Evaluating the success of legislative amendments designed to reduce work disability

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ABSTRACT
Substantial international variation exists in work disability compensation and rehabilitation policy, with little consensus on the most effective policy models for these systems. Legislation that governs them is frequently amended in an attempt to develop more effective and efficient systems, save costs, or improve outcomes for injured workers. A legislative amendment to the workers’ compensation system in 2010 in Tasmania, Australia, increased benefit generosity (by delaying wage replacement step-downs) and introduced a new injury management model to streamline treatment access and encourage earlier return to work. We sought to determine whether the amendments achieved their objective of reducing work disability duration. All analyses used interrupted time series to examine work disability duration in Tasmania compared with the Rest of Australia (ROA), where similar policies were not implemented, using a national workers’ compensation dataset. Data from time loss claims were included for two years before-and-after the legislative amendment introduced July 1 2010. Work disability duration initially declined in Tasmania (−0.45 weeks) compared to ROA; however, this was followed by an increasing trend of 0.11 weeks per quarter in the 2-year period following legislative amendment. Secondary analysis showed that disability duration did not significantly change for injured workers with short (<13 weeks) or long duration (>13 weeks) claims, nor did delaying the step-down in wage replacement payments from 13 to 26 weeks significantly affect the proportion of claims exceeding 13 weeks duration. In summary, we found no evidence that Tasmania’s amendments achieved the intended effect of reducing disability duration of injured workers.

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1. Introduction
The International Labor Organization estimates that every day there are 6400 work-related fatalities and a further 860,000 work-related injuries and diseases (International
Labor Organization 2015). Fortunately, for workers, most developed countries have systems that have been established to support those with work disability, whose structure may be described as social insurance, workers’ compensation (WC), life insurance, social security, sickness absence, disability insurance, compulsory third party or employment injury insurance systems (Collie, Di Donato, and Iles 2018; Bohm et al. 2013). However, there is no consensus internationally on the most effective policy models for these systems, including WC that covers those injured whilst participating in work.

Canada, the USA and Australia have separate cause-based systems for each state, province, or territory (Lippel and Lotters 2013). Thus, the structure of WC systems not only vary between countries, but also within countries. In Australia, there are 11 WC systems governed by separate legislation that describes who is eligible, what benefits are provided, and for how long a worker may access benefits. There are eight geographically organized (by state or territory) WC systems and three national schemes covering seafarers, military personnel, Commonwealth government employees, and more than 30 interstate employers. Their legislation is frequently amended as a response to a system review or in-house discussions in an attempt to develop a more effective and efficient system, save costs, or improve outcomes for injured workers.

The WC system is complex, and involves interactions between the injured worker, their employer, the insurance system, and the health-care system. Social insurance and income support systems, including WC, is one of the four domains of the Sherbrooke work disability model that contributes to injured worker outcomes (Loisel et al. 2005). This model emphasizes the array of factors contributing to work disability from the overarching structures of each domain, such as legislation, to the representatives of each domain, such as the compensation agent or claim manager (Loisel and Anema 2013).

Workers’ compensation scheme design can influence the health and recovery of those injured (Loisel et al. 2005; Collie et al. 2016; Elbers et al. 2016). For example, Cameron et al (2008) found improvements in health outcomes following the introduction of a package of amendments to the New South Wales (NSW) motor vehicle accident compensation legislation (Cameron et al. 2008). These amendments removed compensation for “pain and suffering” of those with whiplash-associated disorders, introduced clinical practice guidelines, and enabled earlier acceptance of claims that enabled earlier treatment. Similarly, in the Canadian province of Saskatchewan, a legislative change from a tort to a no-fault system, which also removed “pain and suffering” payments, decreased the incidence of whiplash claims and improved prognosis among those with accepted claims (Cassidy et al. 2000).

