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Examining vulnerability at the intersection of gender and nativity

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Abstract

The death of a partner has many consequences, including for the economic lives of those they leave behind. Theories predict that these consequences will not only differ by sex (for women and men in opposite-sex couples, especially those with children) but also by nativity (for immigrants as compared with the native-born), as well as for the intersection between sex and nativity. Here, we test these predictions by estimating the effect of partner death on income and employment. We use register data for the whole population of Sweden and focus on quasi-random partner deaths among opposite-sex couples with children. Our results show that partner death has a negative effect on both income and employment, but more so for men than women. The findings indicate that male immigrants are more negatively affected by partner death than native-born men, especially when the partner who dies is another immigrant. The only subgroup who experience a positive impact are female immigrants who experience the death of an immigrant partner. We discuss these findings, which suggest that work retains a prominent place in the life course of immigrant women after the sudden death of a partner, perhaps due to a lack of support and the necessity of meeting economic constraints.

Keywords: *Migration, Integration, Gender, Employment, Income, Partnership, Death*

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1. Introduction

The death of a partner is a life event that has far reaching consequences, not only resulting in a sustained period of grief and bereavement (Rodger et al., 2007), but also with long-run consequences for living arrangements (Hirst & Corden, 2010), household finances (Corden et al., 2008), as well as mental and physical health (Erlangsen et al., 2004; Honkaniemi et al., 2018; W. Stroebe & Stroebe, 1987). Understanding the consequences of partner death are important, in part because it is one of only two ways in which a partnership can end (with the other being partnership dissolution). Although partner death is more common among older people, it is also a life event that is experience by many working age people every year (e.g. Statistics Sweden, 2021). Knowledge about the impacts of partner death is therefore important to inform efforts (including policies) to support the lives of those who are bereaved and other household members such as dependent children.

Despite the fact that previous research has examined many of the immediate impacts of partner death – typically using qualitative data or small-sample surveys (Bar-Nadav & Rubin, 2016; Phipps, 2021; Rodger et al., 2007) – there has been little attention paid to the economic impacts. When research has examined this topic, it has usually focused on the post-retirement income and wealth of older widows (Corden et al., 2008). As such, there appears to be a lack of research on pre-retirement labor market outcomes, as well as a lack of research that incorporates an explicit focus on the role of gender.

Here, we not only examine the role of gender, but also its interaction with migration background – i.e. whether an individual is foreign-born. Gender plays a potentially important role in understanding the impacts of partner death on labor market outcomes. This is not only due to differences between women and men in terms of the psychological impacts of partner death, which can be expected to impact work, but also due to differences in gender roles and the division of economic activities and resources prior to the experience of partner death. At the same time, migration background also plays a potentially important role. Individuals who are foreign-born are more likely than the native-born to be in a 'male breadwinning' and 'female caregiving' relationship (Chuang & Tamis-LeMonda, 2013; Pedraza, 1991). This not only suggests the need to examine migration background, but also the need to examine its interaction with gender.

By focusing on migration background, it is hard to ignore the potential role of integration and adaptation in determining the impact of partner death. Theories predict that integration is determined by a range of factors beyond each individual immigrant, including those relating to households, families and social networks. Empirical evidence broadly supports this prediction, for example by highlighting the role of partnership formation and childbearing in shaping the life course trajectories of immigrants (Andersson & Scott, 2007; Dribe & Lundh, 2008; Winkle & Fasang, 2020). Prior studies also reveal the importance of social networks, for example by showing that living in an area with a higher concentration of co-nationals has a positive impact on labor market outcomes (Marten et al. 2019; Edin et al. 2003). Research also shows that formal and informal social networks can

provide much-needed support when immigrants are faced with problems relating to money, employment or health (Lamba & Krahn, 2003).

Despite this research that highlights the importance of immigrant's family and social networks, few studies have examined whether immigrants' economic status is vulnerable to a deterioration in these networks, for example during an economic or personal crisis. Weaker networks, such as the lack of close family or friends, may make immigrants more vulnerable than the native-born population, including in their ability to cope with unexpected events such as the death of a family member. This vulnerability may be even more acute when immigrants have children. It seems reasonable to expect that a crisis will weigh heavier on individuals with a smaller network of friends and family who can aid them directly (e.g. through financial or childcare support) and indirectly (e.g. through emotional and consultative support).

Evidence shows that families with bigger networks and more financial resources are more likely to sustain a crisis (Gauthier et al. 2021). Even in contexts where networks are also small for the native-born (in terms of numbers of individuals), the strength of immigrant networks (e.g. in terms of the duration since the networks were formed) is likely to be much less than those of the native-born. Immigrants are also more prone than the native-born to surround themselves with other immigrants, consequently reinforcing their shared lack of a large network (Smith et al. 2014). Among both immigrants and the native-born, women have larger social networks than men, while men have more economic resources (Cornwell et al. 2009), and are much less likely than women to experience a deterioration in their labor market outcomes after becoming a parent (Florian, 2018; Sigle-Rushton &

Waldfogel, 2007; Winkle & Fasang, 2020). These findings highlight the potential importance of gender in determining the links between work, family and social networks, in particular as it interacts with migration background

In this article, we analyze the economic impact of a significant unexpected personal crisis – the unexpected death of a person's partner and co-parent. Using longitudinal individual-level data for the entire Swedish population from 1990-2016, we estimate the effect of quasi-random partner death on individuals' income and employment. We focus on opposite-sex couples only, but this is due to the small numbers of same-sex couples in the population, which makes it impossible to include them in this study (using this research design). Our research questions are as follows: (1) Does the effect of partner death differ for women and men, (2) Does it differ for immigrants, as compared with the native-born, and (3) Is the interaction between sex and migration background significant (statistically and substantively)?

