REPORT

Work-related suicide

EXAMINING THE ROLE OF WORK FACTORS IN SUICIDE

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AUTHORSHIP

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EXECUTIVE SUMMARY

Work-related suicide is a significant yet underexamined issue. In three sections, this report looks at how work factors may contribute to suicidality. It considers the questions: What is work-related suicide? What is the prevalence and nature of work-related suicide in New Zealand? And finally, What actions might help us understand and respond to work-related suicide?

Section 1 of this report provides a literature review to clarify what is known about work-related suicide. The review reveals that while there is a considerable amount of research examining general suicide rates within or across particular industries, there is a clear lack of research into work-related suicide. In the suicide literature more broadly, studies that look into the relationship between work and suicide typically focus on the absence of work (that is, unemployment) as a risk factor, while failing to consider aspects of work that may increase suicide risk.

There are, however, a small number of studies examining the role that work factors may play in suicide. These studies do not appear to use an explicit definition of work-related suicide or agreed-upon criteria. Instead, each study generates its own set of criteria, based on slightly different assumptions about what work-related suicide is. As a result, findings from these studies cannot easily be compared or collated.

Internationally, the lack of research is accompanied by very limited recognition of work-related suicide as a social and legal issue. Official data collection regarding such suicides is also scarce. There appear to be several reasons for this lack of recognition, including: the conceptual ambiguity of work-related suicide; the causal complexity of suicidality; and the current emphasis on mental illness in explanations of suicide.

The review then discusses work factors that have been identified in the literature as potentially elevating suicide risk. Perhaps the most widely commented on connection between work and suicide relates to situations where a person's work facilitates their access to and/or familiarity with lethal means.

The literature also considers socioeconomic factors – such as low job status, low education levels, and low income – and how these appear to be associated with particular psychosocial stressors, such as job insecurity and low job control. Less explored, is the question of whether jobs that are considered 'high status' are also associated with unique psychosocial stressors that may contribute to suicidality.

Work-related psychosocial stressors are therefore seen as an important type of work factor. The review summarises the specific work stressors that appear most commonly in the literature. Presently, evidence for a causal relationship between work-related psychosocial stressors and suicide appears inconclusive. This inconclusive evidence should be viewed in the context of various methodological challenges, including: problematic research designs, issues with data quality, and the statistical rarity of suicide.

Where work factors more broadly do contribute to suicidality, the impact they have will not be uniform. The review discusses the elements that appear to contribute to variability in which factors are impactful and the extent of this impact. These elements include the different interpretations and resources of individual workers, as well as the gender and career stage of workers. Findings in some studies also suggest that different work stressors appear to be more highly correlated with different forms of suicidality (that is, certain work stressors may be correlated more with suicidal thoughts, while others may have a stronger association with suicide attempts or suicides).

Finally, the review looks at existing efforts to conceptualise the relationship between work and suicide. These efforts are currently limited, which not only impedes our understanding of work-related suicide, but may also contribute to the inconclusive findings in some empirical studies. The attempts that have been made include the application of models of work stress (demand-control model, effort-reward model, conservation of resources theory, job characteristics model, and the organisational justice model), or the application of general theories of suicide (the interpersonal theory of suicide, psychache theory, and Émile Durkheim's sociological theory of suicide) to help explain the means by which work-related factors are thought to influence suicidality.

Section 2 of this report examines the occurrence of work-related suicide in New Zealand, with findings from a study of coronial data. This study undertook a review and qualitative content analysis of all available coroners' findings for suicides that occurred in New Zealand between 2017 and 2021.

In this study, a suicide was considered work-related if either of the following two criteria were met:

1. work-related stressors played a significant role in the person's suicidality, and/or
2. the means of suicide were distinctly related to the deceased person's work.

Using these criteria, the study found that of the 1678 applicable cases of suicide that were reviewed, there were 197 work-related suicides. Such suicides thus represent 11.7% of all suicides that occurred in New Zealand between 2017 and 2021 (for which a coroner's finding was available in mid-August 2022).

For all suicides that involved at least one work factor, this study assessed the significance of these factors by contextualising them within the wider circumstance of the case. This contextualisation process enabled the further finding that of the 1,678 applicable cases, 17 (1.0%) were cases in which work factors appeared to play a predominant role and were central to explaining the suicide. In the remaining 180 work-related suicides, work factors appeared to play a notable role and were relevant to explaining the suicide. Finally, of the applicable cases, there were 49 (2.9%) in which work factors were present but appeared to play a non-significant role, such that they were not clearly relevant to explaining the suicide. These 49 cases did not meet the criteria above and were not included as work-related suicides.

Section 2 also presents basic demographic, geographic, and industry-specific data associated with these work-related suicides. Although the case numbers are too small for reliable inferences, these findings are of interest and may point to areas for future research. Of the 197 people who died by work-related suicide, 162 (82.2%) were male and 35 (17.8%) were female. Their ethnicities were: New Zealand European, 141 (71.6%); Māori, 28 (14.2%); Asian, 9 (4.6%); and all other ethnicities, 19 (9.6%). The mean age of those who died, at the time of incident, was 45.4 years old.

The agriculture, forestry, and fishing industry (and, more specifically, the occupation 'farmer/farmworker') was particularly prominent in these findings. This is partly due to the prevalence of work-related means among suicides by farmers. However, this industry still appears overrepresented even when only cases involving work stressors are included. The study also found that of the 197 cases of work-related suicide, 38 (19.3%) were by people who were not employed at the time of incident. This finding points to the ability of both work stressors and work-related means to continue having an effect after a person's employment has ended.

Section 2 also offers insights regarding the three categories of work factors: the presence of work stressors, the use of work-related means, and the occurrence of a suicide in the workplace of the deceased. All three work factors are defined, with elaboration on the types of stressors, means, and locations this included. Explanations are also provided as to how the study contextualised the significance of work factors, and why the criterion of a suicide in the workplace was considered insufficient, by itself, for classifying a suicide as work-related. The most prominent work stressors, means, and location types are presented, along with broader themes in these work factors, and points of interest that warrant further research.

By way of a summary, of the 1678 suicides that were reviewed in this study, 170 (10.1%) involved significant work-related stressors; 43 (2.6%) involved work-related means; and 41 (2.4%) occurred in the workplace of the deceased.

Themes derived from the prominent work stressors included: 'work burden', 'conflict and mistreatment', and 'undermined competence and security'. Prominent forms of work-related means included: the use of firearms by farmers, or by members of the police or armed forces; and certain instances of the use of pharmaceutical drugs by health professionals.

Finally, although the occurrence of a suicide in the workplace of the deceased was considered insufficient, by itself, for classifying a suicide as work-related, there appeared to be a high correlation between these workplace suicides and the presence of work stressors. This suggests that the occurrence of a suicide in the workplace can serve as a 'red flag' for a possible work-related suicide.

Section 3 of this report provides recommendations that arise from the findings of Sections 1 and 2. These recommendations are intended to support consideration of responses to work-related suicide, including by a workplace health and safety regulator.

The first recommendation is to adopt an explicit definition and clear criteria for work-related suicide. Specifically, the report suggests that a work-related suicide be defined as **a suicide in which work-related factors significantly contributed to the suicidality of the deceased**. This definition should be accompanied by clear criteria. Section 3 points to (and recommends the retention of) the distinction between a potential work-related suicide and an actual work-related suicide. The criteria of an actual work-related suicide were presented on the previous page. In contrast, a potential work-related suicide is one that involves any of the following three criteria:

1. the suicide occurred in the deceased person's workplace
2. the means of suicide appear to be related to the deceased person's work, and/or
3. there is circumstantial evidence (such as a suicide note or witness statement) indicating that work-related stressors were a contributing factor.

As the criteria for a **potential** work-related suicide do not require a detailed assessment, they enable the immediate identification of suicides that appear to involve work factors. The criteria used to determine an **actual** work-related suicide then narrow this down to cases in which the role of work factors has been confirmed and appears significant in explaining the person's suicidality.

The second recommendation is for the routine assessment of potential work-related suicides. It is suggested that several aspects of the research methodology described in Section 2 could be adopted or adapted by an assessing agency, such as WorkSafe New Zealand, to support robust findings. Finally, this recommendation includes exploring the source of notifications of potential work-related suicides, which might include government agencies as well as businesses.

Thirdly, the report discusses how the routine assessment of potential work-related suicides should be accompanied by the careful collection and dissemination of findings from these assessments. This may support improvements in data quality, and thereby support wider efforts by coroners, researchers, and policymakers to prevent work-related suicide. This could include keeping an official record of work-related suicides to enable monitoring of the ongoing prevalence of these deaths.

Finally, Section 3 of this report outlines several recommendations for future research. Improved understandings of work-related suicide – achieved through both further research and more frequent workplace investigations – would likely facilitate greater recognition of work-related suicide and allow for the development of tailored suicide prevention initiatives, to reduce the occurrence of these deaths.

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Introduction

International concern about suicide has recently been accompanied by an emerging concern about the role that work factors may play in suicidality. Though currently underdeveloped, a body of literature has begun exploring the occurrence of what has been termed 'work-related suicide'. Progress with both an academic understanding and legal recognition of work-related suicide has so far been limited. In part, this limited understanding and recognition of work-related suicide is reflective of the causal complexity of suicidal behaviour. Causal factors of suicide are not only thought to generally be numerous and varied (Turecki *et al*., 2019), these factors also often appear interrelated and dynamic (Milner *et al*., 2017; Peek-Asa *et al*., 2021a).

In addition to causal complexity, the limited progress in understanding how work-related factors influence suicidality is also the result of insufficient research (Cullen, 2014; Ostry *et al*., 2007). Despite some early studies (Bedeian, 1982; Powell, 1958), research in this field is relatively recent, with most studies into work-related suicide being conducted in the past decade. A further limitation of this research is that it almost entirely originates from high income countries (Milner *et al*., 2018). As such, it does not provide many insights into the occurrence of this phenomenon in developing nations. The lack of research into work-related suicide is notable due both to the important role that work plays in many people's lives (Howard & Krannitz, 2017), as well as the well-established connection that exists between work-related stressors and depression (Maheen *et al*., 2021; Virtanen, 2018). However, when considering the relationship between work and suicidality, most suicide research tends to focus on the absence of work (that is, job loss or long-term unemployment) as a risk factor, rather than examine how work-related factors may contribute to suicidality (Duff & Chan, 2014).

This report contributes to emerging understandings of the role that work factors can play in suicidality. The body of this report consists of three parts. Section 1 provides a review of academic literature, to clarify what is currently known about work-related suicide. Section 2 then examines work-related suicides in New Zealand, with findings from a qualitative content analysis of coroners' findings. Finally, Section 3 offers several recommendations regarding potential responses to work-related suicide.

Background to the research

WorkSafe commissioned this research to fill a gap. Although there have been recent reports focusing on farm suicides (Beautrais, 2018) and suicide in the construction sector (Bryson, *et al*., 2019) there is no broader in-depth comparison of suicides across sectors of work. Perhaps of greater importance is that there is currently no robust consideration of work-related suicide. That is, suicide where work factors play a significant role in the actions taken by a worker.

In Australia the federal health and safety agency, Safe Work Australia, reviews coronial findings and assigns specific codes to identify a work-related death, including where this death is by suicide. There is no similar facility within New Zealand, so the identification of suicides which could be considered work-related is currently not possible except through the systematic review of individual cases.

It is also noted that New Zealand's suicide prevention strategy, *Every Life Matters - He Tapu te Oranga o ia Tangata: Suicide Prevention Strategy 2019–2029*, and *Suicide Prevention Action Plan (2019–2024)* makes only very limited mention of the role of work in understanding, preventing, or responding to suicide.

Finally, a review of work-related suicide files held by WorkSafe suggests that many suicides are not notified to the health and safety regulator, suggesting that businesses are not clear about their legal obligations in this matter.

1.0 What is work-related suicide?

IN THIS SECTION:

A review of what is known about the role of work factors in suicide.

Section 1 of this report examines academic literature from New Zealand and abroad, to clarify what is currently known about work-related suicide. First, it will look at attempts in the literature to define or classify work-related suicide, as well as the social and legal recognition of work-related suicide in various countries. As there is a large amount of international research looking at suicide rates within specific industries, it will then clarify the difference between work-related suicide and the occurrence of suicides within an industry, before providing a brief overview of the industry-specific research. To contextualise the discussion of work-related suicide, general risk factors for suicide will be briefly summarised and the interconnectedness of work-related risk factors and 'non-work' risk factors will be discussed.

The review will then present specific work-related factors that have been identified in the literature as potentially increasing suicide risk. This will include discussion of the literature's apparent shift in focus from access to lethal means as the key work-related factor, to an emphasis on socioeconomic status and work-related psychosocial stressors. The variable impact that different work-related factors are thought to have on suicidality will also be examined, along with some of the methodological challenges involved in conclusively demonstrating the causal role of these factors. Finally, the review will look at attempts in the literature to conceptualise the relationship between work and suicide. These attempts primarily consist of applying concepts either from models of work-related stress or from general theories of suicide to the occurrence of work-related suicide.

Following this review of academic literature and its efforts to clarify what work-related suicide is, Section 2 of this report will present findings from a study of work-related suicide in New Zealand.

1.1 Defining work-related suicide

Given the complexity of suicidal behaviour and the scarcity of research into work-related suicide, it is perhaps unsurprising that there is no agreed-upon definition of work-related suicide in the literature (Peek-Asa, 2000; Routley & Ozanne-Smith, 2012). The literature does, however, appear to share an assumed or implicit definition of work-related suicide, to the effect of: **Suicide in which work-related factors contributed to the suicidal behaviour**. Notably, studies of work-related suicide frame work factors as antecedents. As such, they reflect a causal relationship in only one direction: the impact of work factors on suicidality. Almost without exception, the criteria that are used in the literature to classify some suicides as 'work-related' do not encompass the impact of a suicide upon a workplace. It should also be noted that in the definition above, as in most studies of work-related suicide, no attempt has been made to quantify the impact of work-related factors. This raises the question, should a suicide be considered 'work-related' if work factors only played a minor role? Another issue with the

definition above lies in the ambiguity of work-relatedness. What makes a factor 'work-related'? This ambiguity is a broader issue; and may explain why there is also no agreed-upon definition of a work-related death (Brodie *et al*., 2009).

Rather than attempt to define the essential nature of a work-related suicide, it is common for empirical studies in this field to simply list particular features of suicide deaths and then use these features as criteria for classifying suicides as work-related. Broadly, these criteria can be placed into three different categories. Either they relate to the location of a suicide, the means of suicide, or the apparent stressors. While some studies generate their own criteria, other studies simply adopt criteria directly from a coronial database. In either case, there is generally little or no justification provided for the selection of particular criteria. Though this can be seen as a pragmatic means of enabling much-needed research to proceed, it also reflects the lack of development in this area of study.

The absence of a consistent definition for work-related suicide also means that the findings of these studies cannot easily be compared or collated. Illustrating this problem, the paragraphs below include brief summaries of the findings from a number of studies that use different definitions of work-related suicide. The summarised findings below include rates of work-related suicide, demographic trends within these suicides, and, where available, the industries that appear to have the highest rates of work-related suicide. While there is some consistency in demographic trends, the reported rates of work-related suicide vary dramatically, depending on the definition used.

The criteria that are used by different studies for the classification of work-related suicides vary in number and breadth. The narrowest and simplest classifications limit 'work-related suicides' to those suicides that occur in the deceased person's workplace (Bittle *et al*., 2018; Germain, 2014; Stallones *et al*., 2013; Tiesman *et al*., 2015). This approach of focussing on the location of a suicide appears to be commonly adopted in North American studies (Kraus *et al*., 2005). While it may greatly simplify data collection and analysis, this narrow approach appears deeply flawed, particularly if 'work-related suicide' is to be understood as suicide in which work-related factors contributed to the suicidal behaviour. Firstly, considering only the location of a suicide means overlooking all other work-related factors that may have contributed. A person may attempt suicide in a location other than their workplace and yet have work factors contributing to this behaviour (Peek-Asa *et al*., 2021a). Secondly, if a person died by suicide in their own workplace, this is not necessarily evidence that work-related factors contributed to their actions. Tiesman *et al*. (2015), for example, observe that a person may attempt suicide in their own workplace as a means of protecting family members from discovering the body.

Nonetheless, using this narrow criteria of work-related suicide, Tiesman *et al*. (2015) found that in the US, an average of 0.15 workers per 100,000 died by suicide in their own workplace. They further found that this rate increases with age, with the highest rates found among 65–74-year-olds. This trend can be compared to US suicides outside of the workplace, which peak at the age of 55 and then decline (Tiesman *et al*., 2015). Males accounted for 95% of these workplace suicides and the three industries with the highest rates of workplace suicide were, in descending order: protective services; the farming, forestry and fishery industry; and automotive repair (Tiesman *et al*., 2015).

Other studies of work-related suicide look beyond the deceased person's regular work site, but still focus on the location of the suicide. In their study of work-related suicides among farmers in the US, Ringgenberg *et al*. (2018) included suicides that occurred on the employer's premises (if the person was there to work), as well as suicides that occurred off the employer's premises, but only if the person was at that location to work. Using this definition, the study found that, over a 19-year period, work-related suicide rates among US farmers

fluctuated between 0.36 per 100,000 workers to 0.95 per 100,000 workers (Ringgenberg *et al*., 2018). The highest rates of work-related suicide were among farmers between 35–54 years of age, and almost all of those who died were male (Ringgenberg *et al*., 2018).

As the criteria that studies use to define work-related suicide broaden, they include deaths in which the means of suicide was work-related. Examples of work-related means include the use of firearms by law enforcement officers, or the use of pharmaceutical drugs by physicians. Broadening further, a number of studies also include suicides in which work-related stressors are thought to have contributed to the suicidal behaviour. The literature includes studies that use just one category of work-related factors (location, means, or stressors) to classify suicides as work-related, as well as studies that use a combination of two categories, and some that use all three.

In a Japanese study that only included work-related stressors (that is, not location or means) to define work-related suicide, Sakisaka (2018) found that 9% of all suicides were work-related. The findings related to demographic data in this study referred to all suicides, rather than work-related suicides, and are therefore of limited value here. Interestingly, however, this study found that for people in higher status jobs, there was generally a shorter length of time between the initial stressor event and death (Sakisaka, 2018). This was seen as possibly reflective of the cultural belief in Japan that suicide is a respectable way of compensating for a serious mistake (Sakisaka, 2018).

In their recent study of work-related suicides in the US, Peek-Asa *et al*. (2021b) included two categories of work-related factors: location and the presence of work stressors. Their classification of work-related suicide went one step further, however, by acknowledging that the impact of different work-related factors can vary in degree. While most studies do not appear to consider the extent of impact that work factors had, Peek-Asa *et al*. (2021b) attempt to differentiate suicides in which work factors are seen as a major contributing factor from those in which work factors played a minor role. To this end, they examine three variables: 'injury at work' (that is, a suicide occurring in the workplace of the deceased); 'job problem' (for example, tensions with a colleague or fear of losing one's job); and 'job crisis', which is a job problem that occurred within two weeks of the suicide. The distinction between a 'job problem' and a 'job crisis' was adopted from the National Violent Death Reporting System (NVDRS) database. Unfortunately, the authors do not further explain the two-week threshold for differentiating a problem from a crisis. Nonetheless, using the three variables above, Peek-Asa *et al*. (2021b) propose that work-related factors be seen as a major factor when a suicide involves an 'injury at work' or a 'job crisis'. They further suggest that work-related factors be seen as minor in suicides for which only a 'job problem' was present, and not a 'job crisis' or an 'injury at work' (Peek-Asa *et al*., 2021b). If none of the three variables were present, then the suicide was deemed by this study to not be work-related.

Using these criteria, Peek-Asa *et al*. (2021b) found that more than 12.1% of suicides in the US, between 2013 and 2017, could be classified as work-related. This rate of work-related suicides remained relatively stable over all five study years (Peek-Asa *et al*., 2021a). The use of the three variables enabled the further findings that 1.1% of all US suicides in the study's timeframe occurred in the deceased person's workplace, 2.3% involved a 'job crisis', and 11.3% involved a 'job problem' (Peek-Asa *et al*., 2021a). Developing the distinction between work as a major or minor factor enabled this study to conclude that work-related factors played a major role in approximately one quarter of these work-related suicides, while playing a minor role in the other three quarters of work-related suicides (Peek-Asa *et al*., 2021b).

The same study also found that work-related suicides were most prevalent in the 35–54 age group and were almost three times as prevalent among males than females (Peek-Asa *et al*., 2021a). Furthermore, it found that the industries with the highest rates of work-related suicide were: healthcare, management, business or financial operations, protective services, office or administrative support, computer or mathematical occupations, and sales (Peek-Asa *et al*., 2021b). Interestingly, the study also indicated that while low-skilled industries often have higher rates of suicide generally, rates of **work-related** suicide actually increase in conjunction with increases in people's education levels (Peek-Asa *et al*., 2021b). If accurate, this finding would appear to reflect greater work-related risk factors for suicide among workers who are more highly educated.

