

**THE MODERATING EFFECT OF SOCIAL SUPPORT ON THE RELATIONSHIP  
BETWEEN PERCEIVED ECONOMIC STRESS AND PSYCHOLOGICAL DISTRESS:**

**A MENTAL HEALTH STUDY OF SOCIAL DETERMINANTS ON THE ADULT  
POPULATION OF TROMS AND FINNMARK, NORWAY**

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## List of abbreviations

Covid-19	-	Coronavirus disease 2019
HSCL/SCL	-	Hopkins' symptoms checklist
NIHP	-	National institute of public health /FHI
OSSS-3	-	Oslo-3 Social Support Scale
REK	-	Regional Committees for Medical and Health Research Ethics
SDG	-	Sustainable Development Goals
SPSS	-	Statistical package for the social sciences
SSB	-	Statistics Norway
WHO	-	World Health Organization

## Abstract

**Background:** Good mental health is an integral part of our wellbeing, and the effects of poor mental health have both personal and societal implications as it affects people's general functioning and can lead to higher spending for governments as e.g., unemployment checks rise. Mental illnesses are becoming an increasingly prevalent global health issue and as such it is important to look into the reasons behind it. The social determinants of health is an established theory that explains some of the variance in health and mental health, and can be a powerful tool used to identify solutions for poor mental health.

**Objective:** The aim of this thesis was to investigate the relationship between social determinants and mental health, by looking closer at perceived economic stress as a main variable and the possible moderating effect that social support can have on the relationship between perceived economic stress and psychological distress. This study also sought to investigate how this relationship changed when adding control variables representing the social determinants.

**Data and Methods:** The data used in this thesis was a public health survey from Troms and Finnmark conducted by NIPH in 2019. The sample consisted of all people over 18 years living in Troms or Finnmark (N= 21 760). The data was examined by univariate and bivariate analyses and hierarchical regression analysis. As well as moderation analysis with the use of the Process ad-on by Hayes.

**Results:** The analyses showed that perceived economic stress has a profound effect on psychological distress, and that this relationship can be moderated by social support. High levels of social support has the power to buffer the negative effect that high perceived economic stress has on mental health. It was also evident that social determinants, represented by the independent variable and the control variables, play an important role in explaining levels of psychological distress.

**Discussion and Conclusion:** The results indicate that social support can be a helpful health promotion tool. Social support is something that can be provided on a political and personal level and is not reliant on a lot of material resources. In addition to increased focus on providing social support there is also a need for decreasing social inequality in order to lessen the effect that social determinants have on mental health.

# 1. Introduction

## 1.1 Background

Mental health issues are a personal burden that cause human suffering. Mental illness or distress will most likely affect all of us in some way or other, in that we ourselves get sick or that somebody close to us is struggling (Miljøverndepartementet, 2009, p.37). A poor mental health can affect our ability to handle small and big challenges in everyday life, as well as inhibit our ability to contribute to our local societies (Moksnes, 2021). Depression and anxiety, two of the most common mental illnesses yearly cost the global economy 1 trillion US\$ (WHO, 2023). And as such poses both a personal and economic challenge.

The 2001 World Health Organisation's (WHO) world report titled 'Mental Health: New Understanding, New Hope' firmly defined mental health as part of global health (WHO, 2001). In the years after, the WHO has gone on to publish a series of guidelines and documents culminating in the Mental Health Action Plan 2013-2020 (Saraceno, 2020). Following this there has also been two global summits on mental health, one hosted in Los Angeles in 2017 and one hosted by the UK government in London in 2018 (Saraceno, 2020). Both summits focused on cultural bias and cultural barriers connected to mental health. The WHO's increasing focus on mental health is a clear sign that poor mental health is something that should be taken seriously at a global level.

This increased focus on mental health is in part due to the fact that mental health issues are becoming more prevalent (WHO, 2023). The second leading cause of death among 15-29 year-olds is suicide and 1 of 5 years lived with disability is caused by mental illnesses (WHO, 2023). There is also stigma connected to mental health, which can hinder people from seeking help for their mental ailments (WHO, 2022b). Stigma also has a very personal consequence for the people it touches and might bring more suffering in addition to the effect of mental health issues. This exemplifies the all-encompassing nature of mental health. Searching for good ways to maintain good mental health should be a priority.

### 1.1.1 Social determinants of health

This thesis will look closer into the mechanisms behind mental health outcomes by using social determinants of health as a theoretical framework. Social determinants are the conditions which we are born into, and which affect us as we live, work and age. It can take the form of what kind of health services we have access to, our economic, social and emotional situation (Allen et al., 2014). All of these factors affect each other and can affect mental health. Social determinants as a concept have been linked to a number of health- and

mental health outcomes (Marmot, 2010). When we talk about social determinants of health we also often talk about social inequality. Social inequality in society is the unequal distribution of resources, which are similar to social determinants, such as: education, occupation, income and housing/living situation. When this distribution is unfair it creates inequalities that result in meaningfully different health outcomes.

Socio-economic position is determined by income, class, housing tenure, deprivation or education (Shaw, Dorling & Smith, 2006, p. 196). Research on social determinants and mental health show that there is a connection between having a lower social status and having greater health risks (Alegría et al., 2018). Inequality in social and material situation causes lower life expectancy, higher rates of child mortality, and greater burden of disease among disadvantaged populations (Alegría et al., 2018). It has been observed in several European countries, North America and Korea that individuals with lower income and considerable financial strain have a poorer mental health (Alegría et al., 2018).

In this study, economic situation, represented as perceived economic stress, will be the main social determinant of mental health in focus, while a selection of other social determinants will be taken into consideration.

### 1.1.2 Social support

The relationship between social determinants and mental health is not necessarily a straight line and can be influenced by other factors. There is a wide agreement that social support affects mental health (Shelton et al., 2017). However, there are disagreements on exactly how this effect takes place, whether directly or as a buffering effect (Turner & Brown, 2010, p. 200). This study will look closer into the effect that social support can have as a moderator on the relationship between perceived economic stress, as a proxy determinant for income, and psychological distress (mental health). Poor mental health is a global and personal problem, and this thesis will focus on a more local context within the northernmost county in Norway. The following paragraphs will take you through different terms and phenomena used in this study and contextualise the overarching themes for the study.

### 1.1.3 Definition of mental health

The WHO defines mental health as “a state of mental well-being that enables people to cope with the stressors of life, realize their abilities, learn well and work well, and contribute to the community” (WHO, 2022a). Health promotion is grounded in an all-encompassing definition of mental health, that includes positive aspects like belonging, fulfilment, autonomy and positive relationships (Helsedirektoratet, 2014/12). Through these definitions, specifically



with respect to positive relations and belonging, social support is connected to mental health. By defining mental health in this way social support gets a natural point of influence, through support we can improve positive relations and feeling of belonging.

#### 1.1.4 Mental health in global development

One of the anchoring elements of global development are the sustainable development goals (SDGs), they constitute of 17 different goals for ensuring peace and prosperity (UN, 2023). Mental health is connected to the sustainable development goals mainly through SDG 3 Good health and well-being (SDGCities, 2022). Within SDG 3 there are sub-goals for improving both physical and mental health. In order to improve overall mental health levels there are many possible initiatives to take and many possible focus points. Two of the main sub goals in SDG 3, that include mental health, are ‘promote mental health and well-being’ and ‘strengthen the prevention and treatment of substance abuse’ (WHO, 2018).

Mental health is also relevant for SDG 8: Decent work and economic growth and SDG 10: reduced inequalities. Having poor mental health and struggling with mental illness can make you unable to work, or unable to get work and in other ways expose you to stigmatization in society. Having a good mental health and generally being able to cope with the stressors of life and contribute to the community is a condition for almost all the other SDGs as working towards other goals to some extent depend upon people being healthy.

Mental distress is a global health problem, which is also reflected on a national/local level in Norway. In order to achieve the SDGs, we need both global and local initiatives.

#### 1.1.5 Mental health in Norway

Mental illness or disorder can be categorized as a public health issue. Half of Norway’s population will have a mental illness during their lifetime, between 20-30% of the Norwegian population has had a mental illness in the last year and one out of three of those who are on disability pension are mentally ill (Miljøverndepartementet, 2008). As a result poor mental health cost the state a lot of money. Norway paid a total of 52 billion NOK in long-term unemployment checks in 2007 (Miljøverndepartementet, 2008) and with a substantial amount of unemployment connected to mental illness the cost of poor mental health is quite high for the government.

A report from Statistics Norway (SSB) mapped out the ten biggest humanitarian challenges, one of the ten challenges (they were not ranked) were social inequality. This was deemed a

challenge as the differences between the ‘poor and rich’ are growing bigger (Hammersland & Barstad, 2022). The SSB report looked into changes of humanitarian needs from 2017 until 2022<sup>1</sup>. The overall poverty level did not change during the period, but mental health outcomes took a great hit with around twice as many people having mental health issues during the covid-19 lockdowns than usual (Hammersland & Barstad, 2022).

The covid-19 pandemic has had an uneven effect – where the weakest in society were hit the hardest – the existing social inequalities have been made worse. No new groups seem to have become vulnerable, but the existing vulnerability has increased in Norway (Hammersland & Barstad, 2022). Rising inequalities is yet another reason to do more research on mental health and to do research on how health outcomes are related to social inequalities.

## 1.2 Study area: Troms and Finnmark county

This study will use a public health survey from Troms and Finnmark. Troms and Finnmark is the northernmost county in Norway. At the time of the survey in 2019 they were two separate counties, but have since been merged into one county that is splitting up again in 2024.

Statistics show that this region has lower scores on health indicators than the mean for the country as a whole (Skogen et al., 2019). Health statistics within Norway show decreasing disparities between regions/counties, however there are some notable differences. The North is an area with lower health scores than the national mean (Skogen et. al, 2019). Life expectancy still varies between regions and municipalities in Norway, with men in Finnmark having the lowest life expectancy (Bævre, 2021). Troms and Finnmark is the only Norwegian county that has a higher years of life lost than the national average (FHI, 2022b)

The population of Troms and Finnmark generally score low on social determinants, there are substantial differences within the regions and between the municipalities, but compared to the other counties the region is usually towards the bottom of social determinant rankings.

Counted as the amount of the population of municipalities that have finished three years of higher education or more three Finnmark municipalities are among the 10 municipalities in Norway with the lowest amount of higher educated inhabitants (18.9% - 15.8%)

(Telemarksforsking, 2021). Around 29% of the male population in Troms and Finnmark has primary school as their highest obtained education, Troms and Finnmark scored in the top

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<sup>1</sup> a five year period is usually too short to see changes but because of the Corona pandemic some differences were evident.

three among the counties - with Nordland and Innlandet also having around 29% who only have primary school education (SSB, 2022).

There is no evidence that there are substantial differences in mental health between Norwegian counties. However, there are differences in the access to mental health services. The average waiting period for adults seeking mental health services is significantly higher in the north health region (Helse Nord) than the three other health regions in the country (Helsedirektoratet, 2022).

Lacking health facilities in Finnmark have become a political issue. In the parliamentary elections of 2021, a candidate from Finnmark was elected into parliament on the one-case basis of getting a hospital to Alta (the biggest city in Finnmark). While there has been no evidence of great differences in mental health between the Norwegian counties, research on the county level can still prove useful for health promotion purposes, especially when we know that there are differences in physical health and social status. Social determinants are a good measure to identify this, and the moderating role of social support can provide us with a solution to poor mental health.

### 1.3 Study aim

The aim of this thesis is to investigate the relationship between social determinants and mental health in the adult population in Troms and Finnmark county in Norway. This will be done by using perceived economic stress as the main social determinant. It is also the aim of this thesis to investigate if the relationship between perceived economic stress and mental health is moderated by social support.

In Chapter 1 I have given a summary of the context for the thesis by introducing key concepts and definitions. In chapter 2 the theory of the social determinants of health will be explained. Chapter 3 is the literature review and will present relevant studies in the field. In chapter 4 the methods for data sampling and data management will be explained as well as introducing the variables and the analysis methods. Results of the analysis will be presented in chapter 5 and the results will be discussed in chapter 6. Finally, chapter 7 will present the concluding remarks.

## 2. Theory

This chapter explains the theoretical framework for this thesis, which encompasses theory on the influence of determinants on health by using Marmot et al.'s theory of the social determinants of health. This chapter will also put the theory of social determinants in a broader context (CSDH, 2008).

Social class theory has some similarities to social determinants and is/has been an important part of sociology. Karl Marx is considered to be the founder of social class theory as he developed theories around class conflict, mainly focusing on capitalism and the role of the working class. Class is usually defined by different attributes, such as gender, age, race, intelligence, education, geographical location, to mention some. Which is consequential when we want to explain phenomena like health outcomes (Wright, 2009). These class distinctions are also similar to Weber's class theory. While Weber didn't specifically focus on health, he did theorize that education and property have a substantial effect on social standing (Gane, 2005). We can view this as a foundation for the social determinants framework, both social class theory and the social determinants of health framework make certain assumptions about society and about the effect our surroundings have on our abilities and well-being.

