.

Work Stoppage Incidence

While the aforementioned changes are likely explanations for the dramatic drop in the number of work stoppages since the early 1980s, the causes of work stoppages that do occur are more elusive. Spielmans (1939) noted that work stoppages result from either a "clash of conflicting economic interests" or over the "effective right to organize and to bargain collectively." He also noted that 58 percent of all strikes in 1937 involved issues of union organization, a number that is undoubtedly far lower today. Hicks (1963) proposed that the "majority of actual strikes" result from "faulty negotiation": that a work stoppage results from mistakes made during the negotiation process. Ashenfelter and Johnson (1969) argued that work stoppages essentially result from the union leadership attempting to realign its member's expectations with reality. A work stoppage then, from the union's perspective, is merely a tool for helping workers understand that the employer cannot accommodate their demands.

In reality, the causes of work stoppages from 1999-2004 do not appear to be the same as those found in past research. Gramm (1986), for instance, explored 1,050 large bargaining unit negotiations occurring between 1971 and 1981 for factors contributing to the incidence of work stoppages and found that:

1) Growth in product market demand has a significant, negative net effect on strike incidence, duration, and idled worker-days;
2) The propensity to strike is greatest when the negotiation coincides with a season of high demand;
3) Strike activity increases significantly with labor intensity;
4) Strike activity increases with the proportion of male union members;
5) There is a positive correlation with bargaining unit size;

6) The ratio of change in workers wages to changes in CPI has a negative effect on strike incidence and severity;
7) Union density is positively correlated with incidence and severity;
8) Strikes are more likely to occur and are more severe in states with right to work statutes than elsewhere;
9) The probability of strike and strike severity are lowest in the summer and highest in the spring;
10) The magnitude of real wage growth over the term of the expiring contract is important in determining the incidence and severity of the strike.

Due to the extraordinary amount of company-specific data required to conduct a comprehensive review of this nature, most research, like Gramm's, relies on small subsets of FMCS data or the BLS data for bargaining units of 1,000 or more members. While EPF was not able to duplicate each of the variables used by Gramm, seasonal and demographic variables were not found to have any statistically significant relationship with work stoppage incidence. Considering the current low level of work stoppages, one possible explanation for this is that the causes of work stoppages are no longer easily quantified.

The key objective of this study is to determine the impact of FMCS mediation activities on the incidence and duration of work stoppages. Examination of the FMCS work stoppage data through a logistic regression indicates that FMCS mediation and work stoppages are positively and highly correlated with each other.

This result is an excellent illustration of how selection bias among participants in a process can lead to erroneous conclusions about the efficacy of that process. In other words, one should not and cannot conclude from the FMCS case data that FMCS mediation causes work stoppages. A far more logical explanation is that those employers and bargaining units that are most likely to experience a work stoppage are also those groups most likely to request FMCS mediation assistance. The issue is one of causation: while FMCS mediation and work stoppages are highly correlated, mediation activity does not cause these stoppages.

Since the FMCS dataset contains little information about the conditions and attitudes of employers and bargaining units before FMCS mediation took place, EPF relied upon the results of a 2003 survey of union and employer representatives to estimate the work stoppage rate in the absence of FMCS mediation. The survey, with principal investigators from the Massachusetts Institute of Technology Sloan School of Management and George Washington University Department of Management Science (hereafter referred to as the "MIT" study), contains 584 matched pair interview results.

EPF analysis of the MIT survey results indicates that 7.7 percent of matched pairs in the survey believed that a strike, lockout, or binding arbitration was "very likely" without FMCS mediation. In an additional 23.3 percent of cases, at least one of the respondents

believed that a stoppage was "very likely" and the other respondent believed that a stoppage was "likely."

The number of estimated cases for each year is derived from the total number of FMCS-mediated collective bargaining contracts that did not end in a work stoppage, multiplied by the proportion of mediated cases that the MIT data indicated were most likely to have ended in a work stoppage (7.7 percent). Annual estimates of the average number of hours worked each day, firm profit per worker-hour, and hourly wages are developed using the same procedures as detailed in the stoppage costs section of this study.

Between 1999 and 2004, FMCS mediation prevented an estimated 1,140 collective bargaining-related work stoppages. Over this period, the annual private benefits of FMCS collective bargaining mediation averaged $1.027 billion. Of these benefits, $433 million were in saved direct employee wages and $56 million were in saved firm profits. Indirect benefits included $538 million in wages and 204,000 positions among companies providing goods and services to companies that might have otherwise experienced a work stoppage.

Table 16 summarizes the estimated direct and indirect private savings from FMCS mediation activity between 1999 and 2004. As detailed in the previous section, direct savings are the earnings saved by companies and employees, while indirect savings are those among ancillary companies and their employees.

Table 16: Estimated Collective Bargaining Savings, 1999-2004

Collective Bargaining	1999	2000	2001	2002	2003	2004
Est. # of Work Stoppages	184	191	210	206	194	155
Est. # of Stoppage Days	53	43	53	55	68	43
Direct Savings						
Idled Workers	49,061	102,943	47,135	51,689	33,975	176,607
Hours per Day	6.24	6.24	6.17	6.20	6.19	6.23
Profit per Hour	3.03	3.07	1.67	1.71	2.01	2.47
Wage per Hour	16.87	17.19	18.45	19.6	19.53	19.91
Hours Saved (1,000s)	16,226	27,622	15,414	17,626	14,301	47,311
Profit Saved ($1,000s)	49,163	84,799	25,741	30,140	28,745	116,859
Wages Saved ($1,000s)	273,725	474,817	284,382	345,467	279,296	941,967
Indirect Savings						
Earnings Multiplier	2.3089	2.2671	2.1356	2.2667	2.2430	2.2326
Employment Multiplier	2.7836	2.6917	2.4672	2.7247	2.6611	2.6179
Wages Saved ($1,000s)	358,279	601,640	322,945	437,603	347,165	1,161,068
Employment Saved	87,506	174,149	69,157	89,148	56,436	285,732
Employment	**136,567**	**277,092**	**116,292**	**140,836**	**90,412**	**462,339**
Earnings ($1,000s)	**681,168**	**1,161,255**	**633,068**	**813,211**	**655,206**	**2,219,894**

Source: Employment Policy Foundation estimates.

Initial contract mediation involves less than 10 percent of all FMCS mediation cases and represents a roughly proportional share of the savings realized through FMCS mediation activity. Table 17 summarizes the estimated annual savings for initial contract mediation between 1999 and 2004. Initial contract mediation by FMCS provided average annual private savings of $178.4 million between 1999 and 2004. Of these, $77.0 million were in the form of direct employee wages, $12.8 million were in saved company profits, and $88.6 million in ancillary wages. The average annual indirect savings for initial contract mediation cases also include 22,000 positions that would otherwise have been lost among ancillary companies due to work stoppages.

