

Socioeconomic inequalities in health during the Great Recession:

A scoping review of the research literature

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Abstract

Aims: The so-called “Great Recession” in Europe triggered widespread concerns about population health, as reflected by an upsurge in empirical research on the health impacts of the economic crisis. A growing body of empirical studies has also been devoted to socioeconomic inequalities in health during the Great Recession. The aim of the current study is to summarise this health inequality literature by means of a scoping review. *Methods:* We have performed a scoping review of the research literature (English language) published in the years 2012—2017. Only empirical papers with (1) health status measured on the individual level, (2) information on socioeconomic position (i.e. employment status, educational level, income/wealth, and/or occupational class), and (3) data from European countries in both pre- and post-crisis years were considered relevant. In total, 49 empirical studies fulfilled these inclusion criteria. *Results:* The empirical findings in the 49 included studies predominantly show that socioeconomic inequalities in health either increased or remained stable from pre- to post-crisis years. Two-thirds (65 percent) of the studies found evidence of either increasing or partially increasing health inequalities. Thus, people in lower socioeconomic strata fared worse overall in terms of health during the Great Recession, compared to people with higher socioeconomic status. ***Conclusions:* The Great Recession in Europe tends to be followed by increasing socioeconomic inequalities in health. Policymakers should take note of this finding. Widening socioeconomic inequalities in health is a major cause of concern, in particular if health deterioration among ‘vulnerable groups’ is caused by accelerating cumulative disadvantages.**

Keywords: Health inequalities; Economic Crisis; Recession; Scoping Review; Europe

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Introduction

Since 2008, several European countries have been struggling with the worst economic crisis since the Great Depression in the 1930s. Aptly named the “Great Recession”, the most recent crisis has manifested itself in housing bubbles, bankruptcies, credit drought, high sovereign debt, stock market declines, sluggish economic growth, and sustained high unemployment – and elevated youth unemployment, in particular. In the wake of the crisis, many European countries have adopted austerity policies, with assumed detrimental economic and social consequences for its population, and especially so for lower socioeconomic groups.^{1,2} Ten years since the crisis began, unemployment remains high for several of the 28 member states of the European Union (EU) and particularly in Spain and Greece,³ even though economic growth has recovered somewhat in recent years.⁴ Income inequalities – which reached record high levels prior to the crisis in 2008 – have continued to rise during the recession.⁵

From many quarters, there are worries regarding the consequences of the crisis. The OECD⁶ has for example expressed concern regarding the adverse economic, social, and political consequences of the recession. There is also a fear that population health and wellbeing will be negatively affected by the economic crisis, e.g. because job loss and income drop cause health deterioration.^{7,8} In turn, this is likely to have a negative influence on future economic growth and prosperity. Correspondingly, we have seen a resurgence of research interest in the connections between economic downturns and health. Currently there exists more than twenty literature reviews on the impact of the 2008 economic crisis on population health,⁹⁻³⁰ clearly indicative of the immense research interest for this topic. A growing body of empirical studies has also been devoted to *socioeconomic inequalities in health* during the Great Recession, which is the topic of the current paper.

An economic downturn will most likely hit vulnerable groups – such as the unemployed, low educated, and low-income households – the hardest because they, first, face

higher health risks, and second, have less resources available to help them cope with the negative experience(s). This could start a process of *accelerating cumulative disadvantages*, where the health disparities between people with low and high socioeconomic status grow ever-larger. It is therefore of the utmost importance to investigate whether the Great Recession is followed by increasing socioeconomic inequalities in health (due to more health deterioration among vulnerable groups). Note that stable or even narrowing inequalities is also imaginable, for example if the higher educated are more inclined to develop mental health problems due to fear of downsizing and layoffs.

The above-mentioned literature reviews do not – or only scarcely – touch upon socioeconomic inequalities.^{11, 16, 18, 20, 22, 27, 29, 30} Some discuss and/or briefly investigate inequality or vulnerability^{9, 10, 12-15, 17, 19, 21, 23, 25, 26, 28} without it being the main objective. One of the literature reviews do, however, have socioeconomic inequalities as its stated objective.²⁴ Yet, this study is not strictly a literature review, but rather a commentary where only seven of the included studies examines the Great Recession.²⁴ Thus, there is an urgent need for a literature review that includes a larger number of empirical studies.

The present study reviews the existing research literature into how, and to what extent, the Great Recession has affected socioeconomic inequalities in health in European countries. More specifically, we provide a *scoping review* of whether inequalities in health by (a) employment status, (b) educational level, (c) income/wealth, and/or (d) occupational class have changed (for the better or worse) in the post-crisis era. By reviewing empirical papers that examine health inequalities both *explicitly* as well as *indirectly*, a total of 49 studies fulfil our inclusion criteria (more details below). To our knowledge, this is the first comprehensive literature review on the Great Recession and socioeconomic inequalities in health.

Theoretical perspectives

Health inequalities during an economic crisis

A dominant perspective in understanding *health inequalities* is that of social determinants of health,³¹ defined by the World Health Organization (WHO) as “the conditions in which people are born, grow, live, work and age.” This wide theoretical perspective prompts questions such as: to what extent does the impact of important risk factors change during economic crises, and are differing socioeconomic groups affected to greater/lesser extent by such (potential) changes? First and most obviously, important risk factors such as (fear of) unemployment, lower incomes, worse housing conditions, poor nutrition, the weakening of social safety nets, as well as general insecurity and stress^{1, 32, 33}, appear more often during a crisis. Several – if not all – of these risk factors are overrepresented among vulnerable groups (e.g. the low educated and people holding insecure jobs). Thus, simply because the prevalence of risk factors is higher during a crisis, we would expect socioeconomic inequalities in health to increase during the Great Recession.

It is also possible that the negative effect of the above-mentioned risk factors changes for the worse during a crisis. For example, the mental stress surrounding unemployment could be even more difficult to cope with in an economic downturn, because there is no apparent way out of the hopeless situation³⁴. Furthermore, less money to spare – due to e.g. income drops or cut-backs in social security benefits – could imply even fewer nutritious meals for members of low-income households.^{35, 36} Finally, housing with humidity and/or pollution problems will be an even larger health risk if the person(s) living there loses his/her job and consequently spends more time in the damp/polluted apartment.^{37, 38} People located in lower socioeconomic strata experience such (changing) circumstances more often, adding up to a

process of *accelerating cumulative disadvantages* and the outcome would once again be increasing health inequalities during the Great Recession.

However, the opposite empirical pattern – decreasing health inequalities – is conceivable as well. Worsening economic conditions could result in less work stress, fewer work accidents, less road traffic and thus fewer traffic accidents, lower consumption of alcohol and tobacco, less overeating, and more time for social interaction and physical activity.^{39, 40} If people in the lower part of the socioeconomic distribution are more likely to experience these health benefits during a crisis, the gap to high status groups could narrow. Furthermore, the statistical phenomenon known as ‘*ceiling/floor effect*’ could be relevant here too,⁴¹ especially for empirical studies using self-rated health measures. Since people in higher socioeconomic enclaves most often have very satisfactory health status (on average), their (group-level) health could be more inclined to change for the worse. Conversely, people with lower socioeconomic status are so worse off, in relative terms, on health measures that improvement is the ‘only’ option.

Lastly, it is also possible that, first, the major processes described above ‘cancel each other out’ on average, or second, that the (potential) negative effects of the economic crisis is spread rather equally across the socioeconomic distribution. In both instances implying very few or no changes for socioeconomic inequalities in health. We now proceed to a discussion of the socioeconomic indicators covered in the current paper.

