

Supplemental Appendix for: “Survivors’ Mental Health and the Protective Role of Income Stability”

Itzik Fadlon, Astrid Sophie Fugleholm, and Torben Heien Nielsen

Appendix A: Institutional Background

This appendix describes the Danish institutional setting. In the event of a spousal death and the financial strain imposed by the loss of a partner, two types of institutions are relevant to consider: health care and its insurance components and safety-net programs providing income security.

Health care. Denmark has a single-payer, tax-funded universal health insurance scheme that provides free access to health care for all Danish residents (Birk et al. 2024).

Primary care is provided by primary care physicians (PCPs), specialists, psychiatric doctors, home care, and care centers. Visits to PCPs are free, while treatments by other providers come with varying, yet limited out-of-pocket costs. Secondary care is almost entirely provided by public hospitals free of charge. Private hospitals accounted for only 9.8 percent of medical procedures in 2021 and mostly conduct routine procedures (Skovgaard, 2022). Patients who seek care at private hospitals pay either out-of-pocket or through a private insurance, but in most cases patients who utilize private hospitals are referred from public hospitals as a result of long waitlists. In such cases of referrals, patients incur no out-of-pocket expenses.

Prescription drugs (including consumption of psycholeptics and psychoanaleptics, which constitutes our main outcome of interest) are heavily subsidized. The structure of subsidy scheme is broadly similar to Medicare Part D (Medicare, 2024): subsidy rates range from 0 to 100 percent, increase with spending, and are independent of income (Danish Medicines Agency, 2019, 2023).

Income Security. Similar to other developed economies, Denmark has three types of income security institutions that are relevant for our context of health shocks: a) Social Security (Disability Insurance and Old-Age Pension); b) additional government income assistance programs (e.g., sick-pay and an early retirement); and c) privately-purchased insurance policies. We provide a description of their main features and benefit schedules below.

Social Security (Disability Insurance and Old-Age Pensions). Similar to the US Social Security system, the Danish law of Social Pensions (Retsinformation, 2024) establishes Disability Insurance (DI) benefits for individuals younger than retirement age with a documented limitation in work capacity, and Old-Age Pension (OAP) income for all Danish residents that have reached the full retirement age (which is

incrementally increasing from 65 to 67 for cohorts born after 1954). In both schemes benefits are means-tested against current (own and partner's) income. Unlike the US, benefits are independent of earnings history. The benefit rates are set centrally, but the schemes are administered at the municipality level.

Individuals younger than the OAP age, who experience a health shock that permanently reduces their ability to work, are covered by DI. Eligibility for benefits requires loss in work capacity of at least 50 percent, which is determined at the local municipality level. If an application is approved, individuals receive benefits until they reach the OAP age. In 2023, for example, annual benefits from DI amounted to DKK 207,780 (US\$30,200) for individuals in a couple (married or cohabiting) and DKK 244,440 (US\$35,500) for single individuals (Ældresagen, 2024a).

While the Danish DI incorporates the traditional disability benefits scheme for medical reasons, it can also be awarded for social reasons to individuals who are unable to maintain a sufficient standard of living on their own (Bingley et al., 2011). In practice, it therefore also acts as the relevant social insurance program for surviving spouses who have financial needs in lieu of an explicit government survivors benefits scheme in the Danish system. Fadlon and Nielsen (2021) document that the share of surviving spouses younger than the OAP age who end up on DI in the year of spousal death is 25.5 percent.

At the OAP age of 65-67 (where the cut-off age varies by birth cohort as mentioned above), all Danish residents become eligible for the OAP. In 2024, benefits amounted to DKK 179,328 (US\$26,000) for single individuals and 132,360 DKK (US\$19,200) for married or cohabiting individuals (Ældresagen, 2024b). The OAP has a poverty combating element leaving local municipalities with the opportunity to reward pensioners, who are in poor health and have limited savings, additional subsidies to cover medical expenses for prescription drugs, dental care, foot care, physiotherapy, chiropractics, psychology support, and hearing aids. Eligibility for health-related coverage must be renewed annually.

Additional Government Assistance Programs. Other social insurance programs that can potentially provide protection for households experiencing a health shock include sick pay and a voluntary early retirement program. Sick pay targets individuals experiencing a somatic or mental health condition that temporarily reduces their ability to work. Individuals self-report their illness to their employers and upon approval receive benefits for a maximum of 22 weeks within 9 months. Benefits are based on working hours and income during the three months prior to the onset of the illness. In 2023, for example, they amounted to a maximum of DKK 236,600 (US\$34,300) per year (Borger.dk, 2023). In addition, starting at age 60 (and until the OAP age), individuals who have voluntarily been a member of an unemployment insurance fund for a sufficiently long period are eligible for the Voluntary Early Retirement Pension (VERP). In 2024, benefits amounted to DKK 165,024 (US\$24,000) and DKK 244,308 (US\$35,500) per

year for those partially and fully insured, respectively (Ældresagen, 2024c). Note that a person receiving VERP cannot receive DI simultaneously.

Private Insurance. In recent years, the life insurance coverage rate has been increasing as a result of expansions of schemes through labor market pensions described in Section 1. However, older and unhealthy households are still largely uncovered by the private market for two reasons. First, their applications are often rejected based on required health screenings. Second, life insurance payouts decline with age. It is common in both group and non-group markets that even when life-insurance products are purchased by younger and healthier households, the coverage sharply declines with age. For example, some large white-collar group-market policies guarantee DKK 1,076,000 (US\$162,050) if the insured employees die before age 45; DKK 853,000 (US\$128,460) if they die between ages 45 and 54; and DKK 538,000 (US\$81,025) if they die between ages 55 and 66, with no transfers if the insured die at or after they reach age 67 (Fadlon and Nielsen, 2021).

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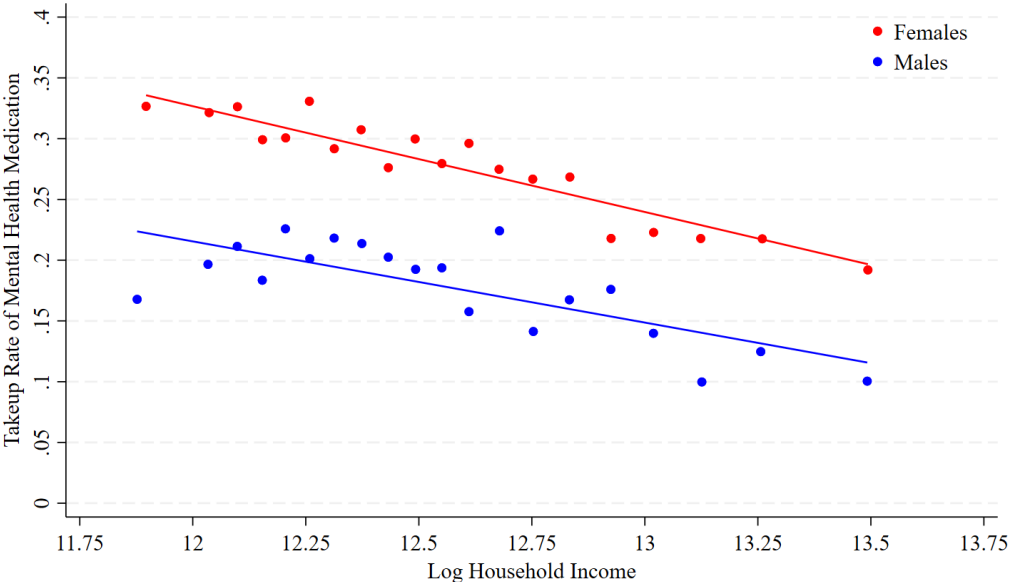
Appendix B: Figures and Tables

