# WORK HEALTH AND SAFETY RESEARCH HORIZON SCAN, SCOPING REVIEW AND EVIDENCE GAP MAPPING PROJECT

## Scoping review and case study findings: Psychosocial harm prevention and recovery

A report prepared for Safe Work Australia

ACADEMY OF THE SOCIAL SCIENCES IN AUSTRALIA

ATSE

# About this project

This project was commissioned by Safe Work Australia, and it maps the existing landscape of work health and safety and workers' compensation research across the five Safe Work Australia *Research and Evaluation Strategy* initial priority areas to provide a data driven understanding of the current evidence base, gaps, and emerging research areas.

This report was developed with guidance from an Expert Working Group of experts from across work health and safety research and related areas. The Academy of the Social Sciences in Australia and the Australian Academy of Technological Sciences and Engineering gratefully acknowledges the Expert Working Group for their contributions.

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# Introduction

This report is part of a series of five reports presenting the consolidated findings from a scoping literature review, horizon scan, and evidence gap mapping undertaken by the Academy of the Social Sciences in Australia for Safe Work Australia (SWA) as part of the 2025 Horizon Scan & Evidence Gap Mapping Project. Each report in the series focuses on one of five research priority areas from SWA's Research and Evaluation Strategy, supported by a case study looking into a known and related driver of change for Work Health and Safety (WHS) in Australia over the coming decade.

The purpose of the project is to ensure future research development, policy and regulatory decisions are evidence informed. To achieve this, each report brings together the results from three integrated research methods. A scoping literature review that maps the depth, breadth and characteristics of Australian WHS and workers' compensation research for a research priority area, a horizon scan which, using a case-study based approach, evaluates research related to a known driver of change to to examine how it is manifesting in relation to WHS research, and an evidence gap mapping that integrates insights from the scoping literature review and the horizon scan to show where the evidence is absent, sparse, or misaligned between the evidence base, priority area and case study.

Together, these methods help us understand what evidence currently exists, how it is distributed across research priority areas and case studies, and how well positioned the Australian research evidence base is to inform policy responses to emerging WHS challenges. The following sections present a summary of key findings that integrates insights from the scoping literature review, horizon scan, and evidence gap mapping. The remainder of the report then unpacks these findings in detail.

| Research Priority Area | Case Study | |
|---|---|---|
| P1: Psychosocial harm prevention and recovery | C1: Psychological injury and increasing time off work | ✓ |
| P2: Advances in technology | C2: GenAI and work design | |
| P3: Shifting mindsets around WHS fundamentals | C3: Respect@Work | |
| P4: Effectiveness of systems and frameworks | C4: Electrification and emerging hazards | |
| P5: Changing nature of work | C5: Algorithmic management in gig platforms | |

## Psychosocial harm prevention and recovery

This report focuses on the research priority area of psychosocial harm prevention and recovery, identified in SWA's *Research and Evaluation Strategy.*

Psychosocial harm has emerged as a central focus for improving work health and safety in Australia. This reflects the need to better understand how psychosocial hazards arise, how to control them effectively, and how to ensure rapid and supported recovery when harm occurs. This research priority area emphasises systemic controls, regulatory and organisational approaches, job and work design, and integrated early intervention and support systems as key mechanisms for reducing harm and strengthening recovery.

Psychosocial harm is a complex, system-level challenge shaped by evolving work practices, workforce demographics, organisational cultures, and regulatory expectations. It underscores the importance of building a stronger evidence base around what works to prevent psychosocial harm, how to design safer work environments, and how to enable effective and timely recovery for affected workers. This includes understanding how psychosocial risks disproportionately affect particular groups of workers and how the broader WHS and workers' compensation frameworks can adapt to emerging challenges. As a research priority, this focus guides efforts to create evidence that supports better prevention, better management of psychosocial risk, and better outcomes for workers who experience harm.

Psychosocial harm prevention and recovery represent a substantial component of the Australian WHS evidence base. The scoping review identified 1,233 records within the 7,027-record dataset as directly relevant to this priority area (collectively referred to as P1), accounting for a significant proportion of national WHS research output. Publication volume has increased consistently over the last fifteen years, indicating a mature research domain.

Taxonomy-based analysis shows that coverage across concepts varies. A relatively small number of terms account for a large share of activity in the dataset, particularly those relating to mental health, burnout, workload and social support. At the same time, a long tail of topics appears at low frequency, and a small number of taxonomy terms are not represented in the dataset.

Comparison with system-generated concept clustering indicates that the literature is conceptually stable over time. Records cluster consistently around mental health outcomes, psychosocial measurement, health care contexts and employment systems. The persistence of these topics supports the observation that this is a mature and coherent research domain.

## Psychological injury and increasing time off work

The case study of psychological injury and increasing time off work was selected for horizon scanning to test the impact of this driver of change on WHS research in Australia.

Psychological injury is a growing and increasingly complex challenge within Australia's WHS and workers' compensation systems. Mental health conditions related to work-related stress, burnout, bullying, harassment, and trauma exposure are rising in prevalence and often result in significantly longer time off work, slower recovery trajectories, and higher compensation costs than physical injuries. This trend persists across jurisdictions and sectors, reflecting both the inherent complexity of psychosocial harm and the difficulties workers face when navigating recovery and return-to-work (RTW) pathways.

Prolonged work absence associated with psychological injury highlights systemic issues, including delays in claims processes, variability in employer capacity to support injured workers, limited early intervention mechanisms, and stigma around mental health. The case study therefore considers evidence around the drivers of increasing time off work for psychological injury, how organisational and compensation systems respond to these injuries, and whether current approaches are adequate for contemporary and future work environments.

The case study of psychological injury and increasing time off work (designated C1) forms a focused subset of the broader psychosocial evidence base. Of the 210 publications identified for the case study, the majority also appear within the priority area dataset. This overlap indicates strong conceptual alignment and reinforces the integration of psychological injury and prolonged absence within the wider psychosocial research agenda.

Within the case study dataset, research activity is more concentrated than in the scoping review data overall. Mental health, burnout and trauma-related constructs appear at higher relative frequency, alongside PTSD, rehabilitation, social support and recovery at work. Fewer concepts account for a larger share of topic coverage, reflecting the narrower scope of research in the case study. Publishing patterns are consistent with those observed for the scoping review data, with increased publication activity in more recent years. System-generated concept clustering mirrors that of the broader dataset, indicating that psychological injury and increasing time off work are a clear and current focus of WHS research in Australia.

## Evidence gap mapping

Evidence gap mapping brings together findings from the scoping review and the case study to consider patterns of absence, sparsity and alignment of topics across the dataset.

A small number of taxonomy terms were not represented in the dataset. These include terms relating to RTW programs, roster design and shift scheduling, FIFO work arrangements and organisational justice constructs. While research on these topics may exist elsewhere, they are not visible within the retrieved dataset or captured through current taxonomy tagging.