Socioeconomic indicators and health-related social mobility

Employment status, educational level, income/wealth, and occupational class is covered in this scoping review. All four indicators relate directly to how well/poor people are situated on the free market in a capitalistic society. We are primarily interested in socioeconomic indicators that are *attained/achieved*, i.e. where people can alter their situation (e.g. attain

higher educational qualifications, or gain a new job). Hence, the *ascribed* characteristics gender and ethnicity/race are not included herein, even though both are of obvious importance for both labour market attachment and income trajectories. We will, however, comment briefly on gender in the results section, because several of the included studies report the empirical findings split by gender.

The four socioeconomic indicators are similar because all are attained characteristics, but they differ as to how *elastic* they are. Employment status and income/wealth are obviously more inclined to change during an economic crisis compared to educational level. Occupational status holds an intermediate position here; depending somewhat on the specific operationalisation (e.g. whether the previously held job is used while classifying the unemployed). These nuances are very important for our purpose due to patterns of *health-related social mobility*. During an economic boom, when almost everyone has a job, the (few) ones who are unemployed tend to be disadvantaged on a number of personal characteristics, including health status. In such a situation, the employed—unemployed health inequalities are quite noticeable.³⁴ Yet, this changes when the economic conditions deteriorate. Now, productive and high-skill individuals – with good health status and perhaps better health behaviours – become unemployed as well due to downsizing and firm closures. This implies that the *composition* of the unemployed population changes as the economic conditions worsens/improves.⁴² Similar reasoning applies for the income distribution: ‘healthy’ people who used to earn high salaries suddenly (due to job loss/income drop) join the lower-income group, causing an improvement in health status in the latter group.

These mobility patterns are of obvious importance while examining (potential) changes in socioeconomic inequalities in health during economic busts and booms. An apparent narrowing of health inequalities could merely be due to healthier individuals moving from a high to low socioeconomic strata. With this caveat in mind, the advantages of

educational level as indicator becomes clear. Education is a more stable characteristic, and once achieved cannot be reduced because of health problems, for example. However, it is conceivable that people with good health increased their educational level more on average (vs. people with ill health) from pre- to post-crisis years, but this will almost certainly not cause any important bias in the current scoping review. Consequently, we will pay particular close attention to the studies using educational level as indicator, because this measure is less influenced by health-related social mobility.

Materials and methods

This paper reviews existing research on socioeconomic inequalities in health during the Great Recession in European countries. We restrict our attention to the Great Recession due to the severity of this most recent economic crisis. For example, the crisis in the early 2000s was considerably milder as to both unemployment level and gross domestic product (GDP). In fact, GDP continued to rise in the EU area throughout the 2000—2004 period.⁴³ We have chosen a ‘pre—post design’, and will therefore only include studies using data collected *before* (‘control group’) and *during* (‘treatment group’) the economic crisis. Studies using data collected during and after the crisis are excluded because all respondents have been exposed to the recession (i.e. it is impossible to construct a valid ‘control group’).

This literature review is part of the project “Health Inequalities, Economic Crisis, and the Welfare State”, funded by the Research Council of Norway. The project focuses on the ways in which European welfare states have responded to the financial crisis and investigates possible consequences for public health and health inequalities. The interest in European countries are spurred by the fact that health inequalities are recognised as a public health concern in Europe, e.g. by the European branch of the World Health Organization.⁴⁴ Furthermore, despite vast cross-national differences in welfare state arrangements, all European countries share important legislative and institutional features of relevance for

health due to the powerful role played by the EU. At the EU level, policies are developed to act on the social determinants of health as EUs investment strategy also includes policies and resources to reduce health inequalities.⁴⁵ Comparing results between European countries could therefore be particularly rewarding. Note that we are interested in European countries in general, and not only EU Member States.

It is difficult to arrive at a clear definition of the Great Recession, partly due to the large cross-national differences as regards both *when*, *how hard*, and *how long* European countries were hit by the economic crisis. For example, the unemployment rate in the first quarter of 2013 – the ‘peak’ of EU-28 unemployment – varied between 27.4 percent in Greece and 3.1 percent in Norway³. Similarly, the crisis had a strong and immediate impact in e.g. Latvia with a sharp rise in unemployment 2008—2010 followed by a steep decline afterwards, whereas the crisis had a more durable impact in Portugal and Spain where the unemployment rate increased steadily 2008—2013. No single crisis operationalisation will capture all of this cross-national heterogeneity, but some common elements can nonetheless be deciphered. The macroeconomic situation started to deteriorate in 2008, and the social consequences, as indicated by increasing unemployment levels, materialised from the third quarter of 2008 and onwards. The peak of EU-28 unemployment was reached in 2013 (1. Quarter) at 11.2 percent, and remained high at roughly 9—11 percent until the first quarter of 2016.³ From the second quarter of 2016, there has been a noticeable decrease, and the EU-28 unemployment rate was 7.1 percent in the fourth quarter of 2017, i.e. almost at the pre-crisis level of approximately 6.5 percent. With the risk of glossing over some vital nuances, we consider *the period 2008—2015* as the Great Recession in Europe. Note that we are interested in European countries in general, and not only EU Member States.

To review the existing literature on the current topic is quite demanding because of the vast diversity in research questions, theoretical perspectives and methodological approaches.

We argue that a *scoping review* is more appropriate than a *systematic review* here because the former is better able to answer broader questions. Systematic reviews, in contrast, often have a more narrow focus, such as the effectiveness of treatments/interventions. A scoping review allows for exploration of elements beyond specific results and quality criteria.⁴⁶ We believe that this exploratory way of reviewing research literature is efficient in organising concepts, identifying knowledge gaps and detecting potential methodological developments.

Furthermore, in order to make sense of the diversity, we will include charting tables where (some of) the most important heterogeneity in results is summarised (see tables 2 and 3).

We followed the five-step description of the scoping review methodology described by Arksey and O'Malley⁴⁷: First, we identified the overarching research question: *How and to what extent has the Great Recession affected socioeconomic inequalities in health in European countries?* Second, we developed a systematic search strategy. This strategy included (i) the development of a search string: “health AND (“economic crisis” OR recession OR downturn)”, (ii) to determine the databases for search (Academic Search Premier and PubMed), and (iii) to define the specific inclusion criteria. To be included, the study had to

1. use data collected before (pre-2008) and during (2008—2015) the Great Recession,
2. include a direct health outcome on the individual level (i.e. health behaviour or utilisation of health services are excluded),
3. investigate the (changing) impact of (a) employment status, (b) educational level, (c) income and/or (d) occupational class,
4. apply statistical analyses,
5. be published in the English language, and
6. include results from European countries.

Third, two of the authors (KH and AGT) read titles and abstracts, and excluded studies that did not fulfil the inclusion criteria. This yielded 49 studies. Fourth, the same two authors (KH

and AGT) charted these studies according to country of inquiry, data material, age group, health outcome(s), socioeconomic indicator(s), and health inequality results. In the final fifth step, we produced a table summarising the results (see Table I), sorting the results vertically according to country of inquiry (alphabetical order).

Some notes on the scoping review strategy is warranted before proceeding to the empirical findings. A rather “wide” search string was chosen because if e.g. socioeconomic indicators was included explicitly, we would run the risk of missing relevant studies that report changes in health inequalities. Socioeconomic inequalities in health is relatively seldom the prime focus of the empirical papers, but several studies do report inequality results “indirectly”, e.g. with education level/employment status as a covariate in analyses of data collected in both pre- and post-crisis years. Thus, a large part of the workload in this scoping review involved reading *the tables* carefully, since many authors do not mention the health inequality results directly in the articles. This also implies that several papers do not formally test whether socioeconomic inequalities in health have changed over time. In certain instances, only ‘simple’ descriptive statistics are available, e.g. prevalence of mental health problems for people in differing socioeconomic groups in pre- and post crisis years. However, it is far from obvious that the adjusted coefficients from regression models are more reliable than the results derived from descriptive statistics. In fact, some of the regression coefficients could be ‘over-adjusted’ if e.g. ‘bad controls’ are included in the model.⁴⁸ Nevertheless, table I shows the analysis technique used (e.g. logistic regression, multilevel model, descriptive statistics) and readers can decide which results they trust the most.