In the next section, we discuss the theoretical background to our study. After this, we describe our research design and empirical strategy to identify the impact of partner loss on individuals' labor market outcomes, followed by a description of the data that we use for our analysis. Subsequently, we present our results and then conclude with a brief discussion of their broader implications.

2. Theoretical background

There are various theories that can be drawn upon when trying to understand how the death of someone can impact the life of their partner who survives. This includes theories that enable specific predictions to be made about variations in the impact of such partner loss according to the gender and migration background of surviving partners. Theories of bereavement place considerable emphasis on the importance of gender in understanding the impacts of partner loss due to death (M. Stroebe et al., 2001). Variation between women and men is predicted with respect to different psychological mechanisms, including social support, coping styles, and cognitive processes that are associated with loss, grief and stress (M. Stroebe et al., 2001; M. Stroebe & Schut, 1999; W. Stroebe & Stroebe, 1987). Although there is much debate about the theory (or theories) that can explain the differences that are observed, empirical evidence finds many differences between women and men in the psychological consequences of partner death (Erlangsen et al., 2004; M. Stroebe et al., 2001; W. Stroebe & Stroebe, 1987). Like much of the literature, this article focuses on opposite-sex couples (due to data limitations), but we note that bereavement due to partner death is also expected (and observed) to be different for members of same-sex couples who lose their partner (Fenge, 2014).

Given that the psychological impacts of partner death are expected to be gendered, it is perhaps to be expected that the socio-economic consequences of partner death will vary by sex. As compared with research on the consequences of partner death for mental and physical health, it appears that there is much less research on the economic consequences. However, research has shown consistently that the

financial impact is also gendered, and that this is to a great extent determined by the gendered nature of family economic life in general (Corden et al., 2008).

There is a wealth of theory that attempts to explain the links between gender and family relations, including with respect to gender roles and the division of economic activities and resources (Chafetz & Chafetz, 2006). Women in opposite-sex couples often have lower incomes and are less likely to be employed, as compared with their male partner (Chafetz & Chafetz, 2006). For this reason, the death of their partner often has a more negative immediate impact on family income due to the loss of the main 'breadwinner' (Corden et al., 2008). On the other hand, men in opposite-sex couples often face challenges relating to gender roles after the death of their partner, typically because they become the primary caregiver for the first time (Phipps, 2021).

Gender roles are therefore likely to be a key explanation for the impact that partner death has upon labor market outcomes. Moreover, it follows that the importance of gender roles (as an explanation) cannot be ignored when predicting the impact of partner death for immigrants as compared with the native-born (as in the focus of our study). Although it is important not to stereotype immigrant women (or their families) in opposite-sex couples (Chuang & Tamis-LeMonda, 2013), they are often more likely than native-born women (in opposite-sex couples) to be in a 'male breadwinning' and 'female caregiving' relationship (Chuang & Tamis-LeMonda, 2013; Pedraza, 1991). This does not necessarily imply a lack of agency (Dasgupta, 1998; Hampshire et al., 2012). However, it does suggest that if gender roles are an important mechanism, then sex differences in the effect of partner death may be

larger for immigrants. This is in addition to gender differences in the theories of immigrant incorporation, such as those relating to acculturation, assimilation and adaptation (Chuang & Tamis-LeMonda, 2013).

In general, theories of migration define immigrant adaptation as the disappearance of differences between first-generation immigrants, who are foreign-born, and the native-born population (Alba & Nee, 2005; Berry, 1997; Hervitz, 1985). Immigrant adaptation is also firmly linked to the related concept of immigrant integration, which can be defined integration as the extent to which immigrants have *"the knowledge and capacity to build a successful, fulfilling life in the host society"* (Harder et al., 2018, p. 11484). It is also recognized that integration is a two-way process of mutual accommodation between native-born and foreign-born members of society (Council of the European Union, 2004; European Commission, 2016).

A large body of research shows that adaptation does occur for some immigrants, but that this process is extremely heterogeneous (Alba & Nee, 2005; Castles et al., 2002; Heckmann & Schnapper, 2003; National Academies of Sciences, Engineering, and Medicine, 2015; OECD, 2015). This heterogeneity is not only linked to life after arrival, but also selectivity – i.e. the characteristics of immigrants prior to arrival (Feliciano, 2005; Ichou & Wallace, 2019; Wallace & Wilson, 2019), and intersectionality – i.e. the intersection of class, gender, race, and body (Bürkner, 2012). It is now well-established that certain groups of immigrants do not adapt, such that they are more likely to experience inequality and disadvantage as compared with the native-born population, at least in areas of life that can be measured using social outcomes (Bijl et al., 2012; Castles et al., 2002; Heckmann

& Schnapper, 2003; National Academies of Sciences, Engineering, and Medicine, 2015; OECD, 2015; Waters & Jiménez, 2005). With respect to labor market outcomes, it is well-known that some groups of immigrants experience disadvantage, in particular in the period immediately after arrival as they establish themselves in their new home (Adserà & Chiswick, 2007).

Various theoretical frameworks have been used to explain differences in immigrant integration. One of the most prominent, assimilation theory, which has been re-formulated during the 21st Century, places an emphasis on group convergence (Alba & Nee, 1997). As such, the social outcomes of foreign-born and native-born groups are predicted to converge due to the attenuation of ethnic, racial and cultural differences over time (Alba & Nee, 2005). The most prominent mechanisms that are predicted to determine this convergence relate to social and spatial mobility (Alba & Nee, 1997).

