Submission for the European Population Conference

Edinburgh, June 12-15, 2024

Kinlessness across Europe: Prevalence and heterogeneity

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Abstract

Availability of kin has profound effects on the lives of people, especially in later life when social networks tend to be composed prevalently of family members and care needs tend to increase. Using data from the last wave (wave 8; 2019-2020) of the Survey of Health, Ageing and Retirement in Europe (SHARE), we estimate the prevalence of kinlessness (i.e., absence of close kin) among older adults aged 65 and more in 27 countries. We consider different definitions of kinlessness, from a less restrictive (i.e., based only on absence of both partner and children) to a more restrictive one (including the absence of all kin, or also grandchildren, parents and siblings).

Results show a large variation of kinlessness across countries. The proportion of adults aged 65 and above who lack both a partner and children range between 2-3.5% in Czech Republic, Romania, Israel, or Bulgaria, and more than 8% in Switzerland Spain, Belgium or Malta. The median value of the proportion of old people lacking all considered kin is 1.4% (ranging from 0.1 to 4.1%). In addition, we found a substantial heterogeneity in kinlessness within country when considering age groups, sex, and education.

Understanding the prevalence of older individuals without close kin is critical for policymakers and healthcare providers to design appropriate support systems for this particularly vulnerable group of older people and their unmet care needs.

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INTRODUCTION

In the complex tapestry of human relationships, kinship has historically occupied a central and indispensable role in shaping individual behaviors, conditions, and identities, as well as societal structures (Moffett 2013; Voorhees et al. 2020). The bonds of kinship have played a vital role in providing support, facilitating social integration, and transmitting cultural and social values across generations (Liu & Bai 2016). Kinlessness, defined as the lack of (close) kin, represents a significant departure from the standard kinship structure. In an increasingly dynamic world – marked by demographic shifts, evolving cultural norms, and changing social dynamics – kinlessness is re-emerging as a critical area of scholarly inquiry (Furstenberg 2020).

Disparities in kin (un)availability stand as a pivotal facet of kinship inequalities (Alburez et al. 2022). The degree of kinlessness observed in a population at a given point in time is strongly influenced by past demographic trends encompassing fertility, mortality, partnership formation and dissolution. Examining how macro-level demographic trends affect the observed prevalence of kinlessness lies outside the scope of our study, and is a notably intricate endeavor (see Caswell 2019 and Verdery 2015 for approaches to study the impact of demographic forces on kinship networks). Furthermore, the absence of specific kin, such as parents or siblings, hinges on even more intricate historical (demographic) processes involving birth cohorts different from those of the focal individuals. Despite this complexity, one can argue that declining mortality rates observed in the recent decades in most countries have increased the proportion of individuals who survive to a certain age while still having kin available (due to their longer life expectancy). Conversely, recent fertility dynamics act in the opposite direction: decreasing fertility levels over time imply shrinking kinship networks with fewer (grand)children and siblings, among others, and this effect can be intensified by reduced rates of partnership formation and increased rates of divorce (see Verdery et al. 2019 for an in-depth discussion). The net effect of fertility and mortality dynamics on kinlessness can be either positive or negative, contingent upon which demographic force prevails. Prior research suggests that changes in fertility appear to exert a greater influence than changes in mortality on kinship network size (Hammel 2005). This trend has led to an increasing number of individuals reaching old age without close kin available, a pattern expected to intensify in the coming decades (Verdery & Margolis 2017).

In a context of population aging, the examination of kinlessness prevalence is of particular relevance. Kinship holds a general significance for both individuals and communities, the availability of kin becoming especially salient at older ages (Connidis & Barnett 2018; Dykstra 2007), however. One primary reason for the study of kin (un)availability among older individuals is the pivotal role that kin plays in providing social support (Carr & Springer 2010; Umberson & Thomeer 2020). Kin relationships offer emotional support, companionship, and a sense of belonging, and previous research shows that older adults who maintain close relationships with their kin tend to experience reduced loneliness and isolation. Kin connections are crucial for the mental and emotional well-being of older people, mitigating the risk of depression and anxiety often associated with aging. Furthermore, kin often serve as caregivers, providing essential assistance to older family members facing health-related challenges. Informal caregiving provided by family members helps older individuals in maintaining their independence and avoid institutionalization.

Kin have been proved essential for ensuring the psychological well-being and overall health of older individuals (Arpino et al. 2022; Quashie et al. 2021). In addition to the social support mechanism discussed earlier, kin exert social control over each other's health behaviors (Tucker 2002; Umberson et al. 2010; Umberson 1987, 1992), through pressures and influence to inhibit or limit unhealthy behaviors and promote positive habits and lifestyles (Arpino et al. 2023; Pasqualini et al. 2022).

Hence, understanding kinlessness is of paramount importance for identifying individuals at higher risk of experiencing health, social, and economic vulnerabilities, who may require increased community or institutional support. It also underscores the need for the development of alternative support networks and policies aimed at ensuring the well-being of older individuals without kin ties. Understanding the prevalence of older individuals without close kin is critical for policymakers and healthcare providers to design appropriate support systems for this particularly vulnerable group of older people (Carney et al. 2016).

On the operationalization of kinlessness

The concept of kinlessness is influenced by the socially evolving nature of kinship (Seltzer et al. 2005). Traditional family structures, characterized by nuclear families and kinship established through blood and marriage, have given way to more diverse forms of kinship relationships in Western societies (Furstenberg 2014). Thus, both biological and step-children, as well as both married and cohabiting (even without a legal recognition) partners, should be considered when identifying the absence or presence of kin. Conversely, in cases of divorce or separation, the ex-partner is typically not counted as available kin. Additionally, there is a consensus on the importance of accounting for extended kin, including grandchildren and siblings, and in defining kinlessness as the lack of more than one type of close kin. Nevertheless, due to data limitations, not all previous empirical studies on kinlessness could account for all types of potentially available kin (Furstenberg 2020).

