



# Trends in firearm homicide in 23 European countries – is Sweden an outlier?

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## Abstract

Prior studies have found an increasing level of firearm-related violence with both lethal and non-lethal outcomes in Sweden, concentrated among young men. This study compares the Swedish trend with 22 other European countries to examine whether any of them might show signs of similar development as Sweden. The analyses are primarily based on mortality data from Eurostat and the World Health Organization for the period 2000–2019. For both homicide in general and firearm homicides against men and young adults, the results show a clear downward trend in almost all of the countries studied, together with an increasing degree of convergence, due to the sharpest declines in homicide in countries with high homicide levels at the beginning of the period examined. Some countries have experienced substantial variations from year to year, partly due to a number of terror attacks, but Sweden is the only country in which a continuous increase in firearm homicides against men and young adults (aged 20–29) can be observed since 2005. Today, Sweden appears to have the highest rate of firearm homicides against men and young adults among the examined European Union countries and lies above the European average for homicide in general.

## Keywords

homicide, firearms, young males, European trend, comparison

## Introduction

Viewed over the longer term, it is well-established that homicide levels in Western Europe increased during the period 1960–1990 and have since declined (Aebi and Linde, 2014; Eisner, 2014; Lappi-Sepälä and Lehti, 2014). In Sweden, however, this downward trend has stalled, and since 2013 levels of homicide have once again been on the rise. Statistics from

the National Council for Crime Prevention (NCCP) show that the entire increase can be explained by rising levels of firearm homicide since 2005, while other forms of homicide have followed a stable or declining trend (NCCP, 2023). Initially, the increase in firearm homicides was compensated by a continued decrease in levels of homicide by other means, but since 2013, rising numbers of firearm homicides have contributed to an increase in Sweden's total homicide rate. Between 2011 and 2022, the number of firearm homicides rose from 17 to 63 cases per year according to the annual statistics (NCCP, 2023), with a particularly large increase in 2022 (from 45 cases in 2021). Consequently, firearm homicides now comprise a much larger proportion of total homicides than they did a decade ago. The aim of this paper is to explore whether there might be any other European country showing similar homicide trends and patterns as those observed in Sweden, and whether any lessons might be learned from other countries in how to prevent or break the negative trend. Special efforts have been made to consider the methodology of international comparisons.

The central thrust of this article draws and builds on a research report previously published in Swedish by the NCCP (2021a). This article is intended to make the results available to non Swedish-speaking scholars, and has also been adapted to fit the requirements of an academic article. The figures and graphs have been translated from the original publication while the sections referring to prior research have been modified and updated.<sup>1</sup>

### The character of firearm homicides in Sweden

The Swedish surge in firearm homicide has increasingly become synonymous with homicides linked to criminal milieus (e.g. Rostami, 2017; Khoshnood, 2018; NCCP, 2019b, 2021a) and young male victims (NCCP, 2021b). Sturup et al. (2018) used mortality data from the World Health Organization (WHO) to present a cross-sectional comparison between Sweden and 12 other European countries, showing that Sweden had the highest rate of firearm homicides against men aged 15–29 by the first half of the 2010s. It is also documented that homicides involving firearms are often linked to one another in time and space (Sturup et al., 2017), i.e., shooting incidents are associated with an elevated risk for additional shootings nearby within a short space of time, indicating connections to local gang conflicts. This phenomenon has been labelled *near-repeat shootings*, a pattern that has also been observed outside Sweden (Green et al., 2017; Papachristos et al., 2015). A study by Gerell et al. (2021) examined the complex links between near-repeat shootings, open drug markets and so-called 'vulnerable neighbourhoods' identified by the Swedish police in Stockholm and Malmö and defined as areas characterised by low socioeconomic status, where crime has a major impact on the local community. The results suggest that firearm violence is strongly linked to open drug markets in vulnerable neighbourhoods. Also, the risk for near-repeat shootings was at least twice as high if the first incident had taken place at an open drug scene in a vulnerable neighbourhood, compared to elsewhere in the cities examined.

### European comparative studies on homicide trends

A number of previous comparative studies of homicide trends in Europe have applied a historical approach. Some examine trends during the post-war period (Aebi and Linde, 2014; Lappi-Sepälä and Lehti, 2014), while some go back as far as the 1800s (e.g. Goertzel et al., 2013). These studies show that homicide trends have been relatively similar across most European countries since the mid-1800s. After World War II, there was a decline until the 1960s, followed by an increase until the 1990s – with peaks being observed at different points in different countries. Since the 1990s, homicide rates have once again been on the decline.

More recently, the Global Study on Homicide (UNODC, 2019a) concluded that the substantial economic and social changes following the fall of the Soviet Union resulted in increased homicide rates in many Eastern European countries. The subsequent period, until 2002, then saw annual variations followed by a period of decreasing trends. In other parts of Europe, there has been a more continuous decrease in homicide since the 1990s, with the exception of a temporary peak in Western Europe in 2015–2016. The authors explain the peak as being due to terror attacks in France and Germany. Using mortality data, Westfelt (2022) found that the decline in homicide observed since the 1990s in all of the eight European countries he examined has stalled in some of them over recent years.

A Nordic comparative study based on data from the European Homicide Monitor (EHM)<sup>2</sup> (Lehti et al., 2019) examined homicide trends and rates in Denmark, Finland, Iceland, Norway and Sweden from different starting points until 2016. The recent Swedish increase in firearm homicides is described as exceptional. Modus operandi could be studied for the period 2007–2016 and the countries could be categorised into three groups: homicide rates were 30% higher in Finland compared to Sweden and Denmark, whose rates were in turn 30% higher than those of Norway and Iceland. By global standards, the homicide rates were described as extremely low in all these five countries.

Suonpää et al. (2022) analysed EHM and mortality data from Denmark, Estonia, the Netherlands, Scotland, Sweden and Switzerland for the period 1990–2016. All countries manifested a clear decrease in homicide over the period, which was primarily linked to an overall decline in male victimisation and offending. The study's central conclusions focused on the generality of the decline, although certain diversity was noted in the trends for different types of homicide (and only small changes in the demographic characteristics of victims and offenders). The most marked deviation was an increase in homicides against young men with involvement in criminal milieus in Sweden.

Another EHM study by Krüselman et al. (2023) examined the prevalence and characteristics of firearm homicides in Denmark, Finland, the Netherlands, Sweden and Switzerland between 2001 and 2016, but also presenting longer trends (since 1992). In all countries but Sweden, firearm homicides were continuously decreasing. Two country profiles were identified on the basis of the context of the homicides: In Denmark, the Netherlands and Sweden, firearm homicides were found to usually occur in public and in urban areas, involved male victims and perpetrators and were concentrated in criminal milieus. In Finland and Switzerland, on the other hand, firearms were found to be used in different contexts and more often in domestic homicides, with a higher share of female victims. Overall, the firearm cases did not differ much from the character of other homicides. The study also explored the relationship between homicide and the availability of firearms in each country.

Duquet and Vanden Auweele (2021) explored the link between firearm trafficking and violence in 34 European countries using UNODC data (mixed sources). Rates of firearm homicide were compared for the year closest to 2000 and the most recent year for which data were available for each country. For all countries except four – Sweden, Austria, Malta and Cyprus – the rates were considerably lower in the most recent year for which data were available than at the beginning of the period. The homicide level in Malta had not changed, while there had been an increase in Austria, Sweden and Cyprus.

#### Examining the Swedish situation in a broader European perspective

As shown above, the increasing rates of firearm homicide in Sweden are well-documented, and have also been explored in a comparative perspective. Some of the existing studies have

good quality data but include few countries, such as those based on the EHM. They have usually presented shorter time series for a limited number of countries, or series that do not cover the most recent increases in Sweden; they have not directed any particular comparative focus at the Swedish case (Krüsselman et al., 2023; Suonpää et al., 2022; Lehti et al., 2019). Other studies have instead used a more comprehensive approach, including a large number of countries and analysing the data available for each of them, which has sometimes involved comparing data from different sources and different (overlapping) periods (e.g. UNODC, 2019a; Mc Evoy and Hideg, 2017; Duquet and Vanden Auweele, 2021). These latter analyses present a valuable, broad picture of rates and trends, but at the expense of some degree of comparability – given the substantial annual variations in national homicide rates and differences in the quality of data drawn from different sources. Still other studies have compared homicide rates across a number of countries but not longitudinal trends (e.g. Ganpat et al., 2011; Sturup et al., 2018). The Swedish case has attracted international attention, but to date, no study has used reliable comparative data to examine whether the rising Swedish rates of firearm homicide are unique in a wider European context.