This focus on mobility has also led some to propose the theory of segmented assimilation (Portes & Zhou, 1993), which not only emphasizes the fact that adaptation is heterogeneous but also that it is inextricably linked with inequality. The theory predicts that successful adaptation is linked with personal, financial, social and spatial resources (Portes & Zhou, 1993), which are not only determined by 'reception' (e.g. Government policy or societal prejudices) but also by the family and social networks that immigrants arrive with and develop over time (Lamba & Krahn 2003; Marten et al. 2019; Edin et al. 2003).

One reason why immigrants experience inequality, therefore, is the fact that they lack the fully-formed social networks that native-born people use in order to support their lives, both in general and in times of crisis. Similarly, the support and resources of family members – within and outside the household – are likely to play a significant role in determining social outcomes, in particular in cases where social networks are not fully developed.

It therefore seems reasonable to predict that significant changes to family and social networks will have a more material impact on the lives of immigrants, as compared with the native-born population. In the case of a crisis that results from the sudden death of a family member – as is the focus of this study – the impact of this event will not only relate to the material and psychological loss associated with the individual who has died, but also the role that they play in supporting the family members that they leave behind. The unexpected death of a partner will have a range of consequences, including grief and loneliness, which in some cases may be exacerbated by a lack of social support (Van Baarsen, 2002). Importantly, this psychological impact is likely to differ for women and men (Van Baarsen & Groenou, 2001), which suggests that there may also be gender differences in other effects of partner loss. In attempting to predict the impact of partner loss on the economic outcomes of immigrants, the theoretical lens of intersectionality might be useful because it highlights the fact that the experiences of female and male immigrants may be different (Bürkner, 2012). In general, empirical research supports this expectation that adaptation – and the mechanisms that determine adaptation – may be different for women and men (Adserà & Chiswick, 2007; Choi & Tienda, 2017; Dasgupta, 1998).

3. Research design

To identify the economic impact of partner loss, we estimate the difference in differences in labor market outcomes between individuals who lose their partner from a quasi-random death and individuals whose partner survives. We use the following baseline specification in an OLS regression:

$$Y_{i,a,t} = \alpha_i + \lambda_a + \gamma_t + \beta \text{Sudden Death}_{i,a,t} + \epsilon_{i,a,t} \tag{1}$$

where $Y_{i,a,t}$ is the outcome of interest of individual i of age group a in year t. $Sudden\ Death_{i,a,t}$ is a dummy variable coded as 1 if an individual's partner dies unexpectedly in year t. The DID estimator of interest in this specification is β, which captures the effect of partner loss on the outcome of interest. We control for individual fixed effects α_i, age group effects λ_a and year effects γ_t. All models use clustered standard errors at the individual level.

In a second step, we test for heterogeneous treatment effects based on an individual's migration status. We estimate the following model using OLS:

$$Y_{i,a,t} = \alpha_i + \lambda_a + \gamma_t + \beta \text{Sudden Death}_{i,a,t} \times \text{Migrant}_{i,a,t} + \epsilon_{i,a,t} \tag{2}$$

With the same approach, we test for heterogeneity by gender and pre-treatment income. We further estimate differential effects between individuals from four distinct couple situations: Native in partnership with another native (native-native), native in partnership with a migrant (native-migrant), foreign-born in partnership with a native (migrant-native), and foreign-born in partnership with another foreign-born (migrant-migrant).

4. Data

We use Swedish register data, containing annual observations from 1990 to 2016. Each individual who resides in Sweden is given a mandatory personal identity number by the Swedish Tax Agency, which is then widely used for everyday purposes (e.g. to open a bank account) and required whenever individuals interact with public authorities. Thus, this number links individuals to various administrative registers, which we use for our analysis. The high-quality data-sets have very few misreporting or missing observations, which enables us to study rare populations such as individuals who experience an unexpected, sudden death of their partner. In the following, we explain in detail how we construct our sample and our variables to estimate our model.

4.1. Study population

Our study population is the entire working-age population aged between 20 and 60 years. Not everybody is observed for the entire time period. For example, if an individual only turns 20 in 2000, we will observe them from 2000 onwards. Similarly, individuals are censored at age 60 (if an individual turns 60 before 2016, all observation-years after their 60th birthday will be discarded from the analysis). We also censor individuals (out of the study) when they die, emigrate or their income data exhibits its first missing value (after entry into the study).

We pool together data from the multigenerational register, the population register (RTB), the socioeconomic register (LISA) and the mortality register and create an individual-level panel dataset.

Next, we limit our sample to individuals who live together as a couple in the year prior to treatment allocation. There are three ways to identify couples in the Swedish registers: marriage, cohabitation, and the presence of children. Neither method is perfect on its own. Marriage is not ideal to identify real couples, as it is very common in Sweden to live in the same household in a marriage-like form, but without actually being married (Statistics Sweden 2018). Prior to 2021, cohabitation can only be measured in Swedish registers through a building ID, which does not allow us to distinguish between real couples and people who are sharing their accommodation, or, in the case of a block of flats, between couples and neighbors. A dwelling (apartment) register does exist from 2012 onwards, but this is too recent to be used in this study. Finally, the presence of children does not guarantee that the parents are (still) a couple. Consequently, we combine the last two conditions to identify our population of interest: Couples have to have at least on child together and have to be living together in the year prior to the focal year in our analysis. All other individuals are dropped from the analysis.

In a further step, we separate the data into three groups: (1) Individuals whose partners are alive for the entire observation period, (2) individuals whose partners die from an unexpected death, and (3) individuals whose partners die of any other causes. Unexpected deaths are defined as those that are coded as V00 to Y99 in the Classification of Diseases ICD-10, or Z800 to Z999 in ICD-9). We eliminate group (3) from the analysis, as non-random deaths could be correlated with labor market outcomes in many unobservable ways. For the same reason, we further exclude all individuals whose economic trajectories we cannot fully observe after the focal year, because they exit the population register due to death or emigration. We

further limit the population in the first two groups by eliminating all individuals whose partners die before 1990 or after 2016, and the deaths are therefore not captured in our data. The remaining individuals in (1) are therefore our control group, and the ones in (2) are our treatment group.

