

Special Projects

# Studies and Research Projects

SUMMARY RR-707



## Québec Survey on Working and Employment Conditions and Occupational Health and Safety (EQCOTESST)

*Michel Vézina  
Esther Cloutier  
Susan Stock  
Katherine Lippel  
Éric Fortin  
Alain Delisle*

*Marie St-Vincent  
Amélie Funes  
Patrice Duguay  
Samuel Vézina  
Pascale Prud'homme*

Institut national  
de santé publique  
Québec 

Institut  
de la statistique  
Québec 





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IRSST – Communications Division

505 De Maisonneuve Blvd. West

Montréal, Québec

H3A 3C2

Phone: 514 288-1551

Fax: 514 288-7636

[publications@irsst.qc.ca](mailto:publications@irsst.qc.ca)

[www.irsst.qc.ca](http://www.irsst.qc.ca)

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*Michel Vézina<sup>1,2</sup>, Esther Cloutier<sup>3</sup>, Susan Stock<sup>1,4</sup>, Katherine Lippe<sup>5</sup>,  
Éric Fortin<sup>6</sup>, Alain Delisle<sup>7</sup>, Marie St-Vincent<sup>3</sup>, Amélie Funes<sup>1</sup>,  
Patrice Duguay<sup>3</sup>, Samuel Vézina<sup>3</sup>, Pascale Prud'homme<sup>3</sup>*

### With the collaboration of :

*Robert Arcand<sup>1</sup>, Noël Boulianne<sup>8</sup>, Louise St-Arnaud<sup>2</sup>, Karen Messing<sup>9</sup>,  
Alice Turcot<sup>1</sup>, Jean-François Boivin<sup>8</sup>, Doris Armstrong<sup>10</sup>, Luc Cloutier<sup>6</sup>,  
Carole Dupéré<sup>10</sup>, Cathy Belzile<sup>10</sup>, Nathalie Audet<sup>6</sup>*

<sup>1</sup>*Institut national de santé publique du Québec (INSPQ)*

<sup>2</sup>*Université Laval*

<sup>3</sup>*Institut de recherche Robert-Sauvé en santé et en sécurité du travail (IRSST)*

<sup>4</sup>*Université de Montréal*

<sup>5</sup>*Université d'Ottawa*

<sup>6</sup>*Institut de la statistique du Québec (ISQ)*

<sup>7</sup>*Université de Sherbrooke*

<sup>8</sup>*Ministère du Travail*

<sup>9</sup>*UQAM*

<sup>10</sup>*Commission des normes du travail*



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# SUMMARY REPORT

## *Québec Survey on Working and Employment Conditions and Occupational Health and Safety (EQCOTESST)*

### Authors of the report :

Michel Vézina<sup>1,2</sup>, Esther Cloutier<sup>3</sup>, Susan Stock<sup>1,4</sup>, Katherine Lippel<sup>1,5</sup>, Éric Fortin<sup>6</sup>, Alain Delisle<sup>7</sup>, Marie St-Vincent<sup>3</sup>, Amélie Funes<sup>1</sup>, Patrice Duguay<sup>3</sup>, Samuel Vézina<sup>3</sup>, Pascale Prud'homme<sup>3</sup>

### With the collaboration of :

Robert Arcand<sup>1</sup>, Noel Boulianne<sup>8</sup>, Louise St-Arnaud<sup>2</sup>, Karen Messing<sup>9</sup>, Alice Turcot<sup>1</sup>, Jean-François Boivin<sup>8</sup>, Doris Armstrong<sup>10</sup>, Luc Cloutier<sup>6</sup>, Carole Dupéré<sup>10</sup>, Cathy Belzile<sup>10</sup>, Nathalie Audet<sup>6</sup>

1. *Institut national de santé publique du Québec (INSPQ)*
2. *Université Laval*
3. *Institut de recherche Robert-Sauvé en santé et en sécurité du travail (IRSST)*
4. *Université de Montréal*
5. *University of Ottawa*
6. *Institut de la statistique du Québec (ISQ)*
7. *Université de Sherbrooke*
8. *Ministère du Travail du Québec*
9. *Université du Québec à Montréal*
10. *Commission des normes du travail du Québec*

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**Publication coordinated by the IRSST, under the responsibility of :**

Michel Vézina, *Direction des risques biologiques et de la santé au travail* (biological hazards and occupational health division), INSPQ  
Esther Cloutier, Research Department, IRSST

**Other principal investigators :**

Susan Stock, *Direction des risques biologiques et de la santé au travail* (biological risks and occupational health division), INSPQ and Department of social and preventive medicine, Université de Montréal  
Katherine Lippel, member of the *Groupe scientifique sur l'organisation du travail* (scientific group on work organization), INSPQ, and Law Faculty, Civil Law Section, University of Ottawa  
Alain Delisle, Department of Kinanthropology, Université de Sherbrooke  
Marie St-Vincent, Research Department, IRSST

**Survey (ISQ) :**

Éric Fortin, *Direction des enquêtes longitudinales et sociales* (longitudinal and social surveys division) (coordination)  
France Lapointe, *Direction de la méthodologie et de la qualité* (methodology and quality division)  
Marie-Ève St-Amand, *Direction des stratégies et des opérations de collecte* (data collection strategies and operations division)  
Issouf Traoré, *Direction des statistiques de santé* (health statistics division)  
Nathalie Audet, *Direction des enquêtes longitudinales et sociales*  
Robert Courtemanche, *Direction de la méthodologie et de la qualité*  
Lyne Des Groseilliers, *Direction de la méthodologie et de la qualité*  
Luc Cloutier, *Direction des statistiques du travail et de la rémunération* (labour and employment earnings statistics division)  
Daniel Tremblay, *Direction générale adjointe aux statistiques et à l'analyse sociale* (assistant director general's office of statistics and social analysis)

**Other collaborators in the survey or the production of this publication :**

Amélie Funes, *Direction des risques biologiques et de la santé au travail*, INSPQ  
Karen Messing, member of the *Groupe scientifique sur les troubles musculo-squelettiques liés au travail* (scientific group on work-related musculoskeletal disorders), INSPQ and CINBIOSE, UQAM  
Alice Turcot, *Direction des risques biologiques et de la santé au travail*, INSPQ  
Louise St-Arnaud, member of the *Groupe scientifique sur l'organisation du travail*, INSPQ  
Pascale Prud'homme, Scientific Division, IRSST  
Patrice Duguay, Scientific Division, IRSST  
Samuel Vézina, Scientific Division, IRSST  
Daniel Vergara, Scientific Division, IRSST  
Robert Arcand, *Direction des risques biologiques et de la santé au travail*, INSPQ  
Noël Boulianne, *Ministère du Travail du Québec*  
Jean-François Boivin, *Ministère du Travail du Québec*  
Doris Armstrong, *Commission des normes du travail du Québec*  
Carole Dupéré, *Commission des normes du travail du Québec*  
Cathy Belzile, *Commission des normes du travail du Québec*

**Linguistic editing of the report :**

Micheline Laperle, Scientific Division, IRSST  
Chantal Bellefeuille, Scientific Division, IRSST  
Lucie Madden, Research and Expertise Support Department, IRSST

**Translation :**

Leslie Macdonald

**For information concerning the content of this publication, please contact :**

|  |  |
|--|--|
| <b>Institut de recherche Robert-Sauvé en santé et en sécurité du travail</b><br>505 De Maisonneuve Blvd. West<br>Montréal (Québec) H3A 3C2 | Telephone : 514 288-1551<br>Fax : 514 288-7636<br>Email : publications@irsst.qc.ca<br>Web site : www.irsst.qc.ca |
|--|--|

|  |  |
|--|--|
| <b>Institut national de santé publique du Québec</b><br>945 Wolfe Street<br>Québec, (Québec) G1V 5B3 | Telephone : 418 650-5115<br>Fax : 418 646-9328<br>Web site : www.inspq.qc.ca |
|--|--|

|  |  |
|--|--|
| <b>Institut de la statistique du Québec</b><br>200, Chemin Sainte-Foy<br>Québec (Québec) G1R 5T4 | Telephone : 418 691-2401<br>Fax : 418 643-4129<br>Web site : www.stat.gouv.qc.ca |
|--|--|

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## 1. INTRODUCTION

In recent decades, the world of work has undergone a number of major transformations, which in turn have had considerable impact on both work organization and employment relationships. These changes have often been introduced for economic reasons in the context of increasingly globalized markets. However, it is becoming more and more apparent that they sometimes have negative impacts on workers' health and safety. This survey was carried out as part of Québec's Minister of Labour's responsibility for conducting a study of changes in working conditions in Québec every five years, in collaboration with the organizations concerned, with the ultimate aim of influencing the future course of public policy (see section 11 of the *Act respecting the ministère du Travail*, R.S.Q., c. M-32.2). A better knowledge of working and employment conditions and how they relate to the health and safety of Québec workers is vital to providing strategic support for orienting occupational health and safety (OHS) research and interventions in Québec.

Thus, in 2007, the *Institut de recherche Robert-Sauvé en santé et sécurité du travail* (IRSST, Québec's occupational health and safety research institute), the *Institut national de santé publique du Québec* (INSPQ, Québec's public health institute), the *Institut de la statistique du Québec* (ISQ, Québec's statistics institute), the *ministère du Travail* (Québec's ministry of labour), the *ministère de la Santé et des Services sociaux* (Québec's ministry of health and social services) and the *Commission des normes du travail* (CNT, Québec's labour standards commission) joined forces to undertake the *Québec Survey on Working and Employment Conditions and Occupational Health and Safety* (EQCOTESST), which was carried out by the ISQ. This survey focuses specifically on work-related musculoskeletal disorders (MSDs), traumatic work accidents, and mental health in the workplace, as well as on workers' perceptions of their general health. Consistent with efforts being made in many other countries, it seeks to better understand the links between work organization and health and safety in order to orient research and preventive interventions with regard to working conditions and OHS in Québec. A lexicon defining the terms used in the full research report (full report available in French only) and in this summary report is appended to this document. This summary report follows the order of the chapters in the full report. It presents the main results of the survey, suggests avenues for action and future research, and provides a general conclusion.

## 2. METHODOLOGY AND PROFILE OF SURVEY POPULATION

The main objectives of the *Québec Survey on Working and Employment Conditions and Occupational Health and Safety* were to paint a picture of the working conditions and occupational health and safety of Québec workers, to identify some of the working conditions that pose health risks, and to describe the consequences of OHS problems. To attain these objectives, it targeted all Québec workers 15 years of age and over who had held paid jobs as either salaried employees or self-employed workers for at least eight weeks and who were working 15 hours a week or more.<sup>1</sup>

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<sup>1</sup> This population included workers who were on vacation, parental or maternity leave, sick leave (including leave due to a workplace accident), or leave without pay, or who were on strike or locked out, and who had been so for less than 12 months.

The EQCOTESST survey was conducted through telephone interviews of over 5,000 workers comprising a representative sample of the target population. This sample was established in two steps: first, a random selection of telephone numbers was performed in order to reach eligible households. Of this number, a target worker was randomly selected from among those living in each of these households. Random digit dialling (RDD)<sup>2</sup> was used to constitute the sample. Data was collected between November 1, 2007 and February 11, 2008. At the end of this period, 5,071 interviews lasting an average of 35 minutes had been completed, corresponding to a response rate of approximately 62% and very close to the 63% rate sought.

The data were then weighted to obtain valid inferences regarding the target population. In addition to taking into account the random sampling of this population, the weighting included adjustments for non-response and two adjustment steps designed to reduce potential biases in the estimates. Specifically, a correction was made for the under-representation of private households having no landline or no telephone number at all. Québec data<sup>3</sup> from the Statistics Canada *Labour Force Survey* (LFS) was used to correct the under-representation of self-employed workers and non-unionized employees<sup>4</sup> suggested by the preliminary estimates obtained in the EQCOTESST survey. All estimates presented in the survey report were therefore weighted, and the following worker characteristics were used to correct for non-response and to calibrate the weightings attributed: the worker's administrative health region of residence, age group and sex, type of work contract<sup>5</sup>, and the industrial sector grouping of the respondent's main job. Lastly, all measures of precision and statistical tests carried out took the survey design into account.

