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The Long-Term Effects of Forced Migration: An Early-Life Approach with Evidence from Yugoslavian Refugees in Sweden

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Abstract

This paper analyzes the effect of being exposed to forced migration during childhood (ages 0-5) on educational achievement at age 15 (grade 9). Using register data from the Swedish Interdisciplinary Panel, I identify children who migrated to Sweden as a consequence of the rising conflict during the disintegration of the former Yugoslavia, and follow them until age 15, when they received their grades at the end of the 9 years of compulsory education in Sweden. The results show that those who experienced forced migration performed worse in school, as measured by Math and Swedish grades and Merit Rating scores, with forced migrants achieving grades that were on average 5 (Merit Rating), 7 (Swedish), and 22 (Math) percentage points of a standard deviation lower than those of native Swedes. Forced migrants outperformed Swedes only in English, obtaining grades that were on average 12 percentage points of a standard deviation higher than did their native-born counterparts.

Keywords: forced migration, refugees, education, early-life, Sweden
JEL Classification: J13, J15, I24, N34

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1 Introduction

Forced migration, also referred to as displacement, is one of the direct consequences of armed and political conflict, as well as of natural and man-made disasters. People who are displaced tend to experience tremendous and repeated shocks of stress, first while having to uproot themselves to get out of harms way, and another one while adapting to their new home locality (Porter and Haslam, 2001). Loss of assets, social networks, and of a sense of belonging undeniably have effects on forced migrants, and the literature documents at length the impact displacement has on forced migrants.[1]

Forced migration is a problem that, while always present in human history, has been growing steadily in recent times. According to the United Nations High Commissioner for Refugees (UNHCR), by the end of 2018, there were over 70 million people in the world who had been forcibly displaced from their homes, out of which 25.9 million had official refugee status and another 3.5 million were asylum-seekers. The scale of human displacement is so great that, on average during 2018, 37,000 people were forced into displacement every day because of persecution, conflict, violence, or human rights violation (UNHCR, 2019).

Given the magnitude of the problem that forced migration represents, it remains a pressing subject to understand how this process affects the outcomes of displaced persons, and especially children, who are often considered a specially vulnerable group, given the critical importance of early years in the process of human capital formation. However, data and sometimes ethical limitations to the study of forced migrants mean that studies that look into the effects of forced migration, particularly those that examine the outcomes of children who experienced it, are rare in the literature (Saarela and Elo, 2016).

This paper, consequently, explores the impact of forced migration on the educational outcomes of children who were displaced as a direct consequence of war. It identifies children aged 0-5 who came to Sweden during the height of the Yugoslav Wars (1993-1994), an immediate consequence of the disintegration of the former Socialist Federal Republic of Yugoslavia (SFRY, henceforth referred to simply as *Yugoslavia*), and follows them until the end of their compulsory schooling in the Swedish system (grade 9, $\approx$15 years of age). While most research on long-term impacts of forced migration exploits the displacement flows that followed World War II, the Yugoslavian experience in the middle of the 1990's, paired with high-quality data from Swedish registers, provides an excellent opportunity to study more recent cohorts, who were possibly exposed to more modern forms of warfare and civil conflict in their home countries, but also to a developed and generous welfare state in the arrival destination.

Data for this study was obtained from the Swedish Interdisciplinary Panel (SIP) which is hosted at the Centre for Economic Demography in Lund University. The SIP contains a collection of population registers and provides the opportunity to follow individuals across time since birth/migration, observing different outcomes years later such as educational achievement, income, etc. Since this paper focuses on children who were exposed to forced migration (ages 0-5) as a consequence of the Yugoslav Wars, the cohorts included in the study are those born between 1988 and 1994, and given their young age, the main outcome of interest is their educational attainment, as measured by the

[1] see (Becker and Ferrara, 2019) for an overview of the literature

grades obtained, around age 15, at the end of compulsory education in Sweden.

The results show that children who were exposed to forced migration to Sweden due to armed conflict and violence in Yugoslavia had generally worse academic results in their teenage years than their non-exposed counterparts, as measured by the results obtained at the end of compulsory education (grade 9). Forced migration lowered the chance of obtaining higher grades in Math and Swedish, with displaced children achieving grades that were between 7% (Swedish) and 22% (Math) of a standard deviation lower than those of native Swedes. Forced migrants had better chances of achieving higher grades in English, which might reflect an advantage of already bilingual children in picking up a third language, compared to native Swedes. However, forced migrants exhibited disadvantages in Math and Swedish that were translated into merit rating scores (a composite measure of all subjects taken) that were around 5% of a standard deviation lower than those of native Swedes. These disadvantages might imply the existence of larger effects in the future, since the results of grade 9 could have an impact on the educational trajectories and outcomes of the children in question, which in turn might end up affecting their transition out of education and into the labor market.

The rest of this paper is organized as follows, the next section presents the historical context of both the conflict that originated this bout of forced migration and the migration flow into the destination country of interest, Sweden. After that, a brief review of the relevant literature is presented, followed by a description of the data used in this paper. Sections 5 and 6 contain a presentation of the methodological strategy chosen for the analysis and a description of the main results from it, respectively. Finally, section 7 concludes.

2 Context

2.1 The Yugoslavian Wars

The region that includes the countries of Yugoslavia has always been located at the intersection of Eastern and Western cultures, empires, and politics. Split between Rome and Byzantium, and between Austro-Hungarian and Ottoman empires, the people from the region have always known ethnic, religious, and political diversity, though not always in peaceful ways (Dragovic-Soso, 2008). Following the collapse of the regional empires after World War I, the territories rearranged themselves into the Kingdom of Serbs, Croats, and Slovenes, later renamed the Kingdom of Yugoslavia. The Kingdom as such would exist only in the interwar period between 1918 and 1941. After a brief reorganization into the Democratic Federal Yugoslavia, designed to unite the peoples against Nazi/Axis invaders, the region stabilized itself after the war under the name of Socialist Federal Republic of Yugoslavia and the leadership of Josip Broz Tito, who would rule it until his death in 1980. In this final configuration, the Federation was comprised of six socialist republics (SR): SR Serbia (with the two autonomous provinces of Vojvodina and Kosovo), SR Croatia, SR Montenegro, SR Slovenia, SR Bosnia-Herzegovina, and SR Macedonia (see Figure 1).

