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Telematics Industry Insights by Michael L. Sena

The Dispatcher

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The March 2023 Issue in Brief

During the period between 1870 and 2010, we came to expect continuous growth. This is the era that J. Bradford DeLong has called *The Long Twentieth Century,* "when the triple emergence of globalization, the industrial research lab, and the modern corporation ushered in changes that began to pull the world out of the dire poverty that had been humanity's lot for the previous ten thousand years". Two devastating wars and a decade-long economic Great Depression should have been enough to shake our faith in the inevitability of the Planet's potential for unfettered expansion. But they weren't. It was the Second World War that ended the Depression, and in the six decades that followed its end there seemed to be no limit to prosperity for all mankind. Paradoxically, our belief in a fair and democratic future was shaken at what should have been the era's greatest moment. In December 2009, America's first Black President was awarded the Nobel Peace Prize "for his extraordinary efforts to strengthen international diplomacy and cooperation between peoples". It was the Great Recession which began in 2008 that brought the *Long Twentieth Century* to an end, and the decade between 2010 and 2020 was, in a word, destabilizing: politically, culturally, socially and economically. It took a pandemic to stop the world from spinning totally out of control. The respite it offered from the manic rushing about in which we were engaged for business, pleasure, and our belief that travelling everywhere was simply something we had to do, gave us the opportunity to see the world and our place in and on it in a different light. A degree of stability returned in 2020, even though some parties (Do I need to mention names?) are acting like it is still the decade of anger and dissatisfaction. The Industrial Revolution brought with it the mass movement of whole populations to places where things would be made. We are on the cusp of a new era, one of deindustrialization. What will it bring?

THE DISPATCHER

Telematics Industry Insights by Michael L. Sena
March 2023 – Volume 10, Issue 4

It Is Time We Admitted That the World Will Change

ITU 2023 Future Networked Car Symposium
13-16 March 2023
Virtual Event
Session 2: Using Automotive Artificial Intelligence to Improve Vehicle Safety, Services and Transport Management
14 March – 13.00-16.00 CET

For some, the goal of Automotive Artificial Intelligence is to remove the human from the driving task under some or all conditions. For others, it is to supplement and improve the human driver's abilities to make driving safer, offer new and better services, and increase the effectiveness of transport management. This has proven achievable with AI that accomplishes one or a limited set of objectives. This panel will present and discuss views on the current status of vehicle-related applications of artificial intelligence, different scenarios and timelines for their implementation, and concerns for how humans interact with Automotive AI.

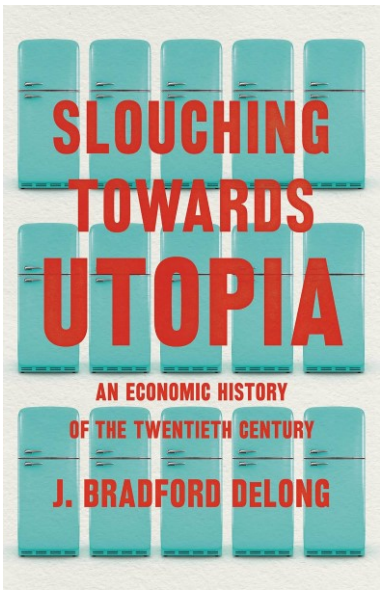
Moderator: Michael L. Sena, Editor of THE DISPATCHER
Keynote Speaker: Missy Cummings, Ph.D. – GEORGE MASON UNIVERSITY (USA)
Panelists:
Bryn Balcombe – Autonomy Systems and Regulatory Expert, OXBOTICA (UK)
Junichi Hirose – Highway Industry Development Organization (Japan)
Jenny Lundahl – RISE RESEARCH INSTITUTES OF SWEDEN
Jan Lühmann – Organisation Internationale des Constructeurs d'Automobiles (OICA). Vice Chairman of the OICA Technical Committee

