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Late Edition - Final**Not-So-Free Ride****BYLINE:** By STEPHEN J. DUBNER and STEVEN D. LEVITT.

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The trouble with negative externalities

Americans drive too much. This isn't a political or moral argument; it's an economic one. How so?

Because there are all sorts of costs associated with driving that the actual driver doesn't pay. Such a condition is known to economists as a negative externality: the behavior of Person A (we'll call him Arthur) damages the welfare of Person Z (Zelda), but Zelda has no control over Arthur's actions. If Arthur feels like driving an extra 50 miles today, he doesn't need to ask Zelda; he just hops in the car and goes. And because Arthur doesn't pay the true costs of his driving, he drives too much.

What are the negative externalities of driving? To name just three: congestion, carbon emissions and traffic accidents. Every time Arthur gets in a car, it becomes more likely that Zelda -- and millions of others -- will suffer in each of those areas.

Which of these externalities is the most costly to U.S. society? According to current estimates, carbon emissions from driving impose a societal cost of about \$20 billion a year. That sounds like an awful lot until you consider congestion: a Texas Transportation Institute study found that wasted fuel and lost productivity due to congestion cost us \$78 billion a year. The damage to people and property from auto accidents, meanwhile, is by far the worst. In a 2006 paper, the economists Aaron Edlin and Pinar Karaca-Mandic argued that accidents impose a true unpaid cost of about \$220 billion a year. (And that's even though the accident rate has fallen significantly over the past 10 years, from 2.72 accidents per million miles driven to 1.98 per million; overall miles driven, however, keep rising.) So, with roughly three trillion miles driven each year producing more than \$300 billion in externality costs, drivers should probably be taxed at least an extra 10 cents per mile if we want them to pay the full societal cost of their driving.

How can this be achieved? Higher tolls, especially variable tolls like congestion pricing, are one option. This seems to have worked well in London but was recently quashed in New York City, where the political hurdles proved too high.

A higher gas tax might also work. If a typical car gets 20 miles to the gallon, then the proper tax would be about \$2 per gallon. But with the current high market price for gas and the political hysterics attached to it -- well, good luck with that one.

This brings us to automobile insurance. While economists may argue that gas is poorly priced, that imbalance can't compare with how poorly insurance is priced. Imagine that Arthur and Zelda live in the same city and occupy the same insurance risk pool but that Arthur drives 30,000 miles a year while Zelda drives just 3,000. Under the current system, Zelda probably pays the same amount for insurance as Arthur.

While some insurance companies do offer a small discount for driving less -- usually based on self-reporting, which has an obvious shortcoming -- U.S. auto insurance is generally an all-you-can-eat affair. Which means that the 27,000

more miles than Zelda that Arthur drives don't cost him a penny, even as each mile produces externalities for everyone. It also means that low-mileage drivers like Zelda subsidize high-mileage drivers like Arthur.

Aaron Edlin first noticed this imbalance more than 15 years ago. "I was a graduate student at Stanford," he says, "and I drove maybe 2,000 miles a year. But I paid roughly the same \$1,000 as if I'd driven 10 times as much, which was a huge portion of my budget." A few years later, Edlin was serving on the President's Council of Economic Advisers when he floated an idea that economists had long found attractive: pay-as-you-drive (PAYD) insurance. It seemed like an obvious solution. Since no one expects to pay the same price for, say, a 60-minute massage as they pay for a 15-minute massage, why should people pay the same for insurance no matter how many miles they drove?

"The objection within the White House," Edlin recalls, "was there wasn't good academic research on the subject."

Edlin and a few others, including Jason Bordoff and Pascal Noel at the Brookings Institution, have since done such research. It makes a compelling case that PAYD insurance would work well, reducing the carbon emissions, congestion and accident risk created by too much driving while leading drivers to pay the true cost of their mileage. Bordoff and Noel put the total social benefit at \$52 billion a year.

The better news is that PAYD insurance is no longer just an academic exercise. G.M.A.C. has begun using OnStar technology to offer mileage discounts, and next month Progressive will roll out a comprehensive PAYD plan called MyRate. Progressive, the huge Ohio-based insurer that has long prided itself as an innovator, will first offer the plan in six states, having run a similar pilot in three other states. Drivers who sign up for MyRate will install a small wireless device in their cars that transmits to Progressive not just how many miles they drive but also when those miles are driven and, to some extent, how they are driven: the device measures the car's speed every second, from which Progressive can derive acceleration and braking behavior. Which means that Progressive will not only be able to charge drivers for the actual miles they consume but will also better assess the true risk of each driver.

If PAYD is such a great idea, why has it taken so long? There are at least three reasons: the tracking technology has only recently become affordable; insurers were anxious about drivers' privacy concerns; and there was a substantial risk for whichever company was first to offer PAYD on a large scale.

Participation in the MyRate program is voluntary, and that's where the economics get interesting. As with most incentive changes, there will be winners and losers. The clearest winners are people like Zelda, who can drive the same distance they used to drive and pay less. What's less obvious is whether Progressive will be a winner; there are, in fact, a couple of situations in which Progressive could lose out. If all MyRate accomplishes is to give Progressive's low-mileage customers the rate cut they deserve, then Progressive is doing little more than lowering its own revenues. It could, of course, try to compensate by raising rates on all its high-mileage Arthurs, but then there's nothing to stop Arthur from buying his insurance elsewhere. (Of course, losing its riskiest customers to other companies might also prove profitable for Progressive.)

If, however, Progressive can corner the Zelda market by stealing millions of Zeldas from other insurers, then it could make a killing by being the first to sell accurately priced insurance for low-mileage drivers. The bigger goal for society -- and the wild card in this or any incentive shift -- is to create real behavior change. And that is always easier said than done. But if Progressive's PAYD insurance can induce some of its high-mileage customers to drive less and especially to drive more safely, resulting in smaller claims payouts for Progressive and fewer negative externalities for everyone, then it could truly be a win-win-win situation.

Except, perhaps, for Progressive's rivals.

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