Appendix Table B.1: Analysis Sample Summary Statistics

	<i>All, Treatment</i>		<i>All, Control</i>		<i>Males, Treatment</i>		<i>Males, Control</i>		<i>Females, Treatment</i>		<i>Females, Control</i>	
	<i>Mean</i>	<i>SD</i>	<i>Mean</i>	<i>SD</i>	<i>Mean</i>	<i>SD</i>	<i>Mean</i>	<i>SD</i>	<i>Mean</i>	<i>SD</i>	<i>Mean</i>	<i>SD</i>
Year of Observation	2004.3	4.3	2004.4	4.3	2004.4	4.3	2004.4	4.4	2004.3	4.3	2004.3	4.3
<i>A. Surviving Spouse</i>												
Age	65.6	8.4	65.5	8.4	67.0	8.5	67.1	8.5	65.0	8.3	64.6	8.2
Female	0.69	0.46	0.65	0.48	0.00	0.00	0.00	0.00	1.00	0.00	1.00	0.00
Mental Health Medication	0.25	0.43	0.24	0.43	0.18	0.38	0.18	0.38	0.28	0.45	0.27	0.44
Has Child Younger than 18	0.13	0.33	0.08	0.27	0.14	0.35	0.09	0.28	0.12	0.33	0.08	0.27
Has Child Older than 18	0.86	0.35	0.87	0.34	0.79	0.41	0.81	0.39	0.88	0.32	0.89	0.31
Has Earnings	0.32	0.47	0.33	0.47	0.36	0.48	0.36	0.48	0.30	0.46	0.31	0.46
Earnings, DKK	188,051	123,768	189,677	124,984	198,897	138,982	198,444	143,922	182,212	114,347	184,292	111,457
Receives Sick Pay	0.02	0.12	0.02	0.12	0.02	0.12	0.01	0.12	0.02	0.12	0.02	0.12
Sick Pay, DKK	9,603	3,833	9,699	3,688	9,888	3,424	10,353	3,278	9,468	4,017	9,380	3,841
Receives DI / OAP	0.64	0.48	0.62	0.48	0.67	0.47	0.67	0.47	0.62	0.49	0.60	0.49
DI / OAP, DKK	71,110	17,315	70,230	17,384	70,651	16,637	70,085	16,693	71,332	17,631	70,316	17,784
<i>B. Deceased Spouse</i>												
Age	67.6	8.3	67.1	8.2	65.6	8.6	65.6	8.3	68.5	8.0	67.9	8.0
Female	0.31	0.46	0.35	0.48	1.00	0.05	1.00	0.05	0.00	0.02	0.00	0.03
Has Earnings	0.25	0.43	0.27	0.45	0.21	0.41	0.23	0.42	0.26	0.44	0.30	0.46
Earnings, DKK	177,454	138,659	179,167	134,684	173,772	114,225	172,052	107,734	178,804	146,598	182,133	144,357
Receives Sick Pay	0.02	0.14	0.02	0.13	0.02	0.14	0.02	0.13	0.02	0.13	0.02	0.13
Sick Pay, DKK	12,535	4,534	11,976	4,893	12,588	4,555	12,221	4,622	12,510	4,538	11,836	5,049
Receives DI / OAP	0.74	0.44	0.70	0.46	0.71	0.45	0.68	0.47	0.75	0.43	0.71	0.45
DI / OAP, DKK	71,173	17,349	69,855	16,972	72,957	18,303	71,593	17,781	70,407	16,866	68,967	16,473
Number of Households	12,637		15,212		3,934		5,309		8,703		9,903	

Notes: This table provides summary statistics of key variables for our analysis sample. The sample includes households in which one spouse experiences a health event between 1999 and 2018 and dies within 12 months. The treatment group consists of individuals whose spouse experiences a health event in 1999-2013, and the control group consists of individuals whose spouse experiences a similar event but in 2004-2018 (to whom we assign a placebo event five years earlier), where we restrict the sample such that both spouses are in the age range 45-80 at baseline. The sample is balanced across the four years before and after the health event so that each household appears throughout the analysis horizon. The values of the variables are measured in the year before the actual or placebo health event.

Appendix Figure B.1: Takeup Rate of Mental Health Medication by Household Income



Notes: This figure illustrates the association between household income and takeup of mental health medication in the year before the health event among male and female survivors. The sample includes households in which one spouse experiences a health event between 1999 and 2013 and dies within 12 months when both spouses are aged 45-80.

Appendix Table B.2: Mental Health Effects of Spousal Death with Different Bandwidth Values and Unbalanced Sample

	Value of Bandwidth Δ				
	3 (1)	4 (2)	5 (3)	6 (4)	7 (5)
Variable: Treat x Event Time					
-4	-0.0058 (0.0047)	-0.0100** (0.0044)	-0.0093** (0.0044)	-0.0083* (0.0044)	-0.0054 (0.0045)
-3	0.0004 (0.0042)	-0.0011 (0.0041)	-0.0002 (0.0041)	-0.0021 (0.0042)	0.0016 (0.0042)
-2	0.0004 (0.0038)	-0.0041 (0.0039)	-0.0004 (0.0038)	-0.0033 (0.0038)	-0.0021 (0.0039)
-1	0.0000 (0.0000)	0.0000 (0.0000)	0.0000 (0.0000)	0.0000 (0.0000)	0.0000 (0.0000)
0	0.1673*** (0.0049)	0.1681*** (0.0048)	0.1740*** (0.0048)	0.1688*** (0.0049)	0.1746*** (0.0049)
1	0.0989*** (0.0050)	0.0986*** (0.0049)	0.1054*** (0.0049)	0.1062*** (0.0049)	0.1068*** (0.0050)
2	0.0529*** (0.0054)	0.0491*** (0.0050)	0.0532*** (0.0050)	0.0554*** (0.0050)	0.0614*** (0.0051)
3		0.0350*** (0.0056)	0.0385*** (0.0053)	0.0356*** (0.0053)	0.0433*** (0.0054)
4			0.0280*** (0.0058)	0.0266*** (0.0056)	0.0289*** (0.0057)
Baseline mean	0.270	0.260	0.260	0.260	0.260
Number of observations	195,531	220,530	244,412	236,499	228,241
Number of households	19,550	20,406	21,315	21,300	21,178