Some previous research has focused on estimating the prevalence and socio-demographic characteristics of older individuals lacking a specific type of kin, such as children (Valerio 2021), and the definitions of kinlessness found in the literature typically describe it as the unavailability of both a partner and children (e.g., Mair 2019; Plick et al. 2021). Brown and colleagues (2022) focused on sole family survivors addressing older people who survive their family of origin (operationalized including parents and siblings), but some studies

aimed at estimating the prevalence of kinlessness accounted for a wider array of kinship ties, including siblings (Verdery et al. 2019), parents and siblings (Margolis & Verdery 2017; Zhou et al. 2019). Past research has examined the size of kinship networks, accounting for grandchildren among other kinship ties (Kolk et al. 2023; Margolis & Wright 2017). Other studies have investigated the demography of grandparenthood (Arpino et al. 2018; Margolis & Arpino 2018; Uhlenberg 2005), or have measured the prevalence of grandchild care provision among older adults (Zanasi et al. 2023). However, despite the importance of grandchildren in the lives of many older adults (Bordone et al. 2023), research on kinlessness prevalence has often overlooked the availability of grandchildren in their definitions of kinlessness.

With this study, we first contribute to the growing, albeit still limited, body of research on kinlessness by considering a broad range of kinship ties and kinlessness definitions. For individuals aged 65 and over, we consider the (un)availability of five close kinship ties – partners (regardless the legal formalization of the union), children (both biological and step- children), grandchildren, parents, and siblings – by estimating both the proportion of individuals lacking each type of kin separately, and the proportion of different combinations of kinlessness. The broadest definition we employ is being without both a partner and children (labeled as K1). Then, we propose additional definitions considering increasing levels of restrictiveness, cumulatively imposing the absence of grandchildren (K2), parents (K3), and siblings (K4).

We also move forward than previous literature by taking a cross-national perspective and providing estimates of the different types of kinlessness across several countries. Only one other study has investigated kinlessness on a cross-national scale (Verdery et al. 2019). Based on data from the last wave (wave 8; 2019-2020) of the Survey of Health, Ageing and Retirement in Europe (SHARE), we offer detailed and recent estimates for 26 European countries plus Israel.

Finally, we investigate within-country heterogeneity by age groups (65-79; 80 and over), sex, and education (low educated; high educated). Whereas previous studies have examined within-country heterogeneity for specific nations (Margolis & Verdery 2017; Zhou et al. 2019), a cross-national investigation of these factors is a novel contribution.

MATERIAL AND METHODS

We used data from the last available wave (wave 8) of the Survey of Health, Ageing and Retirement in Europe (SHARE). Data collection, based on computer-assisted personal interviewing, started in October 2019 and stopped in March 2020 due to the COVID-19 outbreak. Our analyses include all the 27 countries that participated in wave 8 of SHARE: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Israel, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland. We select only individuals aged 65 and above in 2019/2020. Therefore, the analytical sample include people born between 1920 and 1955.

In each wave, SHARE collects data on different types of living kin: partner, children, grandchildren, parents, and siblings. For each kin type, we build dummy variables taking value 1 for respondents who lack that specific kin. Partners include those in a legally recognised union (marriage or registered union), regardless of their cohabitation in the same household, and cohabiting partners even if not legally bonded. Widowed individuals

and those who divorced or separated from their partner are considered as partnerless, unless they are in a new partnership at the time of the interview. Children include biological, adopted, and step- children alive at the time of interview. As for children, grandchildren of any type are considered. In SHARE, information on parents is restricted to biological parents, while siblings include also non-biological ones (namely, half- or step-sigbiling).

We consider four definitions of kinlessness where absence of kin is defined as lack of a progressively more extended set of kin: K1: partner and children; K2: partner, children, and grandchildren; K3: partner, children, grandchildren, and parents; K4: partner, children, grandchildren, parents, and siblings.

We estimate both the prevalence of lacking each type of kin separately and the prevalence of kinlessness according to the four above mentioned definitions. Prevalence estimates are obtained as sample proportions by country, with observations weighted using the cross-sectional calibrated weights provided by SHARE that account for sampling design and attrition (De Luca et al. 2021). Estimates (and confidence intervals) are reported in the Tables as percentages. Estimates based on weighted logistic regression models where the only independent variable was country gave virtually identical values and standard errors. We also examine within-country heterogeneity by age, sex and education. We consider two age groups (65-79 and 80+) and two educational groups ("low" and "high" education). Education is measured according to the International Standard Classification of Education (http://www.uis.unesco.org/), and a high educational level is defined as having any high school degree). Sample sizes by country, and by age (65-79, 80+), sex and education, are reported in Table 1 in the Appendix.

RESULTS

Prevalence of different types of kinlessness across countries

Table 1 presents, for the 27 countries included in SHARE data, estimates of the proportions (with 95% confidence intervals in parentheses) of individuals aged 65 years and over lacking a specific type of kin, and the proportions of kinlessness based on our different definitions, from the least to the most restrictive one (K1 to K4). The countries are listed according the increasing order of K1 (or those without a partner or children).

Significant variability emerges across countries for each considered measure of kinslessnes. The prevalence of older individuals lacking a partner ranges from less than a third in countries such as Malta, Israel, the Netherlands, and Greece, to more than half in Latvia, Estonia, Bulgaria, and Hungary. Considerable diversity is also evident in the proportion of childlessness, albeit with lower absolute values, ranging from around 5% in the Czech Republic, Israel, Cyprus and Romania, to over 15% in Switzerland and Malta. Since, for the cohorts under study, births outside of marriage were limited, the majority of parents in our data have been married in the past. Therefore, the considerable disparities in the prevalence of individuals without a partner (and children) are primarily attributed to widowhood. However, the variations in partnerless across countries are also influenced, to some extent, by differing rates of individuals who have never married, and, to a lesser extent, by separation/divorce.

The absence of these two kin – partner and children – combine into our first and least restrictive definition of kinlessness, K1. The lowest levels, ranging from 2% to 4%, are observed in the Czech Republic, Romania, Israel, Bulgaria, Cyprus, and Denmark. Values exceeding 8% are found in Switzerland, Spain, Belgium, and

Malta. Besides substantial between-country variability in K1, we note that countries cannot be easily categorized according to geographical clusters typically employed in family studies. In fact, among Northern European countries, K1 ranges from 3.9% in Denmark to 7.3% in Finland. Whether some Eastern Europe countries display values in the lowest part of the distribution, we nonetheless find K1 values ranging from 3.3% in Romania to 7.6% in Estonia. Conversely, all major Southern European countries exhibit medium-to-high values, ranging from around 6.0% in Italy and Greece to 8.4% in Spain.

