ambee

WHY AIR QUALITY DATA IS IMPORTANT FOR THE INSURANCE SECTOR



Introduction

Air pollution harms human health in many ways, ranging from reduced physical activity, to ER visits for asthma, and hospitalizations for cardiovascular diseases and premature mortality. The financial costs of such impacts are significant. However, nothing is certain about how pollution- related health care insurance is handled. If providing such healthcare benefits places a major financial burden on insurance businesses, they will strongly incentivize improving air quality.. Medical cost reductions could help public programs like Medicare and Medicaid effectively manage resources and reduce costs.

The natural environment has a substantial impact on human health and longevity. According to the Lancet Commission on Environment and Health, pollution caused approximately nine million fatalities worldwide in 2015, accounting for about 16% of all deaths, including 6.5 million deaths from air pollution. The majority of these deaths happened in low - and - middle income nations, but there were also many reported in high-income countries; the Lancet estimates that pollution-related deaths in the United Kingdom accounted for about 8% of the total in 2015. According to previous Lancet commissions, climate change is the greatest threat to world health in the twenty-first century, yet there is still room for improvement.

ambee

Impact of air pollution on human life

Air pollution has been related to a variety of adverse health effects, most notably respiratory disorders. Long-term exposure to air pollutants in the form of fine particles (PM2.5, particles or drops in the air with a width of 2.5 microns or less) is also linked to cardiovascular disease mortality, such as heart disease and strokes, according to a growing body of research. A prospective sample cohort study of 63 million Medicaid (aged 65 years) – recently published in The Lancet– has formed a linear relationship for long-term exposure to PM2.5 (assessed by US postcode and quantified by more than 2,000 countrywide measuring stations) and the threat of first hospital admission .

The study took into account the primary significant variables of age, ethnicity, and socioeconomic position. Furthermore, the diagnosis of both diseases rises linearly with increasing PM2.5 concentrations, with a 13 percent increased risk of Parkinson's or Alzheimer's disease for every 5 g/m3 increase in annual PM2.5 concentrations – this was noted even at levels underneath the current US federal PM2.5 of 12 ug/m3).
Although PM2.5 concentrations have decreased dramatically since 2003, this recent study also suggests that there is no safe threshold for PM2.5 concentrations.standard for PM2.5 (an annual maximum mean PM2.5 of 12 ug/m3). Although PM2.5 concentrations have decreased dramatically since 2003, this recent study also suggests that there is no safe threshold for PM2.5 concentrations.



The healthcare cost of air pollution

Developing countries, particularly expanding economies like India and China, are witnessing the worst air pollution throughout the world due to increased economic pressure and lax environmental legislation and enforcement. Given the population size and the absence of availability of good health care in such nations, this presents a challenging scenario for public and environmental health. The Environmental Benefits Mapping & Analysis Program–Community Edition (BenMAP-CE) was developed by the Environmental Protection Agency (EPA) to quantify the cost of a subset of clinical outcomes caused by air pollution. Both mortality and morbidity are taken into account. To assess the air pollution–attributable episodes of premature death, BenMAP-CE contains concentration-response characteristics and unit economic values. BenMAP-CE is packed with data on particulate matter and ground-level ozone that is individual to each location. Users can also input data on other air pollutants' geographic values.

