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EVALUATING THE IMPACT OF SUNDAY PENALTY RATES IN THE NSW RETAIL INDUSTRY

A REPORT PREPARED FOR THE SHOP, DISTRIBUTIVE AND ALLIED EMPLOYEES ASSOCIATION (SDA)

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DECLARATION

I have made all the inquiries that I believe are desirable and appropriate and that no matters of significance that I regard as relevant here have, to my knowledge, been withheld from the Commission.



Serena Yu, 1 September 2015

EXECUTIVE SUMMARY

The award modernisation process introduced new national minimum standards for employment pay and conditions across different industries and occupations, rationalising thousands of state based awards in the process. In the retail industry, these conditions included a 100 percent (double time) Sunday penalty rate in the new General Retail Award. This new national standard produced a quasi-experiment between award-reliant retail employees in NSW and Victoria – Victorian employees saw no change to their Sunday wage rates, whereas NSW employees moved from receiving a 50 percent Sunday penalty (time and a half) to 100 percent (double time). The reach and influence of these award conditions are extensive in the retail industry. As at 2014, 29.6 percent of Australian retail employees are paid exactly the award rate (ABS, 2014a). In addition, 54 percent of retail employees have their pay set or guided in some way by the applicable award rate of pay (Wright & Buchanan, 2013).

The debate on whether, and at what level, Sunday penalty rates should exist has lacked a strong evidentiary basis for their effect on employment in Australia. Arguments have been variously put forward that, on the one hand, Sunday penalty rates reduce labour demand, result in diminished employment opportunities, and are unnecessary due to the prevalence of workers preferring to work non-standard hours. On the other hand, it is contested that Sundays (and non-standard hours more generally) retain a privileged status that is descendant from longstanding social norms. The debate is a complex one, and fraught with analytical challenges. This report contributes to the debate by taking advantage of a quasi-natural experiment to evaluate the employment effects of increases in Sunday penalty rates in the NSW retail industry. In particular, the transitional arrangements led to a five year phase-in of a 100 percent penalty rate (or double-time) in NSW, up from 50 percent (or time-and-a-half). This research reports the effects on employment following the increases between 2010 and 2014.

The evaluation in this report compares outcomes in NSW to those of Victoria, where Sunday penalty rates remained unchanged. By using Victoria as a counterfactual scenario, and controlling for a range of state-specific factors, the analysis is able to isolate the effects of the rising Sunday penalty rates in NSW. Using robust econometric methods, the research addresses the questions of whether there were adverse effects on the following measures in the NSW retail industry:

- The total number of employees,
- The aggregate number of hours worked, and
- The probability of working on Sundays.

The key results from the analysis are as follows.

The five increases in Sunday penalty rates did not have a systematic effect on aggregate employment outcomes in the NSW retail industry. While there was a negative effect in the first year of transitioning

to modern awards, the effects in subsequent years were found to be inconsistent, contradictory, and statistically no different from zero. The total effect of the five increases was statistically insignificant. This was the case for Australian Bureau of Statistics' measures of both total number of employees in NSW retail, and the aggregate number of hours worked. These results held taking into account state-specific economic conditions, including total and youth employment conditions, and industry demand.

Rich data on individual retail employees, in particular whether they worked on Sundays, was also used to investigate the potential distribution of employment away from Sundays. While younger individuals, those without dependent children, and part time workers were more likely to work on Sundays, the results again showed that the cumulative effect of the increase in Sunday penalty rates was not statistically different from zero. Year to year, the effects were also found to be statistically insignificant and inconsistent, and these results held for sub-groups of part time and full time workers, as well as those employed in both small to medium, or large enterprises. The analysis did find a large positive effect amongst junior workers, who reported being much more likely to work on Sundays following the increases in penalty rates. However, this result for junior workers was found in only one year (2012), and not consistently over the period of increasing penalty rates. Moreover, there was no commensurate decline in non-junior employees working on Sundays. It is therefore likely that other factors are motivating these preferences for deploying junior employees on Sundays.

Overall, the research showed no systematic evidence of an adverse effect on employment following the transitional increases in the Sunday penalty rates in the NSW retail industry.

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BACKGROUND

PENALTY RATES AND THE MODERN AWARDS

Modern awards are part of the national industrial relations system which was implemented under the Fair Work Act 2009¹. The industry and occupation-based modern awards regulate minimum wages and conditions of employment not provided for in the National Employment Standards (NES), which govern statutory minimum entitlements relating to maximum weekly hours, different forms of paid leave, notice of termination and redundancy pay, and the right to request flexible working arrangements. Modern awards regulate additional conditions such as skill-based classifications, types of employment, arrangements for work scheduling, overtime and penalty rates, superannuation, and consultation and representation procedures (McCallum, Moore & Edwards, 2012).

The reach of awards is complex but substantial, particularly in the retail industry. Data from a 2013 enterprise survey of award reliance indicated that across the non-public sector, almost one in five (18%) of all award reliant employees work in the retail industry (Wright & Buchanan, 2013:56). Within retail itself, 27 percent of employees are paid exactly the award rate. In addition, 54 percent of retail employees had their pay set or guided in some way by the applicable award rate of pay i.e. award-based pay-setting arrangements (Wright & Buchanan, 2013: 56). In 2015, the Fair Work Commission (FWC) released results from a linked employer-employee survey on award reliance. The data showed that 25.9 percent of small retail businesses (less than 20 employees) had more than half their employees paid at exactly the award rate, indicating a high degree of award reliance (Yuen et al., 2015:11). In large retail businesses, the 26.6 percent reported high award reliance. The FWC 2015 study also showed that across all industries, most award reliant businesses operate 7 days a week (56.8% of small businesses, and 69.3% of larger ones) (Yuen et al., 2015:15).

The process of award modernisation involved rationalising around 3700 state and federal awards, notional agreements preserving state awards (NAPSAs) and pay scales, into the current 122 modern awards. Modern awards cover employees who perform work regulated by the award in the industry or occupation to which the award relates and their employers. They do not apply while an enterprise agreement applies to that employment or to high-income employees.

The award modernisation process provided for transitional arrangements to give employers and employees opportunity to adjust to the changes. These arrangements are in place from 1 July 2010 to 1 July 2014. The transitional arrangements phased in changes in minimum wages; casual and part time loadings; weekend, public holiday and evening penalty rates; and shift allowances. The analysis in this report focuses on changes in New South Wales and Victoria in the retail industry, in particular

¹ All states excepting Western Australia conferred their remaining powers relating to private sector industrial relations to the Commonwealth at this time.

changes in Sunday penalty rates. While the analysis is unable to isolate the effect of the Sunday penalty rates from other changes, Table 1 shows that changes in other entitlements were relatively small or zero.

These changes are set out in Table 1, and show that Sunday penalty rates in NSW increased from 150% to 200% of the base hourly rate. This compares to unchanged rates in Victoria. These changes were announced on December 19, 2008 (Australian Industrial Relations Commission, 2008b), and the phase-in schedule announced on September 2, 2009 (Australian Industrial Relations Commission, 2009). These transitional arrangements allowed for employers to reduce the difference between pre-modern award and modern award Sunday penalty rate entitlements incrementally, 10 percentage point increments each year starting 1 July 2010 and ending on 1 July 2014.

Table 1. Changes to retail industry award conditions in NSW and Victoria²

Award	Sunday penalty rate	Saturday penalty rate	Night shift	Evening shift	Public holiday	Casual	Overtime	Base hourly rate ³
Modern Award: General Retail Industry Award 2010	200%	125%	130%	125%	250%	125%	150% first three hours; then 200%	15.78
NSW: Shop Employees Award	150%	125%	130%	117.5%	250%	115%	150% first three hours; then 200%	15.34
Victoria: Victorian Shops Interim Award 2000	200%	133% ⁴	130%	125%	250%	125%	150% first three hours; then 200%	15.86

Source: Australian Industrial Relations Commission (2010a, 2010b), General Retail Award 2010

REGULATION OF TRADING HOURS

Restrictions on Sunday trading hours were widespread across Australia until the early 1990s, and varied widely between the states and territories. Early controls of Sunday trading were justified on the grounds of observing the Sabbath, protecting shop employees, and minimising the risk of dominance by large retailers.

Victoria was the first state to largely deregulate retail trading hours. Following a government review, trading hours in Victoria are now regulated by the Shop Trading Reform Act 1996. Sunday trading

² Note that the data in Table 1 is shown for an adult full time employee.

³ The base hourly rate is for an adult, full time, entry level retail services worker. The rate is as at the end of 2008, at the time the draft General Retail Award was released.

⁴ Saturday penalty rates in Victoria varied by classification. These have been averaged and a full break down is provided in Appendix A.

hours were deregulated in 1996, with current trading restrictions on Good Friday, Christmas Day, and Anzac Day only. All stores may trade seven days a week barring these public holidays, while a exempted stores (small shops with less than 20 employees, and stores selling convenience and emergency type goods) can trade fully unrestricted.

In NSW, retail trading hours are regulated by the Retail Trading Act 2008 (“the Act”), which came into effect July 1, 2008. Under the Act, trading hours are largely unregulated (including Sunday trading), with restricted trading days limited to Good Friday, Easter Sunday, Anzac Day, Christmas Day, and Boxing Day.

Prior to the Act, shop trading hours were regulated by the Shops and Industries Act 1962, which amongst other restrictions, prohibited Sunday trading. This ban was gradually relaxed starting in 1990 with the deregulation of pre-Christmas trading. Small and scheduled shops⁵ were also exempted from the ban, as were retailers who applied for readily-granted exemptions. The NSW Government estimated that the small and scheduled exempted stores included 60 percent of NSW’s 65,000 retailers, while over 1700 larger retailers had also been granted exemptions from the Sunday ban (New South Wales Government, 2007). These widespread exemptions led the National Competition Council to declare in 1999 that NSW trading hours were effectively deregulated (National Competition Council, 1999).

