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Journal articles marked with an asterisk indicate an IWH scientist or adjunct scientist is included in the list of authors.

***Jetha A, Liao Q, Vahid Shahidi F, Vu V, Biswas A, Smith B, Smith P. Machine learning and the labour market: a portrait of occupational and worker inequities in Canada. medRxiv. 2024; [epub ahead of print].**

<https://doi.org/10.1101/2024.06.12.24308855>

Abstract: Introduction Machine learning (ML) is increasingly used by Canadian workplaces. Concerningly, the impact of ML may be inequitable and disrupt social determinants of health. The aim of this study is to estimate the number of workers in occupations highly exposed to ML and describe differences in ML exposure represents according to occupational and worker sociodemographic factors. Methods Canadian occupations were scored according to the extent to which they were made up of job tasks that could be performed by ML. Eight years of data from Canada's Labour Force Survey were pooled and the number of Canadians in occupations with high or low exposed to machine learning were estimated. The relationship between gender, hourly wages, educational attainment and occupational job skills, experience and training requirements and ML exposure was examined using stratified logistic regression models. Results Approximately, 1.9 million Canadians are working in occupations with high ML exposure and 744,250 workers were employed in occupations with low ML exposure. Women were more likely to be employed in occupations with high ML exposure than men. Workers with greater educational attainment and in occupations with higher wages and greater job skills requirements were more likely to experience high ML exposure. Women, especially those with less educational attainment and in jobs with greater job skills, training and experience requirements, were disproportionately exposed to ML. Conclusion ML has the potential to widen inequities in the working population. Disadvantaged segments of the workforce may be most likely to be employed in occupations with high ML exposure. ML may have a gendered effect and disproportionately impact certain groups of women when compared to men. We provide a critical

evidence base to develop strategic responses that ensure inclusion in a working world where ML is commonplace.

Beller J, Sperlich S, Epping J, Safieddine B, Hegewald J, and Tetzlaff J. Sociodemographic differences in low back pain: which subgroups of workers are most vulnerable? BMC Musculoskeletal Disorders. 2024; 25(1):852.

<https://doi.org/10.1186/s12891-024-07970-5> [open access]

Abstract: Background: Low back pain (LBP) is a common health problem in workers that contributes to work disability and reduces quality of life. However, studies examining vulnerable groups in relation to sociodemographic differences in LBP remain scarce. Therefore, the current study investigates which sociodemographic groups of workers are most affected by LBP. Methods: Data from the 2018 BIBB/BAuA employment survey were used (N = 16252). Age, education, occupational group, income, working hours, atypical working time, relationship status, and having children were used as sociodemographic predictors. Gender-stratified logistic regression analyses and intersectional classification tree analyses were conducted. Results: A higher prevalence of LBP was observed for women compared to men. Significant differences in LBP emerged for age, working hours, atypical working time, occupational group and education, with some gender differences in the importance of predictors: Age was a significant predictor mostly in men as compared to women, atypical working hours had a slightly greater effect in women, whereas differences in LBP according to the occupational group were more pronounced for men. Vulnerable groups were found to be women who work in occupations other than professionals or managers, work atypical hours and have an intermediate or low educational level as well as men who work as skilled agricultural workers, craft workers, machine operators, or elementary occupations and are between 35 and 64 years old. Conclusions: Thus, workers with certain occupations and lower levels of education, middle-aged men and women with unfavourable working time characteristics are most affected by low back pain. These groups should be focused on to potentially increase healthy working life and prevent work disability.

Costa S, Velez MJ, and Lopez A. Your coworkers can make you sick: an investigation of coworker undermining and employee health. Journal of Occupational and Organizational Psychology. 2024; 97(4):1716-1735.

<https://doi.org/10.1111/joop.12536>

Gelaw AY, Sheehan L, Gray SE, and Collie A. Incidence, trends and factors associated with psychological injury among health and social care workers in New South Wales, Australia: a retrospective cohort study of workers' compensation claims. Occupational & Environmental Medicine. 2024; 81(8):407-416.