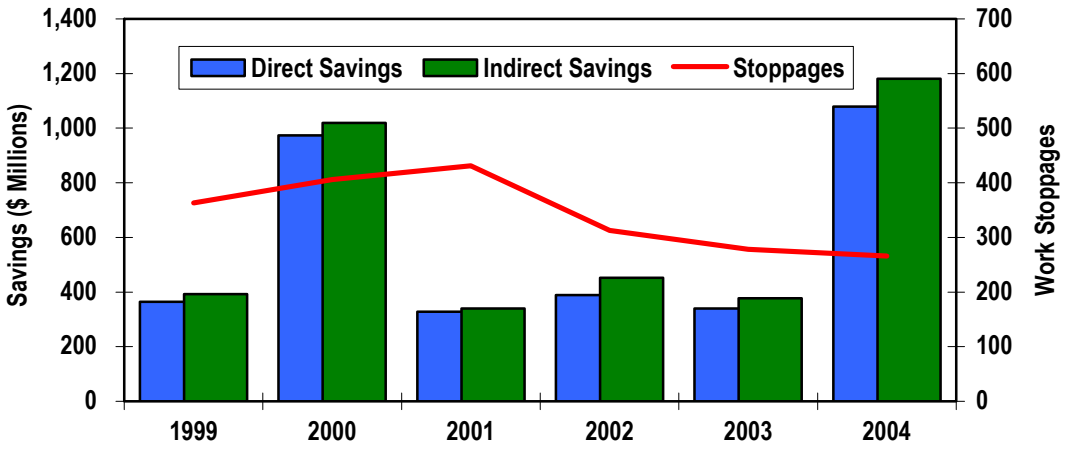
Table 17: Estimated Initial Contract Mediation Savings, 1999-2004

Initial Contract	1999	2000	2001	2002	2003	2004
Est. # of Work Stoppages	23	29	27	19	16	11
Est. # of Stoppage Days	123	80	57	62	130	45
Direct Savings						
Idled Workers	2,775	41,691	2,544	1,690	1,808	3,164
Hours per Day	6.21	6.24	6.20	6.19	6.16	6.33
Profit per Hour	3.17	2.97	1.47	1.68	2.25	2.87
Wage per Hour	16.54	16.92	18.28	19.06	19.78	19.72
Hours Saved (1,000s)	2,119	20,812	899	649	1,448	901
Profit Saved ($1,000s)	6,718	61,812	1,322	1,090	3,258	2,587
Wages Saved ($1,000s)	35,054	352,140	16,438	12,364	28,637	17,775
Indirect Savings						
Wages Multiplier	1.9709	2.1851	1.9964	2.1542	2.0524	2.0869
Employment Multiplier	2.2835	2.4509	2.2783	2.3887	2.3804	2.5098
Wages Saved ($1,000s)	34,034	417,321	16,379	14,271	30,138	19,319
Employment Saved	3,561	60,489	3,253	2,347	2,496	4,778
Employment	**6,336**	**102,180**	**5,797**	**4,038**	**4,304**	**7,942**
Earnings ($1,000s)	**75,806**	**831,273**	**34,138**	**27,725**	**62,033**	**39,681**

Source: Employment Policy Foundation estimates.

Total estimated savings due to reduced work stoppage incidence were $7.7 billion, or an annual average of $1.2 billion. As shown in Figure 8, these savings varied by year, with 2000 and 2004 each with savings of approximately $2 billion and the remaining four years averaging approximately $745 million each.

Figure 8: Estimated Savings from Averted Work Stoppages, 1999-2004



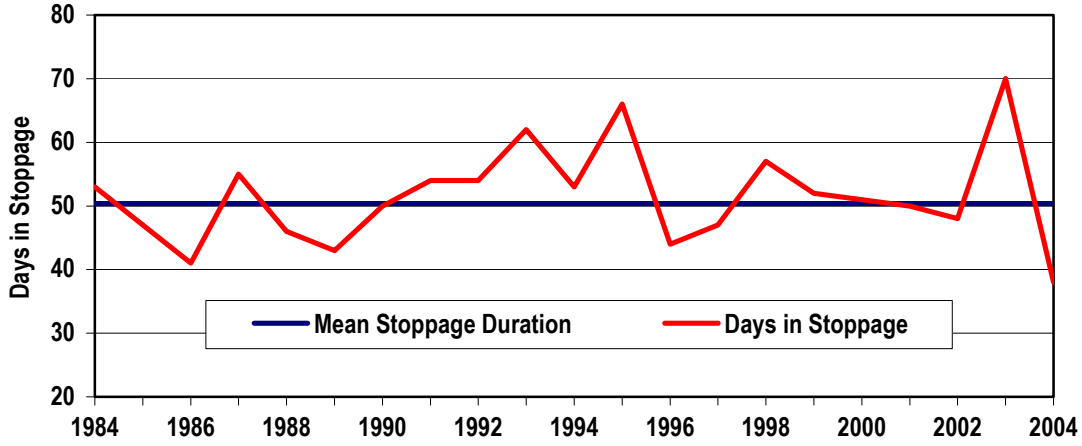
Source: Employment Policy Foundation estimates.

Work Stoppage Duration

While the number of work stoppages has declined substantially since 1970, there is little evidence that their average duration has changed much over the past 25 years. A review of BLS work stoppage data covering the period 1970-1981 by McConnell (1990), found that the average duration of work stoppages involving 1,000 or more bargaining unit members lasted 43 days. Similarly, an analysis by Schnell and Gramm (1994) using a sample of FMCS data for 1985 and 1989 records an average work stoppage duration of slightly more than 43 days.[15]

Analysis by EPF of FMCS data for the period 1984 to 2004 indicates that Schnell and Gramm's finding likely underestimates the average duration of work stoppages by at least 7 days for 1985 and 1989, and likely underestimate the average duration for earlier periods as well. As indicated in Figure 9, analysis of FMCS work stoppage data from 1984 to 2004 reveals that the average stoppage duration was approximately 50 days. The average for 1999 to 2004 provides a slightly higher average duration of 52 days, although this does not represent a statistically significant change from the previous period.

Figure 9: Average Annual Work Stoppage Durations, 1984-2004



Source: Employment Policy Foundation analysis of FMCS data.

A major reason for this difference is that the McConnell and Schnell and Gramm research relied on work stoppage data for "large" bargaining units or covered limited periods. One shortcoming of using the BLS data, as with McConnell, is that BLS stops tracking a work stoppage as soon as the number of bargaining unit members involved in the stoppage drops below 1,000. Thus, the BLS data are biased in favor of larger bargaining units that, as previously shown in Table 4, tend to have shorter work stoppage durations. The Schnell and Gramm analysis, while using a good sample of FMCS data, is also biased downwards. As illustrated in Figure 9, this bias arises from bad fortune: the two years used, 1985 and 1989, both have lower than average work stoppage durations.