A quality assessment is also included in table I, named “Robust method/design?” (0—3). The study is considered to be robust if, first, an objective health indicator is used, such as mortality. Second, if the study uses panel data methods (e.g. random/fixed effects). Third and lastly, if the analysis technique is suitable for comparing results between samples/over time.

This latter criteria e.g. rule out logistic regression analysis on data collected in pre- and post-crisis years because the fixed variance (3.29) in the logistic distribution complicates the comparison of results between different groups and samples.^{49, 50} The studies are scored on a 0—3 scale, where 3 implies that the study fulfils all three criteria. Clearly, there is some element of ambiguity as to the specific choice of criteria, but we have highlighted the ones we consider to be most important. 14/49 studies (29 percent) did not fulfil any of the three criteria (=0). This does not necessarily imply that the results in these papers are biased or flawed in any way, but one should perhaps be extra cautious while interpreting these empirical findings.

This scoping review is an extension of a previous literature review (published in a Norwegian journal) that examined the impact of the 2008 economic crisis on both population health and health inequality.⁵¹ The literature search included studies published up until December 2014, which is rather early considering that the ‘peak’ in EU-28 unemployment rate was in 2013³ and that the Great Recession lasted throughout 2015. The current scoping review differs from Dahl et al.⁵¹ on two important domains. First, we have a more clear-cut emphasis on socioeconomic inequalities in health. Second, this review is based on an updated literature search consisting of studies published up until July 2017, i.e. two and a half year longer timeframe. The updated search yielded 950 titles in Academic Search Premier and 1019 in PubMed. In addition, we included 14 studies⁵²⁻⁶⁵ from Dahl et al.⁵¹ that met the above-mentioned inclusion criteria.

In order to make sense of the (partly diverging) empirical findings in table I, we have created two charting tables (tables II and III). In table II, we differentiate between studies showing (1) *increasing*, (2) *stable*, (3) *decreasing (negative)*, and (4) *decreasing (positive)* socioeconomic inequalities in health. The two former categories are pretty straightforward, but the two latter requires a clarification. Socioeconomic inequality in health can decrease in one of two ways: either through health *improvement* among people in low socioeconomic

strata, or by health *deterioration* among individuals in high socioeconomic groups. Clearly, only the first is desirable, for both ethical reasons and from a policy perspective (health deterioration implies more healthcare utilisation and hence higher public spending).

Accordingly, we believe that it is vital to distinguish between the two types of decreases.

Some studies yield mixed findings, and these are summarised in table III. Four different result mixes was evident: (1) *increasing/stable*, (2) *stable/increasing*, (3) *increasing/decreasing (positive)*, and (4) *decreasing (negative)/stable*. A typical example of a study labelled *increasing/stable* is when the socioeconomic inequalities increase for men, but not for women. The difference between the two former categories is somewhat ambiguous, but if the main empirical pattern is that of stability alongside a non-negligible component of increasing socioeconomic inequality, the study has been labelled as *stable/increasing*. Similarly, the two latter categories refer to situations where *increasing* or *decreasing (negative)* inequalities is the overarching picture, although with some important nuances. For example, the empirical findings could differ between socioeconomic indicators (e.g. increasing for educational level, but stable for employment status).

Results

49 empirical studies were included in this scoping review.⁵²⁻¹⁰⁰ Six of the studies use data for more than 20 countries,^{66, 79, 87, 91, 93, 95} and three studies compare two or three countries (England and Sweden,⁸⁰ Greece and Ireland,⁵⁸ and Estonia, Lithuania & Finland,⁶⁴ respectively). The remaining 40 studies use data from one country, the clear majority from Spain (N=16).^{54, 59, 63, 65, 67, 68, 70, 73, 74, 81, 85, 94, 96, 98-100} A handful of studies are performed in the UK/England (N=6),^{52, 53, 62, 72, 75, 84} Greece (N=5),^{55, 56, 71, 76, 82} Italy (N=4),^{83, 88, 89, 97} and Iceland (N=3),^{57, 60, 69} while the remaining countries are represented once.^{61, 77, 78, 86, 90, 92} Note that some studies do not use national data, but rather regional/citywide data materials (N=6).

As regards data materials, the vast majority is repeated cross-sections (N=29), followed by panels (N=10; 4—10 years length) and time series (N=8; 7—17 years length). Differing age groups are represented because we have not imposed any strict age restrictions. The clear majority, however, is devoted to the adult population, but both the lower and higher age cut-offs varies (e.g. 30—60 vs. 10—74 years). Only five studies investigate infants/children/adolescence, and only one study explicitly examines older individuals (>50 years). Thus, we refrain from any conclusions on age differences.

The by far most common health measures are *mental health* (N=22) and *self-rated health* (N=18), both of which operationalised in different ways. Note that several studies include more than one health measure in the empirical analyses. The same applies for the socioeconomic indicators, where *employment status* (N=32) and *educational level* (N=22) are the most numerous ones.

Turning to the empirical results, it is evident from table I that *increasing* (+, N=19) or *stable* (=, N=11) socioeconomic inequalities in health are in clear majority. However, the findings are mixed for 14 studies. Among the 35 studies where we have reached a conclusion (see table II), inequalities in health are *increasing* in 19 cases (54 percent) and *stable* in 11 cases (31 percent). Merely 3 (9 percent) and 2 (6 percent) studies report that the socioeconomic inequalities in health are *decreasing* of either a negative (†) or positive (—) kind, respectively.

Due to a rather low number of observations/studies in each “cell” in table II, it is difficult to see any clear patterns regarding socioeconomic indicators and health outcomes, but certain tendencies appear. It is primarily *educational* and *employment inequalities in health* that have increased. This is perhaps not surprising given that these are the two most numerous socioeconomic indicators, but it is nonetheless striking that income/wealth is only represented 3 times among the studies showing increased inequality, and that occupational

class is not included at all. As regards health outcomes, the pattern is less clear-cut, but *mental health* seems to be one of the measures most ‘sensitive’ towards widening socioeconomic inequalities. It is also evident that a wide range of health outcomes is represented (e.g. mortality, life expectancy, limiting longstanding illness (LLSI), etc.). There is no clear empirical pattern for cross-national differences either: Socioeconomic inequalities in health have increased both in countries with very high (e.g. Greece) and rather low (e.g. Sweden) crisis impact. In a similar vein, countries with rather dissimilar welfare state types (e.g. Denmark vs. the UK vs. Spain) have all experienced increasing health inequalities.

The findings are mixed in 14 studies, but note that 13 of these report *partially increasing* socioeconomic inequalities in health (see table III). In 11 studies (79 percent), there is a combination of *increasing* and *stable*. Among these 11 studies, the evidence is mixed because of gender differences in six cases (e.g. changes only visible among men), and due to four cases where different socioeconomic indicators yielded diverging results. There was a combination of *increasing* and *decreasing* in two studies. In the first case, inequalities increased among women and decreased among men. In the second case, educational inequalities in health increased, whereas unemployed—employed differentials decreased.

