



**HAL**  
open science

# Family size and economic wellbeing following divorce: The United States in comparative perspective

Zachary van Winkle, Thomas Leopold

► **To cite this version:**

Zachary van Winkle, Thomas Leopold. Family size and economic wellbeing following divorce: The United States in comparative perspective. *Social Science Research*, 2021, 96, pp.102541. 10.1016/j.ssresearch.2021.102541 . halshs-03361269

**HAL Id: halshs-03361269**

**<https://shs.hal.science/halshs-03361269>**

Submitted on 24 Apr 2023

**HAL** is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.



Distributed under a Creative Commons Attribution - NonCommercial 4.0 International License

## **Family Size and Economic Wellbeing following Divorce: The United States in Comparative Perspective**

*Zachary Van Winkle*<sup>1</sup>

Sciences Po

(zachary.vanwinkle@sciencespo.fr)

*Thomas Leopold*

University of Cologne

(t.leopold@uni-koeln.de)

### **Abstract**

Studies have documented the negative association between divorce and women's economic wellbeing in several countries. Less is known about whether the effects of divorce on women's economic wellbeing, and their persistency, vary by family size. We present the first comprehensive assessment of how the short-term and medium-term economic consequences of divorce vary by family size. Using data from the US (PSID) and between-within random-effects models, we estimate changes in women's gross household income up to six years following divorce, stratified by the number of children in the household in the year of divorce. We add a comparative perspective using a harmonized set of socio-economic panel surveys from Australia (HILDA), Germany (GSOEP), and the UK (BHPS). Our findings demonstrate that the household incomes of women with three or more children decrease most drastically in the US, Germany, and the UK. In these countries, divorce widens the economic gap between child-rich households and those with no or few children. While childless women's incomes do not recover in the medium-term, incomes of mothers in Germany, the UK, and to a lesser extent the US partially recuperate. We demonstrate that differences in labor market attachment, and not remarriage, partially account for the family size differences we observe.

**Keywords:** Divorce, Poverty, CNEF, Family Size, Comparative

---

<sup>1</sup> Postal Address: Sciences Po, Observatoire Sociologique du Changement (OSC), CNRS, Paris  
27 Rue Saint-Guillaume  
75337 Paris Cedex 07  
France

## INTRODUCTION

Extensive research has been conducted on both the causes and consequences of marital separation (see Amato 2010 for a review pertaining to the United States). A ubiquitous finding across decades of research is that divorce is negatively associated with women's economic wellbeing (see Espenshade 1979; Furstenberg 1990 for reviews; Amato 2000; 2010). Specifically, divorce has been shown to decrease women's household incomes and increase their risk of poverty (Leopold 2018; Andreß and Hummelsheim 2009; Smock, Manning, and Gupta 1999; Sørensen 1994; Smock 1993).

Women's economic hardship following divorce and its deleterious consequences have always been closely associated with the presence of children (Poortman 2000; Holden and Smock 1991). The presence of children, who most commonly reside with their mothers after divorce (Cancian et al. 2014), is a major obstacle to economic recovery, because children increase the economic needs of the household (Bianchi, Subaiya, and Kahn 1999), limit women's human capital investments and labor supply (Smock 1994), and involve direct costs of childrearing that are often not compensated by alimony and child maintenance (Bartfeld 2000). The presence of children also turns divorced women's economic hardship into a major social problem, as the experience of poverty is associated with numerous problems in children, ranging from deviance and health problems to reduced educational and occupational attainment (Amato 2000; 2010; Furstenberg 1990). In the US, growing up in neighborhoods with a high proportion of single parents is an important obstacle to social mobility (Chetty et al. 2018).

Although it is universally acknowledged that the economic and social consequences of divorce crucially depend on whether and how many children are involved, empirical knowledge about such differences remains scarce. Commonly, studies on the economic consequences of divorce

only control for the number of children in the household. With the current study, we present a comprehensive assessment of how the short-term and medium-term economic consequences of divorce vary by family size. Family size not only determines women's economic needs and pathways to economic recovery after divorce, but also how many children are negatively affected by financial hardship. This means that the relevance of family size is twofold: Larger families are more vulnerable to the economic consequences of divorce and larger families include more children exposed to these consequences.

To study how the economic impact of divorce varies by family size, we use long-running data from the cross-national equivalent file (CNEF). We concentrate on the US Panel Study of Income Dynamics (PSID), but we add a comparative perspective from data of the British Household Panel Study (BHPS), the German Socio-Economic Panel Study (GSOEP), and the Household, Income, and Labour Dynamics in Australia Survey (HILDA). The surveys included in the CNEF comprise high-quality harmonized data on household income. To study how the impact of divorce on household income varies by family size, we use between-within random-effects models allowing us to estimate within-person changes following divorce as well as between-person differences before divorce. We also include a control sample of individuals who stay married to adjust our analyses for overall age trends and family size effects. This approach also allows us to estimate how differences between childless women and mothers with one, two, and three or more children change in the years following divorce. This allows us to gauge whether divorce exacerbates economic differences between childless households and households with children.

## THEORETICAL BACKGROUND

### *Divorce & Economic Wellbeing*

Two classes of theories link divorce to negative economic outcomes: selection and causation (for a discussion, see Amato 2010). According to the selection perspective, socioeconomically disadvantaged men and women are more likely to divorce. Therefore, the negative association between divorce and economic wellbeing is spurious and attributable to individuals' prior earning capabilities. In contrast, the causation perspective maintains that marital breakdown generates negative outcomes over and above selection into divorce.

A second aspect of debate relates to whether the effects of divorce are short-lived or persistent. Amato's (2000) divorce-stress-adjustment demonstrates how divorce negatively affects individuals both in the short term and in the long term. Stressors related to divorce induce short-term negative effects. One important stressor related to economic wellbeing is the loss of economies of scale: when family members live together, fixed costs such as housing are shared so that the per-capita cost of a given standard of living is less for a family with two adults compared to a single adult (Espenshade 1979). However, protective factors, such as individual and structural resources as well as household composition, may ameliorate short-term effects directly following divorce.

Studies using cross-sectional data are limited to comparing divorced men and women with married men and women to estimate the relationship between marital separation and change in household income. As an example, Sørensen (1994) observed that the household incomes of single-mother households were 80 percent lower than those of two-parent households in Germany, 71 percent lower in the United States, and 63 percent lower in Sweden. Although cross-sectional studies increase knowledge on the relationship between divorce and economic wellbeing, cross-sectional studies are unable to address whether the negative effects of divorce

reflect selection or causation. Further, these studies cannot untangle whether the negative relationship between divorce and economic wellbeing is transient or persistent.

Studies using longitudinal data can more adequately indicate whether divorce is causally associated with change in economic status and whether those effects depreciate with time.

Sociological and economic studies indicate that the effects of divorce on economic wellbeing are not completely attributable to selection (e.g., Amato 2010; Ananat and Michaels 2008). For example, Smock, Manning & Gupta (1999) used endogenous switching regression models with data from the US National Survey of Families and Households to demonstrate that divorced women's economic wellbeing would be substantially higher had they not divorced. Further, if married women were to divorce, their economic wellbeing would be about the same as divorced women's economic wellbeing.

There is mixed evidence as to whether the effects of divorce on household income and the risk of poverty are short-lived or persistent. Findings suggest that the answer to this question depends on national context (e.g., Andreß et al. 2006; Leopold 2018). For example, de Vaus and colleagues (2017) demonstrate using CNEF data that divorce had substantial and negative effects on women's household income in the short term. In the medium term, there was no evidence of recovery in the US and South Korea, whereas women recovered very quickly in Switzerland.

Using Danish register data, Hussain and Kangas (2005) showed that women's household incomes initially decreased by over 50 percent, but subsequently recovered between 8.5-13.5 percent per year up to eight years following divorce. Leopold's (2018) analyses using the German Socio-Economic Panel indicated persistent impact on both women's household incomes and poverty risk.

### *The Economic Consequences of Divorce for Childless Women & Mothers*

A number of studies have demonstrated that divorce decreases women's household incomes and increases their probability of falling into poverty to a much greater extent than for men (Leopold 2018; de Vaus et al. 2017; Andreß et al. 2006; Andreß 2003; Smock 1994; 1993; Avellar and Smock 2005). Bayaz-Ozturk and colleagues (2018) recently used fixed effects regressions and longitudinal data from the US (PSID) and Germany (GSOEP) to show that women's pre- and post-government household incomes decrease to a greater extent than men's. For example, between 2005 and 2013 there is no evidence that men's household incomes decreased following divorce. In contrast, women's equivalized post-government incomes dropped by over 20,500 USD, a decline of over 50 percent. Using the European Community Household Panel for Denmark, the Netherlands, Belgium, France, the UK, Ireland, Italy, Greece, Spain, Portugal, Austria, and Finland and a difference-in-difference propensity score matching estimation, Aassve and colleagues (2005) showed that women were considerably more likely to enter poverty following divorce than men.

Three accounts for the gendered consequences of divorce have been put forward (see Holden and Smock 1991): lost resource pooling, lost income sharing, and human capital depreciation. A common theme across all three accounts is that the economic consequences of divorce are greater for women because of the presence of children. First, women may be more affected by the loss of income pooling following divorce than men, because women commonly retain custody of children. For childless men and women, the fixed costs of an independent household are no longer spread over two earners, and this loss of economies of scale is not gendered in obvious ways. However, needs and costs of households with children are greater than those of households

without children. The former spouse with custody of the children, commonly the mother, has a greater burden to bear than the spouse living in a household without resident children.

Second, the loss of partner income is larger for women than for men, and this difference is again intensified by the presence of children. Following divorce, women's household incomes decrease disproportionately, reflecting men's higher average earnings. This disproportionate loss is partly compensated for by transfers from non-custodial fathers, other private transfers, or government assistance. Better enforcement of child maintenance payments and income from personal networks partially accounts for a decline in the economic consequences of divorce since the 1980s (Tach and Eads 2015). Repartnering is another pathway to economic recovery. Hussain and Kangas (2009) partially attribute the economic recovery of women following divorce to remarriage. However, Di Nallo (2019) recently demonstrated that mothers are less likely to repartner than fathers as well as childless men and women. This means that mothers are less likely to recover from divorce by means of income sharing than their childless counterparts.

Finally, gender differences in the economic consequences of divorce emerge from women's lower human capital and earnings capacities. Again, the differences in human capital and earnings capacities are intensified by the presence of children. A number of studies have concluded that higher labor market attachment and earnings reduce the association between divorce and women's economic wellbeing (e.g., Bayaz-Ozturk et al. 2018) and aids in women's recovery following divorce (e.g., Hussain and Kangas 2009). However, women with children have greater difficulties finding gainful employment following divorce than childless women (van Damme, Kalmijn, and Uunk 2009). Studies have attributed the narrowing gender gap in the economic consequences of divorce to the reversed gender gap in educational attainment and increased labor market attachment of women (Tach and Eads 2015; McKeever and Wolfinger



2001). Yet, motherhood still commonly involves losses in human capital. Using data from Survey of Income and Program Participation linked with earners records and controlling for the number of children and whether a child under age 6 is present in the household, Tamborini, Couch, and Reznik (2015) demonstrate that the earnings trajectories of women with young children following divorce are lower than those of childless women. This could indicate that women with resident children after divorce have greater difficulty combining work and family commitments than childless women. Some analysts have argued that family obligations that increase with presence of children, especially children under the age of 6, still contrast with ideal worker norms (Mjoli, Dywili, and Dodd 2013).

In sum, these three accounts suggest that the economic consequences of divorce are greater for mothers than for childless women. This difference comprises larger losses directly following divorce and slower economic recovery in post-divorce years. We therefore hypothesize the following: *The short-term decrease in economic wellbeing following divorce is larger for mothers than for childless women (H1a). Economic recovery in the medium term is slower for mothers than for childless women (H1b).*

### *The Economic Consequences for Mothers by Family Size*

A number of studies that estimate the effects of divorce have adjusted their analyses for the number of children in the household (e.g., Smock 1993; 1994). However, family size is not just confounded with divorce and economic status, but it changes the association. The mechanisms that exacerbate the economic consequences of divorce for women – lost resource pooling, disproportionate income loss, and human capital depreciation – intensify with family size. First, the economic needs of households increase with the number of children (Bianchi, Subaiya, and

Kahn 1999), although the marginal costs of children decrease with each additional child (Letablier et al. 2009). Second, the likelihood of re-partnering decreases with additional co-residential children (Ivanova, Kalmijn, and Uunk 2013; Manting and Bouman 2006). Di Nallo (2019) showed that compared to childless women, the odds of re-partnering are 36 percent lower for mothers with one child and 44 percent lower for mothers with two or more children in the household. Finally, income and human capital differences between former spouses increase with family size (Smock 1994). Women with larger families during marriage exit the labor market longer and more often, which depreciates their human capital to a greater degree (Angrist and Evans 1996; Cools, Markussen, and Strøm 2017). In line with this, Jansen, Mortelmans, and Snoeckx (2009) found by pooling the European Community Household Panel Study and interacting the number of children in the household with employment status and the number of hours worked that the degree divorced women profited from increasing their work intensity decreased with the number of children in the household.

To our knowledge, no study has focused on family size – i.e., the number of resident children – as a moderator of the association between divorce and economic wellbeing. The most recent available study used data from the German Socio-Economic Panel focused only on differences between childless women and mothers as well as differences by the age of the youngest child (Leopold and Kalmijn 2016). Other studies have examined the how divorce effects on non-economic outcomes vary by family size. All of these studies found that larger family sizes exacerbated the negative consequences of divorce for mother outcomes such as depression (Williams and Dunne-Bryant 2006; Kalmijn and Monden 2006; Liu and Chen 2006), psychological distress (Mandemakers, Monden, and Kalmijn 2010; Strohschein et al. 2005), and self-rated health (Liu and Umberson 2008; Williams 2003). In sum, just as the absence of children in the household likely shields childless women from the short-term and medium-term

mechanisms that associate divorce with lower economic wellbeing, such as lost resource pooling, disproportionate income loss, and human capital depreciation, these mechanisms are reinforced by higher parities. In addition, potential coping resources, such as remarriage and increased labor market attachment, are more difficult to access for women with children. We therefore hypothesize the following: *The short-term decrease in economic wellbeing following divorce is intensified by family size (H2a). Economic recovery in the medium term is slowed down by family size (H2b).*

#### *Family Size, Divorce, & Economic Wellbeing: The US in Comparative Perspective*

The association between divorce and economic wellbeing varies considerably across countries (e.g., Sørensen 1994; Andreß 2003; Andreß and Hummelsheim 2009; Uunk 2004; de Vaus et al. 2017; Bayaz-Ozturk et al. 2018; Hiilamo 2009). In a recent study on the economic consequences of divorce, de Vaus and colleagues (2017) used the CNEF to study the association between divorce and equivalized household income up to six years following divorce for men and women. This study showed that although spousal and child maintenance regulations matter, differences in women's earnings and re-partnering contributed most to cross-national differences. Another recent study used the CNEF to compare the economic consequences of divorce for men and women in the US and Germany up to 3 years before and 5 years after divorce (Bayaz-Ozturk et al., 2018). Findings showed that the medium-term consequences of divorce were more negative for German women compared to US women between 1985 and 1993, whereas US women were worse off between 2005-2013.

