



Social Gradients in Subjective Well-Being during the COVID-19 Pandemic in Sweden

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Abstract

The COVID-19 pandemic prompted governments around the globe to employ various measures, such as social distancing and quarantine, to prevent its spread. The pandemic contributed to drastic changes in everyday life, through economic shocks, fear of the virus, morbidity, and mortality. It was quickly suspected that stress, fear, and loneliness resulting from these factors, would have a negative impact on mental health. While previous research suggests an increase of clinical mental morbidity in Sweden during the pandemic, its impact on subjective well-being remains unexplored. The aim of this study is to broaden the understanding of public health during the pandemic by considering a self-reported measure of well-being. Using data from the latest Swedish Generations and Gender Survey (2021), this study sets out to answer two research questions. First, how are demographic characteristics associated with worsened subjective well-being? Secondly, given that foreign-born individuals were disproportionately affected by a range of COVID-19 related negative outcomes, this thesis asks whether foreign-born individuals were particularly affected by worsened subjective well-being. The questions are analysed through descriptive statistics and stepwise modeling using Linear Probability Models. Findings suggest that younger age and being female is associated with negative changes in subjective well-being, net of resources in terms of education, income and activity status, and family status. Foreign-born individuals were indeed particularly affected by worsened subjective well-being. This was partly mediated through their higher propensity of unemployment and on average lower income. By using a nationally representative sample and timely data, this thesis contributes to the understanding of COVID-19 related effects in Sweden. Furthermore, it sheds lights on the experiences of foreign-born individuals, a previously understudied group within the well-being literature.

Keywords: Subjective well-being, SWB, COVID-19, pandemic, Sweden, social gradients, foreign-born, health inequalities, resources

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1 Introduction

In March 2020, the World Health Organisation declared the infectious disease COVID-19 a pandemic (Adhanom, 2020). At the time, it was uncertain how long the pandemic would last and how to best tackle it. Governments around the globe introduced various measures, such as social distancing, travel restrictions, and quarantine, to hinder its spread and protect their populations from infection (Heymann and Shindo, 2020). Throughout the pandemic, the stringency and type of these measures varied both over time and between countries. Some countries went in and out of lockdowns and enforced mandatory wearing of face masks, while Sweden adopted a contrasting approach, remaining relatively open and relying on individuals to comply with voluntary restrictions (Hale et al., 2021). Thus, in addition to the fear of contracting the virus and worrying about one's relatives health due to COVID-19, people experienced drastic changes to everyday life. Social interaction was severely restricted as working from home became the norm (for those who could) and restaurants, shops, social and cultural meeting places were closed. The global uncertainty caused economic shocks that resulted in lost work hours, job loss and financial difficulties (Campa et al., 2021; OECD, 2021). Some sectors, such as restaurant and entertainment, were particularly affected, while other sectors, notably health care and elderly care, experienced increased risks and workloads.

In Spring 2020, researchers called for attention to the impact of the pandemic on other domains of well-being apart from somatic health (Holmes et al., 2020; Torales et al., 2020). Studies suggested that social distancing and isolation contributed to various forms of psychological distress ranging from fear and anxiety to disabling loneliness (for review see: Serafini et al., 2020). While the association was further investigated as the pandemic continued, with the main focus on clinical mental morbidity such as levels of anxiety and depression symptoms (Mazza et al., 2020; Pieh et al., 2020; Solomou and Constantinidou, 2020; Unnarsdóttir et al., 2021), research on subjective well-being remains underexplored.

Subjective well-being is closely related to clinical mental morbidity but is a broader concept, referring to the individual's own assessment of their life (Gargiulo and Stokes, 2009). Studying subjective well-being allows us to uncover potential inequalities in life-quality not captured by clinical measures alone. By examining individuals' perceptions of their own satisfaction during COVID-19, which may substantially differ from objective indicators of depressive or anxiety symptoms, we can gain a broader understanding of the impact of the pandemic on public health in the general adult population. This is important because subjective well-being is associated with outcomes such as social relationships and economic decision-making (Neve et al., 2013). Subjective well-being is linked to challenges and resources that individual's face and react differently to, and the relationship between the two (Dodge et al., 2012). The level of resources and amount of challenges are often related to attributes such as socio-economic status (SES) (Andersson et al., 2018; Li et al., 2008) or gender (Van Oorschot et al., 2006). Therefore, certain groups may be particularly vulnerable to challenges because they lack sufficient resources to cope with them, negatively affecting subjective well-being, and potentially structurally unevenly distributed in the population.

Sweden is a unique case as the country was highly affected by the COVID-19 virus, yet maintained minor restrictions (Hale et al., 2021; SOU, 2022). Within this context, it is

important to explore the nuanced effects of the pandemic, particularly considering that certain groups faced elevated risk of COVID-19-related morbidity and mortality. Besides men and the elderly, these groups largely coincided with groups that generally have fewer resources such as those with low socio-economic status and foreign-born individuals (Drefahl et al., 2020). These groups also experienced other pandemic-related negative outcomes in terms of health and economic hardship to a higher extent compared to others (Altmejd et al., 2023; Campa et al., 2021). In this thesis, I examine whether this pattern is also found for subjective well-being.

I utilize a nationally representative sample from the latest Swedish Generations and Gender Survey (GGS 2021) to investigate the association between perceived changes in subjective well-being and demographic characteristics during the pandemic, and examine whether foreign-born individuals are particularly prone to experience worsened subjective well-being. The data were collected towards the end of the pandemic, between March and August 2021. This timing means that society was beginning to reopen, while consequences, such as illness and job losses, had affected the population and some uncertainty about the future remained. To answer the research questions I perform a set of regression models and introduce covariates in a step-wise fashion. I use Linear Probability Models to be able to compare coefficients across models. This study contributes to the overall understanding of the pandemic-context in Sweden. Since a large representative dataset is used, this study further contributes by analysing previously understudied groups such as foreign-born individuals, and can, albeit cautiously, make inferences about the population at large.

2 Background

2.1 A Theoretical Framework for Subjective Well-Being

The term subjective well-being is sometimes used interchangeably with happiness or life-satisfaction, which is a multifaceted concept that scholars have struggled with defining (Cummins, 1995; Diener, 1994; Forgeard et al., 2011; Gasper, 2010; Ryff and Keyes, 1995). In this thesis I draw on the definition proposed by Dodge et al. (2012) who suggest that well-being is the “balance point between an individual’s resource pool and the challenges faced” (Dodge et al., 2012, p. 230). According to this definition, well-being is determined by whether the individual have the sufficient psychological, social and physical resources to manage a particular challenge. Thus, if the challenge is larger or more than the resources, the balance point shifts and well-being decreases. The opposite also holds, if an individual is faced by no or too few challenges it may also affect subjective well-being negatively. There is both a physical and mental component of subjective well-being, and according to Dodges et al.’s definition they follow the same logic of balancing between resources and challenges. In this thesis I will focus on the mental component of subjective well-being while still being aware that physical well-being affects the mental domain.

Dodge et al. (Dodge et al., 2012) propose their definition by tying together what they call theoretical descriptions of well-being. One such influential theory in the subjective well-being literature is the set-point theory (Cummins, 1995). The basic idea is that individuals have a biologically determined level of subjective well-being, a baseline level, and that they return to this level over time (Cummins, 2010). Findings support that individuals return to their baseline level even after experiencing disruptive events such as divorce etc., although it may take several years (Diener and Ryan, 2009; Hansson et al., 2008). However, the set-point theory fails to explain why not everyone that experiences a disruptive event invariably returns to their baseline level (Headey, 2010; Lucas, 2007). Individuals react differently to challenges, and apart from biological explanations, social and psychological mechanisms are also at play. Research suggest that biological predispositions account for 30-40 percent of variance in subjective well-being, while environmental effects account for the remaining 60-70 percent (Røysamb and Nes, 2018).

One approach for understanding the pendular motion between challenges and resources, which provides a mechanistic explanation for changes in subjective well-being, is the relative standards framework. This framework consists of theories that explain subjective well-being as the result of comparisons between the individual's actual situation and some standard (Diener et al., 2018). The standard of comparison, such as one's past, goals, ideals, or for example set by others, can for instance explain why individuals with the same income have varying levels of subjective well-being. According to the social comparison theory subjective well-being increases when individuals feel better off compared to others (Diener and Ryan, 2009). A famous example is the Easterlin paradox, suggesting that the level of income that satisfy people depends on the level of income in society (Easterlin, 1974). This has been further confirmed by more recent research (Liu et al., 2021; Tibesigwa et al., 2016). However, being wealthier compared to one's past self is also a strong predictor of subjective well-being, suggesting that internal comparisons matter too (Tibesigwa et al., 2016).

Two further aspects of the relative standards framework consider goals and desires as standards of comparison. The resource theory (Diener and Fujita, 1995) maintains that the level of subjective well-being is determined by the possibility to fulfill personal desires and needs, and that this is dependent on sufficient access to material cognitive, spiritual, and/or relational resources. The satisfaction of goals theory (Judge et al., 2005) suggests that subjective well-being increases when individuals' desires and goals are actually satisfied. The idea is that positive emotions arise when individuals' preferences such as social relationships, family life and work-life ambitions match the realities of an individual's life. When a person experiences a mismatch between their life and their perception of how life should be, negative emotions increase and subjective well-being decreases. The resource theory focuses on the process while the satisfaction of goals theory relates subjective well-being to the event of achieving a desired outcome. These relative standard theories are not in disagreement with each other, but merely reflect different parts of the complex interaction between an individual's goals and desires and her social environment. In sum, subjective well-being is multifaceted and linked to the balance between personal resources and challenges, with relative standards and comparisons playing a crucial role in understanding its dynamics.

2.2 Differences in Resources and Challenges

Having discussed the mechanisms behind the interaction between resources and challenges, I will now delve into the way in which both resources and challenges may differ between societal groups. First, challenges may be different depending on where the individual is situated within her life-course. The challenges associated with well-being for a young adult may include finding a partner and a stable job. Whereas in middle-age a challenge may be constituted by balancing work and family-life. Second, the same challenge may have different consequences depending on the resources of the individual. Resources in this context is a multifaceted concept that includes both psychological, social, and physical resources (Dodge et al., 2012). Examples of these are personality (psychological), education (social) and somatic health (physical). From the social stratification literature we know that both physical and social resources are unevenly distributed in a systematic way (Andersson et al., 2018; Lutfey and Freese, 2014).

The life-course perspective can help us understand why the pandemic may have posed different challenges for individuals by turning focus to the interplay between social structure and human action (Settersten et al., 2021). The individual life-course consists of several interlinked trajectories, such as educational, family, and health trajectories (Hutchison, 2005). These trajectories are constructed within a social and historical context, and are usually tied to a normative time frame (George, 1993). Norm schemes inform an individual about the suitable order and timing of various events. Therefore one can think of personal desires and needs as constructed within these schemes. The same event may be a turning point for some individuals but not for others, and this depends on the value the individual attach to it, the timing within the life course and the prevailing norms (Hutchison, 2005).

