Non-technical summary

The social cost of leaded gasoline: Evidence from regulatory exemptions[1]

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Brief summary

Despite being banned for on-road use, leaded gasoline is still widely used in the United States for aviation and automotive racing. In this study, we estimate the cost of the negative health effects of leaded gasoline by exploiting a regulatory exemption from the Clean Air Act for automotive racing and a natural experiment where NASCAR and ARCA switched from leaded to unleaded fuel in 2007.

We provide robust evidence that leaded gasoline use increases airborne lead pollution, increases rates of elevated blood lead in children, and increases elderly mortality. Our findings indicate that even at present day airborne lead concentrations, additional exposure can increase blood lead levels and elderly mortality. We estimate that the reduction in annual lead emissions from deleading NASCAR and ARCA races yielded social benefits of $2.2 billion per year from avoided elderly mortality alone. Our estimates suggest that the cost of a gram of lead added to gasoline is over $1,100.

Even though our study is not about aviation fuel. It has important policy implications for the continued regulatory expemption that allows for the use of leaded aviation fuel. Over 500,000 gallons of leaded aviation fuel are combusted each day in the United States. Even if the external effects of aviation gasoline are only 1% ($10 per gram) of our racing fuel estimates, then the socially efficient price of leaded aviation fuel would be three times higher than current market prices.

[1]Working paper citation and link: Hollingsworth, Alex, and Ivan Rudik. 2019. "The Social Cost of Leaded Gasoline: Evidence from Regulatory Exemptions." SocArXiv. September 23. doi:10.31235/osf.io/rdy6g.

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Figure 1: The removal from lead from race fuel decreased the proportion of children with elevated blood lead levels and elderly mortality in race counties relative to non-race counties.