One thing to keep in mind about Yugoslavia is the difference between *country* and *nation*. While the official *country* designation to the outside world was Yugoslavia, and so it was stated in citizens' passports, one's nationality or *nation* was always more associated to the ethnicity and place of residence of the individual. As such, Yugoslavians could be of Serbian, Croatian, Bosnian, Montenegrin, Slovenian, or Macedonian nationality. To complicate matters even more, those of a particular ethnic group living outside their nation but inside the Federation kept their culture and identity, giving rise

Figure 1: Map of the Socialist Federal Republic of Yugoslavia (1946-1990), with constituent Socialist Republics (SR) and Socialist Autonomous Provinces (SAP).

Source: NordNordWest/Wikipedia. Used under Creative Commons license CC-BY-SA-3.0-DE (https://creativecommons.org/licenses/by-sa/3.0/de/legalcode). The original image has been modified only to include the labels on the countries and regions relevant.

to Croatian Serbs (Serb nationals who lived in Croatia), Serbian Croats (Croat nationals living in Serbia), etc. The role of ethnic minorities within another nation would come to play an important role in Yugoslavian conflicts. From this point on, I will refer to Serbians/Croatians/Bosnians as the people living in those nations, while I will refer to Serbs/Croats/Bosniaks as those who identify as belonging to such ethnic group, regardless of place of residence.

While undeniably an autocrat, Tito developed a very effective way to rule Yugoslavia while keeping a relative harmony between the different ethnic groups in the Federation. His strategy consisted of giving each Nation an acceptable degree of independence while populating the majority of all national bureaucracies with Serbian nationals (the largest ethnic group and territorial denomination within Yugoslavia). While maintaining Serbian political superiority within the Federation, under Titoist rule overt nationalism of any kind was considered taboo and an effective political suicide (Glenny, 1996, p 32). This delicate balance of political and ethnic groups kept the Federation united and made Tito a widely popular figure both within Yugoslavia and abroad (Cottam et al., 2010, p. 243).

Another policy employed by Tito was reallocating resources across the Federation for diverse purposes. For instance, after World War II, the government redistributed large numbers of Serbs to other parts of Yugoslavia, creating pockets of Serbian culture and influence in contested or sensitive areas of the Federation (Glenny, 1996, p. 107). On another occasion, Tito decided to move large amounts of heavy and vital industry from the vulnerable Yugoslavian periphery to Bosnia, located (quite safely) in the center of the Federation (Glenny, 1996, p. 140). While these policies served to strengthen Yugoslavia during Titoist rule, once he was gone, both these policies contributed to rising ethnic tensions and the explosion of the war that would lead up to the disintegration of Yugoslavia.

The Post-Tito era came with two main difficulties: first, the whole decade of the 1980's saw the Yugoslavian economy plunge into recession time and time again, and second, Tito's death left the Federation without an obvious, uniting leader. The latter problem resulted in a progressive transfer of power out of the Presidency of Yugoslavia and into the Presidents of the Republics, who were more interested in their Nation's status vis-à-vis the other five than in the stability and viability of the whole Federation (Dragovic-Soso, 2008). The former problem added on top of that economic tensions between the different groups, who tended to blame and fight each other as the crisis grew and developed. The collapse of Communism in Europe, and the rise of multiparty politics in Yugoslavia further complicated matters.

By the beginning of the 1990's Serbia and Croatia found themselves with elected leaders who were glad to break with Tito's ban on nationalist politics. In Serbia, Slobodan Milošević became President of the Presidency of SR Serbia in 1989, after three years of being in charge of the League of Communists of Serbia. He rose to power by being very outspokenly nationalist, claiming that Serbs in other areas of Yugoslavia were being oppressed and needed Serbia's help to maintain their livelihoods and (more often than not, elite) status. He endorsed Serb nationalist movements in Kosovo, and weakened provincial and republican governments in order to increase the role of Serbia in Yugoslavian politics, and centralize the rule of the Federation to Belgrade (and himself) alone (ICTY, 1999). Franjo Tuđman was elected as President of the Presidency of the Socialist Republic of Croatia in May 1990 as the leader of the Croatian Democratic Union Party (HDZ). He immediately began reforming the composition of the bureaucratic and public sector elites, partly as a response to Serbia's increasing nationalism and Milošević's policies denying increased autonomy to the republican governments. Croatian bureaucratic elites had been heavily populated by Serbs during Titoist rule, and as a result the small minority of Serbs in Croatia ($\approx$ 12% of the population) were heavily over-represented in the public sector. Tuđman's government determined that nationality (Croat ethnicity) would be a requirement to serve in the public administration and the police, leading to wide discontent among the Serbs in Croatia, who were sometimes unaware that they had been appointed in the first place because of their ethnicity and felt victimized by the policy that threatened their livelihoods. He also disappeared Cyrillic script from all official documents and street signs, that had always had the double Latin/Cyrillic spelling, further aligning Croatia with the West and reassuring the Serb minority that they were not welcome in the country (Serbia had done the same to Latin script in 1990) (Glenny, 1996, p. 13, 43).

By 1991, it was clear that Slovenia and Croatia were determined to leave Yugoslavia and become independent countries. In discussions among the Presidents of the Republics, Milošević made it very clear that Serbia would never tolerate a Croatian secession since the country had around 600,000 Serbs living there, which from Milošević's point of view made areas of Croatia rightfully Serbian[2] (Glenny, 1996, p. 37-). Slovenia and Croatia unilaterally declared independence from Yugoslavia on 25 June 1991, Serbia (who by this point ran the Yugoslavian government entirely) declared both these as illegal and hostilities began.

While the conflict with Slovenia was quickly abandoned by Serbia and the Yugoslavian National Army (JNA)[3], this was not the case for any of the conflicts that arose as the Federation disintegrated,

[2]This political view, often referred to as *the right of all Serbs to live in one State*, was one of the main arguments for, and drivers of Serbian hostilities during the war.

[3]Slovenia, sharing Yugoslavian borders only with friendly Croatia, had an almost homogeneous Slovene popu-

which dragged on for years. The common denominator of these wars was a desire to "protect" a nation's ethnic minority abroad, while oppressing and ignoring the cries of other minorities at home. Serbia attempted to secure areas of Croatia where Serbs lived, while Croatia tried to annex areas of Serbia where Croats lived. In no case were minorities brought to the negotiation table and listened to, but only used by Zagreb or Belgrade as an excuse to invade and achieve territorial gains (Glenny, 1996, p. 37).

