

# Globalisation and health: an indicator-based statistical analyses

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# Chapter 32

## Globalisation and health: an indicator-based statistical analysis<sup>65</sup>

Su-Mia Akin, Pim Martens and Maud Huynen

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<sup>65</sup> Based on: Martens, P., Akin, S., Huynen, M., and Raza, M. (2010). Is globalization healthy: A statistical indicator analysis of the impacts of globalization on health. *Globalization and Health*, 6 (16).

## Abstract

Globalisation has positive and negative consequences for our health. This study aims to analyse the relationship between globalisation and health using an indicator-based statistical analysis to link the Maastricht Globalisation Index (MGI), a measure of globalisation, to health indicators. The key challenge in studying globalisation and its health consequences is complexity. We make this complexity explicit by employing an integrative, pluralistic perspective. The resulting crude indication of the potential advantageous effect of globalisation on health should be interpreted with caution in view of the argument that globalisation creates winners and losers, and should not be taken as a simple confirmation that globalisation is good for our health. A fuller understanding of the causal relationship between globalisation and health can help to optimise health outcomes of global processes, and thereby contribute to healthy and sustainable development. This requires more research embracing the complexity of the globalisation–health relationship.

### 32.1 Introduction

Processes of globalisation are influencing our health, and whether these health consequences of globalisation are largely positive or negative still remains unclear. The relationship between globalisation and health is characterised by multiple links and feedbacks. In order to capture this complexity, we use a pluralistic integrated view of this relationship. To analyse the relationship between globalisation and health, we use an indicator-based statistical analysis to link the Maastricht Globalisation Index (MGI), a measure of globalisation, to health indicators. This is followed by a discussion of the results and by an indicator-based statistical analysis. As a way forward, we propose a potential classification of countries based on their level of globalisation and their health performance. The chapter concludes with some lessons to be learned.

### 32.2 Relation to sustainable development

The topic of globalisation and health can be classified under the social dimension of sustainability. However, the integrated view of the globalisation–health relationship, encompassing a variety of processes, extends this research into the other (environmental, economic, and institutional) domains of sustainable development as well. A deeper understanding of the relationship between globalisation and health can help to enhance positive and mitigate negative health outcomes of globalisation. Such an understanding can support progress towards more healthy and overall sustainable ways of development in the face of global change. Improving health and well-being is and will remain one of the driving forces for achieving sustainable development at a global level as we move towards the 2015 deadline of the Millennium Development Goals (MDGs) (Griggs et al., 2013).

### 32.3 An integrated approach to globalisation and health, and the challenge of complexity

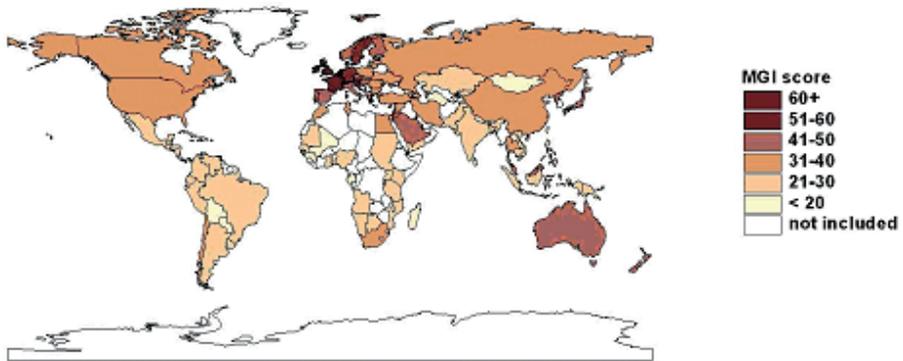
Globalisation is a widely used concept to describe contemporary global change processes across different sectors (Scholte, 2002). Besides economic developments taking place at a global scale, globalisation also incorporates political, technological, socio-cultural, and environmental global change processes, so it can be seen as an overarching process encompassing different simultaneously unfolding developments in various domains and at different scales. Globalisation is a phenomenon shaped by a wide range of factors, leaving its imprints on our society. The complexity of this multi-dimensional global phenomenon is suitably captured by the definition offered by Rennet and Martens (2003): “[...] an intensification of cross-national cultural, [...], economic,

political, social and technological interactions that lead to the establishment of transnational structures and the global integration of cultural, economic, environmental, political and social processes on global, supranational, national, regional and local levels (p.143)".

