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A Report
submitted to the
Legislative Commission on Employee Relations
on
A Quantitative Description and Evaluation
of Public Sector Collective Bargaining
in Minnesota: 1973-1980
by
Mario (Mike) F. Bognanno, Professor*
Frederic C. Champlin, Research Associate
Industrial Relations Center
University of Minnesota

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* Project Director and Co-director, respectively, Messrs. Bognanno and Champlin were a part of a Research Team which also consisted of Harvey A. Hyatt, Yinsog Rhee, Kyungock Shim and Gary Benson. This report is the result of a combined effort. However, special recognition must go to Messrs. Hyatt and Rhee whose time and effort commitment went far beyond reasonable expectation.

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Section I
Introduction

Public sector collective bargaining in Minnesota became formalized in 1971 with passage of the Public Employment Labor Relations Act (MPELRA). Amended in significant dimensions in 1973, the state's basic public sector collective bargaining policy remained relatively intact until the law was again amended in 1980. This report contains the results of numerous studies designed to measure, describe and evaluate critical aspects of public sector collective bargaining behaviors under MPELRA policy as it prevailed between FY1973 and FY1980.

The remainder of this report is divided into five sections. Section II contains a brief review of MPELRA's impasse resolution sequence and it contains a discussion distinguishing between the final impasse resolution steps confronted by essential and nonessential bargaining pairs. Finally, Section II depicts the extent to which the parties to collective bargaining negotiations failed to comply with the statutory requirement to file negotiation notices.

Section III is lengthy. It contains a quantitative history of public sector collective bargaining activity in Minnesota between FY1973 and FY1980. First time compilations of the number of negotiations by year, stage of settlement, and employer and employee categories are shown. These data were used to assess the effectiveness of the state's public sector collective bargaining policy on negotiations, mediation, arbitration and strike. In the main, this section presents findings and conclusions on the chronic concern that the law tended to spawn an excessive reliance on third party arbitrated settlements, rather than a self-dependence on voluntary negotiated settlements -- the "chilling" effect.

Section IV and Section V presents statistics computed from a number of various random samples drawn from different populations of negotiating parties. In section IV point estimates of the number of issues in dispute at various stages in the impasse resolution sequence, by stage of settlements, are presented. These estimates are used to discern the differential concessionary patterns followed by negotiators whose settlements were reached by mediation, arbitration and strike. Further, this section presents estimates on the mean number of days it took for settlements to result, by stage of settlement. This information reflects on the efficiency level at which the state's impasse resolution process operated. Lastly, Section IV contains the results of a statistical test to determine whether users of impasse arbitration tend to become "addicted" to this method of reaching settlements -- the "narcotic" effect. This has been a point long debated by practitioners, arbitrators and policy makers.

Section V contains the results of numerous statistical tests designed to determine whether arbitration panels in Minnesota were granting wage settlements that were larger than negotiated settlements. Here again, this policy concern has been the subject of exaggerated discussion for years, but the facts of the matter have never before been presented.

Section VI contains a summary of the major conclusions and findings contained in the report.

Section II

Negotiation Notices: Assessing Compliance

Between 1973 and 1980, MPELRA specified a series of steps through which public sector collective bargaining negotiations may proceed to the point of settlement. A different sequence of steps was mandated for "essential" and "nonessential" units. The differential sequences are briefly summarized in Figure 1.

An important goal of MPELRA was to encourage voluntary future terms differences. Thusly, a negotiated settlement may result before, during or after mediation assistance. Further, as Figure 1 shows, even after a matter was certified to impasse (arbitration), the parties could have negotiated a settlement, with or without mediation assistance. The intent to encourage voluntary settlements was underscored by a provision in M.S. 1971, Sec. 179.72, Subd. 11 which permitted the parties to settle upon terms and conditions of employment regardless of the terms and conditions of employment determined by arbitration order. Failure to reach a voluntary agreement rendered the arbitration order final and binding.

With voluntarism as a goal, over reliance on arbitration as the final impasse resolution step is thought to be undesirable. How is "over reliance" measured? A common problem in the analysis of the overuse or misuse of arbitration as an impasse resolution technique is that there are few "benchmarks" against which its use can be measured. Analysts often judge the effectiveness of some arbitration schemes, for example, by looking at the number of arbitrations relative to the number of impasses declared by some administrative agency. For example, where an impasse declaration may be the number of mediation petitions

Figure 1

MPELRA Negotiation and
Impasse Resolution Procedures:
1973-1980

<u>Step</u>	<u>Essential</u>	<u>Nonessential</u>
1. Notice of intent to negotiate: bargaining begins. [M.S. 1971, Sec. 179.69, Subd. 1.]	Negotiation Notice filed with BMS Director.	Negotiation Notice filed with BMS Director.
2. Mediation Petition [M.S. 1971, Sec. 179.69, Subd. 1.]	Mediation Petition filed with BMS Director. Director schedules meetings.	Mediation Petition filed with BMS Director. Director schedules meetings.
3. Negotiations may continue and settlements reached prior to mediation.	Same	Same
4. Certification of impasse. Matter forwarded to PERB. [M.S. 1971, Sec. 179.69, Subd. 3, Subd. 5 and Subd. 6.]	BMS Director certifies impasse to binding arbitration. Arbitration proceeding begins within 15 days thereof.	BMS Director certifies impasse. If employer petitioned for binding arbitration, proceedings shall begin 15 days thereof. If employee petitioned for binding arbitration, employer shall have 15 days after BMS Director has determined that an impasse has been reached to reject the request. If rejected, employees may strike.

Figure 1 continued

<p>5. Negotiations may continue and settlement reached prior to arbitration. [M.S. 1971, Sec. 179.72, Subd. 9.]</p>	<p>Same</p>	<p>Same</p>
<p>6. Arbitration [M.S. 1971, Sec. 179.72, Subd. 7.]</p>	<p>Decision handed down within 10 days from date that all arbitration proceedings have been concluded. Prior to or after issuance of arbitrator order, parties may jointly agree to any negotiated terms.</p>	<p>Decision handed down within 10 days from date that all arbitration proceedings have been concluded. Prior to or after issuance of arbitrator order, parties may jointly agree to any negotiated terms.</p>

filed or the number of cases certified to impasse. Such a ratio may be suggestive. A final arbitration step which does not interfere with or discourage negotiations should lead to a large number of settlements prior to impasse declaration. However, when it does not, the issues may be genuinely difficult to resolve raising the likelihood of a high arbitration to impasse declaration ratio. Therefore, in such situations a high rate of arbitrated settlements may not be a good measure of the effectiveness of the arbitration step in discouraging its use. An ineffective arbitration scheme is one which allows easily negotiated disputes to be settled by arbitration.

Testing a particular arbitration procedures effectiveness in generating incentives for the parties to bargain to a voluntary settlement requires data on some measure of exposure to potential impasse. It would appear that the most suitable measure of "exposure" is the total number of negotiations over new contract terms that take place in the relevant period and for the relevant population. For this reason, the Research Team has undertaken to count the number of new contract negotiations which have taken place by year, employer and employee categories. Throughout the report, "new contract negotiations" is a reference to renegotiated or initially negotiated agreements. These data were to be the basic data used in evaluating the effectiveness of the various stages in MPELRA dispute resolution sequence.

For the 1973-1980 reference period, MPELRA required the party wishing to initiate negotiations (usually the employee organization) to submit a formal "negotiation notice" to its counterpart and to the Director of the Bureau of Mediation Services (BMS). Witness step #1 in Figure 1. These are recorded by the BMS and were to be the source data for the count of new contract negotiations.

The results of this count are shown in Tables 1 and 2. Table 1 presents a summary of the total number of negotiation notices received by the BMS from FY

Table 1

Public Sector Negotiation Notices Received by Bureau of
Mediation Services by Employer Category in Minnesota:
1973-1980 (FY)

<u>Employer Category</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>Total</u>
State	2	45	1	4	5	63	3	2	125
University	0	0	6	0	1	0	1	4	12
County	43	25	40	64	66	52	97	85	472
Municipality	64	82	120	71	86	78	157	160	818
School District	66	562	542	176	527	212	597	200	2,882
Special Boards, Vocational Schools and School Cooperatives	3	7	9	14	14	10	11	14	82
Total	178	721	718	329	699	415	866	465	4,391

Source: See Appendix II-1.

Table 2

Public Sector Negotiation Notices Received by Bureau of Mediation Services
by Employee Category and Employer Category in Minnesota:
1973-1980, (FY)

<u>Employee and Employer Category</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>Total</u>
<u>Essential Employees:</u>									
State	0	0	0	1	0	15	0	0	16
University	0	0	1	0	0	0	1	0	2
County	0	5	4	10	14	8	38	32	111
Municipality	21	36	50	28	40	35	103	81	394
School District	1	36	37	31	42	29	36	26	238
Special Boards, Vocational Schools, School Cooperatives	1	0	1	2	3	3	4	4	18
Total	23	77	93	72	99	90	182	143	779
<u>Nonessential Employees:</u>									
State	2	45	1	3	5	40	3	2	101
University	0	0	4	0	1	0	0	0	5
County	43	20	36	54	52	44	59	53	361
Municipality	43	46	70	43	46	43	54	79	424
School District	62	112	104	135	72	176	169	171	1,001
Special Boards, Vocational Schools, School Cooperatives	2	7	8	12	10	7	7	10	63
Total	152	230	223	247	186	310	292	315	1,955
<u>Correctional Guards:</u>									
State	0	0	0	0	0	8	0	0	8
Special Boards, Vocational Schools, School Cooperatives	0	0	0	0	1	0	0	0	1
Total	0	0	0	0	1	8	0	0	9
<u>Teachers:</u>									
University	0	0	1	0	0	0	0	4	5
School District	3	414	401	10	413	7	392	3	1,643
Total	3	414	402	10	413	7	392	7	1,648
Grand Total	178	721	718	329	699	415	866	465	4,391

Source: See Appendix II-1.

1973 through 1980 broken down by employer categories. Table 2 extends Table 1 with a further breakdown according to employee type. In Table 2, the Correctional Guards category was counted separately since this certification status was changed from "nonessential" to "essential" in FY 1980. In subsequent sections, however, Correctional Guards are combined with the nonessential category because throughout most of the reference period they were designated as such. Teachers are certified as nonessential employees as well; they were broken out because of their relative importance and heavily weighted presence in Minnesota's organized public sector.

Minnesota has literally thousands of bargaining units. A precise count is not available. Many of these units did not file negotiation notices when contracts were to be renegotiated. Thus, for example, the BMS files show that in 1973, 1978, and 1980 it received 301, 418 and 514 "petitions to mediate," respectively. Yet Table 1 reveals that for these years the number of negotiation notices filed were 178, 415 and 465, respectively. It is virtually impossible to have more filings for mediation than there were new contract negotiations. Obviously, the negotiation notice counts understate the actual level of new contract negotiations that occurred, at least for these years (and probably in general).

Thus, the Research Team was forced to discard negotiation notices as a suitable measure of exposure. It, however, did use other means to fill this information void. The U.S. Department of Labor has published a count of the number of public sector agreements which became effective in Minnesota for the years ending in October 1975, 1976, 1977 and 1978.¹ Using these four data points as the

1. See: Labor-Management Relations in State and Local Governments: 1976 and ... 1978 (Washington, D.C.: U.S. Department of Commerce and U. S. Department of Labor, 1978 and 1980), p. 83 and 81, respectively.

dependent variable (Y) and the FY 1974, 1975, 1976 and 1977 BMS negotiation notice counts as the independent variable (X), the following relation was estimated:

$$(1) \quad Y(t) = 891.08 + .2179 X (t-1) ; R^2 = .80.$$

The independent variable in (1) was lagged one year to adjust for the overlap in Federal and State fiscal years and because school teacher notices are often filed in July of a negotiating year. With this equation, and with data on negotiation notices it was possible to estimate the number of new contract negotiations occurring in Minnesota's public sector for the FY's 1973, 1978, 1979 and 1980. The published Department of Labor figures were used for the remaining years (lagged to accommodate Minnesota's FY system).

Table 3 presents the Research Team's estimates of the number of new contract negotiations and estimates of the extent to which the parties did not comply with MPELRA's negotiation notice requirement.

The credibility of the Research Team's new contract negotiations series could be brought into serious question, if it were broken down by employee and employee categories. Thus, these estimates will be used only in relation to aggregate discussions.

Table 3
 Public Sector New Contract Negotiation Estimates in
 Minnesota: 1973-1980 (FY)

<u>F.Y.</u>	<u>Estimated New Contract Negotiations</u>	<u>Negotiation Notices</u>	<u>Estimated Percent in Non-Compliance</u>
1973	930	178	81
1974	1,030	721	30
1975	1,088	718	34
1976	962	329	66
1977	1,018	699	31
1978	981	415	58
1979	1,075	866	19
1980	992	465	53
Total	8,076	4,391	46

Source: Table 1 and Equation (1).

Appendix II

Appendix II-1

Public Negotiation Notices (PNN)

This is a log which chronologically lists each negotiation notice received. For each notice filed the following points of information are recorded:

Case number
Mailing date
Receiving date
Employer/Union
Type of employer
Affiliation of union
Number of employees in unit

It also contains a monthly recap.

Source: Bureau of Mediation Services, State of Minnesota.

Section III

Negotiation, Mediation, Arbitration, and Strike Activity:Assessing Effectiveness

During the reference period, parties who found themselves unable to resolve their differences on their own could have petitioned the BMS for assistance in resolving their dispute. The BMS received these petitions, recorded them, and assigned one of its mediation staff professionals to work with the parties and assist them in reaching a voluntary settlement. A negotiation, then, may have been settled prior to petition to mediation; after petition, but prior to mediation sessions; or, it may have been settled by mediation. Finally, of course, if the dispute remained unresolved, the BMS Director would issue an impasse declaration. As Figure 1 depicts, impasses involving essential employees automatically began to work their way through to impasse arbitration; impasses involving non-essential employees may or may not have resulted in arbitration -- the impasse resolution technique ultimately used (i.e., strike or arbitrate) was open to employer option.

In any event, Minnesota's public sector collective bargaining policy encouraged continued negotiation and mediation even after the matter was certified to impasse, and the Public Employment Relations Board (PERB) had activated the arbitration procedure. A new contract negotiation, then, could have been settled after certification to impasse, but prior to arbitration (or after the employer's refusal to arbitrate, but before the strike in cases involving nonessential bargaining units); after arbitration, but prior to issuance of the arbitration award; or it could have been settled by arbitration or strike (where appropriate). As noted in Section II, MPELRA permitted the parties to implement bilaterally agreed upon variations from arbitrated awards.

The Research Team has counted the number of mediation petitions, the number of negotiations settled prior to mediation, and the number settled during mediation. Additionally, counts were made of the number of cases certified to impasse by the BMS Director thus activating the arbitration procedure. Cases that were settled voluntarily before the hearing, and those settled after the arbitration hearing but before the arbitration award was handed down were also tabulated. Finally, a count of the number of cases resulting in a strike was made. These latter cases were excluded from the Team's enumeration of certifications to impasse as well as the cases involving employer refusals to arbitrate. Records were tallied for FY 1973 through FY 1980. The tables appearing in this section, therefore, contain a history of data on Minnesota's stage of settlement experience. The sources for these counts are found in Appendix III. This accounting of the state's collective bargaining activity now will be analyzed at different levels of aggregation.

