

# **From Health to Sickness in One Generation: The Refugee Mortality Advantage and its Disappearance for the Children of Refugees**

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## **Abstract**

It is well known that immigrants generally have a lower risk of dying than native-born populations, in particular at young adult ages. Recent research has also shown that a similar mortality advantage is not experienced by the children of immigrants. However, little is known about the mortality of refugees and their children. This is an important omission, not least because many destinations have experienced an increase in the arrival of refugees over recent years, but also because the unique experiences that are associated with forced migration have been theorised to have a significant impact on health and social welfare. Here, we carry out a case study of Sweden, using longitudinal register data on the whole population. These data allow a comprehensive analysis of mortality for refugees who arrived as adults (G1), or as children (G1.5), as well as the native-born children of refugees (G2). We study all deaths from 1997-2016 for the population aged 15-44 in 1997. The results show that there is evidence of a sizeable mortality advantage for refugees who arrived as adults (G1), and that this advantage is similar to that experienced by other immigrants, but that it disappears for members of the G1.5 and G2 population. The higher mortality risks that are faced by children of refugees in early adulthood are not driven by cancers, accidents or suicides, but instead by circulatory diseases, other diseases and other external causes. The children of refugees from Sub-Saharan Africa and the Middle East face the greatest disadvantage, although it is somewhat smaller than the disadvantage faced by immigrants from the same regions who were not forced to migrate.

## **Introduction**

The migrant mortality paradox describes a situation in which migrants, on average, experience a mortality advantage over the native-born population despite having, on average, a lower socioeconomic status (SES).<sup>1</sup> Such a finding is considered paradoxical because people with a lower SES – such as those who earn less money or have a lower education – are more likely to die at an earlier age.<sup>2</sup> A migrant mortality advantage has been observed for the majority of immigrant groups who have been studied, in particular in high income countries.<sup>3</sup> At the same time, research has begun to examine the mortality of the children of immigrants and found that they often experience a mortality disadvantage.<sup>4</sup> In other words, it not only appears that they have higher mortality than the native-born, but also that the migrant mortality advantage is lost within the space of a generation.

Migration theory defines immigrant adaptation as the disappearance of differences between first-generation adult immigrants (G1), who are foreign-born, and the native-born population.<sup>5</sup> A large body of research shows that adaptation does occur for some G1 immigrants, but that this process is extremely heterogeneous, varying not only across groups, but also across different domains of life.<sup>5</sup> The speed and level of adaptation varies according to the characteristics of immigrants, their origin and destination country, and the life-domain that is considered (e.g. labour market outcomes versus health outcomes).<sup>6,7</sup> However, it is now well-established that socio-economic adaptation is linked with duration of residence, with convincing evidence based on immigrants who arrive as children (G1.5) who are less likely to be selected (into migration) based on their social outcomes (as compared with their parents).<sup>8</sup>

Alongside a growth in evidence about the adaptation of G1 and G1.5 immigrants, there has been a parallel growth in evidence about the lives of the second generation (G2)<sup>9</sup> – defined here as native-born children with at least one foreign-born parent. Indeed, scholars now recognise that it is only possible to gain a comprehensive understanding of adaptation by studying the descendants of immigrants and comparing them with the first-generation, thereby taking an intergenerational perspective.<sup>5</sup> Theorists have argued that it is the descendants of immigrants, rather than their parents, who largely determine the long-term impact of immigration on the character of destination societies.<sup>5,10</sup> With respect to mortality, which is arguably one of the most important measures of social inequality,<sup>11</sup> a considerable body of research has shown that immigrants generally have a lower risk of dying than native-born populations, in particular at young adult ages.<sup>3</sup> To a large extent, this ‘migrant mortality advantage’ is explained by immigrant selectivity,<sup>12</sup> which in turn may explain why a mortality advantage does not appear to be passed on to the children of immigrants.<sup>4</sup> However, little is known about the mortality of refugees and their children. This is an important omission, not least because many destinations have experienced an increase in the arrival of refugees over recent years, and there is little knowledge about the differential impact that this may have on health and healthcare systems over the long-run, including for the children of refugees. Prior research has almost exclusively focussed on immigrants who were not forced to migrate, or their children. Motivated by these gaps in research, we set out to study four research questions:

- (1) *Do refugees experience the same levels of mortality advantage as other immigrants?*
- (2) *Do the children of those who arrived as refugees experience the same advantage?*
- (3) *Do specific causes of death drive intergenerational change in the mortality advantage?*
- (4) *How does intergenerational change vary by country of birth?*

