

Do standardised workplace health and safety laws and increased enforcement activities reduce the probability of receiving workers' compensation?

AUSTRALIAN CONFERENCE OF ECONOMISTS 2021

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Background

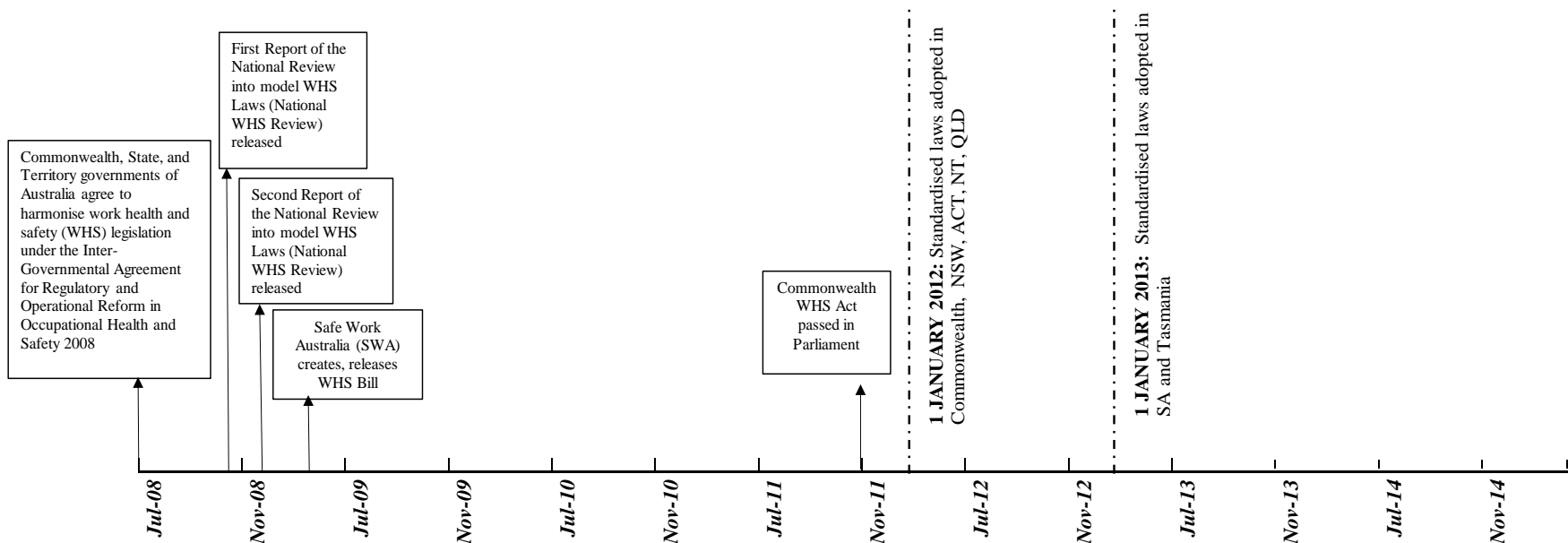
- Globally, 2.3 million deaths linked to workplace injury and disease each year
- In Australia, economic cost = 4.1% of GDP (approx. half a million workers experienced work injury/illness in 2018)
- Substantial burden from reduced quality of life, premature death
- **Workplace health and safety (WHS)** – transaction costs, information asymmetries → regulations, penalties and incentives to reduce the likelihood of workplace injury → aim is to impact behaviour (firms and workers)

The harmonisation of WHS laws in Australia

- 'Harmonisation' reform initiated through COAG National Policy Agenda → reduce regulatory burden and create a seamless national economy (Safe Work Australia, 2019)
- Before harmonisation, variations between states and territories on **duties of care, consultation, risk control mechanisms, record keeping and reporting, compliance regimes and penalties** (Boland, 2018)
- Differences in regulatory requirements, substantial regulatory burdens faced by multi-jurisdictional businesses (Safe Work Australia, 2014)

Harmonisation = unique, regional natural experiment

- **1 January 2012:** Commonwealth, NSW, ACT, NT and QLD implemented harmonised WHS laws (**‘first wave’**)
- **1 January 2013:** Followed by SA, Tasmania (**‘second wave’**)
- **VIC and WA** only two states that did not implement at this time



Objectives of harmonisation, our research question

- Enable uniform/equitable/effective safety standards for all workers
- Reduce compliance/regulatory burdens for multi-jurisdictional businesses, create govt. efficiencies
- Achieve significant and continual reductions in the incidence of death, injury and disease in the workplace (COAG, 2008).