Sparsity is also evident across several organisational and structural concepts. Many terms appear at low frequency relative to the size of the evidence base, indicating focused research attention. Within the case study dataset, this concentration is more pronounced, with outcome-focused topics accounting for a larger proportion of research activity.

Alignment analysis comparing system-generated topics with the policy-led deductive taxonomy showed that some topics relating to employment systems and workers' compensation had much broader definitions and scope than were captured in the taxonomy. This demonstrates the maturity and depth of the evidence base.

Taken together, the evidence base demonstrates strength in documenting psychosocial harm and psychological injury outcomes. There is less emphasis on organisational processes, system-level mechanisms and structured RTW pathways.

## Key findings

The evidence base for psychosocial harm prevention and recovery in Australia is substantial and growing. The scoping review demonstrates that this priority area accounts for a significant proportion of the 7,027-record dataset, with consistent growth in publication volume over the fifteen-year period examined.

Psychological injury and increasing time off work are closely integrated within this broader domain. The majority of case study publications also appear within this domain dataset, indicating strong conceptual alignment and the current importance of this driver of change reflected in the research.

At the same time, the distribution of research activity within this domain is skewed. A relatively small number of taxonomy terms account for a large proportion of topics, particularly those associated with mental health, burnout and trauma exposure. Within the case study dataset, concentration is more pronounced, with a smaller cluster of concepts appearing at higher relative frequency. These also include PTSD and rehabilitation, social support and recovery at work. In contrast, a long tail of taxonomy terms appears infrequently or not at all in the scoping review.

System-generated concept mapping supports this interpretation. The conceptual structure of the literature remains relatively stable over time, with records clustering around mental health outcomes, psychosocial measurement, health care and employment systems. While workers' compensation and employment system topics are present, they are less visible in the taxonomy tagging, particularly within the case study dataset.

Taken together, the findings indicate that the Australian evidence base is well developed in documenting psychosocial harm and psychological injury outcomes. However, comparatively less emphasis is placed on organisational processes, system-level mechanisms, and structured RTW pathways.

The pattern observed across the scoping review and horizon scan shows that over the last fifteen years Australian WHS research has been focused on outcomes relating to psychosocial harm prevention and recovery, with less focus on system design and intervention.

# Scoping literature review

## Overview of results

This scoping review draws on the full dataset of 7,027 records to provide an overview and synthesis of the WHS research landscape for the research priority area of psychosocial harm prevention and recovery (P1). From this full dataset, the AI panel screened 1,232 records into a P1-focused subset that will be compared and contrasted with the full dataset to understand priority area research and taxonomy coverage.

## Tagging

Across the taxonomy, 73 P1 taxonomy terms were operationalised to tag the 7,027 records in the full dataset (a record may have multiple tags). Of those terms, 61 appeared in the abstracts and titles of at least one publication, while 12 terms appeared on no publications.

Table 1 shows that a total of 2,490 tags were applied to the 1,232 records in the P1 priority area, 2,079 of those tags were from the P1 taxonomy. Across the full dataset, a total of 4,330 P1 tags were applied. These figures reflect the significant breadth of P1 concept occurrence within titles and abstracts across the dataset and demonstrate that P1-related concepts appear in a substantial number of records, including 1,843 tags appearing on records that were not screened into any priority area.

Appendix 3 presents a table of P1 taxonomy terms that includes their tag frequency across the full dataset, and for the P1 priority area and C1 case study. Despite the high frequency of tagging, it shows that a small number of P1 taxonomy terms account for a significant proportion of the tags applied and that there is a long tail of terms with relatively low counts.

The most frequently observed taxonomy terms were *mental health* (851 publications) and *shifts* (489 publications), followed by *burnout* (378 publications), *workload* (253 publications), and *social support* (237 publications). Together, the highest-frequency terms account for the majority of P1 taxonomy-tagged publications.

In contrast, many taxonomy terms were associated with relatively small numbers of publications, with 34 taxonomy terms on fewer than 20 publications and several terms only reflected once or twice. These diverse terms included *moral injury, job demands, organisational change,* and *vicarious trauma.*

Twelve taxonomy terms in the P1 taxonomy were not associated with any publications; these included *work rosters, limited decision latitude, poor organisational justice,* and *remote and isolated work (psychosocial)*. Absence in this context refers to a lack of taxonomy tagging in the dataset and does not imply the absence of research on these topics more broadly.

## Screened record categories

| Tags applied | P1 | P2 | P3 | P4 | P5 | Unscreened | Multi*** | Total** |
|---|---|---|---|---|---|---|---|---|
| P1 | 2079 | 140 | 625 | 183 | 138 | 1843 | 678 | 4330 |
| P2 | 63 | 232 | 49 | 24 | 28 | 388 | 66 | 718 |
| P3 | 68 | 40 | 77 | 41 | 19 | 183 | 58 | 370 |
| P4 | 130 | 144 | 226 | 97 | 29 | 477 | 126 | 977 |
| P5 | 150 | 37 | 55 | 26 | 45 | 406 | 71 | 648 |
| Total* | 2490 | 593 | 1032 | 371 | 259 | 3297 | 999 | 7043 |

*Table 1: A matrix showing the number of tags applied to screened records across the 7,027-record dataset. P1 tags are highlighted. The Y-axis is priority area tags and X-axis is the screened record categories, e.g. cell P1/P1 shows the number of P1 tags applied to P1 screened records. The table also includes columns with the number of unscreened records that were tagged, the number of tags that were counted multiple times (Multi) and the total tags applied. Figures reflect total tag counts. Tagging is not exclusive and a term might appear on records in each priority area. Records can also be screened into more than one priority area – hence tag counts are higher than the number of records in the dataset.*

** Total tags on P1, P2, P3 etc. records, **Total P1, P2, P3 tags on all records. ***The number of terms that are counted more than once.*

## Patterns over time

Time-based analyses of the 1,232 screened records show growth in output across the period covered by the dataset (Table 2), with higher volumes observed in more recent years and consistent year-on-year growth over the fifteen-year period. Figure 1 shows the top ten terms over the period, and the number of publications tagged. This highlights the consistent and stable growth of research on the priority area within the dataset.