Consequently, trading hour regulations between NSW and Victoria were substantially the same from the year 2000 onwards. The analysis which follows uses data from between 2000 and 2013, and is therefore unaffected by changes in trading hours.

⁵ Small shops refer to those with no more than two owners, engaging no more than 4 employees. Scheduled shops include stores meeting everyday consumer demand, as well as tourist demand.

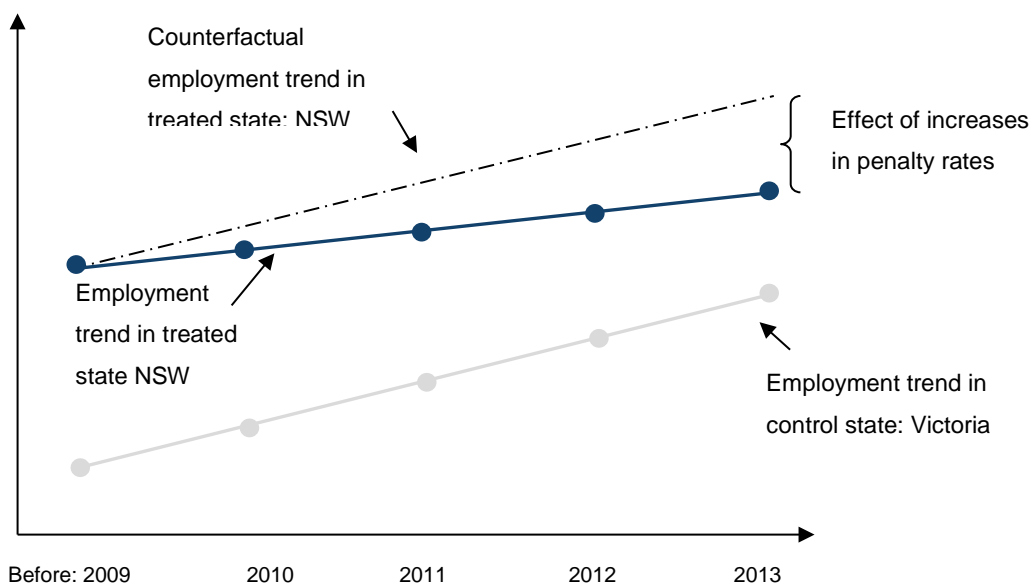
DATA AND METHODOLOGY

The research sets out to investigate the increases in the Sunday penalty rates in the NSW retail industry between July 1, 2010 and July 1, 2014, and their effects on the following:

- Total number of workers employed in the NSW retail industry;
- Aggregate hours worked in the NSW retail industry; and
- The probability of working on Sundays in the NSW retail industry⁶.

The main challenges in identifying such effects are twofold. First, it is difficult to ascertain what would have happened in the NSW retail industry in the counterfactual scenario, that is, in the absence of the policy change. Evaluation of policy changes is dogged by the difficulty of quarantining a ‘control group’ from the effects of the policy change. Ideally, increases in Sunday penalty rates would have been imposed on a segment of NSW retail workplaces, while a comparable group of NSW retailers continued under the old policy regime. In the absence of such an experiment, researchers seek to identify alternative control groups, with the important assumption that they exhibit a common trend with the treatment group prior to the policy’s implementation. In this case, there is a natural control group for NSW retailers – Victorian retailers. Victorian retailers were unaffected by the changes in Sunday penalty rates. The analysis uses a difference-in-difference, quasi-experimental framework to exploit the exogenous increases in Sunday penalty rates in the NSW retail industry, compared to fixed rates in the Victorian retail industry. The essence of the methodology can be visually represented, as in Figure 1. The red line denotes (stylised) employment changes in NSW, while the dashed line denotes the assumed counterfactual scenario. The figure depicts the traditional argument, that resulting employment outcomes are below what they would otherwise have been.

Figure 1. Graphical explanation of empirical strategy



⁶ The individual level data is available only to 2013, and consequently only the four increases between 1 July, 2010 and 1 July, 2013 are evaluated.

The analysis is based on three data sources:

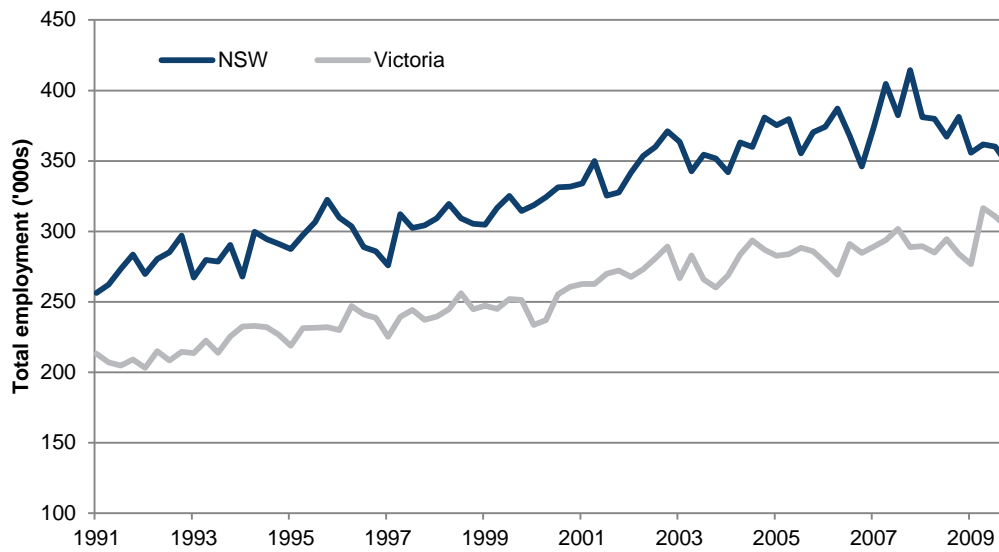
1. Published quarterly aggregate data from the Australian Bureau of Statistics (ABS) on the number of retail industry workers in New South Wales and Victoria⁷.
2. Published quarterly aggregate data from the ABS on the number of hours worked in the retail industry in New South Wales and Victoria.
3. Longitudinal data from the Household, Income and Labour Dynamics in Australia (HILDA) survey on individuals working in the retail industry in both New South Wales and Victoria.

Data on the total number of workers are derived from the ABS's Detailed Labour Force Survey, is a survey of Australians aged 15 and over. The survey sample is selected based on the 2011 Census of Population and Housing, and collected from a sample of about 26,000 households. The survey is collected each month starting on the first Sunday after the 5th of each month, with households being surveyed in the first instance face-to-face, and henceforth by phone. Each month, one-eighth of the sample is rotated out and replaced. The survey collects a range of employment data, including labour force status, demographics, industry, occupation and hours of employment.

The data on the total number of retail industry workers in each state is released quarterly, and as at February 2015, there were about 376,388 retail workers in NSW, and 322,516 in Victoria. The growth in retail employees is shown in Figure 2. The key identifying assumption underlying the analysis is that NSW and Victoria shared common employment trends prior to the policy changes. Figure 2 shows the total number of retail workers in NSW and Victoria from 1991 to 2009. It shows that over a long period, the two states have moved in parallel, suggesting that Victoria is an appropriate control group for investigating total employment.

⁷ The retail industry has been defined according to the ANZSIC 1-digit classification 'Retail Trade'. From 2010, employees in this industry may be covered by a number of awards, including the General Retail Award, the Fast Food Award, the Pharmacy Industry Award and the Vehicle Award. Data from the 2011 Census shows that about 76 percent of retail workers are employed in areas covered by the General Retail Award (supermarket, grocery, food, furniture, electrical goods, homewares, department stores, clothing and footwear, and other store-based retail). Further, the General Retail Award is used to set pay by 61 percent of retail companies with at least one directly award reliant employee, covering 53 percent of award reliant employees in retail (Wright & Buchanan, 2013). These figures on award reliance ignore the effects which awards may have in guiding non-award pay-setting.

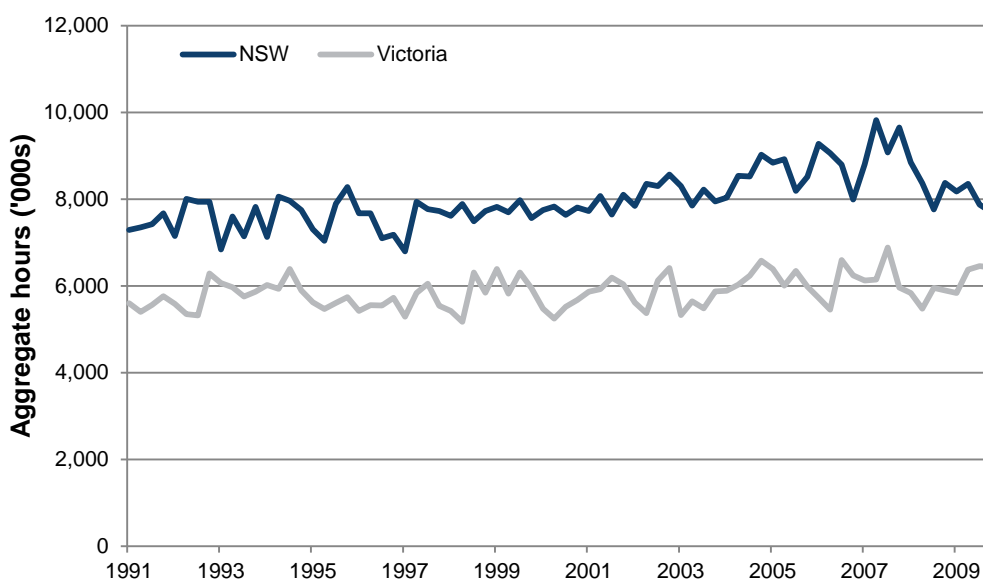
Figure 2. Total retail employment in NSW and Victoria, August 1991 to May 2010



Source: ABS cat. no. 6291.0.55.003 (Detailed Quarterly Labour Force Survey, February 2015); Table 05.