One of the broadest definitions is provided by the French National Public Health Agency, who define a **potential** work-related suicide as one involving any of the following five criteria: the incident occurred in the workplace, or on the journey to or from work; the suicide has been officially recognised as a workplace accident; there is circumstantial evidence (such as a suicide note or witness statement) indicating a connection to work-related factors; the lethal object that was used is from the workplace of the deceased; or the deceased was wearing a work uniform at the time of death (Workplace Health Expert Committee, 2021). A suicide involving any one of these criteria is subject to further investigation, to determine causes and generate preventative recommendations (Waters & Palmer, 2022). The fact that these criteria are used to identify potential work-related suicides for further investigation, rather than to immediately classify suicides as work-related, may explain the inclusion of criteria such as 'wearing a work uniform at the time of death'. From these indicative criteria, approximately 10% of all suicides in France have then been officially recognised as work-related (Gigonzac *et al*., 2021).

Perhaps the broadest criteria for classifying suicides as work-related, however, were those put forward by Routley and Ozanne-Smith (2012). In this Australian study, the authors propose the following four criteria: the suicide location was a workplace; the means of suicide was work-related; work stressors were identified in police reports or coroners' findings; or the method of suicide involved another person's work. Using these four criteria, Routley and Ozanne-Smith (2012) classify 17% of all suicides in the state of Victoria, between 2000 and 2007, as work-related. This study also found that the rate of work-related suicide increases with age, peaking at the age of 55 years old (Routley & Ozanne-Smith, 2012). Further, it found that approximately 90% of those who died by work-related suicide were male (Routley & Ozanne-Smith, 2012). The three occupational groups with the highest rates of work-related suicide were, in descending order: managers; technicians and trade workers; and 'professionals' – which includes occupations such as engineers and accountants (Routley & Ozanne-Smith, 2012).

This study not only uses all three categories of work-related factors (location, means, and stressors), it further extends the scope of what is classified as a work-related suicide. This expansion of the definition of work-related suicide appears problematic, however. One issue arises from the vague wording of the first criterion: the suicide location was a workplace. It might be inferred from the findings that the workplace location the authors are referring to is exclusively that of the deceased. This is not clarified in the published study, however, and if the wording, 'a workplace' was intentional, it raises the problem of determining which locations are workplaces and which are not. It could be argued that there are very few locations that are not, at some point, a workplace for somebody – including the scene of any suicide, upon the attendance of first responders.

More problematic, though, is the fourth criterion: the method of suicide involved another person's work. The authors acknowledge that this is questionable, but take the position that work-related suicides should include those that directly involved another worker and that worker's workplace (Routley & Ozanne-Smith, 2012). The first, and less significant, problem with this criterion again relates

to ambiguous wording. Any object or substance that is used as a means of suicide will have likely involved another person's work – including the people who produced it and those who sold it. Although the authors do not clarify what is meant by 'involved', the study's findings suggest they are referring to situations in which another worker was present at the time of the incident and was instrumental in the occurrence of the incident. This is demonstrated by the study's inclusion of suicides where the deceased was struck and killed by a commercial vehicle (for example, a train or truck).

The more significant issue with this criterion is that it does not serve as a work-related factor **in relation to the deceased**. If, for example, a person attempted suicide by moving in front of a commercial vehicle, the involvement of the driver – though instrumental to the incident – is unlikely to have a connection with the occupation of the person attempting suicide. Instead, the use of a method of suicide that involves another person's work appears to be an example of the broader risk factor, 'access to means'. This risk factor can sometimes be work-related, but often is not. **Work-related** access to means involves situations in which a person attempts suicide using means that were accessed from their own workplace. In the effort to understand and better respond to the various work factors that can contribute to a suicide, methods of suicide that involve other people's work cannot be meaningfully differentiated from methods that do not involve other people's work. Although scenarios such as the one described above are undoubtedly distressing for the involved worker (and should result in some form of postvention), this does not explain the use of this criterion for classifying an event as a work-related suicide.

1.2 Recognition of work-related suicide

With some exceptions, there is little international recognition of work-related suicide as a social and legal issue (Waters & Palmer, 2022). Rather than reflecting a rejection of the role of work factors in suicide, this lack of recognition appears more of an oversight, related to the conceptual ambiguity of work-related suicide, as well as the more general difficulty of attributing causality in suicide. Another likely barrier is the prevailing emphasis on mental ill-health in public discourse about suicide. The general lack of recognition of work-related suicide is accompanied by an absence, in many countries, of official processes for gathering information about suicides in the workplace (Workplace Health Expert Committee, 2021). This is not to mention the lack of official data collection regarding suicides in which other work factors appear to have played a role. Outside of data collection by government agencies, academic studies attempting to determine the prevalence of work-related suicide are not only limited in scope but are also, as discussed, affected by inconsistent definitions of work-related suicide.

The full extent of work-related suicide, both in New Zealand and globally, therefore remains unknown (Workplace Health Expert Committee, 2021). This issue is made more concerning by the fact that while non-suicide deaths in the workplace are generally decreasing, suicides in the workplace (as a narrow interpretation of work-related suicide) appear to be increasing, with a particularly noticeable increase occurring after 2007 (Waters & Palmer, 2022). Tentative explanations for the apparent increase in workplace suicides include greater job insecurity and worsening working conditions (Germain, 2014; Waters *et al*., 2016). It has even been proposed that workplace suicides can be viewed as an extreme form of protest (Chan & Pun, 2010). Others, however, have noted that the increase in workplace suicides in countries like the US appears aligned with increasing suicide rates overall (Peek-Asa *et al*., 2021a).

Research into suicide deaths in general is significantly affected by the issue of poor data collection (World Health Organization, 2021). However, official reporting of work-related suicides appears to be particularly problematic (Weichelt *et al*., 2021). Unreliable, incomplete, or entirely absent data regarding work-related suicide not only means it is not possible to measure the prevalence of the issue, but this also limits the ability to understand how work factors may contribute to suicidality. Such understanding is crucial for designing effective preventative measures.

Even in countries with some recognition of the issue, official data collection is generally limited to recording suicides that occurred in the workplace of the deceased, and as such undercounts suicides in which work factors played a role (Peek-Asa *et al*., 2021a). Official suicide records also generally depend on the determinations of coroners, which can be inaccurate. Illustrating this issue, Kraus *et al*. (2005) reviewed coroners' findings for all suicide deaths in California over a five-year period. These reports included an assessment by the coroner as to whether the suicide was work-related or not. Considerable inaccuracies were found in the coroners' classifications, with a large underestimation of work-related suicide (Kraus *et al*., 2005). Almost 18% of the coroners' findings for suicides that had been classified as 'not work-related' either included evidence of a work-related motivation or listed the location of death as the deceased person's workplace (Kraus *et al*., 2005). Generalising these findings to the rest of the US, Kraus *et al*. (2005) estimate that each year, there are likely to be thousands of work-related suicides which are not classified as such.

One factor that may influence – and in turn be influenced by – the official collection of data regarding work-related suicide, is the social recognition of this issue. While concern about overall suicide rates captures substantial media and public attention, the more specific issue of work-related suicide currently does not.

Two international cases, both involving a series of suicides among employees of a large company, served as prominent exceptions to this, however. The first case originated with the privatisation of the previously state-owned France Telecom, in 2004. Following significant restructuring and mass redundancies, public concern began to grow at the number of suicides among current and former employees, with 35 suicides occurring between 2008 and 2009 (Clegg *et al*., 2016). This concern resulted in official investigations into workplace conditions, culminating in a number of senior management personnel being convicted of employee harassment in 2019.

The second case to attract considerable international attention began in 2010. It involved 14 suicides (and an additional 4 attempted suicides) of employees at the company Foxconn, in China. A report into working conditions at the company found that employees experienced long working hours, social isolation, and poor relationships with their supervisors (Clegg *et al*., 2016). In response to the media coverage of these suicides, Foxconn installed safety netting around company buildings and required employees to sign 'no-suicide' pledges (Chan, 2013).

Beyond the temporary attention garnered in these cases, social recognition of work-related suicide as an ongoing issue is thought to be highest in Japan (Waters & Palmer, 2022). This includes a specific concern about **karojisatsu** (suicide due to overwork), which is seen in Japan as an important public health issue (Waters & Palmer, 2022). Social recognition of work-related suicide in Japan has been accompanied by official data collection, as well as legislation to reduce excessive working hours. By one measure, work-related suicides in Japan peaked in 2011 (with 2,689 deaths), and by 2020 had decreased to 1,918 deaths (Engelmann, 2021).

Work-related suicide is also formally recognised as a public health issue in France (Workplace Health Expert Committee, 2021). Suicides in France that fit the previously mentioned criteria are investigated as workplace accidents, with a burden of proof on the employer to demonstrate that the suicide was not work-related (Workplace Health Expert Committee, 2021). Attempted suicides may also be recognised as workplace accidents in France (Workplace Health Expert Committee, 2021). For both suicide deaths and suicide attempts in that country, there is the possibility of legal recourse and, in some cases, financial compensation (Waters *et al*., 2016). This can be contrasted with the US, where data on suicides in the workplace have been officially collected since 1992, but apparent work-related suicides are not routinely investigated (Waters & Palmer, 2022).

In the UK, as in New Zealand, work-related suicide is neither officially recognised nor reliably recorded (Waters & Palmer, 2022). While the lack of recognition of work-related suicide in other countries appears to be an oversight, in the UK this has been explicitly justified – with their Health and Safety Executive taking the position that work-related suicide is too complex and subjective to regulate (Waters & Palmer, 2022; Workplace Health Expert Committee, 2021). Suicide is therefore specifically excluded from requirements to report work-related deaths to the UK health and safety authority (Germain, 2014; Waters *et al*., 2016). Any investigation into an apparent work-related suicide and any subsequent attempts to implement suicide prevention measures are therefore at the discretion of individual employers (Waters & Palmer, 2022).

In New Zealand, the Health and Safety at Work Act 2015 requires that all work-related deaths or serious work-related injuries (that is, injuries requiring an inpatient admission for immediate treatment) be reported to the national health and safety regulator – WorkSafe. This requirement encompasses injuries and deaths both in and outside the workplace, so long as the injury or death is 'arising out of the conduct of the business or undertaking' (Health and Safety at Work Act 2015, s. 56). In principle, this legislation appears to require the notification of not only all work-related suicides, but also all instances of work-related suicide attempts and self-harm that result in serious injury. However, despite work-related suicidality not being explicitly excluded from the reporting requirement, such notifications are rarely made. This is likely due to the difficulties that are involved in identifying the stressors that a person experienced, determining whether these arose 'out of the conduct of the business or undertaking', and then establishing a clear connection between the work stressors and the suicidal behaviour.

1.3 Suicide rates within industries

In contrast to the small amount of research that examines the relationship between work-related factors and suicide, there is a comparatively large amount of research that either reveals suicide rates within a specific occupation or industry, or compares suicide rates across multiple occupations or industries (Cullen, 2014; Routley & Ozanne-Smith, 2012). The disparity between the amount of research into suicide rates within specific industries and the lack of research into work-related suicide may be partly due to the relative simplicity of uncovering suicide rates without directly attempting to address questions of causality. Research into suicide rates in particular industries is distinct from research into work-related suicide in that it does not examine the causative role of work-related factors. The findings of this research (that is, the suicide rates within specific industries) therefore include suicides that are not motivated by work-related factors.

An important factor that helps explain variable suicide rates between industries is health selection (Maheen *et al*., 2021; Milner *et al*., 2018; Roberts *et al*., 2013). In this context, health selection refers to the observation that the characteristics of people who are drawn to particular occupations can also be characteristics

that are associated with higher suicide risk. Relevant characteristics include demographic factors, personality traits, mental health and substance use history, as well as socioeconomic status (Case *et al*., 2020; Windsor-Shellard & Gunnell, 2019). Milner *et al*. (2016), for example, found that people in low-skilled occupations are at notably increased risk of suicide compared to the general population. They go on to note that this is at least partially reflective of the fact that the workforce in low-skilled occupations is predominately male, and men have higher rates of suicide (Milner *et al*., 2016). Awareness of the role that health selection plays helps to moderate the assumption that a high suicide rate in a particular industry necessarily indicates that there are unique or elevated work-related stressors in that industry.

Research into suicide rates within specific industries also faces several criticisms. First, it has been observed that the vast majority of these studies only look at suicide rates in high-income countries (Milner *et al*., 2018). A similar criticism is that the selective approach of focussing on particular industries has resulted in a large amount of attention being directed towards a small number of occupations (Andela, 2021; Case *et al*., 2020; Skegg *et al*., 2010). This includes significant attention on physicians, which Skegg *et al*. (2010) suggest may reflect researchers' interest in their own peer group. Another, more methodological, concern relates to decisions about how certain occupations are grouped together (for example, grouping farming together with fishing and forestry), as this process can significantly distort data regarding the suicide rates within an occupation (Bissen, 2020). Furthermore, Beautrais (2018) points out that these studies treat workers within a particular occupation as if they are a homogenous group, which they are not.

Despite these limitations, studies of suicide rates within particular industries clearly have value. Most importantly, their findings can be used to guide decisions about where suicide prevention efforts should be directed, and which groups of people may benefit most from these interventions. This guidance is particularly valuable due to a tendency for information about suicide to become somewhat distorted in public discourse. As such, these studies can serve to dispel inaccurate but commonly held beliefs regarding suicide rates in certain professions. Jones *et al*. (2016), for example, demonstrate that a degree of 'mythology' has developed regarding suicide rates among dentists. Although, historically, dentists had higher than average suicide rates, the current rate of suicide among dentists is lower than that of both the general population in Western countries, as well as that of other health professionals (Jones *et al*., 2016).

Given that it does not shed much light on the relationship between work and suicidality, the bulk of research that looks into suicide rates within particular industries is of limited value to this report. However, a point of interest within this research relates to the types of occupations with the highest suicide rates and how this has changed over time. Examining suicide trends in the UK, Roberts *et al*. (2013) observe that over recent decades there has been a significant decrease in suicide rates within 'professional' occupations (such as veterinarians, pharmacists, and dentists) and a significant increase in suicide rates within 'manual' occupations (such as miners and labourers). Studies in New Zealand also reflect high suicide rates in manual occupations, including construction workers, tradespeople, and those working in farming, fishing, or forestry (Bryson *et al*., 2019; Gallagher *et al*., 2008; Jenkin & Atkinson, 2021). Similar findings have been made in other countries, with elevated risk of suicide among construction workers, farmers, and health care support workers (Case *et al*., 2020; Heller *et al*., 2007; Maheen *et al*., 2021; Ringgenberg *et al*., 2018; Weichelt *et al*., 2021).

1.4 General risk factors for suicide

Though research that examines how work-related factors contribute to suicidality is currently limited, the research regarding more general risk factors for suicide is relatively well-established. It is beyond the scope of this report to examine these general risk factors in detail. However, in order to contextualise the role of work-related factors, it is important to note these general factors.

Perhaps the most widely researched and most distinct risk factor for suicide is mental illness (Beautrais, 2018; Law *et al*., 2014; Milner *et al*., 2017; Workplace Health Expert Committee, 2021). Discussion about the relationship between mental illness and suicide is not without contention, however, including concerns about the medicalisation of distress (Drapeau *et al*., 2012; Faessler *et al*., 2016; Mulder, 2008) as well as the medicalisation of suicidality (Jacob, 2016; Pridmore, 2011). Furthermore, while suicide research conducted in Western countries often finds mental illness to be the most prominent risk factor, the role of mental illness appears less prominent in suicide research undertaken in Asian countries (Chen *et al*., 2012; Wei & Chua, 2008) as well as in research conducted in low-to-middle-income countries (Savani *et al*., 2020).

Aside from mental illness, other well-established risk factors for suicide include: substance abuse (Workplace Health Expert Committee, 2021), family history of suicide (Choi, 2018), past suicide attempts (Bostwick *et al*., 2016), access to lethal means (Workplace Health Expert Committee, 2021), social isolation (Law *et al*., 2014), financial pressures (Ringgenberg *et al*., 2018), and relationship difficulties (Milner *et al*., 2017).

1.5 Interconnectedness of factors

In the literature discussing work-related suicide, it is frequently observed that work-related factors are often interconnected with other, 'non-work' factors (Andela, 2021; Germain, 2014; Heller *et al*., 2007; Schneider *et al*., 2011). This observation is important to consider when looking at specific work factors that are thought to contribute to suicidality.

Work-related stressors such as job insecurity or workplace injury, for example, may be closely intertwined with the 'personal stressor' of financial difficulties (Bryson *et al*., 2019). Similarly, working excessive hours may serve as a direct stressor, but it may also negatively impact on a person's interactions with their family members – thereby generating additional stressors such as marital strain (Andela, 2021; Heller *et al*., 2007). Not only are stressors often interrelated, but they can also amplify each other's effect (Routley & Ozanne-Smith, 2012). For example, social isolation (even when this is unrelated to the nature of one's work) appears to amplify the negative impact of work-related stressors (Sullivan & Germain, 2020).

The interconnectedness of stressors is partly captured by the Spillover-Crossover Model (Bakker & Demerouti, 2013). This model presents 'spillover' and 'crossover' as two ways in which the effects of stressors are often not limited to one domain of a person's life or, indeed, limited to one person. Spillover refers to the tendency for stressors in one domain of a person's life to impact upon other domains of their life (Bakker & Demerouti, 2013). Interestingly, studies suggest that the spillover effect of stressors is uneven, with the impact of work-related stressors on a person's mood at home seemingly more distinct than the impact of home-related stressors on their mood at work (Leiter & Durup, 1996). The second element of this model, crossover, refers to the ability of stressors that initially affected one person to then have an impact on other people (Bakker & Demerouti, 2013). Thus, work-related stressors that are experienced by one person can, for example, also negatively impact the mental wellbeing of that person's family members (Howard & Krannitz, 2017).

Further complicating the relationships between stressors is the fact that all stressors are dynamic. Not only can stressors accumulate and compound over time (Bryson *et al*., 2019), but they can also change in priority, sometimes very quickly (Peek-Asa *et al*., 2021a; Workplace Health Expert Committee, 2021). The distinction between work-related stressors and other stressors (which are commonly referred to in the literature as 'personal stressors') is therefore often blurred and at times misleading (Routley & Ozanne-Smith, 2012; Tiesman *et al*., 2015). While there is a need for greater attention on the impact of work-related factors upon suicidality, these factors should not be viewed in isolation from other factors. Conversely, although work-related factors are unlikely to be the only contributing factor involved in a suicide, there is a need for clearer recognition when they are a factor, in order to improve suicide prevention efforts (Peek-Asa *et al*., 2021a).

1.6 Work-related factors

Within the literature, a number of work-related factors that are thought to increase suicide risk have been identified. After presenting these, this section of the report will discuss the variable impact that different work-related factors are thought to have. This will be followed by a discussion of the challenges involved in conclusively demonstrating the causal role that these factors play.

While there is considerable research into the impact of work-related factors on the mental health of workers (particularly, their impact on depression), there is a lack of research examining the impact of these same factors upon suicidal thoughts and behaviours (Ostry *et al*., 2007; Younès *et al*., 2018). Though much therefore remains unknown about this relationship, it is important to note that work factors are not thought to directly cause suicidality. Instead, the causal pathway is likely by way of deteriorating mental health and/or increased psychological distress (Milner *et al*., 2018). Andela (2021) alternatively hypothesises that the key mediating mechanism between work-related factors and suicidality is burnout – in particular, emotional exhaustion (as an aspect of burnout). Factors such as an individual's coping skills will also play a role in this causal pathway. It has been noted, however, that the significance of individual coping skills may at times be overstated by employers, in order to minimise the need for structural changes to the workplace (Germain, 2014).

Before discussing aspects of work that are thought to contribute to suicidality, it is also necessary to point out that employment appears to be broadly protective against suicide (Blakely *et al*., 2003; Waters & Palmer, 2022). People who are unemployed, both in New Zealand and abroad, have higher suicide rates than those who are employed (Gallagher *et al*., 2008; Wada *et al*., 2016; Wei & Chua, 2008). Even after accounting for the variable of mental illness, unemployment – particularly when it lasts for more than six months – significantly increases a person's risk of suicide (Howard *et al*., 2022; Schneider *et al*., 2011). However, the fact that employment appears to broadly serve as a protective factor against suicide does not negate the importance of recognising and addressing the aspects of work that may increase suicide risk. Furthermore, when considering the impact that unemployment has upon suicidality, a distinction should be made between the state of being unemployed (the absence of employment) and the subjective experience of losing a job. While it is debatable whether the absence of employment should be considered a work-related factor, the event of losing employment (whether through a resignation, dismissal, redundancy, or retirement) does more clearly appear to be a work-related factor, and one which may contribute to significant distress.

