

IWH Research Alert
December 4, 2020

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***Biswas A, Begum M, Van Eerd D, Smith PM, and Gignac MAM. Organizational perspectives on how to successfully integrate health promotion activities into occupational health and safety. Journal of Occupational and Environmental Medicine. 2021; [epub ahead of print].**

<https://doi.org/10.1097/JOM.0000000000002087> [open access]

Abstract: Objective: There is increasing recognition of the value of integrating efforts to promote worker health with existing occupational health and safety activities. This paper aimed to identify facilitators, barriers and recommendations for implementing integrated worker health approaches. Methods: Thirteen stakeholders from different job sectors participated in a workshop that targeted key issues underlying integrated worker health approaches in their own and other organizations. Included were participants from human resources, occupational health and safety, government, and unions. Thematic analysis and an online ranking exercise identified recommendation priorities and contributed to a conceptual framework. Results: Participants highlighted the importance of planning phases in addition to implementation and evaluation. Themes highlighted organizational priorities, leadership buy-in, external pressures, training, program



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promotion and evaluation metrics. Conclusions: Findings provide practical directions for integrating worker health promotion and safety and implementation steps.

***McHale P, Pennington A, Mustard C, Mahood Q, Andersen I, Jensen NK, et al. What is the effect of changing eligibility criteria for disability benefits on employment? A systematic review and meta-analysis of evidence from OECD countries. PLoS ONE. 2020; 15(12):e0242976.**

<https://doi.org/10.1371/journal.pone.0242976> [open access]

Abstract: BACKGROUND: Restrictions in the eligibility requirements for disability benefits have been introduced in many countries, on the assumption that this will increase work incentives for people with chronic illness and disabilities. Evidence to support this assumption is unclear, but there is a danger that removal of social protection without increased employment would increase the risk of poverty among disabled people. This paper presents a systematic review of the evidence on the employment effects of changes to eligibility criteria across OECD countries. METHODS: Systematic review of all empirical studies from OECD countries from 1990 to June 2018 investigating the effect of changes in eligibility requirements and income replacement level of disability benefits on the employment of disabled people. Studies were narratively synthesised, and meta-analysis was performed using meta-regression on all separate results. The systematic review protocol was registered with the Prospective Register for Systematic Reviews (Registration code: PROSPERO 2018 CRD42018103930). RESULTS: Seventeen studies met inclusion criteria from seven countries. Eight investigated an expansion of eligibility criteria and nine a restriction. There were 36 separate results included from the 17 studies. Fourteen examined an expansion of eligibility; six found significantly reduced employment, eight no significant effect and one increased employment. Twenty-two results examined a restriction in eligibility for benefits; three found significantly increased employment, 18 no significant effect and one reduced employment. Meta-regression of all studies produced a relative risk of employment of 1.06 (95% CI 0.999 to 1.014; I² 77%). CONCLUSIONS: There was no firm evidence that changes in eligibility affected employment of disabled people. Restricting eligibility therefore has the potential to lead to a growing



number of people out of employment with health problems who are not eligible for adequate social protection, increasing their risk of poverty. Policymakers and researchers need to address the lack of robust evidence for assessing the employment impact of these types of welfare reforms as well as the potential wider poverty impacts

***Sears JM, Schulman BA, Fulton-Kehoe D, and Hogg-Johnson S. Estimating time to reinjury among Washington State injured workers by degree of permanent impairment: using state wage data to adjust for time at risk. American Journal of Industrial Medicine. 2020; [epub ahead of print].**