Using a considerably larger comparison group of other countries than most previous studies of recent trends, but at the same time focusing on the quality of the data used, this article addresses the question of whether Sweden's firearm homicide trend over the past nearly 20 years means that the country should be viewed as an outlier in the broader European context, or whether a similar trend might be observed in any other country. Might there even be countries from whom Sweden could learn something about breaking the rising trend in firearm homicide? The study compares homicide trends in Sweden to those in 22 other European countries from 2000 onwards. The focus is primarily directed at firearm cases against young adult and male victims, since this is where the increase in Sweden has been concentrated. The analysis is of particular interest since there is currently no sign of a slow-down or reverse in the Swedish trend, but rather the opposite. The Swedish firearm homicide rate reached an all-time high in 2022, corresponding to 5.5 deaths per million inhabitants (NCCP, 2023).

## Data and methods

### Data sources

There are many methodological obstacles to international statistical comparisons – irrespective of the nature of the research question. Criminological studies are no exception, not least as a result of differences in criminal justice systems, legal definitions of specific offences, or methods for registering crime data, etc. (Smit et al., 2012). Differences may be less marked for homicides than other offence types, but even here there is some level of between-country variation in how homicide is defined and registered. For example, some countries include attempted homicide or physical assault resulting in death while others do not. In some countries, crimes are categorised on the basis of what is known at the time the offence is reported (thus leading to the inclusion of some cases of suicide or accidental/natural death), while statistics in other countries are based on the more detailed information that becomes available later in the investigation (see also Morgan et al., 2020).

Fortunately, unlike studies focused on many other offence types, homicide studies are able to employ an alternative source, namely cause of death (mortality) data. While crime data tend to contain more detailed information on the circumstances of each homicide, research has shown mortality data to provide a more reliable basis for international comparisons of homicide rates, *inter alia* as a result of the use of more consistent definitions and a lower number of false positives (Aebi and Linde, 2014; Sturup et al., 2018). For this

reason, most of the analyses presented here are based on mortality data from Eurostat and the WHO, for the period from 2000 to 2019 (or for as long as data were available at the time of the study; 2017 is the final year for which data for all the countries examined were available). A special dataset was requested from Eurostat on the number of persons deceased due to physical assault, as classified by the International Classification of Diseases, 10<sup>th</sup> edition (ICD-10), broken down by sex and three age groups. Specific diagnostic codes for harm caused by different types of violence made it possible to analyse the homicide method employed. The analysed data set included all ICD-10 codes concerning “assault from another person” (X85-Y09), and the specific codes for assault using firearms (X93-X95).

Eurostat has systematically collected country-specific mortality data for EU member states since 2011. For earlier years, the availability of data varies between different countries, and to impute missing values in the Eurostat data set, mortality data from the WHO’s public database have been used for certain countries and certain years (following an examination of the comparability of the WHO and Eurostat figures).<sup>3</sup> Since the Nordic comparison is of particular interest, data for Sweden, Denmark, Norway and Finland have been collected directly via contacts with the national authorities responsible for administering the cause-of-death registers in each of these countries. This approach provided somewhat longer time series for the Nordic countries (avoiding the delay associated with each country having first to report their annual data to Eurostat).

### Country selection

In the next step, substantial efforts were made regarding the choice of countries for inclusion in the study, applying the best comparability/reliability principle, rather than focusing on the latest/best available data, but with the ambition to include as many European countries as possible (see Appendix).

Even if they currently remain more appropriate for broader international comparisons, mortality data also have their limitations. For the purposes of the current study, the most important of these is perhaps the large variation in the proportion of deaths registered in mortality statistics with an unspecified cause of death. This issue was examined in relation to the WHO mortality database in a method study by Bhalla et al. (2010), which described countries whose mortality statistics may be viewed as being more and less reliable. According to our assessment, their analyses are applicable to mortality data from Eurostat.

A similar problem when focusing specifically on firearm homicides is the variation in the proportion of deaths registered as being due to assault from another person, but by unspecified means. An examination of this question guided our selection of the countries to include in the analysis, using the criteria described below.

In addition to countries where there were question marks about data reliability, countries with very small numbers of inhabitants (such as Iceland, Malta and Luxembourg) were also excluded from the analyses. For these countries, the combination of population size and the rarity of homicide leads to annual variations that make descriptions of trends difficult.

The inclusion criteria were applied in the following order:

1. Countries found to have good quality mortality data as an indicator of homicide rates in the method study by Bhalla et al. (2010);
2. Countries where the proportion of homicides with unspecified means was lower than 25%;<sup>4</sup>
3. Countries with populations of sufficient size (1 million inhabitants at minimum).



Based mainly on these criteria, and having consulted a number of experts in other countries about the quality of their data, the study included Sweden and 22 other countries. The results are presented on the basis of six geographic regions: The Nordic countries (Denmark, Finland and Norway), Western Europe (Belgium,<sup>5</sup> the Netherlands, Ireland and Austria), Central Europe (Slovakia, Czechia, Poland and Hungary), Baltic countries (Estonia, Latvia and Lithuania), Balkan countries (Croatia and Slovenia) and Southern Europe (Italy, Spain and Greece). Germany, France and England and Wales have been compared to Sweden in a separate analysis using crime data (see below).

Countries outside the EU were excluded, with the exception of Norway, a country important in the Nordic comparison. Thus, while the study does not include the whole of Europe, it does include the majority of EU countries, i.e. those which may be regarded as being historically and culturally most comparable with Sweden.

### Special concerns about data from certain countries

A few countries, described below, have been included in the analyses, even though the quality of their homicide data requires attention, based on the information available to us during the study.<sup>6</sup> For some of these countries, the mortality data were analysed, but with reservations that should be taken into consideration when interpreting the results. For others, and in contrast to most of the countries included, crime data have been assessed to be more reliable.

#### **The case of Denmark and Ireland**

Crime trends in Sweden are often compared to those in Denmark. Denmark is also one of the European countries described by the Global Study on Homicide (UNODC, 2019b) as having recently faced high levels of gang-related violence. Unfortunately, Denmark's mortality data have documented limitations (Lehti et al., 2019).<sup>7</sup> To explore this, Thomsen et al. (2019) retrieved 1439 autopsy files from Denmark's departments of forensic medicine for 1992–2016, for which homicide had been coded as the cause of death. The autopsy data contain more reliable cause of death information than Danish mortality statistics, since the latter are based on an initial, brief medical examination of the victim, often by someone with no forensic expertise. The results of Thomsen et al.'s study confirmed that Denmark's mortality statistics, at least over recent years, very likely underestimate the actual number of homicide cases in Denmark. The analyses presented below are nonetheless based on mortality statistics from Denmark, but the findings reported by Thomsen et al. have been borne in mind when interpreting our results.

Another country with questionable mortality data on homicide is Ireland. There is a substantial discrepancy between different data sources<sup>8</sup> (Appendix 2, table 2B in NCCP 2021a), and the homicide level is likely to be underestimated even if the overall trends are similar irrespective of data source. Ireland's mortality data is thus included in the analyses of *trends* (although the actual level is probably higher) but not in the calculation of the European average.

