

**Measure of the effects of work stoppages  
and mediation-conciliation activities  
on the economy of Québec during the 2009-2013  
period**

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## Abstract

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The objective of this study is to assess the effects of work stoppages on the Economy of Québec and to quantify the costs avoided owing to the mediation-conciliation services provided by the Ministère du Travail, de l'Emploi et de la Solidarité sociale (le Ministère), from 2009 to 2013, in the economic-activity sectors regulated by the Labour Code.

An approach similar to that of the Federal Mediation and Conciliation Service in the United States is used to evaluate the added-value of the mediation-conciliation services provided by the Ministère to the economy of Québec. In this study, only the losses of workers and employers directly affected by a work stoppage and their suppliers are considered. Thus neither the costs supported by their clients nor the induced costs are taken into account. The estimates stem therefore from a conservative approach which tends to underestimate real costs. The data for this analysis mainly come from the Ministère du Travail, de l'Emploi et de la Solidarité sociale and from Statistics Canada.

The study shows that work stoppages have led to a loss of 1.4 million person-days for the Economy of Québec, which is the equivalent of a loss of 9.5 million hours of work. Almost 84,082 workers have been affected by these stoppages which have cost to Québec more than \$323.7M.

Owing to the intervention of the Ministère du Travail, de l'Emploi et de la Solidarité sociale in 1,840 mediation-conciliation cases, the number of work stoppages has been reduced by 31.2%. The number of person-days lost has decreased by 1.49 million days, which is equivalent to 10.2 million hours of work, and the costs of work stoppages have been reduced by \$326.1M.

Finally, the study shows that each dollar spent on mediation-conciliation has permitted to save \$12.80 on average in Québec. The results are comparable to those of the United States Federal Mediation and Conciliation Service.

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**Key words:** Work stoppages, Mediation and conciliation, Labour relations, Wages and profits.

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# 1. Introduction

According to the standard economic theory, the costs of work stoppages are nul in the long run, and markets systematically adjust to compensate all production losses. However, standard neoclassical theory is based on very controversial assumptions, which holds only rarely in a modern economic context: atomicity, homogeneity, transparency, an absence of entry and exit market barriers, and the free movement of factors of production. Reality is however quite different, and markets are not perfect. The latter may, in fact, be not competitive, and the numbers of actors are often limited. This is true, for example, in the case of oligopolistic and monopolistic markets, where work stoppage costs can be significant. A given transaction may involve products that are not necessarily homogeneous; the factors of production may be very specific and cannot be easily reallocated from one industry to another; information is not asymmetric all the time; and adjustments costs are sometimes very high. This is the case, for example, for businesses using just-in-time inventory management systems. All of these reasons, and many others, have led us to believe that the costs of work stoppages may be not null, at least on the short and medium run.

The objective of this study is, first of all, to assess the impact of work stoppages on the economy of Québec and, secondly, to quantify the costs avoided owing to the mediation-conciliation services provided by the Ministère du Travail, de l'Emploi et de la Solidarité sociale. Only collective agreements covered by the Labour Code of Québec are considered in this study, so that settlements and agreements established under specific labour relations regimes, such as those concerning police officers and firefighters<sup>1</sup>, the statutes applied to artists, the construction industry, as well as collective agreements negotiated under the Canada Labour Code are excluded.

In Québec, some 9,779 collective agreements were signed or imposed by an arbitrator from 2009 to 2013. They fix the working conditions of 1,141,363 employees, all sectors of activity being considered. Of these agreements, a total of 7,708 were signed following direct negotiations between the parties and another 1,840 owing to the intervention of the Ministère du Travail, de l'Emploi et de la Solidarité sociale. Thus around 97.5% of the collective agreements have been signed in Québec during this period without work stoppage or arbitration (Table 1).

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<sup>1</sup> In this case, the parties do not have the right to strike or to impose lock-outs.

The methodology used to estimate work stoppages costs and the costs avoided owing to the intervention of the mediation-conciliation services is presented in the following section. Section 3 provides an estimation of the direct and indirect costs of work stoppages per economic sector of activity in Québec. Section 4 provides an evaluation of the costs avoided by the mediation-conciliation services owing to the reduction of the number of work stoppages. The main types of interventions permitting to avoid these costs and the corresponding economic sectors of activity are identified. Finally, the last section presents a summary of the main results.

**Table 1. Breakdown of the concluded collective agreements with respect to their settlement stage, Québec 2009-2013**

Year <sup>2</sup>	Direct Bargaining		Conciliation		Work stoppage and arbitration		Total	Agreements signed without arbitration or work stoppage (in %)
	Number	(in %)	Number	(in %)	Number	(in %)		
2009	1,269	75.5	356	21.2	56	3.3	1,681	96.7
2010	1,179	75.2	348	22.2	40	2.6	1,567	97.4
2011	2,535	86.1	370	12.6	39	1.3	2,944	98.7
2012	1,358	75.3	386	21.4	59	3.3	1,803	96.7
2013	1,367	76.6	380	21.3	37 <sup>3</sup>	2.1	1,784	97.9
Average	1,542	77.8	368	19.7	46	2.5	1,956	97.5
Total and percentage	7,708	77.8	1,840	19.7	231	2.5	9,779	-

<sup>2</sup> Collective agreements were signed during the years presented here. The interventions and work stoppages related to these collective agreements could have taken place the same year or earlier. We note that the proportion of collective agreements signed after having recourse to conciliation is around 21% in all years, except for 2011, when it dropped to 12.6%. This is due to the renewal of collective agreements in the public sector during this year.

<sup>3</sup> The number of collective agreements signed following a work stoppage or arbitration, according to official statistics for the year 2013, is 249. Work stoppages in *Centres de la petite enfance* (CPEs, or early childhood centres) have always been grouped together, except for the year 2013. For the sake of consistency, and in order to be able to compare work stoppages for 2013 with those of preceding years, we have combined the work stoppages in the CPEs for 2013, so that the number of collective agreements signed following a work stoppage in 2013 was reduced to 37.

## **2. Work stoppages and mediation-conciliation services**

Before computing the work stoppages costs and the efforts made by the mediation-conciliation services to cope with them, it's worthy to take a look at the current labour relations context, new forms of conflicts, and the declining number of work stoppages in Québec.

### **2.1 Literature review**

An analysis of Québec data shows that the number of work stoppages has decreased significantly over the last thirty years (Figure 1). That said, such a decrease does not necessarily reflect good workplace relations (Sapsford and Turnbull 1994). Drinkwater and Ingram (2005) have criticized studies done in the United Kingdom, in which the work climate was measured on the sole basis of strikes. They share the view of Gary-Bobo and Jaaidane (2011) that internal workplace conflicts do not necessarily lead to strikes. Indeed, workers have, at their disposal, other means of resistance to seek improvements in their working conditions. Workers and their employers can nowadays use more individual means of resistance. Employees can, for example, demand that their rights be respected or file grievances. Employers who are not satisfied with the performance or the behaviour of one or more employee(s) can undertake disciplinary actions (Antcliff and Saundry 2009). These are covered (or implicit) types of workplace conflicts<sup>4</sup> (Hebdon and Stern 1998), as opposed to overt (or explicit) types. According to Sapsford and Turnbull (1994), the increasing frequency of individual forms of conflicts within firms is an ultimate response to the decrease in the number of strikes (the balloon hypothesis).

According to Godard (2011), several factors may explain the decrease in the number of strikes. These include labour-law changes, decline in union representation, changes in power dynamics within the workplace, and the emergence of various new forms of conflicts such as diseases and family obligations allegations, high turnover rates and absenteeism. The dysfunctional nature of certain workplaces and the appearance of problems such as cynicism, escapism, mental health problems, drug abuse, lack of norms, or even extremism simply reflect, in many cases, the displacement of workplace tensions

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<sup>4</sup> There are two options of individual covered conflicts: making a permanent exit (resigning) or making a temporary exit. Temporary exit option includes absenteeism, sabotage, indiscipline, negligence, etc. (Dix et al. 2009 and Hebdon and Stern 1998).

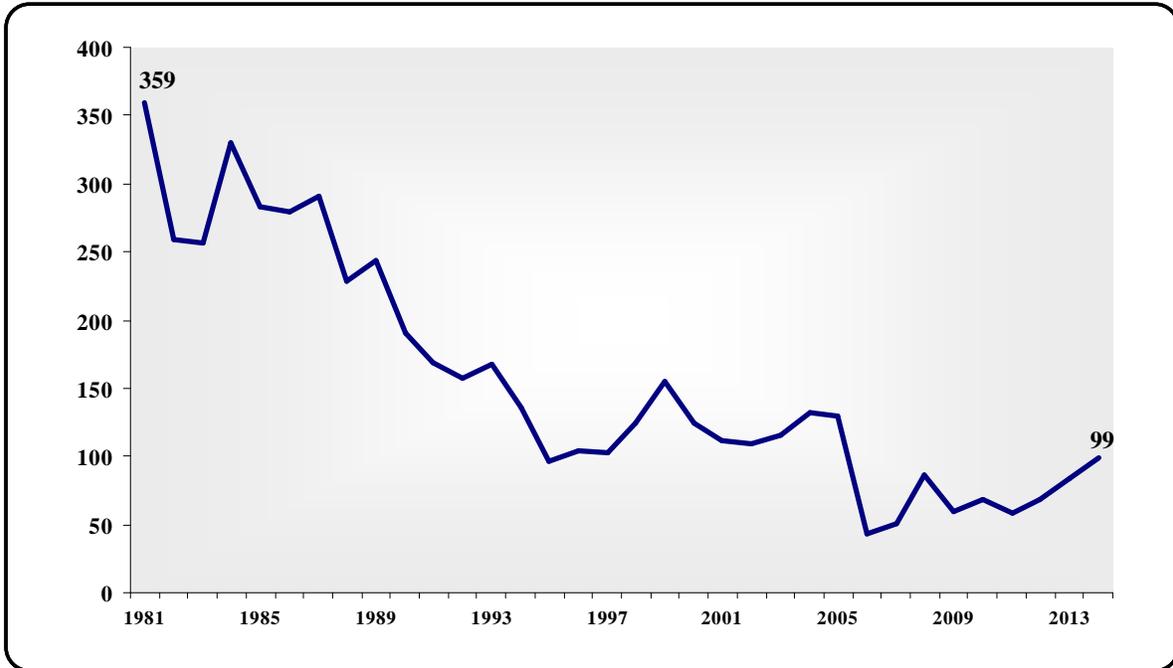
into other spheres of life. Nothing prevents, nevertheless, these tensions from re-emerging in the workplace.

In certain countries, such as the United Kingdom, the decrease in the number of work stoppages was accelerated by anti-union legislation passed in the 1980s, which led to the union representation declining from 50% to 27% by the end of the 1990s (Brown 2011). In other countries, increased international competition, made possible by the decline in freight costs, has put downward pressure on production costs and made collective bargaining more complicated than ever. The volume of international trade has in fact doubled and grown twice as fast as worldwide income.

This decrease in work stoppages could also be caused by the changing industrial composition of employment. The decreasing number of jobs in the manufacturing sector, which is traditionally more unionized, and the increasing number of jobs in the service sector, which is less unionized, but offers better working conditions and is better managed, has helped to reduce the sources of conflicts (Godard 2011). For his part, Marshall (1988) considers that workers, who suffer from what he calls “informed fatalism,” have accepted their subordinate position and have therefore lost their desire to struggle and their psychological capacity to resist their employers’ authority. Even though the potential for conflict has been threatening political and economic elites rather than firms since the 2008 crisis, nothing guarantee, according to certain researchers<sup>5</sup>, that it will not threaten companies themselves in one day.