Work-related means

One of the most widely studied connections between work and suicide is employees' access to and familiarity with lethal means (Alderson *et al*., 2015). This may be due to the fact that access to means (whether work-related or otherwise) is already a well-established risk factor. **Work-related** means of suicide involve situations where a person's work facilitates their access to and/or familiarity with the lethal object or substance that was used. It represents one way in which certain occupations entail an elevated risk of suicide (Roberts *et al*., 2013; Stallones *et al*., 2013; Tiesman *et al*., 2015). Some of the more commonly studied examples of work-related means include the use of: pesticides by farmers – particularly in Asia (Chen *et al*., 2012; Wei & Chua, 2008); firearms by members of the police or armed forces, as well as by farmers (Beautrais, 2018; Skegg *et al*., 2010); and pharmaceutical drugs by medical professionals (Skegg *et al*., 2010; Yentis *et al*., 2019). The impact of work-related means is less evident among women than men, due to a tendency for women to use the method of poisoning, regardless of their occupation (Skegg *et al*., 2010).

A related, yet separate, work factor that is discussed in the work-related suicide literature involves **exposure** (rather than access) to dangerous substances. In particular, researchers have examined the potential role that exposure to neurotoxins may play in suicidality. While the evidence is disputed (Workplace Health Expert Committee, 2021), several studies have indicated a causal relationship between neurotoxins in the workplace and suicide (Gallagher *et al*., 2008; Mustard *et al*., 2010). Specifically, exposure to solvents in the automotive industry (Tiesman *et al*., 2015), as well as exposure to pesticides in the farming industry (Alicandro *et al*., 2021; Ringgenberg *et al*., 2018) appear to be associated with depression. Through this association with depression, neurotoxins in the workplace are thought to potentially contribute to suicidality in some industries (Mustard *et al*., 2010).

Though work-related means are important for understanding work-related suicide, there appears to also be growing attention in the literature directed towards socioeconomic status and psychosocial stressors (Milner *et al*., 2013; Roberts *et al*., 2013).

Socioeconomic status

The socioeconomic status of workers – their level of education, income, and job status – is increasingly viewed as important in understanding the occurrence of work-related suicide (Milner *et al*., 2013; Roberts *et al*., 2013). In the research that looks at suicide rates within particular occupations or industries, there appears to be a consensus that suicide rates are highest among what are referred to as 'low status' or 'low skill' occupations (Mustard *et al*., 2010; Roberts & Marlow, 2005). This trend is apparent not only across different industries, but also within the same industry (Jenkin & Atkinson, 2021; Milner *et al*., 2017; Roberts & Marlow, 2005).

It should be noted, however, that while the overall trend appears clear, it is not without exceptions. Wada *et al*. (2016), for example, found a number of 'high status' occupations (for example, managers, professionals, and government officers) to be among those with the highest rates of suicide in Japan. Similarly, Alicandro *et al*. (2021) found that in the agricultural, fishery, forestry and hunting industry within Italy, the risk of suicide was highest among the more highly educated workers.

It has also been observed that although this trend of high suicide rates in 'low status' occupations can be seen in both male and female workers, it is most evident in men. Compared to the occupations with the highest suicide rates for men, the occupations with the highest rates of suicide for women include a greater proportion of 'high status' occupations (Roberts *et al*., 2013).

As previously discussed, research into suicide rates in particular industries is distinct from research into work-related suicide. Not all suicides in a particular industry will be work-related and there is a need to consider the role of health selection. However, the role played by health selection does not preclude the possibility that there are also unique or elevated work-related stressors in particular industries. As such, it has been proposed that the general trend of higher suicide rates in 'low status' occupations can, at least in part, be explained by relatively poor psychosocial working conditions experienced by workers in 'low status' occupations (Milner *et al*., 2016; Milner *et al*., 2018). From the observation that the trend of high suicide rates in 'low status' occupations is more evident among men than women, Roberts *et al*. (2013) further infer that, as a determinant of suicidality, socioeconomic factors may be more impactful upon men than women.

In studies that look at work-related suicide (rather than at suicide rates in particular industries), the connection between socioeconomic status and suicide rates is less clear. This is not helped by the scarcity of this research and the use of different definitions of work-related suicide. Nonetheless, it is notable that in two studies (Peek-Asa *et al*., 2021b; Routley & Ozanne-Smith, 2012), the occupations with the highest rates of work-related suicide included 'high status' occupations such as managers, engineers, and those in the finance industry. Peek-Asa *et al*. (2021b) further found that rates of work-related suicide appear to increase in conjunction with workers' education levels.

While these studies suggest that the relationship between socioeconomic status and work-related suicide may be more complex than the relationship between socioeconomic status and suicide rates more generally, it is important to also consider how the limitations of these studies may influence their findings. In particular, studies which gather data from coroners' findings (such as the two studies referenced above) are subject to the biases of coroners. This includes the possibility that coroners are more likely to assume that people with 'high status' jobs experienced work-related stress and therefore explore and discuss this in their findings, while potentially overlooking the role of work stressors in the deaths of people who had 'low status' jobs.

Psychosocial stressors

Insofar as socioeconomic status helps to explain work-related suicide, it likely does so by means of psychosocial stressors. Rather than contribute to suicidality directly, factors such as low education levels, low income, and low job status appear to be associated with particular psychosocial stressors (such as job insecurity and low job control). These stressors, in turn, contribute to suicidality. This may explain the variation in findings regarding the role of socioeconomic status in work-related suicide, as some studies may focus on stressors that are more commonly associated with 'high status' jobs.

One frequently discussed psychosocial stressor in the work-related suicide literature is job insecurity (Bryson *et al*., 2019; Milner *et al*., 2017; Roberts & Marlow, 2005). This stressor appears to be related to the socioeconomic status of workers and, unsurprisingly, is particularly prominent among casual and fixed-term contract workers (Alicandro *et al*., 2021; Niedhammer *et al*., 2020).

Though unstable employment and the threat of job loss are shown as risk factors in many studies of work-related suicide, the role of this stressor appears particularly prominent in studies conducted in Asia (Chen *et al*., 2012; Law *et al*., 2014). It has also been found that job insecurity is a more significant risk factor for men than it is for women (Gallagher *et al*., 2008).

Other studies have found that suicidality among workers can also be associated with chronic illness and workplace injury – issues which are more prevalent in labour intensive industries such as construction and farming (Beautrais, 2018; Bryson *et al*., 2019; Milner *et al*., 2017; Ringgenberg *et al*., 2018). Though the pathway by which illness and injury contribute to suicidality remains unclear, it is plausible that this is partly related to the accompanying issue of job insecurity.

Another significant psychosocial stressor in the literature is social isolation. Not only is social isolation a well-established risk factor for suicide generally, but it can also contribute to suicidality more specifically as a work-related factor (Berkman *et al*., 2004; Gallagher *et al*., 2008; Trout, 1980). Social isolation in the workplace, or work that is – by its nature – isolative, can serve as a significant work-related stressor. Relatedly, work that occurs in isolated regions with poor access to mental health services also involve increased risk of suicide (Gallagher *et al*., 2008; Germain, 2014).

The concept of 'job strain', which is the product of high job demands and low job control, has also been identified as a significant stressor in a number of studies into work-related suicide (Amagasa *et al*., 2005; Choi, 2018; Law *et al*., 2014; Xiao *et al*., 2017). The demand-control model, which underpins the concept of job strain, will be discussed in further detail later in this report. Notably though, low influence in the workplace – which is related to the issue of low job control – has been found to serve as a greater psychosocial stressor for women than it does for men (Rugulies *et al*., 2006).

A number of other work-related psychosocial stressors also feature in the work-related suicide literature. In addition to those mentioned above, the most commonly identified stressors include: high workload (Amagasa *et al*., 2005; Andela, 2021; Bryson *et al*., 2019; Nishimura *et al*., 2022); workplace bullying (Niedhammer *et al*., 2020; Sakisaka, 2018; Xiao *et al*., 2017); conflict with colleagues or customers (Alderson *et al*., 2015; Beautrais, 2020; Sakisaka, 2018); and monotonous or repetitive tasks (Germain, 2014; Schneider *et al*., 2011; Xiao *et al*., 2017).

In a report discussing psychological health and safety in the workplace, the International Organization for Standardization (ISO) recently produced a comprehensive summary of work-related psychosocial hazards. This report identifies 21 types of work-related psychosocial hazard and illustrates each with examples. These hazards are placed into three broad categories: those related to the way that work is organised (organisational factors); those that relate to the social dimensions of work (social factors); and those related to the work environment, equipment, or hazardous nature of work tasks (environmental factors). The psychosocial hazards listed in the ISO report include and extend beyond the stressors commonly identified in the work-related suicide literature. These hazards can potentially contribute to distress and depression among workers, and they may also contribute to suicidality. As such, they are displayed in the tables below, along with a summary of the supporting examples.

HAZARD	EXAMPLES
Roles and expectations	– role ambiguity, including lack of guidance regarding expected tasks – role conflict, including contradictory expectations – performing work of little value or purpose
Job control or autonomy	– limited participation in decision-making – low levels of influence and independence – lack of control over workload or work tasks
Job demands	– having too much work to complete within given time/resource constraints – unrealistic expectations of a worker's competence or responsibilities – exposure to events or situations that can cause trauma – working with aggressive or distressed people
Organisational change management	– lack of consultation and communication about workplace changes – prolonged or recurring restructuring – lack of practical support during workplace changes
Remote and isolated work	– working in isolated locations away from support networks – working in non-remote locations, but with limited social interaction
Workload and work pace	– excessive or inadequate workload – high levels of time pressure – highly repetitive work
Working hours and schedule	– inflexible work schedule – unpredictable working hours – long or unsociable hours
Job security and precarious work	– uncertain availability of work, including work with undetermined hours – working under the possibility of redundancy or temporary job loss – working without the protection by labour laws

(International Organization for Standardization, 2021)

TABLE 1:
Psychosocial hazards: Organisational factors

HAZARD	EXAMPLES
Interpersonal relationships	– conflict or poor relationships with managers, co-workers, or clients – power imbalances between different groups of workers
Leadership	– poor decision-making and lack of accountability – misuse of power – lack of clear vision and objectives
Organisational or workgroup culture	– unfair decision-making; inconsistent or untimely application of policies – undefined, or lack of agreement upon, the organisation's objectives – inadequate support for problem-solving and personal development
Recognition and reward	– imbalance between workers' efforts and their rewards – poor acknowledgement of workers' efforts
Career development	– insufficient opportunity for skill development – under-promotion or over-promotion – career stagnation
Support	– lack of support from supervisors or co-workers – lack of access to external support services
Supervision	– lack of constructive feedback regarding work performance – lack of support to facilitate improved work performance – misuse of digital surveillance
Civility and respect	– lack of trust, honesty, civility, and fairness – lack of respect in interactions among workers, as well as with customers
Work/life balance	– tasks cause workers to continue working in their own time – conflicting demands at work and at home
Violence at work	– abuse, threats, or assault at work
Harassment	– offensive or intimidating behaviours (in person or electronically) related to characteristics of the targeted individual, such as their race, religion, gender identity, sexual orientation, age, or disability
Bullying and victimisation	– repeated unreasonable behaviours (in person or electronically) such as insults, gossip, or exclusion

(International Organization for Standardization, 2021)

TABLE 2:
Psychosocial hazards: Social factors at work

HAZARD	EXAMPLES
Work environment, equipment, and hazardous tasks	– poor physical conditions in the workplace, such as lack of space, poor lighting, or excessive noise – extreme conditions, such as work in extreme temperatures or at height – unstable environments, such as work in conflict zones – lack of suitable and reliable equipment

TABLE 3:
Psychosocial hazards: Environmental factors

Variable impact of work factors

Where work-related factors contribute to suicidality, there will be variation in the impact they have. One dimension that influences which factors are impactful and the extent of this impact are the different interpretations and resources of individual workers. In crisis intervention literature, three components are seen as contributing to acute distress - which may, in turn, contribute to suicidality: a precipitating event, one's interpretation of that precipitating event, and inadequate internal and external resources (Puleo & McGlothlin, 2010). Each of the work-related factors discussed above can serve as a precipitating event or situation. Individual workers can formulate different interpretations of the event or situation, including interpreting it as a threat, a loss, or a challenge (Rapoport, 1962). Workers will also differ in the resources (internal coping skills and external social supports) they each have access to. Coping skills are essential for both changing a problematic situation as well as changing one's responses to that situation (Green *et al*., 2010). Social supports not only help a person in distress meet the practical and emotional challenges they face, these supports can also bolster coping skills and influence interpretations of the stressor event (Caplan, 1989; James, 2016). Both actual and perceived social support can be beneficial (Makarios & Livelsberger, 2012).

Beyond differences in the interpretations and resources of individuals, findings in some studies indicate that different work-related stressors appear to be more highly correlated with different forms of suicidality (that is, suicidal thoughts, suicide attempts, or suicides). Milner *et al*. (2018), for example, found that job insecurity appears most clearly associated with suicidal ideation, while a lack of job autonomy is more strongly associated with suicide attempts and completed suicides. Similarly, Ostry *et al*. (2007) found that while insufficient social support is associated with suicide attempts among workers, it is not clearly associated with completed suicides.

Another way in which the impacts of work-related factors appear to vary comes from the observation that the relationship between work stress and suicidality is not necessarily linear (Schneider *et al*., 2011). In a study of nurses in the US, Feskanich *et al*. (2002) found that the relationship between work stress and suicide was U-shaped, even after adjusting for key variables. Thus, the risk of suicide was elevated both among nurses who reported severe work stress and among those who reported minimal work stress (Feskanich *et al*., 2002). Similarly, in a study of Chinese workers in the petroleum industry, Xiao *et al*. (2017) found elevated risk of suicide among those reporting either severe or minimal (rather than moderate or light) work stress. Although these findings have not been conclusively explained, one hypothesis is that the self-reports of minimal stress may include workers who are in a state of denial, or who are experiencing an undiagnosed depressive disorder (Feskanich *et al*., 2002).

Not only may stressors impact upon suicidality differently, Duff and Chan (2014) note that the type of work-related factors that contribute to suicidality appear to vary according to career stage. Drawing on the idea that most careers pass through the phases of exploration, establishment, maintenance, and decline (Super, 1980), Duff and Chan (2014) examined work-related suicides at early, middle, and late career stages. They found that suicides among early-career workers often involved rejection from a desired occupation and involvement in work that was experienced as not meaningful (Duff & Chan, 2014). Suicides at a mid-career stage commonly involved: recent loss of employment; job insecurity; financial pressure; inability to achieve a promotion; or a career failure (Duff & Chan, 2014). Finally, suicides among late-career workers were found to often involve anxiety related to the need to upskill, or humiliation resulting from a demotion (Duff & Chan, 2014).

Variations in the impact of work-related factors can also be seen in terms of gender. These differences were noted in the preceding sections and include a greater impact of work-related access to means and job insecurity upon the suicide risk of men, when compared to their impact upon women (Gallagher *et al*., 2008; Roberts *et al*., 2013; Skegg *et al*., 2010). Conversely, the stressor of low influence in the workplace (and potentially the related stressor of low job control) appears to impact more heavily upon women than it does on men (Rugulies *et al*., 2006). Another gender-based difference relates to the reporting of work-related stressors, rather than the occurrence of those stressors. Experiences of bullying in the workplace, for example, are more likely to be reported by women than they are by men (Heller *et al*., 2007). To the extent that the underreporting of particular work stressors affects some groups more than others, this will skew findings regarding the relative prevalence of those stressors.

Evidence for the role of work factors

Presently, the evidence for a causal relationship between work-related psychosocial factors and suicidality appears inconclusive (Workplace Health Expert Committee, 2021). This is particularly true of their relationship with suicide, rather than with suicidal ideation or suicide attempts (Niedhammer *et al*., 2020). The conclusions that are drawn in the literature discussing work-related suicide are distinctly mixed. Some studies are unable to find clear evidence that work-related psychosocial factors contribute to suicidality, or they conclude that the role played by these factors is a minor one (Baumert *et al*., 2014; Law *et al*., 2014; Mustard *et al*., 2010). Variations in the suicide rates of different industries are then explained by factors such as health selection and access to means.

However, a number of other studies conclude that work-related psychosocial factors play a clear role in explaining suicidality. Most significant among these is a meta-analysis of 22 studies, in which Milner *et al*. (2018) conclude that, overall, there is evidence that work-related psychosocial stressors are associated with increased risk of suicide ideation, attempts, and deaths. They also note, however, a need for more longitudinal studies, to strengthen these findings (Milner *et al*., 2018).

The inconclusive evidence regarding the role of psychosocial stressors needs to be viewed in the context of insufficient research into work-related suicide. Ironically, it has been suggested that these findings may actually be contributing to the lack of research, as researchers could feel that further studies would simply produce more inconclusive findings (Howard & Krannitz, 2017). An additional explanation of both the inconclusive findings and the lack of research is the causal complexity of suicidal behaviour, along with the methodological challenges involved in suicide research.

Suicide is a complex phenomenon. With regard to work-related suicide more specifically, this complexity is reflected in the lack of conceptual development in this field. As will be discussed in the following section, there is no comprehensive theory of work-related suicide and the causal pathway by which work factors are thought to contribute to suicidality remains ambiguous. This lack of conceptual clarity may help explain the inconclusive findings in empirical studies. In the absence of a theory of work-related suicide, there appears to be a tendency to view depression (and other mental health diagnoses) inevitably as a confounding variable that needs to be accounted for in order to clarify the causal role of work stressors. However, there may be circumstances in which depression serves as the mediating mechanism by which work factors contribute to suicidality. There is strong evidence regarding the impact of work stressors on people's mental health – particularly upon depression (Niedhammer *et al*., 2020; Virtanen, 2018). Depression, in turn, is a well-established risk factor for suicide. Insofar as depression is simply framed as a confounding variable to be controlled, rather than a step in the causal pathway, it is perhaps unsurprising that the impact of psychosocial stressors appears negligible in some studies of work-related suicide.

Methodological challenges of various kinds may also help explain the inconclusive evidence regarding psychosocial stressors. Some of these apply to suicide research generally, while others are more specific to research into work-related suicide. One challenge facing all suicide research is the fact that suicide is a statistically rare event (Gibbons, 2013). This issue becomes more pronounced in studies that focus on the sub-category of work-related suicides (Duff & Chan, 2014). To address this, Howard and Krannitz (2017) suggest examining work-related suicide attempts, rather than completed suicides. While this may be a pragmatic solution, research into work-related suicide attempts may result in less accurate suicide prevention guidance, as many suicide attempts do not result in death (World Health Organization, 2021).

Another issue confronting most suicide research is data quality. Firstly, although suicide statistics may appear less prone to inaccuracy compared to other suicidality data (that is, rates of attempted suicide or suicidal ideation), they are still affected by the issue of misclassified deaths, particularly in countries where suicide is illegal (Bachmann, 2018). Furthermore, studies which use coroners' findings as their source of data not only face issues such as inconsistent standards of reporting, but they are also limited by coroners' understandings and descriptions of each death. Aside from other potential biases, coroners have been shown to generally prioritise medical diagnoses when explaining suicides, while understating psychosocial factors (Mallon *et al*., 2016). Studies using data from both coroners' findings and interviews with family or friends of the deceased, have also noted that work-related factors are much less apparent in coroner findings, when compared to their prominence in interviews with family or friends (Bryson *et al*., 2019; Heller *et al*., 2007). This likely reflects the different biases of not only coroners, but also those of family members and friends.

Finally, problems can also arise from the research design of suicide studies. For example, Howard and Krannitz (2017) note that studies into work-related suicide often focus on between-job differences, while overlooking within-job aspects such as individual workers' interpretations of work-related factors. This is problematic because of the distinct work experiences that employees in the same workplace can have. Howard and Krannitz (2017) argue that the tendency to overlook within-job differences helps explain the inconsistent findings regarding a connection between work and suicide. More broadly, it has been noted that while metanalyses serve as helpful summaries of existing research, they are generally unable to capture the complex impact that work-related factors have (Milner *et al*., 2018). In-depth understandings of the role that work factors play in propelling a person's suicidality require the use of qualitative approaches (Duff & Chan, 2014). Psychological autopsies using qualitative methods have been proposed as an improved means of understanding the various stressors a person experienced prior to their suicide (Conner *et al*., 2011). Well-designed psychological autopsies can provide high levels of detail about precipitating social, economic, and psychological factors (Beautrais, 2018). Greater use of robust longitudinal studies would also serve to strengthen the evidence for a relationship between work-related psychosocial factors and suicidality (Milner *et al*., 2018).

1.7 Conceptualising work-related suicide

There is a general lack of theoretical grounding and conceptual development in the literature discussing work-related suicide (Alderson *et al*., 2015; Howard & Krannitz, 2017). This absence of well-developed theory not only limits understandings of work-related suicide, but, as discussed above, it may also contribute to the inconclusiveness of empirical studies (Howard & Krannitz, 2017). Some limited attempts to conceptualise the relationship between work and suicidality have been made, however. This includes the application of general theories of suicide to help

explain the occurrence of work-related suicide. Such explanations also then carry implications regarding the prevention of these suicides. In addition, several authors have looked to models of work stress when undertaking studies of work-related suicide. More specifically, these authors have taken concepts from various models of work stress and tested these as potential work stressors that may contribute to suicidality.