Using the 1994-2000 European Community Household Panel, Uunk (2004) showed that income-related rather than employment-related policies mitigated the short-term economic consequences

of divorce for women within 14 European countries. Income-related welfare provisions, such as allowances for single parents and rules for child maintenance payments, directly compensate for mothers' disproportionate income losses following divorce. Further, these external payments increase with the number of children, thereby assisting mothers of many children to a greater degree than mothers of fewer children. Similarly, employment-related welfare provisions, such as labor market re-entry programs and public childcare arrangements, are targeted towards increasing mothers' human capital and earnings capabilities. Especially in the medium term, these policies reduce the barriers to gainful (re-)employment for mothers and their dependency on a second earner in the household to secure their economic well-being.

In light of these policy perspectives and related empirical findings, we added a comparative view to our study of the US context. Putting this context in comparative perspective not only enhanced our population coverage but also allowed us to gain initial insight into the role of institutional and cultural contexts in mitigating or reinforcing the short-term and medium-term associations between divorce, family size, and women's economic wellbeing.

## DATA & METHODS

### *Study Samples*

We used data from the US Panel Study of Income Dynamics (PSID 1970-2015) included in the Cross-National Equivalent File (CNEF) to analyze how women's economic wellbeing changed following divorce. PSID is a nationally representative household panel, which sampled approximately 18,000 individuals within 5,000 households in 1968 and continued to collect economic, sociological and demographic information annually until 1997. Since then information

has been collected on a biennial basis. From the other CNEF countries, we added data from Germany (GSOEP 1984-2014), the UK (BHPS 1991-2008), and Australia (HILDA 2001-2015).

We generated a divorce and a control sample from the PSID. Our divorce sample was restricted to women who were observed to transition from a marital union to divorce between ages 18 and 50. We chose age 50 as the upper age bound for divorce to define a comparison group of childless women that was clearly interpretable. In the absence of this upper age bound, this group would have comprised women who never had children and women who lived without (adult) children who had already left their parental home. Although the CNEF does not include an indicator of parity, the upper age bound ensured that the vast majority of women labeled childless upon divorce were indeed childless and not in the empty nest stage. The year of divorce was defined as the year of legal divorce or the year of separation. If separation preceded legal divorce, then we used the year of separation as the year of divorce.

The divorce sample included all observations, i.e. person-years, within marriage prior to divorce as well as all post-divorce observations regardless of women's marital status up to age 65. This means that we retained observations even when women remarried or divorced a second time. Keeping these observations was consistent with our goal of estimating the association between divorce and economic wellbeing in the years following divorce for all women, allowing for recovery pathways such as repartnering. We excluded women who were divorced when first sampled to ensure that we could accurately identify divorce years and gauge women's pre-divorce levels of economic wellbeing. Our control sample consisted of all person-years of women within marriage who were not observed to transition to divorce. The CNEF does not provide information on whether marriages are first or higher order. As we omitted women first observed in divorce, it is likely that most women in our divorce sample transitioned from a first marriage to

divorce. Although there are socioeconomic differences between first married and remarried households, we do not expect these differences to bias our results based on within-person differences (see analytical approach section below). We restricted both our divorce and control samples to observations between ages 18 and 65.

The original PSID sample of married or divorced women aged 18 to 65 includes 14,261 women nested in 152,772 person-years. Once we exclude women first observed in divorce and those who divorced after the age of 50, we retain a sample of 13,399 (94.0%) women nested in 149,127 (97.6%) person-years. Summary statistics for both the PSID divorce and control samples are presented separately by family size in Table A1 of the manuscript appendix. Note that for two reasons the average number of observations per respondent in the control sample was smaller than in the divorce sample: First, women in the divorce sample needed to be observed for at least two years to enter the analyses, while women in the control sample could enter even if observed only once. Second, it was more likely to observe new respondents, e.g. refreshment samples, in the control sample, given that the divorce sample was conditioned on having observed the transition to divorce during the panel. We find no indication that our sample selection based on observability introduced selection bias that would invalidate our conclusions (see additional analyses section below).

### *Variables*

As our outcome measure of economic wellbeing, we concentrated on the natural log of gross family income. Annual gross household income was calculated as the sum income of all household members from labor earnings, asset flows, retirement income, private transfers, and

social security pensions. Private transfers included alimony, child support, and other income from non-household members. Zero incomes are included as the natural log of one.

To examine both initial and medium-term changes following divorce, we included both a binary and a continuous indicator for divorce. Our binary indicator took the value of 0 when women were married and 1 when women were divorced. The continuous indicator counted the number of years following divorce and was zero during marriage and in the year of divorce. When these variables were simultaneously included in the regression models, the binary indicator captured the initial change following the transition to divorce and the continuous indicator captured changes after the year of divorce.

Family size was measured as the number of children in the household in the year of divorce categorically as either no children, one child, two children, or three or more children. For individuals who did not divorce, family size was measured as the maximum number of children observed in the household. We chose a categorical measure for the number of children to better account for non-linearities in the association between family size and women's economic wellbeing following divorce. It is important to note that our family size variable did not capture the number of children ever born to a woman (this information is not available in the CNEF), but the number of household members under the age of 18. Missingness on these two variables – gross household income and family size – was moderate. For PSID, we retain 13,313 (99.4% of the working sample) women and 145,900 (97.9% of the working sample) person-years. We therefore opted to omit cases with missing data from our analyses.

### *Analytical Approach*

We used between-within random effects linear regression models (Sjölander et al. 2013), also known as hybrid random effects regression models (Allison 2009), with observation years nested in individuals to estimate changes in log gross household income. Alternatively, one could use fixed effects models or variants of traditional hierarchical random effects modeling, e.g. growth curve models. However, between-within random effects models combine the advantages of fixed effects and random effects models by estimating both between- and within-individual effects. In addition, between-within models allow us to retain information about baseline differences in income, i.e. that we do not disregard the levels around which change occurs. To accomplish this, all time-varying covariates are included twice: as time-constant individual means and as time-varying deviations from those individual means.

A between-within random effects model can be formulated as:

$$y_{it} = \beta_0 + \bar{X}_i \beta^{BE} + (X_{it} - \bar{X}_i) \beta^{FE} + u_i + e_{it}$$

where log gross household income,  $y$ , for an individual,  $i$ , at time point,  $t$ , is a function of time-constant predictors and their vector of between-individual coefficients, and time-varying predictors and their within-individual coefficients as well as an individual random intercept and idiosyncratic error term. In our case, the association between divorce and economic wellbeing is captured through four terms in the regression models: two derived from the binary divorce indicator and two from the continuous measure for years after divorce.

$$y_{it} = \beta_0 + \bar{D}_i \beta_{1a}^{BE} + (D_{it} - \bar{D}_i) \beta_{1b}^{FE} + \overline{Dur}_i \beta_{2a}^{BE} + (Dur_{it} - \overline{Dur}_i) \beta_{2b}^{FE} \\ + \bar{X}_i \beta^{BE} + (X_{it} - \bar{X}_i) \beta^{FE} + u_i + e_{it}$$

where  $\beta_{1b}$  and  $\beta_{2b}$  are our within-effects of interest, i.e. the association between the transition from marriage to divorce and economic wellbeing, and its change as individuals progress from



one year within divorce to the next, respectively. The between-effects are captured by  $\beta_{1a}$  and  $\beta_{2a}$ , which denote the difference between married and divorced individuals and how that difference varies between individuals with longer and shorter durations within divorce. Note that we include the continuous divorce indicator as a linear term to model changes in the association between divorce and economic wellbeing in the years that follow. We also tested quadratic and more flexible specifications using dummy variables for years after divorce, which both led to the same substantive conclusions. We interact these terms with family size to estimate how the associations between our divorce indicators and economic wellbeing vary by the number of children in the household. We therefore need to include five additional terms:

$$\begin{aligned}
y_{it} = & \beta_0 + \bar{D}_i\beta_{1a}^{BE} + (D_{it} - \bar{D}_i)\beta_{1b}^{FE} + \overline{Dur}_i\beta_{2a}^{BE} + (Dur_{it} - \overline{Dur}_i)\beta_{2b}^{FE} \\
& + FAM_i\beta_3 \\
& + \bar{D}_iFAM_i\beta_{4a}^{BE} + (D_{it} - \bar{D}_i)FAM_i\beta_{4b}^{FE} + \overline{Dur}_iFAM_i\beta_{5a}^{BE} + (Dur_{it} - \overline{Dur}_i)FAM_i\beta_{5b}^{FE} \\
& + \bar{X}_i\beta^{BE} + (X_{it} - \bar{X}_i)\beta^{FE} + u_i + e_{it}
\end{aligned}$$

where the within-effects  $\beta_{4b}$  and  $\beta_{5b}$  represent how the initial impact of a transition into divorce on economic wellbeing and its change over time vary by family size. The between-effect of family size and economic wellbeing is captured by  $\beta_3$ , which together with  $\beta_{4b}$  and  $\beta_{5b}$  allows us to estimate the difference between childless women and women with one, two, and three or more children following divorce. These estimates are similar to per-child penalties in the motherhood wage gaps literature (e.g., Misra, Moller, and Budig 2007; Abendroth, Huffman, and Treas 2014; Van Winkle and Fasang 2020), although we focus on differences among divorced women. All models include a sample indicator, i.e. whether an individual ever divorced or remained married during the observation window, quadratic between- and within-individual age terms, as well as respondents' average observation year.

In the following section, we first display pre- and post-divorce differences in women's gross household income, working hours, and remarriage by family size in the United States. We then estimate between-within models on gross-household income first displaying only differences between childless women and mothers followed by family size differences. In the next step, we present family size differences once adjusted by two main coping strategies discussed above: working hours and remarriage. Finally, we display results from unadjusted and adjusted models on Germany, the United Kingdom, and Australia. We present both percent differences in household income by family size relative to pre-divorce levels as well as percent difference between childless women's and mothers' incomes both one year prior and six years following divorce.

## RESULTS

### *Descriptive Results*

Figure 1 shows descriptive results on changes in gross household income, marital status, and annual working hours one year prior to divorce and six years following divorce for the United States. Panel a of Figure 1 shows that the gross household incomes of women both prior to and following divorce was highly stratified by family size. Changes in the composition of households by family size are displayed in panels b, c, and d of Figure 1. Per definition, childless households had zero resident children in the year of divorce.

*Figure 1: Change in Gross Household Income, Working Hours, and Remarriage of the Divorce Sample Prior and Following Divorce by Family Size*

For remarriage, panel d of Figure 1 shows a clear family size gradient. In the first year, those differences were small, ranging between 20 percent for women without children in the household in the year of divorce to 15 percent for women with children. Six years after divorce, nearly 50 percent of childless women in the divorce sample remarried, compared to roughly 35 percent of women with one or two children and under 30 percent of women with three or more children.

Panel e of Figure 1 shows that there was also a clear family size gradient in the women's annual work hours. These differences were largest before divorce, diminished upon divorce, and further narrowed across subsequent years. For example, the difference in annual working hours between childless women and women with three or more children narrowed from 600 hours before divorce to approximately 450 hours in the year of divorce and 300 hours 6 years later. In sum, women without children at divorce were more likely to remarry in the years following divorce, whereas women with children, especially those with three or more children, increased their labor market participation.

*Results from Between-Within Random Effects Regression for Childless Women & Mothers*

In the first step of our multivariate analysis, we compared mothers to women who were childless upon divorce. Results from between-within random effects regressions are displayed in Figure 2 (see Table A2 in the manuscript appendix). Panel a of Figure 2 shows the percent change in gross household income for childless women and mothers one year prior to divorce and six years after it; panel b shows the estimated difference between childless women and mothers.

*Figure 2: Change in Gross Household Income for Childless Women and Mothers*

As can be seen in panel a of Figure 2, the short- and long-term change in gross household income for mothers and childless women was nearly identical. In the year of divorce, the incomes of both women with and without children in the household dropped by roughly 60 percent. However, as can be seen in panel b of Figure 2, the household incomes of mothers were roughly 20 percent lower than the household incomes of childless women on year prior to divorce. Although both childless women's and mothers income drop following divorce, the relative disadvantage of women's households with children remains stable following divorce. While there is a trend towards a recuperation for mothers in the years following divorce, the differences are not statistically significant. Therefore, our result for the US did not support hypothesis H1a and H1b. The negative short-term effects of divorce and household income are not larger for mothers and the speed of recovery in the medium-term was not faster for childless women compared to mothers.

*Results from Between-Within Random Effects Regression by Family Size*

In the second step, we turn to the regression results on women's gross household incomes by family size. These results are displayed in Figure 3 (see Table A3 in the manuscript appendix). Similar to Figure 2, Panel a of Figure 3 the percent change in gross household income for childless women and mothers with one, two, and three or more children one year prior to divorce and six years after it. The estimated difference in women's household incomes with one, two, and three or more children relative to childless women's households are depicted in panel b.

*Figure 3: Change in Gross Household Income by Family Size*

The results in Figure 3 highlight the importance of differentiating between the number of children in divorced women's households. The short-term change in household income following divorce is similar for childless women and mothers with one and two children (see panel A of Figure 3). For these women, household incomes initially dropped by roughly 60 percent. However, the household incomes of women with three or more children decreased by approximately 70 percent. This translated into a sharp increase in the difference in the economic wellbeing of mothers with three or more children and childless women (see panel B of Figure 3). While the household incomes of women with many children were circa 30 percent lower than the household incomes of childless women one year prior to divorce, that difference increased by 50 percent in the year of divorce. However, while childless women's incomes stay stagnant in the years following divorce, women with three or more children do recuperate to a small degree from approximately 70 percent to 65 percent relative to one year prior to divorce. Women with one or two children also recuperate to a small degree. In sum, our results for the US supported hypothesis H2a in that the short-term impact between divorce and household income for women with many children is considerably more severe than for women with few or no children in the household. However, our results tended not support H2b: the recovery of women with many children was not slower than those with few or no children.

*Adjusted Results from Between-Within Random Effects Regression by Family Size*

We additionally estimated analyses separately adjusting for remarriage and the number of work hours—two of the most important pathways to recovery following divorce—by family size. This allows us to gain leverage on whether these pathways assist women’s economic recovery differently by family size. To examine these possibilities, we estimated models that included more complex and higher-order interactions between the divorce indicators, family size, and the two characteristics mentioned above. Specifically, we included main effects of each of these variables along with two-way interactions with the divorce indicators, two-way interactions with family size, and three-way interactions with the divorce indicators and family size. The results of these analyses are displayed in Figure 4 for remarriage and Figure 5 for work hours. If remarriage or working hours account for family size differences in post-divorce economic wellbeing, then we should see smaller family size differences in Figures 4 and 5 compared to Figure 3.

*Figure 4: Change in Gross Household Income by Family Size Adjusted for Remarriage*

As can be seen in Figure 4, adjusting our results for remarriage had only a modest impact on our estimates. As would be expected, we still found that the short-term association between divorce and households income was largest for women with three or more children (ca. 75 percent) compared to childless women and mothers with one or two children (ca. 65 percent). In addition, we still found that divorce widened the gap between divorced women’s household with many children and those with few or no children (from ca. 30 to 50 percent). In sum, our results did not indicate that remarriage played a mediating role in family size differences following divorce.

*Figure 5: Change in Gross Household Income by Family Size Adjusted for Working Hours*

We did however find evidence that the degree of labor market attachment plays a role in family size differences in economic wellbeing following divorce. Once adjusted for working hours, we find important differences. While the short-term decrease in household income following divorce is still substantial for all family sizes (ca. 65 percent for mothers with one or two children, 70 percent for childless women, and 75 percent for women with three or more children), the difference between childless women and mothers with three or more children is no longer exacerbated considerably by divorce, growing from roughly 15 to 25 percent. In contrast with our unadjusted results, which showed only negligible differences between childless women and mothers with few children, we found that mothers' household incomes are roughly 15 to 20 percent higher than the incomes of childless women.