1. All Sector Analysis:

Table 1 contains a summary and analysis of all public sector collective bargaining activity conducted in Minnesota between 1973 and 1980. The "Agreements Negotiated" row was taken from Table 3, Section II. This series is used to evaluate the effectiveness of Minnesota's impasse arbitration procedures. With it, the Team measured the proportion of exposed negotiations (i.e., the total number of new contract negotiations) that required interest arbitration to reach settlements. The lower this percentage, the better the procedure -- in time-series and in cross-section. The only other heading requiring explanation is the column labeled "1974-1980 Trend Rate (%)," found in Table 2. Using the number of cases shown in each "Settlement Stage" row as the dependent variable (Y) and time or year as the independent variable (X), the following trend relationships were estimated:

Table 1

Public Sector Collective Bargaining Activity in Minnesota,
Settlement Stage; All Sectors: 1973-1980 (FY)

Settlement Stage	1973			1974			1975			1976		
	No.	Percent of (1)	Percent of (2)	No.	Percent of (1)	Percent of (2)	No.	Percent of (1)	Percent of (2)	No.	Percent of (1)	Percent of (2)
1. New Contract Negotiations	930	--	--	1,030	--	--	1,088	--	--	962	--	--
2. Mediation Petitions	301	32.37	--	347	33.68	--	482	44.30	--	674	70.06	--
3. Settled Prior to Mediation	83	8.92	27.57	62	6.01	17.86	106	9.74	21.99	186	19.33	27.59
4. Settled by Mediation	197	21.18	65.45	233	22.62	67.14	278	25.55	57.67	409	42.51	60.68
5. Certified to Impasse Arbitration	20	2.15	6.64	51	4.95	14.69	93	8.54	19.29	72	7.48	10.68
6. Settled Prior to Arbitration	9	.97	2.99	9	.87	2.59	25	2.29	5.18	26	2.70	3.85
7. Settled by Arbitration	11	1.18	3.65	42	4.07	12.10	68	6.25	14.10	46	4.78	6.82
8. Strikes	1	.11	.34	1	.09	.28	5	.45	1.03	7	.72	1.03

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Table 1
(continuation)

Settlement Stage	1977			1978			1979			1980		
	No.	Percent of (1)	Percent of (2)	No.	Percent of (1)	Percent of (2)	No.	Percent of (1)	Percent of (2)	No.	Percent of (1)	Percent of (2)
1. New Contract Negotiations	1,018	--	--	981	--	--	1,075	--	--	992	--	--
2. Mediation Petitions	386	37.91	--	482	49.12	--	339	31.53	--	514	51.81	--
3. Settled Prior to Mediation	36	3.53	9.32	118	12.02	24.48	27	2.51	7.96	107	10.78	20.81
4. Settled by Mediation	257	25.24	66.58	258	26.29	53.52	253	23.53	74.63	313	31.55	60.89
5. Certified to Impasse Arbitration	62	6.09	16.06	98	9.98	20.33	54	5.02	15.92	87	8.77	16.92
6. Settled Prior to Arbitration	20	1.96	5.18	25	2.54	5.18	7	.65	2.06	35	3.52	6.80
7. Settled by Arbitration	42	4.12	10.88	73	7.44	15.14	47	4.37	13.86	52	5.24	10.11
8. Strikes	31	3.04	8.03	8	.81	1.65	5	.46	1.47	7	.70	1.36

Table 2

Summary Parameters
From Table 1

<u>Settlement Stage</u>	<u>1973-1980 Summary</u>			<u>Average Per Year</u>	<u>1974-1980 Trend Rate (%)</u>
	<u>No.</u>	<u>Percent of (1)</u>	<u>Percent of (2)</u>		
1. New Contract Negotiations	8,076	--	--	1,010	-.42
2. Mediation Petitions	3,525	43.64	--	441	.49
3. Settled Prior to Mediation	725	8.97	20.56	91	-5.40
4. Settled by Mediation	2,198	27.21	62.35	275	.85
5. Certified to Impasse Arbitration	537	6.64	15.23	67	2.98
6. Settled Prior to Arbitration	156	1.93	4.43	21	5.46
7. Settled by Arbitration	381	4.71	10.80	48	1.31
8. Strikes	65	.80	1.84	8	--

Table 3

Public Sector Collective Bargaining Activity in Minnesota,
Settlement Stage; Essential and Nonessential: 1973-1980 (FY)

Settlement Stage	1973		1974		1975		1976	
	No.	Percent	No.	Percent	No.	Percent	No.	Percent
<u>Essential Employees</u>								
Mediation Petitions	12	--	60	--	83	--	127	--
Settled Prior to Mediation	0	0	9	15.00	4	4.81	19	14.96
Settled by Mediation	8	66.66	36	60.00	43	51.80	63	49.60
Certified to Impasse Arbitration	4	33.33	15	25.00	36	43.37	45	35.43
Settled Prior to Arbitration	2	16.66	2	3.33	5	6.02	18	14.17
Settled by Arbitration	2	16.66	13	21.66	31	37.34	27	21.25
Strikes	0	0	0	0	0	0	0	0
<u>Non-Essential Employees</u>								
Mediation Petitions	289	--	287	--	399	--	547	--
Settled Prior to Mediation	83	28.72	53	18.47	102	25.56	167	30.53
Settled by Mediation	189	65.40	197	68.64	235	58.90	346	63.25
Certified to Impasse Arbitration	16	5.54	36	12.54	57	14.29	27	4.94
Settled Prior to Arbitration	7	2.42	7	--	20	--	8	--
Settled by Arbitration	9	3.11	29	--	37	--	19	--
Strikes	1	.35	1	.35	5	1.25	7	1.28

Source: See Appendix III - 1 and III - 2.

Table 3
(continuation)

<u>Settlement Stage</u>	<u>1977</u>		<u>1978</u>		<u>1979</u>		<u>1980</u>	
	<u>No.</u>	<u>Percent</u>	<u>No.</u>	<u>Percent</u>	<u>No.</u>	<u>Percent</u>	<u>No.</u>	<u>Percent</u>
<u>Essential Employees</u>								
Mediation Petitions	91	--	82	--	84	--	111	--
Settled Prior to Mediation	10	10.98	2	2.43	3	3.57	6	5.40
Settled by Mediation	48	52.74	23	28.04	58	69.04	64	57.65
Certified to Impasse Arbitration	33	36.26	57	69.51	23	27.38	41	36.93
Settled Prior to Arbitration	8	8.79	9	10.97	3	3.57	13	11.71
Settled by Arbitration	25	27.47	48	58.53	20	23.80	28	25.22
Strikes	0	0	0	0	0	0	0	0
<u>Non-Essential Employees</u>								
Mediation Petitions	295	--	400	--	255	--	403	--
Settled Prior to Mediation	26	8.81	116	29.00	24	9.41	101	25.06
Settled by Mediation	209	70.85	235	58.75	195	76.47	249	61.79
Certified to Impasse Arbitration	29	9.83	41	10.25	31	12.16	46	11.41
Settled Prior to Arbitration	12	--	16	--	4	--	22	--
Settled by Arbitration	17	--	25	--	27	--	24	--
Strikes	31	10.51	8	2.00	5	1.36	7	1.74

$$(2) \log Y = \log A + \log(1+g)X;$$

where g is a trend rate of growth estimate. It is interpreted as the average percentage rate at which the number of cases in a given settlement stage row were increasing (decreasing) from one year to the next. Relation (2) excluded 1973 data points because 1974 was the first full year during which MPELRA's impasse resolution sequences were in force.

Table 2 shows that there is no discernible trend in the number of new contract negotiations over the 1974 to 1980 period. Net new bargaining agent certifications must have stabilized by 1974. On average, slightly more than 1,000 agreements were negotiated per year during this period, and about 56 percent of these were settled without any form of third party intervention or resort to strike.

In 1979 mediation petitions were filed in an estimated 31.53 percent of new contract negotiations. This was the low year. At the other extreme, about 70 percent filed for mediation, is 1976 (see Table 4). Over the entire reference period, an average of 44 percent of all negotiating pairs requested mediation assistance (representing 441 mediation petitions filed per year) (see Table 2).

Negotiators have readily turned to the BMS for mediation assistance. However, even after filing for mediation, as many as 28 percent of the contracts for which petitions were filed resulted in a voluntary settlement prior to mediation. This happened in 1976. On average about 21 percent of the total number of cases for which petitions were filed settled prior to mediation. This implies that about 80 percent of the petitions ultimately resulted in mediation activity. On an average per year basis, the BMS carried an "active" case load of about 275 public sector negotiations requiring at least one mediation conference.

The data in Table 1 show that during any given year the vast proportion of mediation petitions filed result in a mediated settlement. For example, in 1979

Table 4

Summary of Parameters
from Table 3

<u>Settlement Stage</u>	1973-1980		Average Per Year	1974-1980 Trend Rate (%)
	Summary			
<u>Essential Employees</u>	No.	Percent		
Mediation Petitions	650	--	81	5.25
Settled Prior to Mediation	53	8.15	7	-13.45
Settled by Mediation	343	52.77	43	4.82
Certified to Impasse Arbitration	254	39.08	32	8.79
Settled Prior to Arbitration	60	9.23	8	14.95
Settled by Arbitration	194	29.85	24	7.41
Strikes	0	0.00	0	--
<u>Nonessential Employees</u>				
Mediation Petitions	2,875	--	359	-.68
Settled Prior to Mediation	672	23.37	84	-4.62
Settled by Mediation	1,855	64.52	231	-.15
Certified to Impasse Arbitration	283	9.84	35	-.23
Settled Prior to Arbitration	96	3.34	12	3.30
Settled by Arbitration	187	6.50	23	-3.24
Strikes	65	2.26	8	--

about 75 percent of the petitions filed resulted in a mediated settlement. The lowest mediation settlement rate is reported for 1978 (approximately 54 percent). Over the entire period, 62 percent of all petitions filed were settled in mediation. This is an insufficient index of the effectiveness of the BMS's public sector mediation efforts. Nevertheless, this is a respectable mediation settlement rate. By subtracting the number of cases that were settled prior to mediation from the total number of petitions filed and then recomputing the mediation settlement rate, this measure of the BMS's effectiveness would be better still. Note further from Table 2 that the number of cases settled in mediation has been increasing at an average rate of .85 percent per year.

Of all contracts open for negotiations, as few as 2.15 percent or 20 (in 1973) and as many as 9.98 percent or 98 (in 1978) were certified to impasse arbitration during the period under consideration (see Table 1). Over all the years under review, there were 537 cases certified to impasse, representing an average of 67 certifications per year (see Table 2). Certifications to impasse arbitration were being called for by the parties in larger and larger numbers. Table 2 shows that the number of certifications issued per year has a trend growth rate of 2.98 percent. Moreover, the proportion of all negotiations which resulted in certifications to arbitration per year also follows an upward trend of approximately 3.40 percent per year (note shown in Table 2).

Some may argue that these findings are evidence of either the "chilling" or "narcotic" effects. The presence of such effects implying that the impasse arbitration procedures in MPELRA are dulling the negotiating parties' incentive to engage genuine negotiations as a means for resolving future terms disputes. Others may argue, however, that these findings suggest little more than the use of the "threat" to arbitrate as a means to underscore the prospective cost that may fall on the opposing party by not conceding or compromising to the point of a

pre-arbitration settlement. The threat to strike in the private sector is used in a similar manner.

Do MPELRA's impasse arbitration provisions dull the incentive to negotiate to the point of voluntary agreement? This question is first answered by determining whether the "all sectors" data in Tables 1 and 2 suggest that the parties wished to use arbitration, rather than to bargain hard because they believed that arbitrators would split-the-difference between final, pre-arbitration positions or otherwise penalize the conceding party in cases that may be ultimately settled in arbitration; their intent was never to bargain, but to freeze at current positions and seek an arbitrated settlement -- the "chilling" effect. Alternatively, these all sector data may suggest that by merely invoking certification to arbitration the parties may be registering a "threat" to risk the cost of an arbitrated award (which presumably would fall more heavily on the threatened party) with the hoped for affect that the threat (and not its execution) would be enough to break the impasse and ultimately result in a voluntary agreement -- the "threat" effect.

In general, the all sectors data support the "threat" effect hypothesis. Between 1973 and 1980, 6.64 percent of new contract negotiations were certified to impasse arbitration. However, from this percent figure, two percentage points must be subtracted for cases that were settled voluntarily prior to the arbitration hearing. Thus, a full one-third of the cases that were certified to impasse arbitration were using this step as a tactical threat. They preferred a negotiated settlement. Through time, the number of cases settled prior to arbitration grew at a trend rate of 5.46 percent. Taken alone, this is an encouraging finding. However, when combined with the fact that the trend line relating time and the proportion of all new contract negotiations settled prior to arbitration is 5.93 percent (rate not shown in Table 2), the 5.46 percent trend rate is even more significant.

More than two-thirds of the cases certified to impasse arbitration -- a count which (as noted earlier) excludes incidences where employer organizations refused to accept arbitration -- actually resulted in an arbitrated settlement. This represents only 4.72 percent of the exposed population or about 48 cases per year (see Table 2). These all sector statistics do not suggest an absence in the incentive to reach voluntary, negotiated settlements.

Consider the following comparison in support of the latter conclusion. In the private sector, the average annual percent of FMCS mediated cases ending in strikes (the logical analogue of public sector impasse arbitrations) was 14 for the 1974 to 1979 period. Reworking the relevant numbers in Table 1, the corresponding parameter for Minnesota (which combines the arbitration and strike series) is 14.38 percent. What is significant in these two numbers is their similarity. Minnesota's public sector negotiators have not relied on arbitration and the strike any more heavily than their nation wide private sector counterparts.

From the above analysis of Minnesota's all sector data, it is difficult to conclude that there was a "chilling" effect operating in the public sector. However, this remark warrants qualification. The fact that cases settled in arbitration between 1974 and 1980 grew at a trend rate of 1.31 percent, and that the proportion of all negotiations ending in arbitrated settlements grew at a trend rate of 1.75 percent (rate now shown in Table 2) is cause for some note. These trends suggest that the "chilling" effect ought not to be discarded as a policy concern. These trends will require continuous monitoring. Indeed, the discussion found in the following sub-section will show that significant differences in bargaining behavior between essential and nonessential units existed, and that these differences are concealed by the instant "all sector" or aggregate analysis.

Return again to the question raised earlier. It is now answered by determining whether the data at hand support the notion that the parties use arbitration rather than negotiation because they find it politically expedient to do so and/or because they have become "hooked" on the easy recourse to third-party imposed settlements -- the "narcotic" effect. To test this hypothesis one would expect to find proportionally large numbers of repeated users of impasse arbitration in the time-series data presented in Tables 1 and 2. Unfortunately, information on repeaters is not revealed by the trended data shown. Later in this report this information is presented, but in a different analytical context. At this point, it is sufficient to observe that even if all of the arbitrated settlements were the result of repeated year-to-year use, the hypothesized addiction does not appear to be epidemic in nature.

Both the trended growth rates in the number of cases settled by arbitration [1.31 percent] and the proportion of all negotiations settled by arbitration [1.75 percent] are quite low. Further, these rates may reflect little more than the fact that it takes time for the industrial relations system to adjust to the availability of arbitration. During the first decade or so of arbitration one might expect to find the parties experimenting with its use. Once these adjustments have taken place, the impasse arbitration settlement rate may stabilize and its time trend(s) fall to zero.

Since 1973, when nonessential public employees were authorized a "limited right" to strike, there have been 65 public sector strikes. For the entire reference period, this translates into an average of eight strikes per year with less than one percent of all negotiations ending in strike. One may disregard the negligible strike records for 1973 and 1974 because of a general reluctance on the part of public employers to sign-off, in effect, on a strike. For the years 1975 through 1980, the number of strikes reported per year ranged from

five to eight with the exception of the year 1977 when 31 strikes occurred. Excluding 1977 from consideration, the trend rate of growth in public sector strikes is zero.

2. Essential and Nonessential Sector Analysis:

Table 3 is a reduction of the information already discussed in Table 1. This display, however, breaks out information by employee category: essential and nonessential. Information pertaining to the number of new contract negotiations for each year under consideration is not available for this or lower levels of disaggregation. Thus, in this table, the percentage columns pertain only to the disposition of cases relative to the number of mediation petitions filed. Without information on the year-to-year number of new contract negotiation exposures, the trends appearing in Table 4 relevant to the chilling effect must be interpreted with caution.

Caveat noted, it is clear from Table 4 that essential and nonessential units followed different patterns of settlement.

In anticipation of the discussion to follow, the Research Team believes that the contrasting impasse resolution provisions that were built into MPELRA may explain the above referenced difference (see Figure 1, Section II). Specifically, between 1973 and 1980 petitions to arbitrate by nonessential employee units could have been met by a refusal to arbitrate from employer organizations. Thus, exposing the negotiations to a strike as the final impasse resolution means (short of continued negotiations). In contrast, petitions to arbitrate by essential employee units required automatic employer organization concurrence. In this instance, finality rested in impasse arbitration -- which may have been relatively less costly to the parties than the strike (thus, increasing its relative use when negotiations

became arduous), or which may have chilled bargaining (i.e., concessions) from the outset in the belief that arbitrator's are controlled by a "split-the-difference" standard.

The data of Table 3 are recast in Table 5 to make more vivid the contrast between essential and nonessential settlement patterns. Table 5 shows that four out of five mediation petitions filed between 1973 and 1980 involved new contract negotiations in nonessential units. This finding suggests that the analysis and discussion in the previous job-section was dominated by the underlying pattern of negotiations exhibited by nonessential bargainers.