The apex of the conflict came when both the Croatian and Serbian armies set their sight on Bosnia. The Socialist Republic of Bosnia and Herzegovina (often referred to simply as Bosnia) was always a bridge between the nations of Yugoslavia. Located in the dead center of the Federation, and completely surrounded by its neighbors Croatia, Serbia, and Montenegro, Bosnia was the only republic in Yugoslavia that didn't have an overwhelming ethnic majority, instead, it was comprised of roughly similar parts of Muslim Bosniaks ($\approx 40\%$), Catholic Croats ($\approx 20\%$), and Orthodox Serbs ($\approx 40\%$) who all lived in relative harmony and prosperity following a policy of power-sharing among the three groups. Because of its strategical position, Tito moved large amounts of industry to the country, and by the end of 1991 over 60% of Yugoslavia's military industry was located in Bosnia (Glenny, 1996, p. 150). This made the country a very important target for both Croatia and Serbia, who were still at war following Croatian independence.

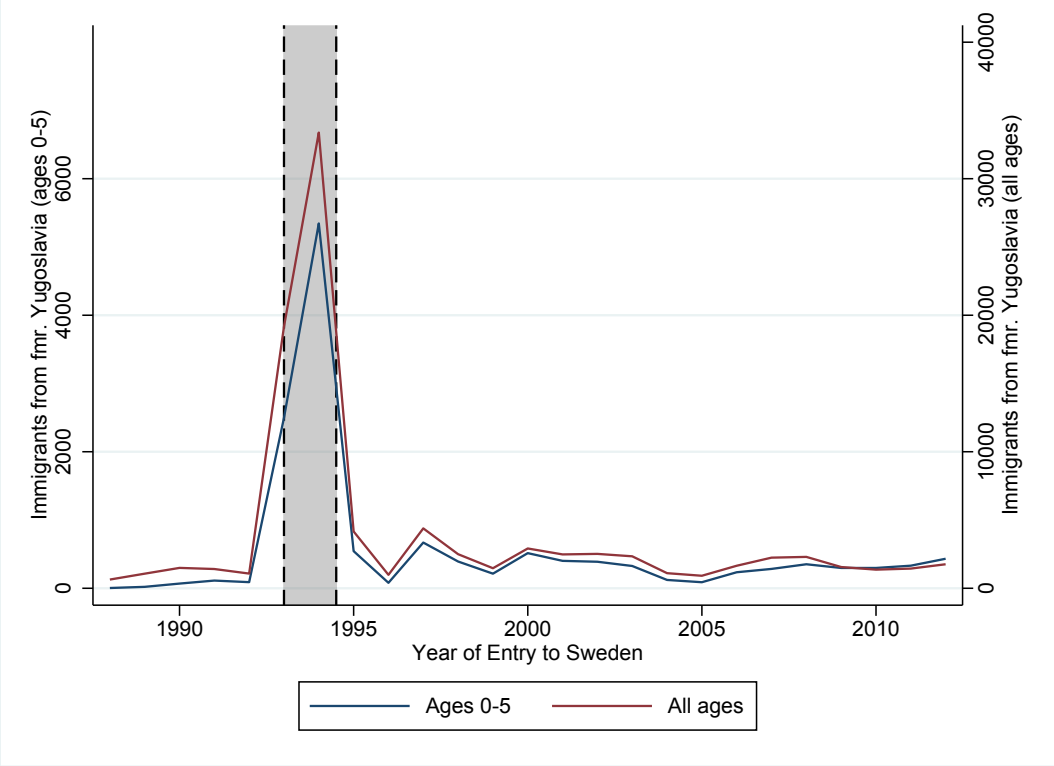
Once it became clear that Bosnia needed to take sides in the war, it faced three possible options, all of which entailed some level of conflict. It could (1) choose to stay in Milošević's *Yugoslavia* (more of a *Greater Serbia* at this point) which would enrage the Bosniaks and Croats; it could (2) choose to declare independence, which Bosnian Serbs found unacceptable; and it could (3) accept a carving of the country into areas belonging to Croatia and Serbia, leaving the Muslim Bosniaks effectively without a country (Glenny, 1996, p. 143). In the end, the Bosnian government chose to hold an independence referendum, boycotted by the Serbs, that resulted in a 98% of support for independence. By March 1992, the country had declared independence with the total support of its Croat and Bosniak population, while completely alienating the entirety of the Bosnian Serbs, who quickly started organizing demonstrations and armed resistance. By April 1992, the country was openly at war, with the Bosniaks and Croats filling the ranks of the Army of the Republic of Bosnia and Herzegovina (ARBiH) and the Serbs creating an army of their own, the Army of the Republica Srpska (VRS), supported by Milošević's Serbia (and the Yugoslav People's Army, JNA).

The Yugoslav Wars in Serbia, Croatia, and specially in Bosnia were characterized by brutal, indiscriminate attacks and bombing of cities, and particularly ethnic cleansing tactics and massacres designed to take over strategic cities and towns in which there were no ethnic majorities from either side[4]. It is estimated that by the end of the war in Bosnia in 1995, over 100,000 people had been killed and more than 2.2 million (equivalent to half of the population of SR Bosnia and Herzegovina, or about 1 in every 10 Yugoslavians) had been forced by the conflict to flee from their homes, the largest displacement of people in Europe since the end of World War II (Hussain, 2010).

lation, and Serbia couldn't raise ethnic objections to independence like it did in Croatia's case. The conflict with Slovenia, known as the Ten-Day War, ended on 7 July 1991 with the signing of the Brioni Agreement.

[4]The Srebrenica Massacre, in which the Serbs massacred all (8000+) Bosniak men and boys from a UN-protected safe enclave, has become the identifying event of the conflict.

Figure 2: Immigration from Former Yugoslavia into Sweden (Ages 0-5, and All ages). By year of entry and in number of people.



Source: Author's calculations with data from Statistics Sweden.
Note: The shaded area in the graph corresponds to the period 1993-1994, which was at the height of the conflict and the immigration flows to Sweden from the region.