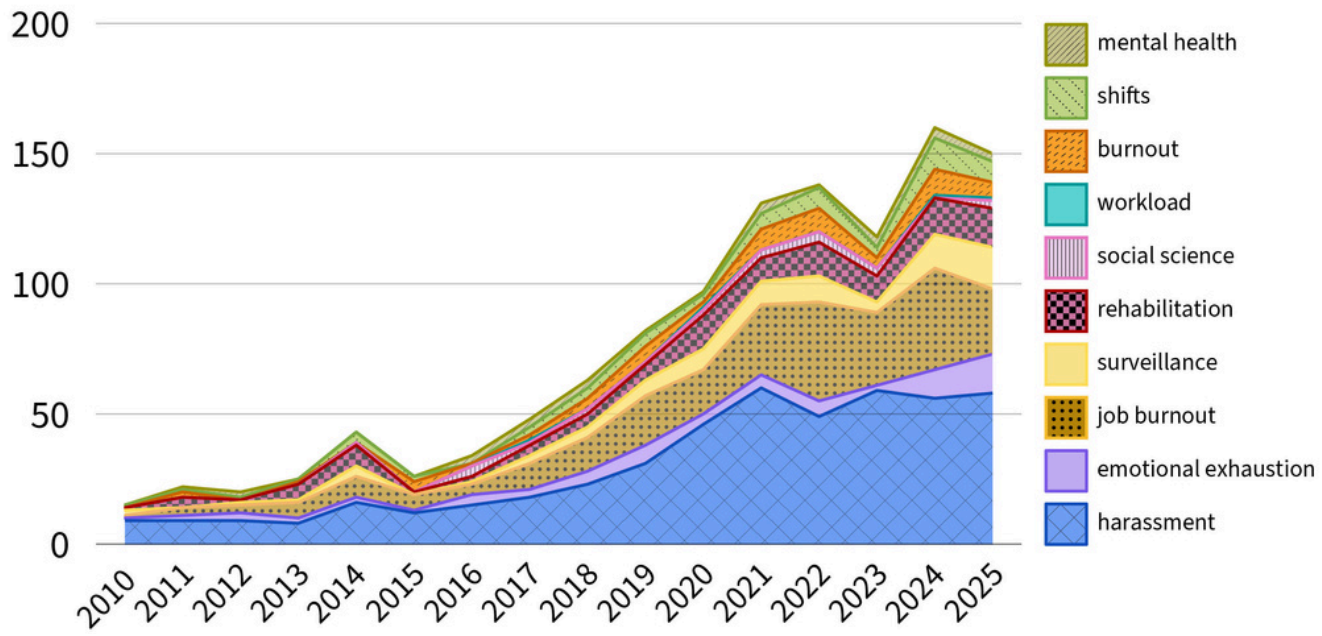


*Figure 1: Stacked area chart of the top ten terms by year and number of publications tagged.*

| Year | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Freq | 25 | 30 | 29 | 38 | 52 | 40 | 47 | 60 | 67 | 80 | 106 | 135 | 132 | 114 | 148 | 129 |

*Table 2: Table showing screened records by year of publication.*

## High-level concept clusters derived from Dimensions.ai

In addition to taxonomy-based mapping, a system-generated concept analysis was produced using VOSviewer[1] to provide a high-level overview of concept co-occurrence across the screened P1 dataset. This analysis is independent of the predefined taxonomy and reflects frequently occurring and distinctive concepts extracted from publication titles and abstracts by VOSviewer. Alignment between taxonomy terms and system-generated concepts was examined descriptively for the ten most frequently observed P1 taxonomy terms. These are presented in Table 3, and visualised in Appendix 4 Figure 3. Table 4 looks more closely at the overlap between taxonomy and VOSviewer concepts. It shows that half of the most frequent taxonomy terms were identified by VOSviewer. This suggests that there is value in using both approaches for understanding the dataset as each identifies unique terms/concepts.

| # | Cluster | Concepts | Description |
|---|---|---|---|
| 1 | Health care and service-delivery cluster | 71 | Broad health, care, and service-delivery concepts, including health services, care settings, and jurisdictional or system-level references. This cluster reflects contextual and service-oriented aspects of the literature. |
| 2 | Employment systems and workers' compensation cluster | 50 | Concepts relating to employment conditions, workers' compensation, claims, industries, and administrative or regulatory contexts. This cluster captures applied workplace and compensation system dimensions. |
| 3 | Psychosocial, measurement and burnout cluster | 39 | Psychological constructs and measurement-related concepts, including burnout, emotional exhaustion, anxiety, and associated assessment instruments. This cluster is tightly focused on psychosocial outcomes and their measurement. |
| 4 | Mental health outcomes and epidemiological research cluster | 39 | Mental health symptoms, disorders, and epidemiological study concepts, including depression, anxiety, associations, and observational study designs. |

[1] *Nees Jan van Eck and Ludo Waltman, "Software Survey: VOSviewer, a Computer Program for Bibliometric Mapping," Scientometrics 84, no. 2 (2010): 523–538, https://doi.org/10.1007/s11192-009-0146-3.*

| # | Cluster | Concepts | Description |
|---|---|---|---|
| 5 | COVID-19 and pandemic context cluster | 26 | Concepts associated with the COVID-19 pandemic, including pandemic context, coping, baseline measures, and temporal disruption. |
| 6 | Research synthesis and reporting cluster | 25 | Concepts related to research synthesis, reporting standards, and bibliographic databases, reflecting methodological and evidence synthesis activity. |

*Table 3: The clusters resulting from VOSviewer analysis, number of concepts included, and summary descriptions.*

| Top ten terms (by publications) | Appears | Occurances | Cluster |
|---|---|---|---|
| Mental health | Yes | 675 | 1, 2, 4, 5, 6 |
| Shifts | No | 317 | |
| Burnout | Yes | 182 | 3 |
| Workload | No | 181 | |
| Social support | Yes | 140 | 4 |
| Rehabilitation | No | 98 | |
| Surveillance | No | 85 | |
| Job burnout | No | 72 | |
| Emotional exhaustion | Yes | 29 | 3 |
| Harassment | Yes | 76 | 2 |

*Table 4: The top ten taxonomy terms by frequency and associated VOSviewer clusters, association is made by the observed presentce of that term in the cluster.*

## Sources and contributing organisations

The P1 evidence base is distributed across a broad range of publication outlets (Table 5). While a small number of sources contribute multiple publications, no single outlet dominates the field. This pattern indicates disciplinary breadth and shows that psychosocial harm prevention and recovery research is embedded across health, occupational and applied research domains.

A similar distribution is evident at the organisational level (Table 6). Although several institutions account for higher publication volumes, contributions are spread across a wide range of universities and research organisations. This distribution suggests that research capacity in psychosocial harm prevention and recovery is established across multiple centres rather than centralised within a small number of institutions.

