Volume - Issue
06-05
March 2019

Telematics Industry
Insights by
Michael L. Sena

THE DISPATCHER

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THE DISPATCHER

Telematics Industry Insights by Michael L. Sena
March 2019 – Volume 6, Issue 5

OEM De-fossilization and Automation Programs II

THE AUTOMOTIVE INDUSTRY is in the throes of wrenching changes. These changes eventually will alter the way we build, buy and use vehicles. They will redefine all the services which these vehicles provide to their drivers and passengers as well as the services that are provided to the vehicles. Signs of these changes are taking many forms as some in the industry attempt to move quickly while others try to maintain the status quo. Arrests of car executives for falsifying fuel emissions is as much a sign of these times as the closing of car assembly plants and investing in electric scooter companies.

In the February issue of **THE DISPATCHER** we gave a summary of what BMW, Daimler and VW have announced as their short-term program to meet their stated long-term goals. In this issue we will look at Fiat, Ford and GM. My objective is to try to determine which companies are likely to still be around in ten years, which companies will find it necessary to merge with rivals or allow themselves to be absorbed into businesses that have business models better adapted to the direction the world seems to be taking with mobility, and which companies are likely to just go away.

BMW
DAIMLER
FIAT CHRYSLER AUTOMOBILES
FORD MOTOR CO.
GENERAL MOTORS
HONDA
HYUNDAI-KIA
JAGUAR LAND ROVER
MITSUBISHI MOTORS.
NISSAN
RENAULT
PSA
SUBARU
TESLA MOTORS
TOYOTA MOTOR
VOLVO CARS
VW (INCLUDING VW AND AUDI)

General Motors Company

GENERAL MOTORS COMPANY is a construction, in the sense that it has been put together out of separate and disparate car companies. GM, as it is commonly known, traces its history back to 1908 and Flint, Michigan. It was originally formed as a holding company by its founders, William C. Durant and Charles Stewart Mott. Its headquarters today are in the heart of Detroit in the *Renaissance Center*, which was originally financed by FORD MOTOR

COMPANY in 1977 as an office, hotel and retail center as part of the revitalization (renaissance) of Detroit's downtown. GM bought the whole complex in 1996, renovated it and moved in in 2004.

Back to the beginning, because how the company came together is probably going to determine if it is going to stay together, as a piece, as a construction.

- Buick is part of the original group of companies that formed General Motors Company in 1908. Oldsmobile was acquired the same year.
- Rapid Motor Vehicle Company, a truck maker, was also acquired in 1908 and later became GMC, the truck brand.
- Cadillac and Oakland Motor Car Company were acquired in 1909. Oakland was renamed Pontiac.
- In 1910, GM had financial problems and Durant was ousted.
- Durant co-founded Chevrolet in 1911.
- Durant bought up GM shares and returned as president in 1916.
- GM purchased Vauxhall Motors, a British company, in 1925.
- In 1929, GM became the largest shareholder in Adam Opel AG, a German company, lost its shares when the Nazi government nationalized the company, and regained them after the end of WWII.
- In 1931 General Motors purchased Holden Motor Body Builders in Australia and merged it with General Motors (Australia) Pty Ltd to form General Motors-Holden's Ltd.
- In 1985 it formed Saturn Corporation as a subsidiary producing yet another brand. Saturn was to be a "new kind of car company".
- In 1995, GM purchased Hummer from AM General, the maker of the original army HMMWV (pronounced 'humvee').

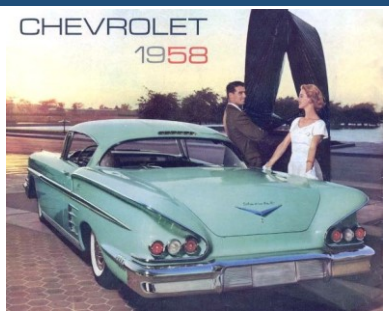
1908 Model 10 Buick. This was a car in which to be seen.

When I grew up in post-WWII America, every car buyer knew the GM pecking order. You came into it as a Chevy buyer. You moved up to Pontiac when you got the first promotion, and then moved to an Oldsmobile when you got your own office. As a young lawyer or doctor, you might be able to afford a Buick, but you were going to have to wait until you owned the firm, became chief surgeon or owned the major department store in town before you could buy a Cadillac. Farmers, ranchers and building contractors bought pick-up trucks. Rich people's kids and movie stars bought Chevy Corvettes, pictured right. If you weren't a doctor, lawyer or the owner of a substantial business in town and you were driving around in a new Caddy, you were probably on a law or tax enforcement office list. That's just the way it was if you were a buyer of General Motors

1955 Chevrolet Corvette Roadster. "Corvettes became the iconic American sports car -- but not right away. Sports cars are automobiles reduced to their essence -- a motor, two seats, a simple body, and a powerful emotional appeal. The first Corvettes, with six-cylinder engines and automatic transmissions, promised more than they delivered."
Source: https://www.huffingtonpost.com/2014/01/21/1914-cars_n_4611555.html?slideshow=true#gallery/5bb36e1de4b0fa920b989d3d/22

cars, and in 1954 that was 54% of the car buyers in the U.S.

Sometime during the 1970s, GM lost track of its story line. In 1980, it reported its first loss since 1921, a whopping $700 million. Between 1980 and 1990, its market share fell from 45% to 35%. By the time the Millennium shift occurred, GM's finances were clearly heading in the wrong direction. Its biggest problem started in the 1950s when it negotiated with the unions for pensions and health care for retired workers, and basically started a spiral that reached its breaking point around 2005. At this time, for each employee actually working for the company, it was paying for 2.5 retired workers. Making matters worse, its pension funds had been decimated in the 2000 bursting of the dot.com bubble. It lost $38.7 billion in 2007, a record loss for the company, and a loss of $30.9 in 2008. On May 1, 2009, GM shares closed at $1, and one month later the company filed for bankruptcy.



The 1958 Chevrolet Impala was one of the classic beauties that GM produced at a time when Americans wanted to buy the cars the company produced.

GM emerged from bankruptcy on the 10th of July, 2009 and renamed General Motors Company. On that day, the story of the incredible shrinking company began in earnest. Roger More, a Harvard Business School professor emeritus wrote a critique of the current state of GM that was published in June 2009. It explained how GM had gotten into its current mess and what it had to do to get out of it.[1] From what the company has done since it left bankruptcy, it seems that it has cherry picked More's list of recommendations. It has downsized from its eight brands to four (GMC, Chevrolet, Buick and Cadillac), closing Oldsmobile in 2004 and Pontiac, Saturn and Hummer in 2010. This is two more than More recommended. It sold off Open and Vauxhall to PSA in 2017 and GM Australia closed its operations to produce its cars in cheaper locations. Other recommendations were to reign in the power of its divisions, replace all current top management, reduce the number of options and variations on the models, drastically reduced the amount of outsourcing, and reduce the number of dealers.