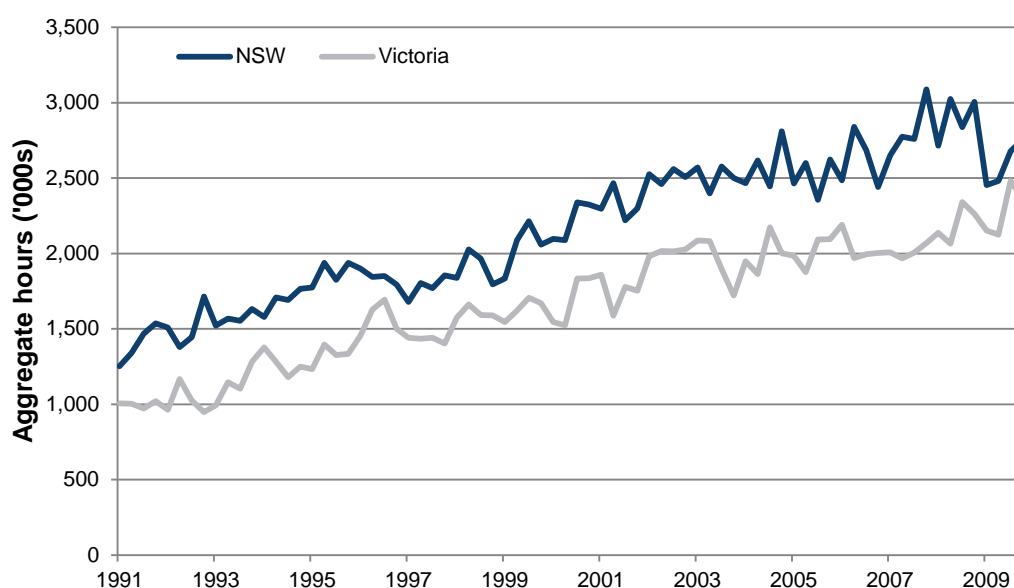
Parallel trends are also evident in the data on aggregate hours. The data are also released quarterly as part of the Detailed Labour Force Survey. The data has been divided between part-time and full-time workers to show how part-time employment has almost entirely driven growth in retail industry hours. For the purposes of the evaluation methodology however, the key result is that NSW and Victoria had common trends in aggregate hours between 1984 and 2009.

Figure 3. Aggregate retail full time hours in NSW and Victoria, August 1991 to May 2010



Source: ABS cat. no. 6291.0.55.003 (Detailed Quarterly Labour Force Survey, February 2015)

Figure 4. Aggregate retail part time hours in NSW and Victorian, August 1991 to May 2010



Source: ABS cat. no. 6291.0.55.003 (Detailed Quarterly Labour Force Survey, February 2015)

Using data on total employees and aggregate hours allows for an assessment of the effects of the changes in Sunday penalty rates on aggregate levels of employment. As a check on this analysis, we also measure whether employers shifted the distribution of employment away from Sunday to other days of the week. A reduction in employment as a result of the higher penalty rates could only have occurred if Sunday employment fell. It is possible that a reduction in employment has occurred but it is so small as to be not statistically significant, but if we also find that there has been no reduction in the likelihood of a retail employee working on Sunday, then it would seem very unlikely that there has been any employment effect arising from higher Sunday penalty rates in NSW. Conversely, if there is both a significant reduction in total employment and a significant reduction in Sunday employment, then there is a good chance that there has been some effect from the change in Sunday penalty rates. Other combinations of findings would give us reason to be cautious: a significant and consistent fall in total employment, but no significant reduction in Sunday employment, would raise questions as to whether some other, unspecified factor (other than Sunday penalty rates) is at work. A significant reduction in Sunday employment with no accompanying loss in total employment would raise questions as to whether there has been a net loss in welfare, if losses in Sunday employment have been offset elsewhere.

To that end, we also investigate data from the Household, Income, and Labour Dynamics in Australia (HILDA) survey. The HILDA survey is an annual longitudinal survey of over 13,000 individuals which commenced in 2001 (and is available up to 2013 only). The HILDA dataset includes rich, individual-level data on demographic characteristics, as well as hours of work, wages, and employment characteristics. Importantly for this analysis, it also includes data on whether individuals usually work on Sundays. As with the analysis of employment levels, the modelling requires that the sample of

NSW retail workers mimic the characteristics of the control group of Victorian retail workers. The HILDA survey fieldwork is undertaken from late July or August each year, with about 80 percent of the sample collected in September and October between 2001 and 2010, and in August and September from 2011 onwards.

Table 2 shows summary statistics from pooled HILDA data on workers in NSW and Victorian retail workers. The 'before' data relates to data collected in 2008 and 2009. The 'after' refers to data collected from 2010 to 2013. The sample of retail workers includes 826 distinct individuals in NSW and 746 in Victoria, totalling 3714 observations over the seven year period.

Overall the data shows that most retail workers are female, live in metropolitan areas, have completed Year 12 education, and work part-time for large employers. In addition, significant proportions are married, work casually, and are under the age of 25.

The table also shows that there may be some important observed differences between retail workers in the two respective states before the penalty rate changes. First, a greater proportion of respondents in NSW were female, who may preference non-standard hours differently to males. Second, a higher proportion of retail workers in NSW were under the age of 25 (44.7% compared to 38.6% in Victoria), a significant source of retail workers. Third, a lower proportion of NSW retail workers were employed on a part-time basis, while a higher proportion were employed casually. These are important controls, as casual or part time workers may be more likely to work on weekends, and so we consider whether their employment is more sensitive to changes in labour demand as a result of changes in penalty rates. Finally, a significantly larger proportion of NSW workers were employed in small to medium organisations with less than 100 employees. It is possible that smaller organisations may be more flexible in changing their trading hours and deployment of workers given the importance of Sunday trading stated by a range of retail associations, and are also less likely to be covered by collective agreements.

The proportion of respondents in NSW who reported working on Sundays fell slightly from 24.8 to 23.7 percent, compared to slight growth in Victoria (rising from 20.6 to 21.5 percent). The analysis that follows includes important individual controls which may have had independent effects on employment in NSW and Victoria.

Table 2. Sample means on NSW and Victorian retail employees in HILDA, pooled

Characteristic	Before		After	
	NSW	Victoria	NSW	Victoria
Female	58.2	52.6	62.0	58.0
Mean age	32.0	32.6	32.6	32.7
Under 25 years old (%)	44.7	38.6	43.8	39.0
Non-English speaking background	8.4	7.6	9.4	7.8
Married or de facto (%)	37.1	39.2	37.4	34.9
Living in metropolitan area (%)	61.9	67.5	67.4	67.7
Full time student (%)	25.3	25.2	22.5	23.4
Education level (%)				
Degree or higher	8.0	9.9	11.3	13.4
Completed Year 12	51.4	53.6	57.3	58.6
Year 11 or below	40.7	36.4	31.4	28.0
Mean weekly hours	29.1	29.7	28.7	29.1
Employed part time (%)	56.2	52.0	58.1	55.1
Employed on casual basis (%)	44.5	37.2	40.8	35.8
Union member (%)	19.0	15.0	19.3	14.2
Workplace size (%)				
Small (less than 20 employees)	8.9	5.6	5.9	6.9
Medium (20 to 99 employees)	14.3	7.8	10.3	10.5
Large (100 or more employees)	76.8	86.7	83.8	82.6
Usually works on Sunday (%)	24.8	20.6	23.7	21.5
Number of observations	742	686	1167	1119
Number of individuals	433	392	393	354

Source: Household, Income and Labour Dynamics in Australia (HILDA) survey, waves 8 to 13.

EMPIRICAL MODEL

The research uses a quasi-natural experimental approach known as a difference-in-difference (DID) regression model. In relation to evaluating policy interventions, in its simplest form the DID model compares changes in outcomes between two groups, before and after the policy intervention. In particular, it compares the outcomes of a ‘treatment’ group to that of a counterfactual ‘control’ group. In this case, the treatment refers to the increase in Sunday award penalty rates in the NSW retail industry. The treatment group is retail workers in NSW, while the control group is retail workers in Victoria. There are also multiple treatments – rather than there being a single policy intervention, the transitional arrangements inscribed five annual increases in NSW, beginning on 1 July, 2010. The evaluation period measures the outcomes between August 2010 and February 2015 (the ‘after’ period), compared to the period between February 2000 to June 2009 (the ‘before’ period). The

'before' period is chosen to maximise the sample period before the policy intervention following deregulation of Sunday trading hours in both Victoria (1996) and NSW (in practice by 1999, according to the National Competition Council). Note that other smaller changes in the industrial relations system also affected the retail industries in NSW and Victoria, but were unlikely to have large employment effects⁸.

The DID model has been used widely in areas as diverse as labour economics, psychology, public health and education, most commonly to estimate the effects of specific policy interventions (Blundell & Costa-Dias, 2009; Blundell & Macurdy, 1999; Cook & Shadish, 1994; Imbens & Wooldridge, 2009). It has been used most prominently in evaluating the impact of changes to the minimum wage in the US (Card, 1992; Card & Krueger, 1994).