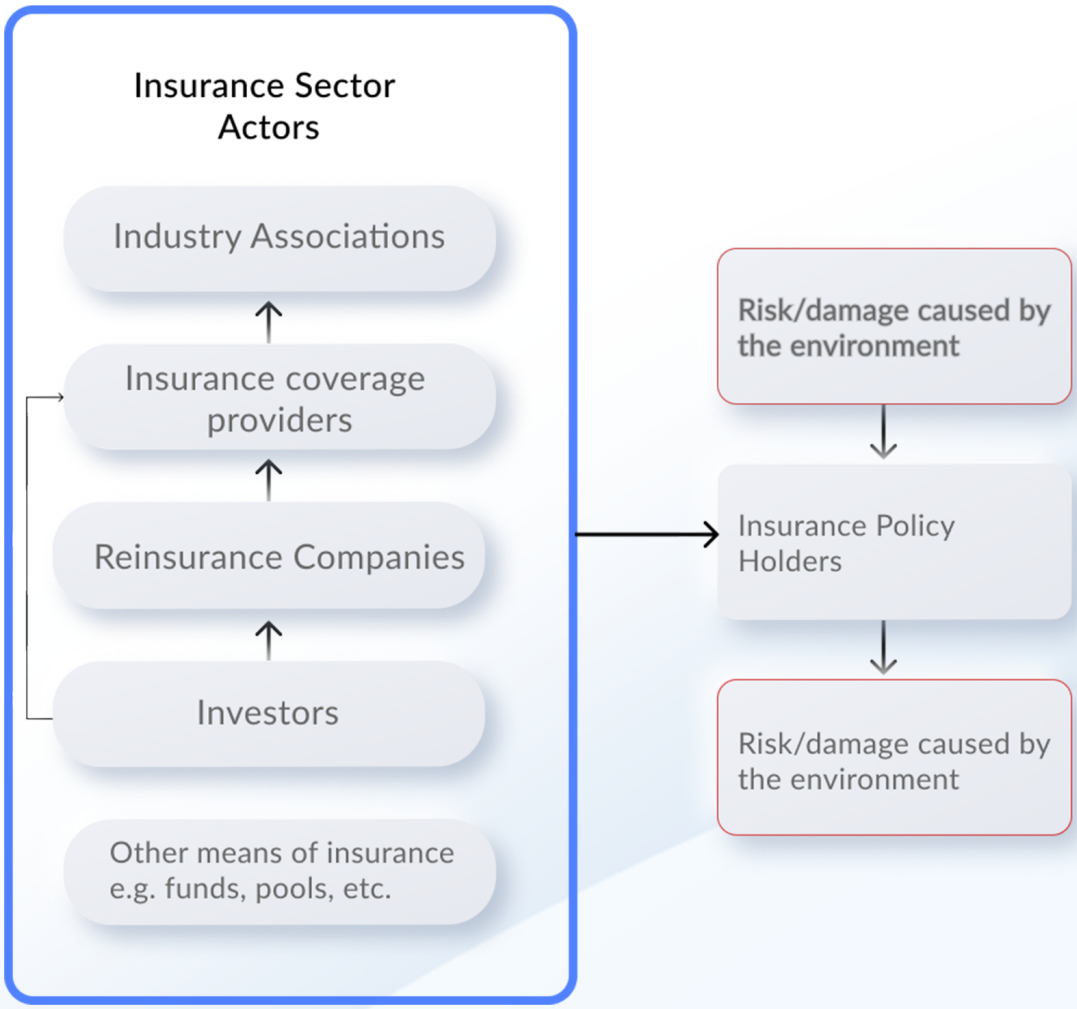
The cost of air pollution is measured by mortality, which is a health-related consequence. From an economic standpoint, the number of lives lost has a significant impact on the economy's future productivity and growth. To estimate mortality costs, BenMAP-CE uses the value of a statistical life approach. This method assesses a group's willingness to pay to lessen their chance of dying prematurely. However, previous research has demonstrated the significant mortality pressure associated with air pollution. It is also critical to quantify the costs of health care related to air pollution even though they contribute to the financial burden of care paid by sick people as private and public insurers.



ambee

Role of the insurance industry to reduce environmental risks

Major storms, earthquakes, and oil spills might result in multiple insurance claims that are too costly for a single insurance provider to handle. Insurance firms insure themselves using reinsurers to safeguard themselves from such massive losses. Reinsurance businesses either have sufficient cash to cover huge losses, or the insurance is funded by selling the insurance liability to investors directly through various funding mechanisms



