

Fischer, Björn; Müller, Kai-Uwe

**Article — Published Version**

## Time to care? The effects of retirement on informal care provision

Journal of Health Economics

**Provided in Cooperation with:**

German Institute for Economic Research (DIW Berlin)

*Suggested Citation:* Fischer, Björn; Müller, Kai-Uwe (2020) : Time to care? The effects of retirement on informal care provision, Journal of Health Economics, ISSN 0167-6296, Elsevier, Amsterdam, Vol. 73, <https://doi.org/10.1016/j.jhealeco.2020.102350>

This Version is available at:

<https://hdl.handle.net/10419/225351>

**Standard-Nutzungsbedingungen:**

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

**Terms of use:**

*Documents in EconStor may be saved and copied for your personal and scholarly purposes.*

*You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.*

*If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.*



<https://creativecommons.org/licenses/by-nc-nd/4.0/>

# Time to care? The effects of retirement on informal care provision

Björn Fischer, Kai-Uwe Müller

## Supplementary material for online publication only

### Appendix A. Further information on institutions

This online Appendix provides additional information on two of the five pillars of the German system of social insurances (State Pension Insurance, Health Insurance, Accident Insurance, Unemployment Insurance and the State Long-time Care (LTC) Insurance), to explain the institutional setting for the two identification strategies used in the paper. We provide details on requirements for LTC benefit receipt (Appendix A.1), additional information on existing policies within the German LTC system that facilitate the simultaneous supply of labor and informal care (Appendix A.2), and on different retirement paths (Appendix A.3).

#### *Appendix A.1. Requirements for LTC insurance benefits*

If a person needs help with at least two activities of everyday life (cooking, mobility, etc.) for not less than 45 minutes per activity a day, and he or she additionally needs support in household maintenance, benefits are granted. In sum, a person must be in demand of 90 minutes of care per day.

#### *Appendix A.2. LTC policies facilitating supply of labor and informal care*

Since 2008 the ‘*Pflegezeitgesetz*’ guarantees anyone working in a firm with 15 or more employees to be released temporarily (6 months at the maximum) on a part- or full-time basis when the demand for care arises (BMJ, 2008). Introduced in 2012, the ‘*Familienpflegezeitgesetz*’ allows to further reduce the working time to a minimum of 15 hours per week for up to 24-month when

25 employees perform care for close relatives (BMJ, 2011). It includes a loan-  
like instrument to absorb the related income shock. The ‘Act to Strengthen  
Long-Term Care’ from 2015 bolstered the financial basis of the LTC system  
and provides carers with the opportunity to take time off their care duty for  
holidays and in cases of illness. It secures a 10-day job leave with benefits  
30 in emergency situations to organize caregiving arrangements. Firms are not  
obliged to register the take-up of these instruments which is why official statistics  
do not exist. According to the German government, the take-up of benefits for  
the ‘Familienpflegezeitgesetz’ amounted to 219 persons between Jan 1, 2015 and  
May 31, 2016 (Bundestag, 2016).

### 35 *Appendix A.3. Pension paths*

The German old-age provisions system consists of three pillars: state, employer-  
based, and private pension insurance schemes. The state pension system is still  
by far the most important pillar (BMAS, 2016). Eligibility for retirement ben-  
efits mainly depends on the number of years with paid contributions including  
40 periods in employment, with voluntary contributions, or recognized non-income  
periods. Until 2012 individuals could claim pension benefits through the regular  
pension system which required at least 5 years of contributions. Four additional  
paths were available to receive pension benefits:

- (1) Pension for women;
- 45 (2) Invalidity pension;
- (3) Pension after unemployment or old-age part-time work;
- (4) Pension for the long-term insured.

Within the pension for women and the invalidity pension regulations the ERA  
was set at age 60. The NRA was defined as 65 within pensions for women and as  
50 63 within invalidity pensions. The NRA for claiming early retirement benefits  
is defined at age 63. For cohorts born between 1946 and 1964 it is increasing  
from 65 to 67. Retiring at age 60 through the pension for women leads to a 18%  
decrease in benefits compared to using the NRA of 65. It amounts to 10.8%  
deduction for invalidity pension and a 9% deduction for women claiming early

55 retirement benefits at age 63 if born on Jan 1, 1952.

Before 2012 the regular old age pension threshold for men was 65. Since then, the regular old age pension threshold is gradually rising from 65 to 67 years for cohorts born between 1949 and 1964. Our data set does not contain any persons born after 1949 and aged 65 or older. The relevant old age pension  
60 age is 65 throughout our observation period.



## Appendix B. Further information on the data and estimation samples

This online Appendix provides further information on the Data set (SOEP) and sample construction in the ERA discontinuity analysis. It further gives a  
65 detailed description of the resulting data set in use.

### *Appendix B.1. Retirement information in the SOEP*

Individuals can state in which months of the previous year they received an old-age pension. This data is matched to the respective year and compared to the exact month of the interview. There are several definitions used in the  
70 literature to define retirement (see, e.g., Coe & Zamarro (2011); Insler (2014)). A RDD becomes more adequate, when the retirement information is precise. Given the type of information available in the SOEP, this is the optimal definition to realize a precise age measurement at retirement. Doing so we can use the retirement information until 2015 as it is reported retrospectively until  
75 2016. We can likewise use information on informal caregiving until 2015.

### *Appendix B.2. ERA discontinuity analysis: sample construction*

We eliminate *unemployed women* who are not yet retired from the main sample for the ERA discontinuity analysis. To avoid sample selection around retirement, these individuals are removed completely and all of their spells in  
80 later stages of retirement are discarded as well. Evidence on the distribution of observations across the sample shows that there is no sample selection problem: women who retire from employment are evenly distributed over the whole sample (Figures A10 and A11). *Disabled individuals* are also discarded throughout all empirical analyses, as they face different choice sets with respect to retirement  
85 and care provision. As one dimension of the heterogeneity analysis we only include women retiring from full-time employment into the estimation sample. We define them as having worked on average 35 hours per week in the 3 years prior to retirement.

*Appendix B.3. ERA discontinuity analysis: sample description*

90      Around 43% of these women are in retirement. The share of retired is  
higher among caregivers (51.8%) than non-caregivers (42.2%). 19.2% of women  
in the sample live in single-person households with a share of 8.4% providing  
informal care. In multi-person households the share of caregivers amounts to  
11.3%. More than 84% of all female caregivers live in multi-person households.  
95      About 79.1% of women who do not provide informal care live in multi-person  
households. The mean age in our main ERA discontinuity analysis sample is  
about 60.7 years (Table A1). Women provide on average about 0.25 hours  
of informal care per normal weekday. Around 10% of women in the sample  
supply positive care hours. About 47% of those informal caregivers supply 1  
100      hour, around 25% state 2 hours, about 10% provide 3 hours, and the remaining  
about 16.5% perform more than 3 hours of care. A relatively high number of  
people (0.8%) provide more than 20 hours of care. The mean retirement age  
is 62.0 for women in the sample. A large standard deviation in the number of  
working hours shows that we observe individuals at a point of their employment  
105      biography when they experience substantial changes in their labor supply.

80% of those women that provide informal care are married. The difference  
in the probability to be married between caregivers and non-caregivers is signif-  
icantly positive and amounts to about 5 pp higher. The probability to provide  
care is around 2 pp higher for married individuals.

110      **Appendix C. Complementary analyses and results**

This online Appendix provides further analysis and results for both, the  
ERA discontinuity and the ERA reform analysis.

*Appendix C.1. ERA discontinuity analysis: validity of fuzzy RDD assumptions*

Histograms do not exhibit any discontinuities in the number of women by  
115      age (Figure A12, upper left picture). A related condition for identification is  
that no apparent discontinuities exist in the number of individuals in the sample

and for important covariates that drive the outcome at a threshold. No jumps become apparent in any of the population variables (share of married women, mean years of education, children in the household) for women plotted by age  
120 within the age range of interest (Figure A12). The health of the spouse does not discontinuously change at the age threshold of their wives (Figure A13), the same is true for their retirement behavior (Figure A14). The time use of husbands changes to some degree when their wives retire at the ERA: They significantly reduce the time in their job and increase their time in hobbies, but  
125 decrease time in exercising (Table A21).

*Appendix C.2. ERA discontinuity analysis: instrument validity*

Women born before 1952 that retire from employment also exhibit a highly significant 18.7 pp jump in their retirement probability at the age-cutoff of 60 (Table A3, column (4)). We find smaller effects of crossing the cohort-specific  
130 ERA with a 3-year bandwidth of 12.1 pp and a 16.5 pp jump in the retirement probability when introducing several control variables with a 5-year bandwidth (Table A3, column (3)). Reducing the bandwidth for the main sample with cohort-specific ERA decreases these jumps in the retirement probability. A bandwidth of 2 years results in a discontinuity estimate of 10.1 pp, a further  
135 reduction to a 1 year bandwidth leads to an increase of 13.3 pp at the threshold (Table A22 in the online Appendix, rows 1-3). This pattern is confirmed in the same exercise with the reduced sample of women born before 1952 with ERA at age 60 as single instrument (Table A22 in the online Appendix, rows 7-9). Statistical significance is reduced only for 1- and 2-year bandwidth estimates  
140 due to the smaller sample size. The graphical evidence and the strong and robust coefficients from the first stage estimates confirm that ERA thresholds used here are indeed relevant instruments for the retirement decision.

*Appendix C.3. ERA discontinuity analysis: additional robustness checks*

Point estimates and 95% confidence intervals for women's hours of care provision upon retirement at an ERA are displayed for 5 different bandwidth choices  
145

(Figure A4 in the online Appendix). Confidence intervals are increasing with lower sample sizes. A zero effect is within the boundaries of the confidence interval for the 2- and 3-year bandwidths. A one-year bandwidth, however, not only widens the 95% confidence interval. It also increases the point estimate markedly, leading to a statistically significant effect of almost 2 hours of informal care per week.

Robustness tests for the binary outcome, i.e. the extensive margin of informal care, reveal that for all bandwidths between 5 and 2 years the 95% confidence intervals include a zero effect (Figure A5 in the online Appendix). For bandwidths between 5 and 3 years, point estimates virtually do not change. A bandwidth of 2 years and particularly a bandwidth of 1-year lead to substantially larger point estimates. The coefficient for the 1-year bandwidth seems to be upward biased. An increase in the care probability of about 80 pp in this rather small sample does not seem plausible.

We provide results based on alternative sample selection criteria. We select women retiring from employment by using only pre-determined variables, before women turn 60. Thus, we keep women in the sample that have unemployment spells after crossing their ERA threshold. These women are not yet retired at these ages, but they are part of the control group. Still, they do not face a time conflict according to our interpretation, as they can potentially be unemployed and provide informal care without being retired. We still find an effect of similar magnitude on hours of daily informal care that is, however, less precisely estimated (Table A23). Parameters of the binary care indicators are also smaller and become insignificant.

We repeat the robustness tests from the main text and limit the analysis to informal care within the household. Point estimates and the 95% confidence intervals for extensive and intensive margin estimates vary less when the bandwidth is reduced (Figures A15 and A16). Results are significantly different from zero for a 4-year bandwidth. Confidence intervals include a zero effect for all narrower estimation windows. The graphs look very similar when the sample includes only women born before 1952 for whom the ERA at 60 applied (Fig-

ures A17 and A18). Confidence intervals are slightly wider due to the decreased sample size.

In another robustness test a local linear estimator is used and a triangular  
180 kernel is chosen for our main sample with a bandwidth of 5 years. Results are not sensitive to choosing a different estimator (Table A24, column (1)). We also include local quadratic and local cubic polynomials in the specification. Results are sensitive to this specification test (Tables A24, column (2) and (3)). The magnitude of parameters increases in most cases. However, these increases are  
185 not statistically significant. Standard errors also increase which leads to only few statistically significant point estimates. Using an Epanechnikov kernel for our standard bandwidth of 5 years produces results for women in our main sample that are comparable in size and significant for overall informal care and informal care within the household (Table A24, column (4)). The same holds when these  
190 robustness checks are done for care provided within the household (Table A25). When standard errors are clustered at a different level, they remain of equal size (Table A26).