The prevalence of grandchildlessness, obviously exceeding that of childlessness, varies significantly across countries, ranging from 7.7% in the Czech Republic to 30.8% in Switzerland, with a median value around 18%. The rank ordering of countries in terms of grandchildlessness closely mirrors the ranking in childlessness, although variations can be attributed to differences in the fertility rates of older generations' offspring, child mortality, and demographic dynamics related to the fertility and mortality of older age groups. Our secondary definition of kinlessness, K2, characterizes individuals as kinless if they lack not only partner and children, but also grandchildren. Due to its more stringent criteria, K2 values naturally exhibit lower prevalence compared to K1 in all countries, nevertheless the gap between K2 and K1 varies, with minimal discrepancies of almost 0 percentage points observed in countries like Denmark, the Netherlands, and Luxembourg, and more substantial differences of over 1 percentage point in countries such as Croatia, Lithuania, Latvia, and Italy. This variability is closely associated with the percentage of individuals who have grandchildren but lack living children.

Having at least one living parent is not common among people aged 65 and over. However, the proportion of older people with at least one surviving parent in some of the considered countries in 2019-2020 is not negligible, exceeding 8% in France, Finland, Cyprus, and Israel. Therefore, in these countries, our third measure of kinlessness, K3, which restricts this definition to those without a partner, children and any living parent, slightly decreases. In the rest of the considered countries, K3 is very similar to K2.

Finally, our most restrictive definition of kinlessness, K4, measures the percentage of individuals who lack all close types of kin: partner, children, grandchildren, parents, and siblings. The proportion of old individuals who lack siblings shows considerable variability, with values ranging from less than 10% in Malta and Cyprus, to approximately 50% in Slovakia, Latvia, and Hungary. Due to the generally substantial proportions of older people who do have siblings, K4 values are lower than K3, and significantly lower than K1. The prevalence of older individuals who lack all five types of kin considered is generally low but, again, highly heterogeneous across countries. On the one end, there are countries with K4 values lower than 1% (Cyprus, Poland, the Czech Republic, Romania, Slovenia, Israel, and the Netherlands); on the opposite end, there are countries where the proportion of K4 exceeds 2% (Finland, Estonia, Slovakia, Belgium, and Latvia).

Table 1. Weighted estimates and 95% confidence intervals (CI) of the proportion (in percentage) of people aged 65 and over without each type of kin separately, and according to our four definitions of kinlessness, by country