Moreover, individuals are situated within networks of relationships and people's lives are interdependent and interconnected. Linked lives can both support, shape and control individual's behavior (Elder et al., 2003). That lives are linked further means that an individual's life trajectory, and accompanying events, usually have ripple effects for others (Burton-Jeangros et al., 2015). Lives are also linked in institutionalized systems of power and privilege and norms can vary within the same society across gender, ethnicity or social class (Hutchison, 2005).

The resources affecting subjective well-being are also unevenly distributed among social groups. When it comes to psychological resources, we see that personality is related both to gender (Vecchione et al., 2012) as well as educational attainment (Eijck and Graaf, 2004). The link between personality and subjective well-being has been explicitly demonstrated in a meta-analysis by Anglim et al. (2020). Social resources such as social capital, both as ties to formal organization as well as informal friendship ties, are associated with class, where those from socioeconomically advantageous background have a greater access to social capital (Andersson et al., 2018; Li et al., 2008). There are also gendered patterns of social capital, where women tend to have more family relations whereas men display higher levels of civic engagement (Van Oorschot et al., 2006). Another important social resource to consider that may affect well-being is education. Currently in Sweden, women tend to have higher education than men and foreign-born individuals have lower educational attainments on average than the native population (Statistics Sweden,

2022). Education moderates other health disadvantages by increasing knowledge and health-promoting behaviors, both in terms of life-choices as well as health-seeking behaviors (Mirowsky and Ross, 2005).

Gender is also a stratifying factor in itself. This is for example evident in terms of financial resources. There is a persistent wage gap between average hourly wages of men and women and the wage structure tend to favor occupations with predominately male workers (Charles and Grusky, 2014). The household division of labor is uneven to the disadvantage of women further constraining women with a taxing work-family balance (Öun, 2014).

Furthermore, physical resources such as physical health is to some degree stratified. Strong ties have been found between socioeconomic status and physical health, so strong is the connection that SES has been argued to be a “fundamental cause” of somatic health (Lutfeý and Freese, 2014). There is also a persistent association between migrant status and health, the so called Healthy Migrant Effect. In Sweden this effect has been found among Western migrants to Sweden, but not for non-Western migrants (except for having lower mortality) (Helgesson et al., 2019).

Finally, resources are not only stratified, but may also be interrelated, leading to compounded disadvantages for certain groups. In particular, foreign-born individuals may experience this compounded disadvantage. In addition of having on average lower levels of formal education and lower income (Friedrich et al., 2022), foreign-born individuals also have less informal knowledge on navigating societal institutions. Moreover, they may also have less social capital as this depends on the establishment of both informal and formal social ties to others over time.

What has been described above is a simplified picture of the relation between resources and challenges and demographic groups. Resources and challenges, and the processes that create them, are interconnected. Given the definition of subjective well-being that I draw on in this thesis, we would however expect that subjective well-being would follow the same patterns of stratification as resources and challenges. In the next section I present the current state of research on subjective well-being during the COVID-19 pandemic.

2.3 COVID-19: A Challenge to Subjective Well-Being

At the beginning of the COVID-19 pandemic, little was known about how the virus would affect the health of the population, both in relation to the virus itself and to the measures taken to hinder its spread. Several factors related to COVID-19 were believed to potentially affect the mental health of the population, for example biological factors directly linked to the infection, psychological factors such as loneliness, and social factors such as empty streets, a struggling economy, and excessive crisis information that may cause nervousness and fear (Wang et al., 2020). Early research focused on clinical manifestations of these factors, and being young, female, and unemployed were found to predict symptoms of insomnia, depression, and anxiety among Europeans during COVID-19 (Mazza et al., 2020; McCracken et al., 2020; Pieh et al., 2020; Salari et al., 2020; Solomou and Constantinidou, 2020).

There is less research regarding subjective well-being during the pandemic, however, clinical mental morbidity is closely linked to poor subjective well-being (Gargiulo and Stokes,

2009). Furthermore, the pandemic measures have reduced social interaction and onset economic stress for many. These are two important resources for individuals to have when tackling upcoming challenges (Diener and Fujita, 1995), such as the COVID-19 pandemic. As has been discussed in the previous section, scholars struggle with defining subjective well-being and this is not least evident in the various operationalizations of subjective well-being in the literature on its relation to COVID-19.

Findings suggest that the stringency level of government response is negatively associated with subjective well-being. Long et al. (2021) measures subjective well-being through the World Health Organisation-5 Well-being (WHO-5), while Clark & Lepinteur (2022) use a question on how satisfied respondents are overall with their life with a 11-point Likert scale. Both studies use the Oxford COVID-19 Government Response Tracker (OxCGRT). This tracker is not a measure of the effectiveness of the response, but rather a summary measure of its intensity that can be compared over time and between countries (Hale et al., 2021).

Contrarily, there are studies that find positive effect of stringent measures such as lockdown on subjective well-being. Recchi et al. (2020) find that subjective well-being increased during the first six weeks of nationwide lockdown in France. Subjective well-being was measured using an index of how often respondents felt nervous, low, relaxed, sad, happy and lonely over the past two weeks. The authors explain these results with the “eye of the hurricane paradox”: individuals not infected by COVID-19 might view their life in a more positive manner than before. Another explanation is that imposed lockdowns made individuals feel protected against the threat of the virus, and thus increased subjective well-being (Foa et al., 2022). Findings from the UK suggests that the rate of fatalities was the main contributor to negative subjective well-being while lockdowns mitigated the effect (ibid).

Neither in France nor the UK were subjective well-being affected the same across different strata. In France, those with less financial resources and those living in small accommodations had lower subjective well-being compared to pre-pandemic levels. These results are partially explained by lack of green spaces and housing constraints in the capital which amplified the disruption of urban lifestyle (Recchi et al., 2020). A study comparing the effects of economic lockdowns on foreign-born and native born working men in the UK, found that foreign-born men were more likely to experience economic disruptions and they reported lower subjective well-being (Shen and Bartram, 2021). This further speaks to the importance of sufficient resources—in these cases financial stability, sufficient housing and neighborhood ecosystem services—for maintaining the level of subjective well-being.

The type and extent of welfare support is a further potential macro-level effect that moderates the challenges of the pandemic to subjective well-being and minimizes the importance of individual resources. For example, Geridal et al. (2021) found that subjective well-being, measured as emotional distress through General health questionnaire 12 (GHQ-12), was negatively affected during the pandemic but to varying degrees between countries. Around 70 percent of respondents from the UK and the US reported emotional distress, while the equivalent number for Norway was 50 percent. This is compared to 20 percent one year before the pandemic in all three countries. Geirdal et al. (2021) argue that these differences may be explained by variation in welfare support and/or trust in authorities. For example, the Norwegian welfare system may mitigate challenges through sickness and

unemployment benefits and paid hospitalization, whereas other countries do not provide as robust welfare support, leaving it up to individuals to secure their health care.

2.4 Subjective Well-Being throughout the COVID-19 Pandemic in Sweden

Previous research suggest that low stringency level of government response towards the pandemic, and high welfare support, potentially mediated the pandemic's impact on subjective well-being. This makes Sweden an unique case to study since welfare support is relatively high (Otto, 2018) and the government response distinguished itself for being the least stringent compared to other European countries (Hale et al., 2021). At the same time, estimates of clinical mental morbidity suggest higher levels during COVID-19 compared to pre-pandemic levels in Sweden (Lovik et al., 2023). Although, it seems difficult to distinguish these levels from an already increasing trend in mental health problems before the pandemic (Folkhälsomyndigheten, 2021). Before I discuss these results in more depth, I present the governmental response and pandemic context in Sweden.

Sweden's pandemic measures mainly relied on voluntary restrictions and individual responsibility. Measures included recommendations such as social distancing, work from home, to not use public transport, and to only meet with other household members (Brusselsaers et al., 2022; Ludvigsson, 2020). Some regulations were supported by law enforcement, with various degrees of limitations at different times. These included banned gatherings with over 500, 50, and 8 people, respectively. Alcohol sales were first prohibited after 11, then 8 pm, and restaurants and bars were forced to close at 8.30 pm (Dahlström and Lindvall, 2021; Ludvigsson, 2020). According to the Oxford COVID-19 Government Response Tracker, the highest stringency level of Sweden's pandemic response was 69.4 on a scale from 0-100 between March 4, 2020 and May 31, 2021 (Hale et al., 2021). This can be compared to 79.6 in Norway, 72.2 in Denmark, 87.9 in France, and 88.0 in England during the same period. While other countries imposed lockdowns, closed primary schools, and enforced wearing of face masks, Sweden remained open and relied on individuals to voluntarily follow recommendations. The National Commission to examine the management of COVID-19 in Sweden found that the strategy had protected democratic rights and individual freedoms (SOU, 2022). However, they also criticized the response for being implemented too slow and late, and argued that the measures should have been more comprehensive in order to protect the lives of elderly and other vulnerable groups from the virus.

In retrospect, it is clear that the pandemic did not affect the entire Swedish population to the same extent. Neither when it comes to morbidity and mortality, nor to social and economic challenges. Old age, being male, having low socio-economic status, and notably being foreign-born, all independently predicted an increased risk of dying from COVID-19 (Drefahl et al., 2020). This pattern was not reflected in test-behaviors or confirmed cases, rather it was young individuals, women, and those with high socio-economic status that ordered PCR-tests and were confirmed infected (Andersson et al., 2021). This association is potentially a reflection of the link between higher education and health behavior (Mirowsky and Ross, 2005). Furthermore, those who already lacked resources

such as a strong network of contacts before the pandemic and who were in need of support in various ways, were particularly distressed by challenges such as social isolation and closure of activities (Folkhälsomyndigheten, 2021). In addition, labour market challenges disproportionately affected service and retail workers as most job losses occurred in these sectors, mainly affecting young individuals, low-skilled, and foreign-born individuals (Campa et al., 2021; Folkhälsomyndigheten, 2021; OECD, 2021). Hence, the pandemic brought many challenges whilst reducing the amount of resources, in particular for already vulnerable groups.

The fact that foreign-born individuals were particularly affected by the virus did not go unnoticed in the media. Bredström and Mulinari (2023) show in their analysis that key stakeholders such as parliamentary representatives reproduced prejudiced stereotypes and placed the responsibility on foreign-born people themselves. Ideas and explanations were often focused on that the higher mortality rate could be explained by illiteracy, inability or even unwillingness of foreign-born individuals to understand and act according to information from authorities. In a background report to the Swedish Public and Health Agency (2021), 447 respondents with refugee and migration history residing in Sweden reported their experience of indirect effects of the COVID-19 pandemic. Around 25 percent reported an increased sense of exclusion based on their origin. Many also experienced COVID-19 related worrying, decreasing mental health, worsened economic stability, and greater difficulties of finding a job. COVID-19 related difficulties, worries, and discrimination are also found among migrants in other contexts (Garrido et al., 2022; Spiritus-Beerden et al., 2021).

