



The App That Changed Driving

Waze, the navigation app with 50 million users and an army of volunteers, is revolutionizing the way we commute. That's not always a good thing. **by TOM VANDERBILT**

YOU MIND IF I take the tunnel? It's quicker." Every urbanite has heard some version of this, at some point, sitting in the back of a taxi. Few argue, because it's better to leave it to the professionals, right? These shortcuts are more than a source of pride to cabdrivers: They're trade secrets, gleaned from years behind the wheel. As onetime taxi hack and former New York City Department of Transportation commis-

sioner Sam Schwartz — the man who invented the term *gridlock* — boasted, "By the time I was in my twenties, I knew a thousand different shortcuts and work-arounds for every street in New York's five boroughs."

But the advantage held by those grizzled street warriors is quickly dying, killed off by a team of Israeli programmers, a behind-the-scenes army of amateur map geeks, and a mass of users — 50 million, at the last pub-

licly released count — who provide invaluable data points simply by driving. It's the most robust knowledge of traffic the world has ever seen. I am talking, of course, about Waze, the Google-owned crowdsourcing navigation app that uses a complex algorithm and the real-time speeds of its users to determine the best driving routes. For all the hypothetical chatter about the world-changing import of self-driving cars, arguably nothing has had a bigger impact on what's actually happening on the roads than this simple app.

That notion first occurred to me during a recent predawn trip to the airport, a route I've driven so often I could do it my sleep. And I almost did: My departure was so stupefyingly early that I didn't anticipate delays for the 18-mile trip, telling myself a half-hour max. Yet lack of traffic makes the wee small hours appealing for road crews. I stumbled from one construction detour to another, baffled by the bottlenecks. I had been in the car nearly an hour when, in a fit of panic, I opened Waze and noticed that every interruption was duly flagged. I now check the app even when I know where I'm going.

Through experience and habit we learn what we think are the best driving directions, even if, as transportation researcher David M. Levinson has discovered, only a small percentage of commuters actually take the quickest routes. And habits stick. The best predictor of your trip today is the trip you took yesterday. But the most vexing traffic jams are those that engineers call nonrecurring congestion, or the ones that aren't normal — the tractor-trailer with the spilled load, the road closed for the walkathon, the random construction crew on the way to the airport at 5 A.M. Even a driver boasting an encyclopedic knowledge of street topography cannot predict them. (EMT drivers have been known to use Waze on emergency calls.)

This is where the power of the masses is incontrovertible. Waze flags a jam when the free-flow speed for Wazers, as its users are known and whose GPS is being pinged once a second, drops below a certain percentage (based on seven years of historical data). When its algorithms are not quite sure, Waze will ask the crowd, "Are you in traffic?"

Individual drivers can flag speed traps and also mark traffic jams. But as Julie Mossler, the company's head of communications, tells me, "95 percent of these jams are filtered out because we decide they are not significant." In other words, the driver who may be impatient or someone who screams "Traffic!" because he did not make it through a stoplight on a single cycle. Waze will minimize the voice of over-reactors: Make too many poor calls and your score — your influence — will decrease. This feature is built in for good reason: In 2014, a team from Israel's Technion Univer-

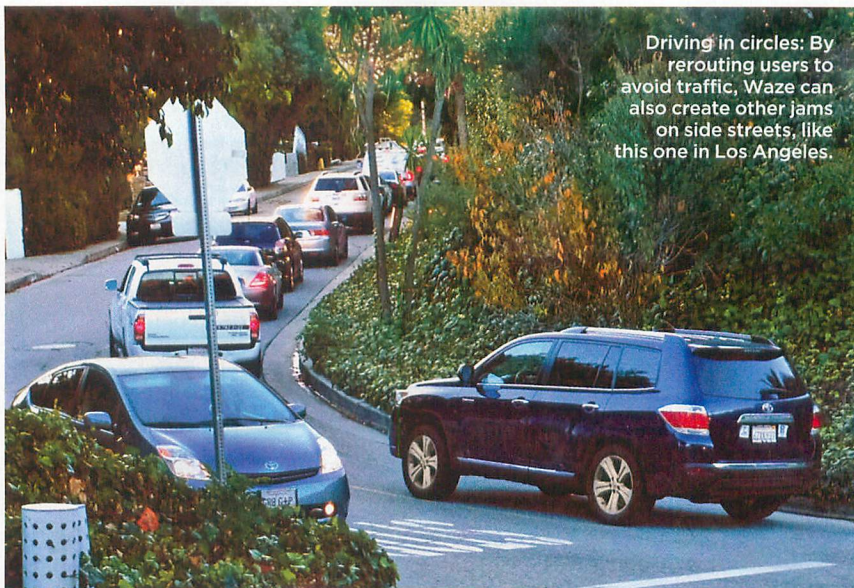
sity, in an attempt to troll the app, created scores of new Waze users, then generated fake traffic jams by pressing the app's traffic signal in concert. The app rerouted real-world users around the bogus jams.