Author-level patterns (Table 7) show a combination of sustained contribution by established researchers alongside a broader group of contributors appearing less frequently. This pattern is consistent with a mature research domain in which identifiable research leaders coexist with ongoing participation from a wider scholarly community.

| Source Title | Publications |
|---|---|
| International Journal of Environmental Research and Public Health | 43 |
| Occupational and Environmental Medicine | 25 |
| Journal of Nursing Management | 21 |
| BMJ Open | 20 |
| International Journal of Mental Health Nursing | 18 |

| Organisation | Publications |
|---|---|
| University of Melbourne | 147 |
| Monash University | 139 |
| UNSW Sydney | 116 |
| University of Queensland | 86 |
| Deakin University | 85 |

*Table 6: Top five affiliated organisations noted on publications, by number of publications they are listed on.*

| Author | Publications |
|---|---|
| Anthony Daniel Lamontagne | 58 |
| Samuel B Harvey | 49 |
| Allison Joy Milner | 38 |
| Maureen Frances Dollard | 29 |
| Nicholas S Glozier | 23 |

*Table 7: Top five authors, by the number of publications they are listed on.*

## Summary of taxonomy-based evidence coverage

The results provide a structured overview of how the existing evidence base is distributed. Overall, the scoping review shows skewed coverage across taxonomy terms related to P1, with a core group of concepts accounting for a large share of the tagged evidence base, while many taxonomy terms appear sparsely or not at all. While there is a high level of concentration within the priority area, a substantial portion of publication screened into other priority areas were also tagged with P1 terms, indicating the secondary or related research associated with P1 terms is prevalent.

The consistent year-on-year publications growth in the P1 dataset indicates stability and a maturing domain of research. Concept clusters derived from Dimensions.ai provide a complementary, high-level view of the P1 results. The partial overlap with taxonomy terms highlights that research in the priority area is distinct from the broader WHS research, with intersections in key areas such as health care and psychosocial research. Bibliometric analyses further speak to the dataset's diverse evidence base, with publications distributed across many sources (Table 5), organisations (Table 6), and authors (Table 7). These observations provide a descriptive foundation for the subsequent horizon scanning and evidence gap mapping presented in this report.

# Horizon scan

The horizon scan was conducted following a case-study based deductive approach that recognises existing research on the future of work health and safety and known drivers of change. Drivers of change identified by leading international institutions and global WHS research programs were used as an organising frame for the horizon scan and to help manage its scope. These drivers represent well-established and emerging trends on the global WHS horizon.

A case study approach was then used to examine how these identified drivers are manifesting within the Australian WHS research evidence base. Case studies were selected through literature review and in consultation with SWA and the project's Expert Working Group (EWG).

| Case study | Drivers of change | Rationale | Time frame | Publications | Publishing | Status |
|---|---|---|---|---|---|---|
| Psychological injury and increasing time off work | Mental health awareness and claim escalation trends | Directly aligns with sustained psychosocial risk focus. It reflects the ongoing rise in psychological injury and compensation trends that will evolve as psychosocial codes mature | Near–Medium Term (Next 1–5 years) | 210 | Since 2010 | Established |

This section presents the results of analysis for the case study of psychological injury and increasing time off work. It reflects the rising psychological injury, extended work absence, and increasing compensation system pressures as critical and near-term challenges for WHS systems (1-5 years).

## Overview of results

The case study dataset comprises 210 publications identified through the AI screening method (See Appendix 1). Records were tagged with terms from the full taxonomy of 304 terms across the five priority areas. The purpose was to examine the cross-cutting nature of the research and related concepts across the priority areas.

Across these 210 records, 174 were tagged to at least one taxonomy term from the full taxonomy of 304 terms, while 36 did not receive any tags (Table 8). Of those terms 61 unique terms appeared at least once, while 243 terms were not present. Table 9 shows the top ten most frequently occurring taxonomy terms within the case study dataset. The five most common were mental health (102), followed by burnout (31), PTSD (26), trauma exposure (21), and rehabilitation (16). A handful of terms were from other priority areas, such as productivity (11) and on demand work (9). A long tail of terms appeared infrequently, with 28 terms appearing on only a single publication.

| Measure | Number of publications |
|---|---|
| Publications in the case study | 210 |
| Publications with ≥1 taxonomy tag | 174 |
| Publications with no taxonomy tags | 36 |

*Table 8: Summary of the publications included in the case study and taxonomy tagging results.*

The case study dataset comprises 210 publications identified through the AI screening method (See Appendix 1). Records were tagged with terms from the full taxonomy of 304 terms across the five priority areas. The purpose was to examine the cross-cutting nature of the research and related concepts across the priority areas.

Across these 210 records, 174 were tagged to at least one taxonomy term from the full taxonomy of 304 terms, while 36 did not receive any tags (Table 8). From the full taxonomy list, 61 unique terms appeared at least once, while 243 terms were not present.

Table 9 shows the top ten most frequently occurring taxonomy terms within the case study dataset. The five most common were mental health (102), followed by burnout (31), PTSD (26), trauma exposure (21), and rehabilitation (16). A handful of terms were from other priority areas, such as productivity (11) and on demand work (9). A long tail of terms appeared infrequently, with 28 terms appearing on only a single publication.

| Taxonomy term | Priority Area | Publications |
|---|---|---|
| mental health | P1 | 102 |
| burnout | P1 | 31 |
| PTSD | P1 | 26 |
| trauma exposure | P1 | 21 |
| rehabilitation | P1 | 16 |
| social support | P1 | 16 |
| recovery at work | P1 | 12 |
| productivity | P2 | 11 |
| job burnout | P1 | 10 |
| workplace bullying | P1 | 10 |
| on demand work | P5 | 9 |
| workload | P1 | 8 |
| shifts | P1 | 7 |
| mental well being | P1 | 7 |
| work design | P4 | 6 |

*Table 9: Top ten taxonomy terms by the number of publications tagged, using the full taxonomy of 304 terms.*

## Patterns over time

Time-based analyses are based on the full case study dataset (n = 210). Annual publication counts indicate growth over time, with higher volumes in more recent years. This pattern is consistent with results seen in the scoping literature review (See Figure 2 and Table 10).