Taking a broader perspective and using administrative registers, Altmejd et al (Altmejd et al., 2023) examine nine negative outcomes related to health and income across social gradients of which foreign-born status is one. They examine whether those with elevated risk of COVID-19-related morbidity and mortality were more likely to suffer other pandemic-related consequences, and whether the pandemic increased or decreased pre-pandemic inequalities. The results suggest that COVID-19-related burdens hit the already vulnerable extra hard, that is, increased absolute inequality. Yet in relative terms, this was well in line with pre-pandemic inequality patterns. The strength of this broad approach is that it compares the whole population while the weakness is the crude measures of the negative outcomes. For instance, psychiatric health was measured through visits to a psychiatric clinic.

Studies focusing on more fine grained measures of mental health have found a pandemic-effect on a range of outcomes. Results from Spring 2020 showed that the prevalence of insomnia were 38%, anxiety 24.2%, and depression 30% (McCracken et al., 2020). These results suggested a substantive difference compared to pre-pandemic studies that has estimated the prevalence of anxiety between 5.6-14.7% (Johansson et al., 2013; Munk-Jørgensen et al., 2006) and depression levels between 8.75-11.8% (Arias-de la Torre et al., 2021; Munk-Jørgensen et al., 2006). Using data collected between June 2020 and June 2021, prevalence of clinical depression symptoms were estimated at 17.1% (Unnarsdóttir et al., 2021) and 15.3% (Lovik et al., 2023), and anxiety at 9.5 %. Thus, lower levels compared to what was found in the first six months of the pandemic, yet a slightly higher prevalence compared to pre-pandemic estimates. Both the analysis period and data collection method may play a role in these differences.

Comparing the Swedish levels of depression at 17.1% during the pandemic with other European countries, it was found that only Scotland had a higher prevalence of depressive symptoms (20.8%). Estonia (15%) and Iceland (16.6%) had slightly lower or around the same levels as Sweden, whilst Denmark (7.6%) had a lower prevalence. The Norwegian results include two cohorts with different prevalence of depression symptoms: 17.1 percent for the cohort over-represented by women and young individuals with higher education, and 4.2 percent among respondents with healthier lifestyle and higher socioeconomic position than the general population. Also in this study, being female and of young age was associated with higher prevalence of depressive symptoms (Unnarsdóttir et al., 2021). Further studies in Sweden have also looked at the link between COVID-19 and clinical mental morbidity and investigated different mediating mechanisms such as sleep quality (González-Hijón et al., 2023), occupation (Nagel and Nilsson, 2022), physical activity (Barbieri et al., 2021), pregnancy (Ho-Fung et al., 2022), and access to green spaces (Löhmus et al., 2021).

As in international research, less is known about subjective well-being during the pandemic in Sweden. Findings are mixed and the results are difficult to generalize as the samples tend to be selective and small. For example, in the beginning of the pandemic, respondents aged 65-71 (n=1,071) rated their subjective well-being as high or higher than pre-pandemic levels (Kivi et al., 2021). Well-being was measured as a combination of life satisfaction, financial satisfaction, self-rated health and loneliness. The authors, however, found that COVID-19-related worry was associated with lower subjective well-being. Kulin et al. (2021) find in another study that young individuals and women were more likely to report COVID-19 related worrying in Sweden. Gröndal et al. (2021) examined self-reported affective responding and personal consequences of the pandemic and its relationships with subjective well-being. The results suggest that among the respondents (n=471), irritability, impulsivity, and anger were positively related to experiencing serious personal consequences during the pandemic. These consequences were in turn negatively associated with subjective well-being. This is one example of how psychological resources and emerging challenges may be related to subjective well-being and COVID-19.

Research on subjective well-being in Sweden pre-pandemic, suggest that being male, older, having good childhood conditions, absence of negative life events, and resources such as cohabiting, financial stability and support from friends are all positively correlated with subjective well-being (Hansson et al., 2005). The Swedish Public Health Authority (2021) reported that health inequalities have been increasing and that it may be difficult to entangle the effects of the pandemic from other period effects. These difficulties may present themselves when examining subjective well-being as well. Among adolescents, research suggest that COVID-19 did not impact the subjective well-being (Chen et al., 2022). Chen et al. administered a survey in two waves where the second wave was partially answered before and partially answered after the outbreak of COVID-19. Comparing the two groups, they found that subjective well-being decreased with the same magnitude in both groups. The result suggest that worsened subjective well-being was not amplified by the pandemic, but rather explained by age or cohort-effects.

To conclude, the pandemic seems to have had an impact on subjective well-being in Sweden, but the results on whether it has improved or worsened, as well as the magnitudes, are

mixed. One reason for these mixed findings may be that the studies conducted so far have a small number of respondents and none have utilised a nationally representative sample. None of the presented studies on subjective well-being have distinguished between native and foreign-born individuals. Yet, the foreign-born population have been excessively challenged during the pandemic in terms of economic hardship, discrimination, illness, and mortality. There is thus a need to acquire knowledge whether these challenges are also reflected in subjective well-being among foreign-born individuals in Sweden. This thesis will contribute by analysing a large representative survey with information on several demographic characteristics, among them foreign-born status.

2.5 Research Questions

The aim of this study is to describe how subjective well-being was distributed in the population during COVID-19 in Sweden. Given that the theoretical background suggests that both resources and challenges affecting subjective well-being are systematically stratified, I predict that negative changes in subjective well-being were unevenly distributed across the population during the pandemic. Since findings from previous research are mixed when it comes to the level of subjective well-being, I start my analysis by asking:

1. How are demographic characteristics associated with worsened subjective well-being during the COVID-19 pandemic in Sweden?

This will be analyzed in terms of gender, age and foreign-born status. The foreign-born population were disproportionately affected by the pandemic with regard to economic hardship, discrimination, morbidity and mortality. Yet they are an understudied group, both in Sweden and globally, in terms of subjective well-being. Therefore, my second and more specific research question is:

2. Were foreign-born individuals particularly affected by worsened subjective well-being?

3 Data and Method

I will utilise cross-sectional, individual level data from the second round of the Swedish Generations and Gender Survey (GGS 2021). The following section starts with a description of the GGS-dataset and my study population, I then introduce the dependent variables followed by the covariates. Thereafter I describe my analytical strategy and lastly I discuss the ethical considerations.

3.1 Data and Study Population

The Swedish GGS is part of the Generations and Gender Programme (GGP), which is an international data infrastructure that aims to provide cross-nationally comparative and

timely data about families and life course trajectories. The second round was conducted between March and August 2021, 94% of the respondents answered between March and May (Neyer et al., 2023). The survey was carried out by Statistics Sweden and the Stockholm University Demography Unit and the modes of collection were web and postal questionnaire. A sample of 30,000 individuals was randomly drawn from the full Swedish population, conditioned on being between the ages 18-59 at the 31st of December 2021. The response rate was 27%, yielding a final sample of 8082 respondents. To mitigate the effects of non-response bias, I use weights in all analysis. The weights are discussed in greater detail in the analytical strategy section. All calculations and analysis are performed using STATA 17 (StataCorp, 2021).

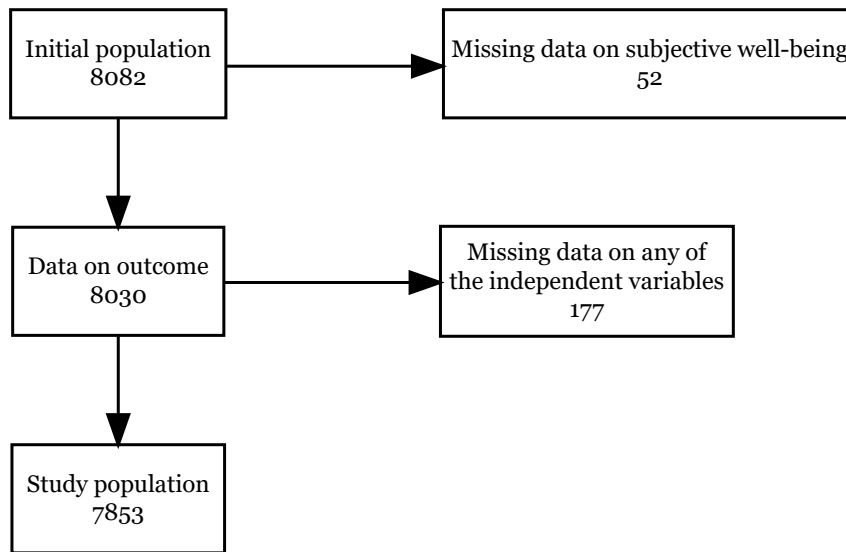


Figure 1: Flowchart over study population selection, variables that were screened for missing values were: subjective well-being, gender, age, country of birth, activity status, education, information on cohabitation and child in the household, disposable family income and survey weight

Respondents are excluded from the study population if they lack information in the dependent or any of the independent variables. These are in total 229 observations (2.8%), yielding a complete case analysis of 7853 individuals. Figure 1 display a flowchart of the study population selection.

3.2 Dependent Variable

The dependent variables are constructed from the following question: “*Comparing your current situation with your situation just before the outbreak of COVID-19 in March 2020, would you say that your mental well-being have improved worsened or stayed the same?*” The respondents can choose from a 7-item Likert scale: definitely improved, improved, slightly improved, stayed the same, slightly worsened, worsened and definitely worsened. This question captures a perceived change in subjective well-being, and thus it contains a longitudinal component. I dichotomize the outcome variable as I am mainly interested

in what demographic characteristics are associated with *worsened* subjective well-being rather than *levels* of subjective well-being. The benefit of dichotomizing the variable is that it allows for a straight forward interpretation and requires fewer modelling assumptions than for instance an ordered logit model. However, there are also negative trade-offs when dichotomizing a variable, such as the potential loss of fine-grained differences between categories in favor of statistical power and interpretability, as well as the issue of where to place the cut-off. In my analysis, I dichotomize the outcome variable using two different specifications which are analysed in tandem throughout the paper. In the first specification I group item 1 to 3 (*slightly worsened*, *worsened* and *definitely worsened*) into the category *worsened* and items 4-7 into the category *other*. In the second specification I use a stricter criteria for being counted as *worsened* by including item 3 (*slightly worsened*) in the *other* group. Using two specifications of the outcome serves as a way to address that the cut-off is not given and allows me to examine the differences when *slightly worsened* is counted as worsened subjective well-being and when it is not.

3.3 Independent Variables

Age is calculated by differencing the month and year of birth from the month and year of interview, it ranges between 17-59. To account for non-linearity I include both a linear and a squared age-term. Gender is included in the analysis with the variable *female* coded yes or no.

To examine my second research question I include a measure of *country of birth*. I construct three categories based on the World Bank Atlas GNI method 2020 (The World Bank, 2023). Respondent's are assigned one of the following categories based on register information on their country of birth: *Sweden*, *high income countries (HIC)* and *low-middle income countries (LMIC)*. I subdivide the foreign-born individuals because it is a heterogeneous group, and the reason why I divide across this axis is because I want to capture potential differences in resources. See Table A1 in the Appendix for country composition of the regional variable.

Education is an important correlate with health (Mirowsky and Ross, 2005) as well as a commonly used SES-indicator. *Highest level of education* is a categorical variable created from register-data on highest level of education. Using Statistics Sweden Sun2020 classification (SCB, 2019) I construct four categories (with Sun levels in parentheses). Primary (100-206), secondary (310-337), post-secondary non-tertiary (410-535) and tertiary including doctoral level (536-640).