<https://doi.org/10.1002/ajim.23200>

Abstract: Background: Many injured workers are reinjured, but reinjury risk is challenging to quantify. Because many injured workers face delayed return-to-work, or return to part-time or intermittent jobs, a calendar timescale may overestimate actual work-time at risk, yielding underestimated reinjury rates. Objectives included determining: (1) reinjury risk by degree of permanent impairment and other factors, and (2) how choice of timescale affects reinjury estimates. Methods: This retrospective cohort study included Washington State workers' compensation (WC) claims for 43,114 injured workers, linked to state wage files (2003-2018). Three timescales were used to define at-risk denominators: (1) calendar quarters; (2) quarters with any wages; and (3) full-time equivalent (FTE) quarters, defined as cumulative work hours ÷ 520. Associations between reinjury outcomes and worker, injury, job, and WC vocational rehabilitation program participation characteristics were assessed using Cox proportional hazards regression. Results: Overall reinjury rates were 5.9 per 100 worker-years using a calendar timescale (95% confidence interval [CI]: 5.8-6.0), 10.0 using any-wage quarters (95% CI: 9.9-10.2), and 12.5 using FTE quarters (95% CI: 12.3-12.7). Reinjury rates were highest in the first two quarters after initial injury, remaining elevated for about 4 years. Using FTE quarters, workers with =10% whole body impairment had a 34% higher risk of reinjury relative to workers with no permanent partial disability award (95% CI: 1.25-1.44); no difference was detected using calendar time. Conclusions: Timescale substantially affects reinjury estimates and comparisons between groups with differential return-to-work patterns. Linking wage data to WC claims facilitates



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measurement of long-term employment, yielding more accurate reinjury estimates.

Arnetz JE, Goetz CM, Sudan S, Arble E, Janisse J, and Arnetz BB. Personal protective equipment and mental health symptoms among nurses during the COVID-19 pandemic. Journal of Occupational & Environmental Medicine. 2020; 62(11):892-897. <https://doi.org/10.1097/JOM.0000000000001999>

Abstract: Objective: To determine the association between access to adequate personal protective equipment (PPE) and mental health outcomes among a sample of U.S. nurses. Methods: An online questionnaire was administered in May 2020 to Michigan nurses via three statewide nursing organizations (n = 695 respondents). Multivariable logistic regression analysis was used to identify factors associated with mental health symptoms. Results: Nurses lacking access to adequate PPE (24.9%, n = 163) were more likely to report symptoms of depression (OR 1.96, 95% CI 1.31, 2.94; P = 0.001), anxiety (OR 1.64, 95% CI 1.12, 2.40; P = 0.01) and post-traumatic stress disorder (OR 1.83, 95% CI 1.22, 2.74; P = 0.003). Conclusions: Healthcare organizations should be aware of the magnitude of mental health problems among nurses and vigilant in providing them with adequate PPE as the pandemic continues.

Bernstein A, Liang A, Luo F, Mann E, Shilts E, and Serxner S. Financial incentives and employer-sponsored health activities. Journal of Occupational & Environmental Medicine. 2020; 62(11):922-929. <https://doi.org/10.1097/JOM.0000000000002003>

Abstract: OBJECTIVE: To understand how employer-sponsored incentives and participant-level characteristics drive health activity engagement. METHODS: Multivariable hierarchical logistic regression models evaluated 283,365 individuals eligible for incentives through health savings accounts, health reimbursement accounts, health incentive accounts, gift cards, and other means, and estimated log odds of (1) completing a health survey; (2) participating in a biometric screening; (3) attaining a biometric target; (4) participating in a weight loss program; undergoing (5) breast, (6) colorectal, or (7) cervical cancer screening. RESULTS: Larger incentives were associated with higher odds of participating in



biometric screenings only (2% higher for every \$25). Obesity, tobacco use, and lack of primary care were associated with lower odds.

CONCLUSION: Employers may wish to tailor incentive plans to the unique characteristics and needs of their populations to better drive participation in sponsored health activities

Carrieri V, Madio L, and Principe F. Do-It-Yourself medicine? The impact of light cannabis liberalization on prescription drugs.

Journal of Health Economics. 2020; 74:102371.

<https://doi.org/10.1016/j.jhealeco.2020.102371> [open access]

Abstract: Governments worldwide are increasingly concerned about the booming use of CBD (cannabidiol) products. However, we know little about the impact of their liberalization. We study a unique case of unintended liberalization of a CBD-based product (light cannabis) that occurred in Italy in 2017. Using unique and high-frequency data on prescription drug sales and by exploiting the staggered local availability of the new product in each Italian province, we document a significant substitution effect between light cannabis and anxiolytics, sedatives, opioids, anti-depressants and anti-psychotics. Results are informative for regulators and suggest that bans on light cannabis use would disregard the needs of patients to seek effective reliefs of their symptoms

Dennerlein JT, Weinstein D, Huynh W, Tessler J, Bigger L, Murphy L, et al. Associations between a safety prequalification survey and worker safety experiences on commercial construction sites. American Journal of Industrial Medicine. 2020; 63(9):766-773.