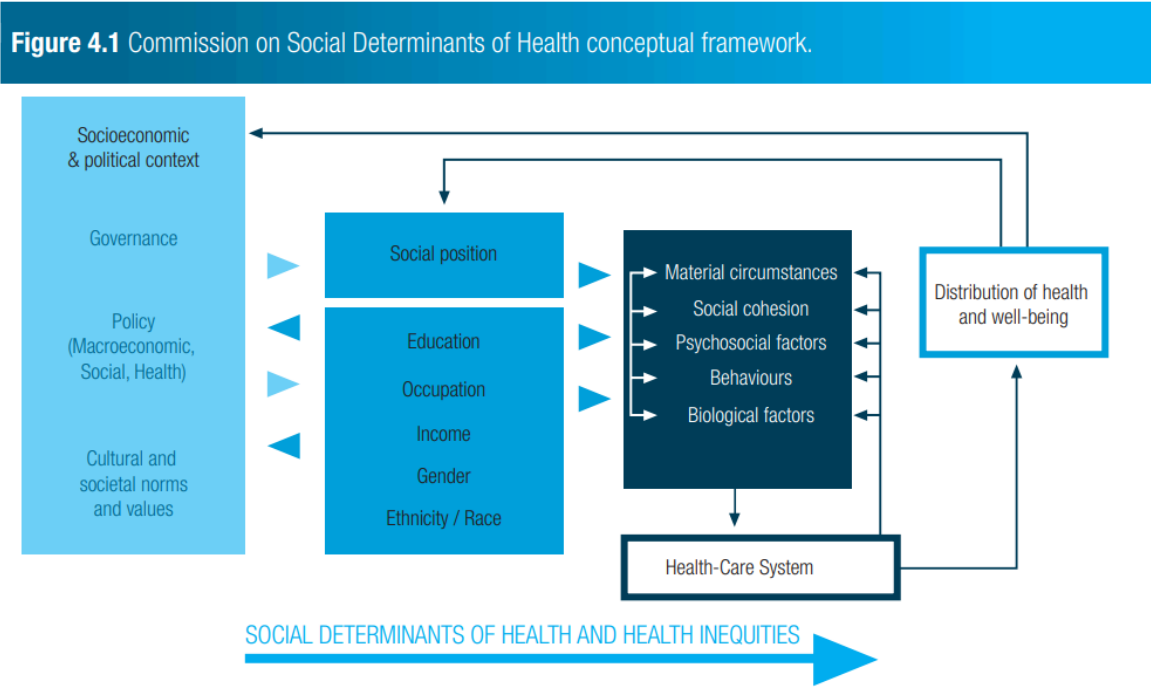
Marmot et al.'s model (Figure 1) (CSDH, 2008, p. 43) of social determinants will be used as the theoretical framework for the analysis of this thesis. The model illustrates how socioeconomic and political context influence social position and vice versa. Social position, which includes education, occupation, income, gender and ethnicity/race influences material circumstances, social cohesion, psychosocial factors, behaviours and biological factors. These outcomes are moderated by the health-care system and the distribution of health and well-being (Figure 1) (CSDH, 2009, p.43).

Marmot et al. (2008) theorize that, for example, education level can be seen as an indication of material circumstances and/or social cohesion which in turn affects health. The level of education often determines income and occupation, which can be affected by policies, governance and societal norms. Education level 'determines' a part of your social standing and overall mobility which has implications for your health. Income, another social determinant, can have a more direct effect on health as it can determine what type of health services you can afford (material circumstances), the quality of your food and house and how much stress you experience (psychosocial factors) and your diet (behaviours). This is

relevant for the aim of this thesis as it contextualises the relationship between income and health and explains the mechanisms behind it.

In making this model Marmot et al. also imply that there are social inequalities in health, and that poor health often is an issue of social inequality (CSDH, 2008, p.44). Part of the solution to ‘closing the gap’ in global health is, as suggested by Marmot et al., to address this social inequality (CSDH, 2008).

Figure 1 Model of Social Determinants of Health (CSDH, 2008, p.43).



Source: Amended from Solar & Irwin, 2007

There is not a clear agreement on which concepts to include as a social determinant. A study has been done on this, where the authors sought to identify what the most common meaning of ‘social’ determinants are and how it is used in different fields (Cruwys et al. 2021). While the term social determinants includes both economic and social aspects, Cruwys et al. (2021) had a main focus on social aspects. By categorizing social variables into different factions Cruwys et al. (2021) found that the different disciplines not only varied from each other, but they all used at least four different conceptualisations between social variables and mental health (social variables as determinants, features, outcomes or intervention).

It is important to note that social determinants is a term that is used in different ways, and this study will also make a delimitation of the term: determinants gender and ethnicity will not be

included in this study, only a proxy for income will be included and occupation will be defined as work status rather than different professions.

Social determinants can generally be divided into two categories: upstream and downstream (Alegría et al., 2018 ; Braveman et al., 2011). Downstream social determinants include behavioural, social and psychological risk factors, while upstream determinants are “the broader risks to population health at both international and national levels” (Fosse, 2022, p. 882). Downstream behaviour could for example be smoking, which is a health risk, while and upstream risk could be dumping of toxic waste. Upstream and downstream determinants affect each other, and downstream determinants are often caused by larger upstream determinants (Braveman et al., 2011). Upstream and downstream determinants are often used as a critique of where to put the ‘blame’, health issues are often caused upstream – but it can be difficult to effectively critique or blame large systems.

This provides a slightly different way to look at determinants of health, with increased focus on the direction of the influence of the determinants and a clearer cause and effect perspective. Compared, Marmots model is more neutral and has emphasis on the actors.

The relationship between social determinants and mental health can also be affected by other phenomena. Social support is a quite wide term, this study primarily uses social support as a proximal social determinant. Hale et al. (2010) identify the domains of social support as “emotional support, appraisal and affirmation, informational assistance, intimacy, comfort, and physical affection”. To simplify it social support can be defined as “resources provided by other persons” (Cohen & Syme 1985 as cited in Stansfeld, 2006, p.148). There are several theories on exactly how social support affects mental- or physical health. One such theory, ‘main support’, suggests that social support directly affects health status (Stansfeld, 2006, p.152), but it has also been theorized that social support works as a buffer which helps you deal with stressors that otherwise would have a negative impact for your health, ‘buffering support’ (Stansfeld, 2006, p. 152).

In this thesis I will use a selection of social determinants. These have been selected with respect to the theoretical framework and the overall aim of this thesis. The determinants chosen, based on Marmot’s model (CSDH, 2008, p.43), are: Education, income, occupation (work status) – as well as social support. This selection of determinants has been chosen because they illustrate the most fundamental determinants of health and because they coincide with the questions available in the data material used for the thesis. Perceived economic stress

will be used as a proxy for income and will also be the main independent variable while the other social determinants will be used as control variables. In addition geographic region and age were also used as a control variables. The data used in this analysis did not include variables on ethnicity or race, which Marmot et al. uses in their model, and will therefore not be included.

### 3. Literature review

This chapter will review empirical literature on the connection between socioeconomic status on a general basis, as well as looking into the chosen social determinants and mental health among adult populations.

Low socio-economic status leads to more psychological stress and mental health issues (Dalgard, 2008). This connection is not only a poverty factor but also a social gradient. Dalgard's (2008) study used Hopkins symptoms checklist – 10 (HSCL-10) as a measure of mental health and defined socio-economic status as education, income, and profession. In addition he also investigated social support, negative life events, control (at work), self-efficacy, disempowerment (impotence), lifestyle and somatic health (Dalgard, 2008). Dalgard (2008) finds that lack of control over your own life situation and low self-efficacy to be an important explanatory factors for mental health, however a lack of social support, negative life events (such as economic difficulties) and lifestyle also plays a part (Dalgard, 2008).

#### 3.1 Poverty and mental health

Poverty is one of the main aspects that determine socio-economic status and is one of the strongest determinants of health and mortality (Shaw, Dorling & Smith, 2006, p. 196).

We can divide poverty into two different types, absolute and relative. Absolute poverty is the deprivation of basic needs such as food, water and shelter (Lepiéce et al., 2015). Relative poverty on the other hand, is not measured according to the 'poverty line' and the lowest amount of money needed to survive, but defined as "The inability to afford the goods, services, and activities needed to fully participate in a given society" (Lepiéce et al., 2015, p.s93). The effects of poverty are not only restricted to physical health, a poor housing situation can for example cause high noise levels and lack of privacy which affects mental health (Shaw, Dorling & Smith, 2006, p.201).

Because poverty is such an all-encompassing field there are several ways in which it influences life and health, either directly or indirectly. The negative effect of poverty on

mental health has been suggested to be mediated by social support (Chang et al., 2020). A study on the mental health of single and partnered mothers found that socio-demographic factors explained almost all of the association between single mothers and poor mental health, with financial hardship and social support being the strongest predictors (Crosier et al., 2007). This thesis will focus on self-evaluated subjective poverty, with the hypothesis that worrying about income and money will have a negative effect on mental health.

### 3.2 Social support and mental health

Social support is an interpersonal phenomenon that can affect depression (Hagerty & Williams, 1999). Dalgard (2008) conducted a thorough study on mental health and social inequality where he found support for the existence of a social gradient in mental health. The study found that social support has an important role in explaining levels of psychological distress (Dalgard, 2008). Similarly a study on university students' mental health during the COVID-19 pandemic found that the students who had a high level of social belonging had less depressive symptoms than the students with a low level of social belonging (Gopalan et al., 2022). Eikemo (2008), found that for every person less that someone had to confine in the odds of having a mental disorder increased. The same study also found a correlation between being in a relationship and better mental health, compared to those who are not in a relationship (Eikemo, 2008). Social isolation is destructive for both mental and physical health, and having close friends and family are some of the greatest resources for improving one's health situation. The negative effect of destructive relationships on mental health can be even grater than the positive effect of high social support has on mental health (Coyne & Downey, 1991, as cited in Eikemo, 2008). Social relations have an instrumental effect on our well-being and physical and mental health.

#### 3.2.1 Moderator effect of social support

Gadalla (2009) found evidence that high levels of social support were associated with lower levels of distress and less depressive symptoms. Another study, that used social support as a moderator on psychological distress is George et al. (2020), their study focused specifically on carers in Australia aged 50 and up. George et al. (2020) state that no matter the caregiving context or patient condition, being a caregiver is associated with higher levels of stress. However, there are not a lot of studies that look into the moderating effect of social support on perceived economic situation and psychological distress. And as such this is a topic that required further investigation.



Strengthening social relations can be health promoting in that it improves social support and reduces social isolation (Nes & Clench-Aas, 2011:2). Studies show that social support has a broad influence on both physical and mental health (Hale et al., 2010). These empirical findings are a clear indication that we should take social relations into account in health promotion work, and when we seek to understand the connection between socioeconomic conditions and mental health.

### 3.3 Education and mental health

Alongside income, education is one of the main determinants used when measuring socio-economic status. Education has a positive effect on mental health, a Norwegian ‘standard of living’ survey from 2008 showed that people with a high educational level have less mental ailments and report being more satisfied with life (Nes & Clench-Aas, 2011:2). These results come from only measuring the direct effect of education, and the combined effect of education through income, or other variables, might be higher (Nes & Clench-Aas, 2011:2).

The effect of education on mental health is different in the developed and developing world (Araya et al., 2003). A study from Chile found that there was a strong association between education and the prevalence of common mental disorders, while income was not correlated to ill mental health when accounting for other socioeconomic variables (Araya et al., 2003). This is in contrast to some British studies that find that income, and not education, has an effect on mental health (Araya et al., 2003). Social determinants can be difficult to separate from each other. Studies may vary from different countries and regions and it is therefore important to look closer into this connection. Chevalier & Feinstein (2006) found that the positive effect of education on mental health is not only due to income, family or work: the learning outcomes and skills that education provides also seem to prevent depression.

### 3.4 Employment status and mental health

Employment status is an important factor within social determinants. It is the most important determinant for income, which again determines housing situation, food affordability and a range of other things. Unemployment often lead to some sort of poverty and higher amounts of stress, but even those who are employed can experience fear of unemployment which affects their well-being and life satisfaction (Brydsten et al., 2018). Kopasker et al. (2018) state that 2.8% of employees in Britain have ‘zero-hours’ contracts which provide no security,

and that this is a growing trend. Kopasker et al. (2018) perform an analysis where level of job insecurity is accounted for in addition to employment status. They find for males “being dissatisfied with current levels of job security reduces mental wellbeing by 0.316 of a standard deviation from the mean, the equivalent figure for females is 0.171” (Kopasker et al., 2018).

### 3.5 Research gaps

The connection between social inequality and mental health is well established. Those that have the least, in terms of education, income and overall social capital also have the worst mental health (Allen et al., 2014). Because socio-economic variables are so influential on mental health outcomes it is important to look closer into this connection to tease out specific explanatory mechanisms of different socio-economic variables and their potential interactions (Gnanapragasam et al., 2021). From a health promotion perspective, it is also important to look into what could moderate this relationship, and thus could be used to prevent poor mental health.