To control for level of resources I include *disposable family income* and *activity status* as control variables. I choose family income, rather than individual income, because research suggest that the level of living standard is better captured by household income (Ringen, 1991). Information on income comes from national register, and I use information from 2019. The variable is top-coded at 170,500 SEK per month in the GGS dataset. This is a way to both preserve anonymity and to reduce the influence of outliers. To further account for the right skewed distribution of the income variable, I use the natural logarithm of income in my regression models. Activity status is self-reported with six categories: employed, self-employed, in education or training, unemployed, on parental leave and

other. In my analysis I condense it to four categories where I count self-employed and on parental leave as employed.

Not only income is pooled within household, but also social resources (Hurlbert and Acock, 1990). Therefore I control for if respondents are *living with a partner or not* with a binary indicator. To get a better picture of the respondents family situation I also control for if there is at least *one child under age 16 in the household*.

3.4 Analytical Strategy

To answer my research questions I will perform the analysis in two steps. First, I will present a rich set of descriptive statistics over the relationship between worsened subjective well-being and the demographic characteristics age, gender and foreign-born status. I will also show the distribution of resources within these groups. Secondly, I will use a set of Linear Probability Models (LPM) to analyse the independent association between worsened subjective well-being and covariates.

I use LPM rather than logit models, because logit models have an inherent scaling problem stemming from unobserved heterogeneity. In a logit model, the unexplained variance is assumed to be fixed, thus any increase in explained variance will increase the total variance and rescale the variable (Mood, 2010). This means that logit models are unsuitable for comparison between models because the coefficients will be compared across different scales, and we will not know whether the change in coefficients is due to an actual effect of added variables or a result of the rescaling. One way to use logit models and address this problem is to apply the KHB-method (Karlson et al., 2012). This method can to some degree account for scaling issues between different nested models by holding the residual variance stable across them, allowing analysts to interpret the effect of the coefficient separate from the scale-effects. However, apart from using the KHB-method, it is also necessary to calculate predicted probabilities or the average marginal effects (AME) in order to make substantive interpretation of the regression results. The LPM model, on the other hand, allows for a straight forward and intuitive interpretation of the model coefficients. Simulations also show that the AME from logistic regression and LPM coefficients are identical or near identical (Mood, 2010).

The drawback of using LPM is the assumption that the relationships between the independent variables and the dependent variable are linear, that predicted values may fall out of range and that the errors are always heteroscedastic (Horrace and Oaxaca, 2006). To address these issues, I will make non-linear specifications of some independent variables to capture potential non-linear effects. A common way of dealing with heteroskedasticity is to use robust standard errors (White, 1980), as I am using probability weights, robust variance calculation is automatically performed by Stata. Predicted values out of range is only an issue when many values fall below 0 or above 1. This problem is also partly addressed by using robust standard errors. However, for the reader who does not feel convinced, I will rerun the regressions with logit models and provide results from these, including average marginal effects, in the Appendix.

The LPM model can be written:

$$P(Y = 1|X_1, X_2, \dots, X_k) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_k X_k \quad (1)$$

where $P(Y = 1|X_1, X_2, \dots, X_k)$ is the probability that subjective well-being has worsened, conditioned on the included control variables $X_1, X_2, \dots, X_k$. β_j can be interpreted as the change in the probability that the subjective well-being has worsened with a unit change in x , holding the other regressors constant.

The regression analysis is carried out through step-wise modelling on each of the specifications of the dependent variable. In the basic model, worsened subjective well-being is regressed on: female, age and age squared, and region of origin. Thereafter, a covariate is introduced in each model in the following order: level of education, the logarithm of disposable family income, activity status, cohabitation and if there is a child under age 16 in the household.

I include weights in all descriptive results and regression models to account for non-response bias. The weights are calibrated by Statistic Sweden, from level of education, country of birth, age and gender. Using weights does not eliminate bias entirely nor fully address the issue of selectivity. Those who belong to underrepresented groups in the survey who do respond are assigned large weights, while potentially not being representative of the group at large. However, weights help to make the sample more representative which allows us to make inferences about the full population.

I also perform a number of robustness checks apart from running the regressions as logit models. I rerun my regressions without extreme values in the income variable, i.e. both without those with the highest income who are top-coded and without those with 0 income. I also rerun my regressions without those under 20 years old in my study population as they were largely still in high school during the pandemic. Before presenting my results, I discuss the ethical considerations.

3.5 Ethical Considerations

This study uses individual-level data on a set of characteristics, including sensitive personal data. Therefore, the confidentiality of the respondents must be respected. The data has been accessed after ethical approval from the Ethical Review Board (Dnr 2022-01286-02), and the study adheres to the national ethical guidelines. The outcome variable in this study is based on a question concerning self-rated health, thus it constitutes sensitive personal data. The respondents had the option to opt out of answering the question so only those who actively answered the question are included in the analysis. Furthermore, the data is de-identified and no attempt to identify any individual is made, neither is any single individual thoroughly checked or analysed specifically. This level of consideration must be maintained throughout the research process, that is, also when presenting the research question and the results.

In this paper, I am paying extra attention to how I portray vulnerable groups such as foreign-born individuals. Given that this is an already stigmatized group, there is a risk that the results presented are misinterpreted and used to reinforce stereotypes. To this end,

I make sure to discuss that the results I present are indicators of central tendencies within groups but that individual experiences vary within the groups I study.

There are no direct benefits to the participating individuals, but the research may contribute to our understanding of health disparities and pandemic consequences. Understanding these potential differences is crucial for paving the way to mitigate them in the future, particularly in the context of potential upcoming pandemics.

4 Results

This section begins with a comprehensive outline of summary statistics of the relationship between the dependent and independent variables. First a general description of the study population, followed by details on each of the three demographic characteristics — age, gender, and foreign-born status — of interest. The section concludes with an analysis of the regression results.

4.1 Descriptive Results

Table 1 shows the weighted summary statistics of all included variables. Considering my outcome variable of perceived change in subjective well-being, there is a concentration of observations in the three middle-categories with 36.9% of the respondents experienced no change in subjective well-being during the pandemic. 14.7% experienced some degree of improved subjective well-being, while a large share, 47.4%, experienced some degree of worsened subjective well-being. Within this group, 30.6% of the total sample reported slightly worsened subjective well-being, 11.0% reported worsened subjective well-being, and 6.8% reported definitely worsened subjective well-being. Thus, in the broader outcome specification these are coded *worsened*. In my second, strict outcome specification, 16.1% are coded *worsened*. This means that the probability to have 1 in the outcome decreases substantively in the strict version. This is important to bare in mind when interpreting the results, and I will get back to this when analysing the regression results. Regarding the demographic characteristics of interest in this study, Table 1, further shows that 48.9% of the population are female and the mean age is 39 years and ranging between 17-59. Of the 23% foreign-born individuals, two thirds are from a low or middle-income country.

Table 2 shows the share of women, those living with a partner, having a child in the household, mean age, median disposable family income, and the share of each categorical variable across each of the outcome specifications as well as the total distribution. For the summary statistics over all categories of subjective well-being, see Table A2 in the Appendix. For both specifications of the outcome variable, the mean age is about 3 years lower for those with worsened subjective well-being compared to the mean age in the total population. In both specifications, certain groups are over-represented among those who experienced worsened subjective well-being compared to the overall average. These

	Percentage/mean	Median	SD	Min	Max
Subjective well-being					
Definitely worsened	6.8%				
Worsened	11.0%				
Slightly worsened	30.6%				
Stayed the same	36.9%				
Slightly improved	7.5%				
Improved	4.8%				
Definitely improved	2.4%				
Country of origin					
Sweden	77.0%				
HIC	8.5%				
LMIC	14.5%				
Level of education					
Primary	16.8%				
Secondary	42.0%				
Post secondary	16.8%				
Tertiary	24.4%				
Activity status					
Employed	75.6%				
In education/training	14.7%				
Unemployed	5.0%				
Other	4.6%				
<i>Female</i>	<i>48.9%</i>				
<i>Living with partner</i>	<i>63.8%</i>				
<i>Child <16 in household</i>	<i>32.6%</i>				
<i>Age</i>	<i>38.9</i>	<i>39.0</i>	<i>12.1</i>	<i>17.0</i>	<i>59.0</i>
Disposable family income (2019)	46272.9	43333.3	26790.7	0.0	117500.0

Notes:

Mean in italic

Disposable family income in SEK per month

Table 1: Summary statistics of all variables

groups include women, those not living with a partner, are born in a low-and-middle-income-country, those with primary education and who are not employed. These differences are larger when applying the stricter version of the outcome. Considering family disposable income, we see that the median is 1,666 SEK lower in the worsened category compared to the total, when employing the broader outcome. This difference is 6,666 SEK less per month when employing the strict outcome specification. Taken together, this shows that the primary dividing line in subjective well-being categories lie between the categories *slightly worsened* and *worsened*, rather than between *slightly worsened* and *stayed the same*.

The first research question concerns how demographic characteristics are associated with

	Broad outcome		Strict outcome		
	Other	Worsened	Other	Worsened	Total
N	4,128	3,725	6,587	1,266	7,853
<i>Age</i>	<i>40.1</i>	<i>37.6</i>	<i>39.7</i>	<i>35.2</i>	<i>38.9</i>
Median disposable family income (2019)	44167	41667	44167	36667	43333
Gender					
Male	54.9	47.1	52.0	47.0	51.1
Female	45.1	52.9	48.0	53.0	48.9
Country of origin					
Sweden	78.7	75.1	77.5	74.4	77.0
HIC	7.8	9.3	8.5	8.7	8.5
LMIC	13.5	15.6	14.0	16.9	14.5
Level of education					
Primary	15.4	18.3	15.5	22.7	16.8
Secondary	44.0	39.8	42.7	38.5	42.0
Post secondary	16.5	17.1	16.6	17.7	16.8
Tertiary	24.1	24.8	25.2	21.1	24.4
Activity status					
Employed	79.5	71.6	78.5	62.6	75.6
In education/training	11.6	18.0	12.8	23.5	14.7
Unemployed	4.5	5.6	4.4	7.8	5.0
Other	4.4	4.8	4.3	6.0	4.6
Living with partner					
Cohabits with partner	33.8	38.6	33.7	47.4	36.2
Does not cohabit	66.2	61.4	66.3	52.6	63.8
Child <16 in household					
No child	65.9	69.1	66.2	73.0	67.4
At least one child	34.1	30.9	33.8	27.0	32.6

Notes:

Mean in italic

The table shows weighted proportions

Table 2: Summary statistics of explanatory variables over the levels of subjective well-being

worsened subjective well-being. Starting with age, Figure 2 shows a stacked area chart of the three levels of worsened subjective well-being across age. There is a substantive decline in the share of respondents in the worsened categories across age. The most prominent decline seem to occur in the age group 20-30 and within the definitely worsened group. After the age of 30 the association between age and worsened subjective well-being seems to taper off. It is due to this non-linearity that the age term is squared in my regression models.