In regard to assessing the differential effects of MPELRA's impasse arbitration procedures on each of the two sectors, the following results are significant: (1) Of all cases certified to impasse arbitration, 47.30 percent involved essential new contract negotiations; and (2) Of all cases settled by arbitration, 50.92 percent involved essential new contract negotiations (see Table 5). Relatively and absolutely more essential than nonessential employee negotiations were settled in arbitration in spite of the fact that nonessential petitions to mediate outnumbered essential petitions by a 4:1 ratio. Over the reference period, about 30 percent of essential negotiations for which mediation petitions were filed ended in arbitration. This contrasts with a corresponding nonessential parameter of only 6.5 percent: a figure that would climb to 8.76 percent if strike and arbitration settlements were combined (see Table 5). Further, the finding that nearly 30 percent of all mediation petitions filed by essential units end in arbitrated settlements also contrasts sharply with the 14 percent magnitude characterizing Minnesota's public sector experience taken as a whole as well as that of the nation's private sector. These contrasts are consistent with the conclusion that a chilling and/or narcotic effect was operating on essential employee new contract negotiations. It is unfortunate that exposure rate

Table 5

1973-1980 Summarization of Public Sector Collective Bargaining
Activity for All Sectors, Essential, and Nonessential
Sectors by Stage of Settlement

<u>Settlement Stage</u>	<u>All Sectors</u>		<u>Nonessential</u>			<u>Essential</u>		
	<u>No.</u>	<u>%</u>	<u>No.</u>	<u>%</u>	<u>% All Sectors</u>	<u>No.</u>	<u>%</u>	<u>% All Sectors</u>
Mediation Petitions	3,525	-	2,875	-	81.56	650	-	18.44
Settled Prior to Mediation	725	20.56	672	23.37	92.69	53	8.15	7.31
Settled by Mediation	2,198	62.35	1,855	64.52	84.39	343	52.77	15.61
Certified to Impasse Arbitration	537	15.23	283	9.84	52.70	254	39.08	47.30
Settled Prior to Arbitration	156	4.43	96	3.34	61.54	60	9.23	38.46
Settled by Arbitration	381	10.80	187	6.50	49.08	194	29.85	50.92
Strikes	65	1.84	65	2.26	100.00	0	0.00	0.00

percentages are not available. Nevertheless, increasing trend rates of growth in mediation petitions filed (5.25 percent per year), in the number of cases certified to impasse arbitration (8.79 percent per year), and in the number of cases settled by arbitration (7.41 percent per year) were found (see Table 4). These findings, when combined with contrasts stated above, further support the conclusion that the impasse arbitration procedure that was open to essential employers and employees did not motivate voluntary settlements in proportions that would have resulted had the parties viewed interest arbitration as if it were as distasteful as the strike. No doubt, the 1980 amendments to MPELRA which restrict the arbitration panel's authority to selecting between the final positions on each impasse issue submitted by essential parties was a move designed to discourage excessive reliance on arbitration (M.S. 1971, amended in 1980, 179.72, subd. 76).

A final point regarding essential employees should be made in reference to Table 4. The Research Team reports a 1974-1980 trend rate for the number of cases certified to arbitration but settled prior to the hearing at a strong 14.95 percent per year. However, this result is due primarily to the 1974 low observation of 2 pre-arbitration settlements which gave the trend its positive slope. By excluding this observation, and computing the trend rate of change for the 1975-1980 period, a negative 1.36 percent per annum rate is derived. Accordingly, cases certified to arbitration (at least during the 1975-1980 years) revealed a trend propensity to end in arbitrated settlements.

Turning attention to nonessential negotiating patterns, a completely different picture emerges. The data in Table 4 show that the number of non-essential employee new contract negotiations certified to arbitration between 1974 and 1980 has a negligible (and negative) trend rate. Moreover, the average

number of cases settled prior to arbitration has been increasing at a 3.3 percent per year, and logically, the average number of cases settled by arbitration has been decreasing at about the same rate. Combined, with the above cited findings, this is strong evidence against the presence of either the chilling and/or narcotic effects.

3. Stage of Settlement Data for Essential and Nonessential Employees by Employer Category 1973-1980

The data appearing in Table 3 are broken down further by employer-employee categories and recast as Tables 6 and 7. In some cases the Research Team did not present 1974-1980 Trend Rates because small N-sizes and/or wide swings in inter-year activity to produced parameters which were meaningless. In these instances, better information about trends can be derived by merely inspecting inter-year fluctuations in the settlement stage series of interest.

Table 8 was produced from the data in Tables 6 and 7. Of central interest at the point in the analysis is the percent of all mediation petitions settled in arbitration by employer category (the center data column in Table 8). It already has been established that the arbitration settlement rate was about five times higher for essential employees than nonessential employees over the reference period. What Table 8 establishes is that none of the essential employer categories escaped from the relatively high reliance on interest arbitration. Weighted concentration, of course, are attributed to the arbitration pattern exhibited in counties, municipalities, and school districts. Quizzically, the arbitration settlement rate for nonessential employees exceeded that for essential employees only for the State as an employer category.

Table 6

Public Sector Collective Bargaining Activity in Minnesota,
Settlement Stage; Essential Employees by Employer Category: 1973-1980 (FY)

Employer Category/Settlement Stage	1973		1974		1975		1976		1977		1978		1979		1980		1973-1980 Summary No. %	Average Per Year	1973-1980 Trend Rate (%)	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%				
<u>State</u>																				
Mediation Petitions	0	--	2	--	5	--	0	--	1	--	0	--	6	--	0	--	14	--	1.75	--
Settled Prior to Mediation	0	0.0	1	50.00	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	7.14	.13	--
Settled by Mediation	0	0.0	1	50.00	4	80.00	0	0.0	1	100.00	0	0.0	3	50.00	0	0.0	9	64.29	1.13	--
Certified to Impasse Arbitration	0	0.0	0	0.0	1	20.00	0	0.0	0	0.0	0	0.0	3	50.00	0	0.0	4	28.57	.5	--
Settled Prior to Arbitration	0	--	0	--	1	--	0	--	0	--	0	--	0	--	0	--	1	--	.13	--
Settled by Arbitration	0	--	0	--	0	--	0	--	0	--	0	--	3	--	0	--	3	--	.38	--
Strikes	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	--	--
<u>University</u>																				
Mediation Petitions	0	--	0	--	1	--	1	--	1	--	0	--	0	--	0	--	3	--	.38	--
Settled Prior to Mediation	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	--
Settled by Mediation	0	0.0	0	0.0	1	100.00	0	0.0	1	100.00	0	0.0	0	0.0	0	0.0	2	66.66	.25	--
Certified to Impasse Arbitration	0	0.0	0	0.0	0	0.0	1	100.00	0	0.0	0	0.0	0	0.0	0	0.0	1	33.33	.13	--
Settled Prior to Arbitration	0	--	0	--	0	--	0	--	0	--	0	--	0	--	0	--	0	--	0	--
Settled by Arbitration	0	--	0	--	0	--	1	--	0	--	0	--	0	--	0	--	1	--	.13	--
Strikes	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	--

Source: See Appendix III - 1 and III - 2.

Table 6
(continuation - 2)

County	1973		1974		1975		1976		1977		1978		1979		1980		1973-1980 Summary		Average Per Year	1973-1980 Trend Rate (%)
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%		
Mediation Petitions	5	--	6	--	11	--	23	--	20	--	21	--	27	--	32	--	145	--	18.13	27.15
Settled Prior to Mediation	0	0.0	1	16.67	0	0.0	1	4.35	0	0.0	0	0.0	0	0.0	1	3.13	3	2.07	.38	--
Settled by Mediation	4	80.00	4	66.67	8	72.73	14	60.87	10	50.00	8	38.10	21	77.78	17	53.13	86	59.31	10.75	22.63
Certified to Impasse Arbitration	1	20.00	1	16.67	3	27.27	8	34.78	10	50.00	13	61.90	6	22.22	14	*43.75	56	*38.62	7.00	41.85
Settled Prior to Arbitration	1	--	0	--	0	--	2	--	2	--	5	--	0	--	3	--	13	--	1.63	--
Settled by Arbitration	0	--	1	--	3	--	6	--	8	--	8	--	6	--	11	--	43	--	5.38	37.26
Strikes	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	--	--
Municipality																				
Mediation Petitions	7	--	47	--	52	--	75	--	53	--	44	--	40	--	63	--	379	--	47.38	-5.54
Settled Prior to Mediation	0	0.0	6	12.77	1	1.92	10	13.70	9	16.98	1	2.27	3	7.50	2	3.17	32	8.44	4.00	-11.44
Settled by Mediation	4	57.14	29	61.70	24	46.15	34	46.58	28	52.83	10	22.73	25	62.50	39	61.90	193	50.92	11.63	-9.90
Certified to Impasse Arbitration	3	42.86	12	25.53	27	51.92	29	39.73	16	30.19	33	75.00	12	30.00	22	34.92	154	40.63	19.25	1.17
Settled Prior to Arbitration	1	--	1	--	3	--	14	--	5	--	4	--	2	--	8	--	38	--	4.75	16.08
Settled by Arbitration	2	--	11	--	**24	--	15	--	11	--	**29	--	10	--	14	--	116	--	14.50	-1.31
Strikes	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	--	--

*One pending

**Sixteen of these were in a voluntary multiemployer bargaining group negotiating with a single union.

Table 6
(continuation - 3)

	<u>1973</u>		<u>1974</u>		<u>1975</u>		<u>1976</u>		<u>1977</u>		<u>1978</u>		<u>1979</u>		<u>1980</u>		<u>1973-1980</u>		<u>Average</u>	<u>1973-1980</u>	
	<u>No.</u>	<u>%</u>	<u>No.</u>	<u>%</u>	<u>No.</u>	<u>%</u>	<u>No.</u>	<u>%</u>	<u>No.</u>	<u>%</u>	<u>No.</u>	<u>%</u>	<u>No.</u>	<u>%</u>	<u>No.</u>	<u>%</u>	<u>Summary</u>	<u>Per Year</u>			<u>Trend</u>
<u>School Districts</u>																					
Mediation Petitions	0	--	5	--	13	--	28	--	15	--	16	--	9	--	15	--	101	--	12.63	7.41	
Settled Prior to Mediation	0	0.0	1	20.00	2	15.38	8	28.57	1	6.67	1	6.25	0	0.0	3	20.00	16	15.84	2.00	--	
Settled by Mediation	0	0.0	2	40.00	6	46.15	13	46.43	7	46.67	5	31.25	9	100.00	8	53.33	50	49.50	6.25	15.42	
Certified to Impasse Arbitration	0	0.0	2	40.00	5	38.46	7	25.00	7	46.67	10	62.50	0	0.0	4	26.67	35	34.65	4.38	--	
Settled Prior to Arbitration	0	--	1	--	1	--	2	--	1	--	0	--	0	--	1	--	6	--	.75	--	
Settled by Arbitration	0	--	1	--	4	--	5	--	6	--	10	--	0	--	3	--	29	--	3.63	--	
Strikes	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.00	--	
<u>Special Boards, Vocation Schools, School Cooperatives</u>																					
Mediation Petitions	0	--	0	--	1	--	0	--	1	--	1	--	1	--	0	--	4	--	.50	--	
Settled Prior to Mediation	0	0.0	0	0.0	1	100.00	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	25.00	.13	--	
Settled by Mediation	0	0.0	0	0.0	0	0.0	0	0.0	1	100.00	0	0.0	0	0.0	0	0.0	1	25.00	.13	--	
Certified to Impasse Arbitration	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	100.00	1	100.00	0	0.0	2	50.00	.25	--	
Settled Prior to Arbitration	0	--	0	--	0	--	0	--	0	--	0	--	0	--	0	--	0	--	0.00	--	
Settled by Arbitration	0	--	0	--	0	--	0	--	0	--	1	--	1	--	0	--	2	--	.25	--	
Strikes	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.00	--	

Table 6
(continuation - 4)

	<u>1973</u> No. %	<u>1974</u> No. %	<u>1975</u> No. %	<u>1976</u> No. %	<u>1977</u> No. %	<u>1978</u> No. %	<u>1979</u> No. %	<u>1980</u> No. %	<u>1973-1980</u> <u>Summary</u> No. %	<u>Average</u> <u>Per Year</u>	<u>1973-1980</u> <u>Trend</u> <u>Rate (%)</u>
<u>Guards</u>											
Mediation Petitions	0 --	0 --	0 --	2 --	0 --	0 --	1 --	1 --	4 --	.5	--
Settled Prior to Mediation	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0.00	--
Settled by Mediation	0 0.0	0 0.0	0 0.0	2 100.00	0 0.0	0 0.0	0 0.0	0 0.0	2 50.00	.25	--
Certified to Impasse Arbitration	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	1 100.00	1 100.00	2 50.00	.25	--
Settled Prior to Arbitration	0 --	0 --	0 --	0 --	0 --	0 --	1 --	1 --	2 --	.25	--
Settled by Arbitration	0 --	0 --	0 --	0 --	0 --	0 --	0 --	0 --	0 --	0.00	--
Strikes	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0.00	--

Table 7

Public Sector Collective Bargaining Activity in Minnesota,
Settlement Stages; Nonessential Employees by Employer Category: 1973-1980 (FY)

Employer Category/Settlement Stage	1973		1974		1975		1976		1977		1978		1979		1980		1973-1980 Summary		Average Per Year	1973-1980 Trend Rate (%)
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%		
<u>State</u>																				
Mediation Petitions	3	--	2	--	5	--	5	--	23	--	0	--	27	--	1	--	66	--	8.25	--
Settled Prior to Mediation	0	0.0	0	0.0	1	20.00	1	20.00	5	21.74	0	0.0	2	7.41	0	0.0	9	13.64	1.13	--
Settled by Mediation	2	66.66	1	50.00	0	0.0	3	60.00	10	43.48	0	0.0	17	62.96	1	100.00	34	51.52	4.25	--
Refused to Impasse Arbitration	1	33.33	1	50.00	4	80.00	1	20.00	8	34.78	0	0.0	6	22.22	0	0.00	21	31.82	2.63	--
Settled Prior to Arbitration	0	--	0	--	0	--	0	--	0	--	0	--	0	--	0	--	0	--	--	--
Settled by Arbitration	1	--	1	--	4	--	1	--	8	--	0	--	6	--	0	--	21	--	2.63	--
Strikes	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	2	7.41	0	0.0	2	3.03	.25	--
<u>Correctional Guards (State)</u>																				
Mediation Petitions	1	--	2	--	0	--	0	--	2	--	0	--	3	--	0	--	8	--	1.00	--
Settled Prior to Mediation	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.00	--
Settled by Mediation	1	100.00	1	50.00	0	0.0	0	0.0	2	100.00	0	0.0	0	0.0	0	0.0	4	50.00	.50	--
Refused to Impasse Arbitration	0	0.0	1	50.00	0	0.0	0	0.0	0	0.0	0	0.0	3	100.00	0	0.0	4	50.00	.50	--
Settled Prior to Arbitration	0	--	0	--	0	--	0	--	0	--	0	--	0	--	0	--	0	--	0.00	--
Settled by Arbitration	0	--	1	--	0	--	0	--	0	--	0	--	3	--	0	--	4	--	.50	--
Strikes	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.00	--

Source: See Appendix III - 1 and III - 2.