The key assumption for the model is that employment trends would be the same for both states in the absence of the reform (and are not systematically related to unobserved factors). In the following analysis, the regression form of the DID model is used to allow for multiple treatments and additional state-specific controls. The base model is specified as follows:

$$y_{st} = \alpha_s + \gamma_t + \sum_{k=1}^5 \beta_k D_{sk} + \delta X_{st} + \varepsilon_{st} \quad (1)$$

Here, α represents state-specific effects, and γ a time trend. Controls for observed state-specific factors are contained in the vector X_{st} , and includes time-varying, state-level unemployment rates, employment to population ratios, and state retail sales. These variables are particularly important for controlling for potential state level effects of the economic crisis of 2008 and 2009. The effect of the increase in Sunday penalty rates is captured by the parameters β_k ($k= 1, 2, 3, 4, 5$) representing the increases in years 2010 to 2014). These are the coefficients on the dummy variables D_{sk} , which denote whether the observation took place in NSW in a period after each penalty rate change.

The outcome variables y_{st} refer to the total number of retail workers, and to the aggregate number of hours worked in retail, in state s at time t . Quarterly aggregate data is used. Ordinary least squares regression is used to estimate equation (1). Robust standard errors are reported to address issues of heteroskedasticity.

⁸ First, the application of common rule in Victorian retail from August 2005 meant that the award became binding on all employers and employees engaged in the industry. Previously, the award was binding on only on parties to the relevant dispute.

Second, the introduction of Work Choices in 2006 saw the federal instrument, Notional Agreements Preserving State Awards (NAPSA), come into operation, covering employees where the employer was a constitutional corporation. This would include the majority of NSW retail employees, although precise figures are unknown. Employers outside the federal system remained covered by the old Retail Services Employees (State) Award. A comparison of the wage increases in the NAPSA and in the state award, enacted by the Australian Industrial Relations Commission (AIRC) and the NSW IRC are included in the Appendix. They show that employees under both systems received similar overall increases.

A second model measures changes in the distribution of employment away from Sunday. The outcome measure in this case is a binary variable indicating whether an individual i reports working on Sundays. A linear probability model is used to estimate the following model⁹:

$$y_{ist} = \alpha_s + \gamma_t + \sum_{k=1}^4 \beta_k D_{sk} + \delta X_{ist} + \varepsilon_{ist} \quad (2)$$

In this case, individual-level controls captured by X_{ist} includes gender, marital status, presence of dependent children, part-time and casual employment status, education level, binary youth indicator, union member status, and employer size. Note that the individual level data is only available to 2013 (with data collected mostly in August and September, 2013), and consequently only the first four increases in Sunday penalty rates are evaluated.

It is important to acknowledge some weaknesses in the analysis. Due to the nature of available data, it is impossible to estimate the effect of the policy change on those most directly affected by it – award reliant retail employees whose wages were directly determined by the award rates. Unpublished data from the ABS' Survey of Employee Earnings and Hours¹⁰ shows that since the introduction of modern awards, the number of award reliant employees – those paid exactly the award rate – has risen steadily from around 64,300 to 97,900 (or 21.8 to 28.3% of all employees) in NSW. In Victoria, the number increased from 53,400 to 94,100 (from 24.4 to 31.1% of all employees), as shown in Figure 5.

Figure 5. Number of award reliant retail employees in NSW and Victoria, 2010 to 2014



Source: ABS cat. no. 6306.0 (Employee Earnings and Hours, unpublished data from 2010, 2012 and 2014)

⁹ Probit models were also compared against the results of the linear probability model and found substantially similar results.

¹⁰ The EEH Survey is collected from a sample of approximately 8000 employers about characteristics of the employer and its employees. The sample is designed to ensure industry and state/territory representativeness. While estimates for smaller states and industries are prone to high sampling variability, the data presented here for retail in NSW and Victoria is regarded as reliable.

The baseline models set out above measure changes in the number of workers, aggregate hours, and the probability of working on Sunday, across all employees, and not solely those who are award reliant. While this may be regarded as less precise, it is also appropriate and important because Australia's methods of wage determination are complex and not independent of one another. Consequently, changes in award conditions are likely to have extended impacts on employees on over-awards and covered by collective and even individual agreements. Investigation of all employees, and not just those who are award-reliant, is the most complete way of evaluating the employment effects of the policy change.

The analysis is also unable to distinguish between the effects of the changes in Sunday penalty rates, and other changes which occurred as part of the transitional arrangements of the award modernisation process. In particular, as described in Table 1, casual loadings increased slightly in NSW from 15% to 25% – 2 percentage points annually; and, Victorian Saturday penalty rates decreased, on average across the award classifications, from about 33% to 25%¹¹ - about 1.6 percentage points per annum. Consequently, employment effects identified in the analysis may conflate the impact of the higher Sunday penalty rates and these two other changes. The three changes – higher NSW casual loadings, lower Saturday penalty rates in Victoria, and higher Sunday penalty rates in NSW, were phased in over the same five year period. It is possible that the first two changes had negative effects on employment in NSW, relative to Victoria. If so, both could potentially overstate any negative employment effects in NSW arising from the change in NSW Sunday penalty rates. These two changes (higher NSW casual loadings, and lower Victorian Saturday loadings) act in the same direction to potentially overstate the effects of the changes in NSW Sunday penalty rates; therefore, the results which follow may be considered as an absolute upper-bound estimate. It should be remarked however that the magnitude of the change in the Sunday penalty rates (10 percentage points each year) was far larger than the other changes.

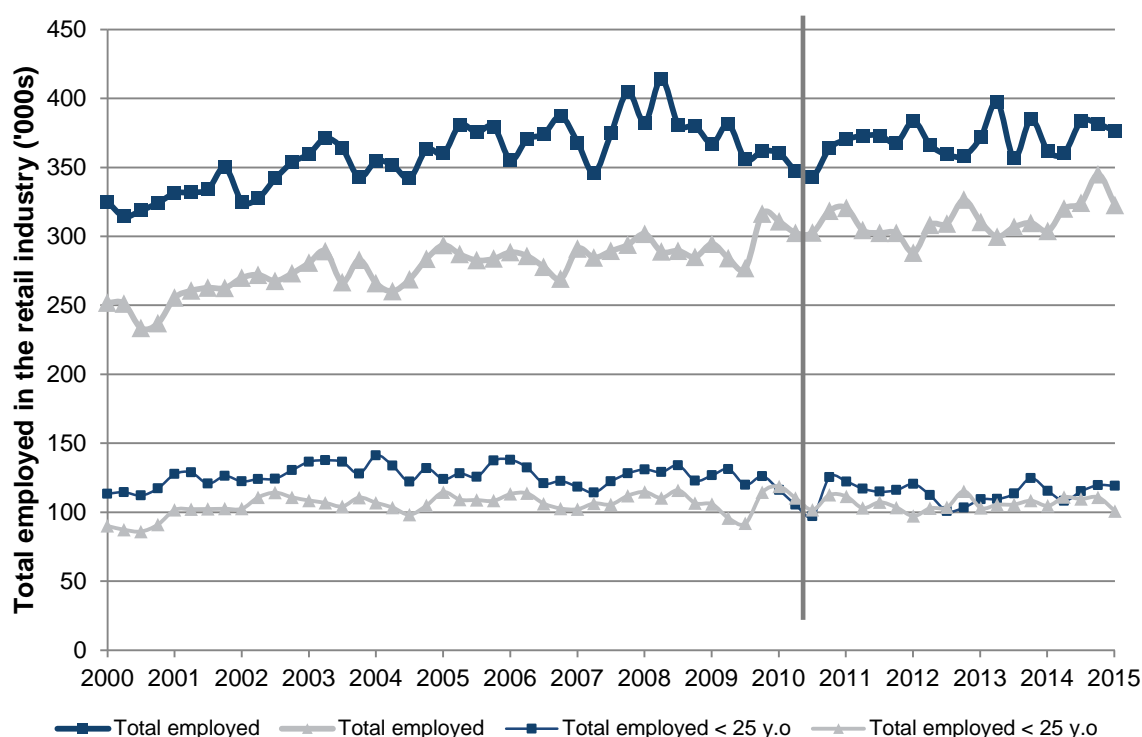
¹¹ There was no standard Saturday penalty rate in the Victorian Shops Interim Award 2000. Instead, a flat dollar rate was applied to each award occupational classification. These rates have been set out in Appendix A.

RESULTS

AGGREGATE EMPLOYMENT

A first inspection of the quarterly aggregate employment effects is presented graphically by comparing employment trends in the NSW and Victorian retail industries. Following the first increase in NSW retail Sunday penalty rates, total employment in NSW rose from 347,565 in May 2010 to 376,388 in February 2015 – a rise of 8.3%. The equivalent rise in the control state of Victoria was 6.6% (ABS, 2015). The results for employees under the age of 25 were starker – between 2010 and 2015, youth employment grew by 12.9 percent in NSW retail, compared to a contraction of 8.5 percent in Victoria. The graphical presentation in Figure 6 shows employment trends in the two states for all employees and those under the age of 25. The grey line marks July 2010, the first of the Sunday penalty rate increases. The graph does not suggest an obvious adverse employment effect in NSW, but suggests that there may other state-specific factors at play, for example, weak state labour market conditions.