As we saw in Table 2 women are overrepresented in the worsened category, in both spec-

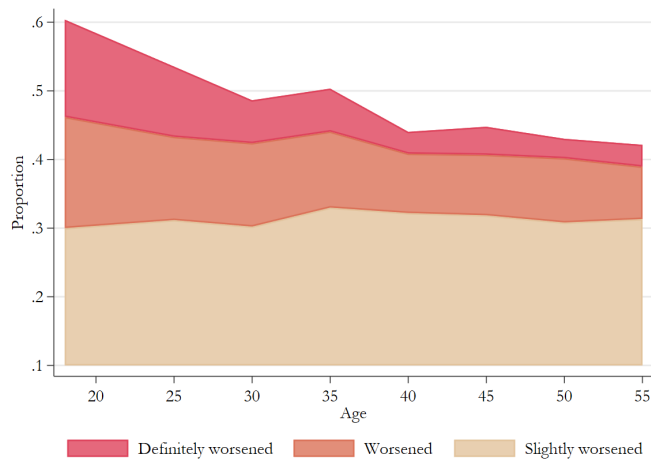


Figure 2: Stacked area chart of the three levels of worsened subjective well-being across age

ifications of the outcome. From the theory section, we know that resources act as buffers against challenges to well-being and we also know that resources may be stratified. However, Table 3 shows that the differences between men and women are small, if anything, women seem to have somewhat more resources than men. This is most evident in terms of education, where tertiary education is 33% more common among women. The median disposable family income for women is also slightly higher (833 SEK per month higher), perhaps reflecting their slightly higher propensity to live with a partner. Although women are not in employment to the same extent as men, this is accounted for by being in education/training rather than unemployment.

My second research question concerns if foreign-born individuals have experienced a disproportionately worsened subjective well-being. It has been suggested that foreign-born individuals have on average lower income (Friedrich et al., 2022), and education (Statistics Sweden, 2022), and that it is probable that they experience a compounded disadvantage. Descriptively, my data is consistent with these previous findings. In Table 4 we see that foreign-born individuals possess lower levels of resources than natives. Moreover, this disparity is more pronounced for individuals from Low- and Middle-income Countries (LMIC) than for those from High-Income-Countries (HIC). For instance, the median monthly disposable family income is 6,666 SEK lower among those from HIC compared to natives, and 13,333 SEK lower among those from LMIC. This is not a reflection of a larger share of single households, as we see that the propensity to cohabit is similar among those from both HIC, and LMIC compared to natives.

Additionally, the level of education and activity status differs between the two migrant groups. Those from HIC tend to be more highly educated with tertiary education being twice as common as in the native population. Those from LMIC have similar education levels as natives, but the proportion with only primary education is 30% higher compared to the native proportion. With regards to activity status, natives and foreign-born from HIC show similar proportions, while the propensity to be employed is 12% lower among those from LMIC and the propensity to be unemployed is 2.5 times higher. In sum, these results indicate that there are substantive differences in level of resources, not only be-

	Gender		
	Male	Female	Total
N	7,022	8,684	15,706
Age	39.46	38.27	38.88
Living with partner	0.62	0.65	0.64
Child <16 in household	0.32	0.33	0.33
Median disposable family income (2019)	42500	43333	43333
Country of origin			
Sweden	0.78	0.76	0.77
HIC	0.08	0.09	0.09
LMIC	0.14	0.15	0.15
Level of education			
Primary	0.17	0.17	0.17
Secondary	0.45	0.39	0.42
Post secondary	0.18	0.16	0.17
Tertiary	0.21	0.28	0.24
Activity status			
Employed	0.78	0.73	0.76
In education/training	0.13	0.17	0.15
Unemployed	0.05	0.05	0.05
Other	0.04	0.05	0.05

Weighted data from the Swedish GGS in 2021
Disposable family income in 1000 sek per month

Table 3: Summary statistics of explanatory variables over gender

tween natives and foreign-born individuals, but also between those from High-Income Countries and Low- and Middle-Income-Countries.

4.2 Regression Results

To get at the independent associations of the covariates, I employed LPM and stepwise modeling for both the broader and stricter variant of the dependent variable. It is important to bare in mind that the size of the coefficients have different relative meaning depending on the outcome specification. The probability to be in the worsened category is larger in the broader specification of the outcome compared to the stricter version, with 47.5% compared to 16.9%. This means that in relative terms, a 1 percentage point change is substantively small in the broader version while larger in the stricter version. I will illustrate the meaning of this by calculating the relative effect of selected coefficients between the two outcome specifications. First I will present the general regression results, starting

	Country of origin			
	Sweden	HIC	LMIC	Total
N	13,560	918	1,228	15,706
Age	38.25	41.02	40.95	38.88
Gender	0.48	0.53	0.50	0.49
Living with partner	0.63	0.68	0.65	0.64
Child <16 in household	0.32	0.36	0.36	0.33
Median disposable family income (2019)	45833	39167	32500	43333
Level of education				
Primary	0.17	0.08	0.22	0.17
Secondary	0.45	0.25	0.36	0.42
Post secondary	0.16	0.19	0.18	0.17
Tertiary	0.22	0.48	0.24	0.24
Activity status				
Employed	0.77	0.79	0.68	0.76
In education/training	0.15	0.10	0.15	0.15
Unemployed	0.04	0.06	0.10	0.05
Other	0.04	0.05	0.07	0.05

Weighted data from the Swedish GGS in 2021

Disposable family income in 1000 sek per month

Table 4: Summary statistics of explanatory variables over country of origin

with the broader outcome specification.

Table 5 presents the result of regressing the covariates on the broader specification of worsened subjective well-being, which includes the category *slightly worsened*. The stepwise modelling does not reveal any substantive differences in the coefficients. Perhaps with exception for the age coefficient, which we see is statistically significant until the introduction of activity status, suggesting that the age effect is mediated by the individual's participation in education or training. However, it is worth noting that the effect size was already negligible. From the final model (Model 6a) we see that there are no statistically significant results for age, education, income, cohabitation or having at least one child in the household. However, we observe that women are, on average, 6.7 percentage points more likely to report worsened subjective well-being compared to men, holding all other variables constant. This gender difference is statistically significant at the 0.1 percent level. Furthermore, individuals from HIC and LMIC are, on average, 5.6 and 5.4 percentage points, more likely to have experienced worsened subjective well-being compared to natives, when keeping all other variables constant. These differences are statistically significant at the 5 percent level. Additionally, those in education or training are, on average, 6.8 percentage points more likely to report worsened subjective well-being compared to those employed, with all other variables held constant. This is statistically significant at

the 1 percent level.

Turning our attention to the results from the second and stricter, specification of the outcome variable, other demographic characteristics appear to be associated with worsened subjective well-being. As seen in Table 6, statistically significant associations include age, income, not being employed, and not living with a partner. As in previous table, women are on average more likely to report worsened subjective well-being compared to men across all six models. The effect size is 2.3 percentage points in the full model, Model 6b, all else held constant. This is significant at the 5 percent level. At first glance, it may seem that the effect of being a woman is much lower in the stricter version (6.7 p.p versus 2.3 p.p), yet if we consider the relative effect we see that they are similar. I calculated predicted probabilities for women and men based on the full model for each outcome specification (Model 6a and Model 6b). A Swedish born, employed woman, with mean age and mean disposable family income, with a tertiary education, living with a partner and at least one child under age 16 in the household, is 16% more likely to experience worsened subjective well-being compared to a male counterpart, using the broader outcome. The difference is 18% for the stricter outcome. This indicates that the relative effect of gender is similar or even slightly larger when applying the stricter version, although the regression coefficient that represents the absolute change in risk, is smaller.

The second major demographic characteristic of interest in this study is age. To substantively interpret the regression results for age I show predicted probabilities for native, employed women, that does not cohabit and have no child in the household, with secondary education and mean disposable family income in Figure 3. For both models, we see that the probability to report worsened subjective well-being decreases with increasing age. As previously seen with gender, the absolute levels are higher when regressing on the broader outcome, however the relative effect of age is higher in Model 6b with the stricter outcome. For instance, a 25 year old woman is 64% more likely to report worsened subjective well-being compared to a 50 year old woman when applying the strict outcome. This difference is 21% when using the broader outcome. This pattern is consistent with the descriptive findings in Figure 2, thus showing that the age association is not explained by the other included covariates.

Continuing with the regression results in Table 6, we see that those living with a partner are on average 2.9 percentage points less likely to experience worsened subjective well-being. Introducing having a child in the household slightly amplifies this association, increasing the coefficient to 3.4 percentage points, and this is statistically significant at the 5 percent level. On the other hand, the coefficient for having a least one child in the household is non significant itself, and appears very close to zero when taking the standard deviation into account. Thus, the change in living with a partner is probably due to noise in the model and greater uncertainty as a new variable is introduced.

While employing the strict outcome variable, no statistically significant association is observed for foreign-born individuals from HIC in any model. In contrast, foreign-born individuals from LMIC are, on average, 5.1 percentage points more likely to report worsened subjective well-being compared to natives, holding the other variables constant in Model 2b. This difference is statistically significant at the 1 percent level. The point estimate is similar as in Model 2a with the broader outcome specification (5.4 p.p). However, comparing predicted probabilities we see substantive differences in relative effects be-

Table 5: Regression table with broad specification of worsened subjective well-being (slightly worsened included)

	1a	2a	3a	4a	5a	6a
Female	0.070*** (5.54)	0.069*** (5.41)	0.069*** (5.41)	0.067*** (5.19)	0.067*** (5.21)	0.067*** (5.20)
Age	-0.013*** (-3.38)	-0.016*** (-3.43)	-0.016*** (-3.47)	-0.011* (-2.13)	-0.010* (-2.01)	-0.009 (-1.55)
Age × Age	0.000* (2.31)	0.000* (2.57)	0.000** (2.62)	0.000 (1.50)	0.000 (1.40)	0.000 (0.96)
Region of origin (ref. Sweden)						
HIC	0.065** (2.60)	0.060* (2.37)	0.059* (2.32)	0.056* (2.19)	0.056* (2.19)	0.056* (2.20)
LMIC	0.061** (2.77)	0.062** (2.82)	0.061** (2.73)	0.054* (2.39)	0.054* (2.39)	0.054* (2.40)
Education (ref. Primary)						
Secondary		0.010 (0.40)	0.010 (0.40)	0.020 (0.80)	0.021 (0.82)	0.019 (0.75)
Post secondary		0.029 (1.07)	0.028 (1.06)	0.036 (1.35)	0.037 (1.36)	0.035 (1.27)
Tertiary		0.029 (1.05)	0.030 (1.09)	0.045 (1.62)	0.046 (1.64)	0.044 (1.59)
Ln disposable family income (2019)			-0.003 (-0.53)	-0.001 (-0.09)	-0.000 (-0.05)	0.000 (0.08)
Activity status (ref. Employed)						
In education/training				0.067** (2.63)	0.066** (2.60)	0.068** (2.65)
Unemployed				0.063 (1.94)	0.063 (1.91)	0.062 (1.88)
Other				0.047 (1.39)	0.046 (1.35)	0.046 (1.34)
Living with partner					-0.005 (-0.32)	0.002 (0.11)
Child <16 in household						-0.016 (-0.93)
Constant	0.753*** (10.58)	0.790*** (10.23)	0.825*** (8.21)	0.666*** (5.87)	0.659*** (5.68)	0.623*** (5.02)
Observations	7853	7853	7853	7853	7853	7853

t statistics in parentheses

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

Table 6: Regression table with strict specification of worsened subjective well-being

