The WorkSafeBC–CHSPR Research Partnership Annual Report 2010–2011 was produced by:

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About the Research Partnership

The research partnership between WorkSafeBC (BC’s Workers Compensation Board) and the Centre for Health Services and Policy Research (CHSPR) aims to address current and emerging issues of work-related health in BC. The research partnership began in 2003 and was renewed in 2011 for a five-year term. CHSPR is housed within the School of Population and Public Health at the University of BC.

The Partnership is a leader in work-related health research through the development, promotion, and use of routinely collected health and workers’ compensation data via our partner, Population Data BC. The data allows us to conduct research on the entire working-age population over a 25 year period, providing a unique and comprehensive portrait of the health and well-being of British Columbia’s workers.

Providing evidence that supports the reduction of serious work injuries and illness and that reduces disability duration is a cross-cutting focus of partnership research.

The research leads of the Partnership are Drs. Mieke Koehoorn and Chris McLeod.

Goals of the program of research

- To conduct surveillance of occupational diseases and injuries in BC.
- To assess the effectiveness of WorkSafeBC policies, regulations and practices in reducing work-related injuries and diseases and in promoting timely and successful return to work.
- To lead the development of WorkSafeBC data for research use in BC and across Canada.

For more information about the WorkSafeBC–CHSPR Research Partnership, please visit

www.chspr.ubc.ca/research/worksafebc.
About CHSPR

As a leader of independent, policy relevant research and graduate training, the UBC Centre for Health Services and Policy Research (CHSPR) is dedicated to fostering visionary research within a collaborative and innovative research environment. CHSPR's work engages and informs health policy and issues that matter to Canadians.

For more information about CHSPR, please visit www.chspr.ubc.ca.

About the School of Population and Public Health

The School of Population and Public Health (SPPH) aims to improve the health of communities and to promote health equity at home and around the world by acting on the socioeconomic, cultural, biological, developmental, environmental and genetic determinants of health and their interactions. SPPH is part of the Faculty of Medicine at UBC. In 2011, the former School of Environmental Health (SOEH) became part of SPPH. Many Partnership student trainees are SPPH graduate students.

For more information about SPPH, please visit www.spph.ubc.ca.

About Population Data BC

Population Data BC is a multi-university, nationally active and recognized data and education resource facilitating interdisciplinary research and teaching on the determinants of human health, well-being and development. While respecting and adhering to legislation and protocols governing access to sensitive information and protecting individual privacy, our work strives to ensure that:

- Researchers have timely access to data and training.
- Researchers have access to data that address research questions on human health, well-being and development.
- Research using these data informs policy-making and leads to healthier communities.

For more information on Population Data BC, please visit www.popdata.bc.ca.
Transforming data into knowledge-driven policy and practice

Partnership findings have helped guide policy and practice at WorkSafeBC.

**Informing change in asthma compensation policy**

Many working British Columbians suffer from occupational and work aggravated asthma, but only a small fraction receive compensation or medical treatment through WorkSafeBC. We estimated that up to 27,000 working-age British Columbians had work-related asthma in 2001 and that about 9,000 of those required medical treatment, but only about 2% of cases were compensated. This research helped inform changes to how work-related asthma is compensated.

[Website](www.chspr.ubc.ca/research/worksafebc/asthma)

**Refining the expedited surgery incentive to reduce disability duration among injured workers**

WorkSafeBC pays for surgeries in private clinics and public hospitals, and provides a financial incentive if the surgeries are expedited (conducted within 21 days of authorization). In response to the BC Auditor General, who noted a need to evaluate WorkSafeBC’s surgical policies, we evaluated differences in health status and return to work by surgical setting and expedited status. Private clinics and the expedited incentive led to a two week reduction in surgical wait times, but surgeries performed in public hospitals had shorter return to work times. These results helped WorkSafeBC refine the expedited program by informing contract and fee negotiations with private clinics and orthopedic surgeons.

[Website](www.chspr.ubc.ca/research/worksafebc/musculoskeletal)

**Improving mesothelioma awareness and compensation**

Less than half of all mesothelioma patients in BC receive compensation even though almost all of those who apply are found to be eligible. WorkSafeBC, the BC Cancer Agency, and the Partnership have undertaken a number of initiatives designed to increase the number of mesothelioma patients seeking compensation. In one project, the BC Cancer Agency sent a letter to physicians of mesothelioma patients indicating that their patients may be eligible for compensation. A 2011-2012 Innovation at Work project will see researchers interviewing patients, their families, and physicians in order to investigate factors that facilitate or prevent patients from seeking compensation.