Notes: This table shows the results from estimating equation (1) for varying values of Δ . The specifications include household fixed effects, calendar year fixed effects, and a quadratic in the surviving spouse's age. The sample includes households in which one spouse experiences a health event between 1999 and 2018 and dies within 12 months. The treatment group consists of individuals whose spouse experiences a health event in 1999-2013, and the control group consists of individuals whose spouse experiences a similar event but in 2004-2018 (to whom we assign a placebo event five years earlier), where we restrict the sample such that both spouses are in the age range 45-80 at baseline. We construct various control groups for different choices of Δ that range from 3 to 7 years of gap in event time relative to households in the treatment group. To ensure that the treatment group stays constant and only the control group varies across values of Δ , we require that the calendar year interval in which households experience a spousal death is the same across values of Δ . Robust standard errors clustered at the household level are reported in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

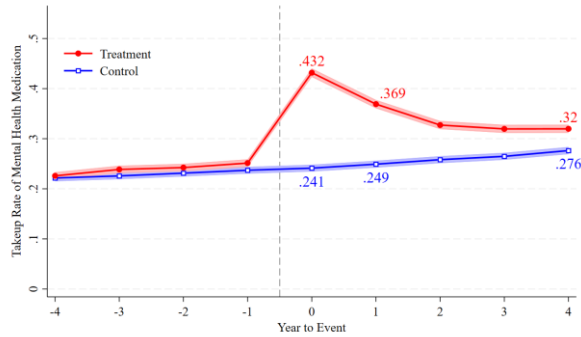
Appendix Table B.3: Mental Health Effects of Spousal Death with Different Bandwidth Values and Randomization

	Value of Bandwidth Δ					Randomization
	3 (1)	4 (2)	5 (3)	6 (4)	7 (5)	(6)
Variable: Treat x Event Time						
-4	-0.0085* (0.0047)	-0.0114*** (0.0043)	-0.0098** (0.0043)	-0.0097** (0.0043)	-0.0073* (0.0044)	-0.0080 (0.0050)
-3	-0.0018 (0.0042)	-0.0031 (0.0041)	-0.0013 (0.0040)	-0.0025 (0.0041)	-0.0000 (0.0042)	-0.0012 (0.0048)
-2	-0.0020 (0.0038)	-0.0060 (0.0038)	-0.0031 (0.0037)	-0.0047 (0.0038)	-0.0039 (0.0039)	-0.0033 (0.0044)
-1	0.0000 (0.0000)	0.0000 (0.0000)	0.0000 (0.0000)	0.0000 (0.0000)	0.0000 (0.0000)	0.000 (0.0000)
0	0.1709*** (0.0049)	0.1722*** (0.0048)	0.1761*** (0.0048)	0.1736*** (0.0049)	0.1766*** (0.0049)	0.1748*** (0.0056)
1	0.1018*** (0.0049)	0.1005*** (0.0048)	0.1054*** (0.0048)	0.1060*** (0.0048)	0.1065*** (0.0049)	0.1075*** (0.0056)
2	0.0515*** (0.0052)	0.0519*** (0.0049)	0.0545*** (0.0048)	0.0563*** (0.0048)	0.0594*** (0.0049)	0.0553*** (0.0056)
3		0.0347*** (0.0054)	0.0401*** (0.0050)	0.0374*** (0.0051)	0.0420*** (0.0051)	0.0426*** (0.0058)
4			0.0288*** (0.0054)	0.0294*** (0.0053)	0.0285*** (0.0054)	0.0301*** (0.0060)
Baseline mean	0.250	0.250	0.240	0.240	0.240	0.250
Number of observations	194,040	222,024	250,641	242,388	233,181	193,455
Number of households	19,321	20,372	21,495	21,469	21,257	21,495

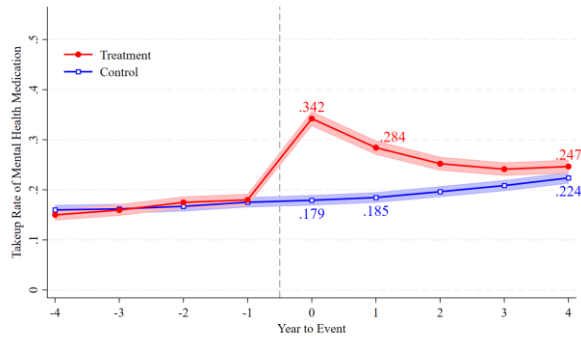
Notes: This table shows the results from estimating equation (1) for varying values of Δ . The specifications include household fixed effects, calendar year fixed effects, and a quadratic in the surviving spouse's age. The sample includes households in which one spouse experiences a health event between 1999 and 2018 and dies within 12 months. The treatment group consists of individuals whose spouse experiences a health event in 1999-2013, and the control group consists of individuals whose spouse experiences a similar event but in 2004-2018 (to whom we assign a placebo event five years earlier), where we restrict the sample such that both spouses are in the age range 45-80 at baseline. We construct various control groups for different choices of Δ that range from 3 to 7 years of gap in event time relative to households in the treatment group. The sample is balanced across the four years before and after the health event so that each household appears throughout the analysis horizon. The first five columns report estimates for the mental health effects of spousal death for different choices of Δ . To ensure that the treatment group stays constant and only the control group varies across values of Δ , we require that the calendar year interval in which households experience a spousal death is the same across values of Δ . The last column reports estimates for the mental health effects of spousal death for non-overlapping treatment and control groups. As some households may appear in both the treatment and the control groups (not simultaneously and not after actual spousal death), we randomize households to only one experimental group. Robust standard errors clustered at the household level are reported in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Appendix Figure B.2: Takeup of Mental Health Medication around Spousal Death—Annual Frequency