A lot of studies done on the connection between social factors and mental health in Norway focus on immigrants (Grønseth & Thorshaug, 2022; Myhrvold & Småstuen, 2017; Straiton et al., 2019) or other minority groups such as bisexual women (Prell & Traeen, 2018). Studies on populations in specific regions in Norway are not as prevalent in mental health studies.

Studies on the social determinants of health seem to mostly focus on nationwide populations (Dunn & Dyck, 2000) , or specific populations such as particular age groups (Viner et al., 2021), people with certain diseases (Federico et al., 2020) etc. Performing a cross sectional study on geographical regions might be able to tell us something more about social support on a community level. The same is the case for social support and mental health. Mental health studies tend to focus on exposed groups, while this thesis investigates a more general population.

There are many nuances to the relationship between social determinants and mental health, and there are a lot of good studies that look into this. Dalgard (2008) does an all-encompassing study on the connection between mental health, socio-economic status and self-efficacy, social support, and lifestyle choices (to name some of the variables). However, social support was here used as a variable that affects mental health rather than a moderator of other social determinants. This is a research hole that this thesis aims to fill by using social support as a moderator of the relationship between a social determinant and mental health.

This study also sticks out from the general literature, as it is using perceived economic stress, rather than a more objective measure like income.

This thesis seeks to contribute to the field of mental health studies that focuses on social determinants of health. While there is a lot of literature and research on this field, the intricate role and definition of social determinants of health and mental health makes for many possible study objectives. The researcher was not able to find any studies that looked into the moderating effect of social support on the relationship between economic situation and mental health. As such the specific delimitation that this study makes is particular and valuable for the research field and can possibly make a useful contribution to the field of health promotion.

The data used in this thesis comes from a public health survey from the National institute of public health (NIPH). The survey investigated several public health issues and connections between socio economic status and overall level of health. The public health survey provides a great starting point for further research, which was also part of the aim NIPH in collecting the data. There is potential in using the data to look closer into other connections between determinants and health outcomes on a population basis rather than for specific groups.

### 3.6 Research questions:

Against this backdrop, the study asks the following research questions:

- What is the relationship between self-reported economic situation and self-reported mental health (symptoms of anxiety and depression) in the adult population of Troms and Finnmark?
- Is this relationship moderated by *social support*?
- To what degree do these relationships hold when controlling for age, gender, work situation, education, and county regions?

## 4. Methods

This study is cross-sectional, which fits the purpose of this project as it sheds light on the relationship between variables. Cross-sectional studies only have data from one point in time and are widely used in health research to establish the prevalence of diseases or knowledge and attitudes among people connected to health care institutions, for both patients and employees. Cross-sectional studies can also be used in reliability studies or to compare different measurement instruments (Kesmodel, 2018, p. 388).

### 4.1 Public health survey Troms and Finnmark 2019

The foundation for this study was data from the public health survey from Troms and Finnmark in 2019 conducted by the Norwegian Institute of Public Health (NIPH/FHI) (Skogen et al., 2019). The study from 2019 follows a standard template developed by the NIPH specifically to investigate the status of public health on the region and county level in Norway. The NIPH has conducted this type of study several times in different regions of Norway (FHI, 2022).

The aim of the public health surveys is to obtain information and knowledge that can help develop health promotion in the given region. The NIPH also has access to a range of health registries where they can find information about participants' diseases or other types of medical information – direct questions regarding health are therefore avoided in their questionnaires (FHI, 2022). The health information that the participants in the public health survey provide, is by self-reporting their physical or mental health on a scale or the severity or prevalence of certain symptoms (Skogen et al., 2019).

### 4.2 NIPH sampling strategy

The public health survey had all people over the age of 18 and living in Troms and Finnmark as their population. The sample was selected randomly from the National Population Register (Folkeregisteret). The original sample drawn from the register was 59 500. After removing people without a unique mobile number or address, and people who were dead, the invitation eventually went out to 50 071 people. Out of all the participants who were invited to join the survey 43.5% responded. The average age was 46.8 years. Participants with a high level of education amounted to 50.1% of the sample and were overrepresented. More participants from Troms answered the survey than from Finnmark, 46.2% against 39.3%. The sample of this study was identical to the sample of the original study but will only include a limited number of variables.

The participants received an invitation to join the survey via e-mail or SMS and filled out the survey digitally. The invitees received the first invitation to join on 28<sup>th</sup> of May 2019, followed by two reminders. The portal for the survey was officially closed on the 17<sup>th</sup> of June 2019 (Skogen et al., 2019, p.13).

## 4.3 Variables

### 4.3.1 Dependent variable

Self-reported mental health was measured using the Hopkins Symptom Checklist (SLC-5). SCL was first developed in the 1950's by researchers at Johns Hopkins University (Parloff et al., 1954). The questions seek to determine how bothered participants have been by: feelings of nervousness or unrest (1), fear or anxiety (2), feeling hopeless about the future (3), feeling depressed or downcast (4) and worry or uneasiness (5) during the last week. The answers vary from: not been affected at all (1), not been affected much (2), been affected quite a lot (3) and been affected a great deal (4) English translation: (Finbråten et al., 2021).

The SCL is an established model within mental health research, and while the longer SCL-25 is very reliable, the reliability for the shorter checklists has been proved to be acceptable (Strand et al., 2003). Strand et al. (2003) recommended using the shorter SCL of 10 or 5 questions in surveys for practicality, as they measure mental distress with a good validity.

The public health survey used SCL-5, and this study will do the same. In this study the questions from SCL-5 were combined into a scale called psychological distress. The values for the scale ranges from 5 to 20, where 5 indicates a low amount of psychological distress. The five-question checklist is a good choice for this analysis as the scope of the statistical analysis is relatively small and the reliability of the scale is still good (Strand et al. 2003).

### 4.3.2 Independent variable

Perceived economic stress was measured by asking the participants how easy or difficult it is for them to make ends meet on a daily basis with the monthly income they have (total income for the household if they do not live alone). There were seven different answer options: very difficult, difficult, relatively difficult, relatively easy, easy, very easy and don't know. The variable was recoded so that low values indicated very easy and the highest value corresponded to very difficult, the answer option 'don't know' was removed. This was done to make it similar to the psychological distress scale which also goes from low levels to high levels.

#### 4.3.3 Control variables

*Education level* was measured by the participants' self-reported highest completed education with four answer options: primary school/secondary school/folk college up to 10 years (1), vocational education/secondary school/ minimum 3 years (2), college/university less than 4 years (3) and college university 4 years or more (4).

This variable was dummy coded with primary school as the reference category, and the three other categories was renamed into High school (2), Bachelor (3) and Master (4). This is a general translation and people who do not hold a bachelor's degree might end up in the bachelor category, but it still paints a general picture of the education level.

*Work situation* was measured by a longer list of answer options. These were as follows: working full-time (32 hours or more per week), working part-time (fewer than 32 hours per week), self-employed, on sick leave, unemployed, on disability benefits/receiving work clearance allowance, receiving social benefits, old-age or early pensioner, school pupil or student, conscript/civilian worker and home worker.

The variable for work situation was coded into three different groups for the moderation analysis including: working fulltime, working parttime and unemployed or receiving some kind of social benefit. Several options or values were excluded in the recoding of the variable- Because the options were not mutually exclusive, those that reported being self-employed were excluded. Students, pupils, pensioners, conscripts, civil workers and homemakers were also excluded. The recoding was done with the intent to look closer into the possible financial difference between the groups. Assuming that those that work fulltime struggle less to get by on their monthly income compared to those that are unemployed and/or receive social benefits. Possibly checking if the addition of the work variable will take some of the explanatory factor away from the perceived economic situation variable.

#### *Age*

The age of the participants was also collected form the National Population Register, and for the use in this study was coded into age groups ranging 10 years.

#### *Regions*

The variables for region were divided into seven groups. Four regions in Troms and three regions in Finnmark. The sample was collected in such a way that it represents the distribution of the population of Troms and Finnmark (Skogen et al, 2019).

#### 4.3.4 Moderator variable

Social support was measured by three different questions. The first is “how many people are so close to you that you can count on them if you have major personal problems” with the options: none, 1-2, 3-5 or 6 or more. The second question is 'how much interest do others show in what you do?': would you say they show: great interest, some interest, neither great nor little interest, little interest or no interest. The last question is ‘is it very easy, easy, neither easy nor difficult, difficult or very difficult’ to get practical help from neighbours if you need it". These three questions are part of a social support scale called Oslo-3 Social Support Scale (OSSS-3). The three questions were made into a sum score called social support. This scale was also dummy coded so that a high score on the scale would indicate high levels of social support.

#### 4.4 Data analyses methods

Preliminary analyses: The initial screening of the data showed no invalid values. For the three main variables outliers and consistency were checked by looking at Leverage value, Mahalanobis distance and Cooks’ distance. While this resulted in some outliers, they made up a relative small part of the overall sample and therefore negligible.

Univariate analyses were done for age, region, education, perceived economic distress, social support and psychological distress. The psychological distress scale and the social support scale were checked for normalcy, for all the other variables frequencies were checked.

Bivariate analyses were conducted between perceived economic distress and psychological distress to check if there was a correlation between the two. A hierarchical regression analysis was then conducted between the dependent and the main independent variable, with social support being added as a second independent variable in a second regression. To address the effect of social support on the relationship between perceived economic stress and psychological distress a moderation analysis was conducted, first without and then with the control variables.

#### 4.5 Data management

The dataset from NIPHs public health survey from Troms and Finnmark 2019 was obtained through a thorough application process. The project proposal for this study was evaluated and approved by the Regional Committees for Medical and Health Research Ethics (REK/REK

vest). The approval and a new application were then sent to the NIPH through the Helsedata website, which is a website that has the responsibility to manage several health databases and registers. The dataset was anonymized and only included specific variables relevant for this analysis. During this project the data was stored on a SAFE remote desktop where only the master student and the supervisor had access. The data was deleted at the end of the project.

#### 4.6 Ethical considerations

Health data is often considered to be extra sensitive data, and that was also the case for the data in this analysis. Through the application process the need for a Data Protection Impact Assessment was evaluated by the data protection officer at the University of Bergen and was found unnecessary (Appendix 3). The conduct of this project was based on and made possible by article 6 no 1 letter e) and article 9 no 2 letter j) in the EU privacy regulation (GDPR, 2016). The approval of the REK (Appendix 1 & 2) as well as approval, processing, and transfer of the data from the NIPH ensured the ethical considerations that are needed in a study such as this one (Appendix 4).

The aim of this study is covered in the original NIPH study, participants were informed that the data could be used in further research in order to generate more knowledge about population health (Skogen et al. 2019). Participants in the original survey were well informed of their rights, and have the opportunity to take back their given consent even after the data collection period.



## 5: Results

### 5.1 Descriptive statistics

#### 5.1.1 Study sample

The total sample for the study was N= 21760. Information about age, gender and region were gathered from the national Norwegian people registry and thus had no missing values (N=21760). There were more women (54.5%) than men (45.5%) that answered the survey. The mean age for the seven different regions differentiated between 45.5 to 48.6 years. The amount of respondents in the different regions is relatively representational of the actual population, but with a slightly skewed participation so that the sample from Finnmark (which had a lower participation) is not as representational. People with a high level of education were slightly overrepresented. Most of the sample has very low levels of psychological distress and quite high levels of social support. Most of the sample reported having low levels of economic stress, but over a fifth of the sample reported struggling to get by on their income.

Age was quite normally distributed, with an overweight in the youngest age groups, the older age groups were under-represented and the oldest age group including those that are 75 or older is also the smallest group in terms of participants. Generally, there were more young people than old people, with people between 45 and 55 being a bit overrepresented.

The region variables were not normally distributed, as can be expected since the population within the five different regions varies significantly. The majority of the respondents resides in the Tromsø-area (36.6%) and participants from Troms County make up a larger part of the sample than (64.5%) than Finnmark county (35.6%). Invitations to participate in the study were sent out to in such a way that the participants would demographically represent the region (Skogen et al, 2019). The frequencies for the regions can therefore show us generally how the population in Troms and Finnmark is distributed. However, there were some differences in the response-rate between Troms (46.2%) and Finnmark (39.3%) (Skogen et al. 2019).

