

SMART DRIVING CARS



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18th edition of the 5th year of SmartDrivingCars

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Rethinking Mobility: The 'pay-as-you-go' car: Ride hailing, just the start

S. Burgstaller, May 23, "The c.\$7 tn global mobility market is speeding into the era of the "pay-as-you-go" car. Ride-hailing services such as Uber and Didi are pioneering a 'cloud' mobility system, which is using data to change how the wealthiest cities move. In Rethinking Mobility, we model how the ride-hailing opportunity can grow to \$285 bn by 2030, and is the precursor to a broader technological and social transformation. We examine how the market might live up to the high valuations of its pioneers, why car sales may prove surprisingly resilient despite the change, and where automakers have a chance to transform their profitability as operators of fleets of autonomous cars...." [Read more](#) *Hmmmm... Nice to see GoldMine Sachs finally weigh in. The report is chock full of information and there is a lot here to absorb.*

The big impact will be if we ever get to Driverless without which you don't replace even one Uber driver.

Without Driverless, the issue centers on the 8x penetration of hailing rides. At 8x only car rental and little else is effected. At 80x it effects car ownership but there will not be enough gig workers to support it. So it doesn't scale without Driverless.

With Driverless, then it is all about ridesharing as with elevators. If it is as easy as elevators, then car ownership diminishes greatly.

The report doesn't respect the enormous difference between Driverless and Non-driversless (Self-driving and Safe-Driving; Levels 0 -> 4). It seems to assumes Driverless, yet it does not deal with the likelihood that Driverless will be achieved and fails to realize/identify the enormous forces that may come to bear that will attempt to derail Driverless at all costs. The strongest of which may well be the "GMs" of this world. GMs are all about Self-driving which REQUIRES a driver (thus consumer ownership) and perpetuates their 100 year old business model.

*Driverless scales 'cloud mobility' beyond the '8x' limits of a gig economy and enables horizontal 'cloud mobility' to become as ubiquitous as the elevator is in vertical mobility. Yes, there are still stair cases, and **private** 'cloud-mobility' elevators for the 0.01%, but the masses will just*

*grin&share the **on-demand** 'cloud-mobility' elevators without a 2nd thought. Driverless assuaged vertical mobility anxiety. Driverless is the critical technological element that will assuage horizontal mobility anxiety and enable widespread horizontal 'cloud mobility'.*

Communities may find, as tall buildings have found, that they really work best (even at all) if they accommodate shared 'cloud' mobility and provide it for 'free' simply because it is so effective in capturing the enhanced land values that are unlocked by such mobility. We've always been able to walk up and down a couple of flights of stair, but once we were easily able to go (via on-demand 'cloud' mobility available 24x7x365) more than four or so, then the sky became the limit. Are similar horizontal land values waiting to be unlocked if they simply pick up the tab for that on-demand horizontal 'cloud' mobility? If so, then the GMs of this world are in a heap of trouble. Alain

NorthJersey.com

[Road Warrior: Driverless cars close enough to touch](#)

J. Cichowski, May 25, "...In a recent two-day "SmartCarsDriving Summit" at Princeton University, nearly all the participating North American and European engineers, administrators, lobbyists and innovators agreed robotic-driving technology is on the verge of taking over, but our nation – or any nation – isn't prepared to accept it.

"Maybe by the year 2050," predicted Bern Grush, a Canadian transportation engineering consultant who has studied nearly all the work done on this subject. Why so long? "It's pricey and it hasn't been integrated or informed in a way that would allow its capability today," explained former Defense Department research director Paul Brubaker. "But it's coming..."

