

Drivers can easily save \$130 a year without big performance concessions, researcher says

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Drivers can make fuel savings of as much as 12% by shifting up to a higher gear sooner, without having the feeling that they're sacrificing too much performance. That's the finding of a graduation project by an Automotive Technology Master's student at TU/e. His 46 test subjects made average fuel savings of 6% – often to their own surprise – by finding the most economical gear-shifting strategy that still gave them acceptable performance. That means drivers can easily save 100 euro (\$130) or more per year on fuel costs.

Student Luke Lathouwers first let his test subjects use their own [driving style](#). Then he asked them to make five test runs, using a different shifting strategy each time, by following signals that showed them when to change gear. After the test runs, the drivers had to indicate which strategies they found gave them acceptable performance, and which didn't. This showed that the most economical strategy which they found acceptable gave average [fuel savings](#) of 6% relative to their 'normal' driving style. All the test subjects were able to make savings by better shifting behavior; the highest saving was 12%. However the most economical strategy isn't always the best for all drivers – those with a 'sporty' driving style were less willing to make concessions in performance. But even so, they were the ones who achieved the biggest savings. "Often to their own surprise", according to Lathouwers.

'New-style driving', in which shifting up earlier is tip number 1, has been encouraged in the [Netherlands](#) for almost 10 years. But there are still a lot of gains to be made. "Some people think they already change gear at the right time, but they can still make big savings. [Young drivers](#) are often better, but they too have room for improvement", Lathouwers explains. His tip for drivers who want to save fuel? "Find your own lowest acceptable performance limit. That's almost always lower than what people themselves expect. If everybody did that, it would mean fuel savings of hundreds of millions of euros nationwide."

Lathouwers presented his graduation project last Thursday, 7 March. The aim of his research is to gain a better understanding of gear-changing strategies. This can then be used to develop new technology that will advise drivers on shifting, braking and accelerating, in combination with traffic information. It can also be used to improve the performance of automatic gearboxes.

A better understanding of drivers' acceptance limits will enable manufacturers to program more economical shifting strategies.

Provided by Eindhoven University of Technology

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