The education variable (N=21 651) had 109 missing cases (0.5%). 49.9% of the respondents had a total of 13 years of education or less and 27.2% of the responders had 4 years of higher education or more, the highly educated were overrepresented in this study (Skogen et al.,

2019, p.6). It is an established phenomenon that those with a higher education tend to be overrepresented in surveys in general (Cheung et al., 2017)

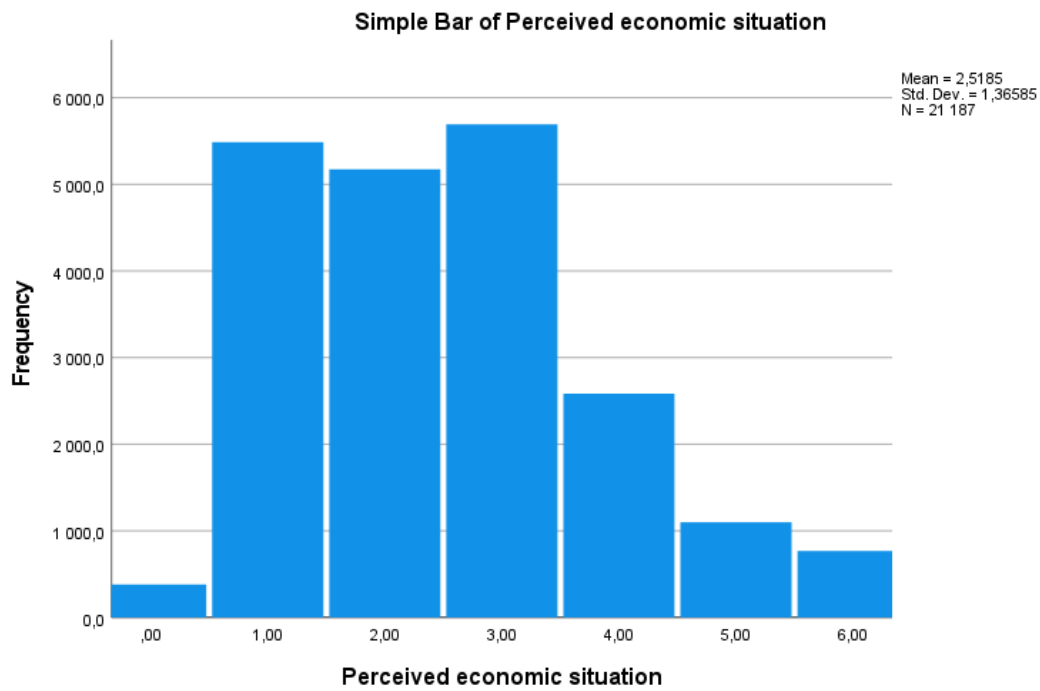
The variable for work or life situation was not exclusive and participants had the possibility to put down several answers with. There were 11 options in total, as listed in the methods chapter. The majority of sample was working full time (56%), with a fraction working part-time (10.2%). 15.7% of the sample reported being unemployed, on sick leave or receiving some kind of government benefit. 15% of the sample reported being a pensioner, but this also included people who are an early pensioner due to them not being able to work. A small part of the sample reported that they study or are in the military/ civil service (8.4%).

Age, region, education and work situation will be used as control variables in this analysis.

### 5.1.2 Independent variable

The question ‘how easy is it to get by on your monthly income’ was dubbed perceived economic stress (N= 21 187) and had 573 (2.7%) missing cases. 75.2% of the participants answered that is ‘very easy, easy or relatively easy for them to get by on their households’ monthly income. 8.7% answered that it was very difficult or difficult to get by on their monthly income. A combined 21.4% answered that it was ‘very difficult, difficult or relatively difficult’ to get by on their monthly income.

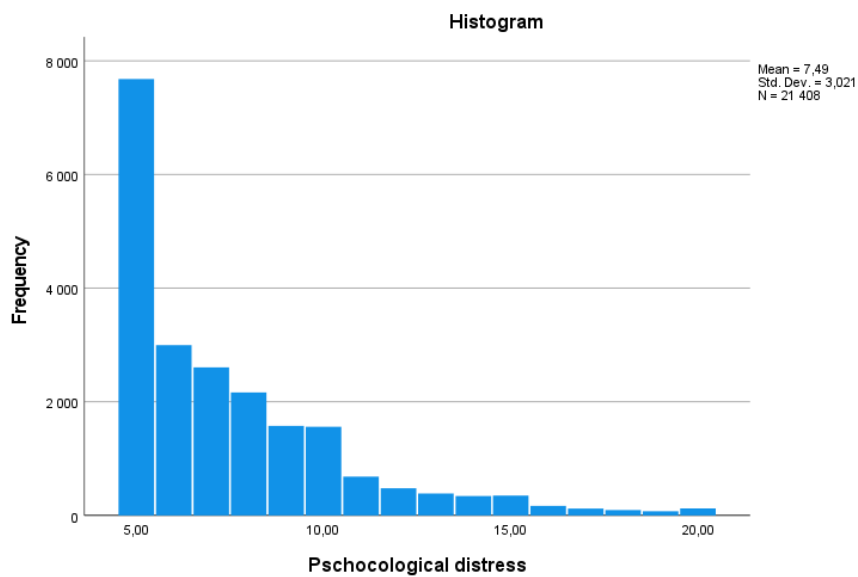
Table 1 Perceived economic stress



### 5.1.3 Dependent variable:

The psychological distress scale (N=21408) had 352 missing cases (1.6%). The Kolmogorov-Smirnov statistics for normality indicate that the assumption of normality has been violated ( $p \leq 0.05$ ). However, this is quite common in large samples, and the histogram can also be used as an indicator (Pallant, 2020, p.64). The histogram of the psychological distress scale shows that the majority of the participants score very low on the psychological distress, with values from 5 to 8. This is to be expected of a scale like this (Counsell et al., 2011). The skewness (1.565) and the kurtosis (2.545) are not at critical values.

Table 2 Psychological distress

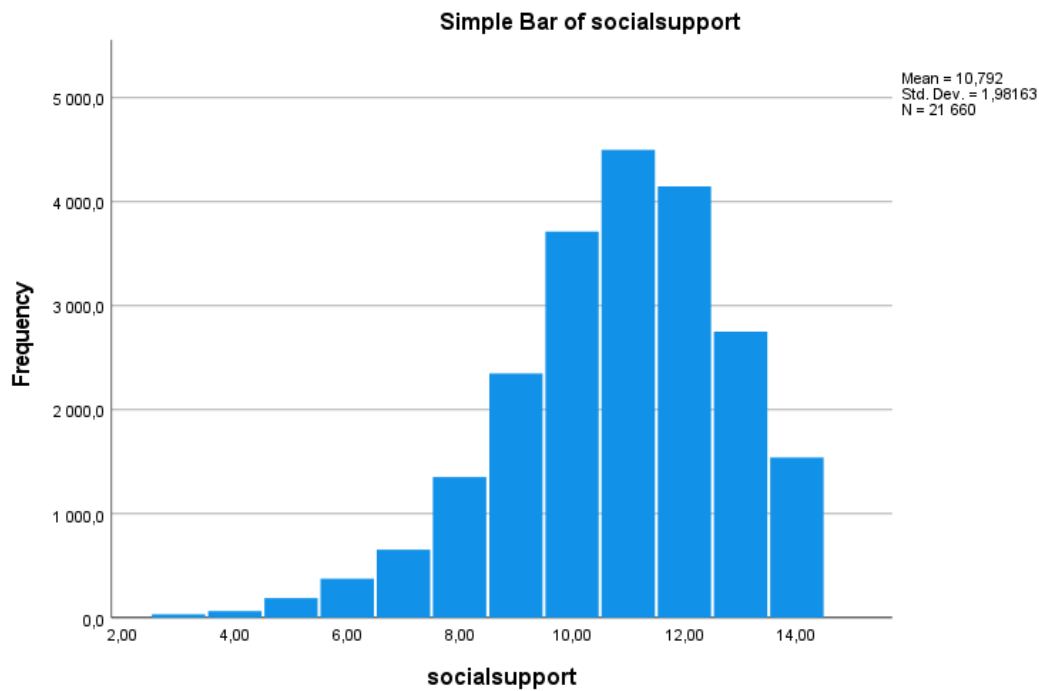


The Q-Q plot for psychological distress shows a relatively straight line. Because the number of outliers was big and the histogram was very skewed, the 5% trimmed mean was also checked. The regular mean (7.49) was not too different from the 5% trimmed mean (7.14). The Cronbach's alpha value of the scale is 0.904, which indicated very good internal consistency. Values in the Inter-item correlation matrix are all positive and the scale therefore seem to have good reliability.

#### 5.1.4 Moderator variable

The social support scale (N=21 660) had 100 missing cases. The sum score ranges from 3 to 14, where high levels indicate very good social support and low levels indicate low social support. Most of the sample has high or fairly high levels of social support, the mean is at 10.8. 12.3% of the sample had a score of 8 or lower – which according to Bøen et al. (2012) is equivalent to poor social support. Most of the sample is situated in the middle of the scale, with what is considered to be moderate social support.

Table 3 Social support



Internal consistency for the OSSS-3 was checked with by using statistical package for the social sciences (SPSS). The Cronbach's Alpha value was 0.606, which is under the recommended value of 0.7 (Pallant, 2020, p.105). However, this is to be expected as the scale only consist of three items (Pallant, 2020, p.106). All items were positive in the inter item correlation matrix, and in the item-total statistics all values were above 0.3. The items seem to measure the same thing, but the internal consistency is not very high.

## 5.2 Bivariate analysis

In order to answer the first research question "What is the relationship between the economic situation and self-reported mental health.." a Spearman's rho correlation analysis was conducted. Spearman's rho was used because the scale of psychological distress is very unevenly distributed. Spearman's rho is non-parametric and does not assume even distribution like Pearson's r.

The correlation between the two variables were significant ( $p < 0.001$ ) and positive, levels of psychological distress is correlated with high levels of self-evaluated poverty. The strength of the two variables ( $\rho = 0.292$ ) is according to Cohen of medium strength (Cohen, 1998, as

cited in Pallant, 2020, p.140). The explanation variance is 8.5%, (0,292 squared). Perceived economic stress explains 8.5% of the variance in psychological stress.

Table 4 Spearman's rho for independent and dependent variable

*Correlations*

			Psychological distress	Perceived economic stress
Spearman's rho	Psychological distress	Correlation Coefficient	1.000	.292**
		Sig. (2-tailed)	.	.000
		N	21408	20854
	Perceived economic stress	Correlation Coefficient	.292**	1.000
		Sig. (2-tailed)	.000	.
		N	20854	21187

\*\* . Correlation is significant at the 0.01 level (2-tailed).

### 5.3 Hierarchical regression

To investigate the strength of the relationship between the independent and dependent variable, a regression analysis was performed. First with only the two variables and then with social support as a second independent variable. The first regression model had an R<sup>2</sup> of 0.103, explaining 10.3% of the variance in psychological distress. The second regression model had an R<sup>2</sup> of 0.190. Adding social support increased the explanatory factor of the model. The standardized b coefficient for perceived economic stress goes down from .321 to .248 with the introduction of social support. Social support has a higher standardized b coefficient (-.304) than perceived economic stress (.248). The b coefficient for social support is negative meaning that higher levels of social support results in lower levels of psychological distress.

Table 5 Hierarchical regression

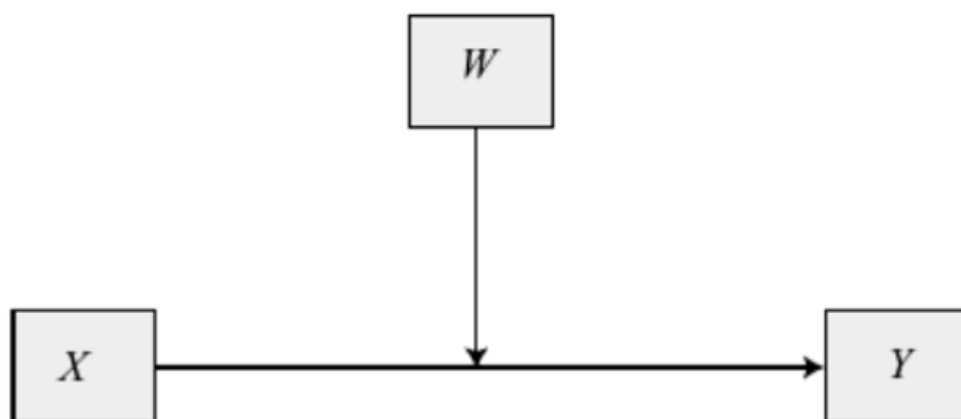
Model		Unstandardized Coefficients		Standardized Coefficients	t	95,0% Confidence Interval for B	
		B	Std. Error	Beta		LLCI	ULCI
1	(Constant) *	5.701	.042		137.188	5.620	5.783
	Perceived economic stress *	.710	.015	.321	48.980	.682	.739
2	(Constant) *	11.103	.121		91.803	10.866	11.340
	Perceived economic stress *	.548	.014	.248	38.603	.521	.576
	Social support *	-.463	.010	-.304	-47,255	-.482	-.444

\* =  $p < 0,001$

#### 5.4 Moderation analysis

In order to investigate the influence that social support can have on the correlation between psychological distress and perceived economic situation, and thus answering research question two “Is this relationship moderated by *social support*?” a moderation model was chosen.

Figure 2 Standard moderation analysis



(Hayes, 2013).

The analysis was done by using Andrew Hayes’ Process ad-on for SPSS (2013). First a moderation analysis was performed only with three variables; psychological distress as the dependent variable, perceived economic stress as independent and social support as moderator. In order to answer research question three a second moderation was conducted with all the control variables.

Before the moderation analysis could be performed certain assumptions were tested. Mahalanobis distance, Cooks' distance and Leverage value were used to check for outliers. 4% of the sample violated values of two or more of these groups. Because the outliers had valid answers, and comparatively are a small part of the sample none were deleted. Multicollinearity between the independent variable and the moderator variable was checked by using Pearson's correlation,  $p = 0.288$  which is under the critical value of 0.7. This shows that the variables are not too highly correlated. Normality and linearity were also checked with sufficient results.