#### *Appendix C.4. ERA reform analysis: validity of RDD assumptions*

A density of all observations along the forcing variable confirms that women  
195 do not select into treatment (Figure A19). Another validity test concerns the mean of covariates that are plotted by birth month around the cutoff (Figure A20). For the group of women aged between 60 and 62, the probability to have children in the household (upper right), the probability to have higher education (lower left), and the probability to have a care-dependent individual  
200 in the household (lower right) are constant around the age cutoff. However, there seems to be a positive discontinuity for the probability to be married at the cutoff.

In a more formal test for discontinuities around the cutoff, these different covariates (marital status, high education, children in the household, and a person  
205 in need of care in the household) are used as outcome variables in our main reform strategy specification (sub-section 5.2.2). When the estimation is based

on a 24-month of birth year bandwidth (BW), we find positive point estimates for women born from 1952 onward for all covariates (Table A27). However, only the probability that a care-dependent person lives in the household is significantly higher in the treated group. We repeat this test for the four different outcomes varying the BW and the degree of the polynomial for the month of birth trends (Tables A28, A29, A30, A31).

We also conduct ‘placebo tests’, where our main ERA reform analysis specification with three covariates as outcome variables (marital status, high education, children in the household) is estimated, however, for a group of women aged from 55 to 60 (Tables A32, A33, A34). The comparison of coefficients from these two sets of results shows that we identify significant differences between the treatment and the control group for certain covariates, marital status and level of education, and several specifications. However, these differences are largely due to cohort effects and do not represent behavioral reactions to the reform.

Significant between-group differences are identified within the age group affected by the reform (aged from 60 to 62) as well as in the placebo regressions with an age group that was not affected by the reform (women aged between 55 and 60). Since there are similar, in part even larger differences for the age group without treatment, we are confident that these differences represent cohort effects and are no behavioral reactions to the reform. We therefore see the three main covariates as pre-determined. We include these covariates in the main ERA reform analysis specification to test the robustness of our results. The probability that a woman cohabits with a care-dependent person can potentially be a reaction to the reform and will therefore not be included as a control variable. The sample is balanced along age and year of birth, as numbers of women in respective ages by birth cohort do not vary much (Table A35).

235 *Appendix C.5. ERA reform analysis: additional heterogeneity analyses*

We conduct additional heterogeneity analyses (for high- and low-educated women, women retiring from employment, a sample with unemployed women and those eligible for women’s pension) based on 12- and 36-month bandwidths. We also estimate a specification in which quadratic trends are included. On a  
240 12-month BW the coefficient pattern is comparable, although standard errors increase due to the smaller sample sizes (Table A36). We estimate a more significant effect for the group of women more closely attached to the labor market. The ATT, i.e. the effect for women eligible for women’s pension, is, however, not significant in this specification. On a 36-month BW the coefficient  
245 pattern is similar to the baseline heterogeneity check (sub-section 5.2.3).

We estimate a significant 0.5 hours reduction for highly educated women on a 12-month BW, while estimates for the other sub-groups are not heavily impacted. Using a 36-month BW, we do not find any significant coefficients. Results for the 12- and 36-month BW specifications confirm that in the sub-  
250 groups of highly educated women and of women more attached to the labor market intensive care provision is reduced significantly (Tables A36, A37). Including quadratic month of birth trends, we find that the main pattern holds for all three outcomes (Table A38). However, we find a larger magnitude of effects for the probability to provide informal care in the group of women more closely  
255 attached to the labor market. In this specification, intensive care provision is also further reduced in the sub-groups of highly educated women and women with closer labor market attachment with coefficients being highly significant. Similar changes occur when a quadratic month of birth trend is included in specifications based on a 12- and 36-month BW (Tables A39, A40).

260 *Appendix C.6. ERA reform analysis: additional robustness checks*

We employ a local linear estimator while choosing a triangular kernel and while estimating the effect of interest on a BW as selected by the optimal bandwidth selection procedure. The optimal bandwidth selection was proposed by Calonico et al. (2014) and is implemented in *Stata’s rdrobust* package (Table

265 A41, see Calonico et al. 2017, column (1)). We also choose an Epanechnikov  
kernel to estimate the procedure on a 12-, 24- and 36-month BW (Table A41,  
columns (2)-(4)). We find that on the optimally selected BW of 16.94 months  
the probability to be a caregiver is reduced by 7.5 pp and highly significant (1%  
level). Employing an Epanechnikov kernel, we find coefficients to be highly sig-  
270 nificant and effect sizes to be similar. We do not find significant effects on the  
hours of daily care provision for either of these specifications. The probability  
to be an intensive caregiver increases significantly for an optimal 19.97-month  
BW and a 12-month BW employing an Epanechnikov kernel (10% and 5% level,  
respectively).

275 We also estimate the main effects re-specifying our main RDD model from  
equation (sub-section 4.2). In this test we suppress the trend break occurring at  
the cutoff (we set  $\gamma_3$  equal to 0). We find that the parameters on the probability  
to provide care are not altered for a 24-month BW. Coefficients are significant  
on a 5% level (Table A42). Estimating these specifications for hours of daily  
280 care and intensive care provision, we do not find significant effects with point  
estimates being similar to the main specification (Table A42). The results of  
robustness tests for several heterogeneity analyses are discussed in online Ap-  
pendix C.5 above.

*Appendix C.7. ERA reform analysis: specifics on household-level effects of the*  
285 *reform*

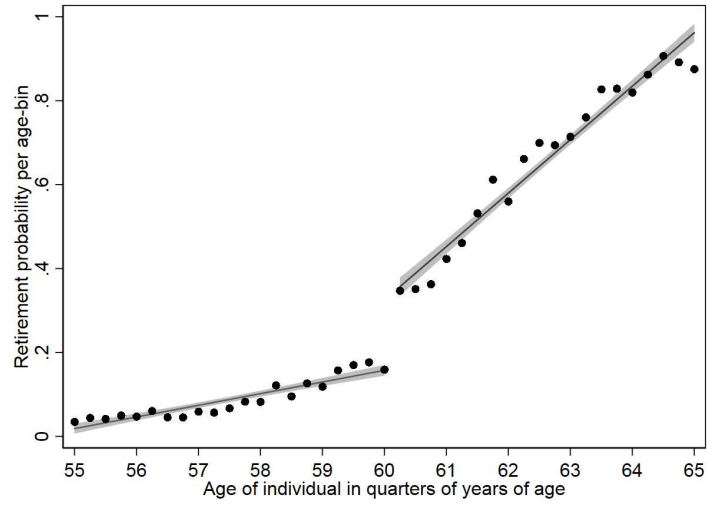
Care from within the household can be delivered informally by a household  
member or formally by a professional care provider living in the household.  
The same holds for care provided from outside the household. This can be a  
family member living outside the household or care provided by professional  
290 services. We look at all individuals who live in ‘care households’ that are also  
inhabited by women aged from 60 to 62 and born between 1947 to 1956. ‘Care  
households’ are those inhabited by a care-dependent person. Importantly, these  
women cannot be a care-dependent person themselves. We then compare those  
households inhabited by a woman born before 1952 (born from 1947 to 1951



295 and aged from 60 to 62) with those inhabited by a woman born from 1952  
onward (born from 1952 to 1956 and aged from 60 to 62). The information on  
care dependency in the household and the outcome variables of interest (care  
provided from within or outside the household) are measured at the household  
level. However, the estimation is carried out at the individual level to increase  
300 the number of observations. We must assume that treated and non-treated  
households (those inhabited by a woman born 1952 vs. those inhabited by  
a woman born before 1952) do not differ in household size and composition.  
Household-specific outcomes are regressed on the binary indicator whether a  
woman in the household was born before or after Jan 1, 1952 as well as the  
305 number of household members and the age of the care-dependent individual.  
We also include the distance in birth months to the birth-cutoff of the woman  
of interest in the respective household.

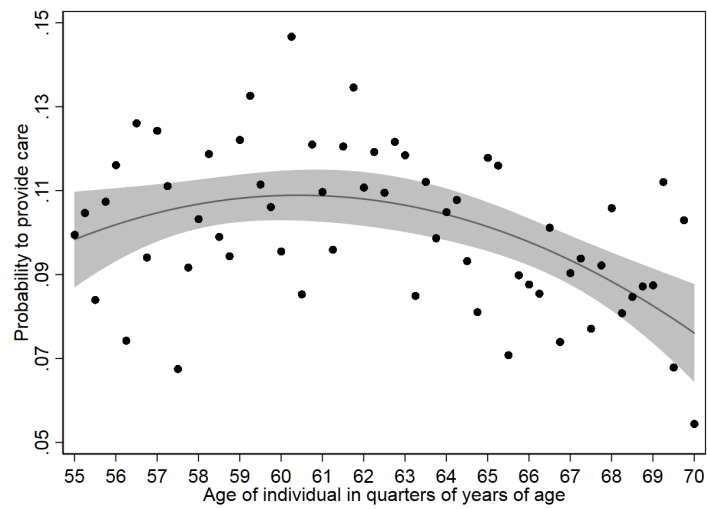
## Appendix D. Additional figures

Figure A1: Retirement behavior of women by age



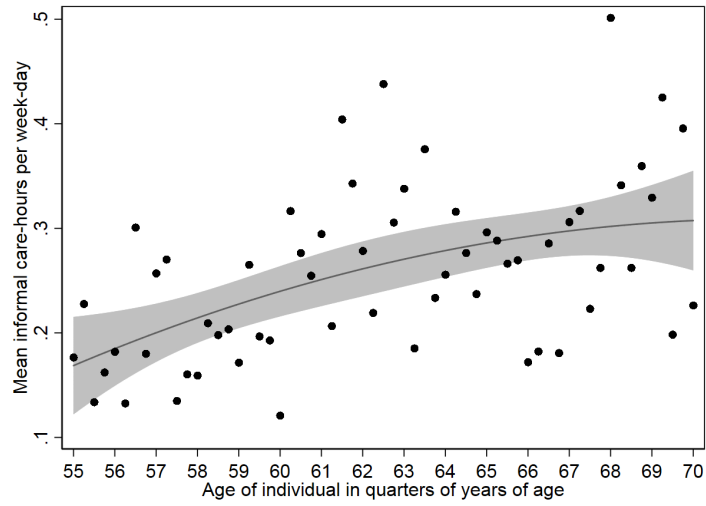
Notes: 95% confidence interval and linear trend included

Figure A2: Share of care providers among females by age



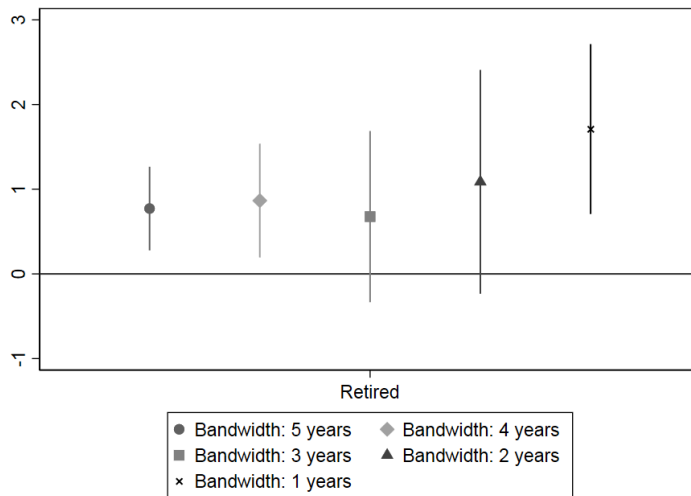
Notes: 95% confidence interval and quadratic trend included

Figure A3: Mean hours of informal care by age



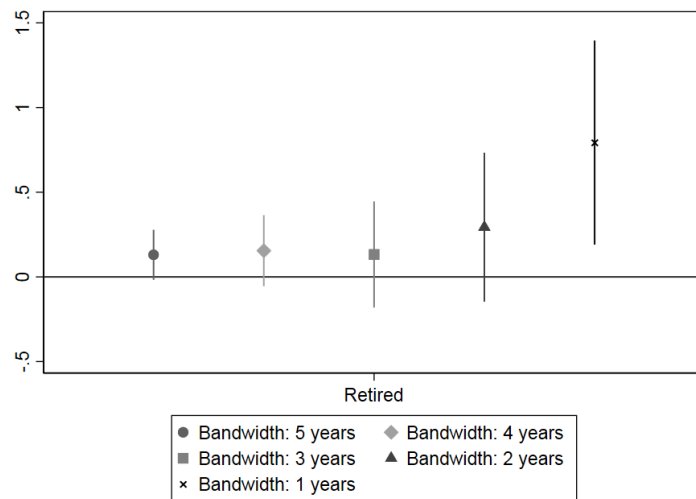
Notes: 95% confidence interval and quadratic trend included