[Website](www.chspr.ubc.ca/research/worksafebc/mesothelioma)

**Facilitating awareness of asbestos-related disease**

Asbestos-related diseases (mesothelioma, asbestosis, lung cancer) represent a significant and growing burden in BC and worldwide. We recently facilitated a workshop that brought together worker, industry and WorkSafeBC representatives, physicians, and researchers to improve awareness and prevention of asbestos-related disease in BC. The workshop led to recommendations that have informed changes to WorkSafeBC practices around asbestos prevention, compensation, and treatment, including an enhanced WorkSafeBC website on asbestos ([www.hiddenkiller.ca](http://www.hiddenkiller.ca)), dedicated staff to help workers and their families with compensation, and the development of a proposal for an asbestos exposure registry program.

[Website](www.chspr.ubc.ca/research/worksafebc/asbestosis)
Our activities in the past year have focused primarily on three broad research areas:
1. Cancer surveillance and compensation
2. Work-related injuries
3. Access, development, and linkage of administrative data for research.

1. Cancer surveillance and compensation

The Partnership has continued its surveillance of mesothelioma and other work-related cancers in BC and our research in the last year has provided evidence to improve the compensation of work-related cancers. We have also undertaken a new project to investigate the rates of cancers related to wood dust exposure in BC.

Wood dust related cancers in BC

Wood dust exposure is linked to cancers of the nasopharynx, sinonasal cavities, and possibly the larynx.* We have developed estimates of sinonasal cancer incidence rates in the BC population for 1985 to 2008 (see Figure 1). We found declining rates of sinonasal cancer, probably due to declining rates of squamous cell carcinomas for which smoking is a strong risk factor. Rates of the less common adenocarcinomas, for which occupational wood dust exposure is an established risk factor, have declined at a slower rate over the observed period.

In examining the geographic distribution of sinonasal cancer in BC we found cumulative incidence rates from 1985 to 2008 for adenocarcinomas were highest in the North Shore-Coast Garibaldi, Kootenay – Boundary, Fraser East, and South Island regions (see Figure 2).

We are now examining wood dust related cancers in relation to occupation and industry of employment. Using job-exposure matrices for wood dust allows us to assign occupations into risk groups and examine whether occupations at high risk of wood dust exposure have higher rates of sinonasal, nasopharyngeal, or laryngeal cancers.

Figure 1: Sinonasal cancer incidence rates per 100,000 population, by cancer type, BC, 1985-2008

Increasing awareness of mesothelioma as a compensable disease

Mesothelioma is a rare form of cancer with a single, well-established cause: exposure to asbestos or related minerals. More than 80% of mesothelioma cases are caused by workplace exposures, and because of the long latency between exposure and disease, cases of mesothelioma are likely to peak within the next decade in Canada. Our previous research has shown that less than half of individuals with mesothelioma listed in the BC Cancer Registry file a workers’ compensation claim for their disease.

Our newest study investigates reasons why individuals do or do not seek compensation and why physicians may or may not provide advice or recommendations to patients regarding mesothelioma compensation. This study will improve information communication to affected individuals about occupational disease and compensation.

The recruitment process for mesothelioma patients, their family members and physician is underway. We expect preliminary results for the spring of 2012.

Figure 2: Cumulative prevalence of all sinonasal cancers per 100,000 population, by health service delivery area, BC, 1985-2008
2. Work-related injuries

Our analysis of work-related injury trends in BC has examined a diverse range of factors associated with injuries, from working hours to certification programs. Our results demonstrate a need for increased injury prevention initiatives in high-risk industries.

Does certification reduce the risk of tree-faller injuries?

Manual tree-fallers have the highest overall injury rate and the highest serious injury rate (amputations, fractures, fatalities) of all occupational groups in BC. In an effort to prevent injuries and fatalities, WorkSafeBC and other stakeholders introduced a faller certification program, the BC Faller Training Standard. By 2006, all manual tree-fallers in BC were required to obtain this safe-work practices certificate either through extensive training and examination for new workers, or by successful completion of an exam for experienced workers.

We conducted two studies to examine the effect of certification on work-injury among BC manual tree-fallers. In the first study, we calculated work-related injury rates during pre- and post-certification periods, and found that the overall rate of injuries among manual tree-fallers had declined following the implementation of mandatory certification (see Figure 3). However, in the second study, where we investigated the effect of faller certification on the individual risk of injury for manual tree-fallers, we found that safe-work practice certification was not associated with a significant reduction in individual injury risk over the study time period.