The determinants and outcomes of health are influenced by globalisation (Lee, 2004). A conceptual framework developed by Huynen (M. Huynen, 2008; M. M. T. E. Huynen, Martens, & Hilderink, 2005) describes the relationship between globalisation and health, illustrating how the globalisation process interacts with determinants of health. The key challenge in studying globalisation and its health consequences is complexity. For the purpose of this chapter, complex problems can be seen as problems encompassing many interlinked problems at the same time, covering different disciplines, existing at different scales, and involving many different stakeholders (Valkering, Amelung, Van der Brugge, & Rotmans, 2006). The relationship between globalisation and health involves different dimensions, processes, scales, and linkages and pathways. In order to make this complexity explicit, we view globalisation and health from an integrative, pluralistic perspective.

### 32.4 Method and approach to the statistical analysis

Empirical (quantitative) evidence on the links between globalisation and health is currently lacking. Many scholars have called for further research and possibly more quantitative evidence on these links (Beaglehole & Bonita, 2000; Dollar, 2001; Drager & Beaglehole, 2001; M. M. T. E. Huynen et al., 2005; Lee, 2001; Lee & Collin, 2001; Martens, McMichael, & Patz, 2000; Smith, Woodward, Acharya, Beaglehole, & Drager, 2004; WHO, 2001; Woodward, Drager, Beaglehole, & Lipson, 2001). To analyse whether more globalised countries are doing better or worse in terms of their population health status, we assess the relation between globalisation and health indicators. For this purpose we use an indicator-based approach (Dreher, Gaston, & Martens, 2008) linking the Maastricht Globalisation Index (MGI) (a measure of globalisation) to important health indicators, correcting for possible confounding factors. The MGI is a weighted composite index incorporating indicators that cover the following domains: political, economic, social and cultural, technological, and ecological. The pluralistic conceptualisation of globalisation presented above is also reflected in the wide range of domains incorporated in the MGI. Higher values of the MGI denote more globalisation. The MGI dataset includes 117 countries (Martens & Raza, 2009; Martens & Zywietz, 2006; [www.globalisationindex.info](http://www.globalisationindex.info)). The present analysis used the MGI for 2008. See Figure 32.1 for a map of the MGI for 2008.



**Figure 32.1** Map of the Maastricht Globalisation Index (MGI) 2008 ([www.globalisationindex.info](http://www.globalisationindex.info))

In order to link a country's level of globalisation with the status of population health in that country, several mortality indicators have been selected, based on the World Health Statistics (WHO, 2009b):

- infant mortality rate (per 1000 live births, both sexes): “[...] the probability of a child born in a specific year or period dying before reaching the age of one, if subject to age-specific mortality rates of that period (WHO, 2009a)”;
- under-five mortality rate (probability of dying by age 5 per 1000 live births, both sexes): “the probability of a child born in a specific year or period dying before reaching the age of five, if subject to age-specific mortality rates of that period (WHO, 2009a)”;
- adult mortality rate (probability of dying between the ages of 15 to 60 years per 1000 population, both sexes): “probability that a 15-year-old person will die before reaching his/her 60th birthday (WHO, 2009a)”.

According to the World Health Organisation (WHO, 2009a), such indicators provide an accurate view of overall population health (see also e.g. WHO, 2008). The selected mortality indicators are available for all 117 countries in the MGI dataset. The statistical analysis used the following methods: correlation analysis, least squares (LS) simple linear regression analysis, and multiple regression analysis.

### 32.5 Statistical indicator analysis: results and discussion

The results of the analysis (Spearman's correlations, simple and multiple linear regression analyses) indicate that the infant mortality rate, under-five mortality rate, and adult mortality rate all show a negative association with the process of globalisation (as measured by the MGI). Specifically, technological globalisation and socio-cultural globalisation are shown to have strong associations with the selected health indicators.

In all multivariate models, the association between globalisation and the mortality indicators remains significant after controlling for confounding factors<sup>66</sup>.

These results might provide a crude initial indication of the potential advantageous effect of globalisation on health. In other words, high levels of globalisation appear to be associated with low mortality rates. However, in view of the argument that globalisation creates winners and losers, interpretation of the resulting positive association between the MGI and health should be done with caution and not taken as a simple confirmation of globalisation being good for our health.

The use of the MGI, and globalisation indices in general, comes with several limitations. Data on international linkages cannot be distinguished with complete certainty from globalisation and regionalisation data. Thus there is an underlying assumption that countries with many international linkages have a correspondingly greater number of global linkages.<sup>67</sup> Data from some countries is either difficult to get or has not been collected, which limits the number of countries that could be included in the MGI. Moreover, the MGI is based on a weighting method, which is in essence normative. For transparency reasons, we have applied equal weighting (OECD, 2008). The indicator data have been collected at the country level, and thus do not fully capture the interactions of globalisation with health at levels that exceed national levels. (For a more elaborate discussion of the limitations of the MGI and similar indices, see the original publication.)