Table 7
(continuation - 2)

Category	1973		1974		1975		1976		1977		1978		1979		1980		1973-1980 Summary		Average Per Year	1973-1980 Trend Rate (%)
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%		
University																				
Mediation Petitions	0	--	1	--	0	--	1	--	2	--	0	--	2	--	1	--	7	--	.88	--
Settled Prior to Mediation	0	0.0	0	0.0	0	0.0	0	0.0	2	100.00	0	0.0	0	0.0	0	0.0	2	28.57	.25	--
Settled by Mediation	0	0.0	1	100.00	0	0.0	1	100.00	0	0.0	0	0.0	2	100.00	1	100.00	5	71.43	.63	--
Refertified to Impasse Arbitration	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.00	--
Settled Prior to Arbitration	0	--	0	--	0	--	0	--	0	--	0	--	0	--	0	--	0	--	0.00	--
Settled by Arbitration	0	--	0	--	0	--	0	--	0	--	0	--	0	--	0	--	0	--	0.00	--
Strikes	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.00	--
City																				
Mediation Petitions	24	--	34	--	47	--	38	--	48	--	13	--	50	--	50	--	304	--	38.00	.75
Settled Prior to Mediation	2	8.33	4	11.76	1	2.13	2	5.26	1	2.08	0	0.0	3	6.00	2	4.00	15	4.93	1.88	-1.27
Settled by Mediation	19	79.17	25	73.53	41	87.23	34	89.47	38	79.17	9	69.23	42	84.00	42	84.00	250	82.24	31.25	-.90
Refertified to Impasse Arbitration	3	12.50	4	11.76	4	8.51	1	2.63	3	6.25	1	7.69	3	6.00	4	8.00	23	7.57	2.89	-.02
Settled Prior to Arbitration	0	--	0	--	1	--	1	--	2	--	0	--	0	--	2	--	6	--	.75	1.08
Settled by Arbitration	3	--	4	--	3	--	0	--	1	--	1	--	3	--	2	--	17	--	2.13	18.20
Strikes	0	0.0	1	2.94	1	2.13	1	2.63	6	12.50	3	23.08	2	4.00	2	4.00	16	5.26	2.00	17.71

Table 7
(continuation - 3)

	<u>1973</u>		<u>1974</u>		<u>1975</u>		<u>1976</u>		<u>1977</u>		<u>1978</u>		<u>1979</u>		<u>1980</u>		<u>1973-1980</u> <u>Summary</u>		<u>Average</u> <u>Per Year</u>	<u>1973-1980</u> <u>Trend</u> <u>Rate (%)</u>
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%		
<u>unicipality</u>																				
Mediation Petitions	23	--	57	--	41	--	91	--	80	--	25	--	29	--	53	--	399	--	49.88	-7.56
Settled Prior to Mediation	2	8.70	3	5.26	2	4.88	8	8.79	3	3.75	1	4.00	3	10.34	3	5.66	25	6.27	3.13	-4.43
Settled by Mediation	19	82.61	50	87.72	35	85.37	78	85.71	50	62.50	20	80.00	22	75.86	42	79.25	316	79.20	39.50	-9.27
Refertified to Impasse Arbitration	2	8.70	4	7.02	4	9.76	2	2.20	4	5.00	4	16.00	4	13.79	6	11.32	30	7.52	3.75	7.06
Settled Prior to Arbitration	2	--	0	--	1	--	0	--	3	--	2	--	1	--	3	--	12	--	1.50	--
Settled by Arbitration	0	--	4	--	3	--	2	--	1	--	2	--	3	--	3	--	18	--	2.25	--
Strikes	0	0.0	0	0.0	0	0.0	3	3.30	23	*28.75	0	0.0	0	0.0	2	3.77	28	7.02	3.50	--

*Twenty-two of these were in a voluntary multiemployer bargaining group negotiating with a single union.

Table 7
(continuation - 4)

	<u>1973</u>		<u>1974</u>		<u>1975</u>		<u>1976</u>		<u>1977</u>		<u>1978</u>		<u>1979</u>		<u>1980</u>		<u>1973-1980 Summary</u>		<u>Average Per Year</u>	<u>1973-1980 Trend Rate (%)</u>	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%			
<u>School Districts: Non-Teachers</u>																					
Mediation Petitions	41	--	40	--	74	--	103	--	100	--	62	--	83	--	76	--	579	--	72.38	6.06	
Settled Prior to Mediation	13	31.71	2	5.00	27	36.49	34	33.01	8	8.00	15	24.19	6	7.23	17	22.37	122	21.07	15.25	9.71	
Settled by Mediation	27	65.85	32	80.00	38	51.35	67	65.05	80	80.00	43	69.35	72	86.75	49	64.47	408	70.47	51.00	7.84	
Refertified to Impasse Arbitration	1	2.44	6	15.00	9	12.16	2	1.94	11	11.00	4	6.45	4	4.82	9	11.84	46	7.94	5.75	1.03	
Settled Prior to Arbitration	1	--	1	--	3	--	2	--	6	--	2	--	1	--	4	--	20	--	2.50	7.26	
Settled by Arbitration	0	--	5	--	6	--	0	--	5	--	2	--	3	--	5	--	26	--	3.25	24.85	
Strikes	0	0.0	0	0.0	0	0.0	0	0.0	1	1.00	0	0.0	1	1.21	1	1.32	3	.52	.38	--	
<u>School Districts: Teachers</u>																					
Mediation Petitions	190	--	149	--	220	--	285	--	33	--	238	--	54	--	211	--	1,380	--	172.50	-6.71	
Settled Prior to Mediation	63	33.16	44	29.53	65	29.55	118	41.40	5	15.15	85	35.71	9	1.67	76	36.02	465	33.70	58.13	-9.01	
Settled by Mediation	117	61.58	85	57.05	115	52.27	146	51.23	24	72.73	120	50.42	34	62.96	106	50.24	747	54.13	93.38	-6.80	
Refertified to Impasse Arbitration	9	4.74	20	13.42	36	16.36	18	6.32	3	9.09	29	12.18	11	20.37	27	12.80	153	11.09	19.13	-3.49	
Settled Prior to Arbitration	4	--	6	--	15	--	3	--	1	--	12	--	2	--	13	--	56	--	7.00	-1.15	
Settled by Arbitration	5	--	14	--	21	--	15	--	2	--	17	--	9	--	14	--	97	--	12.13	-5.45	
Strikes	1	.53	0	0.0	4	1.82	3	1.05	1	3.03	4	1.68	0	0.0	2	.95	15	1.09	1.88	--	

Table 7
(continuation - 5)

	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1973-1980</u>	<u>Average</u>	<u>1973-1980</u>
	No. %	No. %	No. %	No. %	No. %	No. %	No. %	No. %	<u>Summary</u>	<u>Per Year</u>	<u>Trend</u>
									No. %		Rate (%)
<u>ial Boards, Vocational Schools,</u>											
<u>of Cooperatives: Non-Teachers</u>											
Mediation Petitions	6 --	0 --	2 --	15 --	6 --	59 --	4 --	7 --	99 --	12.38	--
Settled Prior to Mediation	2 33.33	0 --	0 0.0	2 13.33	1 16.66	15 25.42	0 0.0	3 42.86	23 23.23	2.89	--
Settled by Mediation	4 66.67	0 --	2 100.00	11 73.33	5 83.33	43 72.88	4 100.00	4 57.14	73 73.74	9.22	--
Refertified to Impasse Arbitration	0 0.0	0 --	0 0.0	2 13.34	0 0.0	1 1.69	0 0.0	0 0.0	3 3.03	.38	--
Settled Prior to Arbitration	0 --	0 --	0 --	2 --	0 --	0 --	0 --	0 --	2 --	.25	--
Settled by Arbitration	0 --	0 --	0 --	0 --	0 --	1 --	0 --	0 --	1 --	.13	--
Trikes	0 0.0	0 --	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	0.00	--
<u>ial Boards, Vocational Schools,</u>											
<u>of Cooperatives: Teachers</u>											
Mediation Petitions	1 --	2 --	10 --	9 --	1 --	3 --	3 --	4 --	33 --	4.13	--
Settled Prior to Mediation	1 100.00	0 0.0	6 66.66	2 22.22	1 100.00	0 0.0	1 33.33	0 0.0	11 33.33	1.38	--
Settled by Mediation	0 0.0	2 100.00	4 33.33	6 66.66	0 0.0	0 0.0	2 66.66	4 100.00	18 54.55	6.00	--
Refertified to Impasse Arbitration	0 0.0	0 0.0	0 0.0	1 11.11	0 0.0	2 66.66	0 0.0	0 0.0	3 9.09	.38	--
Settled Prior to Arbitration	0 --	0 --	0 --	0 --	0 --	0 --	0 --	0 --	0 --	0.00	--
Settled by Arbitration	0 --	0 --	0 --	1 --	0 --	2 --	0 --	0 --	3 --	.38	--
Trikes	0 0.0	0 0.0	0 0.0	0 0.0	0 0.0	1 33.33	0 0.0	0 0.0	1 3.03	.13	--

Table 8

Summary of Arbitration Settlement Rates
from Tables 6 and 7

<u>Employee/Employer</u>	<u>Number of Mediation Petitions</u>	<u>Percent Settled by Arbitration</u>	<u>Percent Settled by Arbitration and Strike</u>
<u>Essential Employees</u>			
State	14	21.43	n.a.
University	3	33.33	n.a.
Counties	145	29.66	n.a.
Municipalities	379	30.61	n.a.
School Districts	101	38.71	n.a.
Special Boards ...	4	50.00	n.a.
Guards	<u>4</u>	<u>0.00</u>	<u>n.a.</u>
Overall	650	29.85	n.a.
<u>Nonessential Employees</u>			
State	66	32.00	35.00
Correctional Guards	8	50.00	50.00
University	7	0.00	0.00
Counties	304	5.60	10.86
Municipalities	399	4.51	11.53
School Districts			
Teachers	1,380	7.03	8.12
Non-teachers	579	4.49	5.01
Special Boards ...			
Teachers	33	9.09	12.12
Non-teachers	<u>99</u>	<u>1.01</u>	<u>1.01</u>
Overall	2,875	6.50	8.77

Appendix III

Appendix III-1

Public Petition Register (PPR)

This is a log which chronologically lists each petition received. For each petition filed, the following points of information are recorded:

- Case number
- Date petition mailed
- Date petition received
- Name of employer and union
- Type of employer
- Type of petition
- County
- Number of authorization cards
- Number of employees
- Agent assigned to case
- Wage cost
- Unit identification
- Election
- Certified PN
- Impasse or Appeal date
- Number of meetings
- Type of Settlement
- Close out date

Source: Bureau of Mediation Services, State of Minnesota

Contract Disputes Certified to PERB
for Arbitration (CDC)

This is a log which chronologically lists every impasse arbitration certification processed by the BMS. It was initiated on July 24, 1972. It is broken down into two categories: "Non-essential" and "Essential". For each entry, the following points of information are recorded:

Case number
Date BMS received request
Ten-day period
Parties' names
Indication of impasse or dismissal
Request for final positions
Fifteen-day period
Date certified to PERB
Results
 settled prior to arbitration and
 settlement date
 date of award
 date of rejection (if applicable)
 strike

Source: Bureau of Mediation Service, State of Minnesota

PERB Grievance Arbitration and
Contract Arbitration (PCA)

This is a log which chronologically lists every impasse arbitration case processed by PERB. It was initiated on September 7, 1972. For every entry, the following points of information are recorded:

Case numbers
Parties
Arbitrators proposed and dates of proposal
Arbitrator selected
Date award received

Source: Public Employment Relations Board, State of Minnesota

Appendix III-2

The counts made by the Research Team and the sources for each count are shown on the sheet entitled "Count Items."

COUNT ITEMSA. Negotiation Period

1. Number of negotiations (PNN)
2. Number settled prior to mediation
A-1 less B-1 = A-2

B. Mediation Period

1. Number of mediation petitions (PPR)
2. Number settled in mediation (PPR)

C. After mediation - prior to certification

1. Number settled (CDC)
2. Number rejecting arbitration (CDC)

D. After certification - prior to hearing

1. Numbers certified to arbitration (CDC)
2. Numbers settled before arbitration (CDC)

E. After arbitration - prior to award

1. Numbers of hearings
E-1 = D-1 less D-2.
2. Numbers settled
E-2 = E-1 less F-1

F. Arbitration Awards

1. Number of decisions (PCA)

G. Arbitration Rejection

1. Settlements prior to strike (CDC)
2. Number of strikes (CDC)

Section IV

Concessions, Time, and the Narcotic Effect

The Research Team compiled information on the number of issues and concession rates at various discernable steps in the dispute resolution process which existed in Minnesota's public sector between 1973 and 1980. Similarly, it compiled information on the number of days which elapsed between various discernable filing dates in the process. The data used in making these compilations were taken from a random sample of files drawn from records maintained by the BMS and PERB. The sampling methodology followed will be discussed in the next sub-section.

The Research Team pursued this line of investigation in an attempt to answer questions like the following:

(1) For new contract negotiations that were settled by (a) negotiation or mediation, (b) arbitration, and (c) strike, how much concession occurred between steps in the process? Did cases that ended in the strike exhibit more or less concession than those which ended in concession?

(2) For new contract negotiations that were settled by (a) negotiation or mediation, (b) arbitration, and (c) strike, how much time elapsed between the day the mediation petition was filed and the day of settlement? How long did it take arbitration panels to hand down awards?

Answers to the first class of questions have relevance to the concern over the prospect of a chilling effect at work in the impasse resolution system. Answers to the second class of questions have relevance for the efficiency of the public sector collective bargaining system. Of course, whether it took too long of a time to move an impasse case through the impasse procedure requires a policy judgement.

Finally, the Research Team broke down the information it compiled on the total number of arbitrations which occurred under MPELRA between 1973 and 1980.

Specifically, the total number of impasse arbitrations reported in Section III were classified by the number of times bargaining pairs used this method of settlement. So classified, it is possible to test for the existence of a narcotic effect.

1. Sample:

The statistics presented in the first two parts of this section are based on a random sample of cases drawn from the files of the BMS and PERB. The sources of chronological lists of "case numbers", and the data gathered per case by each agency appear in Appendix III-1. Appendix IV-1 contains a "Sample Case Data Form" which the Research Team used as its data collection instrument. Attached thereto is the classification system used to define the "character" of specific issues at impasse. Appendix IV-2 contains the sample case keypunch format, variable names and coding instructions.

Before drawing its sample, the Research Team divided the BMS and PERB (collated) lists of case numbers into three sub-populations. The first contained a chronological listing of all case numbers assigned to mediation petitions filed between FY 1973 and FY 1980 where the cases were ultimately settled without arbitration or strike. The second and third chronological listings were of all case numbers on mediation petitions filed during this period which were settled by arbitration and strike, respectively. The Research Team intended to draw a five percent, ten percent and ten percent sample of cases from the respective segmentations of the population of all mediation petitions filed. The three sub-populations were not stratified by year. By a flip of a coin, the Research Team decided whether the first or second entry on each chronological list should be used to initiate the drawings. With the starting point identified, every twentieth negotiated/mediated case was drawn from the first list, and every tenth arbitrated or strike case was drawn from the second and third lists, respectively.

Because cases involving arbitration and strike are over-represented in the over-all sample, it represents a sample of 6.24 percent of all mediation petitions filed during the reference period (see Table 1). Moreover, the sampling routine produced slightly more negotiated/mediated cases than initially intended and slightly fewer arbitrated cases than intended, since these respective sub-population sizes were not precisely established at the time the samples were drawn (see Table 1).

The variables on which data were to be collected from each sampled file are shown on the "LCER Coding Instructions" found in Appendix IV-1. Some files lacked the information sought. Thus, small cell sizes are found in many of the statistical tabulations which follow. This is particularly true for cases involving negotiated/mediated settlements as opposed to settlements resulting from arbitration or strike.

2. Concessions in Terms of Issues Resolved:

Between 1973 and 1980 nearly 56 percent of all new contract negotiations were settled without any kind of third party intervention. However, about 44 percent requested mediation assistance. The statistics in Table 2 show that at the commencement of mediation, cases ultimately resolved by negotiation/mediation had a mean of nearly seven issues in dispute; whereas, cases ending in arbitration and strike had approximately eight and eleven issues in dispute, respectively. These findings could be interpreted to mean that more pre-mediation issue concessions occurred among the cases ultimately settled via negotiation/mediation than among the cases where arbitration or strike resulted. At a minimum, mediators can use the number of issues in dispute at the first mediation session as a lead indicator of the likelihood that arbitration or strike will result. With this in mind, a more intensive and/or imaginative mediation effort might be called for in order to avoid either adverse outcome. A case might be labeled "crisis,"

Table 1
 Sampling Percentages on Minnesota Public Sector
 Collective Bargaining Activity: 1973-1980 (FY)

<u>Settlement Stage</u>	<u>Population N-Size</u>	<u>Sample N-Size</u>	<u>Representation Rate (%)</u>
Mediation Petitions	3,525	220	6.24 ¹
Settled Prior to Mediation	725	-	-
Settled by Mediation	2,198	-	-
Certified to Impasse Arbitration	537	-	-
Settled Prior to Arbitration	156	-	-
Settled by Arbitration	381	34	8.96 ²
Strikes	65	7	10.77 ²

¹By excluding the population and sample of new contracts settled by arbitration and strike from the population and sample of mediation petitions filed and re-computing this percentage, it becomes 5.81 percent.

²The weighted percentage representation of new contracts settled by arbitration and strike is 9.27 percent.

if it has, say, eight or more issues in dispute. Such a case ought to be given special attention.