The majority of certified individuals in this study were experienced fallers certified through a grandfathering process, and thus the analyses largely investigated the effect of experienced fallers challenging the certification exam, rather than on the effect of training for new fallers. This suggests that minimum standards for industry best practices may not be effective in reducing the risk of injury for manual tree-fallers, and that the grandfathering process may not have realized the full potential of the certification requirement.

Dan Sarkany, a recent Partnership trainee, successfully defended his UBC MSc thesis based this project.

Figure 3: Manual tree faller injuries per 10,000,000 m³ of wood, Coast Forest Region, 1997-2010
Serious injuries among BC workers
Serious injuries result in longer disability duration, higher claim costs, fatalities, and/or severe medical diagnoses, and are a significant and disproportionate burden on compensation and health systems. In BC, these injuries comprise one-third of overall claims, yet they account for the majority of disability days paid and workers’ compensation claim costs. We examined the rates and distribution of serious injuries by demographic, work and injury characteristics among BC workers.

Figure 4: Rate of falls per 1,000 workers, by age and sex, BC, 2008

Using workers’ compensation data and provincial workforce estimates, we identified several groups with significantly higher rates of serious injury, including increasing risk with older age. Older workers also had higher rates of fractures and falls, even when accounting for differences in occupation types. This association between age and serious injury varied by gender, with older women having much higher rates than younger women (see Figure 4 and 5).

These results suggest that older workers are at increased risk for certain types of serious injury in the workplace, including falls and fractures, though the actual risk across age groups varies for men and women.

3. The use of linked occupational health data
Using routinely collected data for research allows us to investigate important occupational health-related questions in a cost-effective and timely manner. We are proud to act as leaders in providing WorkSafeBC data expertise and guidance to the research community and to Population Data BC.

The current focus of the Partnership’s data development work is in bridging the new and old WorkSafeBC data systems. Our data analysts are currently designing and building a new research database that will become part of the Population Data BC holdings. The Partnership is developing documentation, validating new variables, developing a database model, and conducting detailed development, testing and implementation of coding for creation of new derived variables.

The Partnership is also actively investigating the use of new data from WorkSafeBC’s Claims Management System. The detailed return to work and cost data have the potential to improve the quality of current research and to guide development of new research questions.
Strategic Focus of Future Partnership Research

Providing evidence that supports the reduction of serious work injuries and illnesses and that reduces disability duration will continue to be a cross-cutting focus of Partnership research. We will also continue the occupational health surveillance of respiratory lung disease and cancer. We are developing two new priority areas, focusing on (1) the evaluation of occupational health and safety programs and regulations and (2) gender and sex differences in the risk of work injury, compensation policy, and return to work.

Informing the effectiveness of occupational health and safety programs and regulations

Occupational health and safety (OHS) interventions are important tools in reducing workplace injury and disease. Workers’ Compensation Boards across Canada are investing in and requiring workplaces to implement OHS programs such as occupational health and safety committees. Employees may be eligible for rebates on their workers’ compensation premiums if they implement or successfully meet certain OHS standards. Regulatory approaches, such as inspections of workplaces and the citation and penalization of non-compliant employers, are also common.

While OHS programs and regulatory approaches are the principal policy instruments in increasing health and safety practices and reducing work injury in BC, few of these initiatives have been evaluated. Recent improvements in administrative data collection by WorkSafeBC and data development by Partnership researchers mean that it is now possible to rigorously evaluate some of these OHS initiatives.

We are developing two projects in this priority area. First, we are seeking to develop an evaluation approach that would assess the effectiveness of WorkSafeBC’s OHS management initiatives, such as the certificate of recognition (COR) program. COR programs provide premium rebates to employers who meet certain occupational health and safety management benchmarks or who have implemented a return to work program for injured workers. Second, by linking administrative data on employer inspections, citations, and penalties to injured worker data, we plan to examine the effectiveness of these regulatory approaches in improving employer OHS practices and reducing worker injury.

