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TIME TRENDS IN YOUTH MENTAL HEALTH BETWEEN 2008 AND 2019 IN SLOVENIA AND THE UNITED STATES

ABSTRACT

A growing body of evidence shows that youth mental health issues have become prevalent since 2010. Current research is disproportionately focused on trends in English-speaking countries, making the generalisability of the evidence unclear. The paper presents comparative analysis of suicide rates, anxiety, depression, and general psychological distress symptoms among young Americans and Europeans, with a focus on Slovenian trends. The results show that the prevalence of anxiety disorders and milder symptoms of psychological distress has been growing among young people in both the United States and Slovenia, as well as across Europe. The rise in suicide rate and the prevalence of severe depression seems to be limited to the United States. The disproportionately stark rise in mental illness among American youth calls for a more thorough understanding of what causes youth mental health time trends.

KEY WORDS: youth, mental health crisis, generation Z, time trends

Časovni trendi depresije, anksioznosti in samomorilnosti med mladimi med 2008 in 2019 v ZDA in Sloveniji

IZVLEČEK

Vse več raziskav kaže na naraščanje duševnih težav mladih po letu 2010. Ker je velik del raziskav omejen na trende v angleško-govorečih državah, ostaja nejasno, v kakšni meri je porast prisoten drugod. Članek razširja razumevanje časovnih trendov duševnega zdravja mladih prek primerjave ameriških trendov

duševnih težav s slovenskimi in umestitve primerjave v evropski kontekst. Rezultati kažejo, da anksioznost in blažje psihološke stiske naraščajo tudi v Evropi in specifično Sloveniji, naraščanje samomorilnosti in hudih oblik depresije pa se zdi omejeno na ZDA. Ta razlika kaže na nujo po bolj poglobljenem razumevanju vzrokov duševnih stisk v meddržavni perspektivi in specifičnih vzrokov v ZDA.

KLJUČNE BESEDE: mladi, kriza duševnega zdravja, generacija Z, časovni trendi

1 Introduction

Individuals born between 1995 and 2012, known as Generation Z or iGen (Twenge 2017), generally enjoy a higher average standard of living, greater life expectancy, higher academic achievements, and higher levels of education compared to individuals from any previous generation (Seemiller and Grace 2017). However, in recent years, a growing body of evidence indicating substantial increases in many indicators of mental ill-health among this generation has emerged. Indeed, as early as the beginning of the 21st century (Collishaw et al. 2004; West and Sweeting 2003), but more prominently after 2010, an increasing number of researchers and mental health experts have started raising concerns about trends in youth mental health. For instance, studies and national statistics from the United States indicate increasing suicide rates (Curtin et al. 2016; Martinez-Ales 2020; Miron 2019; Ruch et al. 2019), psychiatric hospitalizations and emergency visits (Arakelyan 2023; Burstein et al. 2019; Kalb et al. 2019; Mercado et al. 2017), help-seeking behaviors (Lipson et al. 2019), and an increasing prevalence of general psychological distress, depression, and anxiety (Ballou 2019; Daly 2022; Keyes et al. 2019; Lu 2019; Mojtabai et al. 2016; Twenge 2019). Examining two large national datasets, Duffy et al. (2019) found increased rates of depression, anxiety, non-suicidal self-injury, suicidal ideation as well as suicide attempts in the decade between 2007 and 2018, with rates for some of these outcomes doubling over the studied period. Most concerning, the greatest increases were observed in intentional self-injury, suicidal ideation, and suicide attempts. While concerns have been raised about the possibility of these increases merely reflecting a greater willingness to report symptoms by young people, the substantial increases in suicide-related outcomes indicate at least some of the increase in mental health problems reflect generally worsening mental health (Bor et al. 2014; Twenge 2019).

While a disproportional number of studies focus on time trends in the United States, some studies in recent years have investigated trends in other countries. An authoritative systematic review reported a substantial increase in internalizing symptoms (e.g., depression and anxiety) in adolescent girls throughout the first decade of the 21st century (Bor et al. 2014). Moreover, a recent meta-analysis

found a significant increase in global prevalence estimates for elevated depressive symptoms among 10-19-year-olds between studies published from 2001 to 2010 (pooled prevalence of 24%) and 2011 to 2020 (pooled prevalence of 37%), with substantial heterogeneity of prevalence estimates existing between countries, genders, and measurement tools (Shorey et al. 2022). Similar findings have been reported in English-speaking countries (Collishaw 2015; Cybulski et al. 2021; Wiens et al. 2020), Belgium (Walrave et al. 2022), the Netherlands (van Vuuren et al. 2018), Russia (Slobodskaya et al. 2023), and Germany (Beller 2022). Most recently, a cross-national comparative study on country-level drivers of increasing adolescent mental health problems has been conducted, spanning from 2002 to 2018 and 43 European and North American countries (Boer et al. 2023). The study found a significant increase in mental health complaints which coincided with an increase in schoolwork pressures, similar to a prior study by (Löfstedt et al. 2020). This study found an increase in girls reporting low school satisfaction, high schoolwork pressure, or a combination of both in most of the 32 countries studied. While each study investigated a slightly different period, age group, and mental health indicator, most point to a general increase in at least some of the internalizing symptoms (depression, anxiety, stress) in (mostly female) adolescents and college students throughout the 20th century.

However, studies focusing on broader indicators of subjective well-being rather than negative symptoms of mental problems report somewhat less consistent results. For example, in a systematic review and meta-analysis, Potrebny et al. (2017) found an increase in adolescent self-reported psychosomatic health complaints before the 2000s but found a general stabilization of reported symptoms after that. Hagquist et al. (2019) found a non-linear increase in psychosomatic symptoms from 1994 to 2014 in Nordic countries but found no change when taking into account disordered item thresholds. On the other hand, Cosma et al. (2020) and Cashman et al. (2023) report a significant (albeit small) increase in psychosomatic complaints in most of the studied (mainly European) countries between 2002 and 2018. Similar increasing trends are found for the period 1994-2006 in Switzerland (Dey et al. 2015). Mixed findings also exist regarding youth life satisfaction. While some studies have found a noticeable decrease in life satisfaction of youth (see Due et al. 2019 for Nordic countries; Marquez and Long 2021 globally; Twenge et al. 2018 for the United States; Bersia et al. 2022 for Italy), others report no change or mixed and inconsistent trends (Cavallo et al. 2015; Cosma et al. 2020; 2023).

Taken together, current studies on youth mental health time trends underscore three points. Firstly, there does seem to be a broad consensus regarding increased rates of internalizing symptoms in the past two decades and especially in the past

ten years, primarily among young girls. Secondly, the evidence on subjective well-being (as opposed to negative symptoms or clinical diagnoses) and suicide rates is less consistent and shows very mixed patterns across countries and different periods. And lastly, most researchers emphasize that cross-country comparative studies on youth mental health time trends are scarce (Boer et al. 2023; Bor et al. 2014) with the majority focused on the time trends in the United States and other English-speaking countries.

Research is even scarcer and more inconsistent regarding the potential social causes of the observed time trends. While it seems that, at least in part, societal change in Western societies has contributed to this worsening trend (van Vuuren et al. 2018), no consensus exists regarding the specific societal factors that might have played a major role in the rise of youth mental health problems. One of the main hypotheses regarding the cause of these increasing trends is the social media hypothesis, stemming from the observation that after 2010, the majority of young people started using smartphones and social media extensively. Numerous authors have noted that the only major societal change during the rise of mental health problems among young people was the onset of widespread smartphone use and social media usage (Lin et al. 2016; Primack et al. 2017; Twenge et al. 2020). If this hypothesis is true, a similar increasing trend of mental health problems should be observed worldwide, not just in the United States. In the words of the main proponent of this hypothesis, "If similar declines in well-being occurred around the world and not just in the United States, that would be stronger evidence that a worldwide trend such as smartphone adoption – rather than factors unique to just a few countries – were operating" (Twenge et al. 2021: 256). However, despite the expanding scope of research, the majority of studies on youth mental health still focus on the United States. While there is evidence of a substantial decline in youth mental health in the United States and other English-speaking countries, it is not yet clear to what extent this decline can be generalized to other high-income countries (De Looze et al. 2020). Several other explanations have been proposed, ranging from educational stressors (Cosma et al. 2020; Högberg 2021; West and Sweeting 2003), changing structure and dynamics of family life (Collishaw et al. 2007), changes in parent mental health (Schepman et al. 2011), social isolation and lack of exercise (Hidaka 2012), and a combination of various social factors (Boer et al. 2023; Sweeting et al. 2010).