Benefit generosity has also been found to be associated with work disability duration and health outcomes. Meyer, Viscusy, and Durbin (1995) found that after increases to the maximum weekly benefit amount in workers’ compensation systems in Kentucky and Michigan, the amount of time spent away from work also increased (Meyer, Viscusy, and Durbin 1995). A study comparing state policies regarding wage and medical benefits found that policies that allow health-care provider choice can increase work disability duration and medical costs (Shraim et al. 2015). Whilst these studies have shown policies can affect the number and outcome of WC claims, they have their
limitations. They do not employ comparator conditions, are not specifically in WC systems, and do not apply to the Australian context. Changes to legislation in Australian WC systems are common, with 60 instances of WC legislative change identified over a 12-year period (2004–2015) (Collie et al. 2017), though their impacts are rarely evaluated.

On July 1 2010, Australia’s smallest state, Tasmania, amended its Workers Rehabilitation and Compensation Act 1988 in response to a major review in 2007 (Clayton 2007). Along with aiming to make the system fairer, the amendment’s objective was to provide “prompt and effective management of workplace injuries in a manner that promotes and assists the return to work (RTW) of injured workers as soon as possible” (WorkCover Tasmania and Workplace Standards Tasmania 2010). Table 1 provides an overview of the amendments, which increased benefit generosity and introduced the Return to Work and Injury Management Model (RTWIMM). The RTWIMM sought to establish a framework for improving and streamlining injury

### Table 1. Overview of Tasmania’s legislative changes.

| Date passed parliament | December 17 2009 |
|------------------------|------------------|
| Date effective         | July 1 2010      |
| Legislative changes    |                  |
| Benefit generosity     |                  |
| - Provide payment of medical and other expenses for up to 12 months after injured worker no longer eligible for weekly compensation |
| - Delay first step-down (time at which proportion of pre-injury income paid reduces) from 13 to 26 weeks; and change the income replacement rate at step-down to 90% from 85%. |
| - Ensure that step-downs do not apply to workers who have returned to at least 50 per cent of their pre-injury hours, or if an employer is unable to provide alternative duties |
| - Increase maximum lump sum payable for permanent impairment or the death of a worker |
| - Increase weekly payments payable to a dependent child of a deceased worker from 10% to 15% basic salary and provide counseling for families of deceased workers |
| - Extend weekly payments for injured workers that have suffered a whole person impairment (WPI) of 15 or more percent |
| - Reduce threshold for access to common law damages from 30% WPI to 20% WPI |
| Return to Work and Injury Management Model (RTWIMM) |
| - Encourage early reporting by introducing potential fine to employers for failing to notify insurer within three working days of becoming aware of injury |
| - Provide entitlement to the payment of some medical costs before a claim is accepted |
| - Introduce an “injury management coordinator” role to oversee the injury management process |
| - Introduce RTWIMM principles, including early intervention, access to all information, and timely resolution of issues |
| - Introduce a new claims form and medical certificate |

See Workers Rehabilitation and Compensation Amendment Bill 87 of 2009 (Tasmanian Government 2009).
management processes in order to encourage and promote RTW (Government of Tasmania 2009).

To our knowledge, there have been no large-scale Australian studies of the impact of changes to WC legislation on injured worker outcomes. Tasmania’s amendments provide an opportunity for a case study of how substantial changes to WC can affect injured worker outcomes. Thus, this study aimed to determine if the Tasmanian WC legislative amendments achieved their objective of reducing the work disability duration due to work-related injury.

2. Methods

2.1. Setting

The Parliament of Tasmania introduced a package of legislative amendments intended to improve the fairness of the compensation system through more generous benefits yet promote faster return to work of those injured through improved claims handling in line with the RTWIMM (see Table 1) (WorkCover Tasmania and Workplace Standards Tasmania 2010). These were regulated by WorkCover Tasmania, the state’s WC regulator. Tasmania’s WC system is no-fault, as are all other Australian WC systems, meaning that regardless of fault, injured workers may access health care and income replacement payments whilst unable to work. However, the amount and duration vary between schemes (e.g. Queensland provides wage replacement at 100% pre-injury average weekly earnings for the first 26 weeks, yet in Victoria this is 95% for the first 13 weeks). Detailed description of the schemes has been published elsewhere (Safe Work Australia 2014a).