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<sup>5</sup> See the International Labor Organization (ILO) report entitled World of Work Report 2010. From One Crisis to the Next?, published in 2010.



**Figure 1. Evolution of the number of work stoppages, Québec 1981-2014**

In spite of the decrease in their number, the costs of work stoppages in Québec remain very high. Hence the importance of mediation-conciliation interventions, not only to reduce the number of work stoppages and their length, but also to manage new causes of conflict and tackle them before triggering new work stoppages or compromising the productivity and economic performance of Québec firms.

## **2.2 The effects of work stoppages and mediation-conciliation services**

Measuring the effects of mediation-conciliation services is a difficult task. To evaluate the economic impact of the mediation-conciliation services offered by the Ministère du Travail, de l'Emploi et de la Solidarité sociale<sup>6</sup>, we adopt, in this paper, the approach used by the United States' Federal Mediation and Conciliation Service (FMCS)<sup>7</sup>. We have adapted its

<sup>6</sup> Great Britain's Advisory, Conciliation and Arbitration Service (ACAS) uses a completely different approach, but it only evaluates the costs avoided for certain sectors of economic activity and for two years, i.e. 2006-2007 and 2010-2011. For more details, see the document by Meadows entitled *A Review of the Economic Impact of Employment Relations Services Delivered by ACAS*, published in 2007.

<sup>7</sup> Employment Policy Foundation, *Impact measures of Federal Mediation and Conciliation Service activities, 1999-2004*, November 2005, report for the Federal Mediation and Conciliation Service, 47 pages.

model to take into account the specificities and the particularities of the Economy of Québec. The FMCS uses the outcome of this model and updates them annually, since the year 2000, to produce its annual reports<sup>8</sup> and to prepare its budget<sup>9</sup>, which is presented and discussed each year in front of the U.S. Congress.

Before starting the estimation, a clear distinction between the concept of the private costs and the public costs of a work stoppage needs to be made. The private costs of a work stoppage are the costs incurred by those who are directly affected by the work stoppage, i.e. workers and employers, who respectively lose their wages and profits. The public or economic costs, on the other hand, concern the global impact of this work stoppage on the national economy as a whole. For example, while a work stoppage can be very expensive for the owner of a single company and its employees, one or many other companies could offset the loss of production and thus ensure that the loss for the industry and for society as a whole is zero (Neumann and Reder 1984).

According to economic theory, companies and their employees do all that they can to minimize losses due to work stoppages. If, for example, a company sees that collective agreement bargaining might lead to a work stoppage, it can build-up inventories of finished products to compensate for production fall or production shutdown, or it can ask also managers to do part of the work in order to replace their employees. The members of the bargaining unit, can, for their part, compensate for their reduced incomes by drawing on their personal savings or on strike funds, or even by finding other jobs. Still according to economic theory, the national economy will almost never be affected by work stoppages in the long-run. Neumann and Reder (1984), for example, have estimated that the economic costs of work stoppages were zero for 44 out of 63 US manufacturing industries studied over the period between 1955 and 1977 and quite low for the rest of them. Such estimates make a great sense from a purely theoretical point of view. In fact, work stoppages do not lead to long-run economic net costs in competitive industries, because companies who do not experience the work stoppages can always compensate systematically for any losses in the production or the employment.

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<sup>8</sup> Federal Mediation and Conciliation Service annual reports (2009-2013).

<sup>9</sup> Federal Mediation and Conciliation Service report for the 2013 fiscal year. Congressional Budget Submission (2013).

However, work stoppages can engender significant net economic costs in less competitive industries, monopolistic industries or those who apply the just-in-time inventory management system. In these types of industries, companies that are not affected by the work stoppage do not necessarily have the capacity to react in the short run, nor the interest to do so.

To illustrate this point, we use the same example developed in the Employment Policy Foundation's 2005 report. The latter consider the case of two companies, one that fabricate concrete blocks and another that manufactures aircraft spare parts. The company that makes concrete blocks is very competitive. The technology it relies on is relatively simple; the equipment and raw materials it uses are not very costly; the labour force is relatively unskilled and unspecialized; and the final product is standardized across the entire industry. The company that produces aircraft engines represents the diametrically opposite case: the technology it relies on is very advanced and constantly evolving; the capital, resources and raw materials it uses are very costly; the labour force is highly qualified, specialized and has unique skills; and the final product is at the cutting edge of technology.

A work stoppage in one of these companies would have completely different impacts on the national economy as compared to a work stoppage in the other. The competitors of a company that makes concrete blocks and which experience a work stoppage will respond by using their inventories to cover production losses in the short run. They will be able, in the following weeks, to hire and train new workers, which allow them to increase production. Most of the suppliers and consumers in this industry are unlikely to notice any supply or price changes in the short or the long run. On the other hand, a work stoppage in the company that manufactures spare parts for aircraft is likely to completely paralyse the entire supply chain. Suppliers of these parts will be unable to deliver their products to aircraft manufacturers in time. As a result, the latter will be unable to make their aircraft deliveries.

These outcomes demonstrate that when a company, such as the concrete block manufacturer, operates in a highly competitive environment, the costs of the work stoppage will be limited to private costs, whereas when a company operates in an industry that is not as competitive and is highly concentrated, such as the aircraft manufacturers, a

work stoppage will impact the company's suppliers and customers, resulting in significant economic costs.

The example clearly shows therefore that economic losses resulting from work stoppages are directly tied to the degree of competitiveness of companies in an industry and the market structure. One commonly used tool to measure an industry's concentration and thereby intensity of competition is the Herfindahl-Hirschman Index (HHI)<sup>10</sup>. Unfortunately, concentration indices are available only for industries that produce goods. This makes it difficult to determine the magnitude of the economic impacts that work stoppages have across all sectors of the economy. For this reason, our analysis will focus in what follows on the evaluation of the private costs, and only part of the public costs, of work stoppages.

### **3. Estimating work stoppage costs**

The complexity and dynamic nature of national economies make estimating public costs of work stoppages a complex and challenging task. This study offers an estimation of the losses of workers and employers directly affected by a work stoppage and those of their suppliers. The costs to their clients and the induced costs are not considered. The latter may be substantial however<sup>11</sup>. For example, the Employment Policy Foundation estimates of the 2002 West Coast dockworkers strike costs in the United States vary between \$140M and \$1B per day when the losses of companies receiving the goods shipped through the ports were considered in the evaluation, and amount only \$57M per day when not.

The estimates presented in this study are therefore those of a conservative approach, which underestimate real costs. They must therefore be interpreted with caution, while keeping in mind the scope of the aforementioned limits.

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<sup>10</sup> The Herfindahl-Hirschman Index (HHI) is an index used to measure market concentration. It is calculated by squaring the market shares (generally multiplied by 100) of all the companies in a given sector and then summing the results. The higher the HHI of a given sector, the more its production is concentrated.

<sup>11</sup> Of course, if the company whose employees are on strike or locked out has a storage capacity that is sufficient to allow it fill customer orders during the work stoppage, which is likely if the stoppage is of short or medium duration, the companies it supplies may not bear any costs. In this case, our estimate is closer to the true evaluation of total costs in as much as in the latter, real costs are barely if ever underestimated. Otherwise, real costs should be higher. Such is the case, for example, for companies whose stocks come from a limited number of suppliers, with a just-in-time stock managing system and a low storage capacity.

### 3.1 Data

Several data sources were used in this study. The number of labour disputes, affected workers and lost person-days come from the Direction de l'information sur le travail (DIT) of the Ministère du Travail, de l'Emploi et de la Solidarité sociale. Data on the average hourly wage rate and the average hours worked per industry in Québec come from Statistics Canada<sup>12</sup>. In the information system used by the DIT, work stoppages in the different industries are classified by economic activity code. In the system used by Statistics Canada, however, branches of activity are listed according to the North American Industry Classification System (NAICS). We have re-estimated the average hourly wage rate, as well as the average hours worked for each sector of economic activity after converting Statistics Canada's data (in NAICS codes) into the equivalent Québec economic activity codes. This exercise has led to a regrouping of certain industries<sup>13</sup>.

The Institut de la statistique du Québec publishes data on the profits made within ten industries (data provided by Revenu Québec and the Ministère des Finances du Québec). However, the most recent data available is for 2009, and there is no information on the corresponding work hours. The overall data is therefore less pertinent for the evaluation of the hourly profit rate of all Québec industries from 2009 to 2013. We solved this problem by using Canadian profit rates as a proxy. The latter are estimated using data derived from the financial tables of Canadian industries and from the Labour Force Survey (LFS).<sup>14</sup> Profit rate estimates are consistent with data on the average hourly wage rate in Québec for all Québec industries. The results and details of the estimation are provided in the table below.

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<sup>12</sup> See Statistics Canada's table 281-0030 relating to average hourly earnings for employees paid by the hour (Survey of Employment, Payrolls and Hours [SEPH]) and table 282-0026 for estimates of average weekly earnings of hours actually worked.

<sup>13</sup> The average hourly wage and the average work hours per day in the business services sector, for example, were re-estimated according to wages and work hours in the corresponding industries by NAICS codes.

<sup>14</sup> The Labour Force Survey (LFS) provides data on the number of hours worked each year within each Québec industry.

**Table 2. Estimate of key variables used for the computation of work stoppage costs, Québec 2009-2013**

Industry	Average number of hours worked per day	Average hourly wage (\$)	Average hourly profit rate (\$)
Agriculture-related services	8.57	23.95	11.77
Forestry	8.62	23.73	12.92
Forest services	8.62	23.63	12.92
Metal mines	8.68	28.71	12.49
Food industry	7.67	18.39	5.44
Beverage industry	7.65	20.45	5.67
Rubber product industry	7.58	20.44	2.94
Plastic product industry	7.67	21.49	5.44
Leather and allied product industry	7.58	18.45	2.94
Textile product industry	7.61	15.67	4.20
Apparel industry	7.75	14.98	7.30
Wood industry	7.67	21.54	5.44
Furniture and home furnishing industry	7.67	18.62	5.44
Paper and paper product industry	7.74	26.38	6.11
Printing, publishing and allied industries	7.67	19.45	5.44
Primary metal manufacturing industry	7.67	28.48	5.44
Fabricated metal product industry (except machinery and transportation equipment industries)	7.67	24.55	5.44
Machinery industry (except electrical machinery)	7.67	24.16	5.44
Transportation equipment industry	7.67	25.77	5.44
Electrical and electronics product industry	7.67	21.82	5.44
Non-metallic mineral product industry	7.67	23.57	5.44
Petroleum and coal products industry	7.61	21.77	6.02
Chemical industry	7.67	23.40	5.44
Other manufacturing industries	7.67	19.66	3.93
Transportation	8.05	22.58	3.79
Warehousing	7.90	22.17	3.08
Communications	5.92	21.48	2.98
Other public services	7.06	26.13	5.76
Agricultural product wholesalers	7.70	19.03	5.87
Petroleum product wholesalers	7.74	21.05	7.61
Food, beverage, drug and tobacco wholesalers	7.64	20.21	8.90
Clothing, footwear, woven fabric and haberdashery wholesalers	7.74	19.71	6.58