ambee

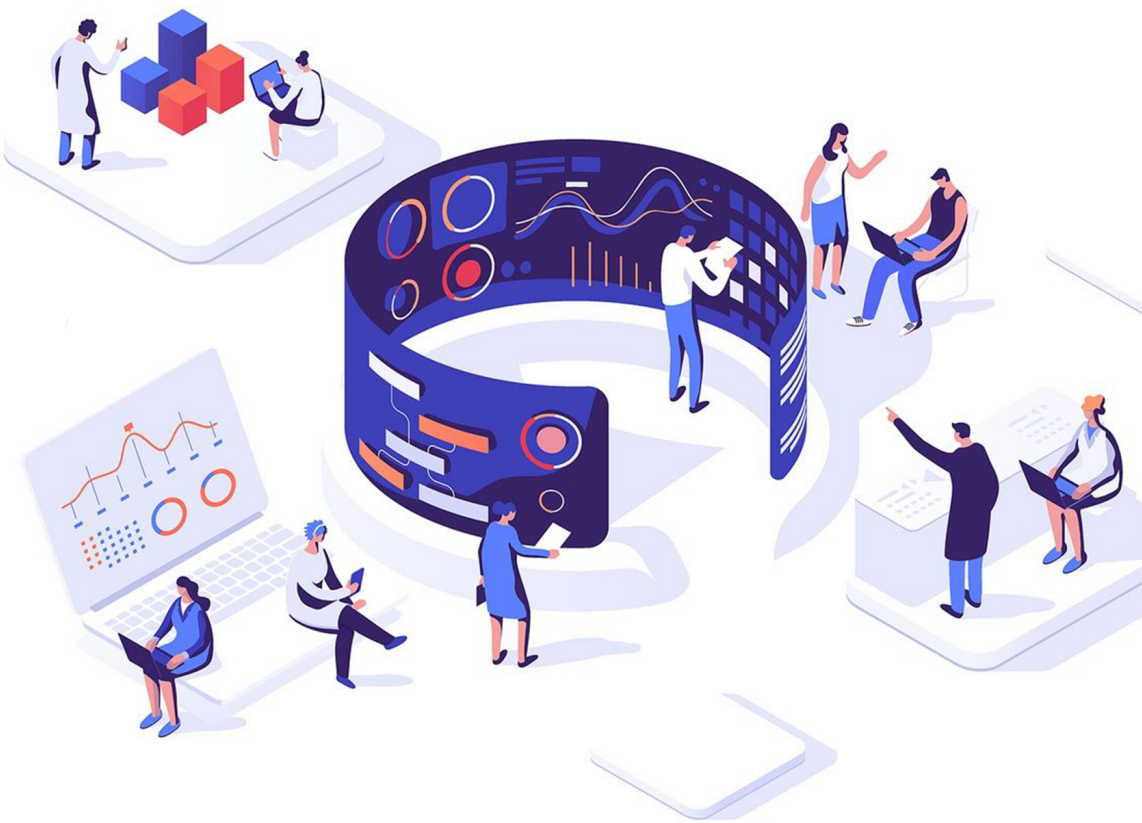
BenMAP-CE assesses the number and price of air quality cases of premature sickness and suffering. This assessment is based on air quality & population data, benchmark rates of morbidity and mortality, concentration-response variables, and unit economic values, for instance, hospital admissions for cardiovascular and respiratory conditions. BenMAP-CE calculates the predicted frequency of hospitalization & ERvisits related to air pollution by unit cost estimates to calculate health care expenditures. It also calculates work loss using the same hospitalization data as it does for health care expenditures.

While the BenMAP-CE configuration only evaluates hospitalizations with a main diagnosis of cardiovascular or respiratory disease, subsequent research has demonstrated that air pollution is linked to hospitalizations supplementary to those evaluated in BenMAP-CE. This is because air quality can injure people in ways beyond acute symptoms, possibly impacting every part of the body. Many negative health issues can be caused, complicated, or exacerbated by it. Likewise, data suggests that air pollution is a toxin associated with lung cancer. Another study discovered that air pollution exacerbates several illnesses which are neither respiratory nor cardiovascular, such as septicemia and anemia.



Few studies have highlighted the effects of pollution on residents' or households' insurance decisions. Based on transaction data through one insurance business in China, a study found that people's insurance purchasing behavior was highly unpredictable and irrational. The number of insurance contracts purchased that day increased by 7.2 percent for every percentage point increase in the urban air pollution index, while the number of postponed insurance policies increased by 4.0 percent on days whenever the urban air pollution index was a standard deviation lower than the day of insurance purchase. Some experts suggest that medical insurance considerably encourages household durable goods spending, based on the China Nutrition and Health Survey data.

A study on healthcare costs for respiratory diseases was undertaken in China. PM2.5 was discovered to have a considerable impact on healthcare costs for respiratory disorders. Total healthcare spending, prescription spending, and antibiotic spending all increased as a result. The effects of various air pollution levels on the health care–expenditure disease burden were varied. As the air pollution index rose, so did the healthcare–expenditure burden of respiratory disorders. The impact of PM10 and the air-quality index on healthcare spending for respiratory disorders was beneficial. The financial cost of respiratory disorders was significantly impacted by air pollution



Why should the insurance sector consider air quality data?

When predicting future death rates, it is critical to take into account the effects of changing environmental conditions, as well as improvements in medical care, lifestyle, and affluence. It will also assist you in complying with the IFoA's risk alert from May 2017, which demands you to understand and communicate the extent to which climate-related risks have been considered in your activity.