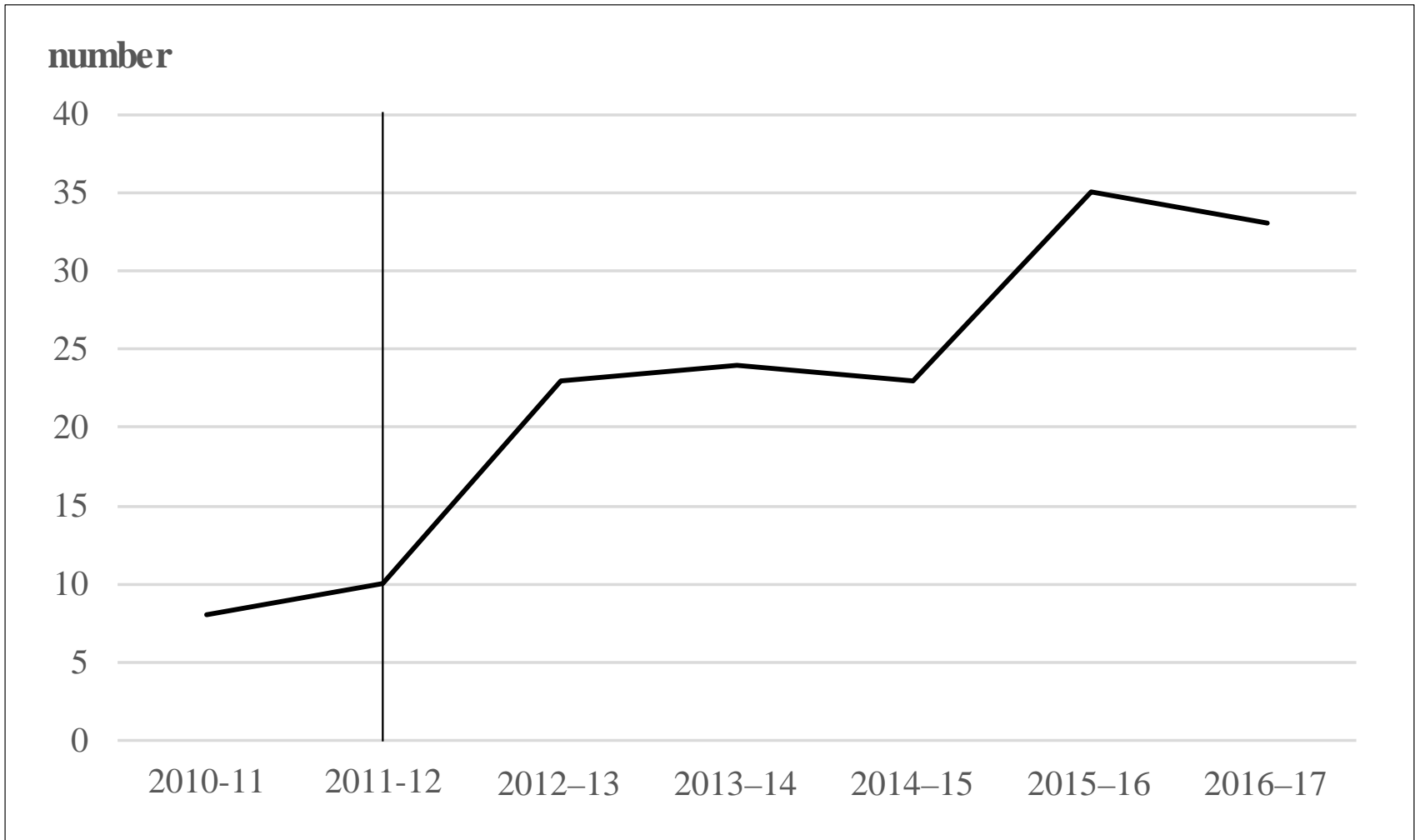
RQ: We (indirectly) explore the extent to which standardised WHS laws and increased enforcement reduced workplace injury and disease, by analysing impacts on the probability of an individual receiving workers' compensation in the past year.

What happened after harmonisation?

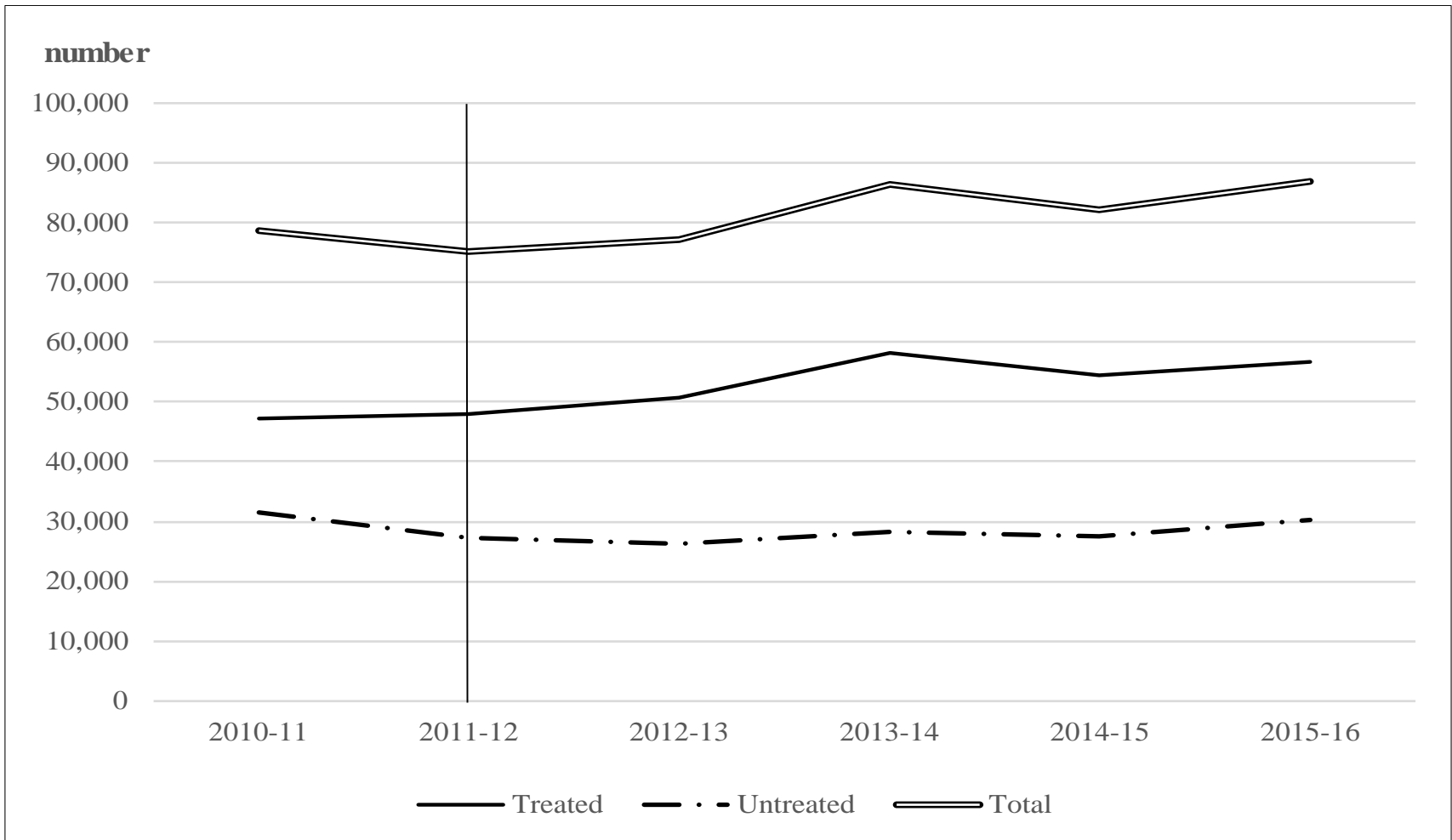
- broadened definition of the traditional employer-employee relationship and of 'workplace'
- removal of reverse 'onus of proof' in NSW and Queensland;
- introduction of criminal penalties for offences, ↑ **financial penalties for breaches (max. penalty double)**
- allowance for union rights of entry to a workplace
- ability of the regulator to accept enforceable undertakings