The Deindustrial Revolution has begun

ASSUMING PLANET EARTH still has humans, or any other life forms, inhabiting it at the dawn of the next century (which, by the way, is now only seventy-seven years hence; it feels like we were just talking about Millennium Bugs, doesn't it?), it is going to be very different from how it is today, although it may not look and feel that way. Think back to 1956, giving ourselves a ten-year buffer from the end of the two world war period and a time I can remember (I wasn't around 77 years ago). That was sixty-seven years ago. I remember that our house in Scranton was heated by steam radiators and the steam was produced by heating water with a coal-fired furnace. We had a gas stove, and the gas came from burning coal at the Scranton Gas Works. Our family had a black-and-white TV which received three channels. We had a party line telephone which we shared with a neighbor across the street. AM radio played in the car, and cars were mostly manual shift that used leaded gasoline. Supermarkets were still a new invention. We bought our food from the butcher, baker and grocery stores in our neighborhood, all within walking distance, and once a week in the summer and fall, the farmer drove his horse-drawn wagon down from his farm and sold fresh produce and eggs. There was a daily passenger train service between Buffalo, New York and New York City via Scranton, intercity GREYHOUND and TRAILWAYS buses that went practically anywhere in the country, and local bus service that carried us from a stop on our street to anywhere in the county. Wherever children living in cities like Scranton had to go during the weekdays they could get to by walking. We knew where the atomic bomb shelters were located, and were reminded of their locations with regular school drills. Our emergency cupboard in the basement was always freshly stocked.

Much has changed, but Scranton and cities like it look pretty much the way they have looked for the past one hundred years, even though they are very, very different.

As Russia has everyone looking for their closest bomb shelter, and a recession looms that has more foolish and self-destructive political causes (Russia again) than economic ones, I found two pieces of recent news that started my reflections on where we're headed, whether we like it or not. The first had to do with China. Predictions have been made that China will be a mere shadow of its current self by the time 2100 rolls around. China's NATIONAL BUREAU OF STATISTICS has confirmed that 2022 was the year China's population growth turned negative, the first time that has happened since the great famine brought on by Chinese leader Mao Zedong in 1959-1961.[1] Its population in 1959 was 652,179,193.

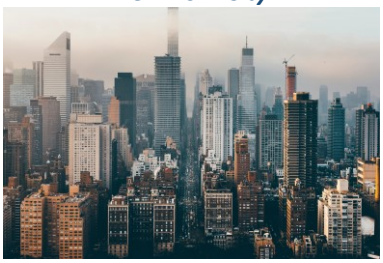


Just to give this some perspective, in 1959, the world's population was 2,979,292,187. China therefore comprised 22% of the world's population. In 1850 during the country's last dynasty before becoming a republic in 1912, China comprised 33.05% of the world's population with 436,100,000 people. In 2022 China had 17% of the world's 7.9 billion people.

Today, China's current population is over 1.4 billion, and in 2019 the UNITED NATIONS projected that China would still have around 1.3 billion people by 2065. The UN's projection was based on the assumption that China's fertility rate would remain at or above 1.7 children per woman. However, China had 12 million newborns last year, which is 25% lower than the UN's estimate.[2] This unexpectedly low birth rate is confirmed with data from the latest census, which is the most accurate census ever performed in China. "If the fertility rate drops to one, in twenty-nine years the population of our country will fall by half," said the researchers.

The second piece of news was about New York City. The city's new mayor, Eric Adams, formed a task force to help him figure out whether some or all of the city's empty office and commercial space can and should be converted to residential use.[3] It seems that the prospects are looking dim for all of the office workers to

New York City



[1] Mao outdid Stalin's feat in 1932-33 of 3.9 million Ukrainians starved to death by his policies. Estimates for the number who starved in China in 1959-61 range between 15 and 55 million.

[2] New research from Jiang Quanbao and colleagues with the Institute for Population and Development Studies at XIAN JIAOTONG UNIVERSITY, warned that the country's population decline may have been severely underestimated. It was published in the Journal of Xian University of Finance and Economics