	1b	2b	3b	4b	5b	6b
Female	0.023* (2.30)	0.024* (2.42)	0.024* (2.41)	0.021* (2.12)	0.023* (2.26)	0.023* (2.27)
Age	-0.017*** (-5.32)	-0.016*** (-4.49)	-0.017*** (-4.76)	-0.013*** (-3.47)	-0.011** (-2.84)	-0.012** (-2.92)
Age $\times$ Age	0.000*** (4.12)	0.000*** (3.44)	0.000*** (3.76)	0.000** (2.66)	0.000* (2.10)	0.000* (2.23)
Region of origin (ref. Sweden)						
HIC	0.025 (1.27)	0.028 (1.41)	0.022 (1.11)	0.019 (0.92)	0.018 (0.91)	0.018 (0.90)
LMIC	0.052** (2.90)	0.051** (2.86)	0.044* (2.43)	0.036 (1.94)	0.036 (1.94)	0.035 (1.93)
Education (ref. Primary)						
Secondary		-0.002 (-0.08)	-0.002 (-0.08)	0.009 (0.46)	0.012 (0.62)	0.014 (0.68)
Post secondary		0.010 (0.46)	0.009 (0.43)	0.020 (0.92)	0.023 (1.08)	0.025 (1.16)
Tertiary		-0.016 (-0.75)	-0.012 (-0.56)	0.006 (0.28)	0.011 (0.49)	0.011 (0.53)
Ln disposable family income (2019)			-0.016** (-3.14)	-0.012* (-2.37)	-0.011* (-2.09)	-0.011* (-2.17)
Activity status (ref. Employed)						
In education/training				0.049* (2.28)	0.046* (2.11)	0.045* (2.07)
Unemployed				0.097*** (3.43)	0.093** (3.26)	0.093** (3.28)
Other				0.078** (2.79)	0.071* (2.53)	0.071* (2.53)
Living with partner					-0.029* (-2.40)	-0.034* (-2.57)
Child <16 in household						0.011 (0.88)
Constant	0.552*** (8.92)	0.537*** (8.41)	0.714*** (8.71)	0.576*** (6.31)	0.532*** (5.74)	0.557*** (5.61)
Observations	7853	7853	7853	7853	7853	7853

t statistics in parentheses

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

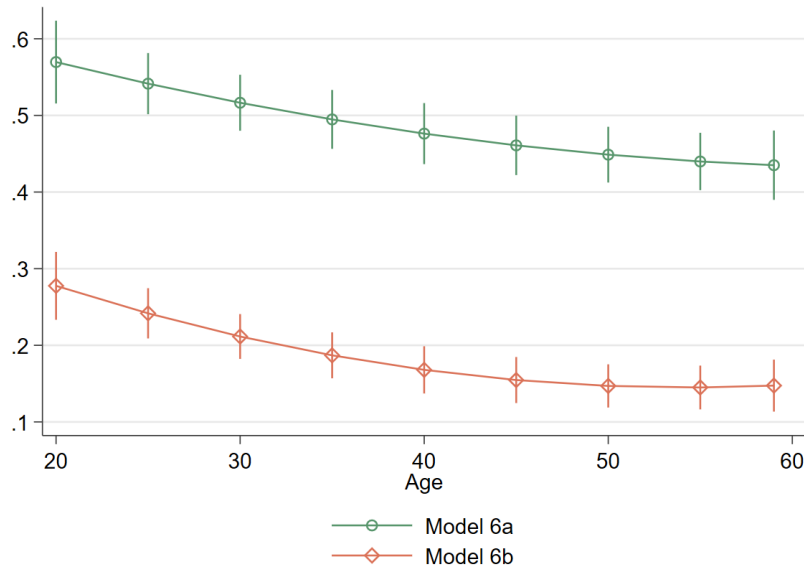


Figure 3: Predicted probabilities of worsened subjective well-being

tween Model 2a and 2b. A foreign-born man from a LMIC, at mean age with a secondary education, is 15% more likely to experience worsened subjective well-being compared to a native counterpart in Model 2a with the broader outcome. Employing the strict outcome (Model 2b), this relative difference is no less than 38%. When introducing disposable family income in Model 3b, the point estimate is reduced to 4.4 percentage points and the statistical significance decreases to the 5 percent level. The predicted probabilities show that the relative difference between the native and foreign-born LMIC man decreased to 32%.

Furthermore, with the introduction of activity status in Model 4b, this association further decreases to 3.6 percentage points and becomes statistically insignificant. These results suggest that the real observed difference between being born in LMIC and natives in Model 2b is partly mediated through income and by not being in employment. This is consistent with the descriptive findings, which show that foreign-born individuals from LMIC have on average lower disposable family income and are less likely to be employed. However, the effect size of disposable family income is substantively small. Considering the comparative perspective, the median disposable family income of individuals born in Sweden is 41% higher than the median disposable family income of individuals from LMIC. When we convert the logarithmic coefficient from Model 3b we see that a 41 percent increase in disposable family income, is associated with a 0.5 percentage points change in subjective well-being, which decreases to 0.4 percentage points in Model 4b¹.

Upon examining the coefficients related to activity status in Model 4b, we observe that unemployed individuals are, on average, 9.7 percentage points more likely to experience worsened subjective well-being compared to their counterparts in employment. Those classified under the ‘other’ group are, on average, 7.8 percentage points more likely to report worsened subjective well-being, all else being constant. These differences are sta-

¹The following expression was used to transform the logarithmic coefficient: $\log(1.41) \cdot \beta_{income}$

tistically significant at the 1 and 0.1 percent level, respectively. These associations slightly attenuate with the introduction of living with a partner. However, the coefficients only decrease with around 0.3 percentage points. Individuals engaged in education or training are 4.9 percentage points more likely compared to those in employment, all else being held constant. This difference is statistically significant at the 5 percent level. I calculate predicted probabilities based on the full models (Model 6a and 6b) to compare the relative effect of being in education or training between the two outcome specifications. A 30 year old, Swedish born woman, with mean disposable family income, with post secondary education, living with a partner and no child under age 16 in the household, and engaged in education or training, is 27% more likely to experience worsened subjective well-being compared to an employed counterpart. This difference is 14% for the broader outcome. Thus, we again see that the relative effect is larger, although the absolute risk is smaller in the stricter version.

Robustness checks were performed to investigate potential effects of extreme values in the disposable family income variable (Table A3 and Table A4 in the Appendix). Furthermore, I removed those under age 20 as they were largely still in high school during the pandemic, to check if these individuals were driving the age gradient or the effect of activity status (Table A5 and Table A6 in the Appendix). Neither of these had any substantive effect on the regression results. Lastly, I reran all regressions with logit models and calculated average marginal effects (AME) from the two full models for both the LPM and logit model. These are shown in Table A7 in the Appendix. The AME are very similar to the LPM coefficients, and with only minor differences between the logit and LPM models.

In summary, demographic characteristics associated with worsened subjective well-being appear somewhat different depending on the definition of the outcome variable. From regression results on the broader outcome specification we discern that female gender, being foreign-born, and engaged in education or training, are independently related to worsened subjective well-being. Considering the stricter outcome specification, female gender, younger age, lower income, not being in employment, and not living with a partner, are independently associated with worsened subjective well-being. Furthermore, the results show an association between being foreign-born in a LMIC and worsened subjective well-being. This association is partly mediated by their on average lower income levels and lower propensity to be employed. It is noteworthy that although the results yield some statistically significant associations, most of the coefficients are small in size. However, as has been illustrated throughout this section, the relative change are substantively larger when applying the strict outcome specification, suggesting that the results from these models are the important takeaway. In the next section, I discuss these results in relation to previous research and the theoretical framework.

5 Discussion

This study aimed to examine how age, gender, and foreign-born status are related to worsened subjective well-being during the COVID-19 pandemic in Sweden. The first research question was “How are demographic characteristics associated with worsened subjective well-being”? The results show that there is both a gender and an age gradient in worsened

subjective well-being during the pandemic in the Swedish population. These patterns are evident both when regressing on the broad outcome specification, and when considering larger changes of subjective well-being regressing on the strict outcome. From the strict outcome models, we observe that being a woman is associated with a 2.3 percentage points higher likelihood of reporting worsened subjective well-being, and this effect remains after controlling for resources and family situation. This is coherent with what has been found in previous research regarding clinical mental morbidity (Unnarsdóttir et al., 2021) and COVID-19 related worrying (Kulin et al., 2021) in Sweden.

This study is based on the theoretical definition of subjective well-being as the balance point between challenges, in this case the COVID-19 pandemic, and resources (Dodge et al., 2012). Descriptive statistics show that women have on average similar or even more resources than men in terms of income, education, and activity status, so the gender difference remains after controlling for them in the regressions. The unexplained variance could be due to omitted variables of other resources. For example, psychosocial resources such as social relationships or pre-pandemic mental health status. Another way of interpreting this gender difference is that the pandemic posed a greater challenge for women than for men in relation to their respective resources. It is conceivable that women, for example, faced a higher care burden, when both caring for elderly relatives and/or children. While the models account for a portion of this increased care burden through the presence of a child in the household, they do not control for the care of other relatives. Lastly, this remaining difference may be due to women's sometimes higher propensity to report morbidity (Dahlin and Härkönen, 2013).

Regarding the age gradient, we also see that this disparity persists after controlling for resources. Regressing on the strict outcome, a 25-year-old woman is 64% more likely to report worsened subjective well-being compared to a 50-year-old woman with the same resource status. As with gender, this may be explained by resources that are not controlled for in the model. For instance, psychosocial resources such as experiences of dealing with negative life events. We can also turn to the life course perspective where this age gradient may be a reflection of how challenges are received differently depending on where in the life course individuals are posited (Hutchison, 2005; Settersten et al., 2021), and not just their level of resources. The life course is not solely linked to age, but normative ideals about the order and timing of certain events are often tied to an age-related time axis (George, 1993). Thus, we may imagine that the pandemic posed greater obstacles for younger individuals to achieve their desires and goals. In line with the relative resources framework (Diener et al., 2018; Judge et al., 2005), we can theorize that younger individuals were more likely to experience a mismatch between their actual life circumstances and their ideas about how life should be. This can give rise to negative emotions, which in turn reduces subjective well-being.