Models of work stress

Two models of work stress appear to be most frequently referenced in the work-related suicide literature. These are the demand-control model (Karasek, 1979) and the effort-reward model (Siegrist, 1996). As the names of these two models indicate, each one emphasises specific factors that are thought to play an important role in work-related stress: the demands of a job, the degree of autonomy within a job, and an imbalance between the effort and rewards that a job entails (Lovelock, 2019; Virtanen, 2018). Transposing these concepts to work-related suicide, studies have examined workers' perceptions of their job demands, job control, or an imbalance between effort and reward, and then explored these factors in relation to suicidality (Amagasa *et al*., 2005; Case *et al*., 2020; Choi, 2018; Niedhammer *et al*., 2020; Ostry *et al*., 2007; Xiao *et al*., 2017).

The same process of extracting conceptual elements that were originally used to explain work stress and testing these as potential causes of work-related suicidality has also been taken with other models of work stress. Several of these models appear similar to, or are extensions of, the demand-control model. An example of an extended version is the demand-control-support model. In addition to job demands and job autonomy, this model also considers the amount of social support that workers have access to while they are performing their job role (Karasek & Theorell, 1990; Maheen *et al*., 2021).

Somewhat similar to the demand-control-support model is the conservation of resources theory. This theory suggests that work stress arises when the physical, emotional, or intellectual demands of a person's job exceed both their personal resources and the organisational resources they have access to (Hastuti & Timming, 2022; Hobfoll, 1989). With the understanding that none of these factors are static, the conservation of resources theory also highlights the changing demands of a job, as well as a worker's loss (whether actual or perceived loss) of valued resources over time. Such changes are thought to lead to feelings of helplessness among workers (Howard & Krannitz, 2017).

Also sharing similarities with the demand-control model is the job characteristics model, which states that jobs are more motivating when characteristics such as autonomy and task variety are present (Oldham & Hackman, 2005). These characteristics are seen as generating psychological states, such as a sense of meaningfulness, in relation to one's work (Howard & Krannitz, 2017). Conversely, the absence or the inverse of these characteristics is seen as generating work-related stress. Howard and Krannitz (2017) point out that it is workers' perceptions of these characteristics that generate stress. They argue that the important role played by workers' perceptions reinforces the need to examine differences between workers within each occupation, rather than only looking at differences between occupations as a whole (Howard & Krannitz, 2017).

Another model of work stress mentioned with reference to work-related suicide is the organisational justice model (Virtanen, 2018). This model proposes that three forms of justice in the workplace are vital for minimising work stress. These are: distributive justice, including equitable salaries; procedural justice, such as the fair enforcement of policies and consulting workers in organisational decision-making; and relational justice, such as managers acting in a considerate, fair, and polite manner towards workers (Cropanzano *et al*., 2001; Elovainio *et al*., 2002).

Finally, the work-related suicide literature also includes references to self-determination theory. While this theory has been used more to explain unemployment and job search behaviour than it has work stress, Duff and Chan (2014) suggest that, with slight modifications, it can also help explain work-related suicide. The theory identifies three fundamental needs that all people are thought to have: the need for autonomy, the need to feel competent, and the need for social belonging and acceptance (Deci & Ryan, 2000; Gagné & Deci, 2005). Adding a fourth fundamental need – the need for a sense of purpose – Duff and Chan (2014) propose a theory of 'purposive self-determination'. This modified theory identifies four key factors for explaining work-related suicide: lack of purpose in one's work; compromised autonomy or powerlessness at work; compromised competence or career failure; and social isolation in the workplace (Duff & Chan, 2014).

Theories of suicide

Several authors have attempted to conceptualise the relationship between work and suicide by applying broader theories of suicide to the more specific phenomena of work-related suicide. Rather than simply enabling the identification of concepts for empirical testing, these attempts were directed towards explaining the means by which work-related factors are thought to influence suicidality. As such, these proposed explanations also then carry implications regarding how to prevent work-related suicides. Three well-established theories of suicide appear in the literature that discusses work-related suicide. These theories are: the interpersonal theory of suicide, psychache theory, and Émile Durkheim's sociological theory of suicide.

INTERPERSONAL THEORY OF SUICIDE

As the name suggests, the interpersonal theory of suicide emphasises the role of interpersonal relationships in explaining the occurrence of suicidal ideation, suicide attempts, and suicide deaths (Evans, 2020; Sullivan, 2013). This theory proposes three key mechanisms to explain suicidality: thwarted belongingness, perceived burdensomeness, and acquired capability (Joiner, 2005). Combined, thwarted belongingness and perceived burdensomeness are seen as generating a desire for suicide (Van Orden *et al*., 2010). The third mechanism, acquired capability, is presented as the means by which this desire is translated into suicidal plans and actions.

'Thwarted belongingness' refers to the feelings associated with a person's interpretation that they lack meaningful connections with others (Joiner, 2005). It consists of two further components: loneliness – the feeling of being disconnected from others; and absence of reciprocal care – the feeling of both being unsupported by others and also of having no one to provide support to (Van Orden *et al*., 2012). 'Perceived burdensomeness' refers to a person's interpretation that they are a burden to those around them (Joiner, 2005). It also consists of two components: liability – the belief that one's existence is a liability and that one's death would therefore benefit others; and self-hate – feelings of self-blame, shame, and low self-esteem (Van Orden *et al*., 2012).

Finally, 'acquired capability' refers to the 'ability' to make a lethal or near-lethal suicide attempt (Joiner, 2005). The two components that constitute acquired capability are a reduced fear of death and an increased tolerance of physical pain (Van Orden *et al*., 2010). As such, acquired capability develops gradually, through acclimation to physical pain as well as through repeated exposure to events that induce fear (Van Orden *et al*., 2010). Ultimately, it is acquired capability (and not emotional distress) which converts suicidal ideation into suicidal actions (Leenaars, 2004).

The interpersonal theory of suicide is well-supported by empirical studies and has become popular in the field of suicide research (Barzilay *et al*., 2015; Hjelmeland & Knizek, 2020; Mandracchia & Smith, 2015). The three key mechanisms identified in this theory carry important implications for suicide prevention efforts. In particular, they suggest that these efforts should target feelings of thwarted belongingness and perceived burdensomeness (Van Orden *et al*., 2010). Acquired capability is more difficult to address as it often develops gradually, over the course of a person's lifetime (Van Orden *et al*., 2010).

As a rare example of conceptual development in the literature, Howard *et al*. (2022) draw upon the interpersonal theory of suicide, along with psychache theory and self-determination theory, to develop a conceptual framework of work-related suicide. The application of the interpersonal theory of suicide (more specifically, the concepts of thwarted belongingness, perceived burdensomeness, and acquired capability) enables a more detailed explanation of how various work-related stressors contribute to suicidality. Howard *et al*. (2022) thus propose that work-related stressors impact upon suicidality through the mechanisms of 'thwarted belongingness' and 'perceived burdensomeness'. For example, social isolation in the workplace can be seen as contributing to suicidality by way of 'thwarted belongingness', while disparaging remarks from a supervisor may contribute to suicidality by way of 'perceived burdensomeness' (Howard *et al*., 2022).

PSYCHACHE THEORY

Psychache theory is also referred to in the work-related suicide literature. In this theory, the key mechanism prompting suicidality is said to be intense psychological pain, which is referred to as 'psychache' (Shneidman, 1993). Shneidman (1993) points to two sets of needs that each individual is said to possess: modal and vital. Modal needs are experienced on a daily basis, whereas vital needs are those a person focusses on during periods of stress (Shneidman, 1998). It is theorised that psychache arises in an individual when their vital needs remained unfulfilled (Gunn III *et al*., 2016). More specifically, this theory holds that most suicides can be attributed to unmet vital needs experienced in five forms: excessive anger and hostility; excessive helplessness; thwarted love, acceptance, or belonging; damaged relationships; and damaged self-image (Shneidman, 1996).

Individual thresholds for psychache are variable, and in situations where the psychache a person is experiencing approaches their threshold, that person begins to view suicide as a viable means of resolving this intense pain (Shneidman, 1993). As alternative methods of alleviating psychache fail, suicide is then seen as the only remaining option and a serious suicide attempt becomes likely (Shneidman, 1996). The implication of psychache theory is that suicide prevention initiatives should focus on alleviating psychache, by helping people who are experiencing suicidal thoughts to address their unmet needs (Shneidman, 1996).

Applied to work-related suicide, psychache theory enables a clearer and more detailed explanation of how work factors can contribute to suicidality. Using psychache theory, work-related stressors can be seen as frustrating one's vital needs, and thereby generating psychache (Howard *et al*., 2022). As psychache reaches a person's threshold (and if it cannot be resolved by alternative means), that person's suicidality will escalate to the point of a serious suicide attempt. In addition to providing this more detailed causal pathway, the application of psychache theory to work-related suicide also helps explain why the same work-related factors do not affect all workers in the same way. Not only does the theory propose that individual thresholds for psychache are variable, but it also points to the likelihood that not all people will experience particular work-related factors as frustrating their vital needs.

DURKHEIM'S SOCIOLOGICAL THEORY OF SUICIDE

Finally, the literature also includes references to Émile Durkheim's sociological theory of suicide. In this theory, Durkheim (1951) uses two criteria – social integration and moral regulation – to propose that there are four different types of suicide: egoistic, altruistic, anomic, and fatalistic. The two extremes of each criterion combine to produce the different types of suicide. Thus, societies in which there is low social integration combined with high moral regulation result in 'egoistic' suicides, while high social integration with low regulation leads to 'altruistic' suicides (Clegg *et al*., 2016). Similarly, societies with low moral regulation and low social integration result in 'anomic' suicides, while high moral regulation and high integration leads to 'fatalistic' suicides (Clegg *et al*., 2016). Although this theory remains influential in the field of suicidology, it is unable to adequately account for the individual variations in suicidality (or lack thereof) that inevitably exist within each society, even where members of a society face very similar levels of social integration and moral regulation (Selby *et al*., 2014).

Applying Durkheim's sociological theory of suicide to the cases of apparent work-related suicide at France Telecom and Foxconn, Clegg *et al*. (2016) propose that work-related suicides can be most appropriately viewed as a form of anomic suicide. In particular, these authors emphasise a lack of social integration in the workplace as central to explaining work-related suicide (Clegg *et al*., 2016). In the case of the France Telecom suicides, it is suggested that the key factor in these deaths was a loss of solidarity in the workplace, subsequent to the company's privatisation (Clegg *et al*., 2016). Likewise, in the Foxconn suicides, Clegg *et al*. (2016) highlight the social isolation and alienation experienced by workers as central to understanding these deaths. They therefore conclude that the prevention of work-related suicide should be directed towards improving solidarity in the workplace (Clegg *et al*., 2016). Unfortunately, the authors do not discuss the proposed role of low moral regulation in work-related suicide, despite this being the defining feature of anomic suicide.

Cullen (2014) also argues for a sociological approach to understanding work-related suicide and expresses concern at suicide being viewed as a personal choice, rather than a cultural phenomenon. Instead of suggesting that work-related suicides be generally viewed as a form of anomic suicide, Cullen (2014) observes that different instances of work-related suicide can be placed into Durkheim's four categories. Furthermore, Cullen (2014) proposes that these four categories be used to guide future research into work-related suicide. Accordingly, 'egoistic studies' could examine workers' lack of membership in integrated groups; 'altruistic studies' could look at the introduction of 'new age' spiritual practices into the workplace; 'anomic studies' could examine the impact of rapid changes to workplace culture; and 'fatalistic studies' could look at how forms of organisational oppression impact upon workers (Cullen, 2014).

2.0 Work-related suicide in New Zealand

IN THIS SECTION:

A content analysis of coroners' reports for New Zealand suicides (2017–2021).

Section 2 of this document presents findings from a review and qualitative content analysis of all available coroners' findings for suicides that occurred in New Zealand between 2017 and 2021. These findings clarify the prevalence of work-related suicide in New Zealand, as well as providing basic demographic, geographic, and industry-specific data associated with these suicides.

Importantly, the findings also offer insights regarding all three criteria of a potential work-related suicide: the presence of work stressors, the use of work-related means, and a suicide occurring in the workplace. These insights include identifying the work stressors, means, and locations that were most prominent in this study, along with broader categories and themes within these work factors and points of interest that may warrant further research. All three criteria are defined, with some elaboration on what they included. Explanations are also provided as to how the significance of work-related stressors was contextualised and why the criterion of a suicide in the workplace of the deceased was considered insufficient, by itself, for ultimately classifying a suicide as work-related.

Before presenting these findings, the report will discuss the methods of data collection and analysis that were used in this study, as well as summarising ethical and safety issues and how these were managed. Section 2 concludes with a discussion of the study's limitations, which relate to the research methods used and the use of coronial data.

Following this presentation of the study's methods, findings, and limitations, Section 3 of this report offers recommendations regarding potential responses to work-related suicide.

2.1 Research methods

Data collection, coding, and analysis in this study were undertaken by the author. Peer examination of coding and much of the initial study design was done by two members of WorkSafe's Mentally Healthy Work team. The author and these two staff are collectively referred to as 'the research team' for the remainder of this report. All three members of the research team have research experience, including conducting mental health and suicide research.

Data collection

This section outlines the study's source of data, search strategy, and the results of this search strategy.

DATA SOURCE

The source of data for this study was the National Coronial Information System (NCIS). NCIS is a secure online database that contains information about deaths that have been reported to coroners in either New Zealand or Australia. In New Zealand, the police must report all suspected suicides to a coroner. More broadly, a death is reported to a coroner in New Zealand if it was unexpected, violent, suspicious, or occurred while the person was in official care or custody (Coroners Act 2006).

NCIS was selected as the data source for this study due to the information recorded on each case file, and the information contained in the coroners' findings that are attached to these case files. Each case file on NCIS records demographic information, details about the cause of death, as well as classifications regarding both the case type (for example, external or natural cause of death) and the intent (for example, unintentional, intentional self-harm, or assault) (NCIS, 2020). For most case files, there are also up to four types of documents attached: coroners' findings, police narrative of circumstances, autopsy reports, and toxicology reports. Of these four types of documents, this study only accessed coroners' findings.

The coroners' findings that were reviewed in this study varied in length from two pages to over 70 pages. As Milner *et al*. (2017) observe, the large variation in the length of coroners' findings appears to be the result of differences in both the circumstances of each death and in the reporting style of each coroner. Despite variable detail and quality, every coroners' finding must establish a number of factual matters, including: that a person has died, their identity, where and when they died, the causes of their death, and the circumstances of the death (Coroners Act 2006). Coroners' findings also sometimes contain recommendations from the coroner, as well as details from investigations which the coroner directed an investigative authority to conduct (Coroners Act 2006).

SEARCH STRATEGY

The search strategy that was used for this study had broad parameters. It included all closed cases in New Zealand's jurisdiction with a notification date between January 1st 2017 and 31st December 2021, which (upon completion of the coronial investigation) were classified as intentional self-harm deaths.

Note that the timeframe above refers to the date on which a coroner was first notified of the death. Except in a small number of cases, the date of notification is either the same as, or very close to, the date of death. A five-year timeframe was used to minimise the potential effect of annual fluctuations. Furthermore, the years 2017 and 2021 were selected so as to include the most recent data possible, while still resulting in a large number of cases. At the time of data collection, there were very few closed cases for intentional self-harm deaths that occurred in New Zealand in 2022.

For Australian cases, NCIS provides an option to filter results according to their 'work-relatedness'. These cases are placed into one of four categories: work-related, not work-related, still enquiring, or unlikely to be known. This categorisation is guided by input from Safe Work Australia, who assign specific codes to coronial cases, in accordance with their definition of a work-related death. Currently, there is no equivalent process for New Zealand cases, so the work-relatedness filter could not be used in this study. Although this resulted in a much larger number of cases to review, it brought the advantage of not constraining search results to external interpretations of work-relatedness. Section 3 of the report will revisit this point, however, and discuss the possibility of WorkSafe assigning codes for work-related deaths and providing these codes to NCIS.

NCIS also provides an option to filter cases by employment status (for example, only including cases in which the person was employed at the time of the incident). However, this study chose not to use this filter. The importance of including cases in which the person was not employed at the time of the incident will be expanded on later in this report. Finally, NCIS enables filtering based on the appearance of keywords in coroners' findings. This option was also not used, due to the risk of not capturing all relevant terms and thereby excluding cases that nonetheless meet the criteria of a potential work-related suicide.

SEARCH RESULTS

Using the search strategy above, a search was conducted in mid-August 2022, producing 1709 case files. This is significantly lower than the number of suicides (3097) that are estimated to have occurred in New Zealand between 2017 and 2021 (Te Whatu Ora, 2022). This number of suicides is an estimate due to the figures for 2019, 2020, and 2021 being for suspected (not confirmed) suicides in those years.

The key reason why the number of search results was lower than the estimated number of suicides is also the reason why numbers of suspected (rather than confirmed) suicides are commonly published in official reports. Both are the result of the delay between a person's death and the completion of a coroner's investigation.

Reflecting this delay, NCIS has calculated the yearly closure rate for all cases (that is, not just suicides and not just New Zealand cases) as: 96.3% for 2017, 92.3% for 2018, 89.2% for 2019, 66.8% for 2020, and 36.7% for 2021 (NCIS, 2022). A more precise measure can be calculated by comparing the number of search results for each year with the estimated number of suicides in New Zealand for that same year. This indicates case closure rates of: 94.4% for 2017, 82.3% for 2018, 63.0% for 2019, 27.4% for 2020, and 6.3% for 2021.

Data analysis

This section briefly describes key aspects of data analysis in this study, including: the two-stage process of categorising and then coding, the coding frame that was used, and peer examination of coding.

CATEGORISING AND CODING

The research team, informed by findings from other studies (discussed in Section 1 of this report), were aware that a significant proportion of the case files were unlikely to meet the criteria of a work-related suicide. As such, rather than attempt to code the coroner's findings in every case file, data analysis in this study was designed to involve a two-stage process of categorising, followed by coding.

The first stage involved reviewing the coroner's findings in every case. Cases that met at least one of three criteria were categorised as **potential** work-related suicides and marked for later coding. The criteria used to identify **potential** work-related suicides were: the suicide occurred in the deceased person's workplace; the means of suicide appear to be related to the deceased person's work; and/or the coroner's findings identifies the presence of one or more work-related stressors. A further explanation of how 'workplace', 'work-related means', and 'work-related stressors' were defined will be provided later in this report.

The second stage involved a qualitative content analysis of all cases that had been categorised as **potential** work-related suicides. Content analysis is a widely used approach for systematically coding textual data, so as to facilitate interpretations of, and the identification of patterns within, that data (Hsieh & Shannon, 2005; Vaismoradi *et al*., 2013). Though similar to thematic analysis, which is another widely used approach in qualitative research, content analysis (unlike thematic analysis) is also designed to enable the quantification of categories and themes in the data (Vaismoradi *et al*., 2013).

The process of coding the **potential** work-related suicide cases not only produced clearer insights, it also enabled the further identification of actual work-related suicides. Cases that met at least one of two criteria were classified as actual work-related suicides. These criteria were: the means of suicide are confirmed as being related to the deceased person's work; and/or the coroner's finding indicates that work-related stressors played a significant role in the deceased person's suicidality. The distinction between actual and potential work-related suicide (including the process by which work stressors were deemed 'significant') will be discussed in further detail, later in this report.

CODING FRAME

In this study, the framework that was used for coding data was developed using a hybrid approach, meaning it involved both deductive and inductive elements. Prior to the categorising and coding process, the majority of the coding frame was developed deductively, using concepts from the literature. Other codes later emerged inductively, while reviewing cases at the categorisation stage. Each inductive code was discussed with and approved by the research team, and then added to the coding frame.

The full coding frame can be found in the appendix of this report. Many of the individual codes it contains will be discussed later in this report. These codes were also placed into broader groupings. For the coding of ethnicity and geographic locations, categories were adopted from the New Zealand Census. However, in the findings that follow, some of these categories have been merged together. This is due to the need to present findings in groups of five or more cases, so as to preserve confidentiality. Findings related to some codes are not presented in this report for that reason (that is, they contain fewer than five cases).

The codes that were used for personal stressors and risk factors were derived from the suicide literature, while the codes used for work-related stressors were derived from work stress literature. More specifically, the coding frame used the list of work-related psychosocial hazards that were developed by the International Organization for Standardization (ISO) as the basis for work-related stressors. As discussed in Section 1 of this report, the psychosocial hazards identified by ISO (2021) include and extend beyond the factors that are commonly identified in the work-related suicide literature. In the study's coding frame, these **hazards** were reframed as **stressors**.

PEER EXAMINATION

To support the rigour of data analysis in this study, peer examination of both the categorisation process and the coding was undertaken by another member of the research team.