Moreover, with a view to taking a prevention perspective, a decision was made to present the prevalence or proportion of workers at risk of various working conditions or health states rather than always to present the absolute number of workers affected. One possible consequence of this approach may have been the presentation of results for certain populations that in total numbers may not be very large but that are proportionally more affected by a given risk.

Overall, the data show that in 2007–2008, nearly 93% of the workers in the study population were working, while the remainder were on vacation, sick leave or some other type of leave.

Of the survey's target population, nearly six workers in ten had occupations in the following categories: "unskilled workers and labourers" (26.2%), "professionals" (17.7%) or "semi-professionals and technicians" (16.1%). The remainder fell into the categories of "clerical workers" (12.8%), "skilled trades workers" (12.5%), "senior managers and middle managers" (8.9%) and "supervisors and front-line managers" (5.8%).

When categorized by the survey's groupings of industrial sectors, nearly half of the workers in the study population were found to fall into the following sector groupings: (1) production

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<sup>2</sup> The method of eliminating non-valid banks of 100 telephone numbers was retained for the Random Digit Dialling (RDD). Assuming a productivity rate of approximately 52% for the sample frame, a private household eligibility rate of 61%, and a response rate of approximately 63%, the 24,830 numbers generated using this method were expected to allow approximately 5,000 workers to be interviewed, i.e. the desired sample size.

<sup>3</sup> For this adjustment, only the Québec portion of the Labour Force Survey data corresponding to a population comparable to that targeted by the EQCOTESST survey was considered.

<sup>4</sup> Obviously the converse of these under-representations is that unionized workers were over-represented in the study sample.

<sup>5</sup> For weighting purposes, the "type of work contract" indicator had three categories: "unionized employee," "non-unionized employee" and "self-employed worker."

support services (18.9%); (2) wholesale and retail trade (16.3%); and (3) the combination of manufacturing and repair and maintenance services (16.1%). Slightly under one-quarter of the workers fall into these groupings: (4) health care and social assistance (11.9%); (5) the grouping that includes accommodation, food services, personal services, business services and arts and entertainment (10.2%). Nearly all of the remaining one-quarter of the workers fall into the following groupings: (6) primary industries, public utilities and construction (8.8%); (7) public and parapublic services (5.9%); (8) educational services (6.7%); (9) transportation, warehousing and waste management services (5.3%).

The gender-based analysis yielded the expected results. The distribution of the target population reveals that men still make up the majority of the labour force (53.1% versus 46.9%), although this gap continues to narrow over time. The proportion of employed women 15 to 24 years of age is higher than that of employed men, whereas the opposite is true for workers 55 years of age and over. Regarding household composition, employed male workers are more likely to live alone or in a household in which they are the only person working, while employed female workers live more frequently in households where two workers reside. Major gender-based differences are noted in terms of level of education: more male workers than female workers are likely not to have finished high school, while employed female workers more often have a university degree or diploma. Female workers also tend to undertake full-time studies more often than men.

Analysis by age group for the different demographic and socioeconomic variables also yielded the expected results. For example, a larger proportion of workers 45 years of age and over lives in a household comprising two people 15 years of age and over, while there are proportionally more workers 15 to 44 years of age living in households with children 14 years of age and under or with more than two persons 15 years of age and over. Lastly, the oldest workers (55 years of age and over) are more likely to live alone than workers in the other age categories. Moreover, proportionally speaking, more workers 45 years of age and over use only French at home, while younger workers (15 to 44 years of age) more often speak neither French nor English at home. Workers 15 to 24 years of age, who have less work experience and are more likely to be studying while working, live in the lowest income-level households. In fact, compared to the other age groups, proportionally more of these workers are found in households with an annual income of less than \$20,000 or a very low income level. At the other extreme, proportionally more of the oldest workers (55 years of age and over) have a low level of education (elementary school or less), and fewer of them have a university degree or community college diploma.

### **3. DESCRIPTION OF WORKING AND EMPLOYMENT CONDITIONS IN QUÉBEC**

#### **Gender differences**

The female workers in the population targeted by the EQCOTESST survey have a higher level of education than the male workers. More women work in service industries, such as health care and social assistance and the grouping of sectors that includes accommodation and food services, personal services, business services and arts and entertainment. They are also proportionally better represented than men in the production support services and educational services sectors. By contrast, fewer women are found in supervisory or management positions and women hold more non-unionized jobs than men. In terms of working conditions, they hold temporary or part-

time jobs more often than men. Lastly, proportionally more women than men hold jobs in the lowest income-level categories and have shorter paid vacation breaks.

### **Age groups**

Workers 15 to 24 years of age generally have poorer working conditions than workers in the oldest age group. Proportionally more of them: hold non-unionized jobs; are employed in the grouping of sectors that includes accommodation and food services, personal services, business services and arts and entertainment and in the wholesale and retail trade sectors; hold jobs as unskilled workers and labourers; work part-time, on rotating shifts or on weekends; and have precarious employment arrangements. Workers in the oldest age group are characterized mainly by the fact that proportionally more of them hold seasonal jobs and receive a variable wage or salary.

### **Labour mobility**

According to the EQCOTESST survey results, nearly one worker in two has held his<sup>6</sup> current job for fewer than five years, and only one worker in 10 has accumulated 25 years of seniority or more. This suggests that labour mobility is a relatively widespread phenomenon in Québec. While young people are the most affected, other age groups are affected as well. For example, nearly 20% of workers 55 years of age and over have fewer than five years of seniority. There is greater mobility noted among men and in small and medium-size enterprises (SMEs). The EQCOTESST grouping of sectors that includes accommodation and food services, personal services, business services and arts and entertainment, as well as the wholesale and retail trade sectors, also employ a considerably higher proportion of workers with fewer than five years of seniority. The occupational groups with the highest percentages of workers who have fewer than five years of seniority are observed among unskilled workers and labourers as well as among skilled trades workers.

### **Small and medium-sized enterprises (SMEs)**

Based on the results of the EQCOTESST survey, small and medium-sized enterprises (SMEs) employ more than six workers out of ten. A large proportion of young people, persons living in rural areas and self-employed workers work in SMEs. The industrial sectors with higher labour concentrations in SMEs include the following groupings: accommodation and food services, personal services, business services and arts and entertainment; the grouping of primary industries, public utilities and construction; and wholesale and retail trade sectors. These SMEs differ from larger organizations in terms of the working conditions they offer. SMEs are characterized by proportionally more part-time work, work weeks of over 40 hours, varying forms of remuneration, some of the lowest incomes, precarious employment, and worker concerns about job security.

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<sup>6</sup> The masculine gender is used throughout this document solely to facilitate reading and has no discriminatory intent.

## Type of employment relationship

Unionized workers are relatively older and less frequently born outside of Canada than non-unionized workers. They are found mainly in large organizations and in the public and parapublic sectors. Unions are in fact less present in the wholesale and retail trades, production support services, and in the grouping of sectors that includes accommodation and food services, personal services, business services and arts and entertainment. Proportionally more unionized workers work full-time and have two or more years of seniority in their main jobs. They work more frequently from 30 to 40 hours a week, are proportionally more likely to receive a fixed salary and are found more in the middle- and upper-income brackets (\$40,000 – \$100,000/year). A greater proportion of unionized workers than non-unionized or self-employed workers have access to most of the employee benefits investigated in this survey (e.g. breaks, paid sick leave, salary or disability insurance plan, pension plan). However, non-unionized workers benefit more from such working conditions as access to flexible work schedules, the possibility of working at home (telework) and the freedom to deal with personal matters at work.

Self-employed workers constitute a distinct sub-group in the EQCOTESST survey that experiences a great deal of employment insecurity. An estimated 14.6% of workers, or 521,000 individuals, fall into this category. Proportionally more male workers and workers 55 years of age and over are self-employed. Their level of education differs somewhat from that of other workers at both ends of the educational spectrum: a higher proportion of self-employed workers than other workers have not gone further than elementary school and a higher proportion hold at least one university diploma. It is also estimated that higher proportions of self-employed workers are found in the grouping that includes the primary industries, public utilities and construction sectors.

## Precarious employment and employment insecurity

The results of the EQCOTESST survey reveal a high level of employment insecurity<sup>7</sup> among Québec workers. More than one-third of the workers (35.8%), or some 1.3 million people, fall into the category of individuals living with employment insecurity. In the population targeted by the EQCOTESST survey, 12.9% report working in a precarious employment arrangement<sup>8</sup>, while 7.2% experience a situation designated in the survey as “precarious employment,” which includes both (work in a precarious employment arrangement and employment insecurity). A number of specific groups stand out with regard to employment insecurity: self-employed workers and workers earning less than \$20,000 a year. Also noteworthy is the fact that the educational services sector stands apart for its high level of precarious employment (21.8%).

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<sup>7</sup> “Employment insecurity” is an indicator that measures the ability to maintain a particular job and takes into account the likelihood of being able to maintain a paid job. The indicator is positive if a worker meets at least one of the two following conditions: agrees or strongly agrees with the idea that he has poor job security and/or has experienced a period of unemployment during the two years prior to the study.

<sup>8</sup> The “precarious employment arrangement” indicator was created to take into account four forms of precarious employment arrangements identified in the scientific literature as being associated with adverse working conditions: working as a part-time employee but wanting to work more hours; becoming self-employed at the request of the employer; holding a job through a placement agency; or having fixed-term employment. The indicator is positive if a worker meets any of these conditions.

Overall, male and female workers who experience precarious employment or employment insecurity have less access to employee benefits<sup>9</sup> in their main jobs.

### **Industrial sector groupings and occupational categories**

The industrial sector grouping that includes the accommodation and food services, personal services, business services, and arts and entertainment sectors stands out as difficult in terms of working conditions. In fact, workers in these sectors tend more often to have non-standard work schedules<sup>10</sup>, be involved in precarious work arrangements and be exposed to employment insecurity, while having limited access to employee benefits. The same applies in other service sectors, such as the wholesale and retail trades. The educational services sector is characterized by a high proportion of temporary workers.

Regarding occupational categories, it is unskilled workers and labourers who stand apart from the others, not only in terms of number, as there are nearly one million of them (26.2% of the labour force, which corresponds to 935,000 workers), but also in terms of difficult working and employment conditions. A larger proportion of these workers is found in the transportation, warehousing and waste management industrial sector grouping, and in the accommodation and food services, personal and business services, and arts and entertainment grouping, than in the wholesale and retail trades grouping.

## **4. WORK-LIFE BALANCE**

Proportionally more women and individuals living in low-income households fall into the category of persons who have heavy family responsibilities<sup>11</sup>, which includes 171,000 Québec workers 25 years of age and over (5.4% of this population). Women and persons 25 to 44 years of age report doing more hours of domestic work, while self-employed workers report doing less.

Approximately 10% of workers 25 years of age and over are responsible for a person with limited autonomy, a situation experienced more frequently by women and persons over 44 years of age. This finding is crucial in a context where it is becoming increasingly important to keep older workers in the labour force.

The students targeted by the survey combine their studies with a relatively high number of hours of work. In fact, approximately 23% of those who study full-time and who hold jobs work more than 30 hours a week, while 10% actually work more than 40 hours a week.

Individuals in the age group that includes the largest number of workers (25 to 44 years of age) living with children do not have better access than others to conditions that would facilitate

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<sup>9</sup> The employee benefits documented in the EQCOTESST consist of having access to paid sick leave, leave without pay or a deferred-pay arrangement, a pension plan, paid vacation, and salary or disability insurance in the event of illness.

<sup>10</sup> By this, we mean evening or night shifts, weekend work, split shifts, on-call work and variable work schedules.

<sup>11</sup> This category includes persons who are 25 years of age and over living in a household comprised of at least two adults and at least one child 14 years of age and under, who are responsible for a person with limited autonomy; and persons living alone with at least one child, whether or not they are responsible for a person with limited autonomy.



work-life balance<sup>12</sup>. Sometimes these workers have even less access to these benefits than do those in other age groups. Proportionally more unionized employees and managers have access to most of the working conditions that promote this balance than do their non-unionized counterparts. Moreover, 56% of salaried employees with heavy family responsibilities report being unable to choose their work schedule. Lastly, it is important to point out that overall, of male and female workers 25 years of age and over, 48% of women and 65% of men work weekends<sup>13</sup>. Of workers with heavy family responsibilities, 22% often work weekends.