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<sup>66</sup> The multivariate analyses found different confounders to be significant in the three final models. Specifically, confounders accounting for primary and secondary education and public health expenditures were found to be significant for Ln Infant mortality rate. For the Ln Under-five mortality rate, not only the confounders for primary and secondary education but also smoking prevalence among women proved to be significant in the final model. Lastly, only a confounder regarding access to improved sanitation facilities proved significant for the model of Ln Adult mortality rate. These factors can thus possibly function as confounders in the relationships between the respective mortality rates and the MGI. However, the confounders in the final models could also be important mediating/causal factors in the association between the mortality rates and the MGI. Either way, in all multivariate models, the association between globalisation and the mortality indicators remains significant after controlling for confounding factors.

<sup>67</sup> For the purpose of clarification: From a conceptual point of view, international linkages or internationalisation “refers to a growth of transactions and interdependence between countries (p.8) (Scholte, 2002)”. Global linkages or globalisation, however, go beyond between-country interactions and refer to “transplanetary connectivity” and “supraterritoriality”, thus challenging territorialist geography. “Globality in the broader sense of transplanetary relations refers to social links between people located at points anywhere on earth, within a whole-world context” (p.15) (Scholte, 2002). This view is distinct from international linkage, as this refers to exchanges between countries, and global linkage, which refers to exchanges within the world, where the world is not made up of geographical country units, but is a social space in itself (Scholte, 2002). This conceptual difference is important with regard to the use of indicators to measure globalisation. Available (and reliable) data usually pertain to indicators for cross-border activities between countries; thus data usually relies on the geography of countries (Scholte, 2002). Due to the use of such data and indicators, therefore, an implicit assumption is made that as countries have more international linkages, they will also be more globalised.

### 32.6 Reflection and a way forward

The results of the statistical indicator analysis and their interpretation show that the relationship between globalisation and health is more complex. Without being able to state with certainty whether globalisation will overall be beneficial or detrimental to our health, it is important to step away from this and focus on the direction that global dynamics should take in order to achieve sustainable health aims. For future research we hypothesise that countries can be classified into four categories according to their level of globalisation and health status (adapted from Ranis, 2006):

- Vicious cycle (low globalisation, high mortality)  
In the vicious cycle, any efforts to properly integrate into the global process are as yet unsuccessful, and might even result in (temporary) adverse health effects (e.g. Ghana).
- Globalisation-lopsided (high globalisation, high mortality)  
Globalisation-lopsided may happen when integration into the globalisation process has not yet resulted in major health benefits, or may even have resulted in increasing health problems (e.g. Egypt).
- Health-lopsided (low globalisation, low mortality)  
Health-lopsided may happen when health improvements occur that are not related to any globalisation benefits, but due to other domestic policies or developments (e.g. Peru).
- Virtuous cycle (high globalisation, low mortality)  
In a virtuous cycle, countries may benefit from their integration into the globalisation process, while averting any associated health risks. It is important to note, however, that for some countries the virtuous cycle could be the result of bias due to causal sequence (i.e. did all the major improvements in health already occur prior to the modern-day globalisation process?) (e.g. the Netherlands).

### 32.7 Lessons

The results of the statistical analysis of the consequences of globalisation for health show that globalisation and its linkages to health are complex. The statistical analysis is a useful method to gain a crude insight into the relationship at hand. The identification of possible confounders is also a step towards understanding which factors are potentially relevant to the globalisation–health relationship. However, when drawing conclusions from such (global) statistical analyses it is important to be cautious and keep the above limitations and underlying assumptions in mind. A reflection on the merits and limitations of the indicator-based statistical analysis makes it clear that such an approach cannot by itself capture the full picture. The hypothesised country

categories may provide a helpful framework for future research into the globalisation–health relationship as well as related potential policy implications.

The challenge of complexity has become very apparent when examining global change issues. For the topic of globalisation and health this means that an integrative approach in terms of conceptual meaning is helpful to make this complexity explicit. At the same time this also requires research which incorporates different perspectives, and multiple disciplines and methods (complementary to a statistical indicator analysis).

A deeper understanding of the causal relationship between globalisation and health can help to manage global processes in such a way that its benefits to health are enhanced and its negative impacts on health can be minimised, and thereby contribute to healthy and sustainable development. More empirical research is necessary to uncover the causal mechanisms underlying globalisation and health. The understanding that is critical for (future) sustainable development and health requires us to embrace greater complexity (M. Huynen, Martens, & Akin, 2013; Soskolne, Butler, Ijsselmuiden, London, & von Schirnding, 2007).

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