2.2 Yugoslavian Migration to Sweden

Figure 2 shows the level of people entering Sweden from one of the countries from the former Yugoslavia in the period 1988-2012. It includes the years immediately before and well after the Yugoslav Wars took place. As can be seen in the graph, arrivals to Sweden from the area were relatively low both before and after the war, and experienced a massive increase during the period in which the conflict between Serbia, Croatia, and Bosnia was at its height. As the figure shows, during the period covering 1993-1994, the arriving headcount went from an usual level of less than 1,000 migrants per year, to 19,000 in 1993 and 33,000 in 1994 (representing over a 5,000% increase between 1988 and 1994). Noteworthy is the fact that the pattern of arrival to Sweden is the same if we look at displaced people from all ages, or if we focus only on those aged 0-5, which suggests that people leaving the war zone were doing so in family groups, something characteristic of forced displacement migration flows, as opposed to economic or work-related migration, which usually consists heavily of working-age males.

In Sweden, before 1994, asylum seekers were randomly assigned to small municipalities all over the country depending on housing availability. However, due to an abnormally large influx of asylum seekers from former Yugoslavian countries, especially Bosnia during the war, policy changes allowed asylum seekers to live with family members already in Sweden while awaiting for a decision on their case by the Migration Board (Bevelander and Pendakur, 2014; Bevelander et al., 2009). This policy change shows that the sheer amount of displaced people arriving in Sweden from the Yugoslavian

region because of the war was so high that most of them already had families in the country also seeking protection.

After the conflict neared its end, the level of people migrating to Sweden from the war zone returned to its pre-conflict levels, with small spikes in the years after the main influx, most likely related to the fact that, under Swedish migration regulations, relatives of refugees also had the right to come to Sweden to reunite with their families (Bevelander and Pendakur, 2014).

3 Related Literature

3.1 Forced Migration and its effects

Forced migration is the phenomenon characterized by the movement of people out of their place of residence due to a perceived life threat (war, violence, natural disasters, etc.) (Ruiz and Vargas-Silva, 2013). Forced migrants are also referred to as *internally displaced persons* (IDP), if they settle somewhere else within the borders of their country of origin, or *refugees*, if they settle across international borders through an asylum-seeking process. Forced migration distinguishes itself from voluntary migration in the sense that, while voluntary migrants' decision to migrate follows cost-benefit considerations, those of forced migrants are less so concerned and are more driven by a sense of self-preservation (Czaika and Kis-Katos, 2009; Engel and Ibáñez, 2007). This being the case, forced migration is usually considered to be exogenous to both the forced migrants and to the receiving populations (Becker and Ferrara, 2019).

The consequences of forced migration have been the subject of several studies in recent years, and they have been the motive of a few systematic reviews (Ruiz and Vargas-Silva, 2013; Becker and Ferrara, 2019). Studies have looked at both economic and health-related outcomes of those involved in the process of displacement, including sending and receiving populations, labor markets, and the migrants themselves. While labor market and destination conditions matter profoundly for the analysis of forced migrants (Saarela and Elo, 2016), only the relevant studies that pertained to the long-term effects of forced migration on the migrants' outcomes are presented here.

Following the start of World War II, Finland lost roughly a tenth of its territory after aggression from the Soviet Union and the entire population of ceded Karelia region was forced to evacuate and relocate somewhere else in Finland. A study by Haukka et al. (2017) finds that forced migration in this case was associated with an increased risk of mortality from heart diseases, but also with a decrease in the suicide mortality of the displaced persons. Sarvimäki et al. (2009) found that the displaced Finns benefited from successful resettlement policies, which translated into an increased long-term income. The authors attribute part of this increase in income to the fact that forced migrants were more willing to change their municipality of residence and adapt to the labor market conditions. Furthermore, Saarela and Finnäs (2009) found that amid the collapse of the Soviet Union and Gorbachev's *Perestroika* policy there were debates in civil society about the restitution of the ceded areas. The psychological stress caused by the renewed hopes of returning home after decades of displacement was associated with a 20% mortality increase among displaced men.

Bauer et al. (2013) look at the effect of displacement on the outcomes of the ethnic Germans who

were forced to resettle to West Germany after the borders of the country were redrawn following World War II. They find that forced migrants had significantly lower average incomes, and that this effect was even noticeable in the second generation. A recent study by Bauer et al. (2019) also finds that the expelled Germans had a higher mortality risk (12-21% for men and 3-9% for women) after age 68.

Ibáñez and Vélez (2008) analyze the effects of forced migration and internal displacement caused by the increased violence that occurred in Colombia as a consequence of civil war. They find that a significant welfare loss, equivalent to 37% of the net present value of rural lifetime consumption, can be attributed to the forced migration shock.

For the particular case of people forced to migrate by the conflict in the former Yugoslavia, Kondylis (2010) studied the impact of forced migration as a result of the war in Bosnia and Herzegovina and finds that internal displacement to safer parts of the country negatively affected people's chances to be working, with higher unemployment chances for men and lower participation in the labor force for women. (Marbach et al., 2018) finds that Yugoslavian refugees in Germany are employed at a lower rate than natives, and this gap takes up to 10 years to disappear. Also, (Porter and Haslam, 2001) found that refugees originating from the region suffer significantly more mental health problems than their voluntary migrant counterparts.

3.2 Forced Migration during Early-life

When it comes to forced migration in childhood, the literature is rather limited, and most studies are focused on the health impact of the displacement stress during childhood. There is, however, no *a priori* consensus of how the stress resulting from forced migration might affect the short and long term outcomes of children. In the shorter term, some studies have found an under-five mortality disadvantage for children who experienced forced migration (Guha-Sapir and van Panhuis, 2004; O'hare and Southall, 2007), while studies focusing on longer time horizons have found less conclusive evidence (Avogo and Agadjanian, 2010; Saarela and Elo, 2016; Verwimp and Van Bavel, 2005), and some even finding that displaced youths fare better than their older counterparts (Nakamura et al., 2016). The logic behind these seemingly counter-intuitive results is that, while it is an accepted fact that forced migration during childhood can increase stress and certain health and social hazards (James, 1997), it might also expose the children to improved environmental conditions, like better health care and educational systems (McKenzie et al., 2010).