However, before being able to determine which of these social factors contributed most to this rise and can explain cross-national differences in the time trends of mental health problems, it is necessary to provide a more rigorous answer to the fundamental question of how prevalent the increasing temporal trends of mental health problems among young people are in other countries that

have been understudied. Indeed, the latest studies on temporal trends of mental health "highlight the need for further investigation of cross-national differences in depression using multinational samples" (Beller et al. 2021: 1250). A systematic review of all studies on temporal trends is beyond the scope of this article. The aim of the paper is not to comprehensively answer the question of the extent to which these trends occur in all other countries but rather to examine the extent to which they occur in Slovenia as compared to the United States for which an increasing trend in mental health problems has been thoroughly established and reported. Therefore, I will limit my review to the main studies on temporal trends in the United States and Slovenia, comparing them and placing them in the broader context of temporal trends in some European countries by presenting average trends across these countries.

This paper aims to clarify the trends in youth mental health by comparing Slovenia and the United States and establish how these trends fit into the European average. Firstly, I present the trends in the United States, where the deterioration of mental health was most prominently observed first. In the second part, I examine mental health indicators for Slovenian youth, broadening our discussion beyond the United States. While the United States has extensive research, it does not allow us to determine whether these trends are global or specific to the country. Next, I compare the temporal trends between the two countries and European trends. This comparison primarily aims to ascertain if the epidemic of mental health issues among young people is unique to the United States or prevalent elsewhere, particularly in Slovenia. Additionally, it provides contextualization within the broader European research landscape. In other words, the main aim is to explore whether this trend is predominantly American or indicative of a broader decline in youth mental health. In this section, I discuss the main methodological limitations and challenges of such cross-country temporal comparisons. Finally, I conclude by outlining the implications of the main findings for researchers and mental health professionals and highlighting key research questions for further investigation of long-term trends in youth mental health.

2 Data sources

In this section data sources that have been used for the graphs presented in this paper are described.

Health Behaviour in School-Aged Children (HBSC). HBSC is a repeated cross--sectional survey that aims to gather cross-country, comparable data on the health of adolescents in middle to high-income countries. This survey has been conducted every four years since 1982 in collaboration with the World Health

Organisation. The target population is all adolescents in participating countries attending school, grouped into three age categories/grade levels (11–12, 13–14, and 15–16 years old). HBSC is conducted in 50 countries across Europe and North America and is collected via a two-stage cluster design, where school classes are the primary sampling unit. At each participating school, a classroom from grades 5, 7, and 9 is invited to take part with the recommended minimum number of participants of 1500 students per grade (Moor et al. 2020). HBSC has been used extensively in studies of mental health outcomes (Cosma et al. 2020; Högberg 2021; Sonmark and Modin 2017). The present paper utilizes survey data from 2001/2002 through to 2018 since the latest wave from 2022 is not yet publicly available. The data and a full description of the survey methods are publicly available at their website (Health Behaviour in School-Aged Children, 2017). Only data for countries with data for all years were used to accurately capture the time trends since many countries were only included in the survey in some of the years.[1] These countries are referred to as the European average.

European Health Interview Survey (EHIS). The National Institute of Public Health (NIJZ) conducted the survey in 2007, 2014, and 2019 on representative samples of residents in Slovenia, aged 15 and over, living in private households. Data were collected through online questionnaires and face-to-face interviews at the addresses of selected individuals with computer-assisted personal interviewing. The EHIS data collection includes sets of questions on health status, health determinants, and healthcare. Selected indicators are displayed by gender, age groups, level of education achieved, activity status, statistical regions, and some are also compared with the year 2007. A full description of the latest survey and the methodology employed is available at their website (Anketa o zdravju in zdravstvenem varstvu 2019). The survey data is publicly available at NIJZ Data portal (2024). Only the data from 2014 and 2019 were used in the present paper because no age breakdown for the 2007 wave could be obtained.

National statistics. The National Institute of Public Health (NIJZ) additionally regularly obtains data on the number and the rate of diagnoses, first visits, and hospitalizations for depressive and anxiety disorders. The data and a full description of the methodology are publicly available on their website.

The American College Health Association Survey. The ACHA-National College Health Assessment II (ACHA-NCHA II) is a national research survey

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1. Countries with data in all years of the HBSC study: Austria, Belgium (Flemish), Belgium (French), Canada, Croatia, Czech Republic, Denmark, England, Estonia, France, Germany, Greece, Greenland, Hungary, Iceland, Ireland, Israel, Italy, Latvia, Luxembourg, Macedonia, Netherlands, Norway, Poland, Portugal, Romania, Russia, Scotland Slovakia, Slovenia, Spain, Slovenia, Sweden, Switzerland, Ukraine, Wales.

organized by the American College Health Association (ACHA) and provides the largest known comprehensive data set on the health of college students. A revised survey, the ACHA-NCHA-II, has been in use since the fall 2008 data collection period to 2019, enabling a time trend analysis. Datasets before 2008 and after 2019 have been collected by different versions of the survey and are hence not directly comparable. Data for this paper, detailed descriptions of the methodology as well as the results for each year of the survey can be found at their website (American College Health Association 2023).

The National Survey on Drug Use and Health. Administered by the U.S. Substance Abuse and Mental Health Services Administration, the NSDUH is an annual survey of the U.S. population, including individuals 12 years of age and older, oversampling adolescents and young adults (Twenge et al. 2019). The NSDUH codebook includes full details on the sample section and survey administration procedures. The data used for this paper were retrieved from their website (NSDUH 2019). We included the data from 2006 to 2019 for easier direct comparison with other data sources, although the data for later years is publicly available.

Global Burden of Disease (GBD). The GBD study is the most comprehensive worldwide observational epidemiological study to date and is led by the Institute for Health Metrics and Evaluation (IHME) at the University of Washington, Seattle (USA). It produces regular estimates of all-cause mortality, deaths by cause, years of life lost due to premature mortality (YLLs), years lived with disability (YLDs), and disability-adjusted life years (DALYs) since 1990. For the present paper, we utilized publicly available data on the annual suicide rate for the age group 10-24 years (number of suicide cases per 100,000 persons of that age). Due to the consistent cross-country methodology, the data on suicide can be compared between countries and in time. A full description of methods employed to produce GBD estimates and the GBD data are publicly available on their website (GBD 2019).

All data is presented for the decade after the year 2007/2008 to compare time trends in the period when the greatest increases in mental problems were observed and when social media became widely used. However, slight deviations from this period occur because not all datasets are available for those exact years. The HBSC data is available at four-year intervals, so the initial year is 2006, but the Slovenian national statistics and American survey data are available from 2008. Some datasets cover only part of the 2008–2019 time frame due to lack of availability. Data for the European Health Interview Survey for Slovenian youth is only available for the years 2014 and 2019. Conversely, national statistics that enable grouping by age are publicly available only from

2008 to 2015. Additionally, some datasets span only to the year 2018/2019, so all data is presented only up to that year to enable direct comparison, even though later data is publicly available for some surveys.

As noted, the paper's aim is not to empirically assess the empirical robustness of the social media hypothesis but to provide further evidence on time trends in youth mental health in countries in which these trends are rarely assessed and compared in a cross-country manner. If it turned out that time trends between countries in this time frame diverged systematically and substantially, this would indicate the need for a further and more detailed examination of the social media hypothesis as well as other explanatory hypotheses as an avenue for future research.

