Emissions Exposure May Increase COVID-19 Mortality

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November 5, 2020 By Alex Brown

Car pollution is making the pandemic worse.

For years, the effort to reduce transportation emissions has largely centered on fighting climate change. But some advocates say the pandemic underscores the need to focus on human health as well. The worst effects of air pollution are being borne by low-income communities and people of color — the same groups that have suffered disproportionately during the pandemic.

Researchers say they’re seeing indications that the pollutants spewed out of tailpipes are making the people who breathe them at high levels more likely to die from COVID-19. Much of the analysis is still in its early stages, but several studies, some not yet peer-reviewed, show high levels of nitrogen dioxide and fine particulate matter correlate with higher mortality rates from the virus.

“The science of the health effects of exposure to air pollution is clear,” said Francesa Dominici, professor of biostatistics at the Harvard T.H. Chan School of Public Health. “The huge burden to the health care system is clear.”

Dominici was among the authors of an April study that correlated small increases in exposure to fine particulate matter with elevated COVID-19 death rates. The study has not been peer-reviewed or published.

“If you take two counties that are as similar as possible with all the things we can measure,” she said, “the county that has a one-microgram higher level of fine particle matter has around an 11% higher rate of COVID-19 mortality.”

State officials say they’re seeing the link as well.

“Some people who are experiencing COVID-19 are more susceptible due to the impacts of air pollution,” said Michael Benjamin, chief of the Air Quality Planning and Science Division at the California Air Resources Board.

“Disadvantaged communities have a double whammy with that preexisting susceptibility and the greater likelihood that they’re going to get COVID-19 [from serving as essential workers].”

Unequal Burden

A study published in September drew a direct link between nitrogen dioxide exposure and COVID-19 mortality.

“The burden of pollution is not equally shared,” said Donghai Liang, a research assistant professor at Emory University’s Rollins School of Public Health and a co-author of the study.

“Nitrogen dioxide exposure levels are 27% higher for low-income non-Whites compared to higher-income Whites,” Liang said. “A small reduction in nitrogen dioxide in those communities could have saved tens of thousands of lives.”

Dominici of Harvard had a similar assessment.

“These communities are getting hit by so many factors at the same time,” she said. “They’re sicker to begin with because they don’t have great access to health care. They’re getting hit because their areas are more polluted. They’re getting hit because they’re more susceptible, and they’re more exposed to COVID because it’s harder for them to practice social distancing.”

Late last month, California Gov. Gavin Newsom, a Democrat, announced that his state would phase out gasoline-powered cars by 2035. Newsom’s executive order talked about the urgency of climate change, but it also noted that transportation fumes are responsible for 80% of smog-forming pollution and 95% of toxic diesel emissions in the state.

“For too many decades, we have allowed cars to pollute the air that our children and families breathe,” Newsom said in a release. “Californians shouldn’t have to worry if our cars are giving our kids asthma.”

California has mandated that many of its emissions reduction efforts focus on disadvantaged communities, including cleaner transit and school buses and programs to bolster access to zero-emission vehicles. The state has also funded a study looking at the link between air pollution and COVID-19.

In Washington state, officials have focused their efforts on diesel pollution, which is known to cause many health problems. The state is using pollution data to guide investments from its $141 million Volkswagen settlement fund, aimed at lowering emissions.

As states face the ongoing fallout of the pandemic and the advancing consequences of climate change, some leaders say it’s clear that they need to invest in cleaning up cars and trucks.

“People tend to focus on upfront costs,” said Benjamin of the California Air Resources Board. “We need to make it clear what the long-term benefits are, not just economically, but also from a health perspective, from moving to zero emissions.”

Going Electric

Newsom's announcement, Benjamin said, came from the realization that California has no chance of achieving its climate or air quality goals without moving to zero-emission vehicles within two decades. Still, some opponents say California is moving too aggressively. And not all concede that air pollution is worsening the pandemic.

"There's studies on everything," said Kevin Slagle, vice president of communications for the Western States Petroleum Association.

Slagle questioned whether the studies connecting air pollution to COVID-19 outcomes accounted for other health factors. (The authors have said they do.) Slagle also said the petroleum industry has worked hard to address emissions and that banning gas-powered cars could set back those efforts.

"In the rush to ban cars and trucks, we're going to leave behind a lot of policies and programs that are working now, and we're going to leave a lot of possible air quality benefits on the table," he said.

Slagle did not specify which air quality benefits or programs would be lost by Newsom's order, or whether they would come close to achieving the same emissions reductions. He did say the order could place a burden on consumers by mandating more expensive cars and creating an unstable situation for gas station owners.

Newsom thinks electric cars will be cheaper than gas models by 2035, and the order will not limit the sale or ownership of existing used gas vehicles.

Focusing only on the potential cost of transitioning is shortsighted, California leaders say. Benjamin pointed to a 2008 study showing that California's economy already is losing $28 billion a year to the effects of air pollution, from factors such as health care costs, premature deaths and lost work days.

"When you look at the health impacts versus the cost of transitioning to new technology, it does pay off from an economic perspective," he said. "I don't think all of these human health costs are reflected in the price of gasoline."

Cleaner Fuels

California also was the first state to begin regulating the fuel mix its suppliers can sell. The state's low carbon fuel standard, established in 2011, sets decreasing annual limits on the carbon intensity of fuels sold in the state.

Suppliers generate credits or deficits based on how their fuels adhere to the benchmark, similar to the state's cap-and-trade program. The standard has lowered the carbon intensity of California fuels by 10% since it was created, keeping 66 million metric tons of emissions out of the air.

Oregon followed suit in 2016, and leaders in Washington and New York are pushing for a clean fuel standard in their states as well.

“In Oregon, the transportation sector is the top producer of greenhouse gases (GHG), and also produces ‘co-pollutants’ — other air pollutants that are harmful to human health,” reads an Oregon Health Authority policy paper connecting climate change and public health. “For Oregon, reducing GHG emissions in the transportation sector, and their associated co-pollutants, is likely to provide substantial public health benefits.”

Earlier this year, Oregon Gov. Kate Brown, a Democrat, signed an executive order to bolster the state’s standard, lowering the carbon intensity of its fuels 20% by 2030. In neighboring Washington, Democratic Gov. Jay Inslee made the clean fuel standard a major priority earlier this year, only to fall short in the legislature. Inslee has not announced his 2021 agenda yet.

The Western States Petroleum Association has led the fight against Inslee’s push for clean fuels, funding an opposition group airing concerns about gas prices. While the clean fuel regulations in California and Oregon have not led to dramatic increases in gas prices, opponents say such policies could have a bigger effect on consumers as they get more stringent over time.

“I don’t think anyone thinks gas will cost less,” Slagle said.

He said the improvements to transportation fuels ought to come from market forces, not state intervention. Those who favor some regulations, though, note that fossil fuel companies in the United States receive roughly $20 billion in government subsidies each year, a form of state intervention.

“We’re spending upwards of $600 billion [in the United States] each year to address the health outcomes associated with breathing bad air, and most of that bad air comes from the transportation sector,” said New York Assemblywoman Carrie Woerner, a Democrat who has put forward legislation that would create a clean fuel standard in that state.

“Is it smarter to fund a program that ultimately saves money in the health care sector and keeps people healthier, or is it smarter to continue to subsidize fuels that are causing all of these health issues?”

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