Figure A4: ERA discontinuity analysis: bandwidth check for effects of retirement on daily hours of informal care



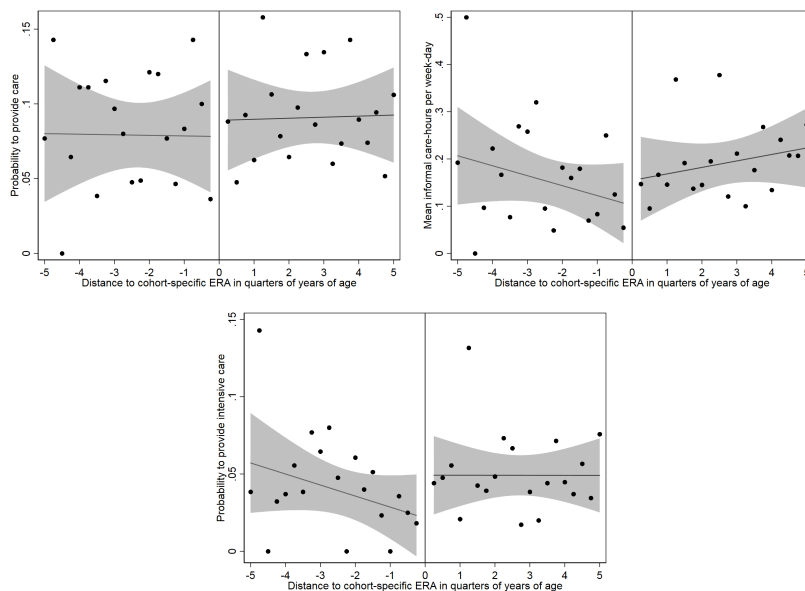
Notes: Point estimates and 95% confidence intervals for effects of retirement, instrumented with the ERA; ERA: early retirement age; cohort-specific ERA

Figure A5: ERA discontinuity analysis: bandwidth check for effects of retirement on the probability to provide informal care



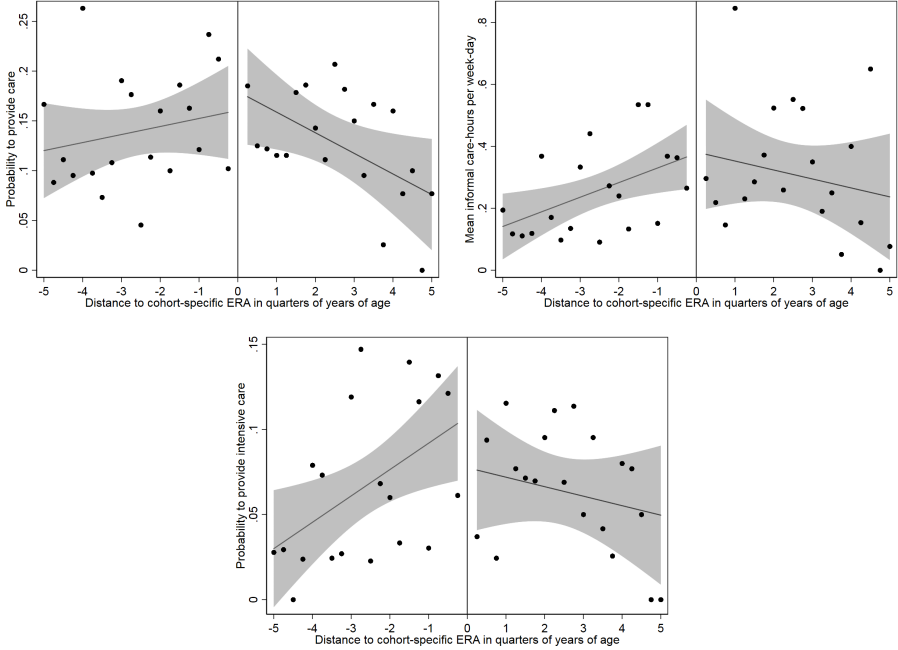
Notes: Point estimates and 95% confidence intervals for effects of retirement, instrumented with the ERA; ERA: early retirement age; cohort-specific ERA

Figure A6: Care provision around the ERA: Women retiring later than their ERA (never-takers)



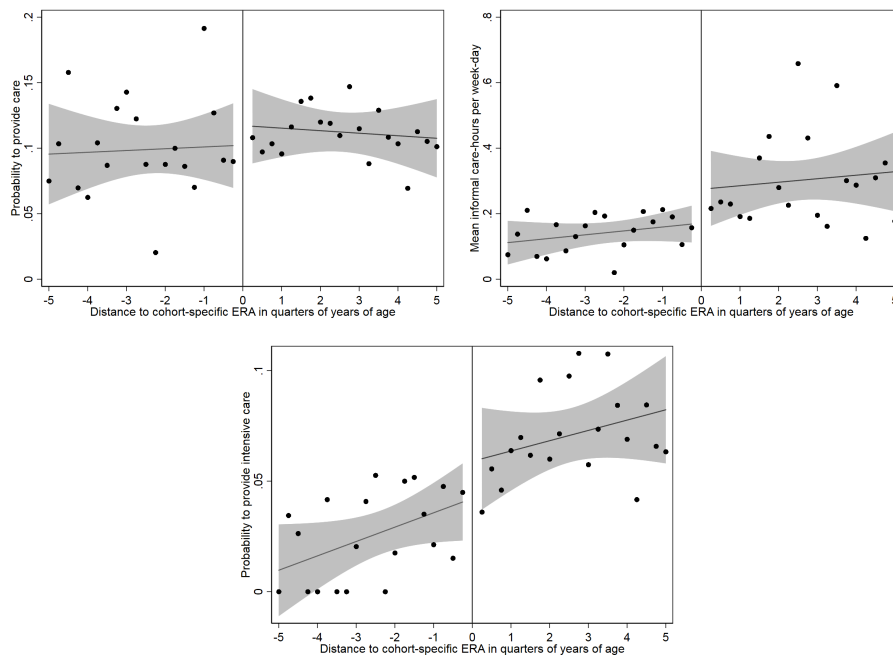
Notes: 95% confidence interval and linear trend included

Figure A7: Care provision around the ERA: Women retiring before their ERA (always-takers)



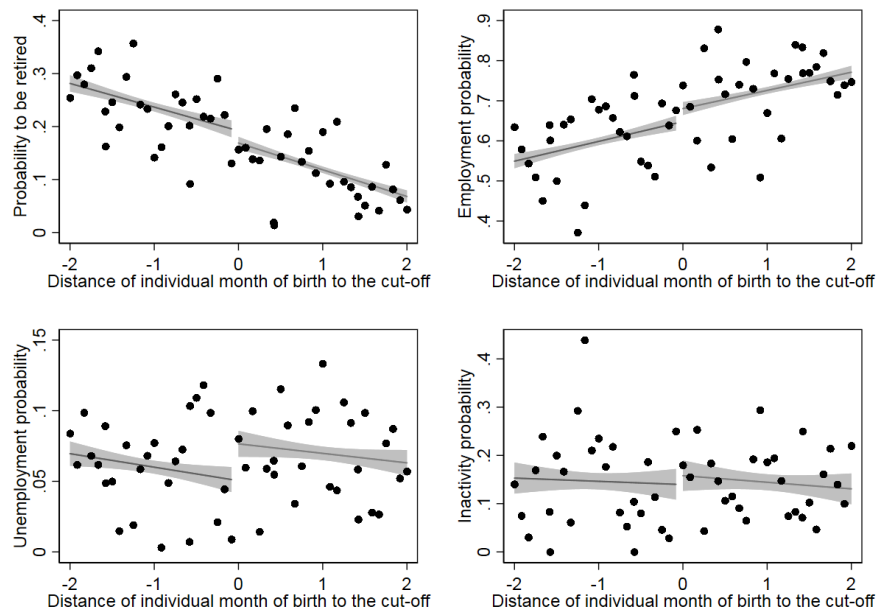
Notes: 95% confidence interval and linear trend included

Figure A8: Care provision around the ERA: Women retiring at the ERA



Notes: 95% confidence interval and linear trend included

Figure A9: Employment outcomes around the reform cut-off



Notes: 90% confidence interval and linear trend included; treatment (pension reform) along the birth month of women aged 60-62



Figure A10: ERA discontinuity analysis: distribution of women in the estimation sample along age

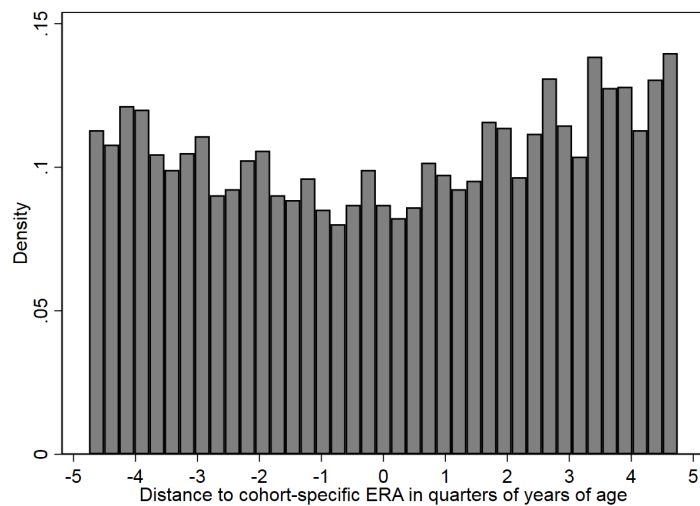


Figure A11: ERA discontinuity analysis: Share of women who are part of the estimation sample in the overall sample by age

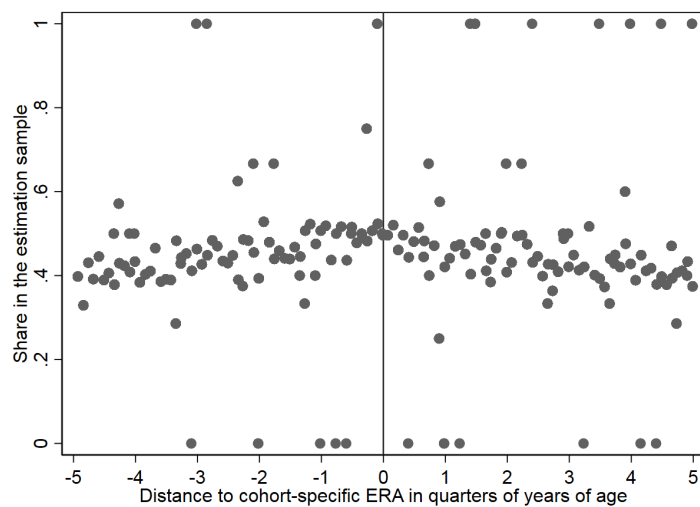


Figure A12: ERA discontinuity analysis: distribution of covariates by age around ERA thresholds