3 Time trends in suicide-related outcomes

3.1 United States

In the past few decades, while suicide rates in most high-income countries have generally remained stable or even declined, they have significantly risen among young people in the United States in the entire age group of 10–24 years, as well as within each specific age subgroup of young people, namely 10–14 years, 15–19 years, and 20–24 years (Miron 2019). Specifically, after a long period of stabilization or decline from 1975 until 2007, suicide rates increased by nearly 13% among 10–14-year-olds and by 8% among 15–19-year-olds by the year 2016 (Ruch et al. 2019). Suicide rates have increased most notably from 2007 onwards for males and from 2010 onwards for females (Miron 2019), resulting in suicide rates for all mentioned age groups being substantially (roughly a third) higher at the end of the second decade of the 21st century than they were at the beginning of the century (Martinez-Ales 2020).

Not just suicide rates, during this time a significant increase occurred in other suicide-related outcomes, particularly among young women. Between 2007 and 2017, there was a notable increase in the proportion of adolescents who seriously considered suicide and in the proportion of adolescent girls with a suicide plan (Duffy et al. 2019). Additionally, the rate of hospitalizations due to suicide attempts and suicidal ideation in this period more than doubled among adolescents, with the largest increase observed among older girls (Plemmons 2018). However, it's important to note that the overall number of hospitalizations for psychiatric reasons and the number of suicides remain very low. Additionally, it is challenging to determine the extent to which this increase reflects an actual rise in mental health issues or an increased willingness among young people to seek help.

The trends are indeed concerning, but are they specific to young people only? The results are mixed. On one hand, the frequency of suicidal ideation and plans significantly and consistently increased only among those younger than 25, while there was little to no increase among older individuals (Twenge et al. 2019). Generation Z individuals reported suicidal ideation twice as often as millennials (8% compared to 4%), and almost three times as many Generation Z individuals compared to millennials (3% compared to 1%) reported having made a suicide plan at some point in their lives. On the other hand, the actual suicide rate between 2008 and 2017 also increased among older groups of young people (in their late 20s and early 30s) to a similar extent as among younger individuals. There were also no significant differences in the rate of suicide attempts between Generation Z and Millennials. The suicide rate significantly increased among men and women across **all** age groups (except those older than 75) between 1999 and 2018 (Martinez-Ales 2020). The rising trend in suicide rates is concerning, but not exclusively, and perhaps not primarily for young girls or young people in general. The only aspect that seems specific to Generation Z in the United States, based on currently available data, is their significantly higher inclination toward suicidal ideation.

3.2 Slovenia

Like in the US and most other Western countries, suicide is the second most common cause of death among young people aged 15 to 19 in Slovenia (Jeriček Klanšček et al. 2018). However, the similarity in suicide trends between the US and Slovenia ends there. Although suicide rates in Slovenia are notoriously high, in the last decade, specifically since 2010, which was the most critical year in the US, the suicide rate among young people in Slovenia has decreased, approaching the European average. The state of youth suicide has significantly improved in Slovenia since the late 1990s, with a specific decline among young girls aged 10 to 19 (Roškar et al. 2015) – precisely the population who experienced the highest rise in suicide rates throughout the 21st century in the USA. Additionally, deliberate self-harm frequency (the number of treated deliberate self-harm cases in hospitals) also decreased during this period among both children aged 6 to 14 (with a threefold reduction in the number of cases) and 15 to 19-year-olds (with a halving of the number of cases) (Jeriček Klanšček et al. 2018). Despite the improvement in this area in Slovenia, the frequency of suicidal behavior and ideation among young people remains high. In 2019, more than 15% of 15-year-olds reported serious and active suicidal thoughts, with more than every fifth girl experiencing such ideation and less than every tenth boy (Jeriček Klanšček et al. 2018). It is particularly concerning that this measure was obtained by

asking adolescents about active suicidal intent (with the question, "Have you seriously considered trying to take your own life in the past 12 months?") rather than passive fleeting thoughts. Thus, it seems that while, contrary to American trends, suicide trends in Slovenia are improving, Slovenian youth still struggle with high levels of suicidality (suicide rates, ideation, and intent).[2]

3.3 Europe

In line with Slovenian trends, while self-harm remains a significant contributor to years of life lost among young individuals in most European countries throughout the 21st century, a notable decrease of nearly 30% was observed over the past decades, indicating a positive trend that stands in stark contrast to the trend in the United States (Castelpietra et al. 2022). This decline is evident across all age groups within the 10-24 age range (10-14, 15-19, and 20-24 years) (Daly 2022). Regarding teenage suicide rates specifically, there has been a slight decline on average, with a significant portion of this decline occurring during the 2000s. In countries that have witnessed the most significant declines in suicide rates, this trend has primarily been attributed to a decrease in suicides among young males, while the suicide rates among young females remained stable or increased. However, it should be noted that the countries with the largest reductions in suicide rates tend to also have the highest initial rates, meaning that some of the countries might have simply had more room for improvement than others. For instance, Estonia experienced a significant decline after 2005 but remained the country with the second-highest suicide rate among this age group. In some countries with high initial suicide rates, suicide rates remained stable. Finland, with the third-highest suicide rate among OECD countries did not exhibit significant changes in their respective trends (OECD 2017). Moreover, the decrease was not observed in all countries; youth suicide rates have risen in Sweden and some other Scandinavian countries. To make matters more complicated, in many countries, the trends have been mixed. For example, in Poland, the suicide rate increased among younger adolescents (10–14 years) but decreased among older adolescents (15–19 years). Despite this within and between-country heterogeneity, Europe has, on average, witnessed a marked

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2. It should be noted, however, that the absolute number of adolescent suicide cases recorded in the mortality database between 2006 and 2015 was comparatively low; there were *77* cases of children and adolescents aged 12 to 19 who died by suicide during this entire period. Due to such low initial absolute values, the number of cases fluctuates significantly from year to year, making it difficult to provide a reliable trend estimation.

decline in youth suicide rates throughout the 21st century, which has been attributed to improved awareness, and social and professional support (Castelpietra et al. 2022).

On average, the suicide rates among young people in European countries have decreased over the past three decades, following similar trends as observed in Slovenia and contrast to the United States, as shown in Figure 1. Given the pronounced heterogeneity between countries, we cannot conclude that suicide rates have increased in all countries. However, we can infer that the situation in European countries differs from that in the equally diverse United States, where the average suicide rate has risen during the same period. Even though some European countries experienced an increase in youth suicide during this period, the observation that the average rate has stabilized in recent decades suggests that the suicide rate has not increased everywhere, not even in comparable high--income countries. If the hypothesis regarding the influence of social networks were valid, we would expect to observe a rising trend in the majority, if not all, of other countries where young people also began using social media extensively daily after 2008.

Figure 1: Number of suicides per 100,000 people between 2008 and 2019 for people aged 10-24.
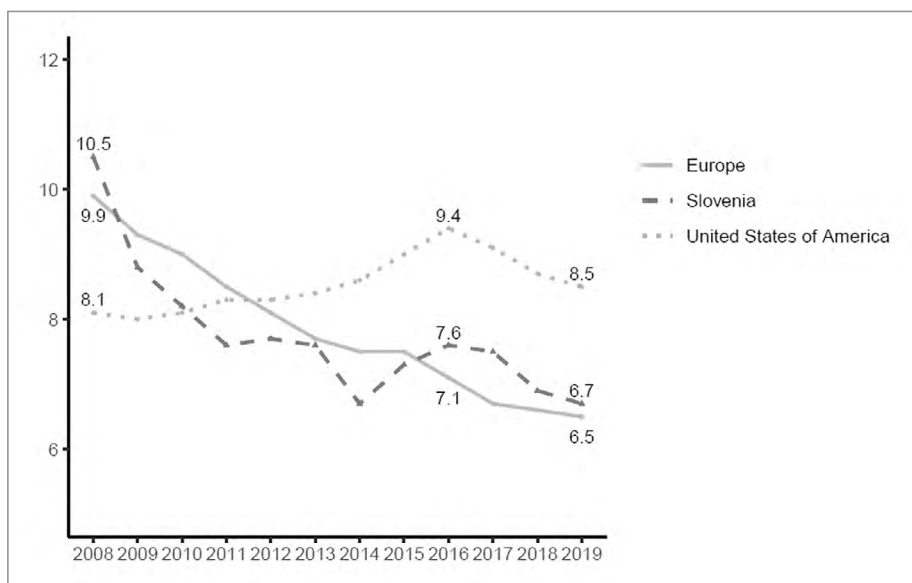
Data source: Global Burden of Disease Study (2019).

