The Intergenerational Impact of Reduced Generosity in the Social Safety Net^{*}

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January 17, 2019

Abstract

This paper provides new causal evidence on how a reduction in welfare cash assistance to newly separated parents impacts the well-being of young-adult children. Our paper differs from the rest of the literature evaluating the intergenerational impacts of welfare policy because it focuses on the role of welfare assistance specifically at the point of parental relationship separation. A-priori, it is unclear if a policy that provides welfare assistance to newly separated mothers produces workdisincentive effects and/or whether, on balance, it helps or hinders recovery from the event of separation. We use a reform that withdrew welfare eligibility from mothers who separated from their partners on or after 1 July 2006, while mothers who separated before this date were exempt from the new rules. We exploit this discontinuity in a Regression Discontinuity Design using biweekly administrative social security records. We find that the loss of welfare eligibility at the time of relationship breakdown reduces mothers' welfare income, but increases their employment and family income. The reform decreases young adults' reliance on unemployment benefits. No effects are found on young adults' receipt of other types of welfare payments, fertility, homelessness or financial independence.

JEL: J12, J18, H53

Keywords: Intergenerational impacts, single parents, welfare reform, young adult outcomes

^{*}This research was supported by the Australian Research Council (ARC) Centre of Excellence for Children and Families over the Life Course (project number CE140100027). The Centre is administered by the Institute for Social Science Research at The University of Queensland, with nodes at The University of Western Australia, The University of Melbourne and The University of Sydney. This paper uses unit record data from the Centrelink administrative records from the Department of Social Services (DSS). The findings and views reported in this paper are those of the authors and should not be attributed to the ARC or DSS. Zhu acknowledges the support of the Australian Research Council Linkage Project (LP170100472). The paper benefited from the helpful comments of: Prashant Bharadwaj, Melisa Bubonya, Julie Cullen, David Ribar, Tim Robinson, Mark Wooden, attendees at the Australian Conference of Economists, and the Australian Social Policy Conference and seminar participants at the University of Bath, University of Bristol, and Institute for Fiscal Studies. All opinions and any mistakes are our own.

1 Introduction

Relationship separation constitutes a significant income shock, particularly for mothers and children (Amato 2010). Traditionally, governments have insured low-income parents against this income shock through the provision of welfare cash assistance. However, a common concern with such a policy is that it provides disincentives to work for parents and can promote a norm of welfare reliance, intergenerationally (Dahl, Kostøl & Mogstad 2014; Hartley, Lamarche & Ziliak 2017; Dahl & Gielen 2018). What remains unclear in the literature, however, is whether these disincentive effects apply to newly separated parents, many of whose first contact with the welfare system is upon separation (Bradbury & Zhu 2018). A related question is whether the policy of providing welfare assistance upon separation, on balance, helps or hinders recovery from the event of separation.

This paper's central motivation is to understand the short- and longer-term impacts of a policy that reduces welfare participation among newly divorced or separated parents on their young-adult children. We focus on parents who became single mothers as they are most likely to be targeted by welfare policy and to undertake the majority of the caring responsibilities for children upon a relationship separation. Our paper differs from the rest of the literature evaluating the intergenerational impacts of welfare policy because it focuses on the role of welfare assistance specifically at the point of relationship separation.

Newly separated mothers may respond to welfare assistance differently compared to mothers who have been separated for longer. For example, newly separated mothers may have lower expectations that welfare assistance will be on-going, which minimises the potential disincentive effects. If so, welfare assistance may serve to facilitate a smoother transition into appropriate employment for mothers and provide income-related benefits to affected children (Dahl & Lochner 2012). In contrast, welfare assistance upon separation may divert mothers onto a trajectory of future welfare use. To the extent that welfare use causes future welfare participation (Immervoll, Jenkins & Königs 2014), providing welfare assistance upon separation may mean foregoing a pivotal opportunity to mobilise mothers into work and to promote positive role model effects among affected children. This may be especially true at the point of separation because recently separated mothers are less likely to receive welfare compared to mothers who have been separated for longer (Bradbury & Zhu 2018). A greater understanding about any unintended, behavioural impacts of welfare assistance on recently separated mothers and affected children can assist the future design of welfare policy to achieve a balance between the goals of insurance and incentives.

We begin by evaluating the static and dynamic impacts of reducing welfare assistance on mothers' outcomes, such as their welfare receipt, personal and total household income, and housing and residential mobility. We then examine the young-adult outcomes of welfare receipt patterns, early fertility, independence, and homelessness because they are salient experiences associated with parental relationship separation (Painter & Levine 2000, Gruber 2004, Moschion & van Ours 2017). The outcome of homelessness, in particular, is novel to the literature on the intergenerational impacts of welfare reform. Youth homelessness is also an important outcome to examine given the rising housing costs in many major cities around the developed work and due to its potential scarring effects on young adults' future outcomes (Cobb-Clark & Zhu 2017).

We estimate the causal impact of reduced welfare assistance by exploiting a unique Australian reform. The reform reduced welfare participation among newly separated parents but importantly, not among parents who were already separated. Specifically, only parents who separated on or after 1 July 2006 and whose youngest child was 8 to 15 years at separation were affected. Parents separating before this date with similar aged children, continued to receive the higher level of cash assistance even after the implementation of the reform i.e. they were grand-fathered. This allows us to employ a Regression Discontinuity Design (RDD), and to generate causal estimates of the reform impacts.

Our estimates are based on administrative government assistance records of over 10,000 mothers and their young adult children. These data are collected at a high frequency (biweekly) and covers a long time-span (from 2001 to 2013). They are also representative of the population of low- to middle-income Australian mothers.¹ Understanding the impacts to young adults is important. An important feature of our data sample is that it comprises a cohort of children born between October 1987 and March 1988. This means that children were aged, on average, 18.5 years at the time of the reform implementation in 1 July 2006.² Although young adults' cognitive development is less sensitive to external shocks (Cunha & Heckman 2007; Cunha & Heckman 2008), their attitudes and values may be highly influenced by their family circumstance (Hartley, Lamarche & Ziliak 2017).

Our study contributes to the literature on the impacts of welfare reform in several ways. First, we assess the intergenerational impact of a reform that reduced welfare support to newly separated mothers. This is important because mothers who have recently sep-

¹Our sample is based on both Income Support recipients as well as Family Payment recipients. A key benefit of using the Family Payment data is that we continue to observe mothers in our data if they stop receiving income support because of, for example, the stricter eligibility rules or because of higher employment earnings.

²Although children's ages span from 13 to 24 at the time of separation, it is the children of parents who separated around the reform implementation date that identify our RDD results.

arated may respond differently to lower welfare supports than those who have been separated for longer. Mothers' behavioural response to the policy may in turn affect their child's outcomes through the channels of time and/or money investments in children; role-model effects; stigma around welfare use; and the exchange of information about the welfare system or the application process. Second, we look at the young-adult outcome of homelessness, which has been given little attention in the literature examining the intergenerational impacts of welfare reform.

The unique nature of the Australian reform and structural context allows us to contribute to the literature in two additional ways. We can assess the reform impacts for mothers with historically low workforce engagement (OECD 2012). We can also measure the impact of a reduction in cash assistance rather than a bundle of reform components. For example, previous studies in the U.S. often capture the combined impacts of a range of reforms components, such as time limits, earnings credits, income support withdrawals, participation requirements, sanctions, and potential macroeconomic effects (Waldfogel 2001, Duncan, Morris & Rodrigues 2011, Hartley, Lamarche & Ziliak 2017). Similarly, studies in the U.K. looking at the expansions to in-work credits combine the effects of these changes with reforms to Income Support generosity such as increases in the child premia (Blundell 2000, Anderberg 2008). Recent exceptions to this include: Fisher and Zhu (2016) who study the impact of changes in the level of Income Support; Avram et al. (2018) who study the impact of participation requirements; and Low, Meghir, Pistaferri, and Voena (2018) who study time-limits. Yet, these studies do not look at the intergenerational impacts of the reforms.

Our paper also relates to a broader literature measuring the causal impact of parental income shocks on the future outcomes of affected children and youth. A key challenge faced by researchers on this topic is isolating the impact of parental income loss/gain from the influence of characteristics for parents who lose/gain their incomes. A typical solution is to exploit variation in household income reduction through quasi-random events from job-loss or job-displacement (Hilger 2016), welfare reforms (Akee, Copeland, Keeler, Angold & Costello 2010), and changes to unemployment insurance (Romero 2016). The conclusions drawn from these studies paint a mixed picture of how parental income shocks affect the future outcomes of children. Our study complements this literature because it provides estimates of single-parent welfare income loss effects from an alternative source - welfare reform.

The key finding of this paper is that the reform greatly affected newly separated mothers. In the short term, the reform significantly reduced mothers' incidence of the parenting payment (by 39 percentage points) and the overall amount of welfare benefits (by A\$1,800 per year). In response to the reduced parenting benefits, affected mothers turned to other sources of income. Some mothers increased their personal income, which is consistent with the findings of Gong & Breunig (2014). The gap in personal incomes between the groups of reform-affected and unaffected mothers is A\$7,000 per year for up to two years after the separation. Some mothers repartnered, which is consistent with the findings of Fisher & Zhu (2016). We find that the gap in family income between the groups of reform-affected and unaffected mothers is A\$9,600 per year and persists up to five years after the separation. Other mothers churned onto another type of welfare benefits, mainly unemployment benefits (we find a gap of nearly 20 percentage points in the first year after the separation between affected and non-affected mothers). In contrast, we find no reform impacts on mothers' residential mobility. These impacts on the mother can be interpreted as causal since we find little evidence of pre-reform differences in the socio-economic status and demographic characteristics of reform-affected and unaffected mothers. We also find little evidence that mothers were pulling forward their separation date in order to actively avoid the reform implications.

Young adults from the households that were affected and unaffected by the reforms were equally likely to receive welfare benefits in the first five years after parental separation. There were also no statistically significant differences in the annual benefit duration and levels, nor in early fertility, independence or homelessness.

A different story emerges when we disaggregate our welfare outcomes by the type of welfare program (unemployment, parenting or disability). We find statistically significant reductions in young adults' receipt of unemployment benefits. Specifically, there is a statistically significant gap of 0.83 fortnights in the annual duration of unemployment benefits and a marginally significant gap in the annual amount of unemployment benefits of \$351 between young adults from households that were affected by the reform and young adults from households that were unaffected. Further disaggregation of the reform effects, by both welfare program type and by the year since the mother's separation, again shows a reduction in young adults' unemployment benefit receipt and unemployment benefit duration and level two to four years after parental separation.

The paper proceeds by first outlining key features of the Australian welfare system and the 2006 reform in Section 2. Section 3 describes the administrative dataset used, and Section 4 outlines our main RDD empirical strategy. Section 5 presents our results, and Section 6 concludes.