**Table 2. Estimate of key variables used for the computation of work stoppage costs, Québec 2009-2013**

Industry	Average number of hours worked per day	Average hourly wage (\$)	Average hourly profit rate (\$)
Motor vehicle, motor vehicle parts and accessories wholesalers	7.65	19.58	8.90
Hardware, plumbing, heating and construction equipment wholesalers	7.65	20.52	9.67
Machine, equipment and supplies wholesalers	7.60	25.61	8.90
Wholesalers of various products	7.65	18.97	8.90
Food, beverage, drug and tobacco retailers	5.51	15.41	1.97
Footwear, clothing, woven fabric and yarn retailers	5.44	14.86	1.35
Household furniture, appliances and furnishings retailers	5.50	16.10	3.38
Motor vehicle, motor vehicle parts and accessories retailers	5,51	19,06	1,97
Other retailers	5.52	13.90	2.04
Deposit-accepting intermediaries	7.23	23.11	18.33
Investment companies	6.79	23.80	22.58
Insurance companies	6.74	22.34	22.58
Real estate services (except developers)	6.72	19.88	19.83
Business services	7.12	23.37	3.41
Provincial government services <sup>15</sup>	7.00	32.22	2.45
Local government services	6.99	25.76	2.11
Education services	6.57	18.13	0.72
Health and social services	6.63	25.52	0.72
Accommodations	5.66	15.40	0.74
Food services	5.64	12.89	0.80
Amusement and recreation services	6.18	16.42	4.38
Personal and household services	5.39	19.06	4.40
Associations	6.99	23.69	2.11
Other services	5.96	19.15	4.40

<sup>15</sup> Profits of provincial and local government services refer to profits of Crown corporations such as Hydro-Québec and the Société des alcools du Québec, as well as profits of municipalities and institutions in various sectors, including management, staff recruitment and placement, document preparation, customer order intake, debt collection, travel planning, and security and surveillance services provision. They offer services to businesses in various economic sectors and to households.

Table 2 shows that employees in the metal mining industry worked the longest average hours per day between 2009 and 2013 (8.68 hours). Employees of the retail sector worked the lowest number of hours per day (5.44 hours in the clothing, footwear, woven fabric and yarn retail). In most other sectors, employees worked on average 7 hours per day, i.e. 35 hours per week.

The highest average hourly wages are paid in the provincial government service sector and in the primary metal manufacturing sector (respectively \$32.22 and \$28.48), whereas the lowest average hourly wages are paid in the food service industry and other retail businesses (\$12.89 and \$13.09 respectively).

The hourly profit rate varies from \$0.72, in education services and in health and social services, to \$22.58, in the financial services (insurance and investment companies).

### **3.2 Estimating direct costs**

Work stoppages have a direct impact on company and employee earnings. The employee wage losses correspond to the product of the hourly wage rate multiplied by the duration of the work stoppage in hours. The employer production losses incurred during a work stoppage affects directly and negatively the profitability of their company. Profit losses are computed as the product of the duration of the hourly profit rate of the industry multiplied by the work stoppage in hours.

Direct costs of work stoppages in Québec from 2009 to 2013 are estimated at \$222.6M (Table 3) and are distributed as follows:

- \$193M in employee wage losses; and
- \$29.5M in profit losses for companies.

We note that employee losses are 6.5 times higher than those incurred by firms. Wage losses in the secondary sector are estimated at \$88.8M, in the tertiary sector at \$103.1M, and in the primary sector at \$258k. Profit losses in the secondary sector amount to \$20.2M, those in the tertiary sector to \$9.2M, and in the primary sector to \$115k.

**Table 3. Summary of direct costs, Québec 2009-2013**

<b>Sector</b>	<b>Wages (thousands of dollars)</b>	<b>Profits (thousands of dollars)</b>	<b>Total (thousands of dollars)</b>	<b>Costs (%)</b>
Primary sector	258	115	372.9	0.2
Secondary sector	88 793.1	20 170.2	108 963.3	49.0
Tertiary sector	103 985.8	9 243.1	113 228.9	50.9
Total	193 036.8	29 528.3	222 565.1	100

The costliest work stoppages are those of the tertiary sector and from which 50.9%, i.e. more than half, of total direct costs derive. Work stoppages in the secondary sector cause 49% of total direct costs. Finally, work stoppages in the primary sector only generate 0.2% of total direct costs. In fact, work stoppages in the primary sector occurred only in 2011 and 2012, and even in these years, their impact was very weak and limited. Their impact on the economy of Québec was therefore marginal.

The highest costs, reaching \$49.1M, were recorded in 2011. The lowest costs, \$37.2M, were recorded in 2010. The primary metal manufacturing and chemical industries are the two secondary sector industries where work stoppages caused the costliest losses. The former incurred a loss of 105,700 person-days in 2012, while the latter suffered a loss of 56,495 person-days in 2013 (Table 1 in Appendix 1), resulting in direct costs of \$24.8M and \$15.4M respectively for Québec (Table 2 in Appendix 1). Wage losses amount to \$22.3M in the first industry and to \$10.4M in the second. Profit losses are evaluated at respectively \$2.6M and \$5M. Education services and motor vehicle, motor vehicle parts and accessories retailers are the costliest sectors in terms of lost person-days, wages and profits. The former incurred a loss of 210,557 person-days in 2011 and the latter, a loss of 93,003 person-days in 2013, resulting in costs of respectively \$26.5M and \$11.7M for Québec. Loss of wages in these two sectors is estimated at \$25.7M and \$10M, and loss of profits at \$0.8M and \$1.7M respectively.

### **3.3 Estimating indirect costs**

Work stoppages also have a negative impact on the wages and on the profits of suppliers of companies experiencing a work stoppage. In this study we use type 1 simple input-output multipliers estimated on the basis of Québec input-output tables. The data on input-output tables are provided by Statistics Canada's Industry Accounts Division. Costs in terms of wage and profit losses suffered by upstream firms with respect to companies experiencing a work stoppage are obtained by multiplying the direct costs by income multipliers corresponding to each type of industry for each year.

It is important to note that type 1 simple multipliers can only be used to compute income loss incurred by firms in the upstream level of the production process of companies experiencing a work stoppage and not those incurred by firms at the downstream level. It is also generally known that type 1 simple multipliers do not take into account the induced effects and tend to underestimate the economic impact because of the hypothesis of households exogeneity<sup>16</sup>. Consequently, what we present in this study is a conservative estimation of the real costs generated by a work stoppage.

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<sup>16</sup> We assume that wages are not necessarily redistributed in the economy through consumer expenses.

**Table 4. Summary of indirect costs, Québec 2009-2013**

<b>Sector</b>	<b>Wages (thousands of dollars)</b>	<b>Profits (thousands of dollars)</b>	<b>Total (thousands of dollars)</b>	<b>Costs (%)</b>
Primary sector	252.6	115.7	368.3	0.4%
Secondary sector	49,889.1	11,332.8	61,221.8	60.6%
Tertiary sector	36,029.4	3,476.9	39,506.3	39.1%
Total	86 171.1	14 925.3	101 096.4	100.0%

Indirect costs due to work stoppages in Québec between 2009 and 2013 are estimated at \$101.1M (Table 4). Indirect costs incurred by employees are 5.7 times higher than those incurred by employers. As with direct costs, the lion's share of work stoppage indirect costs is borne by employees. These costs are distributed as follows:<sup>17</sup>

- \$86.2M wage loss for employees; and
- \$14.9M profit loss for companies.

Wage losses due to work stoppages in the secondary, tertiary and primary sectors are estimated at \$49.9M, \$36M and \$253k respectively. Profit losses due to work stoppages in the secondary, tertiary and primary sectors amount to \$11.3M, \$3.5M and \$116k respectively.

The highest indirect costs are due to work stoppages in the secondary sector. They represent 60.6% of total indirect costs (Table 4). Indirect costs due to work stoppages in the tertiary and the primary sectors represent 39.1% and 0.4% of total indirect costs respectively.

Direct costs account for approximately two thirds of total work stoppage costs in Québec between 2009 and 2013, i.e. 68.8% (Table 5). Direct costs are therefore almost twice as high as indirect costs. This proportion hides certain disparities between sectors. In fact, direct costs are of the same order of magnitude of indirect costs in the primary sector (\$372.9k versus \$368.3k), twice as high as indirect costs in the secondary sector (\$109M and \$61.2M), and three times as high as indirect costs in the tertiary sector (\$113.2M versus \$39.5M).

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<sup>17</sup> These results are available upon request.

### 3.4 Estimating total costs

Total costs of work stoppages are obtained by summing the total direct costs and the total indirect costs of stoppages. A loss of 1,400,616 person-days was recorded in Québec between January 1, 2009 and December 31, 2013 (Table 1 in Appendix 1). Lost person-days are distributed as follows:

- 1,255 person-days in the primary sector;
- 525,126 person-days in the secondary sector; and
- 874,235 person-days in the tertiary sector.

These work stoppages generated a cost of \$323.7M for Québec from 2009 to 2013 (Table 5) which is distributed as follows:

- \$0.7M in losses in the primary sector (0.2%);
- \$170.2M in losses in the secondary sector (52.6%); and
- \$152.7M in losses in the tertiary sector (47%).

**Table 5. Summary of total costs, Québec 2009-2013**

Sector	Direct costs		Indirect costs		Total costs	
	(thousands of dollars)	(% of the total costs)	(thousands of dollars)	(% of the total costs)	(thousands of dollars)	(% of the total costs)
Primary sector	372.9	0.1%	368.3	0.1%	741.2	0.2%
Secondary sector	108,963.3	33.7%	61,221.8	18.9%	170,185.2	52.6%
Tertiary sector	113,228.9	35.0%	39,506.3	12.2%	152,735.2	47.2%
Total	222,565.1	68.8%	101,096.4	31.2%	323,661.5	100%

Unlike our findings with regard to direct costs, the highest total costs are due to work stoppages in the secondary sector, which caused more than half of the total economy costs, i.e. 52.6%. Total costs due to work stoppages in the tertiary and primary sectors account for 47.2% and 0.2% of the total economy costs. This distribution is mainly due to the relative importance of indirect costs generated by work stoppages in the secondary sector (60.6%), which increases their share in total economy costs to 18.9%. This represents approximately one and a half times the share of the tertiary sector, which is

estimated at 12.2%. Work stoppages in the secondary sector appear to have a more important impact on the economy than those of the other sectors.

The highest total costs were recorded in 2012, when they reached \$71.8M. The lowest total costs, \$58.1M, were recorded in 2010. Work stoppage in the primary metal manufacturing industry and the chemical industry have caused the highest losses. The former lost 105,700 person-days in 2012, while the latter incurred a loss of 56,495 person-days in 2013 (Table 1 in Appendix 1), which generated total costs of respectively \$38.8M and \$24.1M for Québec (Table 3 in Appendix 1). Wage losses due to work stoppages in these two industries were estimated at respectively \$34.8M and \$16.2M, and profit losses at \$4M and \$7.9M.

Education services and motor vehicle, motor vehicle parts and accessories detailers are the costliest sectors of activity in terms of lost person-days, wages and profits. The education services sector endure a loss of 210,557 person-days in 2011 and motor vehicle, motor vehicle parts and accessories retailers incurred a loss of 93,003 person-days in 2013, which generated total costs of respectively \$32.7M and \$14.7M for Québec. Loss of wages due to work stoppages in these two sectors of activity was estimated at respectively \$31.7M and \$12.5M and loss of profits amounted to \$1M and \$2.2M.

