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# **The first pan-European sociological health inequalities survey of the general population: the European Social Survey (ESS) rotating module on the social determinants of health**

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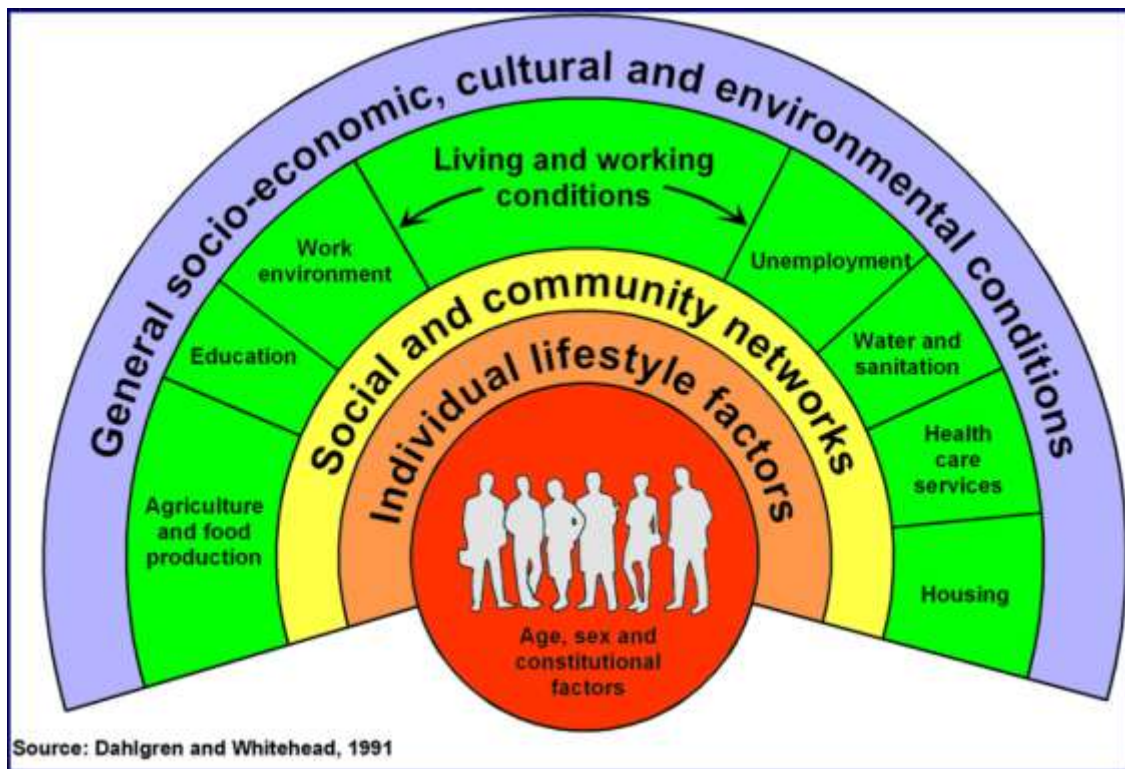
## **Acknowledgements**

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## Background

Health inequality usually refers to the systematic differences in health, which exist between social classes, areas or groups (for example by age, gender, race or place). Health inequality can be defined in a purely descriptive way. For example, Kawachi and colleagues refer to health inequality as *“a term used to designate differences, variations, and disparities in the health achievements of individuals and groups”* (Kawachi, Subramanian, & Almeida-Filho, 2002). More commonly though, the moral and ethical dimensions of the term are emphasised: inequalities in health are thereby *“systematic differences in health between different social groups within a society. As they are socially produced, they are potentially avoidable and widely considered unacceptable in a civilised society”* (Whitehead, 2007). In most European research and policy discourse, the term ‘health inequality’ is used to refer to differences by socio-economic status: most usually measured in terms of income, occupation or education. Inequalities in health between socio-economic groups are not restricted to differences between the most privileged groups and the most disadvantaged; health inequalities exist across the entire social gradient (Marmot & Wilkinson, 2006). The social gradient in health is not confined to the poorest in society; it runs from the top to the bottom of society and *“even comfortably off people somewhere in the middle tend to have poorer health than those above them”* (Marmot & Wilkinson, 2006). Social inequalities in health are universal within European countries and they extend along the whole social ladder: *“the higher the social position, the better the health”* (Lundberg & Lahelma, 2001). They not only persist in poorer parts of the world without health care systems but also in high-income countries with advanced health care systems (Mackenbach, 2012; Mackenbach et al., 2008). These inequalities in morbidity (i.e. disease and ill-health) and mortality (i.e. death) were observed throughout the 20<sup>th</sup> century, despite massive advances in abilities to prevent, diagnose and treat disease. This has led to increased emphasis on factors that influence health outside the traditional health system: *the social determinants of health*. Health inequalities emerge in the intersection between social structures, individual actions and biological processes. While disease and premature mortality are ultimately biological phenomena taking place in individual bodies, social inequalities in ill health, disease and mortality are caused by socially determined conditions and processes of social inequality and stratification. In the WHO Commission on Social Determinants in Health led by Michael Marmot, the social determinants of health are defined as *“...the circumstances in which people grow, live, work, and age, and the systems put in place to deal with illness”* (Marmot, 2008). In other words, our health will depend on a range of circumstances and conditions throughout our lives, including childhood conditions, education, working conditions, neighbourhood conditions, economic resources and housing conditions. The main social determinants of health are widely considered to be: working conditions, unemployment, access to essential goods and services (specifically water, sanitation and food); housing and the living environment; access to health care; and transport (Dahlgren & Whitehead, 1991). This is illustrated in Figure 1 below. Thereby the key social determinants of health also constitute the welfare resources necessary to lead a good life, or *“the resources ... by which the individual can control and consciously direct her conditions of life.”* (Johansson, 1970).