2 The 2006 Welfare to Work Reform

The Australian welfare system provides a number of payments to families with children, and is managed by a central agency called Centerlink. The key payments targeted at low income parents are (1) the Parenting Payment Partnered (PPP) scheme, which provides payments to low income couples with young children, and (2) the Parenting Payment Single (PPS) scheme, which is paid to low income single parents.³ Other types of payments in the income support system include the following: New Start Allowance (NSA) for unemployed individuals; Disability Support Pension (DSP) for individuals with a disability; and Carers Allowance for those with large caring responsibilities for elderly or disabled family members. In Australia, individuals can only receive one income support payment at a time.

The 2006 Welfare-to-Work (W2W) reform in Australia introduced significant changes to a number of income support payments. The reform was announced on 11 May 2005, and implemented on 1 July 2006. The objective of the reforms was to reduce welfare dependency and to increase economic participation. The changes to the PPS are the focus of this paper.⁴ The reforms introduced new rules that tightened eligibility for new applicants of PPS as well as participation requirements (along with sanctions for those who fail to comply with the new participation requirements).

The key change to PPS was the tightening of the eligibility criteria. Prior to 1 July 2006, a low-income single parent with a youngest child aged below 16 years was eligible to receive PPS. After 1 July 2006, new-applicant low-income single parents were only eligible for PPS, if their youngest child was below age 8.⁵ Note that only new applicants were affected; all single parents who were already in receipt of PPS at 1 July 2006, they were grandfathered, meaning they could continue to receive PPS until their youngest child reached age 16 even after the new policy rules were implemented. Therefore, we can compare those parents who separated before and after 1 July 2006 to study the effects of the reform to PPS.

The main consequence of not being eligible for PPS is reduced government cash assistance. Single parents who were no longer eligible for PPS may have been eligible for the unemployment benefit NSA, if they satisfied a more restrictive income and assets test.

³There are also Family Tax Benefits, Child Care Rebates and Subsidies, but the rules for these payments were unchanged in the 2006 reforms.

⁴We later show that the changes to other payments such as PPP and DSP do not confound the effects stemming from changes to PPS.

⁵Some single parents whose youngest child was 8-15 years old were exempt from the new rules. They include those who were foster carers; those with a severely disabled child; those who were single parents with four or more children; and those who experienced domestic violence.

For every level of earned income, PPS is more generous than NSA, and the returns from paid work are much higher under PPS than NSA.

Under PPS, single parents with one child and no private income could receive about A\$257 a week on average in 2006-07. They could continue to receive the maximum PPS payment until their private income reached A\$76 a week.⁶ For every dollar earned beyond this 'penalty-free income threshold', PPS reduced by 40 cents, which meant that a single parent could earn up to A\$718 per week until their PPS payment entitlement extinguished.

The NSA payment is less generous in several ways. First, the maximum payment was A\$228 a week in 2006-07, which is A\$29 a week less than the PPS payment rate. Second, the NSA payment has a smaller 'penalty-free income threshold' than that associated with PPS. NSA payments reduce as soon as private income reaches A\$31 a week. Third, NSA taper rates are higher than those associated with the PPS payment⁷ and NSA payments cut out when an applicant reaches a private income of A\$426 per week. Therefore, the entitlement to income support ceases at a much lower level of earnings for those subject to the new NSA test than for those on the existing PPS.⁸

A key aim of this paper is to separate the effect of the reduced government cash assistance from other features of the welfare reform. Other features include: the grandfathering arrangements for mothers who had separated before 1 July 2006, the introduction of participation requirements, and changes to other income support payments such as DSP and PPP schemes. For the reduced government cash assistance to the post-reform separators to explain our results, we require that the grandfathering arrangements for the pre-reform separators, participation requirements, and other income support payment changes had no direct impact on a single mother's outcomes after the separation.

The grandfathering arrangements may have directly affected mothers' welfare receipt patterns. Mothers separating before 1 July 2006 were eligible to receive PPS until their youngest child reached 16 years, but only if they did not exit PPS. If they relinquished their PPS eligibility, for example, because they repartnered or if their private income exceeded the income threshold for PPS eligibility, then a mother would be subject to the new rules if she tried to re-apply for PPS. This means that grandfathered mothers may refrain from repartnering or engaging in employment in order to retain their grandfather-

⁶The threshold was higher for additional children, increasing by A\$12.30 for every additional child.

⁷Specifically, the NSA payment is reduced at 50 cents for every dollar above the free area of A\$31 and below A\$125 per week. The taper rate then further increases: for every earned dollar beyond A\$125, the NSA payment is reduced by 60 cents.

⁸For those with more than one child the difference will be even greater, as the 'penalty-free income threshold' under New Start Allowance does not vary with the number of children.

ing status and stay on PPS. Our research shows that the grandfathering arrangement did not impact PPS rates as single mothers who separated before 1 July 2006, in fact, are less likely to stay on PPS if they had knowledge of the new grandfathering arrangements.

The W2W reforms also introduced more stringent participation requirements for mothers who had separated from their partners after 1 July 2006, and whose youngest child was aged six or more. These single parents were required to participate in employment, education or job-search activities for at least 15 hours per week.⁹ These new participation requirements were then imposed on the existing recipients of PPS one year later - on 1 July 2007 - if their youngest child had turned seven.¹⁰ These changes may have directly affected welfare receipt patterns of mothers, because they were introduced at the same time as the tightening of the eligibility criteria for PPS. We show, however, that participation requirements do not directly affect mother's welfare participation.

Since the W2W reform also brought changes to payments other than PPS, such as DSP and PPP, these other changes may confound the effect of changes in the level of cash assistance from PPS. The eligibility for DSP tightened, such that new applicants of DSP only became eligible for the payment if they passed an activity test assessment that confirmed they could not work for 15 hours or more (down from 30 hours). The eligibility conditions for PPP were also tightened: mothers who applied for PPP after 1 July 2006 could only receive PPP if their youngest child was below six (down from 16 for those who applied for PPP before 1 July 2006). Participation requirements to engage in 15 hours of work, study, or job search per week were also introduced for new applicants of PPP. The tightening of eligibility for DSP and PPP around the same time as the changes to PPS may be a concern for our identification strategy if they were to give mothers more incentives to separate from their partners just before 1 July 2006 in order to be eligible to receive PPS. We find no evidence, however, of changes to separation rates around 1 July 2006.

Other factors that may confound the effect of changes to PPS eligibility include: seasonal trends in relationship dissolution and potential differential reporting behaviour of mothers separating before and after 1 July 2006. These factors do not invalidate our analysis, however. In RDD, seasonal trends are accounted for by the inclusion the so-called running variable, which accounts for any continuous changes over time. Furthermore, a couple's

⁹Some mothers were exempt from these requirements including if childcare costs made employment financially unviable or if the job required a commute of more than 60 minutes.

¹⁰Anecdotally, Centrelink welfare officers were unprepared for the sudden increase in administrative duties associated with processing the participation requirements of newly affected mothers. Instead, officers activated a clause that has historically existed in the Centrelink rules: mothers who endured a difficult break-up were exempt from any participation requirements for 16 weeks.

optimal *reporting* choice does not change after the reform: income support is always higher when two individuals do not report a relationship than when they do. For example, before the reform, combined gross income for a single mother with no private income and a man with an income of A\$35,000 was 31% higher than when admitting to being in a cohabiting relationship; after the reform, combined gross income when reporting a separation is 28% higher than when reporting a relationship.¹¹ Hence, a couple seeking to maximise their combined income through misreporting their relationship status will always report that they are separated, regardless of the policy regime.

3 Data and Variables

3.1 Administrative Social Security Records

We use administrative data from federal social security records spanning 2001 to 2013. In Australia, the social security system provides two main types of payments to families with children: (1) Family Payments assist families with the cost of raising children provided to approximately 81% of families with children (ABS 2007), and (2) Income Support (IS) payments targeted at low-income individuals with a disability, children or other significant caring responsibilities, or the unemployed. As the administrative data used in this paper comprise both (1) Family Payment recipients and (2) IS recipients, they are representative of the Australian population of low- to middle-income families with children.

Family payments are mainly made to primary carers of children (usually the mother). It consists of two parts, Family Tax Benefit Part A (FTBA) and Family Tax Benefit Part B (FTBB). FTBA is means-tested on the combined income of both partners.¹² It is provided to around 1.6 million families. Families that do not receive this regular payment include: (1) high income families¹³; (2) the approximately 10% of families who choose to receive their FTB payments annually through the tax system (most of these are high income); and (3) eligible customers who do not seek to claim their FTB payments. Median income of families receiving FTBA was A\$54,080 in 2005-06. FTBB provides

¹¹These numbers are based on a couple with one child aged eight years, and incorporate Family Tax Benefit Parts A and B, PPS or PPP, and NSA.

¹²In 2006, the rate of FTBA was A\$137.06 per fortnight for each child aged under 13; A\$173.74 per fortnight for each child aged between 13 and 15; A\$44.10 per fortnight for each child aged between 16 and 17; and A\$59.36 per fortnight for each child aged between 18 and 24.

¹³Income threshold for for a one child family was A\$94,718 in 2006 and increased with a number of children.

additional assistance to around 1.4 million single-earner families (single parent families and families where one parent has a low income or was not in paid employment).¹⁴

IS payments have strict income and asset tests¹⁵ and unemployment and parenting benefits are also subject to activity tests (e.g., seeking work, training, volunteering). In 2006, only 19% of Australians were in receipt of income support payments (ABS 2007). Both FTB and IS payments are administered and distributed by Centrelink.

A key advantage of using the administrative records from the Family Payments data is the high coverage of families with children, including families from both low- and middleincome families. Importantly, this means we expand our observation criteria significantly beyond that used in previous studies such as Fok & McVicar (2013), which require income support receipt for sample inclusion (before and after the separation). In contrast, our data captures and follows mothers and young adults before and after a relationship separation as long as they are eligible for family payments or income support payments. Eligibility for family payments is substantially less strict, as explained above.

Other benefits of using the administrative data set include overcoming concerns that are common to survey based data, especially during the tumultuous event of a relationship separation, such as attrition, recall error, and non-response. We are able to minimise these concerns in our administrative data because there are clear financial incentives (in terms of payment receipt) to families for providing their information to the government. In addition, the large sample size allows us to look at the effects of the reform on relatively infrequent outcomes, such as homelessness, and to divide the sample by mother and child characteristics.