#### *Cross-National Results*

In Figure 6 and Figure 7, we put our unadjusted findings from the US in comparative perspective. These figures correspond to Figure 2 and 3, respectively and show results separately by motherhood status (Figure 4) and family size (Figure 5) for Germany (upper-left plots), the UK (upper-right plots), and Australia (lower-left plots) (see Table A1 in the manuscript appendix). Following the unadjusted results, we then discuss results adjusted for remarriage (Figure 6) and working hours (Figure 7).

*Figure 6: Change in Gross Household Income for Childless Women and Mothers across Countries*

In contrast to the US, we find that the short-term association between divorce and gross-household income was considerably larger for mothers than for childless women in Germany and the UK. While childless women's incomes decreased by roughly 40 percent in Germany and 60 percent in the UK, mother's incomes decreased by at least 20 percentage points more in each country (60 percent in Germany and 80% in the UK). The difference between mothers' household incomes relative to childless women's incomes increases from just over 10 percent to just over 40 percent in Germany, and from well over 25 to well over 50 percent in the UK. Only in Australia do mother's household incomes decrease less than childless women (ca. 65 and 75 percent) and the economic divide between childless women's and mother's households dissipate. Similar to the US, childless women tend not to recuperate in any country in the six years following divorce. However, mothers in all three countries recuperate to a far greater degree than in the US: from 60 to under 40 percent in Germany, from 80 to 30 percent in the UK, and from 60 to 40 percent of pre-divorce levels in Australia. In the UK and Australia, the household incomes of divorced mothers even surpass those of divorced childless women six years following divorce.

*Figure 7: Change in Gross Household Income by Family Size across Countries*

Similar to the US, our results underscore the importance of focusing on family size differences rather than just a dichotomy between mothers and childless women. In both Germany and the UK, mothers with three or more children suffer considerably larger losses directly following divorce compared to childless women and women with one or two children. For example, in the UK the household incomes of mothers with three or more children decrease by 90 percent



compared to pre-divorce levels, compared to 80 percent for mothers with two children and under 70 percent for mothers with only a single child. In these two countries, divorce considerably increases the economic gap between divorced women's households by family size. For example, in Germany mothers with three or more children have roughly 30 percent lower household incomes relative childless households prior to divorce. However, that gap widens to nearly 90 percent following divorce. In Germany, only the gap between households of mothers with one child and childless women's households dissipates within six years of divorce. The household incomes of divorced mothers recuperate in the medium term and mothers with one or two children have higher household incomes than childless women within six years. In Australia, family size differences in the short-term impact of divorce remain small, with mothers affect slightly less than childless women, however especially mothers with two or more children recuperate in the medium-term and eventually the household incomes of divorced mothers become higher than those of childless women.

*Figure 8: Change in Gross Household Income by Family Size across Countries Adjusted for Remarriage*

As can be seen in Figure 8, the family size differences found in Germany, the UK, and Australia remain once adjusted for remarriage. However similar to our results for the US, family size differences decrease in all countries once the number of working hours is taken into account. For example, in Germany the household incomes of women without children as well as mother with few and many children decreases considerably by roughly 70 percent. However, we no longer find that divorce widens the economic gap between households with childless women and mother's households. In contrast, we find that once adjusted for working hours, the household

incomes of mothers with children tend to be larger than those of childless women's households in the years following divorce.

*Figure 9: Change in Gross Household Income by Family Size across Countries Adjusted for Working Hours*

### *Sensitivity Analyses*

An important issue in identifying the role of family size was to address potential confounding with educational attainment, the age of the youngest child in the household, and the number of children in the household. For example, if family size was larger and divorce consequences more severe among the lower educated, we might incorrectly attribute socioeconomic differences in the impact of divorce to differences in family size. Similarly, if the age of the youngest child was lower and the consequences of divorce more severe with the presence of a younger child, we might have incorrectly attributes child age differences in the impact of divorce to family size differences. To examine these possibilities, we estimated models that included more complex and higher-order interactions between the divorce indicators, family size, and the three characteristics mentioned above. The results of all these analyses are available from the authors upon request and were similar to those shown above leading to the same substantive conclusions.

As an additional sensitivity test, we addressed the potential problem of sample attrition. Although we found no evidence of selective panel attrition by family size following divorce, we nonetheless estimated our models using longitudinal weights that accounted for attrition. As the results of these analyses were consistent with those presented above, we present the more parsimonious models in the manuscript. In addition, we gaged the sensitivity of our analyses to

different specifications: analyses with a continuous family size indicator, excluding childless women, and on a sample of non-Black and non-Hispanic women. The results of all these analyses are available from the authors upon request and were similar to those shown above leading to the same substantive conclusions.

Finally, recent literature analyzed whether the economic consequences of marital and cohabitation dissolutions were similar. Using data from the 1979 National Longitudinal Survey of Youth, Allevar and Smock (2005) showed that formerly married women experienced a steeper decline in household incomes than formerly cohabiting women (58 percent compared to 33 percent). More recently, Tach and Eads (2015) demonstrated using data from the US Survey of Income and Program Participation that in contrast to marital dissolutions, the economic consequences of cohabitation dissolution have grown more severe over time. In this study, we concentrated on divorce. Nonetheless, we performed additional analyses on a sample of cohabiting couples that experienced a separation and a control sample of continuously cohabiting couples (available from authors upon request). Our results indicate that the short-term and medium-term associations between separation and gross household income were relatively similar for childless women and mothers with smaller and larger family sizes. However, the baseline economic wellbeing of cohabiting mothers was considerably lower than that for childless women and this difference increased with the number of children.

## DISCUSSION

In this article, we addressed two research questions: how does women's economic wellbeing change in the years following divorce and how do these changes vary by family size? Our main contribution to the literature on the economic consequences of divorce is to study the role of

family size as a moderating factor. We expected that the absence of children in the household shields childless women from the short-term stressors that associate divorce with lower economic wellbeing, such as lost resource pooling, disproportionate income loss, and human capital deficits. The economic needs of households with children are greater (Bianchi, Subaiya, and Kahn 1999) and mothers find it more difficult to find gainful employment following divorce (van Damme, Kalmijn, and Uunk 2009). Moreover, the economic stress of divorce may be exacerbated for women with larger families if they exited the labor market longer and more often during marriage (Angrist and Evans 1996; Cools, Markussen, and Strøm 2017) and if government and child support payments do not compensate for disproportionate income loss following divorce and the needs of the household (Bartfeld 2000).

Based on these considerations, we hypothesized that the negative short-term effects of divorce on poverty are larger for mothers compared to childless women (H1a) and that the speed of recovery in the medium-term is faster for childless women compared to mothers (H1b). Further, we hypothesized that the negative short-term effect of divorce on poverty increases with the number of resident children (H2a) and that the speed of recovery in the medium term decreases with the number of resident children (H2b). Although we concentrated on the US, we examined three additional countries – Australia, Germany, and the UK – to broaden the scope of our results and to gain initial insight into the role of institutional context in reinforcing or ameliorating the negative consequences of divorce for women with different family sizes. We used between-within random effects models to estimate changes in the gross household income following divorce by family size.

Our results provide additional evidence that divorce is related to a substantial initial drop in economic wellbeing (Leopold 2018; de Vaus et al. 2017; Andreß et al. 2006; Andreß 2003;

Smock 1994; 1993; Peterson 1996). However, our main contribution to the literature was to show how motherhood status and family size moderated the short-term and medium-term association between divorce and women's economic wellbeing following divorce. Our findings on the role of motherhood status and family size only partially supported our hypotheses. In line with expectations, we found that the short-term negative effects of divorce on gross household income increased with family size in most contexts. In contrast to expectations, however, these family size differences tended to decrease or dissipate in the medium-term in most contexts.

The finding of faster economic recovery mother's households is surprising, but our results also pointed towards potential explanations in terms of different barriers to women's employment and remarriage following divorce. Specifically, our results demonstrated that women with children at the time of divorce increase their work intensity substantially in the years following divorce, which accounts for a considerable proportion of family size differences in the economic consequences of divorce. While women without children at the time of divorce are more likely to remarry, we found no evidence that this accounts for any of the family size differences we observed.

Although countries differ with regard to the size of the initial association between divorce and economic wellbeing as well as the rate of recovery, cross-national similarities in family size differences are striking. In all countries, women without children did not recover from the economic losses associated with divorce, whereas women with children tended to partially recover in the medium term. The initial association between divorce and poverty was strongest and most stratified by family size in Germany and the UK and smallest and least stratified by family size in Australia and to a lesser extent the US. Women with children tended to fully recovered in Australia and the UK. Our results indicate that the association between divorce and

economic wellbeing is a persistent for childless women in these all countries, whereas it tends to be shorter lived for women with children. In Germany and to a less extent the US, the impact of divorce for women with children at best reached the level of women without children towards the end of the observation window. In these countries, however, substantial losses in economic wellbeing were persistent for all family sizes.

It was out of the scope of this study to directly assess the role of institutional factors and adjudicate between different policy packages that target the core associations between divorce, family size, and economic wellbeing. Our results nevertheless invite us to speculate on important factors that might affect the association between divorce and women's economic wellbeing and mitigate family size differences. Our results are generally consistent with Uunk's (2004) argument that income-related policies reduce the negative effects of divorce on mothers' economic wellbeing. Public spending on cash benefits for families in Australia and the UK is twice as high as in Germany (Thévenon 2011). Further, while there are no unconditional child allowances in the US, child allowances are considerable in Australia and to a lesser extent in the UK and Germany (see Gauthier and Monna 2004). However, other explanations are plausible, such as differential selection into marriage and divorce across countries. Future research should broaden the comparative scope along these lines and include other national contexts, in particular Nordic welfare states, and different time periods.

Children who experience divorce and the economic consequences following divorce often suffer from problems, such as deviance and health problems, reduced educational and occupational attainment, and barriers to social mobility (Amato 2000; 2010; Furstenberg 1990; Chetty et al. 2018). Therefore, the presence of children turns divorced women's economic hardship into a major social problem. As we have shown, larger families are more vulnerable to the short-term

economic consequences of divorce in terms of falling into poverty, which in turn means that more children are exposed to these consequences in larger families. Regarding family size as a moderator of divorce effects, our study contributes an analysis of objective economic outcomes to previous findings on divorce and subjective measures of wellbeing (Leopold and Kalmijn 2016), depression (Williams and Dunne-Bryant 2006; Kalmijn and Monden 2006; R. Liu and Chen 2006), psychological distress (Mandemakers, Monden, and Kalmijn 2010; Strohschein et al. 2005), and self-rated health (H. Liu and Umberson 2008; Williams 2003). Taken together, this line of research suggests that the number of children in the household intensifies the negative consequences of divorce in various domains of life. However, this conclusion is more strongly supported for short-term effects than for medium-term effects. In this regard, our findings suggest that the presence of children contributes to economic recovery following divorce. This unexpected finding and potential underlying mechanisms warrant further investigation in future research.

## WORKS CITED

- Abendroth, Anja-Kristin, Matt L. Huffman, and Judith Treas. 2014. 'The Parity Penalty in Life Course Perspective: Motherhood and Occupational Status in 13 European Countries'. *American Sociological Review* 79 (5): 993–1014. <https://doi.org/10.1177/0003122414545986>.
- Allison, PD. 2009. *Fixed Effects Regression Models*. Thousand Oaks, CA: Sage Publications.
- Amato, Paul. 2000. 'The Consequences of Divorce for Adults and Children'. *Journal of Marriage and Family* 62: 1269–87.
- . 2010. 'Research on Divorce: Continuing Trends and New Developments'. *Journal of Marriage and Family* 72 (3): 650–66. <https://doi.org/10.1111/j.1741-3737.2010.00723.x>.
- Amato, Paul, and Spencer James. 2010. 'Divorce in Europe and the United States: Commonalities and Differences across Nations'. *Family Science* 1 (1): 2–13. <https://doi.org/10.1080/19424620903381583>.
- Ananat, Elizabeth O, and Guy Michaels. 2008. 'The Effect of Marital Breakup on the Income Distribution of Women with Children'. *Journal of Human Resources* 43 (January 2009): 611–29. <https://doi.org/10.3368/jhr.43.3.611>.
- Andreß, Hans-Jürgen. 2003. 'Resources, Standard of Living and Lebenslagen — And What Does All This Have To Do With Poverty? BT - Reporting on Income Distribution and Poverty'. In , edited by Richard Hauser and Irene Becker, 91–104. Berlin, Heidelberg: Springer Berlin Heidelberg.
- Andreß, Hans-Jürgen, Barbara Borgloh, Miriam Bröckel, Marco Giesselmann, and Dina Hummelsheim. 2006. 'The Economic Consequences of Partnership Dissolution - A Comparative Analysis of Panel Studies from Belgium, Germany, Great Britain, Italy, and Sweden'. *European Sociological Review* 22 (5): 533–60. <https://doi.org/10.1093/esr/jcl012>.
- Andreß, Hans-Jürgen, and Dina Hummelsheim, eds. 2009. *When Marriage Ends: Economic and Social Consequences of Partnership Dissolutions*. Cheltenham, UK: Edward Elgar Publishing.
- Angrist, Joshua, and William Evans. 1996. 'Children and Their Parent's Labor Supply: Evidence from Exogenous Variation in Family Size'. 5778. NBER Working Paper Series. Cambridge, MA.
- Avellar, Sarah, and Pamela J. Smock. 2005. 'The Economic Consequences of the Dissolution of Cohabiting Unions'. *Journal of Marriage and Family* 67 (2): 315–27. <https://doi.org/10.1111/j.0022-2445.2005.00118.x>.
- Bartfeld, Judi. 2000. 'Child Support and the Postdivorce Economic Well-Being of Mothers, Fathers, and Children \*'. *Demography* 37 (2): 203–13.
- Bayaz-Ozturk, Gulgun, Richard V. Burkhauser, Kenneth A. Couch, and Richard Hauser. 2018. 'The Effects of Union Dissolution on the Economic Resources of Men and Women: A Comparative Analysis of Germany and the United States, 1985–2013'. *The ANNALS of the American Academy of Political and Social Science* 680 (1): 235–58. <https://doi.org/10.1177/0002716218793608>.
- Bianchi, Suzanne M, Lekha Subaiya, and Joan R Kahn. 1999. 'THE GENDER GAP IN THE ECONOMIC WELL-BEING OF NONRESIDENT FATHERS AND CUSTODIAL MOTHERS'. *Demography* 36 (2): 195–203.
- Cancian, Maria, Daniel R. Meyer, Patricia R. Brown, and Steven T. Cook. 2014. 'Who Gets Custody Now? Dramatic Changes in Children's Living Arrangements After Divorce'. *Demography* 51 (4): 1381–96. <https://doi.org/10.1007/s13524-014-0307-8>.
- Cherlin, Andrew. 2010. 'Demographic Trends in the United States: A Review of Research in the 2000s'. *Journal of Marriage and the Family* 72 (3): 403–19. <https://doi.org/10.1111/j.1741-3737.2010.00710.x>.
- Chetty, Raj, John Friedman, Nathaniel Hendren, Maggie Jones, and Sonya Porter. 2018. 'The Opportunity Atlas: Mapping the Childhood Roots of Social Mobility'. 25147. NBER Working Paper.
- Cools, Sara, Simen Markussen, and Marte Strøm. 2017. 'Children and Careers : How Family Size Affects Parents ' Labor Market Outcomes in the Long Run'. *Demography* 54 (1): 1773–93. <https://doi.org/10.1007/s13524-017-0612-0>.