<https://doi.org/10.1002/ajim.23143>

Abstract: BACKGROUND: While assessment of subcontractors' safety performance during project bidding processes are common in commercial construction, the validation of organizational surveys used in these processes is largely absent. METHODS: As part of a larger research project called Assessment of Contractor Safety (ACES), we designed and tested through a cross-sectional study, a 63-item organizational survey assessing subcontractors' leading indicators of safety performance. We administered the ACES Survey to 43 subcontractors on 24 construction sites. Concurrently, we captured the safety climate of 1426 workers on these sites through



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worker surveys, as well as injury rates, for the duration of the project. RESULTS: At the worksite level, higher average ACES scores were associated with higher worker safety climate scores ($P < .01$) and lower rates of injury involving days away ($P < .001$). Within subcontracting companies, no associations were observed between ACES and worker safety climate scores and injuries. CONCLUSIONS: These results suggest the overall and collective importance of the construction project and its worksite in mediating worker experiences, perhaps somewhat independent of the individual subcontractor level

Dong XS, Brooks RD, and Brown S. Musculoskeletal disorders and prescription opioid use among U.S. construction workers. Journal of Occupational & Environmental Medicine. 2020; 62(11):973-979.

<https://doi.org/10.1097/JOM.0000000000002017>

Abstract: BACKGROUND: Musculoskeletal disorders (MSDs) and opioid use are a combined burden for construction safety and health. This study examines both issues among construction workers using a large population-based survey. METHODS: The prevalence of MSDs in construction was estimated using multi-year data from the Medical Expenditure Panel Survey. Prescription opioid use among workers with MSDs was compared to those without MSDs. RESULTS: About 34% of construction workers had at least one MSD symptom. Compared to those without MSDs, prescription opioid use tripled (aOR=3.28, 95% CI: 2.44 to 4.41) among construction workers with MSDs. CONCLUSIONS: MSDs are prevalent among construction workers, and prescription opioid use significantly increased among workers with MSDs. It is critical to adopt ergonomic solutions in construction to reduce MSDs, and support workers in injury recovery with effective pain management

Frank J and Williams AJ. A simple tool for comparing benefits and 'costs' of COVID-19 exit strategies. Public Health. 2020; 188:4-7.

<https://doi.org/10.1016/j.puhe.2020.08.025>

Abstract: BACKGROUND: Governments and health policymakers are now looking for strategies to lift the COVID-19 lockdown, while reducing risk to the public. METHODS: We propose the population



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attributable risk (PAR) as an established epidemiological tool that could support decision-making through quickly estimating the main benefits and costs of various exit strategies. RESULTS: We demonstrate the feasibility of use of PAR using pandemic data, that were publicly available in mid-May 2020 from Scotland and the US, to estimate the proportion of COVID-19 hospital admissions which might be avoided, and the proportion of adverse labour market effects - for various scenarios - based on maintaining the lockdown for those of certain ages with and without comorbidities. CONCLUSION: These calculations could be refined and applied in different countries to inform important COVID-19 policy decisions, using routinely collected data

Gewandter JS, Dworkin RH, Turk DC, Devine EG, Hewitt D, Jensen MP, et al. Improving study conduct and data quality in clinical trials of chronic pain treatments: IMMPACT recommendations. Journal of Pain. 2020; 21(9-10):931-942. <https://doi.org/10.1016/j.jpain.2019.12.003>

