

Climate policies to reduce motor vehicle emissions can improve children's health and save money, finds study

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A new study finds that policies to reduce carbon dioxide (CO₂) emissions from motor vehicles combined with investments in electric

vehicles and public transportation would reduce air pollution and bring large benefits to children's health. They would also save money.

The findings by researchers at Columbia University Mailman School of Public Health with collaborators at the University of California, Los Angeles, the University of North Carolina at Chapel Hill, and the Boston University School of Public Health appear in the journal *Environmental Research Letters*.

The researchers modeled the benefits of implementing multiple scenarios of the proposed climate policy framework known as the Transportation and Climate Initiative (TCI) in 12 Northeast and Mid-Atlantic states and the District of Columbia.

Under the most stringent cap on CO₂ emissions and the investment scenario that devoted the most resources to mass transportation, they estimated a total of over 58,000 avoided cases of infant mortality, [preterm birth](#), [low birth weight](#), [autism spectrum disorder](#), new cases of asthma, worsened asthma symptoms, and other respiratory illnesses. The related economic savings were \$82 million annually.

Assessment of the distribution of avoided cases of worsened asthma symptoms indicated that children in all racial and [ethnic groups](#) benefited, with somewhat greater health benefits in non-white populations.

Under TCI, fuel suppliers would be required to purchase carbon emissions allowances, the proceeds of which would go towards clean transportation programs. While this program was not implemented, it serves as a useful model for other climate mitigation policies. Specifically, researchers modeled changes in ambient fine particulate matter (PM_{2.5}) and [nitrogen dioxide](#) between 2022 and 2032 associated with on-road transportation sector emissions under nine hypothetical

CO₂ emissions cap and investment scenarios proposed under TCI.

They estimated potential health co-benefits for adverse birth, pediatric respiratory, and neurodevelopmental outcomes using BenMAPR, a health impact assessment platform that builds from the EPA's Environmental Benefits Mapping and Analysis Program.

"Health benefits assessments often overlook [children's health](#) outcomes. Yet we know that [early exposure](#) to air pollutants has multiple detrimental effects on children's health and well-being; and these are preventable," says co-author Frederica Perera, Ph.D., DrPH, professor of environmental health sciences and director of translational research at the Columbia Center for Children's Environmental Health at Columbia Mailman.

Researchers also note the importance of strategic decarbonization efforts as the climate crisis escalates. "Ambitious carbon caps and policies that focus on vulnerable groups, including children, can both improve health outcomes and help mitigate the impacts of climate change," says first author Alique G. Berberian, MPH, Ph.D. student and graduate student researcher at the University of California, Los Angeles,

The researchers also note the importance of including health and environmental justice in climate policies. "Climate policies can have major effects not just on climate, but also on health and environmental justice. Our research shows the importance of including these other benefits of policies when evaluating climate policies," said senior author Jonathan Buonocore, ScD, assistant professor of Environmental Health at Boston University School of Public Health.

More information: Children's health impacts from a proposed decarbonization policy in the transportation sector in the Eastern United States, *Environmental Research Letters* (2024). [DOI:](#)

[10.1088/1748-9326/ad2e73](https://phys.org/news/2024-03-climate-policies-motor-vehicle-emissions.html)

Provided by Columbia University's Mailman School of Public Health

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