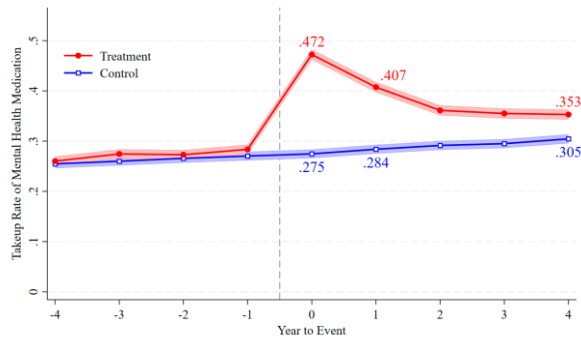
A. All



B. Males



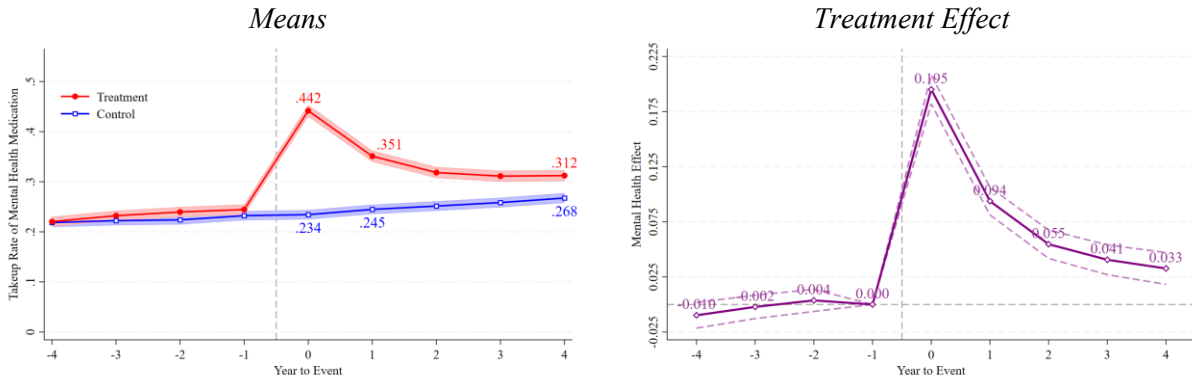
C. Female



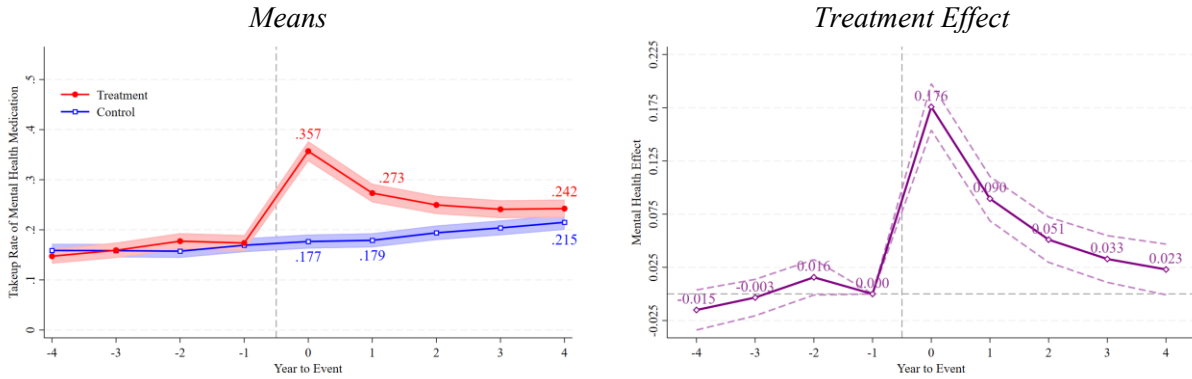
Notes: This figure studies the takeup of mental health medication around a spousal death for all, male, and female survivors. The sample includes households in which one spouse experiences a health event between 1999 and 2018 and dies from the same cause within 12 months. The treatment group consists of individuals whose spouse experiences a health event in 1999-2013, and the control group consists of individuals whose spouse experiences a similar event but in 2004-2018 (to whom we assign a placebo event five years earlier), where we restrict the sample such that both spouses are in the age range 45-80 at baseline. The sample is balanced across the four years before and after the health event so that each household appears throughout the analysis horizon. The figures show the mean takeup rate by time relative to the index event for the treatment group in red circles and for the control group in blue squares with corresponding 95-percent confidence intervals.

Appendix Figure B.3: Takeup of Mental Health Medication around Spousal Death—Annual Frequency with Concordant Cause of Death

