

Risk Factors of Health

Summary of national risk factors: Early life factors; Mortality and morbidity factors; Sexual and reproductive factors; Environmental factors; Economic and occupational factors

Summary of subnational risk factors: Social exclusion; Prevalence of conflict and terrorism; Transportation; Urbanization and population density; Addiction

Aim: To assist analysts with the identification of risk factors for the production of risk terrain maps. Specifically, this brief provides an annotated review of the factors related to health and the settings and times for which some factors may be most relevant. This information should be especially useful to help choose a time period for creating risk terrain maps (i.e., Step 3), to identify aggravating and mitigating risk factors to include in your risk terrain model (i.e., Steps 5 and 6), and to inform the operationalization of your risk factors to risk map layers (i.e., Step 7).

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The determinants of health are largely influenced by the economic development of the region that an individual lives in (Wilkinson & Marmot 2003). Deaths that arise from unsafe abortions a type of maternal mortality, is highest in developing countries where access to health care is limited (Blas et al. 2011). Infant mortality in Britain has dropped from 100/1000 deaths at the beginning of the 20th century to 5-6/1000 births in the 21st century (Wilkinson & Marmot 2006). Even in deprived populations, single mothers, reflect a 10/1000 infant mortality rate; suggesting an improvement in the living conditions of Britain in general. Yet, it would be erroneous to assume that people in richer countries are immune to the same risk factors of those in less developed countries. Black men living in impoverished areas in the United States have a life span 20 years shorter than that of white men that are of higher socioeconomic standing (Wilkinson & Marmot 2006). With the average life span of an African American male in Harlem being lower than that of a man in Bangladesh, it is apparent that the economic development on the national level cannot explain the risk factors of health.

A broad range of factors affecting individual health prompts the following questions:

- What are the risk factors, social determinants, which attribute to health?
- Under what conditions would the health of an individual be at risk?
- Which risk factors are measurable?
- What data, if any, is available to track the influence such factors of health?

Drawing from aforementioned questions, the current research brief attempts to identify risk factors of health for the production of risk terrain maps. A review of literature about social determinates of health will be used to determine factors related to health and operationalize terms. The brief will provide an annotated review of factors most relevant for the analyst preparing risk terrain maps on the social determinants of health.

Operational definition: According to the World Health Organization: "Health is a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity".ⁱⁱ

Aggravating/Mitigating Risk Factors Based on a Review of Empirical Literature

There are two main determinants of social health; behavior and biological markers (Marmot 2005). Behaviors that influence health include smoking cigarettes, poor eating habits, etc. (Marmot 2005). Biological markers include a predisposition to high blood pressure or high cholesterol. However, there are causes of the causes. Individual eating habits are largely influenced by the supply of food, affordability of food, culture and a myriad of other factors (Marmot 2005). Subsequently, determinants of social health are impacted by risk factors that expand beyond biological markers and behaviors. Risk factors for social health go beyond food supply and include access to medical care, mental health, public health, living and working conditions. Early life experiences, cultural and genetic factors influence health. The current brief will not focus on genetic influences and will outline the social determinants of health; life experiences, conditions, cultural influences, etc. As a caveat, social determinants of health occur on a gradient. A genetic predisposition to high blood pressure, or the influence of stress on health, is more potent for individuals that are positioned lower on the socioeconomic ladder. In short, the higher up an individual is on the socio-economic ladder, the more resilient they can be to the social determinants of health (Wilkinson & Marmot, 2005).

Wilkinson and Marmot (2006) suggest that social determinants of health can be categorized into one of ten areas; the social gradient, stress, early life, social exclusion, work, unemployment, social support, addiction, food and transportation. The World Health Organization (2009) classifies social determinants of health into 6 categories; childhood and maternal undernutrition, diet and physical activity, sexual and reproductive health, addictive substances, environmental risks, and occupational and other risks.