- Damme, Maike van, Matthijs Kalmijn, and Wilfred Uunk. 2009. 'The Employment of Separated Women in Europe: Individual and Institutional Determinants'. *European Sociological Review* 25 (2): 183–97.
- Di Nallo, Alessandro. 2019. 'Gender Gap in Repartnering: The Role of Parental Status and Custodial Arrangements: Gender Gap in Repartnering'. *Journal of Marriage and Family* 81 (1): 59–78. <https://doi.org/10.1111/jomf.12527>.
- Espenshade, Thomas J. 1979. 'The Economic Consequences of Divorce'. *Journal of Marriage and Family* 41 (3): 615–25.
- Furstenberg, Frank F. 1990. 'Divorce and the American Family'. *Annual Review of Sociology* 16: 379–403. <https://doi.org/10.1146/annurev.so.16.080190.002115>.
- Gauthier, AH, and B Monna. 2004. 'Family Allowances in Industrialized Countries: Historical Landmarks'. *Max-Planck-Institute for Demographic Research, Comparative Family Policy Database*.
- Hiilamo, Heikki. 2009. '5. Divergences in the Nordic Model: Economic Consequences of Partnership Dissolution in Sweden and Finland'. In *When Marriage Ends: Economic and Social Consequences of Partnership Dissolutions*, edited by Hans-Jürgen Andreß and Dina Hummelsheim, 23. Cheltenham/Northampton: Edward Elgar Publishing.
- Holden, Karen C, and Pamela J Smock. 1991. 'The Economic Costs of Marital Dissolution: Why Do Women Bear a Disproportionate Cost?' *Annual Review of Sociology* 17 (1): 51–78. <https://doi.org/10.1146/annurev.so.17.080191.000411>.
- Hussain, M Azhar, and Olli Kangas. 2009. '4. New Holes in the Safety Net?' In *When Marriage Ends: Economic and Social Consequences of Partnership Dissolutions*, edited by Hans-Jürgen Andreß and Dina Hummelsheim, 34. Cheltenham/Northampton: Edward Elgar Publishing.
- Ivanova, Katya, Matthijs Kalmijn, and Wilfred Uunk. 2013. 'The Effect of Children on Men's and Women's Chances of Re-Partnering in a European Context'. *European Journal of Population* 29: 417–44. <https://doi.org/10.1007/s10680-013-9294-5>.
- Jansen, Mieke, Dimitri Mortelmans, and Laurent Snoeckx. 2009. 'Repartnering and (Re)Employment: Strategies to Cope With the Economic Consequences of Partnership Dissolution'. *Journal of Marriage and Family* 71 (5): 1271–93. <https://doi.org/10.1111/j.1741-3737.2009.00668.x>.
- Kalmijn, Matthijs, and Christiaan Monden. 2006. 'Are the Negative Effects of Divorce on Well-Being Dependent on Marital Quality?' *Journal of Marriage and Family* 68: 1197–1213.
- Leopold, Thomas. 2018. 'Gender Differences in the Consequences of Divorce: A Study of Multiple Outcomes'. *Demography* 55 (3): 769–97. <https://doi.org/10.1007/s13524-018-0667-6>.
- Leopold, Thomas, and Matthijs Kalmijn. 2016. 'Is Divorce More Painful When Couples Have Children? Evidence From Long-Term Panel Data on Multiple Domains of Well-Being'. *Demography* 53 (6): 1717–42. <https://doi.org/10.1007/s13524-016-0518-2>.
- Letablier, Marie-Therese, Angela Luci, Antonie Math, and Olivier Thevenon. 2009. 'The Costs of Raising Children and the Effectiveness of Policies to Support Parenthood in European Countries: A Literature Review'. European Commission Directorate-General "Employment, Social Affairs and Equal Opportunities Unit E1 - Social and Demographic Analysis. <https://ec.europa.eu/social/BlobServlet?docId=2268&langId=en>.
- Liu, H, and D Umberson. 2008. 'The Times They Are a Changin': Marital Status and Health Differentials from 1972 to 2003'. *Journal of Health and Social Behavior* 49: 239–53.
- Liu, R, and Z Chen. 2006. 'The Effects of Marital Conflict and Marital Disruption on Depressive Affect: A Comparison between Women in and out of Poverty'. *Social Science Quarterly* 87: 250–71.
- Macura, M, E Adams, and D Holzer-Zelazewska. 1990. 'Changing Patterns of First Marriage, Divorce and Remarriage in Europe and North America'. In *United Nations International Conference on Ageing Populations in the Context of the Family*. Kitakyushu, Japan.
- Mandemakers, Jornt J, Christiaan Monden, and Matthijs Kalmijn. 2010. 'Are the Effects of Divorce on Psychological Distress Modified by Family Background'. *Advances in Life Course Research* 15: 27–40.

- Manting, Dorien, and Anne Marthe Bouman. 2006. 'Short- and Long-Term Economic Consequences of the Dissolution of Marital and Consensual Unions . The Example of the Netherlands'. *European Sociological Review* 22 (4): 413–29. <https://doi.org/10.1093/esr/jcl005>.
- McKeever, Matthew, and Nicholas H. Wolfinger. 2001. 'Reexamining the Economic Costs of Marital Disruption for Women'. *Social Science Quarterly* 82 (1): 202–17. <https://doi.org/10.1111/0038-4941.00018>.
- Misra, Joya, Stephanie Moller, and Michelle J. Budig. 2007. 'Work—Family Policies and Poverty for Partnered and Single Women in Europe and North America'. *Gender & Society* 21 (6): 804–27. <https://doi.org/10.1177/0891243207308445>.
- Mjoli, T., M. Dywili, and N. Dodd. 2013. 'Demographic Determinants of Work-Family Conflict among Female Factory Workers in South Africa'. *Journal of Economics, Business and Management*, 39–41. <https://doi.org/10.7763/JOEBM.2013.V1.9>.
- Peterson, Richard R. 1996. 'A Re-Evaluation of the Economic Consequences of Divorce'. *American Sociological Review* 61 (3): 528–36. <https://doi.org/10.2307/2096363>.
- Poortman, Anne-rigt. 2000. 'Sex Differences in the Economic Consequences of Separation A Panel Study of the Netherlands'. *European Economic Review* 16 (4): 367–83.
- Sjölander, Arvid, Paul Lichtenstein, Henrik Larsson, and Yudi Pawitan. 2013. 'Between-within Models for Survival Analysis'. *Statistics in Medicine* 32 (18): 3067–76. <https://doi.org/10.1002/sim.5767>.
- Smock, Pamela J. 1993. 'The Economic Costs of Marital Disruption for Young Women over the Past Two Decades'. *Demography* 30 (3): 353–71. <https://doi.org/10.2307/2061645>.
- . 1994. 'Gender and the Short-Run Economic Consequences of Marital Disruption\*'. *Social Forces* 73 (1): 243–62.
- Smock, Pamela J, Wendy Manning, and Sanjiv Gupta. 1999. 'The Effect of Marriage and Divorce on Women 's Economic Well-Being'. *American Sociological Review* 64 (6): 794–812.
- Sørensen, Annementte. 1994. 'Women's Economic Risk and the Economic Position of Single Mothers'. *European Sociological Review* 10 (2): 173–88.
- Strohschein, L, P McDonough, G Monette, and Q Shao. 2005. 'Marital Transitions and Mental Health: Are There Gender Differences in the Short-Term Effects of Marital Status Change?' *Social Science & Medicine*, no. 2293–2303.
- Tach, Laura M., and Alicia Eads. 2015. 'Trends in the Economic Consequences of Marital and Cohabitation Dissolution in the United States'. *Demography* 52 (2): 401–32. <https://doi.org/10.1007/s13524-015-0374-5>.
- Tamborini, Christopher R., Kenneth A. Couch, and Gayle L. Reznik. 2015. 'Long-Term Impact of Divorce on Women's Earnings across Multiple Divorce Windows: A Life Course Perspective'. *Advances in Life Course Research* 26 (December): 44–59. <https://doi.org/10.1016/j.alcr.2015.06.001>.
- Uunk, Wilfred. 2004. 'The Economic Consequences of Divorce for Women in the European Union: The Impact of Welfare State Arrangements'. *European Journal of Population/ Revue Européenne de Démographie* 20 (3): 251–85. <https://doi.org/10.1007/s10680-004-1694-0>.
- Van Winkle, Zachary, and Anette Eva Fasang. 2020. 'Parenthood Wage Gaps Across the Life Course: A Comparison by Gender and Race'. *Journal of Marriage and Family*.
- Vaus, David de, Matthew Gray, Lixia Qu, and David Stanton. 2017. 'The Economic Consequences of Divorce in Six OECD Countries'. *Australian Journal of Social Issues* 52 (2): 180–99. <https://doi.org/10.1002/ajs4.13>.
- Williams, K. 2003. 'Has the Future of Marriage Arrived? A Contemporary Examination of Gender, Marriage, and Psychological Well-Being'. *Journal of Health and Social Behavior* 44: 470–87.
- Williams, K, and A Dunne-Bryant. 2006. 'Divorce and Adults Psychological Well-Being: Clarifying the Role of Gender and Child Age'. *Journal of Marriage and Family* 68: 1178–96.

## FIGURES

Figure 1: Change in Gross Household Income, Working Hours, and Remarriage of the Divorce Sample Prior and Following Divorce by Family Size

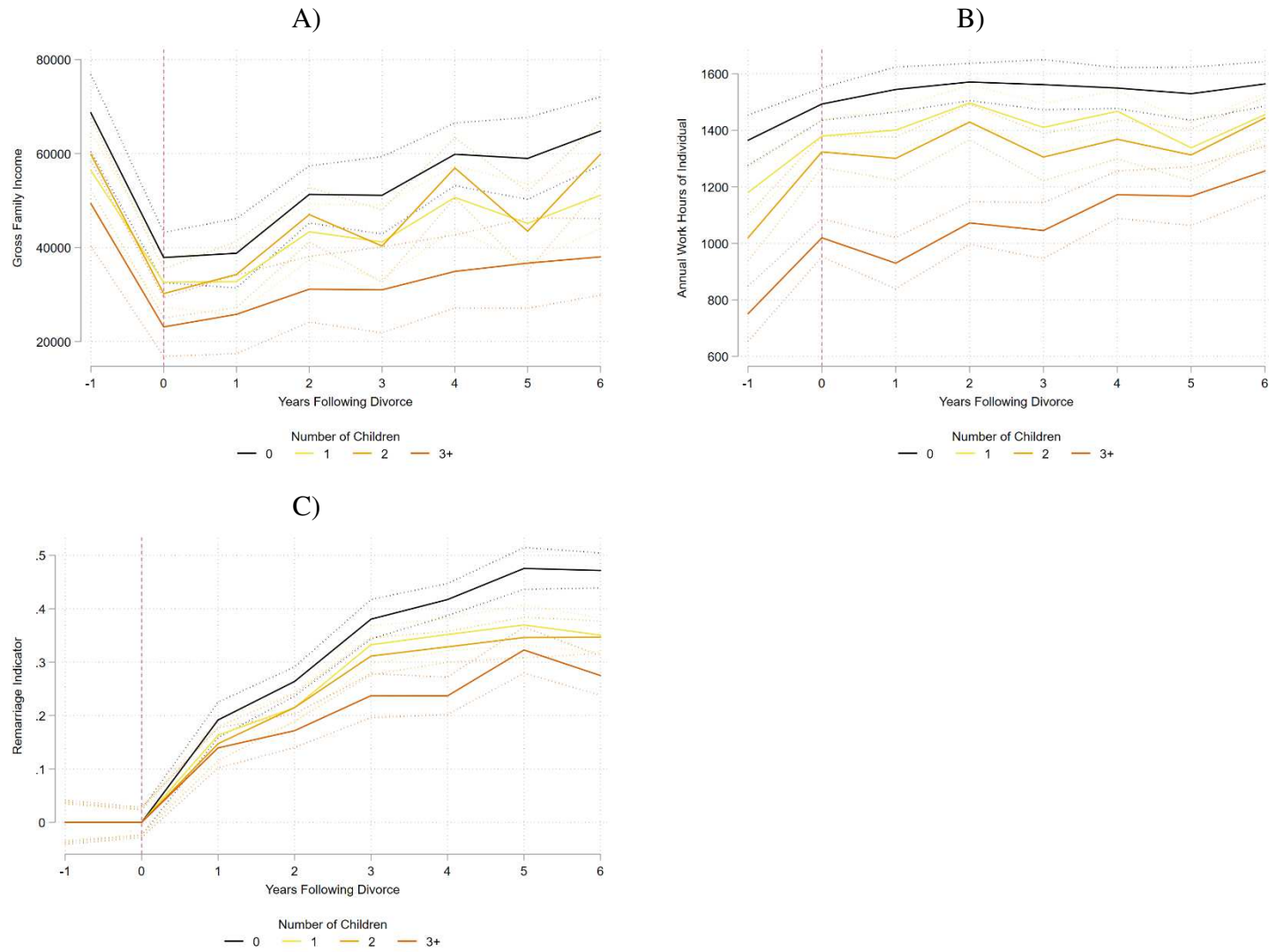
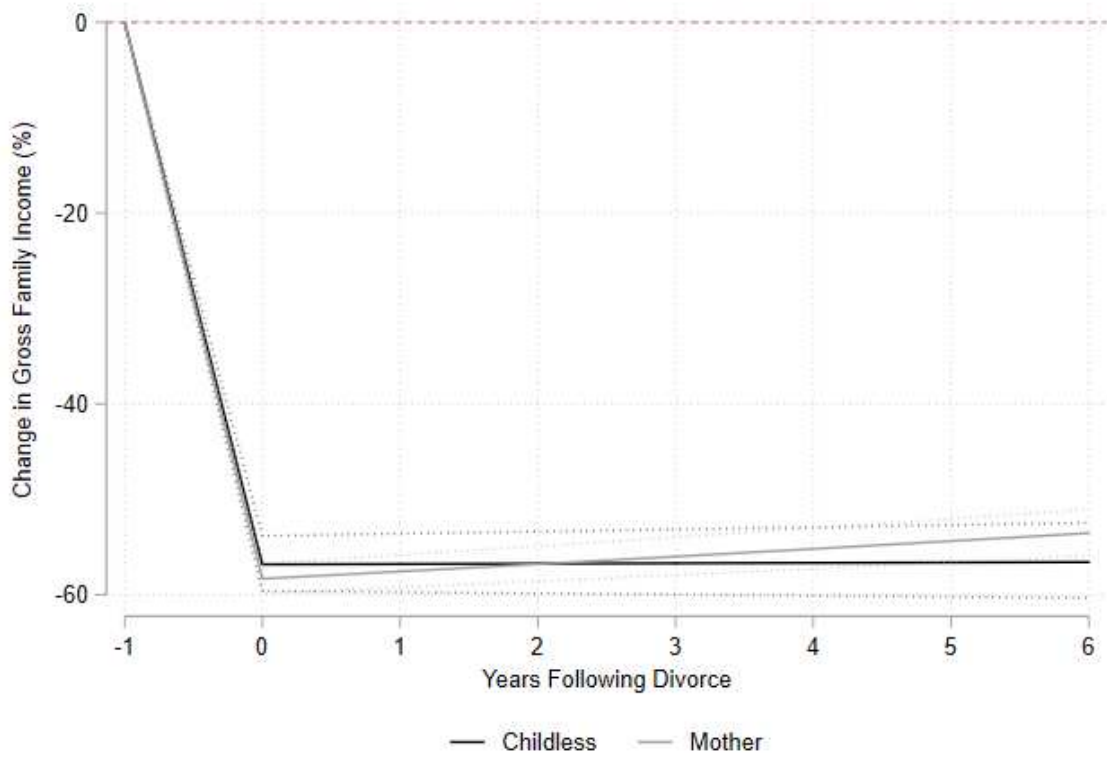