1. https://iveybusinessjournal.com/publication/how-general-motors-lost-its-focus-and-its-way/

More had two recommendations that the company did not follow:

- Do not develop and apply any new technologies, product and process innovations for their own sake—unless they clearly drive positive cash flow. "Learn from the Saturn disaster," he said.
- Do not develop and market extreme environmental cars—unless they can create net cash flow. "Chevrolet Volt is likely to lose heavily!" he warned. And he was right.

In 2013, Mary Barra took over the top job. She had been with the company at that point for thirty-four years, since she was eighteen.

She spent the next two years cleaning up the faulty ignition switch mess she had inherited, which eventually required 30 million cars to be recalled and cost the company $$$ millions. When this was behind her, instead of focusing on the market, she announced in 2016 that GM would invest in building an autonomous Chevrolet Bolt electric car, beginning in 2017. GM bought Cruise Automation in March 2016, and since becoming part of GM, it has been working exclusively on developing software for making GM's Chevy Bolt electric vehicle fully driverless. The subsidiary lost $194 during Q4 2018, and $728 for the year. Investments from Softbank's Vision Fund ($2.5 billion) and Honda ($750 million initially and $2 billion over twelve years) have helped to cushion the losses, but at a time when GM needs to be concerned about keeping enough cars in showrooms that customers want to buy, any loss is significant.

A Cruise Automation Chevrolet Bolt undergoing testing in San Francisco.

Just after the Thanksgiving holiday in 2018, GM announced that it would be shuttering five production facilities and cut its workforce by an additional 15%. It would stop making sedans/saloons that it claimed "the public no longer wants."[2] Production in North America of the *Chevy Impala* and *Cruze* along with the *Buick LaCrosse* would be all be halted, as would production of the *Chevy Volt*, a plug-in hybrid.

2. It seems that American consumers can't get enough of Toyota, Honda and Nissan sedans, so it must be that they no longer want what GM is dishing out.

GM's share price has traded in a narrow range between $29 and $47/share during the past five years. It's currently at $39. The company recorded an $8 billion profit on $147 billion in revenue in 2018, compared to a $3.9 billion loss on $146 billion the year before. The main difference was an $8 billion lower tax bill (i.e., GM paid a grand total of less than half a million dollars in tax for the year!). In 2019, GM will start selling a $3,600 folding electric bike in Europe under its ARIV brand name. I wonder what Roger More thinks about that move. No doubt, scooters will be next. This looks more like scattershot than focus, Mrs. Barra.

The ARIV folding Merge model has a built in smartphone charger as standard equipment.

Bikes and driverless electric cars are not going to save GM from the scrap heap of the thousands of American automotive companies that lost focus over the past one hundred years. By the time it can sell enough cars that do not require a driver or are driven by electricity, it will run out of runway. SUVs and pickups will get it through the next few years. If the China market does not totally collapse, that market can keep it afloat. But it has to get beyond the stage of simply shrinking into a smaller uniform and talking about its high tech future. Either it finds a way of building cars people want to buy, or it finds another business.

GM 2018 Sales by Country
China – 3 645 000
U.S. 2 954 000
Brazil 434,000
Canada 288,310
Mexico 236,060.

Ford Motor Company

Who knew that Henry Ford's first car company, called the HENRY FORD COMPANY which he founded in 1901, became the CADILLAC MOTOR COMPANY in 1902 after he left, and that it was bought by GM in 1909? And who knew that when in 1903 he launched his new company, FORD MOTOR COMPANY, his major investors were the Dodge brothers, who would later found their own car company, DODGE BROTHERS COMPANY that would become part of CHRYSLER CORPORATION?

FORD MOTOR COMPANY has been under the control of Henry Ford and his heirs ever since 1903. Ford acquired the LINCOLN MOTOR COMPANY on February 4th, 1922 for $8 million to compete with CADILLAC and PACKARD, and added the MERCURY brand in 1939 to have a car in the segment with GM's PONTIAC, OLDSMOBILE and BUICK brands. Except for adding *CONTINENTAL*, adding and then subtracting *EDSEL*, and discontinuing the *MERCURY* brand in 2010, it has been essentially the same since its founding. For better or worse.

FORD has four cars on *Motortrend*'s list of the Top Ten Greatest American Cars: the *1908 Model T*, the *1932 Model 18*, the *1966 GT40* and the *2016 Ford Mustang GT*. Its *Focus*, *Fusion* and *Escape* models are on Consumer Report's list of *10 Top American Cars You Can Buy*. Its *F-series* pick-up trucks are the top selling vehicles in the U.S., almost double the sales of number two, the *Chevy Silverado* pick-up. So what's the problem? Why the existential crisis that just will not abate? Why is the company's stock wallowing in the sub-ten dollar range? It had gotten up to $14/share in 2014 after being under $2 at the height of the financial crisis in 2009. Fact is, it was $0.60/share back in 1973, and it has never been over $17/share during the past forty-six years. It has earned a profit of between $3-10 billion in each of the past ten years, with the exception of 2011 when it earned $20 billion. Its revenues have been between $118 and $160 billion during the same period.

In an attempt to cut costs and re-tailor the company's suit to fit the body of the market Ford saw evolving, in May 2017, the company announced cuts to its global workforce. It targeted a $3 billion cost reduction and a nearly 10% reduction in the salaried workforce in Asia and North America to try to push up 2018 earnings. On April 25, 2018, it announced that it would stop building and selling passenger cars in the North American market during the next four years, except for the *Mustang* and the *Focus Active*, due to declining demand and profitability. Then, on August 31, 2018, Ford announced that the *Focus Active* will not go on sale in

Full Disclosure: My first new car was a 1971 Ford Cortina, made in Britain and sold in America. It had a short in its electrical system that caused the battery to drain when the lights were on. Ford mechanics in the U.S. could never find or fix the problem. They told me I should have bought an American Ford. I sold it after three years. It was the last Ford I ever bought.

The 1966 Ford Grand Touring 40. Not your basic family car. All three top finishers in the 1966 24 Hours of Daytona were Ford GT40s).

North America because of the tariffs that would be placed on vehicles built overseas. The *Focus Active* is being built in China and Ford says they have no plans to build it in the United States.

Everything Roger More said about GM could be applied to FORD. It's treading water, keeping its head just about the surface, but not going anywhere. Whenever it seems to be on the verge of something big, it makes a U-turn, like in the 2001 when it fired Jacques Nasser and in 2017 when it fired Mark Fields. Nasser was pushing Ford into the mobile wireless age, and Fields was heavily promoting autonomous and electric vehicles. In 2014, Fields had replaced the retiring Alan Mullaly, who had seen the company through the financial crisis and got its share price up to the $14. During the three years Fields was at the helm, the share price tanked. But what seems to have been behind the boot was cultural. Fields had created the *Ford Smart Mobility* division that focused on "new mobility services, autonomous cars, and electric vehicles". Fields had been delivering the message that Ford "would become an auto and a mobility company, exploring different emerging opportunities." It was creating a two-company atmosphere, the cool guys working on the emerging stuff, and the not-so-cool guys working on what was paying the bills.