The observed reduction in the relative number of issues in dispute between the first and last mediation session (i.e., the "concession rate"), is consistent with the conclusion that mediation has been effective in bringing about settlements. Obviously, mediation and/or continued negotiation ultimately resulted in concessions to the point of agreement for the 33 cases considered in the first row of Table 2. This was not so with the remaining final settlement rows, even though some concession occurred. Note that the parties conceded at a faster rate in the cases which resulted in a strike, than in the cases which resulted in an arbitrated settlement. This result supports the chilling effect hypothesis, but only under the assumption that the bargaining pairs in each of the two settlement categories knew, while in mediation, which of the two resolution paths the employer would opt to follow.

Data limitations precluded the Research Team from tracking the concession process from the point of the last mediation session to the date the declaration of impasse was issued. For cases ultimately ending in the strike, the employer must have refused arbitration; thus, the column heading in Table 2 "Certification to Impasse," technically should read "Impasse Declaration" for the striking category of cases. In any event, the estimated mean number of issues in dispute at this juncture suggest that a more rapid rate of concession occurred from the strike cases than for the arbitration cases: more evidence of chilling. In the final analysis, both categories resolved the approximately six issues that were in dispute through the strike or arbitration. In cases settled by the strike this estimate is biased upward since it also contains "back to work" agreements.

Table 2

Mean Number of Issues in Dispute at Various Steps in the Impasse Resolution Process
and Concession Rates by Final Settlement Stage

Final Settlement Stage	Mean Number of Issues in Dispute ¹			Mean Number of Issues in Dispute ¹		
	First Mediation Session (1)	Last Mediation Session (2)	Concession Rate [(2)/(1)-1]	Certification to Impasse(3)	Arbitration Hearing or Strike (4)	Concession Rate [(4)/(3)-1]
Negotiation/Mediation (Number of Paired Cases)	6.79 (33)	5.09 (33)	-25%*	--	--	--
Arbitration (Number of Paired Cases)	8.05 (20)	6.20 (20)	-23%**	6.85 (33)	5.97 (33)	-12.83%*
Strike (Number of Paired Cases)	10.71 (7)	8.00 (7)	-25.33%*	5.50 (6)	5.83 (6)	+16.0%

Differences between paired means significant at $\alpha = .05$.

Differences between paired means significant at $\alpha = .10$.

1. Means represent point estimates of unknown population means.

The Research Team's sample of issues permits the following inferences of note:

1. There exists a ninety-five percent probability that of all cases that went to arbitration in Minnesota's public sector involved between 4.44 and 7.51 unresolved issues, with an estimated mean of 5.97;
2. There exists ninety-five percent probability that of all cases ending in strike in Minnesota's public sector involved between 2.95 and 8.71 unresolved issues, with an estimated mean of 5.83; and
3. Finally, difference in the mean number of issues brought to impasse arbitration by essential (6.00) and nonessential (5.95) units was not statistically significant.

3. Time Lapse in Reaching Settlement:

Tables 3, 4, and 5 contain a number of facts about the amount of time it took Minnesota's public sector industrial relations system to resolve disputes. The diagonal of zeros on each table are the reference points (i.e., steps) against which each of the day counts listed below ought to be compared. For example, reading off Table 3, the statistic 102.24 means that for cases ultimately settled voluntarily and without strike, an estimated average of 102.24 days elapsed between the date the mediation petition was filed and the date of the last mediation session. For similar cases that were certified to impasse arbitration, it took an average of 108.13 days to reach that step from the date mediation was requested, and so forth.

One might ask whether the above time lapses were too long or too short a time. Overall, the negotiations that were settled voluntarily and without strike, but that involved mediation intervention, took an average of 121 days to settle -- a period of nearly four months. A final observation about Table 3 is that from the time impasse was declared to the date of settlement, only 13 days on average elapsed. This implies that hard bargaining brought about a settlement in these cases at least two days prior to the time the employer had to notify the Director of the BMS of

Table 3

Mean Number of Days Elapsed Between Steps for All New Contract Negotiations Involving Mediation Action and Settled by Negotiation/Mediation: 1973-1980 (FY)

<u>Steps</u>	Mean Number of Days ¹ Elapsed From -- <u>(N-Size)</u>		
	Date of Mediation Petition Filed	0	
Date of Last Mediation Session	102.24 (30)	0	
Date Impasse Certified to Arbitration	108.13 (18)	20.41 (12)	0
Date of Settlement	121.18 (166)	39.35* (-)	13.05 (-)

*Derived from know statistics.

1. Means represent point estimates of unknown population means.

its intent to arbitrate or take a strike.

From Tables 4 and 5, it can be seen that settlement delays are much longer than for the class of cases treated in Table 3. In cases resulting in the strike, an estimated average of 200 days elapsed from the date of petition to settlement, representing more than 6.5 months (see Table 5). In cases resulting in arbitration, 240 days elapsed, or nearly eight months (see Table 4). This finding raises serious efficiency questions. Perhaps the disputed negotiations in question, and the industrial relations climate could be calmed more rapidly by squeezing out of the process the delays occurring between the date the impasse was certified to arbitration and the date of the hearing. On average, this interval ran an estimated 73 days; moreover, the Research Team's estimate of nearly 30 days from the date of the close of the arbitration hearing to the date of the arbitration order was nearly three times longer than the ten days mandated by PELRA. Table 5 shows that the typical public sector strike in Minnesota lasted an estimated 27 days -- this is even a shorter period than the time it took to hand down an arbitration order.

4. Narcotic Effect:

In Section III it was argued that if a narcotic effect was implicitly at work in MPELRA, then it would be necessary to have data on repeated uses of impasse arbitration. Only with data on repeat behavior is it possible to test whether the parties are drawn to arbitration because it provides an easier way out of an impasse situation than hard bargaining. Further, it was suggested that arbitration may be a politically more convenient way to go. If it is the arbitration panel's "settlement," then neither union officials, nor the elected public officials are directly "responsible" for the "contract."

In Section III, the Research Team reported a total of 381 impasse arbitrations took place during the 1973-1980 reference period and that the total number of

Table 4

Mean Number of Days Elapsed Between Steps for
All New Contract Negotiations Involving Mediation Action
and Settled by Arbitration: 1973-1980 (FY)

<u>Steps</u>	Mean Number of Days ¹ Elapsed From -- <u>(N-Size)</u>			
	Date Mediation Petition Filed	0		
Date of Last Mediation Session	93.42 (23)	0		
Date Impasse Certified to Arbitration	123.32 (31)	24.69 (21)	0	
Date of Arbitration Hearing	209.89 (31)	115.54 (21)	73.29 (30)	0
Date of Arbitration Order	239.97 (33)	144.76* (--)	102.62 (32)	29.24 (32)

*Derived from know statistics.

1. Means represent point estimates of unknown population means.

Table 5

Mean Number of Days Elapsed Between Steps for All New Contract
Negotiations Involving Mediation Action and Settled by Strike: 1973-1980(FY)

<u>Steps</u>		Mean Number of Days ¹ Elapsed From --		
		<u>(N-Size)</u>		
Date Mediation Petition Filed	0			
Date of Last Mediation Session	N.C.	0		
Date Impasse Declaration Rejected by Employer	N.C.	N.C.	0	
Date Strike Initiated	172.87 (7)	N.C.	N.C.	0
Date Strike Ended	200.08	N.C.	N.C.	27.21 (7)

N.C. = Statistic not computed

1. Means represent point estimates of unknown population means.

exposures to arbitration were 8,076. Both of these values must be adjusted to test for the narcotic effect.

The first test in question involves determining whether the probability that a unit will arbitrate a second time, given that it has arbitrated a first time [i.e., $P(A_1/A_0)$] is statistically different (greater) from (than) the probability that any bargaining unit would face upon commencement of negotiations [i.e., $P(A_0/\bar{N})$]. To determine A_0 , the 90 units that arbitrated at least two or three times must be subtracted from the total of 381. Thus, $A_0 = 291$. This gives the number of units that arbitrated at least one time. To determine \bar{N} , the total number of units that arbitrated two and three times must be subtracted from 8,076. Thus, $\bar{N} = 2,905$. This gives the number of new contract negotiations (exposures) including only those with one arbitration experience. Accordingly, the probability faced by any bargaining unit of arbitrating upon commencement of negotiations was $P(A_0/\bar{N}) = 291/2,905$ or .0368.

Table 6 contains the data needed to estimate the probability of arbitrating a second time, given a previous arbitration (i.e., $P(A_1/A_0)$); and the probability of arbitrating a third time, given two previous arbitrations [i.e., $P(A_2/A_1)$] -- the second test in question. These probabilities are, respectively,

$$P(A_1/A_0) = 81/291 \text{ or } .2784 \quad \text{and}$$

$$P(A_2/A_1) = 9/81 \quad \text{or } .1111 \quad (\text{see Table 7}).$$

Statistical tests of the hypotheses that $P(A_0/\bar{N}) = P(A_1/A_0)$ and that $P(A_1/A_0) = P(A_2/A_1)$ are rejected at the .01 level of significance. This implies that each

Table 6

Number of Bargaining Units Arbitrating
1973-1980 (FY)

<u>Number Arbitrating</u>	<u>Number</u>
One or More Times (A_0)	291 ¹
Two or More Times (A_1)	81
Three or More Times (A_2)	<u>9</u>
Total	381

1. 291 separate bargaining pairs arbitrated settlements under MPELRA during the reference period.

Table 7

Overall and Conditional Probability
Estimates of Arbitrating

<u>Probability of Interest</u>	<u>II*</u>	<u>%*</u>
P (A_0/\bar{N})	.0368	3.68
P (A_1/A_0)	.2784	27.84
P (A_2/A_1)	.1111	11.11

*Each proportion (percentage) is statistically different from the other
at $\alpha = .01$.

of the three arbitration rates were drawn from different distribution of rate means.

More intuitively these results imply that there was a much higher probability of using arbitration to resolve disputes for both first time and second time repeaters than for the entire population of new contract negotiations that were exposed to this impasse resolution techniques. The probability of using arbitration increased substantially after its first use from 3.68 percent to 27.84 percent. This is strong evidence of a narcotic effect.

The conditional probability $P(A_2/A_1) = 11.11$ percent warrants comment. On the one hand, this statistic could be interpreted to mean that the narcotic effect began to wear-off after the unit's second exposure to arbitration. On the other hand, the new contract negotiations that involved a second and third experience at arbitration must have been those which matured toward the end of the 1973-1980 time frame. If this was the case, and if the time trend of falling arbitration rates by nonessential employees (see Section III) is being reflected in $P(A_2/A_1)$, it may be that this statistic was falling for nonessential units (after the strike became a viable employer option) and rising for essential units. Unfortunately, the data files compiled to date do not permit a test of these variant bits of speculation.

Appendix IV

Sample Case

Data Form

Employer Name _____
 Employer Address _____
 Union Name _____
 BMS Case # _____ PERB Case # _____

A. Negotiation Period

Date negotiation initiated (PNN) _____

B. Mediation Period

Date of Mediation request (PPR) _____

Issues settled prior to mediation (BMSF)

Number _____
 Character | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |

Issues open at beginning of mediation (BMSF)

Number _____
 Character | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |

Issues open at termination of mediation (BMSF)

Number _____
 Character | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |

Date of last mediation effort or settled (BMSF) _____

C. After mediation - prior to certification

Issues settled after mediation but prior to certification to arbitration (BMSF)

Number _____
 Character | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |

Issues open at certification to arbitration (BMSF)

Number _____
 Character | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |

Date of settlement (if applicable) (BMSF) _____

Date of certification to arbitration (CDC) _____

D. After certification - prior to hearing

Date arbitrator selected (PCA) _____

Arbitrator's name (PCA) _____

Date of settlement (if applicable) (CDC) _____

Issues to be settled after certification but prior to hearing (BMSF perhaps)

Number _____

E. After hearing - prior to award

Date of hearing (PERBF) _____

Date of settlement (if applicable) (PERBF) _____

Date of previous arbitration (if applicable) (PERBF) _____

Number and character of issues settled after hearing but prior to award (PERBF)

Number _____

Character | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |

F. Awards

Date of award (received) (PCA) _____

Issues decided by arbitrator

Number _____

Character | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |

G. Arbitration rejection uses

Date of strike _____

Date of settlement _____

Issues settled

Number _____

Character | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |

Appendix IV-1

WORK STOPPAGE CLASSIFICATION

To be used to classify bargaining issues by character on the Sample Case Data Form.

Blocks in data collection instrument:

1. General wage changes-
Includes general wage level increases or decreases, and cost of living allowances.
2. Supplementary benefits-
Includes pensions, insurance, holidays, vacations, meal allowance, travel allowance and uniform and tool allowance, and other welfare programs, premium pay and severance, dismissal, and other payments for layoff or separation.
3. Wage adjustments (and structure)-
Includes incentive pay and its administration, job classification and rates, pay computation, retroactivity, downgrading, longevity and extra-curricular salary schedules.
4. Hours of work-
Includes increases or decreases, call-back time, training time, and court time.
5. Other contract matters-
Includes duration, strictly local issues, and unspecified contract matters.
6. Union organization and security-
Includes recognition, union security issues, refusal to sign agreements, efforts to strengthen bargaining position, and other issues relating to union organization and security.
7. Job security-
Includes issues of seniority, layoff, subcontracting, division of work (jurisdiction), changes in machinery, method or technique; job transfer, bumping, change in work location, and job security.
8. Plant administration-
Includes safety, supervision, physical facilities and surroundings; work assignment, workload, and work rules; overtime allocation, discharge and discipline, EEO issues, management rights, and class size.
9. Other working conditions-
Includes issues of arbitration and grievance procedures and unspecified contract violations.
10. Interunion and intraunion matters-
Union rivalry, jurisdiction issues, union administration.
11. Not reported.

Appendix IV-2

LCER
CODING INSTRUCTIONS

<u>Card No.</u>	<u>Space No.</u>	<u>Title</u>	<u>Coding Instructions</u>
1	1 - 4	LCER Case Number	Sequence number only.
1	5	Card Number	Refers to card no. in each case (with three cards per case).
1	6 - 11	BMS Case Number	Number assigned to incident by BMS.
1	12	Employee Type	Essential = 0; Nonessential = 1
1	13	Employer Classification	State = 1; University = 2; County = 3; Municipality = 4; School District = 5; Special Boards, Vocational Schools, School Cooperatives = 6.
1	14	Employee Classification	Police/Sheriff = 1; Fire = 2; Teachers = 3; Others (e.g., Supervisory, Maintenance, Clerical) = 4; Guards = 5; Principal = 6.
1	15	Settlement Stage	Negotiation, prior to mediation = 1; Mediation = 2; After mediation, impasse declared, prior to certification = 3; After certification, prior to hearing = 4; After hearing, prior to award = 5; By arbitration award = 6; By strike settlement = 7.
1	16 - 21	Settlement Date	Year (last two digits)/Month/Day Example: July 12, 1975 = 750712. (Mediation settlement or ratification date.)
1	22 - 26	Location	Employer Zip Code.
1	27 - 28	Union Affiliation	MEA = 01; MFT = 02; Teamsters = 03; AFSCME = 04; Firefighters = 05; Police Federation = 06; Operating Engineers = 07; Service Employees = 08; Independent = 10; LELS = 11; MLEU = 12.
1	29 - 34	Date Negotiation Initiated	see 16 - 21. (Missing data problem.)
1	35 - 40	Date of Mediation Request	see 16 - 21.

<u>Card No.</u>	<u>Space No.</u>	<u>Title</u>	<u>Coding Instructions</u>
1	41 - 51	Issues Settled Prior to Mediation	Enter in space 41 the number of issues in block 1; enter in space 42 the number of issues in block 2; etc. Block designations shown on <u>Work Stoppage Classifications</u> sheet. (Missing data problem.)
1	52 - 62	Issues Open at Beginning of Mediation	see 41 - 51. (Taken from mediator notes.)
1	63 - 73	Issues Open at End of Mediation	see 41 - 51. (Taken from mediator notes.)
1	74 - 79	Date of Last Mediation Effort	see 16 - 21. (Taken from mediator notes.)
2	1 - 4	LECR Case Number	see card 1, 1 - 4.
2	5	Card Number	see card 1, 5.
2	6 - 16	Issues Settled After Mediation but Prior to Certification to Arbitration	see card 1, 41 - 51. (Hiatus between impasse declaration and receipt of employers decision to arbitrate or take a strike.)
2	17 - 27	Issues Open at Certification to Arbitration	see card 1, 41 - 51.
2	28 - 33	Date of Certifica- tion to Arbitration	see card 1, 16 - 21.
2	34 - 39	Date Arbitrator Selected	see card 1, 16 - 21. (Missing data problem.)
2	40 - 50	Issues Settled After Certification but Prior to Arbi- tration Hearing.	see card 1, 41 - 51.
2	51 - 56	Date of Arbitration Hearing	see card 1, 16 - 21.
2	57	For Case Settled in Arbitration, was There a Previous Arbitration Exper- ience?	Yes = 0; No = 1.