Gender, sex, worker injury, and successful return to work

Our previous research examining the relationship between shift work and work injury found that women were at a higher risk of injury when working in night and rotating shifts compared to women working during the day. There is a growing recognition that the risks of work injury may differ for men and women by occupational exposure and be influenced by non-work factors. Moreover men and women may experience different workers’ compensation and return to work outcomes based on gender (i.e., social expectations and role differences between men and women) and sex (i.e., biological differences between males and females). Understanding how gender and sex can influence the risk of work injury and return to work is key to developing effective injury prevention and workers’ compensation policy, especially given that women now make up half the labour force in Canada and that both men and women are working in greater numbers in non-traditional occupations.

We are beginning a research project that uses linked data resources to examine differences in the risk of injury for men and women by occupational and industrial setting. We also plan to examine gender differences in health and return to work outcomes among injured workers. This research will help inform the development of a gender-based focus in preventing work injury and promoting successful return to work.
Celebrating Trainees

The Partnership works with UBC graduate students interested in policy-relevant occupational health research. Over the past year, two of our trainees graduated and two new trainees were welcomed to the team.

- **Dan Sarkany** (MSc, SOEH) investigated the effect of certification programs on manual tree-faller injuries for his MSc thesis, which he successfully defended in August 2011. He is now a Policy Analyst with the Policy and Regulation Division at WorkSafeBC.

- **Tracy Kirkham** (PhD, SPPH) investigated exposures to work-related cardiovascular hazards, physiological response, and adverse cardiovascular events among BC firefighters. She successfully defended her PhD dissertation in October 2011.

- **Imelda Wong** (PhD Candidate, SPPH) received widespread media attention for her study on the association of shift work and the risk of work injury. She continues to investigate the association between workplace stress and heart disease in paramedics.

- **Kim McLeod** (PhD student, SPPH) continues to assist on our research projects focused on work-related aspects of lung disease and cancer. Kim’s dissertation research examines the effect of environmental pollution on children’s health and development outcomes.

- New trainee **Setareh Rouhani** (PhD Student, SPPH) will be assisting on the gender and worker health and compensation policy project. Setareh’s dissertation research uses population-based administrative data to examine access to health services and disparities in chronic health conditions among immigrant populations.

- New trainee **Billy Quirke** (MSc student, SPPH) is assisting on the certificate of recognition evaluation and firm-level incentives and regulation projects. Billy completed his OEH MSc practicum at ActSafe, where he was involved in investigating exposures in the film industry, with a focus on promoting an asbestos awareness program.
Partnerships and Knowledge Exchange

The Partnership team is committed to ensuring that the results of our research activities are relevant and available to researchers, practitioners, and occupational health policy makers.

We are engaged in active collaborations with organizations whose missions are compatible with ours, such as the BC Cancer Agency, the Occupational and Environmental Health theme in the UBC School of Population and Public Health, CAREX (CARcinogen EXposure) Canada, and the AREA Fund (Asbestos, Research, Education and Advocacy). Nationally we collaborate with the Institute for Work & Health and the Occupational Cancer Research Centre at Cancer Care Ontario (OCRC).

Highlights of collaboration

- Partnership investigators and staff presented an overview of key finding to over 100 WorkSafeBC staff and management at the annual WorkSafeBC Research Day held on March 10, 2011. This forum was an opportunity to share research, but also for WorkSafeBC to provide input and generate new ideas for future research with relevance to WorkSafeBC. For more information, please visit: www.chspr.ubc.ca/worksafebc/researchday2011

- The Partnership was highlighted at two major international conferences. Dr. Chris McLeod presented the findings of our research on mesothelioma compensation and geographic trends in pneumoconiosis the 2011 Epidemiology on Occupational Health Conference and Dr. Paul Demers presented an invited talk on burden of asbestos-related lung cancer at the 2011 Annual Meeting of the American Public Health Association.

- Comparative wood dust work with OCRC was recently presented to the Partnership Steering Committee at WorkSafeBC. Joint analysis addressed case definitions, interpretation of cancer data, and job exposure matrices.

- Partnership investigators are key collaborators in a number of WorkSafeBC funded research projects at the Institute for Work & Health. For example, Dr. Mieke Koehoorn is collaborating with Dr. Sheilah Hogg-Johnson and PhD student Nancy Carnide on a study that examines prescription opioid use in injured workers. Dr. Chris McLeod is collaborating with Dr. Emile Tompa on a comparative study of the experience rating systems in BC and Ontario.
Published


In preparation


Presentations (peer-reviewed, oral)