3.2 Mother's and Young Adult's Variables

The administrative records comprise detailed information on individuals who have received payments (past and present) from Centrelink: the type, amount and frequency of the social security payments received as well as background information such as the age,

¹⁴In 2006, the highest income earner in the family could earn up to A\$150,000. The family ceases to be eligible when the secondary earner's income exceeds A\$21,571 (for those whose youngest child is aged below 5) and A\$16,790 (for those whose youngest child is aged between 5 to 18. All single parents earning an income below A\$150,000 are eligible for FTBB. The rate of FTBB is A\$117.60 per fortnight for those with a youngest child aged under 5; and A\$82.04 for those with a youngest child aged 5-15 (or 16-18 if the youngest child is in full-time study).

¹⁵Australia ranks fifth lowest in the OECD in terms of the proportion of gross domestic product spent on public social cash transfers (OECD 2014a), but close to 80 percent of public social cash spending occurs through income and asset-tested benefits - a rate that is nearly three times that in the U.S. and U.K. (OECD 2014b).

gender, relationship status (single, married, or de-facto), residential location, number of children living in the household and those living away from home, and the ages of these children. This information is recorded every fortnight (recipients are required to complete forms on a bi-weekly basis) in order to help Centrelink routinely test if individuals are eligible for payments.

In addition to the basic information about every child living under the care of the parent, each child has a unique identifier. This allows us to link a parent's payment history to the future payment receipt patterns of all their children. We are unable to identify whether or not the relationship between the carer and the child is biological. Instead, we observe the person who has the primary caring responsibility for the child at every point in time while the child is growing up. We use this information to identify the person with the longest duration of primary care responsibility for the length of time the child is present in the data. In prior research that used a subset of our data linked to survey data, this strategy successfully identified biological mothers (biological parents) in 96.5 (98.6) percent of cases (Breunig et al. 2009).

Young adults who are ever listed in the care of an adult recipient are followed in the administrative data and are registered in the system at any time they receive a social security payment in their own right. Young adults are eligible for the following payments: Youth Allowance (YA) to aid youth in finding employment and/or assisting with full-time study; Newstart Allowance (NSA), unemployment support for adults; Disability Support Pension (DSP); parenting payments (PPP or PPS); and Carer Payment. YA is the most common payment among young adults. In 2006, 12% of young adults aged 16 to 24 received youth allowance; 3% received parenting payments; 1.2% received DSP; 0.3% received Carer's payment; and 72% did not receive any income support payment from the government.¹⁶ We combine YA for the unemployed youth and NSA into one variable measuring unemployment benefit receipt. We do not include YA study allowance into our measures of welfare receipt because we do not consider study to be a concomitant reflection of inactivity as unemployment (job-seeker status).

Payments for young adults are highly targeted, based on age, circumstance, parental income and assets, and the young adult's own income and assets. This means that we can view welfare receipt as an indicator of social disadvantage in young adulthood - either stemming from the youth's own circumstance or that of their parent's circumstances. The eligibility criteria also depends on the type of payment. In most cases, there is an age

 $^{^{16}\}mathrm{Additionally},\,7\%$ received family tax benefits and 2% received child care benefits.

limit. For example, for Youth Allowance (YA) the minimum age of eligibility is 16.¹⁷ The maximum age of eligibility is 21 (or 24 for those who are in full-time study). As for other payments, youth could begin to receive NSA at age 22; DSP at age 16, and PPP, PPS, or Carer Payment as soon as they had a child or started caring for a child or another member of the household with a disability. The young adult is also subject to an income and asset test.¹⁸ For YA, there is also a parental income test, applicable to young adults who are dependent on their parents.¹⁹ Other types of payments have their own additional eligibility criteria. For example, in order for a young adult to receive DSP they must have a certified disability.

Two other outcomes of interest are the young adult's housing arrangement and the level of financial independence they have from their parents. We are able to observe this outcome in the administrative data, because at age 15, young adults become eligible to two types of government allowances if they become homeless or financially independent of their parents, called the Homelessness Allowance and the Independence Allowance, respectively. These allowances are provided to young adults as young as 15 years and up to age 20 (up to 24 for those in full-time study).²⁰ Centrelink personnel can direct Homelessness and Independence Allowances to young adults if they register a need; however, in most cases young adults are required to self-report their circumstances and apply themselves. Centrelink case workers are required to confirm that young adults' circumstances at home accurately reflect what they have reported before they can receive these payments.

Young adults are considered to be homeless if they 'cannot live in the parent's home because of circumstances such as domestic violence, sexual abuse or comparable exceptional circumstances'. This encompasses street homelessness, as well as those who are required to access shelter services, and those temporarily living on another person's couch, caravans, motels or other forms of transitional accommodation.

To be considered independent, young adults must show that they no longer rely on their parents for financial assistance. This often involves the young adult moving out of the parent's home. Alternatively, independent young adults are those who have supported

¹⁷The exception to this rule is for young adults who declare themselves to be independent from their parents at age 15.

¹⁸In 2006, young adults could earn up to A\$616.50 a fortnight and still be eligible for YA.

¹⁹Children whose parents receive an income support payment are not subject to the parental income test. Otherwise, the combined parental income threshold was A\$30,526.4 for a one-child family with child aged less than 18 or A\$30,724.4 for a one child family with the child aged 18 or older in 2006. The thresholds increase significantly when there are more siblings in the household.

 $^{^{20}}$ Homelessness and Independence Allowances are supplemental to YA payments. In 2006, young adults could receive up to A\$201.70 if aged less than 18 (or A\$152.2 if aged 18 and above) per fortnight. This is on top of the base amount of Youth Allowance, which is A\$244.1 per fortnight for those aged less than 18 or A\$293.6 per fortnight for those aged 18 or older.

themselves through full time (averaging 30 hours a week) paid work for at least 18 months within any two-year period. Young adults between the ages of 15 and 24 may be considered independent if they are orphans, refugees or homeless; their parents cannot provide suitable care; they have a child of their own; they have lived with a partner for at least one year; have a partial capacity to work or have previously supported themselves through employment. After age 25, most young adults would be considered to be independent.

3.2.1 Definition of a Separation

A separation date is defined as the first fortnight where a mother reports to Centrelink that she has separated from her partner. Our definition of relationship breakdown follows administrative guidelines. For our study period, a couple (married or unmarried) was generally recognised as separated when the 'couple are living separately and apart on a permanent or indefinite basis' (DSS 2018). In a small number of cases, a separated couple could be 'living under the same roof'. In both cases, an individual would be legally required to report a change in their relationship status within 14 days of the change.²¹ Couples are also required to provide two witnesses to verify that they have indeed separated.

3.3 Estimation Sample and Descriptive Statistics

The administrative data we use for the analysis are a subset of the Family Payment and Income Support recipients and are based on a cohort of children born between 1 October 1987 and 31 March 1988, which we call the 'focal children'. Comparisons of the number of young adults in these administrative data to census data suggests that over 98% of young people born between 1 October 1987 and 31 March 1988 are included in this sample (Breunig et al. 2009). Information on this cohort of children (and their parents) were extracted by the government agency - Department of Social Services - from the mainframe of welfare data to use for the purpose of research.

For our estimation sample, we include children who first show up in the data because they had a parent who received a government payment (family payment or income support) on their behalf. We then select mothers of these focal children who experienced a relationship

²¹The reporting involved the individual submitting a form, which then allowed Centrelink staff to determine whether the relationship had indeed dissolved. The questions on the forms include information about: 1) the emotional and social nature of the relationship, 2) the physical nature such as whether the couple lived at different locations, 3) sexual nature of the relationship such as whether the couple shared the same bed, 4) the financial nature including shared mortgage, debt, rent, housing, transfers etc., and 5) the nature of the commitment such as whether there are children involved.

separation between 1 July 2001 (5 years before the reform implementation date) and 31 December 2008 (2.5 years after the reform implementation date) and who at the point of separation had a youngest child in their care aged between 8 and 15 years. We censor the post-reform separations, because we want to observe young adult outcomes for at least five years after the separation.

Our main analysis sample comprises 10,606 mother-young adult pairs. Of these mothers 13.73% separated after the reform implementation date (1 July 2006). Table 1 presents the descriptive statistics of mother and child characteristics (Panel A) as well as mother's and young adult's outcome variables (Panels B and C, respectively) separately for mothers who separated before and after the reform. The income support variables are measured annually with the separation date being the reference point. Panel A shows that mothers who separated after the reform are on average older at the time of separation as expected (44.3 versus 41.6), but they were younger at the time of the young adult's birth (24.7 versus 26.2). They are less likely to have been in a formal relationship in January 2001 (the start of our data). Similar proportions of mothers in both groups are born in Australia (around 75%) and are of Aboriginal or Torres Strait Islander (TSI) origin (close to 6%). The average age of the youngest child at the separation is close to 13 years in both groups. The average are of young adults at the time of the separation is 19.6 in the post-reform period and 15.5 in the pre-reform period.

As for pre-separation welfare income, the total welfare benefits two years before the separation are higher for mothers who separated before the reform versus those who separated after the reform (A\$2,719) versus A\$2,482). On the contrary, young adult's benefits one year before the separation were substantially higher if their mothers separated after the reform reflecting the difference in age between the two groups (A\$1,345 versus A\$76).

All in all, these descriptive statistics show that mothers who separated before and after the reform (and their young-adult children) are not comparable along a number of demographic and economic characteristics. This does not create problems for our main identification strategy based on RDD, however, because the identification relies on the comparison of mothers who separated just before the reform implementation date and mothers who separated just after, as explained in Section 4.

Turning to the outcome variables, a mother's total welfare benefits in the first year after the separation are lower if she separated after (as opposed to before) the reform (A\$3,957 versus A\$5,707). As expected, almost no mothers who separated after the reform receive PPS after the reform²² compared to 62% before the reform. Mothers who separated after (versus those who separated before) the reform are also less likely to receive PPP (8.2% versus 18.9%), which reflects the changes in PPP. Mothers affected by the reform, however, are more likely to receive unemployment benefits (36.5% versus 10.2%) and disability benefits (7.1% versus 4.3%) in the first year after the separation. These differences suggest that some of the mothers who separated after the reform compensate for the loss of PPS by applying for other types of welfare payments.

Figure 1 presents the means of PPS receipt (Graph A) and total welfare benefits (Graph B) in the first to fifth year after the separation. It shows that the gap in welfare support between mothers who separated before and after the reform narrows over the time-period from separation. This can be partially explained by pre-reform separated mothers becoming ineligible for PPS once their youngest child reaches 16 years of age. The difference in total welfare benefits disappears, and in fact, in the third to fifth year after the separation, mothers who separated after the reform receive more benefits. This reversal is a result of the differential trends between pre-reform and post-reform separated mothers: total benefits decrease in each year after the separation among mothers who separated before the reform, whereas among mothers who separated after the reform, total benefits start increasing in the third year after the separation. This implies that mothers who separated after the reform were more likely to apply (and to be approved) for other welfare benefits.