The theoretical mechanism through which forced migration in childhood might have an impact felt in long-term outcomes is also not particularly clear, as many things are involved in the process and sometimes their impact can point in different directions. For instance, when it comes to health, forced migration and the economic instability of the process can lead children to suffer from malnutrition (Verwimp and Van Bavel, 2005), as well as decreased or missed access to vaccination and general healthcare (Avogo and Agadjanian, 2010), both of which increase morbidity and mortality from common and widespread diseases. Childhood displacement is also associated with health-damaging shocks of stress that follow relocation, disruption of social ties and support, and isolation (Saarela and Elo, 2016). However, the literature has also found that integration abilities of the displaced (Saarela and Elo, 2016), as well as the welfare and support conditions of the destinations (McKenzie et al., 2010) can all positively impact the outcomes of forced child migrants.

4 Data

The data for this study comes from the Swedish Interdisciplinary Panel (SIP), hosted at the Centre for Economic Demography at Lund University. It contains register-based information on several aspects of economic, demographic, and health outcomes and allows researchers to follow individuals on a year-to-year basis. The version of the SIP used for this study is one that focuses on recent cohorts (1973-1995) and is ideal for the study of how individuals perform in their studies, in their early careers, and the transition related to this entry into the labor market. The cohorts included in the sample are those born between 1988 and 1994. These cohorts are then split into three groups according to their migration status, creating (a) a group of Yugoslavian children exposed to war-related forced migration, (b) a group of other migrants from diverse origins, who experienced migration but not the violence of war, and (c) a group of native Swedes, exposed to neither war nor migration. Because of the young age of these cohorts, and since not all of them have finished the transition into the labor market, educational outcomes are the main interest of this paper.

The outcomes of interest for this paper are the grades obtained by students finishing the ninth year of formal and mandatory education in Sweden. While the educational register contains the grades of all subjects taken during the *högstadium* (grades 7-9) years of compulsory education (*grundskola*, grades 1-9), I focus only on four such measures of academic attainment, namely the grades obtained in Math, Swedish, English, and the merit rating score.

While the inclusion of Swedish/Math grades is fairly standard, given they are arguably the two most important subjects at this level, the inclusion of English grade will provide a further look into how children (natives, migrants, and displaced) deal with the acquisition of a whole new language in a school-setting. While all migrants are expected to perform worse than Swedes in Swedish (and consequently Math, since it is also taught in that language), the expectation is that their early exposure to bilingualism might actually be an advantage in the acquisition of a third language, in this case English (Cenoz, 2003).

The Math/Swedish/English grades for the cohorts analyzed (born 1988-1994, in grade 9 somewhere between 2003-2010) are all on the same scale. The scale contains the levels IG (*Icke Godkänd, Not approved*), G (*Godkänd, Approved*), VG (*Väl Godkänd, Well Approved*), MVG (*Mycket Väl Godkänd, Very Well Approved*).

The merit rating score (*meritvärde*) is a composite measure of academic achievement during the years of *högstadium*. It is chosen as part of the analysis as it is a measure of general or average academic achievement across subjects, and therefore provides information beyond what is shown by the math grades. It is calculated at the end of grade 9 and is used to determine if a student is able enough (or has enough *merit*) to continue to high school (*gymnasium*) education. The merit rating score is calculated by taking a student's 16 best grades from grades 7-9 and assign values to the grades received (IG= 0 points, G= 10 points, VG= 15 points, MVG= 20 points). The highest value possible for a merit rating score was 320 points.

As part of the control strategy described in the next section, I also include information about the children, their parents, and their context. This information includes the child's sex (coded 0= male, 1= female), the age of the mother at the birth of the child (included in both linear and quadratic

Table 1: Summary Statistics

Forced Child Migrants

	Mean	(Std. Dev.)	Min.	Max.	*N*
Math Grade	1.25	(0.73)	0	3	7,324
Swedish Grade	1.59	(0.74)	0	3	5,386
English Grade	1.78	(0.80)	0	3	5,386
Merit Rating	199.38	(61.35)	10	320	7,324
Sex	0.476		0	1	7,843
Age of Mother at Birth	26.11	(4.83)	15	46	7,803
Father's Education	3.76	(1.44)	1	7	7,252
Year of Birth	1989.83	(1.36)	1988	1994	7,843

Other Child Migrants

	Mean	(Std. Dev.)	Min.	Max.	*N*
Math Grade	1.31	(0.78)	0	3	5,682
Swedish Grade	1.59	(0.78)	0	3	4,509
English Grade	1.74	(0.84)	0	3	4,509
Merit Rating	199.82	(62.99)	10	320	5,682
Sex	0.494		0	1	7,750
Age of Mother at Birth	27.18	(5.44)	15	46	5,816
Father's Education	4.09	(1.88)	1	7	4,615
Year of Birth	1990.80	(1.84)	1988	1994	7,750

Native Swedes

	Mean	(Std. Dev.)	Min.	Max.	*N*
Math Grade	1.49	(0.79)	0	3	770,864
Swedish Grade	1.67	(0.78)	0	3	753,317
English Grade	1.72	(0.82)	0	3	753,317
Merit Rating	210.37	(60.38)	10	320	770,864
Sex	0.486		0	1	830,873
Age of Mother at Birth	28.73	(5.06)	13	57	824,130
Father's Education	3.67	(1.43)	1	7	813,793
Year of Birth	1991.00	(1.96)	1988	1994	830,873

Source: Author's calculations with data from Statistics Sweden. Note: Sex is coded as 0= male 1=female, Father's education is coded 1-7 according to the highest level attained by the parent, from 1= pre-school to 7= postgraduate. Math, Swedish, and English grades are coded as 0= Failure, 1= Approved, 2= Well Approved, 3= Very Well Approved. Other child migrants include all migrants to Sweden aged 0-5 in the same cohorts as the forced migrants, but excluding those from Yugoslavia and from predominantly English-speaking countries (such as Australia, Canada, or the U.S.A.)

forms), the highest educational level attained by the child's father[5] (coded 1-7 from pre-primary to postgraduate education), and information on the child's year of birth and school of attendance (School ID attached to the grades). Summary statistics for the variables included in the study can be seen in Table 1.