#### **4. Estimation of the work stoppage costs avoided owing to the mediation-conciliation services of the Ministère du Travail, de l'Emploi et de la Solidarité sociale**

Measuring the effects of work stoppages on the global economy and on certain industries has proven to be a valuable and very interesting task. This is especially the case for highly concentrated industries.

## 4.1 Methodology

The review of data on work stoppages in the United States by the FMCS shows that mediation-conciliation and work stoppages are positively and strongly correlated. Of course, this result cannot be interpreted as a causal relationship whereby mediation-conciliation activities cause work stoppages. On the contrary, it is the employers and bargaining units most likely to experience work stoppages who typically request a mediation conciliation intervention. In other words, if mediation-conciliation activities and work stoppages are strongly correlated, it is because the threat of being subjected to work stoppages pushes employers and unions to request mediation-conciliation services.

The FMCS could not, however, find statistically significant relationships to model the links between the two variables. This pushed the Employment Policy Foundation to turn to another approach and to use data from a survey conducted in 2003 by the Massachusetts Institute of Technology Sloan School of Management and the George Washington University Department of Management Science for union and employer representatives to evaluate the rate of work stoppages in the absence of the FMCS mediation-conciliation services. The survey (hereafter referred to as the MIT study) consists of interviews with 584 pairs of employer and union representatives. The Employment Policy Foundation analysis of the MIT study results shows that 7.7% of the matched pairs estimated that a strike, a lockout or binding arbitration were “very likely” without the FMCS mediation-conciliation services. In 31% of cases, at least one of the respondents felt that the stoppage was “very likely” and the other one felt that the stoppage was “likely” or “very likely”. Its approach aims to be very conservative in quantifying the effects of the FMCS interventions; hence the Employment Policy Foundation retained the proportion of cases most likely to lead to a work stoppage among the total cases in which the FMCS has intervened, i.e. 7.7%.

In Québec, the Ministère du Travail, de l'Emploi et de la Solidarité sociale administered, in 2005 and 2010, a survey conducted by an independent company. 27.7% of people surveyed, among a sample of 428 employer and union respondents, felt that a mediation-conciliation intervention was the main way to avoid a work stoppage or to shorten its duration. As the question asked in the survey was not sufficiently precise to meet our needs, the Ministère submitted, in 2014, a specific survey on the incidence of work stoppages to employer and union representatives having used mediation-conciliation

services. A total of 176 representatives responded and about one-third agreed to disclose their identity, thus enabling us to create 29 pairs<sup>18</sup>. The analysis of the results shows that, in 17.24% of cases, the employer and union side “strongly agreed” in saying that mediation-conciliation had enabled them to avoid a work stoppage, and in 41.38% of cases, at least one of the respondents “strongly agreed” that mediation-conciliation had enabled them to avoid a work stoppage and the other respondent either “strongly agreed” or “rather agreed”<sup>19</sup>. Even though the number of pairs that could be obtained by the parties’ voluntary consent is low, i.e. 29 pairs, it is equivalent in percentage to what was obtained for the MIT study. In our survey, we consulted 29 among the 325 pairs that resorted to mediation-conciliation services in Québec in 2014, that’s 8.92% of the total number of cases processed. In the MIT study, they consulted 584 among the 6,340 pairs who used the FMCS in the United States in 2003, i.e. 9.21% of all cases processed<sup>20</sup>. The analysis of the results also shows that the proportion is higher in Québec than in the United States if we limit ourselves to pairs in which the management and union parties “strongly agreed” in saying that mediation-conciliation had enabled them to avoid a work stoppage and those in which at least one of the parties “strongly agreed” and the other side either “strongly agreed” or “rather agreed”. However, given the limited number of pairs we obtained and our objective to present a conservative estimate of the costs avoided, we decided to retain only a proportion of 8% in the case of Québec, i.e. the American proportion rounded up to the last digit. The number of work stoppages avoided each year is thus obtained by multiplying the total number of collective agreements in which the Ministère du Travail, de l’Emploi et de la Solidarité sociale was involved and which did not lead to a work stoppage by 8%.

The annual estimates of the average number of hours worked per day, the hourly profit rate, and the hourly wage rate are exactly those used in the section that estimates the

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<sup>18</sup> The question people had to answer in the specific survey is as follows: Did recourse to mediation-conciliation services enable you to avoid a work stoppage? The answer choices are as follows: Strongly agree; Somewhat agree; Somewhat disagree; Totally disagree; Does not apply; or I do not know. In order not to influence the answers of those surveyed, we gave them the choice of whether or not to reveal their identity. Among the respondents who agreed to reveal their identity, we were able to form 29 pairs.

<sup>19</sup> In total, 106 respondents answered “strongly agree” or “somewhat agree”.

<sup>20</sup> The FMCS was involved in 33.1% of the 19,716 agreements negotiated in 2003 within its area of intervention according to the Employment Policy Foundation report for the Federal Mediation and Conciliation Service, Impact measures of Federal Mediation and Conciliation Service activities, 1999-2004, published in November 2005.

direct and indirect costs of work stoppages in this study. The avoided cost assessment procedure is also the same as described in that section.

## 4.2 Estimation of the costs avoided owing to the mediation-conciliation in Québec from 2009 to 2013

Two mediation-conciliation<sup>21</sup> intervention contexts are considered in this study:

- interventions carried out during the renewal of collective agreements; they represent approximately 81% of all interventions from 2009 to 2013, i.e. 1,488 cases (Table 6); and
- interventions carried out during the negotiation of initial collective agreements; they represent approximately 19% of all interventions from 2009 to 2013, i.e. 352 cases.

**Table 6. Mediation-conciliation interventions, Québec 2009-2013**

Year	Renewal of collective agreements		Negotiation of initial collective agreements		Total
	Number	(%)	Number	(%)	
2009	285	80.3	70	19.7	355
2010	281	80.5	68	19.5	349
2011	307	83.0	63	17.0	370
2012	325	84.2	61	15.8	386
2013	290	76.3	90	23.7	380
Total	1,488	80.9	352	19.1	1,840

The analysis of the study's results shows that it is in the interventions carried out during the renewal of collective agreements that mediation-conciliation services permit to avoid the highest costs. Costs of \$312.1M were avoided during these interventions, i.e. 95.6 % of the total costs avoided, estimated at \$326.1M (Table 7). As for interventions during the negotiation of initial collective agreements, they only permit to save \$14.5M, i.e. 4.4% of the total costs avoided, although the number of collective agreements negotiated for the first time represents 19.1% of all collective agreements signed. This discrepancy is due to the reduced size of the bargaining units negotiating their first collective agreement compared to those already established, and negotiating a renewal. We conclude that interventions carried out during the renewal of collective agreements permit to avoid more significant costs than interventions during the negotiation of initial collective agreements.

<sup>21</sup> In this study, we are interested in all interventions that led to the signing of a collective agreement from January 1, 2009 to December 31, 2013.

**Table 7. Total costs (direct and indirect) avoided, Québec 2009-2013**

<b>Total costs avoided during the renewal of collective agreements</b>							
<b>Sector</b>	<b>2009</b> (thousands of dollars)	<b>2010</b> (thousands of dollars)	<b>2011</b> (thousands of dollars)	<b>2012</b> (thousands of dollars)	<b>2013</b> (thousands of dollars)	<b>Total</b> (thousands of dollars)	<b>Total<sup>22</sup></b> (%)
Primary sector	8.8	19.1	599.4	16.0	34.6	677.9	0,2%
Secondary sector	28,134.9	25,803.6	15,950.5	27,618.1	27,035.0	124,542.1	38,2%
Tertiary sector	21,732.8	23,322.0	105,089,5	15,619.5	21,079.0	186,842.8	57,3%
<b>Total</b>	<b>49,876.4</b>	<b>49,144.8</b>	<b>121,639,4</b>	<b>43,253.6</b>	<b>48,148.6</b>	<b>312,062.8</b>	<b>95,7%</b>
<b>Total costs avoided during the negotiation of initial collective agreements</b>							
<b>Sector</b>	<b>2009</b> (thousands of dollars)	<b>2010</b> (thousands of dollars)	<b>2011</b> (thousands of dollars)	<b>2012</b> (thousands of dollars)	<b>2013</b> (thousands of dollars)	<b>Total</b> (thousands of dollars)	<b>Total (%)</b>
Primary sector	0.0	8.8	4.6	2.5	2.2	18.2	0,0%
Secondary sector	2,058.7	2,574.0	992.8	740,8	109.5	6,475.9	2,0%
Tertiary sector	472.6	1,707.3	903.2	1,138.2	3,301.2	7,522.6	2,3%
<b>Total</b>	<b>2,531.3</b>	<b>4,290.2</b>	<b>1,900.6</b>	<b>1,881.6</b>	<b>3,412.9</b>	<b>14,016.7</b>	<b>4,3%</b>
<b>Total costs avoided</b>							
<b>Sector</b>	<b>2009</b> (thousands of dollars)	<b>2010</b> (thousands of dollars)	<b>2011</b> (thousands of dollars)	<b>2012</b> (thousands of dollars)	<b>2013</b> (thousands of dollars)	<b>Total</b>	<b>Total (%)</b>
Primary sector	8.8	28.0	604.0	18.5	36.8	696.1	0,2%
Secondary sector	30,193.6	28,377.7	16,943.3	28,358.9	27,144.5	131,018.0	40,2%
Tertiary sector	22,205.4	25,029.4	105,992.7	16,757.7	24,380.2	194,365.4	59,6%
<b>Total</b>	<b>52,407.8</b>	<b>53,435.0</b>	<b>123,540.0</b>	<b>45,135.2</b>	<b>51,561.5</b>	<b>326,079.5</b>	<b>100,0%</b>

Mediation-conciliation interventions in Québec prevented the loss of 1,487,880 person-days (Table 1 of Appendix 2) and thus generated savings of \$326.1M. The highest costs avoided, amounting to \$123.5M, were recorded during 2011, which is not surprising, as 2011 correspond to the year of the renewal of the public sector agreements (Table 2 of Appendix 2). The lowest costs avoided were recorded during 2013 and amounted to \$51.6M. The total costs avoided are distributed as follows:

- \$234.2M in direct revenue losses, including \$224.5M saved during the renewal of collective agreements and \$9.7M saved during the negotiation of initial collective agreements (Table 8); and

<sup>22</sup> Percentage with respect to the total costs avoided.

- \$91.8M in indirect revenue losses, including \$87.5M saved during the renewal of collective agreements and \$4.3M saved during the negotiation of initial collective agreements (Table 9).

Direct revenue losses avoided are reported in Table 8 below and include

- \$197.4M in lost wages avoided during the renewal of collective agreements;
- \$27.2M in lost profits avoided during the renewal of collective agreements;
- \$7.9M in lost wages avoided during the negotiation of initial collective agreements;
- and
- \$1.8M in lost profits avoided during the negotiation of initial collective agreements.

Indirect revenue losses avoided are reported in Table 9 below and include

- \$73.5M in lost wages avoided during the renewal of collective agreements;
- \$14M in lost profits avoided during the renewal of collective agreements;
- 3.4M in lost wages avoided during the negotiation of initial collective agreements;
- and
- \$0.9M in lost profits avoided during the negotiation of initial collective agreements.