Initial analysis of the data showed that FMCS' mediation activity did not play a role in reducing work stoppage durations. A standard Ordinary Least Squares (OLS) regression of work stoppage duration on FMCS activity indicates a very weak and statistically insignificant, though positive, relationship between FMCS mediation and work stoppage duration. In other words, initial data showed that FMCS activity and work stoppage duration were not correlated with each other.

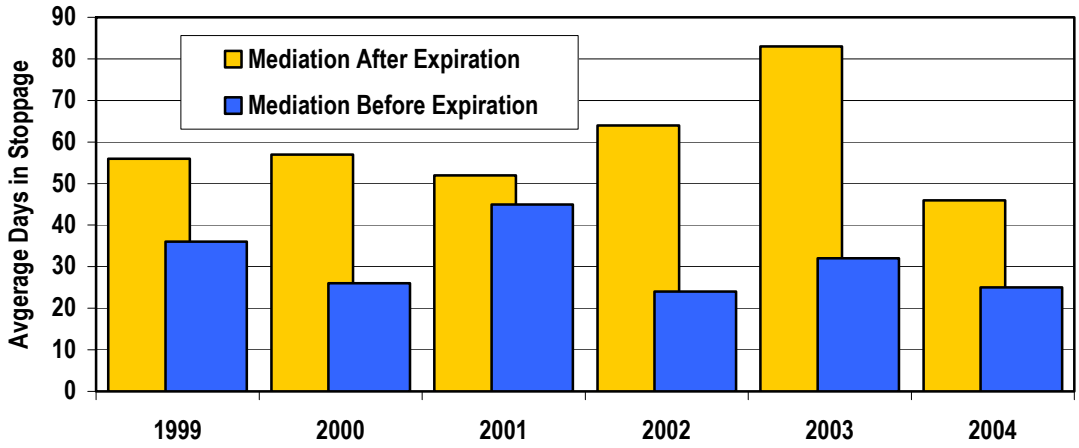
However, further data analysis reveals a strong correlation between FMCS early intervention in contract disputes and reduced work stoppage duration. Mediation is a voluntary process and FMCS mediation services can be requested at any time during the contract negotiation, even after a contract has expired or after a work stoppage begins. Thus, the timing of FMCS' involvement is more important in reducing the duration of work stoppages than whether or not mediation has actually occurred. Logically, the later FMCS is first involved in the contract negotiation, the more likely it is that bargaining positions have become entrenched and attitudes difficult to shift.

Comparing the date of FMCS' first mediation session with the parties with the work stoppage duration shows that early FMCS intervention plays an important role in reducing work stoppage duration. When FMCS mediation occurs before the contract expiration date, the duration of an average work stoppage falls by more than 26 days—

from 59 days to 33—as compared to cases where the first mediation meeting occurs after the expiration date or not at all. This result is highly significant statistically, with a probability below 0.001. A slightly different analytical approach, regressing the number of days in the work stoppage on the number of days that FMCS is involved in mediation after the contract expires, indicates that for every four days after the contract expiration that FMCS is not mediating, one can expect to add another day onto the length of a work stoppage. This result is also statistically significant below 0.001.

Figure 10 details the difference in work stoppage duration for cases where FMCS mediation occurred before the contract expiration and for cases where mediation occurred after contract expiration. In cases where FMCS mediation occurred before the contract expiration date, and there was a subsequent work stoppage, the average stoppage duration was shorter by between 13.5 percent and 62.5 percent.

Figure 10: Effect of Mediation Start on Stoppage Duration, 1999-2004



Source: Employment Policy Foundation analysis of FMCS data.

Savings from early FMCS mediation activity do not include initial contract cases since FMCS mediators become involved only after the National Labor Relations Board (NLRB) certifies the bargaining unit or after voluntary recognition.

Table 18 provides the estimated savings due to reduced work stoppage durations. Between 1999 and 2004, early FMCS mediation activity among 647 work stoppages saved an average of $217.9 million in total earnings and impacted more than 79,000 jobs. Annual savings average $91.7 million in employee wages, $10.8 million in company profits, and $115.4 million among ancillary industries.

Table 18: Early Collective Bargaining Mediation Savings, 1999-2004

Collective Bargaining	1999	2000	2001	2002	2003	2004
Est. # of Work Stoppages	127	128	140	90	83	79
Est. # of Days Saved	20	31	7	40	51	21
Direct Savings						
Idled Workers	39,573	36,881	32,472	24,096	15,750	28,348
Hours per Day	6.24	6.23	6.17	6.17	6.18	6.24
Profit per Hour	2.95	3.05	1.59	1.07	1.66	2.49
Wage per Hour	17.07	17.34	18.77	19.7	19.67	19.82
Hours Saved (1,000s)	4,939	7,123	1,402	5,947	4,964	3,715
Profit Saved ($1,000s)	14,569	21,725	2,230	6,363	8,240	9,250
Wages Saved ($1,000s)	84,304	123,510	26,324	117,154	97,644	73,626
Indirect Savings						
Earnings Multiplier	2.3318	2.2781	2.2087	2.2725	2.2126	2.2265
Employment Multiplier	2.8362	2.7111	2.6213	2.5861	2.6791	2.5999
Wages Saved ($1,000s)	112,276	157,858	31,818	149,078	118,403	90,302
Employment Saved	72,664	63,107	52,647	38,219	26,446	45,354
Total Employment	**112,237**	**99,988**	**85,119**	**62,315**	**42,196**	**73,702**
Total Earnings ($1,000s)	**211,149**	**303,092**	**60,372**	**272,595**	**224,287**	**173,177**

Source: Employment Policy Foundation analysis.

Mediation Benefits

The total benefit from FMCS activity consists of the savings from work stoppages that never occurred and reduced work stoppage durations. These estimates include the direct wages saved by employees, retained company profits, and wages saved among employees in ancillary companies. As shown in Table 19, FMCS mediation saved an estimated $9 billion between 1999 and 2004. This estimate ranges from a high of $2.3 billion in 2000 to a low of $727.8 million in 2001. Nearly 1,849,000 jobs benefited from FMCS mediation, including 1,374,246 employees who were able to keep working and 474,752 employees who experienced less time out of work due to a shorter stoppage.

Table 19: Total Estimated Benefits from FMCS Mediation, 1999-2004

Year	Incidence		Duration		Total Benefits	
	Earnings ($1,000s)	Employment	Earnings ($1,000s)	Employment	Earnings ($1,000s)	Employment
1999	756,974	142,903	211,149	112,237	968,122	255,140
2000	1,992,529	379,272	303,092	99,988	2,295,621	479,260
2001	667,206	122,089	60,372	85,119	727,578	207,208
2002	840,936	144,874	272,595	62,315	1,113,531	207,189
2003	717,239	94,715	224,287	42,196	941,525	136,911
2004	2,259,575	470,281	173,177	73,702	2,432,752	543,983
Total	**7,710,749**	**1,374,246**	**1,307,557**	**474,752**	**9,018,306**	**1,848,999**

Source: Employment Policy Foundation estimates.