*Difficult to assess whether the policy uniformly **increased or decreased the strictness of WHS law across states and territories** or to measure the 'intensity' of treatment. Several significant changes were made that increased consistency across states and territories (Windholz, 2013). Review of state and territories' specific arrangements before the policy reveals variations in whether a state or territory's regulations were made stricter by the policy or not, dependent on subject matter*

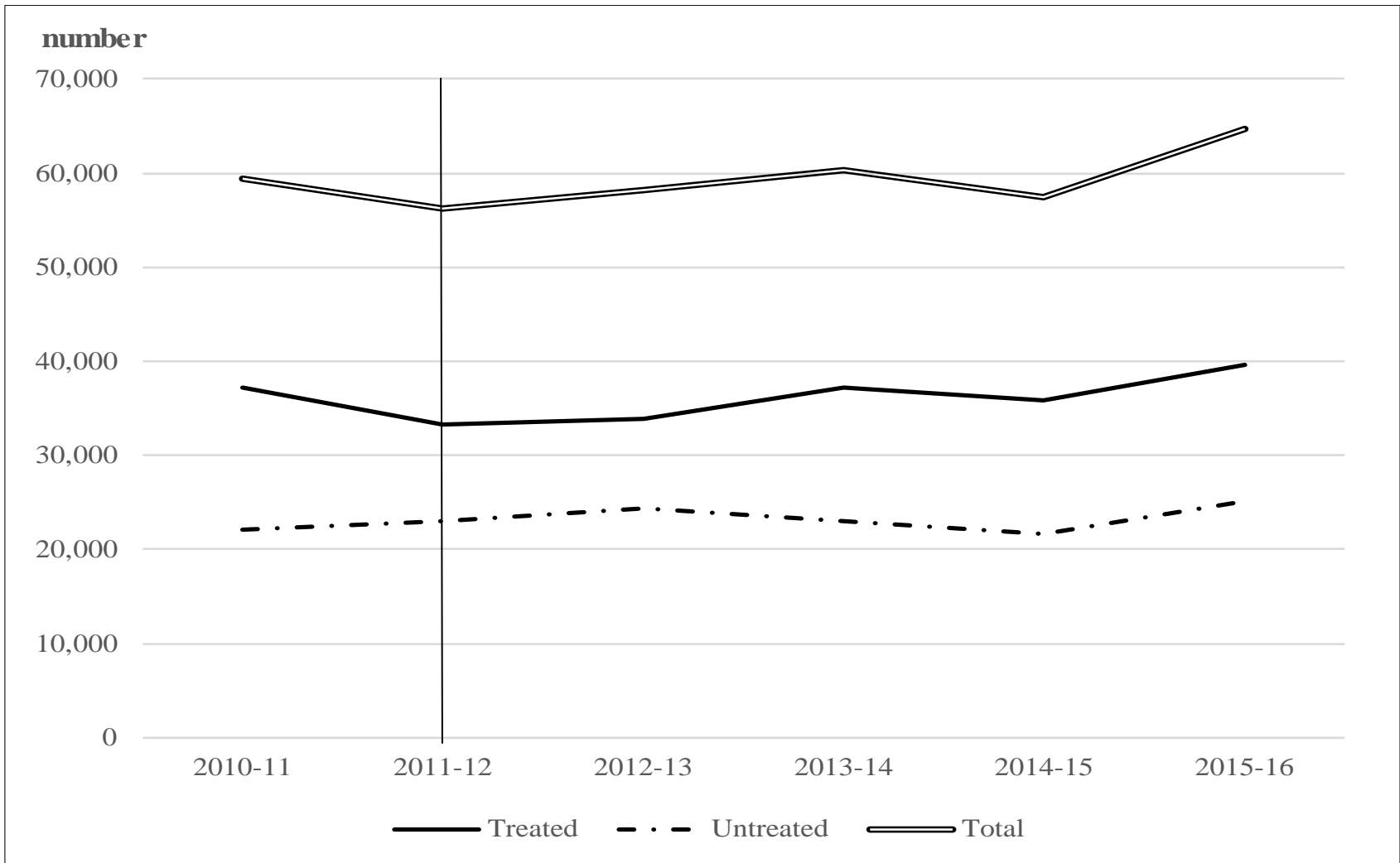
Trends in national data before/after harmonisation (enforceable undertakings)



Trends in national data before/after harmonisation (proactive workplace visits)



Trends in national data before/after harmonisation (reactive workplace visits)



Trends in national data before/after harmonisation (serious injury and disease claim incidence)