<https://doi.org/10.1136/oemed-2024-109410>

Abstract: OBJECTIVES: To describe and compare the incidence and trends of workers' compensation (WC) claims for psychological injury: (1) between health and social care (HSC) industry and other industries; (2) among specific occupations in the HSC industry; and (3) to determine if psychological injury claim rates differ by age and gender in the HSC industry and among specific occupations. METHODS: A retrospective cohort study was conducted using data from the New South Wales WC system. Workers with accepted psychological injury claims between July 2012 and June 2021 were included. Negative binomial regression models were employed to estimate incidence rate ratios and

95% CIs. RESULTS: The HSC industry had a higher incidence (2.4 per 1000 workers) than all other industries combined (1.1 per 1000 workers). In the HSC industry, the incidence increased from 1.8 in 2013-2015 to 3.4 in 2019-2021. Ambulance officers had the highest incidence (24.9 per 1000 workers) and the highest growth rate. Nurses and midwives, and aged and disability care workers also had fast-growing incidence over the 9 years. Risk of psychological injury claims was highest among female workers and older adults. CONCLUSIONS: The increasing incidence and trend of psychological injury claims among HSC workers in New South Wales signify a growing public health issue. Greater efforts are needed to prevent work-related psychological injury in the HSC industry and support affected workers. The different patterns of psychological injury claims across occupations suggest that interventions should be tailored to each occupational group

Gonzalez-Beltran D, Donat M, Politi J, Ronda E, Barrio G, Belza MJ, et al. Changes in all-cause and cause-specific mortality by occupational skill during COVID-19 epidemic in Spain. *Journal of Epidemiology & Community Health*. 2024; 78(11):669-674.

<https://doi.org/10.1136/jech-2024-222065>

Abstract: BACKGROUND: There is little information on the differential impact of the COVID-19 pandemic on mortality by occupation. The objective was to examine changes in mortality during the COVID-19 period compared with the prepandemic period in different occupational groups in Spain. METHODS: Average mortality in the entire period 2020-2021, and each of its semesters, was compared, respectively, with the average mortality in the entire period 2017-2019, and the corresponding semester (first or second) of this last period, across occupational skill levels. For this, age-standardised death rates and age-adjusted mortality rate ratios (MRRs) obtained through Poisson regression were used. Data were obtained from the National Institute of Statistics and the Labour Force Survey. RESULTS: The excess all-cause mortality during the 2020-2021 pandemic period by the MRR was higher in low-skilled (1.18, 95% CI 1.16 to 1.20) and medium-skilled workers (1.14; 95% CI 1.13 to 1.15) than high-skilled workers (1.04; 95% CI 1.02 to 1.05). However, the greatest excess mortality was observed in low-skilled workers in 2020 and in medium-skilled workers in 2021. Focusing on causes of death other than COVID-19, low-skilled workers showed the highest MRR from cardiovascular diseases (1.31; 95% CI 1.26 to 1.36) and high-skilled workers the lowest (1.02; 95% CI 0.98 to 1.02). However, this pattern was reversed for mortality from external causes, with low-skilled workers showing the lowest MRR (1.04; 95% CI 0.97 to 1.09) and high-skilled workers the highest (1.08; 95% CI 1.03 to 1.13). CONCLUSION: Globally, in Spain, during the 2020-2021 COVID-19 epidemic period, low-skilled workers experienced a greater excess all-cause mortality than other occupational groups, but this was not the case during the entire epidemic period or for all causes of death

Jahn A, Andersen JH, Descatha A, and Dalboge A. Dupuytren's disease and occupational mechanical exposures: a systematic review and meta-analysis. *Occupational & Environmental Medicine*. 2024; 81(10):535-542.

