



# Balancing the challenges of Mental Health Claims in Insurance

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## 1. Introduction

Both life and general insurers have experienced significant challenges with disability insurance, particularly from mental health claims. It is well known that the key to improving outcomes is to acquire a better understanding and address the social and psychological factors that impact both claim incidence and recovery.

This paper considers the many relationships and risk factors for mental health conditions that are already well known through clinical, insurance or other academic research.

Developments in data capture and technological advances, such as cognitive learning, present opportunities to leverage these established relationships to understand claims risks and improve the claims management model.

Actuaries have a key role in developing these solutions including providing insights based on analysis of data, data science and support to the decision makers and business leaders.

To achieve this actuaries need to stay connected with the issues, advancements and work alongside the business as it develops its thinking and starts to make greater use of data and new technology/information based strategies. It goes without saying that better information and understanding also assists our other “core/statutory” actuarial roles, including reserving and pricing.

This paper covers 4 key areas:

- Chapters 2 and 3 – provide some context about mental health conditions for later chapter discussion.
- Chapter 4 – provides an introduction to some findings from the studies and the literature on clinical and insurance risk factors that impact disability (incidence, recovery time and response to treatment), with a focus on mental health conditions.
- Chapter 5 – taking into account the literature, this chapter outlines two examples of how existing claims management approaches can be enhanced using additional data and technology.
- Chapter 6 – considers actuarial involvement.

As part of our processes for this paper we consulted with a number of industry experts across a variety of roles in order to gain a sector perspective. A special thanks goes out to these individuals for the insights they provided. We also thank our peer reviewers, Martin Paino and Jefferson Gibbs, for their inputs and feedback on this paper. Any errors in the paper remain the responsibility of the authors.



## 2. Overview of Mental Health Conditions

### Definition of Mental Health and Mental Illness

The World Health Organisation (WHO) defines mental health as; ‘a state of well-being in which every individual realizes his or her own potential, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to her or his community’. WHO emphasizes that ‘mental health is an integral and essential component of health’.

The Australian Government defines mental illness as ‘a health problem that significantly affects how a person feels, thinks, behaves, and interacts with other people’.

### Types of Mental Illness

Mental illnesses are broadly categorized into how they disturb thoughts and behaviours in people.

Mental health disorders are frequently categorized by diagnostic features that can be collated into subgroups of specific diagnoses, such as in the table below. It is worth noting that mood and anxiety disorders are the most common, particularly for insurers<sup>1</sup> and therefore are the focus of observations contained in this paper.

<p><b>Mood Disorders</b> - Mood disorders refer to conditions that disturb a person's mood to the point where it becomes difficult to function in relationships or at work.</p>	<ul style="list-style-type: none"> <li>• Depression (including subtypes)</li> <li>• Bipolar disorder</li> <li>• Substance-induced mood disorder</li> </ul>
<p><b>Anxiety Disorders</b> - People with anxiety disorders may be unable to stop worrying about seemingly unimportant things, and they perceive situations as much worse than they actually are.</p>	<ul style="list-style-type: none"> <li>• Generalised anxiety disorder</li> <li>• Social anxiety disorder</li> <li>• Agoraphobia</li> <li>• Obsessive - compulsive disorder (OCD)</li> <li>• Post traumatic stress disorder (PTSD)</li> <li>• Panic disorder</li> </ul>
<p><b>Psychotic Disorders</b> - Psychosis or psychotic disorders describe illnesses that can make you have distorted thoughts or lose touch with reality.</p>	<ul style="list-style-type: none"> <li>• Schizophrenia</li> <li>• Brief psychotic disorder</li> <li>• Delusional disorder</li> <li>• Substance-induced psychotic disorder</li> </ul>
<p><b>Personality Disorders</b> - People with personality disorders find it hard to change their behaviour or adapt to different situations. They may have trouble sustaining a job or forming positive relationships with others.</p>	<ul style="list-style-type: none"> <li>• Antisocial personality disorder</li> <li>• Borderline personality disorder</li> <li>• Narcissistic personality disorder</li> <li>• Dissociative identity disorder</li> <li>• Avoidant personality disorder</li> <li>• Histrionic personality disorder</li> </ul>
<p><b>Eating Disorders and Body Image</b> - Unusually preoccupied with food and their weight</p>	<ul style="list-style-type: none"> <li>• Anorexia nervosa</li> <li>• Binge-eating disorder (BED)</li> <li>• Body dysmorphic disorder</li> <li>• Bulimia nervosa</li> <li>• Disordered eating</li> </ul>

Adapted from [mindhealthconnect.org.au](http://mindhealthconnect.org.au)

<sup>1</sup> Some mental illnesses tend to arise at older ages (such as cognitive decline and dementia) and therefore are not the source of a large number of insurance claims. Depending on the severity, psychotic disorder cases can be so permanent and severe that a person has had difficulty working throughout most/all of their adult life. These are also therefore not common causes of insurance claims.



## Diagnosing Mental Health Conditions

Unlike many physical illnesses, there are no identifiable biomarkers, clinical or laboratory tests which can be used to diagnose any condition in the DSM 5 (Diagnostic and Statistical Manual of Mental Disorders, 5<sup>th</sup> Edition) (First, 2010) and therefore by necessity, diagnoses are made based on clinical presentation and the patient's self-report of symptoms and disability.

There is a school of thought that the evidence base for psychiatric medicine may lag significantly behind other medical disciplines. There is some clinical and academic criticism that the DSM 5 lacks supportive empirical evidence and inter-rater reliability for the listed diagnoses (Ingleby, 2014). Notwithstanding these opinions, at present, the DSM 5 remains the universal authority for diagnosis of psychiatric illnesses and is widely used as a classification and diagnostic reference for insurance.

To diagnose a mental health disorder, the patient informs the clinician about their history, problems and symptoms. The diagnosis is made by integrating the clinician's best interpretation of the patient's problems with their observations of responses and behaviours during the interaction. Highly skilled clinicians with specific psychological expertise are very capable of critically thinking and making these clinical decisions to form diagnoses. The importance of highly skilled clinicians in the claims process was also a reoccurring theme in discussions with specialist psychiatrists and other medical specialists for this paper.