#### 5.4.1 Standard moderation analysis

The first model ( $F(3,20778) = 1668.05$ ) was statistically significant ( $p < 0.001$ ) and had a  $R^2$  of 0.194. The  $b$  coefficient for perceived economic stress was 1.15 ( $t(20783) = 17.45$ ,  $p < 0.001$ ), meaning that for every one unit increase on the perceived economic stress scale the level of psychological distress increases with 1.15. More economic insecurity equals was associated with more psychological distress. Social support has a  $b$  coefficient of  $-0.305$  ( $t(20778) = -15.48$ ,  $p < 0.001$ ). For every 1 unit increase in social support, we get a 0.305 decrease on the psychological distress scale. The interaction between perceived economic stress and social support is  $b = -0.058$ ,  $p < 0.001$ . To interpret what the interaction coefficient means, it requires examination of simple. Overall, the model explains 19.4% of the variance in psychological distress.

#### 5.4.2 Moderation analysis with covariates



Figure 3 Illustration: moderation with covariates

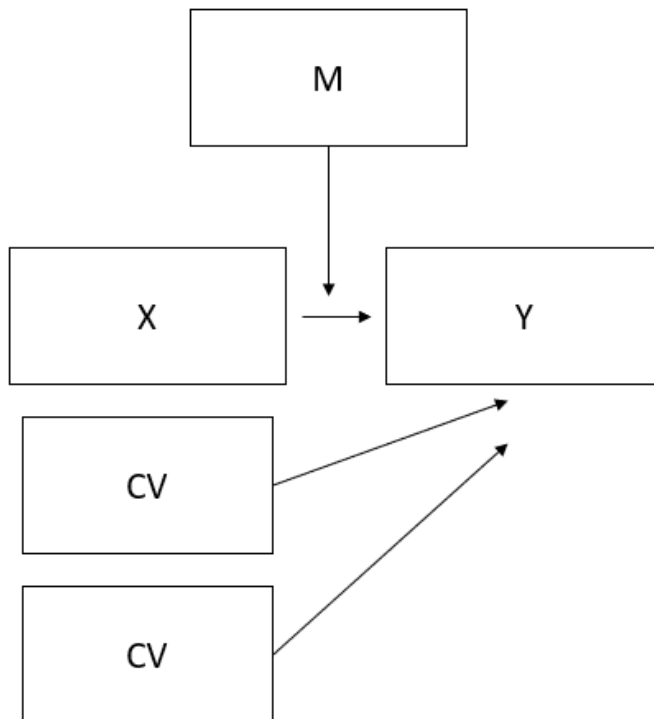


Figure 3 illustrates the moderation model that was used. The covariate/control variables were added to investigate if other variables could impact the main independent variable (Perceived economic stress). The model (N=20782),  $p < 0.001$ , has a  $R^2 = 0.292$  meaning that the model explains 29.2% of the variance in psychological distress.

Perceived economic stress  $b = 0.91$ , has a p-value of 0.000 meaning that perceived economic distress is statistically significant and positively correlated to psychological distress. Higher levels of economic stress also result in higher levels of psychological distress. Social support  $b = -.30$ ,  $p < 0.001$ , is also statistically significant, but has a negative correlation to psychological distress meaning that higher levels of social support will result in lower levels of psychological distress. The interaction between perceived economic stress and social support  $b = -.05$ ,  $p < 0.001$ , is hard to interpret by itself and will be addressed by looking at simple slopes later.

All of the age variables are statistically significant  $p < 0.00$ . People in their early 20's compared to people in their 40's have a unit increase of 1.97 on the psychological distress scale. The groups late 20's and 30's also have positive b coefficients, which shows that compared to the age bracket 40-49 younger age groups have higher levels of psychological

distress. The older age groups all have negative b coefficients, and thus show that compared to people in their 40's people in their 50's or older have less psychological distress.

Among the region variables only two were statistically significant, Midt-Troms  $b = -.21$   $p < 0.001$  and Nord-Troms  $b = -.17$ ,  $p = 0.048$ . Living in Midt-Troms compared to the Tromsø area (reference category) caused a decrease of  $-.21$  units on the psychological distress scale. While living in Nord-Troms, compared to the Tromsø area caused a  $-.17$  decrease on the psychological distress scale. The categories of work situation were both statistically significant  $p < 0.001$ . Compared to the group that are working fulltime, those that are unemployed or receiving some kind of benefit ( $b = 1.53$ ,  $p < 0.001$ ) have higher levels of psychological distress with a unit increase of  $1.53$ . For those working part-time the unit increase is  $0.66$  ( $p < 0.001$ ). Among the three categories of the education variable two has a p-value under  $0.05$ : bachelor ( $p = 0.04$ ) and high school ( $p < 0.001$ ). All education variables had a negative coefficient suggesting that having higher education than primary school decreases psychological distress.

Overall perceived economic stress seems to be one of the strongest predictors of psychological distress. The Process ad-on from Hayes (2013) only provides unstandardized coefficients, so it is not possible to directly compare the independent variables. Comparisons between variables that use the same scale is more viable. Social support and perceived economic stress uses different scales, but all of the other control variables are dichotomous (dummy-coded) and can therefore be compared. Some changes could be observed from/after the first moderation model. The b coefficient for perceived economic stress changed from  $1.15$  to  $0.91$  suggesting that the control variables account for some of the explanatory factor of perceived economic stress but not a lot. The  $R^2$  number increased from model 1 ( $19.4\%$ ) to model 2 ( $29.2\%$ ). All the control variables add  $9.8\%$  of explanatory factor to the model.

Table 6 Moderation with covariates result

	coeff	se	t	p	LLCI	UCLI
constant	9.46	9.46	43.96	0	9.04	9.89
Perceived economic stress	0.91	0.91	14.61	0	0.79	1.03
Social support	-0.3	-0.3	-16.15	0	-0.34	-0.26
Interaction	-0.05	-0.05	-8.75	0	-0.06	-0.04
<b>Region</b>						
Sør-Troms	-0.03	-0.03	-0.51	0.61	-0.15	0.09
Midt-Troms	-0.21	-0.21	-3.37	0	-0.33	-0.09
Nord-Troms	-0.17	-0.17	-1.97	0.05	-0.33	0
Vest- Finnmark	-0.05	-0.05	-1.01	0.31	-0.15	0.05
Indre-Finnmark	0.01	0.01	0.12	0.9	-0.14	0.16
Øst-Finnmark	-0.1	-0.1	-1.72	0.08	-0.22	0.01
<b>Age</b>						
Early 20's	1.97	1.97	28.75	0	1.84	2.11
Late 20's	1.25	1.25	1.25	0	1.1	1.39
Age 30's	0.57	0.57	0.57	0	0.45	0.68
Age 50's	-0.37	-0.37	-0.37	0	-0.48	-0.26
Age 60's	-0.64	-0.64	-0.64	0	-0.76	-0.52
Age 70 pluss	-0.52	-0.52	-0.52	0	-0.67	-0.36
<b>Work status</b>						
Not working	1.53	1.53	29.02	0	1.43	1.64
Working parttime	0.66	0.66	8.41	0	0.5	0.81
<b>Education</b>						
Highschool	-0.17	-0.17	-3	0	-0.28	-0.06
Bachelor	-0.12	-0.12	-2.03	0.04	-0.24	0
Master	0.06	0.06	0.98	0.33	-0.06	0.18

### 5.4.3 Simple slopes

Included in the output from Process the data in Table 7 was presented. In Table 7 the data from the survey has been modified to show trends for three different values of social support, low, average(mean) or high. This gives an indication of when social support is low (l), what is the effect of perceived economic stress on psychological distress.

*Table 7 Data for slopes*

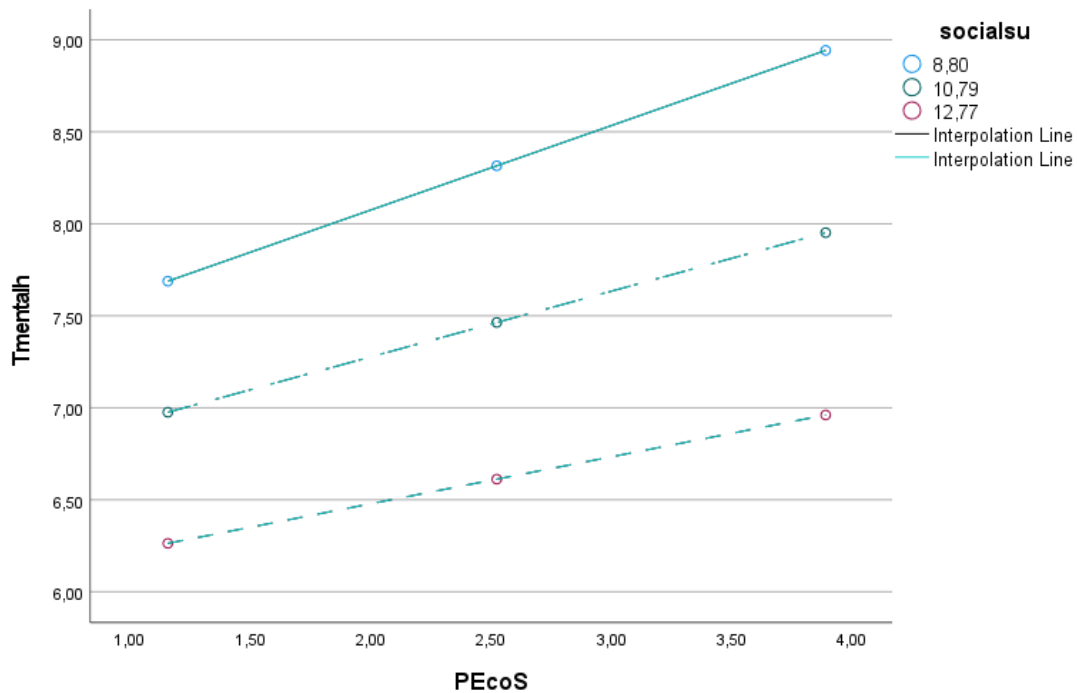
<b>Support</b>	<b>Effect</b>	<b>se</b>	<b>t</b>	<b>p</b>	<b>LLCI</b>	<b>ULCI</b>
(l) 8.800	0.459	0.017	27.374	0.000	0.426	0.492
(a)10.786	0.357	0.014	24.927	0.000	0.329	0.385
(h) 12.772	0.255	0.020	12.756	0.000	0.216	0.294

For those that have low social support ( $b = 0.459$ ,  $p < 0.001$ ) every level up on the perceived economic situation scale increases the level of psychological distress by 0.459.

For average social support, perceived economic distress  $b = 0.357$ ,  $p < 0.001$ , and every level up on the perceived economic situation scale increases the level of psychological distress by 0.357. For high social support, perceived economic distress  $b = 0.255$ ,  $p < 0.001$ , increases the level of psychological distress by 0.255. All of the predicted values for social support (low, average and high) are statistically significant and thus social support has a moderating effect on the relationship between perceived economic distress and psychological distress.

The positive moderating effect of social support on the relationship between perceived economic situation and psychological distress increases with higher levels of social support, as we can see in Figure 4.

Figure 4 Slopes for effect of social support on perceived economic stress



All of the slopes are upward facing meaning that social support matters for the effect of perceived economic distress on psychological distress. The slope for ‘low’ social support (the slope at the top) is steeper than the one for high social support, suggesting that perceived economic situation has a bigger importance for those that have a low level of social support. The slope for the middle line is not as steep as the one for low social support, but also not as slack as the one for high social support. It seems that the effect of social support gradually rises the more social support you have.

## 6: Discussion

This study had as its objective to examine the relationship between perceived economic stress and psychological distress, and the possible moderating effect of social support on the relationship between the two variables. The social determinants of health acted as a framework and starting point, the study then moved on from the more established connections between social determinants and mental health outcomes to how social support can have a moderating effect on this relationship. The important effect/predictability of social determinants on physical and mental health has been established in the literature review of this study. And as such, correlation between determinants and mental health were expected to be evident in this study as well. Through the main independent variable social determinants were found to have a significant effect on psychological distress.

### 6.1 Discussion of findings

Perceived economic stress has a significant effect on psychological distress. The stress that accompanies a poor economic situation negatively effects mental health. While it is not possible to directly compare the unstandardized b-coefficients and we cannot say anything about how important perceived economic stress is compared to the other variables. Nonetheless it is important to note that adding the control variables did not take much statistical power away from perceived economic stress and we can thus be certain that the effect is real.

Both of the categories of the work variable were statistically significant and had positive coefficients, showing that working part time or being unemployed increases levels of psychological distress. These results coincide with Marmot et.al.'s model which mention both occupation and income as determinants of social position which affects health. The findings also align with previous research findings that a third of people who are unable to work also struggle with mental illness (Miljøverndepartementet, 2009). Being unemployed is connected to material poverty and high amounts of stress (Brydsten et al., 2018). As such the results of the moderation analysis with covariates is not suprising because this effect has already been documented and material poverty can be assumed. But it does tell us that there is a gradient in the relationship between work and psychological distress. Those that are unemployed had a higher b-coefficient than those that were working part time, suggesting that psychological distress gradually gets worse moving from working full time - to part time - to being unemployed. This is in line with the findings of Kopasker et al. (2018).