Figure 2: Change in Gross Household Income for Childless Women and Mothers

A)



B)

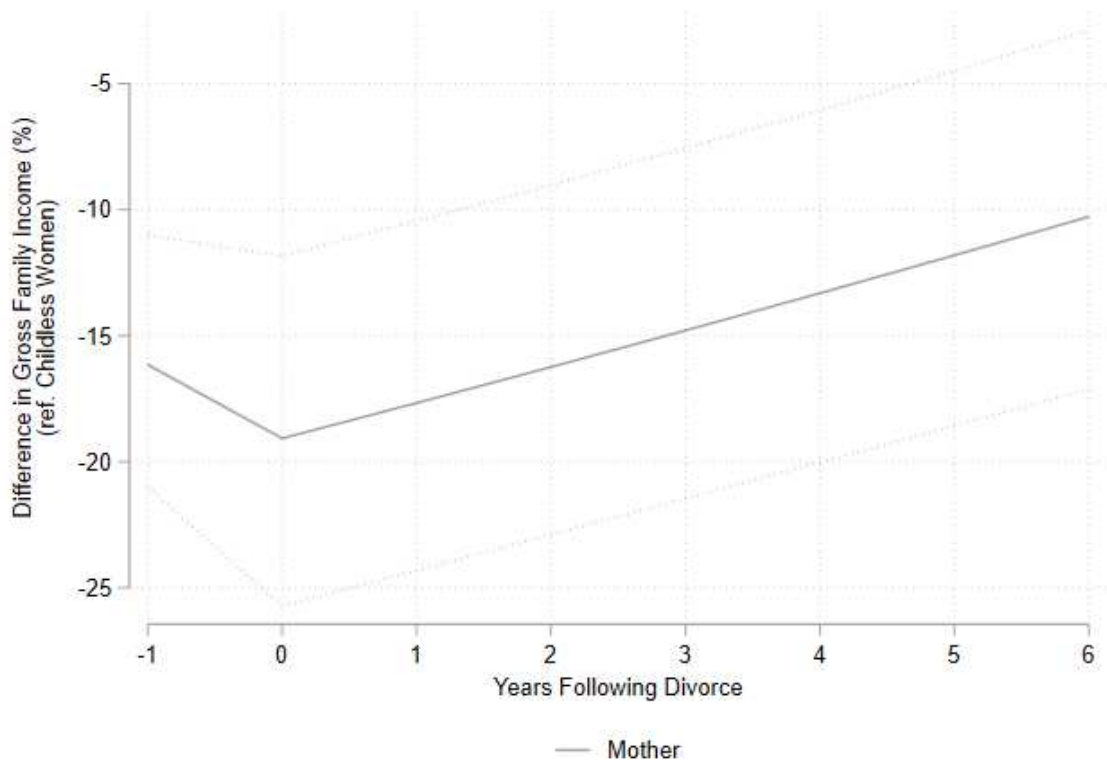
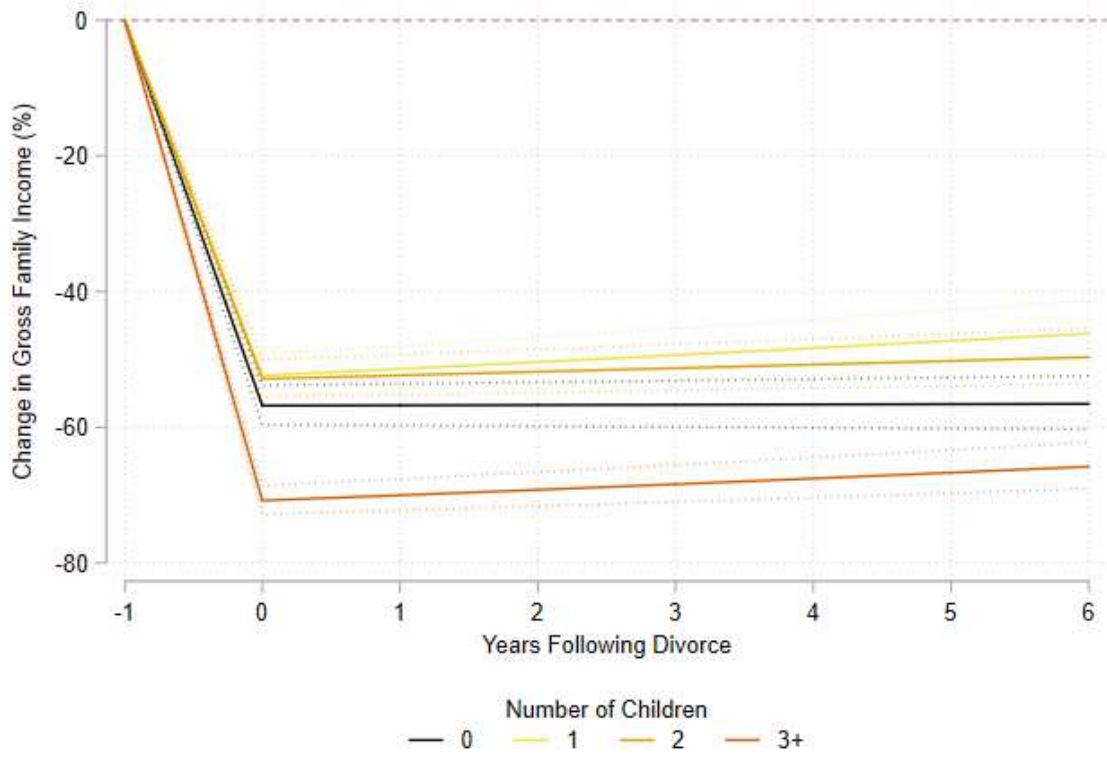


Figure 3: Change in Gross Household Income by Family Size

A)



B)

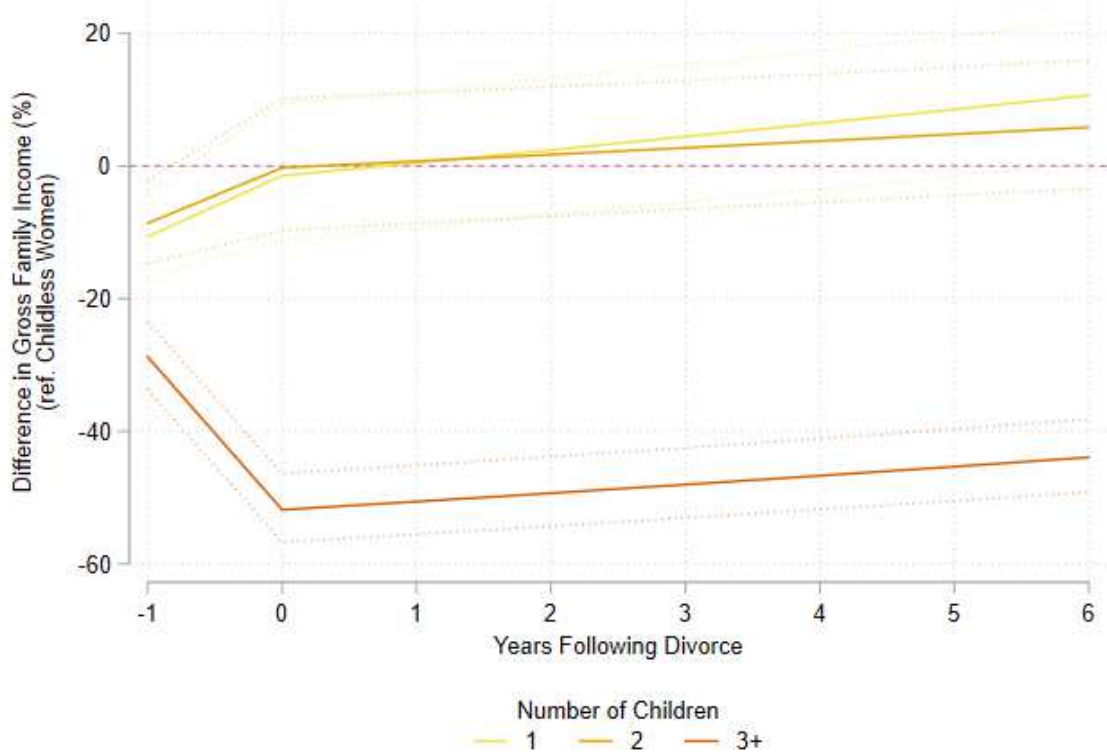
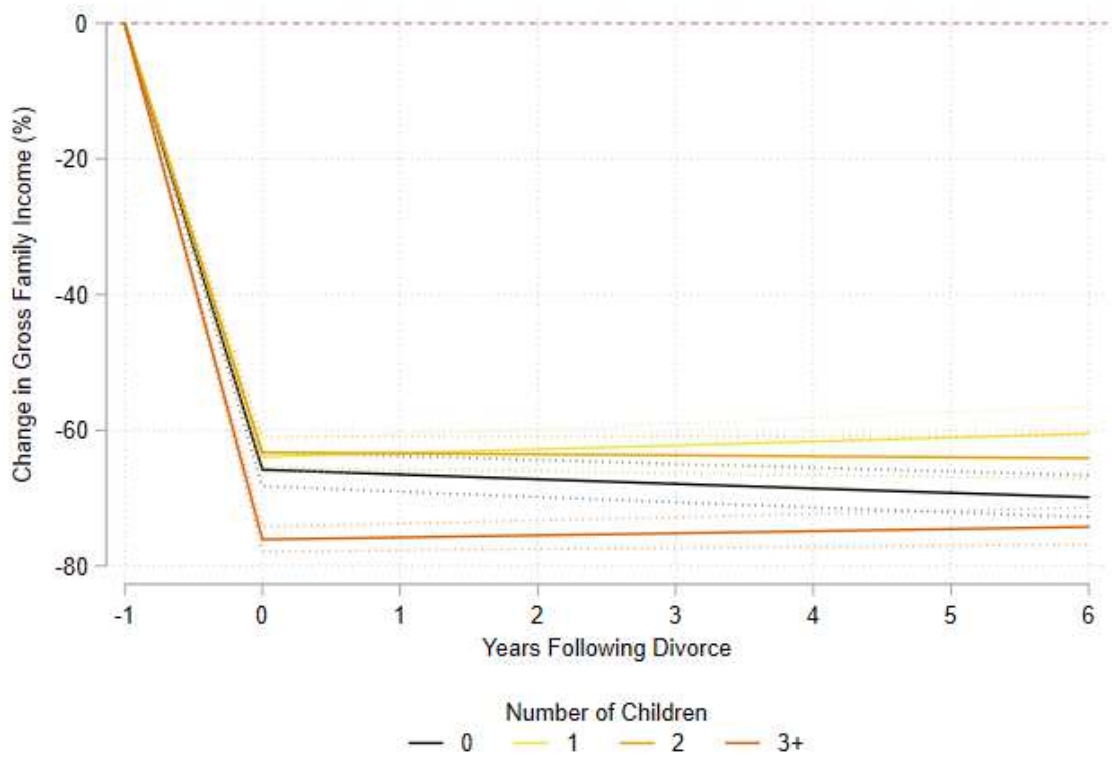


Figure 4: Change in Gross Household Income by Family Size Adjusted for Remarriage

A)



B)

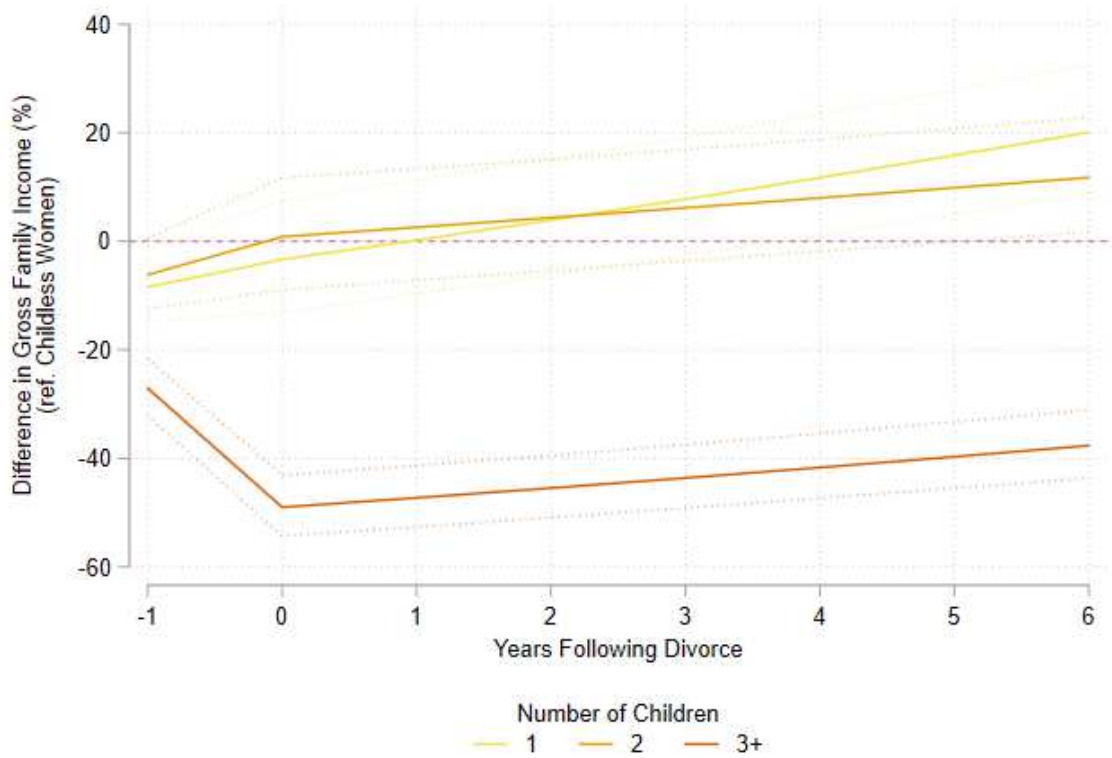
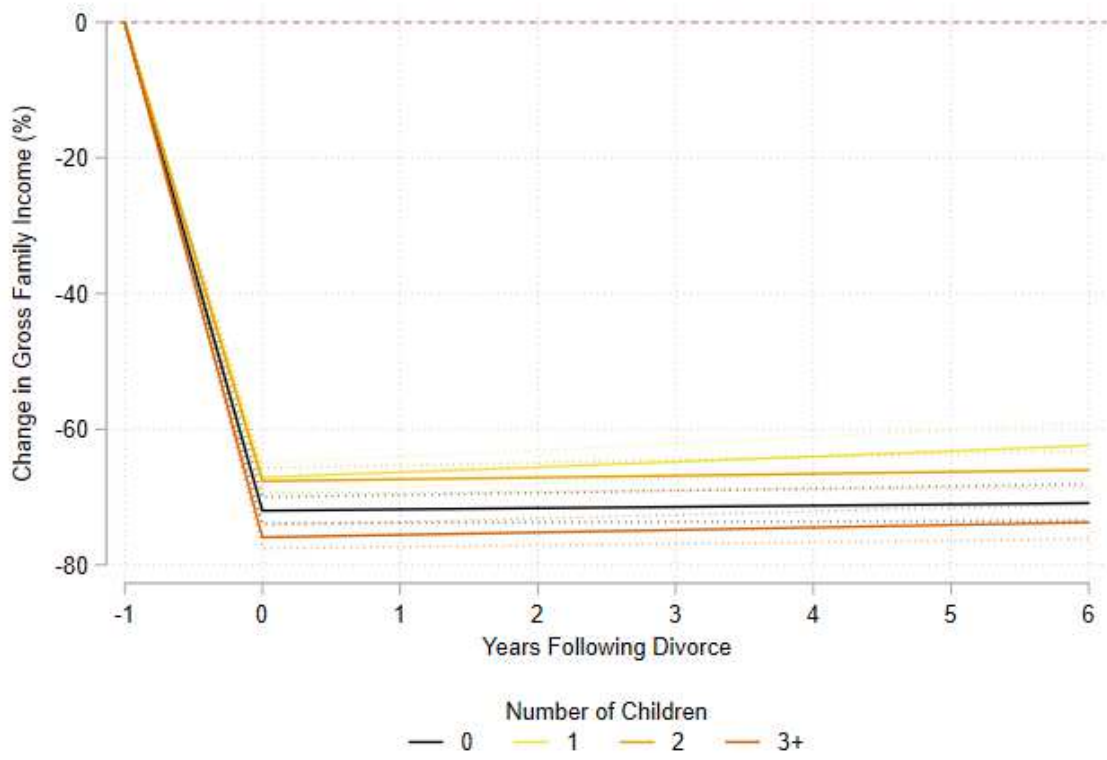