Countries	no partner	no children	K1	no grandchildren	K2	no parents	K3	no siblings	K4
Czech Republic	35.9 (33.4, 38.5)	3.2 (2.4, 4.3)	**2.0** (1.4, 2.9)	7.7 (6.4, 9.2)	**1.8** (1.2, 2.7)	93.4 (91.5, 94.8)	**1.8** (1.2, 2.7)	29.4 (27.1, 31.9)	**0.4** (0.2, 0.8)
Romania	42.5 (38.1, 47.0)	5.1 (3.6, 7.3)	**3.3** (2.0, 5.3)	12.3 (9.8, 15.4)	**2.7** (1.5, 4.6)	97.2 (95.8, 98.1)	**2.7** (1.5, 4.6)	27.5 (23.4, 32.0)	**0.6** (0.2, 1.7)
Israel	31.7 (27.6, 36.2)	4.5 (3.0, 6.7)	**3.4** (2.1, 5.4)	11.2 (8.2, 15.2)	**2.8** (1.6, 4.7)	91.6 (89.0, 93.6)	**2.4** (1.3, 4.3)	18.4 (15.6, 21.6)	**0.7** (0.3, 1.3)
Bulgaria	54.9 (50.6, 59.1)	5.7 (3.8, 8.3)	**3.5** (2.0, 6.0)	12.5 (9.8, 15.9)	**2.6** (1.4, 5.0)	96.7 (94.6, 98.0)	**2.6** (1.4, 5.0)	42.1 (37.9, 46.5)	**1.1** (0.4, 2.8)
Cyprus	36.8 (31.4, 42.5)	5.0 (3.0, 8.3)	**3.9** (2.0, 7.2)	15.1 (11.2, 20.1)	**3.7** (1.9, 7.0)	91.5 (87.4, 94.4)	**3.7** (1.9, 7.0)	8.6 (6.2, 11.9)	**0.1** (0.1, 0.9)
Denmark	37.7 (35.1, 40.4)	6.5 (5.2, 7.9)	**3.9** (2.9, 5.2)	12.6 (10.9, 14.5)	**3.9** (2.9, 5.2)	93.6 (92.2, 94.8)	**3.7** (2.7, 5.0)	20.6 (18.8, 22.8)	**1.3** (0.8, 2.2)
Poland	45.5 (42.4, 48.7)	5.5 (4.2, 7.3)	**4.3** (3.0, 6.0)	10.9 (9.1, 13.1)	**4.2** (2.9, 5.9)	93.4 (91.7, 94.8)	**3.9** (2.7, 5.6)	22.6 (20.0, 25.4)	**0.3** (0.1, 0.8)
Slovenia	42.8 (40.3, 45.3)	5.9 (4.8, 7.3)	**4.6** (3.0, 6.0)	12.9 (11.3, 14.7)	**4.4** (3.4, 5.7)	94.0 (92.6, 95.1)	**4.1** (3.1, 5.4)	22.3 (20.4, 24.4)	**0.6** (0.3, 1.3)
Hungary	57.4 (50.2, 64.3)	10.1 (6.6, 15.0)	**5.1** (2.5, 10.0)	21.2 (15.3, 28.5)	**4.6** (2.1, 9.5)	95.9 (93.3, 97.6)	**4.4** (2.0, 9.4)	50.4 (42.9, 58.0)	**1.7** (0.8, 3.6)
Croatia	42.9 (39.0, 46.9)	9.2 (7.1, 11.8)	**5.1** (3.5, 7.5)	15.4 (12.8, 18.5)	**4.0** (2.6, 6.2)	94.6 (92.5, 96.2)	**3.6** (2.3, 5.7)	29.5 (26.1, 33.2)	**1.8** (0.9, 3.4)
Netherlands	31.7 (29.0, 34.5)	10.0 (8.3, 11.9)	**5.2** (3.9, 6.8)	20.5 (18.3, 22.9)	**5.2** (3.9, 6.8)	94.9 (93.6, 96.0)	**4.9** (3.7, 6.5)	12.0 (10.3, 14.0)	**0.7** (0.3, 1.5)
Slovakia	47.4 (42.0, 52.9)	10.0 (7.1, 14.0)	**5.5** (3.3, 9.1)	17.7 (14.2, 21.9)	**4.4** (2.5, 7.6)	97.5 (95.7, 98.5)	**4.4** (2.5, 7.6)	47.0 (41.7, 52.4)	**2.9** (1.4, 5.8)
Lithuania	49.4 (45.9, 53.0)	8.3 (6.5, 10.6)	**5.5** (4.0, 7.5)	15.5 (13.1, 18.3)	**5.2** (3.8, 7.2)	96.5 (94.9, 97.6)	**5.2** (3.8, 7.2)	26.4 (23.4, 29.6)	**1.2** (0.6, 2.3)
Germany	39.9 (37.4, 42.4)	10.3 (8.8, 12.0)	**5.9** (4.6, 7.4)	24.4 (22.3, 26.7)	**5.7** (4.5, 7.2)	93.7 (92.5, 94.7)	**5.4** (4.3, 6.9)	28.6 (26.4, 30.9)	**1.6** (1.0, 2.6)
Austria	38.8 (35.6, 42.0)	8.8 (7.2, 10.7)	**5.9** (4.6, 7.5)	19.8 (17.4, 22.4)	**5.5** (4.2, 7.1)	94.2 (92.4, 95.5)	**5.2** (3.9, 6.8)	29.3 (26.4, 32.9)	**1.6** (1.0, 2.6)
Sweden	40.3 (37.9, 42.8)	8.0 (6.8, 9.5)	**6.0** (4.8, 7.4)	16.1 (14.3, 18.1)	**5.6** (4.5, 7.0)	92.1 (90.6, 93.4)	**5.2** (4.2, 6.6)	22.8 (20.9, 24.8)	**1.3** (0.8, 2.1)
Italy	34.1 (31.2, 37.1)	11.9 (10.0, 14.1)	**6.0** (4.6, 7.7)	23.6 (21.2, 26.2)	**4.0** (3.0, 5.5)	95.6 (94.4, 96.6)	**3.8** (2.8, 5.3)	25.4 (22.8, 28.1)	**1.3** (0.7, 2.4)
Greece	32.5 (30.4, 34.7)	9.4 (8.2, 10.8)	**6.1** (5.1, 7.3)	28.7 (26.7, 30.8)	**5.8** (4.8, 7.0)	94.4 (93.4, 95.3)	**5.4** (4.5, 6.5)	26.0 (24.1, 28.0)	**2.0** (1.5, 2.8)
France	38.6 (36.3, 40.9)	9.1 (7.8, 10.6)	**6.6** (5.5, 7.9)	17.0 (15.3, 18.9)	**6.2** (5.2, 7.5)	90.7 (89.3, 92.0)	**5.7** (4.7, 6.9)	22.2 (20.2, 24.2)	**1.4** (0.9, 2.0)
Latvia	50.4 (45.7, 55.1)	9.8 (7.5, 12.8)	**7.2** (5.2, 9.9)	19.0 (15.0, 22.9)	**6.0** (4.1, 8.5)	95.8 (93.1, 97.4)	**5.8** (4.0, 8.3)	49.4 (44.7, 54.0)	**4.1** (2.6, 6.3)
Finland	41.0 (35.3, 47.0)	9.4 (6.4, 13.7)	**7.3** (4.5,11.7)	24.1 (19.7, 29.2)	**7.1** (4.3, 11.5)	91.1 (87.0, 94.0)	**6.7** (4.0, 11.1)	16.6 (12.5, 21.9)	**2.4** (0.8, 6.9)
Luxembourg	40.2 (35.7, 44.9)	12.6 (9.8, 16.0)	**7.4** (5.1,10.6)	27.3 (23.6, 31.4)	**7.4** (5.1, 10.6)	93.3 (90.9, 95.1)	**7.1** (4.8, 10.2)	26.1 (22.3, 30.3)	**1.5** (0.6, 3.6)
Estonia	54.3 (52.1, 56.4)	9.3 (8.1, 10.7)	**7.6** (6.4, 8.9)	15.8 (14.2, 17.6)	**6.6** (5.5, 7.9)	95.4 (94.3, 96.3)	**6.3** (5.3, 7.6)	37.0 (34.9, 39.2)	**2.5** (1.8, 3.3)
Switzerland	37.7 (35.1, 40.4)	15.2 (13.4, 17.3)	**8.1** (6.7, 9.8)	30.8 (28.4, 33.3)	**7.7** (6.4, 9.4)	92.5 (91.0, 93.8)	**7.2** (5.8, 8.8)	19.6 (17.5, 21.8)	**1.7** (1.1, 2.7)
Spain	40.3 (36.9, 43.8)	11.5 (9.3, 14.0)	**8.4** (6.5,10.8)	20.5 (17.8, 23.5)	**7.5** (5.7, 9.8)	95.6 (94.0, 96.8)	**7.1** (5.3, 9.4)	24.9 (22.0, 27.9)	**1.9** (10, 3.3)
Belgium	38.1 (35.3, 41.0)	12.0 (10.1, 14.1)	**8.5** (6.9,10.4)	20.4 (18.1, 22.9)	**8.3** (6.8, 10.2)	94.0 (92.6, 95.2)	**8.1** (6.6, 10.0)	25.7 (23.2, 28.5)	**3.3** (2.2, 4.8)
Malta	31.4 (27.0, 36.3)	16.3 (13.0, 20.1)	**8.7** (6.2,12.1)	21.7 (17.8, 26.2)	**7.7** (5.4, 11.0)	92.8 (90.0, 94.8)	**7.4** (5.1, 10.6)	5.4 (3.6, 7.9)	**1.1** (0.4, 2.9)

Note: Estimates based on SHARE data wave 8 (2019-2020) are in ascending order of K1. Calibrated cross-sectional weights are used to account for survey design and attrition.