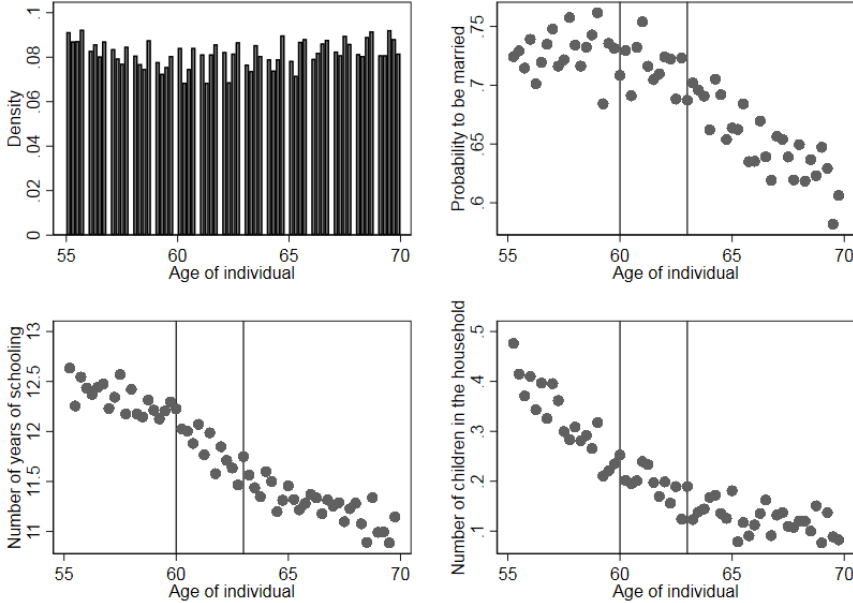


Figure A13: Health of spouses around ERA of their wives

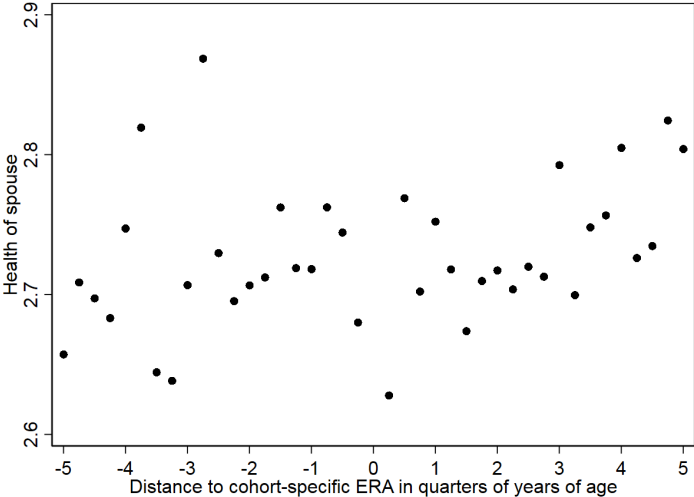


Figure A14: Retirement behavior of spouses around ERA of their wives

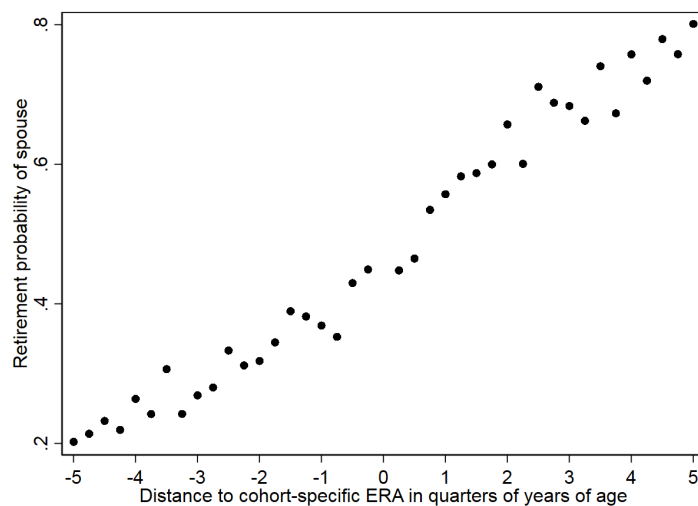
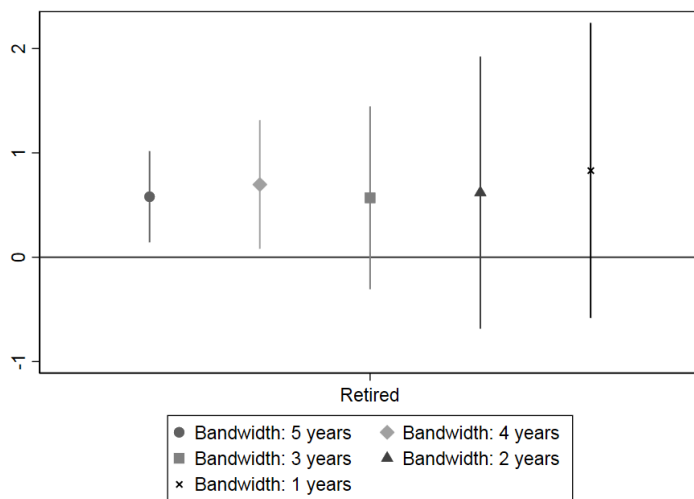
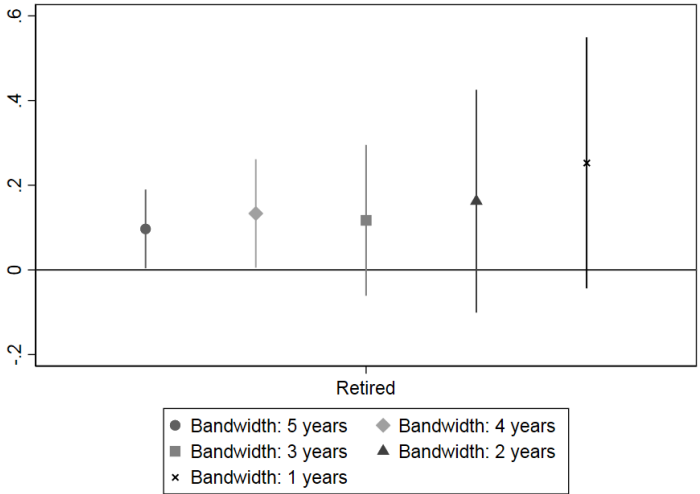


Figure A15: ERA discontinuity analysis: bandwidth check for effects of retirement on daily hours of informal care within the household



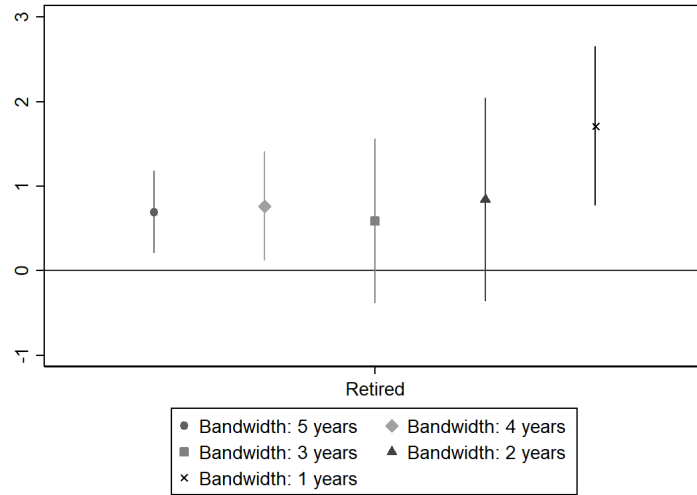
Notes: Point estimates and 95% confidence intervals for effects of retirement, instrumented with the ERA; Cohort-specific ERA

Figure A16: ERA discontinuity analysis estimates: bandwidth check for effects of retirement on the probability to provide informal care within the household



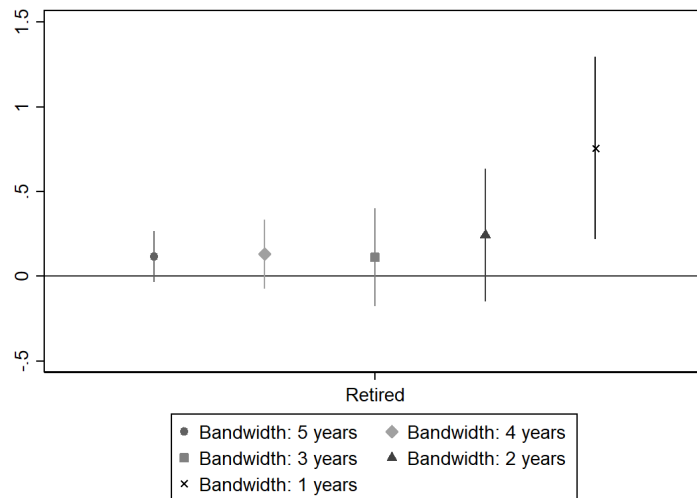
Notes: Point estimates and 95% confidence intervals for effects of retirement, instrumented with the ERA; Cohort-specific ERA

Figure A17: ERA discontinuity analysis estimates: bandwidth check for effects of retirement on daily hours of informal care (ERA at age 60)



Notes: Point estimates and 95% confidence intervals for effects of retirement, instrumented with the ERA at age 60

Figure A18: ERA discontinuity analysis estimates: bandwidth check for effects of retirement on the probability of informal care (ERA at age 60)



Notes: Point estimates and 95% confidence intervals for effects of retirement, instrumented with the ERA at age 60

Figure A19: ERA reform analysis: distribution of women along forcing variable

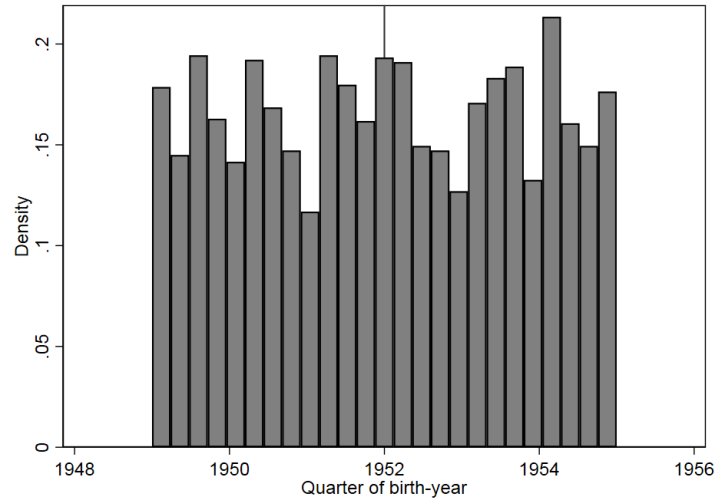
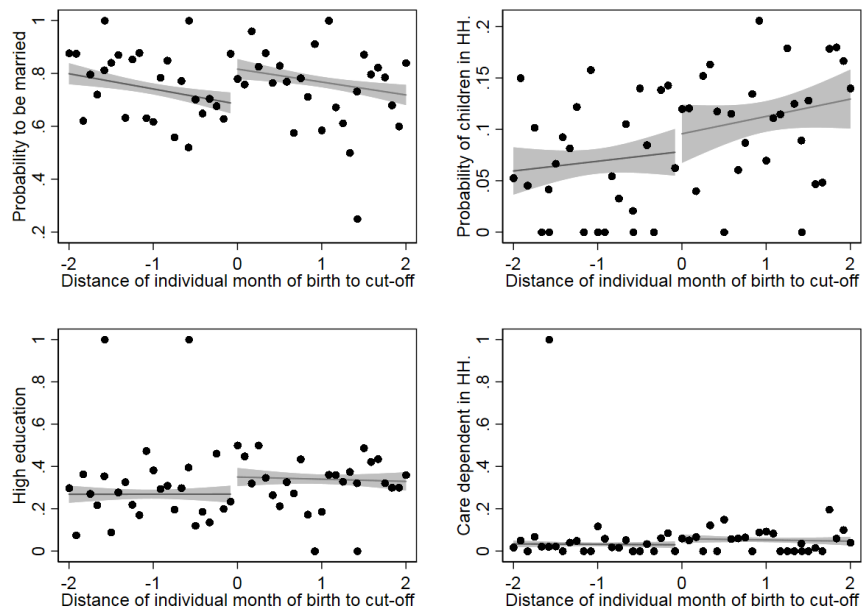


Figure A20: Covariates by birth-date in the group of women aged 60-62 years



Notes: Linear trend and 90% confidence interval included; HH.: Household

## Appendix E. Additional tables

Table A1: Summary statistics for ERA discontinuity design estimation by ERA indicator

	Before ERA			After ERA			Total					
	Mean	S.D.	Min.	Max.	Mean	S.D.	Min.	Max.	Mean	S.D.	Min.	Max.
Hours informal care	0.19	0.72	0	15	0.30	1.32	0	24	0.25	1.08	0	24
Informal care	0.11	0.31	0	1	0.11	0.31	0	1	0.11	0.31	0	1
Intensive Care	0.05	0.21	0	1	0.06	0.25	0	1	0.06	0.23	0	1
Covariates												
Retired	0.13	0.33	0	1	0.71	0.46	0	1	0.43	0.50	0	1
Age	58.47	1.67	55	63	62.74	1.41	60	65	60.72	2.63	55	65
Kids in HH.	0.19	0.50	0	5	0.06	0.27	0	4	0.12	0.40	0	5
Married	0.74	0.44	0	1	0.69	0.46	0	1	0.71	0.45	0	1
Education	12.39	3.39	0	18	11.68	3.11	0	18	12.01	3.26	0	18
Work. Hours	28.94	16.33	0	98	10.00	16.56	0	85	18.96	18.98	0	98
Health	2.68	0.84	0	5	2.70	0.84	0	5	2.69	0.84	0	5
Observations	4776				5319				10095			

Notes: Women aged 55 to 68, retiring from employment, 2001-2015; S.D.: standard deviation; Min.: Minimum; Max.: Maximum



Table A2: Summary statistic, main sample for ERA reform analysis estimation

	N	Mean	S.D.
Outcome variables			
Hours of Care	3 569	0.26	1.26
Caring Probability	3 569	0.10	0.30
Intensive caring Probability	3 569	0.06	0.23
Covariates			
Retired	3 569	0.29	0.45
Reform	3 569	0.49	0.50
Age	3 569	61.47	0.87
High education	3 569	0.21	0.41
Children in household	3 569	0.06	0.23
Care need in the household	3 569	0.04	0.19
Married	3 541	0.69	0.46

*Notes:* Women born 1949-1954, aged 60-62, 2001-2015; N: number of observations; S.D.: standard deviation.