Figure 6. Total retail employment in NSW and Victoria, February 2000 to February 2015

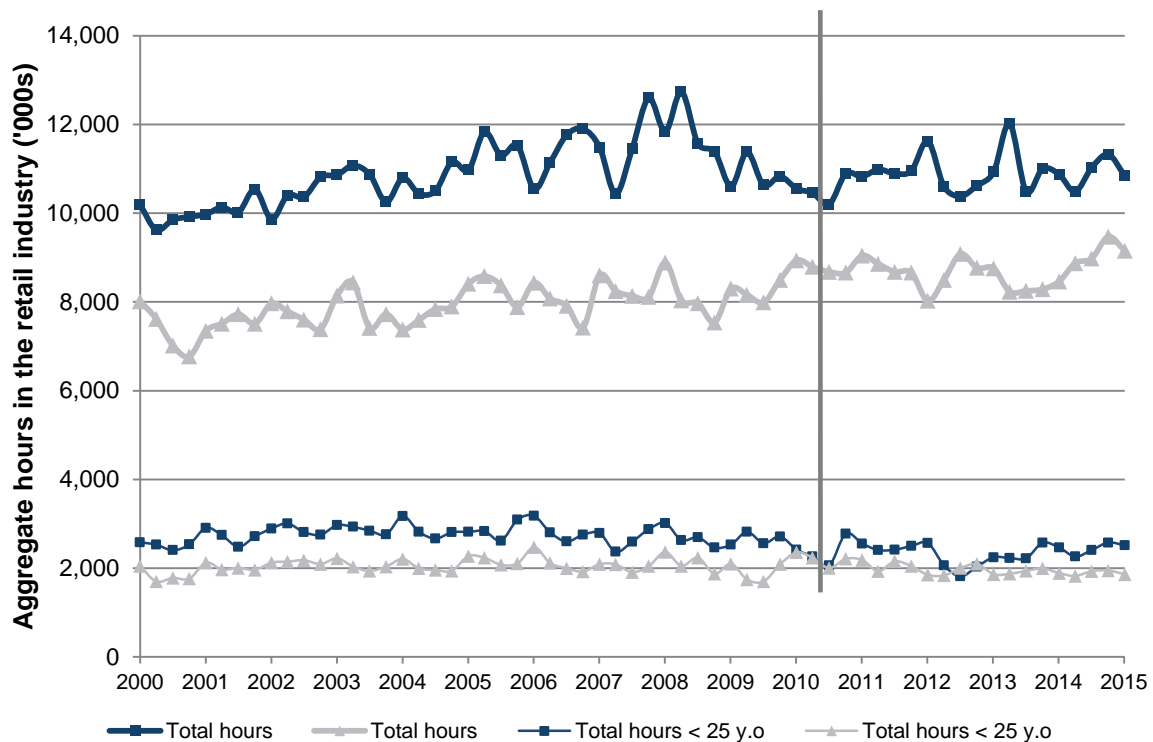


Source: ABS cat. no. 6291.0.55.003 (Detailed Quarterly Labour Force Survey, February 2015)

Similarly, trends in the aggregate hours worked in retail in the respective states are illustrated in Figure 7. Again, the initial inspection of the aggregate data does not suggest an obvious negative employment effect in NSW. Aggregate hours in NSW retail grew by 3.7 percent compared to 4.1

percent in Victoria between May 2010 and February 2015. From these results, it is impossible to distinguish the effects of the changes in penalty rates from those arising from the economic cycle, and in particular the financial crisis and its recovery. In the following regression analysis, we control for additional state-level factors.

Figure 7. Aggregate retail hours in NSW and Victoria, February 2000 to February 2015



Source: ABS cat. no. 6291.0.55.003 (Detailed Quarterly Labour Force Survey)

The results of the regression analysis of aggregate employment effects are presented in Table 3. The outcomes of interest are total retail employees, and aggregate retail hours worked¹². The difference-in-difference model evaluates the impact of the five increases in the Sunday penalty rates in NSW, controlling for a range of state-specific factors. These controls include the employment-to-population ratio, the unemployment rate (these two controls are included for all ages, as well as for individuals aged 15 to 24), and state retail sales. In addition, the model includes controls for any time trend, and quarterly seasonal factors.

In the table below, the key results are the coefficient estimates on the five date variables. Results marked with a double asterisk (**) are by convention regarded as statistically significant, representing a 5 percent probability of falsely concluding that that year's penalty rate increase had an effect on

¹² The model uses the logarithm of total employment and total hours.

employment¹³. Importantly, estimates with no asterisks marked indicate a statistically insignificant result. In addition to testing these ‘null hypotheses’ – that the annual effects were each statistically no different from zero (and presented in the table below) – tests were also conducted on the sum of the five coefficients (determining whether the cumulative effect of the five penalty rate increases was equal to zero).

The results indicate that there were no consistent effects on employment. Specifically, while the number of employees fell by 4.7 percent in NSW following the initial increase in Sunday penalty rates in 2010, the magnitudes and directions of the effects thereafter varied and were statistically insignificant. While the average effect in the first year was shown to be statistically significant, the results showed that the 95 percent confidence interval was much wider, between minus 1 and minus 8 percent. A test on the sum of the five years’ coefficients showed that the cumulative effect was not statistically different from zero¹⁴.

The results for aggregate hours showed similar patterns – a significant drop of 6 percent in 2010, followed by point estimates which varied in magnitude and direction, and were found to be statistically insignificant. A test on the sum of the five years’ coefficients showed that the cumulative effect on hours was again statistically insignificant.

The results also indicate that the effects of the business cycle were found to be highly significant, although due to the high degree of collinearity, the individual coefficients were mostly small, and for the unemployment rate variable, of a counterintuitive direction.

Collectively, the results (across the five years, and across the two employment measures) suggest that it is implausible to place too much emphasis on the lone significant result in the first year, because there is no evidence to suggest that there were sustained employment effects (adverse or otherwise) as the cumulative change in penalty rates rose 10 percentage points each year.

Theoretically, one might expect that negative employment effects would grow as the ‘bite’ of the higher penalty rates increased each year, but the empirical results have shown no such systematic effect. Overall, the results indicate that the cumulative effect of the incremental increases in Sunday penalty rates has been inconsistent and statistically insignificant. After the five increases moving from time-and-a-half to double-time in NSW retail, the impact has been to have no significant effect on the total number of employees or hours worked.

¹³ A single asterisk (*) represents a weakly significant result, representing a 10% probability of incorrectly rejecting the null hypothesis. The null hypothesis is that there was no effect from the penalty rate increase in each year. A Type I error occurs when the null hypothesis is rejected when it is true. In this case, this would be a false conclusion that the penalty rate increases had a significant effect. A triple asterisk (***) represents a highly significant result (with only a 1% probability of a Type I statistical error).

¹⁴ All test results have been reported at the 5% significance level.

Table 3. Aggregate employment effects

Variable	Total employment		Aggregate hours	
Change in Sunday penalty rates				
July 1, 2010	-0.047***	(0.016)	-0.061***	(0.017)
July 1, 2011	0.029	(0.022)	0.040	(0.028)
July 1, 2012	-0.010	(0.023)	-0.007	(0.031)
July 1, 2013	-0.020	(0.023)	-0.015	(0.026)
July 1, 2014	0.030	(0.161)	0.011	(0.017)
State (NSW) effects	0.030	(0.161)	0.269	(0.179)
Time trend effects	0.005	(0.017)	-0.004	(0.018)
Quarterly seasonal effects				
Second quarter	0.015	(0.013)	0.014	(0.015)
Third quarter	0.025	(0.017)	0.029	(0.020)
Fourth quarter	0.027*	(0.016)	0.018	(0.019)
Employment to population ratio	0.028***	(0.010)	0.048***	(0.011)
Youth employment to population ratio	0.007**	(0.003)	0.004	(0.004)
Unemployment rate	0.019**	(0.009)	0.023**	(0.010)
Youth unemployment rate	-0.005*	(0.003)	-0.004	(0.003)
State retail sales	0.207	(0.125)	0.125	(0.130)
n	122		122	
R-square	0.941		0.937	

Robust standard errors in parentheses. Statistical significance: *** p<0.01, ** p<0.05, * p<0.1

WORKING ON SUNDAYS

The preceding section shows that the cumulative employment effects of the incremental increases in Sunday penalty rates in NSW retail have been statistically insignificant, showing no clear trend. As a check against these findings, we investigate whether there was a shift in employment away from Sundays - it is possible that NSW employers did not simply reduce staff and/or working hours, but rather redistributed them away from Sunday work. Importantly, a shift away from Sunday work is not indicative of an overall loss in welfare, if an offsetting increase in employment occurred elsewhere during the week.

Aggregate data on working time arrangements across Australia in 2006, 2009 and 2012 are first presented Figures 8 and 9. The data relates to employees only across all industries. It shows that 9 percent of males, and 8 percent of females, usually work on Sundays; these figures rose slightly in the 2009 survey, and fell again in 2012. This pattern was consistent for Saturdays as well – about 18 percent of males and 13 percent of females report usually working on Saturdays. This national data

shows some stability in the incidence of weekend work, however is not available separately for the NSW and Victorian retail industries.