4.2. Variables

The following variables are used in our analysis.

Sudden Death of Partner: Our treatment variable is binary, coded as 0 for all individuals whose partners are (still) alive. Individuals whose partners pass away from an unexpected death receive a dummy value of 0 in all years prior to the mortal year, and a value of 1 for the mortal and all subsequent years. Since individuals in our control group do not experience partner loss at any point in our sample, we need to select a control period for them. For this, we randomly assign an intervention year to each individual in the control group. The intervention year is randomly extracted from the period of observations for each individual in the control group. For example, if an individual first enters the register in 2000 and we observe her until 2016, the focal year will be selected from the interval 2000-2016. We use this randomly assigned year to measure the control group's labor market outcomes in the years before and after, and compare them to the treated group's outcomes within the same amount of years before and after their partners' deaths. We call both the randomly chosen intervention year in the control group and the actual treatment year in the treated group focal year.

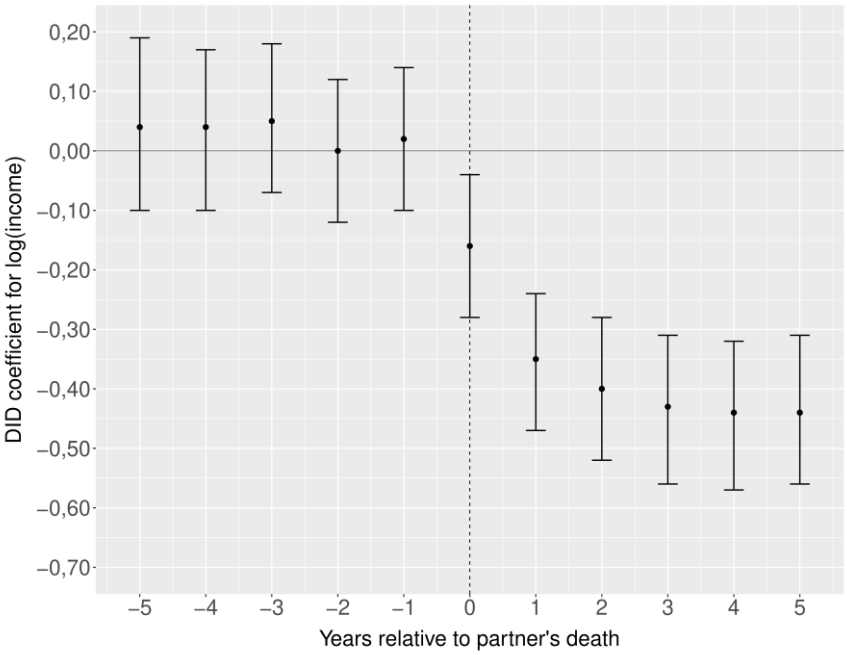
Income: Logged individual income captures the potential impact of partner loss on the left-behind partner's personal income. We estimate effects both on individual earnings and disposable income. Further, logged disposable family income measures how much the death may affect the family overall. For example, studying disposable family income, we can capture if individuals who increase their working hours, change or start jobs after their partner dies can make up for the lost income the partner had earned.

Employment: We use a binary variable for employment with a 0 (1) indicating unemployed (employed) individuals. Since income changes could be caused by a simple change in working hours or a job change, this outcome allows us to track if potential income losses are related to unemployment, and whether income increases are driven by new employment.

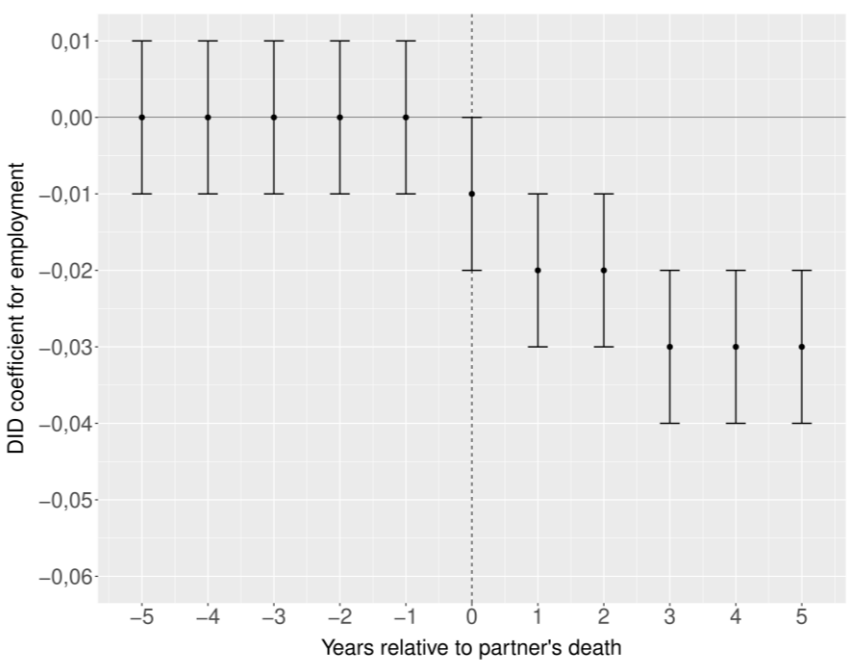
Migrants: We code a binary variable with 1 indicating foreign-born individuals as migrants, and 0 indicating Swedish-born individuals as the native-born. This means that naturalized foreign-born individuals are also still coded as migrants in our sample.