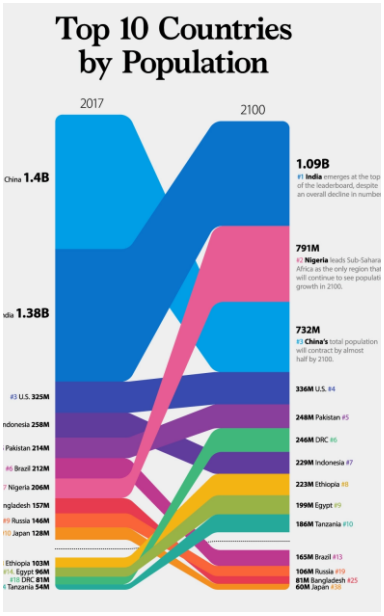
[3] https://nypost.com/2023/01/09/eric-adams-releases-recommendations-to-convert-underused-office-space-into-new-housing/; https://edition.cnn.com/2023/02/03/business/return-to-office-pandemic-record/index.html

return to the city following their forced absence during the pandemic. As of February 2023, only 50.4% of office space that was rented before the pandemic is re-occupied. And if the workers don't return, there will not be sufficient numbers of shoppers and diners to frequent stores and restaurants, ride the buses and subway. So the Mayor thinks he can fill up the empty space with residents who will do the shopping, eating, and riding. New York City is not alone in having too much of what used to be a good thing: office and commercial space.

What will it mean for those living on **PLANET EARTH** in 2100 if China has a similar population to what it had in 1956, and is only double the size of the U.S. rather than over four times the size? What will it mean if the biggest cities in the United States and many other western countries grow smaller? Not a single American city, including New York City, appears on the list of the twenty largest cities in the world? (NYC is currently number 44.) Will the erosion of China's population also cause their cities, which today hold five of the twenty spots on the list of the world's twenty largest cities, to diminish in size, or will their cities grow larger while the rural areas are deserted? What are the implications for both the production and use of transport with all of the changes that will or are likely to occur during the next seventy-seven years? Will countries like India and Nigeria replace China as the world's factory, or will factories be located on ships and trains and planes and trucks with no one on board except the robots doing the making and the robots doing the sailing, flying and driving? Are there positive or negative relationships between population changes and climate changes, and should we be cheering for one or the other if we don't want the climate to be a reason we are no longer around in 2100?

These are big questions. I believe I am not alone in wanting to see some hints that they are being addressed. Maybe they are being studied in top secret think tanks. What we do see in our daily news feeds are the details of mass murders by individuals and by governments (Russia again), the antics of politicians of the left, right and center, the antics of people with too much money and too much power that their money has given them, experts' (usually self-proclaimed 'influencers' or ordained by an opinion-making source, e.g. *THE NEW YORK TIMES*) opinions about what we should be doing with our time and money.

The purpose of *THE DISPATCHER* is to highlight what, how and why developments are occurring within the transport industry so that



*The **INSTITUTE FOR HEALTH METRICS AND EVALUATION (IHME)** is an independent population health research organization based at the University of Washington School of Medicine. It works with collaborators around the world to develop timely, relevant, and scientifically valid evidence that illuminates the state of health everywhere. In making our research available and approachable, we aim to inform health policy and practice in pursuit of our vision: all people living long lives in full health.*

you can develop your own strategies for the future. As I have often said, transport is intertwined with the environment in which it operates, and the two must be developed in concert. If countries shrink, there are fewer people to drive cars, ride on buses and trains irrespective of whether they are living in cities or not. There are fewer people trying to get from all the Point As to all the Point Bs. If cities are not commercial and business centers but residential centers, and work is done at home (like it was before the Industrial Revolution), that will make a difference to whether people need to drive cars and ride on buses and trains. But before I can get to the consequences, I have to convince you that the world is already changing. (It took a while for me to convince myself.) Then I will concentrate on the transport impacts of shrinking populations in certain countries and the repurposing of cities.

Here is what I intend to do in this article:

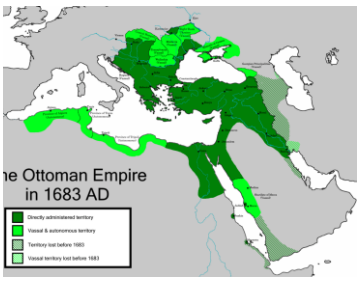
- Identify the reasons why the populations of China, Japan and many other countries are shrinking and why countries do not seem to be able to do anything to stop it;
- Determine if there are direct relationships between diminishing country population and both the sizes and functions of a country's cities.
- Determine whether there is empirical evidence of a relationship between shrinking population and the purchase of vehicles and mobility services;
- Explore the transport implications of cities without offices and stores, where people live and work as independent agents;
- Finally, I will try to frame the discussion of what may happen if cities gradually disappear as people choose more space over the accessibility advantages that dense, urban centers facilitated?

