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From Emissions to Illness: actuaries at the Intersection of CO2 Emissions and Healthcare

In the ever-evolving domain of actuarial science, where quantifying mortality risks and predicting future mortality trends are at the core of our field, the theme of 'life' is central. Life encompasses a vast array of elements within our society, with health being a paramount aspect. Therefore we turn our attention to a matter of growing concern: the effects of CO2 emissions on health and the consequent rise in healthcare costs.

Recent studies have shown that rising CO2 levels in our atmosphere not only pose a threat to the environment but also have consequences for health. In particular, this article will explore the key findings of a pivotal thesis that links rising CO2 emissions to an increase in health care costs in the Netherlands.

Additionally, we will explore what health insurers can do to address the rising healthcare costs stemming from CO2 emissions and climate change. We will present a benchmark of the apps offered by health insurers, designed to aid their clients in managing health issues to reduce medical costs. These apps are not just a testament to the innovative strides being made in healthcare, but they also highlight potential opportunities to stabilize and potentially reduce the increased healthcare costs for mental health associated with CO2 emissions.

By combining these perspectives, this article aims to provide an actuarial perspective on a relevant issue and the role that we can play in managing the risks and costs associated with it.

THESE MENTAL HEALTH CHALLENGES CONTRIBUTE TO RISING HEALTHCARE EXPENDITURES, A CRITICAL ELEMENT FOR ACTUARIES

The interdependent relationship between humans and the environment is evident, as our society thrives on the abundant resources provided by the Earth. However, our relentless progress has led to a rise in CO2 emissions, triggering consequences for public health. A more subtle but significant impact of climate change lies in its influence on mental health. Stressors tied to the climate, including severe weather patterns and environmental hazards, are associated with heightened levels of stress, anxiety, and depression. These mental health challenges contribute to rising healthcare expenditures, a critical element for actuaries.

The thesis research guiding this article highlights that in the Netherlands, renowned for its progressive environmental and healthcare policies, it is the mental health care costs that have risen the most due to CO2 emissions out of all health-related expenses. This cost analysis emphasizes the importance for actuaries to investigate these emerging risk factors.

Health insurers play a pivotal role in providing preventive solutions, for instance digital health apps that focus on mental resilience and coping with environment-related health issues. These technological advancements are integral to healthcare and may contribute to reducing overall healthcare costs.

Amber Nagelhout's thesis, entitled "The Correlation Between CO2 Emissions and Healthcare Expenses in the Netherlands," explores the financial impact of rising CO2 Emissions on healthcare insurers. The research utilizes data on municipality level to analyze and define the connection between CO2 emissions and healthcare costs covered by basic insurance, taking into account demographic factors such as gender, age, education, and socioeconomic status. This comprehensive approach aims to provide a clearer understanding of how climate change is influencing healthcare financing.

In addressing the challenges presented by data outliers, Nagelhout's study implements a logarithmic transformation of the CO2 emission figures. This mathematical adjustment ensures a more accurate analysis by reducing the distortion outliers can cause. A generalized linear model is then used for the regression analysis, which confirms a substantial positive correlation between CO2 emissions and total healthcare costs. These results underscore the broader financial implications of climate change on the healthcare industry.

The thesis explores the specific areas of healthcare where costs have risen alongside increases in CO2 emissions. It reveals a notable correlation between heightened CO2 levels and rising expenditures in mental health care. This key observation underscores the urgency for healthcare systems and insurers to devise focused strategies to tackle the psychological effects associated with climate change. In light of these findings, the research points to the need for insurance providers to consider strategic adjustments to handle the financial implications linked to these environmental trends.

ACTUARIES WILL BE EXPECTED TO PROVIDE FORWARD-THINKING ADVICE ON NAVIGATING THE RISING HEALTHCARE COSTS LINKED TO CO2 EMISSIONS

After establishing the link between CO2 emissions and rising healthcare costs, the focus shifts to the role of health insurers in using technology to contain these expenses. Health apps, as an example of innovative technology, could play a crucial role in managing the rising costs associated with climate change, particularly by providing features that help users cope with climate-related mental health issues. These apps have the potential to offer immediate support and guidance, which is especially valuable given the increasing prevalence of mental health concerns as climate change worsens.

A detailed benchmark study of the mobile health technologies currently offered by insurers indicates significant progress in several areas. There has been considerable advancement in promoting healthier lifestyles, deploying technologies for early detection of skin cancer, and facilitating seamless communication with healthcare providers, doctors, and support for physiotherapists. The adoption of mobile health technology also extends to apps focused on mindfulness, which contribute to mental well-being.

Despite these advancements, there remains a noticeable gap in features of mobile health solutions that specifically address mental healthcare needs stemming from climate change. Health apps present a promising solution for addressing these concerns, and the current market's deficiency in this area indicates a significant opportunity for innovation. The creation of such features could be instrumental in reducing healthcare costs and improving mental health, particularly in light of the lengthy waiting lists for psychological services.

The ethical and societal challenges of addressing environment-related health issues are complex and varied. Within this article, mental health concerns have been a topic of discussion, yet it's important to acknowledge that other health effects linked to CO2 emissions, such as heat stress, diminished productivity, and skin cancer, could also emerge as critical issues as we look forward.

As our understanding deepens over time regarding the impact of CO2 emissions and other climate-related risks on individual health, the importance of factoring in these elements is likely to grow. Actuaries will need to weave these considerations into their future risk assessments and insurance premium calculations. They will be expected to provide forward-thinking advice on navigating the rising healthcare costs linked to CO2 emissions and the broader implications of climate change, while also keeping an eye on emerging trends and innovations in the industry.

In summary, while the current impact on actuarial practices from environmental health risks may not be substantial, the profession is poised for evolution to meet the demands of a shifting landscape in the future. As we look ahead, actuaries will likely play an increasingly critical role in safeguarding the financial stability of healthcare systems against the backdrop of climate change. By leveraging data, technology, and innovative methodologies, they will be well-equipped to adapt and respond to the growing challenges that these environmental risks will present over time. ■

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