Without reliable and measureable biological markers to accurately diagnose mental health conditions, variation can emerge between clinicians regarding an individual's state of mental health. For example, Regier et al (2013) questioned the reliability of the diagnosis of a number of common mental health conditions based on test re-test reliability trials of DSM 5 diagnostic criteria. This study showed:

- Two independent clinicians would agree in their diagnosis of conditions including major depressive disorder and generalised anxiety disorder less than 39% of the time.
- The best diagnostic reliability was for Post-Traumatic Stress disorder (PTSD), which showed agreement in diagnoses between clinicians 69% of the time.
- Mixed anxiety-depressive disorder had unacceptable levels of diagnostic reliability, with agreement between clinicians less than 10% of the time.

These results highlight large inconsistencies in diagnosing a specific condition. While this is somewhat understandable given the judgement involved, it is important for insurers to understand the implications of this when designing the claims management process (including when/how different health professionals are engaged), developing insurance products and, identifying potential issues and challenges for consumer and customer service.

## Comorbidities

Adding to the complexity of diagnosing mental health conditions accurately, is the overlay of comorbidities. People with a mental health condition may have other physical health problems and/or other mental health conditions which may impact disability.



Comorbidities are associated with higher rates of disability (and longer recovery), health costs and poorer quality of life. Having a comorbid mental health condition on top of either a physical or existing mental health condition increases hospitalization rates by almost double (AIHW, 2012). Those with mental health comorbidities are twice as likely as others to have had more than 7 days out of the last 30 being unable to fully function in their usual role (AIHW, 2012).

Comorbidity of mental health disorders occurs frequently. For example, the Australian National Survey of Mental Health and Well-Being used telephone interviews to examine mental health disorder prevalence in a healthy population group in the general community. Twenty per cent (20%) of people surveyed met a DSM IV criteria for a mental health disorder in the previous 12 months. (Andrews et al, 2001).

Results indicated where a person met the DSM IV criteria for having one mental health disorder, they had a 40% chance of meeting the DSM IV criteria for another comorbid mental health disorder. However, for those who satisfied one criteria of the DSM IV for a mental illness, 65% had not seen a health professional in the last 12 months. The same applied for 35% of those with multiple comorbid mental health disorders. (Andrews et al, 2001).

The above discussion on comorbidities highlights that more information than a single claim cause value will assist in understanding claim complexity/risk, particularly for mental health claims. This may involve making available additional information fields in claims or administration systems to provide a more complete picture of a particular person on claim and ultimately, the overall portfolio.

In summary, a single claim cause value (e.g. claim cause in claims administration systems are often populated based on a claims coding table i.e. ICD 10 codes or TOOCS<sup>2</sup>) may:

- Not necessarily be highly accurate for all claims (evidenced by lack of consistency in test/re-test results);
- In terms of level of severity of disability, is missing information on any comorbid mental illnesses and physical illnesses (which is a key driver of claim complexity and duration).
- Does not convey information about the social and psychological factors directly affecting the claim and its prospects for recovery (which are also key determinants of claim complexity and duration).

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<sup>2</sup> Type of Occurrence Classification System (TOOCS) is the workers compensation coding system in relation to health and safety incidents in the workplace that is used in Australia.



*Clinical Diagnosis versus Assessment for Insurance*

The International Classification of Impairments, Disabilities and Handicaps (ICIDH) is published by the WHO to provide a conceptual framework for disability.

The framework is based on 3 dimensions for disability; impairment, disability and handicap.

Impairment	Disability	Handicap
In the context of health experience an impairment is any loss or abnormality of psychological, physiological or anatomical structure or function.	In the context of health experience a disability is any restriction or lack (resulting from the impairment) of ability to perform an activity in the manner, or within the range considered normal, for a human being	In the context of health experience a handicap is a disadvantage for a given individual, resulting from an impairment or a disability, that limits or prevents the fulfilment of a role that is normal (depending on age, sex, and social and cultural factors) for that individual.

WHO 1980

Each of these is discussed further below.

*Impairment / Biomedical*

Impairment occurs at the organ or system function level (e.g. changes in brain neurophysiology with clinical depression) – i.e. impairment relates primarily to the biomedical aspect of health and illness.

Disability insurance has its foundations in this biomedical model of health and illness. In a biomedical model, disease or pathology causes illness which is what the individual feels as a result of the disease.

In contrast, health is then simply the absence of any such disease or ill health. To recover from illness in the biomedical model, treatment aims to remove or reduce the disease or pathology (Wade & Halligan, 2004).

*Disability / Handicap*

Disability occurs at the individual level and is the demonstrable loss of function caused by the impairment.

Handicap concentrates on the person and their interaction with their environment and those around them (e.g. absence from work due to interpersonal conflict associated with their depressive symptoms).

A biomedical model can emphasise the search for a diagnosis to explain distress and fails to address the significant influence of psychosocial factors on resultant functional impairment or disability.





A biopsychosocial model is a standard approach in clinical settings. The biopsychosocial model acknowledges the influence of a range of non-medical factors on people's wellbeing. Biopsychosocial factors are covered in greater depth in Chapter 3.

People vary in their individual resilience, their ability to make sense of a potentially traumatic event, the level of support they perceive and their ability to maintain an awareness of self and security. These factors impact their level of ongoing distress.

This more holistic view of wellbeing is also reflected in most benefit terms in disability insurance policies/compensation schemes which are traditionally framed around a level of "handicap" or "disability" in the WHO disability framework, rather than specifically whether the insured has a demonstrable impairment supporting their clinical diagnosis of a mental health condition.