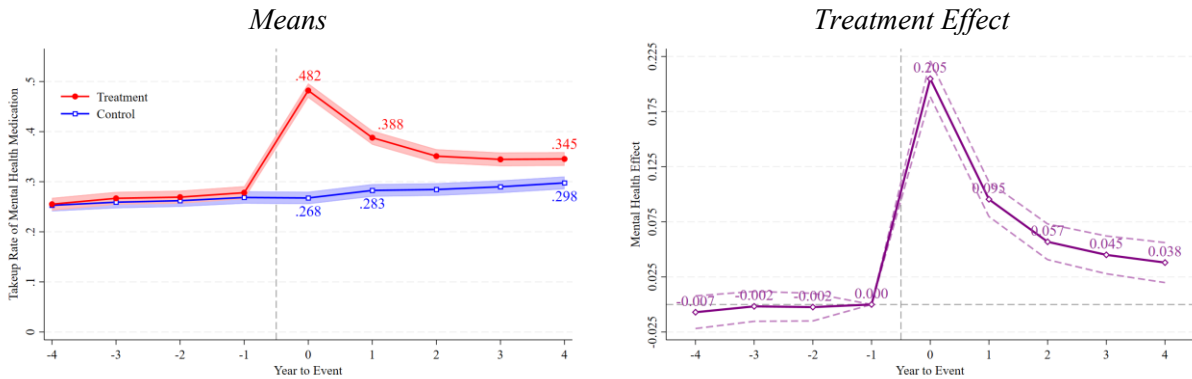
A. All



B. Males



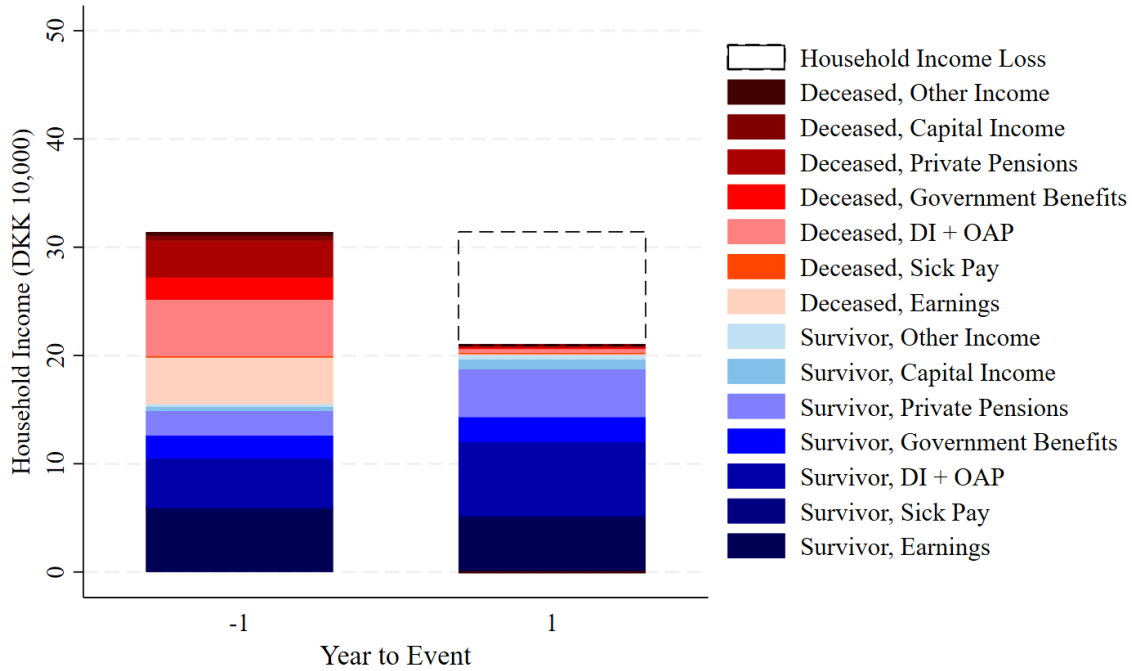
C. Female



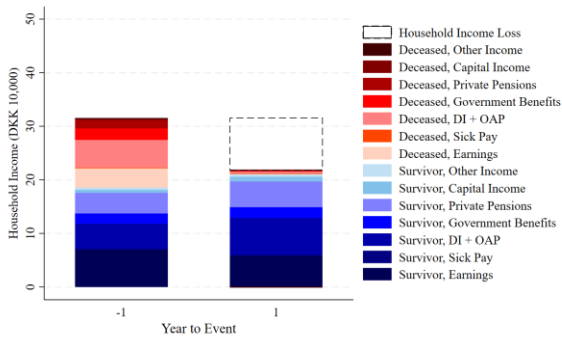
Notes: This figure studies the takeup of mental health medication around a spousal death for all, male, and female survivors. The sample includes households in which one spouse experiences a health event between 1999 and 2018 and dies from the same cause within 12 months. The treatment group consists of individuals whose spouse experiences a health event in 1999-2013, and the control group consists of individuals whose spouse experiences a similar event but in 2004-2018 (to whom we assign a placebo event five years earlier), where we restrict the sample such that both spouses are in the age range 45-80 at baseline. The sample is balanced across the four years before and after the health event. The panels on the left show the mean takeup rate by time relative to the index event for the treatment group in red circles and for the control group in blue squares with corresponding 95-percent confidence intervals. The panels on the right present estimates from the dynamic difference-in-differences equation (1) estimated at an annual frequency. They plot the estimates of δ_t along with their 95-percent confidence intervals. The regressions include household fixed effects, time fixed effects, and a quadratic in the surviving spouse's age.

Appendix Figure B.4: Household Income Loss Decomposition

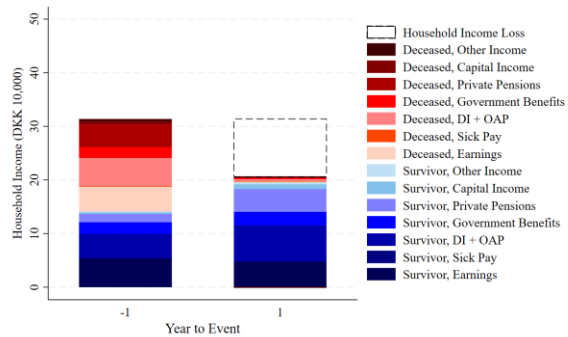
A. All



B. Males



C. Females



Notes: This figure illustrates the distribution and sources of household income in the year before the index event and the year after the index event. The sample includes households in which one spouse experiences a health event between 1999 and 2013 and dies within 12 months when both spouses are aged 45-80. The figures decompose household income into seven sources of income for each spouse in the two periods for all, male, and female survivors.

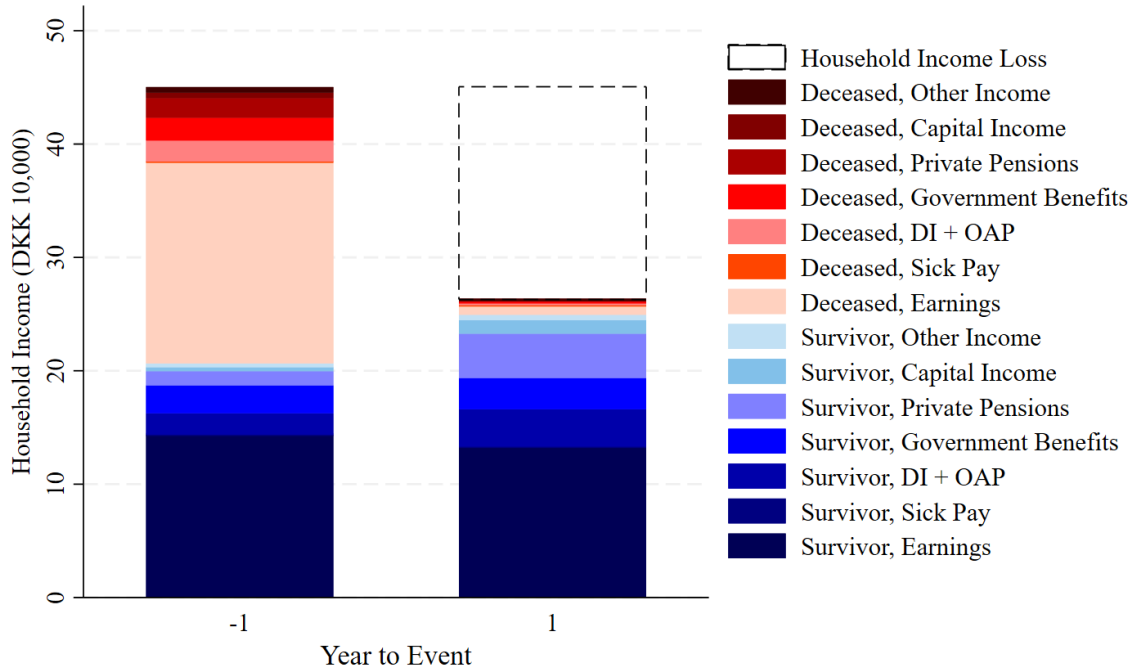
Appendix Table B.4: Household Income Loss Decomposition

<i>DKK 10,000</i>	<i>All</i>		<i>Males</i>		<i>Females</i>	
	<i>Period -1</i>	<i>Period 1</i>	<i>Period -1</i>	<i>Period 1</i>	<i>Period -1</i>	<i>Period 1</i>
Household Income Loss	-	10.47	-	9.77	-	10.78
Deceased, Other	0.34	-0.03	0.16	-0.06	0.43	-0.02
Deceased, Capital Income	0.46	0.02	0.26	0.01	0.55	0.03
Deceased, Private Pensions	3.40	0.20	1.52	0.09	4.25	0.26
Deceased, Government Benefits	2.05	0.14	2.13	0.13	2.01	0.14
Deceased, DI + OAP	5.23	0.35	5.18	0.33	5.26	0.36
Deceased, Sick Pay	0.02	0.01	0.02	0.01	0.02	0.01
Deceased, Earnings	4.39	0.21	3.70	0.20	4.70	0.21
Survivor, Other Income	0.24	0.40	0.41	0.44	0.16	0.39
Survivor, Capital Income	0.39	0.88	0.58	0.87	0.31	0.88
Survivor, Private Pensions	2.26	4.43	3.83	4.81	1.54	4.27
Survivor, Government Benefits	2.14	2.32	1.94	1.99	2.23	2.47
Survivor, DI + OAP	4.52	6.79	4.71	6.93	4.43	6.73
Survivor, Sick Pay	0.01	0.02	0.02	0.02	0.01	0.02
Survivor, Earnings	5.96	5.19	7.09	5.97	5.45	4.83
Deceased, Total Income	15.90	0.92	12.97	0.75	17.22	0.99
Survivor, Total Income	15.52	20.03	18.56	21.02	14.14	19.58
Household Income	31.41	20.95	31.53	21.77	31.36	20.58
Number of households	12,637		3,934		8,703	

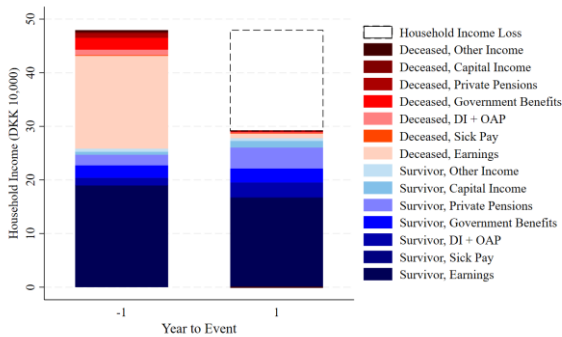
Notes: This table illustrates the distribution and sources of household income in the year before the index event and the year after the index event. The sample includes households in which one spouse experiences a health event between 1999 and 2013 and dies within 12 months when both spouses are aged 45-80. The table decomposes household income into seven sources of income for each spouse and presents the average of each component in the two periods for all, male, and female survivors.