**Figure 1: Dahlgren and Whitehead (1991) model of the determinants of health**

Although social inequalities in health exist in all societies worldwide, the degree of these inequalities varies spatially, and notable differences exist within Europe (Huijts, 2011; Mackenbach et al., 2008). For example, the results of many (but not all) comparative health inequalities studies have found that the Scandinavian welfare states do not have the smallest health inequalities (Huijts & Eikemo, 2009). Mackenbach et al's study of inequalities in mortality found *"no evidence for systematically smaller inequalities in health in countries in northern Europe (Scandinavia)"* (Mackenbach, 2012). This is considered to be a major "public health puzzle" - one that cannot be explained by existing theories of health inequalities. However, the persistence of social inequalities in health in European welfare states – and what this means for how we understand and reduce them - has not to date been comprehensively examined either theoretically or empirically. This is partly due to the lack of comparative data with detailed health outcomes, comprehensive social determinants and information about the socioeconomic structure. Comparative approaches to inequalities in health are important for at least two reasons. First, they are central to establishing the nature of health inequalities – are such inequalities a universal phenomenon or something specific for certain stages of development or historical periods? Second, and more importantly, systematic international comparisons form the basis for one of the key questions in health inequality research, namely whether or not it is possible to organize society, or welfare states, in a way that reduces or even eradicates health inequalities.

### Theories of health inequalities

Traditionally, there have been three main theories which attempt to explain how social determinants interact with health and inequalities in health: material, psychosocial, and cultural-behavioural theories.

*The materialist explanation* focuses on income, and the neo-materialist approach on what income enables, in the relationship between socio-economic status and health. Important dimensions of what income enables include both access to goods and services and the limitation of exposures to physical, and psychosocial risk factors (i.e any attribute, characteristic or exposure of an individual that increases the likelihood of developing a disease or injury). By way of illustration, a decent income enables access to health care, transport, an adequate diet, quality housing and opportunities for social participation; all of which are health promoting. Material wealth also enables people to limit their exposures to known risk factors for disease such as physical hazards at work or adverse environmental exposures. Materialist approaches give primacy to structure in their explanation of health and health inequalities, looking beyond individual level factors (agency), in favour of the role of public policy and services such as schools, transport and welfare in the social patterning of inequality (Bartley, 2004; Skalická et al., 2009). Cross national comparisons demonstrate the importance of material factors for health and health inequalities (Bartley, 2004). In general, countries with narrower income differences between rich and poor have better health and wellbeing e.g. lower obesity, drug misuse, teenage conceptions, stress and mental ill health (Wilkinson and Pickett, 2009). These countries also have better welfare services and so access to education, social housing, transport, health care provision and green spaces tend to be better and more fairly distributed across the population. This may partly account for how lower income inequality translates into better health outcomes (Bartley, 2004). This evidence augments the theory that everyone does better in conditions where income equality exists.

*Psychosocial explanations* focus on how social inequality makes people feel and the effects of the biological consequences of these feelings on health. Bartley describes how feelings of subordination or inferiority stimulate stress responses which can have long term consequences for physical and mental health especially when they are prolonged (chronic) (Bartley, 2004). The socio-economic gradient is therefore explained by the unequal social distribution of psychosocial risk factors. Psychosocial risk factors associated with the workplace include low levels of control over how work is undertaken, limited autonomy over work tasks, monotonous work and time pressures, low levels of support from co-workers and supervisors, an imbalance between efforts exerted and rewards received and organisational injustice (Marmot & Wilkinson et al, 2006). Bartley underscores how it is the way stress makes people feel that is important in relation to health outcomes rather than straightforward exposures to stressors. In this way the model combines both structure and agency. For example, it may not simply be income level or an adequate working environment alone that leads to good health but rather how good income and good quality work can make people feel, especially in relation to others (Bartley, 2004). Here perceptions of social status and in particular perceptions of status in comparison to other people in society are significant constructs: what matters is how individuals value themselves. If these value judgements are negative, feelings of inferiority or subordination can invoke harmful stress responses.

The *cultural-behavioural* approach asserts that the link between socio-economic status and health is a result of differences between socio-economic groups in terms of their health related behaviour: smoking rates, alcohol and drug consumption, dietary intake, physical activity levels, risky sexual behaviour, and health service usage. Such differences in health behaviour, it is argued, are themselves a consequence of disadvantage and unhealthy behaviours may be more culturally acceptable amongst lower socio-economic groups. The 'hard' version of the cultural-behavioural approach asserts that the differences in health between socio-economic groups are wholly accounted for by differences in these unhealthy behaviours. The 'softer' version posits that behaviour is a contributory factor to the social gradient but not the entire explanation (MacIntyre, 1997). Risky health behaviours are more concentrated amongst poorer socio-economic groups due to the concentration of individuals with less self-control, lower responsibility, poorer coping abilities, lower health knowledge, and a more short term outlook on life: an agency focused explanation which can be summed up as the 'feckless poor' argument. A more recent version of the behavioural

model (the cultural-behavioural approach) takes into consideration the more structural role of culture and how different cultural norms can pattern the distribution of unhealthy behaviours. Unhealthy behaviours are more common in lower socio-economic groups where these behaviours represent the cultural norm and are more acceptable. The cultural-behavioural explanation does not take into account possible wider reasons for why unhealthy behaviours are more prevalent and/or more acceptable in lower socio-economic groups, namely the social determinants of health and other more structural factors such as the experience of deprivation and feelings of powerlessness. Simplistic behavioural explanations therefore merely lend authority to policies which stigmatise already disadvantaged individuals and communities (Joyce and Bambra, 2010). Cultural health capital is also relevant in this perspective, which Cockerham (1997) explains with the following logic: the further up a social hierarchy a person is located the less exposure to health-affecting stressors. They will also have access to more social and psychological resources in the event of experiencing such stressors. Indeed, cross-national health inequality research is dominated by an epidemiological paradigm. The main implication of this is that the majority of studies examining and explaining the persistence of social inequalities in health in European countries are mainly concerned with risk factors related to behavior, and conclude that socio-economic differences in smoking and physical inactivity are the main drivers behind inequalities and behind spatial differences in their magnitude. There are of course good reasons for the dominance of this approach - such proximal risk factors are relatively easy to measure, they have a reasonably well-documented causal effect on mortality, and they are sensitive to intervention. However, such explanations are not sufficient as sociological explanations which require an examination further upstream in the aetiological (i.e. causal) pathway – an examination of the ‘causes of the causes’ (Marmot & Wilkinson, 2006). A sociological approach therefore requires the identification of the underlying individual, collective, and structural mechanisms leading to these poorer behaviours, as well as the non-behavioural factors (such as housing, access to services, working conditions) that impact on the prevalence of disease (i.e. proportion of the population with a disease). We see a need to study the wider social context to understand why people behave the way they do. This is especially true because each of the above-mentioned living conditions and welfare state arrangements do not just influence chronic disease directly, but also indirectly through their effect on unhealthy lifestyles. This is why we have designed a module that can examine the impact of welfare states on chronic diseases as pathways working through the socioeconomic structure, living conditions, and lifestyles. More specifically, we will be able to study economic activity, employment, income, education and occupational class (which sometimes has been used interchangeably in previous studies) in welfare states, and further link social inequality to people’s social context, in terms of social capital (social support, participation in voluntary organizations, marital or partnership status), housing conditions, childhood conditions, working conditions, or health care utilization. For example, people with better incomes or higher education tend to have a higher probability to achieve better housing conditions or to be less stressed at work, which in turn may decrease the probability of starting smoking or to be physically inactive. Thus, it may not be feasible to reduce the prevalence of chronic diseases (and their social patterning) by increasing tobacco prices or promoting physical activity alone. Income redistribution policies or action towards an improvement of physical working conditions in manual occupations may (or may not) be equally effective policies to obtain healthier lives. This is because health and health inequalities are deeply rooted in the social stratification systems of modern societies. Promoting healthy lifestyles alone may in fact not be sufficient to reduce health inequality with the persistence of large inequalities in living conditions for instance.