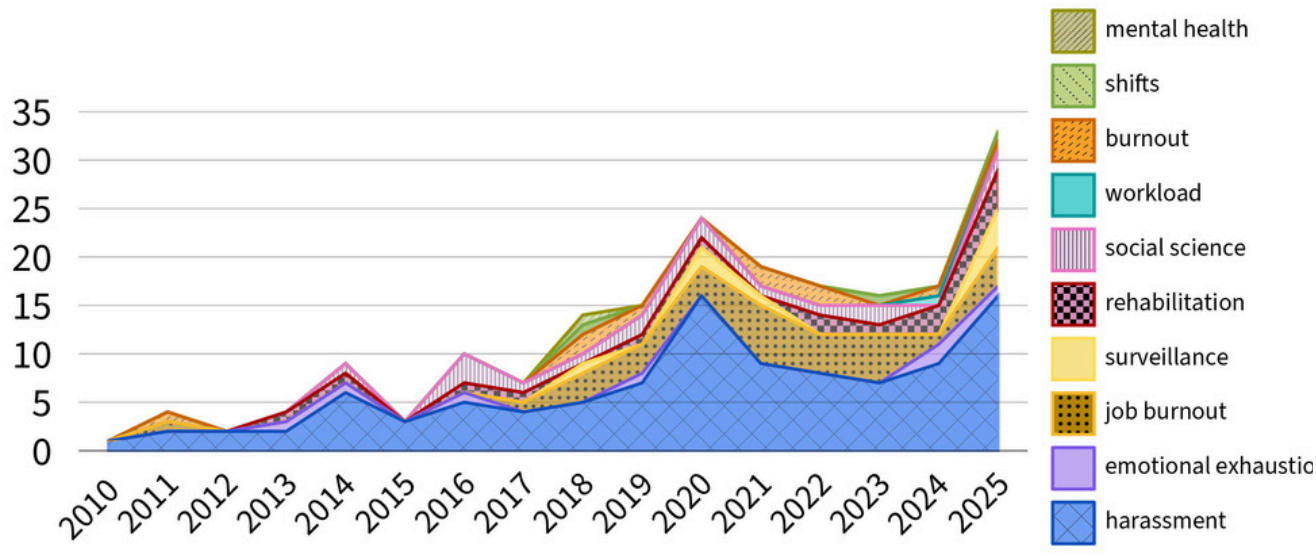


*Figure 2: Stacked area chart of the top ten terms by year and number of publications tagged in the case study dataset.*

| Year | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Freq | 4 | 6 | 4 | 7 | 12 | 3 | 13 | 14 | 14 | 18 | 21 | 18 | 18 | 17 | 15 | 26 |

*Table 10: The number of publications per year in the case study dataset.*

## High-level concept clusters from Dimensions.ai

System-generated concept clusters derived from VOSviewer provide a complementary, high-level overview of concept co-occurrence. These clusters are independent of the taxonomy and reflect frequently occurring and distinctive concepts extracted from titles and abstracts. These are presented in Table 11 and visualised in Appendix 4 Figure 4.

| # | Cluster | Concepts | Description |
|---|---|---|---|
| 1 | Health care and service-delivery cluster | 71 | Broad health, care, and service-delivery concepts, including health services, care settings, and jurisdictional or system-level references. |
| 2 | Employment systems and workers' compensation cluster | 50 | Concepts relating to employment conditions, workers' compensation, claims, industries, and administrative or regulatory contexts. |
| 3 | Psychosocial, measurement and burnout cluster | 39 | Psychological constructs and measurement-related concepts, including burnout, emotional exhaustion, anxiety, and associated assessment instruments. |
| 4 | Mental health outcomes and epidemiological research cluster | 39 | Mental health symptoms, disorders, and epidemiological study concepts, including depression, anxiety, associations, and observational study designs. |
| 5 | COVID-19 and pandemic context cluster | 26 | Concepts associated with the COVID-19 pandemic, including pandemic context, coping, and temporal disruption. |
| 6 | Research synthesis and reporting cluster | 25 | Concepts related to research synthesis, reporting standards, and bibliographic databases. |

*Table 11: The clusters resulting from VOSviewer analysis, number of concepts included, and summary descriptions.*

## Comparison of scoping literature review and horizon scan results

A substantial proportion of case study publications are present within the P1 dataset, reflecting the conceptual and topical relatedness of the two datasets (Table 12). This pattern indicates that the case study does not represent a discrete or isolated body of literature, but rather a more focused set of concepts embedded within the broader P1 evidence base.

| Measure | Publications |
|---|---|
| Publications in C1 dataset | 210 |
| Publications in P1 dataset | 1,232 |
| Publications appearing in both C1 and P1 | 177 |
| Publications unique to C1 | 33 |
| Publications unique to P1 | 1,055 |

*Table 12: Comparison of publications in the priority area (P1) and the case study (C1).*

Comparison of taxonomy tagging highlights both overlap and differences in emphasis between C1 and P1 (Table 13). Many of the most frequently observed taxonomy terms in the case study (e.g. *mental health, burnout, PTSD, trauma exposure*) also feature prominently in P1. However, their relative concentration differs between the two datasets. Within the case study, a smaller number of concepts account for a higher proportion of tagged publications, reflecting the more focused nature of the case study. In contrast, the P1 evidence base exhibits broader dispersion across taxonomy terms, with a longer tail of concepts appearing at lower frequencies.

| Taxonomy term | C1 publications | P1 publications |
|---|---|---|
| Mental health | 102 | 478 |
| Burnout | 31 | 247 |
| PTSD | 26 | 51 |
| Trauma exposure | 21 | 53 |
| Rehabilitation | 16 | 24 |

*Table 13: Top five taxonomy terms shared by the P1 and C1 datasets (see Appendix 2 for the full list).*

Temporal patterns of publication in C1 and P1 are aligned, with higher publication volumes observed in more recent years in both datasets (Table 14). However, growth in case study publications appears more concentrated over time, consistent with the narrower topical scope of the case study. These similarities support the interpretation that the case study reflects a focused subset of activity within the priority area.

| Year | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **P1** | 25 | 30 | 29 | 38 | 52 | 40 | 47 | 60 | 67 | 80 | 106 | 135 | 132 | 114 | 148 | 129 |
| **C1** | 4 | 6 | 4 | 7 | 12 | 3 | 13 | 14 | 14 | 18 | 21 | 18 | 18 | 17 | 15 | 26 |

*Table 14: Comparison of P1 and C1 dataset publications per year.*

System-generated concepts derived from Dimensions.ai show substantial similarity between the C1 and P1 datasets. In both cases, concepts are organised around comparable high-level clusters, including health care and service delivery, employment systems and workers' compensation, psychosocial measurement and burnout, mental health outcomes, and research synthesis. No distinct cluster structure unique to C1 was identified. Instead, differences between the two datasets are reflected in the relative prominence of clusters and concepts within them. This indicates that publications identified for C1 are conceptually embedded within the broader P1 literature.

## Signal scanning

Signals represent observable directional patterns and configurations within the existing evidence base that may warrant monitoring or further investigation. Signals were identified using the horizon scanning questions specified in the study methodology, focusing on: changes in volume or concentration of research activity; shifts in conceptual emphasis; recombination or co-occurrence of concepts; boundary-crossing across domains or priority areas; and consolidation or dispersion of the evidence base.