Appendix Figure B.5: Household Income Loss Decomposition, Deceased Earner

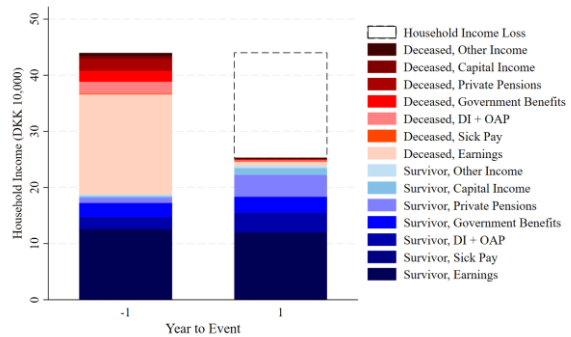
A. All



B. Males



C. Females



Notes: This figure illustrates the distribution and sources of household income in the year before the index event and the year after the index event. The sample includes households in which one spouse experiences a health event between 1999 and 2013 and dies within 12 months when both spouses are aged 45-80, and in which the deceased spouse had labor market earnings in the year before the health event. The figures decompose household income into seven sources of income for each spouse in the two periods for all, male, and female survivors.

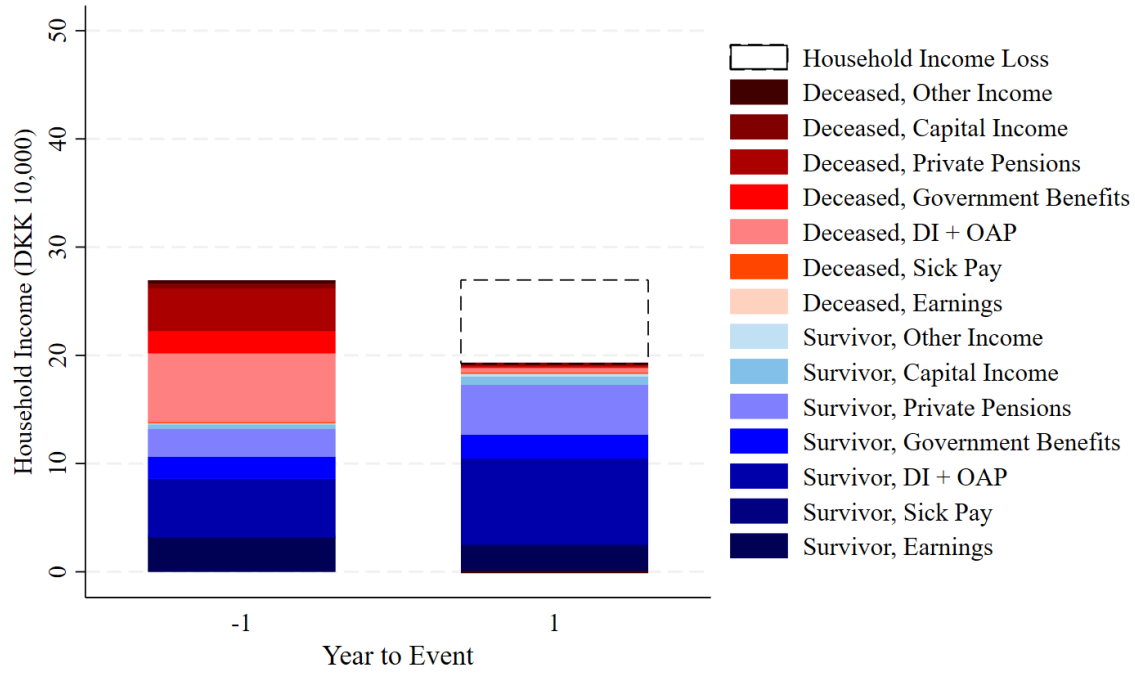
Appendix Table B.5: Household Income Loss Decomposition, Deceased Earner

<i>DKK 10,000</i>	<i>All</i>		<i>Males</i>		<i>Females</i>	
	<i>Period -1</i>	<i>Period 1</i>	<i>Period -1</i>	<i>Period 1</i>	<i>Period -1</i>	<i>Period 1</i>
Household Income Loss	-	18.77	-	18.80	-	18.76
Deceased, Other	0.49	0.04	0.34	-0.02	0.55	0.06
Deceased, Capital Income	0.47	0.02	0.26	0.01	0.55	0.03
Deceased, Private Pensions	1.75	0.14	0.82	0.07	2.09	0.16
Deceased, Government Benefits	2.01	0.15	2.21	0.19	1.93	0.13
Deceased, DI + OAP	1.85	0.15	1.03	0.12	2.16	0.17
Deceased, Sick Pay	0.06	0.03	0.07	0.02	0.05	0.03
Deceased, Earnings	17.75	0.82	17.38	0.92	17.88	0.79
Survivor, Other Income	0.34	0.48	0.55	0.54	0.26	0.45
Survivor, Capital Income	0.36	1.20	0.56	1.22	0.28	1.19
Survivor, Private Pensions	1.24	3.91	1.99	3.92	0.97	3.90
Survivor, Government Benefits	2.46	2.75	2.31	2.58	2.52	2.81
Survivor, DI + OAP	1.88	3.29	1.38	2.74	2.07	3.50
Survivor, Sick Pay	0.03	0.04	0.04	0.05	0.03	0.04
Survivor, Earnings	14.34	13.28	18.99	16.75	12.64	12.01
Deceased, Total Income	24.37	1.32	22.11	1.33	25.20	1.32
Survivor, Total Income	20.65	24.94	25.83	27.81	18.76	23.89
Household Income	45.03	26.26	47.93	29.13	43.96	25.21
Number of households	3,124		838		2,286	

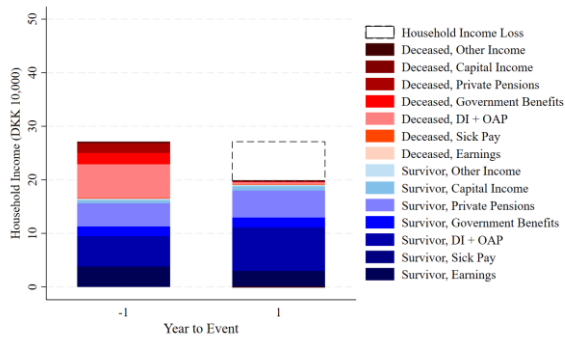
Notes: This table illustrates the distribution and sources of household income in the year before the index event and the year after the index event. The sample includes households in which one spouse experiences a health event between 1999 and 2013 and dies within 12 months when both spouses are aged 45-80, and in which the deceased spouse had labor market earnings in the year before the health event. The table decomposes household income into seven sources of income for each spouse and presents the average of each component in the two periods for all, male, and female survivors.