[Read more](#) *Hmmmm... John, thank you for your active participation. Alain*

accenture

[Insuring Autonomous Vehicles, an \\$81B opportunity](#)

[between now and 2025](#)

L. Karp, 2017, "...While insurers of autonomous vehicles will make fewer payouts for claims, this will not compensate them for lost policy revenues. *Hmmmm... The fundamental conclusion (which is left unsupported) Alain*

...The revolution in autonomous vehicles presents opportunities for insurers in three key areas:

1. Cyber security
2. Product liability insurance for sensors and/or algorithms
3. Insuring against infrastructure problems

...The cyber security model was based on benchmarks of cyber security **spending** in the US information technology sector. *Hmmmm... LOSS in the...??? Alain*

...The product liability model was based on historical automotive software and hardware failure rates, using National Highway and Traffic Safety Administration (NHTSA) data. *Hmmmm... LOSS in the...??? Alain*

...The infrastructure model is based on the number of traffic lights in urban and rural areas of the US.

...personal vehicle ownership will continue to represent the majority of vehicle ownership.

Hmmmm... Figure 4. Alain

...In our view, insurers who act now to explore the opportunities presented by the autonomous vehicle revolution will be best positioned to capture new **revenues** *Hmmmm...I thought the objective was **profit**?*

[Read more](#) *Hmmmm... As a naive outsider of the Insurance Industry it continues to amaze me that it is exclusively focused on Revenue (Premiums). I understand that Premiums are up-front, easy to measure, create the float and it is someone else who worries about running away from the claims, but in this case it is embarrassing. The deep dark secret that seems to be ignored is that there is a NECESSARY condition overarching this technology r/evolution which is it MUST substantially reduce CRASHES. Not reduce their severity, nor reduce deaths. It MUST substantially reduce their occurrences! If not, then, no startup will survive the ensuing litigation. No supplier will survive the litigation. No traditional manufacturer will survive the litigation. The only way to avoid the litigation is to avoid the Crashes. Delivering that crash avoidance begins with Safe-driving cars (if we must, Level 1 done well; [which has yet to happen](#)). Waymo's worth goes from \$70B to Zero if they start Crashing. Tesla stops selling AutoPilot if the [Florida Crash](#) is Tesla's fault. This Fact-of-Life is a real opportunity for Insurance. Insurance will have less to run away from and what it has will be easier to run away from. This suggests that the 'fundamental conclusion' of this report is false. Alain*



[Today's Future Now - Flying Cars Have Finally Arrived](#)

May 16, [Watch Video](#) *Hmmmm... Enjoy! Alain*



[Will autonomous vehicles put the brakes on the collision parts business?](#)

G. Silberg, May 2017, "...And while a decline in roadway crashes is undoubtedly good news for society, it's bad news for automakers and repair service businesses, who will face a significant hit to their bottom lines as the market for their lucrative collision parts and services business shrinks dramatically—and sooner than they may think. ...Although collision parts typically account for less than 3 percent of OEM sales, they provide a highly stable source of revenue, and more important, account for 10 to 20 percent of operating profits. ...As these ADAS-equipped vehicles and self-driving cars increasingly take to the highway, the questions now are how much will they reduce driver error and lower the incidents of roadway crashes, and how the expected drop in vehicle crash rates will further disrupt automakers, particularly their collision parts business....

In our projection, crash involvement rates could decline by over 60 percent by 2030 (that's just 13 years from today) and over 80 percent by 2040...., we estimate that the average cost of repairs will increase (in real dollars) about 10 percent by 2030 and almost 20 percent by 2040. Nevertheless, by combining the crash rate and cost per repair estimate, we could see a roughly 50 percent decline in the overall collision repair market by 2030 and around a 75 percent

decline by 2040. So, the decline in repair business will be somewhat offset by the cost per repair. However, it will not be nearly enough to overcome the dramatic decline crash-involvement rates.." [Read more](#) *Hmmmm... This is another in a series of really good KPMG reports. It could only be improved if they entitled it "Will Safe-driving vehicles...". It will be the Safe-driving aspects of the technology that delivers this impact. Self-driving and even Driverless will, at best, simply maintain the safe gains. It is Safe-driving that delivers the maximum reduction in crashes. it is essentially available now (AEB and the like really worked) which solidifies their 60 % reduction by 2030 and it does it with inexpensive parts. Excellent charts and some excellent basic facts. Very nice. Alain*