<u>Card No.</u>	<u>Space No.</u>	<u>Title</u>	<u>Coding Instructions</u>
2	58 - 63	Date of Previous Arbitrations	see card 1, 16 - 21.
2	64 - 74	Issues Settled After Hearing but Prior to Award.	see card 1, 41 - 51. (Missing data problem.)
2	75 - 80	Receiving Date of Award	see card 1, 16 - 21.
3	1 - 4	LCER Case Number	see card 1, 5.
3	5	Card Number	see card 1, 5.
3	6 - 16	Issues Decided by Arbitrator	see card 1, 41 - 51.
3	17 - 22	Initial Strike Date	see card 1, 16 - 21.
3	23 - 33	Strike Issues Settled	see card 1, 41 - 51.
3	34 - 39	Case History Number	BMS File Number.
3	40 - 45	End Strike Date	see card 1, 16 - 21. (May differ from settlement date by a day or so.)

Missing data convention:

In any field for which data are missing, code a "9" in each place.

Example: Card 1, spaces 6 - 11: If the BMS case number is unknown, code

6 7 8 9 10 11 Card 1, space 12: if the employee type is missing,

9	9	9	9	9	9
---	---	---	---	---	---

code

12
9

Do not code fields which should not be completed; leave these spaces blank.

Example: Card 2, spaces 74 - 79: If the case was settled in mediation, leave this blank, do not code a "9".

Section V

Assessing Minnesota's Public Sector CollectiveBargaining Impact on Wage Costs

Employer representatives and public policy makers are naturally concerned about the cost impact of collective bargaining. There is widespread popular belief, for example, that collective bargaining is responsible for wage and price inflation. Whatever the merits of this belief, many are concerned with these impacts. This concern logically extends to the cost implications of any impasse arbitration technique associated with collective negotiations.

Thus, Minnesota's interest arbitration scheme is subject to these same questions about cost impact. The view exists that arbitrators often award larger wage increases to bargaining unit members than they would have achieved through negotiations with the strike threat alone. Such a view would be particularly pertinent for employee groups where the employer had no options at the final stage of dispute resolution other than submission of the dispute to arbitration. This was the case for employers of essential and supervisory employees under MPELRA. However, the argument, if true, could apply with some force to employers of nonessential employees as well. It may well be that such employers feel that public reaction to a strike and the cessation of services makes the strike alternative impractical even if technically available. If public employers feel such constraints, then arbitration may, for all practical purposes, be compulsory and the cost concerns reappear with renewed force.¹

1. If public employers of nonessential employees did feel such constraints, then the Research Team should observe a sustained level of certifications to arbitration for the nonessential group along with a relatively high incidence of arbitration and low incidence of strikes. However, these trends did not exist over the 1973-1980 period as shown in Section 3. This finding supports the speculation that shortly after MPELRA's 1973 amendment permitting the "limited" right to strike took effect, employers were reluctant to exercise this option. However, as time and economic and political conditions changed, this reluctance began to wane.

1. Points of View about the Cost Impact of Arbitration Awards:

A number of arguments have been made by those who believe arbitration awards are too large to explain this presumed discrepancy. Some argue that arbitrators are simply generous with other people's money. Since some wage increase is nearly always expected, they argue, the arbitrator chooses to err on the side of generosity to employees. A variation on this theme is that arbitrators are inclined to "split-the-difference" and give everyone something. That something might often be a wage increase.

It is also argued that interest arbitrators are often unwilling to incorporate new or novel provisions into agreements. An arbitrator, confronted with a new contract provision proposed by the union, might well decide to find in favor of management on such an issue, but then award a larger wage increase than he otherwise might. If union negotiators sensed such a tendency, one would expect them to search for such issues on proposals for use at bargaining counters. Such a process would result in larger wage increases resulting from arbitration awards than from negotiated agreements.

A final argument relates to arbitrators' notions of equity and fairness. It is argued that arbitrators are more concerned with ideas of equity and fairness than with the hard facts of market reality, ability-to-pay, and bargaining power. Thus, under this argument, arbitrators might make wage awards which seem fair or reasonable according to some criterion (the change over some relevant period in the Consumer Price Index, for example), but which the unit could never achieve

through negotiation and strike.² The result would be larger wage increases under arbitration awards than under negotiated agreements.

As plausible as many of these arguments may be, there exists a counter argument. Some concede that arbitrators have notions of fairness and equity which they apply. However, rather than being general and of widespread application, they tend to be specific and of narrow application. These are tied to the idea of comparability. When confronted with a particular dispute, it is argued, the arbitrator searches for negotiated agreements between parties which are similarly situated to those in the dispute at hand. These, then, become the standard against which arbitrators gauge their decisions. This procedure tends to remove the dispute from the realm of abstract principle. The problem becomes one of deciding which of the bargaining pairs are similarly situated to those in the dispute at hand. Under this procedure one would not expect to observe substantial differences between the wage provisions of arbitration awards and negotiated agreements.

The practical question to be answered, then, is as follows: Are the wage increase provisions of arbitration awards substantially greater than those of negotiated agreements? An answer of "yes" supports the contention that arbitrators

2. It is well known that some bargaining units are strategically located and have economic importance quite beyond what their numbers would indicate. The Air Traffic Controllers come immediately to mind. For these groups arbitration would be a disadvantage; a "fair" award would be less than one they could negotiate. Other groups, though important, are less strategically well placed. The employees of the Library of Congress, for example. For these arbitration could be an advantage; a "fair" award could be substantially better than anything they could negotiate. In practice, the strategically well placed tend to ignore strike bans and arbitration provisions when it is to their advantage. Public employers are, however, more constrained. The upshot is that for these and other reasons arbitration may be invoked only for the strategically less well placed units. Such a result could skew wage increases resulting from awards in favor of weaker units.

are more generous or that they tend to apply some generalized view of equity irrespective of the particular bargaining pair at hand. An answer of "no" casts doubts on these ideas about arbitrator behavior and supports the contention that arbitrators' views of equity are narrowly applied and limited to comparisons of similarly situated bargaining pairs.

2. How the Question is to be Answered:

The answer to this question is not as easily found as might at first be thought. Quantifying the concept of the "wage increase" or "change in wage level" presents some difficulties. A teacher contract, for example, might contain fifteen "lanes," each representing a given level of educational accomplishment for the teacher, and twelve seniority steps within each lane. Each step in each lane has its own salary. The result of negotiations or arbitration, then, is not a wage but 180 wages. Law enforcement contracts present similar though less extreme problems. It is not difficult for the Research Team to point to examples of contracts where these wages changed from year to year at different rates or where some even declined while others increased.

A frequent resolution of this problem has been to select some representative or "key" employee category as a proxy for the entire group. The dangers of such a strategy are readily apparent: The rates of pay change in different ways or even in different directions. Results are then dependent on the rates selected as representative. Furthermore, where rates change in this way the impact of a given agreement or award differ from employer to employer depending on the composition of the workforce. An employer with a senior work force, to give a simple example, will be affected differently by a given award or agreement than an employer with a young or junior workforce, if the wage rates of these two groups change in different ways.

A method of avoiding this and related problems is to compute the total wages paid by the employer for some unit of time (month or year) to bargaining unit employees. This sum will be referred to as the "wage bill" for that particular period. It is computed by multiplying the number of individuals in each step of each lane by the salary applicable to that lane and step.³ These amounts are then summed to get the total wage bill. This number has some attractive features. It is closely related to the "cost impact" concept the Research Team attempted to measure and it has strong intuitive appeal.

It also, however, presents some problems. Foremost among these is that the wage bill is strongly influenced by both the level and composition of the workforce. Just the aging of the workforce lends an upward bias to this number as employees move up the seniority ladder. This problem is aggravated if few junior employees are hired as is the case in many school districts. Furthermore, in a small unit -- one with few employees -- the addition or reduction of even one or two employees can make substantial relative differences in the wage bill. A senior employee who retires from a ten person unit may reduce the wage bill by more than ten percent. Even more extreme examples are available.

The problem, then, is to construct an index of the cost impact of arbitration and negotiation which accurately reflects the total cost concept but is immune to changes in either workforce numbers or composition. The Research Team's solution to this problem was to compute year-to-year changes in the wage bill holding both composition and level of the workforce constant. This computation was made as follows: First, the number of employees in each lane and seniority step category (that is, all the employees who are in a particular lane and in a particular step

3. The Research Team has deliberately adopted the terminology of school negotiations here because it clearly illustrates the situation. The same concepts apply to other employee categories even though the terminology varies.

in that lane) was obtained. Then, the applicable salaries for each lane and step category under both the old and the new contract were gathered. The wage bill under the old contract and the wage bill under the new contract using this same distribution of employees by lane and step category was then computed. The result is two wage bills, each using the same distribution of employees by lane and step category, one for the old contract and one for the new contract. A comparison of these two wage bills, then, allows a comparison of cost impact of the new agreement or award while holding the number and composition of the workforce constant. This number will be referred to as the adjusted total wage bill.

Since the composition and size of the workforce changes from year to year, the use of one size-composition pattern, or staffing pattern would soon result in unacceptable departures from the cost impact concept. The Team's solution to this problem was to periodically update the staffing pattern. Thus, each wage bill comparison was computed using the staffing pattern which was nearest in point of time (and also available) to the moment when the negotiated or arbitrated wage change took effect. The result, then, is a sequence of year-to-year comparisons, each made holding the staffing pattern constant at some point in time that approximated the time when the wage change took effect.

These comparisons are represented as percentage changes. Thus, a five percent increase in the adjusted wage bill (that is, holding the staffing pattern constant) may be interpreted as a pure five percent increase in wage costs abstracting from the costs associated with changes in either the number or composition of the workforce. It should be noted that any year-to-year increase in the total wage bill may be decomposed into an increase in wage costs as indicated above and an increase

in costs associated with changes in the staffing pattern.⁴ If an employer computes a percentage increase in his wage costs, then it is the sum of these two cost impact categories which he measures. It is important to emphasize that there is no assumption here that staffing patterns in fact remain constant. This is merely a device for separating the cost impact of a change in wages from the cost impact of changes in staffing patterns.

Computations have been made for two employee groups and two geographical locations. The two locations are Economic Development Region 5 and the Seven County Metropolitan Area. The two employee categories are teachers and law enforcement officers (police officers and deputy sheriffs).

A description of the sample and its characteristics is given below. What follows next is a discussion of the specific computational procedures for the employee groups. These varied due to differences in the patterns of their contracts and the legal requirements of collective bargaining. The teachers, for example, have been required since 1975 to negotiate or arbitrate two year agreements. For the purpose at hand, then, the relevant comparisons began with the 1977 negotiation round which resulted in contracts for academic years 1977-78 and 1978-1979. The comparison ends with the 1979 negotiations which resulted in contracts for academic years 1979-1980 and 1980-1981. Thus, four comparisons were made: 1977 with 1976; 1978 with 1977; 1979 with 1978; and 1980 with 1979. However, the only available staffing patterns for teachers were from the period just prior to the 1977 and 1979 negotiations. Staffing patterns for the beginning of the second year of each contract term were generally missing. The Research Team's

4. The Research Team did not in fact carry out this decomposition because some of the required data were unavailable.

solution to this problem was to advance each employee one step in his lane until he reached the top step. Thus, the second year staffing pattern is in most cases the first year pattern aged one year.

This procedure has two disadvantages. The first is that it biases the age distribution of the workforce upwards since it ignores the presence of new employees whose first year of employment is the second year of the contract. This upward bias seriously affects the total wage bill computation and associated percentage change calculations. For these reasons, these figures are not reported. The bias introduced into the percentage change in the adjudicated wage bill is less serious, however. This is true because the problem staffing pattern is used to compute the wage bill under both the old and new contracts. Thus, both sides of the fraction used to compute the percentage increase in the adjusted wage bill is augmented by a similar amount. It is argued that this upward bias in both figures tend to cancel out.

The second problem is that this procedure ignores lane changes. An employee may move from one lane to another during some period. Such a change would not be included in the second year staffing pattern. Since lane changes are nearly exclusively upward this would tend to bias downward staffing patterns for the second year. This bias tends to be cancelled out in the computations of percentage changes in the adjusted wage bill for reasons similar to those given above.

The computations for police and sheriff units were carried out in a way similar to those described for school districts. However, staffing pattern reports were more generally available for this group. Thus, the problems with biased estimates do not appear. Law enforcement employee data were gathered for the four year period 1977, 1978, 1979, and 1980. This allowed three comparisons: 1978 to 1977; 1979 to 1978; and 1980 to 1979.

Table

Results of Teacher-School Board Collective Bargaining in Minnesota
 Percentage Change in Total Wage Bill and Adjusted Total Wage Bill by Year and Region¹

	All School Districts			Districts Located in Region 5			Districts Located in the Twin Cities		
	All %	Arb %	Non Arb %	All %	Arb %	Non Arb %	All %	Arb %	Non Arb %
<u>1977/1976</u>									
Total Wage Bill	8.50	8.82	8.37	9.90	9.44	10.08	7.00	5.68	7.09
N	27	6	21	14	5	9	13	1	12
Adjusted Total Wage Bill	5.00	4.96	5.00	5.50	5.14	5.75	4.40	4.08	4.44
N	27	6	21	14	5	9	13	1	12
<u>1978/1977</u>									
Total Wage Bill	--	--	--	--	--	--	--	--	--
N	--	--	--	--	--	--	--	--	--
Adjusted Total Wage Bill	3.20	3.57	3.15	3.20	3.75	3.18	3.10	2.69	3.13
N	27	6	21	14	5	9	13	1	12
<u>1979/1978</u>									
Total Wage Bill	12.09	8.79	12.62	15.07	11.35	15.34	8.28	7.93	8.40
N	27	4	23	15	1	14	12	3	9
Adjusted Total Wage Bill	6.92	6.02	7.08	8.26	9.11	8.20	5.24	4.99	5.32
N	27	4	23	15	1	14	12	3	9
<u>1980/1979</u>									
Total Wage Bill	--	--	--	--	--	--	--	--	--
N	--	--	--	--	--	--	--	--	--
Adjusted Total Wage Bill	4.63	4.82	4.60	5.36	6.57	5.27	3.74	4.24	3.57
N	27	4	23	15	1	14	12	3	9

¹Proportions represent point estimates of unknown population proportions.

Table 2

Results of Law Enforcement Officers Collective Bargaining in Minnesota
 Percentage Change in Total Wage Bill and Adjusted Total Wage Bill by Year and Employee Category ¹

	All Employee Classes			Police			Sheriffs' Deputies		
	All %	Arb %	Non Arb %	All %	Arb %	Non Arb %	All %	Arb %	Non Arb %
<u>1978/1977</u>									
Total Wage Bill	18.51	17.34	19.39	17.64	17.93	17.34	21.55	11.76	23.72
N	49	21	28	38	19	19	11	2	9
Adjusted Total Wage Bill	9.58	10.42*	8.94	9.95	10.85*	9.05	8.29	6.42	8.71
N	49	21	28	38	19	19	11	2	9
<u>1979/1978</u>									
Total Wage Bill	16.62	27.43	16.17	16.22	8.58	16.43	17.87	46.27**	15.29
N	50	2	48	38	1	37	12	1	11
Adjusted Total Wage Bill	7.99	10.99	7.87	7.70	8.00	7.69	8.95	13.98	8.49
N	50	2	48	38	1	37	12	1	11
<u>1980/1979</u>									
Total Wage Bill	16.83	6.57*	17.88	16.93	6.05*	18.17	16.59	8.66	17.15
N	54	5	49	39	4	35	15	1	14
Adjusted Total Wage Bill	8.80	9.78	8.70	8.27	7.83	8.32	10.20	17.57*	9.68
N	54	5	49	39	4	35	15	1	14

*Difference is significant at $\alpha = .05$.

**Difference is significant at $\alpha = .01$.

¹Proportions represent point estimates of unknown population proportions.