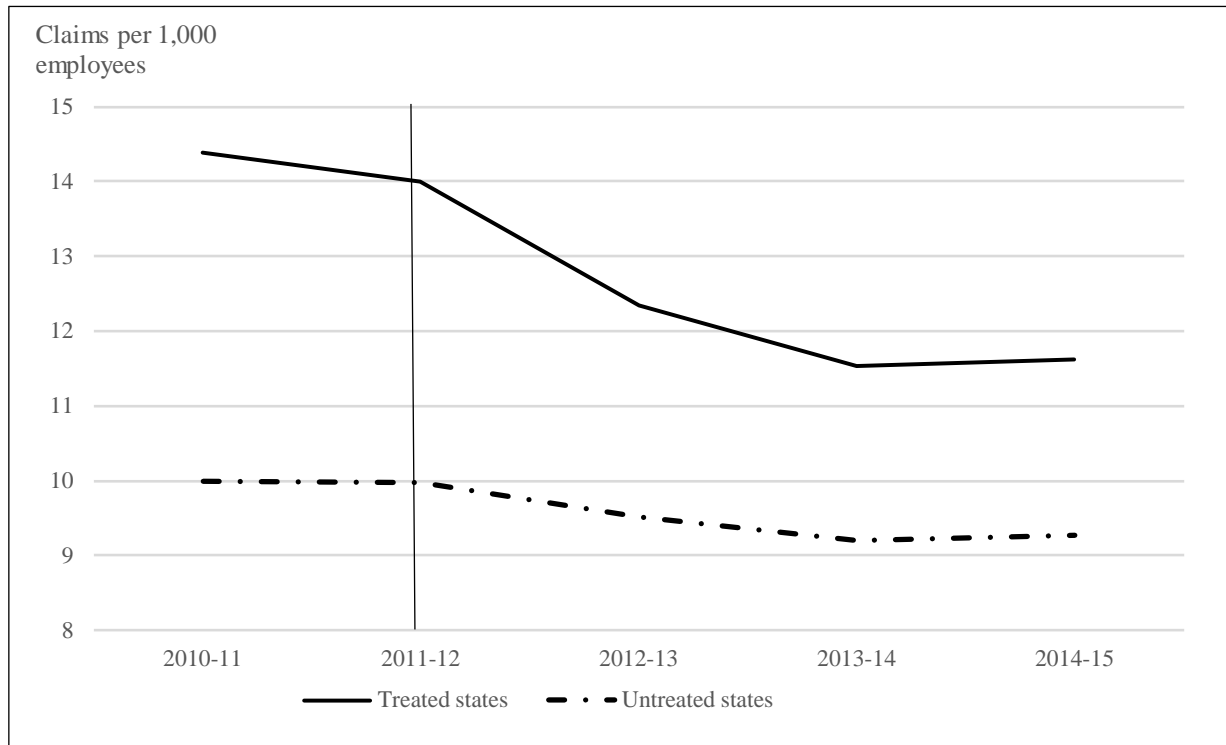


Figure 1: Incidence rates of serious injury and disease claims by treated and untreated states (weighted average – by population)

Source: Safe Work Australia (2017) and ABS (2015)

Trends in national data before/after harmonisation (worker fatality rate)

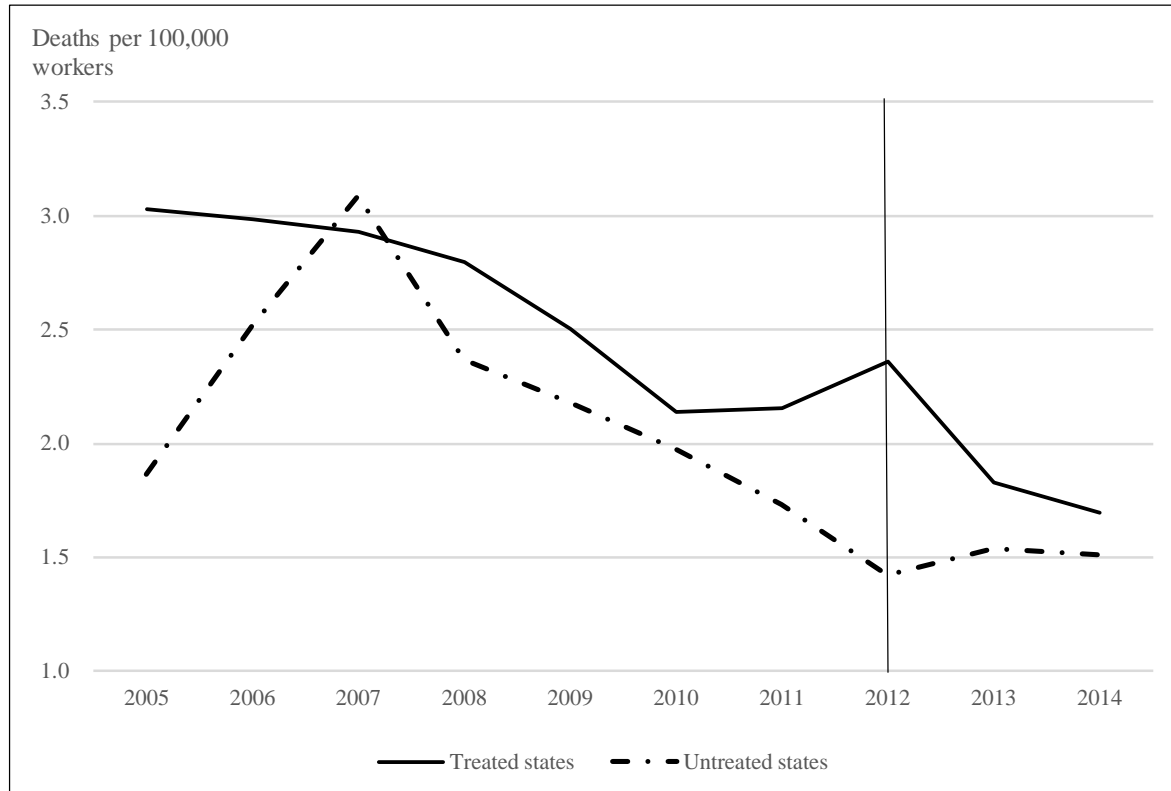


Figure 1: Worker fatality rate by treated and untreated states (weighted average – by population)

Source: Safe Work Australia (2016) and ABS (2015)

Past studies and literature

Limited Australian empirical literature on WHS (Collie et al., 2016; Potter et al., 2017; Lane et al., 2019)

Past assessments of harmonisation:

Safe Work Australia (2011): prospective, ongoing cost savings of \$25-33 per worker for multi-jurisdictional businesses, 1.4% improvement in health outcomes (N=26)

Gunningham (2016) post-implementation survey of 37 senior managers of large businesses, reported improvements on WHS engagement and health and safety outcomes, reduced regulatory burden on multi-jurisdictional business and reduced workplace injuries

Potter et al. (2017) – analysed national survey data to assess the impact on specific outcome measure, the Psychosocial Safety Climate (PSC-12)



Past studies and literature (cont'd)

Older studies from US have analysed impact of OSHA standards and regulations on workplace injuries (Curington et al., 1986; Cooke & Gautschi, 1981; Gray and Scholz, 1991; Scholz and Gray, 1990; Viscusi, 1979; Weil, 1996), largely through the use of firm or industry level data. These suggest an impact on WHS outcomes from enforcement measures – existence of penalties (Scholz and Gray, 1990; 1991, Baggs et al., 2003), programmed inspections more effective than complaint inspections in reducing injuries (Haviland et al., 2012), falls legislation (Lipscomb et al., 2003)

Our study contributes to broader literature and fills a specific gap in the Australian literature as first study to analyse the impact of standardised WHS laws and increased enforcement on workers compensation (unique – we use individual-level data)