Higher education was associated with less psychological distress, as found in Nes & Clench-Aas (2011:2). Unlike the other two education categories the category of ‘master’ was not statistically significant, this suggests that while a lower level of education is connected to higher levels of psychological distress; a higher level of education is not strongly connected to lower levels of psychological distress. While some studies find that when controlling for income education is not statistically significant for mental health (Araya et al., 2003), this study has not had the opportunity to control for the influence of income and cannot directly challenge those results. Still this study seems to fall in line with Chevalier & Feinstein (2006) findings that suggested that education also facilitates knowledge and skills, that subsequently lessen the occurrence of depression.

Age was used as a control variable in this analysis, but it is not defined as a social determinant by Marmot et.al. (CSDH, 2008). Age can indicate education level, income, work situation and so on, and might influence those variables. By using age as a control variable, the possible influence of age had been checked. All the age categories had statistically significant results but did not alter the effect of the main variable by a substantial amount.

Two regression analyses were conducted, one with perceived economic stress, social support and their interaction and one with the same three variables and the control variables. The first model explained 19,4% of the variance in psychological distress, and the second model explained 29,2%. Compared to the bivariate analysis between psychological distress and perceived economic situation which explained around 9% of the variance, the model has a substantial higher explanatory factor. The models provide a broader comprehension of the relationship between mental health and perceived economic situation. Explained variance increased when introducing social support to the model, and the introduction of the control variables further extended the explained variance.

### 6.1.1 The role of social support

The hierarchical regression between perceived economic stress, social support and psychological distress showed that, compared to perceived economic stress, social support has a bigger influence on psychological distress as it has a higher standardized b-coefficient. In the second regression model it becomes evident that social support also has a direct effect on psychological distress. These findings are similar to the theories on social support that it can both be a buffer and have a direct effect on health (Standfeld, 2006) and Marmot’s model (Figure 1) which includes social cohesion and psychosocial factors as contributing to health outcomes. While the main focus of this study was to investigate social support as a moderator,

it can also have a role as a regular variable. Social support thus has the possibility, not just to moderate psychological distress, but also to directly improve it, which firmly anchors the importance of social support on mental health.

The effect of social support on the correlation between high levels of perceived economic stress and psychological distress is higher when social support is low. This was evident from the slopes that were generated from the second model. Social support does indeed have a moderating effect on perceived economic situation and people who have high levels of social support are less likely for high levels of perceived economic stress to have a negative effect on their mental health. While there is not much literature on the moderating effect of social support specifically on perceived economic stress these results do fall in line with existing evidence that high levels of social support are connected to lower levels of psychological distress (Gadalla, 2009; George et al., 2020).

The second model explains more of the variance in psychological distress than the first model. Most of the control variables are statistically significant, meaning that these social determinants are relevant for mental health. However, the addition of the control variables only slightly reduced the strength of the effect of economic stress or social support on mental health, strengthening the confidence in the findings of the effect of the main study variables on mental health.

The question of how easy it is to get by on monthly income can measure both worry about and the actual economic situation, because there is a reasonable presumption that those who worry about money will not have much material wealth. However, it is viable to suggest that worry about money and about 'getting by' can be a problem even for people that have a relative high income or people that have certain material goods. This study was not able to compare perceived economic situation to actual income, which would have provided an interesting dimension to the analysis. Nonetheless studying perceived economic situation, or similar types of relative poverty, provides us with results that are more reflective of each persons experience of their situation. argues that using relative income, rather than absolute income, is a stronger factor for health. People that have a poor economic situation are likely to feel shame around their situation which increases their psychological distress (Liu, 2010). By using perceived economic situation as a measurement we ensure that this direct effect is measured. Measuring poverty as absolute poverty, on the other hand, will only include those that have " the lowest amount of money needed to sustain a human life" (Lepiéce et al., 2015,



p. S93). By measuring the perceived situation we are measuring stress more directly and can also use this as an indication of material wealth.

## 6.2 Limitations and strengths

### *Limitations*

One of the shortcomings of this study is that due to it being a cross-sectional study it is not possible to say anything about causality. The direction of the relationship can have a important implications for which health promotion initiatives should be taken to tackle the issue of poor mental health. But with the limitations of the study design this thesis can only make suggestions on the basis of the correlation between phenomena and not causation.

While reliability was mostly good for the variables used in this study, the reliability of the survey can also be questioned on the grounds of low participation and somewhat skewed representation. From the survey sample drawn in Troms and Finnmark a little under half responded to the survey, a low answer percentage does not pose a threat if it is completely random who answered and who did not, but this is difficult to know (Skogen et al. 2019, p. 155).

Thus there is a possibility that statistics for specific groups are unreliable (Skogen et al. 2019). Those that are struggling with psychological distress and their economic situation might be underrepresented in this study, the frequency tables for these variables showed that a small fraction of the sample are at the top of these scales. It is difficult to tell how big this group is in the general population and because of this also difficult to tell if the sample in the NIPH survey is representable.

The use of social determinants in this study diverts from Marmot's model (CSDH, 2008), only a proxy for income was used in this analysis and gender and race were not included. The use of social determinants is not comprehensive, and while several control variables were checked in the second moderation model the intricate relationship between social determinants could benefit from a more extensive study. And possibly checking the moderating role or social support on other variables.

Fear of unemployment can also have an impact on psychological well-being (Brydsten et al. 2018) but was not measured in the Troms and Finnmark public health survey. Because of this we cannot determine if it is the financial insecurity or the economic situation that causes higher levels of psychological distress for those that are unemployed or receiving economic aid.

### *Strengths*

A strength of this study is that it is built upon established scales and measures and uses a big largely reliable data sample, this underlines the credibility of the results of the statistical analysis. The sum scores used in this survey all follow established scale models and build upon existing research traditions. This adds weight to the findings of this study as the established scales and measures have been thoroughly tested.

#### 6.2.1 Generalisability

While this study only looks at the population of Troms and Finnmark, it is reasonable to assume that these results are representative of the population of Norway.

The statistically insignificant results of almost all the categories of the region variable in the moderation analysis, suggests that the difference in psychological distress is almost non-existent between the regions. Through the literature review there was no evidence found that levels of mental health are significantly different between the Norwegian counties. However, data from the Troms and Finnmark region on mental health can be very useful for health promotion in this region specifically. And while mental health status in Troms and Finnmark does not significantly differ from other counties it is still important to check regional differences as a control variable.

The public health survey from Troms and Finnmark is a population study, and while the population of a Norwegian county is not directly comparable to every other population of the same size, it can be representational in the Scandinavian context (NBDC, 2019).

### 6.3 Implications for health promotion

Health promotion is an extensive field which encompasses many different levels, such as political, organizational, social and personal (Kumar & Preetha, 2012). Health promoting initiatives can be enforced in specific settings such as hospitals, workplaces, a regional or national level (Kumar & Preetha, 2012). The field of influence is quite large and the ways to improve health are extensive. As shown in the findings of this study, and in previous studies, social support has the power to buffer the negative effects of stressful situations (Eikemo, 2008; Gopalan et al., 2022; Hagerty & Williams, 1999).

Perceived economic stress, and the underlying variable income, has a profound effect on mental health (Bøen et al., 2012) and this effect is something we can prevent through health

promotion. To lessen the effect that perceived economic stress has on psychological distress, lowering the cost of mental health services could be an option. If this was implemented seeking mental help is less likely to increase the level of economic worry and will therefore not amount to higher levels of psychological distress. Still there is an argument to be made for improving the economic situation in the overall population, especially for those that have the least. While worry about money can affect anyone it is likely to hit the hardest for those that are struggling to buy enough food or other essential commodities.

Social support can be an important moderator on the negative relationship between high levels of perceived economic stress and high levels of psychological distress. The findings in this study suggest that having high levels of social support has the power to buffer the negative effect of social determinants on mental health, and as such can be a helpful tool in health promotion. According to Marmot et.al. (CSDH, 2008), social support is a proximal social determinant, meaning its effects can directly influence the personal and/or community level, as compared to more distal social determinants (like the political or structural).

It is possible to facilitate increased social support through one of the health promotion action means of the Ottawa Charter (WHO, 1986): strengthening community action. By strengthening community actions, communities can become empowered through drawing on existing resources to enhance self-help and social support in the community (WHO, u.d.).

Measures to increase social support, do not always have to be on a national level, but can also happen on a personal level, e.g., reaching out and talking to your neighbours. Social support is a health promoting tool that is not dependent upon material resource, but rather on human resources. In this way improving the overall level of social support should be possible in most communities, as there isn't a need for material resources. Because social support has the power to buffer the negative effects of a poor economic situation on mental health.

Social determinants are often presented as unchangeable, and to some degree they are. Age, gender and ethnicity are not very changeable, and if we see difference in mental health outcomes between them it is very likely that that is due to unequal distribution of resources or commodities. Even though social determinants can explain a lot of the variance in mental health, and to some extent be connected to ill mental health, it does not necessarily follow that changing social determinants is the solution. It is evident that those with higher education generally have a better mental health, but that does not mean that the solution for poor mental health is that everybody should get a higher education. Or that that is even possible. The focus

should be on political initiatives and structural changes that decreases social inequality. While it is possible to improve mental health outcomes by providing social support on a communal and personal level, poor mental health should also be combated at the root of the problem. Which, among other thing, is economic situation and work situation.

The results of this study coincide with the theory of the social determinants of health. Perceived economic situation (used as a proxy for income), education and work were all proved to be significant for levels of psychological distress, thus supporting the evidence for the relevance of social determinants for mental health outcomes. Social support can be referred to as a proximal social determinant, as a resource provided by those around us (Stansfeld, 2006, p.148) and was also found to have an impact on mental health. Both directly and as a moderator.

## 7. Conclusion

This study has with the use of the social determinants of health framework found that perceived economic stress, education, work situation and social support explain a meaningful amount of the variance in psychological distress for the adult population of Troms and Finnmark.

The focus on mental health is growing on a global level and mental health issues are being recognized as an important part of well-being as ill mental health has serious societal and personal implications. Mental health issues are also becoming more prevalent and reversing this trend is an important goal. In combating poor mental health and the implications it has it is important to have comprehensive and effective health promotion initiatives. Social support has been proven to be an important moderator of the relationship between economic hardship and mental health, and social support also has a direct effect on mental health. This can have an important impact on how we should work to improve mental health. Social support can be an important tool to prevent ill mental health and a good focus point both for health promoters and people wanting to improve their communities.

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## Appendix 1 Conditional REK approval



<b>Region:</b>	<b>Saksbehandler:</b>	<b>Telefon:</b>	<b>Vår dato:</b>	<b>Vår referanse:</b>
REK vest	Ingvild Haaland		15.11.2022	531480

Helga Bjørnøy Urke

**Prosjektsøknad:** Psykisk helse i Troms og Finnmark: en analyse av sosiale determinanter  
**Søknadsnummer:** 531480 **Forskningsansvarlig institusjon:** Universitetet i Bergen

## Prosjektsøknad godkjennes med vilkår

### Søkers beskrivelse

*Formålet med prosjektet er å undersøke mulige sammenhenger mellom en rekke sosiale determinanter og selv-rapportert psykisk helse i den voksne befolkningen i Troms og Finnmark. Mer spesifikt vil prosjektet undersøke i hvilken grad utdannng, inntekt, kjønn, alder, og sosial og lokal tilhørighet kan forklare variasjon i selv-rapportert psykisk helse. Datagrunnlaget som søkes brukt er spørreskjemadata fra Folkehelseundersøkelsen fra FHI (2019) som ble gjennomført blant et representativt utvalg av den voksne befolkningen i Troms og Finnmark. Alle data som skal brukes er selv-rapportert, og inkluderer spørsmål om deltakernes generelle trivsel og mentale helse, samt spørsmål om lokalmiljø, lokaltilbud (tilgang til park, kino, spisesteder etc.) og sosial støtte. Resultater fra studien kan kunne bidra til å forstå mer av hvordan sosiale og sosioøkonomiske forhold henger sammen med psykisk helse blant voksne i denne delen av Norge.*

Vi viser til søknad om forhåndsgodkjenning av ovennevnte forskningsprosjekt. Søknaden ble behandlet av Regional komité for medisinsk og helsefaglig forskningsetikk (REK vest) i møtet 25.10.2022. Vurderingen er gjort med hjemmel i helseforskningsloven § 10.

Ingen av komiteens medlemmer var inhabile, og saken ble behandlet i full komité.

### REKs vurdering

### Forskningsansvarlige institusjoner

Universitetet i Bergen er oppført som eneste forskningsansvarlige institusjon. FHI er ansvarlig for den befolkningsbaserte helseundersøkelsen og må inkluderes som forskningsansvarlig institusjon.