Figure 8. Employees working Sundays (%)

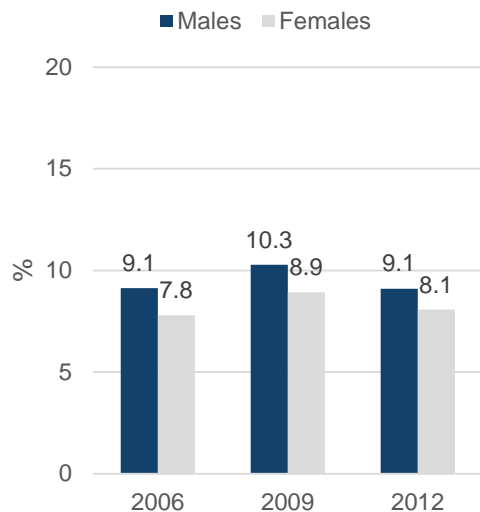
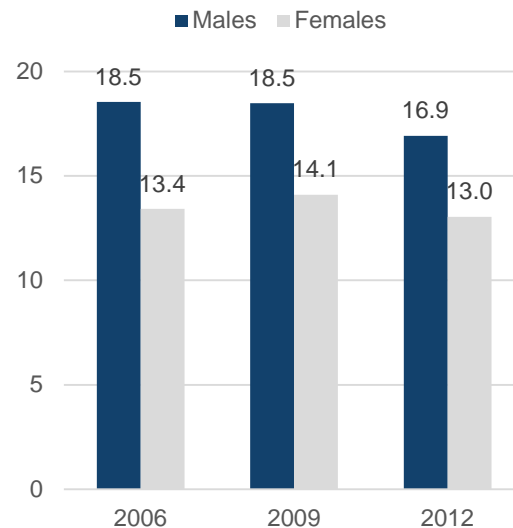


Figure 9. Employees working Saturdays (%)



Source: ABS cat.no.6342.0 (Working Time Arrangements, 2006, 2009, 2012).

As was shown in Table 2, about 24 percent of the sample of NSW retail employees in the HILDA sample reported usually working on Sundays, compared to about 21 percent of Victorian retail employees. The regression results in Table 4 show the change in the probability of working on Sundays following each of the Sunday penalty rate rises between 2010 and 2013¹⁵. The effect is estimated using a linear probability model¹⁶, and can be interpreted as follows: the reported coefficient represents the effect of the change in penalty rates on NSW employees compared to Victorian employees, after each of the three penalty rate changes. The results are presented without additional controls (Model 1); with controls for demographic differences between employees in the two states (Model 2); and with controls for workplace differences (Model 3). These controls are important because, as was shown in Table 2, retail employees in NSW were shown to be more likely to be female, younger, and more likely to be employed on a casual basis. These attributes could have an independent effect on whether an individual works on Sundays, and are controlled for in the analysis.

The results show that *without any controls* (Model 1), the increases in Sunday penalty rates no significant effects in any of the four years, although the point estimates show effects of varying

¹⁵ The latest wave of HILDA data was collected primarily in August and September, 2013. As such, evaluation of the fourth increase in Sunday penalty rates (which occurred on 1 July, 2013) is based on very limited data.

¹⁶ These results were compared to the average partial effects obtained from a probit model, which were very similar to the results of the linear probability model presented here.

direction and magnitude. A test on sum of the four years' coefficients indicate that the cumulative effect was not statistically different from zero.

Model 2 shows the results after controlling for important demographic differences (particularly for being under the age of 25). The estimated effects of the penalty rate changes are virtually the same as Model 1. However, as expected, Model 2 indicates that those under the age of 25, or without dependent children, are significantly more likely to work on Sundays.

The final model includes controls for the individual's employment arrangements – namely whether they worked part-time, on a casual basis, in a large enterprise, or were a union member. Overall, the results again showed contradictory and mostly insignificant effects, with the cumulative effect after four increases not statistically different from zero. Across Models 1 to 3, the sum of the treatment dummy variables was not statistically different from zero – this indicates that the penalty rate increases had no cumulative effects on the likelihood of working on Sundays.

Table 4. Effects on the probability of working on Sundays

Variable	Probability of working Sundays					
	Model 1		Model 2		Model 3	
	Est.	Std. Err	Est.	Std. Err	Est.	Std. Err
Change in Sunday penalty rates						
July 1, 2010	0.006	(0.034)	0.008	(0.033)	-0.013	(0.040)
July 1, 2011	-0.056	(0.036)	-0.055	(0.036)	-0.025	(0.043)
July 1, 2012	0.037	(0.033)	0.040	(0.033)	0.069*	(0.040)
July 1, 2013	0.015	(0.035)	0.017	(0.034)	0.009	(0.041)
Demographic controls						
Less than 25 years old			0.145***	(0.017)	0.113***	(0.023)
Gender (Female)			0.022	(0.014)	-0.016	(0.018)
Married or de facto			-0.012	(0.017)	-0.015	(0.020)
Number of dependent children			-0.019***	(0.007)	-0.033***	(0.010)
Year 11 or below education			-0.014	(0.023)	-0.014	(0.027)
Workplace/ employment controls						
Part-time employee					0.164***	(0.022)
Casual employee					0.016	(0.024)
Large employer					0.111***	(0.031)
Union member					0.014	(0.022)
No. observations	3714		3714		2441	

Robust standard errors in parentheses. Statistical significance: *** p<0.01, ** p<0.05, * p<0.1

It is also observed in Table 4 that, controlling for a large range of variables in Model 3, a weakly significant and positive effect appears after the increase in 2012, and very significantly positive results based on part-time employment status and working in a large firm. This suggests that the results are

strongly segmented. For this reason, the model (with full controls) is separated for full time and part time employees, and for large versus small to medium businesses. A summary of these results is presented next in Table 5.

Table 5. Effects on the probability of working on Sundays, by part time status and workplace size

Change in Sunday penalty rates	Part time workers		Full time workers		SMEs		Large employers	
	Est.	Std. Err	Est.	Std. Err	Est.	Std. Err	Est.	Std. Err
July 1, 2010	-0.013	(0.058)	-0.011	(0.046)	0.021	(0.086)	-0.020	(0.045)
July 1, 2011	-0.040	(0.061)	0.000	(0.054)	-0.150*	(0.091)	-0.010	(0.048)
July 1, 2012	0.083	(0.055)	0.058	(0.053)	0.088	(0.079)	0.067	(0.044)
July 1, 2013	0.032	(0.057)	-0.023	(0.054)	0.000	(0.093)	0.009	(0.045)
No. observations	1392		1049		386		2055	

Robust standard errors in parentheses. Statistical significance: *** p<0.01, ** p<0.05, * p<0.1

Table 5 shows more nuanced results, although large results were still at best weakly significant. Specifically, part time workers were 8.3 percent more likely to report working on Sundays following the 2012 increase in penalty rates. This was driven by part time workers (and particularly those in large firms). Conversely, NSW retail workers employed in small to medium businesses (less than 100 employees) were 15 percent less likely to work on Sundays following the 2011 increase in Sunday penalty rates. It must be emphasised that these results were not found to be consistent throughout the period, and were at best weakly significant. It is possible that because the effects were not found in every period, the results are driven by other confounding effects.

The increase in the probability of part-time employees working on Sundays bears further investigation. Employer submissions to the FWC argue that the higher Sunday penalty rates have led to a mix of less experienced employees, presumably because workers under the age of 21 receive a lower rate of pay. The model was therefore recalculated separately for part-time workers under the age of 21, and those over. In our HILDA sample, 88.5 percent of junior retail employees worked part time, and the results in Table 6 show that it was these workers which became more likely to work on Sundays. Specifically, after the 2012 increase, junior retail workers in NSW were 21.8 percent more likely to report working on Sundays. Importantly, there was no statistically significant effect in any year for older (21 years and over) part time workers, and the result for the junior workers was identified in 2012 only. This suggests that the increased deployment of junior workers on Sundays are more likely due to some other motivation driving preferences for these workers, rather than their being forced to fill gaps created by any loss of ability to deploy more experienced staff.

Table 6. Effects on the probability of working on Sundays, part time employees by junior status

Change in Sunday penalty rates	Probability of working Sundays			
	Junior workers		Non-juniors	
	Est.	Std. Err	Est.	Std. Err
July 1, 2010	-0.056	(0.089)	0.059	(0.075)
July 1, 2011	0.006	(0.097)	-0.088	(0.076)
July 1, 2012	0.218**	(0.094)	-0.014	(0.063)
July 1, 2013	-0.068	(0.098)	0.087	(0.067)
No. observations	652		740	

Robust standard errors in parentheses. Statistical significance: *** p<0.01, ** p<0.05, * p<0.1

ROBUSTNESS CHECKS

A key check for the robustness of the analysis is to run what is referred to as a ‘placebo model’. It replicates the model in a period where there is no policy intervention, and we expect to find no significant ‘treatment’ effect.

A placebo model of aggregate employment outcomes (both total employees and hours) is constructed using a ‘before’ period from 2000 to mid-2005, and an ‘after’ period from mid-2005 to early 2010. These two periods pre-date the increases in Sunday penalty rates, and the placebo model acts to effectively test the ‘common trend’ assumption, validating the use of Victoria’s employment experience as a control state for NSW. Arbitrary dates were used to denote three placebo policy interventions (July 1, 2005; July 1, 2006; and July 1, 2007¹⁷), with the same variables as before controlling for state differences in aggregate demand. These controls include state level employment to population ratios, unemployment rates (for both total and youth aged 15 to 24), and state retail sales.

The small coefficients and high p-values shown in Table 7 indicate that as expected, the estimated treatment effects for the placebo dates are both small and not statistically different from zero.

Table 7. Robustness checks – placebo model results

Placebo date	Total employment		Aggregate hours	
	Estimated effect	p-value	Estimated effect	p-value
July 1, 2005	0.031	0.102	0.023	0.363
July 1, 2006	-0.017	0.544	0.011	0.785
July 1, 2007	0.018	0.518	0.007	0.849
n	80		80	
R-square	0.953		0.948	

¹⁷ Three placebo dates were chosen, rather than five, to ensure that an adequate ‘before’ and ‘after’ period could be identified within the period between 2000 and 2009.