4 Time trends in psychological distress and help-seeking behaviors

From the evidence presented above, it seems a substantial increase in youth suicide rates in the past decade has mostly occurred in the United States, but not in European countries, including Slovenia. Suicide rates, however, are not the only or even the main indicator of a potential growing mental health crisis. In the next section trends regarding anxiety and depressive disorders as well as non-clinical symptoms of psychological distress are examined from a comparative perspective.

4.1 United States

In line with increasing suicide rates among American youth, an increasing number of studies have reported a rise in other mental health issues throughout the past decade, with the largest increases having occurred among adolescent girls (Pontes et al. 2020) and individuals under 25 years of age (Generation Z) (Keyes et al. 2019).

Although studies with different samples, measurement instruments, and focus on somewhat different constructs differ in precise estimates of the increase in disorders, there is a consensus regarding the general observation that the proportion of adolescent girls reporting depressive symptoms (not a clinical diagnosis of major depression) consistently decreased from the late 1990s until 2010 when it began to rise abruptly, peaking in 2018. Specifically, significant increases in depressive symptoms (measured using four consistently asked questions that do not measure clinical severity) among 12 or 13–17 or 18–year-old girls were found by Keyes et al. (2019), Plemmons (2018), Twenge (2018), and Kreski et al. (2022). A similar trend is observed among males of the same age group, but the increase in symptoms among them is noticeably smaller. Moreover, based on a nationally representative survey of adolescents aged 12–17 years, Daly (2022) observed an increase in the prevalence of major depression (the proportion of young people reporting at least one episode in the past year) among girls from just over 11% to more than 23% in the decade between 2009 and 2019. Although this study did not inquire about the actual diagnosis of depression, and the actual prevalence of clinically diagnosed depressive disorder is significantly lower, it is highly concerning that in 2019, nearly a quarter of adolescent girls reported experiencing major depression-like symptoms in the past year.

A similar trend can be observed among older adolescents and young adults (aged 18-25) in the decade between 2007 and 2017 (Duffy et al. 2019). Across

two large national datasets (the National College Health Assessment and the Healthy Minds Study), researchers found the proportion of this population who experienced moderate or severe depression rose from 23.2% in 2007 to 41.1% just ten years later, representing an increase of 77%. In other words, more than 40% of American undergraduate students reported having been so depressed in the previous academic year that it was difficult for them to function. In line with this, the proportion of those experiencing severe anxiety increased from 6.3% in 2013 to 11.7% in 2017, an 86% increase in four years. The increase in these symptoms was accompanied by an increase in those reporting suicidal ideation (from 6.4% in 2007 to 15.2% in 2017), having made a suicide plan (from 1.6% in 2007 to 6.6% in 2017), and in those who have attempted suicide (from 0.7% in 2007 to 1.8% in 2017). This increase in distress appears to be largely limited to individuals under the age of 25, with less pronounced effects among those aged 26 and older (the millennial generation), and most prominent among girls (Twenge et al. 2019).

The increase in mental health challenges among young people has also been reflected in a higher frequency of seeking help. Based on data from 196 college campuses obtained in the context of the Healthy Minds Study, (Lipson et al. 2019) observed an increase in the treatment rate for mental health issues from 19% in 2007 (the proportion of students seeking help for psychological difficulties at that time) to 34% a decade later. During the same period, the proportion of students with at least one psychiatric diagnosis in their lifetime increased from 22% to 36%. A similar trend of both increased help-seeking behaviour and rates of psychiatric diagnoses based on the data from the American National College Health Association is shown in Figure 2 which shows a substantial increase in the percentage of American undergraduate college students who reported either having been diagnosed with or have sought help for a depressive or anxiety disorder in the past year. Similarly, Figure 3 shows a doubling of those who reported having experienced at least one episode of major depressive disorder in the past year.

Figure 2: Percentage of 11-19-year-olds in the United States who were diagnosed with an anxiety or depressive disorder or were treated for it by a professional in the past 12 months between 2008 and 2019.
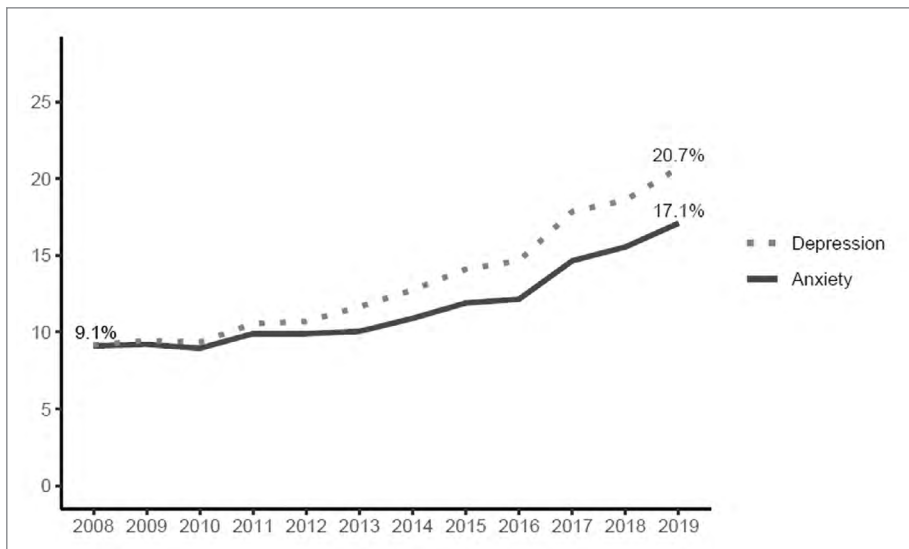
Data source: American College Health Association (ACHA).

Figure 3: Percentage of students in the United States reporting at least one episode of major depression in the past 12 months between 2008 and 2019.
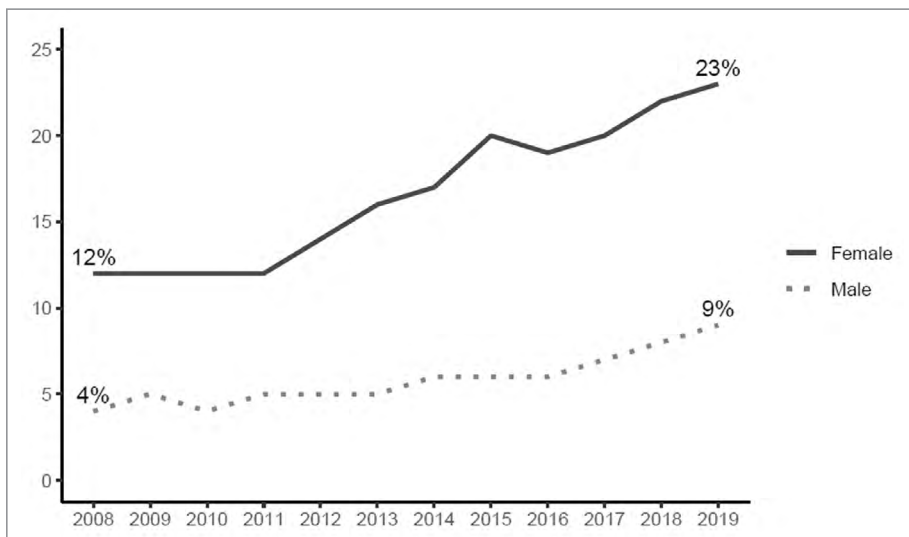
Data source: National Survey on Drug Use and Health (NSDUH).