### 3. Overview of Biopsychosocial (BPS) Model

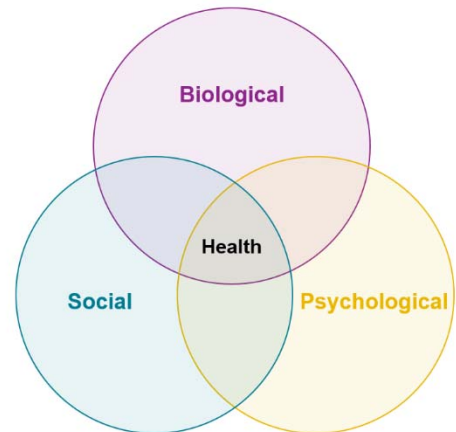
#### Introduction

As noted above, a biopsychosocial (BPS) model acknowledges that the challenges involved in improving a person's health are far more complex than just the medical condition(s) they have been diagnosed with.

A biopsychosocial model recognizes the interaction of biological, psychological and social factors within each person elicits different reactions in human behaviour, illness experience and subsequent disability (Wade & Halligan, 2004).

- Biological factors include viruses, bacteria, toxic agents, accidents, genes and their subsequent impact.
- Psychological factors include personality traits, beliefs and perceptions, and the individual's tendency towards particular behaviours.
- Social factors include cultural, socioeconomic, workplace and family circumstances.

It is noted that mental health conditions are especially challenging due to the intricate and entwined characteristics of biopsychosocial factors in clinical presentations.



#### Impact of BPS factors

The strongest predictors of prolonged absence from the workplace are psychosocial rather than biomedical (Gabbe et al, 2007). This knowledge is essential to a sound understanding of claims drivers in insurance and why social and psychological factors in particular are key risk factors.

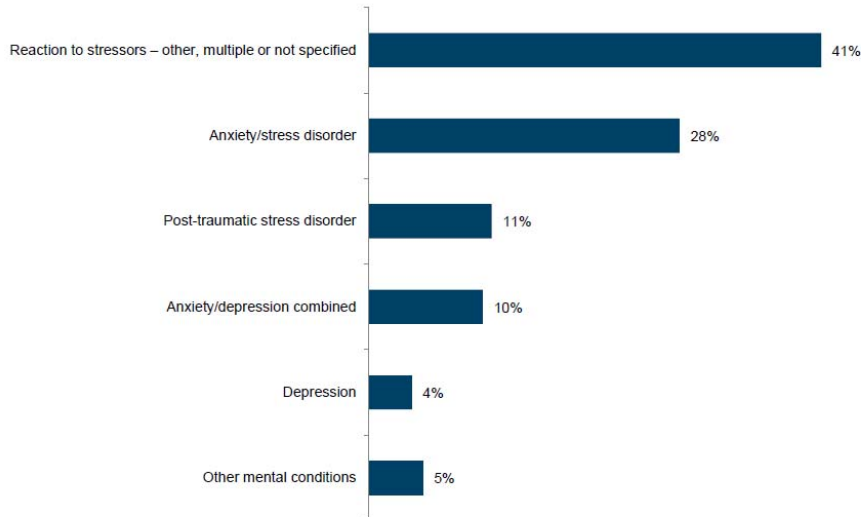
A study of utilising a case management approach<sup>3</sup>, which focused on removing barriers and mitigating the psychosocial risks associated with the employee and the workplace, to workers compensation claims in Victoria halved both claims costs and time off work due to injury (Iles et al, 2012). Case management has been implemented in a pilot group within a life insurer following an extensive training and coaching program. Benefits reported anecdotally include greater customer satisfaction, fewer customer complaints, greater staff engagement and shorter times to claims determination. There is confidence similar financial benefits will follow these initial observations similar to the Victorian workers compensation study.

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<sup>3</sup> Case Management is a holistic approach to claims management which incorporates assessing, analysing and collaboratively working with people on claim to identify their needs and facilitate access to relevant resources necessary for optimal outcomes.



Analysis by Safe Work Australia (2015) has shown 41% of workers compensation mental health claims are due to ‘reaction to stressors’ rather than a specific DSM 5 diagnosis, as outlined in the chart below.



**Proportion of mental disorder claims by nature of injury or disease subcategory, 2008–09 to 2012–13, combined. Safe Work Australia (2015)**

Chapter 4 sets out results from studies on impacts on some of the psychological and social factors impacting claims durations, with a focus on mental illness studies.

### *Distinguishing Between BPS Factors*

The boundary between normal distress and a pathological mental health illness can be difficult to determine. People can exhibit ‘normal’ distress when a life situation or circumstance becomes difficult. Whilst being distressed without cause is abnormal, finding troubling events distressing would be considered normal.

A person may currently be suffering from clinically diagnosed major depressive disorder but still be effectively functioning at work. Alternatively, a person may have a low mood related to financial stressors, but not strictly meet the criteria to be diagnosed with a depressive disorder. However, they may also have conflict with their supervisor at work, relationship difficulties at home and so report difficulty functioning in the workplace, which can lead to greater disability and time off work.

A feeling of distress in certain situations (relationship breakdown, missing a promotion, etc.) stems from the protective psychological human response associated appropriately with psychosocially stressful situations. To have a pathological mental disorder, these protective psychological mechanisms would not be functioning appropriately (Horwitz, 2007).



Workers compensation claimants at times request help with life skills including planning and problem solving to get their life back on track prior to returning to paid employment (Audhoe et al, 2016). This may support the concept of a reaction to distressing circumstances contributing to absence from work as opposed to a mental illness.

If the context of the person's reaction to their individual circumstances is not adequately considered, a normal reaction to an abnormal situation may be unfortunately medicalised as an illness.

### *The Importance of Identifying and Responding to Psychosocial Factors in Claims Management*

In the early 2000's many Australian insurers changed claims management approaches to be more holistic and, over time, claims managers developed a better appreciation of the social and psychological aspects of claims and the benefits of early intervention.

Nonetheless, the implementation of this claims management model is not without its challenges, including quickly and accurately identifying the BPS factors associated with a particular claim.

While there is some automation, a significant amount of the processing and analysis of information to assess social and psychological risk factors is performed by the claims manager.