#### **Crime data for England and Wales, Germany and France**

The above-described examination of the mortality data revealed a particularly low data quality in three of the largest countries in Europe – the United Kingdom, Germany and France. These countries' mortality statistics very likely underestimate their actual homicide levels, a conclusion which has also been drawn in other studies (Aebi and Linde, 2014; Florquin and

Desmarais, 2018, Mucchielli, 2012; Birkel and Dern, 2012). Mortality data from all these countries have been described as reliable by Bhalla et al. (2010), but their analysis was primarily based on the proportion of deaths classified as external injuries due to unspecified causes, i.e. cases lacking information on whether or not these injuries had been due to assault by another person. Our examination showed that for both England and Wales, as well as France, the inclusion criterion of less than 25% of *homicides* having an unspecified method was not fulfilled. It also showed that the gap between homicide data from different sources within each country (for details, see NCCP, 2021a, Appendix 2 and 5) was particularly large in these countries, but also in Germany, with mortality data suggesting unreasonably low homicide rates. Furthermore, none of the several terror attacks that these countries experienced during the examined period are reflected in the mortality data. The low quality of mortality data was also confirmed by personal contacts with experts in the countries.<sup>9</sup>

For these reasons, the comparison with these countries is instead based on *crime data* (number of homicide victims) collected by Eurostat and presented in a public database. The Eurostat database only presents crime data for the total number of homicides (i.e., not broken down by the method of violence or demographic groups), but analyses of trends in firearm homicide – although only at the general level, and not broken down by the age and sex of victims – have been conducted on the basis of information drawn from official national statistics and via contacts with authorities from each country. These data have been compared to crime data from Sweden (NCCP, 2023), which are available from 2008 onward. Consequently, the time series in this particular comparison are shorter, starting in 2008. Given the large variations in homicide levels between the different constituent countries within the U.K., the analyses only include England and Wales, with more comparable administrations.

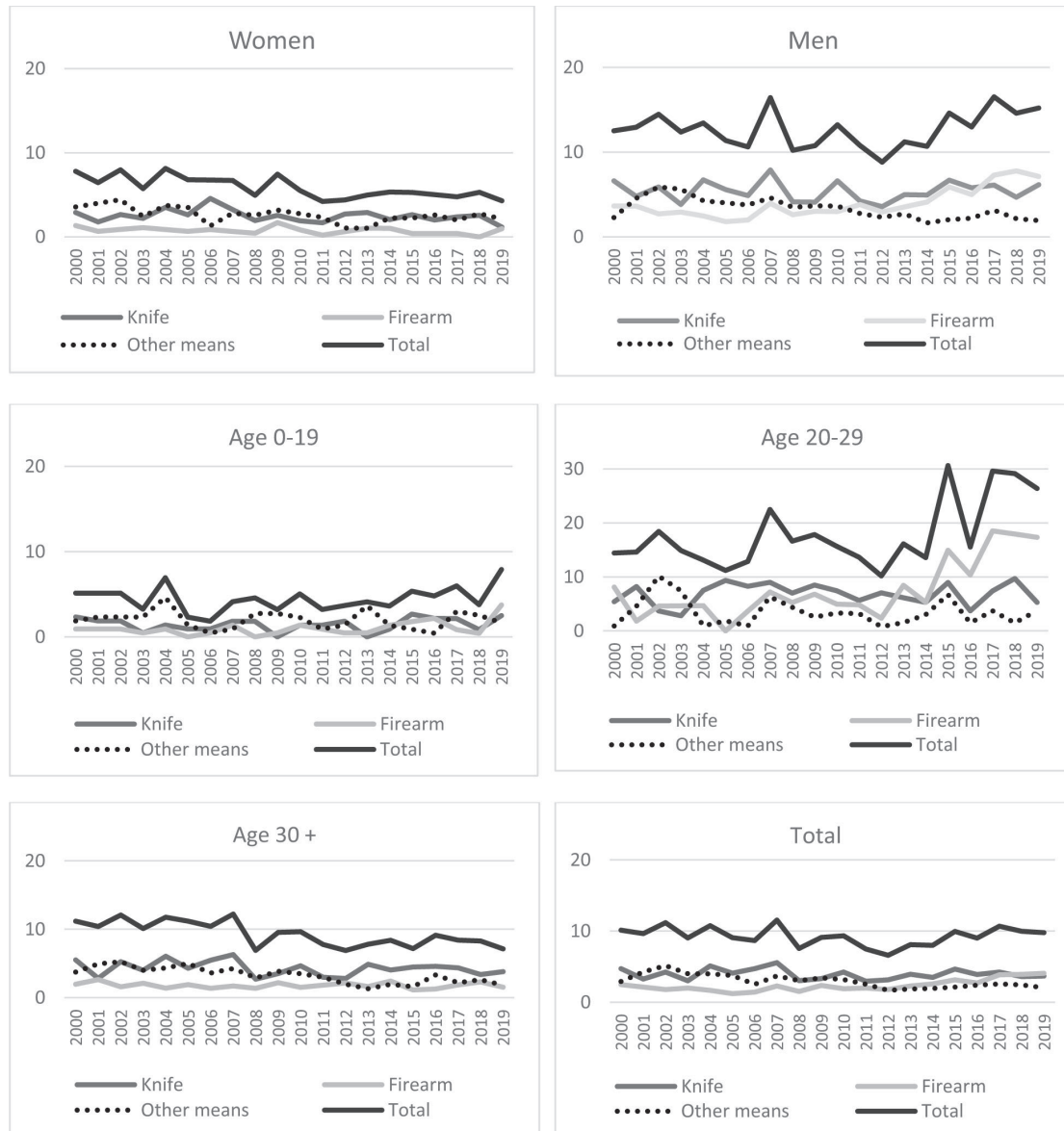
## Results

### Homicide rates and trends in Sweden

Figure 1 presents the Swedish trends in homicide by firearm, knife, and other means for men and women and for three age groups. As has been reported in other studies, the results show that the recent increase in homicide is restricted to male victims and is primarily related to victims aged 20–29, who were killed by firearms. At the end of the period examined, the rate of firearm homicide in this age group was 17 deaths per million inhabitants, as compared to 8 per million in 2000. For male victims, irrespective of age, rates of knife homicide were higher than rates of firearm homicide or homicide by other means at the beginning of the period, but by 2019, rates of firearm homicide had reached roughly the same level as knife homicide, around 7 deaths per million inhabitants.

No trends similar to those for firearm homicides can be observed for homicide committed by other means or for other victim categories. In fact, the total level of knife homicides has been relatively stable and homicides by other means have decreased slightly during the period examined.

Although firearm homicides have rarely involved victims under the age of 20, an increase can be noted in this age group in 2019, although from a very low level. This should be interpreted with caution, since a change from one year to the next is not sufficient to constitute a trend. For most of the studied period, homicides against persons under the age of 20 have more often involved the use of knives or other sharp objects, but also other means such as strangulation, suffocation, blunt force trauma or the use of bodily force. The same is true also of homicides against women.



**Figure 1.** Number of homicide victims by sex, age and type of violence, per million inhabitants, Sweden 2000–2019.

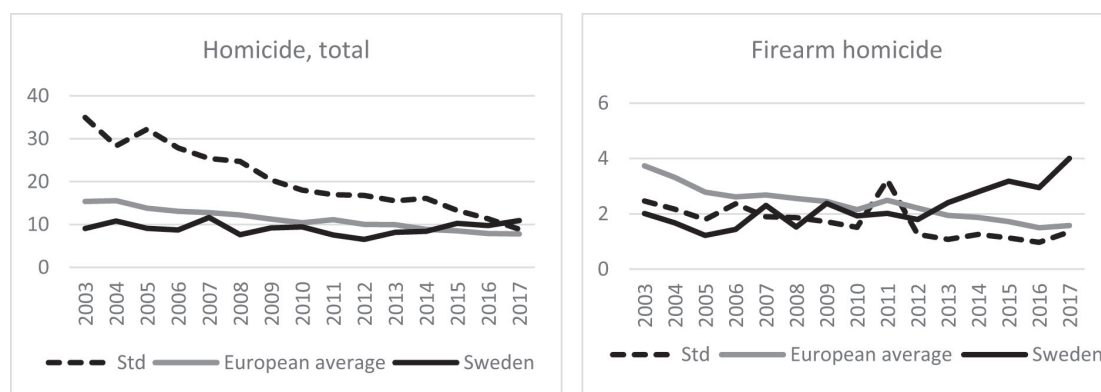
Source: mortality data from National Board of Health and Welfare (Socialstyrelsen)

### Declining levels and differences between European countries

As shown in Figure 2, there is a decline in the average European homicide rate over the study period. In addition, the differences in the homicide rate – overall and by firearms – between these countries (indicated by standard deviation, std) have become smaller. Swedish homicide rates have been below the European average (based on countries covered by the study) for most of the period examined. Since 2015, however, Sweden's rate has been above the average. When all the studied countries are combined, the average homicide rate for 2017 was just under 8 deaths per million, as compared to 11 homicides per million inhabitants in Sweden.