For most of the previous few years, Delhi-NCR has been dealing with extreme air pollution, with AQI ratings (Figure 2) ranging from "severe" to "hazardous." While the situation in Delhi-NCR is dire, air pollution levels are rising in other metros as well. The deteriorating air quality is a health threat, particularly for people who suffer from respiratory illnesses. It can even lead to hospitalization in some situations. Because the loss ratio in this region is higher than the rest of the country, a few insurers already have higher premium rates in Delhi-NCR and most regions of north India.

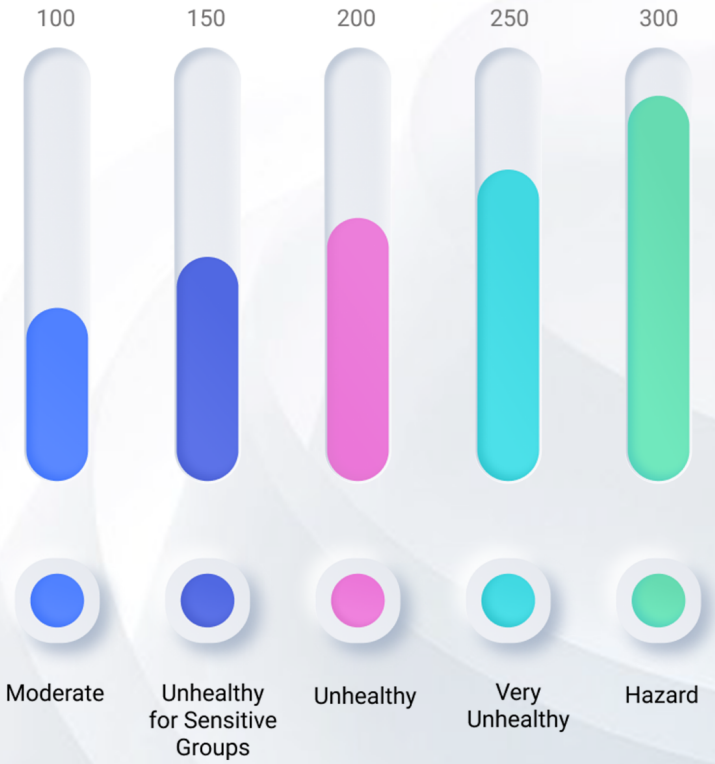


Figure 2

Benefits

In Europe, air pollution is the leading cause of early death due to environmental conditions, but it also has significant economic consequences. Due to worker illness, it raises medical expenditures and lowers economic production. Soil, crops, woods, lakes, and rivers are all harmed by air pollution. Pollutants wreak long-term damage to homes, bridges, and other structures.

Furthermore, the detrimental consequences of low air quality do not affect everyone equally. During the epidemic, many economic and societal activities slowed, resulting in lower emissions and, as a result, lower levels of some of these air pollutants. During lockdowns, for example, car use decreased, resulting in reduced nitrogen dioxide levels in several European towns.

People are becoming more concerned about the air quality they breathe, with some residents using citizen science to monitor their local air quality. The EEA is working on a project called CleanAir@School with the European Network of Directors of Environmental Protection Agencies (EPA Network), in which children, parents, and instructors' measure pollution concentrations near schools

The participating schools use basic low-cost instruments to monitor nitrogen dioxide concentrations, placing one sampling beside the highway in front of the school and the other in a less polluted region, such as the fields behind the school. The project aims to promote public awareness about traffic as a cause of air pollution and persuade parents to stop driving their children to school.



ambee

Benefits

Improved pollution levels have been connected to increases in other health indicators, such as child lung development and growth. From the mid-1990s to the early 2000s, air quality in Southern California has steadily improved due to air quality control initiatives. The Children's Health Study examined yearly lung function in over 2,000 Southern California adolescents over two decades. Children with or without asthma who lived in places where PM2.5 and nitrogen dioxide (NO2) levels were lower had a higher average percentage of lung function growth. As air quality improved, clinically diagnosed poor lung function prevalence decreased from 7.9% in the mid-1990s to 3.6 percent in 2007–2011. Between 1993 and 2014, a reduction in PM2.5 and NO2 lowered the likelihood of childhood asthma. The incidence of incident asthma was lowered by 20% when NO2 levels were reduced by 4.3 parts per billion (ppb). Improved lung development and growth in youngsters lower the chance of chronic lung illness in adults.



ambee

Conclusion

Insights into real-time air quality can assist insurance companies in better underwriting, particularly for health insurance plans. When determining risk for healthcare insurance, one key issue that is sometimes overlooked is the type of air that consumers are exposed to regularly.