Income Groups: We categorize three different income groups: low-, middle- and high-income based in individuals' income in the year prior to the focal year. Low-income individuals fall below the 25th percentile of the income distribution, medium-income between the 25th and the 75th percentile, and high-income above the 75th percentile.

Figure 1: DID point estimates and 0.95-confidence intervals five to one year before partner's death, and one to five years after partner's death



(a) Log(Income)



(b) Employment

5. Results

Figure 1 shows the difference in differences (DID) point estimates separately for the year in which the partner's death occurred, and further for one to five years after. In line with our expectation that the death of one's partner and co-parent causes a significant interruption in an individual's working life, both income and employment show large negative effects. We can see that the negative impact happens immediately in the treatment year, but becomes more negative in the years to follow with no significant recovery. Figure 1 further provides evidence against differential pre-trends in income or employment up to 5 years prior to the partner's death.

Overall estimates of the effect of partner loss are presented in column one and three in Table 1. Individual income drops by 21.3% as a consequence of the partner's death, while the likelihood of being employed drops by 2% (note: $100\times(e^{-0.24}-1) = 21.3\%$).

With respect to variation by sex, we find that women experience a substantively smaller drop in their income and likelihood of employment than men. Women show lower employment and much lower salaries than men in the year prior to the partner's death. Hence, the smaller marginal effects could be driven by women having a reduced lower bound in both outcomes compared to men. However, we estimate the same specifications conditional on employment in the year prior to the partner's death and still find that women's income and employment suffers less than men's.

Table 1: DID effects of partners sudden death on labor market outcomes

	log(Income)				Employment				Benefits			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Sudden death	-0.24***	-0.32***	-0.62***	-0.52***	-0.02***	-0.04***	-0.05***	-0.03**	0.08***	0.10***	0.06***	0.09***
	(0.04)	(0.05)	(0.10)	(0.09)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)
Sudden death × Migrant		0.23*		-0.32		0.04**		-0.06		-0.06***		-0.08*
		(0.11)		(0.27)		(0.01)		(0.04)		(0.02)		(0.04)
Sudden death × Female			0.48***	0.26*			0.03*	-0.00			0.02	0.02
			(0.11)	(0.10)			(0.01)	(0.01)			(0.02)	(0.02)
Sudden death × Migrant × Female				0.68*				0.12**				0.02
				(0.29)				(0.04)				(0.04)
Observations	15915188	15915188	15915188	15915188	15915188	15915188	15915188	15915188	15915188	15915188	15915188	15915188
Individuals	1089143	1089143	1089143	1089143	1089143	1089143	1089143	1089143	1089143	1089143	1089143	1089143
Individual FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Age-group FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
R-squared	0.09	0.09	0.09	0.09	0.02	0.02	0.02	0.02	0.12	0.12	0.12	0.12

Notes: The outcome variable for models 1-4 is Log(Income); for models 5-8 is Employment; and for models 9-12 is benefits (unemployment, family housing, sickness or family social insurance benefits). Clustered standard errors by individual in parantheses. All data is reported annually. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 2: DID effects of partners sudden death on labor market outcomes

	log(Income)			Employment			Benefits		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Sudden death	-0.50***	-0.76***	-0.80***	-0.04***	-0.05***	-0.05***	0.01**	0.02**	0.05***
	(0.05)	(0.08)	(0.09)	(0.00)	(0.01)	(0.01)	(0.00)	(0.01)	(0.01)
Sudden death × Native-migrant	-0.19		-0.12	-0.01		-0.00	-0.03		0.02
	(0.18)		(0.30)	(0.01)		(0.02)	(0.02)		(0.04)
Sudden death × Migrant-native	0.35**		0.27	0.03**		0.02	-0.02*		-0.04
	(0.11)		(0.23)	(0.01)		(0.02)	(0.01)		(0.02)
Sudden death × Migrant-migrant	0.34**		-0.03	0.04***		-0.01	-0.04***		-0.08***
	(0.12)		(0.24)	(0.01)		(0.02)	(0.01)		(0.02)
Sudden death × Female		0.49***	0.38***		0.03***	0.01		-0.03***	-0.04***
		(0.09)	(0.10)		(0.01)	(0.01)		(0.01)	(0.01)
Sudden death × Native-migrant × Female			-0.08			-0.01			-0.07
			(0.38)			(0.03)			(0.04)
Sudden death × Migrant-native × Female			0.13			0.01			0.02
			(0.27)			(0.02)			(0.03)
Sudden death × Migrant-migrant × Female			0.49			0.06**			0.05*
			(0.27)			(0.02)			(0.02)
Observations	28251164	28251164	28251164	28251164	28251164	28251164	28251164	28251164	28251164
Individuals	2027348	2027348	2027348	2027348	2027348	2027348	2027348	2027348	2027348
Individual FE	✓	✓	✓	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓	✓	✓	✓
Age-group FE	✓	✓	✓	✓	✓	✓	✓	✓	
R-squared	0.05	0.05	0.05	0.02	0.02	0.02	0.12	0.12	0.12

Notes: The outcome variable for models 1-3 is Log(Income); for models 4-6 is Employment; and for models 7-9 is benefits (unemployment, family housing, sickness or family social insurance benefits). Interaction effects with gender (baseline category: Male) and couple type (baseline category: Native-native, where first is indicated the status of the individual, followed by the status of the partner). Clustered standard errors by individual in parantheses. All data is reported annually. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Our second expectation is that migrants will suffer economically more from the partner's death than the native-born do. To the contrary, the findings presented in column two and six of Table 1 suggest that while migrants also experience a drop in income as a consequence of the partner's death, it is a lot smaller. Moreover, migrants experience no negative effect on employment.