A variation of this placebo model was also produced to check the individual-level results for working on Sundays. Specifically, the model was rerun estimating the effects of working on Saturday – there were no changes to Saturday wage rates in NSW, and Saturday rates in Victoria fell slightly (on average from 33% to 25% from 2010 to 2015). Therefore, it is expected that the estimated placebo effect in NSW should be insignificant, or slightly positive if the fall in Victorian Saturday rates had an effect. The results of this second placebo model are presented in Table 8. They show that, as expected, the effect of the Sunday penalty rate changes did not have a statistically significant effect on the likelihood of NSW retail employees working Saturdays.

Table 8. Effect of Sunday penalty rate changes on working Saturdays

Variable	Change in probability of working Saturdays	
	Estimated effect	Std. Err
Change in Sunday penalty rates		
July 1, 2010	0.023	(0.043)
July 1, 2011	0.062	(0.044)
July 1, 2012	-0.031	(0.039)
July 1, 2013	0.024	(0.038)
Demographic controls		
Less than 25 years old	0.139***	(0.032)
Gender (Female)	-0.072***	(0.026)
Married or de facto	0.020	(0.033)
Number of dependent children	-0.021	(0.015)
Year 11 or below education	0.034	(0.041)
Workplace/ employment controls		
Part-time employee	0.102***	(0.030)
Casual employee	0.003	(0.032)
Large employer	-0.044	(0.056)
Union member	-0.064**	(0.029)
No. observations	2441	

CONCLUSION

This report set out to investigate the increases in the Sunday penalty rates in the NSW retail industry between July 1, 2010 and July 1, 2014, and their effects on the following in the NSW retail industry:

- Total number of workers employed;
- Aggregate hours worked; and
- The probability of working on Sundays.

Using appropriate econometric techniques, no systematic evidence of an adverse effect of the increase in Sunday penalty rates on aggregate employment outcomes was found. For both aggregate outcomes (number of employees and hours), the evaluation found the cumulative effect was not statistically different from zero. While there was a negative effect in the first year of transitioning to modern awards, the effects in subsequent years were found to be inconsistent, contradictory, and statistically no different from zero. These results held taking into account state-specific economic conditions, including total and youth employment conditions, and industry demand.

Rich data on individual retail employees, in particular whether they worked on Sundays, was also used to investigate the potential distribution of employment away from Sundays. Again, the results showed that the cumulative effect of the increase in Sunday penalty rates was not statistically different from zero, and year to year, the effects were also found to be statistically insignificant and inconsistent. The analysis did find a large positive effect amongst junior workers, who reported being much more likely to work on Sundays following the increases in penalty rates. However, this result for junior workers was found in only one year (2012), and not consistently over the period of increasing penalty rates. Moreover, there was no commensurate decline in non-junior employees working on Sundays. It is likely that other factors are motivating these preferences for deploying junior employees on Sundays.

Overall, the research showed no systematic evidence of an adverse effect on employment following the transitional increases in the Sunday penalty rates in the NSW retail industry.

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APPENDIX A: CHANGES IN AWARD ENTITLEMENTS

The changes in Victorian Saturday penalty rates were based on flat dollar rates at each occupational classification. These are set out in Table A1 below. The calculations show that these flat dollar rates induced a penalty rate in percentage terms of between 32 to 33 percent. The shift to the modern award resulted in these Saturday penalties falling to 25 percent of the base rate.

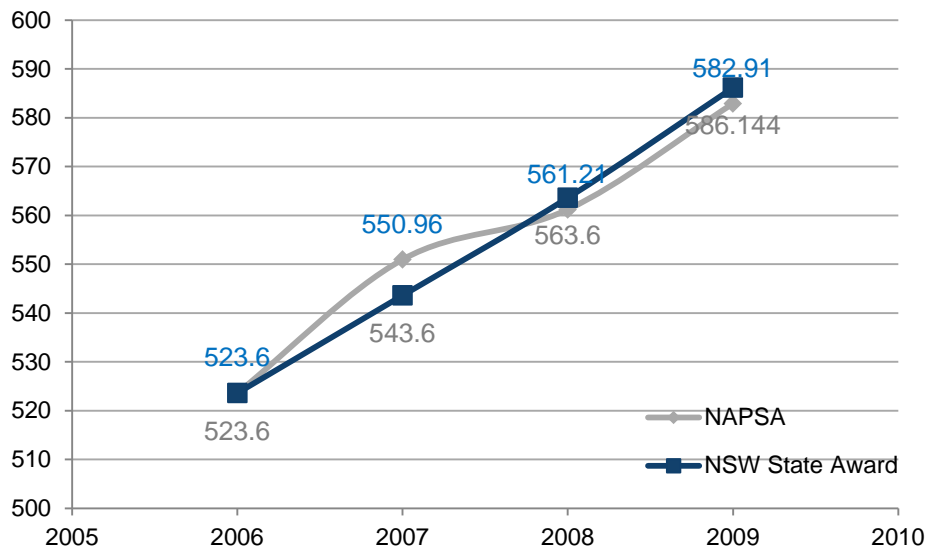
Table A1. Changes in Saturday penalty rates, Victoria

Classifications	Pre-modern award base weekly wage (\$)	Hourly rate (\$)	Saturday penalty (\$)	Saturday penalty (%)
CLOTHING AND FOOTWEAR SHOPS MANAGER				
(a) In charge of two or more persons	653.10	17.19	5.69	33.1
(b) Working singly or in charge of one person	645.20	16.98	5.59	32.9
CLOTHING AND FOOTWEAR SHOPS DEPARTMENT MANAGER				
(a) In charge of two or more persons	641.70	16.89	5.54	32.8
(b) Working singly or in charge of one person	631.10	16.61	5.43	32.7
ELECTRICAL, FURNITURE AND HARDWARE SHOPS MANAGER				
(a) In charge of two or more persons	655.30	17.24	5.72	33.2
(b) Working singly or in charge of one person	646.90	17.02	5.61	33.0
ELECTRICAL, FURNITURE AND HARDWARE SHOPS DEPARTMENT MANAGER				
(a) In charge of two or more persons	646.90	17.02	5.61	33.0
(b) Working singly or in charge of one person	638.60	16.81	5.50	32.7
FOOD, GROCERS AND LIQUOR SHOPS MANAGER				
(a) In charge of two or more persons	655.30	17.24	5.72	33.2
(b) Working singly or in charge of one person	646.90	17.02	5.61	33.0
FOOD, GROCERS AND LIQUOR SHOPS DEPARTMENT MANAGER				
(a) In charge of two or more persons	643.40	16.93	5.57	32.9
(b) Working singly or in charge of one person	632.50	16.64	5.45	32.7
GENERAL SHOPS MANAGER				
(a) In charge of two or more persons	646.90	17.02	5.61	33.0
(b) Working singly or in charge of one person	638.60	16.81	5.50	32.7
GENERAL SHOPS DEPARTMENT MANAGER				
(a) In charge of two or more persons	643.40	16.93	5.57	32.9
(b) Working singly or in charge of one person	632.50	16.64	5.45	32.7
RETAIL WORKER GRADE 2	637.60	16.78	5.49	32.7
CANVASSERS or collectors	605.60	15.94	5.09	31.9
RETAIL WORKER GRADE 1	602.80	15.86	5.06	31.9

Source: Australian Industrial Relations Commission (2010a, 2010b)

Following the introduction of Work Choices in March 2006, some NSW retail employers previously covered by the Retail Services Employees (State) Award were thenceforth covered a transitional federal instrument, a Notional Agreement Preserving State Awards (NAPSA). NAPSA covered employers who were constitutional corporations. Employees of non-corporate employers continued to be covered by the state award. Changes to wages and allowances in NAPSA were made by the Australian Industrial Relations Commission (AIRC) between 2006 and 2009, whereas changes to the state award were governed by the NSW Industrial Relations Commission (NSWIRC). These respective changes are shown in Figure 10.

Figure 10. Weekly award wages in NSW, 2006 to 2009



Sources: AIRC and NSWIRC decisions (2007, 2008, 2009).

APPENDIX B: LETTER CLARIFYING THE RESEARCH PROPOSAL

The attachment overleaf sets out clarifications which were requested by the SDA relating to the original research proposal submitted on February 25, 2015. The final research proposal, included in Appendix C, was submitted on March 9, 2015.

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6 March 2015
Our ref:djm/140302

Professor John Buchanan
Director
Workplace Research Centre
The University of Sydney
NSW 2006 Australia
By email: john.buchanan@sydney.edu.au

Dear Professor Buchanan,

Re: Workplace Research Centre Research Proposal

As you are aware, we act on behalf of the Shop, Distributive and Allied Employees' Association (**SDA**).

Thank you for sending our client the Workplace Research Centre's research proposal on 'The Impact of Sunday Penalty Rates on Employment' last Wednesday 25 February 2015 (**Research Proposal**).

We have now had an opportunity to review the Research Proposal and, subject to the matters raised below, wish to engage the Workplace Research Centre to conduct the research outlined in the Proposal:

1. Please note that the data provided in Table 1 on page 2 of the Research Proposal is inaccurate. We accordingly request that Table 1 and the reference to it on page 3 of the Research Proposal be removed. We provide the following replacement data for insertion into the Research Proposal where amendment is required on pages 2 and 3:

In NSW, the Sunday penalty rate increased as follows:

Pre-modern Award: Shop Employees (State) Award: 150%
Modern Award: General Retail Industry Award 2010: 200%

In Victoria, the Sunday penalty rate remained fixed as follows:

Pre-modern Award: Victorian Shops Interim Award 2000: 200%
Modern Award: General Retail Industry Award 2010: 200%



2. We request that, in order to better capture the Research Proposal's objectives, the last paragraph commencing on page 2 be amended to read as follows:

The research set out in this proposal seeks to interrogate the contention that Sunday penalty rates (and penalty rates more broadly) adversely affect aggregate employment outcomes either by reducing the number of employees, or the number of hours worked, in affected workplaces.