<https://doi.org/10.1136/oemed-2024-109649>

Abstract: The risk of developing Dupuytren's disease among workers exposed to occupational mechanical exposures has been reported in few systematic reviews, mainly related to vibration. Expanding the investigation to all occupational mechanical exposures is essential for advancing scientific knowledge, health policies and improving workplace safety. The aim of this systematic review and meta-analysis was to study the association between occupational mechanical exposures

and Dupuytren's disease. We conducted a systematic review and meta-analysis using guidelines stated by PRISMA. The systematic literature search was performed in Medline, EMBASE, CINAHL, Cochrane Library and Web of Science databases in April 2023. Inclusion criteria were conducted using the PECOS. Two independent authors conducted the literature screening, data extraction and risk of bias assessment. In the meta-analyses, data was pooled using random-effects models and stratified by the risk of bias and study design. The level of evidence was evaluated using GRADE. The literature search identified 563 unique articles and 15 were deemed eligible for inclusion, categorised into hand-transmitted vibration, lifting/carrying loads and combined mechanical exposures. Exposure to hand-transmitted vibration showed an OR of 2.0 (95% CI 1.5 to 2.7, I(2)=64%), lifting/carrying loads had an OR of 1.5 (95% CI 1.1 to 2.0, I(2)=77%) and combined mechanical exposures had an OR of 2.1 (95% CI 1.4 to 3.1, I(2)=94%). When grading the level of evidence, we found moderate evidence for hand-transmitted vibration, while low evidence was found for lifting/carrying loads and combined mechanical exposures. We found an association between hand-transmitted vibration, lifting/carrying loads and combined mechanical exposures. The level of evidence was considered moderate for hand-transmitted vibration and low for lifting/carrying loads and combined mechanical exposures

Jensen M. The occupational therapy process in workplace wellness: a qualitative study of client experience. *Work*. 2024; 79(2):673-682.

<https://doi.org/10.3233/WOR-230723>

Abstract: BACKGROUND: Occupational therapy presently has a limited presence within the workplace wellness industry and the profession's contribution within this area of practice is not fully understood. Occupational therapy's holistic, occupation-based, and client-centered approach has the potential to provide a valuable contribution to the field of workplace wellness. OBJECTIVE: To explore the experience of organizational employees participating in a workplace wellness program centered in the occupational therapy domain and process. METHODS: Six occupational therapy workplace wellness program participants completed in-depth semi-structured interviews one month after program completion followed by deductive thematic analysis of transcripts. RESULTS: Three themes emerged (sustainable change across context, process matters, and therapeutic relationship supporting wellness), along with subthemes, describing the participant experience. CONCLUSIONS: The structured and individualized process of occupational therapy delivered within a workplace wellness program was appreciated by participants as a means of addressing workplace wellness and providing sustainable wellness results

Koch TJS, Neshor Shoshan H, Volker J, and Sonnentag S. Psychological detachment matters right after work: engaging in physical exercise after stressful workdays. *International Journal of Stress Management*. 2024; 31(3):266-278.

<https://doi.org/10.1037/str0000312> [open access]

Abstract: While regular physical exercise as a recovery activity has an important role regarding employees' well-being, employees seem to engage less in physical exercise after stressful workdays—pointing to a paradoxical pattern. Extending the recovery paradox (Sonnentag, 2018) applied to physical exercise and drawing from perspectives on energetic and self-regulatory resource loss and recovery, we integrate psychological detachment right after work as an explaining psychological mechanism in the paradoxical pattern between job stressors, physical exercise, and energetic well-being. We collected daily diary data from 93 employees on 514 days over two consecutive

workweeks. Results of our two-level path model suggest that psychological detachment right after work explains the paradoxical pattern between job stressors (workload and self-control demands) and time spent on physical exercise. However, we did not find a serial indirect effect from job stressors to next-morning energetic well-being (vigor and fatigue) via psychological detachment and time spent on physical exercise. Our study suggests a new perspective on the role of psychological detachment, namely as a prerequisite instead of an outcome of physical exercise after stressful workdays. This new perspective has implications for future research and practical interventions.