At the stage of categorising all cases (that is, determining whether or not each case met the criteria as a potential work-related suicide), the team member selected 125 cases (7.3% of the total) at random and independently reviewed the coroner's finding in each case, categorising them using the same three criteria. The two sets of categorised cases were then compared. In 122 of the 125 cases (97.6%), there was full alignment across all three criteria. Three of the cases, however, contained differences in whether or not particular criteria were seen as being met. The research team discussed these differences and a consensus was reached. This discussion centred around how to define 'work-related means' and a 'workplace'. These points will be discussed in more detail later in this report.

At the stage of coding all potential work-related suicide cases, the same team member selected 30 cases (12.2% of the total) at random and independently coded the coroner's finding for each one. The two sets of coded cases were then compared. Of the 30 cases, there was only one in which the team member felt an error had been made (regarding the presence of a personal stressor). After further discussion, this was agreed to have not been an error. Therefore, as with peer examination at the categorising stage, there was a high level of alignment in the coding of potential work-related suicide cases.

The peer examination process at the coding stage also generated discussion about the definition of a 'stressor'. It was agreed by the research team that in the rare instances where a work-related factor (such as long work hours) did not appear in any way connected to the person's distress or suicidality, this work factor cannot be considered a stressor. Further discussion regarding how both a 'stressor' and a 'work-related stressor' were defined in this study will be provided later in this report.

Ethical and safety considerations

As this study only collected and analysed publicly available records, it did not require formal ethics approval. Nonetheless, the research team considered ethical and safety issues involved in this study.

One key issue is confidentiality. Direct personal identifiers, such as names and addresses, were not extracted from the coroners' findings in this study. Indirect identifiers, such as age, sex, and ethnicity, were extracted from the coroners' findings, but stored securely – as discussed below. To further protect the identity of deceased individuals (while still reporting findings with a reasonable degree of precision), only findings involving five or more cases are reported. Furthermore, the Coroners Act 2006 prohibits any person (unless they were granted an exemption) from making individual details of a self-inflicted death public. This study adheres to this requirement by only reporting data in an aggregated, de-identified form. No individual cases are discussed in this report.

A related issue is that of data storage and security. Several steps were taken to facilitate secure storage of data. Access to data was limited to the research team and all work on this study was completed on password protected WorkSafe devices. Furthermore, all coroners' findings were viewed on the NCIS website – none of these reports were downloaded. However, a CSV file that contained raw data (including NCIS case file numbers, age, and sex) for all cases in the search results was downloaded and stored electronically on a secure and access-restricted drive. The coding frame (with coded data) was securely stored in the same location as the CSV file. Coding was entered directly into the electronic coding frame, and no hard copy of either the coded data or the CSV file was created. With regard to data retention, WorkSafe's policies require all created files (which includes the CSV file and the study's coding frame) to be stored for 10 years.

Finally, the research team were mindful that this study involves exposure to potentially distressing content. Data analysis involved reviewing descriptions of self-inflicted deaths. To manage any distress that this content could cause, the team met weekly to debrief and discuss any issues that had arisen. Team members also had access to both EAP services and external professional supervision.

2.2 Prevalence of work-related suicide

Of the 1709 case files that resulted from the search of NCIS, a small number were removed during the categorisation stage. This included 23 NCIS case files for which no coroner's finding was attached and eight cases in which the coroner deemed the death to be self-inflicted but not a suicide. Therefore, the total number of cases with coroners' findings that were applicable to this study was 1678.

Of these 1678 applicable cases, 246 were identified at the categorisation stage of data analysis as meeting at least one of the three criteria of a **potential** work-related suicide. As such, 14.7% of the suicides that occurred in New Zealand between 2017 and 2021 (and for which a coroner's finding was available in mid-August 2022), fit this study's criteria as potential work-related suicides.

The coding process further revealed that, of those 246 **potential** work-related suicides, 197 met one or both of the study's criteria of an **actual** work-related suicide. Therefore, 11.7% of suicides that occurred in New Zealand between 2017 and 2021 (for which a coroner's finding was available in mid-August 2022), were classified as **actual** work-related suicides.

The table below presents the numbers of applicable cases, potential work-related suicides, and actual work-related suicides for each year that were included in this study.

	2017	2018	2019	2020	2021	OVERALL
Number of applicable cases	559	508	416	161	34	1678
Number of potential WRS as a percentage of applicable cases	90 (16.1%)	76 (15.0%)	48 (11.5%)	26 (16.2%)	6 (17.7%)	246 (14.7%)
Number of actual WRS as a percentage of applicable cases	71 (12.7%)	57 (11.2%)	45 (10.8%)	20 (12.4%)	5 (14.7%)	197 (11.7%)

TABLE 4: Number of potential and actual work-related suicides (by year)

The numbers of work-related suicides recorded above were determined solely from information contained in coroners' findings. As will be discussed later in this document, the coroners' findings generally did not provide high levels of detail regarding work-related psychosocial stressors and other work factors. Therefore, it is quite possible that these numbers would be higher still if additional sources of information (such as workplace inspections) had been available. Section 3 of this report will include discussion of how more detailed information about the role of work factors could be gathered following a potential work-related suicide.

For concision, 'actual work-related suicides' will generally be referred to simply as 'work-related suicides' from this point onwards.

2.3 Demographic, geographic, and industry data

The coding frame that was used in this study captured basic demographic data (age, sex, and ethnicity) associated with cases of work-related suicide. It also gathered information about the geographic region of New Zealand in which the incident occurred, as well as details of the industry and occupation that the deceased person had worked in, prior to their death. Summaries of these data are presented below.

It should be noted that the number of work-related suicides identified in this study is relatively small. Because of this, it is unlikely that inferential statistical analysis would have adequate power to yield reliable results. Therefore, the following summaries are simply presented as points of interest and potential areas for further research.

Demographic data

Of the 197 people who died by work-related suicide, 162 (82.2%) were male and 35 (17.8%) were female. Their ethnicities were: New Zealand European, 141 (71.6%); Māori, 28 (14.2%); Asian, 9 (4.6%); and all other ethnicities, including Pacific Islander, 19 (9.6%). The mean age at the time of incident was 45.4 years old.

The table below displays a comparison between the demographic data for work-related suicides and demographic data for all New Zealand suicides (that is, not just work-related suicides) occurring in 2018. The latter set of data was taken from the Te Whatu Ora – Health New Zealand suicide web tool (2022). Data from 2018 are used as this is the most recent year to have information for confirmed suicides.

Note that the comparison of these two sets of data required recategorizing some of the ethnicity data for work-related suicides. This is due to the Te Whatu Ora data grouping New Zealand Europeans together with 'all other' ethnicities. Calculating a mean age from the Te Whatu Ora data was not possible, as their age data is presented in broad age ranges.

	WORK-RELATED SUICIDES (2017–2021)	ALL SUICIDES IN NEW ZEALAND (2018)
Sex	82.2% (162) male 17.8% (35) female	72.0% (451) male 28.0% (175) female
Ethnicity		
NZ European and all other	79.2%	68.0%
Māori	14.2%	22.2%
Asian	4.6%	5.8%
Pacific Islander	<2.5%	4.0%

TABLE 5: Demographic data for work-related suicides and all suicides

Future research could explore relationships between work-related suicide and both ethnicity and sex. This might include examining the extent to which any such relationships are reflective of the industries and occupations that feature most prominently in work-related suicide statistics (see Tables 7 and 8).

Geographic regions

The table below displays the number of work-related suicides (identified in this study) for each region of New Zealand. Some regions have been grouped together, due to the need to report findings in groups of at least four cases.

REGION OF NEW ZEALAND	NUMBER OF WRS CASES
Northland	14
Auckland	49
Waikato	22
Bay of Plenty	12
Hawke's Bay and Gisborne	12
Manawatū-Whanganui and Taranaki	17
Wellington	15
Tasman, Nelson, Marlborough and West Coast	8
Canterbury	25
Otago	15
Southland	8

TABLE 6: Work-related suicides by geographic region

Industries and occupations

Table 7 displays the number of work-related suicides for each industry. Some of these industries have been grouped together (in the last two rows of this table), due to the need to report findings in groups of at least five cases.

INDUSTRY	NUMBER OF WRS CASES	TOTAL WRS	WRS CASES WITH WORK STRESSORS	NZ WORKFORCE (2020)
Agriculture, forestry and fishing	36	18.3%	10.0%	4.6%
Health care and social assistance	22	11.2%	9.4%	11.3%
Professional, scientific and technical services	18	9.1%	10.6%	7.5%
Accommodation and food services	17	8.6%	10.0%	6.7%
Construction	16	8.1%	9.4%	7.9%
Manufacturing	14	7.1%	8.2%	10.6%
Public administration and safety	13	6.6%	7.1%	6.8%
Retail trade	12	6.1%	7.1%	9.5%
Administrative and support services	11	5.6%	6.5%	4.6%
Education and training	8	4.1%	4.7%	9.3%
Transport, postal and warehousing	8	4.1%	4.1%	4.1%
Financial and Insurance Services	5	2.5%	2.9%	2.9%
N/A	5	2.5%	2.9%	0%
Other	12	6.1%	7.1%	14.2%

TABLE 7: Work-related suicides by industry

In addition to the raw number of cases in each industry, the table above presents these numbers as a percentage of the total number of work-related suicides in this study. Some work-related suicides do not involve work stressors (instead, they involve only the use of work-related means). The fourth column captures this distinction by displaying work-related suicides (in each industry) that involve work stressors, as a percentage of all such suicides. The purpose of highlighting this distinction will be explained shortly. Finally, to contextualise this data, the fifth column displays the proportion of the New Zealand workforce that each industry represents. This workforce data is from 2020 and was collated by Stats NZ (2021).

Table 8 provides a greater level of detail than the industry categories, by displaying the specific occupations in which five or more cases of work-related suicide were identified in this study.

OCCUPATION	NUMBER OF WRS CASES
Farmer/farmworker	30
Business owner	14
Branch/site manager	7
Retail salesperson	7
Nurse	6
Teacher	6
Administrator/assistant	5
Landscaper/lawnmower	5
Meat/food process worker	5
Truck driver	5

TABLE 8: Work-related suicides by occupation

As with other data presented in this section of the report, the numbers of cases in each industry are too small to draw strong conclusions from. Nonetheless, Tables 7 and 8 raise several points of interest, each of which would benefit from further research.

The first of point of interest is the prominence of the agriculture, forestry, and fishing industry – particularly when the relative size of this industry's workforce is considered. This is made more striking by the fact that a single occupational group ('farmer/farm worker') accounts for most of these cases. The rates of work-related suicide in this industry are elevated by the criterion of work-related means. The fourth column of Table 7 reflects this point, by only displaying work-related suicides that involve work stressors. Similarly, if cases that only involved the use of work-related means were excluded from the occupational group 'farmer/farm worker' in Table 8, the number of cases would drop significantly – from 30 to 11. Despite this, the agriculture, forestry, and fishing industry still appears disproportionately prominent (relative to the industry's size), even when only considering cases that involved work-related stressors. Further research into the role that both work stressors and health selection play in the seemingly high rates of work-related suicide in this industry would be of value.

The second point of interest relates to the construction industry. Studies, including some that were recently conducted in New Zealand (Bryson *et al*., 2019; Jenkin & Atkinson, 2021), have consistently found high rates of suicide in this industry. However, in terms of **work-related** suicide, this industry does not appear particularly prominent. Further research could investigate the apparent discrepancy between general suicide rates and work-related suicide rates in the construction industry. One hypothesis could be that workers in this industry who died by suicide were primarily experiencing 'personal stressors', rather than work-related stressors.

A third point of interest is the seemingly low rates of work-related suicide in the education and training industry. This may, at least in part, be reflective of health selection. However, further research could investigate whether there are additional factors at play – such as the possibility that employers in this industry are relatively better equipped for supporting employees with work stressors that arise.

EMPLOYER AWARENESS OF DISTRESS

The coding frame also captured data from the coroners' findings related to whether or not the employer of the deceased was aware of their employee's distress.

- In 135 (68.5%) cases of work-related suicide, the issue of whether or not the employer was aware of their employee's distress was not commented on in the coroner's finding.
- In 22 (11.2%) work-related suicide cases, the coroner's finding states that the employer was aware of their employee's distress.
- In 6 (3.0%) cases, the coroner's finding states that the employer was not aware of their employee's distress (that is, the issue of employer awareness was looked into by the coroner and found to not be present, rather than simply not being looked into or commented on).
- In 34 (17.3%) cases, the deceased was self-employed or a business owner and had no employer, as such, who might have observed changes in their emotional state.

The findings above should not be interpreted as implying that employers 'should have known'. Sadly, people experiencing distress and thoughts of suicide often feel unable to communicate this to others. However, more could be done to help those experiencing suicidality feel better able to communicate their distress, including ways of safely doing so in the workplace.

WORK-RELATED SUICIDE AMONG PEOPLE WHO WERE NOT EMPLOYED

In the initial study design, the research team considered the possibility of filtering search results on NCIS by employment status (that is, only including cases where the person was employed at the time of incident). However, the team decided against this, with the understanding that the effects of both work stressors and work-related means can continue after a person's employment has ended.

The importance of not filtering cases in this way was later emphasised by the study's findings. Of the 197 cases of work-related suicide identified in this study, 38 (19.3%) involved people who were not employed at the time of incident. For these 38 cases, the person's occupation and industry were coded to reflect the occupation in which the work stressors arose and/or the occupation which facilitated their access to and familiarity with lethal means.

Table 9 further specifies the nature of unemployment in these 38 cases. The table also shows that all of the recently unemployed and long-term unemployed experienced work stressors. By contrast, most work-related suicides by people who were retired did not involve work stressors – these cases instead qualified as work-related suicides on the basis that they involved work-related means.

NATURE OF UNEMPLOYMENT	NUMBER OF WRS CASES	NUMBER OF WRS CASES WITH WORK STRESSORS
Recently unemployed (6 months or less)	18	18
Long-term unemployed (more than 6 months)	9	9
Retired	11	<5

TABLE 9: Work-related suicide among the unemployed and retired

The length of time between job loss and death in these cases ranged from a few days to over 30 years, with a mean length of just over three years and nine months. There were 19 cases in which the length of time between job loss and death was more than six months, and almost all of these either involved the stressor of a work-related injury or they only involved work-related means. If 'work injury cases' and 'means only cases' are removed (leaving cases that involved non-injury work stressors), then the average time between job loss and death drops considerably, to a mean of just over seven months.

The role of work stressors will be discussed in detail in the following section. However, it is worth noting here the most prevalent work stressors among those who were not employed at the time of incident. The three most prominent work stressors for this group were, in descending order: work-related injury, bullying, and interpersonal relationships (conflict with colleagues). Furthermore, while the unemployed accounted for less than 20% of all work-related suicides, there were more instances of work-related injury (as a stressor) among this group than there were among the remaining 80% of cases. This is perhaps unsurprising, given that work injuries can often be a key cause of unemployment.

2.4 Work-related stressors

The presence of work-related stressors is a key criterion for classifying a suicide as being work-related. Of the 1678 cases of suicide that were reviewed in this study (that is, suicides that occurred in New Zealand between 2017 and 2021, for which a coroner's finding was available in mid-August 2022), 170 (10.1%) involved significant work-related stressors. Viewed in relation to **work-related** suicides more specifically (rather than to suicides generally), 86.3% of the work-related suicides identified in this study involved work-related stressors. The remaining cases of work-related suicide involved only the use of work-related means, as will be further discussed in Section 2.5 *Work-related means*.

Section 2.4 *Work-related stressors* in this report will first present findings related to individual work stressors, including several demographic and industry-specific points of interest. It will then examine broader categories and themes that can be seen in these work stressors, and briefly discuss how such themes could contribute to efforts to conceptualise work-related suicide. This is followed by an explanation of how both a 'stressor' and a 'work-related stressor' were defined in this study. Section 2.4 *Work-related stressors* will conclude by explaining how this study contextualised the role of work stressors in each case, and why taking the variable impact of work stressors into account matters when looking at work-related suicide.

Individual work-related stressors

Table 10 displays the individual work-related stressors that were included in this study's coding frame. The stressors are listed in descending order of their appearances in cases of work-related suicide.

This table appears to reflect that there are a number of well-established work stressors, that are known to contribute to distress – or even suicidal ideation – among workers, but which nonetheless appear to be weakly correlated with completed suicides. Similar observations have been made in other studies of work-related suicide (Milner *et al*., 2018; Ostry *et al*., 2007), as discussed in Section 1 of this report.

WORK-RELATED STRESSOR	NUMBER
Job demands	43
Work stressor – not otherwise specified	43
Interpersonal relationships	32
Workload and work pace	30
Working hours and schedule	24
Bullying and victimisation	18
Performance management process	18
Job security and precarious work	16
Work-related injury	16
Work-life balance	15
Error at work	11
Starting a new job or business	9
Support	7
Organisational change	5
Leadership	5
Harassment	5
Violence at work	4
Supervision	3
Failure or dissolution of business	3
Job control or autonomy	2
Organisational culture	2
Roles and expectations	1
Career development	1
Civility and respect	1
Work environment, equipment, or hazardous tasks	1
Remote or isolated work	0
Reward and recognition	0

TABLE 10:
Work stressors in cases of work-related suicide

ISO PSYCHOSOCIAL HAZARDS

Table 10 also reflects that while the 21 work-related psychosocial hazards that were identified by the ISO served as a good foundation for the coding frame in this study (as work-related stressors), they cannot be considered a comprehensive list with reference to work-related suicide. A number of these stressors either did not feature or barely featured in this study. The ISO's psychosocial hazards also did not encompass a number of work stressors that turned out to be notable. This can be seen in the fact that four of the work stressors that were later added (performance management process, work-related injury, error at work, and starting a new job or business) can all be found in the upper half of Table 10.

However, one of the ISO's psychosocial hazards was particularly prominent as a work-related stressor: 'job demands'. Though the names used for most of ISO's psychosocial hazards are quite self-explanatory (particularly in combination with the illustrative examples of each hazard that ISO provides, as presented in Section 1 of this report), 'job demands' appears somewhat broader and more ambiguous than the other ISO hazards. Given the relative ambiguity of 'job demands' and its prominence in this study, it is worth expanding on what this hazard entails, as well as clarifying the aspects of 'job demands' that were most apparent in this study.

Table 2.8 presents 10 examples of 'job demands' that were provided by ISO (2021). This table also displays the number of times that each of these forms of job demand appeared in this study.

FORM OF JOB DEMAND	NUMBER
Having too much work to complete within given time/resource constraints	13
Unrealistic expectations of a worker's competence or responsibilities	12
Exposure to events or situations that can cause trauma	11
Working with aggressive or distressed people (for example, customers, members of public)	4
Fragmented or meaningless work	2
Conflicting demands and deadlines	1
Continual work exposure to interaction with people (for example, customers, patients)	0
Lack of task variety or performing highly repetitive tasks	0
Requirements for excessive periods of alertness and concentration	0
Underuse of skills	0

TABLE 11:
Aspects of the stressor 'job demands'

The first form of job demand on the above list is self-explanatory. However, further clarification can be provided regarding how the second and third examples were seen in this study.

In this study, 'unrealistic expectations of a worker's competence or responsibilities' generally consisted of workers being asked to undertake particular duties, despite having a lack of appropriate experience or without consideration given to their physical or cognitive abilities. This form of job demand also involved situations where workers felt under large amounts of pressure from others to succeed. In the case of business owners and the self-employed, the unrealistic expectations were self-imposed.

Broadly, 'exposure to events or situations that can cause trauma' included two types of scenarios. The first was attendance at the scene of homicides, suicides, or car accidents. And the second was involvement in the slaughter or euthanising of animals. Generally, the worker was directly exposed to these events. However, there were also cases of vicarious trauma, with workers being exposed to these events through the accounts of other people.

ADDED WORK STRESSOR CODES

Six codes capturing unique work stressors emerged inductively during the review of coroners' findings. Each one was discussed with the research team and considered sufficiently distinct from the ISO psychosocial hazards to be added to the coding frame.

Of these six added codes, 'work stressor – not otherwise specified' appeared most frequently. This code was used in situations where a coroner's finding made reference to a work issue that caused the person distress, but then provided no elaboration on this issue. The fact that this code was so prevalent speaks to the lack of detail regarding work factors that was present in many coroners' findings.

The other five added codes are also largely self-explanatory. 'Performance management process' captured situations in which some aspect of a worker's performance came under review from their employer or other senior staff. This was considered distinct from the ISO hazard of 'supervision' (which includes, 'lack of constructive performance feedback or evaluation process') in that, from the outset, the process of performance management can serve as a stressor, regardless of the feedback that is received.

The code 'work-related injury' captured the distress that some workers experienced due to both the limitations on activity (including working) and the physical pain that resulted from a work-related injury. 'Error at work' refers to the distress that some workers felt subsequent to making a mistake in their job role – even where this mistake did not result in a detrimental outcome or in a performance review. 'Starting a new job or business' captures the significant anxiety that some felt in response to starting a new job or establishing a new business. Finally, 'failure or dissolution of business' refers to the distress and despair that some business owners experienced following the failure of their business.