Furthermore, it was not just self-reported symptoms that rose. There was a 25% increase in emergency department visits due to experiencing depressive symptoms, which was almost twice the increase in overall emergency department visits during that time (Ballou et al. 2019). What was happening with adults during this time? The prevalence of anxiety has indeed significantly increased between 2008 and 2018, from 5.12% to 6.68%. However, the greatest increase was observed among young adults (18-25 years) (Goodwin 2020). There was no significant increase in the prevalence of anxiety among adults over the age of 50 during this period, indicating young people seem to have been dispro- portionately affected by the increase.

It is important to emphasize that many of the emotional difficulties described are primarily measured with surveys asking people to self-report symptoms they have experienced in the past week, months, or the past year. Because these symp- toms are self-reported and do not necessarily meet the diagnostic criteria for a mental disorder, there is a possibility these reports reflect a greater willingness of youth today to report symptoms in comparison to previous generations of young people. However, since similar increases have occurred clinically-relevant levels of despair, such as the number and rate of psychiatric hospitalizations and dia- gnoses of depressive and anxiety disorders made by mental health professionals as well as suicide rates, at least part of the increase in mental health struggles seems to reflect actual changes in young people's mental health.

In summary, numerous studies have indicated a concerning increase in men- tal health issues among young people, particularly in terms of depressive and anxiety symptoms. The prevalence of these symptoms has risen steadily among girls and individuals under 25 years of age. The United States has conducted extensive research using consistent measurement instruments on representative samples, allowing for more reliable comparisons of emotional difficulties over time than is possible in most other countries. While exact estimates may vary slightly due to differences in study samples, measurement instruments, and constructs, there is a consensus that the proportion of adolescent girls reporting depressive symptoms had consistently decreased until around 2010 but has since shown a significant increase. Additionally, the prevalence of major depression and the severity of associated symptoms have risen, highlighting the need for attention and intervention in addressing the mental health challenges faced by young people, particularly girls, in the United States. Regardless of the possibility that part of this increase may be attributed to changing societal attitudes towards mental health or destigmatization (Lipson et al. 2019), leading to a greater tendency to report symptoms and changing diagnostic criteria, there is an increasing body of evidence, at least for the United States, indicating a noticeable and concerning

rise in emotional distress (clinically expressed symptoms of depression, anxiety, self-harm, suicide ideation, suicide plans, suicide attempts, and hospitalizations related to suicide outcomes). Considering that experiencing a depressive episode is a strong predictor of future episodes (Wang et al. 2013), it is highly likely that generation z will be more prone to experiencing mood disorders throughout their lives, even into adulthood (Twenge et al. 2019).
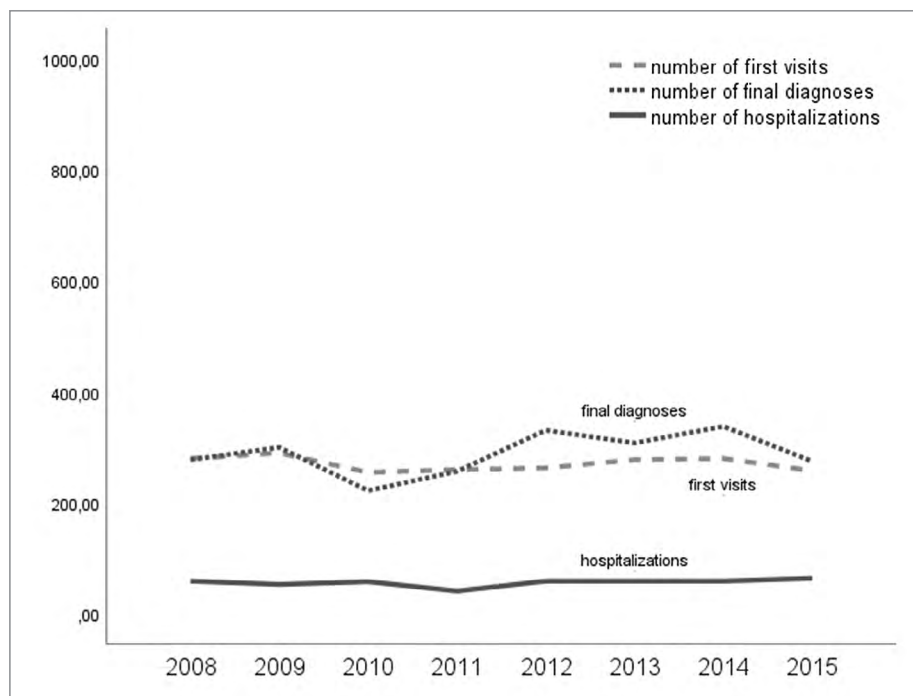
4.2 Slovenia

Regarding specific trends in mental health in Slovenia, it is first necessary to mention several methodological challenges that make it difficult to draw clear conclusions about time trends in mental health. The main problem in analyzing Slovenian trends is the lack of longitudinal studies that systematically measure changes in the mental health of young people using the same measurement instrument, resulting in only limited comparative data on the mental health of children and adolescents in the past decade (Jeriček Klanšček et al. 2018). Furthermore, the existing data often use very limited questionnaires. For example, the Health Behaviour in School-aged Children (HBSC) study does not measure depressive and anxiety disorders but only the presence of a few individual symptoms. The majority of available data on time trends are, instead, based on national statistics of hospital and outpatient treatments, first visits of medical professionals, and final diagnoses rather than obtained by questionnaires using self-reporting measures. This is problematic because the rate of treatment only indicates the proportion of people seeking help for their psychological distress, not the actual proportion of people experiencing distress (Jeriček Klanšček et al. 2018). The difference between these two data points is usually significant, as most people with mental health problems do not seek professional help and therefore are not included in national statistics. Furthermore, the data we have on hand are highly diverse, making it difficult to form a precise picture of the positive mental health of children and adolescents in Slovenia. Cross-sectional and longitudinal data, international survey results, and national statistics are often incomparable. Lastly, none of the population-based studies among adolescents address positive mental health using a standardized questionnaire to measure its presence. The available data are limited to life satisfaction from the HBSC study, which is only one indicator of positive mental health and is restricted to 11, 13, and 15-year-olds.

Based on the currently available limited data, the following conclusions can be drawn regarding the temporal trends of anxiety and depression in Slovenia (for a thorough overview of all mental health trends of Slovenian youth, see Jeriček Klanšček et al. 2018). For depression trends, data on the rate of healthcare treatments and diagnoses and the HBSC survey in Slovenia indicate stabilization

or even a decrease in the prevalence of severe forms of depressive disorders. The rate of outpatient and hospital treatments, the rate of final diagnoses of depressive disorders, and the rate of first visits for depression at both the primary and secondary levels of healthcare remained stable for adolescents between 2008 and 2015 (see Figure 4). Especially the number of hospitalizations for depression throughout this period remained very low (0.21 treatments per 1000 individuals), in stark contrast to substantial increases among American youth. This seems to be contrasted by the observation that the rate of prescribed antidepressants increased by almost 50% in the same period when the frequency of disorders treated with antidepressants did not change significantly. This need not be considered a paradox, though. Potential reasons for the rise of medication use are increased demand for faster treatment methods, time constraints on healthcare providers, limited availability of non-pharmacological treatment options, and greater acceptance of medication use and improved recognition of mental disorders (Harrison et al. 2012).

Figure 4: Number of first visits, diagnoses, and hospitalizations for a depressive disorder among Slovenian 6-19-year-olds between 2008 and 2015.

Source: National Institute of Health Database (in Jeriček Klanšček et al. 2018).