In summary, the prevalence of kinlessness varies significantly across countries for all the definitions adopted. Absolute levels of prevalence of lacking specific kin differ by kin type, and relative levels also change according to the kin type and kinlessness definition. For instance, some countries with high prevalence of individuals who are partnerless exhibit low proportions of childlessness (e.g., Bulgaria), or vice versa (e.g., Italy and Malta). A few countries with the highest values of K1 (unavailability of both partner and children) report relatively low levels of the most restrictive K4 measure (unavailability of all considered kin ties). This is the case of Malta and Switzerland (8.7% and 8.1% for K1 and 1.7% and 1.1% for K4, respectively) and is a result of high values of childlessness compensated by relatively low levels of lacking parents and siblings. Consequently, the overall agreement of the country rankings based on K1 and K4 is far from perfect (Kendall's tau correlation among the ranks is 0.63).

When assessing countries' positions in terms of kinlessness levels, it is essential to consider that, like all previous studies on kinlessness, we had to rely on survey data. This means that our estimates are subject to sampling uncertainty, reflected in the confidence intervals whose width is strongly affected by sample sizes (see Table S1 in the Supplementary Materila). Despite the sampling uncertainty and the fact that the reported 95% confidence intervals are too conservative for pairwise comparisons (MacGregor-Fors & Payton, 2013), our estimates allow us to identify countries with particularly high (or low) levels of kinlessness.

Heterogeneities in kinlessness prevalence across population sub-groups

We now turn to the examination of potential heterogeneity in kinlessness within country, focusing on the least and the most restrictive kinlessness measures, namely K1 and K4. Tables 2-4 presents, for each country, and for both K1 and K4, the estimated proportions by age, by sex, and by education, together with the difference between the levels of these characteristic and its significance (p-value).

When comparing kinlessness prevalence across age groups (65-79 and 80 and over, Table 2), we see that kinlessness levels tend to be higher among the oldest old, thus leading positive differences. Two forces are at play in this case: age – as far as individuals grow older, the likelihood of losing kin by death increases – and cohort– older individuals belong to cohorts characterized by different demographic dynamics with challenging-to-predict and non-universal effects on kinlessness.

As for gender differences (Table 3), kinlessness (both K1 and K4) is notably higher for older females in almost all countries. The higher likelihood of women experiencing widowhood largely explains their elevated levels of kinlessness.

Finally, differences by education (Table 4) are more dispersed, with an almost perfect balance between a group of countries with higher kinlessness among higher educated individuals and a group of countries where the opposite is observed. Kinlessness is higher for highly educated old people in Mediterranean countries (with the exception of Cyprus) and some Eastern and Continental European countries. Conversely, in Northern countries and most Eastern and Continental countries, higher kinlessness is found among less educated individuals.

Table 2. Weighted estimates of the proportion (in percentage) of people without partner and children (K1) and without all close kin (K4), by age groups, sex, education, and difference between groups, by country