As regards the level of firearm homicide, the Swedish rate had become considerably higher than the average of other European countries by the end of the period, approximately





**Figure 2.** Average level and dispersion (std) of homicide rates in Sweden and 19 other European countries, 2003–2017; all homicides and firearm homicides. Number of deaths per million inhabitants.

Source: mortality data from Eurostat, WHO and Nordic authorities.

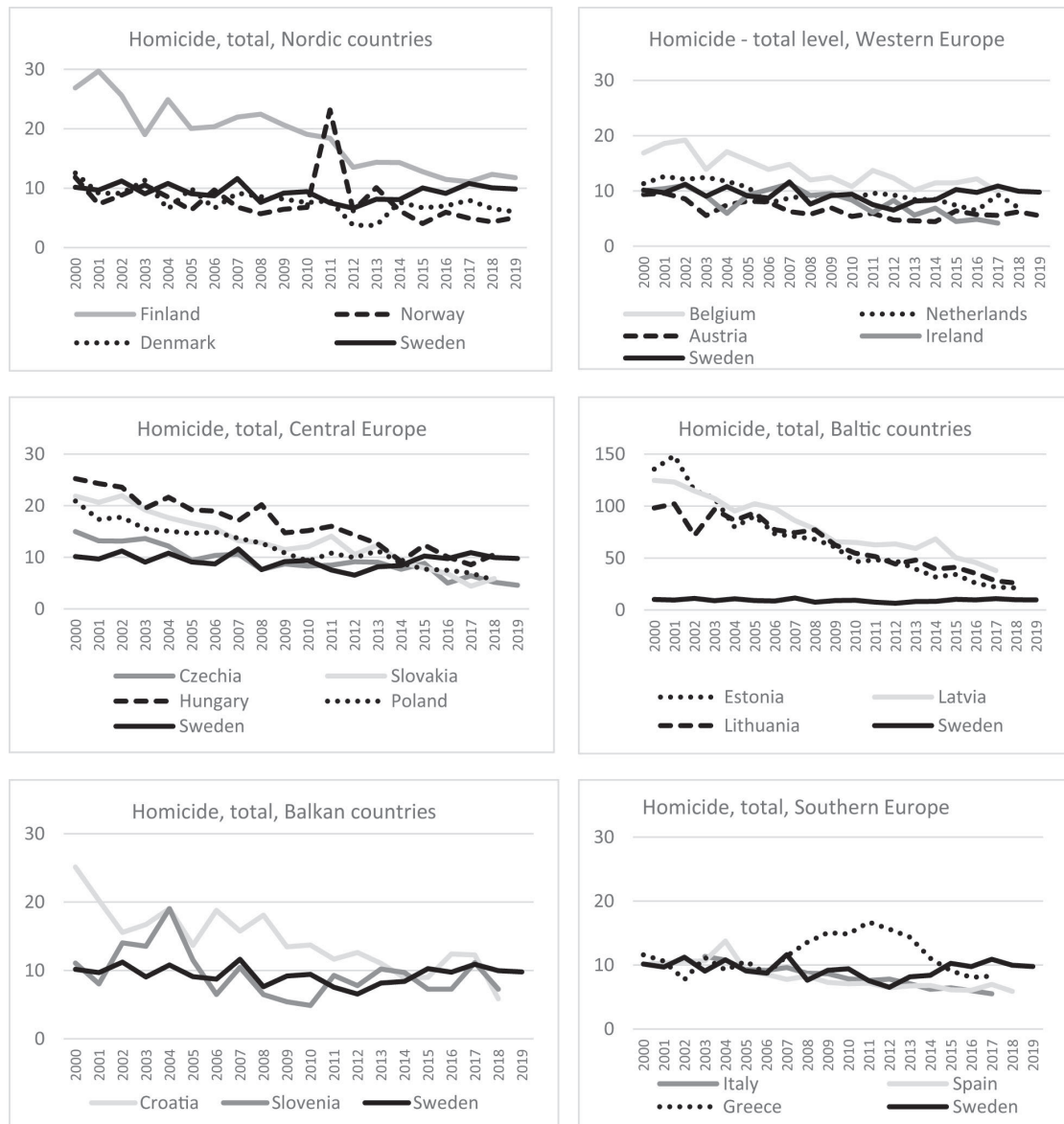
4 deaths per million inhabitants, as compared to the European average of approximately 1.6 deaths per million. As mentioned, the increase in firearm homicide has also continued and even escalated in Sweden subsequent to the period covered by this study (standing at 5.5 deaths per million in 2022).

It should be noted that England and Wales, France, Germany, Denmark and Ireland have been excluded from this particular analysis as a result of the underestimation of the actual homicide level associated with the use of mortality data for these countries (see Data and Methods). For the very first years of the millennium, 2000–2002, data is missing for Italy, which is why the time series start at 2003.

Figure 3 presents the general homicide trends for each country, categorised in six separate groups. The figure shows that the general homicide rate has declined in virtually all of the countries examined – which was also the case in Sweden until 2012. The subsequent increase noted in Sweden cannot be seen anywhere else, with the decline in homicide rates instead having continued in most of the other countries examined.

In countries where homicide levels were very high at the beginning of the 00s, i.e., the Baltic states in particular (around 100–150 deaths per million inhabitants), but also in the other former Eastern Bloc countries (i.e., Central Europe) and Finland, the decline has been particularly marked, which has in turn resulted in the smaller between-country differences noted at the end of the period. During the first half of the period, all Nordic countries except Finland had very similar, relatively low and declining rates and trends (8–10 deaths per million inhabitants), after which Sweden's trend deviates from that of her Nordic neighbours. The terror attacks in Utøya and Oslo in July 2011 (77 deaths) are clearly visible in a sharp peak in the statistics for Norway for this year.

In Western Europe, the homicide rate was almost twice as high in Belgium as in the rest of the group at the start of the millennium, but has since declined sharply. At the end of the period, Sweden has the highest homicide rate in this comparison. A similar change in Sweden's ranking can also be observed in the comparison with Central and Southern Europe, as well as the Balkan countries. In the Southern Europe group, an increased homicide rate can be seen in Greece during the period 2006–2014, i.e., the years of Greece's financial crisis, followed by a decline. The peak noted in Spain in 2004 can be linked to the Madrid bomb attack, which resulted in almost 200 deaths.