Jim Hackett strikes a very different pose than CEOs pretending to be hipsters. He looks more like Mr. Rogers giving assurances that all will be well to the Sesame Street generation.

Bill Ford and the board believed that the two-tier company strategy was not consistent with the company's philosophy. It (read that Bill) placed Jim Hackett in the CEO position replacing Fields. Hackett had joined Ford in 2013 after a career in the contract furniture business, and was running the *Ford Smart Mobility* division when he was tapped for the (almost) top job. If it wasn't clear before this, it became crystal clear now. The top job was held by Bill Ford, who oversees all major policy decisions. It's his and the Ford family's company, and the cars have their name on them. So what is the Ford family's vision for Ford Motor Company?

On the subject of ***electrification***, it has made a less than robust attempt to electrify its models thus far. It announced last year that 20 models would be fully electric by 2023, but right now it has a version of the Ford Focus with a range of 100 miles (160 kilometers). Weak. It has its Ford Fusion as a hybrid. It's going to have to move much faster because China, where it sold a million vehicles last year, requires that 12% of an OEM's fleet is electric in 2020.

Self-driving? Ford built a self-driving prototype in 2016 and announced plans to partner with Lyft, Google, Domino Pizza and

Walmart during the next few years. In February 2017, when Fields was still CEO, Ford acquired a majority ownership of Pittsburgh-based ARGO AI with a $1 billion investment. The founders came from Carnegie Mellon and hopped on the gravy train with UBER and Google before founding ARGO—and getting more gravy. Fields claimed that it did not want to acquire Argo outright, as GM acquired CRUISE, in order to keep the company open to other investments.[3] In sum, it's not leading the pack, but it's keeping up. As opposed to electrification, there is no rush.

3. When Ford acquired the shuttle service Chariot in 2016 for $65 million, there was talk of making its vans self-driving. That plan went out the door in January of this year when Ford decided to close the whole operation.

Ford is firmly in the cellular vehicle-to-vehicle (C-V2X) camp. It demonstrated its solution with partner Qualcomm at CES 2019. It stated that it will launch the system in its vehicles in 2022 using the Qualcomm 9150 C-V2X chipset. This puts it at odds with OEMs that have announced that they will proceed with WAVE/IEEE 802.11p-based systems, including GM, Toyota and VW.

A VW/Ford partnership is the latest news, in spite of the differences on V2X. In January, the two companies announced that they would cooperate on building vehicles, progressing on electrification and sharing developments in self-driving vehicles. Currently, their plans are vague. VW wants a U.S. partner to protect it against the Big Bad Wolves in Washington. It could have used a friend when the emissions smog hit the fan a few years ago. It also wants to find a way into the lucrative U.S. pick-up market. Ford needs help in Europe. (Maybe Brexit will finally help it decide to sit in one chair, rather than two, either in the U.K. or Germany.) More than anything, Bill Ford needs to have someone who knows cars whom he can trust, who won't try to steal the family jewels.

As I said, Ford Motor Company is the Ford family, and right now it is Bill Ford who represents the family in the company's affairs. I do not see anyone who is going to carry the family flame further when Bill decides to hang up his cleats to focus on philanthropy and perform his other civic duties that he takes very seriously.[4] I also miss a clear vision of what and where Ford really wants to be in ten years. It promotes Ford as a company where "people will work together as a lean, global enterprise for automotive leadership." Leadership is measured by "the satisfaction of customer, employees, investors, everyone."

4. Bill Ford is 61. He played rugby, the gentleman's contact sport, while at Princeton. Although his mother is listed as the official owner of the Detroit Lions and Chairman, Bill is the Vice-chairman and the operational chair.

Ford cannot be a company for everyone. There are too many competitors that satisfy too many potential customers. After 111 years, Ford is going to have to decide on a market and a set of customers it can serve better than anyone else.

Fiat Chrysler Automobiles N.V. (FCA)

FCA IS A CREATION of the late Sergio Marchionne. He was one of the *Six Million Car* men, those who believe that in order for an automobile manufacturer to survive it has to have annual worldwide shipments of at least 6 million vehicles. In 2018, the year Marchionne died at the age of 66, FCA had gotten up to 4.842 million units, a 2% improvement over a year earlier. He courted Mary Barra for a merger of GM with FCA, but she wouldn't even meet him to discuss the idea. He had other ideas, but his successor, Mike Manley, will have to carry the torch further.

FCA is called an Italian and American automobile company, but its headquarters are in The Netherlands. I searched hard for a photo of the its new headquarters building to no avail. The headquarters is probably in the desk drawer of the company's lawyers. The reason it established its headquarters in The Netherlands in 2014 was to convince the American and Italian employees that neither of them were in charge. FIAT and CHRYSLER had about as much in common when they merged in 2014 as did CHRYSLER and DAIMLER had in 1998, but while DAIMLER treated CHRYSLER as an acquisition—even though the deal was publicly pitched as a merger—Marchionne pushed both companies to fully merge from Day One. The new CEO, Mike Manley, and the twenty-two employees on the management team, commute between Turin, Italy, the former headquarters of FIAT, and Auburn Hills, Michigan, the former headquarters of CHRYSLER CORPORATION.

Let's have a brief look at how these two companies arrived at their point of merger. The original CHRYSLER CORPORATION was founded by Walter Chrysler from the remains of the MAXWELL MOTOR COMPANY in 1925. Chrysler had made a fortune in salary and stocks running Buick for William Durant, the founder of GM. After founding his own company, Chrysler acquired FARGO TRUCKS and DODGE BROTHERS, and created the *Plymouth* and *DeSoto* brands in 1928. After WWII, CHRYSLER's market share and profitability declined and the company was forced to borrow $250 million in 1954 from PRUDENTIAL INSURANCE to pay for expansion and updated car designs. It spent part of the money expanding into Europe by taking control of French, British and Spanish auto companies, which it then sold in 1978 to PSA Peugeot Citroën for $1.

CHRYSLER was not a nimble company. It had difficulty adapting to trends and changing market conditions. Competition from European and Japanese imports, as well as safety and environmental regulations in the 1970s, affected the company even more than

Formerly Chrysler Corporation's Headquarters in Auburn Hills, Michigan, now FCA's North American offices. The building is the logo.

The new building cannot hold a candle to the original headquarters built in New York City in 1930. It served as the company's headquarters until the mid-1950s.