Appendix Figure B.6: Household Income Loss Decomposition, Deceased Not Earner

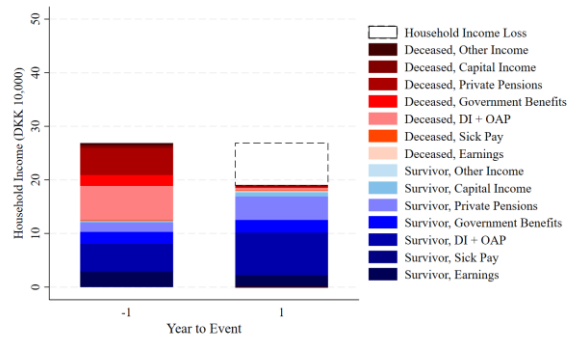
A. All



B. Males



C. Females



Notes: This figure illustrates the distribution and sources of household income in the year before the index event and the year after the index event. The sample includes households in which one spouse experiences a health event between 1999 and 2013 and dies within 12 months when both spouses are aged 45-80, and in which the deceased spouse did not have labor market earnings in the year before the health event. The figures decompose household income into seven sources of income for each spouse in the two periods for all, male, and female survivors.

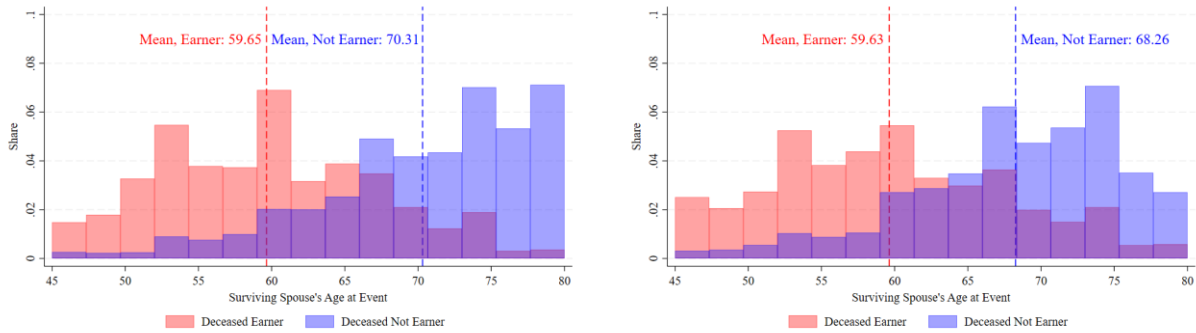
Appendix Table B.6: Household Income Loss Decomposition, Deceased Not Earner

<i>DKK 10,000</i>	<i>All</i>		<i>Males</i>		<i>Females</i>	
	<i>Period -1</i>	<i>Period 1</i>	<i>Period -1</i>	<i>Period 1</i>	<i>Period -1</i>	<i>Period 1</i>
Household Income Loss	-	7.74	-	7.32	-	7.94
Deceased, Other	0.30	-0.05	0.11	-0.07	0.39	-0.05
Deceased, Capital Income	0.46	0.02	0.26	0.01	0.55	0.03
Deceased, Private Pensions	3.94	0.23	1.71	0.09	5.02	0.29
Deceased, Government Benefits	2.06	0.13	2.10	0.11	2.04	0.14
Deceased, DI + OAP	6.34	0.42	6.30	0.39	6.36	0.43
Deceased, Sick Pay	0.01	0.00	0.01	0.00	0.01	0.00
Deceased, Earnings	0.00	0.01	0.00	0.00	0.00	0.01
Survivor, Other Income	0.21	0.38	0.37	0.41	0.13	0.36
Survivor, Capital Income	0.40	0.77	0.58	0.77	0.31	0.77
Survivor, Private Pensions	2.59	4.61	4.33	5.05	1.75	4.40
Survivor, Government Benefits	2.03	2.18	1.83	1.84	2.13	2.35
Survivor, DI + OAP	5.38	7.94	5.61	8.06	5.28	7.88
Survivor, Sick Pay	0.01	0.01	0.01	0.01	0.01	0.01
Survivor, Earnings	3.21	2.53	3.87	3.05	2.89	2.28
Deceased, Total Income	13.11	0.78	10.50	0.59	14.37	0.88
Survivor, Total Income	13.83	18.42	16.60	19.19	12.50	18.05
Household Income	26.94	19.20	27.10	19.77	26.87	18.93
Number of households	9,513		3,096		6,417	

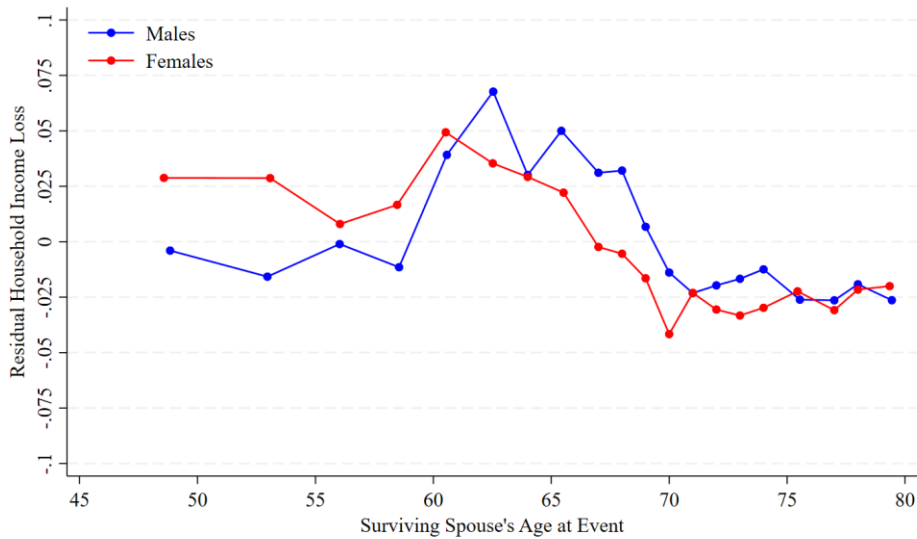
Notes: This table illustrates the distribution and sources of household income in the year before the index event and the year after the index event. The sample includes households in which one spouse experiences a health event between 1999 and 2013 and dies within 12 months when both spouses are aged 45-80, and in which the deceased spouse did not have labor market earnings in the year before the health event. The table decomposes household income into seven sources of income for each spouse and presents the average of each component in the two periods for all, male, and female survivors.