### Andre relevante prosjekter

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REK vest

Besøksadresse: Armauer Hansens Hus, nordre fløy, 2. etasje,

| E-post: [rek-vest@uib.no](mailto:rek-vest@uib.no)

Haukelandsveien 28, Bergen

Web: <https://rekportalen.no>

501878 Psykisk helse i Troms og Finnmark: en analyse av sosiale determinanter:  
Fremleggingsvurdering vurdert som fremleggingspliktig av REK vest.

## Om prosjektet

Søkers vurdering av forsvarlighet: «Prosjektet søker å benytte allerede innsamlet data som har som formål å bidra til bedre kunnskap om folkehelse på fylkesnivå. Prosjektet vil, ved å benytte disse data, bidra til dypere kunnskap om spesifikke sammenhenger mellom sosiale forhold og psykisk helse. Siden datafilen som prosjektet vil få tilgang til via Folkehelseinstituttet ikke innehar personidentifiserende informasjon, vil det ikke være risiko eller ulemper tilknyttet deltakerne i studien. Derimot er det en stor forskningsetisk fordel at data som allerede er innsamlet kan benyttes i stedet for at det blir gjennomført enda en studie som vil øke forskningsbelastningen i befolkningen ytterligere.»

## Data/materiale

Kvantitative analysemetoder.

Epidemiologisk studie.

Søker oppgir «Studien vil bruke allerede innsamlete data fra normalpopulasjonen og vil ikke kreve oppfølging av pasienter.» Det skal forskes på tidligere innhentede data:

Fra befolkningsbasert helseundersøkelse:

«Selv-rapportert data fra Folkehelseundersøkelsen i Troms og Finnmark utdanning, økonomisk status, kjønn, alder, sosial tilhørighet, sosial støtte, tilgjengelighet på lokale tjenester og tilbud, og selv-rapportert psykisk helse, totalt mellom 10 og 15 variabler.» Søkers begrunnelse for valg av data og metode:

«Det er økende sosiale og helseforskjeller i Norge, og Troms og Finnmark har vist seg å ha relativt store forskjeller. Studien kan bidra til en større forståelse for i hvilken grad og hvilke sosiale forhold som har betydning for psykisk helse i denne regionen, og kan i neste omgang peke på mulige områder for innsats for å fremme god psykisk helse fra et sosialt perspektiv.»

Det er lagt ved samtykke/spørreskjema som viser hvilke data som skal benyttes.

REK vest bemerker at protokollen er veldig tynn, mangler bakgrunnsinformasjon (inkludert referanseliste) og utfyllende beskrivelse av prosjektets formål, hypoteser og metode. Revidert protokoll bes sendes REK vest.

## Deltakere

Voksne (Voksne i normalpopulasjonen).

Alle voksne 18 år og oppover.

21 761 deltakere.

«Siden prosjektet vil bruke allerede innsamlete data fra Folkehelseundersøkelsen i Troms og Finnmark vil antallet deltakere være gitt. Det var totalt 21 761 som svarte på undersøkelsen, og det er utgangspunktet for utvalget for studien det søkes om.»

## Rekruttering

Deltakerne består av et tilfeldig og representativt utvalg trukket fra Folkeregisteret som del av Folkehelseundersøkelsen i Troms og Finnmark 2019.

## **Forespørsel/informasjon/samtykkeerklæring**

Samtykke er innhentet for alle deltakere i Folkehelseundersøkelsen i Troms og Finnmark 2019 som består av den voksne normalpopulasjonen 18 år og eldre.

Tidligere innhentet informasjonsskriv og samtykkeskjema er lagt ved.

REK vest vurderer samtykket som dekkende for det som skal gjøres i denne studien.

Søker oppgir «Samtykket som ble gitt ved deltakelse i Folkehelseundersøkelsen i Troms og Finnmark 2019 omfatter at data vil bli brukt til videre forskning, så det er ikke nødvendig med videre informasjon»

## **Oppbevaring av data**

Det er krysset av nei på alt dette:

Behandles det personidentifiserbare opplysninger direkte identifiserbare med 11-sifret personnummer eller navn, adresse og/eller fødselsdato i hele prosjektperioden? Behandles data indirekte identifiserbare ved bruk av koblingsnøkkel?

Kan personidentifiserbare opplysninger være systematisk reidentifiserbare ved kombinasjon av variabler?

REK vest bemerker at data er indirekte identifiserbare og må lagres på institusjonens forskningsserver.

Prosjektslutt er 01.11.2023.

Når et forskningsprosjekt er avsluttet (senest ved godkjent sluttdato) skal en eventuell koblingsnøkkel oppbevares i fem år (15 år ved legemiddelstudier), men kun for kontrollhensyn. Deretter skal en eventuell kodenøkkel slettes og data makuleres eller anonymiseres.

### **REK vest godkjenner prosjektet med følgende vilkår:**

FHI må inkluderes som forskningsansvarlig institusjon.

Revidert protokoll etter ovennevnte merknader bes sendes REK vest.

Data må lagres på institusjonens forskningsserver.

Svar på vilkår sendes inn gjennom en endringsmelding på prosjektet.

## **Vedtak**

REK vest har gjort en helhetlig forskningsetisk vurdering av alle prosjektets sider. Prosjektet godkjennes med hjemmel i helseforskningsloven § 10 på betingelse av at nevnte vilkår tas til følge.

## **Sluttmelding**

Prosjektleder skal sende sluttmelding til REK på eget skjema via REK-portalen senest 6 måneder etter sluttdato 01.11.2023, jf. helseforskningsloven § 12. Dersom prosjektet ikke starter opp eller gjennomføres meldes dette også via skjemaet for sluttmelding.

## **Søknad om endring**

Dersom man ønsker å foreta vesentlige endringer i formål, metode, tidsløp eller organisering må prosjektleder sende søknad om endring via portalen på eget skjema til REK, jf. helseforskningsloven § 11.

## **Klageadgang**

Du kan klage på REKs vedtak, jf. forvaltningsloven § 28 flg. Klagen sendes på eget skjema via REK portalen. Klagefristen er tre uker fra du mottar dette brevet. Dersom REK opprettholder vedtaket, sender REK klagen videre til Den nasjonale forskningsetiske komité for medisin og helsefag (NEM) for endelig vurdering, jf. forskningsetikkloven § 10 og helseforskningsloven § 10.

Med vennlig hilsen

Nina Langeland  
Prof., Dr.med Komitéleder

Ingvild Haaland Seniorrådgiver

*Kopi til:*

Universitetet i Bergen

## Appendix 2 Final REK approval



Region: REK vest      Saksbehandler: Ingvild Haaland      Telefon:      Vår dato: 21.12.2022      Vår referanse: 531480

Helga Bjørnøy Urke

Prosjektsøknad: Psykisk helse i Troms og Finnmark: en analyse av sosiale determinanter

Søknadsnummer: 531480 Forskningsansvarlig institusjon: Universitetet i Bergen

## Prosjektsøknad: Endring godkjennes

### Søkers beskrivelse

*Formålet med prosjektet er å undersøke mulige sammenhenger mellom en rekke sosiale determinanter og selv-rapportert psykisk helse i den voksne befolkningen i Troms og Finnmark. Mer spesifikt vil prosjektet undersøke i hvilken grad utdanning, inntekt, kjønn, alder, og sosial og lokal tilhørighet kan forklare variasjon i selv-rapportert psykisk helse. Datagrunnlaget som søkes brukt er spørreskjemadata fra Folkehelseundersøkelsen fra FHI (2019) som ble gjennomført blant et representativt utvalg av den voksne befolkningen i Troms og Finnmark. Alle data som skal brukes er selv-rapportert, og inkluderer spørsmål om deltakernes generelle trivsel og mentale helse, samt spørsmål om lokalmiljø, lokaltilbud (tilgang til park, kino, spisesteder etc.) og sosial støtte. Resultater fra studien kan kunne bidra til å forstå mer av hvordan sosiale og sosioøkonomiske forhold henger sammen med psykisk helse blant voksne i denne delen av Norge.*

Vi viser til søknad om prosjektendring mottatt 21.12.2022 for ovennevnte forskningsprosjekt. Søknaden er behandlet av sekretariatet i Regional komité for medisinsk og helsefaglig forskningsetikk (REK vest) på delegert fullmakt fra komiteen, med hjemmel i forskningsetikkforskriften § 7, første ledd, tredje punktum. Søknaden er vurdert med hjemmel i helseforskningsloven § 11.

### REKs vurdering

Endringen gjelder: ny versjon av forskningsprotokoll.

Det er sendt inn revidert protokoll etter merknader fra REK vest. Det er nå beskrevet at data er avidentifiserte. Søker skriver videre i revidert protokoll "Dette prosjektet vil hente inn data fra en befolkningsbasert undersøkelse gjennomført av FHI. Data som innhentes vil lagres på UiBs forskningsserver, SAFE, i tråd med UiBs retningslinjer for sikker datahåndtering og -lagring. Publisering av data vil være på gruppenivå, og ikke individnivå. Data slettes ved prosjektslutt (01.11.2023), og sluttrapport sendes REK." REK vest har ingen ytterligere merknader, og godkjenner prosjektendringen.

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REK vest

| E-post: [rek-vest@uib.no](mailto:rek-vest@uib.no)

Besøksadresse: Armauer Hansens Hus, nordre fløy, 2. etasje,

Web: <https://rekportalen.no> Haukelandsveien 28, Bergen

## **Vedtak**

REK godkjenner prosjektendringen i samsvar med forelagt søknad, med hjemmel i helseforskningsloven § 11.

## **Sluttmelding**

Prosjektleder skal sende sluttmelding til REK på eget skjema via REK-portalen senest 6 måneder etter sluttdato 01.11.2023, jf. helseforskningsloven § 12. Dersom prosjektet ikke starter opp eller gjennomføres meldes dette også via skjemaet for sluttmelding.

## **Søknad om endring**

Dersom man ønsker å foreta vesentlige endringer i formål, metode, tidsløp eller organisering må prosjektleder sende søknad om endring via portalen på eget skjema til REK, jf. helseforskningsloven § 11.

## **Klageadgang**

Du kan klage på REKs vedtak, jf. forvaltningsloven § 28 flg. Klagen sendes på eget skjema via REK portalen. Klagefristen er tre uker fra du mottar dette brevet. Dersom REK opprettholder vedtaket, sender REK klagen videre til Den nasjonale forskningsetiske komité for medisin og helsefag (NEM) for endelig vurdering, jf. forskningsetikkloven § 10 og helseforskningsloven § 10.

Med vennlig hilsen

Ingvild Haaland Seniorrådgiver, REK vest

*Kopi til:*

Universitetet i Bergen

Lisbeth Beddari





UNIVERSITETET I BERGEN

# BEKREFTELSE FRA PERSONVERNOMBUDET

*Redegjørelse for hjemmelsgrunnlag og ivaretagelse av personvernet i forskningsprosjekt, i henhold til personopplysningsloven av 2018 /GDPR, herunder vurdering om behov for å gjennomføre en personvernkonsekvensvurdering (DPIA)*

## Prosjektopplysninger:

**Prosjekttittel:** «*Psykisk helse i Troms og Finnmark: en analyse av sosiale determinanter*»

**Forskningsansvarlig:** Universitetet i Bergen, Det psykologiske fakultet

**Prosjektansvarlig:** Helga Bjørnøy Urke, som veileder for masterstudent Lisbeth Beddari

**REK nr. :** REK Vest 531480, vedtak datert: 15.11.2022, endelig godkjent 21.12.2022

**Prosjektnr. i UiBs interne prosjektoversikt RETTE: M2406**

## Bakgrunn:

Prosjektet er et masterprosjekt som gjennomføres ved Det psykologiske fakultet, Universitetet i Bergen. Det ble vurdert av REK Vest ved fremleggingsvurdering at formålet med prosjektet faller innenfor definisjonen av medisinsk og helsefaglig forskning, og således trengte forskningsetisk godkjenning fra REK.

Formålet med prosjektet er å undersøke mulige sammenhenger mellom en rekke sosiale determinanter og selv-rapportert psykisk helse i den voksne befolkningen i Troms og Finnmark. Mer spesifikt vil prosjektet undersøke i hvilken grad utdanning, inntekt, kjønn, alder, og sosial og lokal tilhørighet kan forklare variasjon i selv-rapportert psykisk helse. Datagrunnlaget som søkes brukt er spørreskjemadata fra Folkehelseundersøkelsen fra FHI (2019) som ble gjennomført blant et representativt utvalg av den voksne befolkningen i Troms og Finnmark. Alle data som skal brukes er selv-rapportert, og inkluderer spørsmål om deltakernes generelle trivsel og mentale helse, samt spørsmål om lokalmiljø, lokaltilbud (tilgang til park, kino, spisesteder etc.) og sosial støtte.

Resultater fra studien skal kunne bidra til å forstå mer av hvordan sosiale og sosioøkonomiske forhold henger sammen med psykisk helse blant voksne i denne delen av Norge.

Det etterspørres vurdering fra dataansvarlig for Folkehelseundersøkelsen om det er behov for å gjennomføre en personvernkonsekvensvurdering (DPIA) for masterprosjektet, samt det rettslige grunnlaget for behandlingen av personopplysningen i henhold til personvernregelverket.

