

Smart car technologies save drivers \$6.2 billion on fuel costs each year

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On one of the busiest traveling holidays of the year, drivers may be focusing on getting to grandma's house for Thanksgiving dinner, not on what smart car technologies are saving them in fuel costs. But in the first

study to assess the energy impact of smart technology in cars, researchers at Stevens Institute of Technology have put a number on the potential fuel-cost savings alone: \$6.2 billion.

"That's not insignificant," said Yeganeh Hayeri, an assistant professor at Stevens whose work lies at the intersection of civil and environmental engineering and public policy. "That translates to between \$60 and \$266 in the pocket of car owners every year, not to mention additional savings created for each driver due to more smoothly-flowing traffic, fewer accidents and aerodynamic efficiency of all other vehicles on the road."

While many studies have looked at the social impacts of driverless cars with high levels of automation, this study is the first to look at the energy impact on lower levels of automation and individual technologies that are either already introduced in our cars, pickup trucks and sport-utility vehicles or will be in the next few years.

To figure out the impact of these technologies on fuel-saving cost, Hayeri and her colleagues at Stevens, including Saeed Vasebi, a graduate student in Hayeri's lab, and Carnegie Mellon University conducted a comprehensive review of the literature on the energy and safety impacts of automated features, providing precise data for predicting how these features would affect fuel consumption nationwide.

Using these data, they then analyzed the benefits and costs associated with each automation technology, which were categorized into three groups: warning systems (i.e. for lane departures, blind spots, forward collisions, speed limit detection, and traffic warnings), [control systems](#) (i.e. for adaptive cruise control, collision detection braking, active braking and cooperative [adaptive cruise control](#)) and information systems (i.e. parking aid system and dynamic route guidance.)

In their work, recently reported in *Transportation Research Record*,

Hayeri, Vasebi and colleagues show that drivers of low-level automated vehicles (those equipped with all technologies considered in this study) could reduce fuel consumption by 27 to 119 gallons per year for each vehicle. This saving equals from 6 to 23 percent of average fuel consumption in the U.S. and could save each vehicle owner up to \$60 to \$266, as mentioned above.

This Thanksgiving weekend, it is estimated that 54.3 million Americans are planning a road trip, a 4.8 percent increase over last year, despite drivers expecting to pay the highest Thanksgiving gas prices in four years, according to AAA. That means [traffic congestion](#), construction, a dearth of parking, idling engines at stoplights, intersections and construction zones, not to mention getting lost.

"Knowing when and where congestion will build can help [drivers](#) avoid the stress of sitting in traffic," said Hayeri. "What we did is put a number of fuel-saving costs that come with technologies that assist us with making smarter choices on the road. We hope to use this information for improving future transportation, and consequentially improve the environment, save lives and keep the air we breathe cleaner."

Provided by Stevens Institute of Technology

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