Table A3: Effects of the ERA threshold on retirement

Instrument	(1) ERA	(2) ERA	(3) ERA	(4) Age 60
	0.172*** (0.022)	0.121*** (0.030)	0.165*** (0.024)	0.187*** (0.024)
Observations	10 095	5 573	10 095	8 379
Controls	-	-	YES	-
Bandwidth years	5	3	5	5

*Notes:* Women retiring from employment, 2001-2015; ERA: cohort-specific early retirement age (all women), Age 60: only age 60 as instrument (women born before 1952); YES: controls for year of observation, number of children in the household, and marital status; Cluster robust (clustered on the month of age level) standard errors in parentheses; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

Table A4: ERA discontinuity analysis: women providing care on either side of the threshold.

Instrument	(1) ERA	(2) ERA	(3) ERA	(4) Age 60
Retired	5.434* (2.785)	8.133 (8.474)	5.592** (2.817)	4.555* (2.429)
Observations	1 082	735	1 082	887
Controls	-	-	YES	-
Bandwidth years	5	3.568	5	5
Pre-Treatment mean	1.743	1.759	1.743	1.779
KL.Paap	6.118	-	6.181	6.722

*Notes:* Main effects and robustness checks, women retiring from employment, 2001-2015; ERA: cohort-specific early retirement age (all women), Age 60: only age 60 as instrument (women born before 1952); (2): optimally selected bandwidth; Cluster robust (clustered on the month of age level) standard errors in parentheses; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1; YES: controls for year of observation, number of children in the household, and marital status; KL.Paap: Kleibergen-Paap statistic.

Table A5: ERA discontinuity analysis: effects of retirement on several time use variables

Outcome variable	(1) Child care	(2) Job	(3) Hobbies	(4) House work	(5) Run errands	(6) Education	(7) Repairs	(8) Informal care hours
Retired	0.068 (0.229)	-6.340*** (0.658)	1.891*** (0.391)	1.178*** (0.321)	0.393** (0.200)	-0.087 (0.118)	0.482** (0.233)	0.772*** (0.252)
Observations	10095	10095	10095	10095	10095	10095	10095	10095
Pre-Treatment mean	0.150	7.064	1.615	1.914	1.047	0.169	0.622	0.159
KL.Paap	58.75	58.75	58.75	58.75	58.75	58.75	58.75	58.75

*Notes:* Women retiring from employment, 2001-2015, 5-year bandwidth; ERA: cohort-specific early retirement age (all women), Age 60: only age 60 as instrument (women born before 1952); (2): optimally selected bandwidth; Cluster robust (clustered on the month of age level) standard errors in parentheses; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1; YES: controls for year of observation, number of children in the household, and marital status; KL.Paap: Kleibergen-Paap statistic.

Table A6: OLS effects of the ERA threshold on informal care provision

Instrument	(1) ERA	(2) ERA	(3) Age 60
	Hours of care provision		
	0.249*** (0.029)	0.266*** (0.030)	0.269*** (0.031)
Pre-Treatment mean	0.159	0.159	0.151
	Informal care		
	0.064*** (0.007)	0.074*** (0.008)	0.064*** (0.008)
Pre-Treatment mean	0.091	0.091	0.085
	Intensive care		
	0.051*** (0.006)	0.054*** (0.006)	0.055*** (0.006)
Pre-Treatment mean	0.038	0.038	0.035
Observations	10 095	10 095	8 379
Controls	-	YES	-
Bandwidth years	5	5	5

*Notes:* Women retiring from employment, 2001-2015; (2): optimally selected bandwidth; Cluster robust (clustered on the month of age level) standard errors in parentheses; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1; YES: controls for year of observation, number of children in the household, and marital status; Kl.Paap: Kleibergen-Paap statistic.

Table A7: ERA discontinuity analysis: effects of retirement on care provision for married women

Instrument	(1) ERA	(2) ERA	(3) ERA	(4) Age 60
	Hours of care provision			
Retired	0.546*** (0.192)	0.573* (0.322)	0.583*** (0.200)	0.525*** (0.186)
Pre-Treatment mean	0.170	0.170	0.170	0.164
Observations	7 182	5 320	7 182	5 933
Bandwidth years	5	3.861	5	5
	Informal care			
Retired	0.156** (0.078)	0.289* (0.170)	0.175** (0.079)	0.141* (0.075)
Pre-Treatment mean	0.097	0.093	0.097	0.090
Observations	7 182	4 631	7 182	5 933
Bandwidth years	5	3.416	5	5
	Intensive care			
Retired	0.098** (0.048)	0.131 (0.083)	0.105** (0.050)	0.097** (0.047)
Pre-Treatment mean	0.040	0.042	0.040	0.037
Observations	7 182	5 533	7 182	5 933
Bandwidth years	5	4.003	5	5
Controls	-	-	YES	-
KL.Paap	52.67		45.77	60.85

*Notes:* Women retiring from employment, 2001-2015; ERA: cohort-specific early retirement age (all women), Age 60: only age 60 as instrument (women born before 1952); (2): optimally selected bandwidth; Cluster robust (clustered on the month of age level) standard errors in parentheses; \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ ; YES: controls for year of observation, number of children in the household, and marital status; KL.Paap: Kleibergen-Paap statistic.

Table A8: ERA discontinuity analysis: effects of retirement on care provision for unmarried women

Instrument	(1) ERA	(2) ERA	(3) ERA	(4) Age 60
Hours of care provision				
Retired	1.848* (0.980)	2.511 (2.070)	1.802* (0.995)	1.407 (0.906)
Observations	2913	2310	2913	2446
Bandwidth years	5	4.093	5	5
Pre-Treatment mean	0.126	0.127	0.126	0.116
Informal care				
Retired	-0.004 (0.205)	-0.061 (0.284)	-0.015 (0.214)	-0.004 (0.206)
Observations	2913	3319	2913	2446
Bandwidth years	5	5.566	5	5
Pre-Treatment mean	0.074	0.071	0.074	0.072
Intensive care				
Retired	0.088 (0.160)	0.065 (0.183)	0.079 (0.165)	-0.041 (0.163)
Observations	2913	3706	2913	2446
Bandwidth years	5	6.046	5	5
Pre-Treatment mean	0.031	0.031	0.031	0.031
Controls	-	-	YES	-
KL.Paap	9.696		8.605	11.23

*Notes:* Women retiring from employment, 2001-2015; ERA: cohort-specific early retirement age (all women), Age 60: only age 60 as instrument (women born before 1952); (2): optimally selected bandwidth; Cluster robust (clustered on the month of age level) standard errors in parentheses; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1; YES: controls for year of observation, number of children in the household, and marital status; Kl.Paap: Kleibergen-Paap statistic.

Table A9: ERA discontinuity analysis: effects of retirement on care provision for women retiring from unemployment

Instrument	(1) ERA	(2) ERA	(3) ERA	(4) Age 60
Hours of care provision				
Retired	-0.037 (0.537)	-0.068 (0.601)	-0.017 (0.540)	-0.058 (0.569)
Observations	8 066	9 211	8 066	7 129
Bandwidth years	5	5.746	5	5
Pre-Treatment mean	0.417	0.413	0.417	0.407
Probability to provide care				
Retired	-0.104 (0.087)	-0.120 (0.094)	-0.103 (0.086)	-0.101 (0.087)
Observations	8 066	8 414	8 066	7 129
Bandwidth years	5	5.222	5	5
Pre-Treatment mean	0.129	0.130	0.129	0.125
Intensive care				
Retired	-0.069 (0.089)	-0.091 (0.101)	-0.067 (0.089)	-0.069 (0.093)
Observations	8 066	8 906	8 066	7 129
Bandwidth years	5	5.548	5	5
Pre-Treatment mean	0.085	0.087	0.085	0.083
Controls	-	-	YES	-
KL.Paap	55.70		55.55	52.82

*Notes:* Main effects and robustness checks, women retiring from unemployment, 2001-2015; ERA: cohort-specific early retirement age (all women), Age 60: only age 60 as instrument (women born before 1952); (2): optimally selected bandwidth; Cluster robust (clustered on the month of age level) standard errors in parentheses; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1; YES: controls for year of observation, number of children in the household, and marital status; Kl.Paap: Kleibergen-Paap statistic.

Table A10: ERA discontinuity analysis: effects of retirement on care provision in the weekend

Instrument	(1) ERA	(2) ERA	(3) ERA	(4) Age 60
Hours of care provision				
Retired	0.316 (0.198)	0.232 (0.343)	0.328 (0.205)	0.317* (0.190)
Observations	10 095	7 179	10 095	8 379
Bandwidth years	5	3.756	5	5
Pre-Treatment mean	0.105	0.104	0.105	0.104
KL.Paap	58.75		46.73	63.22
Probability to provide care				
Retired	-0.320 (0.232)	-0.081 (0.435)	-0.052 (0.090)	0.067 (0.061)
Observations	10 853	8 198	10 851	8 379
Bandwidth years	5	3.984	5	5
Pre-Treatment mean	0.137	0.130	0.137	0.213
KL.Paap	66.28		45.66	63.22
Intensive care				
Retired	-0.374 (0.236)	-0.193 (0.389)	-0.104 (0.089)	0.014 (0.040)
Observations	10 853	9 450	10 851	8 379
Bandwidth years	5	4.456	5	5
Pre-Treatment mean	0.106	0.104	0.106	0.188
KL.Paap	66.28		45.66	63.22
Controls	-	-	YES	-

*Notes:* Main effects and robustness checks, women retiring from employment, 2001-2015; ERA: cohort-specific early retirement age (all women), Age 60: only age 60 as instrument (women born before 1952); (2): optimally selected bandwidth; Cluster robust (clustered on the month of age level) standard errors in parentheses; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1; YES: controls for year of observation, number of children in the household, and marital status; Kl.Paap: Kleibergen-Paap statistic.

Table A11: Reduced-form effects of the ERA on care provision for all women retiring from employment that retire later than their cohort-specific ERA (never-takers)

Variable	(1) Hours of care provision	(2) Probability to provide care	(3) Intensive care
ERA	0.052 (0.048)	0.014 (0.023)	0.027* (0.016)
Observations	1648	1648	1648

*Notes:* 5-year bandwidth, Cluster robust (clustered on the quarter age level) standard errors in parentheses; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

Table A12: Reduced-form effects of the ERA on care provision for all women retiring from employment that retire before their cohort-specific ERA (always-takers)

Variable	(1) Hours of care provision	(2) Probability to provide care	(3) Intensive care
ERA	0.038 (0.114)	0.036 (0.042)	-0.022 (0.026)
Observations	1 359	1 359	1 359

*Notes:* 5-year bandwidth, Cluster robust (clustered on the quarter age level) standard errors in parentheses; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

Table A13: Reduced-form effects of ERA on care provision for all women retiring from employment

Variable	(1) Hours of care provision	(2) Probability to provide care	(3) Intensive care
ERA	0.133*** (0.050)	0.022* (0.014)	0.017* (0.009)
Observations	10095	10095	10095

*Notes:* 5-year bandwidth, Cluster robust (clustered on the quarter age level) standard errors in parentheses; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.