Lau K, Aldridge R, Norredam M, Mkoma GF, Kugan M, Lin RC, et al. Workplace mortality risk and social determinants among migrant workers: a systematic review and meta-analysis. *Lancet Public Health*. 2024; 9(11):e935-e949.

[https://doi.org/10.1016/S2468-2667\(24\)00226-3](https://doi.org/10.1016/S2468-2667(24)00226-3) [open access]

Abstract: Background: Migrant workers, a population of 170 million, often work in dangerous or unhealthy working environments and are likely to suffer workplace injuries and labour abuses. However, the risk of mortality in migrant workers compared with local workers is unknown. We aim to synthesise global evidence on migrant worker mortality risk and identify social determinants to inform health and safety protections for migrant workers. Methods: We conducted a systematic review and meta-analysis of peer-reviewed literature to examine mortality outcomes among migrant workers and associated risk factors. We searched MEDLINE, Embase, PsycINFO, and Ovid Global Health for studies published between Jan 1, 2000, and Jan 17, 2023, reporting quantitative primary research in English. A broad definition of migrant worker was used, including any worker who is foreign-born (ie, international first-generation migrant workers), either in paid employment or self-employment. Internal migrants, second-generation migrants, and foreign health-care workers were excluded. The primary outcome was any reported mortality, including all-cause mortality, cause-specific mortality, suicide, homicide, and fatal occupational injury. We used meta-analysis to compare outcomes between migrant worker and local worker populations, and a random-effects model to calculate pooled estimates. We used narrative synthesis to develop a data-driven conceptual framework capturing the intersectional social determinants of mortality in migrant workers. The study protocol is registered on PROSPERO, CRD42023372893. Findings: Of 11 495 identified records, 44 were included in the systematic review, of which 11 studies were pooled in meta-analyses. Data were from 16 countries, most of which were high-income countries, and included 44 338 migrant worker deaths, including migrants from the agriculture, construction, mining, and service industries. Compared with local workers, migrant workers had a higher risk of fatal occupational injury (pooled relative risk 1.71, 95% CI 1.22-2.38; eight studies; I²=99.4%), and a lower risk of all-cause mortality (0.94, 0.88-0.99; three studies, I²=90.7%). Migrant workers were more likely to die from external causes of death (such as falls or assaults) than internal causes of death (such as respiratory or digestive diseases) compared with local workers, with migrant workers also more likely to die from work-related homicides, especially in the retail and sex industries, with some evidence of higher suicide rates among female migrant workers compared with female local workers. Influential social determinants for poor fatality outcomes include migration-related factors (such as lower language proficiency, undocumented status, and long duration of stay) and labour-related factors (such as precarious employment, labour migration policies, and economic deregulation policies). Interpretation: Migrant workers have a higher risk of workplace fatal injury despite being generally healthier than local workers, which could be explained by structural determinants such as precarious

employment and inadequate safety protection. This health inequity must be urgently addressed through future interventions that account for migration-related and labour-related social determinants of health at the structural level, such as extending labour protection laws to migrant workers, and improving occupational health and safety and workplace conditions for this vital and growing workforce. Funding: UK Medical Research Council and National Institute for Health and Care Research.

Mior S, Wang D, Wong JJ, Hogg-Johnson S, and Cote P. Assessing the change in prevalence and characteristics of Canadians utilizing chiropractic services across two time periods 2001-2010 and 2015-2018: a population-based repeated cross-sectional study. *Chiropractic & Manual Therapies*. 2024; 32(1):30.