Summing up, among 49 empirical studies, 19 of them (39 percent) report *increasing* and 13 (26.5 percent) report *partially increasing* socioeconomic inequalities in health. Thus, two-thirds (65 percent) of the included studies find evidence of either increasing or partially increasing health inequalities during the Great Recession. This pattern holds if we only look at the two most commonly used socioeconomic indicators as well: Among the 22 studies of educational level, 16 (73 percent) show increasing or partially increasing inequalities in health. Similarly, in 22/32 (69 percent) studies, employment inequalities in health have (partially) increased. We now proceed to a discussion of the presented findings.

Discussion

Overall, the results from this review indicate that socioeconomic inequalities in health either widened or remained stable after Europe was hit by the Great Recession. Two-thirds (65 percent) of the reviewed studies report increasing or partially increasing health inequalities. The current scoping review includes evidence from 49 empirical studies with a broad range of health outcomes, of which 41 are published in 2014 or later. This scoping review is therefore a significant update of the previous review/commentary of the Great Recession and health inequalities published back in 2014.²⁴ In the following, the findings are discussed in light of socioeconomic indicators and health outcomes used, before proceeding to cross-national comparisons. Thereafter methodological observations and strengths and limitations are discussed, and lastly we offer some conclusions.

Socioeconomic indicators

First, the Great Recession has apparently led to increasing *employment* inequalities in health, a result that is often explained by few available jobs, intensified competition between job-seekers, and cut-backs in benefits causing the unemployed to be more vulnerable to economic downturns.⁷⁹ Recall that employment status is an elastic socioeconomic indicator sensitive to compositional changes.^{34, 74, 79} Recent empirical evidence has shown that the unemployed population is healthier on average in countries where unemployment becomes a mass phenomenon (e.g. Spain and Greece)³⁹. Thus, one could run the risk of underestimating employed—unemployed health differentials in crisis countries because of an influx to the unemployed group of people who are ‘positively selected’ on health characteristics. This is less of a concern, however, in countries where the crisis impact is milder. Nevertheless, one should be careful while interpreting employment inequalities in health during busts and booms, as the composition of the unemployed population changes in non-trivial ways when the economic conditions deteriorates/improves.

Second, a clear majority (73 percent) of the studies show increasing or partially increasing *educational* inequalities in health. Barroso et al.⁷³ have suggested that the skills and information possessed by people with higher education make them more adaptable to economic hardship, and more capable of obtaining better and more efficient healthcare and preventive services. An obvious advantage with education as socioeconomic indicator is its inherent *stability*, and analyses of changing educational inequalities in health are therefore less vulnerable to bias due to compositional changes. Yet, there could still be some potential sources of bias, e.g. if educational level in the working age population changes rapidly because of demographic developments.⁷³ This is, however, probably not a major concern, especially since educational expansion has already occurred in the majority of countries in Europe. Note that (health-selective) migration could create similar issues in some countries hit hard by the crisis.⁷³

Third, the findings for health inequalities according to *income/wealth* vary somewhat between the included studies: Some indicate increased inequalities,^{60, 63, 69, 78, 87, 91} whereas others show stability.^{75, 92, 95} Two studies even show decreasing health inequalities between income groups during the crisis, although the decrease is of a negative kind.^{81, 86} This finding is probably explained, at least partly, by health-related social mobility patterns (see the discussion above). Nonetheless, the evidence on the impact of the Great Recession on income and wealth inequalities in health is still scarce. More research is therefore needed.

Fourth and finally, the results for *occupational class* mostly show signs of stable,^{53, 62, 99} or partially increasing,^{54, 67, 70} health inequalities. The apparent lack of changes for this socioeconomic indicator could be due to measurement errors, e.g. how to classify the previously employed. Alternatively, it could (in part) be because mobility into and out of the labour market – and mobility between the different occupational groups – is heavily dependent on one's health status, i.e. people in good health experience downward

occupational mobility, thereby ‘suppressing’ the effects of the Great Recession on the socioeconomic inequalities in health.

Health outcomes

Twenty-three of the included studies investigate *mental health*. Despite some noticeable exceptions,^{88, 91, 93, 95, 99} the main bulk of these studies find increasing socioeconomic inequalities during the Great Recession. From a theoretical perspective, it is reasonable to assume that mental health will be affected for people who lose their jobs and/or worry about how to make ends meet during a crisis. However, the Great Recession has probably had effects on mental health beyond ‘direct exposure’ to unemployment, income loss and austerity measures,⁷³ e.g. through poorer living conditions or the anticipation of job loss.^{53, 75, 79} These latter mechanisms could be reinforced by media coverage,⁷⁵ and may perhaps be even stronger than direct exposure,⁷⁹ at least in certain circumstances. Still, the results presented in this review suggest that vulnerable groups paid the highest price, as their mental health deteriorated more compared to people in higher socioeconomic strata.

Eighteen of the included studies investigate changes in *self-rated health*, and roughly half show increasing or partially increasing socioeconomic inequalities.^{52, 61, 63, 85, 97, 98} However, some studies also show no changes,^{53, 64, 66, 89, 92} or decreasing,⁷³ inequalities in self-rated health. There is, according to Fayers and Sprangers¹⁰¹, widespread agreement that the global self-rated health measure provides a useful summary of health status perception. However, the self-rated health measure is badly ‘framed’, for two reasons. First, it does not specify what is meant by ‘health’, and there is thus ample room for interpretation. Second, the measure is not explicit regarding the reference group. Some will compare themselves with other people of the same age, while others will use themselves in the past for comparison. The discrepancies in results could, at least partially, be explained by such measurement issues.

Even though several studies indicate that the Great Recession was followed by increased *suicide* rates overall, only three studies investigate socioeconomic inequalities in such patterns. Two of the studies do not find any significant changes in socioeconomic inequalities,^{62, 88} while one study shows a larger increase among low educated and the unemployed in Greece.⁵⁶ Obviously, we need considerably more research on socioeconomic inequalities in suicides during the Great Recession.

Socioeconomic inequalities have increased for more ‘severe’ health outcomes as well, such as mortality,⁶³ life expectancy,⁷⁷ LLSI,⁶¹ obesity,⁷⁴ and self-harm.⁸⁴ These health outcomes (perhaps with the exception of self-harm) are considered to be rather slow-to-change, and widening socioeconomic inequalities is therefore particularly worrying. Such empirical patterns could be explained by processes of *accelerating cumulative disadvantages* experienced by people in low socioeconomic strata. In other words, individuals in low socioeconomic groups experienced cumulative disadvantages before the crisis started,^{102, 103} but these processes accelerated during the Great Recession. The notion of cumulative disadvantage highlights the importance of processes where initial inequalities in problems and resources (e.g. health, working conditions, income) grow over time.

Note that the 49 included studies use very different measures and operationalisations of health status. For mental health, for instance, both validated scales and questions developed by the researcher(s) are used. Pfoertner et al.⁹¹ use four simple questions on feeling low, irritable, nervous, or having difficulties with sleeping, whereas Reibling et al.⁹⁵ and Buffel et al.⁷⁹ used the eight question version of the CES-D depression scale. Bartoll et al.⁵⁴ and Ruiz-Pérez et al.⁹⁶ used the GHQ-12 scale for depression, Zapata Moya et al.¹⁰⁰ had one question on depression, Utzet et al.⁹⁹ used the SF-36 scale for self-rated health, and Economou et al.⁵⁵ used telephone interviews performing parts of validated SCID-1 scale. These mental health

measures could differ importantly in how ‘sensitive’ (i.e. prone to change) they are towards stress imposed by fear of job loss, unemployment, income drop, etc.