Countries	by age groups								by sex								by education							
	K1				K4				K1				K4				K1				K4			
	65-79	80+	diff.	*p-val.*	65-79	80+	diff.	*p-val.*	male	fem.	diff.	*p-val.*	male	fem.	diff.	*p-val.*	low	high	diff.	*p-val.*	low	high	diff.	*p-val.*
Austria	5.4	7.1	1.7	*0.054*	1.4	2.2	0.8	*0.426*	3.8	7.4	3.6	*0.945*	0.5	2.5	2.0	*0.830*	7.1	5.5	-1.7	*0.010*	1.7	1.6	0.0	*0.542*
Belgium	6.9	11.7	4.8	*0.002*	1.9	6.1	4.2	*0.009*	8.2	8.6	0.4	*1.000*	2.6	3.9	1.3	*1.000*	9.5	7.7	-1.8	*0.324*	3.0	3.5	0.5	*1.000*
Bulgaria	3.8	2.7	-1.1	*0.492*	1.2	0.8	-0.4	*1.000*	6.2	1.7	-4.5	*0.063*	2.4	0.2	-2.2	*0.274*	2.7	4.1	1.4	*1.000*	0.4	1.6	1.1	*1.000*
Croatia	4.8	6.0	1.2	*0.018*	1.6	2.1	0.5	*0.308*	3.5	6.3	2.8	*0.737*	1.1	2.3	1.2	*1.000*	4.7	5.9	1.1	*0.328*	1.8	1.8	0.0	*1.000*
Cyprus	4.4	2.1	-2.3	*1.000*	0.0	0.6	0.6	*1.000*	0.4	6.8	6.4	*0.130*	0.0	0.2	0.2	*1.000*	4.3	3.3	-1.0	*1.000*	0.2	0.0	-0.2	*1.000*
Czech Rep.	1.7	3.2	1.5	*0.062*	0.2	1.3	1.1	*0.328*	1.8	2.1	0.3	*1.000*	0.3	0.6	0.3	*1.000*	1.8	2.1	0.2	*1.000*	0.2	0.6	0.3	*1.000*
Denmark	3.7	4.5	0.8	*0.102*	0.7	3.3	2.6	*0.033*	5.8	2.2	-3.6	*0.273*	1.1	1.6	0.5	*1.000*	6.2	3.4	-2.9	*0.001*	1.0	1.4	0.5	*0.893*
Estonia	5.8	12.0	6.2	*0.005*	1.4	5.1	3.7	*0.044*	4.4	9.3	4.9	*1.000*	1.4	3.1	1.7	*1.000*	8.9	7.1	-1.8	*0.024*	3.0	2.3	-0.7	*0.306*
Finland	5.9	11.7	5.8	*0.011*	0.5	8.0	7.5	*0.002*	5.9	8.5	2.6	*0.842*	0.0	4.2	4.2	*0.148*	9.6	6.3	-3.4	*0.079*	4.5	1.4	-3.1	*0.110*
France	5.5	8.8	3.3	*0.023*	0.6	3.1	2.5	*0.095*	6.4	6.7	0.3	*0.807*	1.2	1.5	0.3	*1.000*	7.6	5.8	-1.7	*0.414*	2.4	0.6	-1.9	*0.454*
Germany	5.3	7.1	1.8	*0.026*	1.5	1.8	0.3	*0.566*	5.7	6.0	0.3	*1.000*	1.2	2.0	0.8	*1.000*	9.0	5.4	-3.6	*0.000*	1.4	1.7	0.2	*0.298*
Greece	6.0	6.2	0.2	*0.173*	1.7	2.7	1.0	*0.333*	4.1	7.7	3.6	*0.604*	0.8	3.0	2.2	*0.631*	5.4	7.2	1.9	*0.360*	1.9	2.3	0.4	*0.923*
Hungary	4.6	6.6	2.0	*0.004*	1.2	3.6	2.4	*0.015*	1.6	7.1	5.5	*0.363*	0.8	2.3	1.5	*1.000*	3.8	5.5	1.8	*0.576*	1.7	1.8	0.1	*0.771*
Israel	2.8	5.1	2.3	*0.099*	0.1	2.7	2.6	*0.086*	2.5	4.1	1.6	*1.000*	0.5	0.9	0.4	*1.000*	5.0	2.4	-2.6	*0.187*	0.2	1.0	0.8	*1.000*
Italy	5.3	7.1	1.8	*0.079*	1.0	1.9	0.9	*0.507*	4.9	6.8	1.9	*1.000*	1.0	1.6	0.6	*1.000*	5.1	8.5	3.4	*0.005*	1.2	1.6	0.4	*0.606*
Latvia	4.5	13.9	9.4	*0.000*	1.7	9.8	8.1	*0.000*	3.6	9.0	5.4	*0.998*	2.6	4.8	2.2	*1.000*	15.6	5.0	-10.6	*0.000*	11.0	2.2	-8.8	*0.000*
Lithuania	3.6	9.9	6.3	*0.002*	0.6	2.5	1.9	*0.201*	2.5	7.2	4.7	*0.753*	0.9	1.3	0.4	*1.000*	5.1	5.7	0.5	*0.336*	0.6	1.4	0.8	*1.000*
Luxembourg	6.8	8.8	2.0	*0.001*	1.0	2.7	1.7	*0.049*	6.4	8.2	1.8	*0.925*	1.6	1.4	-0.2	*1.000*	6.5	8.1	1.6	*1.000*	2.1	1.0	-1.2	*0.775*
Malta	5.6	19.5	13.9	*0.000*	0.4	3.5	3.1	*0.004*	3.3	13.3	10.0	*0.051*	0.7	1.4	0.7	*1.000*	5.5	13.2	7.6	*0.018*	1.3	0.8	-0.5	*1.000*
Netherlands	5.4	4.7	-0.7	*0.125*	0.3	1.9	1.6	*0.132*	5.7	4.8	-0.9	*0.933*	0.4	0.9	0.5	*1.000*	4.0	6.2	2.2	*1.000*	0.8	0.6	-0.2	*1.000*
Poland	4.6	3.4	-1.2	*0.334*	0.3	0.2	-0.1	*1.000*	6.3	3.0	-3.3	*0.297*	0.4	0.2	-0.2	*1.000*	4.8	3.9	-0.9	*0.464*	0.6	0.0	-0.6	*1.000*
Romania	2.4	5.8	3.4	*0.002*	0.3	1.4	1.1	*0.309*	2.9	3.6	0.7	*1.000*	1.2	0.2	-1.0	*0.880*	3.9	2.3	-1.6	*1.000*	0.6	0.6	0.0	*1.000*
Slovakia	5.3	6.0	0.7	*0.097*	2.8	3.0	0.2	*0.018*	7.8	3.9	-3.9	*0.253*	3.1	2.7	-0.4	*1.000*	6.3	5.3	-1.0	*0.001*	3.1	2.8	-0.3	*0.057*
Slovenia	4.2	5.8	1.6	*0.080*	0.4	1.2	0.8	*0.661*	4.5	4.7	0.2	*0.954*	0.4	0.8	0.4	*1.000*	4.1	4.9	0.8	*0.624*	0.9	0.5	-0.5	*1.000*
Spain	9.0	7.2	-1.8	*0.725*	1.5	2.4	0.9	*0.636*	9.2	7.8	-1.4	*0.544*	2.1	1.7	-0.4	*1.000*	8.0	9.9	1.9	*0.096*	1.9	1.5	-0.4	*0.567*
Sweden	6.0	5.8	-0.2	*0.201*	1.1	2.1	1.0	*0.386*	7.5	4.7	-2.8	*0.460*	2.2	0.6	-1.6	*0.642*	7.5	5.2	-2.2	*0.107*	2.0	1.0	-1.0	*0.552*
Switzerland	7.5	9.5	2.0	*0.018*	0.9	4.0	3.1	*0.029*	6.7	9.2	2.5	*0.945*	1.3	2.1	0.8	*1.000*	5.8	8.7	2.9	*0.167*	1.6	1.8	0.2	*0.632*

Note: Estimates based on SHARE data wave 8 (2019-2020). Calibrated cross-sectional weights are used to account for survey design and attrition. Estimates are obtained separately for the various age/sex/education groups.

DISCUSSION

Social support for older individuals in many countries traditionally relies heavily on kin, who play a pivotal role in providing care, assistance, and emotional support (Liu & Bai, 2016; Umberson & Thomeer, 2020). However, contemporary shifts in demographics and societal structures may challenge the sustainability of this system.

In this study, using data from the eighth wave (2019/2020) of the Survey of Health, Ageing, and Retirement in Europe (SHARE), we examine the prevalence of kinlessness among individuals aged 65 and over across 26 European countries plus Israel. Our comprehensive analysis of kinlessness prevalence, using multiple measures, reveals a complex mosaic of differences. While a previous cross-national study (Verdery et al., 2019) included some SHARE countries we consider, it focused on a larger group of people aged 50 and above in 2015. Therefore, while our findings are not directly comparable to those of this previous study, they do confirm a strong pattern of variability across countries in kinlessness. We provide updated estimates for individuals aged 65 and over, who are at a higher risk of social isolation and, presumably, needing care. Additionally, we extend the set of kin and the definitions of kinlessness, and provide estimates for the prevalence of individuals lacking each type of kin separately. This allows us to highlight the intricate variability across countries, which varies depending on the definition of kin and kinlessness considered.