In contrast, and in line with American trends, a noticeable increase was observed in anxiety disorders among Slovenian youth. From 2008 to 2015, the number or rate of outpatient treatments for anxiety disorders increased both at the primary (primary healthcare) and secondary (specialist and hospital treatment) levels of healthcare. The largest increase was observed among 15–19-year-old girls, particularly on the secondary level between 2011 and 2014. The rate of outpatient treatments with a final diagnosis of anxiety disorders nearly quadrupled in just a few years (see Figure 5). Additionally, there was an increase in hospitalizations, primarily due to a mild increase in anxiety-related treatments among girls after 2012, while the rate of hospitalizations for anxiety disorders among boys remained mostly stable during this period. Specifically, the overall rate of hospitalizations for anxiety disorders among 6–19-year-olds increased slightly from 2008 to 2011, then decreased in 2012, and notably increased until 2015, predominantly due to the increase among girls.

Figure 5: Number of first visits, diagnoses, and hospitalizations for an anxiety disorder among Slovenian 6-19-year-olds between 2008 and 2015.
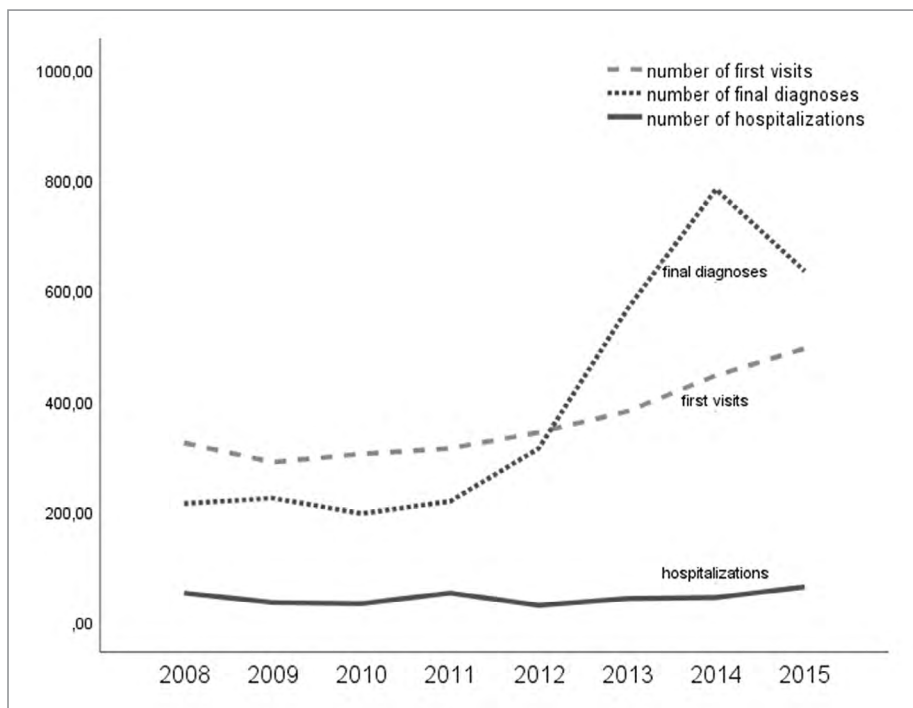

Source: National Institute of Health Database (in Jeriček Klanšček et al. 2018).

However, it should be noted that the available data on hospitalizations and prescribed medications provide insight into the prevalence of the most severe forms of depression and anxiety requiring medical intervention, but they do not capture a significant portion of young people experiencing mental distress who do not seek or receive healthcare assistance. Therefore, survey data complement the information from databases by providing self-assessments of depression and anxiety among individuals in representative population samples. The HBSC survey among school-aged children has been particularly useful as it allows for the analysis of trends over time. The results of this survey can be interpreted as cautiously encouraging as they indicate a decrease in the proportion of young people reporting subjective feelings of depression between 2010 and 2014. In 2010, 29% of adolescents reported such feelings, which decreased to a still concerning 22.8% in 2014 (Jeriček Klanšček et al. 2018). Within just four years – particularly during the years that proved most critical in the United States – the reporting rate of depressive symptoms statistically significantly decreased by almost 8% for female adolescents and over 5% for male adolescents. However, the key limitation of this measure is that it consists of only one question that requires a dichotomous answer (yes or no). For a more accurate insight into temporal changes in self-reported depressive symptoms among young people, additional research with more appropriate measurement instruments would be needed.

So far, we have examined the national statistics on the number of hospitalizations, first visits, and psychiatric diagnoses as well as symptoms of mental ill-health as measured by the HBSC study. The Slovenian National Institute for Public Health (NIJZ) has conducted one other study based on self-reported measures in the years 2014 and 2019. As depicted in Figure 6, the percentage of 15-24-year-olds who reported having experienced depression, anxiety or other mental health problems increased in the short period between 2014 and 2019. The survey did not measure clinical levels of distress and the respondents were not asked whether they had been diagnosed with a disorder or sought help for it. They were merely asked whether they feel they have experienced depression, anxiety or other mental health problems which typically results in much higher prevalence levels than data obtained by standardized clinical measures would. Moreover, single-item measures are often less valid than multi-item assessments (Carey et al. 2014). However, the fact that even self-reported depression and especially anxiety increased in only a few years (with anxiety almost doubling from 11.9% to 23.1% for girls and from 4.7% to 8.3% for boys) is concerning and indicative of a substantial change in the experience of young people in Slovenia. Notably, self-reported depression in this age group changed less between 2014 and 2019. An increase occurred among girls (from 9.5% to 11.9%) and a small decline among boys (from 6.9% to 6.2%).

Figure 6: Percentage of Slovenian 15-24-year-olds who reported having experienced depression, anxiety or other mental health problems in the years 2014 and 2019.
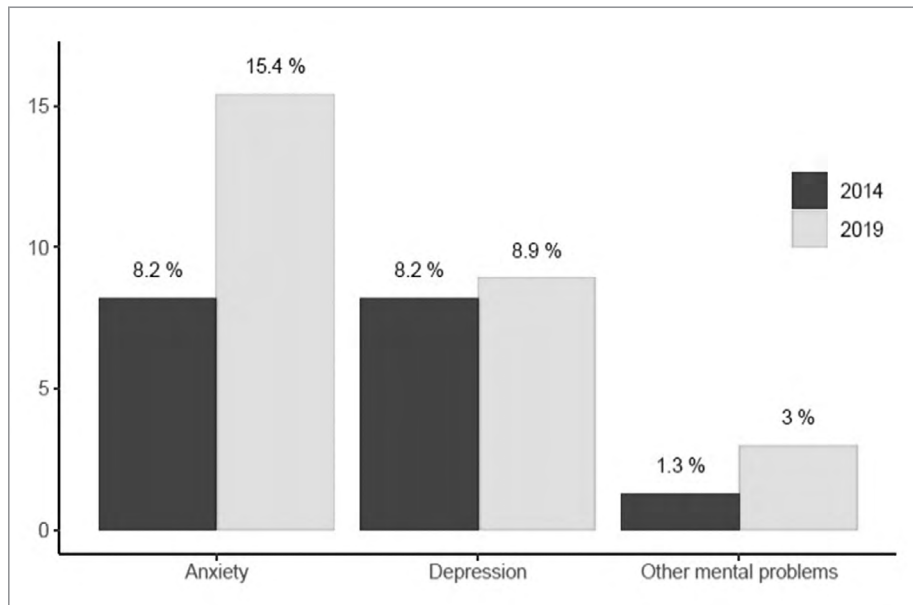
Source: European Health Interview Survey (EHIS).