	Men				Women			
	G1	G1.5	G2	All	G1	G1.5	G2	All
<b>Population (aged 15-44 in 1997)</b>								
Ancestral Swedes				2,171,131				2,068,361
Refugee background	194,000	65,486	42,678	302,164	116,185	59,491	40,991	216,667
Non-refugee background	437,047	108,405	345,867	891,319	473,146	108,212	330,024	911,382
<b>Deaths (1997-2016)</b>								
Ancestral Swedes				20,270				10,036
Refugee background	894	521	129	1,544	360	174	63	597
Non-refugee background	1,657	1,385	4,252	7,294	1,224	626	1,924	3,774

**Table 1:** Descriptive statistics for the study population (authors’ analysis of Swedish register data)

## Data and methods

Sweden represents an ideal context for this study, not only because of the availability of high-quality longitudinal demographic data on the whole population, but also because it has a long history of receiving large numbers of refugees. In fact, Sweden is one of the few countries of the world in which this study could take place. Our main data source is the *Ageing Well* register data that is currently available for analysis by researchers at the Stockholm University Demography Unit. These data enable us to study the population who were aged 15-44 in 1997 and resident in Sweden from 1997-2017, including those who died or emigrated during this period. The study population is shown in Table 1, and includes immigrants who arrived as adults (G1), or as children (G1.5), as well as the native-born children of refugees (G2). These three generational groups are analysed separately according to whether they or their parents arrived as refugees (‘refugee background’) or not (‘non-refugee background’).

Immigrants enter the population register when they receive a resident permit or register their immigration (which is required in order to live in Sweden, and coverage of the population is close to 100% because it is very difficult to live in Sweden without registering – e.g. it is

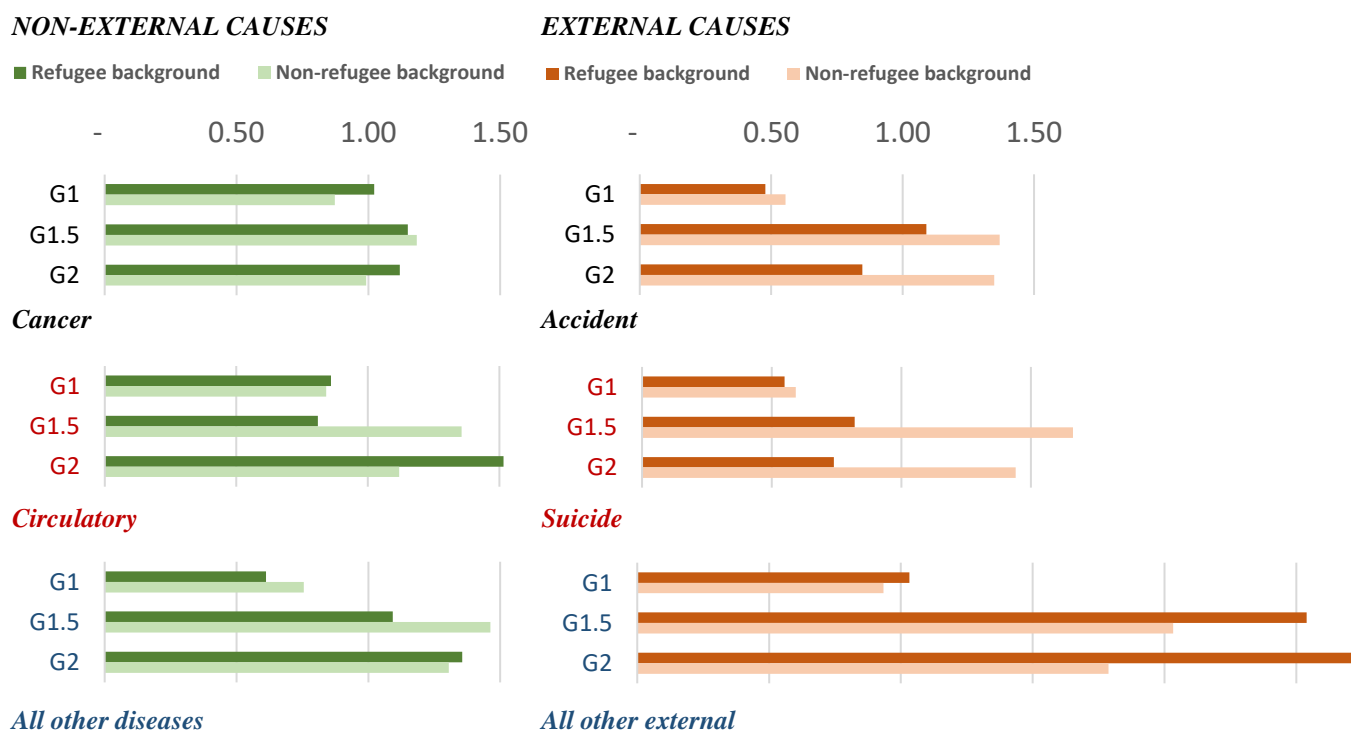
impossible to access public services or hold a bank account). All members of the population have a unique person number, which is available in our data in an anonymized format, and this is linked to the person number of their biological parents (if those parents have ever lived in Sweden). This means that we are not only able to measure whether an individual arrived as a refugee (based on their first residence permit) but also whether any of their parents arrived as a refugee (allowing us to identify whether the children of immigrants have parents who arrived as refugees). Swedish population registers collect all demographic events, including the date of the event. With respect to deaths, we have a record of all deaths (in this study we focus on deaths from 1997-2017), as well as the cause of death, which we classify into one of six categories: three relating to external causes (accidents, suicides, and other external causes) and three relating to non-external causes (cancers, circulatory diseases, and other diseases).

