

Air Pollution, Health, and the Economy

In 2019, air pollution contributed to 12% of deaths worldwide, roughly 7 million people. In India, nearly 18% of all deaths -- around 1.7 million people -- were caused by air pollution, no surprise given the country has the highest levels of PM2.5 in the world.

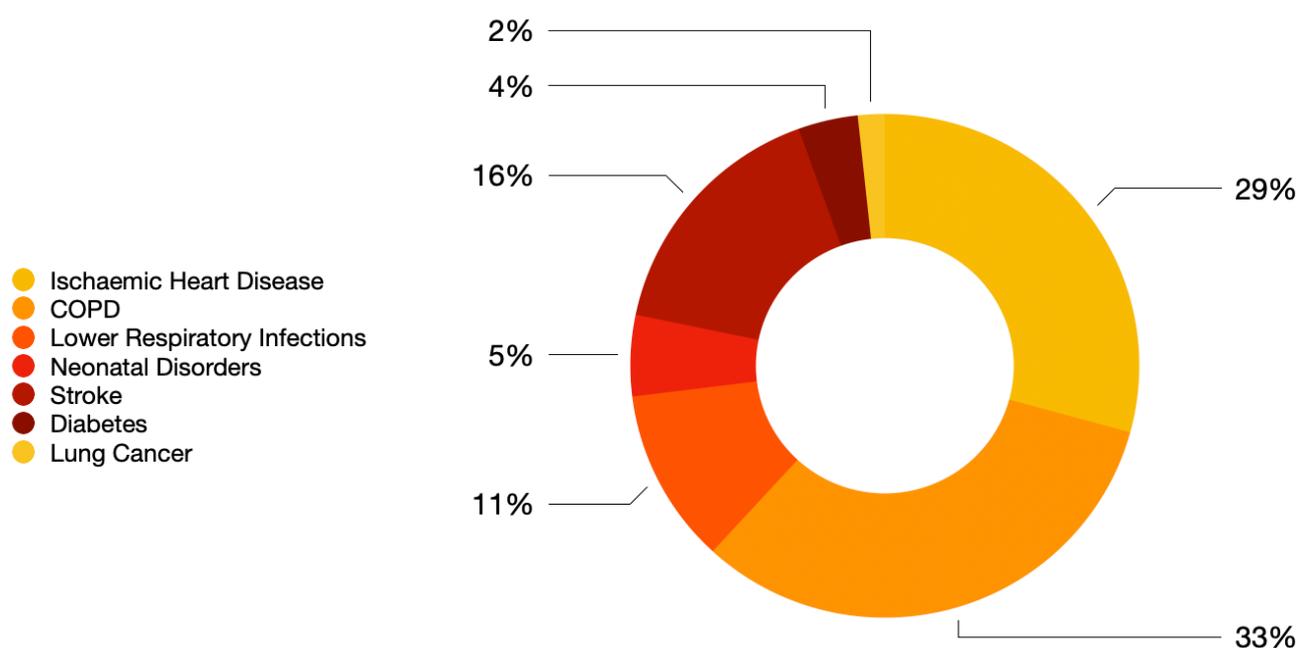


Taken as a whole, air pollution measures account for ambient particulate matter pollution, household air pollution, and ambient tropospheric ozone. Ambient particulate matter pollution refers to PM2.5, the particles emitted by burning fossil fuels, coal, agricultural stubble and other waste, as well as windblown mineral dust and industrial emissions. Household air pollution comes from burning of various fuels for heating or cooking, particularly when using open fires or cookstoves without proper ventilation, and can also be a significant contributor to PM2.5 levels. Tropospheric ozone, also referred to as ground-level ozone, is produced through a reaction that occurs when pollutants emitted by burning fossil fuels interact in the presence of sunlight. Rising temperatures can worsen the effects of air pollution by further driving increases in PM2.5 and tropospheric ozone.

Over the last decade, India has seen marked improvements in the levels of household air pollution, with 54 million fewer people exposed in 2019 compared to 2010, largely due to increased access and affordability of LPG for cooking. Unfortunately, the decade also saw India have the third-highest increase in PM2.5 exposure and the highest increase in tropospheric ozone exposure, a reflection of rapid urbanization and construction, industrial growth, and vehicle emissions. Total deaths attributable to PM2.5 in India increased by 373,000 over the decade, while deaths attributable to ozone increased by 76,500.