Cross-national comparisons

Some European countries were hit particularly hard by the Great Recession, and one might suspect that the impact on health inequalities will be most pronounced in ‘crisis countries’. According to this scoping review, socioeconomic inequalities in health have increased in both countries hit hard by the economic crisis (e.g. Greece, Italy and Spain), and in countries less affected by the Great Recession (e.g. Denmark, England and Sweden). Yet, this does not imply that the severity of the crisis is inconsequential for the development of socioeconomic inequalities in health. On the contrary, the most disadvantaged individuals are probably overrepresented among those who have experienced a worsening of income and living conditions in ‘crisis countries’. Perhaps processes of *accelerating cumulative disadvantages* will be especially pronounced in these countries in the years to come, and this is an important topic for future research. On the other hand, socioeconomic inequalities in health increased in countries with ‘mild’ crisis impact too, suggesting that the prevailing *economic conditions* is not the only reason why health inequalities widened during the Great Recession.

Socioeconomic inequalities in health have increased in countries with differing *welfare state models*. Both countries with Anglo-Saxon (e.g. the UK), Mediterranean (e.g. Spain) and Nordic (e.g. Sweden) welfare state models have experienced growing socioeconomic inequalities in health. Interestingly, there are no studies from countries with a Continental welfare state model (e.g. Germany, France, and Belgium) among the 49 studies. Hence, neither economic conditions nor welfare state characteristics is the sole explanation for why socioeconomic inequalities in health has widened during the Great Recession, although both probably are important cogs in the explanatory wheel.

To a certain extent, the cross-national differences in results could be due to *austerity*, or more complex interplays between (the severity of) the crisis and the specific austerity policies implemented.⁷² Furthermore, *cut-backs in benefits and services* to chronically ill or disabled people may have increased poverty in this group.⁷² However, as the number of studies in each country is rather low (apart from Spain, England/UK and Greece), we refrain from reaching a firm conclusion on cross-national differences and similarities.

Methodological observations

The research design varies widely between the empirical studies included in this review. Some studies use individual level data e.g. ^{52, 54}, some use aggregated data e.g. ^{62, 87}, and some use both e.g. ^{66, 96}. Some studies assume a time interruption e.g. ^{52, 61, 64, 74}, i.e. a year that separates pre-recession from recession, while others use the change in unemployment rate as the main crisis indicator e.g. ^{66, 79}. The drawback of this diversity is the limited possibility to compare effect sizes across studies. One cannot determine whether discrepancies in results are due to (a) different health outcomes, (b) different socioeconomic indicators, (c) different methodological design, or (d) a combination of a—c. A greater emphasis on replication, data source sharing, and openness on both operationalisation and analytical techniques is required if we are to move forward with regard to scientific comparability.

Some research designs are particularly promising. Several studies use *panel data* where the same individuals are followed over time.^{60, 66, 67, 71, 72, 75, 81, 82, 89, 97} Individual-level panel data enables controlling for changes in socioeconomic status, and hence eliminate bias due to compositional changes. Comparison of individual health changes before and during the recession is a particularly promising design. Utilising administrative register data with crisis year(s) as a time interruption is also a promising design worth pursuing further.

Some studies investigate more than one health outcome.^{53, 57, 59, 69, 75, 82, 85, 87, 100} This is clearly a strength, improving the validity of the results (i.e. a robustness check). Running the analyses on several, but distinct health outcomes is preferable, as compared to e.g. constructing one single health index consisting of information from numerous variables. The health variables will, in most cases, pick up different aspects of health and wellbeing. For instance, LLSI should capture quite serious illnesses and health impairments of a rather long-term kind, implying that ‘mild’ and temporary conditions are left out. Self-rated health, on the other hand, will reflect respondents’ self-perceived fitness and psychosocial wellbeing, and more short-lived pains and illnesses could therefore be more decisive. Presenting – and explicitly comparing – the empirical findings for several health measures will add more, and more nuanced, knowledge about socioeconomic inequalities in health. We urge researchers interested in (changing) health inequalities to do so in their future work.

Strengths and limitations

This is the most comprehensive review of the research literature on socioeconomic inequalities in health during the Great Recession, and is as such an important addition to the existing literature. However, one should be careful while interpreting the results of this scoping review, as the included studies comprise a wide range of socioeconomic indicators, health outcomes, European countries, methodological designs, crisis operationalisations, and observational years. On the other hand, the strength of this heterogeneity is the ability to generate a more extensive overview of the changing health inequalities in European countries during the Great Recession. The examination of socioeconomic inequalities in health is not the main objective in several of the 49 included studies, perhaps implying that the empirical findings presented in this review are less affected by publication bias.

While reviewing the existing research literature, we have paid most attention to whether the *effect sizes* changes noticeably over time. Where possible, we have of course checked the statistical significance of these changes. However, the statistical significance of the (potentially) changing association between socioeconomic indicators and health status is not always reported, simply because health inequalities are not prime focus in several studies. In these cases, there is a certain degree of uncertainty, but we are confident that the overall conclusions of this scoping review will not be biased due to this inconvenience. Similarly, the presented coefficients/numbers are not always statistically controlled for *other confounding variables* (e.g. age and marital status). Some studies only report the relationship between socioeconomic indicator and health as descriptive statistics, e.g. the prevalence of poor mental health among people with low and high education in pre- and post-crisis periods.

Roughly two-thirds (65 percent) of the reviewed studies report increasing or partially increasing socioeconomic inequalities in health. This finding could be driven by *underlying health trends* over time that are unrelated to the Great Recession, per se. Thus, people in lower socioeconomic strata might have been equally worse off even in the absence of an economic crisis. This potential source of bias is, however, less of a concern in studies using panel data methods, where individual health trends are followed before and after the Great Recession (i.e. there is no reason to expect that such an underlying negative health trend should speed up in the post-crisis period). Nonetheless, uncertainties remain as to whether it is the economic crisis in itself, or some other trends that are causing people with low socioeconomic status to deteriorate in health compared to people in higher socioeconomic strata. In any case, we argue that the empirical findings reported here are troublesome.

There are some important nuances left out of the current review, such as *nonstandard/precarious employment*. Precarious workers often have poorer mental health than ‘standard’ workers. Thus, increased prevalence of precarious workers during the Great

Recession could conceal an even steeper increase in e.g. unemployed—employed health disparities than those found in the 49 studies. Similar reasoning applies to (involuntary) *part-time* work as well, especially if people with ill health were more likely to be hired on part-time contracts during the Great Recession. Furthermore, we have not paid any attention to *retirement* in this review, which also could be considered a drawback. Belloni et al.¹⁰⁴ have e.g. shown that retirement improves mental health among blue-collar, but not among white-collar workers. Hence, the results in this review could be (slightly) biased, first, if more people in low socioeconomic strata retired as a direct consequence of the economic crisis, and second, if there is a non-trivial health component in the retirement decisions. Unfortunately, we are unable to draw any firm conclusions for neither *cross-national comparisons* nor differences between *age groups*. We have not examined healthcare utilization in this review, partly due to endogeneity problems. People in lower socioeconomic strata are probably less likely to use healthcare services during an economic crisis, because their budgetary constraints will tend to be stricter⁷. Thus, studies of healthcare utilization runs the risk of underestimating the (changes in) socioeconomic inequalities.

We have briefly discussed potential explanations across socioeconomic indicators, health outcomes, and cross-national differences/similarities. Yet, we encourage future studies to dig deeper into the *explanatory mechanisms* involved in the increasing health inequalities observed in this scoping review. A combination of (i) randomized field experiments, (ii) statistical analyses of high-quality administrative register data, and (iii) qualitative research is needed in order to advance the theoretical discussions.