The prevalence of older individuals without a partner ranges from approximately 30% to over 50%. These disparities primarily result from factors such as widowhood, but also reflect variations in partnership formation rates and divorce patterns. Childlessness also exhibits significant diversity, with percentages fluctuating from under 5% to over 15%. This variation is closely linked to past fertility trends and, to a lesser extent, experiences of child mortality.

Partners and children serve as the main sources of support for older people (Silverstein & Giarrusso, 2010). However, in line with the perspective advocated by several scholars (e.g., Furstenberg, 2020), it is essential to consider extended kinship ties. Adhering to this call, we also account for other types of kin, such as parents and siblings, and grandchildren, which have been overlooked in previous studies on kinlessness, despite grandparenthood representing a significant life transition for many older individuals (Di Gessa et al., 2020; Thiele & Whelan, 2006). Variations in the prevalence of grandchildlessness, ranging from about 8% to 30%, can be attributed to factors such as fertility rates among older individuals and their offspring, as well as mortality dynamics, including child mortality. Due to varying degrees of child mortality across countries, the percentage of grandparents with no living children differs considerably. Consequently, the ranking of countries based on our second kinlessness definition, K2, which accounts for grandchildren, differs from that based on the broadest definition (K1, focusing solely on partnership and parenthood statuses). In the age group we focus on, the availability of parents is limited. Still, the percentage of individuals aged 65 and above without both living parents varies from about 91% to 98%. Finally, our findings underscore a significant variability in the prevalence of lacking siblings, ranging from less than 10% to almost 50%.

We propose four distinct definitions of kinlessness, each progressively more restrictive. K1, the least restrictive, defines kinlessness as the absence of a partner and children, with prevalence ranging from 2% to 8% across countries. The most restrictive measure, K4, equating kinlessness with the absence of a partner, children,

grandchildren, parents, and siblings, naturally yields lower values but still exhibits significant cross-national heterogeneity. In some countries, only one out of 1,000 individuals aged 65 and over lacks all five types of kin considered, while in others the proportion raises to 41 per 1,000 individuals. Due to complex socio-demographic dynamics, the relative positions of countries in terms of the absence of specific kin vary. This variation is also reflected in changing rankings of countries depending on the definition of kinlessness. For instance, Malta and Switzerland are among the top-ranked countries in terms of K1, despite reporting relatively low levels of K4.

The variability in specific kin availability and kinlessness is a reflection of the intricate interplay of multifaceted cultural, historical, and demographic factors that influence kinship structures in diverse societal settings. Family and demographic studies often cluster countries geographically or according to welfare regimes to capture contextual similarities and differences (Albertini et al., 2022; Sobotka & Toulemon, 2008; Lesthaeghe, 2020). Although these country clusters capture important similarities in family support and demographic trends due to shared policies, norms, and socio-economic conditions, our findings highlight that they cannot neatly categorize countries in terms of kinlessness prevalence. With the exception of the largest Southern European countries, which consistently display relatively high values of kinlessness (from K1 to K4), considerable heterogeneity exists within all other geographically-based clusters.

The description of the pattern of kinlessness becomes even more complex when considering within-country differences across socio-demographic groups defined by age, sex, and education. These dimensions are among the most relevant factors contributing to the demographic forces affecting kinlessness. When comparing kinlessness prevalence across age groups, two forces are at play: age (as individuals grow older, the likelihood of losing kin through death increases) and cohort effects (older individuals belong to cohorts characterized by different demographic dynamics, which have challenging-to-predict and non-universal effects on kinlessness). In almost all countries, both kinlessness K1 and K4 are higher, and in many cases substantially so, among individuals aged 80 and over compared to the younger age group (those aged 65-79). Given that the risks of social isolation and the need for support increase with age, this pattern exacerbates kinlessness issues. Kinlessness (both K1 and K4) is substantially higher for older females than males in almost all countries. This is related to the well-known female–male health–survival paradox, where females tend to survive longer than their male counterparts, but with more health issues (Oksuzyan et al., 2009). Thus, the higher kinlessness levels among older females are mostly due to their higher likelihood of losing their partners (who are also typically older) due to death. Another potential mechanism is son preference, which was particularly prevalent in the past throughout Europe, influencing the propensity to have additional children (Kolk, 2011; Sandström and Vikström, 2015; Marco-Gracia, 2021). When older individuals' parents favored having male children, they were more inclined to continue childbearing in cases where they had only produced female offspring. Consequently, female older individuals are more likely to have had more siblings, some of whom may have survived to reach the age of 65.

The relationship between education and kinlessness differs among countries, with highly educated individuals experiencing kinlessness more frequently in about half of the countries examined. We find that older highly educated individuals in Mediterranean nations (excluding Cyprus) and some Eastern and Continental

European countries tend to experience greater kinlessness. Conversely, in Northern countries and the majority of Eastern and Continental countries, higher rates of kinlessness are observed among those with lower levels of education. Differences across countries in the educational gap in kinlessness are linked with cross-national differences in educational gradients in the demographic forces influencing kinlessness and how these gradients have changed across cohorts. Non-standard demographic behaviors that influence the likelihood of experiencing kinlessness at older ages, such as singlehood, divorce/separation, and childlessness, may be positively or negatively associated with education depending on the period, country, and the specific behavior considered (Beaujouan et al., 2016; Cherlin, 2017). To further complicate the puzzle, studies within the second demographic transition (SDT) framework often point out an apparent paradox: whereas lower-educated individuals often embrace values that can be characterized as rather traditional, they also frequently manifest high rates of non-standard behaviors, such as union dissolution (Sobotka, 2008). In addition, the educational gap in mortality also changes cross-nationally and over time (Bengtsson & Van Poppel, 2011; De Gelder et al., 2017). Future research can be specifically dedicated to addressing the factors that, likely differing across countries, are more likely to explain the varying education gradients in kinlessness that we found.