Further, a sociological theory would take into account that the social distribution of health is also a result of how individuals actively form their own life chances and not only the result of the social context in which individuals live. This is the core of *the fundamental cause theory*. Link and Phelan (1995) developed the theory of fundamental causes to explain the association between social status and mortality. They proposed that the enduring association results because social status embodies an array of resources, such as *money, knowledge, prestige, power, and beneficial social connections*

that protect health no matter what mechanisms are relevant at any given time (Link & Phelan, 1995). According to the authors, a fundamental social cause of health inequalities has four essential features. First, it influences multiple disease outcomes, meaning that it is not limited to only one or a few diseases or health problems. Second, it affects these disease outcomes through multiple risk factors. Third, it involves access to resources that can be used to avoid risks or to minimize the consequences of disease once it occurs. Finally, the association between a fundamental cause and health is reproduced over time via the replacement of intervening mechanisms. It is the persistent association of socioeconomic status (SES) with overall health in the face of dramatic changes in mechanisms linking SES and health that led Link and Phelan to call SES a “fundamental” cause of health inequalities.

Sociological theories have not been comprehensively tested empirically in a cross-national setting and when they have been exposed to empirical scrutiny, they have been shown to have only limited explanatory power. This has resulted in the emergence of a ‘public health puzzle’ whereby the most prominent theories explaining social inequalities in health (e.g., materialist, cultural-behavioural or psychosocial) cannot adequately explain why social inequalities in health persist in developed welfare states or why particular cross-national patterns in the magnitude of social inequalities in health are detected, e.g. that the Scandinavian countries have relatively larger health inequalities. In order to meet some of these challenges, we have developed a new pan-European data source which will advance the theoretical understanding of the aetiology of social inequalities in health in Europe. The survey will be able to comprehensively and empirically test existing theories of inequalities in health, and also examine the mechanisms underpinning welfare state policies and social inequalities in health. It will also be the first pan-European survey that will enable an empirical examination of the intersectionality of educational, class-, income-, gender- and ethnicity-based health inequalities and the effects of welfare state policies interventions in reducing them. Moreover, the ESS health inequality module will provide information on the major social determinants of health (some of which are already included in the core ESS module) on which interventions and policies should focus in order to reduce health inequalities in Europe. Such information is at the moment fragmentary and only available for a few countries. Whilst it will not be possible to prove causality due to the cross-sectional nature of the data it will provide more comprehensive data on both health and the sociological context across a larger range of countries than has been available before.

We will be able to quantify the magnitude of social inequalities in health across European welfare states for an extensive number of health outcomes, which will add importantly to the available studies on self-reported general health and limiting longstanding illness. We will be able to assess the contribution of a unique selection of major health determinants (social, political, material, behavioral, life-course-related, and psychosocial determinants) to inequalities in health between European welfare states.

### **The rotating module on the social determinants of health of the European Social Survey**

The European Social Survey (ESS) is a biennial, academically-driven, cross-sectional, pan-European social survey that charts and explains the interactions between Europe’s changing institutions and the attitudes, beliefs and behaviour patterns of its diverse populations (R. Fitzgerald & Jowell, 2010). The ESS has already completed seven rounds since 2002, which have covered over 30 nations and employed the most rigorous survey methodology. The survey was awarded the Descartes Prize for “Excellence in Scientific Collaborative Research” in 2005 in recognition of its world-leading quality and the impact and relevance of the ESS was further recognized by its inclusion in the European Strategy Forum on Research Infrastructures in Europe “Roadmap” in 2006 (R. Fitzgerald, Harrison, & Ryan, 2013). In 2013 the ESS became the first UK-hosted European Research Infrastructure Consortium (ERIC), which acknowledges the relevance and importance of the infrastructure whilst



2016 see's it become an ESFRI landmark infrastructure in recognition of its maturity. Almost 3000 publications using ESS data have been published since 2002 and there are over 80,000 registered users of the data from across the world. Data from the ESS has also had influence on policy and has been presented to the European, Italian and Lithuanian Parliaments as well as to the OECD.

The questionnaire for each round consists of two main elements: a core module of substantive and socio-demographic items (around 100 items/questions in all); and two rotating modules, each including up to 30 items (Fitzgerald & Jowell, 2010). These modules are administered together and the questionnaire takes one hour to answer in British English. This has enabled social researchers to measure change over time as well as topics of emerging interest. Each rotating module covers a single academic and/or policy concern within Europe and is drafted by a competitively selected team. The survey data is freely accessible over the internet and has been widely used in sociological research, for example related to social inequality, immigration, democracy, media, participation in the civil society, trust, social networks, and health. The survey has also been used by other social science disciplines including psychology, political science, economics and demography. With respect to health, the ESS has contributed substantially to the exploration and explanation of how and why social inequalities in health vary across European countries and welfare states (Bambra & Eikemo, 2009; Eikemo, Bambra, Judge, & Ringdal, 2008a; Eikemo, Huisman, Bambra, & Kunst, 2008b; Eikemo, Kunst, Judge, & Mackenbach, 2008c; Huijts, 2011). This has previously only been based on the two core questions on self-rated health (general health and limiting longstanding illness) and depression measured with an 8-item version of the Center for Epidemiological Studies-Depression (which was included in the third and sixth round of the ESS). However, to aid descriptive analysis, more nuanced health outcomes in particular are needed to further develop a cross-national macrosociology of population health and health inequalities. To enhance the explanation, there was also a need to have a fuller set of questions about the social determinants of health and how they may vary spatially across – and within – the countries of Europe.

