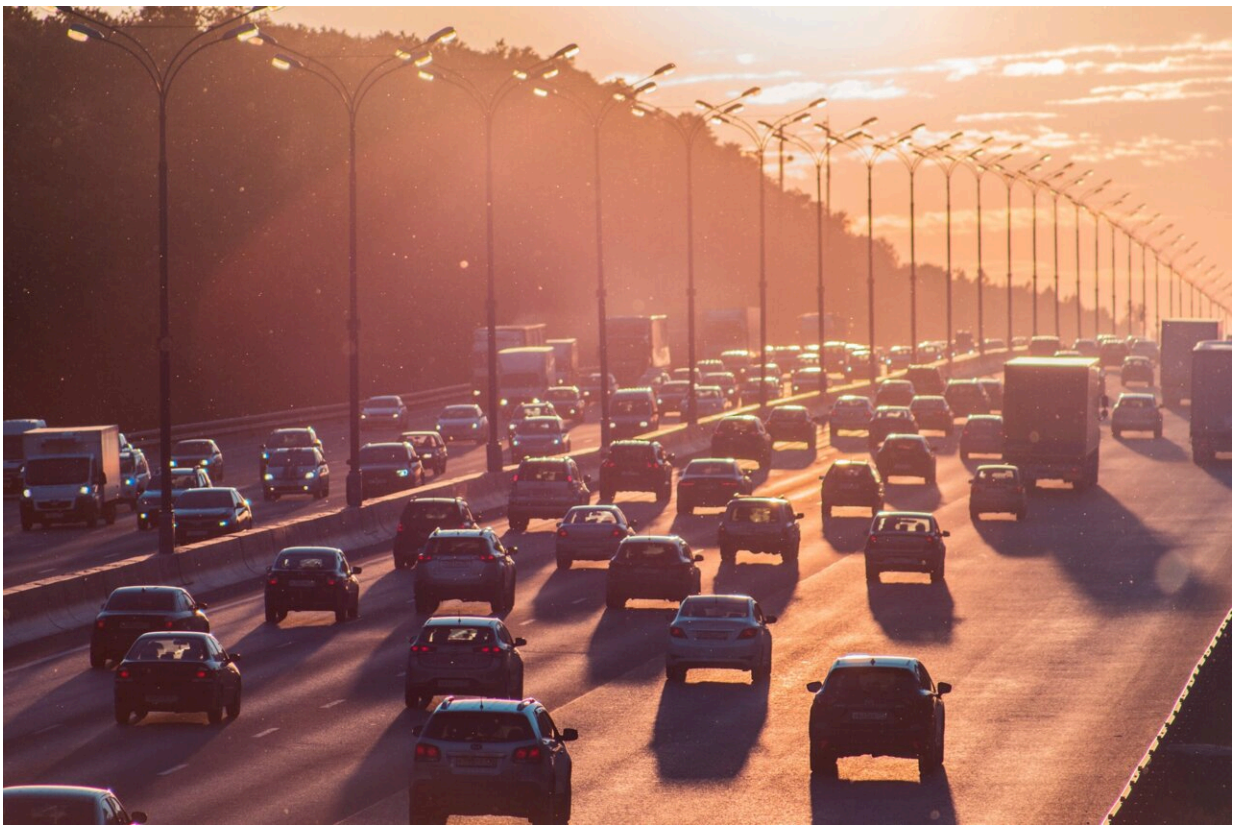


# Clean Air Act dramatically cut vehicle pollution, but inequities remain

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Credit: Unsplash/CC0 Public Domain

The 1972 Clean Air Act has driven spectacular decreases in pollution from U.S. passenger vehicles but poses a challenge for pollution policy in poor communities, according to the first comprehensive study of air

pollution exhaust standards, by researchers at the University of California, Berkeley; the University of California, San Diego; and the University of Pennsylvania.

The team analyzed data from 65 million [pollution](#) readings of U.S. vehicles between 1957 and 2020 and found that emission rates of air pollutants like carbon monoxide, nitrogen oxides, and volatile organic compounds fell by more than 99%. They also concluded that tightening the stringency of exhaust standards, which are separate from fuel economy standards, drove the [environmental improvements](#).

The research reveals that while Clean Air Act standards have been extremely effective at cleaning up [new vehicles](#), old vehicles—which are disproportionately owned by [low-income households](#)—remain major polluters. Environmental justice is one of the Biden Administration's top two policy concerns, alongside [climate change](#), and transportation is a leading air pollution source in minority and low-income communities.

"Our findings pose a Catch-22," said Joseph Shapiro, an associate professor of agricultural and resource economics at the Rausser College of Natural Resources at UC Berkeley. "How do you equitably clean up [vehicle pollution](#) in low-income communities when lower-income households drive relatively older and dirtier vehicles?"

The researchers propose that reforming vehicle registration fees and incentives to scrap the oldest vehicles may help. The analysis appears in a study published today by the National Bureau of Economic Research and the Energy Institute at Haas.

## **Existing tax policies don't help**

The researchers found that most states and [local governments](#) impose higher vehicle registration fees on newer vehicles, which are fairly clean,

since registration fees are often proportional to vehicle value. If registration fees reflected the environmental health costs created by vehicles' air pollution, most cars 20 years and older would be scrapped.

"The challenge is creating policy that encourages scrap of the oldest polluting vehicles without unfairly burdening the lower income households more likely to drive these vehicles," said Arthur van Benthem, an associate professor of business economics and public policy at the University of Pennsylvania.

While scrap subsidies can help, they can have the unintended consequence of encouraging some households to refrain from scrapping cars until the vehicles age enough to qualify for subsidies.

To perform their analysis, the researchers compiled data from official tests of every new vehicle make and model sold since 1972, roadside infrared and ultraviolet beams that remotely sense pollution, and smog check inspections of used vehicles. They compared these pollution readings against Clean Air Act standards.

The research found that older vehicles pollute more both because catalytic converters and associated pollution control technologies deteriorate as vehicles age and because vehicles manufactured in earlier model years faced weaker exhaust standards.

"Exhaust standards make new vehicles more expensive to manufacture, so they increase vehicle prices and discourage scrap of the dirtiest used vehicles," said James Sallee, an associate professor of agricultural and resource economics at UC Berkeley. "Ironically, tightening exhaust standards clean up the new vehicle fleet but extends the lifetime of the dirtiest vehicles."

"Electric vehicles seem like the solution because they will clean up the

newest cars, but it will take decades for vehicle electrification to fix the challenge of higher pollution levels from older used vehicles," said Mark Jacobsen, a professor of economics at the University of California, San Diego.

## Comparing costs and benefits

Adding up all the costs and benefits—both monetary and non-monetary—of a policy is one way to value its effectiveness. The costs of an environmental policy like the Clean Air Act can include direct compliance costs, such as installing more effective catalytic converters. Benefits can include decreases in premature mortality and hospital admissions.

The researchers conducted a cost-benefit analysis of the Clean Air Act exhaust standards and found that, on average, the measured economic benefits of these standards are more than 10 times the total costs.

**More information:** Regulating Untaxable Externalities: Are Vehicle Air Pollution Standards Effective and Efficient? [haas.berkeley.edu/wp-content/uploads/WP334.pdf](https://haas.berkeley.edu/wp-content/uploads/WP334.pdf)

Provided by University of California - Berkeley

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