Individuals with heavy family responsibilities are in poorer health (experience psychological distress<sup>14</sup>, have depressive symptoms<sup>15</sup>, particularly depressive symptoms unrelated to work, and consume psychotropic medication). They are also more prone to long-term presenteeism<sup>16</sup>, and the higher the level of family responsibilities they report, the less leisure time reported; this situation is more pronounced among women. The number of hours of leisure time is not significantly associated with the number of hours of paid work. Proportionally speaking, individuals with fewer than four hours of leisure time a week have poorer health (psychological distress, depression, whether or not work-related) than those who have this much or more leisure time.

## 5. ORGANIZATIONAL AND PHYSICAL WORK DEMANDS

This study reveals that in Québec, one worker in four is subject to exposure to a combination of at least two organizational work demands<sup>17</sup> recognized as potentially having negative health effects. Approximately one-quarter of all workers and half of all manual workers (52% of men and 39% of women) are frequently exposed to at least four physical work demands<sup>18</sup>. The vast majority of workers exposed to at least four physical work demands are also exposed to at least one organizational or psychosocial work demand.

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<sup>12</sup> The working conditions facilitating work-life balance that were documented in the EQCOTESST survey include mainly access to a flexible work schedule, the possibility of banking work hours for use when needed, a voluntary reduced work week, and the possibility of working at home, of dealing with personal matters at work and of returning to work progressively.

<sup>13</sup> The question asked was formulated as follows: *Do you work on weekends, that is, Saturday or Sunday?*

<sup>14</sup> Psychological distress is an early indicator of a mental health impairment; this indicator assesses two of the most frequently observed symptoms in this regard, i.e. depression and anxiety. It is not a tool for diagnosing these pathologies, but rather an index that identifies those individuals in a given population who are at the greatest risk of developing such pathologies. Nor is it an indicator of burnout.

<sup>15</sup> This index comprises two questions that measure two key symptoms of depression: depressive mood and loss of interest or pleasure in most customary activities. The responses to another question permit a distinction to be made between depressive symptoms perceived as being work-related and those perceived as not being work-related.

<sup>16</sup> Presenteeism refers to the phenomenon whereby workers go in to work despite feeling that they should stay home because they are sick (Aronsson et al., 2000).

<sup>17</sup> These refer to dimensions of work organization that have been shown by empirical evidence to have a negative impact on the health of exposed workers. The organizational work demands measured include psychological work demands, decision latitude, social support at work, job strain, iso-strain, recognition or job rewards, effort-reward imbalance, and the lack of possibility of taking breaks and of modifying the work pace.

<sup>18</sup> The term “physical work demands” refers to biomechanical factors, such as forceful exertion, repetitive work, certain awkward or static postures, the handling of heavy loads, hand-arm and whole-body vibration, etc., for which empirical evidence has shown a causal link with one or more musculoskeletal disorders.

Women are proportionally more exposed than men to all the organizational work demands measured in this study, with the exception of low social support at work. Those at the bottom of the hierarchy, including manual workers, skilled and unskilled workers, and in some cases, clerical workers, are particularly likely to have low decision latitude, low social support, low job rewards or recognition at work, and to be exposed to a combination of these work demands. Proportionally more older workers are exposed than other age groups to low recognition and low social support at work. Lastly, several of the organizational work demands measured were observed to be more prevalent among workers in the health care and social assistance and the educational services sectors.

The groups most heavily exposed to a combination of at least four physical work demands are skilled trades workers and unskilled workers, manual workers, young men (aged 15 to 24), and particularly young male manual workers (57% are so exposed). Workers in the following industrial groupings are also heavily exposed to the combination of at least four physical work demands: primary industries and construction; manufacturing, repair and maintenance services sectors; health care and social assistance sectors; and the grouping that includes the accommodation and food services sectors. Workers with a low level of education, those living in low-income households and those with various types of precarious work situations (employment insecurity, temporary or part-time work, seasonal work) are also more exposed to a combination of at least four physical work demands. Many workers exposed to multiple physical work demands are also exposed to high organizational work demands; among those exposed to a combination of high physical work demands and organizational work demands, a large proportion experiences employment insecurity as well. For example, of the workers who lack employment security, 22% are exposed to four or more physical work demands and a lack of recognition at work (25% of men and 18% of women). The comparable proportion is 7% among workers who do not experience employment insecurity (8% of men and 7% of women). A similar finding applies to each combination of exposure to four or more physical work demands and at least one psychosocial work demand.

Similarly, statistically more workers frequently exposed to at least four physical work demands and who have low decision latitude work in a precarious employment arrangement (18% versus 13%), work part-time (19% versus 13%) or hold a temporary (18% versus 13%) or seasonal (24% versus 13%) job.

With the exception of repetitive movements, prolonged computer work and sitting postures, men are generally more exposed than women to the physical work demands measured in the survey. Nonetheless, certain categories of female workers are simultaneously exposed to a high number of physical work demands. Examples include skilled trades and unskilled female workers, and women who work in the industrial grouping that includes accommodation and food services. A high proportion of female manual workers are frequently exposed to four or more physical work demands, and a higher proportion are more exposed than male manual workers to repetitive movements and standing postures, particularly where there is no possibility of sitting down.

Female workers in several mixed occupations requiring a combination of manual and non-manual tasks are also exposed to a number of physical work demands. For example, women in mixed occupations are as exposed as female manual workers to work requiring hands above the shoulders, work in which their backs are bent forward, to one side or twisted, and work requiring

precise movements. A significant proportion of those working in mixed occupations are healthcare professionals and early childhood educators.

Approximately 21% of workers (24% of women and 19% of men) report working on the computer for 31 or more hours a week in their main job. These workers have primarily non-manual occupations.

Approximately 14% of the men and 6% of the women in the working population targeted by the survey are frequently exposed to noise; 22% of manual workers (24% of men and 16% of women) are so exposed. The industrial sectors showing the highest prevalence of exposure to noise are the manufacturing, repair and maintenance services grouping (27% of men and 18% of women) and the primary industries, public utilities and construction grouping (20% of men and 12% of women).

Based on the results of this survey, it is estimated that 9% of workers are exposed often or all the time, in their main job, to solvent fumes (such as those of degreasers, oil-based paints, varnishes, glues, Varsol and turpentine), more specifically, 11% of men and 6% of women. One manual worker in five reports being exposed often or all the time to solvent vapours. Again, it is the grouping of the manufacturing, and repair and maintenance services industrial sectors, and the primary industries, public utilities and construction sectors grouping that are the most affected by solvent exposure.

## **6. WORKPLACE VIOLENCE: PSYCHOLOGICAL AND SEXUAL HARASSMENT AND PHYSICAL VIOLENCE**

Based on this study, it is estimated that, in the 12 months prior to the survey, approximately 528,000 workers in Québec were exposed to psychological harassment at work. Some 90,000 and 69,000 individuals were exposed to sexual harassment and physical violence respectively. Psychological harassment is much more prevalent than the other forms of workplace violence. In the 12 months prior to the survey, approximately 15% of the survey population was subjected to psychological harassment in their main jobs, and approximately 3% to sexual harassment, whereas roughly 2% were subjected to physical violence.

Proportionally more female workers are the target of psychological or sexual harassment in their main jobs, but no gender-based differences are detected for physical violence. The rate of psychological harassment reported by salaried employees is nearly 19% for women and 14% for men. Proportionally more individuals 15 to 34 years of age are the target of sexual harassment, while proportionally more of those between 25 and 34 years of age are likely to experience physical violence; however, there is no statistically significant association between age and psychological harassment.

Proportionally more non-management unionized employees are the target of violence in their main jobs, a finding that is confirmed for the three forms of violence studied. This may partly be attributable to the fact that more unionized workers are employed in sectors where violence is more prevalent, i.e. the public or parapublic sector, health care and social assistance, educational services and in large organizations and those whose activities involve contact with the general

public. Furthermore, regarding psychological harassment, it is important to note that more than half of the perpetrators of harassment of workers who are in contact with the general public work for the same organization.

Level of education and household income are not associated with the psychological harassment rate in main jobs for female workers, whereas for men, higher incomes and higher levels of education are significantly associated with a lower prevalence of this type of harassment in their main jobs. No statistically significant association is found between level of education and sexual harassment. It is the more educated workers who are more exposed to physical violence.

The occupational categories at the highest risk of experiencing workplace violence vary, depending on the type of violence and gender. Unskilled workers and labourers of both sexes are the most subjected to psychological harassment, while the level of risk associated with other occupational categories appears to vary according to gender. Female supervisors and front-line managers rank among the highest risk groups. As for physical violence, it is semi-professionals and technicians who report the highest prevalence.

Proportionally more workers who experience employment insecurity are also subjected to psychological and sexual harassment at work.

Working in a precarious employment arrangement was found to play a different role, depending on the type of violence studied. Workers who hold permanent jobs are thus the most exposed to psychological harassment in their main jobs. However, workers in precarious employment arrangements, notably temporary workers, are those most exposed to sexual harassment and physical violence, as compared to those in permanent jobs. Part-time employees are more exposed to sexual harassment than full-time employees, and although the result is not statistically significant, the same trend is observed for physical violence.

Exposure to each of the organizational job demands and to the demanding work situations<sup>19</sup> studied, as well as exposure to at least four physical work demands, are all significantly associated with psychological harassment at work. The same holds true for sexual harassment, with the exceptions of work demands related to decision latitude, social support at work and the possibility of taking breaks. Physical violence is also associated with exposure to at least four physical work demands and with exposure to each of the organizational job demands and to the demanding work situations studied, except for decision latitude and the possibility of taking breaks.

When examining the relationships between health and violence at work in this survey, we note that proportionally more workers exposed to each of the forms of violence have a negative perception of their general health, mental health problems and work-related musculoskeletal disorders than do the other workers. Moreover, proportionally more workers exposed to more than one form of violence experience high levels of psychological distress or depressive symptoms, have been involved in a work accident or display presenteeism for more than ten days than do workers exposed to only one form of violence.

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<sup>19</sup> These terms designate the following work situations: emotionally demanding work, tense situations in relations with the general public and situations where workers do not have adequate means at their disposal to do quality work.

A little over half of the population exposed to psychological harassment in the previous year had taken steps to stop this conduct. Proportionally more female workers than male workers took such steps, and they did so when the source of the harassment was internal and when the harassment behaviour was exhibited by a peer or by a subordinate. As to whom the workers consulted, 27% of the unionized employees contacted their unions, but only 6% of the non-unionized employees filed a complaint with the *Commission des normes du travail*.

## 7. GENERAL HEALTH

The survey results estimate that approximately 7% of Québec workers 15 years of age and over who have held a job for at least eight weeks and who work 15 hours or more a week, have a negative perception of their general health. In addition, over half of the target population reported having gone in to work even when sick on at least one day in the 12 months prior to the survey. Taking into account the duration of this presenteeism, nearly 40% of Québec workers exhibit presenteeism on one to ten days a year (short-term presenteeism), while nearly 15% do so on more than ten days a year (long-term presenteeism).

This study shows that a high prevalence of negative perceptions of health among Québec workers is associated with several organizational and physical work demands. The prevalence of a negative perception of health is particularly associated with low decision latitude, lack of job rewards or recognition, low social support at work and frequent exposure to at least four physical work demands. Exposure to the combination of at least four physical work demands and psychological harassment in the workplace is also significantly associated with a high prevalence of a perception of poor general health. Furthermore, our study shows that not having adequate means to do quality work is also associated with a higher prevalence of workers who have a negative perception of their health and a high prevalence of long-term presenteeism.

Frequent exposure to tense situations in relations with the general public is significantly associated with a negative perception of general health. Moreover, the presence of a significant relationship between general health and emotionally demanding work is influenced by the presence or not of decision latitude, social support at work and job rewards or recognition at work; this same phenomenon is observed for work involving tense situations in relations with the general public. Perception of health varies with age: a considerably higher proportion of persons who have a negative perception of their health is observed in workers 55 years of age and over than in the other age groups.