Table A14: ERA reform analysis: effects on informal care provision

	(1)	(2)	(3)	(4)
	Hours of care provision			
OLS	−0.094 (0.130)	−0.082 (0.156)	−0.260 (0.267)	−0.259 (0.289)
Local polynomial	−0.150 (0.140)	−0.140 (0.163)	−0.192 (0.260)	−0.153 (0.278)
Pre treat. pred.	0.356	0.356	0.592	0.592
	Probability to provide care			
OLS	−0.057* (0.029)	−0.052 (0.036)	−0.111*** (0.030)	−0.114*** (0.033)
Local polynomial	−0.075*** (0.023)	−0.075*** (0.026)	−0.090*** (0.016)	−0.085*** (0.016)
Pre treat. pred.	0.173	0.173	0.256	0.256
	Intensive care			
OLS	−0.031 (0.020)	−0.026 (0.026)	−0.066 (0.039)	−0.065 (0.045)
Local polynomial	−0.044** (0.020)	−0.042* (0.025)	−0.056* (0.034)	−0.049 (0.038)
Pre treat. pred.	0.105	0.105	0.137	0.137
Observations	1 245	1 234	1 245	1 234
Polynomial	1	1	2	2
Controls	YES	YES+	YES	YES+

*Notes:* Main effects and robustness checks, 12-month BW, OLS and local polynomial estimator, triangular kernel; Cluster robust (clustered on the quarter of year of birth level) standard errors in parentheses; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

BW: bandwidth; Pre treat. pred.: pre treatment prediction; Control variables: YES (Age of individuals and year of questionnaire), YES+ (Age of individuals and year of questionnaire, marital status, children in the household, high education dummy)

Table A15: ERA reform analysis: effects on informal care provision

	(1)	(2)	(3)	(4)
	Hours of care provision			
OLS	-0.102 (0.077)	-0.109 (0.073)	-0.056 (0.128)	-0.056 (0.126)
Local polynomial	-0.085 (0.080)	-0.088 (0.081)	-0.100 (0.123)	-0.103 (0.123)
Pre treat. pred.	0.366	0.366	0.314	0.314
	Probability to provide care			
OLS	-0.051** (0.023)	-0.053** (0.024)	-0.067*** (0.021)	-0.066*** (0.022)
Local polynomial	-0.056** (0.024)	-0.056** (0.025)	-0.072*** (0.027)	-0.071** (0.029)
Pre treat. pred.	0.163	0.163	0.181	0.181
	Intensive care			
OLS	-0.020 (0.015)	-0.020 (0.016)	-0.032 (0.022)	-0.030 (0.024)
Local polynomial	-0.025 (0.015)	-0.023 (0.016)	-0.033* (0.020)	-0.032 (0.022)
Pre treat. pred.	0.087	0.087	0.096	0.096
Observations	3 569	3 541	3 569	3 541
Polynomial	1	1	2	2
Controls	YES	YES+	YES	YES+

*Notes:* Main effects and robustness checks, 36-month BW, OLS and local polynomial estimator, triangular kernel; Cluster robust (clustered on the quarter of year of birth level) standard errors in parentheses; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

BW: bandwidth; Pre treat. pred.: pre treatment prediction; Control variables: YES (Age of individuals and year of questionnaire), YES+ (Age of individuals and year of questionnaire, marital status, children in the household, high education dummy)

Table A16: ERA reform analysis: Multinomial logit estimation

Category	(1) No care	(2) Non-intensive care	(3) Intensive care
Estimation parameters			
Reform	-	-0.647* (0.352)	-0.389 (0.245)
Marginal effects			
Reform	0.056*** (0.021)	-0.032* (0.018)	-0.024 (0.018)
Observations	2412	2412	2412

*Notes:* Categorical variable on no care provided, non-intensive care or intensive care provided; 24-month bandwidth; Cluster robust (clustered on the quarter of year of birth level) standard errors in parentheses; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. Non-intensive care: 1 hour of care per weekday, Intensive care: at least 2 hours of care per weekday; BW: bandwidth; Control variables: Age of individuals and year of questionnaire

Table A17: ERA reform analysis: Effects from IV estimation

	(1)	(2)
	Probability to provide care	
2SLS	0.476** (0.215)	0.597** (0.301)
Local polynomial	0.389* (0.214)	0.486* (0.280)
	Daily hours of care	
2SLS	0.601 (0.737)	0.731 (0.960)
Local polynomial	0.537 (0.568)	0.720 (0.714)
	Probability to provide intensive care	
2SLS	0.193 (0.126)	0.223 (0.174)
Local polynomial	0.171 (0.111)	0.202 (0.137)
Observations	2412	2397
Polynomial	1	1
Controls	YES	YES+
First stage F-value	7.546	5.410

*Notes:* 24-month bandwidth, triangular kernel; Cluster robust (clustered on the quarter of year of birth level) standard errors in parentheses; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

BW: bandwidth; Pre treat. pred.: pre treatment prediction; Control variables: YES (Age of individuals and year of questionnaire), YES+ (Age of individuals and year of questionnaire, marital status, children in the household, high education dummy)

Table A18: ERA reform analysis: effects on informal care provision

	(1)	(2)	(3)
Ages 57-59			
Hours of care provision			
Reform	-0.089 (0.078)	-	-
Placebo 1951	-	0.001 (0.147)	
Placebo 1953	-	-	-0.003 (0.091)
Pre treat. pred.	0.356	0.358	0.291
Probability to provide care			
Reform	-0.016 (0.032)	-	-
Placebo 1951	-	0.049 (0.040)	
Placebo 1953	-	-	0.032 (0.037)
Pre treat. pred.	0.147	0.112	0.099
Intensive care			
Reform	-0.017 (0.021)	-	
Placebo 1951	-	0.015 (0.025)	
Placebo 1953	-	-	-0.002 (0.022)
Pre treat. pred.	0.072	0.069	0.068
Observations	2 396	2 367	2 447

*Notes:* Placebo test using different age groups and different cutoff dates, 24-month BW, OLS estimator; Cluster robust (clustered on the quarter of year of birth level) standard errors in parentheses; \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

BW: bandwidth; Pre treat. pred.: pre treatment prediction; Control variables: Age of individuals and year of questionnaire; Kernel: triangular.

Table A19: Placebo check: reduced-form effects of age 60 on care provision for women born before 1952

Variable	(1) Hours of care provision	(2) Probability to provide care	(3) Intensive care
Age 60	0.130** (0.054)	0.022 (0.015)	0.014 (0.010)
Observations	8 379	8 379	8 379

*Notes:* 5-year bandwidth; Cluster robust (clustered on the quarter age level) standard errors in parentheses; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

Table A20: Reduced-form effects of age 60 on care provision for women born from 1952 onward

Variable	(1) Hours of care provision	(2) Probability to provide care	(3) Intensive care
Age 60	0.054 (0.049)	0.023 (0.028)	0.006 (0.018)
Observations	4 418	4 418	4 418

*Notes:* 5-year bandwidth; Cluster robust (clustered on the quarter age level) standard errors in parentheses; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

Table A21: ERA discontinuity analysis: effects of retirement on several time use variables of the spouse

Partner outcome	(1) Informal care hours	(2) Informal care	(3) Exercise	(4) Hobbies	(5) Education	(6) Child care	(7) House work	(8) Run errands	(9) Job
Retired	-0.132 (0.108)	-0.059 (0.060)	-0.474** (0.209)	0.855* (0.450)	-0.094 (0.126)	-0.014 (0.130)	-0.183 (0.218)	0.003 (0.174)	-2.494*** (0.899)
Observations	7 253	7 253	7 253	7 253	7 253	7 253	7 253	7 253	7 253
Pre-Treatment mean	0.079	0.053	0.138	2.286	0.183	0.109	0.991	0.913	4.927
KL.Paap	57.53	57.53	57.53	57.53	57.53	57.53	57.53	57.53	57.53

Notes: 5-year bandwidth; (2): optimally selected bandwidth; Cluster robust (clustered on the month of age level) standard errors in parentheses; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1; controls for year of observation, number of children in the household, and marital status; KL.Paap: Kleibergen-Paap statistic.

Table A22: Effects of the ERA threshold on retirement

	(1)	(2)	(3)	(4)	(5)
All women					
ERA	0.133** (0.060)	0.101** (0.038)	0.121*** (0.030)	0.137*** (0.025)	0.172*** (0.022)
Observations	1,705	3,540	5,573	7,764	10,095
Women providing care within the household					
ERA	0.109* (0.059)	0.098** (0.038)	0.127*** (0.030)	0.145*** (0.024)	0.178*** (0.022)
Observations	1,570	3,265	5,122	7,139	9,303
Women born before 1952					
Age 60	0.138** (0.063)	0.115*** (0.039)	0.134*** (0.031)	0.154*** (0.026)	0.187*** (0.024)
Observations	1,592	3,236	4,923	6,649	8,379
Bandwidth years	1	2	3	4	5

*Notes:* Women retiring from employment, several bandwidths, 2001-2015; Cluster robust (clustered on the month of age level) standard errors in parentheses; \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

Table A23: ERA discontinuity analysis: effects of retirement on care provision, women retiring without unemployment spells before their ERA

Instrument	(1) ERA	(2) ERA	(3) ERA	(4) Age 60
Hours of care provision				
Retired	0.758** (0.333)	0.065 (0.714)	0.794** (0.354)	0.597* (0.308)
Pre-Treatment mean	0.218	0.209	0.218	0.226
Observations	12.956	6 189	12.956	11.124
Bandwidth years	5	2.642	5	5
Informal care				
Retired	0.081 (0.087)	0.016 (0.177)	0.097 (0.091)	0.055 (0.081)
Pre-Treatment mean	0.100	0.098	0.100	0.099
Observations	12.956	7 300	12.956	11.124
Bandwidth years	5	3.063	5	5
Intensive care				
Retired	0.076 (0.070)	-0.056 (0.138)	0.081 (0.074)	0.042 (0.067)
Pre-Treatment mean	0.049	0.048	0.049	0.050
Observations	12.956	7 540	12.956	11.124
Bandwidth years	5	3.156	5	5
Controls	-	-	YES	-
KL.Paap	47.56	-	41.39	58.35

*Notes:* Main effects and robustness checks, 2001-2015, linear polynomial, triangular kernel; ERA: cohort-specific early retirement age (all women), Age 60: only age 60 as instrument (women born before 1952); (2): optimally selected bandwidth; Cluster robust (clustered on the month of age level) standard errors in parentheses; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1; YES: controls for year of observation, number of children in the household, and marital status; Kl.Paap: Kleibergen-Paap statistic.



Table A24: ERA discontinuity analysis: effects of retirement on care provision

Instrument	(1) ERA	(2) ERA	(3) ERA	(4) ERA
Hours of care provision				
RD-Estimate	0.816** (0.356)	1.155 (0.733)	1.485** (0.715)	0.782** (0.336)
Pre-Treatment mean	0.159	0.159	0.159	0.159
Probability to provide care				
RD-Estimate	0.159 (0.114)	0.364 (0.254)	0.680* (0.356)	0.139 (0.105)
Pre-Treatment mean	0.091	0.091	0.091	0.091
Intensive care				
RD-Estimate	0.101 (0.070)	0.156 (0.142)	0.207 (0.141)	0.095 (0.065)
Pre-Treatment mean	0.038	0.038	0.038	0.038
Observation	10 095	10 095	10 095	10 095
Local polynomial	1	2	3	1
Kernel	Tri.	Tri.	Tri.	Epa.