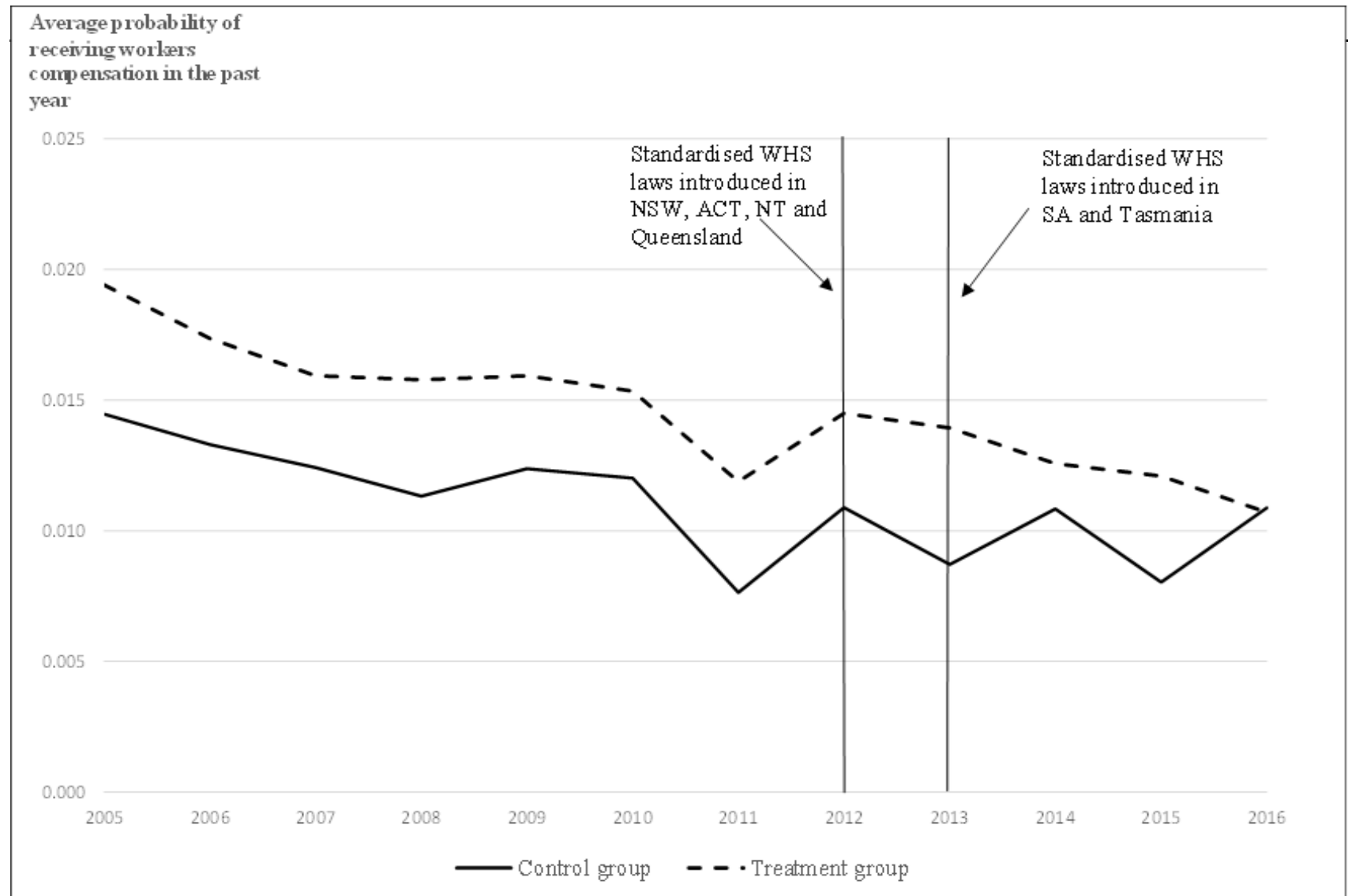
Data

- Individual-level, panel data from the *Household, Income and Labour Dynamics in Australia (HILDA)* survey
- **Estimations**
 - **First wave:** Pre-reform year – 2011, Post-reform year – 2013, **TG** - NSW, ACT, NT, QLD, **CG** - VIC, WA, SA and TAS
 - **Second wave:** Pre-reform year – 2011, Post-reform year – 2014, **TG** - NSW, ACT, NT, QLD, SA and TAS, **CG** - VIC, WA
 - **Longer term effects:** Pre-reform year – 2011, Poled post-reform years – 2014-2016
- **Outcome variable** (binary, 0/1) - receipt of workers' compensation in past year
- **Covariates** – identified from literature review
- **Sample size (N)** – 14,680 to 29,868 across estimations (7,858 – 19,459 in TG)