**Presentations to stakeholders**


**Reports**

## Awards held by partnership investigators and students during 2010-2011

<table>
<thead>
<tr>
<th>Granting agency</th>
<th>Subject</th>
<th>Total $</th>
<th>Year</th>
<th>Awarded to</th>
</tr>
</thead>
<tbody>
<tr>
<td>Michael Smith Foundation for Health Research</td>
<td>Health and the work environment</td>
<td>$500,000 ($250,000 supporting Partnership research)</td>
<td>2007–12</td>
<td>Mieke Koehoorn</td>
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<tr>
<td>Social Sciences and Humanities Research Council</td>
<td>Work-related health inequalities</td>
<td>$81,000</td>
<td>2010–11</td>
<td>Chris McLeod</td>
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<tr>
<td>Canadian Institute for Advanced Research</td>
<td>Work and health in the global economy</td>
<td>$75,000</td>
<td>2011</td>
<td>Chris McLeod</td>
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<tr>
<td>WorkSafeBC</td>
<td>Certification in hazardous occupations: A focus on the BC faller certification</td>
<td>$22,500</td>
<td>2009–11</td>
<td>Daniel Sarkany</td>
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## Grants held during 2010-2011

<table>
<thead>
<tr>
<th>Granting agency</th>
<th>Subject</th>
<th>Total $</th>
<th>Year</th>
<th>Principal investigator</th>
<th>Co-investigator(s)</th>
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</thead>
<tbody>
<tr>
<td>WorkSafeBC</td>
<td>Seeking compensation for mesothelioma: Investigating why individuals do or do not seek workers’ compensation benefits in British Columbia</td>
<td>$50,000</td>
<td>2011–12</td>
<td>Mieke Koehoorn</td>
<td>G Pomaki, C McLeod, C Lee, P Demers, C Hurrell</td>
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<tr>
<td>WorkSafeBC</td>
<td>Workplace fatal and serious injuries in British Columbia: comparison of case ascertainment across data sources</td>
<td>$100,510</td>
<td>2010–12</td>
<td>Mieke Koehoorn</td>
<td>C McLeod, P Demers, H Alamgir</td>
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<td>CIHR</td>
<td>Burden of asbestos related disease in BC</td>
<td>$13,866</td>
<td>2010–11</td>
<td>Paul Demers</td>
<td>M Koehoorn, C McLeod, T Takaro</td>
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<td>CIHR</td>
<td>Musculoskeletal surgeries among injured workers: Investigation of disability and health-related outcomes by care setting and expedited status</td>
<td>$327,500</td>
<td>2009–11</td>
<td>Mieke Koehoorn</td>
<td>C McLeod, ML Barer, R Chhokar, P Cote, S Hogg-Johnson, K McGrail</td>
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## Partnership affiliated grants during 2010-2011

<table>
<thead>
<tr>
<th>Granting agency</th>
<th>Subject</th>
<th>Total $</th>
<th>Year</th>
<th>Principal investigator</th>
<th>Co-investigator(s)</th>
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<tr>
<td>WorkSafeBC</td>
<td>Association of past hysterectomy with low back injury: A retrospective study of direct healthcare workers</td>
<td>$30,000</td>
<td>2011-12</td>
<td>Mieke Koehoorn</td>
<td>C Backman, L Lochhead</td>
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<td>WorkSafeBC</td>
<td>Early opioid prescriptions for work-related musculoskeletal disorders of the back: Understanding utilization patterns, determinants, and impact on work disability</td>
<td>$64,855</td>
<td>2011-13</td>
<td>Sheilah Hogg-Johnson</td>
<td>N Carnide, A Furlan, M Koehoorn</td>
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<td>WorkSafeBC</td>
<td>Assessment of beryllium disease risk in pre-selected BC industries</td>
<td>$294,268</td>
<td>2010-12</td>
<td>Tim Takaro</td>
<td>P Demers, M Koehoorn, L Maier, M Van Dyke</td>
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<td>WorkSafeBC</td>
<td>A comparative analysis of the occupational health and safety incentives of workers’ compensation premium Setting in British Columbia and Ontario</td>
<td>$201,342</td>
<td>2009-11</td>
<td>Emile Tompa</td>
<td>C Mustard, C McLeod, I Moore</td>
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<td>WorkSafeBC</td>
<td>Examining determinants and consequences of work injuries among older workers</td>
<td>$225,000</td>
<td>2009-11</td>
<td>Peter Smith</td>
<td>M Koehoorn, C McLeod, C Mustard, D Beaton and 5 others</td>
</tr>
</tbody>
</table>
Advancing world-class health services and policy research, training and data resources on issues that matter to Canadians

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