5 Methodological Approach

The first methodological issue to address is the one of identification. Ideally, when studying forced migration, one would prefer to have comprehensive data on the motives and manner of immigration. Sometimes, as in this study, migration data from destination countries, Sweden in this case, fail to distinguish clearly between regular and forced migration as a consequence of war[6]. Kondylis (2010) encounters this issue when studying displacement caused by the Bosnia and Herzegovina war and argues that it can be solved by looking at the timing of migration events. For instance, she identifies forced migration by considering any person who relocated during the years the conflict took place as being displaced as a direct consequence of the war. For this paper, a similar choice is made using the information presented in Figure 2, where it is visible that migration into Sweden from countries that were part of the former Yugoslavia were pretty stable and low both before and after the height of the conflict. The spike in migration that happened in 1993-1994, seems reasonable to assume, was a direct consequence of the escalating levels of violence during the conflict, and not a result of a sudden rise in economic or voluntary migration. I therefore identify all individuals coming from the former Yugoslavia and entering Sweden in either 1993 or 1994 as forced migrants. Furthermore I focus on solely those who experienced the displacement shock during the first five years of life, to have in the analysis only individuals who undertook the entirety of their formal mandatory education in the Swedish system.

A source of classical selection in the migration literature might be diminished by the characteristics of the conflict itself. While voluntary migrants are usually considered to be a selected sample of the country of origin population, forced migrants are less likely to be so, given that the decision to migrate might not be endogenous to themselves (Becker and Ferrara, 2019). However, some conflicts push people into displacement based on certain unobserved characteristics, which might lead to a selected sample of forced migrants. Nevertheless, in the case of ethnically motivated conflicts, such as the Yugoslavian wars, it is possible to assume and there is evidence that the level of violence experienced is determined only by ethnicity and is not related to any unobserved characteristics such as pre-war social status, skill levels, etc. (Kondylis, 2008, 2010; Falck et al., 2011; Ruiz and Vargas-Silva, 2013). That being the case, an appropriate comparison group for the forced migrants in our sample would be native Swedes in the same cohorts, who neither experience force migration, nor suffer from selection (unlike other migrant groups).[7] A second reference group, comprised of children (also ages 0-5) who migrated to Sweden from all non-anglophone countries, is also included for further comparison.[8] Although I include this group of non-forced migrants in order to provide a further insight

[5] As children with educated parents usually perform better in school themselves. For a graphical representation of how this looks in the Swedish system, see the breakdown of merit score ratings by parental education presented in https://www.scb.se/hitta-statistik/temaomraden/jamstalldhet/jamstalld-utbildning/grundskolan/meritvarde-for-elever-som-avslutat-arskurs-9-efter-svensk-och-utlandsk-bakgrund-samt-foraldrarnas-utbildningsniva/

[6] Alternatively, this data might exist but not be available to researchers for confidentiality or ethical reasons

[7] The data for this study is register-based, and includes the whole native population, therefore eliminating any sampling issues.

[8] Native English-speakers were excluded since their (plausibly higher) English grades would be due to their origin and not from the bilingual advantage of speaking two non-English languages, as would be the case with all other migrant children.

into the experience of all those who migrate, I would be skeptical in interpreting the results from this group on par with those from the forced migrant sample, given that I can't rule out that non-forced migrant group is not subject to classical migrant selection issues.[9]

Given the natural experiment setting described above, it is quite straightforward to estimate the effect of being exposed to forced migration in childhood (ages 0-5) on the outcomes of interest. For the merit rating scores, since it is a numeric variable, we use standard estimation by ordinary least squares (OLS). The model is of the form:

$$y_{its} = \beta_0 + \beta_1 \vartheta_i + \gamma X_i + \delta_t + \delta_s + \epsilon_{its} \tag{1}$$

Where y_{its} is the outcome of interest, ϑ_i is an indicator variable that takes the value of 1 if the individual was exposed to forced migration by the age of 5, X_i is a vector of controls of individual and parental characteristics, δ_t and δ_s are fixed effects for year of birth and school of attendance. The main coefficient of interest, β_1 is the estimate for the effect of forced migration on merit rating by age 15.

For the case of the math grades, given that the scale of grades is inherently ordered (Failure, Approved, Well Approved, Very Well Approved), it is appropriate to analyze them through an ordered logit model, as discussed in Greene (2000). Consider the model:

$$y^* = \beta' x + \epsilon$$

in which y^* is the unobserved dependent variable (say, a student's true achievement in a math course), x is a vector of explanatory variables with unknown parameters β and ϵ is the error term which is assumed to have a standard logistic distribution. Now, instead of observing y^* the following is observed:

$$\begin{aligned}
y &= 0 && \text{if } y^* \leq 0 \\
y &= 1 && \text{if } 0 < y^* \leq \mu_1 \\
y &= 2 && \text{if } \mu_1 < y^* \leq \mu_2 \\
&\vdots \\
y &= J && \text{if } \mu_{J-1} \leq y^*
\end{aligned}$$

Where y is the observed math grade and μ is a vector of unknown threshold parameters that is estimated from the β vector. Since:

$$Pr[y_i = j] = Pr[y^* \text{ is in the } j^{th} \text{ range}]$$

[9]For instance, in Table 1 it is possible to observe that, between native Swedes, forced migrants and non-forced migrants, this last group has the most educated fathers, while the fathers of Swedes and forced migrants show a similar, lower average value. This could indicate that non-forced migrants are positively selected, and suggests that the comparison between Swedes and forced migrants may be the best fit for this analysis.

Then the probability of observing an outcome happening can be written as follows:

$$Pr[y_i = j] = F[\mu_j - \beta' x_i] - F[\mu_{j-1} - \beta' x_i]$$

Where $F(\cdot) = \frac{\exp(\cdot)}{1+\exp(\cdot)}$, which implies that:

$$Pr[y_i = j] = \frac{1}{1 + \exp^{-\mu_j + \beta' x_i}} - \frac{1}{1 + \exp^{-\mu_{j-1} + \beta' x_i}}$$

And this in turn can be used in the computation of a likelihood function and, therefore, also in generating maximum likelihood estimates for both μ and β. The results from these models will illustrate the effect of an independent variable (in this case forced migration) on the probability of attaining a higher categorical grade. While modelling the effect of forced migration on Math, Swedish, and English grades, exposure, controls, and fixed effects are defined in the same way as in the linear model.

In order to make interpretation easier and address potential issues of grade inflation, I standardize all grades and the merit rating score by school year, and then fit linear models to the Z-scores, similar to Equation 1. The main difference is that the coefficients from these models can be easily interpreted as standard deviations from the mean of that particular outcome.