| | <i>Control group</i> | | | | | | <i>Treatment group</i> | | | | | | | | | | | | | | | | | | | | | |
|---|--------------------------|-------------|----------------|---------------------------|-------------|----------------|--------------------------|-------------|----------------|---------------------------|-------------|----------------|--|-------|-------|------|-------|-------|------|-------|-------|------|-------|-------|------|--|--|--|
| | <i>Pre-reform (2011)</i> | | | <i>Post-reform (2014)</i> | | | <i>Pre-reform (2011)</i> | | | <i>Post-reform (2014)</i> | | | | | | | | | | | | | | | | | | |
| | <i>N</i> | <i>mean</i> | <i>std.dev</i> | <i>N</i> | <i>mean</i> | <i>std.dev</i> | <i>N</i> | <i>mean</i> | <i>std.dev</i> | <i>N</i> | <i>mean</i> | <i>std.dev</i> | | | | | | | | | | | | | | | | |
| Demographic characteristics: | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Age (years) | 3,884 | 39.38 | 14.04 | 3,878 | 39.84 | 14.27 | 7,350 | 39.33 | 14.08 | 7,098 | 39.53 | 14.23 | | | | | | | | | | | | | | | | |
| Proportion male | 3,884 | 0.52 | 0.50 | 3,878 | 0.51 | 0.50 | 7,350 | 0.52 | 0.50 | 7,098 | 0.52 | 0.50 | | | | | | | | | | | | | | | | |
| In married/defacto relationship | 3,884 | 0.66 | 0.47 | 3,878 | 0.66 | 0.47 | 7,350 | 0.67 | 0.47 | 7,098 | 0.67 | 0.47 | | | | | | | | | | | | | | | | |
| Dependent children | 3,884 | 0.71 | 1.04 | 3,878 | 0.68 | 1.02 | 7,350 | 0.71 | 1.05 | 7,098 | 0.72 | 1.07 | | | | | | | | | | | | | | | | |
| Culturally and Linguistically Diverse (CALD) | 3,884 | 0.12 | 0.32 | 3,878 | 0.11 | 0.32 | 7,350 | 0.11 | 0.31 | 7,098 | 0.11 | 0.31 | Organisation size <20 people | 3,884 | 0.44 | 0.50 | 3,878 | 0.44 | 0.50 | 7,350 | 0.45 | 0.50 | 7,098 | 0.45 | 0.50 | | | |
| In remote/regional area | 3,884 | 0.24 | 0.43 | 3,878 | 0.24 | 0.43 | 7,350 | 0.35 | 0.48 | 7,098 | 0.34 | 0.48 | Organisation size 20-100 people | 3,884 | 0.26 | 0.44 | 3,878 | 0.26 | 0.44 | 7,350 | 0.28 | 0.45 | 7,098 | 0.27 | 0.44 | | | |
| Household size | 3,884 | 3.00 | 1.34 | 3,878 | 2.93 | 1.34 | 7,350 | 2.94 | 1.34 | 7,098 | 2.95 | 1.36 | Organisation size >100 people | 3,884 | 0.29 | 0.46 | 3,878 | 0.30 | 0.46 | 7,350 | 0.28 | 0.45 | 7,098 | 0.28 | 0.45 | | | |
| Health status/health behaviours: | | | | | | | | | | | | | Missing organisation size | 3,884 | 0.004 | 0.06 | 3,878 | 0.004 | 0.06 | 7,350 | 0.003 | 0.05 | 7,098 | 0.002 | 0.04 | | | |
| SAH poor | 3,884 | 0.01 | 0.08 | 3,878 | 0.01 | 0.07 | 7,350 | 0.01 | 0.09 | 7,098 | 0.01 | 0.11 | | | | | | | | | | | | | | | | |
| SAH fair | 3,884 | 0.07 | 0.25 | 3,878 | 0.07 | 0.26 | 7,350 | 0.08 | 0.27 | 7,098 | 0.08 | 0.27 | | | | | | | | | | | | | | | | |
| SAH good | 3,884 | 0.28 | 0.45 | 3,878 | 0.30 | 0.46 | 7,350 | 0.32 | 0.47 | 7,098 | 0.32 | 0.47 | Job type: | | | | | | | | | | | | | | | |
| SAH very good | 3,884 | 0.37 | 0.48 | 3,878 | 0.37 | 0.48 | 7,350 | 0.34 | 0.48 | 7,098 | 0.36 | 0.48 | Managers | 3,884 | 0.14 | 0.35 | 3,878 | 0.14 | 0.35 | 7,350 | 0.13 | 0.33 | 7,098 | 0.14 | 0.34 | | | |
| SAH excellent | 3,884 | 0.14 | 0.34 | 3,878 | 0.12 | 0.33 | 7,350 | 0.11 | 0.32 | 7,098 | 0.11 | 0.31 | Professionals | 3,884 | 0.25 | 0.43 | 3,878 | 0.26 | 0.44 | 7,350 | 0.23 | 0.42 | 7,098 | 0.23 | 0.42 | | | |
| SAH missing | 3,884 | 0.13 | 0.34 | 3,878 | 0.12 | 0.33 | 7,350 | 0.13 | 0.34 | 7,098 | 0.11 | 0.32 | Technicians | 3,884 | 0.14 | 0.34 | 3,878 | 0.14 | 0.34 | 7,350 | 0.14 | 0.34 | 7,098 | 0.13 | 0.34 | | | |
| BMI obese | 3,884 | 0.18 | 0.38 | 3,878 | 0.19 | 0.39 | 7,350 | 0.18 | 0.39 | 7,098 | 0.19 | 0.39 | Community service workers | 3,884 | 0.09 | 0.29 | 3,878 | 0.11 | 0.32 | 7,350 | 0.11 | 0.31 | 7,098 | 0.12 | 0.33 | | | |
| Have long-term health condition | 3,884 | 0.15 | 0.35 | 3,878 | 0.14 | 0.35 | 7,350 | 0.17 | 0.38 | 7,098 | 0.18 | 0.38 | Sales | 3,884 | 0.09 | 0.29 | 3,878 | 0.08 | 0.28 | 7,350 | 0.09 | 0.28 | 7,098 | 0.09 | 0.28 | | | |
| Drinks alcohol daily | 3,884 | 0.04 | 0.21 | 3,878 | 0.04 | 0.19 | 7,350 | 0.05 | 0.22 | 7,098 | 0.05 | 0.21 | Clerical and admin | 3,884 | 0.15 | 0.36 | 3,878 | 0.13 | 0.34 | 7,350 | 0.15 | 0.36 | 7,098 | 0.14 | 0.34 | | | |
| Daily smoker | 3,884 | 0.14 | 0.35 | 3,878 | 0.13 | 0.33 | 7,350 | 0.15 | 0.36 | 7,098 | 0.15 | 0.35 | Machine operators/labourers | 3,884 | 0.14 | 0.35 | 3,878 | 0.13 | 0.34 | 7,350 | 0.16 | 0.36 | 7,098 | 0.16 | 0.36 | | | |