However, these attenuated effects for are driven by female migrants. As shown in column four and eight, male migrants show a negative but insignificant difference from native-born men for both outcomes. Female migrants, however, experience a 10.5% increase in income, and a 3% increase in their likelihood of being employed (note: $100\times(e^{-0.52-0.32+0.26+0.68}-1) = 10.5\%$).

It is important to note that it is only migrant women who improve their earnings and employment as a consequence of their partner's death. While native women's income drops less than native and migrant men's, the effect is still negative for them. Their employment effect is further no different from native men's.

In a second step, we try to proxy the strength of migrants' social network more closely with dummy variables for whether a migrant's partner was a native or a migrant. We do the same for the native-born. We expect that fully native couples have the strongest social networks, followed by half-native (i.e. a native whose partner is a migrant, or a migrant whose partner is a native) and fully migrant couples. Fully and half-native couples are not only more likely to have extended family close by, they should also be more often fluent in Swedish and, hence, have it easier to build close ties with local community.

The findings in column one of Table 2 suggest again that the native-born, with either another native or a migrant as partner, show more negative effects on both income and employment than migrants do. The effects are further almost identical between both couple types where a migrant loses his or her partner. Hence, we find no evidence that migrants partnered with another migrant suffer economically the most.

Consistent with the earlier results, however, the findings in column 3 of Table 2 suggest that the attenuated effects are driven by female migrants, especially those who lose a migrant partner. To exemplify, a female native whose partner is another native loses 34.3% in income and 4% in employment, while a female migrant partnered with a native loses 25.2% and 3%. On the other hand, a female migrant partnered with another migrant improves her income by 7.3% and becomes 2% more likely to be employed as a consequence of the partner's passing. The effect difference for migrant women who lose a migrant partner is however only significant for employment.

Finally, we check for effect heterogeneity across different income groups. The results are shown in Table S1 of the appendix. We find that individuals in the lowest 25th percentile of the income distribution are the most vulnerable. However, low-income migrants don't experience any income loss, while middle- and high-income migrants increase their income as a consequence of the partner's death. Among female migrants, those within the 25th to 75th percentile of the income distribution increase their earnings most, by 47.7%, compared to those with low income (+ 10.9%), and those from the top 25th percentile (+ 9.4%).

6. Conclusion

The death of a partner may have many consequences, including for the labor market outcomes of the partner that they leave behind. Here we used register data for the Swedish working-age population to test the prediction that these consequences will differ by sex, for women and men in opposite-sex couples with children. We also examined heterogeneity in the impact by nativity – for immigrants as compared with the native-born – as well as for the intersection between sex and nativity. To do this, we estimated the impact of unexpected partner death (for partners who share a child with the focal individual) on an individuals' income and employment.

Our results show that partner death has a negative effect on both income and employment, but more so for men than women. The findings indicate that male immigrants are more negatively affected by partner death than native-born men, especially when the partner who dies is another immigrant. The only subgroup who exhibit a positive impact are female immigrants who experience the death of an immigrant partner.

These findings suggest that accounting for the intersection between sex and nativity is crucial for understanding the likely impact of partner death on labor market outcomes. Our findings are limited in their ability to examine the mechanisms that explain how these differences are produced (to a large extent because data are not available on economic needs, changing attitudes to work, and uncertainties around the future). We are also unable to examine mediating factors that are theoretically relevant with respect to family and social networks, which are likely to make an important difference to changes in the life course after the death of a partner.

Irrespective of these limitations, and the fact that our results may not be generalizable beyond the Swedish context, we might nevertheless consider the implications of our results. The finding that men are more negatively affected by partner death than women is perhaps connected with the need for men to make a larger adjustment to their lives after the death of a partner with respect toward caregiving and other unpaid household activities. The finding that male immigrants are more negatively affected than native-born men, especially when their partner is another immigrant, suggests that this adjustment may be larger for male immigrants, perhaps because they are less likely to participate in such unpaid activities prior to the death of their partner.

The results for women may be interpreted by considering the fact that women are less likely to be employed, and likely to have lower incomes than men, in addition to the fact that they may have lower levels of savings and wealth. This not only implies that their economic needs may be greater after the death of a partner, but also that they may have a greater capacity to increase their labor market activity (although they may be penalized by previous years of inactivity and discrimination in the labor market). This may also explain the results for female immigrants, who are the only group that exhibit any positive impacts of partner death on labor market outcomes. It seems that work retains a prominent place in the life course of immigrant women after the sudden death of a partner, perhaps due to a lack of support and the necessity of meeting economic constraints. These findings suggest the need for research on the impacts of partner loss to account for both gender and nativity. At the same time, they suggest the need for further research to examine the underlying mechanisms that determine the links between family circumstances and

work, including research that explores the role of family and social networks in determining economic outcomes, as well as more research on other domains of life that are not examined here.

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Table S1: DID effects of partners sudden death on labor market outcomes

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Sudden death	-0.39***	-0.51***	-0.76***	-0.73***	-0.81***	-1.71***	-1.26*	-1.94*
	(0.04)	(0.04)	(0.08)	(0.21)	(0.09)	(0.30)	(0.57)	(0.87)
Sudden death × Migrant		0.36***			0.12	1.71***		1.07
		(0.09)			(0.18)	(0.41)		(1.15)
Sudden death × Female			0.49***		0.38***		0.63	0.27
			(0.09)		(0.10)		(0.61)	(0.93)
Sudden death × Medium income				0.41		1.22***	0.14	1.05
				(0.22)		(0.31)	(0.61)	(0.89)
Sudden death × High income				0.58*		1.47***	0.94	1.50
				(0.24)		(0.31)	(0.59)	(0.88)
Sudden death × Migrant × Female					0.34			0.79
					(0.20)			(1.23)
Sudden death × Migrant × Medium income						-1.18**		-1.72
						(0.45)		(1.27)
Sudden death × Migrant × High income						-1.38**		-0.54
						(0.53)		(1.25)
Sudden death × Female × Medium income							0.33	0.21
							(0.65)	(0.95)
Sudden death × Female × High income							-0.34	0.09
							(0.65)	(0.94)
Sudden death × Migrant × Female × Medium income								0.66
								(1.36)
Sudden death × Migrant × Female × High income								-1.15
								(1.40)
Observations	28251164	28251164	28251164	15563571	28251164	15563571	15563571	15563571
Individuals	2027348	2027348	2027348	981749	2027348	981749	981749	981749
Individual FE	✓	✓	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓	✓	✓
Age FE	✓	✓	✓	✓	✓	✓	✓	✓
R-squared	0.05	0.05	0.05	0.07	0.05	0.07	0.07	0.07