Finally, a complementary analysis focuses on differences in age at displacement among those children who were identified as forced migrants, in order to explore possible heterogeneity in the effects associated with forced migration. These models also make use of the standardized grades and the results from them should be interpreted as the effects of experiencing displacement in ages 0-5, relative to other children who experienced the same process at a different age.

6 Results

The results from the models specified in the last section are presented in Table 2. The top panel shows the results for the ordered logistic regression with Math and Swedish grades as the main dependent variables. The bottom panel shows the results for the ordered logistic regression for English grade and the OLS model for merit rating score. Models are estimated for three scenarios, first comparing forced migrants to native Swedes (column labeled FM/S), then comparing forced migrants to other non-forced migrants (column labled FM/OM), and finally comparing the non-forced migrants to native Swedes (OM/S). The results show that forced migration negatively affects the probability of attaining higher grades in both Swedish and Math at age 15, while increasing the chances of having a higher grade in English. For the case of merit rating score, according to the estimates, experiencing forced migration in early-life had a negative impact on merit rating scores of around 3.1 points. When comparing to Swedes, both forced and non-forced migrants experience effects in the same direction, although magnitudes differ.

In order to more easily visualize the previous results in terms of magnitude, Table 3 shows the results of the models where the standardized z-scores for every educational outcome has been the dependent variable. Given that z-scores are constructed to have a mean of 0 and a standard deviation of 1, the coefficients from these regressions can be interpreted as percentage points of a standard deviation. The models show that children who experienced forced migration achieved grades in math that were 22% of a standard deviation lower than those of native Swedes, 7.4% of a standard deviation

Table 2: The impact of Forced Migration in Childhood on Educational Outcomes at age 15 (School Grade 9)

	Math Grade			*Swedish Grade*		
	FM/S	FM/OM	OM/S	FM/S	FM/OM	OM/S
Forced Migration	-0.480***	-0.0947		-0.166***	0.143*	
	(0.0325)	(0.0546)		(0.0328)	(0.0622)	
Other Migration			-0.343***			-0.344***
			(0.0413)			(0.0443)
Sex (1=female)	0.207***	0.127**	0.206***	1.273***	1.143***	1.273***
	(0.00612)	(0.0402)	(0.00613)	(0.00742)	(0.0532)	(0.00742)
N	771,395	10,092	767,935	752,561	7,316	749,923
	English Grade			*Merit Rating*		
	FM/S	FM/OM	OM/S	FM/S	FM/OM	OM/S
Forced Migration	0.247***	-0.0547		-3.123**	5.918***	
	(0.0354)	(0.0638)		(0.987)	(1.785)	
Other Migration			0.192***			-7.148***
			(0.0463)			(1.201)
Sex (1=female)	0.361***	0.523***	0.359***	21.95***	20.17***	21.93***
	(0.00643)	(0.0470)	(0.00644)	(0.191)	(1.264)	(0.191)
N	752,561	7,316	749,923	771,395	10,092	767,935
adj. R^2				0.134	0.100	0.134

Source: Author's calculations with data from Statistics Sweden and Swedish Interdisciplinary Panel (SIP). Heteroskedasticity-robust standard errors in parentheses. Forced Migrant is defined as 1 if the individual migrated to Sweden between 1993-1994 and were of ages 0-5. All models shown control for Mother's Age at Birth (linear and squared) and Father's educational attainment (in highest level achieved). Fixed effects for year of birth and school of attendance are also included (schools with only one student in the sample are excluded). Inclusion in the models is conditional on being born between 1988 and 1994 and survival up to age 15. Results for math, swedish, and english grades are from an ordered logistic model, while the results from merit rating score were obtained via OLS estimation. For each grade outcome, three models were fitted comparing Forced Migrants vs. Swedes (FM/S), Forced Migrants vs. Other (non-forced) Child Migrants (FM/OM), and finally comparing Other (non-forced) Child Migrants vs. Swedes (OM/S). In all these models the second group mentioned is the reference group, eg. in FM/S the coefficients are those of forced migrants when compared to native Swedes.

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

lower for the case of Swedish grades, 12.6% of a standard deviation higher than Swedes for the case of English, and merit rating scores that were on average 4.9% of a standard deviation lower than the composite scores of Swedes. The results seem to support the idea that bilingual children have an advantage over monolingual when learning an extra language. While other (non-forced) migrants experience similar effects in all outcomes, differences between forced and non-forced migrants appear significant only for Swedish grade and Merit Rating Scores, where forced migrants actually achieve grades and scores that are on average around 9% of a standard deviation higher than those of non-forced migrants.[10] Girls consistently outperform boys all across the board, regardless of migration status.

These results describe a rather clear picture of a negative impact of living through forced migra-

[10] As was mentioned before, the results from the non-forced migrant models could be affected by selection and should therefore be interpreted cautiously.

tion in childhood on most educational outcomes by age 15. However, two main questions arise, based upon the limitations of the methodology employed: (1) Are the comparison groups, native Swedes and non-forced migrants, ideal? and (2) is the effect the same regardless of age at displacement? First, in the models from Tables 2 and 3 forced migrants are compared to entire Swedish cohorts. While there is an argument to support the comparability of these forced migrants and native Swedes (e.g. non-selected, see, Section 5), it would be appropriate to estimate some results that didn't compare migrants to natives, but to other migrants. While our comparisons to the group of non-forced migrants provided a quick insight of the differences and similarities between both groups, the problem here remains that non-forced migrants are most likely heavily selected sample. Another alternative comparison group would be, for instance, non-forced Yugoslavian migrants, but based on Figure 2, it becomes clear that the migration pattern both before and after the war suggest that these immigrants made a decision (rational, bound by economic/cultural constraints) to move to Sweden. This would render the non-war Yugoslavian migrants a less than ideal comparison group because of selection issues.[11] To explore this question further, I choose instead to compare forced migrants from Yugoslavia to *other* forced migrants from Yugoslavia, and focus only on variation at the age of migration. In this case, the effect estimated from experiencing forced migration would be compared and relative to those who experienced it at a different point in their lives.

The answer to the second question is related to the answer to the first question, which has just been described. In order to know more about the effect of forced migration in early-life, it is needed to run an analysis of it in which we decompose our exposed group into smaller categories. In this case, I calculate the age at which each child (ages 0-5) experienced displacement during the Yugoslavian war and include this as a categorical variable in the models.