POINTS OF INTEREST

Examining the individual work stressors in demographic and industry-specific groupings revealed some tentative points of interest regarding the types of work stressors that were relatively more prominent (that is, appeared more frequently) within these different groups and industries. These points are tentative because, although the differences are observable in the data, the numbers in each grouping are too small for solid inferences. Further research into these points of interest would be of value.

Age

Placing the 170 cases that involved work-related stressors into three broad age groupings, with approximately equal numbers of cases, produced several observations. The age ranges for these groupings were 35 years old and below; 36–55 years old; and 56 years old and above. The lower and upper ages in the overall age range are not reported, in an effort to preserve confidentiality.

The first observation is that the average number of work stressors appears to peak in the middle age range, at 2.1 work stressors per case. The other two groupings share the same average of 1.7 work stressors per case. In terms of individual work stressors, 'job security and precarious work' as well as 'work-related injury' both appear most prominent in the third age range. Meanwhile, the work stressors 'interpersonal relationships' as well as 'bullying and victimisation' appear most

prominent in the first age range. Interestingly, the stressors 'job security and precarious work' and 'performance management process' (which were otherwise quite prominent) did not feature at all for people under the age of 26 years old (with 26 cases under that age).

With the understanding that age and career stage do not necessarily align at an individual level, the three age ranges discussed above could nonetheless be seen as loosely related to early-, mid-, and late-career stages. To the extent that they are related, the observations discussed here may illustrate different types of work stressors manifesting more clearly at different career stages.

Sex

Overall, women had a slightly higher average number of work stressors per case (1.9) than men (1.8). Furthermore, the stressor 'performance management process' appeared to be more prominent for women than it was for men. Meanwhile, 'work-related injury', 'error at work', 'starting a new job or business', and 'failure or dissolution of business' appeared more prominent among men than among women. Interestingly, 'bullying and victimisation', 'harassment', and 'interpersonal relationships' also appeared slightly more prominent among men, compared to the relative prominence of these stressors for women.

Ethnicity

Three groups (Māori, New Zealand European, and 'all other ethnicities') were used for these observations, to ensure an adequate number of cases in each group. This resulted in several observations.

First, 'working hours and schedule' appeared to be a somewhat more prominent work stressor for Māori than for New Zealand Europeans and 'all other' ethnicities. Second, 'bullying and victimisation', 'harassment', and 'violence at work' all appear more prominent among Māori and 'all other ethnicities' than among New Zealand Europeans. Third, 'starting a new job or business' appears to be a more prominent for 'all other ethnicities' than for Māori or New Zealand Europeans. And finally, the stressors 'work-related injury' as well as 'workload and work pace' both appeared to be more prominent among New Zealand Europeans than they were among Māori or 'all other ethnicities'.

Industries

Placing the individual work-related stressors that appeared in this study into the 20 industry categories resulted in small numbers for each stressor. As a result, clear differences in the type of work stressors that were prominent or absent for each industry were generally not observable. One noteworthy exception to this was found in the health care and social assistance industry. Not only was 'performance management process' the most prominent work stressor in that industry, but furthermore, that industry also accounts for almost half of all appearances (8 out of 18) of this particular stressor.

Broader categories and themes

As shown earlier in this report (tables 1.1, 1.2, and 1.3), the 21 ISO psychosocial hazards have been placed into three broad categories: hazards that are related to the way in which work is organised (organisational factors); hazards related to the social dimensions of work (social factors); and hazards related to the work environment, equipment, or hazardous nature of work tasks (environmental factors). Of the three categories, organisational factors (which included eight out of the 21 ISO hazards) were the most frequently mentioned in coroners' findings, making up 38.4% of the total number of work stressors that were coded in this study. Next, was the category of social factors which, despite including 12 out of the 21 ISO hazards, made up 29.5% of the total number of work stressors

that were coded in this study. Almost not featuring at all, was the category of environmental factors, which included only one ISO hazard and made up 0.3% of the coded work stressors. The remaining amount (31.8%) of coded work stressors consisted of the six added codes.

While useful for conceptualising psychological health and safety in the workplace, the three ISO categories of organisational, social, and environmental factors do not shed light on the subjective experiences of those affected by these factors. In an effort to provide further insight into the sources of distress for those who later died by work-related suicide, this study looked for basic themes within the most prominent individual work stressors. Three key themes were identified from this process, as summarised in Table 12.

WORK BURDEN	CONFLICT AND MISTREATMENT	COMPROMISED COMPETENCE AND SECURITY
– job demands – workload and work pace – work-life balance – working hours and schedule	– interpersonal relationships (conflict with colleagues) – bullying and victimisation	– performance management process job security and precarious work – error at work

TABLE 12: Themes in the prominent work stressors

With regard to the stressor 'interpersonal relationships', it should be noted that this consisted almost entirely of conflictual relationships with colleagues. Also worth noting is that while all three themes were significant in this study, the theme of 'work burden' appears particularly so.

Distilling nine prominent codes into these three themes of 'work burden', 'conflict and mistreatment', and 'compromised competence and security' helps to crystallise the work stressors faced by those who later died by work-related suicide. The identification of broader themes such as these three can also contribute to future efforts to develop a theory of work-related suicide. The development of theory is essential for explaining (and therefore better responding to) work-related suicide.

CONNECTING THEMES TO THEORY

The three themes identified above are not well captured by many of the models and theories discussed in Section 1. Care should therefore be taken before using these models of work stress or theories of suicide to understand and design responses to work-related suicide. The inapplicability of the demand-control model (as a widely used model of work stress) to work-related suicide is of particular interest. Examining the model's two key mechanisms ('demand' and 'control'), the findings of this study indicate that these two mechanisms have very uneven significance in relation to work-related suicide. On one side, the stressor 'job demands' (and the broader theme, 'work burden') is clearly prominent. On the other side, the stressor 'job control and autonomy' barely featured.

Of the models and theories commonly used to conceptualise work-related stress, the one that may best explain this study's findings is the conservation of resources theory. To briefly recap, this theory suggests that work stress arises when the physical, emotional, or intellectual demands of a person's job exceed their personal resources and the organisational resources they have access to. The theory also highlights that the demands of a job, as well as a person's resources (both actual and perceived) change over time. The themes of 'work burden', 'conflict and mistreatment', and 'compromised competence and security' could be viewed as physical, emotional, and intellectual demands which exceed both the personal and organisational resources that a worker has access to.

In terms of the general theories of suicide discussed in Section 1 of this report, psychache theory appears to be the most relevant. To summarise heavily, this theory holds that most suicides can be attributed to unmet vital needs in five forms: thwarted love, acceptance, or belonging; damaged relationships; damaged self-image; excessive helplessness; and excessive anger and hostility. These concepts appear to be applicable to this study. The themes of 'work burden' and 'compromised competence and security' may both be viewed as involving unmet vital needs in the forms of excessive helplessness and damaged self-image. Furthermore, the theme 'conflict and mistreatment' could be viewed as involving all five forms of unmet vital needs.

What counts as a work-related stressor?

Clarifying what was included as a 'work-related stressor' in this study involves defining both components of this term: a 'stressor' and 'work-related'.

STRESSOR

Consistent with the suicide and crisis intervention literature, this report uses the term 'stressor' to refer to events, situations, or circumstances that result in emotional distress. Note that this term is sometimes used to refer not only to factors that **have caused** distress, but also factors that **may cause** distress. However, as this study is looking retrospectively at the actual impacts (rather than the potential impacts) that work factors had on suicidality, it uses the term 'stressor' in the narrower sense described above. Therefore, a 'stressor' (as it is used in this report) can be differentiated from a 'hazard', which refers to any source of potential harm (WorkSafe NZ, 2020). Stressors are commonly placed into three categories: situational, developmental, and existential (Callahan, 2009; James & Gilliland, 2017). The work-related stressors examined in this study were primarily situational stressors.

While coding the potential work-related suicide cases, there were several instances where the coroner described the presence of a psychosocial hazard (for example, working long hours), but this hazard did not appear in any way connected to the person's distress or suicidality. In fact, on more than one occasion, far from being described as a stressor, hazards related to workload and working hours were identified by family members or colleagues as a source of personal pride for the deceased. Observing a similar point in their study of suicidality among nurses, Feskanich *et al*. (2002) note that the events people experience, including those events that commonly serve as stressors, cannot be assumed to have a universal effect (whether universally negative or positive). In this study, if a psychosocial hazard was present but did not appear in any way connected to the person's distress, the hazard was not coded as a stressor.

Understanding the variable impact that exposure to psychosocial hazards can have on people is aided by accurately defining and distinguishing between 'stress' and 'distress'. Despite its negative connotation, stress is a neutral term which refers to a physical or emotional pressure (Puleo & McGlothlin, 2010; Ridner, 2004). The effects of this pressure can be beneficial or harmful, pleasant or unpleasant. **Distress** is an unpleasant or harmful effect that can be generated from stress (Ridner, 2004; Selye, 1976). Leaving aside situations where an event that commonly serves as a stressor is interpreted positively (such as being a source of pride), exposure to psychosocial hazards may also generate stress (pressure), without this necessarily resulting in distress.

WORK-RELATEDNESS

Work-relatedness is perhaps best understood with reference to the Health and Safety at Work Act 2015. As such, a work-related factor can be defined as a factor that arises 'out of the conduct of the business or undertaking' (Health and Safety at Work Act 2015, s. 56). The key element of this definition is that a work-related factor necessarily originates from (arises out of) the work itself.

This excludes factors which **impact upon** a person's work but originate from something external to work (for example, economic conditions, government policy, weather, or personal stressors). In other words, the relationship referred to in the term 'work-**related**' is a unidirectional one.

This exclusion of external factors is necessary, in order for 'work-related' to remain a meaningful term. The value of conceptualising 'work-relatedness' in this study is in identifying the role that a person's work is playing in their suicidality (thereby enabling the development of effective preventative measures). Including external factors that impact upon a person's work within the definition of a 'work-related factor' would obscure the role played by work.

Using this definition of work-relatedness provided the research team with a clear rationale regarding the events, situations, or circumstances that should be included or excluded as work-related stressors. The work stressors that were included and added to the coding frame were discussed earlier in this section of the report. Below is a summary of the most common scenarios that were considered, but not included, as work stressors. Each of these was excluded following discussion and consensus in the research team.

The coroners' findings included a number of references to stressors (that is, situations resulting in distress) that clearly **impacted upon** a person's work, but did not **originate from** the person's work. This included situations that were clearly secondary to pre-existing mental health conditions, substances abuse, or criminal offending (for example, stealing from the workplace).

Also excluded were stressors associated with an absence of employment (for example, long-term unemployment or retirement). However, as discussed in Section 1 of this report, a distinction can be (and was) made between being in a state of unemployment and the experience of losing a job. While the former scenario was not included as a work stressor (instead being coded as a 'personal stressor'), the latter was. Attention was therefore paid to the presence of distress associated with the experience of losing a job (such as a distressing termination process).

Contextualising work stressors

To develop a clear understanding of work-related suicide, it is necessary to contextualise the role that work factors play within the wider circumstances of each case. While this is true for all work factors (stressors, means, and locations), the need to consider the wider context appears particularly important for the factor of work stressors. This is due to both the highly variable impact these stressors can have on people, as well as the role that is very often played by other, 'non-work' stressors and risk factors.

Contextualising the role of work factors (and work stressors in particular) helps avoid oversimplifications when discussing the relationship between work and suicide. By considering the **significance** of work factors (rather than just whether a factor were present or not), it is possible to avoid automatically classifying all cases in which a work factor was present as 'work-related suicides', regardless of the wider circumstances of the person's death. Furthermore, this contextualisation enables the further identification of a subset of work-related suicides, in which work factors were not only significant, they appear central to explaining the person's suicidality. Elaboration on these points will be provided shortly.

The following section of the report describes the process by which this study placed work factors into context. As section of this discussion, it also provides a summary of the study's findings related to the role of risk factors and personal stressors. The section will conclude by presenting the findings enabled by this contextualisation process.

CONTEXTUALISATION PROCESS

It is arguably not possible to quantify the precise impact of individual factors upon a person's suicidality. Instead, this study broadly contextualised the role of work factors in each case of work-related suicide. During the coding stage of data analysis, all cases of potential work-related suicide were placed into one of three colour-coded categories, in accordance with the apparent significance of work factors in that case. Among cases of potential work-related suicide (all of which necessarily involved at least one work factor), this process enabled differentiation between cases where those work factors appeared to play:

- the predominant role (that is, they were central to explaining the suicide) – '**red cases**'
- a notable role (that is, they were relevant to explaining the suicide) – '**orange cases**', or
- a non-significant role (that is, they were present but not clearly relevant to explaining the suicide) – '**green cases**'.

In part, the contextualisation process can be seen as an extension upon the earlier distinction between **potential** and actual work-related suicides (as discussed previously in the report). Whereas that distinction was made at the categorising stage of data analysis, this further differentiation occurred at the coding stage, with the benefit of the details that coding provided.

In the case of two work factors – 'workplace location' and 'work-related means' – the research team agreed to the application of a general rule for determining the significance of each of these work factors.

As will be explained shortly (in section 2.6), a workplace location, by itself, was considered insufficient for classifying a suicide as work-related. As such, for cases which only involved the criterion of a workplace, work factors were considered to have played a non-significant role. Put differently, while the occurrence of a suicide in the workplace of the deceased is a work-related factor, in the absence of the other criteria (work stressors or work-related means), this factor was broadly deemed as being not clearly relevant to explaining the person's suicidality. Cases which only involved the criterion of a workplace were therefore colour-coded green.

For cases which only involved the criterion of work-related means, work factors were considered to have played a notable role. Put differently, the use of work-related means was broadly deemed as being relevant to explaining the suicide. However, in the absence of work stressors, the use of work-related means was not considered **central** to explaining the suicide, as there would almost certainly be a number of 'non-work' stressors and risk factors propelling the person's suicidality. Cases which only involved the criterion of work-related means were therefore colour-coded orange.

However, the process for contextualising the role of work factors was more complex in cases that involved work-related stressors. Rather than applying a general rule for determining the significance of a wider group of cases, contextualising the role of work stressors required a subjective assessment be done for each case.

To aid this assessment, four 'contextualizing questions' were developed. These served to clarify the number and severity of work stressors in each case:

1. What were the number of work stressors in relation to the number of personal stressors and other risk factors?
2. Were any of the work stressors recent (that is, the precipitating event occurred within six months of the incident)?
3. Were any of the work stressors recurring or chronic (as opposed to being one-off or short-lived events)?
4. Is there any evidence of preoccupation with work stressors at the time of the incident (for example, as detailed in a suicide note or final conversation)?

The four questions above were attached to the coding frame. Once the coding of a coroner's finding was completed, these four questions were answered, before moving onto coding the next coroner's finding. All four questions are close-ended, with answers that came directly from information in coroners' findings. At a later stage of analysis, question one (above) was reframed as the binary (yes–no) question: Were the number of work stressors in this case equal to, or greater than, the number of personal stressors and risk factors (combined)?

These close-ended questions were designed to ultimately help answer the more speculative question: How significantly did work-related stressors (in relation to other stressors and risk factors) contribute to the person's distress and suicidality?

There was a high degree of alignment (but not a total alignment) between the number of positive responses each case had to the contextualizing questions and the colour-coding of that case. Thus, 'green cases' involved distinctly more negative responses; 'red cases' involved distinctly more positive responses; and the responses for 'orange cases' gravitated around the middle (two positive responses). The fact that there was not a total alignment between the responses and the colour-coding of cases points to the four questions serving a useful guiding function, rather than being directly instructive. These contextualizing questions are limited in that they do not entirely capture the impact of stressors. As such, they do not eliminate the need for a subjective assessment of the significance of stressors.

To support the rigour of this process, the contextualisation of work factors underwent peer examination at the coding stage. This was done by a member of the research team and resulted in full alignment in how all 30 of the peer-examined cases were colour-coded.

Discussion within the research team also resulted in agreement that the role of work factors in a person's suicidality must be significant, in order for a case to be considered an **actual** work-related suicide. Consequently, all 'green cases' (that is, cases in which work factors were present but appeared to play a non-significant role) were excluded as **actual** work-related suicides. A further description of these excluded 'green cases' is provided below.

PERSONAL STRESSORS AND RISK FACTORS

As discussed in Section 1 of this report, work stressors are often intertwined with personal stressors, including by way of 'spillover' and 'crossover'. It is beyond the scope of the present study to examine the complexities of this interrelationship. In this study, data regarding personal stressors and risk factors were gathered for the sole purpose of helping to contextualize the role of work-related stressors. This function was reflected in the first of the four 'contextualizing questions'. Though this study therefore did not examine individual risk factors and personal stressors in detail, some basic findings related to these stressors and factors will be presented here in a highly summarized form.

Of the 197 cases of work-related suicide that were identified in this study, 190 (96.4%) involved at least one personal stressor. The average number of personal stressors and risk factors (combined) in these cases of work-related suicide was 3.8. In comparison, the average number of work stressors across these cases was 1.6 (this average includes cases of work-related suicide that did not involve work stressors). Though this comparison is of interest, there are two notable points to be made here. First, there was considerable variation in these numbers within individual cases. Second, the number of personal stressors and risk factors is not directly equivalent to the **impact** of those stressors and factors.

Among the specific personal stressors that were identified in this study, the three most prominent were, in descending order: 'family/relationship issues', 'financial pressures', and 'physical health issues'. Among the specific risk factors identified in this study, the three most prominent were: 'diagnosed mental health issue', 'history of substance abuse', and 'past suicide attempts'. Coding for mental health issues relied on diagnoses by a medical practitioner, rather than being informed by statements from family members or friends. This limitation was necessary due to the broad usage of the word depression and the associated issue of the medicalisation of distress.

FINDINGS

The contextualisation process enabled more nuanced findings regarding the cases of work-related suicide that were identified in this study. Of the 1678 applicable cases (that is, suicides that occurred in New Zealand between 2017 and 2021, for which a coroner's finding was available in mid-August 2022), 17 (1.0%) were cases where work factors appeared to play a predominant role and were central to explaining the suicide (that is, 'red cases'). Of the 1678 applicable cases, 180 (10.7%) were cases where work factors appeared to play a notable role and were relevant to explaining the suicide (that is, 'orange cases').

Finally, of the applicable cases, 49 (2.9%) were cases where work factors were present but appeared to play a non-significant role, such that these factors were not clearly relevant to explaining the suicide (that is, 'green cases'). By way of further examination: of the 49 'green cases', 31 involved non-significant work stressors and 21 involved a workplace location (with three cases, therefore, involving both a workplace location and non-significant work stressors). These 49 'green cases' constitute all of the potential work-related suicides that did not later qualify as **actual** work-related suicides.

2.5 Work-related means

The second criterion for classifying a suicide as work-related is the use of work-related means. After presenting the study's findings regarding the use of work-related means, this section of the report will highlight several points of interest in the demographic, geographic, and industry data. This is followed by a discussion of how this study determined whether the means of suicide in each case should be considered **work-related** means.

Findings

Of all 1678 suicides that were reviewed in this study, 43 (2.6%) involved **work-related** means. With reference to work-related suicides more specifically, work-related means were used in 21.8% of the work-related suicides identified in this study.

Note that individual cases can involve both work-related means and work-related stressors. In this study, 16 (37.2%) of the 43 cases that involved the use of work-related means also involved work stressors, while the other 27 cases did not. This appears to indicate that suicides that involve work-related means are noticeably more likely to also involve work-related stressors, when compared with suicides generally. It is beyond the scope of the present study to explain this apparent connection.

Coroners' findings, as well as each NCIS case file, detail the objects or substances which produced the injuries that caused death. The objects and substances that served as **work-related** means can be placed into three broad categories. More detailed descriptions of these objects and substances are not included, in accordance with section 71 of the Coroners Act 2006, which prohibits publishing details of the means of suicide in individual cases. The three categories of work-related means, along with how frequently each was used (both as a raw number and as a percentage of all suicides) are displayed in Table 13.

CATEGORY OF WORK-RELATED MEANS	NUMBER	ALL NZ SUICIDES (%)
Firearm	29	1.7%
Pharmaceutical drugs	9	0.5%
Other	5	0.3%

TABLE 13: Categories and prevalence of work-related means

Note that among the 1,678 suicides that were reviewed in this study, there were many additional cases in which the means of suicide were pharmaceutical drugs, along with a number of additional cases in which the means of suicide was a firearm – all of which were not counted as instances of **work-related** means. In these cases, the person's access to and/or familiarity with the means of suicide was the result of something other than their occupation. Furthermore, there were other means of suicide (for example, hanging) which were not considered to be work-related means in any instance, regardless of the occupation of the person using those means. The reasoning that was used in this study to determine what constitutes 'work-related means' will be presented shortly.

Points of interest

The mean age (at the time of incident) of those who died using work-related means was 51.8 years old. This is higher than the mean age of work-related suicide more generally (45.4 years old).