Conclusion

This scoping review has examined 49 empirical studies on health inequalities, with an emphasis on educational level, employment status, income/wealth, and occupational class. Overall, two-thirds (65 percent) of the included studies find evidence of either *increasing or*

partially increasing health inequalities during the Great Recession. Thus, vulnerable groups, such as the unemployed and people with low education, have experienced more negative health developments in post-crisis years, compared to people in higher socioeconomic strata.

The 2008—2015 economic crisis was followed by increasing health inequalities in several European countries. Policymakers should pay attention to this finding. Widening socioeconomic inequalities in health is a major cause of concern, in particular if such an empirical pattern is the result of *accelerating cumulative disadvantages*. It is well-known that vulnerable groups face a large number of health risks and have access to fewer health-beneficial resources, and initial differences have a tendency to widen over time. If this inequality-generating mechanism becomes stronger during and after an economic crisis, the consequence could be (rapid) health deterioration among people in low socioeconomic strata. From an economical viewpoint, this could lead to higher social spending on healthcare services, and also to higher utilisation of health-related benefits. These (potential) societal costs should be countered with innovative policy solutions. It is worth noting that although the majority of the included studies indicate widening socioeconomic inequalities, some show stability or even decreasing inequalities. Thus, increasing health inequalities is by no means inevitable during an economic crisis, and there may be valuable policy lessons to be learned from the studies that find stable/decreasing inequalities during the Great Recession.

Finally, the scoping review offers certain insights from a methodological perspective. First, it is preferable to use *educational level* as the socioeconomic indicator while investigating changes over time in health inequalities. Alternatively, researchers should use *panel data* while examining the remaining socioeconomic indicators (e.g. income or employment). Second, we recommend the use of *several health outcomes*, both as a robustness check and in order to compare results (e.g. health measures that are more/less likely to change in the short-term as a consequence of stress related to economic downturns).

Third and lastly, much more emphasis on *replication and openness* should be implemented overall, e.g. by posting data materials, coding of variables and syntax files online.

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References

1. Marmot M, Bloomer E and Goldblatt P. The Role of Social Determinants in Tackling Health Objectives in a Context of Economic Crisis. *Public Health Reviews*. 2013; 35: 1-24.
2. World Health Organization. Review of social determinants and the health divide in the WHO European Region: final report. In: Marmot M, (ed.). Copenhagen, WHO Regional Office for Europe, 2012.
3. Eurostat. Unemployment rate by sex and age. In: Eurostat, (ed.). Eurostat, 2018.
4. Lo Duca M, Koban A, Basten M, et al. A new database for financial crises in European countries. European Central Bank, 2017.
5. Thévenot C. Inequality in OECD countries. *Scandinavian Journal of Public Health*. 2017; 45: 9-16.
6. OECD. *Society at a Glance 2014*. Organisation for Economic Co-operation and Development (OECD), 2014.
7. Karanikolos M, Cylus J, McKee M, et al. Financial crisis, austerity, and health in Europe. *The Lancet*. 2013; 381: 1323-31.
8. Stuckler D, Basu S, Suhrcke M, Coutts A and McKee M. Effects of the 2008 recession on health: a first look at European data. *The Lancet*. 2011; 378: 124-5.
9. Kentikelenis AE. Structural adjustment and health: A conceptual framework and evidence on pathways. *Social Science & Medicine*. 2017; 187: 296-305.
10. Parmar D, Stavropoulou C and Ioannidis JP. Health outcomes during the 2008 financial crisis in Europe: systematic literature review. *BMJ*. 2016; 354: i4588.
11. Mucci N, Giorgi G, Roncaioli M, Perez JF and Arcangeli G. The correlation between stress and economic crisis: a systematic review. *Neuropsychiatric disease and treatment*. 2016; 12: 983.
12. Martin-Carrasco M, Evans-Lacko S, Dom G, et al. EPA guidance on mental health and economic crises in Europe. *European archives of psychiatry and clinical neuroscience*. 2016; 266: 89-124.
13. Margerison-Zilko C, Goldman-Mellor S, Falconi A and Downing J. Health Impacts of the Great Recession: a Critical Review. *Current epidemiology reports*. 2016; 3: 81-91.
14. Karanikolos M, Heino P, McKee M, Stuckler D and Legido-Quigley H. Effects of the global financial crisis on health in high-income Oecd countries: a narrative review. *International journal of health services*. 2016; 46: 208-40.
15. Frاسquilho D, Matos MG, Salonna F, et al. Mental health outcomes in times of economic recession: a systematic literature review. *BMC Public Health*. 2016; 16: 1.
16. Stuckler D, Reeves A, Karanikolos M and McKee M. The health effects of the global financial crisis: can we reconcile the differing views? A network analysis of literature across disciplines. *Health Economics, Policy and Law*. 2015; 10: 83-99.
17. Kentikelenis A, Karanikolos M, Williams G, et al. How do economic crises affect migrants' risk of infectious disease? A systematic-narrative review. *The European Journal of Public Health*. 2015; 25: 937-44.
18. Haw C, Hawton K, Gunnell D and Platt S. Economic recession and suicidal behaviour: Possible mechanisms and ameliorating factors. *International Journal of Social Psychiatry*. 2015; 61: 73-81.
19. Glonti K, Gordeev VS, Goryakin Y, et al. A systematic review on health resilience to economic crises. *PloS one*. 2015; 10: e0123117.
20. De Goeij MC, Suhrcke M, Toffolutti V, van de Mheen D, Schoenmakers TM and Kunst AE. How economic crises affect alcohol consumption and alcohol-related health problems: a realist systematic review. *Social Science & Medicine*. 2015; 131: 131-46.

21. Burgard SA and Kalousova L. Effects of the Great Recession: Health and Well-Being. *Annual Review of Sociology*. 2015; 41: 181-201.
22. Simou E and Koutsogeorgou E. Effects of the economic crisis on health and healthcare in Greece in the literature from 2009 to 2013: A systematic review. *Health Policy*. 2014; 115: 111-9.
23. Rajmil L, de Sanmamed M-J, Choonara I, et al. Impact of the 2008 Economic and Financial Crisis on Child Health: A Systematic Review. *International Journal of Environmental Research and Public Health*. 2014; 11: 6528-46.
24. Bacigalupe A and Escolar-Pujolar A. The impact of economic crises on social inequalities in health: What do we know so far? *International Journal for Equity in Health*. 2014; 13: 1-6.
25. Anagnostopoulos DC, Giannakopoulos G and Christodoulou NG. The synergy of the refugee crisis and the financial crisis in Greece: Impact on mental health. *International Journal of Social Psychiatry*. 2017; 63: 352-8.
26. Bonaccio M, Bes-Rastrollo M, de Gaetano G and Iacoviello L. Challenges to the Mediterranean diet at a time of economic crisis. *Nutrition, Metabolism and Cardiovascular Diseases*. 2016; 26: 1057-63.
27. Downing J. The health effects of the foreclosure crisis and unaffordable housing: a systematic review and explanation of evidence. *Social Science & Medicine*. 2016; 162: 88-96.
28. Maltezou HC and Lionis C. The financial crisis and the expected effects on vaccinations in Europe: a literature review. *Infectious Diseases*. 2015; 47: 437-46.
29. Nagelhout GE, Hummel K, de Goeij MCM, de Vries H, Kaner E and Lemmens P. How economic recessions and unemployment affect illegal drug use: A systematic realist literature review. *International Journal of Drug Policy*. 2017; 44: 69-83.
30. Tsai AC. Home foreclosure, health, and mental health: a systematic review of individual, aggregate, and contextual associations. *PloS one*. 2015; 10: e0123182.
31. Marmot M. Social determinants of health inequalities. *The Lancet*. 2005; 365: 1099-104.
32. Ruckert A and Labonté R. The global financial crisis and health equity: Early experiences from Canada. *Globalization & Health*. 2014; 10: 2.
33. Stuckler D and Basu S. *The body economic: why austerity kills : recessions, budget battles, and the politics of life and death*. New York: Basic Books, 2013, p.XXI, 216 s. : ill.
34. Heggebø K and Elstad JI. Is it Easier to Be Unemployed When the Experience Is More Widely Shared? Effects of Unemployment on Self-rated Health in 25 European Countries with Diverging Macroeconomic Conditions. *European Sociological Review*. 2017: 1-18.
35. Conklin AI, Forouhi NG, Suhrcke M, Surtees P, Wareham NJ and Monsivais P. Variety more than quantity of fruit and vegetable intake varies by socioeconomic status and financial hardship. Findings from older adults in the EPIC cohort. *Appetite*. 2014; 83: 248.
36. Ásgeirsdóttir TL, Corman H, Noonan K, Ólafsdóttir Þ and Reichman NE. Was the economic crisis of 2008 good for Icelanders? Impact on health behaviors. *Economics & Human Biology*. 2014; 13: 1-19.
37. Schwela D. Air pollution and health in urban areas. *Reviews on environmental health*. 2000; 15: 13-42.
38. Mendell MJ, Mirer AG, Cheung K, Tong M and Douwes J. Respiratory and allergic health effects of dampness, mold, and dampness-related agents: a review of the epidemiologic evidence. *Environmental health perspectives*. 2011; 119: 748.
39. Ruhm CJ. Good times make you sick. *Journal of Health Economics*. 2003; 22: 637-58.
40. Ruhm CJ. Commentary: Mortality increases during economic upturns. *International Journal of Epidemiology*. 2005; 34: 1206-11.