The signals identified in Table 15 highlight areas of concentration, stability, and sparsity within the case study dataset. These signals do not, in themselves, constitute evidence gaps; rather, they provide structured inputs for evidence gap mapping.

| Signal | Measure | Insight |
|---|---|---|
| Concentration of research activity | A high proportion of case study publications are tagged with a small number of taxonomy terms (e.g. mental health, burnout, PTSD), with limited dispersion across the broader taxonomy. | Research activity within the case study is concentrated around outcome-related constructs, indicating depth in specific areas but limited conceptual breadth. |
| Embeddedness within broader priority area | 177 of 210 case study publications (84%) also appear within the P1 dataset. | Psychological injury and increasing time off work are structurally integrated within the broader psychosocial harm domain rather than constituting a separate research focus. |
| Stability of conceptual structure | System-generated concept clusters for the case study mirror those identified for P1, with no new or distinct clusters emerging. | The conceptual structure of the research domain remains stable over time, suggesting domain maturity rather than emergence. |

| Signal | Measure | Insight |
|---|---|---|
| Temporal intensification | Publication counts increase in more recent years, consistent with patterns observed in P1. | Research attention to psychological injury and time off work is increasing, reinforcing the contemporary relevance of this driver of change. |
| Emphasis on outcomes and measurement | High frequency of tagging for mental health, burnout, PTSD and trauma exposure relative to organisational or system-level terms. | The literature prioritises documentation of psychological injury outcomes over analysis of system-level mechanisms or intervention design. |
| Limited explicit coverage of system-level interventions | Organisational, structural and return-to-work related taxonomy terms appear sparsely or are absent. | Evidence relating to organisational processes and structured intervention pathways is comparatively less visible within the retrieved dataset. |

*Table 15: Table of horizon scanning signals.*

# Evidence gap mapping

This evidence gap mapping brings together results from the scoping review and the horizon scan case study to systematically document gaps in the evidence base, drawing on patterns in taxonomy tagging, temporal patterns of publication, and concepts and clusters emerging from VOSviewer.

Three kinds of evidence gaps were observed in results from the scoping literature review and horizon scan case study:

- **Absence:** taxonomy terms or concept areas with no explicit coverage;
- **Sparsity:** concepts represented by very small numbers of publications relative to the size of the evidence base; and
- **Alignment:** mismatches between conceptual centrality (as indicated by system-generated concept clusters) and explicit taxonomy coverage.

## Absence

Appendix 2 shows that several taxonomy terms were not associated with any publications in either the scoping literature review or case study. These terms represent areas of absence in the dataset, while research on these subjects may exist, it was not present in the records retrieved from Dimensions.ai. Significantly, terms related to time off work such as *return-to-work programs,* or *work rosters* and *roster design* and *shift scheduling* were absent along with high-risk contexts such as FIFO (fly-in-fly-out), *remote and isolated work* or *marginalised workforce* participants.

## Sparsity

Several taxonomy terms were observed within the P1 dataset but were absent or represented by very small numbers of publications within the case study dataset (Table 13). These terms indicate areas where the case study and priority area differ and speak to the distinct research occurring in relation to psychological injury and increasing time off work. A small number of P1 taxonomy terms, while sparsely represented in the P1 dataset, appeared with a relatively high frequency in association with C1 publications. This gives us an idea of the specific priorities for research in the case study dataset and its connection to the priority area.

## Alignment

Alignment gaps are identified through comparison of taxonomy coverage with system-generated concepts from VOSviewer and temporal publishing patterns.

Across both the P1 dataset and the case study, taxonomy coverage and concept clustering indicate a strong focus on individual-level outcomes and conditions, including mental health, burnout, PTSD, and trauma-related constructs. In contrast, explicit coverage of system-level, organisational, or process-oriented concepts is comparatively limited, particularly within the case study dataset. This reflects a pattern where outcomes are well represented, while the mechanisms, organisational processes, and system-level pathways through which psychological injury leads to time off work and recovery are less frequently identified by taxonomy terms. This could indicate a gap in the research, where more system-level studies are warranted, or in the taxonomy and dataset used to study this priority area.

System-generated concept clusters from VOSviewer indicate that employment systems and workers' compensation-related concepts are prominent within the priority area and case study datasets. However, taxonomy coverage of these workers' compensation concepts is comparatively sparse, particularly within the case study. This indicates a potential gap in the taxonomy, and an opportunity to expand the taxonomy using workers' compensation terms derived from the VOSviewer concept mappings.

The system-generated concept structures provided by VOSviewer remain relatively stable between 2010-2025, with similar clusters and dominant concepts persisting across the period in the priority area and case study dataset. This pattern suggests consistent conceptual framing within the literature despite growth in the volume of research output. This reflects a stable and mature domain of research.

# Appendix 1: Screening and data

This section reports on the method and approach followed to conduct the horizon scan, scoping literature review and evidence gap mapping.

The dataset of 7,028 WHS and workers' compensation research publications (see Note below) were screened for records relevant to the research priority area of psychosocial harm prevention and recovery and the case study of psychological injury and increasing time off work. Screening was conducted by a panel of four large language models (LLMs) which included ChatGPT 4.1 Mini, Claude 3 Haiku, Gemini 2.5 Flash and Grok 4.1 Fast Reasoning.[2]

The LLMs were asked to classify records into three categories using a schema: primary research, secondary research or irrelevant, and to provide confidence scores along with their decision. This information was used to calculate inter-panel agreement following an established method which led to records being labelled as green (high confidence and agreement), amber (intermediate) or red (low confidence and agreement). Only records categorised as primary, where the panel showed a high level of confidence and agreement (green records), were selected.

The panel identified 1,233 records (Table 17) potentially relevant to the psychosocial harm prevention and recovery and 210 records (Table 18) relevant to psychological injury and increasing time off work. One record was removed from the dataset following further screening, leading to 1,232 records being included in the P1 dataset. These records were then checked by human reviewers for relevance. These records were not excluded but identified for the purpose of comparison and audit. It is the case that there can be a high level of ambiguity and interpretation when deciding if a record, based on its title and abstract, is a primary, secondary or irrelevant source of evidence for a priority focus area or case study.

Results were then tagged with taxonomy terms and described using bibliometrics. The results of this analysis are provided in the following section and discussed as part of the scoping literature review, horizon scan and evidence gap mapping.

[2] *Zhilong Zhao and Yindi Liu, A Confidence–Diversity Framework for Calibrating AI Judgement in Accessible Qualitative Coding Tasks (Guangzhou: School of Journalism and Communication, South China University of Technology, 2025). https://doi.org/10.48550/arXiv.2508.02029.*

| | Green | Amber | Red |
|---|---|---|---|
| Primary | 1233 | 770 | 120 |
| Secondary | 104 | 538 | 158 |
| Irrelevant | 2679 | 1251 | 175 |

*Table 16: Model ratings and risk matrix for the priority area in the set of 7,028 records (Geen – low risk, Amber – medium risk, Red – high risk).*

| | Green | Amber | Red |
|---|---|---|---|
| Primary | 210 | 907 | 175 |
| Secondary | 128 | 494 | 216 |
| Irrelevant | 2993 | 1672 | 233 |

*Table 17: Model ratings and risk matrix for the case study in the set of 7,028 records (Geen – low risk, Amber – medium risk, Red – high risk).*

Note: Tables 16 and 17 contain an extra record, which was removed after screening was completed.