Table 20 compares the estimated costs of work stoppages with the savings from FMCS mediation. The results indicate that without FMCS mediation activities there would be a 71.2 percent increase in the cost of work stoppages to firms and employees and a 76.1 percent increase in the number of jobs affected by work stoppages. In other words, without FMCS mediation, the total cost of work stoppages would have been an estimated $21.7 billion instead of $12.7 billion and negatively impact more than 4 million workers.

Table 20: Mediation Benefit and Work Stoppage Costs, 1999-2004

Year	Total Benefits		Work Stoppage Costs		% Difference	
	Earnings ($1,000s)	Employment	Earnings ($1,000s)	Employment	Earnings	Employment
1999	968,122	255,140	1,779,490	234,899	54.4	108.6
2000	2,295,621	479,260	7,022,355	984,032	32.7	48.7
2001	727,578	207,208	971,484	248,937	74.9	83.2
2002	1,113,531	207,189	824,811	244,388	135.0	84.8
2003	941,525	136,911	702,273	123,258	134.1	111.1
2004	2,432,752	543,983	1,369,735	593,928	177.6	91.6
Total	**9,018,306**	**1,848,999**	**12,670,147**	**2,429,442**	**71.2**	**76.1**

Source: Employment Policy Foundation estimates.

Conclusion

Far fewer work stoppages occur now than at any time since FMCS' creation in 1947. While much of this reduction is due to the decline of union density in the U.S. workforce and changed union and employer strategies for negotiating labor contracts, FMCS mediation does play an important role in reducing work stoppage incidence. EPF's analysis of the 2004 MIT survey of FMCS' union and management customers indicates that FMCS mediation successfully prevented work stoppages in more than 7 percent of contract negotiations between 1999 and 2004. While the agency will continue its work to minimize the number of annual work stoppages, it is unlikely to reduce stoppage

incidence much below the current level. Since there will always be a number of work stoppages despite FMCS' best efforts, the key to reducing their cost is to minimize their duration when stoppages do occur.

FMCS mediation is effective in reducing the duration of work stoppages, provided that the parties in the dispute consent to agency involvement before their labor contract expires. On average, stoppage duration is 45.8 percent lower when FMCS mediation occurs before the contract expiration date—32 days versus 59. It is worth noting that the average work stoppage duration of approximately 50 days does not appear to have decreased since 1984.

Finding ways to encourage unions and employers to use FMCS mediation early in the contract negotiation process is critical to reducing work stoppage duration. As part of any initiative that encourages early mediation, FMCS should consider implementing a process for educating union and employer representatives of the cost of a work stoppage in their specific industry. An effective program will analyze labor contract specific information—such as the timing of unfair labor practice charges, grievance filings, and previous participation in FMCS mediation activities—to identify negotiations with a high likelihood of a work stoppage. This system should also be able to help mediators prioritize negotiations that would potentially cause the most disruption to economic activity.

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Appendix A: Basic Data Cleaning

FMCS maintains a database of all statutory notifications (F-7) and voluntary mediation requests and records details of the service's involvement with each case. FMCS staff provided data for 165,000 collective bargaining, initial contract, and grievance mediation case files covering six fiscal years from 1999-2004. Subsequent review of these cases with the assistance of FMCS managers discovered approximately 7,000 duplicate records, 2,800 initial contract and collective bargaining records that were better classified as grievances, and 5,400 collective bargaining records better classified as initial contracts (Table A-1).

Table A-1: Original FMCS Data Composition and Initial Cleaning Results

Mediation Type	# Original	# Duplicates	Grievances	Init. Contract	Final #
Grievances	4,385	0	2,787	0	7,172
Collective Bargaining	152,264	(7,126)	(2,782)	(5,417)	136,939
Initial Contract	8,527	0	(5)	5,417	13,939
Total	**165,176**	**(7,126)**	**0**	**0**	**158,050**

Additional data cleaning corrected a variety of data entry and coding errors. Two records were dropped (from 158,050 to 158,048) due to duplicate case numbers. Other corrections to the data resulted in excluding approximately 13,700 records from the analysis that were closed and unassigned due to case consolidation, duplicate record entry, or absence of contact between FMCS and either party (Table A-2). Most significant among these exclusions were 81 duplicate work stoppage cases.

Table A-2: Description of Records Excluded from Original FMCS Data.

Final Status	Collective Bargaining	Initial Contract	Grievance	Total
Excluded	8,973	3,451	1,284	13,708
Included	127,965	10,488	5,887	144,340
% Excluded	6.6	24.8	17.9	8.7
Total	**136,938**	**13,939**	**7,171**	**158,048**

As indicated in Table A-2, these errors, as a percentage of total records in each category, were not randomly distributed, being most prevalent in the Initial Contract and Grievance categories. As a result, the statistics provided by this report differ slightly from those previously reported by FMCS, but should better reflect the services' work. Table A-3 provides numeric- and percentage-based comparisons of these differences.

Appendix A: Basic Data Cleaning (continued)

Table A-3: Comparison of Final FMCS and EPF Data

Fiscal Year	1999	2000	2001	2002	2003	2004
FMCS Reported						
Cases Issued	27,391	28,038	26,816	26,768	28,352	27,632
-CBM & Grievance	25,676	26,323	25,071	25,282	26,774	26,282
-Initial Contract	1,715	1,715	1,745	1,486	1,578	1,350
Cases Assigned	20,857	21,251	20,818	20,761	21,022	21,560
-CBM & Grievance	19,200	19,574	19,116	19,303	19,516	20,249
-Initial Contract	1,657	1,677	1,702	1,458	1,506	1,311
EPF Reported						
Cases Issued	25,836	26,518	25,226	25,570	26,973	26,513
-CBM & Grievance	23,603	24,197	22,889	23,594	24,990	24,827
-Initial Contract	2,233	2,321	2,337	1,976	1,983	1,686
Cases Assigned	18,850	19,384	19,040	19,153	19,716	19,930
-CBM & Grievance	16,671	17,119	16,746	17,231	17,814	18,290
-Initial Contract	2,179	2,265	2,294	1,922	1,902	1,640

Fiscal Year	1999	2000	2001	2002	2003	2004
FMCS Reported						
Cases Issued	27,391	28,038	26,816	26,768	28,352	27,632
-CBM & Grievance (%)	93.7	93.9	93.5	94.4	94.4	95.1
-Initial Contract (%)	6.3	6.1	6.5	5.6	5.6	4.9
Cases Assigned (% of Issued)	76.1	75.8	77.6	77.6	74.1	78.0
-CBM & Grievance (%)	92.1	92.1	91.8	93.0	92.8	93.9
-Initial Contract (%)	7.9	7.9	8.2	7.0	7.2	6.1
EPF Reported						
Cases Issued	25,836	26,518	25,226	25,570	26,973	26,513
-CBM & Grievance (%)	91.4	91.2	90.7	92.3	92.6	93.6
-Initial Contract (%)	8.6	8.8	9.3	7.7	7.4	6.4
Cases Assigned (% of Issued)	73.0	73.1	75.5	74.9	73.1	75.2
-CBM & Grievance (%)	88.4	88.3	88.0	90.0	90.4	91.8
-Initial Contract (%)	11.6	11.7	12.0	10.0	9.6	8.2

Finally, additional records drop out of EPF estimates due to the constraints of data provided by other federal agencies. For example, FMCS territory includes US territories such as Puerto Rico and Guam. However, most national statistics do not include these areas, causing work stoppage records for US territories to drop out of the EPF analysis.