*Notes:* Main effects and robustness checks using a local linear estimator, 5-year bandwidth, women retiring from employment, 2001-2015; ERA: cohort-specific early retirement age (all women); Tri.: triangular, Epa.: epanechnikov; Cluster robust (clustered on the month of age level) standard errors in parentheses; \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

Table A25: ERA discontinuity analysis: effects of retirement on care provision within the own household

Instrument	(1) ERA	(2) ERA	(3) ERA	(4) ERA
Hours of care provision				
RD-Estimate	0.702** (0.343)	0.846 (0.832)	0.829 (1.055)	0.688** (0.314)
Pre-Treatment mean	0.042	0.042	0.042	0.042
Probability to provide care				
RD-Estimate	0.142** (0.068)	0.232 (0.165)	0.266 (0.227)	0.134** (0.062)
Pre-Treatment mean	0.019	0.019	0.019	0.019
Intensive care				
RD-Estimate	0.138** (0.056)	0.184 (0.143)	0.181 (0.198)	0.134*** (0.051)
Pre-Treatment mean	0.012	0.025	0.012	0.012
Observation	9 303	9 303	9 303	9 303
Kernel	Tri.	Tri.	Tri.	Epa.
Local polynomial	1	2	3	1

*Notes:* Main effects and robustness checks using a local linear estimator, 5-year bandwidth, women retiring from employment, 2001-2015; ERA: cohort-specific early retirement age (all women); Tri.: triangular, Epa.: epanechnikov; Cluster robust (clustered on the month of age level) standard errors in parentheses; \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

Table A26: ERA discontinuity analysis: effects of retirement on care provision

Instrument	(1) ERA	(2) ERA	(3) ERA	(4) Age 60
Hours of care provision				
Retired	0.772*** (0.274)	0.932 (0.576)	0.813*** (0.287)	0.695*** (0.253)
Observations	10 095	6 450	10 095	8 379
Bandwidth years	5	3.427	5	5
Pre-Treatment mean	0.159	0.157	0.159	0.151
Probability to provide care				
Retired	0.131* (0.071)	0.223 (0.163)	0.146* (0.075)	0.118* (0.066)
Observations	10 095	6 530	10 095	8 379
Bandwidth years	5	3.468	5	5
Pre-Treatment mean	0.091	0.088	0.091	0.085
Intensive care				
Retired	0.096* (0.054)	0.116 (0.110)	0.102* (0.056)	0.075 (0.050)
Observations	10 095	7 268	10 095	8 379
Pre-Treatment mean	0.038	0.038	0.038	0.035
Bandwidth years	5	3.806	5	5
Controls	-	-	YES	-
Local Polynomial	1	1	1	1
KL.Paap	89.87	-	84.02	106.3

*Notes:* Main effects and robustness checks, women retiring from employment, 2001-2015, triangular kernel ;ERA: cohort-specific early retirement age (all women), Age 60: only age 60 as instrument (women born before 1952); Standard errors in parentheses (clustered on the individual level); (2): optimally selected bandwidth; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1; Controls for year of observation, number of children in the household, and marital status; Kl.Paap: Kleibergen-Paap statistic.

Table A27: ERA reform analysis: effects on important covariates

Variables	(1) Marital status	(2) High education	(3) Children in HH.	(4) Care need in HH.
Reform	0.134 (0.077)	0.083 (0.061)	0.015 (0.018)	0.029* (0.016)
Observations	2 397	2 412	2 412	2 412
Pre treat. pred.	0.721	0.332	0.204	0.023

*Notes:* 24-month BW, OLS estimator; Cluster robust (clustered on the quarter of year of birth level) standard errors in parentheses; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

BW: bandwidth; Pre treat. pred.: pre treatment prediction; HH.: household.

Table A28: ERA reform analysis: effects on the probability to be married (women aged 60-62)

	(1)	(2)	(3)	(4)	(5)	(6)
OLS	0.134 (0.130)	0.134 (0.077)	0.117* (0.060)	-0.026 (0.145)	0.144 (0.141)	0.162 (0.104)
Local polynomial	0.071 (0.116)	0.139* (0.085)	0.134** (0.064)	-0.110 (0.090)	0.092 (0.121)	0.139 (0.101)
Observations	1 234	2 397	3 541	1 234	2 397	3 541
Polynomial	1	1	1	2	2	2
BW months	12	24	36	12	24	36
Pre treat. pred.	0.734	0.690	0.715	0.850	0.726	0.677

*Notes:* Several bandwidths, OLS and local linear estimator, triangular kernel; Cluster robust (clustered on the quarter of year of birth level) standard errors in parentheses; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. BW: bandwidth; Pre treat. pred.: pre treatment prediction

Table A29: ERA reform analysis: effects on the probability to be highly educated (women aged 60-62)

	(1)	(2)	(3)	(4)	(5)	(6)
OLS	0.217*** (0.052)	0.083 (0.061)	0.065 (0.051)	0.167* (0.089)	0.179** (0.065)	0.133** (0.064)
Local polynomial	0.198*** (0.052)	0.125** (0.056)	0.093* (0.049)	0.215*** (0.058)	0.220*** (0.051)	0.155*** (0.059)
Observations	1 245	2 412	3 569	1 245	2 412	3 569
Polynomial	1	1	1	2	2	2
BW months	12	24	36	12	24	36
Pre treat. pred.	0.241	0.268	0.297	0.293	0.249	0.243

*Notes:* Several bandwidths, OLS and local linear estimator, triangular kernel; Cluster robust (clustered on the quarter of year of birth level) standard errors in parentheses; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. BW: bandwidth; Pre treat. pred.: pre treatment prediction

Table A30: ERA reform analysis: effects on the probability of a child living in the household (women aged 60-62)

	(1)	(2)	(3)	(4)	(5)	(6)
OLS	-0.019 (0.033)	0.015 (0.018)	0.041** (0.017)	0.036 (0.041)	-0.003 (0.029)	-0.021 (0.028)
Local polynomial	0.002 (0.030)	0.008 (0.017)	0.016 (0.014)	0.035 (0.044)	-0.008 (0.033)	-0.003 (0.022)
Observations	1 245	2 412	3 569	1 245	2 412	3 569
Polynomial	1	1	1	2	2	2
BW months	12	24	36	12	24	36
Pre treat. pred.	0.125	0.085	0.076	0.075	0.111	0.108

*Notes:* Several bandwidths, OLS and local linear estimator, triangular kernel; Cluster robust (clustered on the quarter of year of birth level) standard errors in parentheses; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. BW: bandwidth; Pre treat. pred.: pre treatment prediction

Table A31: ERA reform analysis: effects on the probability that a care dependent person lives in the household (women aged 60-62)

	(1)	(2)	(3)	(4)	(5)	(6)
OLS	0.041 (0.026)	0.029* (0.016)	0.031* (0.016)	0.000 (0.053)	0.052** (0.023)	0.037** (0.017)
Local polynomial	0.026 (0.030)	0.039** (0.018)	0.035** (0.014)	0.023 (0.046)	0.035 (0.031)	0.036 (0.022)
Observations	1 245	2 412	3 569	1 245	2 412	3 569
Polynomial	1	1	1	2	2	2
BW months	12	24	36	12	24	36
Pre treat. pred.	0.017	0.028	0.026	0.056	0.024	0.032

*Notes:* Several bandwidths, OLS and local linear estimator, triangular kernel; Cluster robust (clustered on the quarter of year of birth level) standard errors in parentheses; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. BW: bandwidth; Pre treat. pred.: pre treatment prediction

Table A32: ERA reform analysis: effects on the probability to be married (women aged 55-60)

	(1)	(2)	(3)	(4)	(5)	(6)
OLS	0.142 (0.077)	0.120** (0.049)	0.131*** (0.040)	0.149 (0.125)	0.151 (0.087)	0.132** (0.063)
Local polynomial	0.145* (0.086)	0.133** (0.058)	0.131*** (0.044)	0.081 (0.091)	0.147* (0.086)	0.134* (0.071)
Observations	1 959	3 919	5 820	1 959	3 919	5 820
Polynomial	1	1	1	2	2	2
BW months	12	24	36	12	24	36
Pre treat. pred.	0.750	0.727	0.731	0.746	0.739	0.728

*Notes:* Several bandwidths, OLS and local linear estimator, triangular kernel; Cluster robust (clustered on the quarter of year of birth level) standard errors in parentheses; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. BW: bandwidth; Pre treat. pred.: pre treatment prediction

Table A33: ERA reform analysis: effects on the probability to be highly educated (women aged 55-60)

	(1)	(2)	(3)	(4)	(5)	(6)
OLS	0.165*** (0.032)	0.013 (0.051)	-0.005 (0.044)	0.153*** (0.033)	0.160*** (0.041)	0.080* (0.044)
Local polynomial	0.163*** (0.030)	0.075* (0.039)	0.030 (0.041)	0.159*** (0.038)	0.188*** (0.036)	0.110*** (0.039)
Observations	1 974	3 940	5 856	1 974	3 940	5 856
Polynomial	1	1	1	2	2	2
BW months	12	24	36	12	24	36
Pre treat. pred.	0.310	0.369	0.382	0.338	0.298	0.328

*Notes:* Several bandwidths, OLS and local linear estimator, triangular kernel; Cluster robust (clustered on the quarter of year of birth level) standard errors in parentheses; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. BW: bandwidth; Pre treat. pred.: pre treatment prediction

Table A34: ERA reform effects on the probability of a child living in the household (women aged 55-60)

	(1)	(2)	(3)	(4)	(5)	(6)
OLS	-0.062 (0.052)	-0.002 (0.041)	0.027 (0.039)	-0.090* (0.042)	-0.064 (0.048)	-0.055 (0.042)
Local polynomial	-0.081 (0.050)	-0.025 (0.046)	-0.004 (0.037)	-0.122** (0.052)	-0.081 (0.060)	-0.055 (0.054)
Observations	1 974	3 940	5 856	1 974	3 940	5 856
Polynomial	1	1	1	2	2	2
BW months	12	24	36	12	24	36
Pre treat. pred.	0.252	0.202	0.165	0.190	0.253	0.250

*Notes:* Several bandwidths, OLS and local linear estimator, triangular kernel; Cluster robust (clustered on the quarter of year of birth level) standard errors in parentheses; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. BW: bandwidth; Pre treat. pred.: pre treatment prediction

Table A35: Number of observations by birth year and age for in the ERA reform analysis sample

Age Birthyear	60	61	62	Total
1949	167 (30.14)	185 (33.39)	202 (36.46)	554 (100.00)
1950	180 (31.69)	204 (35.92)	184 (32.39)	568 (100.00)
1951	216 (34.50)	205 (32.75)	205 (32.75)	626 (100.00)
1952	195 (33.85)	196 (34.03)	185 (32.12)	576 (100.00)
1953	214 (36.15)	185 (31.25)	193 (32.60)	592 (100.00)
1954	218 (33.38)	215 (32.92)	220 (33.69)	653 (100.00)
Total	1 190 (33.34)	1 190 (33.34)	1 189 (33.31)	3 569 (100.00)

*Notes:* Row-percentages in brackets

Table A36: ERA reform analysis: heterogeneous effects on informal care provision

	(1)	(2)	(3)	(4)	(5)	(6)
Hours of care provision						
OLS	-0.094 (0.130)	-0.533** (0.171)	0.130 (0.158)	-0.228 (0.130)	0.583 (0.385)	-0.139 (0.185)
Local polynomial	-0.150 (0.140)	-0.562*** (0.158)	0.094 (0.158)	-0.303* (0.168)	0.698 (0.514)	-0.199 (0.215)
Pre treat. pred.	0.356	0.520	0.294	0.457	-0.202	0.463
Probability to provide care						
OLS	-0.057* (0.029)	-0.195** (0.071)	0.012 (0.039)	-0.096*** (0.028)	0.134 (0.112)	-0.060 (0.037)
Local polynomial	-0.075*** (0.023)	-0.204*** (0.062)	-0.006 (0.036)	-0.117*** (0.015)	0.182 (0.157)	-0.079*** (0.026)
Pre treat. pred.	0.173	0.254	0.142	0.204	0.008	0.191
Intensive care						
OLS	-0.031 (0.020)	-0.194*** (0.016)	0.051 (0.028)	-0.060** (0.020)	0.124 (0.085)	-0.034 (0.030)
Local polynomial	-0.044** (0.020)	-0.209*** (0.018)	0.041 (0.027)	-0.073** (0.029)	0.130 (0.109)	-0.042 (0.036)
Pre treat. pred.	0.105	0.196	0.071	0.135	-0.051	0.120
Observations	1 245	368	877	1 011	234	976

