

INTERVIEW

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How gas prices fuel electric usage of hybrid cars

Interview with Laura Grigolon, EPoS Economic Research Center

Bonn, Mannheim, 25.01.2024 – **The fuel consumption of plug-in hybrid cars is, on average, double that of official estimates. Higher fuel prices can improve the environmental performance of these vehicles, Laura Grigolon from the Epos Economic Research Center reports. A ten percent rise in fuel prices increases the share of driving in electric mode for German car owners by 1.6 percentage points. These research results are published in the discussion paper “Fueling Electrification: The Impact of Gas Prices on Hybrid Car Usage”.**

Ms. Grigolon, have the environmental benefits of plug-in hybrid cars been overestimated?

Laura Grigolon: Yes, this is what research on plug-in-hybrids results suggest. We confirm this finding in our data by documenting that the mileage driven in electric mode by plug-in hybrids is, on average, only 39 percent. This is well below the official percentage adopted by international and European standards (WLTP and NEDC) for determining the level of pollutants emitted by these cars (70 to 85 percent). We conclude that the fuel consumption of plug-in hybrids is, on average, double that of official estimates.

How did you arrive at your results?

We have analyzed micro-level data from a German mobile phone application that allows users to record fuel consumption, distance traveled, and the price paid for each refueling. The dataset spans six years (from 2016 to 2021) and comprises more than 70,000 drivers; around 3,000 users drive a plug-in hybrid.

What is the impact of rising fuel prices on travel mode?

The share of mileage driven in electric mode increases as fuel prices rise: a ten percent rise in fuel price increases the share driven in electric mode by 1.6 percentage points. Higher fuel prices thus encourage plug-in hybrid drivers to increase the use of their vehicles in electric mode. This improves the environmental performance. Importantly, when fuel prices rise, drivers of plug-in-hybrids do not reduce mileage. This is in contrast with drivers of traditional internal combustion engines, who can reduce gasoline consumption mainly by reducing their mileage when gasoline prices increase.

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Does the improved environmental performance of plug-in hybrids come at the expense of drivers' time needed for charging?

That's an interesting question. We have modeled the choice of fueling versus charging and thus identified drivers' value of time. For a reasonable range of electricity prices, we estimate that drivers value their time between 15 and 41 Euros per hour, which is quite high. This is an important finding for policy-makers: expanding the charging infrastructure improves the environmental performance of plug-in hybrids as it saves drivers time.

What else should policy-makers consider?

When aiming to reduce the carbon footprint in the transport sector, financial incentives matter! They encourage drivers to recharge. Therefore, the actual fuel costs, especially for company-owned plug-in hybrid cars, should at least partly be paid by drivers. That would increase the share of driving in electric mode.

The presented discussion paper is a publication without peer review of the Collaborative Research Center Transregio 224 EPoS. Access the full discussion paper here : <https://www.crctr224.de/research/discussion-papers/archive/dp494>.

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