

TRANSPORTATION

Know-It-All Toll Roads

Building more roads won't eliminate traffic. Smart pricing will.

by Tom Vanderbilt

THE ROAD OF THE FUTURE will look much like the road of the present, but it most certainly won't be free. "You can have your driveway," says Bern Grush, founder of Sky-meter, a Toronto-based company that creates GPS-enabled devices to measure road use. "But if you're going to come over to visit me, you need to pay to get to my place from your place."

With the emergence of wireless, location-based technologies such as GPS, it is now possible to gauge the true costs of driving and the true value of the roads. The umbrella term is dynamic road-use charging, which means essentially that drivers will pay for roads they use by the mile, rather than through other mechanisms such as registration fees or a gas tax. Only a few pilot programs are up and running at the moment, but urban planners think the idea could change our experience of driving from white-knuckled frustration to something

closer to a joyride. Researchers at the Massachusetts Institute of Technology and General Motors laid out such a vision earlier this year in "Reinventing the Automobile," a study that argued that transparent trip pricing would optimize road use, reducing traffic congestion and highway deaths.

Shifting the true cost of driving onto the driver would be a radical departure from what goes on now. Drivers pay no more to use crowded roads than empty roads, a person who drives once a month pays as much in insurance as someone who drives every day, and parking meters cost the same during the busiest times as during the most quiet. The federal gas tax, which for a century has financed U.S. highways, has effectively dropped from a peak of 3.9 cents per mile (2007 dollars) to 0.9 cents today, writes Cato Institute analyst Randal O'Toole in his book *Gridlock: Why We're Stuck in Traffic and What to Do about It*. As a result, congestion

levels have risen steadily in the cities and suburbs. As Harvard University economist Edward Glaeser notes, you can ration scarce goods—like urban roads—by price or by queue (also known as sitting in traffic). So far the de facto choice has been traffic.

Results from the first pilot studies have been encouraging. The Dutch government plans to enact countrywide GPS-based "per kilometer" pricing on all roads in the Netherlands by 2016. A six-month pilot trial in Eindhoven last year showed that 70 percent of users changed their behavior as a result of pricing, by traveling either at off-peak hours or on less crowded roadways. Once the program is expanded to the rest of the country, the Dutch government expects a 58 percent reduction in traffic delays.

Per-mile pricing programs can also be used to benefit the environment. In Germany, where heavy trucks are charged not just by the mile but by their emissions (dirtier trucks pay a higher per-mile fee), the percentage of trips driven by low-emissions trucks has jumped from less than 1 percent in 2005, when the program began, to more than 55 percent.

The collapse of the Dutch government earlier this year, however, has put the future of its road-pricing program in doubt—a reminder that politicians want to be seen building new roads, not new tollbooths. The technology required can also be prohibitively expensive. In one trial, U.K. insurer Norwich Union (now known as Aviva) used on-car gadgets to measure not only where and when young drivers drove but *how* they drove. The company used in-car accelerometers to punish aggressive drivers with higher insurance rates. Even though accident claims dropped by 30 percent during the trial, the required telematics were too expensive to make the program sustainable.

Smart tolls can help alleviate another cause of urban traffic: street parking. Researchers such as Donald Shoup of the University of California, Los Angeles, argue that underpriced street parking leads to urban congestion as drivers cruise for bargains. To avoid this practice, San Francisco is implementing "dynamic parking," which uses sensors to track a car's presence in a parking spot and tally overall demand; the city then sets prices at a level that ensures a constant 85 percent occupancy. The rates can change by time of day and day of the week, although they will always be set in advance—making them much easier to predict than the amount of time you would otherwise be wasting in traffic.



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