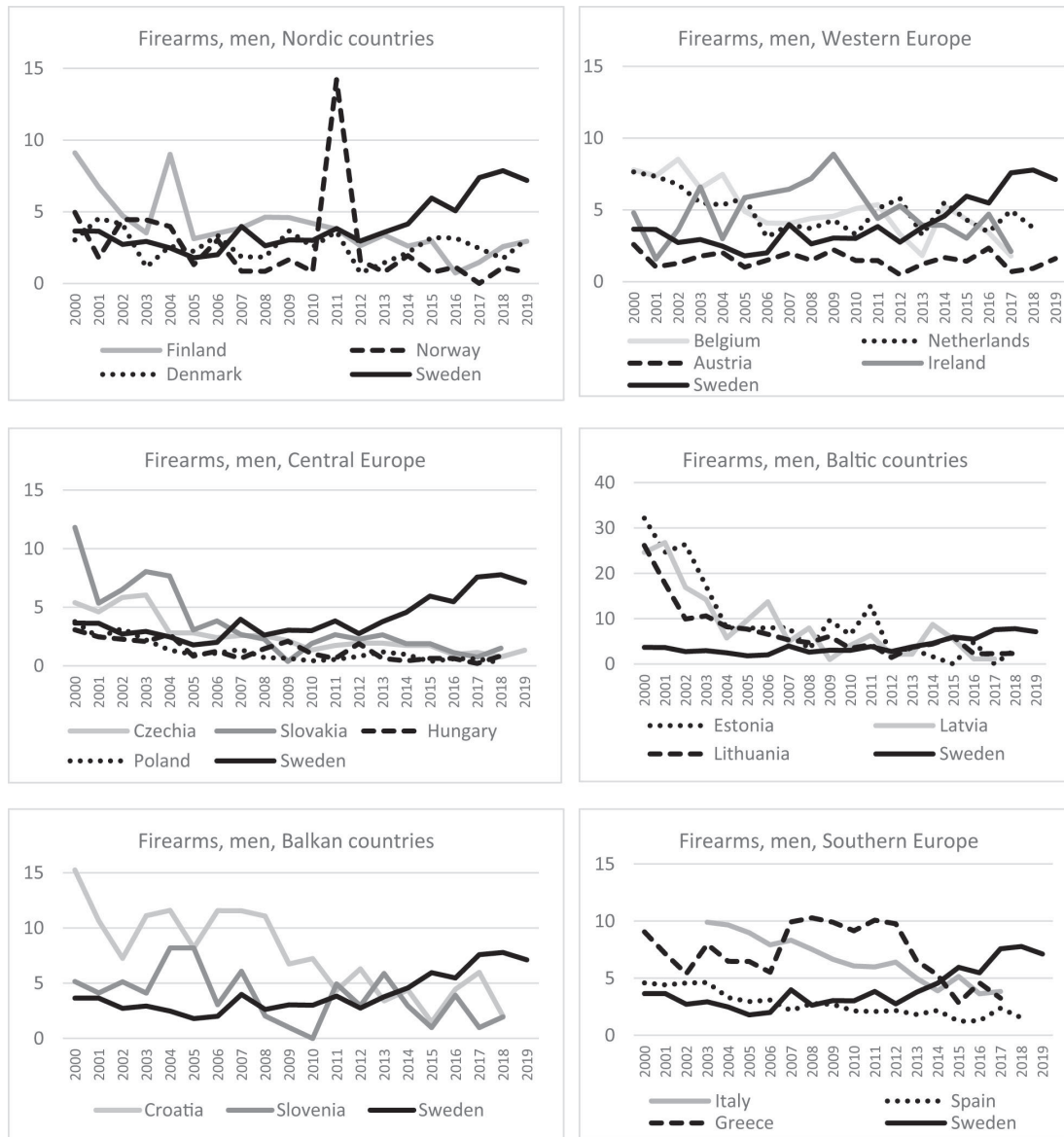


**Figure 3.** Homicide trends in Sweden and other European countries, 2000–2019. Number of deaths per million inhabitants (note different scale for the Baltic countries.) Source: mortality data from Eurostat, WHO and Nordic authorities.

### Trends in homicide by firearms against males and young adults

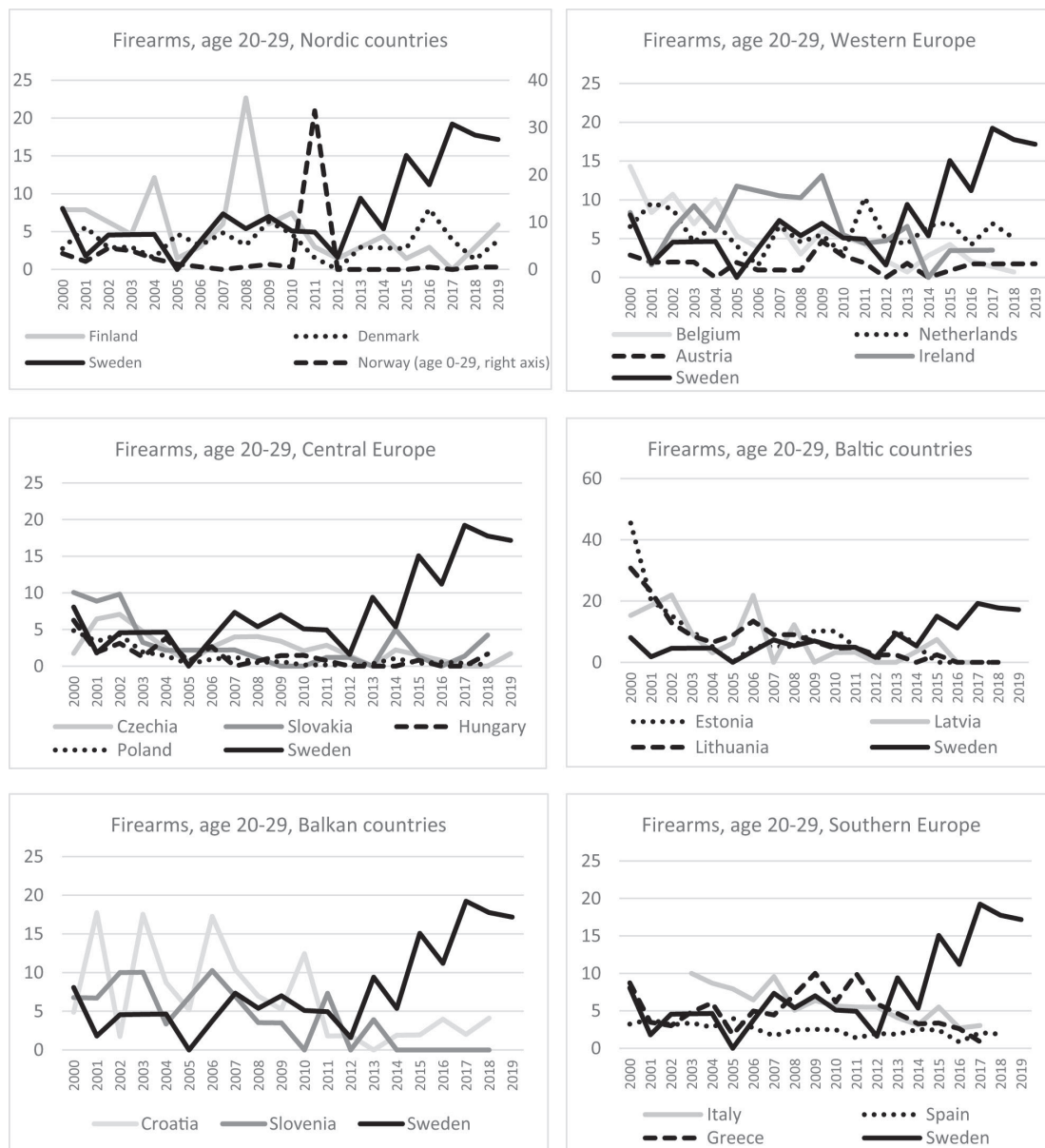
Even if no increase has been found in the other countries for homicide in general, the pattern might be different for a specific type of violence against specific population groups. The analyses in Figures 4 and 5 present a comparison of firearm homicides against men and against victims aged 20–29, i.e. the demographic groups in which the increase in firearm violence has been observed in Sweden.

For most countries, the trends in firearm homicide against men and young adults do not differ much from homicide trends in general, but there are some interesting patterns. By comparison with all six groups of countries, the Swedish rate is close to or below that of virtually all the other countries included in the analysis at the beginning of the period examined. At the end of the period, the situation is very different, with Sweden presenting the highest rates in all six comparisons. While this is the case for both firearm homicides against male victims and against victims aged 20–29, the increase is particularly pronounced in the latter comparison.



**Figure 4.** Firearm homicide against men in Sweden and other European countries, 2000–2019. Number of deaths per million inhabitants (note different scale for the Baltic countries.) Source: mortality data from Eurostat, WHO and Nordic authorities.