**Table 8. Summary of direct costs avoided, Québec 2009-2013**

<b>Total direct costs avoided during the renewal of collective agreements</b>				
<b>Sector</b>	<b>Wages (thousands of dollars)</b>	<b>Profits (thousands of dollars)</b>	<b>Total (thousands of dollars)</b>	<b>Costs (%)</b>
Total for the primary sector	324.3	126.3	450.6	0.2%
Total for the secondary sector	65,004.6	14,735.2	79,739.8	35.5%
Total for the Tertiary sector	132,056.0	12,288.6	144,344.6	64.3%
Total	197,384.9	27,150.1	224,535.0	100.0%
<b>Total direct costs avoided during the negotiation of initial collective agreements</b>				
<b>Sector</b>	<b>Wages (thousands of dollars)</b>	<b>Profits (thousands of dollars)</b>	<b>Total (thousands of dollars)</b>	<b>Costs (%)</b>
Total for the primary sector	4.9	3.3	8.2	0.1%
Total for the secondary sector	3,034.9	642.6	3,677.6	37.9%
Total for the tertiary sector	4,891.7	1,132.3	6,024.0	62.0%
Total	7,931.5	1,778.2	9,709.7	100.0%
<b>Total direct costs revenues avoided</b>				
<b>Sector</b>	<b>Wages (thousands of dollars)</b>	<b>Profits (thousands of dollars)</b>	<b>Total (thousands of dollars)</b>	<b>Costs (%)</b>
Total for the primary sector	329.3	129.5	458.8	0.2%
Total for the secondary sector	68,039.5	15,377.8	83,417.3	35.6%
Total for the tertiary sector	136,947.7	13,420.9	150,368.6	64.2%
Total	205,316.4	28,928.3	234,244.7	100.0%

**Table 9. Summary of indirect costs avoided, Québec 2009-2013**

<b>Total indirect costs avoided during the renewal of collective agreements</b>				
<b>Sector</b>	<b>Wages (thousands of dollars)</b>	<b>Profits (thousands of dollars)</b>	<b>Total (thousands of dollars)</b>	<b>Costs (%)</b>
Total for the primary sector	161.0	66.3	227.3	0.3%
Total for the secondary sector	36,523.3	8,279.1	44,802.4	51.2%
Total for the tertiary sector	36,827.1	5,671.1	42,498.2	48.6%
Total	73,511.4	14,016.5	87,527.8	100.0%
<b>Total indirect costs avoided during the negotiation of initial collective agreements</b>				
<b>Sector</b>	<b>Wages (thousands of dollars)</b>	<b>Profits (thousands of dollars)</b>	<b>Total (thousands of dollars)</b>	<b>Costs (%)</b>
Total for the primary sector	4.5	3.0	7.5	0.2%
Total for the secondary sector	1,807.2	361.1	2,168.3	50.3%
Total for the tertiary sector	1,559.7	571.4	2,131.2	49.5%
Total	3,371.4	935.5	4,306.9	100.0%
<b>Total indirect costs avoided</b>				
<b>Sector</b>	<b>Wages (thousands of dollars)</b>	<b>Profits (thousands of dollars)</b>	<b>Total (thousands of dollars)</b>	<b>Costs (%)</b>
Total for the primary sector	165.4	69.3	234.8	0.3%
Total for the secondary sector	38,330.5	8,640.2	46,970.7	51.1%
Total for the tertiary sector	38,386.8	6,242.5	44,629.4	48.6%
Total	76,882.8	14,952.0	91,834.8	100.0%

Total avoided losses in revenue are reported to table 10. The costs avoided owing to the interventions in the tertiary, secondary and primary sectors represent respectively 59.8%, 40.0% and 0.2% of the total avoided costs. The number of interventions in the primary sector is very restricted and limited to some interventions in agricultural, forestry or mining activities.

**Table 10. Summary of total costs avoided,  
Québec 2009-2013**

<b>Total direct and indirect costs avoided during the renewal of collective agreements</b>				
<b>Sector</b>	<b>Wages (thousands of dollars)</b>	<b>Profits (thousands of dollars)</b>	<b>Total (thousands of dollars)</b>	<b>Costs (%)</b>
Total for the primary sector	485.3	192.6	677,9	0.2%
Total for the secondary sector	101,527.9	23,014.3	124,542.1	39.9%
Total for the tertiary sector	168,883.1	17,959.7	186,842.8	59.9%
Total	270,896.2	41,166.6	312,062.8	100.0%
<b>Total direct and indirect costs avoided during the negotiation of initial collective agreements</b>				
<b>Sector</b>	<b>Wages (thousands of dollars)</b>	<b>Profits (thousands of dollars)</b>	<b>Total (thousands of dollars)</b>	<b>Costs (%)</b>
Total for the primary sector	11.1	7.1	18.2	0.1%
Total for the secondary sector	4,842.1	1,003.7	5,845.9	41.7%
Total for the tertiary sector	6,451.4	1,703.7	8,155.1	58.2%
Total	11,303.0	2,713.7	14,016.7	100.0%
<b>Total direct and indirect costs avoided</b>				
<b>Sector</b>	<b>Wages (thousands of dollars)</b>	<b>Profits (thousands of dollars)</b>	<b>Total (thousands of dollars)</b>	<b>Costs (%)</b>
Total for the primary sector	496.4	199.7	696.1	0.2%
Total for the secondary sector	106,370.0	24,018.0	130,388.0	40.0%
Total for the tertiary sector	175,334.5	19,663.5	194,998.0	59.8%
Total	282,199.2	43,924.7	326,079.5	100.0%

### **4.3 Comparing benefit-cost ratios in Québec for the 2009-2013 period**

To assess the efficiency of the public funds use, it was considered very interesting to evaluate how much saves, in term of work-stoppage costs, each dollar spent on mediation-conciliation in Québec. The table below presents the benefit-cost ratios in Québec for the 2009-2013 period compared to those of the United States (FMCS) and the United Kingdom (Advisory, Conciliation and Arbitration Service [ACAS]). It is clear that

mediation-conciliation services have permitted annual average savings of approximately \$65.3M in Québec. If these benefits are divided by the value of the expenses incurred each year, we find that each dollar spent on mediation-conciliation saves on average \$12.8 in work-stoppage costs. The record year was 2011, in which the ratio reached a peak of 21.7. Québec's average ratio is very comparable to the American one, where FMCS intervention saved work-stoppage costs of an average value of \$20.7 per each dollar spent on mediation-conciliation, which is still 62% higher than Québec's rate. The higher rate in the United States mainly stems from the size of American bargaining units, which were about 79% larger than Québec units during the analysis period.<sup>23</sup> As such, the same intervention held in the United States helped to avoid more costs than in Québec.

However, by analyzing the evolution of the ratios over time, we can clearly see that Québec ratios became higher than those of the United States as of 2011 and remained so during three consecutive years. The average for Québec after 2011 is 14.3, i.e. more than twice as high as that of the United States (6.5), indicating a sustained performance of the Québec's mediation-conciliation services.

We also note that the estimate found in the case of the United Kingdom, i.e. 76.5, is higher than those found in the case of Québec and the United States. This finding is not surprising given that the ACAS uses a completely different approach. It does not assess costs avoided in all sectors of the economy, as is the case of Québec and the United States, but instead assesses costs avoided in certain clearly defined sectors and for a given year, i.e. 2010-2011. While it is obvious that avoiding a work stoppage in the public transport service in a very crowded city such as London saves enormous costs,<sup>24</sup> this is not the case in all other sectors of the British economy.

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<sup>23</sup>The size of bargaining units having resorted to mediation-conciliation in the United States is 79% greater than that of Québec units, which means that a dollar invested in mediation-conciliation would have earned on average \$22.97 in Québec during the 2009-2013 period if the bargaining units had been the same size as in the United States. These results compare favourably with the findings of the EFP for the FMCS in the United States.

<sup>24</sup>It is worth recalling that there are no provisions as regards essential services in the United Kingdom.

**Table 11. Comparison of benefit-cost ratios**

Year	Total costs avoided in Québec (M\$)	Mediation-conciliation budget in Québec (M\$)	Benefit-cost ratios		
			Québec	United States	United Kingdom
2009	52.4	5.3	9.9	55.5	ND
2010	53.4	5.3	10.1	28.6	76.5
2011	123.5	5.7	21.7	6.1	ND
2012	45.6	4.5	10.1	5.6	ND
2013	51.6	4.6	11.2	7.7	ND
Average	65.3	5.1	12.8	20.7	76.5

## Conclusion

This study assesses the effects of work stoppages on the economy of Québec, and quantifies the costs avoided owing to the mediation-conciliation services offered by the Ministère du Travail, de l'Emploi et de la Solidarité sociale. In a context of fiscal restraint and program review, assessing the performance and the efficiency of the programs and services offered by different government departments and agencies turn to be of a major concern. The quantification of the mediation-conciliation services added value and their contribution to the economy of Québec by this study serves to give some insights about these concerns and to enlighten policy choices. This is an original study which offers the first attempt to assess the added value of Québec's conciliation-mediation services. It covers interventions in economic sectors regulated by the Labour Code of Québec. The information collected, particularly concerning the benefit-cost aspect of government interventions to facilitate the resolution of labour disputes and promote industrial peace, is revealing in several respects.

In fact, the study shows that the mediation-conciliation interventions carried out from January 1, 2009 to December 31, 2013 reduced the number of person-days lost due to work stoppages in Québec by 1,487,880, thus helping the parties to renew their collective agreement or negotiate news ones. The number of work stoppages under provincial jurisdiction declined from 472 to 325, i.e. a decrease of 31.2%. The costs avoided owing to mediation-conciliation services are estimated at \$326.1M and are distributed as follows:

- \$205.3M in workers' wages;
- \$28.9M in company profits; and
- \$91.8M in gains for related industries.

The Ministère du Travail, de l'Emploi et de la Solidarité sociale intervened in 1,840 cases, including 1,488 during the renewal of collective agreements and 352 during the negotiation of initial collective agreements.

Despite efforts made by the Ministère, work stoppages caused a loss of 1,400,616 person-days, which is the equivalent of 9.5 million working hours, and cost Québec's workers and businesses more than \$323.7M. These costs are distributed as follows:

- \$193 M in lost wages for employees of the bargaining units;
- \$29.5 M in lost profits for companies; and
- \$101.1M in lost revenues for related industries.

These work stoppages affected some 84,754 workers, distributed as follows:

- 65,885 employees directly affected by a work stoppage; and
- 18,869 workers indirectly affected by a work stoppage.

It is estimated that each dollar spent in mediation-conciliation during the period of analysis saved \$12.8 on average in Québec<sup>25</sup>. These results, which highlight the contribution of the mediation-conciliation services offered by the Ministère and their contribution to the economy of Québec, confirm the importance of its mission and encourage the development and sharing of experiences in the study and management of industrial relations.

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<sup>25</sup> These results are comparable to the results of the FMCS (see footnote 23).