<https://doi.org/10.1186/s12998-024-00552-1> [open access]

Abstract: Background: Despite increases in musculoskeletal disorders (MSD) in Canada, evidence suggests utilization of chiropractic services has remained relatively stable over time. Understanding the extent to which chiropractors are consulted and factors associated with their utilization may suggest factors related to accessing care. We assessed the change in prevalence and characteristics of Canadians seeking chiropractic care across two time periods 2001-2010 and 2015-2018. Methods: We used national cross-sectional data from seven cycles of the Canadian Community Health Survey between 2001 and 2018. The survey included Canadians aged 12 years and older living in private dwellings in all provinces and territories. National annual weighted prevalence and age-standardized weighted prevalence (and 95% confidence intervals) of chiropractic utilization were calculated. We calculated prevalence of chiropractic utilization stratified by demographic, socioeconomic, lifestyle and health-related variables. Crude linear trends and change in prevalence from 2001 to 2010 were assessed using linear regression models. Results: The national annual prevalence of Canadians consulting a chiropractor in the previous 12 months slightly increased from 11.0% (95% CI 10.8, 11.3) in 2001 to 11.4% (95%CI 11.1, 11.7) in 2010, and in those reporting receiving regular health care from a chiropractor from 7.5% (95%CI 7.2, 7.7) in 2015 to 7.9% (95%CI 7.7, 8.2) in 2018. Prevalence of utilization varied by province, highest in the Western provinces but lowest in Atlantic provinces. The age-specific prevalence of chiropractic utilization was highest in those aged 35-49 years and remained stable over time, except for slight increase in those aged 65-79 years. A higher percentage of Canadians identifying as white, Canadian-born, in the highest quintile of household income, overweight, physically active and in excellent health reported seeking chiropractic services. The most common reported chronic conditions measured in the survey among Canadians consulting chiropractors were chronic back problems, arthritis, fibromyalgia and headaches. Conclusion: The national prevalence of utilization of chiropractic services among Canadians slightly increased over time but varied by province and respondents' socioeconomic and health characteristics. Chronic back problems were the most common reported chronic condition. This comprehensive population-based study on chiropractic utilization in Canada can be used to inform decisions concerning health human resources and access to rehabilitation care for MSD.

Ofonedu MC, Frey JJ, Ware OD, Hoke K, Mitchell CS, and Cloeren M. Improving identification of gig workers in national health and behavior surveys. *New Solutions*. 2024; 34(3):172-181.

<https://doi.org/10.1177/10482911241269313>

Abstract: This paper describes the work-related information collected in several important U.S.

national health and behavior surveys, to highlight data gaps that prevent identifying responses by vulnerable workers in the gig economy, with emphasis on the growing digital platform sector of the work force. The national information systems used to understand health status and health behaviors, including drug use, rely on outdated census categories for self-employed workers. This paper describes the importance of understanding the needs of this growing part of the labor sector and describes how some of the most well-known and utilized national surveys fail to meet this need. For the agencies conducting national health and behavior surveys, we propose revisions to the categories used to classify type of worker and recommend adoption of a new Worker-Employer Relationship Classification model

Scheibe S, Retzlaff L, Hommelhoff S, and Schmitt A. Age-related differences in the use of boundary management tactics when teleworking: implications for productivity and work-life balance. *Journal of Occupational and Organizational Psychology*. 2024; 97(4):1330-1352.

<https://doi.org/10.1111/joop.12512> [open access]

Abstract: The rise of home-based teleworking and the ageing of the workforce constitute two major trends impacting the future of work. Managing these trends well requires a good understanding of how worker age and telework intersect and which mechanisms link age and telework outcomes. We integrated perspectives of boundary theory and the lifespan model of selection, optimization, and compensation and investigated in two studies the relationship between employee age and two telework outcomes (work-life balance and unfinished tasks) as mediated by boundary management tactics aimed at segmenting work and nonwork roles. Across Study 1 (a two-wave study with 172 teleworkers) and Study 2 (a three-wave study with 282 teleworkers), we found positive associations between age and use of segmenting boundary management tactics during telework. We further identified indirect effects of age on higher productivity in terms of fewer unfinished tasks (both studies) and better work-life balance (Study 2) through boundary management tactics use. Robustness checks indicated that age effects remain significant after controlling for a number of demographic characteristics, work and home demands, motivational factors, and self-regulatory skills. Findings suggest that older workers effectively navigate the blurred work-nonwork boundaries in home-based telework using self-regulatory behaviour that supports positive telework outcomes.