41. Twisk J and Rijmen F. Longitudinal tobit regression: a new approach to analyze outcome variables with floor or ceiling effects. *Journal of clinical epidemiology*. 2009; 62: 953-8.
42. Heggebø K and Dahl E. Unemployment and health selection in diverging economic conditions: Compositional changes? Evidence from 28 European countries. *International Journal for Equity in Health*. 2015; 14: 121.
43. OECD. Gross domestic product (GDP) (indicator). In: OECD, (ed.). OECD, 2018.
44. Marmot M, Allen J, Bell R, Bloomer E and Goldblatt P. WHO European review of social determinants of health and the health divide. *The Lancet*. 2012; 380: 1011-29.
45. EU-commission. Newsletter issue 106. 2013.
46. Levac D, Colquhoun H and O'Brien KK. Scoping studies: Advancing the methodology. *Implementation Science*. 2010; 5: 1-9.
47. Arksey H and O'Malley L. Scoping studies: towards a methodological framework. *International Journal of Social Research Methodology*. 2005; 8: 19-32.
48. Angrist JD and Pischke J-S. *Mostly harmless econometrics: An empiricist's companion*. Princeton/ Oxford: Princeton university press, 2009.
49. Mood C. Logistic regression: Why we cannot do what we think we can do, and what we can do about it. *European Sociological Review*. 2010; 26: 67-82.
50. Allison PD. Comparing logit and probit coefficients across groups. *Sociological methods & research*. 1999; 28: 186-208.
51. Dahl E, Tøge AG, Heggebø K, Elstad JI, Berg JE and Halvorsen K. Er økonomisk krise ensbetydende med helsekrise – hva forteller forskningen? [Is economic crisis equivalent to health crisis: what does the research say?]. *Tidsskrift for velferdsforskning*. 2015; 18: 62-73.
52. Katikireddi SV, Niedzwiedz CL and Popham F. Trends in population mental health before and after the 2008 recession: a repeat cross-sectional analysis of the 1991–2010 Health Surveys of England. *BMJ Open*. 2012; 2: e001790.
53. Astell-Burt T and Feng X. Health and the 2008 economic recession: evidence from the United Kingdom. *PLoS ONE*. 2013; 8: e56674.
54. Bartoll X, Palencia L, Malmusi D, Suhrcke M and Borrell C. The evolution of mental health in Spain during the economic crisis. *European Journal of Public Health*. 2013; 24: 415-8.
55. Economou M, Madianos M, Peppou LE, Patelakis A and Stefanis CN. Major depression in the era of economic crisis: a replication of a cross-sectional study across Greece. *Journal of Affective Disorders*. 2013; 145: 308-14.
56. Economou M, Madianos M, Peppou LE, Theleritis C, Patelakis A and Stefanis C. Suicidal ideation and reported suicide attempts in Greece during the economic crisis. *World Psychiatry*. 2013; 12: 53-9.
57. Eiríksdóttir VH, Valdimarsdóttir UA, Ásgeirsdóttir TL, Bjarnadóttir RI, Kaestner R and Cnattingius S. Low birth weight, small for gestational age and preterm births before and after the economic collapse in Iceland: A population based cohort study. *PLoS ONE*. 2013; 8: e80499.
58. Hessel P, VANDOROS S, AVENDANO M and VANDOROS M. The differential impact of the financial crisis on health in Ireland and Greece: a quasi-experimental approach. *Public Health*. 2013; 128: 911-9.
59. Rajmil L, Medina-Bustos A, Fernández de Sanmamed M-J and Mompert-Penina A. Impact of the economic crisis on children's health in Catalonia: a before–after approach. *BMJ Open*. 2013; 3: e003286.
60. Ásgeirsdóttir TL and Ragnarsdóttir DÓ. Health-income inequality: The effects of the Icelandic economic collapse. *International Journal for Equity in Health*. 2014; 13: 50.

61. Blomqvist S, Burström B and Backhans MC. Increasing health inequalities between women in and out of work - the impact of recession or policy change? A repeated cross-sectional study in Stockholm county, 2006 and 2010. *International Journal for Equity in Health*. 2014; 13: 51.
62. Coope C, Gunnell D, Hollingworth W, et al. Suicide and the 2008 economic recession: who is most at risk? Trends in suicide rates in England and Wales 2001–2011. *Social Science & Medicine*. 2014; 117: 76-85.
63. Maynou L, Saez M and Lopez-Casasnovas G. Has the economic crisis widened the intraurban socioeconomic inequalities in mortality? The case of Barcelona, Spain. *Journal of Epidemiology & Community Health*. 2014; 0: 1-11.
64. Reile R, Helakorpi S, Klumbiene J, Tekkel M and Leinsalu M. The recent economic recession and self-rated health in Estonia, Lithuania and Finland: a comparative cross-sectional study in 2004–2010. *Journal of Epidemiology & Community Health*. 2014; 68: 1072-9.
65. Cordoba-Dona JA, Escolar-Pujolar A, San Sebastian M and Gustafsson PE. How are the employed and unemployed affected by the economic crisis in Spain? Educational inequalities, life conditions and mental health in a context of high unemployment. *BMC Public Health*. 2016; 16: 267.
66. Abebe DS, Tøge AG and Dahl E. Individual-level changes in self-rated health before and during the economic crisis in Europe. *International Journal for Equity in Health*. 2016; 15: 1.
67. Alonso I, Vallejo F, Regidor E, et al. Changes in directly alcohol-attributable mortality during the great recession by employment status in Spain: a population cohort of 22 million people. *Journal of Epidemiology & Community Health*. 2017; 71: 736-44.
68. Arroyo E, Renart G and Saez M. How the economic recession has changed the likelihood of reporting poor self-rated health in Spain. *International Journal for Equity in Health*. 2015; 14: 149.
69. Ásgeirsdóttir TL and Johannsdóttir HM. Income-related inequalities in diseases and health conditions over the business cycle. *Health Economics Review*. 2017; 7: 12.
70. Bacigalupe A, Esnaola S and Martín U. The impact of the Great Recession on mental health and its inequalities: the case of a Southern European region, 1997–2013. *International Journal for Equity in Health*. 2016; 15: 17.
71. Barlow P, Reeves A, McKee M and Stuckler D. Austerity, precariousness, and the health status of Greek labour market participants: Retrospective cohort analysis of employed and unemployed persons in 2008-2009 and 2010-2011. *Journal of Public Health Policy*. 2015; 36: 452-68.
72. Barr B, Kinderman P and Whitehead M. Trends in mental health inequalities in England during a period of recession, austerity and welfare reform 2004 to 2013. *Social Science & Medicine*. 2015; 147: 324-31.
73. Barroso C, Abásolo I and Cáceres JJ. Health inequalities by socioeconomic characteristics in Spain: the economic crisis effect. *International Journal for Equity in Health*. 2016; 15: 62.
74. Bartoll X, Toffolutti V, Malmusi D, Palència L, Borrell C and Suhrcke M. Health and health behaviours before and during the Great Recession, overall and by socioeconomic status, using data from four repeated cross-sectional health surveys in Spain (2001–2012). *BMC Public Health*. 2015; 15: 865.
75. Bayliss D, Olsen W and Walthery P. Well-Being During Recession in the UK. *Applied Research in Quality of Life*. 2017; 12: 369-87.