Specifically, the research will investigate whether the increases in award Sunday penalty rates in the NSW retail industry between 1 July 2010 and 1 July 2012 had any effect on:

- i. The total number of workers employed in the retail industry in NSW whose terms and conditions of employment were regulated by award conditions and, if so, the extent of any such effect.*
- ii. The aggregate number of hours worked by workers in the retail industry in NSW whose terms and conditions of employment were regulated by award conditions and, if so, the extent of any such effect.*
- iii. The probability of individual workers in the NSW retail industry whose terms and conditions of employment were regulated by award conditions working on Sundays and, if so, the extent of such effect.*

Based on the results, the research proposed will allow for an analysis of whether and to what extent an increase in Sunday penalty rates affected employment outcomes in the NSW retail industry.

3. We ask that the research outputs described on page 5 of the Research Proposal be amended to read as follows:

The researchers propose that two distinct reports be produced based on the empirical analysis:


- 1. A technical and descriptive report, containing information on the data sources, methodology, full research results and a non-technical description of the research results; and*
- 2. A commentary report, if requested by the SDA, that addresses specific questions raised by the SDA about conclusions and implications which may be drawn from the technical and descriptive report in the context of other research and relevant academic literature.*

If you are agreeable to the above requests, please amend the Research Proposal in the above terms and submit it to this office. We will then confirm our client's agreement for the research to be undertaken.



We look forward to hearing from you at your earliest convenience. Please do not hesitate to contact Mr Dominic Macken on (03) 9614 4899 should you have any queries regarding this letter.

Yours sincerely,

A handwritten signature in black ink, appearing to be 'AM', followed by a long horizontal line extending to the right.

A. J. MACKEN & CO.

APPENDIX C: FINAL RESEARCH PROPOSAL

EVALUATING EMPLOYMENT EFFECTS OF SUNDAY PENALTY RATES IN RETAIL

The research will explore the consequences of a quasi-natural experiment that arose in New South Wales due to annual increases in the Sunday penalty rates which took place from July 2010 as part of the Award Modernisation process. In particular, the study will evaluate the impact of these changes on employment in the NSW retail industry.

CHANGES IN MODERN AWARD PENALTY RATES

As part of the award modernisation process, from July 2010, changes to the penalty rates in the General Retail Industry Award 2010 were phased in to give employers and employees to adjust to the changes. These arrangements are in place from 1 July 2010 to 1 July 2014. The transitional arrangements allowed for employers to reduce the difference between pre-modern award and modern award entitlements incrementally, in one-fifth increments each year starting 1 July 2010 and ending on 1 July 2014. This study focuses on the changes implemented in NSW, compared to Victoria. The overall changes were as follows:

In NSW, the Sunday penalty rate increased as follows:

- Pre-modern award: Shop Employees (State) Award: 150%
- Modern Award: General Retail Industry Award: 200%

In Victoria, the Sunday penalty rate remained fixed as follows:

- Pre-modern award: Victorian Shops Interim Award: 200%
- Modern Award: General Retail Industry Award: 200%

The research set out in this proposal seeks to interrogate the contention around Sunday penalty rates (and penalty rates more broadly) adversely affect aggregate employment outcomes either by reducing the number of employees, or the number of hours worked, in affected workplaces. Specifically, the research will investigate whether the increases in award Sunday penalty rates in the NSW retail industry between 1 July 2010 and 1 July 2012 had any effect on

- The total number of workers employed in the retail industry in NSW, and if so, the extent of any such effect;
- The aggregate number of hours worked by workers in the retail industry in NSW, and if so, the extent of any such effect; and
- The probability of individual workers in the NSW retail industry working on Sundays, and if so, the extent of any such effect.

Based on these results, the research proposed will allow for an analysis of whether and to what extent an increase in Sunday penalty rates affected employment outcomes in the NSW retail industry.

The main challenges in such an analysis hypothesis are twofold. First, it is difficult to ascertain what would have happened in the NSW retail industry in the counterfactual scenario, that is, in the absence of the policy change. Second, there are significant data limitations in identifying the individuals

affected by the penalty rate changes, and obtaining reliable data on a large enough sample to estimate the effects of the policy change.

Evaluation of policy changes is dogged by the difficulty of quarantining a 'control group' from the effects of the policy change, for the purpose of consequently comparing their outcomes to that of the group impacted by the change, or the 'treatment group'. Ideally, increases in Sunday penalty rates would have been imposed on a segment of NSW retail workplaces, while a comparable group of NSW retailers continued under the old policy regime. In the absence of such an experiment, researchers seek to identify alternative control groups, with the identifying assumption that they exhibit a common trend with the control group prior to the policy's implementation.

In this case, there is a natural control group for NSW retailers – Victorian retailers. As detailed above, Victorian retailers did not experience a change in Sunday penalty rates. Victoria has a similar population and industry profile of employment as New South Wales. Both states also had similar regulations of trading hours over the period of the study.

There is no single data source that contains information on the form of wage instrument that is of sufficient frequency to enable the analysis of changes in award wages on employees. We propose using two main data sources to address the data limitations, namely:

1. The Australia At Work (AAW) dataset: this was a five year, ARC-funded longitudinal survey of over 8000 individuals and their experience of the Australian labour market between 2007 and 2011. The data collection included critical information about wage-setting, which are not generally available in other large scale surveys.
2. The Household, Income and Labour Dynamics in Australia (HILDA) dataset: this is an annual longitudinal survey of over 13,000 individuals which commenced in 2001 (and available up to 2012). The HILDA dataset includes variables similar to AAW and relevant to award-reliance (including industry, occupation, state and hours of employment data), and provides a large sample over a longer period of time. It also includes data on individuals who report usually working on Sundays.

The empirical method below sets out a way of identifying individuals who meet the criteria of being affected by the quasi-experiment: being covered by the state award pre-2010 and covered by the modern award post-2010, and working Sundays – and therefore receiving Sunday penalty rates.

EMPIRICAL METHOD

A key concern with identifying the employment effects of the changes in Sunday penalty rates is addressing three potential channels – 1) that employers reduced the number of employees; 2) that employers reduced the number of hours employed; and 3) that employers changed the distribution of hours employed away from Sunday employment. Based on the proposed hypothesis, the empirical method sets out to investigate the following:

1. Changes in the total number of retail industry workers in NSW versus Victoria before and after the increases in Sunday penalty rates.
2. Changes in the total number of hours worked in the retail industry in NSW versus Victoria before and after the increases in Sunday penalty rates.
3. Changes in the probability of individual employees working on Sundays before and after the increases in Sunday penalty rates, controlling for the experience of the employee.

We propose using a quasi-experimental approach, implementing a difference-in-difference (DiD) regression framework to analyse the changes in employment in response to the exogenous changes to Sunday penalty rates in the modern awards from July 2010 (Angrist & Pischke, 2009). The DiD model has been used widely in areas as diverse as labour economics, psychology, public health and education, most commonly to estimate the effects of specific policy interventions. Some prominent international examples include studies into the impacts of the minimum wage rise in Pennsylvania (Card & Krueger, 1994) and the impact of mandating maternity leave benefits (Gruber, 1994).

Essentially, the approach compares a 'treatment group' to a 'control group', before and after treatment. In this case, the 'treatment' refers to the three exogenous changes to the penalty rates on July 2010, 1 July 2011 and 1 July 2012. The 'treatment group' will be retail workers in New South Wales, and the primary control group will be retail workers in Victoria, who did not experience changes in their Sunday penalty rates. The key identifying assumption of the modelling is that the control group represents the counterfactual scenario which would have occurred in the absence of the policy change.

Changes in the number of workers and aggregate hours worked will be investigated using aggregate published and unpublished data from the ABS. Public data from the Detailed Labour Force Survey, and unpublished data from the Employee Earnings and Hours collection will be used to analyse changes in the total number of workers and total hours worked in NSW retail (compared to Victoria). The analysis will include total employees, as well as, where possible, sub-groups including occupational groups and analysis of employees by pay-setting mechanism.

Changes in the probability of working Sundays will be analysed at the individual employee level using longitudinal data from the HILDA survey. The researchers will use HILDA data from 2008 to 2013 to construct a difference-in-difference regression model on a sample of retail workers from NSW and Victoria. This sample of retail workers comprises observations on 560 employees in NSW, and 509 in Victoria.

The outcome of these three analyses will include:

- An evaluation of whether the change in Sunday penalty rates affected the number of NSW retail workers.
- An evaluation of whether the change in Sunday penalty rates affected the total hours worked in the NSW retail industry.
- An evaluation of whether individual employees were less likely to work Sundays following the changes to Sunday penalty rates.

In aggregate, the analyses will provide a robust evaluation of the employment effects of the changes in Sunday penalty rates, allowing for changes in the level and distribution of employees and hours worked.

RESEARCH OUTPUTS

The researchers propose that two distinct reports be produced based on the empirical analysis:

1. A technical and descriptive report, containing information on the data sources, methodology, full research results, and a non-technical description of the research results; and
2. A commentary report, if requested by the SDA, that addresses specific questions raised by the SDA about conclusions and implications which may be drawn from the technical and descriptive report in the context of other research and relevant academic literature.