[40 Proposed U. S. Transportation & Water Infrastructure Projects of Major Economic Significance](#)

T Horst, R Mudge, R. Ellis & K. Rubin, Fall 2016, [Read More](#) *Hmmmm... More on this from SDC reader and co-author R. Mudge: "A key finding is hidden in the text:*

- Top 40 infrastructure projects had a new economic value of \$1.2 trillion
- Reconstruct the Interstate had a value of \$2-2.5 trillion – two time as large
- Autonomous vehicles have a value of \$6-7 trillion. This was derived from work by Adam Jonas and colleagues. I suspect the number is low. Three times as large as rebuilding the Interstate.

Pages A-96 and A-97 are about autonomous vehicles. Major messages:

- 1 Quite a few solid infrastructure investments out there – as measured by net economic benefits, not construction jobs.
- 2 Even so, not as many really large projects under discussion – a number of reasons for this, some political, some financial, and some due to the structure of the federal program.
- 3 Good infrastructure projects generate significant net economic value. **But, autonomous vehicles are head and shoulders above these in impact – even better than rebuilding the Interstate.**
- 4 **The public sector should change their programs to help speed deployment. States (and countries) that do this first will gain economic value over the competition"**

[Read more](#) *Hmmmm... Thank you Dick! Alain*



[The Future of European Transit: Driverless and Utilitarian](#)

M. Scott, May 28, "On the outskirts of Berlin, Michael Barillère-Scholz is testing a driverless vehicle that is neither sleek nor futuristic. The machine is boxy and painted white. Its top speed barely reaches 20 miles per hour.

The self-driving vehicle is a shuttle with room for 12 passengers. Mr. Barillère-Scholz, who leads the driverless research team at Deutsche Bahn, Germany's largest train and bus operator, and his team have been testing the vehicle around a local office park. Later this year, the partly state-owned public transit company will also begin separate trials of a similar autonomous bus on public roads in southern Germany, connecting a local train station with stops along a predetermined route. "We want to show that autonomous cars don't have to be limited to

luxury consumer vehicles, they also have a role in public transport," Mr. Barillère-Scholz said. "The market in Germany for this type of vehicle is huge..."

In total, more than 20 pilot or existing public transport programs have taken place in Europe involving autonomous vehicles, according to a review by The New York Times. Most of these projects have received government funding, tapping into local research institutions and tech start-ups that are not household names..." [Read more](#) *Hmmmm... Much of the Princeton SDC Summit was focused on doing similar things in US cities, including Princeton. Why are Washington, FTA and NJ Transit so not into this??? So disappointing. Alain*

Bloomberg Technology

[Tesla Rebuffed Uber Partnership on Self-Driving Cars in 2016](#)

E. Newcomer, May 16, "Uber Technologies Inc. Chief Executive Officer Travis Kalanick rang up Tesla Inc. CEO Elon Musk last year to propose a partnership on self-driving cars, according to an upcoming book.

The discussion came after Apple Inc. invested \$1 billion in Didi Chuxing, then a fierce competitor of Uber in China. Kalanick pitched Musk on teaming up against Apple, according to [Wild Ride](#), a book by Fortune magazine's Adam Lashinsky scheduled for release next week..." [Read more](#) *Hmmmm... Interesting article and read the book. Alain*

WIRED

[Lawyers, Not Ethicists, Will Solve the Robocar 'Trolley Problem'](#)

A. Marshall, May 28, "Giving machines the ability to decide who to kill is a staple of dystopian science fiction. And it explains why three out of four American drivers say they are afraid of self-driving cars. The National Highway Traffic Safety Administration even suggested creating something of an "ethical" test for companies developing the technology.