Appendix B: Methodology Notes for Impact Measures Study

The following methodology notes are intended to highlight the most important strengths and weaknesses of EPF's analysis of the FMCS mediation data. As with most projects of this nature, EPF used industry or regional aggregations to allow values to be taken from standard data sets.

Some of these aggregations were necessary due to limitations within the FMCS data and to incompatibilities between external data used for generating the estimates. For example, some of FMCS' industry codes do not correspond directly with standardized North American Industry Classification System (NAICS) codes. Similarly, Current Population Survey (CPS) industry codes do not always translate directly into NAICS codes, and even NAICS coding changed between 2001 and 2002.

- **Workers in Stoppages:** FMCS does not track the number of bargaining unit members in a work stoppage beyond those who are involved in the stoppage on the first day. Thus, FMCS data do not reflect the situation where workers gradually return to work over time or where the stoppage attracts sympathetic action by the members of other bargaining units. The data also do not reflect the situation where non-bargaining unit members in the same company are also put out of work due to a work stoppage. EPF estimates derive from the number of workers in the work stoppage on the first day multiplied by the number of days in the work stoppage. Thus, this will overestimate the costs of work stoppages when bargaining unit members return to work before the official end of a strike and underestimate the cost when other workers in the company have their hours reduced or are laid off. "Large" bargaining unit data from BLS has a similar problem and suffers from the additional complication that BLS ceases to track a work stoppage after the number of workers involved drops below 1,000.

- **Hours Worked:** EPF derived these estimates from the Current Population Survey (CPS) annual March Supplement. These data reflect the hours that workers, as opposed to employers, report working in their primary job in a typical week over the previous year. Since CPS data are drawn from samples, estimates for a single work stoppage should be used with caution. However, the industry and annual values should be accurate, given the constraints outlined above. EPF calculated the number of hours worked each day by dividing the average number of hours worked each week by 7 (the number of days in a week) to give the average number of hours worked in a day. Since holidays and vacation days are paid holidays for the vast majority of workers, EPF estimates include this cost to workers.

- **Stoppage Duration:** The duration of work stoppages should be accurate so far as the data in the FMCS database are entered accurately.

- **Hourly Wages:** Hourly wage estimates for each industry are taken directly from the CPS data and identified by year. The CPS variable used is A-HRSPAY. As this variable does not include tips, overtime pay, or bonuses, EPF wage estimates will tend to underestimate the total loss, particularly in service industries where a large proportion of a worker's pay may come from tips or those industries, such as construction, where workers routinely collect overtime pay as part of their pay package.

- **Firm Profits:** These data are taken from the Bureau of Economic Analysis' (BEA) National Income and Product Accounts (NIPA) table 6.17 and reflect before tax corporate profits per employee hour. These profit estimates do not reflect the cost of lost market share or other types of loss, such as lost productivity among other workers, overtime paid to other hourly workers, or uncompensated hours worked by salaried employees. The year 2004 data were not available at the time of analysis, requiring EPF to create a linear estimation for this year based on past trends. Given the 2001 recession, these projections may underestimate the lost profits in 2004 if the recovery of profits in 2004 was strong. EPF also estimated industry sub categories for 2003 and 2004 based on previous year data due to gaps in sub category coverage in the BEA data.

- **Ancillary Losses:** These estimates are calculated by multiplying the lost worker wages by a multiplier for the industry, year, and state to obtain the lost wages for workers in ancillary industries. As described in the report, using state-level multipliers will overestimate the impact for highly localized firms, especially among services, and will underestimate the impact on firms that provide goods or services at a national or international level. It is important to note that these losses are for firms that provide inputs to the firm experiencing a work stoppage, not the firms that depend upon the provided goods or services. For example, the EPF estimate of the 2002 west coast dockworkers strike includes only losses to input-providing firms, not to firms that did not receive their goods on time. These input-providing firms could range from a restaurant that serves meals to workers to companies that build or repair the equipment used to unload ships. EPF's earnings loss estimates (direct and ancillary) for this work stoppage were approximately $57 million. Other analyses estimated that the economic cost of this one work stoppage ranged between $1 billion and $140 million per day.

- **Stoppages Prevented:** EPF examined more than 20 variables that might contribute to the incidence of work stoppages and was unable to corroborate findings of previous studies. By using results from an independent ex post survey of FMCS union and firm bargaining representatives to estimate the number of work stoppages prevented by FMCS mediation. EPF found that 7.7 percent of paired responses indicated that both parties (union and management) believed that a work stoppage was "very likely" without FMCS involvement. When multiplied by the number of contract negotiations that did not end in a work stoppage, the indication is that the number of work stoppages would roughly double. This standard, where both parties believed a work stoppage "very likely", represents the strictest interpretation of the available data. Unfortunately, the MIT survey

authors cannot identify the work stoppage to which the parties are referring, so EPF was unable to conduct additional tests to improve the work stoppage likelihood estimate.

- **Reduced Stoppage Duration:** When FMCS is involved in mediation before the expiration of a collective bargaining agreement, the duration of work stoppages is roughly half as long as when FMCS is involved after the contract expires or not at all. This variable is highly significant (below 0.001). EPF was unable to find any other variable, although it is possible that others exist, to explain this significant difference. EPF estimated the savings as the difference between the duration of stoppages when FMCS mediation occurred after the contract expiration date or not at all and the duration of stoppages where FMCS was involved prior to the contract expiration date. Given the significance of FMCS' involvement and that work stoppage durations have not varied much since the 1970s, this estimate should be fairly accurate and should be used with confidence.

Future analyses will benefit from changes in the type of data that FMCS collects. First, using standard 4-digit NAICS coding to describe industries will allow accurate use of the RIMS II multipliers and aggregate wage and hour variables. Second, collecting occupation information or actual wage data for the bargaining unit will likewise improve the wage loss estimates by better reflecting local conditions. Third, collecting individual companies' Dunn and Bradstreet D-U-N-S number will reveal a wealth of financial and corporate profit information. Finally, collecting company sales data will allow future analysts to generate Herfindahl-Hirschman Index (HHI) numbers for individual companies. These indices will allow estimation of the downstream supply chain impacts of work stoppages.