Turning to young adult outcomes, young adults whose mothers separated after (compared to those whose mothers separated before) the reform are more likely to receive welfare benefits in the first five years after the separation (54.1% versus 47.7%). Their average annual benefit duration and level in the first five years after the separation are also higher, both in terms of total welfare benefits and specific types of payments (unemployment, disability, and parenting). Furthermore, young adults whose mothers separated after (versus before) the reform have higher rates of homelessness (8.7% versus 5.7% in the first year after the separation), independence (10.0% versus 1.2% in the first year after the separation). These differences can be partly attributed to the differences in young adults' age.

4 Empirical Strategy

Our aim is to estimate how a removal of eligibility for cash assistance to single mothers affects their young adult children. We exploit the natural experiment created by the

 $^{^{22}}$ As described in Section 2, a small number of mothers were exempted from the changes to the eligibility rules after 1 July 2006. This explains why 3.5% of mothers received PPS after the reform.

change in eligibility for PPS, a welfare program targeted at newly single parents. As described in Section 2, parents who separated after 30 June 2006 were no longer eligible for the PPS, if their youngest child was aged 8 or more. Existing recipients were, however, grandfathered and remained eligible for the PPS until their youngest child turned 16 years of age. Thus, the reform created a sharp discontinuity in PPS eligibility on 1 July 2006 among single mothers whose youngest children were 8 to 15 years old at the time of the separation.

We exploit this discontinuity and employ the Regression Discontinuity Design (RDD) to test whether the reform had intergenerational impacts on the young adult children of the affected mothers. The idea behind the RDD is that the mothers who separated *just before* the reform implementation date and the mothers who separated *just after* this date are comparable in all their characteristics besides the eligibility for PPS. Therefore, by comparing them we can identify causal effects of PPS eligibility on mothers and their young adult children. The key identifying assumption of our RDD model is that mothers did not *precisely* manipulate the timing of their separation. We test this assumption in several ways in Subsection 5.1 and find no evidence of manipulation.

Our sample consists of mothers whose youngest child is 8-15 years old at the time of separation. The separation date $(sepd_i)$ is our running variable, which captures the trends in the mother's and young adult's outcomes, and determines treatment status. We normalize it with respect to the reform implementation date (the cut-off), so that $sepd_i = 0$ for mothers who separated on 1 July 2006. A binary variable $post_i$ is our treatment indicator: it takes the value one if a mother separated on or after 1 July 2006 and therefore lost eligibility for PPS, and the value zero if a mother separated before 1 July 2006 and therefore retained eligibility to PPS. We first estimate the following regression for mothers:

$$PPS_i = \alpha_0 + \alpha_1 f(sepd_i) + \alpha_2 f(sepd_i) \cdot post_i + \alpha_3 post_i + \varepsilon$$
(1)

where PPS_i is an indicator of the mother's PPS receipt, and $f(sepd_i)$ is a function of the separation date. We allow this function to differ before and after the reform by including interactions between $f(sepd_i)$ and $post_i$. The coefficient of interest is α_3 , which captures the causal effect of the reform on the mother's PPS receipt. We also estimate the impact of the reform on the mother's overall welfare receipt.

For young adults, we estimate the following regressions:

$$Y_{il} = \beta_{0l} + \beta_{1l}g_l(sepd_i) + \beta_{2l}g_l(sepd_i) \cdot post_i + \beta_{3l}post_i + \eta_l,$$

$$\tag{2}$$

where Y_{il} is the l^{th} (l = 1, ..., L) outcome variable, and the rest of the variables are defined in the same way as in equation (1). The coefficients β_{3l} capture the causal effects of the removal of the mother's eligibility to PPS on their young-adult children. We focus on these reduced form regressions, because they produce policy-relevant parameters. Policy makers can directly control the eligibility rules for welfare payments, but not the actual participation in welfare programs by individuals. Nonetheless, we also estimate the following instrumental variable (fuzzy RDD) equations:

$$Y_{il} = \gamma_{0l} + \gamma_{1l}h_l(sepd_i) + \gamma_{2l}h_l(sepd_i) \cdot post_i + \gamma_{3l}PPS_{il} + \epsilon_l,$$
(3)

where $P\hat{P}S_{il}$ is the mother's predicted PPS receipt from equation (1) and coefficients γ_{3l} capture the effects of the mother's PPS receipt on young adult outcomes.

There are two approaches to the estimation of RDD models: global polynomial (GP) and local linear regression (LLR) (Lee & Lemieux 2010). The GP approach involves including a polynomial function of the running variable and using all the available observations. The LLR approach instead involves using only the observations in close proximity to the cut-off, and including a linear function of the running variable. In line with recent developments in the theoretical literature on RDD, we preference the latter approach, although we also present the GP estimates as a sensitivity check. The GP estimates are quite sensitive to the order of the polynomial function, because young adult outcomes evolve over time in a highly non-linear manner, which is directly a function of the agerelated welfare eligibility rules. As a result, it is difficult to find functional forms that flexibly fit these trends.

The key decision in the estimation of LLR is the choice of the bandwidth, that is, which observations to use for the estimation. We use a procedure developed by Calonico et al. (2014), which is based on a mean squared error (MSE)-optimal bandwidth selector. It is an extension of the well-known procedure suggested by Imbens & Kalyanaraman (2012). We allow for the bandwidth to differ below and above the cutoff, given the different number of observations on each side of the cut-off. Calonico et al. (2014) also provide a method for calculating robust bias-corrected confidence intervals. These procedures are implemented using the *rdrobust* command in Stata (Calonico et al. 2014).

5 Results

5.1 Testing for Validity of RDD

Before discussing the impact of the W2W reform on mothers and young adults, we investigate the validity of our identification strategy. The main concern is that some mothers may have brought their separation date forward before the reform came into effect in order to remain eligible for PPS. This type of manipulation would be problematic, as it may invalidate the assumption that mothers who separated just before 1 July 2006 and mothers who separated on or just after this date are similar in all other characteristics besides the eligibility to PPS. For example, the mothers who brought their separation date forward may have greater knowledge of the welfare system, which in turn may be correlated with their socioeconomic status and other characteristics affecting young adult outcomes. We show that such manipulation did not occur.

First, we conduct a test to detect any discontinuity in the density of separations on 1 July 2006. The idea underlying the test is that if mothers indeed manipulated their separation date, there should be more mothers separating just before 1 July 2006 than just after this date. In turn, we expect to see a discontinuity in the density of separations. We perform the standard test suggested by McCrary (2008) as well as an alternative test based on a novel local polynomial density estimation technique developed by Cattaneo et al. (2016). The advantage of the latter approach is that it does not require any prebinning of the data, which leads to improved size properties, that is, a lower probability of falsely rejecting the null hypothesis of there being no discontinuity in density (Cattaneo, Jansson & Ma 2016).

Figure 2 presents the results of the McCrary test. Graph A is based on the default bandwidth, and in Graph B, the bandwidth is set to be half as narrow as the default one. The separation date, normalized by the reform date is on the horizontal axis; the vertical line denotes the reform date. In both graphs, there is a small discontinuity in the density of separations at 1 July 2006, but it is not statistically significant.²³ We reach the same conclusion using the alternative test developed by Cattaneo et al. (2016), implemented with Stata's command *rddensity*.²⁴ We have also considered that mothers with younger children have a stronger motivation to manipulate, since their total potential loss in

 $^{^{23}\}mathrm{In}$ Graph A and Graph B, the log differences in height is equal -0.105 and -0.045, and corresponding standard error is 0.096 and 0.139, respectively.

 $^{^{24}\}mathrm{The}$ p-value of the test statistic is equal 0.231.

years of PPS payments is greater than mothers of older children.²⁵ Therefore, we group the mothers by the age of the youngest child (8-10, 11-13, and 14-15), and perform the manipulation tests for these subgroups. Appendix Figure A.1 shows that there are no statistically significant discontinuities in the densities at the reform implementation date in these groups.²⁶

As a second test for manipulation, we check for any discontinuities in the fixed and preseparation characteristics of mothers and young adults at the reform implementation date. As mentioned above, if manipulation exists, we would expect the mothers who separated just before the reform implementation date to be different in their characteristics from the mothers who separated just after this date. In this case, we may also expect differences in the characteristics of the young-adult children of these mothers. The results are presented in Figures 3 and 4. Mother's pre-separation variables (welfare receipt and local area house prices) are measured in the second to last year before the separation to avoid capturing any potential anticipation effects.²⁷ For youth, we can only measure preseparation welfare receipt in the last year before separation, because the eligibility to welfare benefits begins at age 15 or 16, and sample youth are 18 at the time of the reform. In each plot, the dots represent bin-averages, where the bins are optimally selected using Stata's command *rdplot* (Calonico et al. 2014), and the lines represent the fitted values of the local linear regressions (LLRs) over optimal bandwidths as selected by Stata's command *rdrobust* (Calonico et al. 2014). We also report the estimated discontinuities. The other similar figures in the remainder of the paper follow this convention.

Figure 3 shows that there are no statistically significant discontinuities in the mother's age at the young adult's birth, country of birth, Aboriginal or TSI status, house prices in the local area she lived two years prior separation, and most measures of pre-separation welfare receipt. There are also no discontinuities in the youngest child's characteristics (age and gender). The only statistically significant discontinuity is in mother's unemployment benefit receipt two years before the separation. Figure 4 shows no discontinuities in the characteristics of the young adult, including pre-separation welfare receipt, experiences of homelessness, financial independence from parents, and fertility. The only significant difference is the young adult's gender: the children of mothers who separated just before the reform are more likely to be male. When we test for the joint significance

 $^{^{25}\}mathrm{Both}$ before and after the reform, single mothers become ineligible for PPS once their children turn 16 years of age.

 $^{^{26}}$ The alternative test by Cattaneo et al. (2016) confirms this.

²⁷We have also tested mother's pre-separation variables in the year before the separation and find similar results to those presented here.

of all mother's and young adult's characteristics, we cannot reject the null hypothesis that all the coefficients are equal to zero (p-value = 0.254).²⁸

Overall, both tests suggest that manipulation is not a major concern in our case. One explanation for the lack of manipulation is the difficulty for mothers to precisely time a separation. The procedure for reporting a separation to Centrelink can be involved and time-consuming. For example, Centrelink has processes in place to verify whether a separation has taken place, including visitations by Centrelink staff to the recipient's residence or verifications through third-parties. Some of the requirements for formalizing separation may take time to implement. Partner's cooperation is also required since they are expected to complete and sign a form. Another explanation for the lack of evidence of manipulation is the long time-period between the announcement of the policy and its implementation (more than a year). The mothers who were aware of the policy and wanted to avoid losing PPS could have separated at anytime before 1 July 2006, rather than waiting until June 2006. For identification purposes, we only require there to be no manipulation immediately around the cut-off.