What happens when countries get smaller?

Coincidentally, the film 'The Incredible Shrinking Man' was a 1957 science fiction movie. Scott, the main character in the movie, is on vacation with his wife, Louise, when he is engulfed in a strange mist. Six months later, Scott notices his clothes are too large and visits a doctor. The doctor confirms his shrinking and refers him to a medical research institute. There, it is determined that Scott's exposure to the mist, combined with his later exposure to a pesticide, rearranged his molecular structure, causing him to shrink. He becomes a subject of a great deal of media attention until he becomes so small that he disappears from sight. When he is so small that even insects cannot notice and torment him, and he is alone with his thoughts, he accepts his fate. He concludes that no matter how small he becomes, even as small as an atom, he will

still matter in the universe because God will know he exists. Small comfort, perhaps, but comfort nonetheless.

Once you start looking for countries that have gotten smaller, they are not hard to find. Many of them are hiding in plain daylight, while others have faded with the passing of time. ***The Roman Empire*** is long gone, even if you count its 1,100-year extension period in Constantinople while Rome itself fell into ruins. Paraphrasing the quote "Life's but a walking shadow, a poor player" in Shakespearean *Macbeth*, which appears in Act V, Scene 5 and is spoken by the title character, Rome "had its hour to strut and fret upon the stage, and then was no more". It left us with more than just memories, however. Our laws, our languages, our concrete, to name a few of its legacies. Nevertheless, from the time Constantine picked up stakes and moved the Empire's jewels to Byzantium until the city bearing his name fell to another empire builder, it left a very large vacuum in those areas where it had exerted most influence. It took a new dawn, the Renaissance and the Age of Enlightenment to wipe the dust off everything that had been hidden under a thousand years of neglect. Mussolini tried to revive the Roman Empire between 1922 and 1943, but it was just a lot of pompous uniforms and endless salutes.



It was the ***Ottoman Empire*** that finished off the last of the eastern portion of the Roman Empire in 1453. Then they just kept going, banging at the gates of Vienna in 1529. They didn't get in, but the Turks controlled much of what had been the eastern and southern parts of the Roman Empire up until the end of the First World War when they chose to fight with the Central Powers, Germany and Austria-Hungary, rather than the Allies, Great Britain, France, Italy, Japan, Russia, and the United States. Turkey remains as a reminder of what was, and its current leaders act like they would like the world to treat it like it could once again bang at the gates of Vienna—or Stockholm.

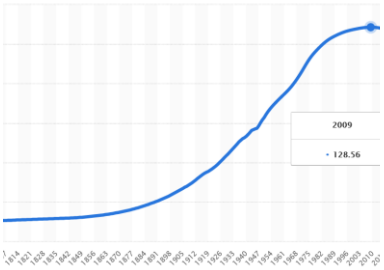
There is a long list of empires, nations, fiefdoms and city states that came and went: Babylonian Empire (1792 BC-626 BC), Holy Roman Empire, French Empire, Incas (1438-1572 A.D), Venice, Austria-Hungary, Russia, Japan, not to mention the British Empire (1603-1997), and the Chinese Dynasties (2070 BC-1912 A.D.). Most were conquered or just ran out of energy to keep going. The Aztecs (1300-1521 A.D.) were wiped out by an epidemic named 'cocoliztli' brought by the Europeans and their animals.

We have quite a lot of experience with empires shrinking down to the size of the original country, for example Great Britain, France, Germany, Spain, Portugal, Japan, Sweden (yes, Sweden). However, we don't have a great deal of experience with countries getting smaller inside their borders in modern times. But they are beginning to show up. There are two countries, also in Asia and also in the world-beating class, where populations are dwindling.

Japan and South Korea pave the way

This year, on Monday, the 23rd of January, Japan's Prime Minister, Fumio Kishida, issued a warning to the Japanese people about the country's population crisis. *"It is on the brink of not being able to maintain social functions due to the falling birth rate,"* he said. Solving this issue was a case of *"now or never"* he said. *"In thinking of the sustainability and inclusiveness of our nation's economy and society, we place child-rearing support as our most important policy,"* he said.