The second research question concerned the relationship between foreign-born individuals and worsened subjective well-being. Given that foreign-born individuals were particularly exposed to COVID-19-related negative outcomes, ranging from morbidity and mortality (Drefahl et al., 2020) to economic hardship and other health-related issues (Altmejd et al., 2023), I asked: "Where foreign-born individuals (also) particularly affected by worsened subjective well-being?". There is a persistent disadvantage for foreign-born individuals when applying the broad outcome specification. Both individuals from Low- and

Middle-Income-Countries (LMICs) and from High-Income-Countries (HICs) are around 5.5 percentage points more likely to experience worsened subjective well-being compared to natives, net of resources and family status. This may suggest that their elevated risk of COVID-19 related negative outcomes meant greater challenges for foreign-born individuals compared to natives. For instance, increased experiences of prejudice and discrimination among foreign-born individuals (Bredström and Mulinari, 2023; Folkhälsomyndigheten, 2021) may explain part of this discrepancy between foreign-born and natives. We may also interpret these results through the life-course lens, and think of greater challenges due to interlinked lives (Burton-Jeangros et al., 2015). For instance, foreign-born individuals may to a higher extent have experienced severe morbidity and/or mortality of relatives. They may also experienced greater obstacles to maintain social ties compared to natives, given travel restrictions between countries. There is a potential compounding disadvantage for foreign-born women, given that both being foreign-born and being female are associated with worsened subjective well-being. Future research may delve into this potential interaction.

Considering larger changes in subjective well-being and applying the strict outcome specification, we observe a disadvantage for foreign-born individuals from LMIC, net of education. This association is partly mediated by income, yet we observe a relative difference of a foreign-born man being 32% more likely to experience worsened subjective well-being compared to a native counterpart with the same education and income level. This association is further mediated by activity status. Thus, the greater propensity of foreign-born individuals from LMIC to experience worsened subjective well-being is partly a reflection of their on average lower disposable income and lower likelihood of being in employment. For the same reason, we observe no statistically significant difference between natives and foreign-born individuals from HIC as they have similar levels of resources. Thus, foreign-born individuals were indeed particularly affected by worsened subjective well-being compared to natives. However, only those from LMICs experienced an elevated likelihood of more severe negative changes in subjective well-being.

The general results from this study show that there exist social gradients in perceived change in subjective well-being during the pandemic with regards to gender, age, and foreign-born status. However, these differences were all substantively larger when considering more severe changes in subjective well-being. This is perhaps not surprising, as the pandemic and the subsequent changes to everyday life caused a large share of the population to experience *slightly worsened* subjective well-being. Thus, yielding small differences between population groups as these disturbances to everyday life occurred to everyone. On the other hand, it is only for the broad specification that we see an association between foreign-born status and worsened subjective well-being, net of resources, for both individuals from HIC and LMIC. This shows that broader measurements may detect inequalities that otherwise remain hidden. This speaks to using more inclusive well-being measures, and not only measures of clinical mental morbidity, if we want to get the full understanding of potential health disparities.

However, this study cannot answer whether these social gradients are a pandemic effect or reflects patterns that existed before the COVID-19 pandemic. Previous research indicate that these inequalities are pre-existing patterns in public health that are also visible in pandemic-related outcomes (Altmejd et al., 2023). Next, I discuss the strengths and

limitations of this thesis, and suggest some future research directions.

5.1 Strengths and Limitations

This thesis has several strengths. Firstly, the utilisation of a nationally representative sample enhances generalizability. Secondly, the focus on foreign-born individuals, a previously understudied group, provides novel knowledge and contributes to the research field on subjective well-being at large. Additionally, the analytical approach allows for an examination of the mediating effects of resources, further highlighting its relation to subjective well-being. Furthermore, the timing of the question adds temporal relevance for this paper, as it captures the perceived experience of the COVID-19 pandemic towards the end of it.

While the timing of the question is a strength, there are some limitations with the question as well. The outcome variable is based on a question in which respondents are asked to evaluate changes in their subjective well-being since the outbreak of the pandemic. There is a risk of recall bias as respondents may incorrectly remember how they felt one year prior to the interview, which could lead to an over- or underestimation of changes in their subjective well-being. Unfortunately, I cannot compare my results to pre-pandemic levels as I do not have data on subjective well-being from before the pandemic, either from the same individuals or others. Nevertheless, this study provides insights into how the Swedish adult population perceived that their subjective well-being had changed towards the end of the pandemic in relation to before the pandemic. Whether differences among societal groups were due to the pandemic or simply reflected pre-pandemic patterns remains a matter of speculation. However, this study contributes to the larger understanding of health disparities in Sweden.

There is also a risk of omitting explanatory variables. Following the theoretical idea of linked lives (Burton-Jeangros et al., 2015), this study would have benefited from including parents' country of birth to also capture the experience of second generation immigrants. However, the information in the dataset was not detailed enough to determine both immigrant generation and region of origin. There were also overall few observations that could be classified as second generation migrants. Thus, I opted to focus on heterogeneity among foreign-born individuals. Furthermore, to capture the COVID-19 context, useful variables would have been whether or not individuals were able to work from home, and whether or not they belonged to a risk group. This information was not available in the dataset. However, in quantitative research there is always a trade-off between including explanatory variables and not overfitting the model. Thus, more variables do not necessarily mean a better study.

Furthermore, a limitation is the risk of selection bias. This is especially a problem that stems from the high non-response rate, which is something that everyone working with surveys faces. A non-response rate of 73% is, unfortunately, nothing unusual in surveys from recent years (Luiten et al., 2020). However, to investigate research questions related to subjective experiences, surveys are our best bet. The best available method to deal with non-responses is to use weights in our analyses. However, we need to be somewhat cautious when making inferences about the population at large.

Moreover, while the possibility to make inferences about the Swedish population at large is a strength, it is important to recognize the limitations to external validity in relation to other countries, given the unique Swedish COVID-19 context. Potential variations in absolute levels, whether higher or lower than in other countries, remain speculative. That there were fewer changes in daily life in Sweden due to voluntary restrictions, may indicate lower absolute levels of worsened subjective well-being. Or it is possible that people in other countries felt more protected against the threat of the virus, and consequently experienced less worry and fear. As the Generations and Gender Program involves international collaboration, future research can explore these nuances.

Future research should explore whether the patterns found in this study remain beyond the pandemic. Will we observe similar social gradients in worse subjective well-being during more stable times, or will these gradients become more or less prominent? Another question deserving further exploration is the unexplained variance between men and women. It is worth examining whether this discrepancy is related to resources that are not controlled for in this study, or if it is attributed to greater challenges for women, such as caregiving-related burdens. Furthermore, attention should be given to the potential interaction between gender and foreign-born status. Finally, analyses including subjective well-being among second generation immigrants could shed further light on how well-being is related to migrant status and on how second generation immigrants experienced the COVID-19 pandemic.

Despite its limitations, this study contributes valuable insights into health disparities in Sweden during the COVID-19 pandemic, and future research could extend these findings by exploring patterns post-pandemic and further investigating the mechanisms driving subjective well-being inequalities.

6 Conclusion

This study contributes to the understanding of how the COVID-19 pandemic affected the well-being of the Swedish population. Specifically, this study examines perceived changes in subjective well-being between the outbreak of COVID-19 and one year into the pandemic. The nationally representative data used, allows us to make inferences about the full Swedish population aged 18-59. The results provide new insights into which population groups experienced worsened subjective well-being. In particular, this study sheds light on the perceived changes in subjective well-being among foreign-born individuals, a previously understudied group within the well-being literature.

Using descriptive statistics and regression analysis, this study finds social gradients in worsened subjective well-being. Younger individuals and women were more likely to report negative changes in subjective well-being, even after controlling for educational level, income and activity status. Foreign-born individuals were more likely than natives to experience worsened subjective well-being. This was partly accounted for by their higher propensity to be unemployed, and their on average lower income. These findings show that health inequalities during the COVID-19 pandemic were not contained to morbidity and mortality and point to the importance of considering a variety of challenges faced by

different groups in times of crisis.

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Appendix

Table A1: Regional country composition

Region	Country of birth	Percentage of total	Percentage of region
Sweden		86.34	
	Sweden		100
HIC		5.84	
	Germany, Austria, and Switzerland		15.03
	Finland		13.29
	Denmark, Norway, and Iceland		12.42
	East Asia (incl. Singapore)		11.76
	Spain, Portugal, Italy, and Greece		9.37
	Poland		7.84
	USA, Canada, Australia, and NZ		7.84
	UK and Ireland		6.97
	France, Netherlands, and Belgium		5.88
	Czechia, Slovakia, and Hungary		5.23
	Estonia, Latvia, and Lithuania		4.36
LMIC		7.82	
	South East Asia (excl. Singapore)		11.89
	Latin America and Caribbean		11.4
	Sub-Saharan Africa		11.24
	Yugoslavia + ex-Yug. states (excl. B&H)		7.82
	Bosnia & Herzegovina		7.82
	Syria		7.65
	Iraq		7.65
	Sov. Union & non-Baltic ex-Sov. states		7.65
	Iran		6.51
	South Asia		5.86
	Romania and Bulgaria		4.56
	Turkey		4.23
	Rest of MENA (excl. Israel)		3.42
	Afghanistan		2.28

	Subjective well-being							
	Definitely worsened	Worsened	Slightly worsened	Stayed the same	Slightly improved	Improved	Definitely improved	Total
N	449	817	2,459	2,966	628	356	178	7,853
<i>Age</i>	33.2	36.5	39.0	41.5	37.0	36.4	35.9	38.9
<i>Female</i>	58.1	49.8	52.8	42.7	49.3	53.0	53.7	48.9
<i>Living with partner</i>	48.5	55.1	66.5	69.3	60.2	58.5	52.2	63.8
<i>Child <16 in household</i>	23.6	29.1	33.2	35.9	31.0	31.0	23.3	32.6
Disposable family income (2019)	33333	37500	45000	45000	44167	39167	35000	43333
Country of origin								
Sweden	73.9	74.6	75.6	79.6	81.0	72.6	70.1	77.0
HIC	9.0	8.6	9.6	8.0	7.2	8.7	5.6	8.5
LMIC	17.1	16.8	14.9	12.5	11.8	18.7	24.3	14.5
Level of education								
Primary	26.1	20.6	15.6	14.7	16.0	16.7	22.4	16.8
Secondary	39.1	38.1	40.6	47.5	35.5	35.4	34.4	42.0
Post secondary	16.0	18.7	16.8	15.0	19.2	21.5	20.8	16.8
Tertiary	18.8	22.5	27.0	22.8	29.3	26.5	22.4	24.4
Activity status								
Employed	55.1	67.3	76.8	82.5	72.4	72.8	67.7	75.6
In education/training	28.3	20.6	14.8	8.7	17.3	19.8	22.3	14.7
Unemployed	8.5	7.4	4.3	4.1	6.6	3.7	5.3	5.0
Other	8.1	4.8	4.0	4.6	3.8	3.7	4.7	4.6

Notes:

Mean in italic

Median disposable family income in SEK per month

Weighted data from the Swedish GGS in 2021

Table A2: Summary statistics of explanatory variables over the levels of subjective well-being

The improved and definitely improved groups are on average younger, the median disposable family income lower and a higher proportion of individuals from low and middle income countries compared to the total average, reflecting the patterns found in the worsened groups. However, these groups, especially the definitely improved group have few observations and although I am using probability weights, these results should be interpreted with caution.