This perception is also strongly associated with socioeconomic status: proportionally more workers with the lowest level of education and those belonging to poor households have a negative perception of their health.

Presenteeism affects more than half of Québec's workforce. To gain a better understanding of this phenomenon, we analyzed it as a function of its duration. Based on this analysis, we hypothesize that there are two forms of presenteeism: one of less than 10 days on an annual basis, which appears to be more voluntary in nature; and the other, of longer duration, which appears to be imposed. Long-term presenteeism has a higher prevalence among workers experiencing employment insecurity, those who work 50 or more hours a week and self-employed workers. In addition, long-term presenteeism is more characteristic of workers who are

also exposed to organizational or physical work demands known to have negative health effects. Thus long-term presenteeism may be a better predictor of more serious health problems than short-term presenteeism. The results show that long-term presenteeism is more strongly associated with a high level of psychological distress than with a moderate level, contrary to short-term presenteeism.

Furthermore, access to employer-paid sick leave is not associated with short-term presenteeism, but only with long-term presenteeism. To understand this phenomenon, it must be seen in a continuum with work absence. According to our hypothesis, short-term absences may constitute an adaptive mechanism allowing individuals suffering from an illness or distress to recover and to avoid more serious health problems that, in the absence of salary replacement or disability insurance coverage, will result in more days of presenteeism.

Female workers in the health care and social assistance sector exhibit more long-term presenteeism. This observation can be related to a higher prevalence of this form of presenteeism in workers required to perform emotionally demanding work. It is surprising to note that the lowest prevalence of both short- and long-term presenteeism is found in male and female non-unionized (non-management) workers. The explanation might stem from the hypothesis that among non-unionized workers, the drop in production associated with a health problem leads more readily to job loss than it does among other employees.

The prevalence of presenteeism in individuals with depressive symptoms is extremely high, i.e. over 45% for short-term presenteeism and over 40% for long-term presenteeism, in both men and women. This finding must be considered in the light of the results of other studies, which have shown that 44% of workers who returned to work following a mental health problem considered that their problem was not resolved. Lastly, it is surprising to note that, for the same level of depressive symptoms, as measured in this survey, the individuals who attribute their symptoms to their work tend to have a higher prevalence of long-term presenteeism than those who attribute their symptoms to other causes. The explanation may have to do with stigma and prejudice concerning depression and its origins. Studies have in fact shown that workers with depression associated with personal factors, such as the loss of a loved one, benefit from greater empathy and support from their co-workers than do those whose problem is related to difficult working conditions that prevent them from being fully productive, particularly if their co-workers have to make up for their lower productivity. The support offered by co-workers in cases where the depression is related to personal factors may also take the form of encouraging the person to take time off work sooner.

## **8. MUSCULOSKELETAL DISORDERS**

Based on the results of this survey, one Québec worker in five is estimated to report a non-traumatic musculoskeletal disorder (MSD) perceived as being work-related, i.e. significant musculoskeletal pain that interferes with activities, is experienced often or all the time and is attributed, partly or entirely, to one's main job (16% of men and 25% of women). A significantly higher prevalence of these MSDs is observed in women than in men, for each of the body regions studied. This disparity between the sexes is particularly pronounced in the case of neck disorders (10.3% versus 3.8%).

Workers in manual occupations and those in the primary industries, public utilities and construction sector grouping, as well as those in the grouping of the manufacturing and repair and maintenance service sectors, have higher prevalences of work-related MSDs than do those in other occupational categories or industrial sector groupings.

Approximately 7% of the workers targeted by the survey had been absent from work due to musculoskeletal pain related to their main jobs during the year prior to the survey. A much greater proportion of workers in manual occupations than in non-manual occupations are absent from work due to such pain.

The prevalence of work-related MSDs and of absence from work for this reason is strongly associated with exposure to physical work demands. For example, it is estimated that one-third of workers exposed to at least four physical work demands suffer from MSDs attributed to work, compared to 10% in non-exposed workers. There is also a much higher prevalence of work-related MSDs among workers exposed to various organizational and psychosocial work demands (e.g. job strain, iso-strain, effort-reward imbalance, emotionally demanding work, tense situations in relations with the general public, psychological and sexual harassment) than are those who are not exposed. In addition, the prevalence of work-related MSDs rises to approximately 40% in workers exposed to the combination of at least four physical work demands and an organizational work demand. It is also strongly associated with psychological distress and depressive symptoms in both men and women.

A very small proportion of salaried employees who had been absent from work due to work-related MSD pain in the year prior to the survey applied for workers' compensation from the CSST (*Commission de la santé et de la sécurité du travail du Québec*). It is estimated that over 80% of the non-management salaried employees who were absent from work for musculoskeletal pain perceived as being entirely related to work did not file a workers' compensation claim for this problem<sup>20</sup>. Approximately 23% of non-management salaried employees who had been absent from work due to a work-related MSD had no replacement income during their absence.

## 9. TRAUMATIC WORK ACCIDENTS<sup>21</sup>

Based on this survey, an estimated 220,000 workers reported having been the victims of at least one work accident in their main jobs during the year prior to the survey, which corresponds to 265,000 accidents of all levels of severity. Moreover, according to CSST data, there were 45,000 traumatic work accidents compensated during the same period. Again based on this survey, one-third of the victims of work accidents that resulted in an absence from work did not file a claim with the CSST. The reasons cited for this are mainly lack of information on the part of the injured workers, but also the perceived lack of seriousness of the injury. In some cases, the respondents also provided administrative and relational reasons.

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<sup>20</sup> It is important to note that the fact of being absent from work due to musculoskeletal pain perceived as being entirely work-related is not automatically associated with a claim for compensation from the CSST. The main reasons cited for not having filed such claims are that the respondents did not perceive their problem as serious enough, they did not believe that they or their type of problem was covered by the CSST or they lacked information in this regard.

<sup>21</sup> In the EQCOTESST survey, traumatic work accidents exclude non-traumatic MSDs, but include musculoskeletal pain related to traumatic accidents such as a fall, banging into something, being struck or being involved in a motor vehicle accident.

Workers who were absent from work due to a traumatic accident were compensated by the CSST in at least 43.6% of the cases, entirely or partially by the employer in one-third of the cases<sup>22</sup> and by other sources (salary or disability insurance, employment insurance, banked time, etc.) in 7.5% of the cases. Approximately 13% received no income replacement for their work absence. Furthermore, in over one-quarter of the cases, the injured workers were given temporary work assignments or benefited from reduced working hours.

Young people stand out as a population at risk of having work accidents. There is no statistically significant gender difference in the frequency rate of these accidents.

The levels of risk of work accidents are as high in certain industrial sector groupings (such as health care and social assistance; accommodation, food services and personal services) as in sectors more traditionally associated with such accidents (the primary industries, public utilities and construction sector grouping; the manufacturing and repair and maintenance services grouping). In addition, unionized workers emerge as the group with proportionally higher rates of accident frequency than other worker groups.

The frequency rates of traumatic accidents are proportionally higher when workers are subjected to any of the following: at least four physical work demands, precarious employment arrangements, employment insecurity, high organizational demands or other demanding work situations such as iso-strain, effort-reward imbalance, high psychological demands, not having adequate means at their disposal to do quality work or exposure to psychological harassment or physical violence.

Lastly, higher accident frequency rates are observed in workers exposed to high levels of psychological distress, those who exhibit presenteeism at least 10 days during the year and those who experience depressive symptoms.

## 10. MENTAL HEALTH

Approximately 18% of the Québec workers targeted by this survey (21.7% of women versus 15.0% of men) exhibit a high level of psychological distress according to the Kessler 6 (K-6) Scale and the threshold levels used in this study. This study also revealed that employment insecurity and precarious employment arrangements are strongly associated with psychological distress, particularly in women. The same applies in the case of exposure to high psychological work demands, particularly if combined with exposure to low decision latitude or low support at work, or when workers do not have adequate means at their disposal to do quality work or are victims of psychological harassment. In addition, there is a higher prevalence of psychological distress among female workers in the educational services sector and in the grouping of the manufacturing and repair and maintenance services sectors than among workers in other sectors. The survey also shows that over 7% of workers report suffering from depressive symptoms that

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<sup>22</sup> When a claim is filed with the CSST, the first 14 days of absence are compensated by the employer. The CSST then reimburses the employer for this amount. According to the aforementioned 2008 CSST report, nearly 50% of the cases resolve themselves within less than 14 days. As workers are rarely aware of the reimbursement process, they may report that their employers paid them, when in actual fact, this is not the case.



they attribute to their work, and that proportionally more women than men experience these work-related symptoms (9.6% versus 5.4%). Generally, the prevalence of work-related depressive symptoms is statistically significantly associated with the same factors as those previously mentioned in relation to psychological distress. Thus, those with high exposure to these organizational and psychosocial work conditions have a higher prevalence of work-related depressive symptoms and psychological distress. Lastly, in workers exposed to tense situations in relations with the general public or to emotionally demanding work and who also have high decision latitude at work, high social support at work or high levels of job rewards or recognition, the prevalence of high levels of psychological distress and depressive symptoms approaches the average values for workers not exposed to these demanding work conditions.

The survey revealed a significant association between levels of psychological distress and presenteeism, as well as between work-related depressive symptoms and long-term presenteeism.

Of the workers who have work-related depressive symptoms, over 40% had been absent from work due to this problem in the 12 months prior to the survey. This suggests that 60% of the workers affected went to work despite these symptoms. Of those who had been absent from work, nearly 50% had been off work for 11 or more working days, i.e. more than two weeks, and approximately 25% for more than 60 working days, i.e. over three months. This represents a heavy financial burden for organizations and society, not to mention a considerable human burden for the workers affected. The costs for these individuals are also very high, with the results showing that approximately one-quarter of them received no income at all during their absences.

Lastly, this study reveals that in Québec, more than 400,000 workers had taken medication on a regular basis during the month prior to the survey to reduce their anxiety, boost their morale or help them sleep, and that this consumption was associated with both psychological distress and depressive symptoms. The prevalence of psychotropic medication consumption for workers exposed to tense situations in relations with the general public or emotionally demanding work approached the average values for workers not exposed to these demanding work situations when exposure was accompanied by high decision latitude, high social support or high job rewards or recognition at work. Moreover, it can be deduced from these results that nearly two-thirds of the workers with depressive symptoms do not take psychotropic medication, which means that the consumption of this type of medication is not a sensitive indicator of depression.

## **11. SUGGESTIONS FOR ACTION**

A number of possible avenues for action can be proposed in light of this initial portrait of the working and employment conditions of Quebecers. First, it appears particularly important to focus on certain groups of workers who frequently face difficult working conditions (notably workers 15 to 24 years of age, those who have only an elementary school education, etc.). It is also important to recognize that inequalities still exist between men and women's working conditions. Particular efforts could be made to evaluate working and employment conditions in SMEs, raise awareness among workers and senior management, and provide support to improve working conditions.

The analyses performed reveal relatively high mobility in workers' main jobs; this mobility was assessed taking seniority in these jobs into account. However, the survey brings to light significant proportions of individuals in all age groups with fewer than five years of seniority, which can generally be associated with less favourable working conditions (Benavides et al., 2006). The challenge therefore lies in promoting access to working conditions conducive to occupational health and safety while taking into account employment relationships, which are more and more frequently discontinuous over time.

It is worthy of note that the *Bureau de normalisation du Québec* (the Québec standards bureau) recently developed a standard regarding work-life balance. Improving the quality of working conditions that affect work-life balance is a challenge facing not only workers, but also organizations. The difficult task of balancing work and family responsibilities is also costly for employers. It is likely that workers who have better control over their work schedules will be absent from work less frequently for family reasons if they can switch hours with co-workers or otherwise modify their work schedules so as to meet both their family and occupational obligations.

Measures should be envisaged to ensure that workers, particularly those who are non-unionized, are better informed about their rights. Many of the participants in this study did not know whether they had access to certain working conditions, particularly, the right to a progressive return to work after maternity or paternity leave and the right to leave without pay or deferred-pay arrangements. Non-unionized workers were particularly unable to answer these questions, which points to the need to continue efforts to raise employees' awareness of the existing rules and standards and to explore the possibility of introducing new universal standards that would provide all workers with the conditions deemed to be of greatest importance.