76. Bougea A, Spantideas N, Anagnostou E, et al. Understanding of headache patterns modification in an emergency department during the economic crisis of Greece. *Neurological Sciences*. 2016; 37: 1233-9.
77. Brønnum-Hansen H, Baadsgaard M, Eriksen ML, Andersen-Ranberg K and Jeune B. Educational inequalities in health expectancy during the financial crisis in Denmark. *International Journal of Public Health*. 2015; 60: 927-35.
78. Bruggink JW, de Goeij MC, Otten F and Kunst AE. Changes between pre-crisis and crisis period in socioeconomic inequalities in health and stimulant use in Netherlands. *European Journal of Public Health*. 2016; 26: 772-7.
79. Buffel V, Van de Velde S and Bracke P. The mental health consequences of the economic crisis in Europe among the employed, the unemployed, and the non-employed. *Social Science Research*. 2015; 54: 263-88.
80. Copeland A, Bambra C, Nylén L, et al. All in It Together? The Effects of Recession on Population Health and Health Inequalities in England and Sweden, 1991–2010. *International Journal of Health Services*. 2015; 45: 3-24.
81. Coveney M, Garcia-Gomez P, Van Doorslaer E and Van Ourti T. Health Disparities by Income in Spain Before and After the Economic Crisis. *Health Economics*. 2016; 25 Suppl 2: 141-58.
82. Drydakis N. The effect of unemployment on self-reported health and mental health in Greece from 2008 to 2013: a longitudinal study before and during the financial crisis. *Social Science & Medicine*. 2015; 128: 43-51.
83. Fiori F, Rinesi F, Spizzichino D and Di Giorgio G. Employment insecurity and mental health during the economic recession: An analysis of the young adult labour force in Italy. *Social Science & Medicine*. 2016; 153: 90-8.
84. Hawton K, Bergen H, Geulayov G, et al. Impact of the recent recession on self-harm: Longitudinal ecological and patient-level investigation from the Multicentre Study of Self-harm in England. *Journal of Affective Disorders*. 2016; 191: 132-8.
85. Juarez S, Revuelta-Eugercios BA, Ramiro-Farinas D and Viciano-Fernandez F. Maternal education and perinatal outcomes among Spanish women residing in southern Spain (2001-2011). *Maternal and Child Health Journal*. 2014; 18: 1814-22.
86. Madden D. Health and Wealth on the Roller-Coaster: Ireland, 2003–2011. *Social Indicators Research*. 2015; 121: 387-412.
87. Maynou L and Saez M. Economic crisis and health inequalities: evidence from the European Union. *International Journal for Equity in Health*. 2016; 15: 135.
88. Merzagora I, Mugellini G, Amadasi A and Travaini G. Suicide Risk and the Economic Crisis: An Exploratory Analysis of the Case of Milan. *PLoS ONE*. 2016; 11: e0166244.
89. Minelli L, Pigini C, Chiavarini M and Bartolucci F. Employment status and perceived health condition: longitudinal data from Italy. *BMC Public Health*. 2014; 14: 946.
90. Nogueira H. What is happening to health in the economic downturn? A view of the Lisbon Metropolitan Area, Portugal. *Annals of Human Biology*. 2016; 43: 164-8.
91. Pfoertner TK, Rathmann K, Elgar FJ, et al. Adolescents' psychological health complaints and the economic recession in late 2007: a multilevel study in 31 countries. *European Journal of Public Health*. 2014; 24: 960-6.
92. Pöld M, Pärna K and Ringmets I. Trends in self-rated health and association with socioeconomic position in Estonia: data from cross-sectional studies in 1996–2014. *International Journal for Equity in Health*. 2016; 15: 200.
93. Rathmann K, Pfoertner T-K, Osorio AM, et al. Adolescents' psychological health during the economic recession: does public spending buffer health inequalities among young people? *BMC Public Health*. 2016; 16: 860.

94. Regidor E, Vallejo F, Granados JAT, Viciano-Fernandez FJ, de la Fuente L and Barrio G. Mortality decrease according to socioeconomic groups during the economic crisis in Spain: a cohort study of 36 million people. *Lancet*. 2016; 388: 2642-52.
95. Reibling N, Beckfield J, Huijts T, Schmidt-Catran A, Thomson KH and Wendt C. Depressed during the depression: has the economic crisis affected mental health inequalities in Europe? Findings from the European Social Survey (2014) special module on the determinants of health. *European Journal of Public Health*. 2017; 27: 47-54.
96. Ruiz-Pérez I, Bermúdez-Tamayo C and Rodríguez-Barranco M. Socio-economic factors linked with mental health during the recession: a multilevel analysis. *International Journal for Equity in Health*. 2017; 16: 45.
97. Sarti S and Zella S. Changes in the labour market and health inequalities during the years of the recent economic downturn in Italy. *Social Science Research*. 2016; 57: 116-32.
98. Urbanos-Garrido RM and Lopez-Valcarcel BG. The influence of the economic crisis on the association between unemployment and health: an empirical analysis for Spain. *European Journal of Health Economics*. 2015; 16: 175-84.
99. Utzet M, Navarro A, Llorens C, Muntaner C and Moncada S. Is the worsening of psychosocial exposures associated with mental health? Comparing two population-based cross-sectional studies in Spain, 2005–2010. *American Journal of Industrial Medicine*. 2016; 59: 399-407.
100. Zapata Moya AR, Buffel V, Navarro Yanez CJ and Bracke P. Social inequality in morbidity, framed within the current economic crisis in Spain. *International Journal for Equity in Health*. 2015; 14: 131.
101. Fayers PM and Sprangers MAG. Understanding self-rated health. *The Lancet*. 359: 187-8.
102. Merton RK. The Matthew Effect in Science: The reward and communication systems of science are considered. *Science*. 1968; 159: 56-63.
103. DiPrete TA and Eirich GM. Cumulative Advantage as a Mechanism for Inequality: A Review of Theoretical and Empirical Developments. *Annual Review of Sociology*. 2006; 32: 271-97.
104. Belloni M, Meschi E and Pasini G. The Effect on Mental Health of Retiring During the Economic Crisis. *Health Econ*. 2016; 25 Suppl 2: 126-40.