| Highest educational attainment: | | | | | | | | | | | | | Missing job type | 3,884 | 0.001 | 0.03 | 3,878 | 0.001 | 0.03 | 7,350 | 0.001 | 0.04 | 7,098 | 0.001 | 0.04 | | | |
| Less than high school education | 3,884 | 0.19 | 0.39 | 3,878 | 0.16 | 0.37 | 7,350 | 0.22 | 0.41 | 7,098 | 0.19 | 0.39 | | | | | | | | | | | | | | | | |
| High school | 3,884 | 0.18 | 0.39 | 3,878 | 0.17 | 0.38 | 7,350 | 0.17 | 0.38 | 7,098 | 0.16 | 0.37 | Industry: | | | | | | | | | | | | | | | |
| Certificate or diploma | 3,884 | 0.32 | 0.47 | 3,878 | 0.34 | 0.47 | 7,350 | 0.34 | 0.47 | 7,098 | 0.35 | 0.48 | Construction | 3,884 | 0.09 | 0.29 | 3,878 | 0.08 | 0.28 | 7,350 | 0.08 | 0.28 | 7,098 | 0.08 | 0.27 | | | |
| Tertiary education | 3,884 | 0.31 | 0.46 | 3,878 | 0.33 | 0.47 | 7,350 | 0.27 | 0.45 | 7,098 | 0.29 | 0.46 | Mining | 3,884 | 0.01 | 0.12 | 3,878 | 0.01 | 0.12 | 7,350 | 0.02 | 0.13 | 7,098 | 0.02 | 0.13 | | | |
| Work characteristics: | | | | | | | | | | | | | Manufacturing | 3,884 | 0.09 | 0.28 | 3,878 | 0.09 | 0.28 | 7,350 | 0.08 | 0.27 | 7,098 | 0.08 | 0.28 | | | |
| In full-time work | 3,884 | 0.46 | 0.50 | 3,878 | 0.57 | 0.49 | 7,350 | 0.47 | 0.50 | 7,098 | 0.59 | 0.49 | Electricity, gas, water and waste services | 3,884 | 0.01 | 0.09 | 3,878 | 0.01 | 0.08 | 7,350 | 0.01 | 0.08 | 7,098 | 0.01 | 0.08 | | | |
| Union membership | 3,884 | 0.23 | 0.42 | 3,878 | 0.23 | 0.42 | 7,350 | 0.23 | 0.42 | 7,098 | 0.23 | 0.42 | Agriculture, forestry or fishing | 3,884 | 0.03 | 0.17 | 3,878 | 0.03 | 0.18 | 7,350 | 0.03 | 0.18 | 7,098 | 0.03 | 0.18 | | | |
| Years worked with current employer | 3,105 | 8.63 | 8.78 | 3,098 | 8.87 | 8.90 | 5,908 | 8.62 | 8.72 | 5,743 | 8.70 | 8.68 | Transport and storage | 3,884 | 0.04 | 0.19 | 3,878 | 0.04 | 0.20 | 7,350 | 0.04 | 0.20 | 7,098 | 0.04 | 0.20 | | | |
| Missing years worked | 3,884 | 0.201 | 0.400 | 3,878 | 0.20 | 0.40 | 7,350 | 0.20 | 0.40 | 7,098 | 0.19 | 0.39 | Other services | 3,884 | 0.14 | 0.34 | 3,878 | 0.13 | 0.34 | 7,350 | 0.14 | 0.35 | 7,098 | 0.12 | 0.33 | | | |
| Weekly hours worked in all jobs | 3,662 | 36.27 | 15.06 | 3,779 | 35.97 | 15.13 | 7,158 | 36.75 | 15.20 | 6,894 | 36.28 | 15.20 | Education | 3,884 | 0.09 | 0.29 | 3,878 | 0.09 | 0.29 | 7,350 | 0.09 | 0.29 | 7,098 | 0.09 | 0.29 | | | |
| Varying weekly hours | 3,884 | 0.06 | 0.23 | 3,878 | 0.03 | 0.16 | 7,350 | 0.02 | 0.16 | 7,098 | 0.03 | 0.16 | Government | 3,884 | 0.05 | 0.23 | 3,878 | 0.06 | 0.23 | 7,350 | 0.07 | 0.25 | 7,098 | 0.06 | 0.24 | | | |
| Missing weekly hours | 3,884 | 0.001 | 0.02 | 3,878 | 0.001 | 0.02 | 7,350 | 0.001 | 0.03 | 7,098 | 0.001 | 0.04 | administration/defence | | | | | | | | | | | | | | | |
| Log of annual disposable income (\$10,000s) in 2011 | 3,836 | 1.36 | 0.90 | 3,838 | 1.35 | 0.95 | 7,249 | 1.32 | 0.90 | 7,027 | 1.33 | 0.90 | Cultural and recreational activities | 3,884 | 0.03 | 0.18 | 3,878 | 0.03 | 0.17 | 7,350 | 0.04 | 0.19 | 7,098 | 0.04 | 0.18 | | | |
| Log of equiv household disp.income (\$10,000s) – 2011 | 3,874 | 1.64 | 0.52 | 3,869 | 1.63 | 0.54 | 7,325 | 1.58 | 0.54 | 7,091 | 1.58 | 0.53 | Communication and services | 3,884 | 0.02 | 0.13 | 3,878 | 0.01 | 0.12 | 7,350 | 0.01 | 0.11 | 7,098 | 0.01 | 0.11 | | | |
| In government sector job | 3,884 | 0.19 | 0.40 | 3,878 | 0.20 | 0.40 | 7,350 | 0.22 | 0.42 | 7,098 | 0.21 | 0.41 | Finance and insurance | 3,884 | 0.04 | 0.19 | 3,878 | 0.04 | 0.19 | 7,350 | 0.03 | 0.18 | 7,098 | 0.03 | 0.17 | | | |
| Permanent job | 3,884 | 0.58 | 0.49 | 3,878 | 0.58 | 0.49 | 7,350 | 0.57 | 0.49 | 7,098 | 0.57 | 0.49 | Restaurants and hotels | 3,884 | 0.06 | 0.23 | 3,878 | 0.06 | 0.24 | 7,350 | 0.06 | 0.24 | 7,098 | 0.07 | 0.25 | | | |
| Contractor | 3,884 | 0.08 | 0.27 | 3,878 | 0.09 | 0.28 | 7,350 | 0.08 | 0.27 | 7,098 | 0.08 | 0.27 | Retail trade | 3,884 | 0.12 | 0.32 | 3,878 | 0.11 | 0.31 | 7,350 | 0.11 | 0.32 | 7,098 | 0.11 | 0.32 | | | |
| Casual role | 3,884 | 0.17 | 0.38 | 3,878 | 0.18 | 0.39 | 7,350 | 0.20 | 0.40 | 7,098 | 0.20 | 0.40 | Wholesale trade | 3,884 | 0.03 | 0.18 | 3,878 | 0.03 | 0.17 | 7,350 | 0.03 | 0.16 | 7,098 | 0.03 | 0.16 | | | |
| Other job contract | 3,884 | 0.002 | 0.04 | 3,878 | 0.002 | 0.04 | 7,350 | 0.002 | 0.05 | 7,098 | 0.002 | 0.05 | Health | 3,884 | 0.12 | 0.32 | 3,878 | 0.13 | 0.34 | 7,350 | 0.13 | 0.34 | 7,098 | 0.14 | 0.35 | | | |
| | | | | | | | | | | | | | Other or missing industry | 3,884 | 0.03 | 0.18 | 3,878 | 0.05 | 0.21 | 7,350 | 0.03 | 0.17 | 7,098 | 0.03 | 0.18 | | | |