Given the importance of predictable work schedules in establishing a work-life balance, as well as the negative effect that a lack of control over one's work schedule has on this balance and on health, and given the finding that 42% of salaried employees with heavy or moderate family responsibilities are subject to very constraining work schedules, thought must be given to mechanisms that could be introduced to reduce exposure to these constraints. It is important that workplace stakeholders explore how this objective could be achieved.

This study focused on organizational and physical work demands that are specific, identifiable and modifiable aspects of work. It would therefore be advisable that the prevention mechanisms provided for in Québec's *Act respecting occupational health and safety* (R.S.Q, c. S-2.1) be applied to the industries with a high prevalence of these work demands, particularly, primary industries, construction, manufacturing, repair and maintenance services, health care and social assistance, educational services, and the accommodation and food services sectors.

In addition, numerous statutory provisions oblige organizations to reduce or eliminate several of the physical and organizational work demands to which a large proportion of workers are exposed. The general duty clause, stipulated in section 51 of the *Act respecting occupational health and safety*, applies to all Québec employers governed by provincial legislation. This section of the Act obliges them, notably, "to ensure that the organization of the work and the working procedures and techniques do not adversely affect the safety or health of the worker."

Physical work demands are targeted both by the general duty clause and by specific sections of the *Regulation respecting occupational health and safety* (R.S.Q., c. S-2.1, r. 19.01). There is a need to ensure the implementation of strategies to reduce exposure to these work demands and to guarantee adequate inspection of workplaces.

Lastly, the results of the survey are consistent with and support the measures taken by establishments seeking recognition as an “*entreprise en santé*” (“healthy enterprise”), to meet the standards developed by the *Bureau de normalisation du Québec* in 2007 at the instigation of the *Groupe de promotion de la prévention en santé* (GP<sup>2</sup>S) (group for the promotion of health prevention). In fact, using the data collected in this survey, reference values can be established to which organizations will be able to compare themselves in order to help them identify priority psychosocial work demand reduction targets in the context of prevention programs and other programs designed to promote organizational practices conducive to the health and well-being of their personnel.

Moreover, the prevalence of exposure to psychological harassment in the study population targeted by the survey was found to be high. Those responsible for preventing work-related health problems associated with this risk factor should therefore be encouraged to seek out the best practices for preventing workplace violence, and particularly, psychological harassment.

In its 2008–2012 strategic plan, the *Commission des normes du travail* (CNT) made a commitment to implement a targeted preventive intervention program in organizations with a higher risk of psychological harassment. In the short term, two objectives are central to its action plan: increase the number of employers aware of the need to prevent psychological harassment in the workplace and take action regarding at-risk employers. The results of the EQCOTESST survey suggest that the following sectors should be targeted: health care and social assistance, educational services and public and parapublic services. The prevention strategies retained should take into account that the risk of exposure to psychological harassment among industrial sectors or occupational categories can differ according to gender.

With regard to sexual harassment, not only must specific attention be focussed on the health care and social assistance, educational services and public and parapublic services sectors, but also on the grouping that includes the accommodation, food services, personal services, business services, and arts and entertainment sectors.

The results of this study reveal a greater prevalence of the three forms of violence documented (psychological harassment, sexual harassment and physical violence) among workers who experience employment insecurity. Physical violence and sexual harassment is more prevalent in workers with precarious employment arrangements. Employment insecurity is often associated with organizational restructuring, and may partly explain the increased prevalence of psychological harassment in this context. Other occupational health problems are also associated with the restructuring process, and legislation in other countries requires an assessment of the risks to employees’ physical and mental health in such cases. It would be worthwhile to take a closer look at this type of preventive strategy.

Few non-unionized employees indicated that they had contacted the *Commission des normes du travail* in their attempts to put a stop to psychological harassment. In pursuing its efforts to

disseminate information, the Commission is currently seeking to implement a variety of strategies to raise employer awareness of the importance of providing a healthy work atmosphere and to encourage them to try to prevent psychological harassment.

The CSST accepted 53% of the claims submitted to it for psychological disorders associated with workplace violence, including harassment. Only 4.2% of the claims accepted for psychological disorders were attributed by the CSST to a diagnosis of depression (CSST, 2009). The CSST accepted an average of 70 claims a year for psychological harassment and 14 claims a year for sexual harassment from 2004 to 2007. This suggests that the majority of the individuals who became unable to continue working due to health problems associated with this phenomenon did not file claims for these problems.

Regarding presenteeism, organizations should go beyond simply controlling sick days in medico-administrative terms; they must act as well on the organizational and physical work demands associated with increased presenteeism. As some authors have suggested, all attempts to reduce the cost of absenteeism must be analyzed in light of the potential increase it may cause in presenteeism, the costs of which are estimated to be ten times higher than those caused by absenteeism due to illness.

With regard to non-traumatic musculoskeletal disorders (MSDs), preventive intervention strategies should be introduced in workplaces to identify and reduce the physical and organizational work demands associated with these health problems. The prevention of MSDs is in fact a priority action identified in the CSST's 2010–2014 strategic plan and in the Québec Public Health Program for 2003–2012 of the *Ministère de Santé et des Services sociaux* (Québec's ministry of health and social services). Preventive strategies could also include training occupational health professionals in MSD prevention and increasing workplace awareness of the importance of physical and organizational work demands and how they contribute to MSDs. Informing workers about the possibility of filing a claim with the CSST for compensation for non-traumatic work-related MSDs is another avenue that could be pursued. Given the existing evidence of the economic benefits associated with MSD prevention interventions in the workplace, the costs related to these actions should not constitute an argument against their implementation. This observation is all the more important since the majority of this survey's respondents who reported having a work-related MSD are found in sectors not currently covered by the prevention activities of Québec's public health network for occupational health, the *Réseau de santé publique en santé au travail*.

Several aspects regarding interventions needed to prevent work accidents require reflection. Among these, workers must be better informed about their occupational health and safety rights and responsibilities; the range of populations covered by the work accident prevention plan must be rethought; efforts must be made to raise awareness and better promote prevention among particularly vulnerable populations (e.g. young workers, workers in precarious employment); existing workplace intervention programs designed to address physical and temporal work demands must be examined; and the impact of precarious employment arrangements and employment insecurity on the prevention and compensation systems must be examined. It is worth noting that the need to focus on certain vulnerable populations (young people and immigrant workers) identified in this study coincides with the priorities identified in the CSST's strategic plan.

In the matter of mental health, it is important to ensure the application of the prevention mechanisms set forth in the *Act respecting Occupational Health and Safety* in the sectors where a high prevalence of these types of problems, related to organizational and physical risks, has been shown, i.e. the health care and social assistance, educational services, manufacturing and repair and maintenance services, and accommodation and food services sectors. It is important to remember that the purpose of the Act is not limited to protecting physical health; it also includes mental health. The duties of occupational health and safety committees in organizations should therefore include identifying mental health risks. Tools exist for identifying the psychosocial risks present in organizations, and can thus help them develop and implement prevention programs and organizational practices conducive to their personnel's health and well-being.

In light of the results of this study, workplace inspectors and OHS prevention professionals should focus on interventions aimed at enhancing decision latitude, social support and recognition of workers who experience tense situations in their relations with the general public or who perform emotionally demanding work. Priority should also be placed on incorporating the reduction of organizational work demands into prevention programs, given their impact on both mental health and MSDs.

In addition, given the close links between mental health problems and presenteeism, and the magnitude of the duration of work absences associated with work-related MSDs, return-to-work support programs that include measures to address physical and psychosocial risk factors should be developed for workers who have been absent from work for such problems.

Lastly, given the substantial financial burden borne by workers with mental health problems that they attribute to their work, and to promote their resolution through interventions at the source, better management of work-related mental health disorders is needed, through the identification of the workplace factors known to contribute to mental health problems to which these workers have been exposed. Validated instruments exist for detecting these factors, and for measuring and comparing the prevalence of mental health problems in these at-risk groups. To this end, we should ensure that workplace parties are trained to identify these risk factors in the workplace.

On the individual level, physicians should be encouraged to be more attentive to their patients' work when investigating their depressive, anxiety or musculoskeletal symptoms, and in their recommendations regarding prevention, therapy or rehabilitation, including support for workers eligible for workers' compensation from the CSST.

## **12. AVENUES FOR RESEARCH**

Despite the breadth of information provided, the full report presenting the EQCOTESST survey results reflects only part of the wealth of information collected. Complementary analyses will have to be carried out by a variety of researchers in different settings in order to derive the maximum amount of information that can help improve working conditions in Québec and provide direction to further studies. As was the case in Europe following the results of five-year surveys on working conditions, the data from the EQCOTESST survey could give rise to numerous other publications that will examine in greater depth problems that are more specific to certain sectors, or issues such as precarious employment, social inequalities and occupational health, gender-based disparities or the aging of the labour force.

It is important also to assess the implementation and effectiveness of interventions designed to reduce exposure to organizational or physical work demands. These assessments should take into account worker characteristics that could have an impact on their exposure to work demands and on the intervention implementation process, notably, gender, age, recent immigrant status, level of education, as well as industrial sector and various working conditions (e.g. precarious employment, seasonal work). Studies of a wide range of interventions for adequately counteracting health inequalities attributable to workplace exposures are also needed. Despite our longstanding knowledge of the consequences of high exposure to physical work demands, these work exposures persist. We must therefore seek to understand the reasons for their persistence if we are to find out how to overcome the factors impeding sustainable reduction of such exposures.

Intervention approaches that promote the integration of sustainable MSD prevention in organizations and research on interventions that optimize the reduction of physical and organizational work demands thus remain priorities. Greater efforts are needed to assess the effectiveness of interventions aimed at reducing the prevalence of MSDs through the reduction of physical and organizational work demands, as well as the effectiveness of interventions designed to shorten the duration of MSD-related work absences.

Multivariate and longitudinal analyses will be needed to identify which work demands have the greatest influence on the health outcomes measured in the EQCOTESST survey. It would also appear important to conduct research on the impact of exposure to different combinations of physical and organizational work demands not only on MSDs, but also on mental health and even perceptions of general health. Specifically, we need to further our understanding of the complex and potentially two-way interactions that occur between MSDs, psychological distress, physical demands and psychosocial work demands, as well as the mechanisms whereby they act on each other. A better understanding of these relationships could lead to new avenues of intervention for preventing work-related MSDs and mental health problems. Work accidents could also be examined as part of this dynamic. As well, the contribution of various physical and psychosocial work demands to inequalities in musculoskeletal health warrants further study.

Given the small proportion of workers having work absences for work-related MSDs who file workers' compensation claims with the CSST, this study shows the importance of conducting population-based surveys in order to study the extent of MSDs and to track the evolution of their prevalence and related work absences over time; such surveys complement analyses of compensation data on occupational disorders. Complementary analyses and more in-depth studies should provide a clearer understanding of the discrepancies in the number of disorders reported in surveys versus the number declared to the CSST and help identify their determinants.

The results of this study indicate that, for women, holding a higher-level position in the socioeconomic hierarchy (in terms of education, income, occupational category or type of employment) is not associated with a decrease in exposure to psychological or sexual harassment. It would be relevant to explore the contexts in which workers at different levels of the socioeconomic hierarchy are subjected to harassment.

It would also be worthwhile to explore the phenomenon of sexual harassment to see whether it has diminished, and if so, to better understand the reasons for this, particularly to find out

whether the concept of this form of violence has changed in the minds of the Québec population now that psychological harassment is a better known phenomenon. This question should be of particular interest to the *Commission des droits de la personne et des droits de la jeunesse* (Québec's human rights and youth rights commission).

As precarious employment arrangements are associated with a higher prevalence of sexual harassment and physical violence, we should seek to improve our understanding of these links. It would also be relevant to explore the inverse relationship between the absence of precarious employment arrangements and psychological harassment. Lastly, it would be important to explore the part played by workplace violence in social inequalities in health.