This can lead to:

- Delays before high risk factors are identified in a claim,
- Not understanding and assessing the risks as accurately or consistently as possible,
- Achieving good outcomes being significantly dependent on the skill level of the individual claims manager,
- More time and effort than would be required if some of the processing and analysis could be more automated.

Chapter 5 considers two potential examples of how improved data and technology may assist with meeting these challenges for faster and more accurate psychosocial risk assessment.

Chapter 6 looks at some of the challenges and opportunities for actuaries in improving models and applying claim data and historic research to provide business insights.



## 4. Studies of Social and Psychological Risk Factors for Mental Health

### Introduction

This chapter provides an overview of a number of different studies which show a link between mental health and a social and/or psychological factor(s).

The studies we have included examine factors we consider insurers may have an interest in. This is because the factor(s) may have potential value in identifying those at risk and acting early on interventions.

Nonetheless, it should be noted that the example studies we have included are by no means exhaustive and new studies are regularly being produced. For actuaries and other practitioners with a particular interest in this area, it is worth staying abreast of the leading developments and research.

### Workplace

The workplace environment an employer creates through their management practices has significant implications for the health of their workforce. Goh et al (2015) found in their review of 228 studies, that:

- The impact of poor workplace factors on health was comparable to that of exposure to secondhand cigarette smoke on both physical and mental health.
- Poor physical and mental health were strongly associated with poor work-life balance, unemployment, high job demands and low levels of autonomy at work.
- Job insecurity increased the odds of self-reported poor health by 50% and raised the odds of having a physician diagnosed illness by 35%.
- Lower levels of organisational justice or perceived unfairness in the workplace was strongly associated with mental health issues.

The above results indicate that workplaces can significantly influence the health of those they employ, and where workplaces are less than ideal, there is a risk of significantly more disability when workers are unwell or injured.

### Return to Work: Expectation and Motivation

Disability is significantly impacted by an individual's perceptions, beliefs and behaviours. People spend less time on disability benefits if they are engaged with the idea of returning to work, have social support and are willing/motivated to participate in their improvement. (Brouwer et al, 2009).

After serious accidental injuries, time off work is best predicted by the injured person's own perception of the severity of their injury and their ability to cope (Hepp et al, 2011). Similarly, those who judge their recovery as going better than expected cease receiving benefits 30%

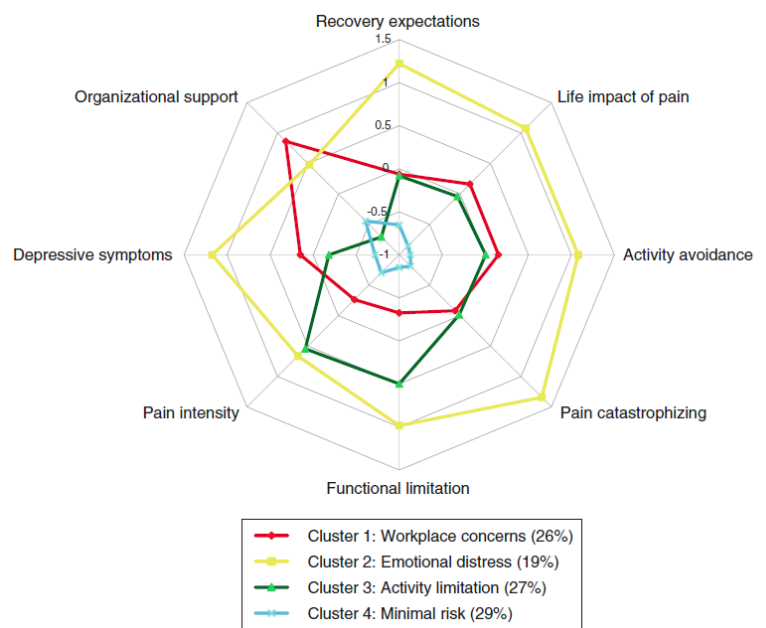


faster than those who feel they are doing worse than expected (Cole et al, 2002). A negative expectation regarding recovery is predictive of a longer time to return to work (Cornelius et al, 2011). Recovery expectations are usually quite stable, however, when recovery expectations decrease return to work outcomes also reduce (Carstens et al, 2013). Gaining insight into the recovery expectation of a person on claim can help predict the claim duration.

### Types of Psychosocial Factors

Identification of the types of psychosocial factors impacting a claim have been studied in the workers compensation sector in the US. At initial evaluation, people self-reported on 11 risk psychosocial factors for chronicity of symptoms and disability. The results of these questionnaires enabled clustering of people on claim into 4 subgroups:

- Minimal risk
  - There are minimal psychosocial concerns and the medical condition is the predominant factor
- Workplace concerns
  - The psychosocial concerns predominantly relate to the workplace e.g. conflict at work
- Activity limitations
  - These people are avoidant of activity, contact with others and they may hold unhelpful beliefs about pain. This cohort tends to avoid things they are not comfortable with.
- Emotional distress
  - These people have psychosocial factors across multiple domains, they often have significant distress and complexity in multiple areas of their lives.



Eight of the eleven psychosocial measures collected at initial evaluation showed significant predictors associated with recovery and return to work at 3 months (Reme et al, 2012). These 8 factors are outlined in the above chart.

It is noted that insights into these 8 significant indicators (as outlined in the image above) can be obtained by building rapport, asking relevant questions and exploring people's individual circumstances. When this data is collected at claims notification it can be utilised to flag both risk and indications for early intervention.



## Potential Impacts of Paying Insurance Benefits and Health Benefits of “Good” Work

A number of studies have found that despite aiming to assist people return to function after injury, claiming disability insurance complicates the recovery process and has negative impacts for people’s health. For example:

- Workers compensation data indicates there are increasing levels of work disability associated with relatively minor injuries (Nicholas, 2002).
- The Royal Australian College of Physicians has noted that people who lodge disability claims in compensation systems, such as workers compensation, have worse health outcomes than those who do not lodge claims for a similar injury (RACP, 2001).
- People covered by compensable systems are less likely than non-compensable patients to return to work even when accounting for injury severity (Gabbe et al, 2007).