Temporary peaks can be observed in certain countries for certain years. One obvious example in the Nordic region is the terror attack in Norway in 2011, but higher rates can also be seen in Finland in 2004 and 2008. The 2008 peak is concentrated to young victims and is related to a school shooting in Kauhajoki. The peak in 2004, which can be observed both for men and young victims has been explained by a change in Finland’s alcohol tax legislation that occurred in this year, which was followed by a general increase in violent crime (Sirén and Lehti, 2006). Even if there have been indications of increased gang crime activity in Denmark (UNODC, 2019b), no increase in firearm homicide can be seen in the mortality data. As has been mentioned, these data seem to underestimate actual homicide levels over recent years, but even using more reliable autopsy data, which describe somewhat higher rates, no support can be found for any increase in firearm homicide (see also NCCP, 2021a; Thomsen et al., 2021).



**Figure 5.** Firearm homicide against victims aged 20–29 in Sweden and other European countries, 2000–2019. Number of deaths per million inhabitants (note different scale for the Baltic countries.) Source: mortality data from Eurostat, WHO and Nordic authorities.

In Western Europe, perhaps the area of the continent that is most culturally comparable to Sweden, both Belgium and the Netherlands had relatively high rates of firearm homicide against men, and to some degree also young adults, in the first years of the new millennium, which then declined to much lower levels at the end of the studied period. Ireland experienced an increased level of firearm homicide in both groups during the first decade after the turn of the millennium, and around 2007–2010 Ireland's firearm homicide rates were the highest in Western Europe (see also Sturup et al., 2018).

In Central Europe, the rates of firearm homicide against men (and to some extent also young adults) were particularly high at the beginning of the millennium in Czechia and Slovakia, while rates in Hungary and Poland were lower, and similar to that of Sweden. In the Baltic countries, there is a clear drop from particularly high levels during the first five years of the period.

There has also been a decrease in firearm homicide in Slovenia – and even more so in Croatia – from relatively high but fluctuating levels during the first decade of the new millennium. With a reservation for missing data at the beginning of the period for Italy, rates of firearm homicides against young adults and men were higher here than in other South European countries. In all these countries, the rates of firearm homicide against men were higher than those of Sweden at the beginning of the period examined, but lower than Sweden at the end of the period. The general increase in homicide in Greece in the middle of the period is also reflected in firearm homicides against men, and to some extent also against victims aged 20–29.

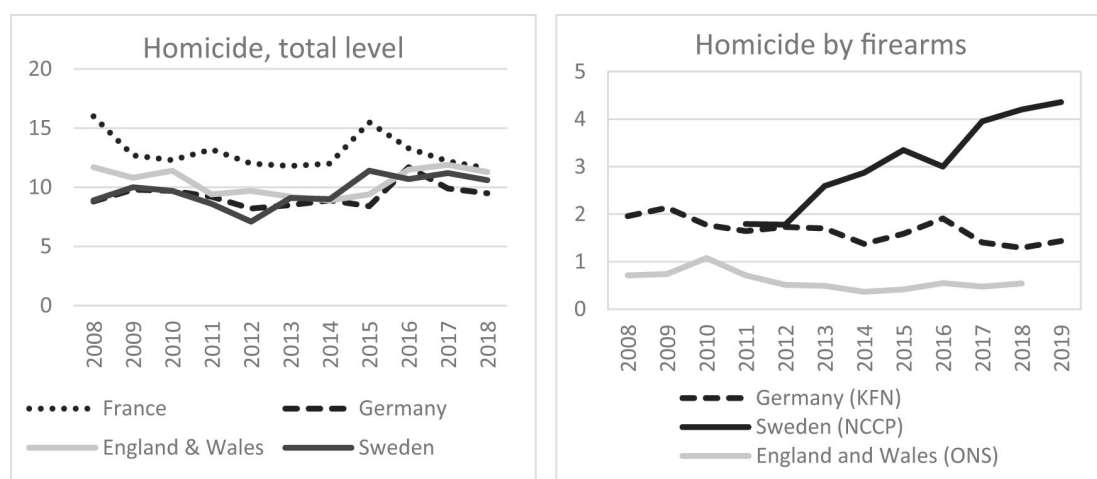
In sum, none of the other countries included in the study has experienced an increase in firearm homicide against young adults and men of the type seen in Sweden during the period examined. Temporary upturns can be seen in a few other countries, mainly explained by specific terror attacks. In Ireland and Greece, there was an increase in firearm homicide against men and young adults in the middle of the studied period, but this was restricted to periods of only a few years and was followed by a new decline.

### England and Wales, Germany and France

For the analyses of homicide rates in the largest European countries, England and Wales, Germany and France, crime data have been used (see Data and Methods). Information on total homicide rates from the criminal justice system published by Eurostat has been used and compared to corresponding data from Sweden. The presentation of trends in firearm homicide for these countries is based on the number of homicide victims registered in crime data obtained via contacts with authorities and experts in the countries concerned, with the exception of France, and these trends are not separable by sex and age.

#### Small differences in homicide rates at the end of the period

During the final years of the period (2017–2018), the crime data show relatively small differences in the total homicide rate between the countries examined here, corresponding to approximately 10–11 deaths per million inhabitants (Figure 6). For most of the studied



**Figure 6.** Total homicide rates in Sweden, England and Wales, Germany and France, and firearm homicide rate in Sweden, Germany and England and Wales. Number of deaths per million inhabitants, 2008–2018/19.

Source: Crime data, Eurostat (total homicide rate), The Criminological Research Institute of Lower Saxony, KFN (Germany), NCCP (Sweden) and Office for National Statistics, ONS (England and Wales).



period, the rates were higher in France compared to the other countries, with the peak in 2015 largely reflecting the terror attacks in Paris (130 deaths). Similarly, the effect of terror attacks in Germany in 2016 (22 deaths) is also visible in the statistics, but this peak is followed by a decrease to a level slightly below that of the other countries. A terror attack in Sweden in 2017 (5 deaths) did not produce any marked effect on the total homicide rate, but had this incident not occurred the rate would have been somewhat lower that year.

There are annual variations for all the countries in Figure 6, but Sweden does not constitute an outlier with regard to total homicide rates. Even if a more or less continuous increase since 2012 can only be observed in Sweden, the rates are rather close to those in Germany during the whole of the period. In England and Wales, a decline between 2010 and 2014 has been followed by an increase in the total homicide rate, which can only in part be explained by three terror attacks in England in 2017 (35 deaths). The most common type of homicide in England and Wales involves knife violence, and crime statistics show a clear increase in such homicides since 2014 (Morgan et al., 2020). Some of these homicides relate to victims of the terror attacks, but the increase has primarily been linked to knife violence associated with criminal gangs and illegal drug markets (Morgan et al., 2020) – i.e., contexts similar to those that are typical for the increase in firearm homicides in Sweden.<sup>10</sup>

#### **No indications of an increase in firearm homicide**

At the same time, the rate of firearm homicide has been both very low and relatively stable in England and Wales throughout most of the period examined, at 0.5–1 deaths per million inhabitants. However, the Office for National Statistics (ONS, 2020) found that there had been a 27% increase in firearm-related incidents (including non-lethal incidents), during the five-year period prior to 2019.<sup>11</sup> The increase seems to have stalled somewhat thereafter. The incidents were concentrated in urban areas, and many victims were between 15 and 35 years of age. However, very few of these incidents resulted in deaths.

In Germany, the rates in firearm homicide were about the same as in Sweden in 2011–2012, but the curves then diverge, despite similarities in the two countries' total homicide trends and rates. While the firearm homicide rate has increased sharply in Sweden, Germany has instead experienced a gradual decline. In a longer perspective, the firearm homicide rate (only murder and manslaughter, i.e. not including physical assaults with a lethal outcome) has decreased in Germany from about 4 deaths per million inhabitants in 2000 to 1.4 deaths in 2019 (according to the statistics received from the Criminological Research Institute of Lower Saxony, KFN).

We have been unable to obtain data for an analysis of trends in different types of homicide in France, but previous reviews have shown that firearms had been used in 17% of all homicide incidents in 2010–2015 (Florquin and Desmarais, 2018). If the proportion had not changed by 2019, this would correspond to firearm homicides resulting in 2 deaths per million inhabitants – compared to more than 4 deaths per million in Sweden.