Simpson J, Wildman J, Bambra C, and Brown H. Do longer job hours matter for maternal mental health? A longitudinal analysis of single versus partnered mothers. *Health Economics*. 2024; 33(12):2742-2756.

<https://doi.org/10.1002/hec.4895>

Abstract: Over the past decade, single mothers have experienced increasing work requirements both in the UK and in other developed countries. Our aim was to examine if increasing job hours are associated with mental health of single mothers compared to partnered mothers. Using 13 waves of the Understanding Society Survey (2009-2023), we estimated the relationship between changing job hours and mental health using difference-in-difference event study design, accounting for differential treatment effects across time and individuals. We also investigated the role of potential mechanisms, including role strain and additional income. Our findings suggest that increasing job hours from part-time to full-time is associated with an instantaneous decrease in mental health of 0.19 standard deviations for single mothers [95% CI: -0.37;-0.01], with no effect for partnered mothers. Further analyses suggest increased role strain for single mothers as a mechanism helping explain these

differences. The negative effects of increasing job hours and increased role strain should be considered when developing future welfare policies for single mothers, to ensure that greater work requirements do not undermine the mental health of the already vulnerable population group

Tsantila F, Rugulies R, Coppens E, De WH, Arensman E, Kahar A, et al. Towards an assessment of psychosocial work factors in a multi-level mental health intervention in the workplace: results from the MENTUPP pilot-study. *International Archives of Occupational & Environmental Health*. 2024; 97(8):915-929.

<https://doi.org/10.1007/s00420-024-02096-6> [open access]

Abstract: BACKGROUND: Mental health in the workplace is a growing concern for enterprises and policy makers. MENTUPP is a multi-level mental health intervention implemented in small and medium size enterprises from three work sectors in nine countries. This pilot study aimed to evaluate the feasibility, delivery, and instruments for the MENTUPP intervention to inform the planning of a clustered randomized controlled trial. METHODS: We administered items from the Copenhagen Psychosocial Questionnaire and the Danish Work Environment Cohort Study measuring psychosocial workplace factors. The questionnaire was answered by 382 participants at baseline, of which 98 participants also answered after six months at follow-up. We calculated mean scores of 19 psychosocial factors at baseline and conducted repeated measures ANOVAs to assess differences in eight psychosocial factors at follow-up. We also examined whether outcomes differed between work sectors and job positions at follow-up. RESULTS: The construction sector and workers with no or a lower leadership role reported more negative working environment factors at baseline. We observed a statistically significant decline in social support from colleagues and social community at work, and a marginally significant decline in justice at work. For the rest of the constructs, we did not observe statistically significant changes. CONCLUSIONS: We found significant differences in psychosocial work environment factors among work sectors and job positions at baseline. Contrary to our hypotheses, three psychosocial work environment factors decreased at follow-up. Possible explanations are the utilization of specific psychosocial factors as resources to cope with psychosocial stressors, high participant expectations that were not met by the intervention, insufficient time for structural changes, or the intervention prompting critical evaluations of the work environment. These findings will inform the design and implementation of the forthcoming clustered randomized controlled trial, where they will also be further investigated to validate their significance

Wang C, Zhang Y, and Feng J. How do older employees achieve successful ageing at work through generativity in the digital workplace? A self-affirmation perspective. *Journal of Occupational and Organizational Psychology*. 2024; 97(4):1475-1501.

<https://doi.org/10.1111/joop.12525>

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