The above results are not surprising, due to the potential impact of substantial benefit sizes on motivation (i.e. compensation systems reduce the financial imperative/outcome and hence the need to return to work).

The insurance industry has for a number of years promoted the health benefits of good work to both healthcare specialists and in claims management with the person on claim. This reflects that it is well established that work is generally good for people’s health by providing a sense of purpose, value, autonomy and identity. For example:

- Studies have provided strong evidence that employment improves general mental health and reduces depression (van der Noordt et al, 2014) and that work can facilitate recovery from an illness and enhance mental wellbeing (Harvey et al, 2016).
- Good work is ‘characterised by safe and healthy work practices and it strikes a balance between the interests of individuals, employers and society’ (AFOEM, 2013).

In addition, unemployment is associated with poorer mental health. The odds of having depression are three times higher in those aged 18-25 if they are unemployed (McGee & Thompson, 2015).

The above highlights two aspects; first, motivation seems a key factor in recovery and second, where the reduced financial need to return to work unduly influences a person’s efforts to return to work there is potential for detrimental long-term impacts to overall wellbeing. Therefore, while each case is different, it is important to focus on cases where medical advice or the person on claims perception, unduly influences the belief that work is harmful or that their medical diagnosis alone will prevent them from attempting to work.

It is noted that some specialists we spoke with highlighted the need to continue promoting the health benefits of work and for people with a mental health condition, work is part of recovery (rather than only contemplating returning to work after full recovery).





### Trust and Engagement with the Insurer

Many people on claim find the experience of engaging with injury compensation schemes highly stressful. People on claim reporting high levels of stress have significantly higher levels of disability, anxiety and depression and lower quality of life (Grant et al, 2014). High levels of stress were found to be associated with; understanding what is required for the claims process (33.9%), claim delays (30.4%), the number of medical assessments involved (26.9%) and the level of compensation received (26.1%).

In addition to these potentially stressful aspects of the claims process, we believe that the person on claims' perceptions of the insurer's intentions can be a key driver of outcomes. Our discussions with industry and health professionals support this.

For example, the person on claim may incorrectly believe that the insurer will not treat them fairly, honestly and will unreasonably try to avoid paying them. This can lead to both anxiety and a lack of trust.

The insurer often needs to focus on maintaining the trust of the treating health professional(s) particularly where the person on claim is more open with them.

The impact of trust is evidenced in studies which show improved outcomes where there is a strong connection between an individual and their treating health professional. These studies include:

- The development of a positive therapeutic alliance shows a positive impact on health outcomes in both mental and physical conditions (Martin et al, 2000; Ferreira et al, 2013).
- A good quality therapeutic alliance between clinician and patient is a reliable predictor of positive clinical outcomes in mental health conditions (Ardito and Rabellino, 2011).
- Positive outcomes are further reinforced when the patient feels the relationship is strong and that sense strengthens over time. The ability to establish a good interpersonal connection with empathy and warmth, tailored to the individual client or patient, rather than specific specialised treatment can produce successful clinical outcomes (Lambert et al, 2001).

Similarly, where the person on claim trusts their claims manager, co-operation and accountability will develop (e.g. it should leads to more open and honest conversations and improved participation in recovery activities). Not surprisingly, this anecdotally results in faster recovery time.

### Personality

Studies on the relationship between personality and mental health include those in non-insurance settings as well as in compensable systems.





They have included both incidence, recovery and effectiveness of treatment. An overview of these studies is set out below.

It is noted that most of these studies adopt a five factor model (FFM) of personality which rank a person on a scale for each factor; emotional stability, agreeableness, openness to experience, conscientiousness and extraversion. Further detail of a FFM personality model is set out in Appendix A.

### Non-Insurance Setting Studies

A large number of studies have been undertaken on the link between personality traits and mental health.

A 2010 study “Linking “Big” Personality Traits to Anxiety, Depressive, and Substance Use Disorders: A Meta-Analysis” by Kotov et al combined 175 such studies. This meta-analysis study found that:

- “...common mental disorders are strongly linked to personality and have similar trait profiles. Neuroticism\* was the strongest correlate across the board...Greater attention to these constructs can significantly benefit psychopathology research and clinical practice.”

\* Neuroticism is referred to as low emotional stability throughout this paper.

Low emotional stability was not the only correlate of mental health disorders. Associations were low conscientiousness and low extraversion were also found to be associated with mental health conditions.

### Insurance Studies

In workers compensation populations, differences in personality traits are identified between people with a current claim, those who have lodged claims previously and, those who have never lodged a claim (Gatchel et al, 1995). Specifically they found:

- People on claim had higher levels of emotional instability and introversion, with personality disorders identified at 4 times the incidence expected in the community.
- People who have never claimed are more emotionally stable with significantly lower levels of emotional instability and higher extraversion measures.
- People whose claims process has finished tend to fall between the current claimants and those who have never claimed

These findings may indicate that the propensity to make a disability insurance claim is greater for people with particular personality traits.

Personality traits are quite stable, with life events amplifying existing traits, rather than causing enduring personality change (McCrae & Costa, 2003). Some personality traits appear protective in terms of disability insurance claims while others appear to increase the likelihood of an individual making a claim.



People who score at the lower end of average for emotional instability and higher end for agreeableness may be less likely to lodge claims (Wall et al, 2008). Understanding personality traits may assist in predicting claims and claims outcomes.



## 5. How Technology Can Assist

### Introduction

The previous chapter highlighted various social and psychological risk factors for mental health conditions.

This chapter looks to the future and considers two potential examples of how technology might enable these factors to be leveraged in managing the risks of mental health claims.

The examples include cognitive personality trait analysis and sentiment analysis. While it is not certain that these particular examples/technologies (or indeed even something similar) will be widely adopted or successful in the future, we think they are useful illustrative examples which show the scale and potential for change.