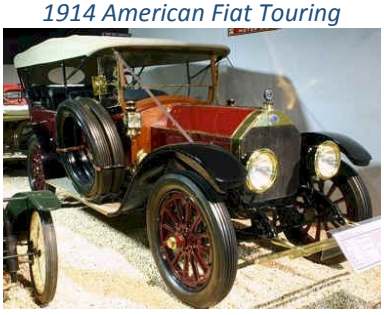
The Fiat View of Fiat Lingotto Factory in Torino, with a test track on the roof, completed in 1923.

the other Big Three, GM and FORD. It looked for help in an engineering partnership with MITSUBISHI MOTORS (a company that seems to have partnered with everyone at one time or another), and began selling MITSUBISHI vehicles branded as *Dodge* and *Plymouth* in North America. By the late 1970s, it was on the verge of bankruptcy. It was saved by $1.5 billion in loan guarantees from the U.S. government. Its new CEO, Lee Iacocca, who was part of Ford's executive management when the *Ford Mustang* and *Ford Pinto* were developed, and who joined CHRYSLER in 1978 as its CEO, was credited with returning the company to profitability in the 1980s.

In 1987, CHRYSLER acquired AMERICAN MOTORS CORPORATION (AMC), which brought the *Jeep* brand under the CHRYSLER umbrella. Like the other Big Three automobile manufacturers, CHRYSLER was impacted by the automotive industry crisis of 2008–2010. The company remained in business through a combination of negotiations with creditors, filing for Chapter 11 bankruptcy reorganization on April 30, 2009, and participating in a bailout from the U.S. government through the *Troubled Asset Relief Progra*m. On June 10, 2009, CHRYSLER emerged from the bankruptcy proceedings with three principal owners: the United Auto Workers pension fund, the U.S. and Canadian governments and FIAT S.P.A.. The bankruptcy resulted in CHRYSLER defaulting on over $4 billion in debts.

CHRYSLER finished repaying its obligations to the U.S. government five years early, on May 24, 2011, but the cost to the American taxpayers was $1.3 billion. Over the next few years, FIAT gradually acquired the other shares while paying off the loans, which carried a 21% interest rate. On January 1, 2014, FIAT S.P.A announced a deal to purchase the rest of CHRYSLER from the United Auto Workers retiree health trust. The deal was completed on January 21, 2014, making CHRYSLER GROUP a subsidiary of FIAT S.P.A. In May 2014, FIAT CHRYSLER AUTOMOBILES was established by merging FIAT S.P.A. into the company. This was completed in August 2014. CHRYSLER GROUP LLC remained a subsidiary until December 15, 2014, when it was renamed FCA US LLC, to reflect the FIAT-CHRYSLER merger.

1914 American Fiat Touring



FABBRICA ITALIANA AUTOMOBILI TORINO (FIAT), was founded in 1899 by a group of nine men, among them Giovanni Agnelli, who led the company until his death in 1945. In 1910, it opened a factory in Poughkeesie, NY, which closed a decade later. While Ford was getting $525 for its Model T, Fiat was commanding a luxurious price of $6,400 for its Touring model. In 1925, Fiat owned 87% of the

new car market. The company became part of Italy's war machine, and when the war was over, the Agnelli family was prevented from running the company. The ban lasted until 1963, when Giovanni's grandson, Gianni assumed the role of general manager. By 1917, Fiat had over 100,000 employees and produced 1.4 million cars in Italy alone.

Fiat took over Lancia in 1969, acquired Alfa Romeo in 1986, took a 90% stake in Ferrari in 1988, and bought Maserati in 1993. It spun out Ferrari in 2016 as an IPO.

Marchionne was no fan electric cars. FCA developed the FIAT 500e, which was built to show regulators that FIAT could comply if it had to. He is famously quoted as saying: "I hope you don't buy it," the 'it' referring to the FIAT 500e.[5] It has the *Chrysler Pacifica Hybrid*, but Waymo is buying up as many as FIAT can produce. However, by June 2018, the pressure had grown too high and the company was forced to introduce more BEVs. Of the €45 billion in development money it announced it would spend through 2022, €9 billion was earmarked for electrification. This was announced by Marchionne himself in its Capital Markets Day presentation on June 1, 2018. *Jeep* will have all-electric versions of its *Renegade*, *Compass*, *Wrangler*, *Cherokee* and *Grand Commander*. By 2022, *Maserati* will offer electric options in all of its models. Even the Dodge *Ram* pick-up will have a mild hybrid option.[6] At the same time as Marchionne announced the plans for electrification, he said that 75% of all the investments would be to *Jeep*, Ram, *Alfa Romeo* and *Maserati*. The rest would be divided up among *Chrysler*, *Dodge* and *Fiat*. That's hardly a vote of confidence in their future.

Under Marchionne's leadership, FCA appears to have had a modest focus on self-driving technology. In an analysts meeting in 2017, he said: "Don't believe the fluff (about self-driving cars). I don't want to start chasing rainbows here, because if you chase rainbows you are going to fall off the cliff." But behind the scenes, the company was working with BMW, INTEL and MOBILEYE to develop a self-driving vehicle platform.

IF.[7] Kipling's poem reads like a script (or play book) for how Sergio Marchionne ran FCA. It's worth reading. "If you can keep your head when all about you are losing theirs and blaming it on you…" Electrification and self-drivamation were not goals in his head. He knew that FCA would live if people—not Waymo or Uber—bought his company's cars. If those who have come after him use the same script, FCA will get to 6 million and live on.

The 2008 Alfa Romeo 8C Competizione.

5. The 'it' he was referring to was the Fiat 500e, their electric vehicle. Why? "Because every time I sell one it costs me $14,000." Small cars with expensive technology are a difficult equation for car manufacturers, said Marchionne.

6. Mild hybrids are internal combustion engine vehicles equipped with an electric device that allows the engine to be turned off whenever the car is coasting, braking or stopped, but then restarts the engine quickly.

The Chrysler Portal concept, a semi-autonomous electric minivan, is unveiled during the 2017 Consumer Electronics Show in Las Vegas in January 2017.

7. *"If you can keep your head when all about you*
Are losing theirs and blaming it on you…"

***If**, by Rudyard Kipling*
https://www.poetryfoundation.org/poems/46473/if---

Dispatch Central

Map obtained from the Official Portal of the Grand Duchy of Luxembourg.

Where public transport will be free

LUXEMBOURG. I have a special connection to this little country in the middle of Europe. My mother's parents lived in the town of Esch-zur-Alzette and had two of their four children (my mother was number three and she was born in Pennsylvania) there before being forced to leave in 1914 as a result of the start of WWI. Today, its inhabitants are the sixth richest in the world. (The first five are all in the Middle East.) Its population of 600,000 is slightly more than Wyoming, the least populated state in the U.S., and its area of 998 square kilometers is slightly less than Rhode Islands, the smallest state.

I have spent time in Luxembourg, both on business and to search for family roots. It has a lot to offer. It's capital, also called Luxembourg, is charming and well-preserved. With its wealth has come the problem of high vehicle ownership per capita. At 734 cars per 1,000 inhabitants, it is eighth in the world. Traffic congestion, especially in the capital, is a problem. In addition to its own citizens, 175,000 commuters come from neighboring Germany, France and Belgium every day. And then there are the 1.2 million tourists who visit the Duchy each year. The government has decided to do something about the traffic situation. No, it is not going to charge an entrance fee at its border or add a congestion charge in the city. Starting in March 2020, it is going to set up park-and-ride facilities at the major roadways entering the country and make all mass transit free.