# Appendix 2: Schema and instructions

This appendix presents the instructions provided to large language model (LLM) panel members when reviewing records, and the specific categorisation schemes that were used.

| Scheme P | Psychosocial harm prevention and recovery |
|---|---|
| **Instruction** | Classify each text as Primary, Secondary, or Irrelevant based only on what the text explicitly states. The key distinction is whether psychosocial harm prevention or recovery in the workplace is the central focus (Primary), discussed but not central (Secondary), or not present (Irrelevant). |
| **Primary category** | The text is mainly about psychosocial hazards in work (such as job demands, low control, bullying, harassment, aggression, or exposure to traumatic events), or about preventing psychosocial harm in workplaces through organisational or system-level controls. A text is also Primary if it focuses on early intervention, support, or recovery systems for workers affected by psychosocial harm, or on regulatory, organisational, or workers' compensation approaches to managing psychosocial risk. Psychosocial harm prevention or recovery must be central to the analysis in a WHS or workplace context. |
| **Secondary category** | The text discusses psychosocial factors or workplace mental health but does not focus on psychosocial harm prevention or recovery systems. Psychosocial issues may be included as one element of a broader topic, or the link to WHS responsibilities, organisational controls, or recovery processes may be limited or indirect. The content is related but not central to psychosocial harm prevention or recovery. |
| **Irrelevant category** | The text does not meaningfully address psychosocial hazards, harm prevention, or recovery in a WHS or workers' compensation context. Content limited to general wellbeing, non-workplace mental health, physical hazards, or organisational matters without a psychosocial risk or WHS recovery link should be classified as Irrelevant. |

| Scheme C | Psychological injury and increasing time off work |
|---|---|
| **Instruction** | Classify each text as Primary, Secondary, or Irrelevant based only on what the text explicitly states. The key distinction is whether the themes of psychological injury and recovery/absence/return-to-work (RTW) are central (Primary), peripheral (Secondary), or absent (Irrelevant). |
| **Primary category** | The text is mainly about work-related psychological injury (such as stress, trauma, bullying, harassment, burnout) and its consequences for recovery, time off work, workers' compensation claims, or RTW. Psychological injury and work related recovery/absence/RTW must be central themes. |
| **Secondary category** | The text mentions psychological injury, workplace mental health, time off work, or RTW, but these are not the main focus. They may be one part of a broader discussion, or addressed without specific focus on psychological injury outcomes. Relevance is present but not central. |
| **Irrelevant category** | The text does not meaningfully discuss psychological injury, workplace mental health, time off work, or RTW. Any content only about physical injury, general wellbeing, or organisational topics without connection to psychological injury or RTW should be classified as Irrelevant. |

# Appendix 3: Tagging results

This appendix lists taxonomy terms for the research priority area, ranking them by the total number of records tagged in the full dataset of 7,027 records and providing a breakdown of tagged records in the priority area and case study datasets.

| Rank | Normalised term | P1 records tagged | C1 records tagged | Total tagged |
|---|---|---|---|---|
| 1 | mental health | 478 | 102 | 851 |
| 2 | shifts | 73 | 7 | 489 |
| 3 | burnout | 247 | 31 | 378 |
| 4 | workload | 82 | 8 | 253 |
| 5 | social support | 112 | 16 | 237 |
| 6 | rehabilitation | 24 | 16 | 197 |
| 7 | surveillance | 4 | 1 | 128 |
| 8 | job burnout | 59 | 10 | 97 |
| 9 | emotional exhaustion | 63 | 3 | 94 |
| 10 | harassment | 76 | 4 | 88 |
| 11 | recovery at work | 22 | 12 | 88 |
| 12 | mental well being | 54 | 7 | 85 |
| 13 | peer support | 42 | 6 | 83 |
| 14 | discrimination | 26 | 3 | 79 |
| 15 | workplace bullying | 73 | 10 | 76 |
| 16 | flexibility | 9 | 0 | 72 |
| 17 | PTSD | 51 | 26 | 71 |

| Rank | Normalised term | P1 records tagged | C1 records tagged | Total tagged |
|---|---|---|---|---|
| 18 | trauma exposure | 53 | 21 | 66 |
| 19 | job insecurity | 31 | 0 | 62 |
| 20 | job strain | 29 | 4 | 61 |
| 21 | sexual harassment | 56 | 2 | 61 |
| 22 | psychosocial climate | 45 | 1 | 53 |
| 23 | work pressure | 13 | 1 | 51 |
| 24 | occupational violence | 30 | 2 | 47 |
| 25 | psychosocial safety climate PSC | 42 | 1 | 46 |
| 26 | fatigue and burnout | 36 | 4 | 45 |
| 27 | time pressure | 6 | 0 | 38 |
| 28 | low job control | 28 | 0 | 37 |
| 29 | bullying and harassment | 30 | 1 | 31 |
| 30 | stay at work | 1 | 0 | 31 |
| 31 | empowerment | 11 | 2 | 30 |
| 32 | workplace support and culture | 14 | 1 | 25 |
| 33 | organisational change | 9 | 0 | 24 |
| 34 | moral injury | 15 | 1 | 23 |
| 35 | job demands | 10 | 1 | 21 |
| 36 | precarious work | 4 | 0 | 21 |

| Rank | Normalised term | P1 records tagged | C1 records tagged | Total tagged |
|---|---|---|---|---|
| 37 | organisational climate | 8 | 1 | 21 |
| 38 | workplace aggression | 19 | 2 | 20 |
| 39 | vicarious trauma | 18 | 3 | 19 |
| 40 | resilience training | 16 | 1 | 19 |
| 41 | emotional labour | 10 | 0 | 15 |
| 42 | work job depression | 6 | 2 | 12 |
| 43 | critical incident stress | 9 | 5 | 11 |
| 44 | work job anxiety | 2 | 0 | 8 |
| 45 | workplace violence and aggression | 7 | 0 | 8 |
| 46 | work related stress | 2 | 0 | 7 |
| 47 | cognitive load | 0 | 0 | 7 |
| 48 | lack of autonomy | 4 | 0 | 7 |
| 49 | stigma and disclosure | 4 | 0 | 5 |
| 50 | procedural justice | 4 | 0 | 4 |
| 51 | lone work | 1 | 0 | 4 |
| 52 | ethical distress | 1 | 1 | 4 |
| 53 | concealment | 1 | 1 | 4 |
| 54 | customer aggression | 2 | 0 | 3 |
| 55 | moral conflict | 1 | 0 | 3 |