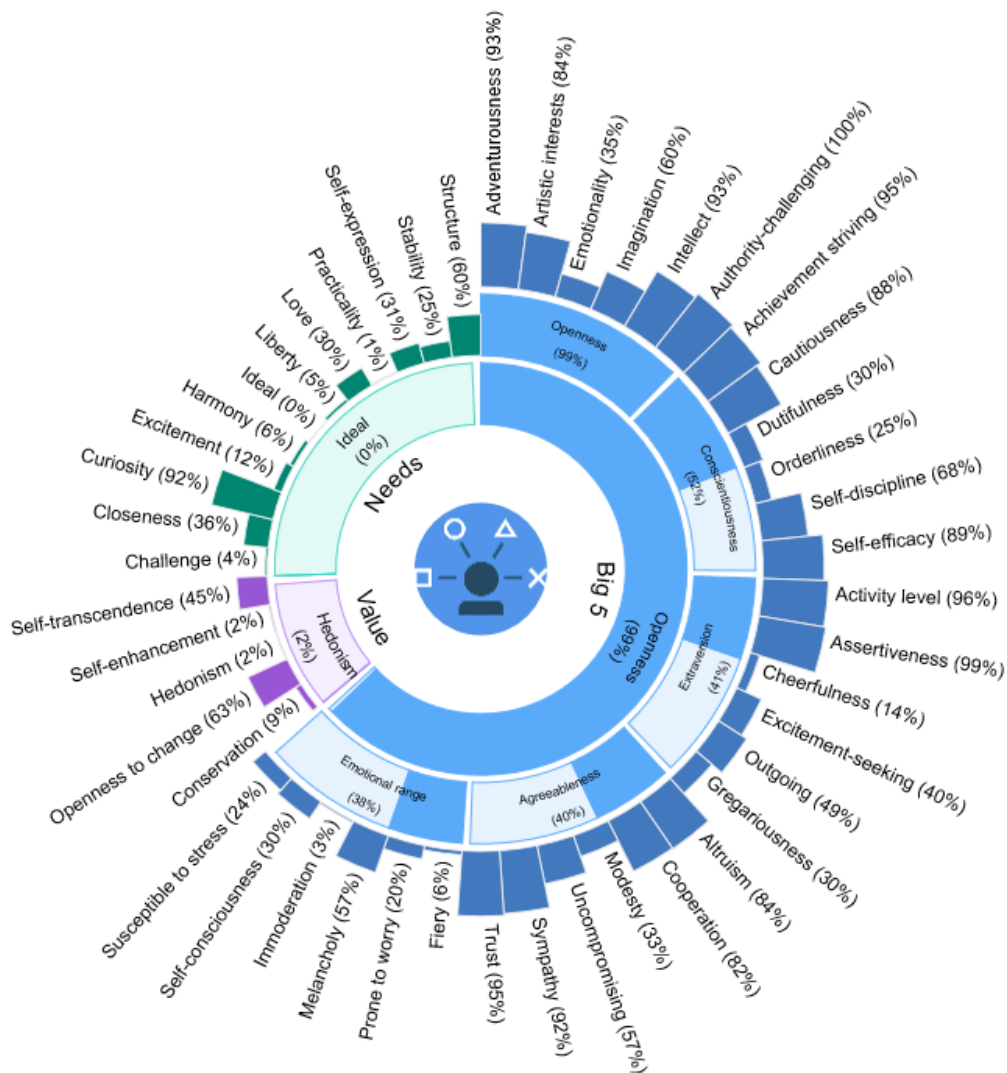
### Example Opportunity 1: Cognitive and Personality Trait Analysis

The studies noted earlier indicate that incidence and/or time to recovery for certain mental health conditions are related to certain personality traits (i.e. emotional stability, conscientiousness and agreeableness, which are 3 of the 5 factors in the FFM).

Good claims managers analyse conversations and written information to understand personality traits, however, cognitive technology has the ability to automatically provide a claims manager with more timely and accurate analysis of the person coming on claim.

Another application of personality trait information to assist with managing mental health claims relates to “trust and engagement”. It may be possible to improve engagement by pairing the individual (based on their personality traits) with the health professional they are likely to develop a trusting, respectful and positive relationship with. Examples already exist of using technology to pair a patient with a therapist they are most likely to engage with. Online therapy providers including talkspace.com use personality traits to match clients and therapists to optimise the therapeutic alliance and facilitate positive treatment outcomes.

An individual’s personality traits can be captured with as little as 600 words of spoken or written input by applications such as IBM’s Watson. The type of outputs that can be produced by cognitive analysis is set out below.



Source - <https://personality-insights-livedemo.mybluemix.net/>

In our discussions with industry professionals some expressed skepticism of the reliability of the personality analysis, and were unsure that this could be addressed by refining questions.

Approaches must also satisfy privacy and general fairness considerations. In this context we note that information collected during the claims management phase is for the express purpose of managing the claim.

Therefore cognitive and artificial intelligence approaches applied to data collected (in the ways described above) are an extension of the claims management decision making processes that are currently done through much simpler computing algorithms and/or human judgment.



*Example Opportunity 2: Sentiment Analysis and Improving Relationships with People on Claim*

Language, tone and sentiment analysis within cognitive computing can be similarly utilised to improve interactions with people on claim. For example, utilising cognitive computing allows scaling of the analysis of interactions between companies and their customers. Moving from sampling a few calls per month per employee to reviewing all interactions, this increased data:

- Could allow insurers to identify specific training needs for each claims professional.
- Could be used to determine which customer personality the claims professional is best at managing, when combined with personality information.
- Reduce the need for insurers to ask the same question multiple times (e.g. when a new claims professional takes on a case, this can result in the claims professional asking a question that was asked previously. This can cause distress for the person on claim). That is, a cognitive search engine can be applied to all calls, which allows the claims professional to quickly identify if a certain question was asked in the past.



## 6. Actuarial Analysis and Data Sources

### Introduction and the Role of Actuaries

Generally, the executive leadership for product, claims and underwriting are responsible for developing and implementing detailed strategies in their areas.

Nonetheless, for actuaries to be as relevant as possible and contribute more to developing solutions and identifying problems that require action, we need to continue to expand our understanding of the business and claim context.