In addition, studies should be carried out to further understanding of the phenomenon of presenteeism and its impact on workers' health and organizational productivity. It would be particularly interesting to analyze the propensity for presenteeism in relation to the number of days of sickness absence, two phenomena already recognized as being related, mainly in workers with high levels of psychological distress.

In particular, the links between a high rate of presenteeism and certain dimensions of work organization, such as workload intensity (psychological work demands), effort-reward imbalance and not having the adequate means at one's disposal to do quality work, warrant further analysis and investigation. It is also important that we improve our understanding of the magnitude of the stigma and prejudices facing workers with mental health problems, as these prejudices may lead many workers not to report their problems and to work despite being sick. The predictive value of long-term presenteeism for coronary heart disease mortality should also be studied.

Regarding work accidents, future research should focus on the following: analyzing, through multivariate approaches, all the accident risk factors documented in the EQCOTESST survey in order to identify the main determinants; studying the relationships between the various forms of precarious employment arrangements and employment insecurity and the increase in the number of work accidents; studying the mechanisms that underlie the relationships between the various manifestations of work intensification (e.g. lack of adequate means at one's disposal to do quality work, interruptions, temporal work demands) and an increased risk of accidents; studying the effects of the new forms of work organization on accidents, to determine which of these promote greater decision latitude and organizational room to manoeuvre, as well as greater job rewards and recognition, social support offered by work groups and conditions facilitating work-life balance; enhancing knowledge of specific accident risks and of ways to prevent them in SMEs and very small workplaces; and continuing to study populations that are especially vulnerable to the risk of accidents (e.g. young people, workers in service industries).

As well, the links between family responsibilities, working conditions, access to leisure time and occupational health and safety identified in this study should be examined in greater depth through multivariate analysis to enhance understanding of these relationships. Complementary qualitative studies should be conducted on the determinants of the implementation of work-life balance measures in the workplace.

With regard to students, it will be important to examine the determinants of their long hours of work, particularly in relation to family income, level of studies and type of study program, as

well as gender, age, family responsibilities and academic performance. In addition, student workers should be integrated into a longitudinal study that would shed light on the cumulative impact of their multiple roles on health.

Another possible avenue to explore is that of the relationships between the duration of work absences for mental health problems and the organizational work demands identified in this survey, given the significant costs associated with these work absences. A study of the social costs associated with work-related mental health problems (e.g. in terms of loss of income, personal expenses and long-term work disability) should be envisaged, in particular, the links between working conditions and medical consultations can be studied by using the data on disabilities by occupation compiled by the *Régie des rentes du Québec* (Québec's pensions board) and by more in-depth analyses of the data collected from the participants in this survey who authorized access to their health insurance files at the *Régie de l'assurance maladie du Québec* (Québec's health insurance board).

Lastly, the importance of organizational conditions for occupational health and safety (OHS), identified in this survey, raises questions about prevention management in workplaces. Another scientific study should therefore be conducted in Québec workplaces to document different OHS management practices in detail, and ultimately to study their impact in terms of sustainable prevention.

### **13. GENERAL CONCLUSION**

The links between these results and the specific objectives of the EQCOTESST survey have been described in the different sections of this summary report. The overall goal was to provide an overview of the working conditions and work demands to which the Québec labour force is exposed; to paint a picture of the accidents, musculoskeletal, mental health, violence and workplace harassment problems that occur in Québec workplaces; to measure the relationships between these working and employment conditions and occupational health and safety problems; and lastly, to describe the consequences of OHS problems in terms of work disability, medication consumption and use made of health and compensation services. The data presented here are comparable to those obtained in similar studies conducted in other countries. Given the objectives of the EQCOTESST survey, it is also important, from a prevention perspective, to target the work conditions or populations at the highest risk of experiencing health and safety problems in the workplace for preventive interventions.

Rather than reiterating here the main results of this survey, notably with respect to the way its objectives were met, we provide an overview that highlights the principal findings and issues discussed in the full report.

#### **Differences in working conditions between men and women and among age groups**

The distribution of the female and male workers targeted by the survey reveals that, overall, men make up a larger portion of the Québec labour force (53.1% versus 46.9%). However, the opposite is true among young people, where a greater portion of workers 15 to 24 years of age are women; it is only in workers 55 years of age and over that a statistically significant higher percentage of men is noted. Workers of both sexes 15 to 24 years of age generally have poorer



working conditions than workers who are older. Most of these young workers fall into the unskilled workers and labourers category, and are more likely to hold non-management, non-unionized positions. Moreover, the female workers in the population targeted by the survey have a higher level of education than the male workers. However, the fact that women occupy fewer supervisory positions and that more of them hold jobs that are not protected by unions clearly shows that disparities still exist today between their employment and working conditions and those of men.

The gender-based analysis sheds light on several situations where exposure to work demands varies according to gender. For example, a higher proportion of women are exposed to all the organizational work demands measured, except for low social support at work, iso-strain and low job rewards or recognition at work, for which the differences between women and men are not statistically significant. In general, with the exception of repetitive movements, prolonged computer work and sitting posture, a higher proportion of men than women are exposed to the physical work demands measured. However, a very high proportion of female manual workers are exposed to at least four physical work demands and a higher proportion of them than men in manual occupations are exposed to repetitive movements and standing postures, particularly standing with no possibility of sitting down. Proportionally more female workers in the educational services sector are exposed to physical violence in the workplace than employees in other sectors, which is not the case for men. Proportionally fewer male managers compared to other occupational categories are exposed to psychological harassment, but the same tendency is not observed for female managers.

Proportionally more female workers assume heavy family responsibilities and also do more hours of domestic work than male workers. The individuals with heavy family responsibilities do not have better access than other workers to conditions that facilitate work-life balance. This finding concerns female workers in particular, both because they assume heavier family responsibilities and because they may be deprived of the support needed from their male spouses, who themselves have no access to conditions that would allow them to take on more of the work associated with domestic responsibilities.

Major gender differences are also noted in the prevalence of several health outcomes studied. Women have higher prevalences of work-related musculoskeletal disorders (MSDs) than men, and this applies to all parts of the body studied. The same holds true for mental health problems.

### **Industrial sector groupings to prioritize for prevention**

This study shows that the risks of work accidents are as high in certain groupings of service sectors (such as that of health care and social assistance, or the grouping that includes the accommodation, food services, personal services, business services and arts and entertainment sectors) as in the industrial sectors more traditionally associated with these rates (such as the grouping of the primary industries, public utilities and construction sectors or that of the manufacturing and repair and maintenance services sectors). MSDs in women are particularly prevalent in the public and parapublic services sectors, as well as in those sectors more traditionally associated with these disorders and with work accidents. The results also show a high prevalence of psychosocial, organizational and physical risks in the grouping that includes the following sectors: health care and social assistance, educational services, manufacturing and

repair and maintenance services; and in that including the accommodation, food services, personal services, business services and arts and entertainment sectors.

### **Social inequalities in health and access to healthy working condition**

The study highlights the importance of examining the contribution of exposure to poor working and employment conditions (e.g. employment insecurity and precarious employment arrangements) and of exposure to various physical and organizational work demands, and their relationship to social inequalities in health. The results of this survey demonstrate a higher prevalence of several physical and psychosocial work demands in the occupational and income categories at the bottom of the hierarchy. The prevalence and severity of several health problems vary according to socioeconomic status: those who are poorest or who have the lowest level of education and the more disadvantaged socio-occupational classes suffer more from ill-health (Marmot and Wilkinson, 2006). As a number of recent studies<sup>23</sup> have established, the social inequalities observed with regard to several health problems disappear or diminish when exposure to physical and psychosocial work demands is factored in. Also, given that work is a key determinant in this regard, improving these conditions ranks among the essential strategies to adopt in order to reduce health inequalities (Commission on Social Determinants of Health, 2008; Marmot et al., 2008).

Work intensification and the increase in precarious employment are phenomena observed worldwide, and whose consequences for workers' health are well documented (Quinlan et al., 2001). The EMCONET (Employment Conditions Knowledge Network) report (Benach et al., 2007), prepared at the request of the Commission on Social Determinants of Health of the World Health Organization, documents the proliferation of a deterioration in working conditions and its global consequences for health.

Among the results of this survey, we note that a large proportion of all workers, i.e. 35.8% or some 1.3 million individuals, fall into the category of those who experience employment insecurity. This population includes, notably, salaried employees whose employment relationship is uncertain due to restructuring or subcontracting, realities known to impact on workers' health. A recent review of 86 studies on this topic revealed that 85% of them found that these realities have adverse effects on occupational health outcomes (Quinlan & Bohle, 2009). The links between employment insecurity and psychological harassment have also been shown (Baillen & De Witte, 2009), and in this survey, 19% of the workers who experience employment insecurity also reported being victims of this type of harassment, compared to only 12.6% among those who did not report employment insecurity.

Employment insecurity is also the reality faced by workers who enter and leave the labour force on a regular basis, and by those who have had a period of unemployment in the past two years (Malenfant et al., 2007). Studies conducted on these workers, who often form part of the informal work sector, show that they are frequently exposed to poor working conditions, which has a negative effect on their health (Benach et al., 2007). It has also been shown that belonging

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<sup>23</sup> Aittomäki, 2007; Bauer et al., 2009; Borg and Kristensen, 2000; Hagen et al., 2006; Kaikkonen et al., 2009; Leclerc et al., 2009; Lundberg et al., 2007; Marmot et al., 2008; Mehlum et al., 2008; Melchior et al., 2006; Melchior et al., 2005; Stock et al., 2008.

to this population, which is constantly searching for the next contract, has an adverse effect on health. The term “employment strain” is used to describe the stress associated not with the work itself, but with the precarious nature of the employment relationship and the obligation to continually look for new contracts (Clarke et al., 2007).

This portion of the population that experiences employment insecurity is also the most likely to be exposed to precarious employment arrangements. Of the EQCOTESST study population, 12.9% report such arrangements and 7.2% experience both precarious employment arrangements and employment insecurity. Precarious employment, in particular, temporary work, is associated with a higher rate of work accidents according to the scientific literature (Benavides et al., 2006; Fabiano et al., 2008), a phenomenon partly explained by low seniority in the job, which is the reality of a large number of temporary workers.

The scientific literature further reports that some countries have launched initiatives to induce organizations to take into account the consequences that the decision to restructure may have on workers’ health (Quinlan, 2007). The majority of European countries have, moreover, chosen to specifically address the issue of temporary work, including work involving temporary employment agencies (Arrowsmith, 2006).

### **Organizational models associated with cumulative work demands**

The results as a whole suggest that some workplaces are at higher risk of occupational disorders than others due to the presence of simultaneous exposure to multiple risk factors, some of which are particularly critical in the genesis of occupational health and safety adverse outcomes, such as, for example, low decision latitude and the lack of organizational room to manoeuvre, very significant organizational and physical work demands, low social support at work, rigid work schedules and lack of job rewards and recognition. The results also suggest that the impact of these factors on workers not only leads to an increase in accidents, but also influences health, including the prevalence of musculoskeletal and psychological disorders.

The results of studies carried out in France, using data from the European Foundation for the Improvement of Living and Working Conditions (EUROFOUND) (Valeyre, 2006), contribute to this process of reflection. They have shown that innovative organizational models, such as that of learning organizations, differ greatly from organizations that adopt the lean production method (total quality, just-in-time, multi-tasking) in terms of working conditions and consequences on health and safety. These organizational models are obviously defined by numerous components that influence the situations to which their workers are exposed in many ways. The first model, that of learning organizations, is characterized by real autonomy in managing work intensity, by the possibility of teamwork and by reduced physical work demands. It is associated with fewer risks to health, including fewer musculoskeletal disorders and work absences due to illnesses or accidents, than are lean production organizations or more traditional, Taylor-type organizations. Similar findings were described in a study by Daubas-Létourneux and Thébaud-Mony (2000), although their definition of the organizational models was somewhat different.

These results clearly show the importance of introducing a global occupational health and safety culture in organizations by incorporating a set of elements that will also enhance productivity. A number of studies point out that the participation of both managers and workers, and thus the

acknowledgement of the usefulness of their knowledge and experience, is more likely to guarantee the sustainable impact of the preventive measures implemented (Daniellou et al., 2009; Simard, 1998).