Figure 5: Change in Gross Household Income by Family Size Adjusted for Working Hours

A)



B)

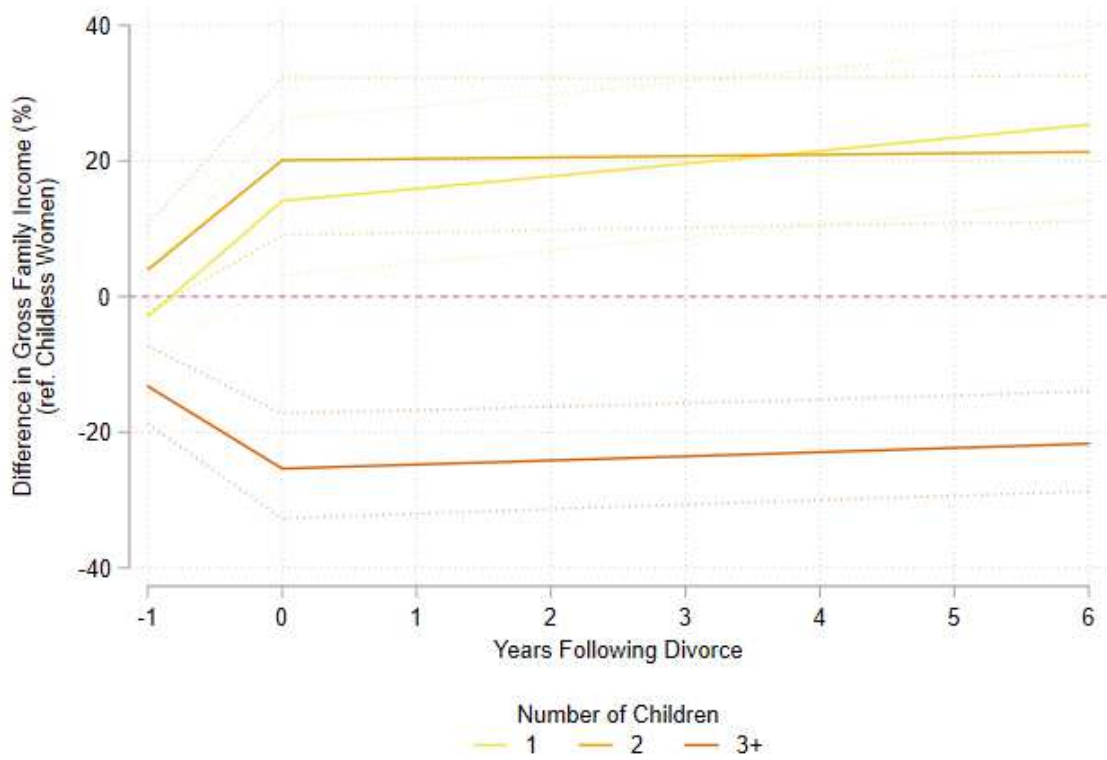
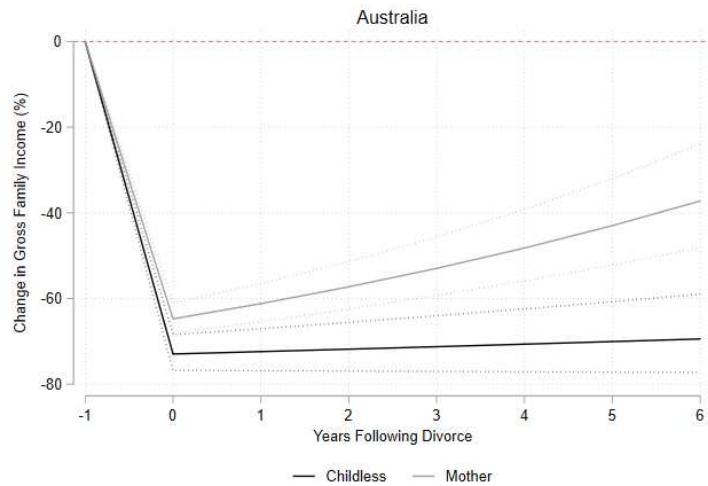
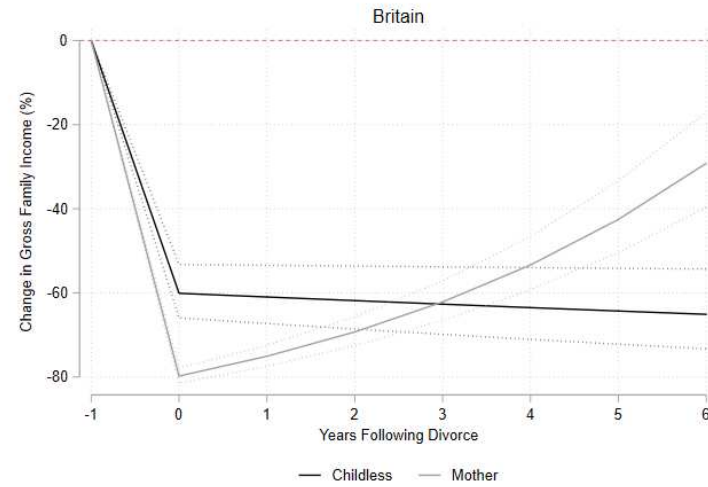
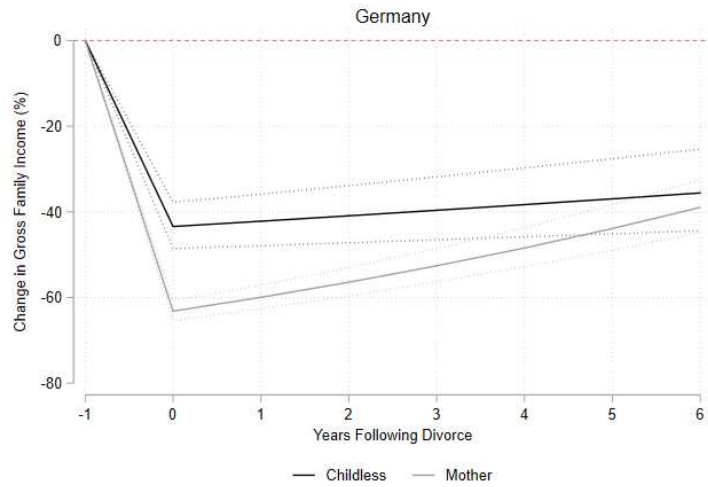




Figure 6: Change in Gross Household Income for Childless Women and Mothers across Countries

A)



B)

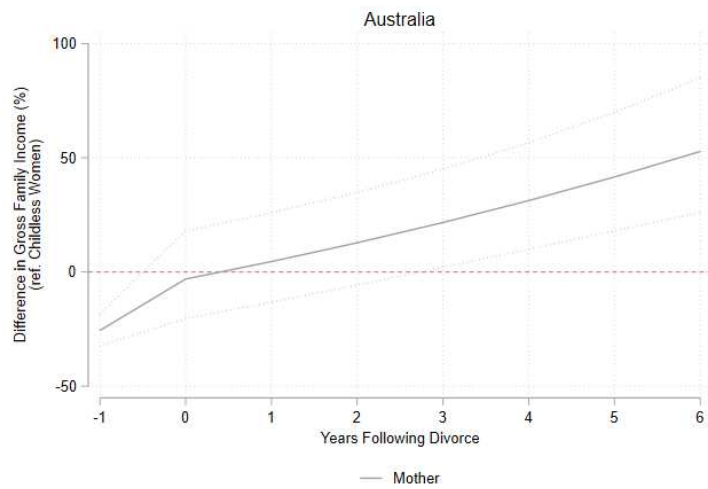
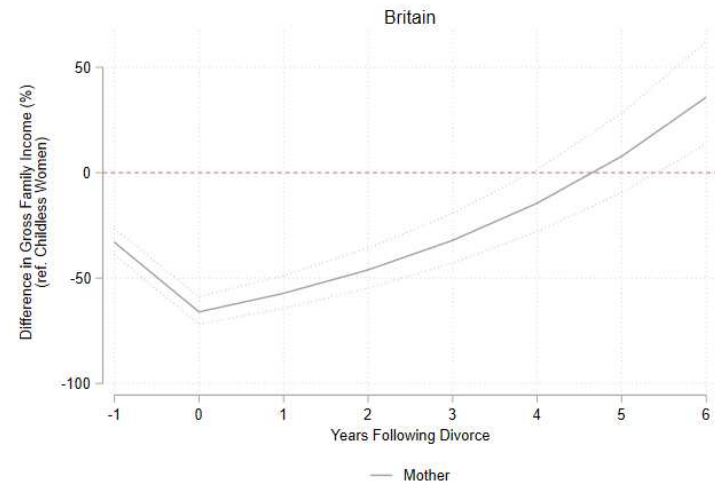
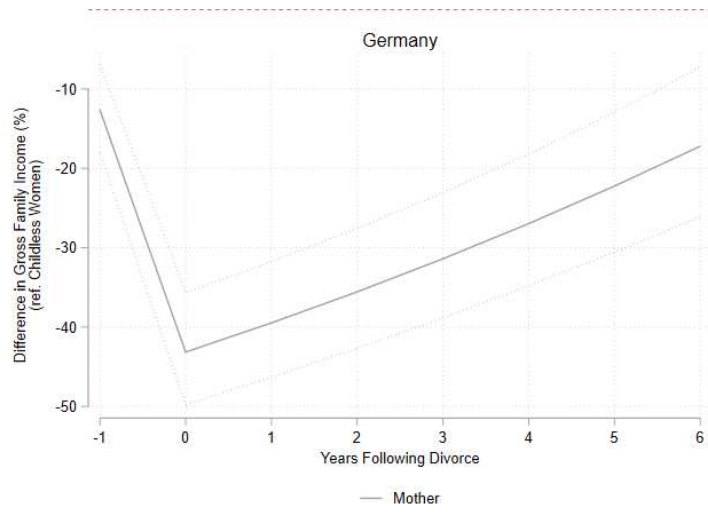
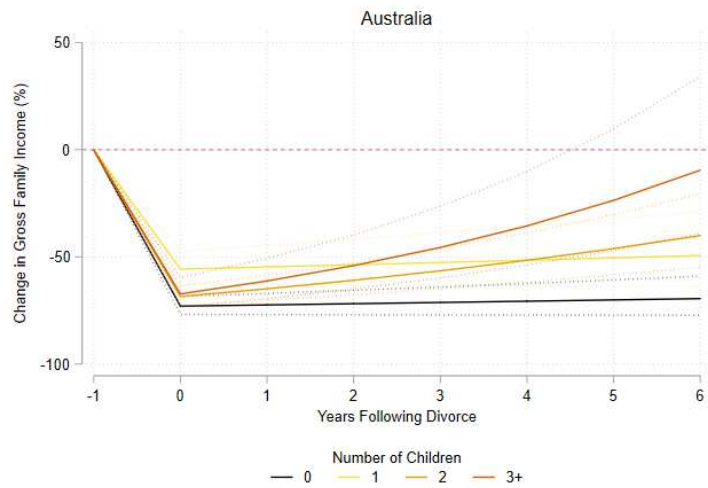
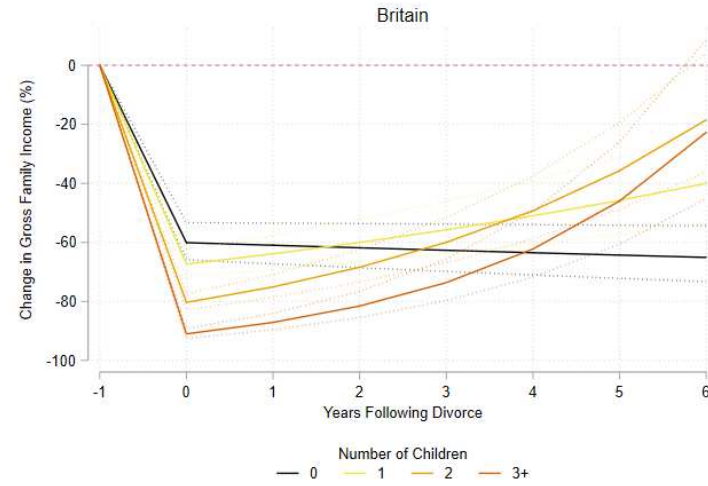
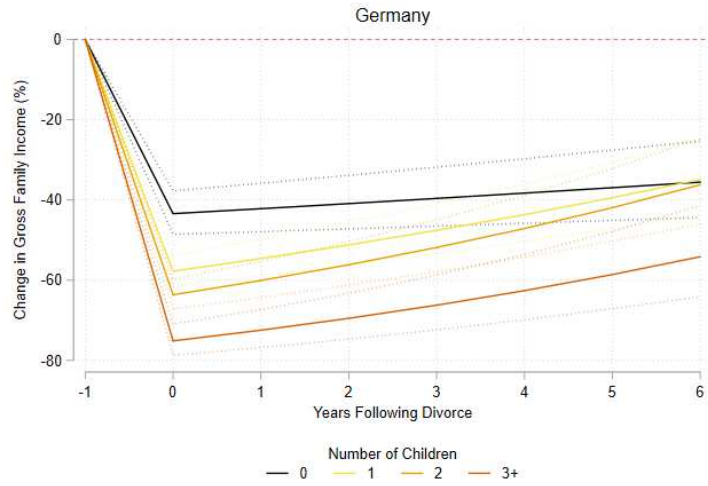


Figure 7: Change in Gross Household Income by Family Size across Countries

A)



B)