Dependent variable



Methods

- Difference-in-difference (DID analysis) – estimation using pooled OLS and panel methods (RE)

Our model specification is:

$$Y_{it} = \alpha + \beta TG_i + \gamma T_t + \delta TG_i \times T_t + \phi X_{it} + \eta_i + u_{it} \quad \dots (1)$$

where:

Y is the binary outcome variable indicating whether the i^{th} individual had a workers compensation claim in the last year;

TG is a binary variable indicating whether an individual is in the treatment group (treated states – in estimation A: NSW, ACT, NT and Queensland; and in estimation B: NSW, ACT, NT, Queensland, SA and Tasmania);

T is dummy variable indicating observations in the post-reform period (where $T=1$ if observation is in 2013 in estimation A, and 2014 in estimation B);

$TG \times t$ is an interaction term indicating if an individual is in the post-reform treatment group;

X is a vector of control variables; and

η is time-constant unobservable individual effect and u is an idiosyncratic error term.

Results (baseline)

- Pooled OLS and random-effects results suggest harmonisation may have reduced the probability of receiving workers compensation (-0.9 p.p.) (second wave).

| | (i) Pooled OLS | (ii) Random-effects |
|---|--------------------------|--------------------------|
| (A) The first wave of policy implementation (2011=pre-policy, 2013=post-policy) | | |
| Overall policy effect | -0.002 (0.005) | -0.003 (0.004) |
| N | 14,680 | 14,680 |
| p-value | 0.592 | 0.563 |
| (B) The second wave of policy implementation (2011=pre-policy, 2014=post-policy) | | |
| Overall policy effect | -0.009 (0.004) ** | -0.009 (0.004) ** |
| N | 14,821 | 14,821 |
| p-value | 0.044 | 0.047 |

Results (longer-term)

- Similar effect size to baseline (a 0.7 p.p reduction in workers comp), significance at the 5% level
- Suggests baseline estimates are robust to post-policy fluctuations in the dependent variable

| | (i) Pooled OLS | (ii) Random-effects |
|-----------------------|-------------------|---------------------|
| Overall policy effect | -0.007 (0.003) ** | -0.007 (0.003) ** |
| N | 29,868 | 29,868 |
| p-value | 0.031 | 0.033 |

Results (high-risk industries)

| (A) – The first wave of policy implementation | | |
|--|--------------------------|----------------------------|
| | (i) Pooled OLS | (ii) Random-effects |
| Agriculture, forestry and fishing | | |
| Policy effect | 0.015 (0.024) | 0.009 (0.021) |
| N | 523 | 523 |
| p-value | 0.533 | 0.665 |
| Transport | | |
| Policy effect | -0.034 (0.027) | -0.034 (0.026) |
| N | 682 | 682 |
| p-value | 0.205 | 0.184 |
| Manufacturing | | |
| Policy effect | 0.007 (0.019) | 0.010 (0.016) |
| N | 1,450 | 1,450 |
| p-value | 0.699 | 0.530 |
| Construction | | |
| Policy effect | -0.024 (0.0137) * | -0.029 (0.013) ** |
| N | 1,380 | 1,380 |
| p-value | 0.076 | 0.030 |

Results (high-risk industries)

| (B) – The second wave of policy implementation | | |
|---|--------------------------|--------------------------|
| | (i) Pooled OLS | (ii) Random-effects |
| Agriculture, forestry and fishing | | |
| Policy effect | -0.012 (0.020) | -0.014 (0.016) |
| N | 542 | 542 |
| p-value | 0.552 | 0.389 |
| Transport | | |
| Policy effect | -0.015 (0.030) | -0.015 (0.027) |
| N | 692 | 692 |
| p-value | 0.621 | 0.582 |
| Manufacturing | | |
| Policy effect | 0.018 (0.017) | 0.014 (0.016) |
| N | 1,521 | 1,521 |
| p-value | 0.286 | 0.357 |
| Construction | | |
| Policy effect | -0.041 (0.017) ** | -0.036 (0.017) ** |
| N | 1,369 | 1,369 |
| p-value | 0.015 | 0.030 |

Estimation limitations

- (1) Outcome variable** – cannot distinguish between reduced injury vs. incentive effects (claim suppression), partial effect (\neq fatalities and all injury/claims)
- (2) NSW 2012 legislative change** (major change, reduced generosity of workers compensation benefits, potential confounding from incentive effects!) **Sensitivity analysis**
- (3) Workers in mining** – Mining-specific laws/regulators in NSW, QLD, TAS, WA. Mining legislation significantly more stringent. **Sensitivity analysis**
- (4) Workers in Comcare across all states and territories** – covered by WHS harmonised laws. Approx. 370,000 workers (3-4% of employed). **Sensitivity analysis.**

Sensitivity checks

- (1) **Placebo test** – using pre-reform years in DID (2009 & 2010, 2010 & 2011) → **insignificant results**, supports parallel trends assumption
- (2) **Omitting NSW** - Estimated **policy effect size almost identical to baseline results**
- (3) **Deleting one state/territory at a time from estimations:** **policy effect varied between -0.7-1.0 p.p.** Remained significant except for in last estimation (NSW vs. VIC)
- (4) **Mining** – exclude mining industry, **similar effect size**
- (5) **Exclude Comcare-heavy industries (Public admin. & Defence, Information, media & telecoms, Financial & insurance services, Postal, transport & warehousing) – similar effect size**

Conclusions

- Overall, estimations suggest WHS laws may have improved WHS and reduced injury in treated states and territories, leading to a corresponding reduction in the probability of receiving workers' compensation.
- Larger decline in the construction industry → may be from greater potential to reduce injury given higher workplace risk and change to laws specifically aimed at the construction industry.
- **National data:** increased enforcement, decreased injury in treated states/territories. Increased financial penalties.

Conclusions

- **Policy may have also fostered greater awareness of WHS issues, cultural change by increased managerial focus on WHS** (Gunningham, 2016).
- **Policy effects may also reflect claim suppression** → stricter regulation and penalties causing employers to discourage claims (Boden and Galizzi, 2016; Fan et al., 2006; Moore et al., 2013).
- If due to injury reduction, results supports past literature - ability of WHS regulation/enforcement measures to reduce injuries (Arocena et al. 2008; Baggs et al., 2003; Lanoie, 1992; Lipscomb et al., 2003)
- **Future research:** could not attribute policy effects to specific legislative changes (would be complemented by research at the firm/industry level), potential benefits from extending coverage to different work structures, such as gig work.

Thank you for listening!



**“Guess what you forgot to
take with you this morning!”**