Overall, while the prevalence of severe major depression that would require psychiatric care appears to have stabilized or decreased among Slovenian youth in the limited period examined, there has been a noticeable increase in both the self-reported subjective experience of anxiety (between 2014 and 2019) as well as of diagnosable anxiety disorders (between 2008 and 2015), particularly among girls, as well as milder symptoms such as low mood and nervousness (between 2006 and 2018). These findings highlight the importance of further research and intervention strategies to address mental health issues in young people, including better access to non-pharmacological treatments and a comprehensive understanding of the factors contributing to the observed trends. Moreover, the reasons for the increase in the number of recorded diagnoses, especially at the secondary level, should be further investigated since currently, no expert consensus on the causes of mental health deterioration exists (Levitz 2023). Potential reasons range from an actual increase in mental health issues, reduced stigma and increased public awareness of mental health problems, better societal recognition of these issues, early intervention, and diagnosis, organizational and staffing changes in healthcare providers, changes in the

quality of mandatory recording and reporting of data to the National Institute of Public Health by healthcare providers (Jeriček Klanšček et al. 2018). Certain social events, including the growing socioeconomic disparities on one hand and high expectations placed on individuals and the abundance of opportunities on the other hand, simultaneously encourage and/or frustrate children, adolescents, and their parents, as well as influence behavioral styles, patterns, and parenting practices, also contribute to the increased prevalence of certain disorders (Bor et al. 2014; Boer et al. 2023).

4.3 Europe

As with suicide rates, European countries differ significantly in the time trends of mental health issues, and the available directly comparable longitudinal data on nationally representative samples are scarce. One of the latest such studies that do exist shows that, on average, the prevalence of depressive symptoms, measured with a standardized questionnaire, decreased in most European countries between 2006 and 2014, unlike the trends in the United States (Beller et al. 2021). Depressive symptoms significantly decreased in both men and women and across all age groups, with the decline being most prominent among adults and least noticeable among young people. Despite the authors' emphasis on the differential trends between adults and younger generations, this finding also means that in most European countries during the decade that was most critical for youth in the United States, the prevalence of depression among young people at least did not *increase.* The largest decrease in the prevalence of depressive symptoms overall was observed in Hungary, Poland, and Slovenia, while the prevalence decreased the least and partially increased among younger adults in Spain, Norway, and Denmark. Except for these three latter countries, depressive symptoms decreased among both middle-aged adults and young adults (aged 14–24). While the decrease in symptoms among young people was not significant or consistent enough for the authors to generalize the improvement to all European countries, this finding contradicts most other studies reporting a significant increase in mental distress among young people in the United States. On the other hand, several studies indicate a deterioration in less severe forms of emotional well-being in European youth. Closely matching Slovenian trends, the proportion of European youth who report feeling low or nervous about every day has increased between 2002 and 2018 (see Figures 7 and 8). They, too, increasingly report feeling very pressured by schoolwork. An overview of trends in specific European countries additionally reflects these changes. Emotional problems increased in girls in England between 2009 and 2014 (Fink et al. 2015) and in Italian 15-year-old girls (Bersia et al. 2022). The proportion

of Irish adolescents reporting severe anxiety doubled from 11% in 2012 to 22% in 2019 (Dooley et al. 2019). Adolescents and young adults in France exhibited persistent negative and worsening trends in health-related quality of life and an increase in symptoms suggestive of a depressive state; the proportion of young people presenting this type of syndrome doubled between 2014 and 2019, and again between 2019 and 2020 (Clause-Verdreau et al. 2019). The prevalence of depression increased in Germany between 2009 and 2017 (Steffen et al. 2020). There was a major increase in psychiatric hospitalizations of children and adolescents for depression in Italy between 2007 and 2017, particularly among female adolescents (Amianto et al. 2022). Emotional symptoms and internalizing problems increased in Russian adolescent girls between 2002 and 2021 (Slobod-skaya et al. 2023) as well as in Dutch adolescents between 2004 and 2013 (van Vuuren et al. 2018). The prevalence of anxiety and depression substantially increased between 2008 and 2013 for Belgian girls (Van Droogenbroeck et al. 2018). It seems, then, that while European youth might not be suffering an increa-sed risk of suicidality and severe mental disorders, they do seem to be becoming increasingly anxious, nervous, low-spirited, and pressured by school.

Figure 7: Percentage of 11, 13, and 15-year-olds reporting feeling low about every day between 2006 and 2018.
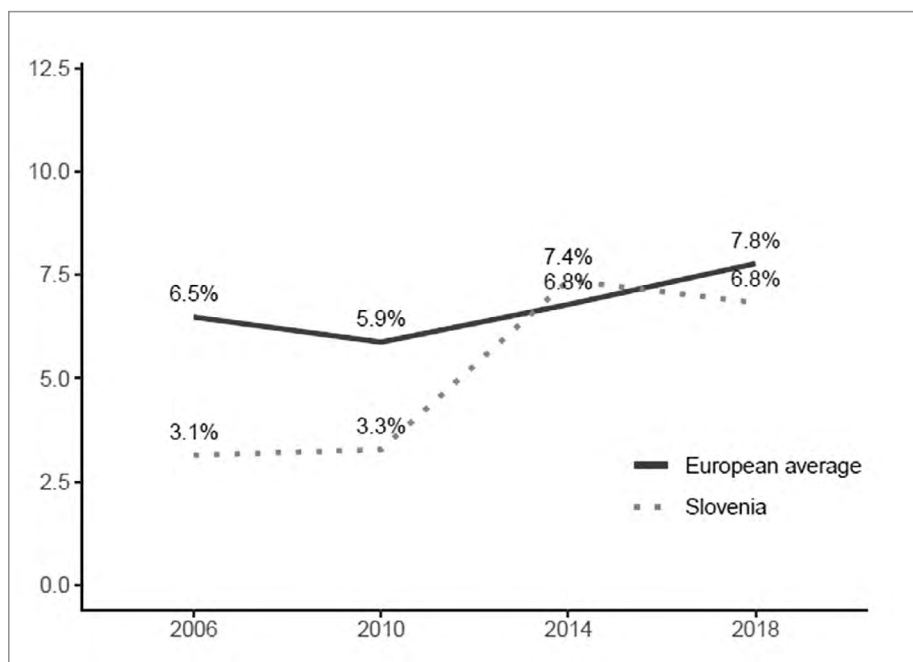
Data source: Health Behaviour in School-aged Children Study.

Figure 8: Percentage of 11, 13, and 15-year-olds reported feeling nervous about every day between 2006 and 2018.
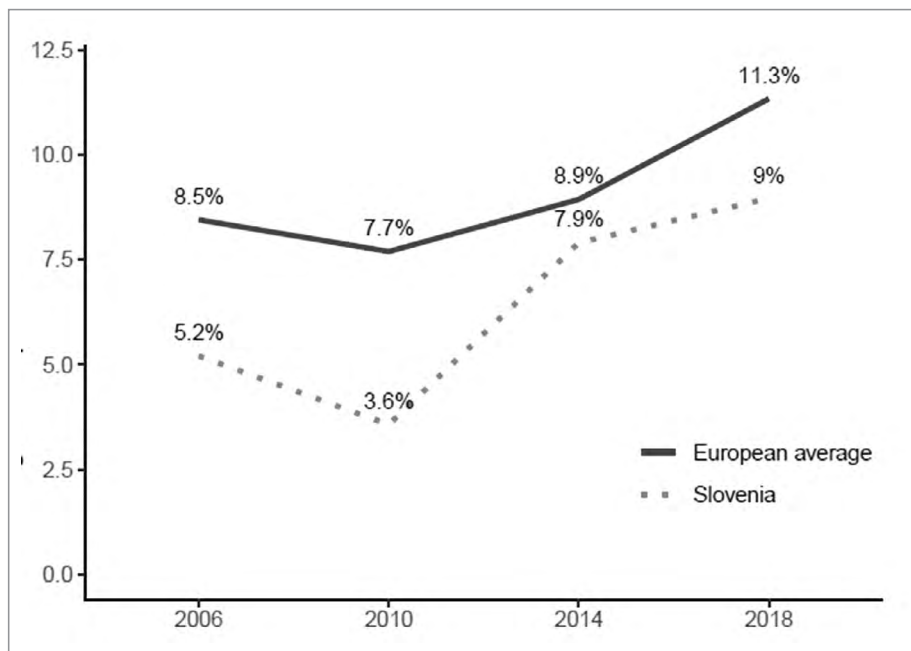
Data source: Health Behaviour in School-aged Children Study.