## **Discussion**

The results confirm that the recent increase in firearm homicide in Sweden cannot be viewed as part of an international trend. From 2000 onwards, Sweden's homicide rate first followed the declining trend observed both in most European countries and the rest of the Western world. Around 2005, firearm homicides started to increase in Sweden, and in the past decade have contributed to an overall upward trend in the homicide rate that cannot be seen in any of the other countries examined. Swedish research has shown that the increase is restricted to a very specific category of homicides – shootings focused on young

male victims with links to criminal milieus – while other types of homicide have followed the same declining trend as that noted in other countries (NCCP, 2019a; NCCP, 2021a).

The pattern that lies closest to the Swedish trend is perhaps an increase in knife homicide in England and Wales since 2014. Despite the difference in the method of violence, many of these incidents have occurred in contexts similar to those typical of the growing number of firearm homicides in Sweden – being linked to illegal drug markets and young men involved in criminal milieus in socially disadvantaged areas (Morgan et al., 2020).

A number of countries show temporary peaks reflecting terror attacks or school shootings in specific years (e.g. Norway 2011, France 2016, Finland 2008). Apart from this, a more or less continuous decrease in both total homicide and homicide by firearms is observed in most of the countries included in the study. Two exceptions are Ireland and Greece – with increased rates of homicide by firearms against young adults and men during the middle of the period examined. In Greece, this rise seems to be a part of a generally increased level of violence during the economic crisis in the country. The total homicide rate in Ireland, however, has been declining since the turn of the millennium in the same way as in most of the other countries analysed. The rise in firearm homicides against young men during the first decade of the period examined seems thus to have been limited to this group and method of violence, and has also been described as related to criminal gangs (Campbell, 2010). In contrast to Sweden, however, the increase was replaced by a new decline after 2010, and whether this is a result of specific measures directed at firearm violence, or whether the shootings became less frequent for other reasons, is an important question for future research.

### Why Sweden?

The discussion of how the Swedish trend might be understood may be broken down into two questions: why an increase, and why specifically in Sweden? The first of these might be the easier to analyse on the basis of existing research.

### Drivers of homicide described in the literature

Many studies have analysed the relationship between homicide trends and traditional criminological predictors such as the proportion of young (men) in the population, socio-economic conditions, the degree of modernisation and urbanisation, migration, firearm availability, alcohol consumption, cultural changes such as attitudes to violence, and the legitimacy and functioning of the criminal justice system (Chon, 2011; Eisner, 2013, 2014; Goertzel et al., 2013; Lappi-Seppälä and Lehti, 2014; Aebi and Linde, 2014; Baumer and Wolff, 2014; Tuttle et al., 2018; Lehti et al., 2019; Morgan et al., 2020; Kivivuori et al., 2020; Suonpää et al., 2022,). However, findings and conclusions have pointed in different directions, and there is no consensus on how general homicide trends might best be explained.

At the same time, the research has described different factors as being related to short- versus long-term homicide trends. A review by Morgan et al. (2020) has shown that sudden increases in specific types of homicide – unlike more synchronised trends in all types of homicide (and often violence in general) – might be linked to other, less macro-oriented predictors. Such sudden surges are primarily associated with conflicts related to illegal drug markets, criminal gangs, and lack of confidence in the criminal justice system. These factors are also characteristic of the specific type of homicide that has increased in Sweden. However, these circumstances are also present in other European countries that have not experienced the same trend in firearm homicides.

Nor is the concentration of drug-related violence in socially disadvantaged areas unique to Sweden (e.g. Morgan et al., 2020; Contreras and Hipp, 2020).

A number of studies have explored the relationship between immigrant background and involvement in crime (Chon, 2011; Baumer and Wolff, 2014; Roders and Pridemore, 2017; Martinez et al., 2015; Tuttle et al., 2018). The conclusions point in different directions, but the topic is nevertheless often addressed in the public debate. The proportion of residents with immigrant background is high in disadvantaged areas in Sweden, and research shows that second-generation immigrants are overrepresented among crime suspects, particularly in homicide cases (NCCP, 2021b; Lehti et al., 2019). But again, Sweden is far from the only country in Europe with a large immigrant population, often concentrated in disadvantaged areas. Against this background, it is reasonable to differentiate between large proportions of immigrants in a country and the integration process. If there is a between-country difference, it is more likely to concern the latter – an issue that may need to be examined further. For instance, Soysa and Noel (2018) have shown that it is polarisation rather than ethnic diversity that enhances the risk of violent crime.

The link between access to firearms and the homicide rate has also been explored in a number of studies, although typically analysing changes in legislation or comparing countries with differences in weapon ownership regulation – i.e. not examining access to illegal firearms typically used in the homicides in criminal milieus. A systematic review by Krüsselmann et al. (2021) on the relationship between firearm availability and violence in Europe showed a (rather weak) correlation to female victimisation but not male. This may be explained by the fact that unregistered, illegal firearms are more often used in homicides against men (often in criminal milieus), whereas legal weapons are commonly used when women are killed (often within the family) (Killias and Markwalder, 2012). Research shows that firearms imply a specific danger; firearm incidents tend to be more rapid and fatal compared to violence by other means (Dantinne & André, 2017; Duquet and Van Alstein, 2015; Stroebe, 2013; Killias and Markwalder, 2012). Similarly, Aebi and Linde (2014) found that, due to limited access to firearms, some potentially lethal incidents only result in assault or threat. On the other hand, the case of England and Wales demonstrates that firearms are not necessary for a trend such as that found in Sweden to emerge. And the presence of an illegal trade in firearms is not limited to Sweden (Duquet and Vanden Auweele, 2021; Duquet 2022), although estimating the size of the stockpile of illegal firearms in a country constitutes a challenge.

Krüsselmann et al. (2023) found that in Finland and Switzerland, despite the relatively high availability of firearms, the prevalence of homicide by firearms is low. In Denmark and the Netherlands, the opposite was observed: firearm availability was estimated to be low, but the firearm homicide rate was higher than in Finland or Switzerland. Sweden showed a mixed profile – with a high availability of firearms and also high rates of firearm homicide. Thus, also in this context, Sweden shows a deviant pattern. However, based on the above mentioned studies, despite having some degree of impact, access to firearms is neither necessary nor sufficient to explain the Swedish trend.

### **New group dynamic**

The latter question, ‘why Sweden?’, thus remains a puzzle. There are other parts of Europe that are characterised by similar circumstances, without this having resulted in the sustained rise in firearm homicides witnessed in Sweden over the past decade.

Perhaps there is not yet a concrete answer to the ‘why Sweden?’ question, other than that once the violent spark – more or less accidentally – had been lit, it appears to have generated

a chain reaction in terms of homicides and revenge attacks, accompanied by a shift over time in attitudes to firearm use within the criminal milieu, with an increasing normalisation. This emergence of a new group dynamic within the criminal milieu has been well described in the research (Gerell et al., 2021; NCCP, 2019a; Sturup et al., 2018). Why this dynamic should only have emerged in Sweden, however, remains unclear, particularly since a contagion effect for gang-related violence has been found elsewhere (e.g. Papachristos et al., 2015; Green et al., 2017; Brantingham et al., 2020).

Given the current situation in England and Wales, with rising numbers of knife homicides related to criminal gangs and illegal drug markets, the Home Office has described sudden surges in certain types of homicide as follows (Morgan et al., 2020, p. 11):

The evidence suggests that for a short period, one type of homicide dominates due to social transmission rather than changes in structural factors. That is, a relatively small group of individuals, known to each other in some way, are suddenly drawn into a pattern of violence due to a gang beef, or competition related to a change in supply or demand of illicit drugs, or some similar mechanism.

Similar conclusions have been drawn in both the Swedish (NCCP, 2019a) and American (O’Flaherty and Sehti, 2010) contexts. These studies also note that the young men sometimes kill in order not to get killed, and that conflicts can escalate in milieus that are perceived as dangerous.