This may sound like a huge dose of largesse, but 90% of the cost of the country's public transport network's operation is already subsidized by the government. Only €41 million comes from fare revenue, while total costs are €491 million. In addition to fighting traffic congestion, the country wants to get ahead of a problem that is developing: a growing percentage of its population is at risk of poverty. Currently it is at 10%. This is a result of its rapid population growth and increase in immigration.

Will free transit alone coax a large number of the currently 60% of commuters who travel by private cars to join the

19% who use public transport? Probably not. It's not the cost of bus or train fare that is the issue, but convenience, and that will not be improved by switching to public transport. So the government is going to add a stick to the carrot. It is planning to eliminate the deduction for using one's car to travel to work.

Has free transit worked in other cities? It seems the jury is still out. A study was made of the effects of free transit in Tallinn, Estonia introduced in 2013. The average trip length dropped by 10%, indicating that people who normally walked hopped on the free bus. Ridership in the city center increased by 3% and by over 10% to one high employment district, but there did not seem to be any improvement in employment opportunities. Also, there was no meaningful decrease in car traffic.[8] In the U.S., both Seattle, Washington and Portland, Oregon introduced no-fare zones in their downtowns in the 1970s and both ended the experiments in September 2012. Portland concluded it was just subsidizing the wealthy since the number of low-income people in Portland dropped significantly over the thirty years of no fees. Seattle had the reverse problem. Most of the riders were lower income and the scheme was having no impact at all on traffic congestion.

8. Public Transport Pricing Policy – Empirical Evidence from a Fare-Free Scheme in Tallinn, Estonia. Center for Transport Studies, Department of Transport Science, Swedish Royal Institute of Technology (KTH). (January 2014).

Do public transport options 'want' to be free? Don't address that question to an economist or to THE ECONOMIST. I have found no evidence that lowering the cost of a bus ticket of and by itself has any effect on the use of other modes of travel. There needs to be a holistic approach, and it must include intermodal stations where people can leave their cars and trains and change to local transport. This is what Luxembourg appears to be implementing. We shall see how it works out for my long, lost cousins.

⌘

Driving for knowledge and pleasure

Imagine waking up every morning with the thought that you are going to make a lot of people happy because of what you will be doing during the better part of that day. That's probably how Antonio La Cava, a retired teacher, feels every day. He gets into his three-wheeled travelling library, the *Bibliomotocarro*, and heads up into the mountains of Basilicata, Italy visiting its remote, tiny villages with few inhabitants and fewer children. Basilicata is a poor and sparsely populated Region in the south of Italy between Campania to its north, Calabria to its south and Apulia to its east. The little bookmobile that La Cava made himself is the perfect size for negotiating the narrow streets of the mountain villages. Talk about a vehicle fit for purpose. Three cheers to Antonio!!!

Bibliomotocarro *brings the message that culture is made by and for everyone, not just a privileged few. "Without a book, so often the child is alone," says Antonio La Cava, the travelling librarian. "I was strongly worried about growing old in a country of non-readers. Carrying out such action has a value, not only social, not only cultural, but has a great ethical meaning."*

Amazon's Scout delivers, but why?

AMAZON began testing a fleet of six self-driving delivery robots on the 23rd of January, 2019 in Snohomish County, Washington. The cute little mechanical critters are delivering packages to customers' doorsteps, the company claims on its blog post (https://blog.aboutamazon.com/transportation/meet-scout). Initially, the rolling robots will be accompanied by an Amazon employee (they call him or her a 'chaperone') who will keep it on track, and "ensure that the devices can safely and efficiently navigate around pets, pedestrians and anything else in its path." I wonder if the chaperones will be packing a gun.

The actual devices are emblazoned with the *Prime* brand name, but your Editor felt compelled to ask the question: Why me? When a representative of *Hugo*, a Swedish company making robot delivery vehicles very similar to the Amazon Scout, was asked during the DRIVE SWEDEN Annual Meeting what would be done to prevent theft and vandalism, she answered directly and honestly: "We don't know." If the experience of human food delivery drivers is any indication of what the robots will have to contend with, maybe they should take some hints from the military robots that are sent into dangerous areas instead of humans.[9]

9. Delivering Pizza is One of the Most Dangerous Jobs in America. (https://munchies.vice.com/en_us/article/53jayq/delivering-pizza-is-one-of-the-most-dangerous-jobs-in-america)

I will continue to look for both the rationale and business case for putting an expensive piece of equipment on city sidewalks where it can easily be pushed over and otherwise vandalized. When I find it—or the absence of one—I will let you know.

⌘

Nevs, Koenigsegg and Faraday Future

What do all of these car companies have in common, besides the fact that you may never have heard of them before unless you are a diligent reader of this newspaper? The answer is Hui Ka-yan. He is China's third richest person after ALIBABA's Jack Ma and TENCENT's Pony Ma. Following his recent investments in NEVS and KOENIGSEGG and his 2017 company-saving investment in FARADAY FUTURE, he now is a major owner of all three.

NEVS (NATIONAL ELECTRIC VEHICLE SWEDEN AB) - It is a Swedish holding company that acquired the assets of SAAB from a bankruptcy estate in 2012. Its business idea was to produce an electric car on the SAAB 9-3 platform, and to do it in SAAB's facilities in Trollhättan. The world is still waiting. The company has been in constant need of money. These problems were supposed to be solved with an order of 150,000 NEVS 9-3 vehicles from PANDA ENERGY COMPANY with

production shifted to Tianjin City in China. That never happened. Then, on 22 January of this year, Hui Ka-yan and his CHINA EVERGRANDE GROUP showed up with enough to buy 51% of NEVS. Founder Kai Johan Jiang retains 49%. No sooner was the ink on that deal dry when it was announced that NEVS would invest €150 million in KOENIGSEGG and another €150 million in a joint venture between the two companies. NEVS now owns 20% of KOENIGSEGG and 65% of the JV. Amazing, that after seven years of not having enough money to produce cars, it has millions to throw at a company that produces less than twenty (yes, 20) cars per year.

KOENIGSEGG – The first time I heard the word KOENIGSEGG was when GM was trying to unload SAAB and Christian von Koenigsegg, owner and CEO of the company bearing his name, rode in on a white horse to save the damsel in distress. In June 2009 he, along with RENCO GROUP and FIAT, were vying for the company. In the end, in 2010, it went to the Dutch automobile company SPYKER CARS N.V. KOENIGSEGG was founded in 1994. It has been a family business making super expensive super cars. It now plans to develop an electric model, which is where Hui Ka-yan's money comes in. Christian says he saw the potential of using EVERGRANDE's 1200 car dealers in China to sell the new model and his flagship cars, and it was too good to pass up.