### **Gaps in terms of income replacement**

The results of the EQCOTESST survey bring to light inadequacies in the compensation of individuals who have sustained work-related musculoskeletal disorders, work accidents and psychological disorders. The results show that one-third of the victims of work accidents resulting in absence from work did not file a claim with the CSST. The situation was even more flagrant among non-management employees who had been absent from work for musculoskeletal pain that they attribute entirely to their work, with over 80% of them not filing for compensation from this agency. Nearly 23% of salaried employees and 81% of self-employed workers who had been off work due to work-related MSDs had no income during these absences. Regarding mental health disorders, over 40% of the workers with depressive symptoms that they attribute partly or wholly to their work had been absent from work for this problem, but nearly one-quarter of them received no income during that time.

These results suggest that workers' compensation data do not represent the full burden of illness and cannot be relied upon to provide the true prevalence of occupational accidents and illnesses, and, therefore, the full range of needs for occupational health and safety prevention. It is important to remember that compensation data is insurance data; they are not collected for the purpose of prevention. Based on this survey's results, we can also surmise that there is lack of awareness in workplaces of what is covered by workers' compensation and how to go about filing a claim for a work-related disorder. The discrepancies between compensation data and the prevalence of work-related health problems documented in this survey warrant further investigation in order to ascertain, among other things, whether costs are transferred to private insurers or individuals, given that a large proportion of EQCOTESST respondents reported receiving no income during their absence from work.

Moreover, the finding that over 80% of self-employed workers who had been absent from work for work-related MSDs received no income during their absence is partly explained by the fact that most of them are not covered by the *Act respecting Industrial Accidents and Occupational Diseases*, and therefore are not eligible for workers' compensation unless they have previously opted to pay into Québec's CSST workers' compensation plan. A large proportion of this population has no private insurance coverage either, due to the high costs of insurance products for individuals (Akyeampong, Sussman, 2003). These results suggest that the majority of self-employed workers still have no access to economic support in the case of disability.

### **Methodological improvements to incorporate into the next survey**

Overall, the sample population targeted offers interesting potential for further analysis. However, the sample size should be increased during future cycles of the EQCOTESST survey in order to increase the level of precision, and above all, to allow for clearer identification of the subgroups at risk, for example, by industry or occupation. The sample size used in this cycle of the survey obliged the researchers to group several industrial sectors together, often sacrificing in the process the precision of the analyses by sector. A larger sample size would prevent this loss of

precision and allow clearer identification of the sectors at risk. A larger sample size would also allow a more detailed and more accurate study of certain sub-groups of workers, such as the victims of work accidents, harassment or workplace violence, which is quite important to do.

The comparability of the EQCOTESST survey's results to those of other sources is sometimes compromised by virtue of the target population chosen (workers employed for at least eight weeks and working a minimum of 15 hours a week). If such comparisons were to become essential to the study and if the necessary resources were available, in the future cycles of the EQCOTESST survey it would be preferable to expand the target population to include all workers 15 years of age and over. However, before proceeding, it would also be important to measure the consequences of such a decision on the survey's data analysis plan.

The planned recurrence interval of this survey (every five years) will allow changes in the phenomena studied in 2007–2008 to be tracked. However, the relevance of using a random digit dialling (RDD) method that excludes mobile phones to select the sample population should be reassessed. Although in this survey, it was established that the loss of coverage associated with the exclusion of workers living in households with no landline phone had a negligible impact on the quality of the estimates, it is likely that the phenomenon of landline phones being replaced by mobile phones will grow in the years ahead and have a greater impact on the survey estimates. The survey methodology will therefore have to be adapted or other sampling methods used in order to enhance the estimates, while still taking into account the comparability of the results of future surveys with those of this survey.

In summary, ensuring the comparability of this EQCOTESST survey results to those obtained in the future cycles of the survey will remain a key objective. The future cycles of this survey will therefore have to be developed in continuity with this survey, bearing in mind statistical needs and the specific analysis objectives. However, the limitations identified in this first survey will also be taken into account in the new exercise, as will the time and resource constraints in effect at the time it is conducted.

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## 15. APPENDIX – LEXICON

**Note:** The terms included here all appear in the full report, which is available in French only.

**Area of residence (*zone de résidence*):** An indicator derived from the Statistical Area Classification (SAC) of Statistics Canada. According to this indicator, the area of residence is labelled “urban” if the worker lives in a census metropolitan area (CMA)<sup>24</sup>; workers living in a census agglomeration (CA) are classified as living in “rural” areas; and lastly, those living in metropolitan influenced zones (MIZ) are classified in “semi-urban” areas.

**Confidence interval (CI) (*intervalle de confiance*):** Expresses the range of possible values of a selected estimate. At a 95% confidence level, there is a 95% probability that the true value of an estimated variable such as a mean, proportion or rate is contained within the interval.

**Constraining schedule (*horaire contraignant*):** Concept measured by the index that is described in Section 3.2.2 of the report and that is designed to measure restrictive aspects of the work schedule (employees only).

**Constraining schedule index (*indice d’horaire contraignant*):** Index described in Section 3.2.2 of the report and designed to reflect the limiting nature of various aspects of the work schedule (employees only).

**Cumulative physical work demands affecting the back (*cumul de contraintes physiques du travail relatif au dos*):** Index that measures the number of physical work demands associated with musculoskeletal disorders of the back to which the worker is exposed. It includes six items: (1) Working in a standing posture with no possibility of sitting down, (2) Working with the back in a bent posture, (3) Work involving repetitive movements, (4) Forceful exertion when using tools, machines or equipment, (5) Handling heavy loads, and (6) Exposure to whole-body vibration.

**Cumulative physical work demands affecting the upper extremities (*cumul de contraintes physiques du travail relatif aux membres supérieurs*):** Index that measures the number of physical work demands associated with musculoskeletal disorders of the upper extremities to which the worker is exposed. It includes six items: (1) Working with hands above shoulder level, (2) Work involving repetitive movements, (3) Work involving very precise movements of the hands or fingers, (4) Forceful exertion when using tools, machines or equipment, (5) Handling heavy loads and (6) Exposure to hand-arm vibration.

**Current main job (*emploi principal actuel*):** Employment identified by the respondent as his main job and to which he must refer when answering the interview questions. If he holds more than one remunerated job, he must choose the one for which he works the most hours or, if he regards his jobs as equivalent in terms of number of hours worked, he is asked to refer to the job he has held the longest.

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<sup>24</sup> This indicator uses the geography of the 2006 census.

**CV or coefficient of variation (*CV ou coefficient de variation*) :** A measure of the relative precision of an estimate. It is defined as the ratio of the standard error of the estimate to the estimate itself and it is usually expressed as a percentage. The smaller the coefficient of variation, the more accurate the estimate.

The standard error of an estimate expresses the variation that would be observed among the estimates of all possible samples of the same size; it is therefore a measure of the mean “distance” expected between the estimate derived from the survey sample and the mean of the estimates derived from all possible samples. A small standard error means that the estimate obtained using the survey sample would not have been very different had another sample been selected.

**Decision latitude (*latitude décisionnelle*) :** Index comprised of five items and designed to measure the opportunity available to the respondent to use his/her skills and develop new ones and the latitude he/she has to choose how to perform his/her work and to participate in related decisions.

**Demanding work situations (*situations de travail exigeantes*) :** Term used in this study to designate the following work situations: emotionally demanding work, tense situations involving the public, lacking the means to do quality work, and workplace violence (psychological harassment, sexual harassment and physical violence).

**Depressive symptoms (*symptômes dépressifs*) :** Index comprising two questions that measure two key symptoms of depression, i.e. depressive mood and loss of interest or pleasure in most customary activities. The responses to another question about the work-relatedness of these symptoms permit a distinction to be made between depressive symptoms perceived as being work-related and those perceived as not being work-related.

**Domestic work (*tâches domestiques*) :** Concept that is not defined in the survey except to specify that hours spent on domestic work also included hours spent on family responsibilities.

**Effort-reward imbalance (*déséquilibre entre l'effort et la reconnaissance*) :** Index that identifies exposure to work situations characterized by a combination of a high level of effort and a low level of job reward and recognition. It is measured as a ratio of the level of psychological work demands to the level of job rewards.

**Employment insecurity (*insécurité d'emploi*) :** Indicator measuring the ability to maintain a particular job (job security), that also takes into account the likelihood of being able to maintain a paid job (employment security). The indicator is positive if a worker meets at least one of the two following conditions: agrees or strongly agrees with the idea that he has poor job security; or, has experienced a period of unemployment during the past two years.

**Flexible schedule (flextime) (*horaire flexible*) :** Schedule that allows employees flexibility in choosing their own work schedule.

**FTE (*ETC*) :** Abbreviation that stands for “full-time equivalent.” It is a term used when estimating the number of full-time equivalent workers calculated on the basis of the total annual

hours worked divided by 2,000 hours, which is the standard used as an estimate of the average annual hours worked by full-time workers.

**General Index of Cumulative Physical Work Demands (*cumul general de contraintes physiques du travail*) :** Index measuring the number of physical work demands associated with musculoskeletal disorders from among nine items: (1) Working in a standing posture with no possibility of sitting down, (2) Working with hands above shoulder level, (3) Working with the back in a bent posture, (4) Work involving repetitive movements, (5) Work involving very precise movements of the hands or fingers, (6) Forceful exertion when using tools, machines or equipment, (7) Handling heavy loads, (8) Exposure to whole-body vibration and (9) Exposure to hand-arm vibration.

**Grouping of industrial sectors (*regroupement de secteurs d'activité économique*) :** Based on the four-digit codes used in the North American Industry Classification System (NAICS) 2002, respondents were classified according to the industrial sector they worked in. These sectors were then grouped into the following nine categories: (1) *Primary industries, public utilities, and construction*, (2) *Manufacturing industries and repair and maintenance services*, (3) *Accommodation, food services, personal services, business services, and arts and entertainment*, (4) *Production support services*, (5) *Transportation, warehousing and waste management services*, (6) *Wholesale and retail trade*, (7) *Health care and social assistance*, (8) *Educational services* and (9) *Public and parapublic services*.

**Index (*indice*) :** A measure of exposure, health status or another phenomenon based on the responses to several questions.

**Indicator (*indicateur*) :** A measure of exposure, health status or another phenomenon measured in the survey that is based on the response(s) to one or more than one question.

**Iso-strain (*tension et faible soutien au travail*) :** Based on the Karasek demand-control-support model, this indicator designates the combined exposure to high psychological work demands, low decision latitude and low social support at work.

**Job rewards or recognition (*reconnaissance*) :** Index that includes eight questions and that measures level of rewards at work, whether monetary (satisfaction with salary or wages), social (esteem or respect from both co-workers and supervisors) or organizational (job security and prospects of promotion).

**Job strain (*tension au travail*) :** Based on the Karasek demand-control model, this indicator designates the combined exposure to high psychological work demands and low decision latitude at work.

**Language spoken most often at home (*langue parlée le plus souvent à la maison*) :** Indicator established by means of the question “*What language is spoken most often in your home?*” The respondent may mention more than one language if he believes that they are all spoken equally often. The following categories of answers are provided: (1) *French only* (2) *French and at least one other language* (3) *At least English (but no French)*, and (4) *Other languages than French*

or English. It should be noted that the *French and at least one other language* category includes workers living in households where at least one language other than French is spoken on a regular basis, whether it be English or some other language.

**Leisure activities (Recreation) (*loisirs*) :** If prompted by the interviewee, the interviewer would provide the following examples: exercising or playing sports, playing music, participating in other recreational activities such as hobbies or board games or watching television.

**Level of education completed (*niveau de scolarité complété*) :** Indicator of the highest level of education achieved that includes the following four levels of education: (1) *Elementary school or less* (including incomplete high school studies), or having completed and received a certificate or diploma for (2) *High school*, (3) *College*, or (4) *University*.

**Level of family responsibilities (*niveau de responsabilité familiale*) :** Concept measured using the index defined in Section 3.2.2 of the report that takes into account responsibilities for children and/or handicapped adults.