#### Not a totally isolated phenomenon

The fact that these mechanisms have recently been described outside Sweden implies that while the underlying causes of the Swedish trend remain difficult to explain, it has not occurred in a vacuum. Both within Europe (Westfelt, 2022), but also looking outside Europe, it has been shown that the decline in homicide observed over several decades appears to have stalled, and that increases have been observed in a number of developed countries (McEvoy and Hideg 2017). Over recent years, homicide trends have also become less well-synchronised in Europe (Morgan et al., 2020; Krüsselman et al., 2023).

The Global Study on Homicide (UNODC, 2019b) has also identified a number of countries in Europe that are facing problems with gang-related crime. In some of the countries, this violence is described as contributing to rising homicide rates, with Sweden being the most obvious example, but with mention also being made of Denmark and England and Wales – while in other countries with rising gang crime, homicide rates have been characterised by fluctuations or even decreases (the Netherlands, Italy and Spain). As noted above, Krüsselman et al. (2023) found that firearm homicides were concentrated in public and urban areas, and involved male victims and perpetrators from criminal milieus not only in Sweden but also in both Denmark and the Netherlands. One conclusion is that homicides in some countries have recently come to be more strongly associated with firearm use and criminal gangs, but that there is no simple correlation with a general rise in homicide rates.

The trafficking of both illegal weapons and drugs has been described as a growing problem in Europe, and Sweden is far from the only destination (Duquet and Vanden Auweele, 2021; EMCDDA, 2018). Together with the similarities noted with the recent increase in homicides in England and Wales, there are thus a number of indications that the homicide trend in Sweden may not in fact be a completely isolated phenomenon.

In a global and historical perspective, sudden surges in homicides limited to a certain type and context are not new. The lessons that need to be learned might thus be found

outside Europe – for instance in the American cities of the 1980s (Blumstein et al., 2000), but perhaps also in Ireland in the first decade of the new millennium. It may also be fruitful to follow responses to the rising trend in knife homicides in England and Wales, and also the situation concerning gang-related violence in Denmark or the Netherlands. So far, the Swedish trend in firearm homicide appears to be an outlier in a European context, but there are indications that other countries may, in the near future, come to face a similar kind of challenge.

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## Notes

1. The graphs have been reproduced with the permission of the NCCP. The corresponding data are available from the first author upon reasonable request.
2. EHM is a collaborative research project initiated in 2009 by Sweden, Finland and the Netherlands (Ganpat et al. 2011), with the aim of developing comparable homicide data based on information from the police and courts in each country, synchronised using a common coding schedule. A number of additional countries have subsequently joined the project. For details, see <https://www.universiteitleiden.nl/en/research/research-projects/governance-and-global-affairs/european-homicide-monitor#tab-1>
3. Countries report their mortality data to both the WHO and Eurostat, which might lead to an expectation that these data would be more or less identical. This is not the case for some countries, however (see NCCP 2021a). The WHO data were only used to supplement missing values in the Eurostat data set for countries for which there were only minor or no differences between these two sources during those periods when data from both sources were available.
4. For a majority of the countries examined, the proportion is considerably lower than this. However, there is some level of variation between the countries that were ultimately included in the analysis (see Appendix), and to some extent over time. This is a limitation when it comes to measuring rates of and trends in homicide by some specific means, such as firearms. At the same time, the problem seems to be concentrated to cases of homicide by unspecified means versus homicides by means other than firearms (or knives) – and the distribution of cases between these two categories. The estimated rates of firearm homicide are therefore unlikely to be much affected by numbers of unspecified cases, since a shooting is relatively easy to determine.
5. Belgium was not included in the analysis by Bhalla et al. (2010), since Belgian data were not available at the time. However, there is nothing to indicate that the Belgian mortality data may be inadequate for the purpose of our comparison.
6. There may be further countries with less obvious – or less well-documented – data quality issues. We do not, however, feel that these issues would be sufficiently extensive to impact on the central findings of our study, which are focused on trends over time. To affect our central findings, the data quality for countries would have to vary over time in quite specific ways, which appears fairly unlikely.
7. This is also supported by the fact that there is an obvious discrepancy in the mortality data from Sundhedsdata and Statistics Denmark, the two authorities that administer this information, which has also increased in size over time (NCCP 2021a). Contacts with these authorities suggested that the gap might



be explained by differences in which diagnostic codes are included in the statistics, but this would not in itself explain why the discrepancy has become larger over time.

8. Mortality data from Eurostat correspond to about 50–60% of the rates reported by the Irish Central Statistics Office (CSO) based on crime data (murder and manslaughter, dangerous driving excluded). <https://www.cso.ie/en/releasesandpublications/ep/p-rc/recordedcrimeq42017/homicidestatisticsrevisions/>
9. Auke Aplowski (Bundeskriminalamt, Germany), Christoph Birkel (Bundeskriminalamt, Germany), Nick Morgan (Home Office, UK), Dietrich Oberwittler (Max Planck Institute for the Study of Crime, Security and Law, Germany), Justine Pooley (Office for National statistics, UK), Peter Squires (University of Brighton, UK).
10. Updated figures from the Office for National Statistics (ONS) show that there was a decline during the COVID-19 pandemic, but in 2022 the rates were at the same level as 2018. Source: <https://www.ons.gov.uk/peoplepopulationandcommunity/crimeandjustice/datasets/appendixtableshomicideinenglandandwales>
11. These figures also include incidents where a firearm was used to threaten someone, without necessarily having been fired, although the weapons had been fired in more than half of the incidents recorded. The figures also include a relatively large proportion of incidents involving air rifles and air pistols. No data are available for Sweden on firearm-related incidents that also include air guns, which makes it impossible to compare trends in such incidents between the two countries.

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### Appendix: Country selection criteria

Countries with good quality of mortality data on homicide according to Bhalla et.al. 2010 (and Belgium)	Not member of the EU	Additional data collected by NCCP	Small population	More than 25% of cases with unspecified homicide method	Included in the study	Years for which WHO data were imputed	Comment
Belgium					X	2000–2002	
Croatia					X	2000–2005	
Poland					X	2000–2004	
Romania				X	-		
Slovakia					X	2000–2001	
Slovenia					X	2000-2010	
Czechia					X		
Hungary					X		
Estonia					X	2000–2009	
Latvia					X	2000–2006	
Lithuania					X	2000	
Moldova	X				-		
Cyprus			X		-		
Denmark		X			X		Data from Sundhedsdata have been used. Uncertain quality during the final years of the period examined. Autopsy data were used to validate the mortality data (Thomsen et al. 2019).
Finland		X			X		Data from Statistics Finland have been used
France		X		X	X		Low quality mortality data; crime data from Eurostat (total homicide) have been used instead.
Greece					X		

(Continued)



Countries with good quality of mortality data on homicide according to Bhalla et al. 2010 (and Belgium)	Not member of the EU	Additional data collected by NCCP	Small population	More than 25% of cases with unspecified homicide method	Included in the study	Years for which WHO data were imputed	Comment
Ireland				X	X		Mortality data for 2006 missing (both from Eurostat and the WHO database). Data for 2006 were imputed based on average for 2005 and 2007. Ireland's mortality data underestimate the homicide rates, and were therefore omitted from certain analyses.
Iceland			X		-		
Israel	X						
Italy					X	2004–2005	Mortality data are missing for 2000–2002 in both the Eurostat dataset and the WHO database.
Luxembourg			X		-		
Malta			X		-		
Netherlands		X			X	2000–2006	
Norway	X	X			X		Data from Folkehelseinstituttet were used.
Portugal				X	-		
Spain					X		
Sweden		X			X		Data from National Board of Health and Welfare were used. Crime data have been used in the comparisons with England and Wales, France and Germany.
Germany		X			X		Low quality mortality data; crime data from Eurostat (total homicide) and the KFN (firearm homicide) were used.
UK/England and Wales		X		X	X		Low quality mortality data, crime data from Eurostat (total homicide) and the ONS (firearm homicide) were used. Only England and Wales were included.
Austria					X		