FARADAY FUTURE – This company's story is a complicated one and probably not worth going into in too much detail because it still exists mainly on paper. It was co-founded in 2014 by Jia Yueting, another Chinese billionaire businessman who started his work career as a tech support officer in a provincial Chinese tax office. One of the other co-founders is Nick Sampson, who left the firm in October 2018 claiming it was insolvent. He had been director of vehicle and chassis engineering at TESLA. Tony Nie is the other co-founder. He was an executive at Lotus. He left FF in the beginning of 2018.

Hui Ka-yan and his EVERGRANDE HEALTH, a subsidiary of EVERGRANDE GROUP, came into FF's life at the end of 2017 when the company was running out of cash. It promised $2 billion and received a 45% share of the company. It put in $800, but did not make remaining payments. Money ran out, staff were furloughed and operations shut down. In January, the disagreement was settled, but the firm remains in financial difficulties. Jia Yueting has been in self-imposed exile in California since December 2017 after disobeying an order by the China Securities Regulatory Commission to take responsibility for debts in one of his companies.

It looks like a 2009 Saab 9-3, but it is one of the Nevs 9-3 electric cars being shown to the public and investors. It is not yet sold to customers.

Swedish KOENIGSEGG's Agera RS starts at over $2 million, and anyone with enough money to buy one will also have to have enough patience to wait a couple of years to drive it.

The FF91 Faraday Future's first production model was shown for the first time in 2017 at CES.

FARADAY FUTURE is named for one of the founding principles of electric motor technology known as Faraday's law of induction. Faraday's Law *is in turn named after English scientist Michael Faraday who discovered electromagnetic induction.*

Drive Sweden's Annual Meeting: A Day Well Spent

About Drive Sweden

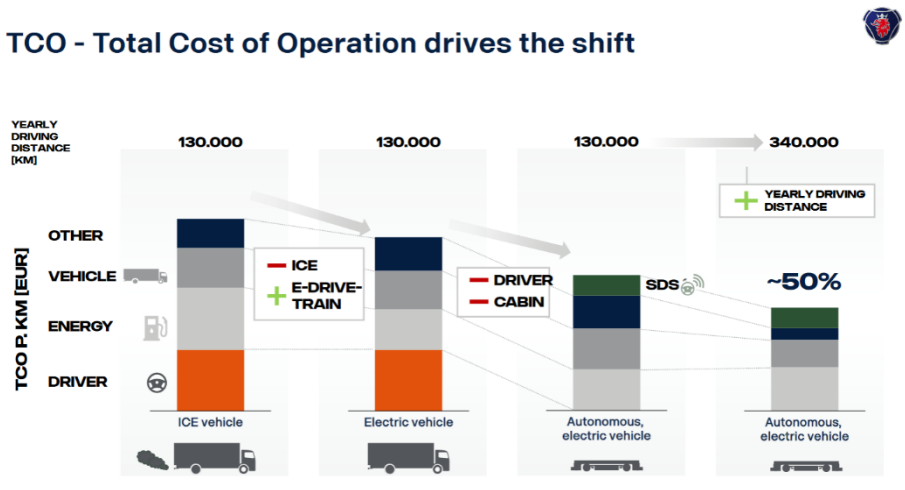
"A few years ago, the Swedish government established a new instrument for addressing complex areas with huge potential to come up with sustainable solutions to challenges in our society, but – at the same time – requiring close cooperation among several stakeholders to succeed. Both these criteria apply perfectly to the opportunities and challenges with the next generation mobility system for people and goods, and in 2015 Drive Sweden was awarded a contract to address this domain as one of seventeen such Strategic Innovation Programs, (SIP). Drive Sweden is currently in the third year of an expected total duration of 12 years, and with a considerable governmental co-funding behind it.

The SIPs are funded by VINNOVA, the Swedish Innovation Agency, the Swedish Research Council Formas and the Swedish Energy Agency. Drive Sweden is hosted by Lindholmen Science Park AB."

Source:
https://www.drivesweden.net/en/about-drive-sweden

THE DRIVE SWEDEN Annual Meeting was hosted by Scania[10] at its headquarters in Södertälje, a city just south of Stockholm, Sweden. This was the last Annual Meeting presided over by Jan Hellåker, the founding Director of DRIVE SWEDEN. He will now take over as Chairman of the DRIVE SWEDEN Board, so his extensive experience in ITS that traces all the way back to the PROMETHEUS activities in the late 1980s will not be lost. As he turned over the reins to his successor, Sofie Vennersten, he summed up the past three years. The total number of partners has grown to 108. DRIVE SWEDEN recently passed its first three-year evaluation, and it is good to go for the next nine years.

We were welcomed to the event and the location by SCANIA CEO Henrik Henriksson. He asked a rhetorical question: "Will a truck company like SCANIA sell autonomous trucks in the future, or will we set up a control tower and operate a logistics system with our trucks?" The driver represents 32% of the total cost of operating a truck, with the vehicle taking another 32%, energy 27% and everything else accounting for 7%. Scania sees the opportunity to save 32% as a good enough reason for continuing to invest in driverless technology. They see the opportunity to save energy through electrification as a good enough reason to continue to invest in electric power trains. Henrik showed the following slide to illustrate his points.



His answer to his own question was: "We'll do both."

ERICSSON's Stefan Myhrberg described DRIVE SWEDEN's *Innovation Cloud*. With this initiative, the organization moves from being a meeting and networking place for partners to being a promoter of an approach to vehicle and services

10. Scania AB has been 100% owned by Volkswagen AG since 1 January 2015. It is part of TRATON GROUP which includes the brands Scania, MAN and Volkswagen Caminhões e Ônibus.

connectivity. The *Innovation Cloud* is principally the work of partner ERICSSON. It is used to channel various types of data from traffic and transport authorities, such as bus priority, traffic signal priority, time to green and green light optimization (GLOSA) to OEM's telematics service providers (TSPs) for delivery to their vehicles.

There were several presentations of projects that use the DRIVE SWEDEN *Innovation Cloud* that have been funded by VINNOVA, Sweden's Innovation Agency. One of them is *AD Aware* (Autonomous Driving Aware Traffic Control). Its purpose is to define and propose a traffic control cloud[11] for automated vehicles. An interesting issue addressed in the project is how driverless vehicles interact with emergency vehicles, such as police, fire and ambulance. Human drivers hear the vehicles, judge where the emergency vehicles are and if they should pull over and allow them to pass. Driverless vehicles must perform the same actions, but the same result could be achieved if the emergency vehicles communicated its location and path to the vehicles.[12]

Sustainable and Affordable Mobility for ALL

Christopher Borroni-Bird, founder of AFREECAR LLC, gave the post-lunch keynote presentation titled *Sustainable and Affordable Mobility for ALL the World's People*. I can guarantee you that no one in the lecture hall was prepared for what Dr. Borroni-Bird talked about. When he introduced himself and told us of his positions at GM, QUALCOMM, the MIT MEDIA LAB and *Waymo*, we were all settling in to see another *Waymo* conqueror. Then he began his talk, and it was as far from driverless taxis for coddled kids (both young and old) as you can get.