As part of Round 7 of the ESS, we successfully developed a rotating module that provides a fairly comprehensive and comparative pan-European data set on the social determinants of health and health inequalities within the confines of the space available. It can be used to compare the influence of different European welfare states and to test sociological theories of health and health inequalities for a range of health outcomes. In this article, we present the rationale for the module, the health outcomes and social determinants that were included, and some of the opportunities that we think the module provides for advancing research into explaining the distribution and aetiology of social inequalities in health in Europe.

### **Data and sampling**

The ESS has already completed and published data for seven rounds, which have all covered over 20 nations and resulted in around 1000 to 2000 interviews in each country per round. The central coordination of the ESS and design had been funded through the European Commission's Fifth and Sixth Framework Programs and the European Science Foundation. From Round 7 the central costs are covered by the governments who are members, observers and guests of ESS ERIC, a new legal entity established to run the survey and encourage exploitation of its data. The new data in the seventh round, which includes our rotating module, will cover 22 countries in Europe: Austria, Belgium, Czech Republic, Denmark, Estonia, Finland, France, Germany, Hungary, Ireland, Israel, Latvia, Lithuania, Netherlands, Norway, Poland, Portugal, Slovenia, Spain, Sweden, Switzerland and UK. Data collection is coordinated by the Core Scientific Team of the European Social Survey with ESS ERIC HQ and Director Rory Fitzgerald based at City University in London. For each country, local data collection is organized and coordinated by national coordinators and fieldwork is conducted by market research companies, national statistical institutes and nonprofit institutes. Data is designed to be representative of all residents aged 15+ in each country and is inclusive of all those living in a

country and *not* only citizens. Each country must draw a random probability sample using the best sampling frame possible in their country and no substitution is allowed at *any* stage. Every member of the target universe therefore has a known and non-zero chance of selection. The aim is to achieve an effective sample size of 1500 and so any country not using a simple random sample has to increase their sample to compensate for the larger design effects arising from features of the design which reduce precision (Häder & Lynn, 2007).

The ESS has set new and improved methodological and coordination standards in cross-national survey research in other areas too including: questionnaire design, translation, response measurement, fieldwork design, cross-national harmonization as well as through state of the art data archiving and the provision of free and non privileged access to the data and documentation (Fitzgerald & Jowell, 2010). All interviews are conducted face to face by an interviewer in people's homes to avoid comparability issues that might be introduced by mixing modes of data collection. There are design, population and post stratification weights which the user must consider applying when using the data. The questionnaire for the health module was developed and documented using the ESS questionnaire design template which ensures a conceptually anchored approach to the design and testing of the module (Fitzgerald, 2015). The templates from each stage of the design and the final questionnaire are available from the ESS website along with the data ([www.europeansocialsurvey.org](http://www.europeansocialsurvey.org)). In general the ESS uses an Ask the Same Question approach with each country asking exactly the same items adapted only to facilitate a workable translation (R. Fitzgerald & Jowell, 2010). However on occasion this is not possible and each country asks a different question which is later recoded into a single code frame. This was required for the alcohol consumption questions in the health inequality module for instance (see below). Since the design of cross-national questionnaires is so much more complex than for single nation, single language surveys the ESS includes the following: omnibus tests, a 2-nation pilot survey, cognitive interviews in several European countries, reliability and validity prediction using the Survey Quality Predictor, advance translation and consultation with coordinators in every participating country. The process takes around 18 months. Once the source questionnaire in English has been developed each country then undertakes a committee approach to translation, ensuring the process remains steeped in the target languages and avoiding the loss of quality associated with back translation (Fitzgerald & Jowell, 2010). Figure 2 provides an overview of the questionnaire development and pretesting. We have also provided a brief overview of all measurements in Table 1. The full questionnaire can be downloaded here: <http://www.europeansocialsurvey.org/download.html?file=ESS7e01&y=2014>.

### **Critical reflection on the limitations of the survey for measuring health inequalities and their determinants**

Although the high quality of the ESS is clear, even the best cross-national surveys still have a high potential for error (Smith, 2011). Therefore data analysts are advised to always check first whether differences found in the data might in fact reflect methodological artifacts and a lack of equivalence in the final data. For example, previous rounds of the ESS highlight big differences in response rates between countries, although evidence of non response bias was found to be slim (Ineke, Billiet, Koch, & Fitzgerald, 2010). Other scholars have pointed to possible differences in the quality of the questions between countries (Willem & Gallhofer, 2007).

Response rates are one measure of survey quality however in themselves they are not a direct indicator of non-response bias (Stoop, Billiet, Koch, & Fitzgerald, 2010). That said, the ESS sets out very high targets for response rates (70%) and low rates for non-contacts (3%) as part of its approach of aiming for the standards of the best social surveys in Europe, rather than taking some average or

lowest common denominator. At the time of writing ESS data had been published for 15 countries<sup>1</sup>. Response rates ranged from 31% in Germany to 68% in the Czech Republic and overall are similar to previous rounds of the ESS, although perhaps a little lower in some cases largely reflecting organisational delays around the transition to the ERIC structure. Details of response rates and key deviations found with particular questions are published on the ESS website, to allow data users to consider these when using the data and to report any further issues discovered as the data is explored in detail (see [http://www.europeansocialsurvey.org/data/deviations\\_7.html](http://www.europeansocialsurvey.org/data/deviations_7.html)). Note that data collection was due to take place between September and December 2014 in all countries. However, as in previous rounds, the actual data collection periods deviate from this in some countries due to delays in funding confirmation or organisational or technical reasons. However, the content of the health inequalities module is unlikely to be significantly impacted by these differences and data users can control for the date of interview in their analysis. As noted earlier it is also important to note that the ESS is cross-sectional in nature and thereby does not allow panel analysis (unlike for example the SHARE data). Especially in the health sciences, panel data or follow-up studies are considered optimal, as researchers can disentangle causal paths in their analysis. The new module on health inequalities will only allow inferences with respect to associations but not the directionality of the relationship between social determinants and health. However there is no longitudinal panel survey that covers as many countries in Europe as the ESS and which has such a comprehensive sample. SHARE for instance only covers the population aged 50 and older. Efforts to compare data from national surveys that use very different methodologies and / or questions should arguably also be treated with caution, since it can be difficult to isolate whether differences in the data are real substantive differences or reflect methodological artifacts.