5.2 Effects of W2W Reform on Mothers

Figure 5 graphically presents the RDD results for mothers. It shows that the W2W reform significantly affected the incidence and level of single mothers' welfare benefits. The estimated discontinuities are based on LLRs with optimally selected bandwidths.²⁹ In Graphs A and B, the vertical axis measures the proportion of mothers receiving PPS and the total dollar amount of benefits in the first year after the separation, respectively. We find that the reform induced a large drop in both PPS payment receipt (38.7 percentage points) and total annual benefits (A\$1,836) in the first year after the separated for mothers who separated just after 1 July 2006 compared to mothers who separated on or just before this date. This corresponds to a 38% decrease relative to the mean annual welfare benefits of mothers who separated within one year before the reform.³⁰

 $^{^{28}}$ We perform this test by running a seemingly unrelated regression and restricting the sample to the mothers who separated between 1.5 year before and 0.75 year after the reform to accommodate the optimally selected bandwidths in the individual regressions presented in Figures 3 and 4. In most of the regressions, the bandwidth above the cut-off is between 0.5 and 1 year, and the bandwidth below the cut-off is between 1 and 2 years.

²⁹In Appendix Table A.1 we show that the results are sensitive to bandwidth selection, which justifies the use of the methods for optimal bandwidth selection.

³⁰As expected, we find no effects on mothers who are not affected by the W2W reform, because their youngest child was older than 16 years of age at the time of separation, which made them ineligible to PPS even prior the reform.

To investigate the persistence of these effects, Figure 6 presents the estimated effects of the W2W reform on mothers' welfare receipt in the first five years after the separation. In addition to PPS receipt (Graph A) and the total benefit amount (Graph D), we present the effects on unemployment and disability benefit receipt to evaluate the extent of substitution between PPS and other welfare programs (Graphs B and C, respectively). Graph A shows that the gap in PPS receipt between unaffected and affected mothers persists up to five years after the separation, but becomes smaller as unaffected mothers become increasingly ineligible for PPS. The gap closes to less than 10 percentage points in the fourth and fifth years after the separation. Graph B shows that some of the affected mothers shift to unemployment benefits. In the first two years after the separation, affected mothers are over 10 percentage points more likely to be on unemployment benefits. There are no statistically significant differences in disability benefit receipt. The difference in total annual benefits, in turn, remains relatively large (up to A\$1,750 per year) for two years after the separation.

5.2.1 Tests for Alternative Explanations

We next explore whether two other contemporaneous changes to PPS (as part of the W2W reform) may affect the interpretation of our results. The first potential confounder is the participation requirements, which were imposed on mothers who separated on or after 1 July 2006. As explained in Section 2, this participation requirement was imposed on all mothers with youngest child six years of age or older at the point of separation. Thus newly separated mothers of 6-7 year old children where affected by the participation requirements, but maintained eligibility to PPS (until their youngest child turned 8 years old). If participation requirements confound the effect of reduced income support, then we should find significant effects of the W2W reform on this group of mothers. We check this in Table 2, and do not find any reform effects on mothers of six year old children: their parenting, unemployment, or disability benefit receipt, and total benefit amount is not statistically significantly affected.³¹ These results suggest that the introduction of the participation requirements do not confound the effects of reduced income support.

The second potential confounder relates to the grandfathering arrangements. As explained in Section 2, mothers whose youngest child was 8 to 15 years old at the time of separation and who had separated before the reform implementation date, remained eligible for PPS until their child turned 16. They remained grandfathered unless they left PPS (for example, because their employment income became too high), in which case

 $^{^{31}}$ We do not use mothers of seven year old children, as they may modify their behaviour in anticipation of the loss of PPS once their youngest child reaches eight years of age.

they would have lost access to PPS on a permanent basis. This provided grandfathered mothers an incentive to stay on PPS. We test whether grandfathered mothers refrained from exiting PPS by exploiting variation in the timing of their separation around the reform announcement date of 10 May 2015. The idea behind this exercise is that if the grandfathering effect exists, then we expect that mothers who separated after the announcement will be more likely to stay on PPS compared to mothers who separated before the announcement.

We test this using a Difference-in-Difference (DID) model. As a control group, we use mothers whose youngest child was younger than 7 years old at the reform implementation date, because they are unaffected by the reform and thus by the announcement.³² We first restrict the sample to the mothers who separated before the reform.³³ Then we create a binary variable *Treated* that equals one if the mother's youngest child will be 8-15 years old at the time of reform implementation and zero if the mother's youngest child will be under 7 years old at the time of reform implementation. Another binary variable *Post* equals one if the mother separated after the reform announcement date and zero otherwise. As dependent variables we use an indicator of PPS receipt and the number of fortnights on PPS in the 6 months following the separation. The parameter of interest is the coefficient on the interaction between *Treated* and *Post*. A positive statistically significant coefficient on this interaction would indicate that grandfathering could be contributing to the impact of W2W reforms on mothers. The results presented in Table 3 show, however, that affected mothers were *less* likely to stay on PPS after the reform announcement date, suggesting that grandfathering cannot explain the impact of the W2W reform on mothers' welfare receipt.

5.2.2 How Did Mothers Respond to the Loss of Eligibility for PPS?

In this subsection, we investigate ways in which newly separated mothers affected by the W2W reform reacted to the reduced welfare support. Previous research finds that affected single mothers were more likely to be employed (Gong & Breunig 2014) and to repartner (Fisher & Zhu 2016). Thus first, we check what effect the reform had on mother's personal income from other sources than welfare as well as family's income.³⁴ The personal income

 $^{^{32}{\}rm Mothers}$ whose youngest child was 7 years old at the reform implementation date are excluded due to possible anticipatory behaviour.

³³Mothers who separated up to 6 months before the reform announcement date or up to 6 months before the reform implementation date (1 July 2006) are excluded, because our outcome variables are measured within six months after the separation.

³⁴In our data, mother's and family's incomes are available only for the financial year, which starts on 1 July in Australia. This creates measurement issues given that the reform was also implemented on 1 July. We define the income variables in the following way: the income in the first year after the

of affected mothers includes income from any source besides welfare, but for the vast majority of mothers, it measures employment income. Apart from the partial substitution of PPS with other welfare programs, we expect mothers who separated after the reform to be more likely to be employed and thus have higher personal incomes compared to mothers who separated before the reform. It is uncertain, however, whether this increase in employment income is sufficient to compensate for the decrease in welfare income. Graph A of Figure 7 suggests that it is: we find that in the first year after the separation, the personal income of affected mothers increases by almost A\$7,000. Given that the welfare income of affected mothers decreases by approximately A\$1,800 (as shown in panel B of Figure 5), this means that their total income increases by around A\$5,200 per year. The increase in the personal income of affected mothers persists in the second year after the separation, but reduces and becomes statistically insignificant in the following years when some of the mothers who separated before the reform lose their eligibility to PPS and enter the labour market.

We also analyze the effect of the reform on the total family's income, which includes the partner's income for the mothers who re-partner (as well as other family members' income). Graph B of Figure 7 shows that the family's income in the first year after the separation is higher by around A\$9,600 for the mothers affected by the reform. The increase in the total family income persists up to five years after the separation and becomes larger over time. The larger and more persistent increase in the family-income compared with the personal income of affected mothers suggests that mothers affected by the reform are more likely to re-partner and/or have higher earning partners conditional on repartnering. This is consistent with the findings of Fisher & Zhu (2016).

Next, we check whether the W2W reform changed mothers' housing arrangements. Specifically, we explore changes in home-ownership to rental status (or other types of accommodation). The loss of parenting support payments may exacerbate such changes in housing status. Graph A of Figure 8 shows that there are no statistically significant differences in home ownership rates between affected and unaffected mothers in the first two years after the separation. The point estimates in the third to fifth year are negative, but also statistically insignificant. Graph B shows that there are also no differences in the share

separation refers to the income of the financial year starting in the calendar year of the separation. For example, for mothers who separated in 2006, as their income in the first year after the separation we assign 2006-07 financial year's income. Thus, for the mothers who separated just before or just after the reform implementation date this variable exactly measures their income in the first year after the separation. For mothers who separated farther away from the cut-off, income in the first year after the separation is measured with error. However, this measurement error is in part addressed by the running variable. We also include calendar year dummies in these regressions. Incomes in the second to fifth year after the separation are measured accordingly.

of mothers who are residing in either own- or privately-rented accommodation (versus government rented or other accommodation).

Finally, newly separated mothers who are not eligible to PPS may at least initially move to cheaper areas in response to the reduction in income support. To account for potential differences in living arrangements, we use four measures of the wealth of the area: median house prices and rents and median apartment prices and rents in the postcode. For these measures, we turn to data on median prices of houses and apartments sourced from SIRCA's (2016) CoreLogic RP suburb scorecard.³⁵ While the four measures are correlated, we present results for all of them to give a broader sense of the housing affordability in a given postcode. The results, presented in Figure 9, show that there are no statistically significant differences in local house and apartment prices and rents between mothers who separated just after the reform and those who separated just before the reform. Thus, there is no evidence that affected mothers moved to cheaper areas after the separation.

5.3 Effects of W2W Reform on Young Adults

The results presented in the previous section show that the mothers who separate after the W2W reform have lower welfare income, but their employment income is higher. As the increase in employment and especially family income is larger than the decrease in welfare income, the total household income is in fact higher post-reform. Additionally, the affected mothers are more likely to re-partner, as shown by the earlier studies (Fisher & Zhu 2016) and implied by our results on family income.

How are these changes likely to impact the young adult children of affected mothers? On the one hand, the increase in household income is expected to have a positive effect, because the additional money can be invested in the young adult's education, health, and other needs. The affected youth may also be more likely to stay in education after secondary school rather than seek employment, as there is less pressure to help the family financially. Since mothers act as role models for their children, witnessing the

³⁵We use the postcode level RP Data according to the Australian Standard Geographical Classification (ASGC) as defined by the Australian Bureau of Statistics (ABS). The median sale price is the median value of all sale transactions recorded during the 1 month period within the specified postcode. It is differentiated by houses and units (apartments). RP data collects official sales transactions from government sources and sales advised by agents. Government sources will only provide sales data following settlement whereas agents may provide results prior to settlement. Only settled sales are included within the suburb scorecard. These data cover the period of 2000 to 2016. Median asking rent is the median value of advertised weekly rents captured by RP data during the 1-month period. It is also differentiated by houses and units. These data cover the period of 2005 to 2016.

mother pursue employment or repartnering options (as opposed to welfare) may reduce the likelihood of welfare receipt by the young-adult themselves.