| Rank | Normalised term | P1 records tagged | C1 records tagged | Total tagged |
|---|---|---|---|---|
| 56 | uncertainty stress | 2 | 0 | 3 |
| 57 | emotional demands | 2 | 0 | 2 |
| 58 | distributive justice | 2 | 0 | 2 |
| 59 | inclusive workplaces | 0 | 0 | 1 |
| 60 | unstable work | 0 | 0 | 1 |
| 61 | participation in organisational change | 0 | 0 | 1 |
| 62 | work rosters | 0 | 0 | 0 |
| 63 | limited decision latitude | 0 | 0 | 0 |
| 64 | poor organisational justice | 0 | 0 | 0 |
| 65 | organisational fairness | 0 | 0 | 0 |
| 66 | remote and isolated work psychosocial | 0 | 0 | 0 |
| 67 | FIFO work rosters | 0 | 0 | 0 |
| 68 | roster design and shift scheduling | 0 | 0 | 0 |
| 69 | return to work programs | 0 | 0 | 0 |
| 70 | marginalised workforce | 0 | 0 | 0 |
| 71 | organisational change as a hazard | 0 | 0 | 0 |
| 72 | psychological first aid secondary prevention | 0 | 0 | 0 |
| 73 | organisational stress interventions | 0 | 0 | 0 |
| | **Total** | **2079** | **320** | **4330** |

# Appendix 4: Network visualisations

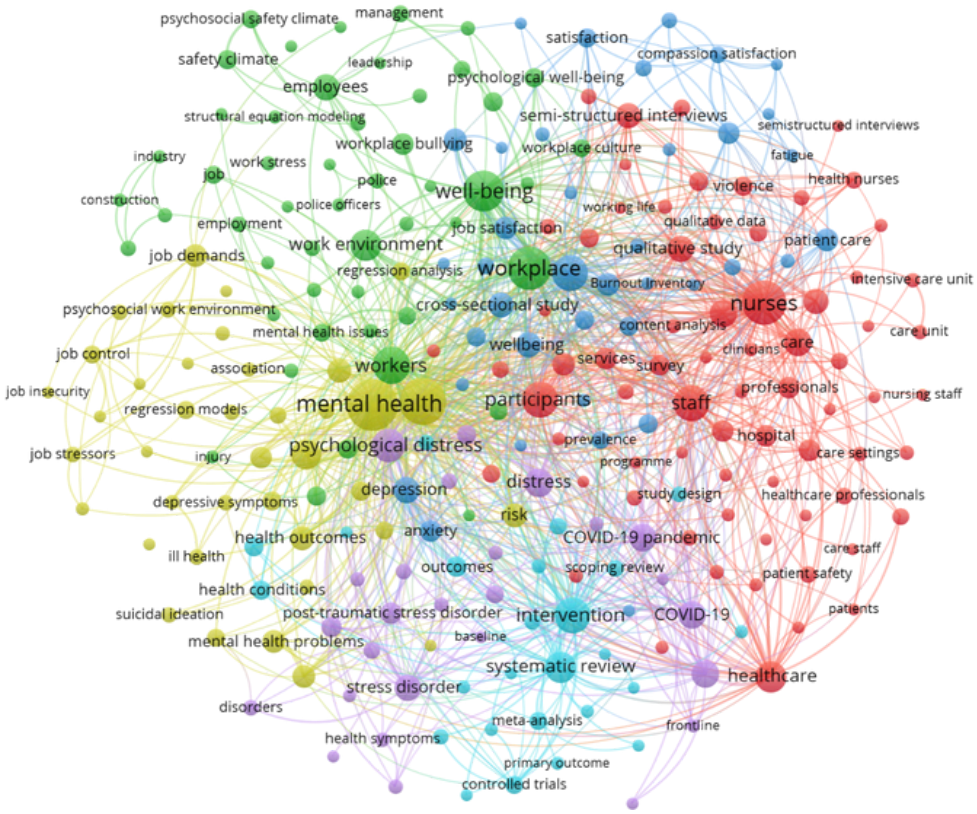


*Figure 3: Co-occurrence network map for 250 concepts derived from titles and abstracts in the priority area dataset using VOSviewer. Cluster 1: red, Cluster 2: green, Cluster 3: blue, Cluster 4: yellow, Cluster 5: purple, Cluster 6: light blue.*

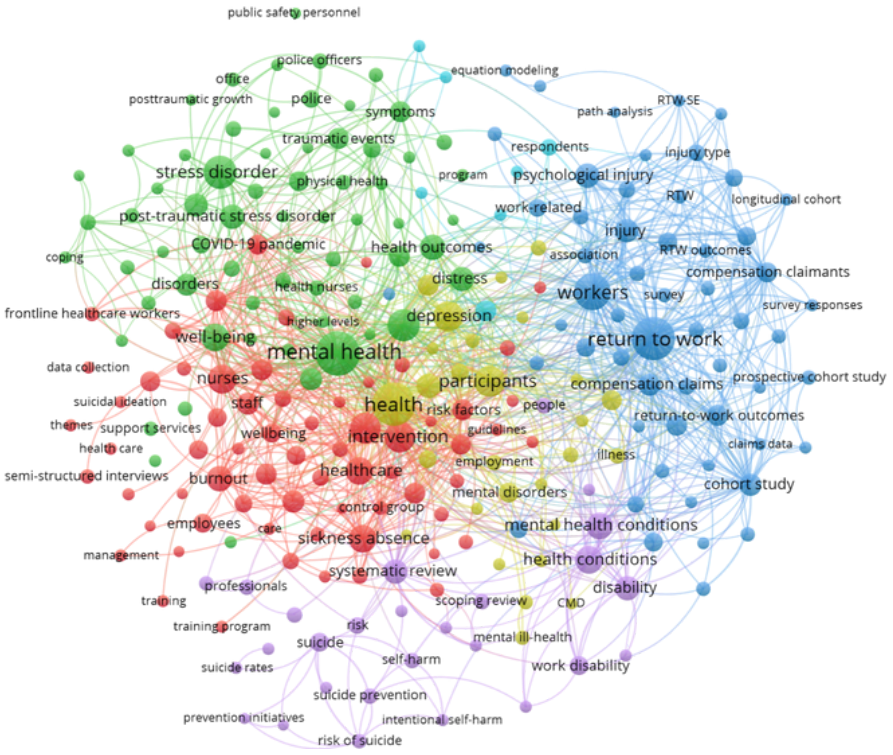


*Figure 4: Co-occurrence network map for 250 concepts derived from titles and abstracts in the case study dataset using VOSviewer. Cluster 1: red, Cluster 2: green, Cluster 3: blue, Cluster 4: yellow, Cluster 5: purple, Cluster 6: light blue.*