Abstract: The estimated probability of progressing from phase 3 analgesic clinical trials to regulatory approval is approximately 57%, suggesting that a considerable number of treatments with phase 2 trial results deemed sufficiently successful to progress to phase 3 do not yield positive phase 3 results. Deficiencies in the quality of clinical trial conduct could account for some of this failure. An Initiative on Methods, Measurement, and Pain Assessment in Clinical Trials meeting was convened to identify potential areas for improvement in trial conduct in order to improve assay sensitivity (ie, ability of trials to detect a true treatment effect). We present recommendations based on presentations and discussions at the meeting, literature reviews, and iterative revisions of this article. The recommendations relate to the following areas: 1) study design (ie, to promote feasibility), 2) site selection and staff training, 3) participant selection and training, 4) treatment adherence, 5) data collection, and 6) data and study monitoring. Implementation of these recommendations may improve the quality of clinical trial data and thus the validity and assay sensitivity of clinical trials. Future research regarding the effects of these strategies will help identify the most efficient use of resources for conducting high quality clinical trials. PERSPECTIVE: Every effort should be made to optimize the quality of clinical trial data. This



manuscript discusses considerations to improve conduct of pain clinical trials based on research in multiple medical fields and the expert consensus of pain researchers and stakeholders from academia, regulatory agencies, and industry

Gonzalo RM, Ana RG, Patricia CA, Laura AL, Nathalia GT, Luis C, et al. Short-term emotional impact of COVID-19 pandemic on Spaniard health workers. Journal of Affective Disorders. 2021; 278:390-394.

<https://doi.org/10.1016/j.jad.2020.09.079>

Abstract: **BACKGROUND:** The aims of this study were to evaluate the short-term impact of 2019-nCoV outbreak on the mental/psychological state of Spaniard health care workers (HCWs) and to explore the influencing factors, including organizational factors. **METHODS:** A web-based survey (Google forms questionnaire) spread via professional and scientific associations, professional WhatsApp and email lists, following a snowball technique was used. Data were collected from May 11th and May 31st, 2020 **RESULTS:** : A total of 1407 subjects were included in final analyses. 24.7% (348 out of 1407) of HCWs reported symptoms of acute stress (SARS-Q measurement) and 53.6% (754 out of 1407) reported symptoms related to poorer general health (GHQ-28 measurement). A higher risk of having an acute stress disorder was associated to being female, not having access to protective material, and several subjects´ perceived risks. Additionally, poorer overall general health (GHQ>24) was related to being female, working in a geographical area with a high incidence of infection, not being listened to by your co-workers, having a greater perception of stress at work and being able to transmit the infection to others. **LIMITATIONS:** We must consider a likely memory bias. **CONCLUSION:** The high prevalence of affective and general health symptoms among the HCWs and the critical influence of organizational issues and subjects´ perceived risk should lead health authorities to design future strategies to protect health professional force for facing a potential upcoming epidemiological crisis

Jeyaraman MM, Rabbani R, Copstein L, Robson RC, Al-Yousif N, Pollock M, et al. Methodologically rigorous risk of bias tools for nonrandomized studies had low reliability and high evaluator



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burden. Journal of Clinical Epidemiology. 2020; 128:140-147.
<https://doi.org/10.1016/j.jclinepi.2020.09.033>

Abstract: OBJECTIVE: To assess the real-world interrater reliability (IRR), interconsensus reliability (ICR), and evaluator burden of the Risk of Bias (RoB) in Nonrandomized Studies (NRS) of Interventions (ROBINS-I), and the ROB Instrument for NRS of Exposures (ROB-NRSE) tools. STUDY DESIGN AND SETTING: A six-center cross-sectional study with seven reviewers (2 reviewer pairs) assessing the RoB using ROBINS-I (n=44 NRS) or ROB-NRSE (n =44 NRS). We used Gwet's AC1 statistic to calculate the IRR and ICR. To measure the evaluator burden, we assessed the total time taken to apply the tool and reach a consensus. RESULTS: For ROBINS-I, both IRR and ICR for individual domains ranged from poor to substantial agreement. IRR and ICR on overall RoB were poor. The evaluator burden was 48.45 min (95% CI 45.61 to 51.29). For ROB-NRSE, the IRR and ICR for the majority of domains were poor, while the rest ranged from fair to perfect agreement. IRR and ICR on overall RoB were slight and poor, respectively. The evaluator burden was 36.98 min (95% CI 34.80 to 39.16). CONCLUSIONS: We found both tools to have low reliability, although ROBINS-I was slightly higher. Measures to increase agreement between raters (e.g., detailed training, supportive guidance material) may improve reliability and decrease evaluator burden

Ling CF, Umar RZR, and Ahmad N. Development of a predictive model for work-relatedness of MSDs among semiconductor back-end workers. International Journal of Occupational Safety & Ergonomics. 2020; [epub ahead of print].