*Notes:* 12-month BW, OLS and local linear estimator, triangular kernel; (1): main effect (2): highly educated, (3): lower educated, (4): retiring from employment, (5): women with unemployment spells, (6): women eligible for women's pension; Cluster robust (clustered on the quarter of year of birth level) standard errors in parentheses; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

BW: bandwidth; Pre treat. pred.: pre treatment prediction; Control variables: Age of individuals and year of questionnaire;

Table A37: ERA reform analysis: heterogeneous effects on informal care provision

	(1)	(2)	(3)	(4)	(5)	(6)
Hours of care provision						
OLS	-0.102 (0.077)	-0.186 (0.175)	-0.045 (0.102)	-0.118 (0.075)	-0.021 (0.298)	-0.112 (0.101)
Local polynomial	-0.085 (0.080)	-0.078 (0.173)	-0.058 (0.102)	-0.152* (0.085)	0.205 (0.305)	-0.092 (0.111)
Pre treat. pred.	0.366	0.333	0.375	0.367	0.361	0.385
Probability to provide care						
OLS	-0.051** (0.023)	-0.122** (0.046)	-0.017 (0.030)	-0.056* (0.028)	-0.023 (0.076)	-0.072** (0.026)
Local polynomial	-0.056** (0.024)	-0.121** (0.050)	-0.023 (0.030)	-0.069*** (0.026)	-0.001 (0.092)	-0.074*** (0.028)
Pre treat. pred.	0.163	0.177	0.158	0.163	0.167	0.188
Intensive care						
OLS	-0.020 (0.015)	-0.082** (0.033)	0.009 (0.023)	-0.028 (0.020)	0.016 (0.057)	-0.034* (0.019)
Local polynomial	-0.025 (0.015)	-0.095*** (0.033)	0.012 (0.021)	-0.037* (0.020)	0.029 (0.061)	-0.034 (0.021)
Pre treat. pred.	0.087	0.099	0.083	0.092	0.068	0.097
Observations	3 569	1 028	2 541	2 720	849	2 745

*Notes:* 36-month BW, OLS and local linear estimator, triangular kernel; (1): main effect (2): highly educated, (3): lower educated, (4): retiring from employment, (5): women with unemployment spells, (6): women eligible for women's pension; Cluster robust (clustered on the quarter of year of birth level) standard errors in parentheses; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

BW: bandwidth; Pre treat. pred.: pre treatment prediction; Control variables: Age of individuals and year of questionnaire;

Table A38: ERA reform analysis: heterogeneous effects on informal care provision

	(1)	(2)	(3)	(4)	(5)	(6)
	Hours of care provision					
OLS	-0.107 (0.151)	-0.386 (0.276)	0.082 (0.175)	-0.260* (0.147)	0.643 (0.502)	-0.213 (0.221)
Local polynomial	-0.175 (0.150)	-0.744*** (0.197)	0.137 (0.159)	-0.297* (0.174)	0.478 (0.558)	-0.241 (0.230)
Pre treat. pred.	0.385	0.352	0.392	0.482	-0.101	0.531
	Probability to provide care					
OLS	-0.069** (0.028)	-0.165** (0.078)	-0.016 (0.037)	-0.112*** (0.026)	0.129 (0.147)	-0.094** (0.039)
Local polynomial	-0.083*** (0.031)	-0.232*** (0.070)	-0.004 (0.044)	-0.122*** (0.023)	0.126 (0.162)	-0.088** (0.035)
Pre treat. pred.	0.184	0.216	0.173	0.210	0.064	0.220
	Intensive care					
OLS	-0.035 (0.023)	-0.170*** (0.038)	0.039 (0.034)	-0.070** (0.025)	0.131 (0.101)	-0.064 (0.040)
Local polynomial	-0.049** (0.023)	-0.232*** (0.020)	0.046 (0.029)	-0.078** (0.033)	0.115 (0.113)	-0.052 (0.039)
Pre treat. pred.	0.112	0.166	0.093	0.139	-0.021	0.143
Observations	2 412	735	1 677	1 873	539	1 878

*Notes:* 24-month BW, OLS and local linear estimator, quadratic trend, triangular kernel; (1): main effect (2): highly educated, (3): lower educated, (4): retiring from employment, (5): women with unemployment spells, (6): women eligible for women's pension; Cluster robust (clustered on the quarter of year of birth level) standard errors in parentheses; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

BW: bandwidth; Pre treat. pred.: pre treatment prediction; Control variables: Age of individuals and year of questionnaire;



Table A39: ERA reform analysis: heterogeneous effects on informal care provision

	(1)	(2)	(3)	(4)	(5)	(6)
Hours of care provision						
OLS	-0.260 (0.267)	-0.617* (0.269)	0.003 (0.295)	-0.422 (0.272)	0.762 (0.511)	-0.311 (0.383)
Local polynomial	-0.192 (0.260)	-0.479** (0.244)	0.047 (0.277)	-0.420 (0.311)	1.301*** (0.427)	-0.186 (0.364)
Pre treat. pred.	0.592	0.630	0.599	0.617	0.193	0.686
Probability to provide care						
OLS	-0.111*** (0.030)	-0.219** (0.092)	-0.043 (0.039)	-0.158*** (0.031)	0.213 (0.126)	-0.116** (0.043)
Local polynomial	-0.090*** (0.016)	-0.178** (0.074)	-0.032 (0.039)	-0.154*** (0.021)	0.358** (0.171)	-0.094*** (0.020)
Pre treat. pred.	0.256	0.294	0.247	0.279	0.0527	0.278
Intensive care						
OLS	-0.066 (0.039)	-0.235*** (0.032)	0.025 (0.049)	-0.090** (0.034)	0.118 (0.127)	-0.056 (0.057)
Local polynomial	-0.056* (0.034)	-0.244*** (0.044)	0.038 (0.036)	-0.101** (0.041)	0.265*** (0.101)	-0.048 (0.054)
Pre treat. pred.	0.137	0.239	0.106	0.144	0.0283	0.136
Observations	1 245	368	877	1 011	234	976

*Notes:* 12-month BW, OLS and local linear estimator, quadratic trend, triangular kernel; (1): main effect (2): highly educated, (3): lower educated, (4): retiring from employment, (5): women with unemployment spells, (6): women eligible for women's pension; Cluster robust (clustered on the quarter of year of birth level) standard errors in parentheses; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

BW: bandwidth; Pre treat. pred.: pre treatment prediction; Control variables: Age of individuals and year of questionnaire;

Table A40: ERA reform analysis: heterogeneous effects on informal care provision

	(1)	(2)	(3)	(4)	(5)	(6)
	Hours of care provision					
OLS	-0.056 (0.128)	0.092 (0.341)	-0.073 (0.160)	-0.199 (0.122)	0.542 (0.399)	-0.066 (0.167)
Local polynomial	-0.100 (0.123)	-0.188 (0.234)	-0.008 (0.142)	-0.257** (0.124)	0.617 (0.459)	-0.178 (0.172)
Pre treat. pred.	0.314	0.062	0.403	0.403	-0.035	0.389
	Probability to provide care					
OLS	-0.067*** (0.021)	-0.128** (0.062)	-0.034 (0.028)	-0.091*** (0.024)	0.034 (0.117)	-0.080** (0.029)
Local polynomial	-0.072*** (0.027)	-0.158*** (0.060)	-0.026 (0.037)	-0.105*** (0.020)	0.079 (0.139)	-0.087*** (0.031)
Pre treat. pred.	0.181	0.200	0.174	0.198	0.117	0.212
	Intensive care					
OLS	-0.032 (0.022)	-0.120*** (0.038)	0.015 (0.032)	-0.050* (0.027)	0.051 (0.082)	-0.036 (0.030)
Local polynomial	-0.033* (0.020)	-0.150*** (0.033)	0.028 (0.027)	-0.060** (0.025)	0.091 (0.090)	-0.051* (0.031)
Pre treat. pred.	0.096	0.131	0.084	0.110	0.032	0.111
Observations	3 569	1 028	2 541	2 720	849	2 745

*Notes:* 36-month BW, OLS and local linear estimator, quadratic trend, triangular kernel; (1): main effect (2): highly educated, (3): lower educated, (4): retiring from employment, (5): women with unemployment spells, (6): women eligible for women's pension; Cluster robust (clustered on the quarter of year of birth level) standard errors in parentheses; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

BW: bandwidth; Pre treat. pred.: pre treatment prediction; Control variables: Age of individuals and year of questionnaire;

Table A41: ERA reform analysis: effects on informal care provision

	(1)	(2)	(3)	(4)
	Hours of care provision			
Local polynomial	-0.085 (0.099)	-0.151 (0.137)	-0.074 (0.102)	-0.082 (0.078)
	Probability to provide care			
Local polynomial	-0.075*** (0.029)	-0.073*** (0.027)	-0.059** (0.026)	-0.055** (0.025)
	Intensive care			
Local polynomial	-0.033* (0.017)	-0.043** (0.020)	-0.025 (0.019)	-0.024 (0.015)
Observations	1 896	1 245	2 412	3 569
Controls	YES	YES	YES	YES
Kernel	Tri.	Epa.	Epa.	Epa.
BW months	19.79	12	24	36

*Notes:* Robustness checks using a local linear estimator, several bandwidths; Cluster robust (clustered on the quarter of year of birth level) standard errors in parentheses; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

BW: bandwidth; Control variables: YES (Age of individuals and year of questionnaire); Pre treat. pred.: pre treatment prediction; Tri.: triangular, Epa.: epanechnikov

Table A42: ERA reform analysis: effects on informal care provision imposing a constant month-of-birth trend

	(1)	(2)	(3)	(4)
	Hours of care provision			
OLS	-0.078 (0.101)	-0.073 (0.101)	-0.076 (0.099)	-0.070 (0.099)
Pre treat. pred.	0.310	0.310	0.385	0.385
	Probability to provide care			
OLS	-0.056** (0.022)	-0.054** (0.022)	-0.057** (0.022)	-0.054** (0.023)
Pre treat. pred.	0.170	0.170	0.184	0.184
	Intensive care			
OLS	-0.024 (0.017)	-0.021 (0.019)	-0.023 (0.017)	-0.020 (0.020)
Pre treat. pred.	0.0822	0.0822	0.112	0.112
Observations	2 412	2 397	2 412	2 397
Polynomial	1	1	2	2
Controls	YES	YES+	YES	YES+

*Notes:* 24-month BW, OLS estimator; Cluster robust (clustered on the quarter of year of birth level) standard errors in parentheses; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

BW: bandwidth; Control variables: YES (Age of individuals and year of questionnaire), YES+ (Age of individuals and year of questionnaire, marital status, children in the household, high education dummy); Pre treat. pred.: pre treatment prediction.

310 **References**

- BMAS (2016). Ergänztender Bericht der Bundesregierung zum Rentenversicherungsbericht 2016 gemäss §154 Abs. 2 SGBVI; Alterssicherungsbericht(2016).
- BMJ (2008). Gesetz über die Pflegezeit (Pflegezeitgesetz - PflegeZG). URL: <http://www.gesetze-im-internet.de/pflegezg/PflegeZG.pdf> (last accessed on 31.07.2017).
- BMJ (2011). Gesetz über die Familienpflegezeit (Familienpflegezeitgesetz - FPfZG). URL: <http://www.gesetze-im-internet.de/fpfzg/FPfZG.pdf> (last accessed on 31.07.2017).
- 320 Bundestag, D. (2016). *Antwort der Bundesregierung auf die Kleine Anfrage der Abgeordneten Elisabeth Scharfenberg, Dr. Franziska Brantner, Katja Dörner, weiterer Abgeordneter und der Fraktion BÜNDNIS 90/DIE GRÜNEN*. Technical Report Drucksache 18/9111.
- Calonico, S., Cattaneo, M. D., Farrell, M. H., & Titiunik, R. (2017). rdrobust: Software for regression discontinuity designs. *Stata Journal*, *17*, 372–404.
- 325 Calonico, S., Cattaneo, M. D., & Titiunik, R. (2014). Robust nonparametric confidence intervals for regression-discontinuity designs. *Econometrica*, *82*, 2295–2326.
- Coe, N. B., & Zamarro, G. (2011). Retirement effects on health in Europe. *Journal of Health Economics*, *30*, 77–86.
- 330 Insler, M. (2014). The health consequences of retirement. *Journal of Human Resources*, *49*, 195–233.