Det vises til at deltakelse i Folkehelseundersøkelse er frivillig og basert på et informert samtykke. Det rettslige grunnlaget for befolkningsbaserte helseundersøkelser etter nytt personvernregelverk er Forskrift om befolkningsbaserte helseundersøkelser, som er etablert med hjemmel i Helseregisterloven § 9, jf. § 8. I henhold til forskriftens § 4-1 gjelder i tillegg helseregisterlovens bestemmelser om tilgjengeliggjøring og sammenstilling av opplysninger. I helseregisterloven § 19 a heter det at den dataansvarlige skal etter søknad legge tilgjengeliggjøre helseopplysninger i helseregistre, inkludert opplysninger som er sammenstilt etter § 19 c, når opplysningene skal brukes til et uttrykkelig angitt formål innenfor registerets formål, mottaker kan godtgjøre at behandlingen vil ha rettslig grunnlag etter personvernforordningen artikkel 6 og 9, at behandlingen vil være innenfor rammene av eventuelle samtykker, og mottakeren har redegjort for at egnede tekniske og organisatoriske tiltak er iverksatt for å ivareta informasjonssikkerheten. Opplysningene kan bare tilgjengeliggjøres dersom det er ubetenkelig ut fra etiske, medisinske og helsefaglige hensyn.

## **Personvernombudets vurdering:**

### **Rettslig grunnlag for behandling av personopplysninger etter personvernregelverket (GDPR):**

Det rettslige grunnlaget for behandling av personopplysninger i masterprosjektet er personvernforordningen artikkel 6 (1) e) nødvendig for utføre en oppgave i allmennhetens interesse, med supplerende rettslig grunnlag i den norske personopplysningsloven § 8, under henvisning til at vilkårene i GDPR art. 89 (1) anses å være oppfylt.

Vilkåret for å for å kunne behandle helseopplysninger (særlige kategorier personopplysninger) er personvernforordningen artikkel 9 (2) j) at behandlingen er nødvendig for formål knyttet til vitenskapelig forskning, og tilsvarende som over, at vilkårene i GDPR art. 89 (1) anses å være oppfylt.

### Særlig om samtykke:

Deltakerne har avgitt et bredt samtykke til deltakelse i Folkehelseundersøkelsen, med den forståelsen at opplysninger kan tilgjengeliggjøres for formål innenfor registerets formål. Deltakerne har ikke avgitt et spesifikt samtykke til deltakelse i masterprosjektet. Bruken av opplysninger i studien dreier seg om sekundærbruk av data til formål knyttet til vitenskapelig forskning. De rettslige grunnlaget oppgitt i søknaden, og som redegjort for ovenfor, er korrekt, og må ikke forveksles med at deltakernes samtykke til å delta i Folkehelseundersøkelsen.

### GDPR art. 89 (1) for formål knyttet til vitenskapelig forskning:

Forutsetningen for å kunne behandle særlige kategorier personopplysninger for formål knyttet til vitenskapelig forskning er at behandlingen er omfattet av nødvendige garantier i samsvar med personvernforordningen, for å sikre den registrertes rettigheter og friheter, herunder at det er innført tekniske og organisatoriske tiltak for særlig å sikre at prinsippet om dataminimering overholdes (f.eks gjennom pseudonymisering). Det er personvernombudets vurdering at prinsippet om dataminimering er ivaretatt ved at alle opplysninger behandles aidentifisert og mottaker har ikke tilgang til koblingsnøkler. Videre skal all data som mottas behandles på universitetets sikre forskningsserver SAFE. Organisatoriske tiltak er ivaretatt gjennom at rutiner og roller (prinsippet om ansvarlighet) følges i henhold til UiBs retningslinjer.

Personvernombudet vurderer at kravene til rettslige grunnlag er oppfylt og at personvern hensyn er tilstrekkelig ivaretatt. Deltakere har gjennom sitt samtykke godkjent kobling av svar til andre registre, herunder MFR.

#### Forskningsetisk vurdering:

Det vises til at prosjektet har vært underlagt etisk vurdering av REK, og har en forskningsetisk godkjenning fra REK Vest med godkjent protokoll. Den forskningsetiske vurdering er et slikt tiltak som er særlig egnet til å sikre deltakernes integritet og velferd, og at prosjektets formål, metode og organisering er forsvarlig, herunder at den samfunnsmessige nytten av prosjektet er vurdert.

#### **Vurdering om det er behov for å gjennomføre en personvernkonsekvensvurdering (DPIA):**

Det er personvernombudets vurdering at det ikke er sannsynliggjort at behandlingen av personopplysninger vil innebære høy personvernrisiko for de registrerte. Gjennom at de registrerte har samtykket til deltakelse i Folkehelseundersøkelsen, at all kobling utføres av dataansvarlige for registrene og at kun avidentifisert data utleveres, og at informasjonssikkerheten er ivaretatt gjennom tekniske og organisatoriske tiltak hos forskningsansvarlig, anses personvern hensyn for å være godt ivaretatt. Det er personvernombudets vurdering at personvernkonsekvensvurdering ikke er nødvendig å gjennomføre, idet risikoen anses å være lav.

Det vises også til at REK Vest har gjort en helhetlig forskningsetisk vurdering og godkjent forskningsprosjektet, herunder vurdert at deltakernes samtykke for deltakelse i Folkehelseundersøkelsen er dekkende for denne studien og at opplysningene kan tilgjengeliggjøres.

(sign.)

Bergen, 10. januar 2023



Janecke Helene Veim  
Personvernombud / seniorrådgiver  
Sekretariat for universitetsledelsen  
Universitetsdirektørens kontor  
Universitetet i Bergen  
Tlf: +47 55 58 20 29  
Mob:+47 93030721  
[uib.no](http://uib.no)

## Appendix 4 Decision from NIPH



UNIVERSITETET I BERGEN  
Postboks 7800  
5020 BERGEN

v/ Helga Bjørnøy Urke

Deres ref.:

Vår ref.:  
23/00422-5

Dato:  
07.03.2023

### **Vedtak om tilgjengeliggjøring av data fra Folkehelseinstituttet til prosjektet "Mental health in Troms and Finnmark: an analysis of social determinants" (PDB 3350)**

Det vises til søknad om tilgjengeliggjøring av data fra Fylkeshelseundersøkelsene (FHUS) til ovennevnte prosjekt. Søknaden ble mottatt 27.01.2023.

Det framgår av søknaden at forskningsansvarlig institusjon er Universitetet i Bergen (UiB) og prosjektleder er Helga Bjørnøy Urke.

### Vedtak

Folkehelseinstituttet har vurdert søknaden og finner at prosjektet ligger innenfor formålet og samtykket til folkehelseundersøkelsen i Troms og Finnmark 2019 og at øvrige vilkår for tilgjengeliggjøring av data er oppfylt, jf. forskrift om oversikt over folkehelsen § 7 siste ledd, jfr. forskrift om befolkningsbaserte helseundersøkelser § 4-1 siste ledd, jfr. Helseregisterloven § 19 til § 19h.

Vilkår for tilgjengeliggjøring av data er beskrevet lenger ned i dette enkeltvedtaket.

## Søknad og nødvendige avklaringer

Det er søkt om utvalgte variabler fra spørreskjemaet til folkehelseundersøkelsen i Troms og Finnmark 2019. Det er sendt inn en variabelliste med søknaden.

Studiepopulasjonen er deltakerne i folkehelseundersøkelsen i Troms og Finnmark 2019, som består av den voksne normalpopulasjonen 18 år og eldre.

Prosjektet oppgir at data skal oppbevares på universitetets sikre forskningsserver SAFE.

Inndeling i regioner og kategorisering av variabelen «alder» ble avklart i e-postdialog den 13.02.2023.

## Prosjektets behandlingsgrunnlag

- Prosjektet har dokumentert lovlig grunnlag for behandling av data fra folkehelseundersøkelsen i Troms og Finnmark etter personvernforordningens art. 6 nr. 1 bokstav e) og art. 9 nr. 2 bokstav j), samt nasjonalt supplerende rettsgrunnlag etter personopplysningsloven § 8.
- Prosjektet har godtgjort at behandlingen av opplysningene er innenfor rammene av samtykket, og ikke i strid med eventuelle reservasjoner, som er gitt for deltakelse i folkehelseundersøkelsen i Troms og Finnmark 2019.
- Prosjektet er medisinsk og helsefaglig forskning og har forhåndsgodkjenning fra REK, jf. helseforskningsloven § 10, datert 15.11.2022 (ref.nr. 531480).

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- Prosjektet har innhentet godkjenning av ny versjon av forskningsprotokoll fra REK, jf. helseforskningsloven § 11, i vedtak av 21.12.2022.
- Prosjektet har innhentet bekreftelse fra personvernombudet ved UiB på at det ikke er nødvendig å gjennomføre en DPIA. Vurderingen er forankret ved forskningsansvarlig institusjon den 10.01.2023.

### Vilkår for tilgjengeliggjøring:

- Prosjektleder er ansvarlig for å sikre at all behandling av personopplysninger i prosjektet følger kravene i personopplysningsloven og GDPR. Dette innebærer blant annet å sørge for at opplysningene oppbevares trygt i tråd med institusjonens retningslinjer, sikre tiltak mot uautorisert utlevering og tilgang til personopplysninger, samt mot forsøk på identifisering av enkeltpersoner.
- Prosjektleder er ansvarlig for å inngå tilstrekkelige avtaler med alle forskningsinstitusjoner der prosjektmedarbeidere er ansatt.
- Prosjektleder er ansvarlig for at alle prosjektmedarbeidere overholder vilkår og betingelser.

- Prosjektleder skal søke Folkehelseinstituttet ved vesentlige endringer i prosjektet, som f.eks. endring i dataansvarlig institusjon, prosjektleder, prosjektmedarbeidere eller prosjektvarighet.
- Prosjektleder må sørge for at det til enhver tid foreligger en oppdatert oversikt over hvilke personer som lovlig kan gis tilgang til datasettet. Data skal ikke overlates til andre enn disse medarbeiderne.
- Opplysningene skal kun brukes i det godkjente forskningsprosjektet og til det formålet som er oppgitt i søknaden.
- Kommersiell utnyttelse av deltakere, helseopplysninger og humant biologisk materiale er forbudt, i henhold til forskrift om befolkningsbaserte helseundersøkelser § 1-4.
- Alle som får tilgang til datasettet, har taushetsplikt i henhold til helseregisterloven § 17.
- Det er ikke tillatt å flytte data fra SAFE.
- Datamaterialet skal slettes senest innen prosjektets avslutning 01.11.2023. ○ Skriftlig bekreftelse på at materialet er slettet skal oversendes Folkehelseinstituttet.
- Ved publisering eller offentliggjøring skal Fylkeshelseundersøkelsene (FHUS) ved Folkehelseinstituttet oppgis som kilde. I alle publikasjoner skal folkehelseundersøkelsen i Troms og Finnmark 2019 offisielle navn eller forkortelse inngå i tittel eller abstract-tekst av hensyn til PubMed-søk. For nærmere informasjon om registrenes offisielle navn og forkortelser, se <https://www.fhi.no/div/datatilgang/retningslinje-for-referanse/>
- Dersom prosjektet ønsker å delta i nasjonale eller internasjonale samarbeid der data fra folkehelseundersøkelsen i Troms og Finnmark 2019 inngår i metaanalyser, skal prosjektleder gi skriftlig beskjed til FHUS.
- Folkehelseinstituttet er ikke ansvarlig for tolkninger eller analyser av dataene som blir gjort av andre.
- På Folkehelseinstituttets nettsider vil det publiseres informasjon om at dette prosjektet har fått tilgang til data.

Brudd på vilkår må varsles FHUS umiddelbart. Brudd på vilkår vil håndteres i henhold til Folkehelseinstituttets rutiner for avvik.

## Videre saksbehandling

Folkehelseinstituttet har en frist på 30 dager på å tilgjengeliggjøre data, jf. helseregisterloven § 19 f.: Fristen løper fra komplett søknad.

Dersom det gjøres tilleggsbestillinger av data i denne søknaden, vil det beregnes ny tidsfrist for tilgjengeliggjøring.

Det gjøres oppmerksom på at nærmere avklaringer og tilpasninger av datasettet kan bli aktuelt dersom FHUS finner grunnlag for det.

## Klagegang

Dette er et enkeltvedtak som kan påklages etter forvaltningsloven kapittel VI. Klagefristen er tre uker etter at du har mottatt melding om vedtak.

En eventuell klage sendes først Folkehelseinstituttet. Folkehelseinstituttet skal etter at klagen er mottatt, gjennomgå saken på ny. Folkehelseinstituttet kan omgjøre vedtaket. Fastholdes vedtaket, sendes klagen videre til Helse- og omsorgsdepartementet for endelig avgjørelse.

## Kontaktinformasjon

Ved spørsmål knyttet til saken, send epost til [FHUSdata@fhi.no](mailto:FHUSdata@fhi.no). Oppgi alltid prosjektnummer PDB 3350 ved henvendelser.

Vennlig hilsen

Åsa L'Abée-Lund  
Avdelingsdirektør

Ragne Larsen  
Seniorrådgiver