Japan's population peaked at around 128.56 in 2009. By the end of 2021, it had fallen to 125.93 million. It is projected to lose 25 million by 2050. The same UN projection that pegged China's population decline at the end of this century put Japan's at 74 million in 2100. Japan has the lowest birth rate in the world. Its Ministry of Health predicts that it will record fewer than 800,000 births in 2022, the lowest birth rate[4] since it began recording in 1899. At the same time, it has one of the highest life expectancies, with nearly one in 1,500 people in Japan aged 100 or older.



Population of Japan – 1800-2017
Source: Statistica

Why is the birth rate in Japan declining? Several factors:[5]

- Women are marrying later.
- Women have more options besides homemaking.
- Young professionals in Japan have been family-averse for the past 20 years.
- Unmarried women are less likely to have kids. Marriage is still the most socially acceptable way to have children.

Other factors include pessimism among young people in Japan about the future. The country has been essentially treading water since its asset bubble burst in the early 1990s, and the GDP had

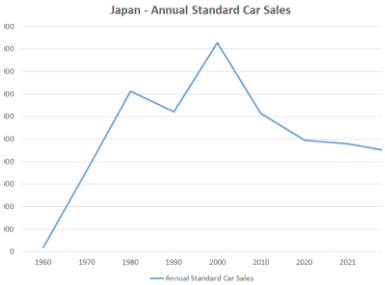
[4] **Birth rate** is the rate at which the births take place in a population during a particular time or period, usually one year. **Fertility rate** measures the average number of children / offspring a female could give birth to over her entire lifetime

[5] According to the Sasakawa Peace Foundation USA, a US think tank dedicated to research, analysis, and better public understanding of the US-Japan relationship.

slowed from 4.9% in 1990 to 0.3% in 2019, according to the World Bank. The average real income declined from $50,600 in 1995 to $43,000 in 2020.[6]

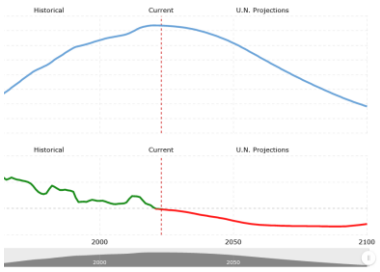
If there are fewer people in a country, economic stagnation will be made worse because there will be fewer people to do the jobs that need to be done in both the public and private sectors. A lower population means fewer people spending money with a resulting negative pressure on wages. Land prices will fall with few people bidding on land to build homes, offices, and commercial space. By 2014, 8.2 million homes in Japan were empty, and 40% of these homes were not being offered for sale or rent.[7] The vacancy rate of Japan's five largest cities in 2018 was lowest in Tokyo (7.3%). It is followed by Fukuoka (9.4%), Sapporo and Nagoya (11%), and Osaka (14.7%). However, condo prices have risen as a result of higher costs and a shortage of labor. Even Tokyo has seen a rise in abandoned homes. Communities desperate to attract home buyers have even started offering cash to outsiders willing to move into the community. Italy has been doing this for many years, selling abandoned homes for one Euro.

If you are wondering if a lower population results in fewer numbers of cars being sold in Japan, the answer is "Yes" (see chart right).[8] Car sales have been falling for twenty years.



Car sales in Japan peaked in 2000. In 2022, Japan had the lowest total vehicle sales in 45 years, and more of the passenger cars sold were of the cheaper models.

South Korea's population peaked in 2020, and then turned negative. The U.N.'s 2021 projection for South Korea is that its population will be one-half of its peak, or 24.1 million. At present, the country holds the world record for the lowest fertility rate ever recorded, 0.79. This is very far below the 2.1 that is needed to maintain a stable population, assuming no net migration and mortality rates remain unchanged. Japan's fertility rate is 1.3, while the U.S. stands at 1.6, and China's is at 1.7.[9]



Population of South Korea 1950 - 2100
Source: United Nations World Population Prospects

Chinese women resent being 'baby machines'

"Women are pushing back against the gender inequality of wedlock. The Internet seethes with resentment of the idea, implied by the government's efforts to encourage bigger families, that they