Of course there are gaps in European coverage notably with Italy missing in the South and more peripheral countries in Europe like Russia, Ukraine and Turkey not taking part in Round 7. However Northern, Western, Southern and Eastern Europe are all well represented and non-EU Norway and Switzerland are also present. Furthermore, the institutionalized population is usually not included in sampling frames in general population surveys like the ESS. However, institutionalization is however very common for individuals with severe (physical and mental) health issues and the elderly. In addition levels of institutionalization are known to vary cross-nationally. Related to this, the data cannot fully capture the extent of health inequalities due to problems of coverage and non-response to surveys. The ESS and other cross-national European surveys are currently examining whether it might be possible in future to include the institutional population in samples through the Synergies for Europe's Research Infrastructures in the Social Sciences (SERISS<sup>2</sup>).

Finally, although we intended this module to be used for large-scale comparative analyses of European countries, recent studies suggest that conventional methods to do this (e.g. multilevel regression analysis) have their limitations (Bryan & Jenkins, 2016; Schmidt-Catran & Fairbrother, 2016). This suggests that further development of appropriate analytic methods is needed to fully exploit the comparative potential of these data.

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<sup>1</sup> Austria, Belgium, Czech Republic, Denmark, Estonia, Finland, France, Germany, Ireland, Netherlands, Norway, Poland, Portugal, Slovenia, Sweden and Switzerland. Data for Hungary, Israel, Lithuania, Latvia, Spain and UK will be published during 2016.

<sup>2</sup> See [www.seriss.eu](http://www.seriss.eu)

## The health variables of the module

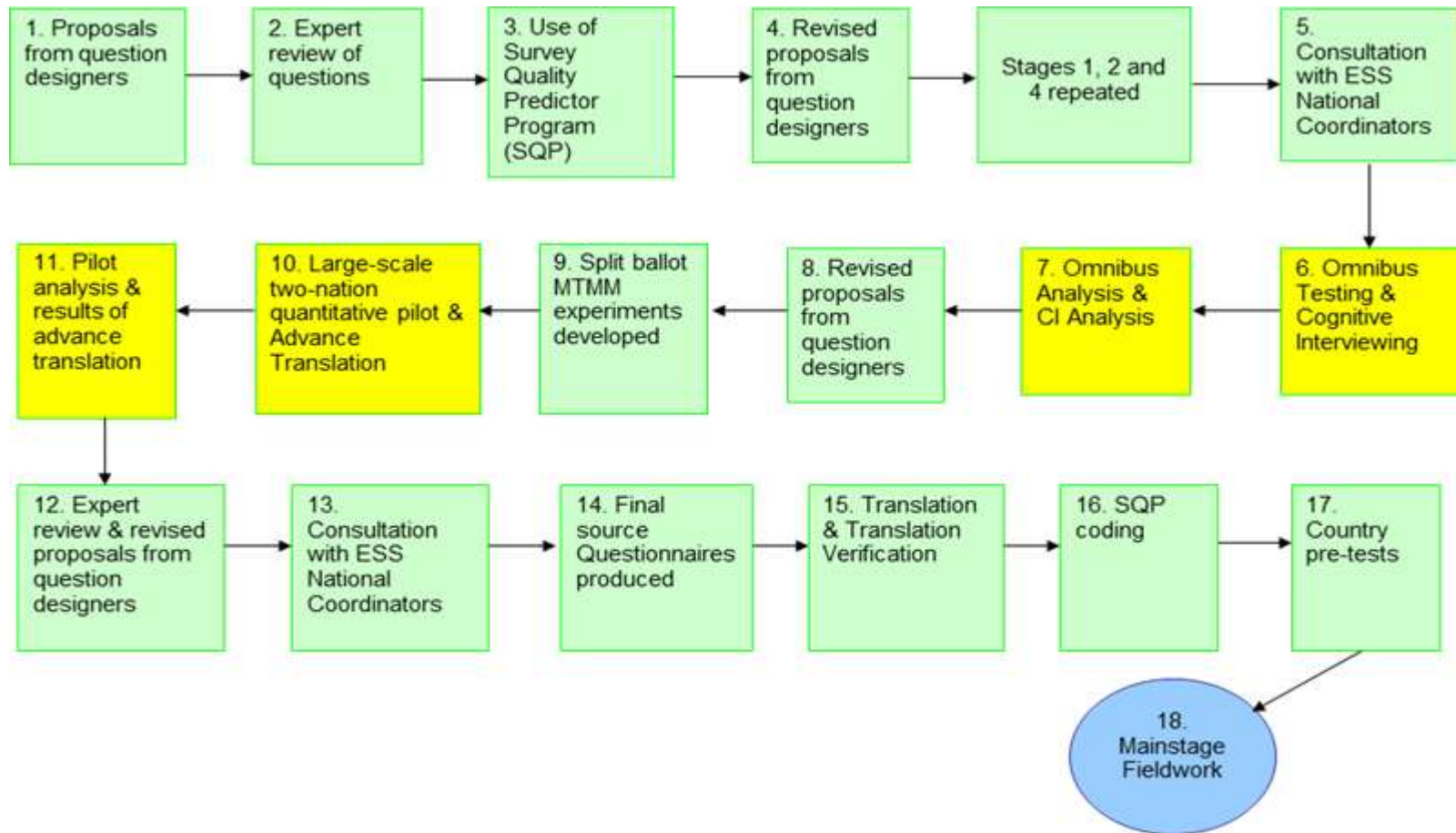
### *Self-reported conditions*

Self-reported physical chronic conditions (i.e. long-term diseases) are a more precise way of capturing people's physical health than general self-rated health, and will allow us to disentangle links between specific conditions and their social determinants. The research interest and policy impact of analyses of chronic conditions is very high because research at the individual-level comparing physical chronic conditions in Europe is scarce and because chronic diseases are the leading cause of mortality in the region. Traditionally, chronic diseases were considered to be a problem of the rich and elderly, but more recent evidence suggests that within high-income countries, poor as well as young and middle-aged people are affected by chronic conditions (Busse, Blümel, Scheller-Kreinsen, & Zentner, 2010). Also, chronic diseases depress wages, earnings, workforce participation and labour productivity, as well as increasing early retirement, job turnover and disability. We have therefore included **back pain, heart problems, high blood pressure, allergies, breathing problems, stomach problems, skin conditions, diabetes, severe headaches, and cancer** (cancer was asked as a separate question due to its sensitive nature). These conditions have been chosen based on frequency in the general population (e.g. epilepsy was excluded due to low prevalence), sensitiveness for the respondent (e.g. this excluded sexual diseases), and correlation with mortality. Some of these conditions are also known to be unequally distributed by social position. The largest social differences are generally observed for stroke (heart problems), diabetes, and arthritis (back pain); while no differences or even inverse differences are observed for cancer, kidney diseases (stomach pain), skin diseases and allergy.