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## Appendix 1

**Table 1. Number of person-days lost during work stoppages, Québec 2009-2013**

<b>Sector of activity</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>
Agriculture-related services	0	0	825	0	0
Forest services	0	0	130	300	0
<b>Total for the primary sector</b>	<b>0</b>	<b>0</b>	<b>955</b>	<b>300</b>	<b>0</b>
Food industry	26,017	3,001	8,640	2,770	9,370
Beverage industry	0	200	0	0	0
Rubber product industry	0	0	0	0	0
Plastic product industry	0	0	0	0	0
Leather and allied product industry	0	0	0	54	0
Textile product industry	2,655	0	0	0	0
Apparel industry	0	0	0	0	0
Wood industry	0	0	44	0	0
Furniture and home furnishing industry	0	8,768	0	0	0
Paper and paper product industry	0	3,684	0	0	73
Printing, publishing and allied industries	64,534	65,933	0	825	
Primary metal manufacturing industry	0	0	0	105,700	22,244
Fabricated metal product industry (except machinery and transportation equipment industries)	2,104	155	1,343	0	163
Machinery industry (except electrical machinery)	0	416	2,500	0	249
Transportation equipment industry	0	0	0	8,250	466
Electrical and electronic products industry	41,230	16,959	2,075	0	0
Non-metallic mineral product industry	1,173	1,105	1,360	250	
Petroleum and coal products industry	1,925	0	0	0	0
Chemical industry	0	3,171	0	18,260	56,495
<b>Total for the secondary sector</b>	<b>0</b>	<b>107,969</b>	<b>0</b>	<b>139,423</b>	<b>89,060</b>
Transportation	0	0	0	384	160
Warehousing	0	0	0	0	0
Other public services	0	0	154	0	0
Petroleum product wholesalers	0	0	28	0	0
Food, beverage, drug and tobacco wholesalers	3,786	23,920	0	845	0
Motor vehicle, motor vehicle parts and accessories wholesalers	0	616	0	58	0
Hardware, plumbing, heating and construction equipment wholesalers	414	0	0	7,332	2,632

<b>Sector of activity</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>
Wholesalers of various products	0	409	0	6	0
Food, beverage, drug and tobacco retailers	46,323	5,932	3,726	12,947	32,571
Motor vehicle, motor vehicle parts and accessories retailers	2,093	8,793	10,535	1,222	93,003
Other retailers	0	920	0	0	2,775
Deposit-accepting intermediaries	0	0	0	0	0
Investment companies	0	0	0	0	0
Insurance companies	0	0	0	0	0
Real estate services (except developers)	101	0	754	0	0
Business services	19,517	0	0	195	48
Provincial government services	0	0	0	31,800	1,838
Local government services	0	5,396	0	478	10,743
Education services	0	56,934	210,557	498	230
Health and social services	1,683	1,231	2,012	11,585	1,914
Accommodations	17,731	11,956	18,089	34,830	53,590
Food services	14,375	14,633	14,686	589	0
Amusement and recreation services	0	146	0	20	0
Personal and household services	0	861	0	0	0
Associations	0	0	0	0	55
Other services	0	0	0	0	444
<b>Total for the tertiary sector</b>	0	<b>132,163</b>	<b>285,357</b>	0	<b>200,003</b>
<b>Total</b>	0	<b>240,132</b>	<b>328,355</b>	0	<b>289,063</b>

**Table 2. Estimate of the direct costs of work stoppages (in thousands of dollars), Québec 2009-2013**

Sector of activity	2009		2010		2011		2012		2013	
	Wages	Profits	Wages	Profits	Wages	Profits	Wages	Profits	Wages	Profits
Agriculture-related services	0.0	0.0	0.0	0.0	171.4	89.4	0.0	0.0	0.0	0.0
Forest services	0.0	0.0	0.0	0.0	27.0	14.1	59.5	11.5	0.0	0.0
<b>Total for the primary sector</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>198.4</b>	<b>103.5</b>	<b>59.5</b>	<b>11.5</b>	<b>0.0</b>	<b>0.0</b>
Food industry	3,400.0	534.2	421.7	122.3	1,243.8	303.3	409.5	66.8	1,355.5	833.3
Beverage industry	0.0	0.0	34.6	8.2	0.0	0.0	0.0	0.0	0.0	0.0
Rubber product industry	0.0	0.0			0.0	0.0	326.4	48.3	0.0	0.0
Plastic product industry	0.0	0.0	771.1	186.5	0.0	0.0	179.7	29.1	0.0	0.0
Leather and allied product industry	0.0	0.0	0.0	0.0	0.0	0.0	9.3	1.3	0.0	0.0
Textile product industry	325.9	54.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Apparel industry			0.0	0.0	0.0	0.0	12.1	2.7	0.0	0.0
Wood industry	1,031.9	143.6	0.0	0.0	7.5	1.5	0.0	0.0	0.0	0.0
Furniture and home furnishing industry	0.0	0.0	1,199.0	357.3	0.0	0.0	0.0	0.0	0.0	0.0
Paper and paper product industry	0.0	0.0	674.6	150.1	1,505.0	258.1	0.0	0.0	15.2	6.5
Printing, publishing and allied industries	9,231.1	1,325.0	9,046.2	2,686.8	2,810.5	657.3	129.0	19.9	0.0	0.0
Primary metal manufacturing industry	0.0	0.0	0.0	0.0	0.0	0.0	22,261.1	2,550.4	4,579.7	1,978.1
Fabricated metal product industry (except machinery and transportation equipment industries)	442.3	43.2	26.3	6.3	246.5	47.1	0.0	0.0	28.9	14.5
Machinery industry (except electrical machinery)	0.0	0.0	77.8	17.0	476.2	87.7	0.0	0.0	46.0	22.1
Transportation equipment industry	0.0	0.0	0.0	0.0	0.0	0.0	1,746.5	199.1	94.5	41.4
Electrical and electronics product industry	6,007.5	846.5	2,938.8	691.1	350.0	72.8			0.0	0.0
Non-metallic mineral product industry	203.4	24.1	183.7	45.0	265.9	47.7	43.5	6.0	0.0	0.0
Petroleum and coal products industry	297.0	39.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Chemical industry	0.0	0.0	514.2	129.2	0.0	0.0	3,443.3	440.6	10,380.8	5,024.0
<b>Total for the secondary sector</b>	<b>20,939.0</b>	<b>3,010.7</b>	<b>15,888.0</b>	<b>4,399.9</b>	<b>6,905.3</b>	<b>1,475.7</b>	<b>28,560.2</b>	<b>3,364.0</b>	<b>16,500.6</b>	<b>7,920.0</b>

Sector of activity	2009		2010		2011		2012		2013	
	Wages	Profits								
Transportation	101.3	13.4	0.0	0.0	175.6	22.9	67.0	6.2	29.7	8.9
Warehousing	0.0	0.0	14.8	2.7	0.0	0.0	0.0	0.0	0.0	0.0
Other public services	0.0	0.0	0.0	0.0	40.2	7.4	0.0	0.0	0.0	0.0
Petroleum product wholesalers	0.0	0.0	0.0	0.0	4.6	1.6	0.0	0.0	0.0	0.0
Food, beverage, drug and tobacco wholesalers	543.5	133.5	3,649.1	1,218.7	0.0	0.0	123.8	38.2	0.0	0.0
Motor vehicle, motor vehicle parts and accessories wholesalers	0.0	0.0	90.1	31.4	381.4	144.9	7.7	2.6	0.0	0.0
Hardware, plumbing, heating and construction equipment wholesalers	59.4	14.6	0.0	0.0	0.0	0.0	1,160.2	331.5	398.4	335.5
Wholesalers of various products	0.0	0.0	60.4	20.8	0.0	0.0	0.9	0.3	0.0	0.0
Food, beverage, drug and tobacco retailers	3,480.7	402.1	451.2	61.1	316.7	34.3	1,357.9	95.1	2,694.3	606.3
Motor vehicle, motor vehicle parts and accessories retailers	224.2	18.2	988.0	90.6	1,173.1	97.0	98.8	9.0	10,015.5	1,731.2
Other retailers	0.0	0.0	67.0	9.5	0.0	0.0	0.0	0.0	227.4	51.7
Deposit-accepting intermediaries	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Investment companies	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Insurance companies	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Real estate services (except developers)	12.7	7.8	0.0	0.0	112.7	78.8	0.0	0.0	0.0	0.0
Business services	2,914.2	225.4	0.0	0.0	0.0	0.0	32.6	3.4	8.1	2.2
Provincial government services	0.0	0.0	0.0	0.0	3,375.8	225.0	7,465.8	323.0	438.5	47.2
Local government services	2,181.8	111.3	928.8	72.3	958.4	83.3	87.8	4.9	2,058.5	276.1
Education services	3,794.4	0.0	6,405.3	224.8	25,760.0	783.8	58.8	1.9	27.1	2.8
Health and social services	283.0	0.0	207.6	4.9	343.6	7.4	1,911.0	46.2	319.9	23.5
Accommodations	1,521.7	51.7	1,015.4	47.3	1,541.9	62.5	3,088.1	94.8	5,214.1	423.7
Food services	949.7	41.5	1,006.8	57.5	1,113.7	51.8	43.5	1.6	0.0	0.0
Amusement and recreation services	0.0	0.0	14.8	4.6	0.0	0.0	2.1	0.0	0.0	0.0
Personal and household services	14.2	2.0	80.3	15.8	142.9	30.1	0.0	0.0	0.0	0.0
Associations	13.6	0.5	0.0	0.0	0.0	0.0	7.4	0.6	10.3	1.4
Other services	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	51.1	23.6
<b>Total for the tertiary sector</b>	<b>16,094.4</b>	<b>1,022.0</b>	<b>15,027.8</b>	<b>1,892.9</b>	<b>35,440.5</b>	<b>1,630.7</b>	<b>15,930.3</b>	<b>1,163.3</b>	<b>21,492.8</b>	<b>3,534.2</b>
<b>Total</b>	<b>37,033.3</b>	<b>4,032.6</b>	<b>30,915.8</b>	<b>6,292.8</b>	<b>42,544.2</b>	<b>3,209.9</b>	<b>44,550.1</b>	<b>4,538.8</b>	<b>37,993.4</b>	<b>11,454.2</b>

**Table 3. Estimate of the total direct costs of work stoppages (in thousands of dollars), Québec 2009-2013**

Sector of activity	2009		2010		2011		2012		2013	
	Wages	Profits	Wages	Profits	Wages	Profits	Wages	Profits	Wages	Profits
Agriculture-related services	0.0	0.0	0.0	0.0	352.8	184.0	0.0	0.0	0.0	0.0
Forest services	0.0	0.0	0.0	0.0	49.2	25.7	108.5	21.0	0.0	0.0
<b>Total for the primary sector</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>402.1</b>	<b>209.6</b>	<b>108.5</b>	<b>21.0</b>	<b>0.0</b>	<b>0.0</b>
Food industry	5,310.3	834.3	658.7	191.0	1,942.7	473.6	639.6	104.4	2,117.1	1,301.4
Beverage industry	0.0	0.0	54.0	12.7	0.0	0.0	0.0	0.0	0.0	0.0
Rubber product industry	0.0	0.0	0.0	0.0	0.0	0.0	509.8	75.4	0.0	0.0
Plastic product industry	0.0	0.0	1,204.4	291.3	0.0	0.0	280.6	45.4	0.0	0.0
Leather and allied product industry	0.0	0.0	0.0	0.0	0.0	0.0	14.6	2.0	0.0	0.0
Textile product industry	509.1	85.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Apparel industry	0.0	0.0	0.0	0.0	0.0	0.0	18.8	4.1	0.0	0.0
Wood industry	1,611.6	224.3	0.0	0.0	11.6	2.4	0.0	0.0	0.0	0.0
Furniture and home furnishing industry	0.0	0.0	1,872.7	558.1	0.0	0.0	0.0	0.0	0.0	0.0
Paper and paper product industry	0.0	0.0	1,053.6	234.5	2,350.5	403.2	0.0	0.0	23.7	10.1
Printing, publishing and allied industries	14,417.6	2,069.5	14,128.9	4,196.5	4,389.6	1,026.6	201.5	31.1	0.0	0.0
Primary metal manufacturing industry	0.0	0.0	0.0	0.0	0.0	0.0	34,768.7	3,983.3	7,152.8	3,089.6
Fabricated metal product industry (except machinery and transportation equipment industries)	690.7	67.5	41.1	9.9	384.9	73.6	0.0	0.0	45.1	22.6
Machinery industry (except electrical machinery)	0.0	0.0	121.5	26.5	743.8	137.1	0.0	0.0	71.9	34.6
Transportation equipment industry	0.0	0.0	0.0	0.0	0.0	0.0	2,727.7	310.9	147.6	64.7