Table

Results of Law Enforcement Officers Collective Bargaining in Minnesota
 Percentage Change in Total Wage Bill and Adjusted Total Wage Bill: Metropolitan Area by Occupation¹

	Metropolitan Area All Employee Classes			Metropolitan Area Police			Metropolitan Area Sherrifs' Deputies		
	All %	Arb %	Non Arb %	All %	Arb %	Non Arb %	All %	Arb %	Non Arb %
<u>1978/1977</u>									
Total Wage Bill	18.70	18.21	19.24	17.93	17.93	17.92	23.79	23.53	23.85
N	38	20	18	33	19	14	5	1	4
Adjusted Total Wage Bill	9.71	10.63*	8.69	10.03	10.84*	8.92	7.58	6.47	7.86
N	38	20	18	33	19	14	5	1	4
<u>1979/1978</u>									
Total Wage Bill	16.02	--	16.02	16.28	--	16.28	14.29	--	14.29
N	38	0	38	33	0	33	5		5
Adjusted Total Wage Bill	7.58	--	7.58	7.51	--	7.51	8.04	--	8.04
N	38	0	38	33	0	33	5		5
<u>1980/1979</u>									
Total Wage Bill	15.61	1.28	16.39*	16.75	1.28*	17.72	7.83	--	7.83
N	39	2	37	34	2	32	5		5
Adjusted Total Wage Bill	8.14	7.67	8.17	8.24	7.67	8.28	7.50	--	7.50
N	39	2	37	34	2	32	5	0	5

*Difference is significant at $\alpha = .05$.

¹Proportions represent point estimates of unknown population proportions.

Table 4

Results of Law Enforcement Officers' Collective Bargaining in Minnesota
 Percentage Change in Total Wage Bill and Adjusted Total Wage Bill: Region 5 by Occupation¹

	Region 5 All Employee Classes			Region 5 Police			Region 5 Sherrifs' Deputies		
	All %	Arb %	Non Arb %	All %	Arb %	Non Arb %	All %	Arb %	Non Arb %
1978/1977									
Total Wage Bill	17.88	0	19.67	15.71	--	15.71	19.68	0	23.62
N	11	1	10	5	0	5	6	1	5
Adjusted Total Wage Bill	9.13	6.37	9.40	9.41	--	9.41	8.89	6.37	9.39
N	11	1	10	5	0	5	6	1	5
1979/1978									
Total Wage Bill	18.51	27.43	16.72	15.81	8.58	17.62	20.43	46.27*	16.12
N	12	2	10	5	1	4	7	1	6
Adjusted Total Wage Bill	9.32	10.99	8.98	8.93	8.00	9.16	9.59	13.98	8.86
N	12	2	10	5	1	4	7	1	6
1980/1979									
Total Wage Bill	20.00	10.10	22.48	18.08	10.83	22.92	20.96	8.64	22.93
N	15	3	12	5	2	3	10	1	9
Adjusted Total Wage Bill	10.52	11.19	10.35	8.44	8.00	8.74	16.55	17.57	10.89
N	15	3	12	5	2	3	10	1	9

*Difference is significant at $\alpha = .05$.

¹Proportions represent point estimates of unknown population proportions.

These computations were made for each case in the school district and law enforcement agency samples. Reported are the means of these data for the complete sample and for various subcategories. It should be noted that these results are unweighted by bargaining unit size or similar variables. Thus, a very large police force or sheriff's department in the sample counts as much as a very small one. The unweighted mean was chosen by the Research Team because it was thought that this would produce a statistic which best represented the cost impact of percentage wage changes on individual public employers. School district data are reported in Table 1; law enforcement agency data are reported in Table 2, Table 3, and Table 4.

3. Sample:

Before discussing the results, the sample which was used in the research is described. It was not feasible to generate a sample large enough to be representative of the entire state and still provide detailed local and occupational information. The alternative was to intensively sample contrasting areas. This would provide a sample size large enough to furnish local detail, but not so large as to be unmanageable. Contrasting areas were selected for sampling so that their differences would highlight the range within which the data falls and provide estimates of that range.

The two areas sampled were Economic Development Region 5 and the Seven County Twin City Metropolitan Area. These areas are widely divergent in terms of population, population density and income per capita. Some important differences are outlined in Table 5. In addition to the items in this table, of course, these two areas provide a basis for studying urban-rural differences affecting collective bargaining.

The Team has drawn a total of four samples from these two regions. Two samples, one from each region was drawn from the population of school districts and they

Table 5

Comparison of Economic Development Regions
With the Seven County Metropolitan Area*

		<u>Region 5</u>	<u>Seven County Metropolitan Area</u>
Population	(7/1/75)	281,471	2,010,841
Population Per Square Mile	(7/1/75)	15.14	443.00
Local Government Employment	(1972)	8,369	65,055
Public School Enrollment	(1975)	67,976	444,208
Per Capita Income	(1974)	\$3,511	\$5,206
Educational Expenditure Per Capita	(1971-1972)	\$267	\$216

*Source: U.S. Department of Commerce, Bureau of the Census. County and City Data Book, 1977, (A Statistical Abstract Supplement), Washington (1978).

focus on collective bargaining between public school teachers and their employers. These are taken to represent the class of nonessential employees. They also, however, represent somewhat less than half the mediation petitions filed by non-essential employees during the period 1973 through 1980 and so are an important category standing alone. A list of the school districts sampled is in Table 6.

Similarly, two samples were drawn for law enforcement employees. These were taken to represent the broader class of "essential" employees. Again, however, they are, themselves, an important class. The study examines the bargaining and arbitration results of municipal police bargaining units and of sheriff's deputies. A complete list of the law enforcement agencies included in the two samples is in Table 6. It should be noted that certain supervisory employers are "deemed" essential by MPELRA and hence were classified by the Team in this category. Many of these employees have little in common with employees classified as essential because of the "emergency" or "public health and safety" aspects of their employments. The results of this study with respect to essential employees may have little applicability to these supervisory employees.

The original design of the study called, with two exceptions, for a 25 percent random sample of these populations. The two exceptions related to the oversampling of specific groups. The Team sought to include all bargaining units in the target groups with arbitration awards during the period of the study. Also, the team sought to include every county sheriff's department in each area in the sample. Review of Table 6 indicates the Research Team was successful in its goal of achieving a 25 percent sample in all cases with the exception of that of police departments in Region 5. The Team was also not successful in obtaining a complete enumeration of county sheriff's departments or of units with arbitration awards. These samples are, however, large enough to adequately represent the populations at hand.

Table 6

Description of the LCER Sample of School
Districts and Law Enforcement Agencies

Economic Development Region 5

This includes the counties of Aitkin, Becker, Beltrami, Cass, Crow Wing, Hubbard, Itaska, Koochiching, Morrison, Ottertail, Todd, and Wadena.

The school district sample included the following school systems:

Bertha-Hewett	Motley
Browerville	Pillager
Clarissa	Parkers Prairie
Coleraine	Red Lake Falls
Crosby Ironton	Staples
Grand Rapids	Walker
International Falls	

There are a total of fifty-six school districts in Region 5, of which thirteen, or 25%, are represented in the sample.

The law enforcement agencies included in the sample are:

Aitkin County Sheriff
Beltrami County Sheriff
Cass County Sheriff
Crow Wing County Sheriff
Hubbard County Sheriff
Itaska County Sheriff
Koochiching County Sheriff
Morrison County Sheriff
Ottertail County Sheriff
Todd County Sheriff
Wadena County Sheriff

This is a 100% representation of County Sheriff's departments in Region 5.

The following Region 5 police departments are represented:

Brainerd	International Falls
Detroit Lakes	Wadena
Grand Rapids	

There are sixty-four police departments in Region 5, of which fifty-eight are organized. The sample represents 8.62% of the organized police departments in this region.

Seven County Metropolitan Area

This includes the counties of Anoka, Carver, Dakota, Hennepin, Ramsey, Scott, and Washington.

Table 6 Continued

The following metropolitan area school districts were included in our sample:

Bloomington	Minneapolis
Burnsville	Minnetonka
Chaska	St. Louis Park
Edina	St. Paul
Farmington	Shakopee
Hastings	White Bear Lake
Hopkins	

This is fourteen or 29.8% of the forty-seven school districts in the metropolitan area.

Law enforcement agencies in the sample included:

Anoka County Sheriff
 Dakota County Sheriff
 Hennepin County Sheriff
 Scott County Sheriff
 Washington County Sheriff

This is five or 71.4% of the seven county sheriff's departments in the metropolitan area.

The following metropolitan area police departments are represented:

Bayport	New Hope
Blaine	North St. Paul
Champlin	Oakdale
Chaska	Oak Park Heights
Columbia Heights	Orono
Coon Rapids	Prior Lake
Crystal	Robbinsdale
Deephaven	Rosemount
Edina	Roseville
Farmington	St. Louis Park
Fridley	St. Paul
Golden Valley	Shakopee
Hopkins	South St. Paul
Inver Grove Heights	Stillwater
Maplewood	West St. Paul
Medina	Woodbury
Minneapolis	White Bear Lake
Mounds View	

This is thirty-five or 38% of the ninety-two police departments in the metropolitan area.

Appendix V-1 contains the sample case keypunch format, coding instructions and variable names used in processing the sample data referenced in this section.

4. Wage Cost Comparisons:

The results are contained in Tables 1, 2, 3, and 4. Each reports for a particular group percentage changes in the total wage bill -- the percentage range in total salary outlays -- and the percentage change in the adjusted total wage bill -- the total wage bill adjusted to hold the size and composition of the work force constant. These are then broken down into regional and occupational subcategories. Beneath each statistic is the number of cases upon which its calculation is based. Each pair of rows is based on one year-to-year comparison, 1977 to 1976, 1978 to 1977, 1979 to 1978 and 1980 to 1979. Within each group the mean percentage increase in total wage bill and adjusted total wage bill for negotiated and arbitrated contracts is furnished. The asterics indicate statistically significant differences between the means.

Table 1 presents data from the school district sample. Note the differences in the percentage changes in the total and adjusted wage bill. The 1977/1976 comparison, for example, yields an estimated 8.5 percent increase in the total wage bill, but only a five percent increase in the adjusted wage bill. Furthermore note that in this same comparison period the mean of the total wage bill for arbitrated settlements exceeded that for negotiated settlements while just the reverse was true for the adjusted wage bill. Review of the other tables will indicate that this is not an unusual occurrence. It should be noticed that in no case on this table are differences between mean percentage increases in total wage bills or mean adjusted total wage bills significant at $\alpha = .05$. The evidence of this table does not support the hypothesis that arbitrators were awarding greater wage increases than were being negotiated by similar bargaining units.

Table 2 presents results from the law enforcement agency samples. Note here that in three of the nine possible cases the mean of the percentage increase in the adjusted total wage bill for arbitrated settlements is significantly greater than the mean for the negotiated settlements. This discrepancy persists with the police group although it disappears in the deputies group. Review of Table 3 shows that this difference extended to the metropolitan police group. These findings constitute one example of a case where it may be concluded that arbitrators made larger awards than were obtained in negotiation by similar groups. The third case -- sheriff's deputies in 1980/1979 -- is based on one case only and is not very persuasive.

In neither Table 2, Table 3 or Table 4 does one find significant differences between means of percentage increases in the adjusted total wage bill beyond those already mentioned. Of the twenty-seven possibilities only five displayed significant differences at $\alpha = .05$. Four of these related to the police arbitrations discussed above. In general, this evidence does not support the hypothesis that arbitrators were handing down awards with larger wage increases than were otherwise being negotiated.

These results may be interpreted as support for the view that arbitrators made their awards based on specific comparisons to other similarly situated groups.

The statistics in this section reveal some similarity between negotiated and arbitrated settlements. This similarity is more apparent in looking at the aggregated series -- those for all employees -- where the estimates are more stable. One cannot help conclude from these statistics that interunit comparisons have been a strong influence on arbitrators.

Appendix V

LCER

CODING INSTRUCTIONS AND
VARIABLE NAMES

<u>Card No.</u>	<u>Space No.</u>	<u>Variable Name</u>	<u>Description</u>
1	1 - 3	ISD	School district number.
1	4	LCER	Refers to card no. in each case (with three cards per case).
1	6 - 11	N77	Teachers employed in 1977 (MSBA front sheet).
1	12 - 17	N76	Teachers employed when BC166 was computed (MSBA back sheet).
1	18 - 23	N79	Teachers employed in 1979 (MSBA front sheet).
1	24 - 29	N78	Teachers employed when BC188 was computed (MSBA back sheet).
1	31	ARB77	Yes = 1; No = 0. A strike in 77 is coded "2".
1	33	ARB79	Yes = 1; No = 0. A strike in 79 is coded "2".
1	35	UNAF	MEA = 1; MFT = 0.
1	37	LOC	Region 5 = 1; Twin Cities = 0.
2	1 - 3	ISD	see card 1, 1-3.
2	4	LCER	see card 1, 4.
2	5 - 12	SB176	School district total salary computation for academic year 76-77. Computation made in 1977.
2	13 - 20	SB177	School district total salary computation for academic year 77-78. Computation made in 1977 using estimated staffing data.
2	21 - 28	SB178	School district total salary computation for academic year 78-79. Computation made in 1977 using estimated staffing data.

<u>Card No.</u>	<u>Space No.</u>	<u>Variable Name</u>	<u>Description</u>
2	29 -36	SB278	School district total salary computation for academic year 78-79. Computation made in 1979.
2	37 - 44	SB279	School district total salary compensation for academic year 79-80. Computation made in 1979 using estimated staffing data.
2	45 - 52	SB280	School district total salary compensation for academic year 80-81. Computation made in 1979 using estimated staffing data.
2	53 - 60	BC166	MSBA back sheet data on school district total salary compensation for academic year 76-77.
2	61 - 68	BC167	LCER school district total salary compensation estimate for academic year 77-78 holding to 76-77 staffing pattern.
2	69 - 76	BC177	LCER school district total salary compensation estimate for academic year 77-78 after aging the 76-77 staffing pattern one (1) year.
3	1 - 3	ISD	see card 1, 1-3.
3	4	LCER	see card 1, 4.
3	5 - 12	BC178	LCER school district total salary compensation estimate for academic year 78-79 holding to 77-78 staffing pattern.
3	13 - 20	BC288	MSBA backsheet data on school district total salary compensation for academic year 78-79.
3	21 - 28	BC289	LCER school district total salary compensation estimates for academic year 79-80 holding to 78-79 staffing pattern.
3	29 - 36	BC299	LCER school district total salary compensation estimate for academic year 79-80 after aging 78-79 staffing pattern one (1) year.

<u>Card No.</u>	<u>Space No.</u>	<u>Variable Name</u>	<u>Description</u>
3	37 - 44	BC290	LCER school district total salary compensation estimate for academic year 1980-81 holding to 78-79 staffing pattern estimate.

Appendix V-1

LCER

CODING INSTRUCTIONS AND VARIABLE
NAMES

<u>Card No.</u>	<u>Space No.</u>	<u>Variable Name</u>	<u>Description</u>
1	1 - 3	LCER	Identification No. (see code sheet).
1	4	--	Card Number = 1
1	5	LOC	Twin Cities = 0; Region #5 = 1.
1	6	EECLASS	Sheriff = 0; Police = 1.
1	7	UNAF	Teamsters = 1; Federation or Association = 2; LELS = 3; MLEU = 4; Other = 5.
1	8	ARB77	If Arbitrated: No = 0; Yes = 1.
1	9	ARB78	If Arbitrated: No = 0; Yes = 1.
1	10	ARB79	If Arbitrated: No = 0; Yes = 1.
1	11	ARB80	If Arbitrated: No = 0; Yes = 1.
1	12 - 17	SETDA71 . . . SETDA73	Date Contract Signed or Award Received by PERB: Year = 1; Month = 2; Day = 3 (7 References Contract Year 77)
1	18 - 23	SETDA81 . . . SETDA83	see card 1, 12-17; 8 re. 78.
1	24 - 29	SETDA91 . . . SETDA93	see card 1, 12-17; 9 re. 79.
1	30 - 35	SETDA01 . . . SETDA03	see card 1; 12-17; 0 re. 80.
2	1 - 3	ID	Identification No., see card 1, 1-3.
2	4	--	Card Number = 2.
2	5 - 10	NS77	LCER Total Salary Compensation Estimate for 77.
2	11 - 16	NS78	LCER Total Salary Compensation Estimate for 78 Holding to 77 Staffing Pattern.
2	17 - 22	NS88	LCER Total Salary Compensation Estimate for 79 Holding to 78 Staffing Pattern.