2.2. Data source

The study uses routinely collected administrative claims data of all Australian WC jurisdictions and annually collated into a single, national dataset of compensation-based statistics (Safe Work Australia 2004b), and has been used previously to compare disability durations across Australian WC systems (Collie et al. 2016). Thus, the dataset includes case-level detail on each claimant (e.g. age, sex) and system-level information (e.g. compensated time loss).

2.3. Study design

This study uses a quasi-experimental design, the interrupted time series (ITS), that compares claim outcomes both pre- and post-legislative amendment. Analysis uses a time series that is “interrupted” by an event at a defined point in time to compare the existing level and trend with that post-intervention, to determine significant effects beyond underlying trends (Ramsay et al. 2003; Bernal, Cummins, and Gasparini 2017). The design was “controlled” by measuring the post-event change relative to a comparator composed of the Rest of Australia (ROA), which can rule out some threats to validity such as co-occurring events (e.g. economic downturn, changes in employment) (Shadish, Cook, and Campbell 2002). This method was chosen as it is suited to
interventions that are introduced at a population level, and has previously been applied to evaluate the impact of legislative changes on health outcomes (Langmann 2012; Morgan, Griffiths, and Majeed 2007; Dennis et al. 2013).

2.4. Selection criteria

Claims were selected if they were lodged between July 1 2008 and June 30 2012, providing a two-year time series both before-and-after the legislative amendment. Claims were retained if there was work disability due to injury and payments for income support were paid; thus, medical-only claims were excluded. Herein the pre-legislative amendment period (July 1 2008 to June 30 2010) will be referred to as period 1, and the post-legislative amendment period (July 1 2010 to June 30 2012) as period 2. Claims from Tasmania were separated from claims from all other major jurisdictions (New South Wales, Victoria, Queensland, South Australia, Western Australia, Northern Territory, Australian Capital Territory), which were pooled together and herein named as ROA, which was used as the comparator to control for co-occurring events. Claims from seafarers and military personnel were excluded as they originate from particular occupational groups and hence are not representative.

2.5. Study outcomes

Work disability duration (in weeks) was derived by dividing the total number of hours compensated by the claimant’s pre-injury weekly working hours and describes the length of time workers received income benefits. The pre-injury weekly working hours are the usual hours of work per week or the average of previous weeks up to 12 months prior if working hours vary.

Given that a principal focus of the legislative amendments was to encourage return to work, the primary outcome of this study was the median work disability duration. This was right censored at 104 weeks due to variations in jurisdictional WC legislation that defines the amount of time income support is paid; however, all jurisdictions provide income support for at least 104 weeks. Subgroup analyses focused on the effect of changes to the step-down in wage replacement payments in Tasmania. Step-downs reduce the amount of wage replacement paid to an injured worker after a set duration of compensation (e.g. the amount of time injured workers can access 100% of their pre-injury wages as compensated benefits). The step-down timing was delayed from 13 to 26 weeks, and the step-down amount was increased from 85% to 90%; the rate of compensation prior to step-down remained unchanged at 100% of pre-injury income. To isolate the impact of this change, subgroup analyses focused on short duration claims (<13 weeks) and long duration claims (≥13 weeks) for their median work disability duration, in addition to analysis of the proportion of claims compensated for at least 13 weeks.
2.6. Analysis

Claims were grouped by their quarter of lodgment (e.g. 2008 Q1 was July 1 2008 to September 30 2008) to ensure sufficient claim volumes at each data point. This allowed eight time points both before-and-after the legislative amendment, considered necessary for ITS analysis (Penfold and Zhang 2013), and two years of data both before and after the legislative change, which should have been sufficient to identify any seasonal patterns (Wagner et al. 2002).

Descriptive analyses determined total and average (mean per quarter with standard deviation) time loss claim volumes, median work disability duration (in weeks with interquartile range), mean work disability duration (in weeks with standard deviation), and claimant characteristics (proportion of females, mean age in years with standard deviation) to describe the cohort in Tasmania and ROA in periods 1 and 2 and overall.