The variations we document in kinlessness across countries are not merely a numerical curiosity; rather, they suggest that across Europe, we observe the emergence of substantial subgroups lacking the customary close family ties responsible for providing support to older people. This shift has significant ramifications, impacting the demand for institutionalized care, pension systems, and the overall welfare of older individuals. Although non-kin can have an important role in influencing the well-being of older kinless individuals (Huxhold et al., 2014; Seeman, 2000), kin play a pivotal role in the overall well-being of older individuals, serving as the primary providers of emotional and instrumental support, companionship, and social control over health behaviors. Recognizing the importance of kin in the lives of older people, our study highlights the significance of developing support systems and policies that cater to the specific needs of those who lack close kin.

With the world's population aging at an unprecedented rate, understanding and addressing kinlessness is of paramount importance. Policymakers must proactively plan for the growing number of older individuals without close kin. This planning involves the development of alternative support networks and services that ensure the well-being of these individuals. Adequate provisions of social and healthcare services, designed to mitigate social isolation and health-related risks, are vital to address the unique challenges faced by this vulnerable demographic group. Policy interventions to address rising kinlessness also need to account for the fact that experiencing lack of kin is not homogeneous, with older individuals and women being at higher risk of experiencing lack of kin. The challenges implied by substantial and increasing kinlessness are exacerbated by the fact that not all individuals who do have kin can count on them for several reasons, including loss of contact, geographical distance, unwillingness, or inability of kin to provide support (Hank & Steinbach, 2023; Fingerman et al., 2020).

Our study emphasizes that kinlessness is a multifaceted and multifactorial phenomenon. Variability in kinlessness prevalence cannot be attributed to a single factor but, rather, results from an intricate interplay of

cultural, historical, demographic, and policy-related factors. Policymakers and researchers need to acknowledge that a one-size-fits-all approach to understanding kinlessness is inadequate.

While our research contributes to the understanding of kinlessness variation, several avenues for future research remain. These include a deeper exploration of the impact of kinlessness on the mental and physical health of older individuals, and the extent to which this can be mitigated by non-kin networks (Mair, 2019). Investigating the underlying reasons behind disparities in kinlessness between and within different countries is another area that warrants further examination. Additionally, the dynamics of kinship in non-European (and non-Western) contexts have not been studied, except for Zhou et al.'s (2019) research on China. The influence of migration on kinlessness prevalence is also an important topic for future research.

In conclusion, our research demonstrates the intricate and varied nature of kinlessness across countries and population sub-groups. It underscores the importance of recognizing the diverse conditions of older individuals, particularly those without close kin, and calls for tailored policies and support systems to ensure their well-being. As the global demographic landscape continues to evolve, understanding and addressing kinlessness will remain a vital area of study, with implications for the well-being and quality of life of old people.

ACKNOWLEDGEMENTS

This paper uses data from SHARE Wave 8 (DOIs: 10.6103/SHARE.w8ca.800) see Börsch-Supan et al. (2013) for methodological details. The SHARE data collection has been funded by the European Commission, DG RTD through FP5 (QLK6-CT-2001-00360), FP6 (SHARE-I3: RII-CT-2006-062193, COMPARE: CIT5-CT-2005-028857, SHARELIFE: CIT4-CT-2006-028812), FP7 (SHARE-PREP: GA N.211909, SHARE-LEAP: GA N.227822, SHARE M4: GA N.261982, DASISH: GA N.283646) and Horizon 2020 (SHARE-DEV3: GA N.676536, SHARE-COHESION: GA N.870628, SERISS: GA N.654221, SSHOC: GA N.823782, SHARE-COVID19: GA N.101015924) and by DG Employment, Social Affairs & Inclusion through VS 2015/0195, VS 2016/0135, VS 2018/0285, VS 2019/0332, and VS 2020/0313. Additional funding from the German Ministry of Education and Research, the Max Planck Society for the Advancement of Science, the U.S. National Institute on Aging (U01 AG09740-13S2, P01 AG005842, P01 AG08291, P30 AG12815, R21 AG025169, Y1-AG-4553-01, IAG BSR06-11, OGHA 04-064, HHSN271201300071C, RAG052527A) and from various national funding sources is gratefully acknowledged (see www.share-project.org).

This publication was produced with the co-funding European Union - Next Generation EU, in the context of The National Recovery and Resilience Plan, Investment Partenariato Esteso PE8 “Conseguenze e sfide dell’invecchiamento”, Project Age-IT, CUP: B83C22004800006.

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Appendix

Table 1. Sample sizes by country, age, education and sex, from the SHARE study 2019-2020, wave 8.

Country	All	Age		Sex		Education	
		65-79	80+	Male	Female	Low Ed.	High Ed.
Austria	1259	902	357	496	763	282	977
Germany	1994	1483	511	979	1015	214	1780
Sweden	2034	1460	574	953	1081	687	1347
The Netherlands	1518	1188	330	732	786	658	860
Spain	1717	1079	638	754	963	1415	302
Italy	1554	1082	472	712	842	1153	401
France	1819	1266	553	759	1060	764	1055
Denmark	1484	1123	361	697	787	260	1224
Greece	2086	1480	606	970	1116	1240	846
Switzerland	1454	1054	400	671	783	315	1139
Belgium	1395	996	399	642	753	568	827
Israel	809	557	252	344	465	303	506
Czech Republic	2217	1754	463	893	1324	813	1404
Poland	1330	1036	294	604	726	498	832
Luxembourg	592	478	114	287	305	258	334
Hungary	614	490	124	240	374	168	446
Slovenia	1869	1343	526	795	1074	605	1264
Estonia	2291	1523	768	818	1473	627	1664
Croatia	776	609	167	358	418	469	307
Lithuania	842	581	261	301	541	247	595
Bulgaria	601	465	136	240	361	226	375
Cyprus	431	270	161	172	259	265	166
Finland	744	586	158	350	394	270	474
Latvia	482	339	143	157	325	104	378
Malta	528	425	103	245	283	309	219
Romania	758	598	160	331	427	434	324
Slovakia	433	382	51	199	234	68	365
Total	33631	24549	9082	14699	18932	13220	20411