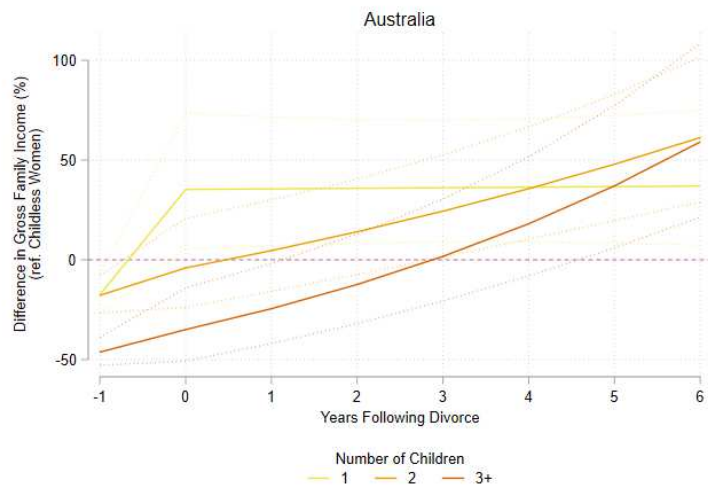
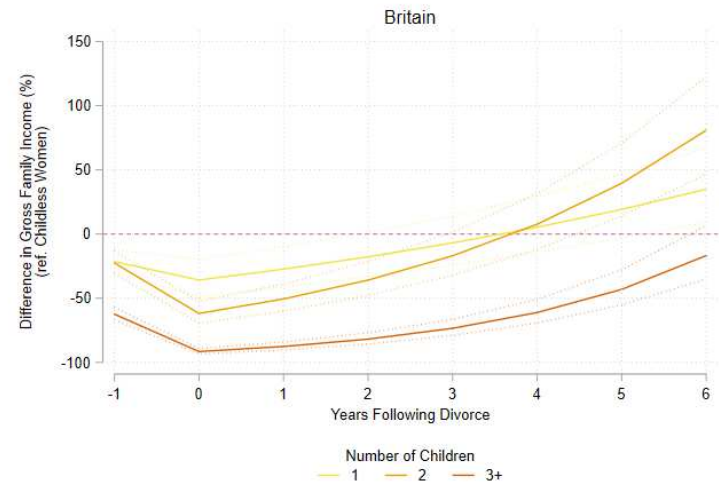
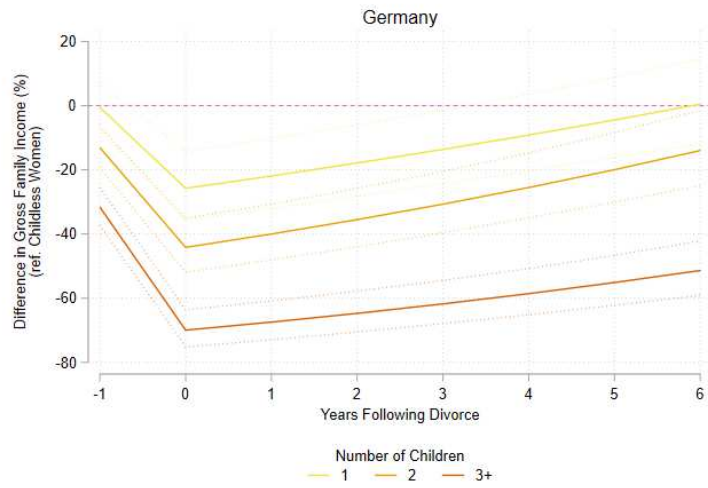
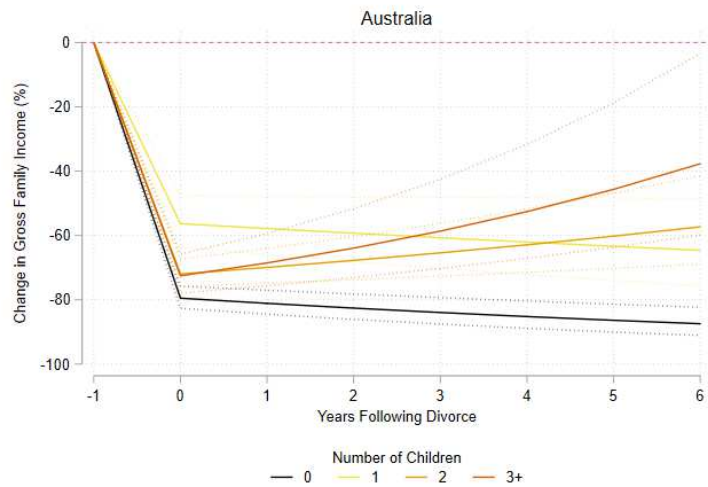
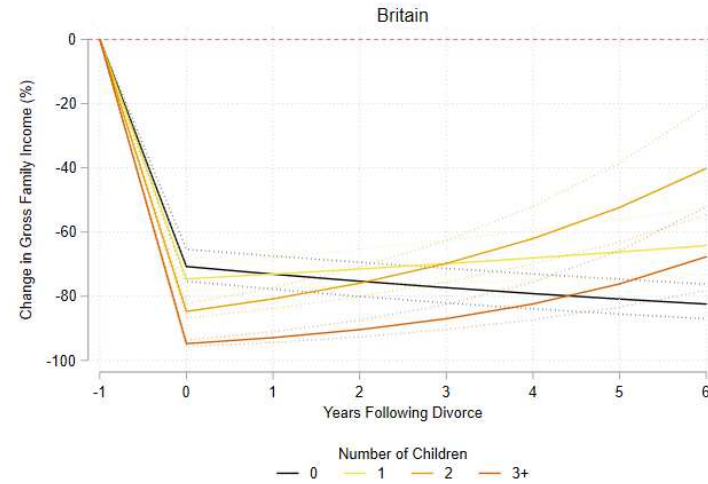
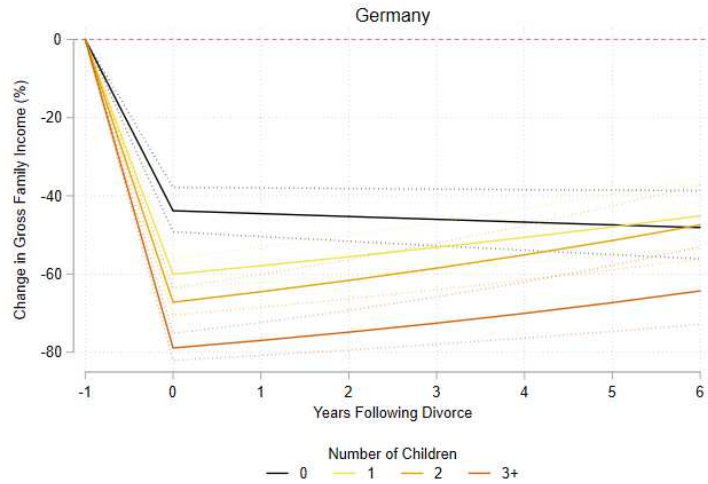


Figure 8: Change in Gross Household Income by Family Size across Countries Adjusted for Remarriage

A)



B)

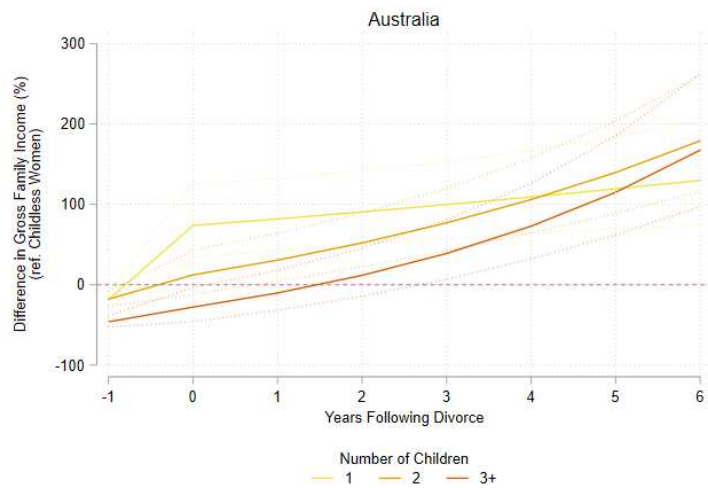
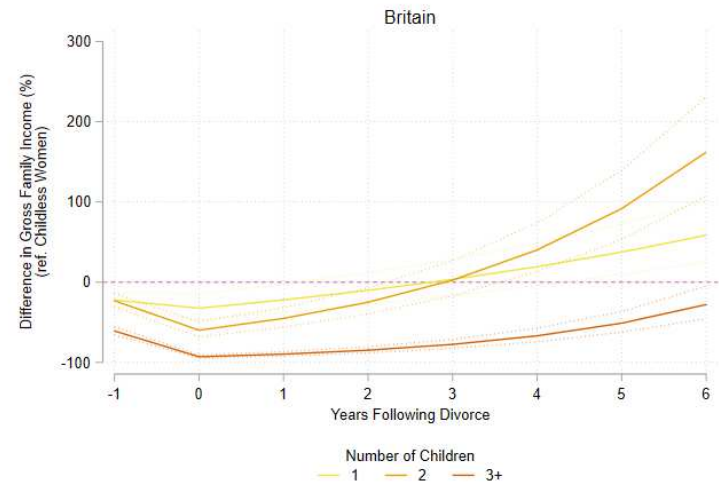
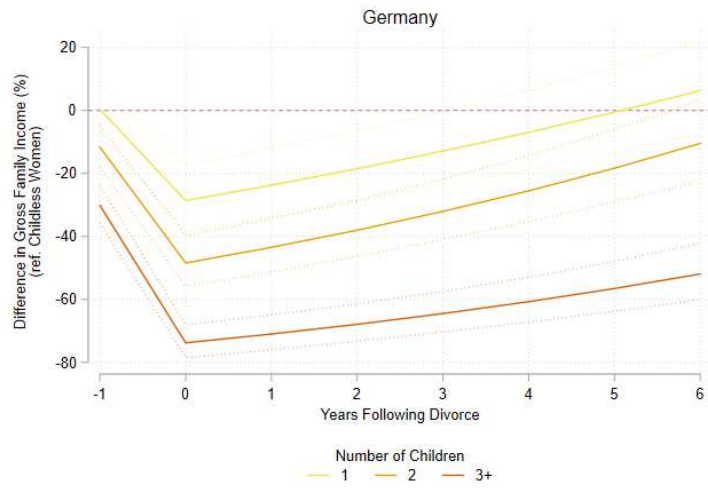
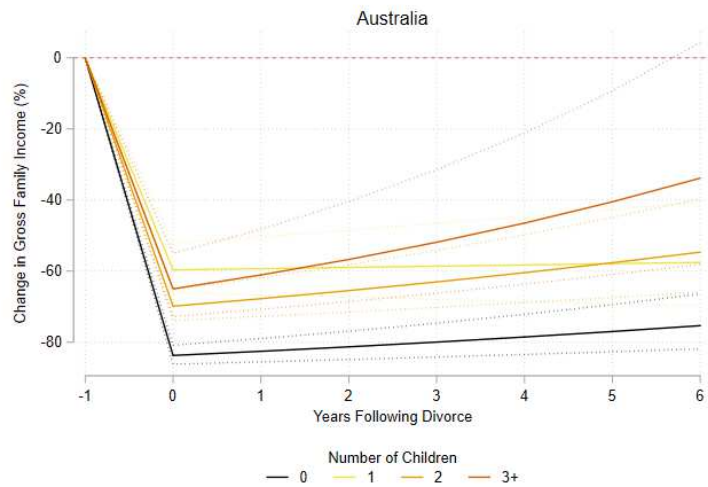
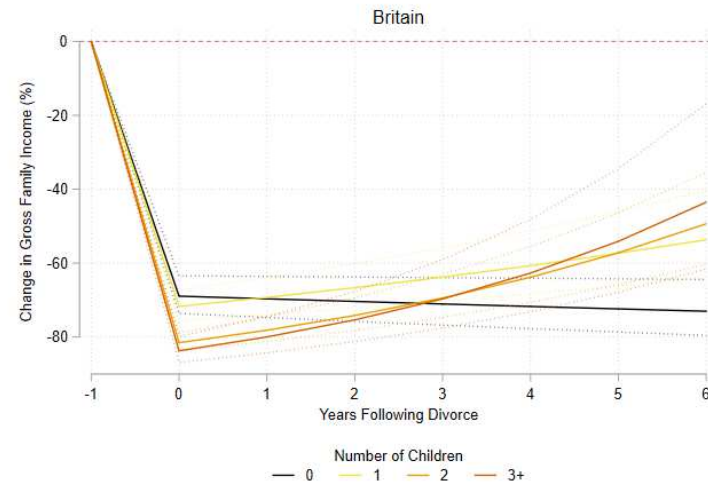
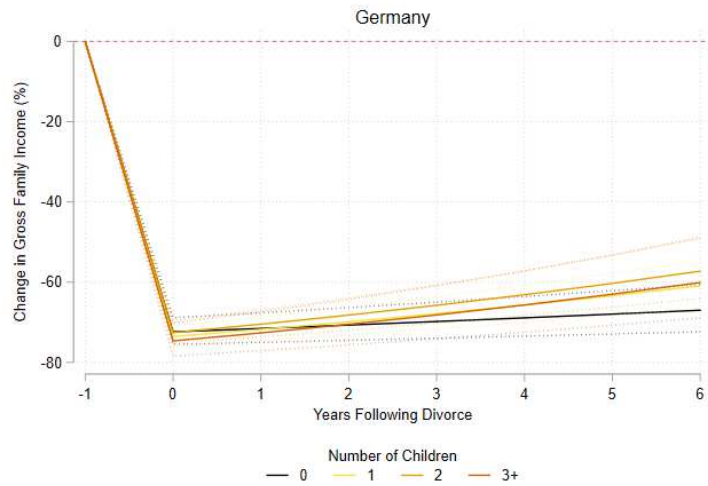
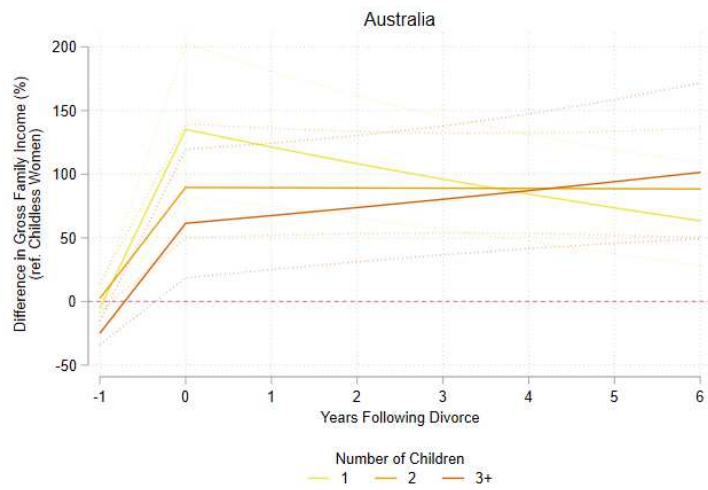
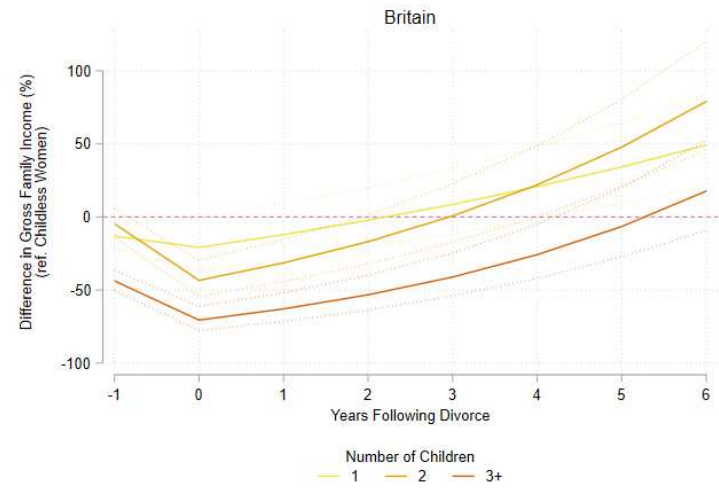
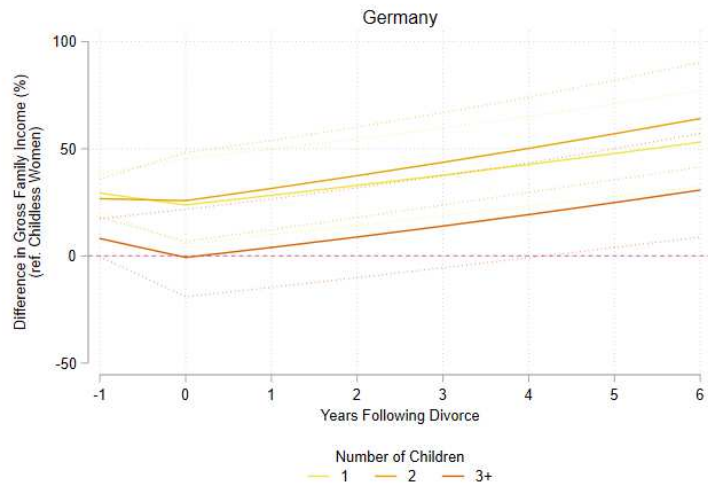


