Driverless Commute

Welcome again to the Driverless Commute, presented by Dentons, a weekly drive time digest clocking the most important technical, legal, and regulatory developments shaping the path to global autonomy.

If you believe a colleague or associate would benefit from this service, please email us so they may receive future editions.

By **James Richardson** and **Eric Tanenblatt**

1. The trillion dollar question: How safe is "safe enough?"

In our inaugural edition, your Driverless Commute correspondents wondered, in qualitative terms, what constitutes a sufficiently safe autonomous vehicle. It's a complex question of machine morality and ethical rule-making to which we--and governments across the world--still lack a clear answer.

In the United States, transportation authorities report that **94 percent of all car crashes are the consequence of human error**. Worldwide, that translates to some 1.25 million deaths annually. For relative scale, that's equivalent to seven wide-body airliners crashing. Every day.

ROAD TRAFFIC PUTS LIVES AT RISK *

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≈

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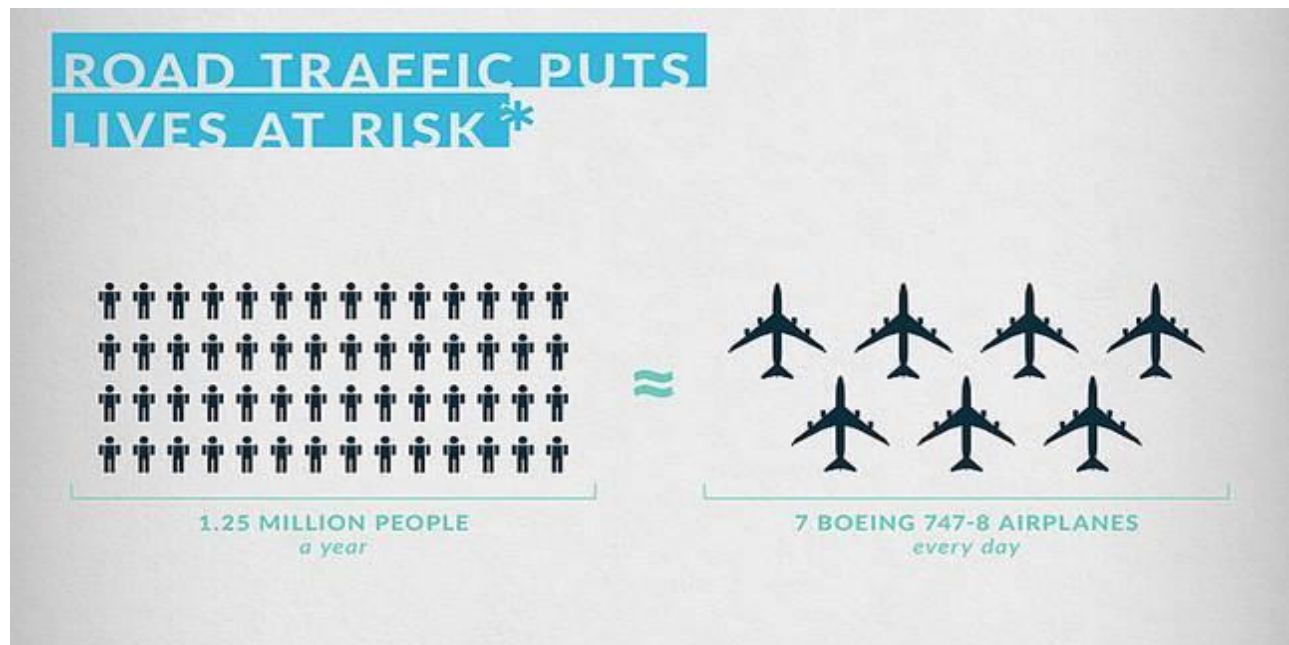
Some studies have predicted that autonomous vehicles could prevent up to 90 percent of traffic accidents through collision-avoidance technology and lane control. The future for autonomy is undeniably a bright one, but collisions will happen, and anyone who tells you otherwise is either misinformed or lying. So at what threshold--five percent, 20 percent, 40 percent safer?--will regulators deem automotive autonomy safe enough?

[Turn to *The Washington Post* for more](#): "'Is 'safe enough' 10 percent safer than where we are by manually driving?' said **Bryan Reimer, associate director of the transportation center at Massachusetts Institute of Technology**. "One thing that I think is really going to limit our ability to see this technology proliferate is a societal acceptance on the definition of what is safe enough." … Reimer says, 'If consumers are looking at robots as being almost perfect, they can't be.'

- **RAND REJOINDERS: Says Rand Corp. study**, on which we previously reported: "[Requiring autonomous vehicles to be nearly flawless before putting them on the road could cost hundreds of thousands of lives](#)."

- [MORE](#) from the *Post*: "They present two of some 500 different scenarios in their paper … In one model, autonomous cars are marketed in 2020 when they were 10 percent safer than the average human. With steady improvement over 15 years--the result of widespread use by the public--they reach the point of being 90 percent safer than humans. **By 2070 [in model 1] autonomous cars will have saved 1.1 million lives**. In another scenario, introduction of driverless cars is delayed until 2040 because regulations require them to be close to perfect. **By 2070, autonomous cars will have saved 580,000 lives, 420,000 fewer than under the first scenario**."