He started with an image of an iceberg floating in the ocean, with the part visible above the water depicting the 'developed world' and the majority of the iceberg below the surface showing the 'developing world'. What we are doing today with our shared, autonomous and electric, he claimed, was for the tip of the iceberg. He wants to help people in the developing world to improve their lives with an affordable, solar-powered vehicle that combines a bicycle with a trailer that is powered by a solar panel roof. He has calculated the price of the combination vehicle at $1,000, including the solar panel. This is $1 per day that the owner would have to earn in order to pay for its cost. If you would like to know more, here is his card. He is planning to be delivering in 2022.

There was more. It was an excellent way to spend a day. Come to Sweden next year at this time. It would be well worth the trip.

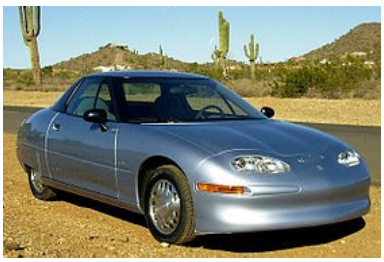
11. There was a lot of 'cloud' talk, but most of it referred to an Internet-based platform built and hosted by Ericsson.

12. This is not an application confined only to the future and driverless vehicles, but could be implemented today with current technology. One more point: hearing-impaired drivers would be helped greatly if strobe lights were installed at intersections to warn of approaching emergency vehicles.

Christopher Borroni-Bird, founder of AFREECAR LLC, center, is introduced as the keynote speaker by Jan Hellåker. In the slide on the screen above is a prototype of the combination bicycle and trailer on a 'test track' in Detroit.

A Dispatcher's Musings: Hitting Home Runs

There were a total of 5,585 home runs hit in 4,860 games during the 2018 Major League Baseball season. That is 1.15 home runs per game, but, with 54 outs (3 per side per inning) in each 9-inning game, it is only 1 home run for every 23 outs, or 2%.



The 1996 GM EV1 Electric Car. Not a home run. Only 1,117 units were sold between 1996 and 1999 when production was stopped. Sales were halted a few years later and all cars were repossessed by GM and either put into museums or crushed.

OVER THE YEARS, I've sat in meetings in which groups of people have discussed how to meet competitive threats from rivals, old and new, that have beaten them to the market with a product or service that has become a winner. To put it into sporting terms, someone has hit a home run and now you need to play catch-up. In the mid-to-late 1990s, the major map publishers were caught flat-footed by three new products and services, some based on the still relatively immature Internet. MICROSOFT, which had the largest cartographic staff in the U.S. around the turn of the Millennium, in 1997 produced its rotating and scalable world globe in its *Encarta World Atlas* product, first on CD and then on the Internet. A little company called NEXTBASE LIMITED based in Central London, which was later acquired by Microsoft, introduced its route planner called *AutoRoute* on CD-ROM. Probably the biggest impact was made by *MapQuest*, a division of GEOSYSTEMS led by Barry Glick, with its Internet map service.

A home run can be a game changer, but for every ball hit out of the park, 54 players have added an out to the baseball game. Most players who have gotten to the Major League Baseball level are able to hit home runs, but some are better at it than others. Hitting one takes a combination of skill developed during years of practice on the part of the batter and a ball delivered by the pitcher—by mistake—in just the right place, which is why it is a relatively rare occurrence. If the batter hits the ball on the sweet spot of the bat with enough force in the swing and at just the right angle, it's over the wall it goes.

It's the same with a winning business idea. People come up with great ideas all the time, but the idea-makers are not always skilled enough to follow through with them, or the conditions into which the idea is cast are not receptive at that particular time. A good example of bad timing is the *GM EV1 Electric Car*. A concept for this electric car was presented in 1990. It was well received, apparently—or at least product development people thought it would be a hit. The concept was developed into a product and introduced in 1996 to what GM believed was an eagerly

waiting market. But the design of the production car was less than stellar, and there was no thought given to the infrastructure needed to keep the car on the road. There simply were not enough electric car enthusiast buyers who were ready for battery electric cars at the time, and the difficulties of charging them was not at all well appreciated.

Where great ideas come from

It does happen that a player who is not known for his batting prowess manages to connect with a ball that a pitcher has delivered with enough velocity and in exactly the right spot to drive it over the fence. A case in point is UBER and its founders Travis Kalanick and Garrett Camp. I'm convinced that the idea for UBER came from the desire of two young adults to have the same transportation option they had as children, namely, have a chauffeur in the form of Mom or Dad ready whenever they needed a ride. They developed a platform controlled by a mobile app that connected a person with a car (Mom or Dad surrogates) to a person needing a ride (them). It took all the painful moments of calling for or hailing a taxi out of the equation for the riders, and removed the two principal problems for the drivers, being told where to go by a dispatcher and getting paid. It also eliminated all of the inconveniences inherent in the prevailing taxi medallion business model, most importantly limiting supply to keep the price level high enough to return a profit to the medallion owners and providing enough money over to pay the drivers.

Mom or Dad would have driven the little princess to her after school piano lessons, but now they can depend on the door-to-door chauffeur service while they are able to work late downtown.

Let's bring the discussion into the game of cars. Think of the different passenger vehicle types that have been invented during the past 100 years: the basic sedan/saloon, including the Model T; the VW Beetle; station wagons/estates; pick-ups; hatchbacks; SUVs; crossovers and the minivan. Some were hits, most sold enough to keep the brand from folding and some were outright flops. There are books written about the real losers, like the FORD MOTORS *Edsel*, FIAT *Multipla* and the AMERICAN MOTORS CORPORATION *Pacer*. The top six best-selling cars ever are the FORD *Model T* (16.5 million), the Russian-made LADA "Classic" (17.5 million), the VW *Beetle* (21.53 million between 1938 and 2003), the VW *Golf* (25 million starting in 1974) the FORD *F-Series* pick-up (34 million between 1948 to the present), and, at number one, the *Toyota Corolla* (43 million since 1966 and still counting).

1940 Pontiac Special Series 25, one of the first station wagons

All of these models, with the exception of the Ford pick-up, are mass market sedans and have been hits for similar reasons. They offered the best combination of price, performance and

dependability for basic transportation compared with the other models available. None of them are luxury cars. The *F-Series* pickup is the exception and it has something in common with my personal favorite for the home run car, number thirteen on the all-time best seller list, the CHRYSLER CORPORATION minivans. These were the *Chrysler Town and Country*, *Dodge Caravan* and *Plymouth Voyager*.