Any navigation system that offers an ETA has already softened the biggest traffic pain: the phenomenon of unknown waits feeling longer than known waits. But the social aspect of Waze gives you something more. If you are sitting in a large, unexpected jam, looking at the icons of other Waze users in your area, it can feel almost empowering to push the button labeled STANDSTILL traffic jam — and to be thanked by other drivers for your effort — as if you were doing something about it, even if only unleashing a cry of existential distress. “You are not stuck in traffic,” a German ad campaign once said. “You are traffic.” Waze humanizes that. Of course, it can also be too social: too many hazards flagged, too many detailed messages, too many distracting pop-up ads for the nearest Dunkin’ Donuts. At what point does a driver flagging a roadside hazard himself become a hazard?

WAZE, LAUNCHED IN 2008 in Israel, began life with the mission, notes Mossler, of saving “five minutes a day for every driver.” But over time the company has moved deeper into understanding why traffic happens.

Through an initiative called Connected Citizens, it has been partnering and sharing data with dozens of cities around the world to help streamline day-to-day traffic patterns and inform long-term infrastructure decisions. In Boston, transportation officials pored through Waze data to find streets with rampant double-parking — and to hand out tickets to avoid backups. In Rio de Janeiro, the city is using Waze to help plan for the 2016 Olympics. Los Angeles, whose police chief had initially criticized Waze for interfering with his department's work by allowing users to mark speed traps, began working with the company last year. It's these partnerships, and the huge storehouse of behavioral data, that lay behind Google's purchase of the company in 2013. Google now gets roughly 70 percent of traffic data for its maps app from Waze.

And what makes Waze's maps so good is the work of people like Jesse May, an IT professional in Lakewood, California. May is a “level six” Waze editor, an unpaid volunteer in the army of people who work to ensure that the app's maps are up-to-date, responding daily to any number of user reports (for example, “left turn no longer permitted at this intersection”). Anyone can become an editor, and there are about 100,000 in the U.S., but your level — and ability to make edits — rises with experience. May, one of the top editors in the country, spends hours on the computer every night, making sure the world that Waze



Driving in circles: By rerouting users to avoid traffic, Waze can also create other jams on side streets, like this one in Los Angeles.

presents to drivers is the world that is really out there. “It’s my hobby,” he tells me. “Instead of playing Doom or watching the boob tube, I’m going to do something that’s more beneficial.” Sometimes he will even drive out of his way to check on a user report in person. “My wife just shakes her head, ‘Whatever.’”

Waze editors possess an almost missionary zeal. Many were early adopters of other navigation systems, none of which, they insist, have the reliability or responsiveness of Waze — and certainly not its social aspect. When they aren’t using it as drivers, they are tweaking it on their computers or traveling to far-flung countries to participate in “map raids,” in which they use Google Street View to assess, say, whether a roundabout in Chiang Mai has four or five exits.

One afternoon I drive out to Montclair, New Jersey, to meet “Orbit,” as he is known, a Turkish-born quality-control manager and Waze Global Champ. To reach this level, he has made hundreds of thousands of edits. “I probably put in more time on Waze than at my actual work,” he tells me with a sheepish smile. “Everyone likes to flash their lights to warn of police,” he says as a way of explaining why he does it.

This individual altruism, more than any algorithm, is really the secret of Waze. And the promise of the app is that all that social effort, beyond helping any one driver save time, might help rationalize overall traffic flow. When a fast-moving snowstorm was predicted to hit Atlanta in 2014, Mossler says, people left their workplaces in droves, promptly creating what the media dubbed the “rush hour from hell.”

“Everyone was downloading us in their cars,” says Mossler, “because they weren’t moving — it was one of our biggest usage

days.” Could Waze, working with the city’s transportation department, have helped coordinate traffic flow more effectively?

In a big, complex system like urban traffic, there is typically a conflict between what is best for the system as a whole and what is best for the individual user. This conflict haunts Waze, too: If everyone knows about a shortcut, it is no longer a shortcut. When a Waze-enabled driver learns about a favored cut-through, the effect is rather like when a beloved ice cream shop runs a Groupon that goes viral: Suddenly you are waiting in line with a bunch of impatient strangers.

This “Waze effect,” as some have called it, not kindly, has surfaced at numerous community-board meetings — especially in California, where Waze is particularly prevalent — as residents fume about once-quiet streets being overrun with more traffic than they were designed for. Waze takes a rather libertarian view. “If it’s public, and taxpayers are paying for that road, we want it in the map,” says Mossler. Small local access road? School zone? Waze’s ruthless algorithms see only its users’ travel speeds, legal or not, and try to distribute the pain of drivers efficiently — even at the expense of others.

The driver, meanwhile, experiences the slightly illicit feeling that he’s getting away with something, that he’s gained entry to some small fraternity. Sometimes, taking what seems like a curiously circuitous route, I have noticed another car that appears to be making the same moves — like we are slyly Waze-stalking each other. Maybe this is the golden age of Waze: enough users to make the data robust, but not so many that every last chance to save time has been gobbled up by machine intelligence and the hell that is other drivers. ■