Figure 9: Change in Gross Household Income by Family Size across Countries Adjusted for Working Hours

A)



B)





## APPENDIX

*Table A1: Summary Statistics - USA*

|                                 | Childless             |                       | 1 Child               |                       | 2 Children            |                                   | 3+ Children           |                                   |
|---------------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------------------|-----------------------|-----------------------------------|
|                                 | Divorced              | Control               | Divorced              | Control               | Divorced              | Control                           | Divorced              | Control                           |
| Gross Family Income             | 66187.11<br>(68462.7) | 79865.68<br>(72216.8) | 54504.94<br>(58413.8) | 83707.91<br>(71965.3) | 55524.99<br>(90768.6) | 93394.66<br>(1.0e <sup>05</sup> ) | 43918.10<br>(50338.3) | 82745.02<br>(1.0e <sup>05</sup> ) |
| Number of Children in HH        | 0.76<br>(1.11)        | 0.00<br>(0.00)        | 1.16<br>(1.01)        | 0.53<br>(0.50)        | 1.55<br>(1.10)        | 1.14<br>(0.86)                    | 2.35<br>(1.68)        | 1.98<br>(1.57)                    |
| Number of Years of Education    | 12.75<br>(2.20)       | 12.70<br>(2.92)       | 12.61<br>(1.95)       | 12.73<br>(2.47)       | 12.52<br>(2.01)       | 13.19<br>(2.36)                   | 11.82<br>(2.21)       | 12.25<br>(2.62)                   |
| Age of Youngest Child           | 4.32<br>(6.24)        | 0.00<br>(0.00)        | 8.03<br>(6.52)        | 5.68<br>(6.64)        | 8.06<br>(6.47)        | 7.14<br>(6.63)                    | 8.01<br>(6.47)        | 7.74<br>(6.54)                    |
| Remarriage Indicator            | 0.28<br>(0.45)        | 0.00<br>(0.00)        | 0.24<br>(0.43)        | 0.00<br>(0.00)        | 0.20<br>(0.40)        | 0.00<br>(0.00)                    | 0.19<br>(0.39)        | 0.00<br>(0.00)                    |
| Annual Work Hours of Individual | 1393.27<br>(908.17)   | 1175.09<br>(951.74)   | 1316.49<br>(900.51)   | 1183.84<br>(911.13)   | 1274.83<br>(911.70)   | 1159.90<br>(898.15)               | 1077.49<br>(956.06)   | 943.17<br>(900.28)                |
| Age in years                    | 37.01<br>(10.65)      | 44.52<br>(13.96)      | 35.82<br>(10.36)      | 39.85<br>(12.44)      | 35.89<br>(10.18)      | 38.23<br>(11.30)                  | 37.46<br>(10.39)      | 40.32<br>(11.31)                  |
| Year of Divorce                 | 1993.77<br>(12.38)    |                       | 1993.60<br>(12.32)    |                       | 1993.55<br>(12.53)    |                                   | 1992.26<br>(13.46)    |                                   |
| Age at Divorce                  | 33.02<br>(9.22)       |                       | 32.08<br>(8.63)       |                       | 32.24<br>(7.09)       |                                   | 33.07<br>(6.38)       |                                   |
| Year of Birth                   | 1960.70<br>(13.35)    | 1952.53<br>(23.93)    | 1961.48<br>(12.38)    | 1958.69<br>(18.60)    | 1961.26<br>(13.25)    | 1959.64<br>(16.56)                | 1959.14<br>(14.89)    | 1955.40<br>(17.71)                |
| N - Subjects                    | 921                   | 2,305                 | 942                   | 1,881                 | 973                   | 2,804                             | 671                   | 2,811                             |
| N - Observations                | 12,498                | 12,019                | 12,950                | 14,449                | 14,265                | 32,793                            | 9,379                 | 38,189                            |

Table A2: Regression Results for Childless Women and Mothers

|                             | USA                 | Germany             | Britain             | Australia           |
|-----------------------------|---------------------|---------------------|---------------------|---------------------|
| Divorce                     |                     |                     |                     |                     |
| Between                     | -0.405*<br>(0.133)  | 0.363<br>(0.225)    | -1.369**<br>(0.269) | -0.053<br>(0.596)   |
| Within                      | -0.840**<br>(0.034) | -0.570**<br>(0.049) | -0.919**<br>(0.081) | -1.307**<br>(0.078) |
| Duration                    |                     |                     |                     |                     |
| Between                     | 0.029+<br>(0.012)   | -0.042<br>(0.027)   | 0.097<br>(0.052)    | 0.018<br>(0.100)    |
| Within                      | 0.001<br>(0.002)    | 0.022**<br>(0.004)  | -0.022+<br>(0.009)  | 0.020<br>(0.012)    |
| Motherhood (ref. Childless) |                     |                     |                     |                     |
| Mother                      | -0.029<br>(0.034)   | -0.107*<br>(0.034)  | -0.325**<br>(0.048) | -0.255**<br>(0.049) |
| Divorce*Motherhood          |                     |                     |                     |                     |
| Between                     | -0.426*<br>(0.133)  | -0.821**<br>(0.210) | -0.222<br>(0.267)   | -0.951<br>(0.566)   |
| Within                      | -0.035<br>(0.039)   | -0.430**<br>(0.058) | -0.679**<br>(0.092) | 0.265*<br>(0.093)   |
| Duration*Motherhood         |                     |                     |                     |                     |
| Between                     | -0.027<br>(0.014)   | 0.075+<br>(0.033)   | -0.123<br>(0.065)   | 0.082<br>(0.121)    |
| Within                      | 0.017**<br>(0.002)  | 0.063**<br>(0.005)  | 0.231**<br>(0.011)  | 0.076**<br>(0.014)  |
| Sample (ref. Control)       |                     |                     |                     |                     |
| Divorce                     | 0.063<br>(0.059)    | -0.172<br>(0.105)   | 0.201<br>(0.148)    | -0.151<br>(0.207)   |
| Age                         |                     |                     |                     |                     |
| Between                     | 0.026**<br>(0.001)  | 0.048**<br>(0.002)  | 0.027**<br>(0.002)  | 0.030**<br>(0.002)  |
| Within                      | 0.006**<br>(0.001)  | -0.036**<br>(0.001) | 0.012**<br>(0.001)  | 0.006**<br>(0.002)  |
| Age (sq.)                   |                     |                     |                     |                     |
| Between                     | -0.002**<br>(0.000) | -0.005**<br>(0.000) | -0.003**<br>(0.000) | -0.004**<br>(0.000) |
| Within                      | -0.002**<br>(0.000) | -0.004**<br>(0.000) | -0.001**<br>(0.000) | -0.003**<br>(0.000) |
| Year                        | 0.006**             | -0.003+             | 0.015*              | 0.045**             |

|                |                     |                     |                     |                     |
|----------------|---------------------|---------------------|---------------------|---------------------|
|                | (0.001)             | (0.001)             | (0.005)             | (0.006)             |
| Constant       | 11.242**<br>(0.037) | 10.854**<br>(0.035) | 10.619**<br>(0.066) | 11.758**<br>(0.049) |
| Random Effects |                     |                     |                     |                     |
| Constant       | 0.162**<br>(0.008)  | 0.380**<br>(0.006)  | 0.599**<br>(0.008)  | 0.580**<br>(0.009)  |
| Residual       | 0.240**<br>(0.002)  | 0.227**<br>(0.002)  | 0.271**<br>(0.003)  | 0.249**<br>(0.003)  |
| <hr/>          |                     |                     |                     |                     |
| N              | 148709              | 138264              | 71923               | 60594               |

Note: Unstandardized regression coefficients and standard errors in parentheses displayed. Stat. sig.: +  $p < 0.05$ , \*  $p < 0.01$ , \*\*  $p < 0.001$ . Data not weighted.

Table A3: Regression Results by Family Size

|                                     | USA                 | Germany             | Britain             | Australia           |
|-------------------------------------|---------------------|---------------------|---------------------|---------------------|
| <b>Divorce</b>                      |                     |                     |                     |                     |
| Between                             | -0.379*<br>(0.132)  | 0.340<br>(0.224)    | -1.376**<br>(0.266) | 0.077<br>(0.596)    |
| Within                              | -0.840**<br>(0.034) | -0.570**<br>(0.049) | -0.919**<br>(0.080) | -1.307**<br>(0.078) |
| <b>Duration</b>                     |                     |                     |                     |                     |
| Between                             | 0.027+<br>(0.012)   | -0.042<br>(0.027)   | 0.099<br>(0.052)    | 0.009<br>(0.100)    |
| Within                              | 0.001<br>(0.002)    | 0.022**<br>(0.004)  | -0.022+<br>(0.009)  | 0.020<br>(0.012)    |
| <b>Family Size (ref. Childless)</b> |                     |                     |                     |                     |
| 1                                   | 0.018<br>(0.042)    | 0.028<br>(0.038)    | -0.184*<br>(0.060)  | -0.141+<br>(0.062)  |
| 2                                   | 0.084+<br>(0.039)   | -0.109*<br>(0.038)  | -0.192**<br>(0.058) | -0.180*<br>(0.060)  |
| 3+                                  | -0.184**<br>(0.039) | -0.361**<br>(0.043) | -0.857**<br>(0.069) | -0.549**<br>(0.068) |
| <b>Divorce*Family Size</b>          |                     |                     |                     |                     |
| Between                             |                     |                     |                     |                     |
| 1                                   | -0.137<br>(0.161)   | -0.719*<br>(0.240)  | 0.209<br>(0.329)    | -0.987<br>(0.710)   |
| 2                                   | -0.510*<br>(0.163)  | -0.917**<br>(0.271) | 0.222<br>(0.330)    | -0.417<br>(0.728)   |
| 3+                                  | -0.887**<br>(0.181) | -1.073**<br>(0.324) | -1.397**<br>(0.392) | -1.710+<br>(0.797)  |
| Within                              |                     |                     |                     |                     |
| 1                                   | 0.098+<br>(0.047)   | -0.292**<br>(0.067) | -0.201<br>(0.108)   | 0.493**<br>(0.117)  |
| 2                                   | 0.088<br>(0.045)    | -0.442**<br>(0.071) | -0.708**<br>(0.106) | 0.154<br>(0.107)    |
| 3+                                  | -0.391**<br>(0.050) | -0.822**<br>(0.093) | -1.489**<br>(0.124) | 0.191<br>(0.132)    |

|                       |          |          |          |          |
|-----------------------|----------|----------|----------|----------|
| Duration*Family Size  |          |          |          |          |
| Between               |          |          |          |          |
| 1                     | -0.050*  | 0.047    | -0.185+  | 0.055    |
|                       | (0.017)  | (0.038)  | (0.080)  | (0.153)  |
| 2                     | -0.031   | 0.083    | -0.200+  | 0.043    |
|                       | (0.017)  | (0.044)  | (0.079)  | (0.153)  |
| 3+                    | 0.019    | 0.132+   | 0.053    | 0.154    |
|                       | (0.019)  | (0.054)  | (0.101)  | (0.168)  |
| Within                |          |          |          |          |
| 1                     | 0.019**  | 0.050**  | 0.124**  | 0.002    |
|                       | (0.003)  | (0.006)  | (0.013)  | (0.018)  |
| 2                     | 0.010**  | 0.072**  | 0.259**  | 0.087**  |
|                       | (0.003)  | (0.007)  | (0.013)  | (0.017)  |
| 3+                    | 0.025**  | 0.080**  | 0.381**  | 0.149**  |
|                       | (0.003)  | (0.009)  | (0.016)  | (0.020)  |
| Sample (ref. Control) |          |          |          |          |
| Divorced              | 0.048    | -0.176   | 0.172    | -0.237   |
|                       | (0.059)  | (0.105)  | (0.146)  | (0.208)  |
| Age                   |          |          |          |          |
| Between               |          |          |          |          |
|                       | 0.028**  | 0.048**  | 0.028**  | 0.030**  |
|                       | (0.002)  | (0.002)  | (0.002)  | (0.002)  |
| Within                |          |          |          |          |
|                       | 0.006**  | -0.036** | 0.012**  | 0.006**  |
|                       | (0.001)  | (0.001)  | (0.001)  | (0.002)  |
| Age (sq.)             |          |          |          |          |
| Between               |          |          |          |          |
|                       | -0.003** | -0.005** | -0.003** | -0.004** |
|                       | (0.000)  | (0.000)  | (0.000)  | (0.000)  |
| Within                |          |          |          |          |
|                       | -0.002** | -0.004** | -0.001** | -0.003** |
|                       | (0.000)  | (0.000)  | (0.000)  | (0.000)  |
| Year                  | 0.005**  | -0.002   | 0.013*   | 0.043**  |
|                       | (0.001)  | (0.001)  | (0.005)  | (0.006)  |
| Constant              | 11.246** | 10.888** | 10.641** | 11.779** |
|                       | (0.037)  | (0.035)  | (0.065)  | (0.049)  |
| Random Effects        |          |          |          |          |
| Constant              | 0.152**  | 0.376**  | 0.584**  | 0.577**  |
|                       | (0.008)  | (0.006)  | (0.008)  | (0.009)  |

|          |                    |                    |                    |                    |
|----------|--------------------|--------------------|--------------------|--------------------|
| Residual | 0.239**<br>(0.002) | 0.227**<br>(0.002) | 0.269**<br>(0.003) | 0.248**<br>(0.003) |
|----------|--------------------|--------------------|--------------------|--------------------|

---

|   |        |        |       |       |
|---|--------|--------|-------|-------|
| N | 148709 | 138264 | 71923 | 60594 |
|---|--------|--------|-------|-------|

---

Note: Unstandardized regression coefficients and standard errors in parentheses displayed. Stat. sig.: +  $p < 0.05$ , \*  $p < 0.01$ , \*\*  $p < 0.001$ . Data not weighted.