Appendix C: Work Stoppages & Members by BU Size and Year, 1999-2004

Bargaining Unit Members Involved in Work Stoppages by Unit Size

Unit Size	1999	2000	2001	2002	2003	2004	1999-2004
1 to 49	3,925	3,534	3,509	3,136	3,417	2,191	19,712
50 to 124	9,481	9,151	10,538	6,402	6,225	4,687	46,484
125 to 249	10,002	9,331	14,302	9,004	7,224	5,884	55,747
250 to 499	15,102	17,342	14,699	11,042	8,554	10,628	77,367
500 to 999	16,342	13,574	16,751	11,238	9,774	8,431	76,110
1000+	41,796	333,396	52,531	38,608	17,972	223,464	707,767
All Sizes	**96,648**	**386,328**	**112,330**	**79,430**	**53,166**	**255,285**	**983,187**

Number of Work Stoppages by Unit Size

Unit Size	1999	2000	2001	2002	2003	2004	1999-2004
1 to 49	106	123	118	104	100	85	636
50 to 124	108	115	130	74	82	68	577
125 to 249	55	60	89	59	42	38	343
250 to 499	46	53	40	38	29	33	239
500 to 999	24	21	27	20	14	16	122
1000+	24	34	27	18	11	26	140
All Sizes	**363**	**406**	**431**	**313**	**278**	**266**	**2,057**

Appendix D: Imputed Values for First Meeting Dates by Year, 1999-2004

A final step in preparing the data for statistical analysis was to impute the date of the first meeting between the two parties and FMCS mediators for 9,500 records. Appendix C details the average time period between the first meeting and closing date used in this imputation for initial contract and collective bargaining mediation cases. Values were also imputed for 7,500 cases that were missing closing reason codes.

Year	Mediation Activity	# of Days	# of Cases
1999	Collective Bargaining	57.4	2,174
2000	Collective Bargaining	59.9	2,171
2001	Collective Bargaining	64.7	2,300
2002	Collective Bargaining	64.7	2,363
2003	Collective Bargaining	68.4	2,162
2004	Collective Bargaining	65.0	1,981
1999	Initial Contract	75.5	391
2000	Initial Contract	79.0	492
2001	Initial Contract	74.0	476
2002	Initial Contract	82.3	355
2003	Initial Contract	74.8	248
2004	Initial Contract	92.0	215

Appendix E: Work Stoppage by Year and Industry, 1999-2004

Number of Work Stoppages

Industry	1999	2000	2001	2002	2003	2004	1999-2004
Coal Mining	0	2	0	2	0	2	6
Mining	1	4	1	5	3	7	21
Construction	22	25	44	34	24	21	170
Petro-Chemicals	1	1	1	1		3	7
Manufacturing	197	182	175	131	128	106	919
Transportation	9	10	12	14	7	14	66
Communications	1	13	2	0	2	3	21
Electricity / Gas	4	3	7	6	2	4	26
Retail / Wholesale / Service	49	57	44	53	44	43	290
Maritime	4	1	0	3	3	1	12
Healthcare	32	45	102	30	25	27	261
Other	2	5	8	3	8	2	28
Food Manu. / Processing	20	32	12	15	17	16	112
Food Retail Sales / Distr.	5	6	8	0	5	7	31
State / Local Government	16	20	15	16	10	10	87
All Industries	**363**	**406**	**431**	**313**	**278**	**266**	**2,057**

Average Work Days per Stoppage by Industry

Industry	1999	2000	2001	2002	2003	2004	1999-2004
Coal Mining	0	39	0	65	0	7	37
Mining	29	21	13	36	243	81	76
Construction	96	33	56	25	41	11	44
Petro-Chemicals	43	3	5	3	0	82	43
Manufacturing	56	54	54	70	58	50	57
Transportation	14	268	67	34	63	19	73
Communications	74	30	16	0	88	7	33
Electricity / Gas	15	24	55	38	6	26	33
Retail / Wholesale / Service	31	38	89	43	109	34	56
Maritime	19	6	0	8	164	100	58
Healthcare	60	28	33	12	93	31	39
Other	4	133	25	15	13	17	38
Food Manu. / Processing	68	62	39	64	63	29	56
Food Retail Sales / Distr.	50	46	44	0	104	56	58
State / Local Government	21	18	13	27	34	10	20
All Industries	**52**	**51**	**50**	**48**	**70**	**38**	**52**

Appendix E: Work Stoppage by Year (continued)

Bargaining Unit Members in Stoppage by Industry

Industry	1999	2000	2001	2002	2003	2004	1999-2004
Coal Mining	0	228	0	447	0	3,433	4,108
Mining	50	122	85	226	750	1,357	2,590
Construction	5,102	6,438	19,909	9,713	6,391	5,083	52,636
Petro-Chemicals	72	35	115	219	0	207	648
Manufacturing	38,641	91,459	29,893	31,391	18,168	25,680	235,232
Transportation	2,117	3,641	2,334	4,191	370	2,242	14,895
Communications	2,700	181,641	300	0	745	101,090	286,476
Electricity / Gas	880	525	3,073	926	600	703	6,707
Retail / Wholesale / Service	13,228	17,558	9,232	7,577	4,414	15,255	67,264
Maritime	33	20	0	10,358	774	15	11,200
Healthcare	7,511	14,608	22,747	4,890	4,619	12,230	66,605
Other	80	45,569	504	1,023	7,838	138	55,152
Food Manu. / Processing	7,555	12,057	3,539	2,970	3,326	2,533	31,980
Food Retail Sales / Distr.	8,357	1,832	4,028	0	1,327	83,099	98,643
State / Local Government	10,322	10,595	16,571	5,499	3,844	2,220	49,051
All Industries	**96,648**	**386,328**	**112,330**	**79,430**	**53,166**	**255,285**	**983,187**

Appendix F: Industry Employment and Work Stoppage Involvement, 1999-2004

Industry Employment (1,000s)

Industry	1999	2000	2001	2002	2003	2004	1999-2004
Coal Mining	78	72	74	74	70	71	439
Mining	437	445	457	435	430	451	2,655
Construction	6,545	6,787	6,826	6,716	6,735	6,964	40,573
Petro-Chemicals	2,057	2,055	1,977	1,893	1,835	1,805	11,622
Manufacturing	13,345	13,284	12,546	11,477	10,802	10,673	72,127
Transportation	2,569	2,622	2,587	2,493	2,475	2,513	15,259
Communications	3,419	3,631	3,629	3,395	3,188	3,138	20,400
Electricity / Gas	564	555	552	549	530	524	3,274
Retail / Wholesale / Service	61,121	62,778	62,326	61,348	61,530	62,607	371,710
Maritime	204	208	201	199	200	205	1,217
Healthcare	12,477	12,718	13,134	13,555	13,892	14,187	79,963
Other	2,320	2,390	2,510	2,642	2,695	2,766	15,323
Food Manu. / Processing	1,757	1,760	1,760	1,732	1,716	1,691	10,416
Food Retail Sales / Distr.	10,986	11,182	11,309	11,305	11,422	11,676	67,880
Total	**117,879**	**120,487**	**119,888**	**117,813**	**117,520**	**119,271**	**712,858**