- In the United States, law enforcement report **10,497 annual deaths attributed to drunken driving, 10,111 attributed to speeding, 3,450 attributed to distracted driving, and 803 deaths attributed to falling asleep at the wheel**. An autonomous vehicle never grows fatigued, distracted, or drunk, but they're pointedly imperfect, at least in their current form. So what threshold for failure will governments abide? [Email us your predictions](#).

The Driverless Commute, a subscription-based service, is provided by Dentons' Global Autonomous Vehicles Team. [Click here to speak with one of our experts across the world to learn more about any of the items contained in this digest](#).

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2. Apple's NIPS tease

The director of artificial intelligence research at notoriously secretive Apple previewed the company's latest advances in machine learning last week at California's **Neural Information Processing Systems** (NIPS) conference, leaving the crowd of uber-accomplished AI researchers with the distinct impression that Apple remains in the AV contest.

[Wired has more](#): "**Ruslan Salakhutdinov [Apple's director of AI research]** … discussed projects using data from cameras and other sensors to spot cars and pedestrians on urban streets, navigate in unfamiliar spaces, and built detailed 3-D maps of cities. The talk offered new insight into Apple's secretive efforts around autonomous vehicle technology."

Apple has carefully shrouded its automated driving unit in secrecy, but has recently teased out details in coordinated leaks, including its application for a [permit to test experimental vehicles in California](#), and [studies on LiDAR](#). Its NIPS presentation, though, marked the most pointed evidence yet the company is still investing in its driverless project.

3. More confidence in AV, AI in developing world

Ford's 2018 Trends Report (PDF), its sixth-annual dive into consumer automotive and mobility trends worldwide, finds a decidedly nuanced global reception for automotive autonomy. First, the key numbers plucked from the 52-page report:

- **Fifty-two percent of adults globally say they believe artificial intelligence will do more harm than good**. Adults in India, which produced 2.6 million STEM graduates in 2016 compared to the United States' 568,000, overwhelmingly believe AI will do more harm than good, by a measure of 61 percent. Half of all US adults believe the same, while just 1 in 4 Chinese respondents shared the same outlook.

- **Sixty-one percent of adults globally say they are hopeful about a future of autonomous vehicles**. Adults in China (83 percent), India (81 percent), Brazil (75 percent), and Saudi Arabia and the UAE (71 percent) are the most hopeful about the future of autonomous vehicles. The developed western world, though, isn't quite so optimistic. Roughly half of the adults in Australia (52 percent), the U.S. (50 percent), Canada (50 percent), the U.K. (45 percent), and Germany (44 percent) wear rose-colored AV glasses.

- **Forty-five percent of adults globally expect brands to take a stand on political issues**. Among adults ages 18 to 29, that number jumps to 52 percent. Among Generation X'ers, that number falls to just 36 percent.

- **Forty-six percent of adults globally believe they lack privacy in their lives**. In China, 78 percent of adults expressed frustration by how much their personal information has become publically traded. That number registers at 64 percent in the United States. Brazilian adults registered the lowest dissatisfaction, at just 49 percent.

Researchers at Ford pointed to population density as the root of the significant expectation chasm between developed and developing nations. More from CNBC: "[T]he largest city in the United States by population is New York City, which is home to just over 8 million people. Even including some of the surrounding area … New York barely qualifies for the list of "megacities," those with populations greater than 10 million. By contrast, there are 23 million in Beijing's city center … **A single commute in the Chinese capital can last five hours**. …

The United Nations says most of the world's megacities are located in Asia, Africa, and Latin America. … China alone is home to six megacities, and India claims five. In Brazil, both Sao Paulo and Rio de Janeiro were included in the list."

4. Panasonic hits open (rail)road in Japan's first AV pilot

The Japanese electronics giant has launched a driverless pilot in Eiheiji, an aging town in the sparsely populated Fukui Prefecture of western Japan, making for the country's first attempt at piloting driverless vehicles in public spaces.

The experiment, which will run along a six-kilometer walking trail leading to one of two of Sōtō Zen Buddhism's main temples, was specially selected to evaluate last-mile mobility programs in the islands. The test will run through March 2019, per Electrive.

The test marks an important step for Japan, whose government has triggered a wildly ambitious program to transform Tokyo into a truly driverless city ahead of the 2020 Olympic Games.

- **Speaking of Japanese pilots**: Nissan, a relative global late-comer to automotive autonomy, signaled last week it would begin testing of a new on-demand driverless taxi platform on par with Lyft and Uber in Minatomirai district of Yokohama in the new year.

- **Trend spotter**: Traditional car makers are increasingly turning their gaze from classical pursuits to on-demand ride-sharing services as alternative revenue streams. Last month, General Motor's top executives teased out plans for the company to launch a new ride-sharing service in early 2019 whose earnings, they told investors, could eclipse the company's core automotive division within a decade.

5. Boston goes wicked driverless with Lyft-NuTonomy pilot

Lyft has launched the company's first robotaxi pilot in Boston's tech-friendly Seaport district in a partnership with emerging player NuTonomy, which has been testing its experimental vehicles in a small industrial park for the last twelve months.

The two companies haven't yet shared how many driverless cars the pilot will deploy across Seaport, but cautioned in a press release that, unlike recent robocab trials by rivals Uber and Waymo, **there will still be a human safety driver in the event of an emergency**.

According to a statement released by NuTonomy, which was spun out of MIT in 2013 and acquired earlier this year by Delphi for $400 million, "select Boston passengers in Seaport area" will be matched with the driverless cabs as the pilot expands.

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