For each of the analyses, ITS was completed using a generalized least squares model. To adjust for seasonality, each model included two pairs of sine and cosine terms, retaining only those that were significant; none attained significance or were included in final models (Jebb et al. 2015; Cowpertwait and Metcalfe 2009). Autocorrelation, which is the relationship between a variable’s current value and its previous values that can confound analyses, was tested for by visually inspecting autocorrelation and partial autocorrelation function plots up to lag 4 and adjusted for where necessary, using autoregressive-moving average (ARMA) terms in the model (Penfold and Zhang 2013; Wagner et al. 2002). We reported coefficients and their 95% confidence intervals with their degree of statistical significance.

Data visualization involved fitting linear lines for periods 1 and 2 for all time loss-related graphs. Period 1 is in white and period 2 in gray. Dotted lines were added to period 2 to represent the counterfactual, which is the estimated path the outcome would have followed in the absence of the amendments.

Selection criteria and creation of new variables were applied using SPSS Version 23.0 (Armonk, NY). Data visualization and ITS analysis were completed using RStudio 0.99.902.

2.7. Ethics

The Monash University Human Research Ethics Committee approved this study on October 8 2014 (project number CF14/2995-2014001663) (Boston, MA).

3. Results

In Tasmania, the number of time loss claims dropped slightly from period 1 to period 2 (n = 9008 and n = 8318, respectively). About 2.4% percent of time loss claims were censored at 104 weeks in Tasmania, and 4.1% in ROA. Average ages were similar between Tasmania and ROA, yet the proportion of claimants that were female was higher in Tasmania (38.0–40.1%) than ROA (36.3–37.7%). The median time loss in both periods was greater in Tasmania than ROA whereas the mean was lower (Table 2).
Table 2. Descriptive statistics of Tasmania and Rest of Australia pre- and post-legislative change.