Notes: All models have Log(Income) as outcome variable, include individual, year and age group fixed effects. Clustered standard errors by individual in parantheses. The income groups refers to the income distribution in the year prior to the focal year. If individual had an income in lower 25 percentile at t-1, they get coded as "low income" (reference category). Incomes in the upper 25 percentile at t-1 are coded as "high income". All other values are coded as "medium income". * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Online Appendix

A. Descriptive statistics

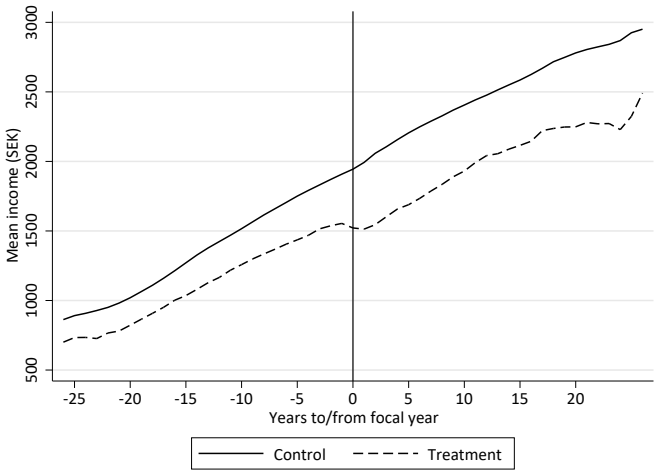
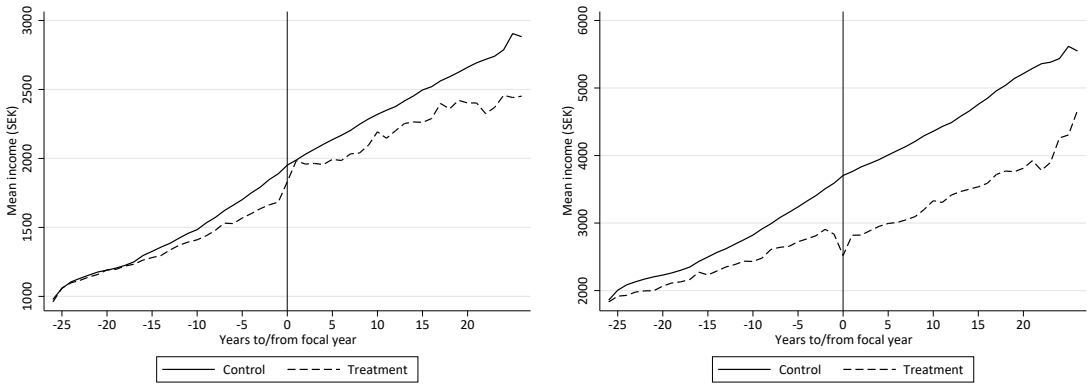


Figure A1: Income from earnings



(a) Individual (b) Family

Figure A2: Disposable income

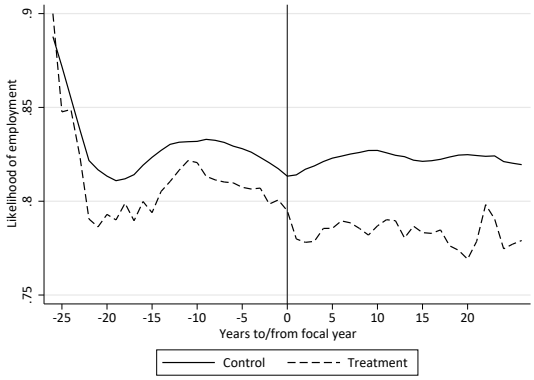


Figure A3: Employment

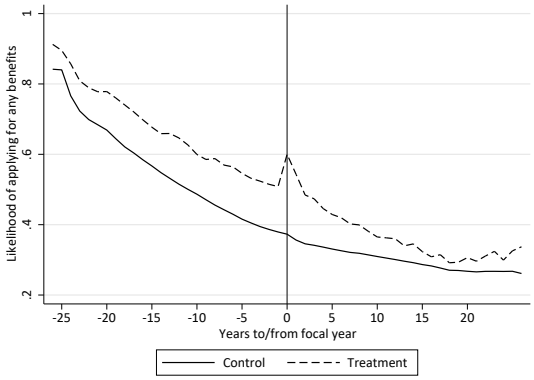


Figure A4: Benefits

Table A1: T-test for treated vs control in the pre-treatment period

	Difference in means
Income (earnings)	398.62***
	(36.22)
Disposable income	298.21***
	(17.25)
Family disposable income	368.54***
	(13.30)
Employed	0.02***
	(7.93)
Any benefits	-0.09***
	(-28.23)
Observations	6853950