<https://doi.org/10.1080/10803548.2020.1840116>

Purpose: There are limited models available to predict work-relatedness of musculoskeletal disorders (MSDs) among semiconductor back-end workers. The study attempts to address the gap through development of a predictive model for this specific population. Method: Potential MSDs risk factors were extracted from 277 ergonomics investigation reports for work compensation claim cases conducted between 2011 - 2019. A binary logistic regression approach was used to determine predictors from extracted data. Results: Significant predictors ($p < 0.05$) include poor posture (OR = 1.822; 95%CI [1.261, 2.632]), forceful exertion (OR = 1.741; 95%CI



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[1.281,2.367]), static posture (OR = 1.796;95%CI [1.367,2.378]), lifting-lowering (OR = 1.438;95%CI [0.966,1.880]), transferring (OR = 1.533;95%CI [1.101,2.136]), pushing-pulling (OR = 0.990;95%CI [0.744,1.317]), repairing (OR = 0.845;95%CI [0.616,1.159]), preventive maintenance (OR = 1.061;95%CI [0.765,1.471]) and quality inspection (OR = 0.982;95%CI [0.729,1.322]). Confounding factors and employment duration also played crucial roles in this predictive model. The model accuracy conducted through cross-validation with 30 sets of new data was 86.2%. Face validation activity among 30 experts shows a promising result, with mean score of agreements on predictors inclusion to be rated at 7.9/10 (SD = 1.9). Conclusion: The model allows practitioners to predict potential MSD cases among semiconductor back-end workers, and proactively plan appropriate mitigation measures.

Martin F and Sevak P. Implementation and impacts of the Substantial Gainful Activity Project demonstration in Kentucky. Journal of Vocational Rehabilitation. 2020; 53(3):297-305.
<https://doi.org/10.3233/JVR-201106>

Monahan JL, Lombardi A, Madaus J, Carlson SR, Freeman J, and Gelbar N. A systematic literature review of college and career readiness frameworks for students with disabilities. Journal of Disability Policy Studies. 2020; 31(3):131-140.
<https://doi.org/10.1177/1044207320906816>

Noel-Storr AH, Dooley G, Wisniewski S, Glanville J, Thomas J, Cox S, et al. Cochrane Centralised Search Service showed high sensitivity identifying randomized controlled trials: a retrospective analysis. Journal of Clinical Epidemiology. 2020; 127:142-150.
<https://doi.org/10.1016/j.jclinepi.2020.08.008> [open access]

Abstract: BACKGROUND AND OBJECTIVES: The Cochrane Central Register of Controlled Trials (CENTRAL) is compiled from a number of sources, including PubMed and Embase. Since 2017, we have increased the number of sources feeding into CENTRAL and improved the efficiency of our processes through the use of application programming interfaces, machine learning, and crowdsourcing. Our objectives were twofold: (1) Assess the



effectiveness of Cochrane's centralized search and screening processes to correctly identify references to published reports which are eligible for inclusion in Cochrane systematic reviews of randomized controlled trials (RCTs). (2) Identify opportunities to improve the performance of Cochrane's centralized search and screening processes to identify references to eligible trials.

METHODS: We identified all references to RCTs (either published journal articles or trial registration records) with a publication or registration date between 1st January 2017 and 31st December 2018 that had been included in a Cochrane intervention review. We then viewed an audit trail for each included reference to determine if it had been identified by our centralized search process and subsequently added to CENTRAL.

RESULTS: We identified 650 references to included studies with a publication year of 2017 or 2018. Of those, 634 (97.5%) had been captured by Cochrane's Centralised Search Service. Sixteen references had been missed by the Cochrane's Centralised Search Service: six had PubMed-not-MEDLINE status, four were missed by the centralized Embase search, three had been misclassified by Cochrane Crowd, one was from a journal not indexed in MEDLINE or Embase, one had only been added to Embase in 2019, and one reference had been rejected by the automated RCT machine learning classifier. Of the sixteen missed references, eight were the main or only publication to the trial in the review in which it had been included.