|                          | Any compensated time loss | Short duration claims | Long duration claims and those that reach 13 weeks on compensation |
|--------------------------|---------------------------|-----------------------|---------------------------------------------------------------|
|                          | Mean (SD) claims per quarter | Mean (SD) age in years | Total time loss in weeks | Median (IQR) time loss in weeks | Mean (SD) claims per quarter | Mean (SD) age in years | Total time loss in weeks | Median (IQR) time loss in weeks | Mean (SD) claims per quarter | Mean (SD) age in years | Total time loss in weeks | Median (IQR) time loss in weeks |
| Total                    |                          |                        |                          |                            |                          |                        |                            |                            |                          |                        |                            |                            |
| Tasmania                  |                           |                        |                          |                            |                          |                        |                            |                            |                          |                        |                            |                            |
| Period 1                 | 9008                      | 1126                   | 3419                     | 86,847                     | 2.5                      | 9.6                    | 7501                       | 937.6                      | 39.3                  | 2761                     | 1.8                      | 3.0                    | 1507                       | 188.4                      | 43.4                  | 658                      | 27.2                      | 42.5                    |
|                         | (823)                     | (12.5)                 | (38.0)                   | (1.0–8.0)                  | (19.9)                   |                        | (750)                      | (12.6)                     | (36.8)               | (0.8–4.4)               | (3.1)                    |                        | (19.9)                     | (11.3)                    | (43.7)               | (17.0–62.2)               | (32.0)                   |
| Period 2                 | 8318                      | 1040                   | 3332                     | 91,832                     | 2.9                      | 11.0                   | 6724                       | 840.5                      | 40.2                  | 2649                     | 2.0                      | 3.2                    | 1594                       | 199.2                      | 44.4                  | 683                      | 28.7                      | 44.1                    |
|                         | (946)                     | (12.9)                 | (40.1)                   | (1.0–9.3)                  | (21.6)                   |                        | (85.8)                     | (13.0)                     | (39.4%)              | (0.9–4.7)              | (3.1)                    |                        | (18.6)                     | (11.9)                    | (42.8)              | (18.3–67.2)               | (32.2)                   |
| Total                    | 17,326                    | 1082                   | 6751                     | 178,679                    | 2.7                      | 10.3                   | 14,225                      | 889.1                      | 39.7                  | 5410                     | 1.9                      | 3.1                    | 3101                       | 193.8                      | 43.9                  | 1341                     | 28.0                      | 43.3                    |
|                         | (986)                     | (12.7)                 | (39.0)                   | (1.0–8.6)                  | (20.7)                   |                        | (93.0)                     | (12.8)                     | (38.0)               | (0.8–4.6)              | (3.1)                    |                        | (19.9)                     | (11.6)                    | (43.2)              | (17.6–646)                | (13.0)                   |
| Rest of Australia       |                           |                        |                          |                            |                          |                        |                            |                            |                          |                        |                            |                          |                        |                            |                          |
| Period 1                 | 361,852                   | 45,232                 | 131,356                  | 4,544,492                  | 2.2                      | 12.6                   | 287,439                      | 35,930                     | 39.0                  | 101,735                  | 1.3                      | 2.7                    | 74,413                      | 9302                       | 43.4                  | 29,621                    | 36.0                      | 50.7                    |
|                         | (2005.4)                  | (12.9)                 | (36.3)                   | (0.7–9.5)                  | (25.2)                   |                        | (1,748.1)                   | (13.0)                     | (35.4)               | (0.6–3.8)              | (3.0)                    |                        | (434.1)                    | (11.9)                    | (39.8)              | (20.2–913)                | (34.8)                   |
| Period 2                 | 360,221                   | 45,027                 | 135,733                  | 4,570,841                  | 2.4                      | 12.7                   | 281,951                      | 35,244                     | 39.6                  | 103,885                  | 1.4                      | 2.8                    | 78,270                      | 9784                       | 43.8                  | 31,848                    | 35.0                      | 48.5                    |
|                         | (1432.9)                  | (13.1)                 | (37.7)                   | (0.8–10.4)                 | (24.5)                   |                        | (1,140.3)                   | (13.2)                     | (36.8)               | (0.6–4.0)              | (3.1)                    |                        | (415.0)                    | (12.1)                    | (40.7)              | (20.0–768)                | (33.2)                   |
| Total                    | 722,073                   | 45,129                 | 267,089                  | 9,115,333                  | 2.3                      | 12.6                   | 569,390                      | 35,587                     | 39.3                  | 205,620                  | 1.4                      | 2.7                    | 152,683                      | 9543                       | 43.6                  | 61,469                    | 35.4                      | 49.5                    |
|                         | (1745.8)                  | (13.0)                 | (37.0)                   | (0.7–10.0)                 | (24.8)                   |                        | (1,469.1)                   | (13.1)                     | (36.1)               | (0.6–3.9)              | (3.1)                    |                        | (479.9)                    | (12.0)                    | (40.3)              | (20.0–830)                | (34.0)                   |
Figure 1 presents visual representations of all time loss analyses. Following the legislative amendment, there was a possibly significant decrease in the median work disability duration in Tasmania, given the confidence intervals did not cross zero (yet the p-

Table 3. Results from interrupted time series analyses for claim volume and all time loss outcomes.

| Any compensated time loss | Median | Level change | Trend change |
|---------------------------|--------|--------------|--------------|
|                           | Mean   | −0.07 (−1.22, 1.07) | 0.22 (−0.01, 0.45) |
| Short duration claims     | Median | −0.30 (−0.63, 0.03) | 0.06 (−0.01, 0.13) |
|                           | Mean   | −0.31 (−0.63, 0.00) | 0.06 (−0.01, 0.13) |
| Long duration claims      | Median | −1.67 (−4.64, 1.31) | −0.25 (−0.85, 0.35) |
|                           | Mean   | −0.38 (−3.22, 2.45) | −0.14 (−0.71, 0.43) |
| Proportion compensated for at least 13 weeks | 0.94 (−1.15, 3.02) | 0.43 (−0.01, 0.86) |

Note: This table reports the coefficients from generalized least squares models. An example of interpretation is that the median time loss decreased 0.45 weeks and significantly increased 0.11 weeks per quarter after the legislative change. CI is confidence interval; *p < 0.05, †p > 0.05 but confidence interval suggests statistical significance at the 95% level; ‡indicates that the results are in median weeks (for any compensated time loss, short duration claims, long duration claims) whereas proportion compensated for at least 13 weeks are claim volumes.