On the other hand, the reform may negatively affect young adults because the reform removes a financial safety net for families immediately after a relationship separation has occurred. Consequently, in the short-term the families affected by the reform may experience a larger financial shock than non-affected families. This may have particularly negative effects on young adults because the reduction in welfare benefits coincides with a sensitive and a transitional phase of the young adult's life, i.e. age 18. Additionally, the higher rate of employment among affected mothers means that mothers may spend less time at home. Although maternal supervision becomes less important as children grow up, the mother's presence at home may prevent the young adults from engaging in risky behaviours and encourage them to study and attend classes.

Finally, the presence of a new partner at home may benefit children through higher total income in the family. Alternatively, repartnering can negatively affect children if there is greater conflict in the family. Therefore, a priori it is unclear how the W2W reform affected young-adult children.

In Figure 10, we graphically present the estimated effects of the W2W reform on young adults' homelessness, financial independence, fertility, and welfare receipt after the mother's relationship separation. All outcomes are measured within five years after the separation, except for homelessness and independence, which are measured within one year after the separation, as the data on these outcomes are collected only until young adults turn 21. Welfare receipt is measured in three ways: (1) any welfare receipt in the five years after the separation, (2) average annual number of fortnights on welfare in the five years after the separation, and (3) average annual welfare benefits in the five years after the separation. These measures incrementally introduce additional information. The first measure is a very crude measure of welfare dependence, because it does not differentiate between someone who has been on welfare for one week during the five years post separation and someone who has been on welfare for most of the five years post separation. A substantial number of individuals enter the welfare system for brief periods of time during their lifetime. The second measure, on the other hand, is more informative of welfare dependence because it contains information on the duration of welfare benefits. The third measure captures both the duration and the level of welfare benefits, which depends on the type of the benefit and the financial situation of the individual. Holding duration constant, the higher level of benefits generally indicate greater disadvantage.

Figure 10 shows that none of the young adult outcomes were affected by the reform significantly. There are no statistically significant discontinuities at the reform implementation date in young adults' homelessness or financial independence in the first year after parental separation. The young adults whose mothers separated after the reform to have children and to be on welfare in the first five years after the separation. The point estimates do, however, suggest that the duration and level of welfare benefits are lower among the young adults whose mothers separated after the reform, but these differences are not statistically significant for the overall measure of welfare i.e. any type of welfare payment. Table 4 presents IV results, which consistent with Figure 10, shows no statistically significant effects of mother's PPS receipt on the outcomes of young adults.

5.4 Sensitivity of the Results

In this subsection we perform several sensitivity analyses. First, we test sensitivity of our estimates to the estimation method. In Appendix Table A.2, we present the global polynomial estimates of the effects of W2W reform on the mother's and young adult's outcomes. Although the estimates are quite sensitive to the choice of the polynomial order, they are generally in line with the LLR estimates. Based on the fourth order polynomial model selected by the minimum Akaike Information Criterion (AIC), mothers who separated after the reform are estimated to be 37.2 percentage points less likely to receive PPS in the first year after the separation compared to those who separated before the reform. We find no statistically significant effects on young adults' outcomes in the models selected by the minimum AIC.

Second, we test the sensitivity of our baseline estimates to the addition of control variables. We repeat the baseline estimates in column (1) of Table 5. In column (2) we add the following controls: mother's age at the young adult's birth, marital status in 2001, migrant status, Aboriginal/TSI status, median house price in the postcode two years before the separation, youngest child's gender and age at the separation, and the young adult's gender. A comparison between columns (1) and (2) show that the results are insensitive to the addition of the mother's, youngest child's, and young adults' characteristics. Holding these characteristics fixed, the mother's PPS receipt is found to decrease substantially and in a statistically significant fashion, and the effects of the W2W reform on young adults' outcomes remain statistically insignificant.

Last, we perform a 'donut' RDD estimation to test how our results would change if we relied less on the separations closest to the reform implementation date. In this respect,

it is another test for manipulation of separation timing, and complementary to the tests shown earlier in the paper. Specifically, we exclude mothers who separated within a month of the reform implementation date (in June-July 2006). The disadvantage of the donut method is that it subverts the cleanness of the RDD strategy in comparing mothers who separated immediately before and after the reform implementation date. This can explain why the estimated reform effects on mothers' PPS receipt in the donut LLR model are different (larger in absolute value) from those in the baseline model, as shown in column (3) of Table 5. We continue to find no effects on young adults.

5.5 Heterogeneity in W2W Reform Effects

We continue by analysing the variation in the effects of the W2W reform across subgroups of mothers and young adults. For this analysis, we select characteristics that may affect a mother's willingness and ability to adapt to the loss of parenting benefits for example, potential barriers to mothers transitioning to either other welfare programs, employment, or repartnering, including mother's welfare history, country of birth, and her youngest child's age. Young adults are categorised by whether they are in the care of the mother or not in the three years before the separation because we expect stronger reform effects on the young adults who were residing with the mother.³⁶ Finally, the results are presented separately for male and female young adults, as they may be differently affected by the changes in family's financial situation.

The first row of Table 6 shows that mothers who were on welfare two years before the separation, were born overseas and had younger children at the time of the separation experienced the largest drop in PPS receipt in the first year after the separation. Mothers responsible for the young adult's care and mothers of female young adults also were more affected by the reform in terms of PPS receipt. The larger decreases in PPS are consistent with a higher reliance on parenting welfare payments of these subgroups. Rows two and three provide information on the heterogeneity in the impact of the W2W reform on the mother's welfare and employment income, and in turn in her total income. These results suggest that the mothers who had no welfare history, were born overseas, had older children and were responsible for young adults' care experienced larger increases in their total income. Despite the heterogeneity in the impact of the W2W reform on mother's income, we find no statistically significant effects on young adults' outcomes in most of the subgroups (rows four to nine). One exception is the group of mothers whose youngest child was 14

 $^{^{36}}$ We are using the information on whether the young adult was in the mother's care three years before the separation because of data availability constraints.

years of age or older at the time of separation: their young-adult children are found to receive less welfare benefits (by A\$965 per year) and to stay on welfare for shorter periods of time (by 1.5 fortnights per year). These effects are statistically significant at the 5% and 11% levels, respectively.

We next explore whether the reform affected youth's participation in the following specific welfare programs: unemployment, disability, and parenting. Among the young adults in our sample, the rates of disability and parenting benefit receipt are low because not many young adults are disabled or have children. The reform, therefore, may not have had any impact on the young adults' participation in these programs. In comparison, it is more common for young adults to receive unemployment benefits because it is easier to qualify for them. Table 7 shows that the reform, indeed, did not affect young adults' participation in disability and parenting programs, but had some effects on their reliance on unemployment benefits. We find that the average annual duration of unemployment benefits is 0.828 fortnights lower among the young adult children of mothers who separated after the reform compared to those whose mothers separated before the reform. This effect is statistically significant at the 10% level. Their unemployment benefits are also found to be lower by A\$351 per year, although this effect is only marginally significant (p-value = 0.102).

5.6 Dynamic Reform Effects

In this subsection, we analyse the dynamic effects of the reform, that is, whether the effects on young adults' fertility and welfare participation vary by the year since the mother's separation. We start by analysing the dynamic reform effects at the extensive margin. Graphs A and E of Figure 11 show that there are no statistically significant effects on young adults' overall welfare participation and fertility in any year after the separation. There are also no dynamic effects on participation in disability and parental support programs. The young adult children of affected mothers are found, however, to be 8 percentage points less likely to be on unemployment benefits in the fourth year after the separation (statistically significant at 10%). The effects on unemployment benefit receipt in the first to third and fifth year after the separation are also negative, but not statistically significant.

In Figures 12 and 13, we explore if the reform affected young adults at the intensive margin, as measured by benefit duration and level. The results are largely consistent with those presented in Figure 11, but the effects on unemployment benefits are estimated more precisely. We find statistically significant negative effects on unemployment benefit

duration and levels in the second to fourth year after the separation. In the second and fourth year after the separation, the duration of unemployment benefits is found to be shorter by 1.118 and 1.509 fortnights among the young adults whose mothers were affected by the reform. These effects are statistically significant at the 5% and 10% levels, respectively. Consistently, the level of unemployment benefits is found to be lower by A\$407 and A\$668 in the second and fourth year after the separation among the affected young adults (also significant at the 5% and 10% levels, respectively). Taken together with the results presented in Table 7, Figures 11 - 13 suggest that the reform did decrease young adults' reliance on unemployment benefits.

6 Conclusion

Relationship separation brings with it a significant source of financial instability, particularly for low-income mothers, and the welfare system has traditionally served to insure them against this sensitive life-event (Amato 2010). This paper examines the impact of a reduction in welfare support on newly separated mothers and their young-adult children. It uses an Australia-wide reform, which unambiguously reduced the amount of government-provided payments to a subset of single mothers. In particular the reform removed eligibility to parenting payment for mothers whose youngest child was 8-15 years old. The key aspect of the reform is that it affected only the mothers separating after the date of the reform implementation, at 1 July 2006, while the mothers separating before this date were exempt from the new rules. We exploit this discontinuity in the RDD framework. For the empirical analyses, we use biweekly administrative data, which provide information on separations among low and middle income couples. The data contain precise measures of mothers' and young adults' welfare histories. We are also able to use the power of the large size of these data to measure relatively infrequent outcomes, such as homelessness and independence among young adults.

Our key contribution to the literature on the intergenerational impacts of welfare reforms is that we examine the impact of the reform on *newly separated* mothers and their youngadult children. We argue that the event of relationship separation may be a particularly sensitive and critical time period to consider when examining the impact of changes to welfare payment generosity. While governments have traditionally tried to insure mothers against financial instability at this vulnerable time period, it may also present an opportunity for policy to mobilise mothers into work. This is because recently separated mothers are less reliant on welfare than mothers who have been separated (or on welfare) for longer. To date, little is known about the impact of a reduction in welfare assistance on the behavioural response of newly separated mothers and the subsequent impacts on attached young-adult children.

We make a number of other contributions to the literature, including: examining youngadult outcomes that are novel to the literature such as homelessness; isolating the impact of government assistance reduction rather than the overall impact of a bundle of reform components; and assessing the impacts on a population that has been historically highly reliant on welfare.

We find that the reduction in government assistance available at the time of relationship breakdown has strong and persistent effects on mother's welfare receipt and income recovery patterns. Mothers affected by the reform responded to the loss of access to parenting payment in the following three ways: (1) by increasing employment income, (2) by repartnering and increasing family income, and/or (3) by churning onto a less-generous unemployment benefit. The increase in unemployment benefits was not sufficient to offset the loss of parenting benefit and thus reduced the total welfare income received by affected mothers relative to the grandfathered mothers. Affected mothers were able, however, to more than offset the welfare income loss from the reform via increases in employment and family income. This provides suggestive evidence that higher levels of welfare assistance do indeed provide disincentives to work for newly separated mothers.