**Level of household income (*niveau de revenu du ménage*) :** A measure of total household income (in 2006) expressed in quintiles, applied to the private household in which the worker lives, taking into account the number of persons in the household, the low income thresholds established for 2006 (LICOs)<sup>25</sup>, and the community in which the household is found. The latter information takes into account differences in the cost of living between rural and urban areas<sup>26</sup>. This index includes an imputation of income values for those respondents who did not provide an income category.

**Musculoskeletal disorders (MSDs) (*troubles musculo-squelettiques*) :** Term that refers to a set of symptoms and disorders involving the musculoskeletal system; they include neck, back, upper and lower extremity disorders of muscles, tendons, peripheral nerves, and other tissues around joints. In this study, musculoskeletal disorders were defined as significant pain of musculoskeletal structures experienced in the 12 months prior to the survey that interfered with activities; they were measured separately for the neck, back, upper extremities and lower extremities. The frequency of pain was measured with the following response options: never, occasionally, often, all the time. The perception of the relationship of these symptoms to work was also measured (response options: not related to work, partially related, entirely related, don't know). The following categories of MSDs were identified :

- *All musculoskeletal pain:* Refers to significant musculoskeletal pain experienced occasionally, often, or all the time, that interferes with activities. This category includes cases involving pain caused by accidental traumatic injury as well as non-traumatic cases, and includes both work-related and non-work-related cases.

<sup>25</sup> The before-tax low income cut-offs from 2006 were used to calculate the income level indicator. See Statistics Canada (2008), *Low income cut-offs for 2007 and low income measures for 2006, 2006–2007*, Research Paper. Income Research Paper Series, Ottawa, Ministry of Industry, Catalogue no. 75F0002M, No. 004, 40 p.

<sup>26</sup> For a definition of urban area and rural area, see Statistics Canada (2010), *2006 Census Dictionary*, Ottawa, Ministry of Industry, No. 92-566-X, 560 p.

- *Musculoskeletal disorders (MSDs) related to the person's main job*: Refers to significant musculoskeletal pain experienced often or all the time, which interferes with activities, is non-traumatic, and is perceived as being partly or entirely related to the respondent's main job. This category excludes cases involving pain experienced occasionally and pain caused by accidental traumatic injury.
- *Work absences due to musculoskeletal pain related to the person's main job*: Refers to work absences of at least one day attributed by the respondent to significant non-traumatic musculoskeletal pain experienced occasionally, often, or all the time, that interferes with activities, is perceived as being partly or entirely related to the respondent's main job. This category of musculoskeletal pain includes cases involving pain experienced occasionally, and excludes cases caused by accidental traumatic injury and cases perceived as not being work-related.

**NAICS (SCIAN)** : Adopted by Statistics Canada and the corresponding agencies in the United States and Mexico, the North American Industry Classification System constitutes a standardized classification system with common definitions regarding the North American industrial structure and a statistical framework for the analysis of industry-related data from the three economies.

**NOC (CNP)** : Adopted by Human Resources and Skills Development Canada (HRSDC), the National Occupational Classification provides a standardized framework for organizing the world of work of Canadians according to the occupations it includes.

**Occupational category (*catégorie professionnelle*)** : Based on the four-digit code used in the National Occupational Classification 2006 (NOC 2006), this indicator classifies workers according to the type of job they held at the time of the survey. It includes the following categories: (1) *Senior managers and middle managers*, (2) *Professionals*, (3) *Semi-professionals and technicians*, (4) *Supervisors and front-line managers*, (5) *Clerical workers*, (6) *Skilled trades workers*, and (7) *Unskilled workers and labourers*.

**Organizational work demands (*contraintes organisationnelles*)** : Refer to the dimensions of work organization for which there is empirical evidence of a negative impact on the health of exposed workers. The organizational work demands measured include psychological work demands, decision latitude, social support at work, job strain, iso-strain, effort-reward imbalance, and the lack of possibility of taking breaks and modifying the work pace.

**Perceived health status (*perception de l'état de santé*)** : Health status indicator comprised of one question with five response options (excellent, very good, good, fair or poor) and designed to measure the respondent's perceived or self-rated health; this reliable indicator of health is a strong predictor of mortality. A respondent was considered to have a negative perception of his/her health if, in general, he/she perceives his/her health as "fair" or "poor" (versus "excellent," "very good" or "good").

**Person with limited autonomy (*personne à autonomie réduite*)** : Person who requires assistance because his/her independence is limited by a physical or mental handicap, his/her health or advanced aged.

**Physical violence at work (*violence physique au travail*) :** Individuals who, during the 12 months prior to the survey, at their main job, have been subjected to one or more acts of violence, excluding strictly verbal violence or the threat of violence, are considered the target of physical violence for the purposes of this study.

**Physical work demands (*contraintes physiques*) :** Refer to the biomechanical factors, such as forceful exertion, repetitive work, awkward or static postures, handling of heavy loads, hand-arm and whole-body vibration, for which empirical evidence has shown a causal link with one or more musculoskeletal disorders.

**Population estimate (Pe) (*population estimée, Pe*) :** Estimated number of persons in the target population corresponding to a given proportion or rate.

**Precarious employment (*précarité d'emploi*) :** Indicator used to measure exposure to the combination of a precarious employment arrangement AND employment insecurity as measured by the two indicators above.

**Precarious employment arrangement (*précarité contractuelle*) :** Indicator created to take into account four types of precarious contracts identified in the literature as being associated with adverse working conditions: working as a part-time employee but wanting to work more hours; becoming a self-employed worker at the employer's request; holding a job through a placement agency; and having a fixed-term contract job.

**Presenteeism (*présentéisme*) :** Designates the phenomenon whereby workers go to work even if they believe that they have symptoms or an illness that warrant resting and being absent from work. A distinction is made between short-term presenteeism (one to nine days) and long-term presenteeism (10 days or more).

**Private household (*ménage privé*) :** Consists of one or more persons living in a private dwelling (not including visitors). The members of a private household may be related or not.

**Productive time (productive activities) (*temps productif ou activités productives*) :** Indicator measuring the combined number of hours spent carrying out paid work and tasks related to household and family responsibilities. (Source: ISQ, 2009).

**Psychological distress (*détresse psychologique*) :** A six-item index that provides an early indicator of impairment to mental health that assesses two of the most frequently observed symptoms of mental health disorders: depression and anxiety. It is not a tool for diagnosing these pathologies, but rather an index that identifies, in a given population, those persons at the greatest risk of developing such pathologies. In this survey, this index is measured using Kessler's K6 psychological distress scale (2006).

**Psychological harassment at work (*harcèlement psychologique au travail*) :** Individuals who, during the 12 months prior to the survey, at their main job, have been subjected to repeated verbal comments or actions that affected their dignity or personal integrity are considered to be the object of psychological harassment for purposes of this study.

**Psychological work demands (*demande psychologique*)** : Index comprising six items measuring quantitative work demands, mental demands and the time constraints that a worker must cope with at work.

**Psychosocial work demands (*contraintes psychosociales*)** : Refer to “organizational work demands” and “demanding work situations” (see “Organizational work demands” and “Demanding work situations”).

**Psychotropic medication (*psychotropes*)** : Psychotropic medication includes tranquilizers, sleeping pills and anti-depressants, whether or not prescribed by a physician.

**Responsibility for children (*responsabilité à l'égard des enfants*)** : Respondents are considered to be responsible for children if young people under the age of 15 live in the household. See Section 1.2.1.3, Chapter 1, of the report for a profile of households. For purposes of our analysis, a family responsibility link is presumed to exist between the respondent and these children.

**Salaried employee (*salarié*)** : Worker targeted by the study who holds a paid job and is paid a salary by the employer. This category includes all those who do not regard themselves as self-employed workers.

**Self-employed worker (*travailleur autonome*)** : Respondents who work for themselves for example, freelancers, consultants and contractors. This category includes all workers who do not regard themselves as salaried employees.

**Sexual harassment at work (*harcèlement sexuel au travail*)** : Individuals who, during the 12 months prior to the survey, at their main job, have been subjected to unwanted words, gestures or actions of a sexual nature are considered to be the object of sexual harassment at work for purposes of this study.

**Small and medium-sized enterprises (SME) (*petites et moyennes entreprises, PME*)** : Enterprises with fewer than 200 workers.

**Social support at work (*soutien social au travail*)** : Index comprising seven questions that measure the degree of social and emotional integration, degree of trust between co-workers and supervisors, i.e. team spirit and degree of cohesiveness in the work group, and the presence of aid and assistance given by others in the performance of work tasks.

**Source of compensation (*source d'indemnisation*)** : Entity from which the worker's replacement income comes during a work absence.

**Target population (*population visée*)** : The target population for this survey was all Québec workers aged 15 or over who at the time of the survey held a paid job either as employees or self-employed workers for at least eight weeks and who worked a minimum of 15 hours per week. This population includes workers on vacation, parental or maternity leave, sick leave (including that for occupational accidents or diseases), or unpaid leave, or who were on strike or locked out, provided the duration of the absence was less than 12 months.

**Type of household (*type de ménage*):** This indicator measures the composition of the household and is based on the responses to two questions: the first concerned the total number of persons aged 15 or over in the private household, and the second asked about the number of persons aged 14 or under who live there at least half of the time. The four categories of this indicator are: (1) *One person aged 15 or over*, (2) *Two persons aged 15 or over*, (3) *More than 2 persons aged 15 or over*, and (4) *At least one person age 14 or under*. The first three categories exclude households where persons aged 14 or under live.

**Type of occupation (*type de profession*):** Indicator that groups the four-digit National Occupational Classification codes (NOC 2006) used to classify workers according to the type of work they do, into three categories: (1) *Manual occupations* (occupations involving handling of heavy or moderate loads on a regular basis or of lighter loads, those with a continuous static posture or continuous repetitive work), (2) *Non-manual occupations* (occupations involving little or no load handling or other physical work demands), and (3) *Mixed occupations* (occupations involving handling of light loads, exposure to intermittent static postures, occasional handling of heavy or moderate loads, exposure to numerous movements with light loads, or intermittent repetitive work). The term “load” may refer to goods, containers, tools, pieces of equipment, other objects, people or animals. This type of distinction between occupations was originally created for other occupational classification systems, such as the Canadian Classification and Dictionary of Occupations (CCDO) and the Standard Occupational Classification (SOC).

**Type of work contract (*type de contrat de travail*):** This indicator was constructed using responses associated with the occupation codes assigned to respondents based on the National Occupational Classification (NOC 2006), their employment status (salaried employee or self-employed) and their union status. It includes the following four categories: (1) *Salaried management employee (unionized or not)*, (2) *Salaried unionized employee (non-management)*, (3) *Salaried non-unionized employee (non-management)* and (4) *Self-employed worker*.

**Variable schedule (*horaire variable*):** Schedule that varies depending on appointments, contracts or clients’ needs.

**Weighting (*pondération*):** A weight applied to survey estimates that allows each respondent to the survey to be associated with a factor, a *sampling weight*, which corresponds to the number of units in the target population that he/she “represents.” Using this factor in the estimation step, the respondents’ data can be extrapolated to the target population, allowing adequate inferences to be made about the target population without having observed it in its entirety.

**Work accident (*accident du travail*):** Refers to an accidental traumatic event causing injury, physical or psychological consequences or pain, occurring as a result of or in the course of work performed within the 12 months prior to the survey. It may involve a fall, banging into something, being struck or being involved in a work-related motor vehicle accident. Work accidents exclude non-traumatic injuries or pain due to forceful exertion, awkward or static postures, or repetitive movements.

**Workers (*travailleurs*):** Term that includes both salaried employees and self-employed workers.



**Working conditions facilitating work-life balance (*conditions de travail facilitant la conciliation*) :** Using the index that is described in Section 3.2.2 of the report, this indicator measures working conditions, other than work schedule, that facilitate work-life balance (for salaried employees only).

**Work-life balance working conditions of self-employed workers (*conditions de conciliation des travailleurs autonomes*) :** Working conditions measured using the index that is described in Section 3.2.2 of the report and that is designed to measure working conditions that may limit work-life balance of self-employed workers.

**Workplace violence (*violence au travail*) :** General term that includes the three forms of violence in the workplace studied in this survey: psychological harassment, sexual harassment and physical violence.