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

B. Simple model, no interactions

Table A2: DID effects of partners sudden death on income and employment

	Log(earnings)		Log(disposable income)		Log(family disposable income)		Employment
Sudden death	-0.24***	-0.29***	0.20***	0.16***	-0.36***	-0.36***	-0.02***
	(0.04)	(0.04)	(0.02)	(0.02)	(0.01)	(0.02)	(0.01)
Observations	15915188	12933410	15915188	12933410	15915188	12933410	15915188
Individuals	1089143	796068	1089143	796068	1089143	796068	1089143
Individual FE	✓	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓	✓
Age-group FE	✓	✓	✓	✓	✓	✓	✓
Conditional on employment at t–1	✗	✓	✗	✓	✗	✓	✗
R-squared	0.09	0.11	0.16	0.22	0.26	0.32	0.02

Notes: All data is reported annually. Clustered standard errors by individual in parantheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table A3: DID effects of partners sudden death on benefits, moving to a big city and applying for citizenship

	Benefits	Living in a big city	Citizenship	Continued education
Sudden death	0.001	-0.009**	-0.055***	-0.005***
	(0.004)	(0.003)	(0.007)	(0.001)
Observations	28251164	28250617	10906068	16613892
Individuals	2027348	2027309	999486	1071150
Individual FE	✓	✓	✓	✓
Year FE	✓	✓	✓	✓
Age-group FE	✓	✓	✓	✓
R-squared	0.124	0.061	0.376	0.008

Notes: All outcomes are binary. Benefits takes value 1 if individuals receive any of these benefits - unemployment, family housing, sickness or family social insurance benefits. Living in large city takes value 1 if individuals live in one of the three largest cities in Sweden: Stockholm, Gothenburg or Malmo. Citizenship model is restricted to foreign born individuals and takes value 1 after individuals obtain Swedish citizenship. Continued education takes value 1 if individual has more years of education in the current year compared to previous and 0 othervise. All data is reported annually. Clustered standard errors by individual in parantheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

C. Distinguishing between different migrant groups

Table A4: DID effects of partners sudden death on economic integration indicators

	log(Income)			Employment			Benefits		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Sudden death	-0.51***	-0.76***	-0.81***	-0.04***	-0.05***	-0.05***	0.01*	0.02**	0.05***
	(0.04)	(0.08)	(0.09)	(0.00)	(0.01)	(0.01)	(0.00)	(0.01)	(0.01)
Sudden death × EU	-0.17		-0.10	-0.01		-0.01	-0.03**		-0.01
	(0.10)		(0.20)	(0.01)		(0.02)	(0.01)		(0.02)
Sudden death × Refugee	1.07***		0.32	0.10***		0.02	-0.09***		-0.17***
	(0.24)		(0.40)	(0.02)		(0.03)	(0.02)		(0.03)
Sudden death × Other	1.37***		0.61	0.12***		0.04	0.01		-0.10***
	(0.17)		(0.42)	(0.01)		(0.03)	(0.01)		(0.03)
Sudden death × Female		0.49***	0.38***		0.03***	0.01		-0.03***	-0.05***
		(0.09)	(0.10)		(0.01)	(0.01)		(0.01)	(0.01)
Sudden death × EU × Female			-0.08			0.00			-0.02
			(0.23)			(0.02)			(0.02)
Sudden death × Refugee × Female			1.25*			0.12**			0.10**
			(0.49)			(0.04)			(0.04)
Sudden death × Other × Female			0.96*			0.10**			0.14***
			(0.46)			(0.04)			(0.03)
Observations	28251164	28251164	28251164	28251164	28251164	28251164	28251164	28251164	28251164
Individuals	2027348	2027348	2027348	2027348	2027348	2027348	2027348	2027348	2027348
Individual FE	✓	✓	✓	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓	✓	✓	✓
Age-group FE	✓	✓	✓	✓	✓	✓	✓	✓	
R-squared	0.05	0.05	0.05	0.02	0.02	0.02	0.12	0.12	0.12

Notes: The outcome variable for models 1-3 is Log(Income); for models 4-6 is Employment; and for models 7-9 is benefits (unemployment, family housing, sickness or family social insurance benefits). Interaction effects with gender (baseline category: Male) and residency permit type (baseline category: Swedish). Clustered standard errors by individual in parantheses. All data is reported annually. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

D. Conditional on employment at t-1

Table A5: DID effects of partners sudden death on economic integration indicators, conditional on employment at t-1

	log(Income)				Employment				Benefits			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Sudden death	-0.29***	-0.33***	-0.70***	-0.54***	-0.03***	-0.04***	-0.06***	-0.03***	0.08***	0.10***	0.06***	0.08***
	(0.04)	(0.05)	(0.09)	(0.08)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)
Sudden death × Migrant		0.14		-0.59*		0.02		-0.10**		-0.05**		-0.07
		(0.11)		(0.27)		(0.01)		(0.03)		(0.02)		(0.04)
Sudden death × Female			0.52***	0.26**			0.04**	-0.00			0.03	0.02
			(0.11)	(0.09)			(0.01)	(0.01)			(0.02)	(0.02)
Sudden death × Migrant × Female				0.91**				0.15***				0.03
				(0.30)				(0.04)				(0.04)
Observations	12933410	12933410	12933410	12933410	12933410	12933410	12933410	12933410	12933410	12933410	12933410	12933410
Individuals	796068	796068	796068	796068	796068	796068	796068	796068	796068	796068	796068	796068
Individual FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Age-group FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
R-squared	0.11	0.11	0.11	0.11	0.02	0.02	0.02	0.02	0.12	0.12	0.12	0.12

Notes: The outcome variable for models 1-4 is Log(Income); for models 5-8 is Employment; and for models 9-12 is benefits (unemployment, family housing, sickness or family social insurance benefits). The population is restricted to include only those who are employed the year prior to focal year. Clustered standard errors by individual in parantheses. All data is reported annually. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

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