### *Mental well-being*

We have also included mental well-being as a health variable. The main rationale for this is that mental health problems are a major public health issue. Worldwide, depression is becoming one of the most salient illnesses and is a considerable element of poor general well-being and quality of life. Moreover, psychological discomfort means not only personal suffering, but also has a significant impact on the immediate environment (such as relationships with a partner or children) and society more generally. Mental health problems also have a major economic cost. Mental health complaints are a significant cause of absenteeism and declining productivity at work (Lerner et al., 2004; Lerner & Henke, 2008). In addition, the total expenditure for mental healthcare have risen in most industrialized countries (Gadit, 2012). To capture feelings of depression, we have included the 8-item version of the Center of Epidemiological Studies Depression Scale (CES-D scale) (Radloff, 1977). The CES-D scale was also covered in the third and sixth round of the ESS and includes **feeling depressed, everything an effort, restless sleep, lonely, enjoy life, sadness, being happy and cannot get going.**

Figure 2: ESS Round 7 Questionnaire development and pre-testing cycle



## **The health determinants of the module**

The ESS already includes extensive information on respondents' social conditions including educational attainment, work status, psychosocial working conditions, social class, household income, dimensions of social capital (such as having someone to discuss intimate matters with, frequency of meeting friends, colleagues and neighbours, and membership of various organizations), and family structure. While adding to this list of factors, we relied on the Dahlgren & Whitehead model of the determinants of health, and recent reviews on the social determinants of health (such as the Marmot review). Furthermore, we reviewed the existing evidence on their cross-national prevalence, their level of social inequality, and by their association with physical and mental health. We also gave priority to potential important health determinants, identified in national reviews, such as housing conditions, use of alternative health services, and unpaid care, that have not been included in cross-national surveys to date. Following the two nation pilot we assessed the social determinant items that were not part of the ESS core for their prevalence, social gradient and associations with health outcomes. Those with the strongest associations and without other measurement problems were then included. We also gave priority to questions that could be measured using a limited list of items, mindful of the limit of 30 items.

## **Questions relating to health care use and access**

### ***Unmet need***

Access to healthcare is a fundamental determinant of health, particularly in terms of the treatment of pre-existing conditions, and equitable distribution across the population is a critical issue in health services approach (Pappa, Kontodimopoulos, Papadopoulos, Tountas, & Niakas, 2013). The use of health care has commonly been studied through the concept of unmet need. However, research on unmet need has mainly been conducted in the U.S. and Canada (Diamant et al., 2004; Sibley & Glazier, 2009). In Europe, the study of unmet need as a determinant of access to healthcare is limited to specific countries (Cavalieri, 2013). In most advanced capitalist countries, access to health care is universal. However, there are variations in terms of how health care is funded (e.g. social insurance, private insurance or general taxation), the role and level of co-payments for treatment, and the extent of provision – what has been collectively termed 'health care decommmodification' (Bambra, 2005). For example, in the nationalised UK health system, it has long been the case that an 'inverse care law' operates whereby there are fewer doctors in areas of higher need (Tudor Hart, 1971).

### ***Visits to GP and specialists***

Social differences in the use of health care services have been widely reported. People in a lower social position are less likely to use preventive health services (Veugelers & Yip, 2003). Moreover, they tend to be more intensive users of general practitioners, while higher social groups report significantly more specialist contacts, even when taking into account the generally poorer health of lower social groups. A number of possible reasons for such disparities have been suggested, including systematic differences by social position in interpretation of symptoms and perception of the need for health care (Adamson, Ben-Shlomo, Chaturvedi, & Donovan, 2003). Our questions include both GP and specialist visits.

### ***Provision of unpaid care***

There is a lack of comprehensive or comparable international evidence on health inequality amongst carers compared to non-carers (OECD, 2011). Care-giving can have a detrimental effect on carers' emotional health (stress, depression, and exhaustion), social activities, leisure time, energy levels, family relationships and access to health services (Kerr & Smith, 2001). There is also evidence of a

negative effect of caring on general self-rated physical health (Greenwood, Mackenzie, Cloud, & Wilson, 2008). While unpaid carers provide a valuable service to society and looking after family members or friends brings great rewards, there is growing concern about increased psychological distress, strain and overall health deterioration endured by family carers. Isolation and lack of support might prove a high burden and result in distress or mental health problems. In our module, we ask whether the respondents spend any time looking after or giving help to family members, friends, neighbours or others because of issues related to health or age.

### ***Use of alternative health care***

During the last century, medical interventions have helped the world population to obtain better health and live longer lives. Also, we have seen substantial improvements in the quality of and access to timely and efficient health care, which has been of great benefit to health worldwide. Despite these developments, we have seen a growing utilization of other less conventional types of health care services in areas of the world where the position of Western Medicine has been the strongest: above all in Western countries (Harris & Rees, 2000). According to an article in JAMA 42 percent of the U.S. population used at least one alternative therapy in 1997 (Eisenberg et al., 1998). This is one of the great unexplained paradoxes within health care provision in high-income countries. The utilization of alternative medicine cannot be ignored as an important societal phenomenon, with relevance to the trust and functioning of conventional health services, and the rationale for including this variable is to map the use of several different types within and between countries, to identify for which chronic conditions alternative health care is utilized and to understand the underlying mechanisms behind the use. We ask questions about a range of treatments, such as acupuncture, acupressure; Chinese medicine, chiropractics, osteopathy and homeopathy.