Table A3: Regression table with broad specification of subjective well-being (slightly worsened included) without income outliers

	(1)	(2)	(3)	(4)	(5)	(6)
Female	0.070*** (5.37)	0.068*** (5.21)	0.068*** (5.19)	0.065*** (5.00)	0.065*** (5.01)	0.065*** (5.00)
Age	-0.013*** (-3.47)	-0.018*** (-3.83)	-0.018*** (-3.87)	-0.013* (-2.50)	-0.012* (-2.40)	-0.010 (-1.87)
Age $\times$ Age	0.000* (2.44)	0.000** (2.99)	0.000** (3.04)	0.000 (1.89)	0.000 (1.81)	0.000 (1.28)
Region of origin (ref. Sweden)						
HIC	0.079** (3.05)	0.074** (2.82)	0.073** (2.76)	0.070** (2.66)	0.070** (2.66)	0.070** (2.67)
LMIC	0.064** (2.84)	0.067** (2.97)	0.065** (2.88)	0.058* (2.54)	0.058* (2.54)	0.058* (2.56)
Education (ref. Primary)						
Secondary		0.026 (1.01)	0.025 (0.98)	0.036 (1.40)	0.037 (1.41)	0.035 (1.35)
Post secondary		0.044 (1.62)	0.043 (1.58)	0.052 (1.88)	0.052 (1.89)	0.050 (1.81)
Tertiary		0.044 (1.59)	0.045 (1.61)	0.060* (2.14)	0.061* (2.15)	0.060* (2.11)
Ln disposable family income (2019)			-0.006 (-0.60)	-0.001 (-0.10)	-0.001 (-0.06)	0.002 (0.17)
Activity status (ref. Employed)						
In education/training				0.069** (2.65)	0.068** (2.63)	0.070** (2.68)
Unemployed				0.066* (1.98)	0.066* (1.96)	0.065 (1.95)
Other				0.045 (1.31)	0.045 (1.29)	0.045 (1.30)
Living with partner					-0.003 (-0.19)	0.004 (0.23)
Child <16 in household						-0.018 (-0.99)
Constant	0.761*** (10.47)	0.816*** (10.35)	0.883*** (6.61)	0.694*** (4.75)	0.686*** (4.52)	0.628*** (3.81)
Observations	7544	7544	7544	7544	7544	7544

t statistics in parentheses

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

Table A4: Regression table with strict specification of subjective well-being, without income outliers

	(1)	(2)	(3)	(4)	(5)	(6)
Female	0.023* (2.22)	0.024* (2.30)	0.023* (2.21)	0.020 (1.96)	0.021* (2.06)	0.021* (2.07)
Age	-0.017*** (-5.34)	-0.017*** (-4.74)	-0.018*** (-5.07)	-0.014*** (-3.72)	-0.013** (-3.24)	-0.015*** (-3.55)
Age $\times$ Age	0.000*** (4.20)	0.000*** (3.73)	0.000*** (4.17)	0.000** (3.00)	0.000* (2.57)	0.000** (2.94)
Region of origin (ref. Sweden)						
HIC	0.036 (1.71)	0.038 (1.80)	0.030 (1.43)	0.027 (1.29)	0.027 (1.29)	0.027 (1.27)
LMIC	0.048** (2.66)	0.048** (2.65)	0.037* (2.02)	0.029 (1.58)	0.030 (1.60)	0.029 (1.57)
Education (ref. Primary)						
Secondary		0.004 (0.18)	-0.000 (-0.01)	0.011 (0.53)	0.014 (0.67)	0.015 (0.76)
Post secondary		0.015 (0.71)	0.008 (0.39)	0.019 (0.89)	0.023 (1.04)	0.025 (1.15)
Tertiary		-0.008 (-0.35)	-0.004 (-0.17)	0.013 (0.62)	0.017 (0.78)	0.018 (0.83)
Ln disposable family income (2019)			-0.041*** (-5.00)	-0.034*** (-4.10)	-0.031*** (-3.61)	-0.034*** (-3.86)
Activity status (ref. Employed)						
In education/training				0.051* (2.33)	0.049* (2.22)	0.047* (2.14)
Unemployed				0.089** (3.10)	0.086** (2.99)	0.087** (3.01)
Other				0.071* (2.46)	0.067* (2.31)	0.066* (2.29)
Living with partner					-0.022 (-1.72)	-0.030* (-2.20)
Child <16 in household						0.021 (1.58)
Constant	0.559*** (8.82)	0.553*** (8.48)	1.003*** (9.42)	0.826*** (7.17)	0.770*** (6.48)	0.837*** (6.57)
Observations	7544	7544	7544	7544	7544	7544

t statistics in parentheses

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

Table A5: Regression table with broad specification of worsened subjective well-being (slightly worsened included), excluding those under age 20

	(1)	(2)	(3)	(4)	(5)	(6)
Female	0.073*** (5.66)	0.072*** (5.51)	0.072*** (5.50)	0.069*** (5.30)	0.069*** (5.32)	0.069*** (5.30)
Age	-0.012** (-2.71)	-0.015** (-3.00)	-0.015** (-3.00)	-0.011* (-2.18)	-0.011* (-2.08)	-0.009 (-1.57)
Age $\times$ Age	0.000 (1.87)	0.000* (2.24)	0.000* (2.25)	0.000 (1.56)	0.000 (1.48)	0.000 (0.98)
Region of origin (ref. Sweden)						
HIC	0.068** (2.69)	0.063* (2.47)	0.062* (2.40)	0.059* (2.27)	0.058* (2.27)	0.059* (2.29)
LMIC	0.065** (2.90)	0.067** (2.98)	0.065** (2.88)	0.058* (2.55)	0.058* (2.55)	0.058* (2.56)
Education (ref. Primary)						
Secondary		0.016 (0.59)	0.017 (0.62)	0.023 (0.83)	0.023 (0.84)	0.023 (0.81)
Post secondary		0.035 (1.19)	0.035 (1.21)	0.039 (1.35)	0.040 (1.36)	0.039 (1.31)
Tertiary		0.034 (1.16)	0.035 (1.22)	0.047 (1.58)	0.047 (1.60)	0.047 (1.58)
Ln disposable family income (2019)			-0.004 (-0.64)	-0.001 (-0.15)	-0.001 (-0.12)	-0.000 (-0.00)
Activity status (ref. Employed)						
In education/training				0.056* (2.09)	0.055* (2.07)	0.056* (2.09)
Unemployed				0.066* (2.02)	0.066* (1.99)	0.065* (1.97)
Other				0.048 (1.42)	0.047 (1.38)	0.047 (1.39)
Living with partner					-0.004 (-0.24)	0.003 (0.19)
Child <16 in household						-0.016 (-0.94)
Constant	0.737*** (8.44)	0.759*** (8.43)	0.797*** (7.37)	0.679*** (5.76)	0.673*** (5.60)	0.633*** (4.88)
Observations	7574	7574	7574	7574	7574	7574

t statistics in parentheses

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

Table A6: Regression table with strict specification of worsened subjective well-being, excluding those under age 20

	(1)	(2)	(3)	(4)	(5)	(6)
Female	0.021* (2.13)	0.022* (2.24)	0.022* (2.22)	0.019 (1.92)	0.021* (2.08)	0.021* (2.09)
Age	-0.018*** (-4.82)	-0.017*** (-4.34)	-0.017*** (-4.35)	-0.014*** (-3.40)	-0.011** (-2.78)	-0.013** (-2.87)
Age $\times$ Age	0.000*** (3.85)	0.000*** (3.40)	0.000*** (3.46)	0.000** (2.62)	0.000* (2.06)	0.000* (2.22)
Region of origin (ref. Sweden)						
HIC	0.025 (1.27)	0.028 (1.40)	0.023 (1.13)	0.019 (0.93)	0.018 (0.92)	0.018 (0.91)
LMIC	0.058** (3.22)	0.057** (3.17)	0.050** (2.77)	0.042* (2.26)	0.042* (2.27)	0.042* (2.26)
Education (ref. Primary)						
Secondary		-0.001 (-0.05)	0.002 (0.09)	0.011 (0.53)	0.015 (0.68)	0.015 (0.70)
Post secondary		0.010 (0.45)	0.012 (0.55)	0.022 (0.97)	0.026 (1.12)	0.027 (1.16)
Tertiary		-0.015 (-0.66)	-0.008 (-0.38)	0.008 (0.36)	0.013 (0.57)	0.013 (0.58)
Ln disposable family income (2019)			-0.014** (-2.91)	-0.011* (-2.12)	-0.009 (-1.82)	-0.010 (-1.89)
Activity status (ref. Employed)						
In education/training				0.044 (1.92)	0.040 (1.76)	0.040 (1.75)
Unemployed				0.101*** (3.55)	0.097*** (3.37)	0.097*** (3.39)
Other				0.080** (2.83)	0.072* (2.55)	0.072* (2.55)
Living with partner					-0.031* (-2.56)	-0.036** (-2.74)
Child <16 in household						0.012 (0.91)
Constant	0.564*** (7.75)	0.546*** (7.36)	0.691*** (7.83)	0.567*** (5.95)	0.522*** (5.40)	0.551*** (5.28)
Observations	7574	7574	7574	7574	7574	7574

t statistics in parentheses

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

Table A7: Average Marginal Effects of LPM and logistic regression

	LPM 6a	Logit 6a	LPM 6b	Logit 6b
Female	0.0666 (0.0128)	0.0666 (0.0128)	0.0228 (0.0100)	0.0240 (0.0100)
Age	-0.00353 (0.000690)	-0.00351 (0.000683)	-0.00348 (0.000546)	-0.00384 (0.000662)
Region of origin (ref. Sweden)				
HIC	0.0562 (0.0256)	0.0561 (0.0255)	0.0181 (0.0202)	0.0182 (0.0207)
LMIC	0.0539 (0.0224)	0.0538 (0.0223)	0.0354 (0.0183)	0.0373 (0.0185)
Ln disposable family income (2019)	0.000474 (0.00617)	0.000476 (0.00618)	-0.0111 (0.00511)	-0.00948 (0.00369)
Education (ref. Primary)				
Secondary	0.0193 (0.0256)	0.0192 (0.0257)	0.0136 (0.0200)	0.0158 (0.0180)
Post secondary	0.0346 (0.0272)	0.0344 (0.0272)	0.0247 (0.0213)	0.0276 (0.0196)
Tertiary	0.0444 (0.0279)	0.0440 (0.0278)	0.0114 (0.0214)	0.0136 (0.0206)
Activity status (ref. Employed)				
In education/training	0.0676 (0.0255)	0.0678 (0.0257)	0.0450 (0.0218)	0.0370 (0.0187)
Unemployed	0.0619 (0.0328)	0.0617 (0.0328)	0.0932 (0.0284)	0.0901 (0.0273)
Other	0.0456 (0.0339)	0.0455 (0.0339)	0.0712 (0.0282)	0.0754 (0.0285)
Living with partner	0.00182 (0.0170)	0.00172 (0.0169)	-0.0341 (0.0133)	-0.0351 (0.0137)
Child <16 in household	-0.0161 (0.0174)	-0.0160 (0.0174)	0.0112 (0.0128)	0.0100 (0.0143)

Standard errors in parentheses

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