Of the 43 people whose suicide involved the use of work-related means, 37 (86.0%) were male and 35 (81.4%) were New Zealand European. This can be compared to work-related suicides generally, for which 82.2% were male and 71.6% were New Zealand European.

This study also examined the geographic regions where suicides involving work-related means occurred. This revealed that the Waikato region appears disproportionately prominent, with 11 out of the 43 cases. All other regions, except Auckland and the Bay of Plenty (both with five cases), had fewer than four cases of suicides involving work-related means. In accordance with efforts to maintain confidentiality, data for these other regions (as with the data for other ethnicities) will not be displayed here.

To briefly summarise the demographic and geographic data above – compared to suicides generally, suicides that involve work-related means appear more likely to be by males and New Zealand Europeans. They also appear more likely to occur in rural regions, and in particular, the Waikato region. These findings appear to be connected to the high number of farmers using work-related means.

To unpack this observation further, the study examined the industries and occupations in which suicides involving work-related means occurred. This report will only present industry and occupation data for two of the categories of work-related means: firearms and pharmaceutical drugs. Industry and occupation data for suicides involving 'other' work-related means will not be reported, due to the likelihood that these details would enable readers to infer the specific objects that were used in individual cases. The publication of details from which the specific means of suicide in individual cases could be inferred is also prohibited by the Coroners Act 2006.

Of the 29 cases that involved the use of a firearm as the work-related means of suicide, 25 occurred in the agriculture, forestry, and fishing industry, while the remaining four cases occurred within the industry of public administration and safety. More specifically, the occupation of all but one person in the agriculture, forestry, and fishing industry was 'farmer/farmworker'. The people who worked in the public administration and safety industry had occupations in either the police force or the military.

All nine of the cases that involved the use of pharmaceutical drugs as the work-related means of suicide, occurred in the health care and social assistance industry. More specifically, this included nurses, medical practitioners, and pharmacists.

Note that in 10 of the 43 cases, the person was retired at the time of incident. In these cases, occupation was coded to reflect that which facilitated their access to and/or familiarity with lethal means. The length of time between job loss and death, in these 10 cases, ranged from a few months to 25 years, with a mean length of just over eight years and six months. This observation highlights the point that familiarity with lethal means often continues well after retirement. In some cases, **access** to work-related means also continues after retirement.

What counts as work-related means?

In this study, determining whether or not the means of suicide should be considered **work-related** means revolved around the extent to which a person's occupation (whether recent or in the past) provided them with access to and/or familiarity with the means they used, at a level that was clearly beyond the access or familiarity that could be expected among the general public. In attempting to elaborate on this point, the following discussion is limited by the need to avoid describing specific objects or substances that were used in individual cases of suicide.

In the vast majority of cases that were reviewed at the categorisation stage (that is, while identifying which cases were **potential** work-related suicides), the person's occupation did not appear to provide them with greater access to, or familiarity with, the means of suicide they used. This included the large number of cases in which the means of suicide was hanging. However, in a relatively small number of cases, there did appear to be some potential relationship between the person's occupation and their means of suicide. These relationships ranged from tenuous to distinct.

Cases where there was a tenuous relationship between the person's occupation and their means of suicide were not counted as involving work-related means. In broad terms, this included cases where the person's work involved slightly greater access to, or familiarity with, particular means. This slightly greater access and/or familiarity was often situational, rather than the result of restrictions on those means for the general public. Therefore, the general public could be expected to have a degree of access to and/or familiarity with those means that is not far behind that of the identified occupation. Any barriers to access or familiarity could be overcome by members of the general public without difficulty.

Beyond this, were cases where the relationship was more distinct and which were therefore counted as involving work-related means. In these cases, the greater access to, or familiarity with, particular means that was granted by a person's occupation was not simply situational. Also, the barriers to gaining access or familiarity would not be so easily overcome by members of the general public.

Within cases where there was a distinct relationship between the occupation and the means of suicide, there was further variability. In some cases, an occupation provided access to and familiarity with means that are otherwise tightly restricted. In other cases, the means that an occupation provided access to and/or familiarity with were only somewhat restricted to the general public. An example of the latter is the access to and familiarity with firearms that is provided by the occupation of farming.

It should be noted that this determination of what counts as work-related means will therefore depend on the laws and norms of particular societies. It is reasonable to suggest that farmers in New Zealand have a degree of access to, and familiarity with, firearms that is higher than that of the New Zealand public generally. However, this difference between farmers and the general public may be less distinct in countries with more widespread ownership of firearms.

The distinction between a 'tenuous connection' and a 'distinct connection' (and the underlying question of how easy it is for the general public to overcome any barriers to gaining access or familiarity), ultimately relies on a subjective assessment. While this approach brings difficulties of its own, it was nonetheless considered preferable to classifying all cases where there was a tenuous relationship between the person's occupation and their means of suicide as being 'work-related suicides'.

With regard to classifying the use of a firearm by a farmer as work-related means, one issue that arose was that on several occasions the coroner's finding indicated that, in addition to being a farmer, the person was also a recreational hunter. In these cases, it appeared that the person's access and familiarity was as much due to their hobby as it was to their occupation. Nonetheless, the relevance of their occupation was considered sufficient to classify the case as involving work-related means. There were also cases in which a farmer used someone else's firearm. Such cases were counted because, although the access to lethal means was not work-related, **familiarity** with those means was still work-related.

Similarly, classifying the use of pharmaceutical drugs by health professionals as work-related means (and distinguishing this from what is an otherwise relatively common method of suicide) involved several considerations. In particular, it was necessary to confirm that the health professional's access to or familiarity with the substance was actually **work-related**. Work-related access involved situations where the pharmaceutical drugs were sourced from the workplace, rather than being prescribed to the deceased. Work-related familiarity involved situations where the route of administration reflected a degree of specialised knowledge, arising from the person's occupation.

Finally, the 'other' category encompassed all cases in which the person used some relatively specialised work object. For these cases, it was necessary that the work object be something for which access and familiarity are uncommon in the general public. Non-specialised work objects were therefore not included.

2.6 Work location

A third criterion, used for identifying **potential** work-related suicides, is the occurrence of a suicide in the workplace of the deceased. This section begins by explaining why the workplace criterion was considered insufficient for classifying a suicide as an **actual** work-related suicide. The study's findings related to these 'workplace suicides' are then presented, along with several brief points of interest. Finally, the process by which this study classified certain locations as 'workplaces' is explained.

As a criterion for work-related suicide

While the workplace criterion was used to identify **potential** work-related suicides, it was considered insufficient, by itself (that is, in the absence of work stressors or work-related means), for classifying a suicide as work-related.

When considering how work factors contributed to a person's suicidality (rather than considering how a person's suicide may impact upon a workplace), the significance of the workplace criterion is unclear. Without evidence (for example, in a suicide note) that the workplace location was selected to represent the role

that work factors played in the person's suicidality, it cannot be safely assumed that this is the case. Even in a situation where there was evidence that the workplace location was intentionally selected to represent the role that work factors played in the person's suicidality, it is likely that these significant work factors are work-related stressors (and therefore captured by the stressor criterion).

In addition to the significance of the workplace criterion (by itself) being unclear, there are other plausible explanations as to why this location may have been used. Tiesman *et al*. (2015), for example, point out that a workplace location may be selected so as to reduce the likelihood of a family member discovering the body. Another possible reason for the use of a workplace location outside of work hours is the person's desire to not have their actions prevented by others.

Findings

Of the 1,678 suicides that were reviewed in this study, 41 (2.4%) occurred in the workplace of the deceased. Of these 41 'workplace suicides', 20 cases had at least one other criterion (work stressors or work-related means) present and were therefore reclassified from **potential** work-related suicides to **actual** work-related suicides. As such, 10.2% of all the **actual** work-related suicides that were identified in this study occurred in the workplace of the deceased.

As mentioned above, almost half of all 'workplace suicides' (20 out of 41) were ultimately classified as an **actual** work-related suicide. In comparison, 11.7% of suicides generally (those reviewed in this study) were ultimately classified as **actual** work-related suicides. It is beyond the scope of this study to explain this high correlation. However, it underscores the value of this workplace criterion as a 'red flag' – potentially indicating cases to examine closely.

Finally, a further breakdown can be provided of the 20 'workplace suicides' that were reclassified as **actual** work-related suicides. Of these 20 cases, 14 involved work stressors but not work-related means; five involved work-related means but no significant work stressors; and one involved both work-related means and work stressors.

LOCATION TYPES

NCIS provides 14 categories of 'location types' and, for each case, codes a location type for both the location in which the incident occurred and the location in which death occurred. For clarity, 'the incident' refers to the infliction of the injury that later resulted in death. These 14 categories are displayed below.

NCIS LOCATION TYPE
1. Commercial area (including hotels and work office)
2. Countryside (for example, national parks, forests, or lakes)
3. Farm
4. Home or dwelling
5. Industrial or construction area
6. Medical service area (for example, hospital or clinic)
7. Other (for example, in a vehicle)
8. Recreational area, cultural area, or public building
9. Residential institution area (for example, retirement home or prison)
10. School or educational area (including student accommodation)
11. Sports and athletics area
12. Transport area (for example, carpark, bus stop, airport)
13. Transport area (for example, roadway, cycleway, footpath)
14. Unlikely to be known

TABLE 14: NCIS location type categories

For the cases that were reviewed in this study, the two recorded locations (incident and death) were generally the same. Of the 41 'workplace suicides', there were only four cases in which the location of death differed from the location of incident. In all four cases, the location of death was a hospital. For the purposes of this study (examining the role of work factors in suicide), the location of incident was of greater relevance.

Regarding the location of incident for the 41 'workplace suicides', there were only three of the NCIS location type categories that contained four or more cases. The most common workplace location type was 'commercial area' (which includes work offices), with 16 cases. This was closely followed by the location type 'farm', with 15 cases. Third was 'industrial or construction area' (which included workshops and building sites), with six cases. For all three categories, approximately half of these cases were later reclassified as **actual** work-related suicides (as they also involved work-related means or work stressors).

Points of interest

Of the 41 people who died by suicide in their own workplace, 28 (68.3%) were New Zealand European and six (14.6%) were Māori. This is similar to the proportions of these two ethnicities in work-related suicide cases generally. Further, the mean age (at the time of the incident) was 44.9 years old. This is also similar to the mean age for work-related suicide generally (45.4 years old). Finally, 38 (92.7%) of those who died by suicide in their own workplace were male. The high proportion of males may be reflective of the prominence of the 'agriculture, forestry, and fishing' industry in these cases.

Regarding the number of 'workplace suicides' for each industry, there were three industries that contained four or more cases. These were: 'agriculture, forestry, and fishing' with 15 cases; 'professional, scientific, and technical services', with five cases; and finally, 'retail trade', with five cases. For all three of these industries, approximately half of these cases went on to be later reclassified as **actual** work-related suicides (as they also involved work-related means or work stressors). The high number of 'workplace suicides' among farmers is perhaps unsurprising, given the proximity of their workplace to their home.

What counts as a workplace?

In determining which specific locations should be included as a 'workplace', this study was guided by WorkSafe's definition of a workplace as, 'any place where a worker goes or is likely to be while at work, or where work is being carried out or is customarily carried out' (WorkSafe NZ, 2020).

As such, a 'workplace' in this study was not limited to the main physical site at which a person worked. It also included locations outside of this main site, if the person was at that other location for work purposes. Furthermore, this definition allows for a broad range of locations and spaces to potentially serve as workplaces for some people. This includes public spaces (for example, parks or roads), areas in the natural environment (for example, forests or the ocean), and commercial vehicles (for example, trucks or trains).

Often, the process of identifying a particular location as the person's workplace was straightforward, as this location was a distinct physical building, some distance from the person's home (for example, an office, workshop, or store). However, determining whether a location was a workplace was less straightforward in situations where the person's workplace and home were in very close proximity. This situation most commonly arose with suicides by farmers.

In the case of suicides by farmers, this study only classified the location as a workplace if the incident clearly occurred on the farm itself (that is, the non-residential area of the farm), such as in a paddock or a farm shed. By contrast, locations such as a farmhouse, lawn, or garage would not typically be classified as a workplace for a farmer. Similarly, other locations that were close to, but nonetheless separate from the workplace, such as worker accommodation or a nearby sleepout, would generally not be considered workplaces.

Finally, locations that were of a similar nature to the person's workplace, but which were nonetheless not the person's actual workplace, were not counted in this study. Examples of this could include a farmer on someone else's farm, or a builder on someone else's building site.

2.7 Limitations

This final section of Section 2 will discuss the study's limitations, which relate to the research methods used and the use of coronial data.

Research methods

DOCUMENT ANALYSIS

The use of documentary sources, such as coroners' findings, is an efficient and relatively unobtrusive form of data collection (Patton, 2015). However, there are a number of common issues associated with this research method. The impact of these issues is perhaps most apparent in studies such as this one – where documentary sources are the sole source of data (rather than being used in conjunction with other methods of data collection, such as interviews, focus groups, or observational research).

One of the common challenges when using this method lies in simply gaining access to the documents (Patton, 2015). This study faced a considerable delay before access to NCIS was granted. Though this delay did not significantly impact the overall study, it nonetheless tightened timeframes for several aspects of the project.

Documentary sources are also notoriously variable in quality (Patton, 2015). This necessitates some assessment of the accuracy and authenticity of the documents that have been gathered (Bryman, 2016). Issues associated with the quality of coronial data will be discussed shortly. In summary, however, there was significant variation in both the quality and level of detail in the coroners' findings. On rare occasions, some coroners' findings also contained unwarranted speculation (such as statements about the 'true motivations' underlying certain actions of the deceased) or moral judgements regarding the behaviour of the deceased or their family members. Reviewing and coding the coroners' findings therefore required an ongoing assessment of the information these reports contained, in section to enable the identification of any nonfactual statements.

Another limitation associated with document analysis is that the researcher has no control over how the information in documents was gathered, and this information is usually compiled for purposes that are different from the researcher's purpose (Green & Thorogood, 2018). It is therefore necessary to consider who produced the documents, why they produced it, and who the intended audience was (Bryman, 2016). Coroners' findings serve to establish various factual matters, including: that a person has died, the person's identity, where and when they died, the causes of death, and the circumstances of the death (Coroners Act 2006). Some coroners' findings also contain recommendations, with the aim of preventing similar deaths in future. Researchers are not the primary intended audience, and furthermore, it is not a coroner's task to focus specifically on the role that work factors may have played in each death.

Related to the issue of the writer and reader having different purposes, document analysis involves the interpretations of not only the researcher, but also those of the person who wrote the document (Bryman, 2016). In the case of coroners' findings, there are additional layers of interpretation, occurring prior to the coroner writing their report. This includes the interpretations of those providing information (for example, family members, friends, colleagues, and health professionals), and the interpretations of those who initially record this information (for example, the police or another investigative authority). These various interpretations require consideration, including reflection on the role of biases.

Bias

Researcher bias is a potential threat to validity in all studies. However, it is viewed as a particular issue for qualitative research, due to the qualitative researcher's role as the instrument of data collection (Maxwell, 2013; Xu & Storr, 2012). Reflection on the positionality of each member of the research team was therefore necessary. This helped maintain mindfulness of team members' potential biases, which was particularly important while reviewing and analysing the coroners' findings, and during peer examination of the coding.

Another step to manage researcher bias was taken during a specific stage of data analysis. This involved the use of the four contextualising questions, while determining the significance of work-related stressors in each case. As discussed in Section 2 Contextualising work stressors, these questions enabled less reliance on a purely subjective assessment of this significance.

However, researcher bias was not the only bias posing a threat to this study's validity. Bias at the other 'layers' of interpretation also needed to be considered. Again, this included: those providing information about the deceased, those initially recording this information, and those who convert this information into a written report.

It is estimated that only somewhere between 15–40% of people who die by suicide leave behind a note (Callanan & Davis, 2009). Leaving aside potential issues associated with using suicide notes as a source of data, this nonetheless means that first-hand accounts of why a person died by suicide are not particularly common. Instead, the information in coroners' findings – including discussion of contributing and causative factors – depends almost entirely on the accounts of others.

As such, all coroners' findings (and therefore also this study) are vulnerable to the issue of recall bias (Milner *et al*., 2017). A potential example of this was detected during data analysis, where it was observed that family members appeared more likely to emphasise the role of work stressors, while employers and colleagues appeared more likely to emphasise the role of stressors at home. To the extent that this observation can be generalised, any explanation a coroner provides regarding a person's suicidality (along with discussion of the apparent role of personal and work-related stressors) would seem to depend heavily on who the police approach as their primary source of information.

Following the accounts of family members, friends, colleagues, and any involved health professionals, there are the interpretations and biases of those recording this information (namely, the police) and those writing the findings (the coroners). Among the various biases that police officers and coroners may hold, is the possible assumption that people with 'high status' jobs are more likely than others to experience work-related stressors. Where this assumption is made, it would likely result in more attention being directed towards investigating potential work stressors in such cases.

A somewhat related issue, which was observed in this study, is the tendency for greater attention to detail in 'high profile' cases. This was seen in the uncharacteristically thorough coroners' findings that were completed for cases that may have drawn media attention.

CODING

Studies that use an entirely deductive approach to coding often have the limitation of being unable to code certain data simply because it does not fit the a *priori* coding frame. This study overcame that limitation by taking a hybrid approach to coding, as described in section 2.1. This hybrid approach began with an a priori coding frame, but also allowed for additional codes (pertaining to work stressors) to inductively emerge from the data.

A large component of the study's coding frame was derived from the psychosocial hazards that were identified by ISO (2021). These hazards (framed as stressors) include and extend beyond the stressors that are commonly identified in the work-related suicide literature. As such, they provided a comprehensive foundation for this study's coding frame.

Generally, the codes that were derived from these psychosocial hazards were both internally homogenous (that is, coherent) and externally heterogenous (that is, distinct). One exception to this, however, was seen in a degree of overlap between the codes 'job demands' (which included, 'having too much work to complete within given time and resource constraints') and 'workload' (which included, 'work overload'). This overlap was managed by coding issues associated with having too much work as 'job demands' when time or resource constraints were made explicit in the coroner's finding, and as 'workload' when those constraints were not made explicit.

Coronial data

MISCLASSIFICATION OF DEATHS

In the suicide literature, a regularly discussed limitation arising from the use of coronial data is the misclassification of deaths. This issue has been found to result in an underestimate of suicides in some coronial records (Alicandro *et al*., 2021; Kraus *et al*., 2005). Often, this misclassification occurs due to an inability to determine intent in a self-inflicted death (Maheen *et al*., 2021; Roberts & Marlow, 2005).

This study (like many suicide studies) chose not to include indeterminate cases. By limiting the results to cases that were classified as intentional self-harm, a number of likely suicides (that is, deaths that appear to meet the definition of suicide, but for which the coroner felt the person's intent was not sufficiently clear) may have been excluded from this study. Including indeterminate cases in a suicide study can involve disputing coroners' findings and reclassifying (for research purposes) some of these cases as suicides. The potential complications involved in this approach, combined with the relatively small number of indeterminate cases, led the research team to decide that this would be of limited value in this study. For reference, there were 55 deaths that occurred in New Zealand between 2017 and 2021 (for which a coroner's finding was available in mid-August 2022) that were classified by coroners as involving 'undetermined intent'.

DETAIL REGARDING WORK FACTORS

In a number of the coroners' findings reviewed in this study there was a significant lack of detail regarding the circumstances of the death. In particular, there was often a noticeable lack of detail regarding the role of work factors.

In some cases, this lack of detail appeared to originate from the police reports that coroners receive. Among the coroners' findings reviewed in this study, there were several in which the coroner directly commented on this issue of inadequate detail in the police reports they received.

In other cases, it appeared that this lack of detail originated from the coroner's decisions about what details to include in their written findings (from the wider information that was available to them). This issue was highlighted in cases where details about various stressors were included in the coroner's finding only

as a result of the case being reviewed by a mental health professional (at the coroner's request). Additionally, there were cases where the coroner stated in their report that certain details about the deceased (such as their health history or the stressors they faced) did not need to be included, as these detail were already known to family members.

Often, the issue of inadequate detail in the coroners' finding took the form of relevant factors (especially work factors) being touched on only briefly and broadly, with little elaboration. However, there were also a number of cases in which there appears to have been no investigation of potential work factors at all, despite the circumstances of the person's death appearing to provide a clear rationale for such an investigation to occur. An example of circumstances that would seem to warrant an investigation into work factors (but apparently did not) were suicides that occurred after a person's first day at a new job.

CASE CLOSURE RATES

Another potential threat to validity that the research team was mindful of arises from the length of time it takes for coroners' findings to be completed. It seems plausible that suicides which appear to involve a greater number of (or more complex) contributing factors will face the longest delays in the completion of a coroner's findings. To the extent that work-related suicides involve a greater number or complexity of contributing factors, the research team considered the possibility that there may be a disproportionately high number of work-related suicides among those cases for which the coroner's finding was incomplete. This concern was not reflected in the study's data, however, as the rates of work-related suicide in both the 2021 data (11.8%) and the 2020 data (12.4%) were similar to the overall rate of 11.7%.