The effects of toxic air quality on public health are severe. As per the World Health Organization, 90% of the world's population breathes filthy air, leading to a diversity of health problems ranging from chronic coughing, chest congestion, wheezing, asthma, lung cancer, pneumonia, heart disease, and more. According to recent studies, polluted environments had higher Covid-19 death rates.

Poor air quality is damaging to high-risk populations, including the elderly, pregnant women, chronic patients, and children. It is also detrimental to people who are in good health. As a result, while pricing risk for insurance, it's critical to factor in air quality data. As a result of their data-driven judgments, insurers can confidently give the best-suited insurance coverage.

In delivering tailored insurance coverage, real-time data can be a significant value add. For example, a person who lives near a recent high-risk wildfire may be contacted by an insurance company and given an increase in insurance policy tailored to that customer.



ambee

Using environmental intelligence, insurance firms may send customized air, pollen, and weather notifications for a user's geographical region. Customers can utilize this information to safeguard themselves and their loved ones by taking preventative measures against:

Toxic air pollution:

- Use indoor air filtration at home and work, and make sure your HVAC system is properly managed.
- When the air quality index (AQI) is severe, it is preferable to stay indoors and limit outside activity and pollution exposure.
- Put on a mask. Masks not only protect you from Covid-19, but they also reduce the amount of particulate matter that you breathe in when you're outside in a polluted environment.



ambee

Severe weather

Accurate weather forecasts of storms, heat waves, hail, and other extreme weather events will encourage people to stay indoors and organize their daily activities. Extreme weather conditions can mean the difference between life and death, as well as irreversible damage to your home and possessions

High pollen count

- When pollen levels are high, it's best to stay inside and adjust your indoor air filters.
- When the pollen count is high, people with asthma can be reminded to use their inhalers. It follows that the quantum of insurance claims would be reduced if consumers take such preventative actions.



Customer satisfaction

Insurance customers can benefit from personalized environmental notifications that will help them avoid catastrophic events. These notifications keep customers engaged and help them engage with an insurer's app, website, and other services. Improved insurance coverage combined with individualized alerts also helps build trust with the insurer, a critical feature of the industry, resulting in higher levels of customer happiness and retention.

Minimizing risks with accurate air quality data

Environmental Intelligence (EI) company, Ambee, provides hyperlocal, real-time air quality data that can be used to prevent or mitigate the risks caused to life and property by poor air quality. Ambee's environmental APIs gather, simplify, and analyze accurate data that can be leveraged to validate claims, offer policy recommendations, and provide preventive measures to the customers. With street-level granularity, insurers can get insights on Air Quality Index, particulate matters, and prevalent toxic gases, which can be utilized to assess risks, demonstrate environmental dangers and create a personalized strategy for the policyholders. Spreading over locations across 90+ countries, Ambee's AQI provides flexible and reliable solutions to those with an intent to monitor environmental threats, promote sustainability, and spread awareness.



References

- Birnbaum, H. G., Carley, C. D., Desai, U., Ou, S., & Zuckerman, P. R. (2020). Measuring The Impact Of Air Pollution On Health Care Costs. Health Affairs, 39(12), 2113-2119. doi:10.1377/hlthaff.2020.00081

- Chang, T. Y., Huang, W., & Wang, Y. (2018). Something in the Air: Pollution and the Demand for Health Insurance. The Review of Economic Studies, 85(3), 1609-1634. doi:10.1093/restud/rdy016

- DP;, R. J. (2021). The Impact of Air Quality on Hospital Spending. Retrieved from https://pubmed.ncbi.nlm.nih.gov/28083265/

- Li, L., Du, T., & Zhang, C. (2020). The Impact of Air Pollution on Healthcare Expenditure for Respiratory Diseases: Evidence from the People's Republic of China. Risk Management and Healthcare Policy, Volume 13, 1723-1738. doi:10.2147/rmhp.s270587

- Rumson, A. G., & Hallett, S. H. (2019). Innovations in the use of data facilitating insurance as a resilience mechanism for coastal flood risk. Science of The Total Environment, 661, 598-612. doi:10.1016/-j.scitotenv.2019.01.114