The choice of indicators has been influenced by the availability of data at the national and sub-national level. Interestingly enough, the academic community has opted to expound on the social risk factors in the sub-fields of health (i.e. public health, mental health, etc) without

furthering develop the general social risk factors. Research on the social determinates of health has yielded statistics on the prevalence of various factors in one country versus another, on the ratio of a determinants with life expectancy, etc. However, minimal research has attempted to geographically analyze social determinants of health. Two main methodologies will be used for determining the geography of health determinants; 1) the use of national level (aggregated level) geographical data to substitute for socio-economical and political characteristics and 2) the use of sub-national level (disaggregate level) data to directly reflect the local differences.

National Level Geographical Data

Early life factors: Majority of the work in the area of social determinants of health have been done by Wilkinson and Marmot (2003, 2006) and by the World Health Organization (2009). Wilkinson and Marmot (2003) suggest that early life factors such as low birth weight, infant mortality, access to health care and pregnancies per lifetime have a significant impact on the health of the mother and child. The World Health Organization similarly suggests that early life factors such as childhood and maternal undernutrition affect an individual's health. Factors such as premature births, pneumonia during childhood, diarrhea, measles and nutritional deficiencies can affect the health and quality of life during adult years.

Mortality and morbidity factors: Patrick et al. (1973) suggest mortality and morbidity to be included as factors of determining health. Forms of mortality and morbidity include health determinants such as the prevalence of disease and life expectancy (Wilkinson & Marmot 2006). The numbers of non-communicable diseases, HIV/AIDS, malaria, etc. are examples of diseases (Blas et al. 2011).

Sexual and reproductive factors: The World Health Organization (2009) poses sexual and reproductive factors as social determinants of health. Factors such as condom use, unmet contraceptive needs and unsafe sex directly impact sexual health. Wilkinson and Marmot (2006) note that abortion is one the top 5 reasons for maternal death.

Environmental factors: Environmental factors such as urban pollution, lead exposure, unsafe water/ access to clean water, poor sanitation and global climate change

greatly diminishes health (WHO 2009). Food supply is an indicator of social health in that too much or too little food can lead to poor health. Food poverty (lack of food) and food plenty (over eating) can lead to malnutrition and obesity, respectively (Wilkinson & Marmot 2003). The number of markets, presence of sustainable agriculture, obesity, the amount of arable land captures the national supply of food.

Economic, occupational and other factors: Wilkinson and Marmot (2003, 2006) note that financial strain and unemployment largely affects an individual's position on the social gradient and in turn affects housing options. Wilkinson and Marmot (2003) note that will unemployment is stressful, work can also impact health. High demanding jobs with little control over occupational circumstances impacts physical and mental health. The World Health Organization (2009) uses the category of occupational and other risks to address additional social factors influencing health. Unsafe healthcare, child sexual abuse and occupational risks are classified as indicators of occupational and other risks.

Subnational Level Geographical Data

Societal factors: Wilkinson and Marmot (2003) categorize social exclusion as a social determinant of health. Social exclusion is operationalized as absolute poverty, rates of homelessness, and the lack of basic human security. Social exclusion increases with divorce, disability, illness and addiction. The number of divorces filed, individuals with disabilities and addictions indicate local levels of social exclusion. The prevalence of conflict and terrorism greatly reduce the basic human essentials of safety and security and poses a direct impact on physical and mental health. Marmot (2005) notes the importance of transportation on health. The factors such as local infrastructure (i.e. paved roads), public transportation and personal automobile use can impact health. The use of public transportation, cycling and walking are thought to reduce pollution and fatal accidents (Wilkinson & Marmot 2003). Urbanization and population density of the location also serve as sub-national societal indicators of health (WHO 2009).

Psychological Factors: Addictions can have a negative impact on health and could lead to death (Wilkinson & Marmot 2003; WHO 2009). Drug abuse, alcohol dependence and narcotic use can be captured by the cost of nicotine, cost of drugs, licenses to sell alcohol/nicotine, frequency of liquor stores and drug clinics.

References & Recommended (Publically Available) Readings

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Endnotes

ⁱ For steps of risk terrain map production, download the RTM Manual at www.riskterrainmodeling.com

ⁱⁱ World Health Organization.

Retrieved from: <https://apps.who.int/aboutwho/en/definition.html>