Percentage of Industry Workforce Involved in Work Stoppages

Industry	1999	2000	2001	2002	2003	2004	1999-2004
Coal Mining	0.00	0.32	0.00	0.60	0.00	4.84	0.94
Mining	0.01	0.03	0.02	0.05	0.17	0.30	0.10
Construction	0.08	0.09	0.29	0.14	0.09	0.07	0.13
Petro-Chemicals	0.00	0.00	0.01	0.01	0.00	0.01	0.01
Manufacturing	0.29	0.69	0.24	0.27	0.17	0.24	0.33
Transportation	0.08	0.14	0.09	0.17	0.01	0.09	0.10
Communications	0.08	5.00	0.01	0.00	0.02	3.22	1.40
Electricity / Gas	0.16	0.09	0.56	0.17	0.11	0.13	0.20
Retail / Wholesale / Service	0.02	0.03	0.01	0.01	0.01	0.02	0.02
Maritime	0.02	0.01	0.00	5.21	0.39	0.01	0.92
Healthcare	0.06	0.11	0.17	0.04	0.03	0.09	0.08
Other	0.00	1.91	0.02	0.04	0.29	0.00	0.36
Food Manu. / Processing	0.43	0.69	0.20	0.17	0.19	0.15	0.31
Food Retail Sales / Distr.	0.08	0.02	0.04	0.00	0.01	0.71	0.15
Total	**0.08**	**0.32**	**0.09**	**0.07**	**0.05**	**0.21**	**0.14**

Appendix G: Hours, Wages, and Industry Profits per Employee, 1999-2004

Work Hours per Day by Year and Industry

Industry	1999	2000	2001	2002	2003	2004
Coal Mining	NA	7.13	NA	6.94	NA	6.53
Mining	6.80	6.66	6.94	6.71	6.97	7.34
Construction	6.17	6.24	6.16	6.17	6.17	6.14
Petro-Chemicals	NA	6.24	6.24	6.21	NA	6.27
Manufacturing	6.24	6.21	6.17	6.16	6.17	6.20
Transportation	6.54	6.63	6.66	6.50	6.49	6.54
Communications	NA	6.21	6.23	NA	6.26	6.19
Electricity / Gas	6.13	6.13	6.06	6.04	6.11	6.04
Retail / Wholesale / Service	6.29	6.30	6.26	6.26	6.23	6.23
Maritime	6.21	6.13	NA	6.53	6.23	6.21
Healthcare	6.10	6.14	6.06	6.07	6.04	6.03
Other	6.20	6.16	6.14	6.11	6.14	6.14
Food Manu. / Processing	6.24	6.27	6.27	6.24	6.19	6.19
Food Retail Sales / Distr.	6.21	6.17	6.21	NA	6.19	6.17
Government	6.07	6.13	6.11	6.10	6.09	6.09

Profit per Worker-Hour by Year and Industry ($)

Industry	1999	2000	2001	2002	2003	2004
Coal Mining	NA	2.55	NA	1.14	NA	4.89
Mining	2.78	11.90	11.58	3.60	13.02	14.15
Construction	2.75	2.67	2.86	2.68	2.71	2.75
Petro-Chemicals	NA	10.30	9.60	7.08	NA	9.96
Manufacturing	2.82	2.66	0.00	0.00	0.46	0.00
Transportation	1.85	1.57	0.00	0.00	1.13	0.94
Electricity / Gas	24.96	18.82	18.39	9.06	14.97	13.44
Retail / Wholesale / Service	3.25	3.05	3.31	3.92	4.18	4.35
Maritime	0.11	4.33	NA	0.00	2.62	2.46
Healthcare	0.81	0.95	1.17	1.36	1.46	1.58
Other	0.33	0.38	0.37	0.45	0.44	0.45
Food Manu. / Processing	7.83	6.76	7.27	5.62	7.70	8.14
Food Retail Sales / Distr.	1.95	1.89	2.02	NA	2.06	2.09

Appendix G: Hours, Wages, and Industry Profits per Employee (continued)

Hourly Wage by Year and Industry ($)

Industry	1999	2000	2001	2002	2003	2004
Coal Mining	NA	21.09	NA	18.98	NA	26.26
Mining	18.67	20.08	22.48	21.17	19.92	20.38
Construction	15.57	15.99	16.91	17.88	17.73	18.96
Petro-Chemicals	NA	20.38	20.36	24.12	NA	24.05
Manufacturing	17.47	18.02	19.72	19.99	20.10	20.82
Transportation	14.53	14.90	15.50	16.60	17.56	17.58
Communications	NA	23.11	24.78	NA	24.12	23.95
Electricity / Gas	22.01	22.62	23.18	23.56	24.95	26.12
Retail / Wholesale / Service	17.12	17.27	19.09	20.75	20.83	21.05
Maritime	18.39	18.20	NA	19.58	19.03	19.91
Healthcare	17.53	16.68	18.24	20.15	20.35	19.75
Other	14.88	15.26	16.12	16.79	18.20	18.84
Food Manu. / Processing	13.93	14.05	16.47	15.50	16.95	15.93
Food Retail Sales / Distr.	9.90	10.10	10.65	NA	12.16	12.19
Government	18.32	19.08	19.77	20.41	21.27	22.12