Figure 1 presents visual representations of all time loss analyses. Following the legislative amendment, there was a possibly significant decrease in the median work disability duration in Tasmania, given the confidence intervals did not cross zero (yet the p-
value was not less than 0.05) (Table 3). Relative to the ROA, there was a statistically significant increase in the trend in Tasmania of 0.11 weeks per quarter during period 2, meaning that for each quarter the median work disability duration increased 0.11 weeks. There were no statistically significant changes to the mean work disability duration.

For short and long duration claims, there were no significant changes to median or mean work disability duration in Tasmania relative to ROA following the legislative amendment. Similarly, there was no significant change in the proportion compensated for at least 13 weeks, despite an increase in the raw proportions.

4. Discussion

Rarely are policy changes to systems that support those with work disability independently evaluated to assess their impact. The package of WC legislative amendments introduced in 2010 in Tasmania, Australia, provided an opportunity for assessment. There were two main components to the legislative amendments to encourage earlier and more sustainable RTW that we attempted to test in this study: increased benefit generosity and improved claims management. While RTW after injury is an important economic objective, it also has substantial health benefits by promoting recovery and rehabilitation, reducing the likelihood of long-term incapacity, and improving well-being and quality of life (Waddell and Burton 2006). Despite this, results from this study suggest that median and mean work disability duration among Tasmania’s injured workers reduced slightly following the legislative amendment, and that there was a statistically significant trend of increasing duration. The temporal delay between the legislative amendment and this observed effect, however, increases the likelihood that this was due to unrelated factors. Assuming that duration of time on wage replacement payments is a reasonable proxy for RTW (Krause et al. 1999), this finding indicates that the Tasmanian legislative amendments did not achieve their objective of earlier RTW.

The finding that the Tasmanian legislative amendments were unsuccessful in their attempt to enable earlier RTW is in contrast to two prior studies that observed substantial changes in outcomes following injury compensation legislative amendments (Cameron et al. 2008; Cassidy et al. 2000). In 1999 in NSW, Australia, the tort-based transport injury scheme introduced four key legislative changes: removing noneconomic loss from common law (e.g. “pain and suffering”); introducing clinical guidelines for whiplash treatment; ensuring earlier acceptance of compensation claims through regulation; and earlier access to treatment (Cameron et al. 2008). Cameron et al. (2008) followed insured individuals with whiplash-associated disorder in NSW two years after their injury and found that those whose accident occurred after the legislative change had better health outcomes (Cameron et al. 2008).

Similarly, in a natural experiment conducted for the motor vehicle injury compensation scheme in Saskatchewan, Canada, it was found that individuals with whiplash-associated disorders had improved prognoses following a major policy change (Cassidy et al. 2000). Here the scheme changed from a tort-based to a no-fault system, which meant that an individual could no longer access payments for “pain and suffering,”
and income replacement and medical benefits were increased. It has subsequently been shown that these two sorts of systems are associated with differences in health outcomes (Elbers et al. 2016), for example due to broader eligibility to claim, and therefore improvements in health outcomes following this change were unsurprising.

It is possible that the Tasmanian amendments failed in their objective to return workers to work earlier due to antagonistic components of the legislative package. It has been seen previously that increased benefit generosity can lead to increased time loss due to increased financial motivation to remain on benefits longer (Meyer, Viscusy, and Durbin 1995), therefore delays in income support step-downs for more severely injured workers may have contributed to increased work disability duration. There were possibly some workers returning to work earlier, yet others were remaining on benefits for longer and thus significant changes were not seen in period 2 as the overall effect was too small to detect. We hypothesized, however, that delaying step-downs (the time period for which injured workers could access 100% of their pre-injury wages as compensated benefits) from 13 to 26 weeks would result in an increase in median work disability duration among workers with more than 13 weeks of compensation. However, ITS analysis showed there were no statistically significant changes in median or mean work disability duration observed in either short or long duration claims.