Sector of activity	2009		2010		2011		2012		2013	
	Wages	Profits								
Electrical and electronic products industry	9,382.8	1,322.2	4,590.0	1,079.4	546.6	113.8	0.0	0.0	0.0	0.0
Non-metallic mineral product industry	317.6	37.6	286.9	70.3	415.3	74.6	67.9	9.4	0.0	0.0
Petroleum and coal products industry	463.9	61.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Chemical industry	0,0	0.0	803.1	20 1.8	0.0	0.0	5,377.9	688.1	16,213.4	7,846.8
<b>Total for the secondary sector</b>	<b>32,703.7</b>	<b>4,702.2</b>	<b>24,814.8</b>	<b>6,871.9</b>	<b>10,785.1</b>	<b>2,304.8</b>	<b>44,607.0</b>	<b>5,254.1</b>	<b>25,771.5</b>	<b>12,369.9</b>
Transportation	158.3	21.0	0.0	0.0	234.4	30.5	89.4	8.3	39.7	11.9
Warehousing	0.0	0.0	23.1	4.3	0.0	0.0	0.0	0.0	0.0	0.0
Other public services	0.0	0.0	0.0	0.0	64.5	11.9	0.0	0.0	0.0	0.0
Petroleum product wholesalers	0.0	0.0	0.0	0.0	6.1	2.2	0.0	0.0	0.0	0.0
Food, beverage, drug and tobacco wholesalers	848.9	208.6	5,699.4	1,903.4	0.0	0.0	165.1	50.9	0.0	0.0
Motor vehicle, motor vehicle parts and accessories wholesalers	0.0	0.0	140.7	49.0	508.6	193.2	10.3	3.5	0.0	0.0
Hardware, plumbing, heating and construction equipment wholesalers	92.8	22.8	0.0	0.0	0.0	0.0	1,547.1	442.1	531.2	447.3
Wholesalers of various products	0.0	0.0	94.4	32.5	0.0	0.0	1.2	0.4	0.0	0.0
Food, beverage, drug and tobacco retailers	5,436.3	628.0	704.7	95.5	396.8	43.0	1,701.3	119.1	3,375.5	759.6
Motor vehicle, motor vehicle parts and accessories retailers	350.2	28.4	1,543.2	141.5	1,469.7	121.5	123.8	11.2	12,547.9	2,168.9
Other retailers	0.0	0.0	104.6	14.8	0.0	0.0	0.0	0.0	284.9	64.7
Deposit-accepting intermediaries	0.0	0.0	0.0	0.0	0.0	0.0	717.2	349.7	0.0	0.0
Investment companies	0.0	0.0	0.0	0.0	0.0	0.0	57.0	28.9	0.0	0.0
Insurance companies	0.0	0.0	75.0	48.1	0.0	0.0	0.0	0.0	0.0	0.0

Sector of activity	2009		2010		2011		2012		2013	
	Wages	Profits								
Real estate services (except developers)	19.9	12.1	0.0	0.0	209.3	146.3	0.0	0.0	0.0	0.0
Business services	4,551.6	352.1	0.0	0.0	0.0	0.0	44.6	4.7	11.0	3.0
Provincial government services	0.0	0.0	0.0	0.0	4,154.7	276.9	9,188.4	397.5	539.7	58.1
Local government services	3,407.6	173.8	1,450.6	112.9	1,179.5	102.5	108.0	6.0	2,533.5	339.8
Education services	5,926.3	0.0	10,004.2	351.1	31,703.9	964.7	72.3	2.4	33.3	3.4
Health and social services	441.9	0.0	324.3	7.7	410.5	8.8	2,283.2	55.2	382.3	28.1
Accommodations	2,376.7	80.7	1,585.9	73.9	2,020.3	81.9	4,046.2	124.2	6,831.8	555.2
Food services	1,483.2	64.7	1,572.6	89.8	1,459.2	67.9	57.1	2.0	0.0	0.0
Amusement and recreation services	0.0	0.0	23.1	7.2	0.0	0.0	3.3	0.0	0.0	0.0
Personal and household services	22.1	3.2	125.4	24.7	175.8	37.1	0.0	0.0	0.0	0.0
Associations	21.2	0.8	0.0	0.0	0.0	0.0	9.4	0.7	13.1	1.8
Other services	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	64.8	29.9
<b>Total for the tertiary sector</b>	<b>25,137.1</b>	<b>1,596.2</b>	<b>23,471.2</b>	<b>2,956.5</b>	<b>43,993.3</b>	<b>2,088.2</b>	<b>20,224.9</b>	<b>1,607.1</b>	<b>27,188.7</b>	<b>4,471.9</b>
<b>Total</b>	<b>57,840.8</b>	<b>6,298.4</b>	<b>48,286.0</b>	<b>9,828.4</b>	<b>55,180.5</b>	<b>4,602.7</b>	<b>64,940.3</b>	<b>6,882.3</b>	<b>52,960.3</b>	<b>16,841.8</b>

## Appendix 2

**Table 1. Estimate of the number of person-days not lost due to mediation-conciliation, Québec 2009-2013**

Sector of activity	2009		2010		2011		2012		2013	
	Case <sup>126</sup>	Case <sup>227</sup>	Case 1	Case 2	Case 1	Case 2	Case 1	Case 2	Case 1	Case 2
Agriculture	0	0	0	5.8	0	0	0	0	0	0
Agriculture-related services	0	0	0	0	92.0	0	0	0	0	0
Logging	0	0	0	7.2	26.4	0	0	0	36.0	0
Forest services	0	0	29.8	0	0	8.0	23.0	0	14.4	0
Mines	0	0	0	0	911.2		17.9	0	0	0
<b>Total for the primary sector</b>	<b>14.4</b>	<b>0.0</b>	<b>29.8</b>	<b>13.0</b>	<b>1,029.6</b>	<b>8.0</b>	<b>41.0</b>	<b>0.0</b>	<b>50.4</b>	<b>3.1</b>
Food industry	10,082.3	0	1,339.2	10.0	11,570.7	22.1	1,758.6	101.0	29,399.3	0
Beverage industry	107.7	0	3.5	0	0	0	200.3	0	927.1	0
Tobacco industry	0	0	762.2	0	0	0	0	0	0	0
Rubber product industry	753.6	0	0	0	0	0	194.5	0	0	0
Plastic product industry	5,382.9	0	565.9	0	2,004.8	0	520.8	0	0	0
Leather and allied product industry	176.9	0		0	0	0	42.2	0	0	0
Textile product industry	292.6	0	2,071.9	0	1,212.0	0	0	0	0	222.1
Apparel industry	0	0	0	0	0	0	42.7	0	1,471.1	0
Wood industry	2,001.1	49.2	6,360.5	0	264.5	53.8	32,382.5	0	5,934.4	0
Furniture industry	292.2	0	2,498.7	0	853.4		1,400.4	0	161.0	0
Paper and paper product industry	0	0	600.2	0	15,288.0	1,781.5	6,492.0	0	136.8	0
Printing, publishing and allied industries	16,765.3	4,347.6	14,602.4	1,998.8	6,660.3	59.7	4,131.6	396.0	977.0	27.8
Primary metal manufacturing industry	16,848.6	0	31,405.3	0	414.1	378.7	26,936.0	0	13,731.5	0
Fabricated metal product industry (except machinery and transportation equipment industries)	236.0	0	271.1	0	3,495.0	252.8	2,123.1	0	70.1	0
Machinery industry (except electrical machinery)	1,122.7	499.8	80.1	0	1,388.0	0	1,045.4	0	56.4	0
Transportation equipment industry	9,343.2	0	6,392.7	182.5	1,095.8	121.2	1,390.0	120.0	6.2	0

<sup>26</sup> Case 1: number of person-days not lost when collective agreements are renewed.

<sup>27</sup> Case 2: number of person-days not lost when first collective agreements are negotiated.

Sector of activity	2009		2010		2011		2012		2013	
	Case 1	Case 2	Case 1	Case 2	Case 1	Case 2	Case 1	Case 2	Case 1	Case 2
Electrical and electronic products industry	912.0	121.6	1,945.4		2,058.4		997.0		2,026.3	
Non-metallic mineral product industry	1,302.7	596.2	1,107.6	722.8	421.6		1,453.6		1,720.9	
Petroleum and coal products industry	552.6		622.6	26.8	1,752.3					38.9
Chemical industry	3,552.7	238.4	2,416.0	5,254.8	292.9		889.8		5,226.4	
Other manufacturing industries	30,728.8	1,999.4	1,213.1		156.5		1,439.1		360.8	
<b>Total for the secondary sector</b>	<b>100,454.0</b>	<b>7,852.1</b>	<b>74,258.2</b>	<b>8,329.9</b>	<b>48,928.3</b>	<b>2,669.9</b>	<b>83,439.7</b>	<b>932.5</b>	<b>66,524.4</b>	<b>289.6</b>
Transportation	381.7	14.6	3,324.1	534.2	545.0	34.8	409.9	32.2	272.4	103.1
Warehousing			6.7				30.0	3.4		
Communications			46.1							
Other public services	209.8		6,936.3	115.3	235.2	56.0	145.8	561.2	663.0	161.8
Agricultural product wholesalers							548.9	149.7		
Petroleum product wholesalers					44.1					80.6
Food, beverage, drug and tobacco wholesalers	13,262.2		966.0		38.6		16,440.3		78.3	1,129.0
Clothing, footwear, fabric and haberdashery wholesalers			96.1							
Motor vehicle, motor vehicle parts and accessories wholesalers	263.8		845.4		305.8		21.8		370.7	
Hardware, plumbing, heating and construction equipment wholesalers	548.8		703.1		634.4		1,160.6		342.7	268.8
Machinery, equipment and supplies merchant wholesalers	659.4	143.9			22.1				161.8	
Wholesalers of various products	101.9		148.3	15.3	910.2	353.0	1.2	1.1	52.2	224.0
Food, beverage, drug and tobacco retailers	9,079.1	70.5	8,597.1	82.5	19,880.6		5,434.5	288.4	42,902.3	1,988.5
Footwear, apparel, fabric and yarn retailers				1,150.0			149.8			
Furniture, appliance and home furnishing retailers									1,70.1	
Motor vehicle, motor vehicle parts and accessories retailers	11,849.1	49.9	1,172.4	1,325.3	1,279.5	222.2	1,146.0	331.3	1,189.8	4,943.4
Other retailers	2,684.3		115.0	165.6	979.5	1,680.7	455.5		1,051.1	235.5
Deposit-accepting intermediaries	1,426.8		780.1		5,394.8		10,833.9	322.6	1,409.6	219.3
Investment companies				57.6		248.2	61.6	1.0	313.2	913.6
Insurance companies			29.6		286.8				287.1	
Real estate services	8.1	206.0	38.4	465.0	266.1				2,307.5	