We observe intergenerational effects on young adults' welfare receipt for particular types of welfare receipt payments. Based on overall (or any type of welfare receipt), youngadult children of affected and unaffected mothers are just as likely to be on welfare in the first five years after the separation. However, a different story emerges when we disaggregate overall welfare receipt by the type of payment. Specifically, we consistently find that young adults from households affected by the reform are less likely to rely on unemployment benefits (along both the extensive and intensive margins) for a number of years after parental separation. We observe no intergenerational effects on young adults' early childbirth decisions or the incidence of homelessness or financial independence from the parents.

The reduction in young adults' unemployment benefits suggests that a policy that restricts mothers' welfare access upon separation may in fact decrease the welfare reliance of their young-adult children. One explanation for this finding may be that mothers offset any negative impacts by turning to other sources of income, as we have shown. The higher total income in the family can in turn increase investment in the child's education or human capital development, which explains the reduction specifically to unemployment benefits. Increased employment among affected mothers may also have direct positive spill-over effects on their young-adult children through positive role model effects.

The lack of any negative effects on young adults' welfare receipt, early fertility or homelessness and independence outcomes suggest one of two things. It may suggest that the impacts stemming from the channels of increased employment and income dominate any potential impacts from reduced maternal time and monitoring. Of course, mothers may not have reduced time spent with children if they adjusted their leisure hours instead or if pre-existing time investments in young adults were low (Chase-Lansdale, Moffitt, Lohman, Cherlin, Coley, Pittman, Roff & Votruba-Drzal 2003; Blundell, Pistaferri & Saporta-Eksten 2017). Thus, an alternative explanation is that time investment may not be as important for young adults as for younger children (Gennetian, Duncan, Knox, Vargas, Clark-Kauffman & London 2004).

This research can be extended by analysing the channels through which a decrease in mothers' welfare receipt reduced young adults' reliance on unemployment benefits. The finding that the reform impacts are mainly pronounced in terms of young adults' unemployment benefits suggests a number of potential channels may be in effect. They include: providing positive role-model effects; increased investment in human capital development from the higher total income; promoting attitudes about the value of selfreliance; increasing stigma associated with welfare receipt; and reducing the exchange of information about the welfare system or the application process.

Another possible extension is to examine the impact of similar reforms implemented in different economic conditions. The Australian economy around the time of the reform was relatively strong, and there is evidence to suggest that a weaker economy may severely curtail mothers' ability to find alternative sources of income (Hartley, Lamarche & Ziliak 2017). These future research avenues will help us to understand the broader impacts of a policy that reduces welfare assistance to newly separated mothers on the long-term well-being of their children.

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Figure 1: Trends in mother's welfare receipt before and after W2W reform

Notes: Sample consists of young adult children of mothers with 8-15 year old youngest child at the time of separation. Sample size is 10,606. PPS stands for Parenting Payment Single.

Figure 2: McCrary test for the discontinuity in density at W2W reform date



Notes: Sample consists of young adult children of mothers with 8-15 year old youngest child at the time of separation. Sample size is 10,606. Separation date is normalized so that 1 Jul 2006 equals 0.



Notes: Sample consists of young adult children of mothers with 8-15 year old youngest child at the time of separation. Sample size is 10,606. The dots represent means in each bin, the number of which is optimally selected. The lines represent fitted values of LLRs, which are used to estimate reported Standard errors are presented in parentheses. Separation date is normalized so that 1 Jul 2006 equals 0. *, **, *** denotes statistical significance at the 10%, 5% and 1% discontinuities. In each LLR, bandwidth is selected using two different MSE-optimal bandwidth selectors (below and above the cut-off). level, respectively.





Figure 5: Effects of W2W reform on mother's welfare benefits in the first year after separation



Notes: Sample consists of young adults whose youngest sibling was 8-15 years old at the time of separation. Sample size is 10,606. The dots represent means in each bin, the number of which is optimally selected. The lines represent fitted values of LLRs, which are used to estimate reported discontinuities. In each LLR, bandwidth selected using two different MSE-optimal bandwidth selectors (below and above the cut-off). Standard errors are presented in parentheses. Separation date is normalized so that 1 Jul 2006 equals 0. PPS stands for Parenting Payment Single. *, **, *** denotes statistical significance at the 10%, 5% and 1% level, respectively.



Figure 6: Effects of W2W reform on mother's welfare benefits by year after separation, LLR estimates

Notes: Sample consists of young adults whose youngest sibling was 8-15 years old at the time of separation. Sample size is 10,606. PPS stands for Parenting Payment Single. The dots represent the estimates of reform effects and the vertical lines corresponding 95% confidence intervals. In each LLR, bandwidth is selected using two different MSE-optimal bandwidth selectors (below and above the cut-off).

Figure 7: Effects of W2W reform on mother's personal and family income by year after separation, LLR estimates



Notes: Sample consists of young adult children of mothers with 8-15 year old youngest child at the time of separation. For mother's personal income, sample size varies from 8,336 in the first year after separation to 3,800 in the fifth year after separation. For family's income, sample size varies from 7,788 in the first year after separation to 3,457 in the fifth year after separation. The dots represent the estimates of reform effects and the vertical lines corresponding 95% confidence intervals. In each LLR, bandwidth is selected using two different MSE-optimal bandwidth selectors (below and above the cut-off).





Notes: Sample consists of young adult children of mothers with 8-15 year old youngest child at the time of separation. Sample size is 10,606. The dots represent the estimates of reform effects and the vertical lines corresponding 95% confidence intervals. In each LLR, bandwidth is selected using two different MSE-optimal bandwidth selectors (below and above the cut-off).

Figure 9: Effects of W2W reform on property prices and rental rates in mother's local area by year after separation, LLR estimates



Notes: Sample consists of young adult children of mothers with 8-15 year old youngest child at the time of separation. Sample size is 10,606. The dots represent the estimates of reform effects and the vertical lines corresponding 95% confidence intervals. In each LLR, bandwidth is selected using two different MSE-optimal bandwidth selectors (below and above the cut-off). PC stands for postcode.



Figure 10: Impact of W2W reform on young adult's outcomes in post-separation years

Notes: Sample consists of young adult children of mothers with 8-15 year old youngest child at the time of separation. Sample size is 10,606. The dots represent means in each bin, the number of which is optimally selected. The lines represent fitted values of LLRs, which are used to estimate reported discontinuities. In each LLR, bandwidth is selected using two different MSE-optimal bandwidth selectors (below and above the cut-off). Separation date is normalized so that 1 Jul 2006 equals 0. Standard errors are presented in parentheses. *, **, **** denotes statistical significance at the 10%, 5% and 1% level, respectively.

Figure 11: Effects of W2W reform on young adult's benefit receipt and fertility by year after separation, LLR estimates



Notes: Sample consists of young adult children of mothers with 8-15 year old youngest child at the time of separation. Sample size is 10,606. The dots represent the estimates of reform effects and the vertical lines corresponding 95% confidence intervals. In each LLR, bandwidth is selected using two different MSE-optimal bandwidth selectors (below and above the cut-off).

Figure 12: Effects of W2W reform on young adult's benefit duration by year after separation, LLR estimates



Notes: All dependent variables are measured in fortnights per year. Sample consists of young adult children of mothers with 8-15 year old youngest child at the time of separation. Sample size is 10,606. The dots represent the estimates of reform effects and the vertical lines corresponding 95% confidence intervals. In each LLR, bandwidth is selected using two different MSE-optimal bandwidth selectors (below and above the cut-off).





Notes: All dependent variables are measured in dollars. Sample consists of young adult children of mothers with 8-15 year old youngest child at the time of separation. Sample size is 10,606. The dots represent the estimates of reform effects and the vertical lines corresponding 95% confidence intervals. In each LLR, bandwidth is selected using two different MSE-optimal bandwidth selectors (below and above the cut-off).

Table 1: Descriptive statistics of mother and young adults characteristics and income support variables

	Separated before reform	Separated after reform
	(1)	(2)
A. Family's characteristics		
Age of mother at youth's birth	26.172	24.724
Age of mother at separation	41.636	44.298
Mother Australian	0.754	0.754
Mother Aboriginal/TSI	0.057	0.063
Mother in relationship in Jan 2001	0.815	0.729
Youngest child male	0.502	0.503
Age of youngest child at separation	12.594	12.824
Young adult male	0.503	0.514
Age of young adult at separation	15.464	19.574
Mother's benefits 2yrs before separation, kA\$	2.719	2.482
Youth's welfare benefits 1yr before separation, kA\$	0.076	1.345
B. Mother's outcomes		
Total benefits 1yr after separation, kA\$	5.707	3.957
Receives PPS 1yr after separation	0.618	0.035
Receives PPP 1yr after separation	0.189	0.082
Receives unemployment benefits 1yr after separation	0.102	0.365
Receives disability benefits 1yr after separation	0.043	0.071
C. Young adult's outcomes		
Receives any welfare benefits 1-5yrs after separation	0.477	0.541
Average annual total benefits 1-5yrs after separation, fortnights	2.658	5.206
Average annual total benefits 1-5yrs after separation, kA\$	1.013	2.709
Average annual unemployment benefits 1-5yrs after separation, kA\$	0.524	1.195
Average annual disability benefits 1-5yrs after separation, kA\$	0.183	0.476
Average annual parenting benefits 1-5yrs after separation, kA\$	0.283	0.966
Homeless 1yr after separation	0.057	0.087
Independent 1yr after separation	0.012	0.100
Had any children 1-5yrs after separation	0.086	0.168
Sample size	9,150	1,456

 $\it Notes:$ Sample consists of young adult children of mothers with 8-15 year old youngest child at the time of separation.

Table 2: Testing for participation requirement effect, LLR estimates of reform effects on mothers

	PPS receipt	UB receipt	DSP receipt	Total benefits, A\$
W2W reform	-0.057 (0.161)	$0.105 \\ (0.109)$	0.084 (0.081)	705.642 (1800.845)

Notes: All welfare variables are measured in the first year after the separation. Sample consists of 706 young adults whose mothers had 6 year old child at the time of separation. In each LLR, bandwidth is selected using two different MSE-optimal bandwidth selectors (below and above the cut-off). Standard errors are presented in parentheses.PPS stands for Parenting Payment Single; UB for unemployment benefits, and DSP for Disability Support Pension. *, **, *** denotes statistical significance at the 10%, 5% and 1% level, respectively.