These three models did't just pop out of the sky. Someone inside CHRYSLER made a connection between a major demographic shift and a corresponding absence of a vehicle to accommodate that shift. After a decade of a precipitous drop in the annual population growth rate in the U.S., in 1970 it suddenly stopped falling and began to grow again. The huge number of Baby Boomer children born following the Second World War were now beginning to start families. Within a decade, the large number of female baby boomers would take a pause in their careers, move out of the cities with their spouses to the suburbs and start their families. If they didn't own a car before the move, they needed one now.

The Chrysler Minivan is in the Smithsonian

There are thirteen post-WWII model cars in the Smithsonian National Museum of American History collection in Washington, DC. One of them is the *GM EV1* and another is the *Chrysler Minivan*. Why? Back in late 1970s and early 1980s there wasn't a good family vehicle. Sedans and station wagons had been downsized due to the high price of fuel caused by the two oil crises. Full-sized vans and the precursers to four-wheel-drive sport utility vehicles (SUVs) were more like trucks than cars. What young families needed was a roomy, multi-seat vehicle that drove like a car, got good fuel economy and had space for baby prams and all the paraphernalia that kids and parents schlep around to all their activities.

1984 Plymouth Voyager Minivan. The car that saved Chrysler Corporation…at least for a while.

On the 2nd of November, 1983, the first minivan produced by CHRYSLER CORPORATION rolled off the Windsor, Ontario assembly line. It was boxy with a high roof for plenty of headroom and lots of storage space. It had a sliding side door for both safety and ease of entry, and a hatch door in the back for ease of loading. It fit into the same space as a sedan. Its front-wheel-drive architecture allowed for a flat floor, and its removable seats made it possible to carry a 4'X8' sheet of plywood—the ultimate test for a weekend hauler—or function as a camper for the whole family. In other words, it was the perfect family car.

The *Plymouth Voyager*, along with its brothers, the *Dodge Caravan* and the *Chrysler Town and Country*, were a huge hit. It is said that

their success brought the company back from the verge of bankruptcy. In 2008, when the company was once again in financial difficulties, it still held 41% of the U.S. minivan market.

You need to keep your eyes open and on the ball

One of the first lessons you learn when you start playing baseball as a youngster is that in order to hit the ball, you need to see it. You need to watch it all the way from the time it leaves the pitcher's hand until it hits your bat that you are swinging. This is the same lesson you learn in business. Keep your eyes open and keep them focused on your goal. The individual or the team that came up with the idea of the minivan had an acute awareness of what was happening, at least in their part of the world. At the same time as the *Plymouth Voyager* appeared, what became an ubiquitous ornament in the windows of those and other vehicles showed up: the "Baby on Board" sign.[13] The minivan and this sign are one piece in the history of the evolution of the car industry.

Why are fewer people buying sedans and minivans in the U.S. than SUVs and pick-up trucks? This article should give you an answer to the SUV part.[14] What about the fact that the top three best-selling vehicles in the U.S. are pick-up trucks, the FORD *F-150* and the *Chevrolet Silverado* and the *Dodge RAM*? If seven out of the top-selling sedans are from Japan or Korea, why are there no foreign pick-ups on the list? The answers to the pick-up questions are found both in demographics and politics. A pick-up and a SUV in the driveway are not an uncommom site.

What do you see happening today? Are you looking for answers to that question in tea leaves, tarot cards or, worse, market reports and articles written by journalists who have zero experience about what they are writing? Or are you looking around yourself and asking yourselves and your friends and colleagues: Where are we headed? Are car buyers in the the largest market of cars sold per capita, the U.S., suddenly going to start sharing, subscribing or sitting at home waiting for everything to be delivered to them? Are people in emerging markets going to go back to riding bikes? Is everyone in Europe going to go out on strike like school children have been doing?

During the past six years that I have been writing this newspaper for you, I have mixed in articles about why things that seem to be opaque are really quite transparent. I've tried to add an extra pair of eyes to help you see that ball that is hurtling toward you so that you can hit it out of the ballpark. I hope it has helped, at least a bit.

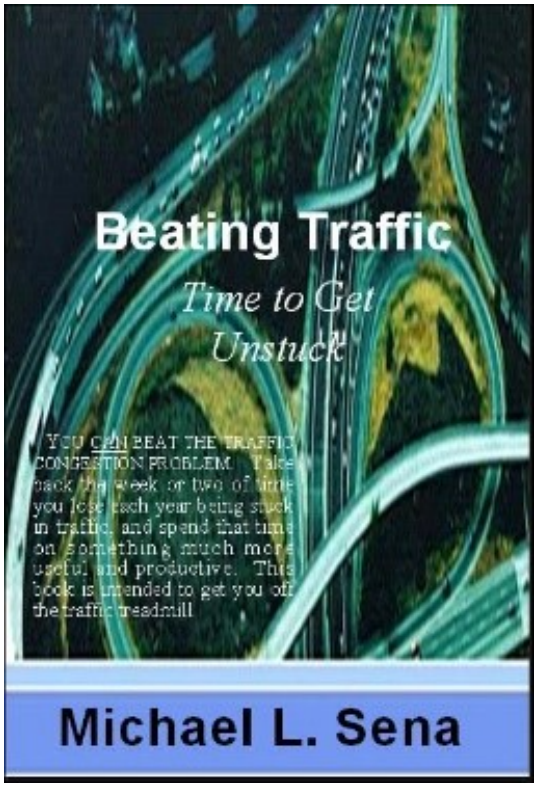
13. In 1984, Michael Lerner founded SAFETY 1ST for the purpose of manufacturing the **Baby on Board** signs. There are many different stories about where the idea came from, but Mr. Lerner attributes the idea to an accident of a friend's child. His message was simple: There's a child in this car so drive carefully. This image was a perfect sign of the times in so many ways.

14. Volvo calls its XC90 a mid-size crossover SUV. It has been manufactured and marketed by Volvo Cars since 2002 and, since 2014, is now in its second generation. It looks more like a van than the original. They are simply an extension of the minivan design, taking out the frumpy part and adding a bit of flare. They can take the family up to the mountains in all types of weather. Even TESLA sells more of its SUV, the Model X, than its high-end sedan, the Model S, and when it introduces its Model Y, it will likely outsell the Model 3. Families have not disappeared, and they still need to do all of the things that families have been doing for quite a long time.

About Michael L. Sena

Michael Sena, through his writing, speaking and client work, attempts to bring clarity to an often opaque world of vehicle telematics. He has not just studied the technologies and analyzed the services, he has developed and implemented them. He has shaped visions and followed through to delivering them. What drives him—why he does what he does—is his desire to move the industry forward: to see accident statistics fall because of safety improvements related to advanced driver assistance systems; to see congestion on all roads reduced because of better traffic information and improved route selection; to see global emissions from transport eliminated because of designing the most fuel efficient vehicles.

This newsletter touches on the principal themes of the industry, highlighting what, how and why developments are occurring so that you can develop your own strategies for the future.



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