But the good news is, that point might be moot. In a paper published in Northwestern University Law Review, Stanford University researcher Bryan Casey deems the trolley problem irrelevant. He argues that it's already been solved—not by ethicists or engineers, but by the law. The companies building these cars will "less concerned with esoteric questions of right and wrong than with concrete questions of predictive legal liability," he writes. Meaning, lawyers and lawmakers will sort things out..." [Read more](#) *Hmmmm... It wasn't bad enough that Humanist has invented this non-problem as a means by which Humanists might have something to say at SmartDrivingCar cocktail parties. Now we've been given a reason to like lawyers for ridding us of this pestilence. So depressing! Alain*

Builder

[How Will Autonomous Cars Impact Housing?](#)

R. Dietz, May 25, "...While the first impact would tend to increase population density, particularly in central cities and large urban areas, driverless cars also could increase the number of areas suitable for single-family community development. More efficient roadways would reduce travel times and grow the size of markets in which buyers could "ride until they qualify." If commuters are free to work, socialize, or otherwise spend their time not driving, the mental cost of commuting would be lower. A less-taxing commute would mean that people could live farther away, in homes and neighborhoods perhaps more to their liking. This effect could spark a renewed round of exurban development..." [Read more](#) *Hmmmm... "ride until*

they qualify." *I love it! Not a bad article. It, and other points, pretty much hit the nail on the head. Alain*



[What Self-Driving Cars See](#)

R. Quain, May 25, "...The advantage of lidar is that it can generate precise three-dimensional images of everything from cars to trees to cyclists in a variety of environments and under a variety of lighting conditions. While autonomous car designs use numerous sensors, including ultrasonic, radar and video camera components, lidar has unique abilities. Unlike cameras, for example, lidar cannot be fooled by shadows or blinded by bright sunlight...The biggest hurdle to widespread lidar adoption is an economic one, and that is where the battle is being waged. [Read more](#) *Hmmmm... An OK discussion but the issue is "an economic one". Lidar's competition is a lens (which may be a pin hole). Biology found lenses to be the elegant solutions when backed up with some processing power. Moreover, the whole infrastructure that we have installed for the past 100 years is based on lenses. And it works pretty well as long as we behave and pay attention. Lidar doesn't improve behavior or concentration and it also needs processing power. Alain*



[Australian guidelines for automated vehicle trials invite nationwide testing of new-era technology](#)

Press release, May 24, " Australian governments are taking steps to move to a new era of mobility, with today's launch of national guidelines for trials of automated vehicles. [Guidelines for trials of automated vehicles in Australia](#) is a joint publication of the National Transport Commission (NTC) and Austroads. The guidelines support state and territory road agencies in providing exemptions or permits for trials, and give greater certainty to industry on conditions for trials...." [Read more](#) *Hmmmm... Read the just released Guidelines. However, there must be some supporting materials because there really isn't much substance here. Alain*

Some other thoughts that deserve your attention

[This Is A Mercedes Benz Factory](#)

Submitted by SDC reader T. Krohn, May 23 "FYI, these days one of Germany's main exports is the design and building and installation of robotic equipment around the world. For example Tesla cars are manufactured in this manner. And until they have perfected the reverse-engineering of the robots, China currently is the largest customer of this German technology. Add this to AV technology and changes galore are-a-comin'!! [See video](#) *Hmmmm... Yup! Alain*

[On the More Technical Side](#)

<http://orfe.princeton.edu/~alaink/SmartDrivingCars/Papers/>

Half-baked stuff that probably doesn't deserve your time

[Autonomous Vehicle Implementation Predictions: Implications for Transport planning](#)