Table 3: Testing for grandfathering effect, DID estimates of reform announcement effects on mothers

	PPS rec	eipt	Number of fo	Number of fortnights on PPS		
Treated	-0.059^{***}	(0.011)	-0.730^{***}	(0.145)		
Post	-0.026	(0.030)	-0.363	(0.384)		
Treated x Post	-0.088^{**}	(0.036)	-1.219^{***}	(0.448)		

Notes: PPS receipt and number of fortnights on PPS are measured within 6 months after the separation date. Sample consists of 7,151 mothers who separated before the reform date. Mothers who separated up to 6 months before the reform announcement date (10 May 2005) or up to 6 months before the reform implementation date (1 July 2006) are excluded. *Treated* equals one if the youngest child of the mother will be 8-15 year old at the time of reform implementation date and zero if the mother had a child who will be under 7 years old at the time of reform implementation. *Post* equals one if the mother separated after the reform announcement date and zero otherwise. Standard errors are presented in parentheses. *, **, *** denotes statistical significance at the 10%, 5% and 1% level, respectively.

Homeless	0.008	(0.107)
Financially independent	-0.048	(0.099)
Any children	-0.022	(0.088)
Any welfare benefits	-0.011	(0.132)
Average $\#$ of fortnights on welfare	0.926	(2.050)
Average welfare benefits kA\$	0.471	(1.005)

Table 4: Effects of mother's PPS receipt on young adult's outcomes, IV estimates

Notes: Sample consists of young adult children of mothers with 8-15 year old youngest child at the time of separation. Each row comes from a separate IV regression, in which mother's PPS receipt is instrumented with the exposure to the W2W reform. In each first stage LLR, bandwidth is selected using two different MSE-optimal bandwidth selectors (below and above the cut-off). Mother's PPS receipt is measured in the first year after separation in thousand A\$. Standard errors are presented in parentheses. *, **, *** denotes statistical significance at the 10%, 5% and 1% level, respectively.

	Baseline	Add controls	Donut RDD
	(1)	(2)	(3)
A.Mother			
PPS receipt	-0.387^{***}	-0.395^{***}	-0.475^{***}
	(0.036)	(0.039)	(0.042)
B. Young adult			
Homeless	-0.003	-0.033	-0.025
	(0.040)	(0.039)	(0.058)
Independent	0.018	0.026	-0.017
	(0.038)	(0.040)	(0.059)
Any children	0.008	-0.018	0.067
	(0.034)	(0.034)	(0.044)
Any welfare benefits	0.004	-0.032	-0.014
	(0.051)	(0.055)	(0.061)
Average $\#$ of fortnights on welfare	-0.372	-0.992	-0.273
	(0.824)	(0.861)	(1.056)
Average welfare benefits kA\$	-0.191	-0.462	-0.185
	(0.409)	(0.425)	(0.516)
Sample size	10,606	10,590	10,461

Table 5: Sensitivity analysis, LLR estimates of W2W reform effects

Notes: In columns (1) to (2), sample consists of young adults of mothers with 8-15 year old youngest child at the time of separation. In column (3), mothers who separated within one month window around the reform date are excluded. In each LLR, bandwidth is selected using two different MSE-optimal bandwidth selectors (below and above the cut-off). Regression in column (2) controls for mother's age at birth, marital status in 2001, migrant status, aboriginal/TSI status, median house price in the postcode two years before the separation, youngest sibling's age at separation and gender, and youth's gender. Standard errors are presented in parentheses. *, **, *** denotes statistical significance at the 10%, 5% and 1% level, respectively.

	Mother or 2 years	n welfare before	Mot native	her born	Youn; child's	gest : age	Young a mother	adult in r's care	Young	adult's der
	No	Yes	No	$\mathbf{Y}_{\mathbf{es}}$	< 14	>= 14	No	Yes	Ĺ	Μ
A.Mother										
PPS receipt	-0.332^{***}	-0.479^{***}	-0.500^{***}	· -0.339***	-0.412^{***}	-0.333^{***}	-0.161	-0.400^{***}	-0.496^{***}	-0.300^{***}
	(0.034)	(0.078)	(0.045)	(0.046)	(0.052)	(0.043)	(0.124)	(0.037)	(0.043)	(0.046)
Total benefits kA\$	-1.558^{***}	-2.496^{***}	-4.987^{***}	-0.822	-1.857^{***}	-1.191^{*}	3.633^{**}	-2.548^{***}	-2.836^{***}	-0.894
	(0.483)	(0.841)	(0.840)	(0.618)	(0.701)	(0.719)	(1.667)	(0.583)	(0.841)	(0.719)
Personal income kA\$	9.989***	7.710^{*}	26.966^{***}	4.100	9.032^{**}	12.172^{**}	-6.487	10.684^{***}	9.728^{**}	8.723**
$B. Young \ adult$										
Homeless	-0.031	0.135	-0.006	-0.009	-0.034	0.048	0.037	0.001	-0.030	-0.014
	(0.028)	(0.127)	(0.084)	(0.044)	(0.045)	(0.074)	(0.127)	(0.041)	(0.055)	(0.049)
Independent	0.035	-0.024	0.079	-0.005	0.012	0.020	0.179	-0.002	-0.024	0.061
	(0.043)	(0.083)	(0.109)	(0.036)	(0.053)	(0.048)	(0.121)	(0.038)	(0.043)	(0.061)
Any children	0.009	-0.006	0.021	0.012	0.010	-0.009	0.050	-0.013	-0.025	-0.015
	(0.036)	(0.081)	(0.084)	(0.039)	(0.048)	(0.048)	(0.136)	(0.034)	(0.056)	(0.023)
Any welfare benefits	-0.015	-0.003	0.085	-0.030	-0.007	0.005	0.102	-0.019	-0.011	0.019
	(0.062)	(0.071)	(0.127)	(0.062)	(0.067)	(0.074)	(0.145)	(0.054)	(0.073)	(0.067)
Average # of fortnights on welfare	-0.598	-0.382	0.952	-0.526	0.943	-1.501	1.683	-0.771	-0.846	-0.124
	(0.735)	(1.859)	(1.630)	(0.975)	(1.338)	(0.924)	(2.739)	(0.790)	(1.216)	(0.933)
Average welfare benefits kA\$	-0.306	-0.027	0.368	-0.267	0.704	-0.953^{**}	1.363	-0.446	-0.472	0.025
	(0.357)	(0.950)	(0.785)	(0.475)	(0.693)	(0.424)	(1.413)	(0.388)	(0.631)	(0.447)
Sample size	6579	4027	2608	7998	6948	3658	1308	8958	5253	5353

Table 6: Heterogeneity in W2W reform effects on mother's and young adult's outcomes, LLR estimates

Notes: Sample consists of young adult children of mothers with 8-15 year old youngest child at the time of separation. In each LLR, bandwidth is selected using two different MSE-optimal bandwidth selectors (below and above the cut-off). Standard errors are presented in parentheses. *, **, *** denotes statistical significance at the 10%, 5% and 1% level, respectively.

	Unemployment benefits	Disability benefits	Parenting benefits
Receives benefits	-0.040	0.008	0.044
	(0.052)	(0.019)	(0.033)
Average $\#$ of fortnights on benefits	-0.828^{*}	0.424	-0.019
	(0.482)	(0.467)	(0.485)
Average benefits kA\$	-0.351	0.217	-0.086
-	(0.215)	(0.254)	(0.256)

Table 7: W2W reform effects on young adult's welfare receipt by type of benefits, LLR estimates

Notes: Sample consists of young adult children of mothers with 8-15 year old youngest child at the time of separation. In each LLR, bandwidth is selected using two different MSE-optimal bandwidth selectors (below and above the cut-off). Standard errors are presented in parentheses. *, **, *** denotes statistical significance at the 10%, 5% and 1% level, respectively.

A Supplementary figures and tables





			Bandwidth		
	0.5	1	1.5	2	2.5
A.Mother					
PPS receipt	-0.397^{***}	-0.402^{***}	-0.361^{***}	-0.390^{***}	-0.398^{***}
	(0.053)	(0.039)	(0.032)	(0.028)	(0.026)
B. Young adult	. ,			× ,	, , , , , , , , , , , , , , , , , , ,
Homeless	-0.020	-0.003	-0.001	-0.011	-0.018
	(0.045)	(0.031)	(0.026)	(0.022)	(0.020)
Independent	-0.037	0.018	0.010	0.013	0.023^{*}
	(0.036)	(0.026)	(0.021)	(0.017)	(0.014)
Any children	-0.003	0.017	-0.007	-0.009	-0.000
	(0.045)	(0.034)	(0.027)	(0.023)	(0.020)
Any welfare benefits	0.009	0.005	0.008	-0.003	-0.034
	(0.069)	(0.049)	(0.039)	(0.034)	(0.030)
Average fortnights on welfare	-0.193	-0.380	-0.486	-0.685	-0.512
	(1.051)	(0.745)	(0.600)	(0.506)	(0.439)
Average welfare benefits kA\$	-0.142	-0.155	-0.213	-0.279	-0.171
-	(0.516)	(0.372)	(0.301)	(0.255)	(0.222)
Sample size	851	1654	2532	3453	4457

Table A.1: Sensitivity of LLR estimates of W2W reform effects to bandwidth selection

Notes: Sample consists of young adult children of mothers with 8-15 year old youngest child at the time of separation (1 Jul 2006) and whose youngest sibling was 8-15 years old at the time of separation. Sample size is 10,606. Standard errors are presented in parentheses. *, **, *** denotes statistical significance at the 10%, 5% and 1% level, respectively.

		Order of	polynomial	
	First	Second	Third	Fourth
A.Mother				
PPS receipt	-0.447^{***}	-0.439^{***}	-0.418^{***}	-0.372^{***}
-	(0.016)	(0.024)	(0.032)	(0.041)
AIC	13325	13327	13326	13324
B. Young adult				
Homeless	-0.038^{*}	-0.018	-0.011	-0.021
	(0.020)	(0.029)	(0.039)	(0.047)
AIC	-607	-619	-630	-629
Independent	0.023	0.024	-0.029	-0.009
	(0.019)	(0.026)	(0.035)	(0.042)
AIC	-10069	-10082	-10100	-10099
Any children	-0.003	-0.006	-0.018	-0.021
	(0.019)	(0.028)	(0.036)	(0.043)
AIC	4119	4122	4126	4129
Any welfare benefits	-0.100^{***}	-0.057	-0.012	0.029
	(0.027)	(0.041)	(0.054)	(0.065)
AIC	15240	15234	15228	15228
Average fortnights on welfare	-0.580	-0.532	-0.550	-0.478
	(0.416)	(0.624)	(0.830)	(1.020)
AIC	66633	66637	66640	66643
Average welfare benefits kA\$	-0.111	-0.264	-0.230	-0.283
	(0.217)	(0.316)	(0.416)	(0.510)
AIC	50913	50914	50917	50919

Table A.2: Global polynomial regression estimates of W2W reform effects

Notes: Sample consists of young adult children of mothers with 8-15 year old youngest child at the time of separation (1 Jul 2006) and whose youngest sibling was 8-15 years old at the time of separation. Sample size is 10,606. Standard errors are presented in parentheses. *, **, *** denotes statistical significance at the 10%, 5% and 1% level, respectively.