CONCLUSION: This analysis has shown that Cochrane's centralized search and screening processes are highly sensitive. It has also helped us to understand better why some references to eligible RCTs have been missed. The CSS is playing a critical role in helping to populate CENTRAL and is moving us toward making CENTRAL a comprehensive repository of RCTs

Schmidt K and Pfortner TK. Job insecurity, sickness presenteeism and the moderating effect of workplace health promotion. Journal of Occupational & Environmental Medicine. 2020; 62(11):937-942.

<https://doi.org/10.1097/JOM.0000000000001997>

Abstract: **OBJECTIVE:** This study examined the relationship between job insecurity and presenteeism, and the role of workplace health promotion as moderator in this association. **METHODS:** We used



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data from 9525 employees from the sixth BIBB/BAuA Employment Survey 2012 for the working population in Germany. Data analysis was performed with logistic regressions. RESULTS: Job insecurity was associated with a higher risk of presenteeism, even after adjustment for control factors (OR=1.25, CI: 1.01-1.53, P<0.05). Workplace health promotion moderated this relationship: It no longer existed in companies with health promotion. CONCLUSIONS: The results suggest that employees with job insecurity are more likely to work despite feeling ill with the aim of securing their jobs. By establishing workplace health promotion, companies can protect their employees from that behavior in order to avoid negative long-term consequences

Taylor AB and Blackburn N. "It makes me feel part of the society": return-to-work decisions of SSDI beneficiaries. Journal of Vocational Rehabilitation. 2020; 53(3):319-333.
<https://doi.org/10.3233/JVR-201108>

Yamauchi T, Takahashi K, Suka M, Sasaki T, Takahashi M, Yoshikawa T, et al. Longitudinal association between near-misses/minor injuries and moderate/severe injuries in industrial settings by presence/absence of depressive symptoms in a nationally representative sample of workers in Japan. Occupational and Environmental Medicine. 2020; 77(12):832-838.
<https://doi.org/10.1136/oemed-2020-106460>

Abstract: OBJECTIVES: The association between near-misses/minor injuries and moderate/severe injuries has yet to be investigated longitudinally. This study aimed to examine the longitudinal association between near-misses/minor injuries and moderate/severe injuries by the presence/absence of depressive symptoms using 1-year follow-up data obtained from a nationally representative sample of workers in Japan. METHODS: Of the 18231 eligible participants at time 1 (T1), 12127 who responded to the 1-year follow-up survey at time 2 (T2) (response rate: 66.5%; 4370 females and 7757 males; mean age (SD), 45.3 (10.5) years) were included in the analysis. Multivariate logistic regression analyses were performed with the presence/absence of moderate/severe injuries at T2 as the dependent variable. RESULTS: In total, 36.4% of participants reported depressive symptoms at T1. During the follow-up period,



1.6% of participants reported moderate/severe injuries in industrial settings. After adjusting for relevant variables, participants who reported near-misses (OR=1.7 (95% CI, 1.3 to 2.4)) and minor injuries (OR=2.5 (95% CI, 1.3 to 4.7)) at T1 were more likely to have moderate/severe injuries at T2 compared to those who reported no near-misses/minor injuries. However, this association was stronger in participants who did not have depressive symptoms at T1 than in those who had depressive symptoms. CONCLUSIONS: While the predictive value of near-misses/minor injuries for the occurrence of moderate/severe injuries by the presence/absence of depressive symptoms should be cautiously interpreted, our findings suggest that the development and utilisation of near-miss/minor injury reporting systems may help reduce the likelihood of moderate/severe injuries among workers, especially those without depressive symptoms

**Yu X, Mehmood K, Paulsen N, Ma Z, and Kwan HK. Why safety knowledge cannot be transferred directly to expected safety outcomes in construction workers: the moderating effect of physiological perceived control and mediating effect of safety behavior. Journal of Construction Engineering and Management. 2021; 147(1):04020152-
[https://doi.org/10.1061/\(ASCE\)CO.1943-7862.0001965](https://doi.org/10.1061/(ASCE)CO.1943-7862.0001965)**

***IWH authored publications.**



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