This wider understanding informs and supports participation in the data capture and analysis, and enriches discussions and the feedback loop with operations, and strategic discussions with senior management more broadly.

Importantly, our discussions have highlighted the very keen desire of senior managers in operational roles for more analysis, and their belief that this will add to their understanding.

### Granularity of Reserving Basis

For reserving, general insurers tend to make greater use of case estimates, adjusted taking into account historic differences between case estimates and actual claims costs. Some larger general insurers utilise a statistical algorithm to produce initial case estimates to be used prior to information becoming available from claims managers.

For life insurance, actuarial analysis for financial reporting (assumption setting and reserving) has tended to focus on main policy and demographic details such as age, gender, duration, smoker status, or occupation. Often claim cause, such as ICD-10 codes, are included in the data, although reserving may be performed using higher level groupings. For example treating all mental claims in one group.

A number of companies have made use of other data collected. This includes data on characteristics of the claimant and their condition. This extended analysis has generally including one-off investigations to identify patterns and test hypotheses. This has occurred particularly in recent years as claims experience has worsened for life insurers and management has wanted to understand why.

While this has involved efforts to leverage other data to the extent available, this is also where some challenges have arisen. Some of these have included data which has simply not been available (or was not captured), or additional work is required to establish reliability. In other cases, there have been difficulties extracting the data and/or mapping and connecting to existing datasets, or the organisation was simply not aware of what they had available.

Outside of these more detailed studies, the regular life insurance actuarial reserving basis has tended to reflect a portfolio view of experience which can limit the ability to provide detailed



insights to the management of claims. That is, the reserving basis does not allow for all factors that explain the duration of an individual claim (i.e. a predictive reserving basis). A predictive reserving basis is needed for actuaries to accurately distinguish between claims assessors that are performing well and those that are not.

In addition, adopting a less predictive reserving basis also means that the reserves held are more likely to be misstated, relative to a more predictive reserving basis, if the mix of claims changes over time. This can result in management making sub-optimal decisions.

The case estimate approach adopted in general insurance is a more predictive approach, and can provide more detailed insights into claims management performance. It can also lead to the assessor and actuary being more involved in the entire process, and improve the feedback loop between actuarial and claims.

Notwithstanding these advantages, the scaling adjustments noted above that are often applied to case estimates can be significant (e.g. 20% or more) which can raise questions about whether they could be more accurate.

Limitations with the actuarial reserving basis mean that some claims teams use medical databases to estimate expected claims duration and monitor performance (rather than the actuarial liability calculation).

We are not proposing the life actuaries move to a case estimate reserving basis for claims in course of payment. Rather that the reserving basis needs to be made more predictive so that actuaries can provide better insights to management.

The analysis in this paper suggests that in order to make the basis more predictive that actuaries will need to include a wide range of information including:

- Various BPS factors including activity limitations, workplace concerns and emotional distress;
- Return to work expectations;
- Personality;
- Comorbidities; and
- Trust and engagement with the insurer and treating health professional.

The following sub-sections discuss some of the challenges and opportunities particularly around the “feedback loop” and data in further detail.

### *Predicting the Future*

Our role as actuaries also involves peering into the future, considering how the environment might change, and advising senior management on the risks, opportunities and potential uncertainties for our industry.





Given the importance of BPS factors, considering how the drivers of them might change in future is central to this process. To prompt thinking on this subject, we have listed below some example potential future drivers/developments (many of which are already well known):

- Workplaces – how likely are they to become more/less stressful in the future, how many and which companies/industries are effectively implementing “workplace wellness” programmes.
- Social acceptability of mental health conditions – reducing the stigma associated with having a mental health condition is a commonly recognised reason for increased reporting with associated impacts on claim incidence/duration. Some people we spoke with considered this trend has some potential to develop further.
- Unemployment and economic factors.
- Changes to family structures.
- Changes to funding/effectiveness of public health and community support organisations.

We don't know exactly how these factors will develop but if we are aware of their potential and the implications, we will improve our ability to detect problems before they become a fully developed trend/outcome in the financial results.

### *Sharing Insights and Feedback Loop*

Within insurance companies it is reasonably common for leaders from underwriting, claims management and actuaries to meet regularly to share insights, concerns and identify emerging issues.

Our understanding is that all parties consider these useful because information emerges that would otherwise not have been known or shared.

These existing connections and collaborative forums may provide a useful platform for expanding the discussions on data availability, developing hypotheses to test and identifying worthwhile analysis and information/reporting.

Working together is key if insurers are to make greatest use of the data they collect/could collect.

### *Leveraging Business Knowledge and Justifying the Cost*

This paper considers a number of possibilities and factors, however, it is important not to be overwhelmed by data and do nothing because developing the perfect solution is daunting.



Thinking about simpler approaches can assist. For example in our conversations with industry professionals, while discussing the importance of a range of factors we also asked for views on if there was one additional field that they could add to improve the predictive capability of their models what would it be.

For interest there were differences between the opinions of some specialists and across the business lines with which they focus. For life insurance, responses included expectations around return to work and gathering multiple perspectives of this (claimant, employer (assuming not self-employed), insurer, medical professional, etc.) For workers compensation, relationship with employer was suggested as a factor that would improve the predictive power of actuarial models.

Regardless of the factors though, a key learning is that the experience and knowledge within the business can assist/simplify problems and help with focusing.

Claims managers tell us they need evidence based analysis to justify spending on claims management (be it staff, systems and/or other costs of implementing claims strategies) on a return on investment basis. Otherwise the way claims are managed is unlikely to change significantly. Clearly developing the analysis in the first place involves investment which can cause a “chicken and egg” dilemma – one which can be overcome by getting permission by first doing small things within existing budgets to demonstrate value.

### Data Sources

This section briefly considers some of the information opportunities and challenges given the developing landscape in technology, competition, regulation and social attitudes.