<u>Card No.</u>	<u>Space No.</u>	<u>Variable Name</u>	<u>Description</u>
2	23 - 28	NS89	LCER Total Salary Compensation Estimate for 79 Holding to 78 Staffing Pattern.
2	29 - 34	NS99	LCER Total Salary Compensation Estimate for 79.
2	35 - 40	NS90	LCER Total Salary Compensation Estimate for 80 using 79 Staffing Pattern.
2	41 - 46	NS00	LCER Total Salary Compensation Estimate for 80.
2	47	CY77	1 = First Year of 77 Arbitration Award; 0 = Second Year of 76 Arbitration Award.
2	48	CY78	see card 2, 47 with respective years 79, 78.
2	50	CY80	see card 2, 47 with reference years 79, 80.

Appendix V-2

Minnesota's Last-Best-Offer Experiment

Considerable attention has been given in Section's 3 and 4 of this report to the problem of the "chilling" effect and the "narcotic" effect which may arise when compulsory interest arbitration is used as the final stage of dispute resolution. One solution to these problems is to make the arbitration procedure itself more threatening to the parties. One proposal for accomplishing this is to adopt a last-best-offer procedure. Such a procedure constrains the arbitrator to selecting the last position of only one of the parties. This procedure automatically assures, so the theory goes, that someone will be a big loser. Each party is thus motivated to concede, both to avoid arbitration and to make his position more attractive to a prospective arbitrator.

Beginning with Fiscal Year 1980, Minnesota has implemented a last-best-offer by issue procedure on an experimental basis. At the time of data collection, only six arbitration awards were available for study. Of these, the BMS had closed its files on only three. Consequently, the data are sketchy and incomplete. It is impossible to say anything at this time about the effects of the last-best-offer by issue procedure on the bargaining process.

Because of these data limitations and the recency of the procedure, it was also impossible to compute percentage increases in the adjusted total wage bill in the same rigorous way as in Section V. However, the Research Team has endeavored to put together some information relating to the cost impact of last-best-offer by issue arbitration structures. This information was gathered from arbitration awards and from contracts with public employers. In all cases, an attempt was made to adjust the total wage bill change associated with the arbitration award for changes in the composition and size of the work force. However, the

Team believes that this has not been accomplished as successfully with respect to these cases as with those reported in Section V. For this reason these data are not reported in Section V, but are confined to this appendix.

The six last-best-offer-by-issue arbitrations were:

Sauk Rapids School District (ISD#47) Principal's Association.

South Washington County Schools (ISD#833) and Principal's Association.

Virginia Public Safety Commission and General Drivers Union Local 346.

City of Minneapolis and Police Officers Federation.

Cass County and Law Enforcement Labor Services (Sheriff's Department).

Lyon County and American Federation of State, County and Municipal Employees Council No. 65, Local 3118.

The results are in the attached Table 7. These data are difficult to interpret given the sample and data limitations mentioned above and the lack of comparison data. Significantly, it appears that the pattern of law enforcement officers receiving greater increases than school district employees seems to be continued. Both the school district employees and law enforcement employees appear to have received greater increases than in the past (see Section V). However, even if this is generally true, the economic conditions of this period would seem to dictate different settlements.

These data have been reported because of the interest in last-best-offer arbitration structures. However, it is stressed they must be interpreted with extreme caution. This report has established the presence of a chilling effect and, in particular, a narcotic effect in the operation of the conventional arbitration structure in Minnesota (see Section III and Section IV). Interest in last-best-offer schemes as a method of avoiding these problems is therefore substantially increased.

Table 7

Preliminary Results of the Use of Last-Best-Offer Arbitration
in Minnesota

Percentage Increase in Estimated
Adjusted Total Wage Bill
by Occupation

	All Cases %	School Districts %	Law Enforcement %
1980/1979			
Adjusted Total Wage Bill	9.25	7.50	10.13
N	6	2	4

Whether last-best-offer schemes will in fact stimulate hard bargaining, concession and agreement is an important question from the point of view of public policy. The Research Team is not now able to answer this question; it awaits further research.

Section VI

Conclusions and Summary of Major Findings

This report is based on the findings of several separate studies. In combination, these studies served to portray critical aspects of the operation of public sector collective bargaining in Minnesota. The state's first comprehensive public sector collective bargaining statute was signed into law in 1971. Two years later, in 1973, a number of important amendments to the basic law were introduced. The most significant among these amendments dealt with the manner in which bargaining impasses would be resolved. In a nutshell, impasses reached between the representative of essential employees and their employer representative were to be resolved through compulsory impasse arbitration; whereas, negotiating impasses reached between nonessential employees and their employer were to be resolved through either impasse arbitration or the strike. Deciding which of these two options should be selected as the impasse resolution technique was left to employer choice. These impasse resolution schemes and other dimensions of the statute, specifically those having to do with the appropriateness of bargaining unit structure, remained in force until 1980 when the basic public sector law was again the subject of major revision.

1. Overview: The studies underlying the findings contained herein deal with the state's public sector collective bargaining operations during the eight year period when the statute remained relatively stable. That is, from FY1973 through FY 1980. Thus, in describing and measuring various dimensions of bargaining, arbitration and strike activities during these years, the Research Team proceeded as if the public sector collective bargaining policy currently in effect and the pre-FY1980 version of MPELRA are separate and distinct systems of industrial relations. The Research Team, then, provided a description and

evaluation of collective bargaining conduct in Minnesota prior to the 1980 amendments. Naturally, previous collective bargaining practices and behaviors may portend future practices and behaviors in those areas where the 1980 policy changes did not effect a system change.

The first study undertaken by the Research Team involved the development of a classification system that could be used to adequately reflect the nature and volume of public sector collective bargaining activity which transpired in Minnesota on a year-to-year basis from FY1973 through FY1980. With this system in place, data were gathered to fill in the classification system's categories. The accounting effort involved in this aspect of the study was enormous. Estimates were made of the number of bargaining pairs having contracts open for negotiation on an annual basis. Similar data were compiled on the number of annual mediation petitions filed; cases settled by mediation; cases for which certifications to impasse were issued; cases settled by impasse arbitration; and cases settled by strike. This is only a partial listing. Further, aggregate counts were broken down by employer and employee categories. Tabulations of counts on these variables and the associated analysis appeared in Sections II and III of the report. These data provide a quantitative history of collective bargaining under MPELRA during the reference period. Some of the evaluative issues treated in these sections were as follows:

1. The extent to which third-party interventions were required in reaching new settlements;
2. The extent to which mediation was an effective step in resolving impasses; and
3. The extent to which MPELRA's impasse arbitration provisions "chilled" the parties initiative to reach voluntary, pre-arbitration settlements.

The second study undertaken by the Research Team involved drawing a state-wide random sample of public sector bargaining cases from a chronological list of mediation petitions filed with the BMS over the entire reference period. With this sample of 220 cases, the Research Team inspected the file maintained on each of these cases. At this phase of this study, information was systematically collected on variables like the following:

- a. The date the mediation petition was filed;
- b. The date of the first mediation session (if applicable);
- c. The date of the last mediation session;
- d. The date the case was certified to impasse arbitration (if applicable);
- e. The date of the arbitration hearing;
- f. The date of the arbitration award;
- g. The date of the strike (if applicable); and
- h. The date of strike settlement.

Furthermore, information was collected on the "stage of settlement" per case, and on the number and type of issues at impasse as an unresolved case moved from stage-to-stage under MPELRA's impasse resolution sequence. Tabulations of means from this sample and the associated analysis based on these data appeared in Section IV of the report. Some of the questions and evaluatory issues considered in this section included the following:

1. The amount of time that elapsed from the date the mediation petition was filed to the date of the first hearing -- for those cases involving mediation intervention;
2. The mean number of days that elapsed between filing for mediation and settlement, broken down by settlement stage: (a) negotiation/mediation; (b) arbitration; or (c) strike.

3. The time lapse between certification to impasse and the arbitration hearing;
4. The time lapse between the arbitration hearing and issuance of the arbitration order;
5. The mean length of strikes;
6. The mean number of issues at impasse at the first and last mediation session, broken down by settlement stage; and
7. The mean number of issues decided by arbitration panels and strikes.

Finally, this section presented the results of a test designed to measure (evaluate) the extent to which MPELRA transmitted the negative affects of causing dependence on the use of impasse arbitration -- the "narcotic" effect.

The third study undertaken by the Research Team involved drawing four random samples. First, two geographic areas were designated to represent a "rural" and "urban" contrast within the state. Then, within each area the population of (1) school districts, and (2) police and sheriff departments were identified. For each region, a sample of school districts, and law enforcement departments was drawn. The school districts sampled were requested to furnish the Research Team with information on contractual salary agreements and staffing patterns for the 1976/1977 school year, and for the 1977-1979 and 1979-1981 school biennia. The law enforcement departments sampled were requested to provide similar information for the years 1977, 1978, 1979 and 1980. This phase of the study was followed by the arduous task of computing a salary index designed to measure the year-to-year percentage increase in salaries, holding staffing patterns constant. This index was constructed to test the statistical hypothesis that negotiated and arbitrated mean percentage increases do not differ. Section V contains tabulations of mean percentage wage increases, and the tabulation analyses and findings associated with these sample data. The

aforementioned hypothesis was tested by employee category and region.

In total, this report contains the results of (at least) three separate studies. What follows is a brief listing of the findings and conclusions found in the report's text. The latter are organized on a section-by-section basis to facilitate reference to the body of the report.

2. Summary of Conclusions and Findings:

Section II. Negotiation Notices: Assessing Compliance

1. Negotiation notices filed with the BMS grossly understate the actual number of parties whose contracts were being negotiated.
2. Table 3 contains estimates made by the Research Team of the number of contract negotiations that occurred annually between FY1973 and FY1980. Over the entire period, it was estimated that 8,076 negotiations occurred which only 4,391 negotiation notices were filed.
3. An average of 46 percent of the parties to negotiations did not file negotiation notices between FY1973 and FY1980.

Section III. Negotiation, Mediation, Arbitration, and Strike Activity: Assessing Effectiveness

1. Between FY1974 and FY1980, there was virtually no trend rate of growth in the number of new contracts open for negotiation. The average annual number of public sector collective bargaining contracts negotiated each year was 1,010 for the reference period.
2. Between FY1973 and FY1980, an average of 56 percent of the negotiating parties did not require third party intervention or strike in reaching voluntary settlements.

3. Between FY1973 and FY1980, an average of 44 percent of the negotiating parties filed petitions for mediation assistance. This percentage translates into an average of 441 mediation petitions filed per year.
4. Over the reference period, from among those petitioning for mediation an average of 21 percent actually reached negotiated settlements prior to a mediation session.
5. From FY1973 through FY1980, an average of 80 percent of the total number of the petitioning parties participated in one or more mediation sessions. This percentage translates into an average of 275 active BMS mediation cases per year.
6. Between FY1973 and FY1980, an average of 62 percent of all mediation petitions filed resulted in mediated settlements at this stage alone. This percentage is increased to 78 if the mediation petitions that did become "active" cases are discarded. By any standard, this is an excellent mediation settlement rate.
7. Between FY1973 and FY1980, 573 certifications to impasse arbitration were issued, representing about 7 percent of all negotiations and an average of 67 certifications issued per year. The number of certifications issued per year increased at a trend rate of about 3 percent per year.
8. Over the reference period, about one-third of all cases certified to impasse arbitration resulted in pre-arbitration settlements. This pattern increased at a trend rate of 5.46 percent per year. Thus, petitioning for arbitration is increasingly being used by the parties as a "tactical threat" designed to bring about concessions and a voluntary settlement.

9. Over the reference period, about two-thirds of all cases certified to impasse arbitration resulted in arbitration hearings and orders. This proportion represents a total of 381 arbitrations or 4.72 percent of the exposure population of negotiations. On an annual average basis, there were 48 arbitrations per year.
10. With only 4.72 percent of the total number of negotiations conducted between FY1973 and FY1980 ending in impasse arbitration, one cannot conclude that, in general, the state's two impasse arbitration schemes served to discourage or "chill" the incentive to reach voluntary, bi-lateral settlements. In the private sector, where the strike is the final impasse resolution means, about 14 percent of all FMCS active mediation cases resulted in strike (between 1974 and 1979). In Minnesota's total public sector, where arbitration and, in some cases, the strike are the final impasse resolution means, 14.38 percent of all BMS active mediation cases resulted in either arbitration or strike (between 1974 and 1979). What is significant in these two numbers is their similarity. This is added evidence that the state's total public sector has not relied on arbitration and the strike significantly more heavily than their private sector counterparts.
11. Between FY1974 and FY1980, positive trend rates of arbitration growth were detected. These trends warrant monitoring.
12. Between FY1973 and FY1980 there were 65 public sector strikes in Minnesota. From year-to-year there were from 5 to 8 strikes per year.
13. Between FY1973 and FY1980 about four out of five mediation petitions were for nonessential negotiations. However, in spite of their relatively small numbers, no less than 47.30 percent and 50.92 percent

of all certifications to impasse arbitration and of all arbitration order issues, respectively, involved essential bargaining units.

This finding suggests that during the reference period, the chilling effect may have been operating on essential bargaining behavior relative to nonessential bargaining behavior.

14. The conclusion stated in point 13 above is further supported by the following findings:
 - a. Between 1974 and 1979, about 14 percent of all FMCS active mediation cases resulted in strike and 14.38 percent of all BMS active mediation cases resulted in arbitration or strike. Comparable statistics for essential and nonessential groups in Minnesota are about 30 percent and 9 percent, respectively. This is contrasting evidence that the chilling effect was operating on the bargaining behavior of essential, but not nonessential negotiations.
 - B. Between 1974 and 1980, the trend rates of change in the number of essential cases (i) certified to impasse arbitration, and (ii) settled by arbitration were about 9 percent and 7.5 percent, respectively. In contrast, the comparable trend rates of change in the number of nonessential cases are -.23 percent and about -3.24 percent per year, respectively. These contrasting patterns are evidence that the chilling effect was increasingly operating on the behavior of essential bargaining units, while decreasingly present (if at all) in the instance of nonessential negotiations.
15. The chilling effect that was present in essential negotiations appeared to be operating among all such employee classifications regardless of employer category (see Table 8).

Section IV. Concessions, Time, and the Narcotic Effect

1. Between FY1973 and FY1980, the estimated mean number of issues in dispute at the first mediation session for cases ending by negotiation/mediation, arbitration, and strike were approximately 7, 8 and 11, respectively.
2. While in mediation, the parties representing cases ending in a voluntary settlement and strike exhibited a greater tendency to concede issues than did the parties whose negotiation impasse ended in arbitration. This finding supports the chilling effect conclusions stated earlier.
3. For cases settled by arbitration, there is a 95 percent probability that between 4.44 and 7.51 issues were in dispute, with an estimated mean of 5.97 issues.
4. For cases settled by strike, there is a 95 percent probability that between 2.95 and 8.71 issues were in dispute, with an estimated mean of 5.83 issues.
5. Between FY1973 and FY1980, for all cases ending in a mediated settlement, it took an estimated average of 121 days to reach settlement from the date the mediation petition was filed. For cases ending in strike and arbitration, the comparable time lapse estimates are 200 and 240 days respectively.
6. The efficiency of the impasse resolution system could have been improved, if the mean elapsed number of days between the date impasse was certified and the date of the arbitration hearing was reduced from the estimated 73 days. Similarly, efficiency would have been improved if the mean elapsed number of days between the date of the arbitration hearing and the date the award was handed down could have been reduced from the

estimated.29 days to the legally required 10 days.

7. During the reference period, any bargaining pair undertaking to negotiate a settlement faced a 3.68 percent probability of having their case end in arbitration. However, given that a specific pair had previously settled their dispute by arbitration, the probability of returning to arbitration for a second time increased to 27.84 percent. This contrast is strong support for concluding that a "narcotic" or dependency effect was affecting the parties bargaining behavior. Further research is required to determine whether the narcotic effect was operating more or less strongly on essential rather than nonessential negotiations.

Section V. Assessing Minnesota's Public Sector Collective Bargaining Impact on Wage Costs

1. Statistical tests do not support the argument that the year-to-year percentage increase in arbitrated wage settlements were any greater than negotiated wage settlements that resulted in school district and teacher contracts. This finding held for every inter-year and inter-region comparison made in the study.
2. Statistical tests, with a few police department inter-year and inter-region exceptions, do not support the argument that the year-to-year percentage increase in arbitrated wage settlements were any greater than negotiated wage settlements that resulted in law enforcement contracts.