FUTURE CHANGES

At the time of writing, the Coroners Amendment Bill will soon have its second reading in New Zealand's Parliament. This bill intends to amend the Coroners Act 2006, with a stated aim being to reduce the amount of time it takes for coroners' findings to be issued, and consequently minimise the distress that family members often experience while waiting for these findings.

To this end, the proposed amendments include allowing coroners to record the cause of death as 'unascertained natural causes', without further investigation or an autopsy, if it appears as such to the coroner. This amendment has come under particular criticism, as pathologists have pointed out that deaths which initially appear to be due to natural causes can, after an autopsy, turn out to be otherwise. This includes deaths that are later found to be suicides. Compounding the concern around recording a cause of death without an investigation or autopsy is the fact that coroners generally lack medical training. While this amendment may reduce the time it takes for some coroners' findings to be issued, it would also likely exacerbate the issue of misclassified deaths.

Another proposed amendment would allow coroners to produce written findings that simply state the cause of death, if the coroner decides that the broader circumstances of the death are not of public interest. This would likely result in a greater number of coroners' findings that are lacking in detail. Among the implications of this amendment is the impact it would have on research projects such as this one, which ultimately aim to reduce preventable deaths.

A third proposed amendment looks more promising in its potential to reduce the time it takes for coroners' findings to be issued, without necessarily compromising the quality of coroners' reports. This amendment involves the establishment of an 'associate coroner' role. Associate coroners would be able to undertake most of the current functions of a coroner, except for conducting coronial inquests (as distinct from coronial inquiries).

3.0 Responses to work-related suicide

IN THIS SECTION:

Recommendations for future action.

Section 3 of this report provides recommendations that arise from the findings of Sections 1 and 2. These recommendations are intended to aid considerations of potential responses to work-related suicide. They will be relevant for consideration by WorkSafe, as the country's primary workplace health and safety regulator. The recommendations also have broader applicability – including to interested researchers and policymakers. Where possible, Section 3 will refer to or summarise points that were made in parts one and two of the report, rather than repeat these points in full. Readers will be directed towards the relevant sections that contain the more detailed discussion.

The first recommendation refers to the need to move beyond conceptual ambiguity, by embracing explicit definitions and criteria for work-related suicide. Specific definitions and criteria will then be offered. Secondly, the report recommends more focused and routine scrutiny of potential work-related suicides, including by WorkSafe. Drawing on lessons from the study presented in Section 2, the report offers suggestions about how certain aspects of these assessments could be conducted, to enable robust findings. This includes a brief discussion of how notifications of potential work-related suicides might be facilitated. Thirdly, the report discusses how the routine evaluation of potential work-related suicides should be accompanied by the careful collection and dissemination of findings from these assessments. By contributing to improvements in data quality, regulators such as WorkSafe can support wider efforts to prevent work-related suicide. Finally, a number of recommendations for future research will be summarised.

Section 3 concludes the body of this report.

3.1 Adopt clear definitions and criteria

As discussed in Section 1 of this report, there is no explicit, agreed-upon definition of work-related suicide in the literature. One consequence of this is that each study of work-related suicide appears to simply construct its own list of criteria for classifying suicides as work-related, resulting in findings that cannot easily be compared or collated. While the impact of this issue is most evident in the small amount of research that has examined work-related suicide, the absence of an explicit definition and agreed-upon criteria would also affect any efforts to assess, understand, and ultimately prevent work-related suicides.

Discussions from parts one and two of this report help to clarify the terms 'work-related suicide' and 'work-relatedness'. Therefore, the first recommendation is to draw upon these discussions in order to adopt explicit definitions for both terms. Note that the definitions (below) for both work-related suicide and work-relatedness are not without difficulties. They nonetheless provide a useful degree of clarity and could evolve as research in this field grows.

A work-related suicide can be defined as **a suicide in which work-related factors significantly contributed to the suicidality of the deceased**. This definition requires the further clarification of three terms: 'suicide', 'suicidality' and 'work-related factor'. Furthermore, determining whether a work-related factor 'significantly contributed' to suicidality requires a process of careful assessment. This process was discussed in detail in Section 2 *Contextualising work stressors* – key points of which will be summarised shortly.

An effective and simple definition of 'suicide' is provided by the US Centres for Disease Control and Prevention (2022), who define it as, 'death caused by injuring oneself with the intent to die'. 'Suicidality' is a broader term that encompasses the range of thoughts and behaviours relating to suicide, including suicidal ideation, suicide attempts, and suicide deaths (Meyer *et al*., 2010; Slade *et al*., 2009). Finally, as discussed earlier in this report (Section 2 *What counts as a work-related stressor?*), work-relatedness can best be defined with reference to the Health and Safety at Work Act 2015 (s. 56). Thus, a 'work-related factor' can be understood as a factor that arises out of the conduct of the business or undertaking.

Potential and actual work-related suicide

The above definition of work-related suicide should be accompanied by clear criteria. Furthermore, any examination of work-related suicide will benefit from retaining the important distinction between a **potential** work-related suicide and an **actual** work-related suicide.

Even in the absence of detailed information about a suicide, the criteria for a **potential** work-related suicide can enable the identification of suicides that appear to involve work-related factors, and which therefore warrant further assessment. The criteria for an **actual** work-related suicide then enables the identification of suicides in which the role of work factors has not only been confirmed, but appears significant in explaining the person's suicidality. Not using a distinction between **potential** and **actual** work-related suicides (that is, only using criteria for an actual work-related suicide), results in a need to closely inspect all suicides, in order to identify those that are work-related. This is because the criteria of an **actual** work-related suicide (particularly the second criterion) can only be confirmed as present or absent after a thorough examination of the circumstances of the case.

Beyond the general distinction between a **potential** and **actual** work-related suicide, Section 2 of this report provides specific criteria for each. Section 2 also defines and explains in some detail all three components of these criteria, including: 'work-related stressors' (see Section 2 *What counts as a work-related stressor?*), 'work-related means' (see Section 2 *What counts as work-related means?*), and 'workplace' (see Section 2 *What counts as a workplace?*).

A potential work-related suicide is one that involves any of the following three criteria:

1. the suicide occurred in the deceased person's workplace
2. the means of suicide appear to be related to the deceased person's work, and/or
3. there is circumstantial evidence (such as a suicide note or witness statement) indicating that work-related stressors were a **contributing** factor.

An actual work-related suicide is one that involves either of the following two criteria:

4. the means of suicide are confirmed to have been distinctly related to the deceased person's work, and/or
5. work-related stressors played a **significant** role in the person's suicidality.

As such, there are three key differences between **potential** and **actual** work-related suicides.

First, the occurrence of a suicide in the workplace of the deceased is, by itself, insufficient for classifying a death as an **actual** work-related suicide. Despite this, it remains a useful criterion for ultimately identifying **actual** work-related suicides, due to the apparent (and as yet unexplained) correlation between suicides in the workplace and the presence of work-related stressors. In circumstances where the initial information about a suicide is limited, this criterion can serve as a helpful 'red flag'.

The second difference between **potential** and **actual** work-related suicides is that, for the latter, the means of suicide are confirmed as being work-related, and this relationship between the person's work and the means of suicide is considered distinct. The lower threshold for **potential** work-related suicides (that is, that the means of suicide **appear** to be work-related) allows for both the limited amounts of information that may initially be available, and the fact that determining whether the means of suicide are distinctly work-related requires an assessment that is not always straightforward.

Third, in the case of an **actual** work-related suicide, work stressors are not simply suspected, their presence has been confirmed through an inquiry. Furthermore, in an **actual** work-related suicide, these work stressors have been assessed as playing a significant role in the person's suicidality. This is done by contextualising the role of work stressors within the wider circumstances of the suicide. A detailed description of this contextualisation process was provided in Section 2 *Contextualising work stressors.* All cases in which work stressors were present but appeared to play a non-significant role are therefore not included as **actual** work-related suicides.

3.2 Inquiries into work-related suicides

The Health and Safety at Work Act 2015 (s. 56) requires that all work-related deaths or serious work-related injuries (that is, injuries requiring an inpatient admission for immediate treatment) be reported to WorkSafe. This requirement encompasses injuries and deaths both in and outside the workplace, so long as the injury or death is 'arising out of the conduct of the business or undertaking'. In principle, the Act appears to require the notification of not only all work-related suicides, but also all instances of work-related suicide attempts and work-related self-harm that result in serious injury.

Section 2 of this report presented the finding that 11.7% of suicides that occurred in New Zealand between 2017 and 2021 (for which a coroner's finding was available in mid-August 2022) met the criteria as a work-related suicide. With such deaths accounting for more than one out of every 10 suicides in New Zealand, there appears to be a strong justification for WorkSafe to consider the impact of potential work-related suicides.

If work-related suicide was a well-recognised issue, it is likely that the primary sources for notifications of a potential work-related suicide would be employers, colleagues, or family members of the deceased. To facilitate greater recognition of this issue, businesses could be provided education regarding work-related suicide and a clear expectation could be communicated that WorkSafe is notified in the event of a potential work-related suicide.

Drawing upon the criteria listed in the previous section, guidance could be given that businesses notify WorkSafe if the suicide of a worker occurs and any of the three following criteria are applicable:

- the suicide occurred in the deceased person's workplace
- the means of suicide appear to be related to the deceased person's work, and/or
- there is circumstantial evidence (such as a suicide note or witness statement) indicating that work-related stressors were a contributing factor.

As recognition of work-related suicide gradually develops, interagency collaboration to share information about potential work-related suicides will greatly enhance our understanding and practice. A potential limitation in this approach is that it is unclear how much information agencies would receive regarding possible work-related stressors as section of the initial notification.

Though the purposes of research and a workplace assessment differ, several aspects of the research methodology described in Section 2 of this report could potentially be adopted or adapted to aid inquiries into work-related suicide. The first aspect has already been discussed. This involves maintaining the distinction between **potential** and **actual** work-related suicides. Any suicides that meet at least one of these criteria can be classified as a potential work-related suicide and subjected to further exploration.

Those exploring potential work-related suicides could make use of elements of the study's coding frame (see appendix). This may assist with the identification and assessment of work stressors, personal stressors, and other risk factors. However, as in the study, a 'hybrid approach' should be taken. This involves assessors not only using a deductive coding frame, but also looking for additional work stressors that may emerge inductively from the gathered information. However, care is needed in this inductive process, to ensure the work-relatedness of any additional stressors were not already captured by the coding frame. A process for determining the work-relatedness of stressors is described in Section 2 *What counts as a work-related stressor?*, but, in summary, this involves confirming that these stressors **arose out of** work, rather than being stressors that **impacted upon** work. To support the rigour of any assessment (particularly regarding the inclusion of additional work stressors), the assessment should undergo some form of peer review.

The coding frame also contains other useful codes and data fields. This includes the 14 categories of 'location types' used by NCIS (see Table 14); the length of time between job loss and death (in cases where the person was not employed at the time of incident); and (where applicable) employer awareness of their employee's distress. Capturing information regarding employers' awareness of employees' distress could support efforts to help those experiencing suicidality feel more able to communicate this, including finding ways of safely doing so in the workplace.

A final aspect of the study that could be adopted in any assessment of suspected work-related suicide is an effort to contextualise the role of work factors. The importance of this, and a process by which it can be done was discussed in Section 2 *Contextualising work stressors*. The details of this process will not be repeated here, but to summarise – once assessors have gathered sufficient information they can use the four contextualising questions to guide their assessment of the significance of work factors. Suicides in which work factors were present can then be classified according to whether those work factors were: predominant, notable, or non-significant. In cases where the role of work factors was non-significant (which therefore do not qualify as **actual** work-related suicides), businesses may benefit from general guidance regarding mentally healthy work. In cases where the role of work factors was notable, businesses may require more targeted education and support. Finally, in cases where the role of work factors was predominant, more assertive actions might be required.

Other notifiable suicides

This report may not encompass all suicides that are **notifiable** to a workplace health and safety regulator. There may be suicides which, despite not meeting the criteria of a potential work-related suicide, are nonetheless of concern to health and safety regulators. Such suicides are beyond the scope of this report and will not be explored here in detail. However as a broad overview, there appear to be at least two scenarios where a suicide may be notifiable, despite

not being work-related. The first involves suicides that occurred in other people's workplaces, while the second involves suicides in which the means of suicide were accessed through other people's workplaces. It is possible that a single suicide might fit both of these scenarios.

Following a suicide in the first scenario, businesses may benefit from guidance regarding postvention for workers who were exposed to the suicide. The term postvention refers to planned interventions with those affected by a suicide. It aims to both facilitate the grieving process and minimise adverse outcomes, such as suicidality or a deterioration of mental health (Andriessen, 2009; Berkowitz *et al*., 2011). Suicides that fit within the second scenario may raise safety concerns regarding a failure to adequately store (that is, limit access to) potentially lethal objects. These concerns may warrant further investigation.

3.3 Collect and share data

Conducting routine assessment of potential work-related suicides would create opportunities to work with businesses to reduce psychosocial hazards that workers are exposed to, and thereby reduce the risk of similar deaths in future. However, findings could also be collated and used towards wider efforts to prevent work-related suicides. This would require the careful collection and sharing of work-related suicide data.

Following an investigation into a potential work-related suicide, the gathered data can be collated to provide a clearer picture of the ongoing prevalence of work-related suicide in New Zealand. When sufficient numbers of individual assessments have been completed, this information could build on the findings in Section 2 of this report, and be used by policymakers, researchers, and mental health professionals to identify key areas of concern. This could include further examination of: the industries or occupations in which rates of work-related suicide are particularly high; the types of work stressors that appear most detrimental; or work-related means that are of particular concern. These data are not systematically collected by NCIS.

Following a similar process to Safe Work Australia codes could be assigned for work-related deaths and provided to NCIS. These codes can then be incorporated into the NCIS case files. Ultimately, this would enable fast and reliable access to coroners' findings pertaining to work-related deaths in New Zealand. Currently, this information is not available for New Zealand cases. Reflecting this, all 17 'red cases' that were identified in the study (that is, suicides in which work factors were predominant) are classified as 'not work-related' on NCIS.

3.4 Support further research

Further research would be beneficial for any future policy responses to work-related suicide. Agencies such as WorkSafe could contribute to this process by undertaking or supporting specific research projects. This could include the areas for future research summarised below.

As a newly emerging field of research, additional empirical studies into work-related suicide are needed. These studies will ideally take place in a variety of contexts, including both developed and developing nations. A combination of robust longitudinal studies and psychological autopsies using qualitative methods would deepen our understanding of the impact work factors have on suicidality, as well as their relationship with other, 'non-work' risk factors. Such studies may also strengthen the evidence regarding the causal role of work-related stressors in suicidality.

Section 2 of this report highlighted a number of specific areas for future research. These included further examination of potential connections between work-related suicide and demographic features, geographic regions, or particular industries. Other potential connections of interest included those between each of the three types of work factor (that is, work stressors, work-related means, and workplace location) and the various demographic features, geographic regions, or specific industries. Section 2 of this report also pointed to a seemingly high correlation between the use of work-related means and the presence of work stressors, as well as between the occurrence of a suicide in the workplace of the deceased and the presence of work stressors. These apparent connections would benefit from further research.

There is also a distinct lack of theory specific to work-related suicide. Further research is needed to develop, test, and refine theory that explains the means by which work-related factors contribute to suicidality. Section 2 of this report identified three key themes among the work stressors: 'work burden', 'conflict and mistreatment', and 'compromised competence and security'. It also indicated that the conservation of resources theory as well as the psychache theory of suicide may be fruitful areas for further conceptual development.

A deeper understanding of work-related suicide and more well-established evidence for the causal role of work-related factors would likely facilitate greater social and legal recognition of work-related suicide. This greater recognition may, in turn, result in more notifications of potential work-related suicide to workplace health and safety regulators, such as WorkSafe. Most importantly, an improved understanding of work-related suicide – achieved through both further research and more frequent workplace investigations – could allow for the development of tailored suicide prevention initiatives, to reduce the occurrence of these deaths.

Conclusion

This report examined the role that work factors can play in suicidality.

It asked, and provided answers to, the questions: What is work-related suicide? What is the prevalence and nature of work-related suicide in New Zealand? What actions might help us understand and respond to work-related suicide? Section 1 of this report reviewed academic literature to uncover what is known about work-related suicide. The review found that although there appears to be some implicit understanding of the term's meaning, there is no explicit definition of work-related suicide in the literature and no agreed-upon criteria for determining such deaths. It also identified low social and legal recognition of work-related suicide in all but a few countries. Section 1 highlighted the interconnectedness of work stressors and personal stressors and discussed the variable impact that work stressors can have. This includes variability associated with stressor type, career stage, gender, and the interpretations and resources of individual workers.

Section 2 examined the occurrence of work-related suicide in New Zealand, with findings from a qualitative content analysis. These findings indicated that 11.7% of suicides in New Zealand between 2017 and 2021 can be considered work-related suicides. Section 2 also explained how the three key work factors of work stressors, work-related means, and a workplace were defined in this qualitative study, and identified the specific stressors, means, and workplace locations that were most prominent. Furthermore, it described the process by which the role of work factors was contextualised, and explained why such a process is important in studies of work-related suicide.

Section 3 offered recommendations for potential responses to work-related suicide. The first recommendation was to embrace an explicit definition and clear criteria for work-related suicide. A definition and two sets of criteria (for both **potential** and **actual** work-related suicide) were then proposed. Second, it was recommended that potential work-related suicides be explored further. Aspects of the study in Section 2 could be adapted to support the rigour of identification and assessment of work stressors, personal stressors, and other risk factors. Third, it was recommended that data regarding work-related suicides be carefully collected and shared, so as to improve data quality and contribute to wider efforts to prevent such deaths. Finally, Section 3 presented a range of research recommendations.

By uncovering what is known about work-related suicide, examining its occurrence in New Zealand, and recommending potential responses, this report not only contributes to emerging understandings of this issue, it also serves as a call to action. Work factors appear to play a significant role in more than one out of every ten suicides. Currently, this issue remains largely unexamined and undiscussed, resulting in a lack of targeted efforts to attend to the aspects of work that may increase suicide risk. The complex, multifactorial nature of suicidal behaviour, along with the fact that classifying a suicide as work-related requires various subjective assessments, create challenges in recognising and responding to work-related suicide. Despite this, there is an opportunity for workplace health and safety regulators, policymakers, researchers, and mental health professionals to collaborate and meaningfully contribute to such efforts.

Appendices

IN THIS SECTION:

Appendix 1: References

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Appendix 2: Coding frame

NCIS CASE FILE NUMBER	
Criteria for work-related suicide	– Did the incident or death occur in their own workplace? – Were the means of suicide related to their own work? – Were any work-related stressors noted in the coroner's finding?
Demographics, location, and means	– Age – Sex – Gender identity – Ethnicity (NZ Census categories) – Geographic location of the incident (NZ Census categories) – Location type of the incident (NCIS location categories) – Location type of the death (NCIS location categories) – Object used (if work-related means)
Work details	– Main occupation – Industry (WorkSafe categories) – Other occupation(s) – Employer aware of employee distress? – Time between job loss and death (if unemployed)
Personal stressors and risk factors	– Physical health issue – Diagnosed mental health issue – Past suicide attempts – Family history of suicide – History of substance abuse – Intoxicated at time of incident – Family/relationship issues – Bereavement – Trauma – Social isolation – Financial pressures – Unemployment – Legal issues – Cultural issues – Other personal stressors (describe)
Work stressors: organisational	– Roles and expectations – Job control or autonomy – Job demands – Organisational change – Remote or isolated work – Workload and work pace – Working hours and schedule – Job security and precarious work
Work stressors: social	– Interpersonal relationships – Leadership – Organisational culture – Reward and recognition – Career development – Support – Supervision – Civility and respect – Work-life balance – Violence at work – Harassment – Bullying and victimisation

NCIS CASE FILE NUMBER	
Work stressors: environmental	– Work environment, equipment, or hazardous tasks
Added work stressor codes	– Performance management process – Error at work – Work-related injury – Starting a new job or business – Failure or dissolution of business – Work stressor - not otherwise specified
Contextualising questions	– What were the number of work-related stressors in relation to the number of personal stressors/risk factors in this case? – Were any of the work-related stressors recent (that is, the precipitating event occurred within six months of the incident)? – Were any of the work-related stressors recurring or chronic (as opposed to being one-off or short-lived events)? – Is there any evidence of preoccupation with work-related stressors at the time of incident (for example, as detailed in a suicide note or final conversation)?
Additional comments	

Notes

Disclaimer

WorkSafe New Zealand has made every effort to ensure the information contained in this publication is reliable, but makes no guarantee of its completeness.

It should not be used as a substitute for legislation or legal advice. WorkSafe is not responsible for the results of any action taken on the basis of information in this document, or for any errors or omissions.

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