We analyse mortality risks using Cox proportional hazards models, which allow us to estimate hazard ratios relative to the ancestral Swedish population (defined as those who are Swedish-born with two Swedish-born parents). All models control for birth cohort and sex, except for those summarised in Table 2, which are stratified by sex. The results for causes of death (Figure 1) are from models stratified by cause of death. The results for (parental) country of birth (Figure 2) are from a single model (a full interaction between country and generation). Since our data are for the whole population, we only report significance in Table 2.

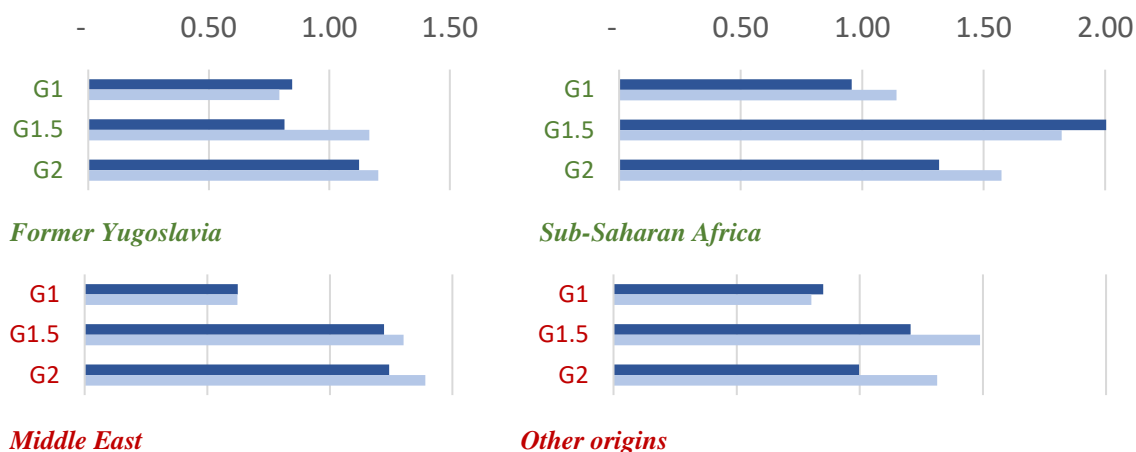
	Hazard rate (ref = ancestral Swedes)		
	G1	G1.5	G2
<b>Men</b>			
Refugee background	0.75 **	1.22 **	1.11
Non-refugee background	0.75 **	1.55 **	1.34 **
<b>Women</b>			
Refugee background	0.82 **	1.03	1.22
Non-refugee background	0.85 **	1.33 **	1.25 **

There is a mortality advantage for G1 men and women, with or without refugee background, but not for G1.5 or G2.

**Table 2:** Hazard ratio of mortality relative to ancestral Swedes (\*\* p<0.001)



**Figure 1:** Hazard ratios by cause of death, relative to ancestral Swedes



**Figure 2:** Mortality risk by country of birth (or parental country of birth)

## Results

The results show that there is evidence of a sizeable relative mortality advantage (versus ancestral Swedes) for refugees who arrived as adults (G1), and that this advantage is similar to that experienced by other immigrants (Table 2). The advantage is slightly higher for male refugees (HR=0.75) than females (HR=0.82). There is no advantage for members of the G1.5 and G2 population. For those with a refugee background, there is even evidence of a disadvantage for the G2 and for G1.5 men.

Stratified analysis by cause of death shows that the higher mortality risks experienced by G2 children of refugees in early adulthood are not evident for accidents or suicides (for which they experience an advantage), and the disadvantage that they experience with respect to cancer is relatively small (Figure 1). By contrast, they experience a considerable disadvantage with respect to mortality due circulatory diseases, as well as due to other (non-external) diseases and other external causes. Of the G2, the children of refugees from Sub-Saharan Africa and the Middle East face the greatest disadvantage, followed by Former Yugoslavia (Figure 2). That said, this disadvantage is smaller than that faced by immigrants from the same regions who were not forced to migrate. Further research is needed to explain this result.

[Further results and discussion will be available in the final paper – This is a draft, not for dissemination please]

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