### **Questions related to health behaviours**

#### ***Smoking***

Tobacco is widely recognized as one of the most prominent causes of morbidity and premature mortality in Western Europe and North America. Each year tobacco is responsible for approximately one fifth of all deaths (Ezzati et al., 2006). Although the association between smoking and morbidity and mortality is well-established, less is known about the social determinants of smoking, and variation in smoking behaviour across Europe. There are marked differences across Europe in the prevalence of smoking, as well as educational differences in smoking behaviour. This implies that smoking is strongly driven by social and cultural determinants. Earlier work on the social determinants of smoking was based on data that were not fully comparable; information on both smoking behaviour and the social background of respondents was collected through different survey questions and through different sampling designs (Eikemo & Mackenbach, 2012). Moreover, most studies only included data from a limited number of countries. The ESS health inequality module will help achieve an adequate and comprehensive comparison of smoking behaviour and the social determinants of smoking in Europe. Additionally, examining smoking behaviour in a large number of European countries would allow researchers to investigate the impact and effectiveness of smoking-related policies. For instance, several European countries have implemented smoking bans in public places. After due consideration it was agreed to exclude e-cigarettes from the questioning since 'vapeing' is considered to be a different activity from smoking by many of those partaking.

#### ***Alcohol consumption***

According to the World Health Organization alcohol consumption is a leading risk factor for mortality and morbidity related to both intentional and unintentional injury (Cherpitel, Borges, & Giesbrecht, 2009). Despite this, there is limited understanding of how alcohol consumption is related to social and economic factors, and how this varies between European countries. In addition, alcohol policies

targeted to altering alcohol consumption patterns differ enormously. Through cross-nationally comparative data on alcohol, researchers will be able to examine how alcohol policies may impact overall consumption patterns. We had intended to use questions based on a WHO-validated instrument to measure alcohol consumption, particularly focused on identifying hazardous or harmful alcohol use: The Alcohol Use Disorders Identification Test (AUDIT) (Bush, Kivlahan, McDonell, Fihn, & Bradley, 1998). However it turned out it was not possible to obtain all of the individual country instruments and the ESS piloting suggested there were serious measurement problems with the UK version.

We therefore developed a new method for measuring alcohol consumption. We still followed the WHO approach by measuring 3 concepts: (a) the frequency of alcohol consumption, (b) the quantity of alcohol consumed, and (c) binge drinking. However instead of asking about units consumed (which respondents simply did not understand) or simply the number of drinks consumed (which some other surveys have resorted to), we presented typical drinks on a country specific show card and then calculated the likely grams of alcohol in those to enable an overall total to be computed for each respondent. For binge drinking interviewers presented possible combinations of drinks on a show card and asked if the respondents had drunk that amount or more in one session. Piloting suggested this approach was promising although only limited testing was possible. Therefore the data will need to be examined carefully to check on its reliability and validity. Whereas consuming a high volume of alcohol is mostly associated with health risks, heavy drinking occasions are especially harmful in terms of the violence, injuries, and accidents that result from these episodes. Hence, because of the broad range of adverse consequences of alcohol use, it is essential to understand the determinants of multiple dimensions of alcohol use, instead of focusing on one aspect. We believe that this is necessary to fully and accurately capture alcohol consumption.

### ***Physical activity***

Physical activity status has changed dramatically in the last decades. With economic and industrial development in the last century, physically demanding work became less common, and more sedentary (mostly sitting) jobs emerged. Insufficient physical activity is associated with a number of health outcomes, such as ischemic heart disease, breast cancer, colorectal cancer and diabetes as well as falls and osteoporosis, osteoarthritis, lower back pain and prostate cancer (Ezzati et al., 2006). The way physical activity relates to social, economic and employment variables is likely to differ between European countries. In addition, policies meant to enhance physical activity might differ as well. Through cross-nationally comparative data on physical activity, researchers should be able to examine how policies related to physical activity may have an impact on overall level of activity. The International Physical Activity Questionnaire (IPAQ) is an instrument to assess total physical activity and sedentary behaviour (see also: <http://www.ipaq.ki.se>). However, during the design process of the ESS health inequality module it was decided that the existing IPAQ questions were overly long, complicated and burdensome for respondents, so a simpler, more general single question was implemented. This question asks how many of the last 7 days the respondent walked quickly, did sports or other physical activity for 30 minutes or longer.

### ***Fruit and vegetable consumption***

It is widely accepted that fruit and vegetables are important components of a healthy diet, and that their consumption helps prevent a range of diseases. In particular, ischemic heart disease, ischemic stroke, colorectal cancer, stomach cancer, lung cancer, oesophagus cancer and mouth & pharynx cancer belong to the major causes of death that are related to low fruit and vegetable intake (Ezzati et al., 2003). Currently, no survey containing valid measures of social stratification has measured fruit and vegetable consumption in representative European populations. The ESS module has sought to do this for the first time and has therefore included two questions on the frequency of fruit



consumption (excluding drinking juice) and vegetable/salad consumption (excluding potatoes). Juice is excluded as it may not be fresh and could contain large amounts of sugar whilst potatoes were excluded as they have often been fried.

### ***BMI – obesity, overweight and underweight***

Among adults, obesity, overweight and underweight are usually defined with reference to the Body Mass Index (BMI). BMI is calculated by dividing a person's weight in kilograms divided by the square of his or her height in metres (kg/m<sup>2</sup>). In adults, the World Health Organization defines underweight as a BMI below 18.5, 'healthy weight' as a BMI between 18 and 24.9, overweight as having a BMI greater than (or equal to) 25, and obesity as a BMI greater than or equal to 30. BMI is somewhat contentious because of the possibility that it does not allow for normal differences in body mass among ethnic groups and may not be relevant to certain sub-populations like professional athletes, but has the advantage of being easy to measure and relatively reliable as an indicator of trends over time within a population. The ESS module asked questions about weight and height so that BMI could be calculated. Unlike some other surveys which take actual measures of height and weight the ESS is to rely on self-reported measures. This is clearly more error prone than taking actual measures but was considered better than excluding the measures entirely.

High BMI (e.g. obesity which is BMI greater than or equal to 30) is an important risk factor for health and longevity, as it is associated with an increased risk of disease (e.g. diabetes, heart disease) and premature mortality (Robertson, Brunner, & Sheiham, 2006). A much less investigated health problem in modern Western countries is underweight. Underweight is an important risk factor for psychosocial and psychological factors, such as self-esteem and sense of purpose, body image and body image distortion, and emotional status, especially among young women in the industrialised world.

