

The COVID-19 pandemic has caused unprecedented health damage and significant social and economic disruption. Societies worldwide have faced an extraordinary increase in deaths and other severe health consequences from the coronavirus. The highly contagious nature of the disease also significantly impacted economies. Policies aimed at limiting the spread of the disease have resulted in disruptions in enterprises' operation, breakdown of supply chains and the need to implement job retention schemes. As a consequence, the world experienced a slowdown in economic growth.

One of the less noticeable economic consequences of the pandemic is the loss of productivity resulting directly from the health damage caused by COVID-19. So far, scientists have not provided satisfactory data to illustrate the value of the productivity losses associated with mortality and morbidity from COVID-19. This problem is also important because the coronavirus has caused an increased number of cases and deaths in other diseases (e.g. cancer, cardiovascular diseases or mental diseases). As a consequence of the pandemic rise in mortality and morbidity, the working population is declining and this leads to a reduction of economies' potential output.

The aim of this research project is to estimate the economic and epidemiological burden resulting from the COVID-19 pandemic in Poland and the European Union countries. The essential element of the research will be estimation of the productivity losses resulting from the pandemic. This analysis will be accompanied by an epidemiological investigation aimed at scrutinizing the population health consequences of the coronavirus. In addition, as part of the economic analysis, we will examine the public finance burden caused by the disease.

The study will cover the years 2020-2024 and will be based on epidemiological and economic secondary data collected by the Central Statistical Office, the Social Insurance Institution and Eurostat. For the disease burden in Poland, the analysis will cover the burden from premature deaths, absenteeism, and an inability to work caused by the disease. For sub-analysis based on data from the European Union, we will analyse the burden caused by early deaths solely because it is the only epidemiological measure for which comparable data in a number of countries are available. Both analyses (Poland and the EU) will investigate epidemiological indicators and economic losses resulting from COVID-19 itself and from the excess burden in other diseases.

In epidemiological analysis, we will use commonly used indicators such as the counts and rates of deaths, absenteeism and inability to work (cause-, age- and sex-specific), as well as measures of years of potential life lost and years of potential productive life lost. In the productivity losses analysis, the human capital method, friction costs method (both applied to activities in the formal economy) and opportunity cost method (for the informal economic losses) will be applied. For the COVID-19 impact on public finance, we will analyse the pandemic-related social benefits spending and potential losses in public funds revenues.

The expected result of the research project is to illustrate the magnitude of the health and economic burden of the COVID-19 pandemic. The results of the epidemiological analysis will allow for a comprehensive picture of the health consequences of the pandemic, not only in terms of the coronavirus itself but also the burden of other diseases whose treatment has suffered as a result of the pandemic. For the economic burden analysis, our results will identify the extent of production losses resulting from the increased mortality and morbidity due to the COVID-19 pandemic. Knowledge of the above-mentioned consequences of the pandemic is of key importance for rational decisions in the economic policy and health policy of the state. In particular, this applies to forecasting the potential burden of future epidemic threats and the state's preparedness in the event of another pandemic.