T. Litman, May 1, "This report explores the impacts that autonomous (also called self-driving, driverless or robotic) vehicles are likely to have on travel demands and transportation planning. It discusses autonomous vehicle benefits and costs, predicts their likely development and implementation based on experience with previous vehicle technologies, and explores how they will affect planning decisions such as optimal road, parking and public transit supply. The analysis indicates that some benefits, such as independent mobility for affluent non-drivers, may begin in the 2020s or 2030s, but most impacts, including reduced traffic and parking congestion (and therefore road and parking facility supply requirements), independent mobility for low-income people (and therefore reduced need to subsidize transit), increased safety, energy conservation and pollution reductions, will only be significant when autonomous vehicles become common and affordable, probably in the 2040s to 2060s, and some benefits may require prohibiting human-driven vehicles on certain roadways, which could take longer. ..." [Read more](#) *Hmmmm... A thorough analysis that suffers from the beginning by not properly recognizing the enormous difference between Self-driving and Driverless. It treats them interchangeably as autonomous vehicles even though they are VERY different. It also starts out with a condescending Computers v Automobiles. It has obvious inconsistencies in its very first Figure 1: Is it cost per passenger mile or cost per vehicle mile or are these prices, not costs; are a Taxi only slightly cheaper than Ride-hailing (are we dealing with costs or prices?) yet autonomous bus is only slightly cheaper than personal auto (must not have much ride sharing). Figure 2 is useless because it completely misses the consumer-owned Self-driving and fleet -owned driverless aspects. Plus how do they both end up with 100%. (100% what??). Figure 3 is somewhat OK, but implies that factors have equal weights. Table 8... we are going to "need to plan for mixed traffic beginning in 2040" when a major share of all vehicles are autonomous? How did we transition without that need plan?? What am I missing here? The barn door has been open and now we're worried about what happened to the animals??? I won't even comment of Figure 4. WHATEVER. The report is very weak and relies on questionable references. But please read and you judge. Alain*

[C'mon Man!](#) (These folks didn't get/read the memo)



[Consumer Interest in Automation: Preliminary Observations Exploring a Year's Change](#)

H. Abraham, May 2017, "In 2016, the MIT AgeLab and New England Motor Press Association (NEMPA) conducted a survey exploring consumers' perceptions and willingness to accept varying levels of automation, as well as how they learned to use technology in their current vehicles (Abraham, et al., 2017). The survey found while approximately one third of the younger adult sample (under 45 years) were somewhat open to full automation, older drivers were more likely to only endorse being comfortable with systems that assist the driver and that do not require them to give up control.... "How much would you consider paying for a car that

completely drives itself?"..." [Read more](#) *Hmmmm... This seems like one of those surveys prior to the November election. Of course no one is going to purchase a car that completely drives itself. One doesn't purchase elevators that completely drive themselves. As with the November elections, the sample is biased (folks having some correlation with MIT) and the world models of the surveyed doesn't necessarily match the world models of the surveyors that asked the hypothetical questions. Thus Figure 6 should be labeled "...a car that completely drives itself.", since that was the question that was asked. [C'mon MIT!](#) Alain*



[Tesla's bumpy relationship with Consumer Reports exposes a bigger challenge](#)

K. Korosec, May 24, "...Three weeks ago, the Tesla Model S lost its top spot in the ultra luxury vehicle category after Consumer Reports lowered its score because newer versions of the sedan didn't have a functioning automatic emergency braking system — a safety feature Tesla said would come standard in its cars. Model X was also docked two points on the Consumer Reports 100-point scale.

Now, Tesla is climbing back up Consumer Reports' vehicle ratings after the electric automaker updated its software to add automatic emergency braking to its new Model S sedans and Model X sport utility vehicles.

CR restored only one of the two points it docked Tesla because the updated braking system doesn't work at highway speeds. Older iterations of the S and X have AEB systems that work up to 90 mph, according to Consumer Reports. Once the vehicles have AEB operational at higher speeds, CR says testers will reconsider the scores. The Model S now has a score of 86, and sits just one point behind the No. 1 Lexus LS. ..." [Read more](#) *Hmmmm... CR should reward Tesla because it can readily update its vehicles. I've owned my 2014 MB for 3 years and I've gotten zero software updates. The lane keeping control system is terrible. Who knows if the AEB even works (Luckily it has never engaged.) Why should updates and corrections require a NHTSA recall. [C'mon MB!](#) [C'mon CR!](#) Alain*

Calendar of Upcoming Events:



[AV Policy Series](#)

June 2, 2017

American Institute of Architects,
1735 New York Ave. NW, Washington, D.C.