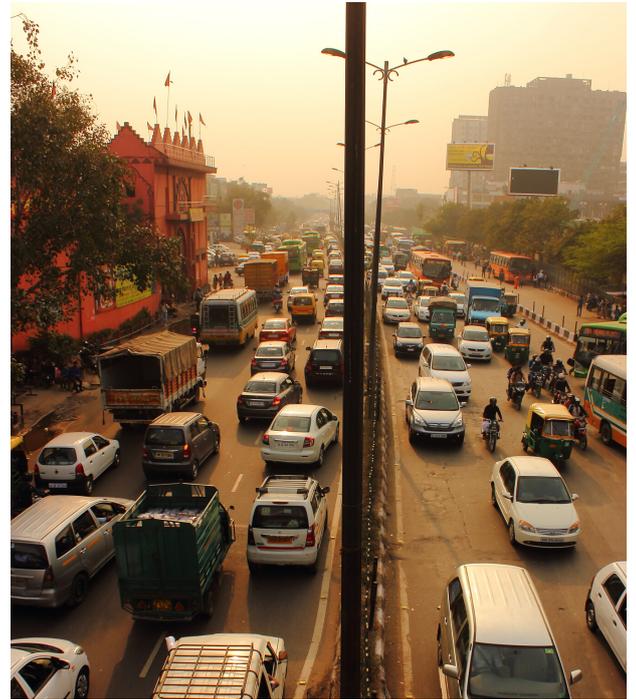
The health effects of air pollution borne out in these death statistics have been increasingly well documented. Air pollution leads to heart disease, COPD, other respiratory infections and lung cancer, as well as contributing to diabetes, stroke, and neonatal deaths. The 2020 State of Global Air report, which was the first to include infant deaths due to air pollution, recorded 116,000 instances in India alone, making it the worst-hit country in the world. Most of these are due to complications arising from low birth weight and premature birth, which leaves infant lungs unable to cope with poor air quality. Of additional concern are links between exposure to air pollution, diseases arising from that exposure, and increased risk of contracting COVID-19. Given the respiratory nature of both the virus and the most common diseases caused by poor air quality, it may be the case that more polluted areas see higher rates of COVID-19 infection, more severe cases, or higher fatality rates.

Deaths Attributable to Air Pollution in India (2019)



Pandey, A., Brauer, M., Cropper, M. L., Balakrishnan, K., Mathur, P., Dey, S., Turkgulu, B., Kumar, G. A., Khare, M., Beig, G., Gupta, T., Krishnankutty, R. P., Causey, K., Cohen, A. J., Bhargava, S., Aggarwal, A. N., Agrawal, A., Awasthi, S., Bennitt, F., ... Dandona, L. (2021). Health and economic impact of air pollution in the states of India: the Global Burden of Disease Study 2019. *The Lancet Planetary Health*, 5(1), e25–e38. [https://doi.org/10.1016/s2542-5196\(20\)30298-9](https://doi.org/10.1016/s2542-5196(20)30298-9)

While the effects on health and the cost of lives are dire, the economic impact is important to note and can have significant negative impacts on livelihoods as well. According to a recent study in *The Lancet*, health issues caused by air pollution account for 11.5% of the total disease burden across the population. With the total healthcare cost in India approaching \$104 billion USD in 2019, air pollution alone cost Indians nearly \$12 billion USD in 2019 alone. Overall economic losses further exemplify the adverse economic effects of air pollution: lost output arising from premature death and pollution-related diseases accounted for total economic loss of \$36.8 billion USD, 1.36% of India's total GDP. At a state level, Uttar Pradesh suffered the greatest losses relative to total state GDP, while Delhi suffered the highest per-capita economic losses.



These are some of the reasons Swaniti Initiative has partnered with the state governments of Uttar Pradesh and Delhi to continue working to reduce air pollution by strengthening policies, implementing programs to link city- and state-level initiatives, raise awareness of the issues among policymakers, and provide evidence of best practices through comprehensive research and knowledge sharing. While ongoing climate change and rising temperatures could continue to exacerbate both the health and the economic impacts of air pollution, the decade-long decrease in household air pollution provides some measure of hopeful evidence that strong, aggressive, coordinated efforts can make an impact. Continued efforts to promote consistent usage of LPG and biomass cooking stoves combined with measures to reduce industrial and vehicular emissions are critical going forward. The blue skies that emerged during COVID-19 lockdown measures have shown that air pollution is not irreversible.