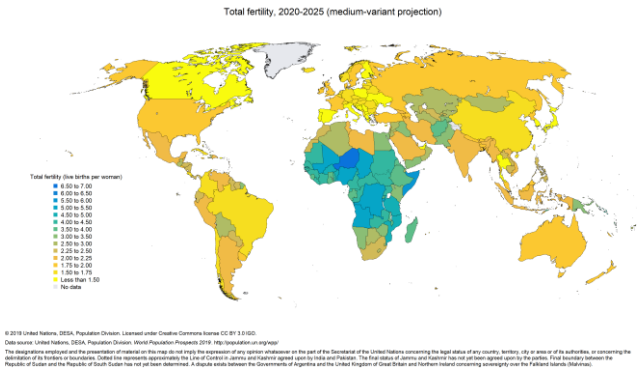
[6] Japan Ministry of Health, Labor and Welfare (2021)

[7] https://www.tofugu.com/japan/population-decline/

[8] https://factsanddetails.com/japan/cat23/sub184/item2793.html

[9] https://edition.cnn.com/2022/08/26/asia/south-korea-worlds-lowest-fertility-rate-intl-hnk/index.html; Note: There are multiple sources of world data, and I have found that the numbers reported on fertility rates differ.

become baby-making machines."[10] This is no different from what has happened in most Western countries. You need to go to Africa or the Middle East to find countries where the fertility rate is above replacement level (see map right), and it is from these countries that the Western countries are receiving immigrants to hold their populations stable and even grow.



China's been fiddling with its population for over forty years. It started to be concerned about over population in the 1970s, and instituted the one-child policy in 1980.[11] Then the government became concerned that the population wasn't growing, and instituted the two-child policy, which became effective in 2016. The negative population needle didn't budge in spite of incentives. So in 2121, the Party announced that three is better than two.

China has gotten where it is today, second only to the U.S. in GDP and total share of the global economy, for two reasons: 1) by having more inexpensive hands than anyone else to manufacturer everything; and 2) by becoming the third largest consumer market, after number one U.S. and number two EU. Losing population and having more of the population in the category of 'non-working' because of the increasing number of people beyond working age, will not help it to keep its economic and innovation engines running. India will soon take over the number one spot as the world's most populated country. Will it and another up-and-comer, Nigeria, take over the top spots as both producer and consumer nations, bumping China down the ladder? Let's hold that question while we look at what's happening with cities.

Do big countries have to have big cities?

China's largest cities have grown over the past twenty years by between 10% and 92%. They didn't do it organically, from within, and they didn't do it by importing foreigners. This astounding growth has been driven by migration from rural China, the places to which people flock back during the New Year's celebrations. More than 100 Chinese cities have a population of over 1 million