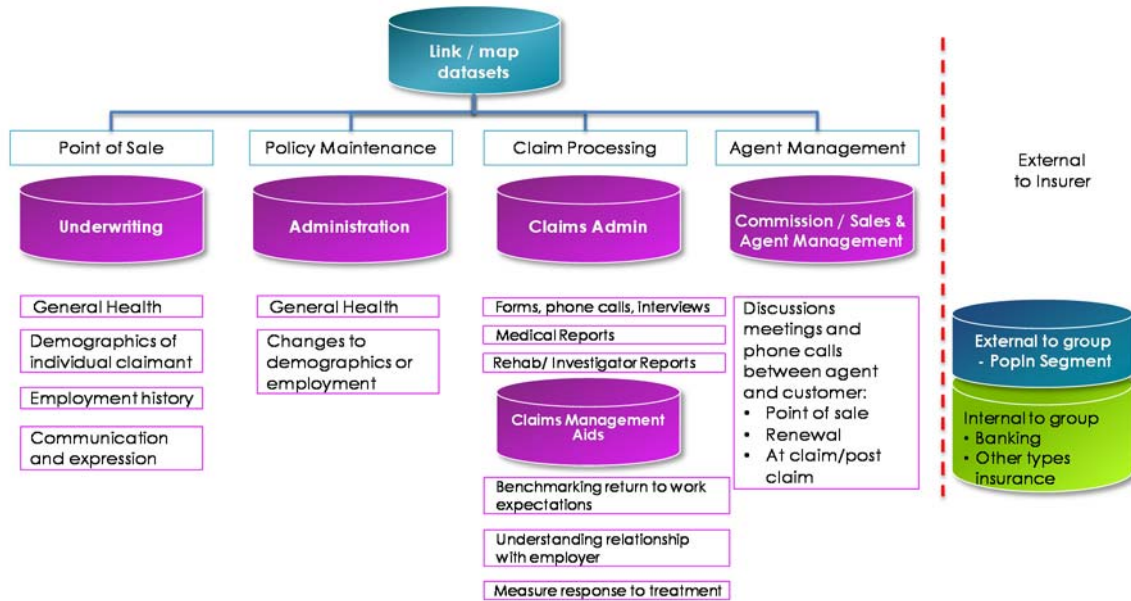
Under the current BPS methods to claims management, a lot of information is collected through the initial interviews, medical records and examinations as well as the ongoing conversations through implementation of the claims management plan.

The approach is specifically designed to go beyond the medical condition to identify psychosocial barriers. Nonetheless, while it is being used for the management of that specific claim, a key issue for actuaries and senior claims managers is extracting this information in a useable format across the overall portfolio for analysis to identify problems, patterns or trends, opportunities for improvement and reserving.

The below diagram of systems and data is illustrative only – and will vary for different products and industries (for example the diagram does include some information that may be available in employer based arrangements) – it highlights that in many cases there are a large number of potential data sources and systems involved. It should also be recognised that limitations apply and data must only be used appropriately taking into account customer expectations and the purposes for which data was collected. For example not using information from general discussions with a sales/call centre person to decide how to manage a claim (unless the customer has consented).



Clearly, extracting and linking this data has challenges, however, understanding all available data and their sources is fundamental to designing the analysis and understanding possibilities.



Source: This table is an adapted version from Dermody and Scheuber 2015

In addition to making best use of historic data there is a need to consider the extent to which the company should redesign systems and/or questions to get more or different data in the future.

For example, we believe that to exercise the full potential of the technology and leverage established relationships, it is best to adopt a strategic approach and adjust the questions used in claims management by adding to and/or editing those that already exist. This will maximise insights while not necessarily requiring significantly greater time and effort.



## 7. Conclusion

Mental health conditions and treatment is a complex area. The inherent complexity arises because disability due to mental health, as well as other co-morbid conditions, is impacted by biological, psychological and social factors. Insurance processes can add further complexity for the person coming on claim.

Insurers are generally aware of this and the current claims management approaches of Australian insurers are largely holistic with claims managers having developed a better appreciation of the social and psychological aspects that cause and drive claim durations.

Nonetheless, the implementation and identification of the psychosocial factors in the claims process is not without its challenges. One of the well-recognised keys to further improvements is the ability to more efficiently and accurately identify these factors in the individual claim. The use of new and emerging technologies has the potential to assist. The ability of cognitive technology to extract information to enable better profiling and understanding is an example of this changing landscape and future opportunity.

Businesses need actuaries with a sound understanding of changing technology to assist and grasp opportunities to improve claims experiences and customer outcomes. If we fail to do this, others will take this space.



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## Appendix A – Personality Testing and the Five Factor Model

The Five Factor Model (FFM), also known as the Big Five personality factors, categorise a person based on five key characteristics. These factors encapsulate numerous other characteristics/personality traits.

The model ranks individuals on a scale for each of these traits in terms of strength for or against the trait. It is the most used current psychometric measurement perspective in personality psychology, and is the most reliable and well-validated system of trait description.

A common version of the FFM is Costa and McCrae's OCEAN model and the elements of this model are explained below:

- Neuroticism (or emotional stability) – measures regularity of negative emotions. Underlying facets include; worry, anger, discouragement, self-consciousness, impulsiveness and vulnerability.

The scale ranges from reactive (easily worried, angered, and embarrassed) to resilient (composed, resists urges and handles stress easily).

- Agreeableness – measures likelihood of challenging or accepting views presented to them. Underlying facets include; trust, straightforwardness, altruism, compliance, modesty and tender-mindedness.

Putting others views of ahead of themselves, and viewing others as honest result in a high score. Those who are aggressive, competitive, cynical and/or sceptical would score low.

- Openness to experience (also referred to as originality, culture, or intellect) – someone who prefers the familiar, neglects feelings and is focused on the situation at hand would score low on this scale.
- Conscientiousness – this factor is centred around a person's ability to focus. Someone high in conscientiousness might be highly competent, well-organised, and driven for success whilst someone low on this scale might often feel unprepared, procrastinate or be easily distracted.
- Extraversion – the facets of extraversion include; warmth, gregariousness, assertiveness, activity, excitement-seeking and positive emotions.