We consider a number of possible explanations for the lack of effect, including that (1) the legislative changes were not adequate to enable earlier RTW; (2) the number of claims in Tasmania were too few to observe statistically significant changes; or (3) that some other factor was operating concurrently that affected time loss and was not measured in this study.

It is possible that the policy event’s impact in Tasmania was too weak to affect work disability duration, particularly given the small population (508,000 compared to 21.8 million in ROA at the time of legislative amendment (Australian Bureau of Statistics 2010)), limited statistical power, and fairly modest changes to the WC system. The Canadian study analyzed a major overhaul of their motor vehicle injury insurance system. The change in NSW was of lesser magnitude, yet meant that individuals with whiplash-associated disorder were not required to prove fault and substantiate their injuries. By removing eligibility for pain and suffering compensation (as part of a larger package of changes), those injured are able to focus on recovery from the point of injury (Cameron et al. 2008; Cassidy et al. 2000). These prior studies also differ as Tasmania was already a no-fault scheme, and these studies deal with motor vehicle injuries as opposed to a worker cohort.

A substantial driver in the legislative amendments was Clayton’s commissioned review of the Tasmanian Workers’ Compensation System in 2007 (Clayton 2007), which made recommendations on specific areas of scheme performance that could be improved, rather than in response to stresses or difficulties. There were 19 recommendations that the Parliament of Tasmania could choose to implement; however, these were not necessarily evidence-based. Changes in other Australian schemes have been extensive when they are in response to financial stresses; however, this was not the case in Tasmania and thus more modest changes were pursued.
The introduction of penalties for late workplace injury reports was implemented because of both recommendations set out in Clayton’s report and research that indicates long lag times are associated with poorer RTW outcomes and higher costs to the WC system (Workers Rehabilitation and Compensation Amendment Bill, Tasmanian Government 2009). In an earlier study, we found that whilst claim reporting time significantly dropped in Tasmania, insurer decision time increased (attributed to administrative burden of implementing a whole suite of amendments), which offset the gains, leading to no change in the time between injury and acceptance of claim (Lane et al. 2018). This shows that there can be unintended consequences of changing legislation, in this case possibly because the system could not handle claims in the same manner as before the change.

4.1. Strengths and limitations

Study strengths include the use of a powerful quasi-experimental research design, the ITS, on population-based datasets, incorporating a control, and adjusting for autocorrelation. The number of observations exceeded most recommended minimums (e.g. eight time periods before and after intervention and two years of data to identify seasonal patterns) and allowed for greater certainty in autocorrelation adjustments (Penfold and Zhang 2013; Jebb et al. 2015). The ITS technique may be valuable in assessing the impact of other WC legislative amendments using administrative data.

This study had a number of limitations, including the use of administrative data, which are not collected for research purposes and can be subject to missing or incorrect data. However, the data underwent thorough cleaning and assurance processes prior to use to account for this (Collie et al. 2016). The legislative amendments had other objectives that were unable to be measured using the dataset, such as fairer compensation and greater support. It is likely that processes within the Tasmanian WC scheme also changed in response to legislative amendments such as case management or health-care provision; however, these were unable to be accounted for. Further, we were only able to assess the impact of the entire package of amendments rather than its individual components, such as the changes that affect those with whole person impairment (WPI) of 15% or more due to data quality issues. We were also unable to factor in injury severity (including WPI) due to lack of relevant information in the dataset. Future analyses could focus on the effect of the legislative amendments for each major injury type.

5. Conclusions

The legislation governing insurance systems is known to impact on work disability both positively and negatively. Despite the intentions of amendments to Tasmania’s WC system, this study found it did not achieve its intended policy effect of reducing work disability duration of injured workers. To our knowledge, this is the first study of the impact of legislative amendments on work disability duration in Australia, within an injured worker cohort. Future research should be directed to developing a stronger evidence base around policy and system design impact on injured worker outcomes.
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