5 Conclusion

The introductory question posed in this paper was: What has been happening with the time trends of mental health issues among young people over the last two decades? Specifically, it sought to answer whether the trend of increasing emotional distress among American youth is primarily limited to the United States, representing a unique exception requiring an American explanation, or whether it is more globally widespread, with a focus on its presence in Slovenia. A direct comparison of time trends in youth mental health between the United States, Slovenia, and other European countries has appeared to be very challenging and, for certain outcomes, impossible. However, based on available data, we can conclude at least that the increase in suicide rates and severe depression is most noticeable among young people in the United States, but not in Europe and Slovenia. In Slovenia, the greatest increases occurred in both self-reported anxiety as well as diagnoses of anxiety disorders and to a lesser extent depression. In the United States, the prevalence of both severe depression and anxiety seems to have increased. In Europe, obtaining directly comparable data is difficult,

but data from the HBSC study indicate a similar increase in symptoms of mental ill-health. It should be noted that Slovenia is among the European countries with the most encouraging long-term trends concerning youth suicide, which has generally declined in the studied period.

Several concluding remarks follow from the discussion of these trends. On the one hand, the data indicate that the trend of deterioration in mental health is indeed present in other countries beyond the United States. European countries have observed increases in mental ill-health and Slovenian youth are reporting being much more anxious and are also diagnosed with anxiety much more than in the previous years. These trends could be explained by either the social media hypothesis (Twenge et al. 2020), the educational stressors hypothesis (Boer et al. 2023; Sweeting et al. 2010), increased parental expectations (Curran and Hill 2022; Doepke and Zilibotti 2019), changes in the styles of reporting symptoms (Twenge et al. 2010), or any other of the proposed hypotheses that have been put forward in recent years. Considering the apparent rise in various indicators of mental health issues across multiple countries, more comprehensive and systematic research into the *general* underlying causes of this trend will be imperative in the coming years.

On the other hand, the contrasting suicide patterns among American and European (particularly Slovenian) youth underscore the necessity for a much deeper understanding of the unique factors contributing to these *specific* trends in the United States. To the best of our knowledge, no recent study on time trends in youth mental health has identified, let alone empirically examined, the potential social factors and determinants that might explain the differential trends observed across various countries over the last decade. This divergence might partly be attributed to the historically high suicide rates among Slovenian youth at the beginning of the century, with recent declines possibly reflecting successful efforts in mental health prevention, treatment, and awareness in Slovenia (Roškar et al. 2015). However, this does not make the increase in the American suicide rate any more understandable. This raises the question of whether one broad social determinant, as suggested by the social media hypothesis, is a sufficient or even the primary explanation for the observed trends, or whether we should be paying more attention to country-specific causes. Thus, alongside understanding the causes of the overall decline in mental health, it will be crucial to investigate specific factors contributing to different country-level trajectories in youth mental health.

5.1 Limitations and future research

This paper has several limitations that should be addressed in future research on youth mental health trends. Firstly, while the data used in the present paper complement each other, they might not be directly comparable. To determine whether the mental distress experienced by youth has undergone comparable or divergent changes over time in the United States, Slovenia, and Europe, it would be necessary to compare data obtained using the same measurement instruments, at the same time points, and for the same age groups. Such a comparison is highly challenging because publicly available data are not always directly comparable. For instance, data on symptoms of mental health issues are accessible for Slovenia and numerous other European countries through the international HBSC study, yet they are not available for the United States, which was included in the study only until 2010. Similarly, for the United States, data are available on the proportion of youth seeking help for or diagnosed with anxiety or depressive disorders in the past year, while for Slovenia, data are available on the number of diagnoses, initial visits, and hospitalizations based on national statistics published by the National Institute of Public Health, along with self-assessment data on depression and anxiety. It is therefore important to emphasize that the presented data are not entirely or at least directly comparable because they are obtained using somewhat different measurement instruments and methodologies. On the other hand, such triangulation of data is desirable (and often the only feasible option in the absence of directly comparable data) as it provides insight into time trends of slightly different indicators that measure similar constructs in various ways (Holbrook et al. 2017; Twenge 2015). If data obtained through different methods indicate similar trends, which seems to be the case for the areas mentioned above, it generally strengthens the evidence that trends are unfolding in one direction. However, if vastly different results were obtained through different methodologies, it would be necessary to first examine methodological causes. The present article attempted to compare data that would be as comparable as possible, although this is not always feasible. Therefore, we rely on currently available data that appear to be the most robust in terms of methodological comparability, public accessibility, temporal coverage, and thematic similarity.

Second, the paper's scope was limited to the comparison of time trends in youth mental health in the United States and Europe, with a focus on Slovenian time trends, thereby excluding time trends of all other countries from the comparison. Hence, further empirical comparative analysis of time trends in positive and negative mental health among young people globally is needed, at least in OECD countries that utilize directly comparable measurements. It is crucial

to accurately assess the extent to which cross-national time trends differ and systematically analyze the potential causes of these differences (Martinez-Ales 2020). Challenges in measuring the mentioned constructs and, especially, comparing results over time and across countries remain significant and need to be considered in all comparative analyses of data obtained from different countries, at different time points, on different age cohorts, or using different measurement instruments (Boer et al. 2023).

Third, the present comparison does not address the problem of the potential effect of youth's increased tendency to identify, report, and seek help for their struggles with the rise in mental health issues. As researchers have pointed out, "Even when representative population samples are compared using identical symptom screens it is necessary to consider whether observed trends represent real changes in mental health or instead a shift in how symptoms are perceived and reported by informants" (Collishaw 2015: 13). Over time and across different generations, shifts in thresholds for rating symptoms and behaviors as problematic could have occurred, with young people potentially becoming more open about reporting problems or even more sensitive to experiencing them. Some studies have addressed this issue quantitatively and found increases in mental health problems to be significant even after controlling for the effect of reporting style, known as response bias (Twenge et al. 2010). Based on this and other evidence, it appears that at least part of the increase in mental problems is real (Bor et al. 2014; Collishaw 2015), but it remains unclear to what extent what part precisely. Hence, it is imperative that future research follows this example by systematically and empirically addressing this methodological problem. Only by doing so will we be able to fully understand and account for the potential effects of reporting styles on youth mental health time trends.

Furthermore, while we have noted that increasing suicide rates in the United States are by no means limited to the youngest age group, future studies should compare trends in youth mental health of young people with the trends in the general population or adults across the globe before we can conclusively determine whether the trends are specific to the young.

Furthermore, while we have noted that increasing suicide rates in the United States are by no means limited to the youngest age group, future studies should compare trends in youth mental health with those in the general population or adults worldwide before concluding whether these trends are specific to young people. Only after determining whether a global mental health crisis exists or if it is localized to certain countries or regions, can we begin researching the potential societal factors contributing to it. Research is needed to investigate the causes of the increasing trends and cross-country differences in secular trends in both negative

mental health (prevalence of mental disorders) and positive mental well-being. Currently, it is unclear whether the rise in mental health problems, particularly among adolescent girls, is primarily due to increasing academic pressures, the proliferation of social media usage, increased sensitivity to experience, and greater readiness to report problems, or something else entirely. It is crucial to explore potential factors unique to the United States that may contribute to the most pronounced, consistent, and widespread time trends in the United States.

In this context, the importance of investigating long-term trends in a wide range of indicators of young people's psychological well-being cannot be overstated. This should encompass not only clinical indicators of psychopathology, such as the prevalence of mental disorders and suicide rates, but also a broad range of indicators related to non-clinical emotional difficulties, including general psycho-logical distress, overwhelm, stress, sadness, poor self-esteem, and loneliness. Additionally, it should involve examining the presence of positive mental health, such as life satisfaction, happiness, experience of positive emotions, and other dimensions of subjective well-being, measured systematically with reliable and valid measurement instruments. While focusing primarily on the trends in the clinically expressed problems allows for greater data comparability between countries and over time, it may potentially hinder a more comprehensive un-derstanding of young people's mental state.

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