Appendix Figure B.7: Household Income Loss and Age

A. Distribution of Surviving Spouse's Age at Event by Deceased's Earner Status

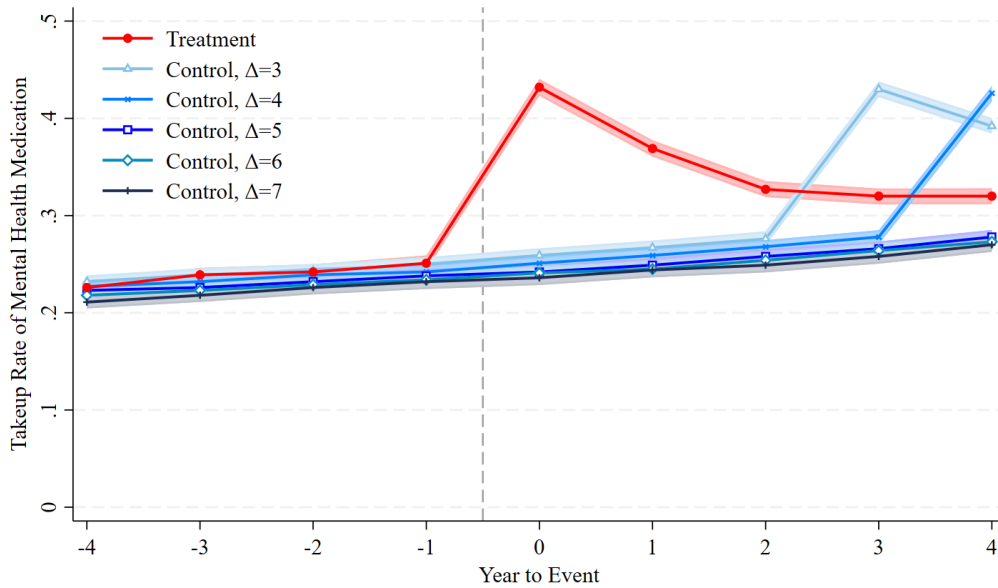


B. Residual Household Income Loss by Surviving Spouse's Age at Event



Notes: This figure illustrates the association between the surviving spouse's age at the health event, the deceased spouse's earner status, and the household's income loss. The sample includes households in which one spouse experiences a health event between 1999 and 2013 and dies within 12 months when both spouses are aged 45-80. Panel A shows the age distribution of male and female survivors whose spouse did or did not have labor market earnings in the year before the event. Panel B shows the relationship between the surviving spouse's age at the event and the household's income loss after residualizing by whether the deceased spouse had labor market earnings in the year before the event.

Appendix Figure B.8: Illustration of Research Design



Notes: This figure illustrates the takeup of mental health medication around a spousal death for the treatment and different control groups. The sample includes households in which one spouse experiences a health event between 1999 and 2018 and dies within 12 months. The treatment group consists of individuals whose spouse experiences a health event in 1999-2013, where we restrict the sample such that both spouses are in the age range 45-80 at baseline. We construct various control groups for different choices of Δ that range from 3 to 7 years of gap in event time relative to households in the treatment group. The sample is balanced across the four years before and after the health event so that each household appears throughout the analysis horizon. To ensure that the treatment group stays constant and only the control group varies across values of Δ , we require that the calendar year interval in which households experience a spousal death is the same across values of Δ . The figure shows the mean takeup rate by time relative to the index event for the treatment group in red circles and for the various control groups in shades of blue with corresponding 95-percent confidence intervals.

Appendix Table B.7: Mental Health Effects of Spousal Death by the Degree of Income Loss

	All (1)	All (2)	Males (3)	Males (4)	Females (5)	Females (6)
Variable: Treat x Post x						
Household Income Loss	0.7509*** (0.1304)	0.7078*** (0.1451)	0.5510** (0.2263)	0.5574** (0.2478)	0.7940*** (0.1609)	0.7519*** (0.1827)
Female	0.0036 (0.0091)	0.0038 (0.0092)				
Has Child Younger than 18	0.0027 (0.0189)	0.0014 (0.0206)	-0.0002 (0.0312)	0.0066 (0.0339)	0.0034 (0.0236)	0.0030 (0.0259)
Has Child Older than 18	-0.0145 (0.0179)	-0.0224 (0.0186)	-0.0260 (0.0271)	-0.0320 (0.0284)	-0.0113 (0.0239)	-0.0210 (0.0247)
Log(Household Income)	-0.0402*** (0.0148)	-0.0396** (0.0195)	-0.0533** (0.0233)	-0.0604* (0.0312)	-0.0317* (0.0189)	-0.0247 (0.0254)
Age of Surviving Spouse		-0.0073 (0.0075)		-0.0102 (0.0144)		0.0008 (0.0092)
Age of Surviving Spouse Squared		0.0001 (0.0001)		0.0001 (0.0001)		-0.0000 (0.0001)
Cohabiting/Married 10+ Years		0.0349* (0.0197)		0.0046 (0.0341)		0.0497** (0.0241)
Cohabiting		0.1868*** (0.0311)		0.1951*** (0.0583)		0.1809*** (0.0370)
Married		0.2387*** (0.0299)		0.2492*** (0.0579)		0.2272*** (0.0351)
Lives in Northern Region		0.0115 (0.0153)		0.0098 (0.0268)		0.0123 (0.0186)
Lives in Central Region		0.0090 (0.0126)		0.0087 (0.0218)		0.0082 (0.0155)
Lives in Southern Region		0.0223* (0.0127)		0.0115 (0.0222)		0.0266* (0.0154)
Lives in Capital Region		0.0129 (0.0119)		0.0172 (0.0206)		0.0094 (0.0145)
Visit to Psychiatrist at Baseline		-0.1124*** (0.0365)		-0.0928 (0.0797)		-0.1212*** (0.0408)
Visit to Hospital at Baseline		0.0245*** (0.0083)		0.0254* (0.0147)		0.0228** (0.0101)
Primary Education		0.0194 (0.0281)		0.0846** (0.0404)		-0.0245 (0.0388)
High School or Vocational Training		0.0310 (0.0287)		0.0896** (0.0408)		-0.0104 (0.0399)
Short Higher Education		0.0479 (0.0414)		0.1774*** (0.0596)		-0.0489 (0.0566)
Medium Higher Education		0.0224 (0.0337)		0.0941* (0.0511)		-0.0303 (0.0455)
Long Higher Education		0.0118 (0.0411)		0.0754 (0.0591)		-0.0456 (0.0577)
Number of households	21,182	21,182	7,129	7,129	14,053	14,053

Notes: This table reports two-stage least-squares estimates from the average difference-in-differences specification of equation (2), split by the gender of the surviving spouse. We instrument for the household's income loss with an indicator for whether the deceased spouse had earnings and a quadratic in the share of the household's income earned by the deceased spouse in the year before the event. All specifications include household fixed effects, calendar year fixed effects, and a quadratic in the surviving spouse's age, and are estimated using observations for years -1 and 0 relative to the event. The household's income loss is normalized at the mean of individuals in the treatment group and is winsorized at the top and bottom 1 percent. Robust standard errors clustered at the household level are reported in parentheses. *** p<0.01, ** p<0.05, * p<0.1.