Sector of activity	2009		2010		2011		2012		2013	
	Case 1	Case 2	Case 1	Case 2	Case 1	Case 2	Case 1	Case 2	Case 1	Case 2
Business services	2,933.5	165.6	1,863.8	2,217.3	860.5	496.5	108.0	56.0	1,128.6	21.0
Provincial government services					20.0	4.8	3,845.7		41.9	
Local government services	729.8	10.2	5,388.8	168.0	2,537.3	80.2	6,699.0	6,605.1	8,710.3	123.4
Education services	82,085.5	92.4	1,219.6	7.9	520,490.9	100.2	692.4		2,198.7	143.8
Health and social services	316.9	94.1	52,227.7	541.6	780.2	523.4	616.3	108.0	7,995.1	911.1
Accommodations	4,873.8	2,703.5	4,339.2	1,959.6	10,361.1		7,314.0	87.9	13,106.2	1,064.6
Food services			822.6	80.9	5,476.7		1,126.0	132.9	469.9	161.8
Amusement and recreation services	3,668.8		10.9		10,403.5	33.1	403.4	3.6	15,813.3	182.7
Personal and household services	55.0		216.5		2,712.4		71.5		663.0	
Associations	13.8	8.0	1,110.6	661.0	52,536.1	198.6	13.2		382.8	34.6
Other services	2,997.4	119.9	23,299.1	303.6	766.7	468.9	1,603.7		112.5	639.4
<b>Total for the tertiary sector</b>	<b>138,149.3</b>	<b>3,678.5</b>	<b>114,303.4</b>	<b>9,850.7</b>	<b>637,768.3</b>	<b>4,500.5</b>	<b>59,333.0</b>	<b>8,684.3</b>	<b>103,194.2</b>	<b>13,550.1</b>
<b>Total</b>	<b>238,617.7</b>	<b>11,530.6</b>	<b>188,591.4</b>	<b>18,193.6</b>	<b>687,726.2</b>	<b>7,178.3</b>	<b>142,813.6</b>	<b>9,616.7</b>	<b>169,769.0</b>	<b>13,842.9</b>

**Table 2. Estimate of total costs avoided (direct and indirect, in thousands of dollars) due to mediation-conciliation, Québec 2009-2013**

Sector of activity	2009		2010		2011		2012		2013	
	Wages	Profits	Wages	Profits	Wages	Profits	Wages	Profits	Wages	Profits
Agriculture	0.0	0.0	2.4	1.8	0.0	0.0	0.0	0.0	1.3	0.9
Agriculture-related services	6.0	2.8	0.0	0.0	39.3	20.5	0.0	0.0	0.0	0
Logging	0.0	0.0	2.7	2.0	0.0	0.0	0.0	0.0	15.2	9.6
Forest services	0.0	0.0	11.0	8.1	13.0	6.8	10.0	2.5	6.1	3.8
Mines	0.0	0.0	5.1	3.7	387.4	141.6	6.7	1.8	1.3	0.9
<b>Total for the primary sector</b>	<b>6.0</b>	<b>2.8</b>	<b>21.1</b>	<b>15.6</b>	<b>439.7</b>	<b>168.9</b>	<b>16.7</b>	<b>4.3</b>	<b>23.8</b>	<b>15.2</b>
Food industry	2,057.9	323.3	296.1	85.9	2,606.7	635.5	417.6	68.4	6,542.9	4,083.4
Beverage industry	27.3	3.5	1.0	0.2	0.0	0.0	46.3	7.5	206.3	128.8
Tobacco industry	0.0	0.0	160.6	48.5	0.0	0.0	0.0	0.0	0.0	0.0
Rubber product industry	172.8	24.2	0.0	0.0	0.0	0.0	49.6	7.3	0.0	0.0
Plastic product industry	1,297.2	172.6	158.8	38.4	547.0	109.9	123.6	20.0	1,196.8	599.9
Leather and allied product industry	28.0	5.7	0.0	0.0	0.0	0.0	11.9	1.6	0.0	0.0
Textile product industry	56.1	9.4	367.5	131.9	229.4	66.4	0.0	0.0	53.5	30.8
Apparel industry	0.0	0.0	0.0	0.0	0.0	0.0	7.3	1.6	281.3	204.3
Wood industry	472.5	65.7	1,614.5	411.0	84.3	17.4	8,818.7	1,223.1	1,623.5	824.3
Furniture and related product industry	59.7	9.4	533.7	159.0	195.3	46.8	318.9	52.8	38.8	22.4
Paper and paper product industry	0.0	0.0	171.6	38.2	5,455.9	935.8	2,507.9	307.2	46.4	19.0
Printing, publishing and allied industries	4,716.8	677.1	3,557.5	1,056.6	1,575.2	368.4	1,052.8	163.2	249.5	139.6
Primary metal manufacturing industry	5,599.5	540.3	10,860.5	1,998.9	278.8	43.5	8,972.0	1,031.4	4,755.8	1,907.2
Fabricated metal product industry (except machinery and transportation equipment industries)	77.5	7.6	71.8	17.3	1,074.2	205.5	662.9	88.9	21.1	9.9
Machinery industry (except electrical machinery)	420.8	52.0	23.4	5.1	412.9	76.1	313.2	39.4	16.9	7.8
Transportation equipment industry	2,603.6	299.6	1,933.1	418.5	383.4	66.7	498.3	58.3	2.0	0.9
Electrical and electronic products industry	235.2	33.1	526.5	123.8	542.2	112.8	280.6	37.6	536.4	281.4

Sector of activity	2009		2010		2011		2012		2013	
	Wages	Profits								
Non-metallic mineral product industry	514.2	60.9	475.3	116.5	128.7	23.1	419.5	54.8	523.0	239.0
Petroleum and coal products industry	133.2	17.7	170.9	41.3	478.1	96.1	0.0	0.0	9.0	5.4
Chemical industry	936.4	121.6	1,942.8	488.2	84.6	16.1	262.0	33.5	1,666.7	725.9
Other manufacturing industries	7,311.8	1,049.5	255.6	77.2	38.0	8.6	345.0	54.2	94.3	50.1
<b>Total for the secondary sector</b>	<b>26,720.4</b>	<b>3,473.2</b>	<b>23,121.1</b>	<b>5,256.5</b>	<b>14,114.7</b>	<b>2,828.6</b>	<b>25,108.2</b>	<b>3,250.8</b>	<b>17,864.4</b>	<b>9,280.1</b>
Transportation	91.6	12.1	905.3	168.2	144.9	18.9	105.7	10.1	96.4	28.0
Warehousing	0.0	0.0	1.6	0.3	0.0	0.0	7.2	0.7	0.0	0.0
Communications	0.0	0.0	9.4	1.3	0.0	0.0	0.0	0.0	0.0	0.0
Other public services	42.8	7.8	1,464.5	340.2	121.9	22.5	93.3	16.3	315.8	102.0
Agricultural product wholesalers	0.0	0.0	0.0	0.0	0.0	0.0	114.6	35.4	0.0	0.0
Petroleum product wholesalers	0.0	0.0	0.0	0.0	9.6	3.5	0.0	0.0	16.3	13.7
Food, beverage, drug and tobacco wholesalers	2,538.8	623.8	196.5	65.6	8.4	3.0	3,212.4	991.2	245.4	205.2
Clothing, footwear, fabric and haberdashery wholesalers	0.0	0.0	19.5	6.5	0.0	0.0	0.0	0.0	0.0	0.0
Motor vehicle, motor vehicle parts and accessories wholesalers	49.9	12.4	164.9	57.4	63.2	24.0	3.9	1.3	85.2	63.0
Hardware, plumbing, heating and construction equipment wholesalers	105.1	25.8	143.0	47.8	137.8	49.8	244.9	70.0	130.8	103.9
Machinery, equipment and supplies merchant wholesalers	184.1	37.8	0.0	0.0	6.0	1.7	0.0	0.0	44.8	27.5
Wholesalers of various products	18.3	4.8	32.2	11.1	241.7	99.2	50.9	20.9	55.6	46.9
Food, beverage, drug and tobacco retailers	861.3	99.5	827.2	112.1	2,117.0	229.4	721.8	50.5	4,652.3	1,046.9
Footwear, apparel, fabric and yarn retailers	0.0	0.0	104.9	14.8	0.0	0.0	15.2	1.4	0.0	0.0
Furniture, appliance and home furnishing retailers	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	129.8	27.3
Motor vehicle, motor vehicle parts and accessories retailers	1,596.9	129.4	366.7	34.4	209.5	17.3	140.8	12.6	836.0	143.0
Other retailers	237.8	29.2	10.5	1.5	283.3	30.7	195.8	20.3	132.1	30.0
Deposit-accepting intermediaries	440.0	218.6	225.8	144.8	1,601.1	1,121.2	3,729.5	1,818.7	518.7	850.1
Investment companies	0.0	0.0	15.5	9.9	68.8	48.1	56.1	35.6	373.7	593.1
Insurance companies	0.0	0.0	8.0	5.1	79.5	55.6	0.0	0.0	84.2	138.8

Sector of activity	2009		2010		2011		2012		2013	
	Wages	Profits	Wages	Profits	Wages	Profits	Wages	Profits	Wages	Profits
Real estate services (except developers)	50.1	30.6	116.9	86.7	73.9	51.6	0.0	0.0	573.7	1,115.5
Business services	631.8	48.9	722.1	48.4	335.5	41.2	118.0	14.0	263.5	72.1
Provincial government services	0.0	0.0	0.0	0.0	7.0	0.5	1,112.3	48.1	12.3	1.3
Local government services	160.2	8.2	1,177.2	91.6	569.8	49.5	1,807.6	100.5	2,081.8	279.4
Education services	11,866.5	0.0	170.0	6.0	78,386.1	2,385.1	112.8	3.7	359.2	34.8
Health and social services	82.6	0.0	10,634.9	251.2	266.0	5.7	214.3	4.9	1,840.7	130.8
Accommodations	548.1	18.6	700.9	32.7	1,157.2	46.9	852.1	26.2	1,698.6	146.8
Food services	234.0	10.2	81.5	4.7	525.5	25.3	112.1	4.0	63.0	6.6
Amusement and recreation services	517.3	102.9	1.7	0.5	1,675.7	289.2	71.0	9.6	2,789.6	1,364.2
Personal and household services	7.1	1.0	24.8	4.9	349.7	73.7	8.2	1.3	95.9	40.4
Associations	4.7	0.2	378.5	30.1	11,604.0	1,026.7	36.6	2.2	98.1	13.6
Other services	449.0	65.7	4,157.4	790.2	190.8	38.4	275.1	46.3	111.0	50.7
<b>Total for the tertiary sector</b>	<b>20,717.8</b>	<b>1,487.6</b>	<b>22,661.3</b>	<b>2,368.1</b>	<b>100,233.9</b>	<b>5,758.8</b>	<b>13,412.1</b>	<b>3,345.6</b>	<b>17,704.5</b>	<b>6,675.7</b>
<b>Total</b>	<b>47,444.2</b>	<b>4,963.5</b>	<b>45,803.5</b>	<b>7,640.2</b>	<b>114,788.3</b>	<b>8,756.3</b>	<b>38,537.0</b>	<b>6,600.7</b>	<b>35,592.8</b>	<b>15,971.0</b>