The results from this complementary analysis are shown in Table 4. By looking only at forced migrants, and comparing them to other forced migrants who experienced the same shock, only at a different point in their childhood, we get both a comparison group that is as close to ideal as possible, while also getting a detailed picture of if and how the effect differs according to age-at-exposure. Since the expectation is that the closer to school-starting age a child experiences displacement the worse it will be for their educational outcomes, all models in Table 4 have as reference group those who experienced forced migration on their year of Birth (Age 0).

While looking at individual grades provides little significant evidence, the most interesting results come from looking at the merit rating score. Since it is a composite measure of all results in grade 9, it can better capture overall educational achievement by the forced migrants in the sample. The results show that there is a clear gradient in the effect of forced migration according to the age at which it occurs, supporting the hypothesis that experiencing forced migration in the ages closest to the start of compulsory education may be worse than doing so in younger ages. This could be related to the fact that children develop country-specific abilities during the first years of life that can't be so easily transferred to a new context, such as language and verbal communication[12]. It would then, make sense that children who have not yet formed these abilities would be better suited to face a dramatic change of residence such as the one described in this study, similar to the way that younger people had better outcomes after forced migration in Nakamura et al. (2016).

[11] Or at least no better than our non-forced migrant sample, which has the added benefit of experiencing migration in the same receiving context, since they all migrate in the same years as the forced-migrant group.

[12] While the same gradient can be observed in the magnitudes of the coefficients for the Swedish language grade (language), this is not statistically significant.

Table 3: The impact of Forced Migration in Childhood on Educational Outcomes at age 15 (School Grade 9): Standardized Grades (Z-scores)

	Math Grade			*Swedish Grade*		
	FM/S	FM/OM	OM/S	FM/S	FM/OM	OM/S
Forced Migration	-0.222***	0.00479		-0.0743***	0.0962**	
	(0.0142)	(0.0283)		(0.0151)	(0.0327)	
Other Migration			-0.161***			-0.153***
			(0.0188)			(0.0201)
Sex (1=female)	0.0930***	0.0464*	0.0927***	0.583***	0.486***	0.583***
	(0.00287)	(0.0185)	(0.00288)	(0.00326)	(0.0248)	(0.00325)
N	771,395	10,092	767,935	752,561	7,316	749,923
adj. R^2	0.086	0.058	0.086	0.165	0.115	0.165

	English Grade			*Merit Rating*		
	FM/S	FM/OM	OM/S	FM/S	FM/OM	OM/S
Forced Migration	0.126***	0.0290		-0.0497**	0.0978***	
	(0.0176)	(0.0362)		(0.0161)	(0.0291)	
Other Migration			0.0830***			-0.118***
			(0.0224)			(0.0196)
Sex (1=female)	0.171***	0.235***	0.170***	0.352***	0.329***	0.352***
	(0.00312)	(0.0234)	(0.00313)	(0.00309)	(0.0206)	(0.00309)
N	752,561	7,316	749,923	771,395	10,092	767,935
adj. R^2	0.088	0.065	0.088	0.133	0.100	0.133

Source: Author's calculations with data from Statistics Sweden and Swedish Interdisciplinary Panel (SIP). Heteroskedasticity-robust standard errors in parentheses. Forced Migrant is defined as 1 if the individual migrated to Sweden between 1993-1994 and were of ages 0-5. All models shown control for Mother's Age at Birth (linear and squared) and Father's educational attainment (in highest level achieved). Fixed effects for year of birth and school of attendance are also included (schools with only one student in the sample are excluded). Inclusion in the models is conditional on being born between 1988 and 1994 and survival up to age 15.

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

7 Conclusion

In this paper, I analyse how the experience of war-related forced migration in childhood affects children's ability to perform in the host-country's educational system up to the age of 15. Using high-quality administrative data from the Swedish Interdisciplinary Panel, I observe those children who moved to Sweden during (and because of) the Yugoslavian war in 1993-1994, and follow them until the completion of their compulsory education in Sweden. The results suggest that displacement in early-life has a negative impact on children's educational performance, with forced migrants having lower chances of attaining high grades in math and Swedish and also lower overall merit rating scores. They achieved results that were on average 5% (Merit Rating), 7% (Swedish), and 22% (Math) of a standard deviation lower than those of native Swedes.

Furthermore, the age-at-displacement analysis suggests that there might be reason to believe, at

Table 4: The impact of Forced Migration in Childhood on on Educational Outcomes at age 15 (School Grade 9, Z-scores): Age-at-Displacement Analysis

Dep. Var	Math Grade	Swedish Grade	English Grade	Merit Rating
Age at Forced Migration				
Ref. Cat. Age 0 (Year of Birth)				
Age 1	-0.135	0.00972	0.109	-0.312*
	(0.162)	(0.199)	(0.210)	(0.151)
Age 2	-0.245	-0.0867	0.0336	-0.414**
	(0.159)	(0.194)	(0.205)	(0.151)
Age 3	-0.251	-0.104	-0.0339	-0.418**
	(0.157)	(0.196)	(0.205)	(0.149)
Age 4	-0.292	-0.154	0.0197	-0.508***
	(0.155)	(0.197)	(0.207)	(0.149)
Age 5	-0.361*	-0.216	-0.0755	-0.545***
	(0.157)	(0.199)	(0.207)	(0.150)
N	6,776	4,977	4,977	6,776
R^2				
between	0.0626	0.1255	0.0666	0.1105
within	0.1325	0.1662	0.1519	0.1715
overall	0.0843	0.1397	0.0858	0.1271

Source: Author's calculations with data from Statistics Sweden and Swedish Interdisciplinary Panel (SIP). Heteroskedasticity-robust standard errors in parentheses. All models control for sex, Mother's Age at Birth (linear and squared), and Father's educational attainment (in highest level achieved). Fixed effects for school of attendance are also included. Inclusion in the models is conditional on being a forced migrant born between 1988 and 1994 and survival up to age 15

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

least in the case of the more aggregate merit rating score, that these effects might be felt harder by older children, who are close to school-starting age, than younger ones, which could indicate that societal benefits might be available if more attention and focus should be devoted to these extra vulnerable groups among displaced children. Given the rising number of displaced people and refugees from conflicts and natural disasters across the globe, it remains of vital importance to understand the effect this events might have on those who suffer them, and how the receiving countries might ensure that the existing disadvantages can be alleviated, in order to promote a better integration process.

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