### **Questions related to living-, working- and childhood conditions**

#### ***Quality of housing***

*Housing* has long been recognised as an important material determinant of health. It was health concerns that underpinned the slum clearances which accompanied the advent of the post-war welfare state. Housing which is damp can lead to breathing diseases such as asthma; infested housing leads to the rapid spread of infectious diseases; overcrowding can also result in higher infection rates, and it is also associated with an increased prevalence of household accidents. Expensive housing (e.g. as a result of high rents) can also indirectly have a negative effect on health as expenditure in other areas (such as diet) is reduced (Stafford & McCarthy, 2006). Poor housing conditions are associated with a wide range of health conditions, such as breathing problems (infections, asthma), injuries, and mental health (Gibson et al., 2011). Specific housing-related factors that can affect health outcomes include: Agents that affect the quality of the indoor environment such as indoor pollutants; cold, damp, housing design or layout (which in turn can affect accessibility and usability of housing), infestation, hazardous internal structures or fixtures, noise (Bonnefoy, Braubach, Moissonnier, Monolbaev, & Robbel, 2003). There are also factors relating more to the broader social and behavioural environment such as overcrowding, sleep deprivation, neighbourhood quality, infrastructure deprivation (i.e. lack of availability and accessibility of health services, parks, stores selling healthy foods at affordable prices), neighbourhood safety and social cohesion. Surprisingly, quality of housing is rarely applied in cross-national studies of health inequalities. We have asked whether the accommodation of the respondent has mould or rot in windows, doors or floors, damp walls or leaking roof; lack of indoor flushing toilet, lack of bath and shower, whether it is overcrowded, extremely hot or extremely cold. It is worth noting that response

rates to household surveys tend to be lower in flats and households of multiple occupation (Stoop, Koch, & Billiet, 2010). It is therefore possible that there may be some underestimation of this problem.

### ***Physical working conditions***

There is a noticeable lack of contemporary discussion as to whether physical working conditions still play a meaningful role with respect to the persistence of social inequalities in health. One could speculate that this is because the negative health effects of physical working conditions are associated with the “industrial worker”, which again is related to the emergence of modern capitalism and industrialization (Toch et al., 2014). *The physical work environment* can have a negative impact on physical health via exposure to dangerous substances (e.g. lead, asbestos, mining, mercury etc.) or via physical load and ergonomic problems. Working life remains one of the most important factor in people’s health. Even today, large parts of the workforce are exposed to harmful physical working conditions in Europe and the U.S., although the variation across nations is large (Bambra, 2011; I. Lundberg, Hemmingsson, & Hogstedt, 2007). There is a range of working conditions of importance for health, but the most important include heavy lifting, bent or otherwise unsuitable work postures, noise and exposure to dust, smoke or toxic substances. Such conditions are directly linked to musculoskeletal disorder, hearing problems, respiratory problems and specific diseases, but can also affect psychological health through stress (Bambra, 2011). It should be noted that psychosocial working conditions which are far more commonly applied in the literature on the social determinants of health, are already included as part of the core ESS module. In our module we have focused on *hazardous* working conditions by means of two sub concepts: ‘ergonomic hazards’, and ‘material hazards’ (including environmental and chemical hazards).

### ***Childhood conditions***

Inequalities in health are intertwined with social inequalities in a number of living conditions throughout the course of life. One’s position in the social structure at each point in time is linked to health, and the accumulated time in lower social positions constitutes a good summary measure of life-time “exposure” to adverse conditions. Over and above that, however, adverse living conditions during different periods of the life course affect health (Braveman & Barclay, 2009). It is of particular interest that social and material conditions during childhood can have both independent effects on health in adult and later life as well as be part of the social stratification process. The key questions asked in the ESS rotating module on childhood conditions include economic as well as social circumstances during upbringing, typically up to age 16. However it should be noted that due to limited space this area was not covered in lots of detail and recall problems may impact on these measures.

### ***New Research Frontiers***

The ESS module greatly enhances our abilities to conduct cross-national sociological and social science research into health and health inequalities. The new ESS module means that for the first time, such a pan-European data set is available to take this sociological approach to health inequalities. We already know that the new module will be used to comprehensively test existing theories of the aetiology of European social inequalities in health. The HiNews project (Health Inequalities in European Welfare States), which is funded by the NORFACE program, is a recent example. The HiNews project will incorporate analysis of the ESS health inequality module alongside macro-level data about country characteristics such as healthcare system type or welfare state regime configurations and health promotion policies such as smoking-related policies or policies meant to enhance physical activity. The expected outcomes of the project include the refinement,

testing and development of social inequalities in health theory, the identification of policies and interventions with the potential of reducing health inequalities, and a new policy agenda on how health inequalities can be reduced most effectively (<https://www.dur.ac.uk/hinews/>). Further, with the new ESS health inequality module we will be able to more fully examine the role of institutional structures – most notably welfare states - on chronic diseases. Welfare states shape the social structure, living conditions, and lifestyles of European populations. Therefore, an examination of health behaviours (typically found in health surveys) in populations must be accompanied with an examination that is able to unveil the deeper structural context of individuals belonging to different welfare states (typically found in sociological surveys). Thus far, no health survey has had sufficient data on the stratification system of societies, including rich data on living conditions, and there is no sociological survey with sufficient variety of lifestyle factors and health outcomes (such as specific chronic conditions). This is of course why we have developed a health inequality module to be integrated into the European Social Survey, specifically designed to examine social inequalities in health and their determinants. The European Social Survey is ideal for this perspective because political, psychosocial, social, and material variables already exist in the core version of the survey. By including unhealthy lifestyle behaviours, childhood conditions, housing conditions, working conditions, and variables describing people's access to health care, together with an extensive set of mental and physical health outcomes, the ESS has strengthened its position tremendously as a data source for sociologists wanting to perform European cross-national analyses of health inequalities.

Furthermore, most research comparing social inequalities in health across welfare states has either not included Central and Eastern European countries or failed to acknowledge differences within the group of Central and Eastern European countries. In this respect, it should be mentioned that the ESS health inequality module has been replicated around the same time with almost identical questions in South Africa as part of the South African Social Attitudes Survey (SASAS) and in the US (only BMI and depression) as part of the General Social Survey (GSS). Thus, we are now facing historic opportunities for cross-continental comparisons of social inequalities in health and their determinants.

The persistence of social inequalities in health in European welfare states – and what this means for how we understand and reduce them - has not, to date, been comprehensively examined empirically. There is an urgent need to expand our knowledge with comparable data on health determinants and more refined health outcomes for a large number of European countries. As noted there remain limitations to the data that has been collected both in terms of coverage and methodological challenges. However, the new pan-European sociological health module will provide us with an exciting intellectual opportunity that was not available before.

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