Appendix H: Largest 5 Work Stoppages Each Year by Total Direct Loss

Year	Employer	City	State	Days	Affected Workers	Total Earnings Losses
1999	KAISER ALUMINUM & CHEMICAL CORP (12)	VARIOUS CITIES	WA	718	6,836	472,698,156
1999	AK STEEL (FDBA ARMCO INC MANSFIELD)	MANSFIELD	OH	1,217	1,909	212,372,226
1999	BASIC VEGETABLE PRODUCTS LP	KING CITY	CA	787	2,726	172,529,902
1999	BASIC VEGETABLE PRODUCTS LP (L P)	SALINAS	CA	439	3,237	114,284,619
1999	RUBATEX CORPORATION	BEDFORD	VA	273	1,541	48,949,712
2000	JOINT TV COMMERCIALS (1997 COMM CONTRACTS)	NEW YORK	NY	183	121,766	2,859,283,226
2000	JOINT POLICY COMMITTE FOR RADIO ADVERTISERS	NATION WIDE	NY	183	69,224	1,321,090,728
2000	OVERNITE TRANSPORTATION COMPANY	TOWSON	MD	1,096	6,950	699,396,132
2000	BELL ATLANTIC NEW JERSEY INC	NEWARK	NJ	15	232,272	377,035,299
2000	BOEING COMPANY THE (PROFESSIONA UNIT)	SEATTLE	WA	39	51,999	200,547,921
2001	AGC OF MINNESOTA (18)	MPLS/ST PAUL	MN	39	13,846	49,823,255
2001	MIDWEST GENERATION EME LLC	CHICAGO	IL	116	5,094	46,362,294
2001	OLIN CORPORATION	ALTON	IL	48	11,094	45,841,353
2001	WAH CHANG	ALBANY	OR	198	1,918	34,099,427
2001	WILSON SPORTING GOODS COMPANY	TULLAHOMA	TN	512	386	23,996,751
2002	PACCAR INC/PETERBILT MOTORS COMPANY	HENDERSONVILLE	TN	293	2,097	75,408,399
2002	LONGVIEW ALUMINUM LLC	LONGVIEW	WA	431	1,331	62,339,392
2002	LOCKHEED MARTIN AERONAUTICS COMPANY	MARIETTA	GA	48	7,031	60,345,494
2002	PACIFIC MARITIME ASSOCIATION (PCLCA)	SAN FRANCISCO	CA	10	77,380	57,830,033
2002	HERSHEY CHOCOLATE USA	HERSHEY	PA	43	9,277	41,317,981
2003	BH&L DECORATORS INC (B H & L)	ORLANDO	FL	320	2,234	78,600,298
2003	NORTHERN MICHIGAN REGIONAL HEALTH SYSTEM	PETOSKEY	MI	686	488	39,433,647
2003	DOCTORS MEDICAL CENTER PINOLE	PINOLE	CA	310	1,026	37,158,800
2003	SIMPLEX GRINNELL LLP	WASHINGTON	DC	367	730	32,718,647
2003	DOSKOCIL FOODS GROUP	MADISON	WI	335	685	25,758,784
2004	GROCERY STORES	SOUTHERN CA	CA	138	104,720	1,640,640,905
2004	SBC	SAN ANTONIO	TX	3	332,910	110,404,228
2004	RMI TITANIUM COMPANY (R M I)	NILES	OH	340	834	30,682,247
2004	SCHNUCK MARKETS INC	ST LOUIS	MO	24	8,827	23,352,430
2004	ST LOUIS AUTO DEALERS ASSN & IND. SHOPS	SAINT LOUIS	MO	60	3,274	21,077,211

Appendix I: Estimated Indirect Work Stoppage Costs, 1999-2004

Direct Effect Earnings Estimates by Industry ($1,000s)

Industry	1999	2000	2001	2002	2003	2004
Coal Mining	0	1,489	0	3,078	0	1,728
Mining	190	413	131	1,267	13,937	4,242
Construction	12,422	5,265	54,188	20,284	8,819	5,336
Petro-Chemicals	672	23	0	168	0	608
Manufacturing	791,770	477,221	236,409	318,010	123,814	85,481
Transportation	2,795	408,592	6,559	15,854	623	5,722
Communications	0	2,115,535	1,028	0	7,263	66,976
Electricity / Gas	1,652	2,413	38,995	6,567	543	2,414
Retail / Wholesale / Service	9,563	20,476	39,878	14,580	62,706	29,791
Maritime	205	47	0	42,401	16,105	654
Healthcare	13,861	28,277	43,672	6,586	41,012	15,777
Other	16	553,346	744	523	11,437	74
Food Manu. / Processing	60,791	53,540	41,362	31,971	29,928	18,260
Food Retail Sales / Distr.	2,543	5,515	13,033	0	13,409	30,196
Total	**896,481**	**3,672,152**	**476,000**	**461,289**	**329,595**	**267,260**

Direct Effect Employment Estimates by Industry

Industry	1999	2000	2001	2002	2003	2004
Coal Mining	0	450	0	711	0	3,317
Mining	41	233	35	742	983	3,068
Construction	5,593	7,725	22,265	9,950	7,538	5,996
Petro-Chemicals	242	109	0	682	0	1,034
Manufacturing	72,155	137,682	58,803	59,847	35,859	44,477
Transportation	3,727	4,906	3,079	5,544	378	2,709
Communications	4,606	358,672	695	0	417	234,671
Electricity / Gas	2,545	1,342	9,716	2,062	1,227	2,321
Retail / Wholesale / Service	17,071	21,287	10,621	5,360	4,799	17,959
Maritime	161	135	0	68,412	2,043	101
Healthcare	5,986	11,415	18,008	3,805	3,076	9,191
Other	53	24,495	265	653	4,190	75
Food Manu. / Processing	22,889	28,544	11,299	7,191	9,098	8,471
Food Retail Sales / Distr.	3,183	707	1,820	0	484	5,253
Total	**138,251**	**597,704**	**136,607**	**164,958**	**70,092**	**338,643**

Endnotes

[1] This is FMCS form F-7, Notice to Mediation Agencies.

[2] Results of this study differ with previously released FMCS summary statistics due to extensive data cleaning and re-categorization efforts. Appendix A provides examples of these differences.

[3] A Collective Bargaining or Initial Contract mediation case is automatically opened when FMCS receives an F-7 notice. Grievance Mediation cases are opened at FMCS' discretion.

[4] Conversations with FMCS administrators indicate that the closing date is often, but not always, the day that FMCS processed the final case paperwork. Therefore, the closing date may lag the actual agreement date by several days or weeks.

[5] Since FMCS case numbers are randomly assigned, it is very difficult to accurately track cases that are closed and then re-opened in a subsequent year.

[6] This number does not include other employees in the firm, or any related firms, who may also be out of work due to the work stoppage.

[7] US Department of Justice and Federal Trade Commission, Horizontal Merger Guidelines, http://www.usdoj.gov/atr/public/guidelines/horiz_book/15.html

[8] http://www.census.gov/epcd/www/econ97.html#1997

[9] http://www.bea.gov/bea/dn/nipaweb/index.asp Table 6.17 -Corporate Taxes before Profits by Industry and Table 6.5 -Full-Time Equivalents by Industry.

[10] Because FMCS data do not indicate the length of the workweek for each work stoppage, this average assumes a 7-day workweek and that no holidays occurred during the stoppage.

[11] Since a negative profit implies a net benefit to the employer from a work stoppage, industries with a negative profit per employee-hour were given a value of $0. Similarly, federal, state, and local government activities are not considered to be for-profit and were consequently also assigned a value of $0 in the profit per employee-hour field.

[12] The RIMS II direct effect earnings and employment multipliers are used to calculate the indirect costs of a work stoppage.

[13] FMCS coding for the two bargaining units involved in this stoppage are for the "Communications" industry and "Other". Thus, the costs of these stoppages are spread over the two industries in Table 12.

[14] FMCS closes a case 1) at the end of the fiscal year if it is not involved in the negotiation and cannot establish communications with either party or, 2) when a mediator or one of the parties notifies it that a negotiation has ended. The precise impact of the end of year closing should become clearer in the 2005 data, which will reflect some changes in the way cases are closed.

[15] These data were prepared by the U.S. General Accounting Office (GAO) for its 1991 analysis and involve a 100% sample of large (1,000+ bargaining unit members) work stoppages and samples of 13 percent and 20 percent for 1985 and 1989, respectively, work stoppage data for smaller units.