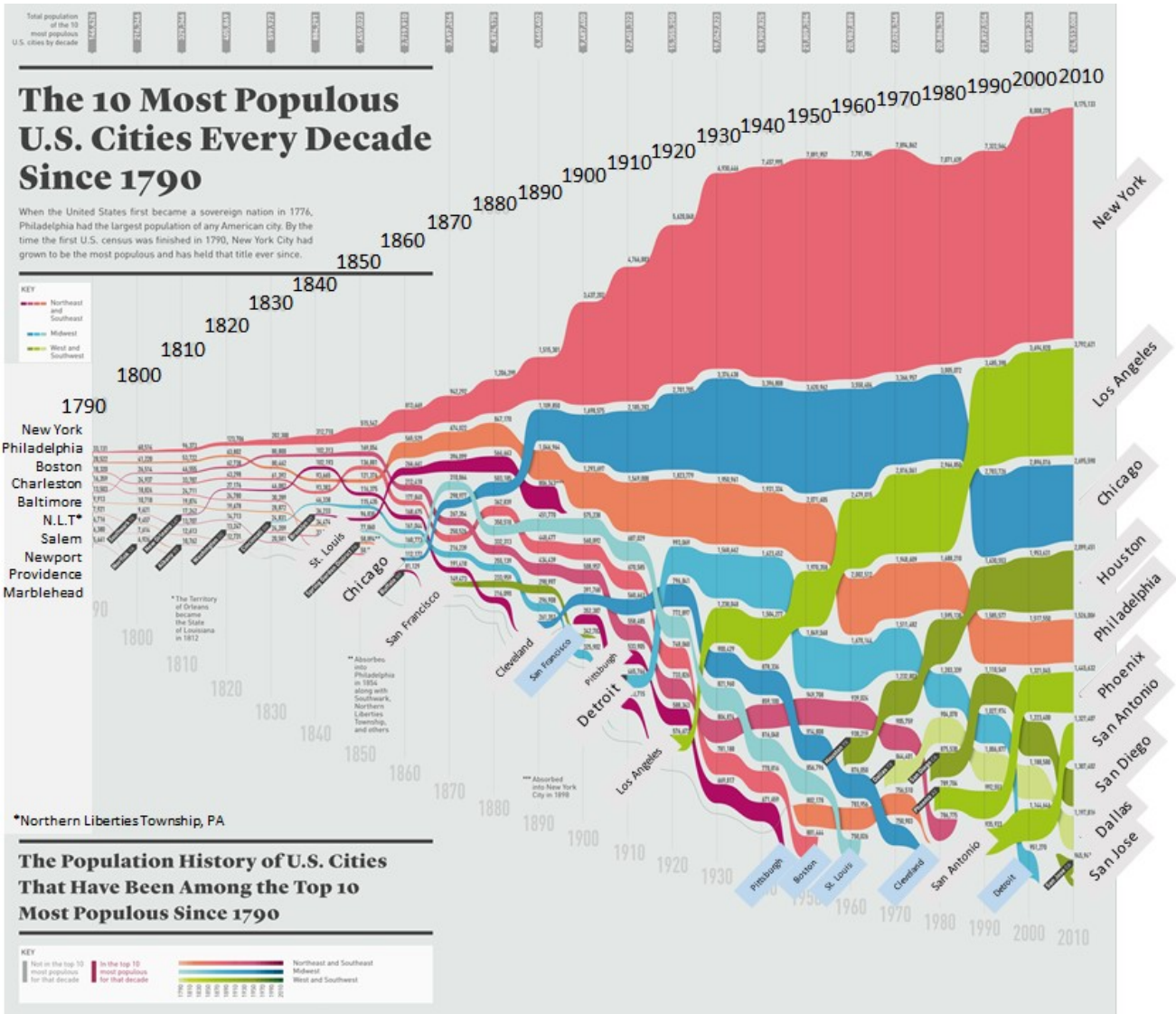
[10] *THE ECONOMIST JANUARY 21ST 2023*, page 47.

[11] The term one-child policy refers to a population planning initiative in China implemented between 1980 and 2015 to curb the country's population growth by restricting many families to a single child.

people. Just 10 U.S. cities have a million or more people. The U.S. has never been big on big cities, as I have shown in the May and August 2022 issues of *THE DISPATCHER*. China, on the other hand, has had a proclivity for prodigiously sized population centers dating back to Haojing in 1000 B.C. when it shared the title as the world's largest city with Memphis in Egypt and Babylon in Iraq, all with 100,000 inhabitants. During the next three thousand years came Haojing, Luoyang, Xiadu, Nanjing, Chang'an, Habgzhou, Beijing, and now, Shanghai.

In 2001, India had 20 cities with a population of 1 million or more. By 2011, the number was up to 46. In 2022, it was 50. Nigeria had only eight cities with 1 million inhabitants, but Lagos, its capital and largest city, had 15.4 million, almost double that of New York City.

I found the chart below while looking for information about the population growth of U.S. cities. I made some additions so it is



more easily readable. What it shows is the fate of America's largest cities, starting in 1790 after independence from Great Britain.[12] Of the ten largest cities at the start, only two remained on the list in 2010: New York City and Philadelphia. During the intervening years, eight of the original cities fell by the wayside, not disappearing, but just not keeping pace with growth. Boston and Baltimore are the most notable. Chicago came and stayed. Same with LA. Others, like San Francisco, Cleveland, St. Louis, Detroit and Pittsburgh, came and went—again, not ceasing to exist, just not playing in the Big Ten league. Of the ten largest U.S. cities in 2010, six of them entered the list in 1960 or later.

It's not the core that counts in the U.S.

New York City could be as large in population as Shanghai if it included its surrounding metropolitan area. New York's land area is one-eighth that of Shanghai. It's also one-third the physical size of Tokyo. If China's cities were compared with U.S. metropolitan areas, the two country's city regions would match up fairly well. Even Boston, extending west to Worcester and south to Providence would end up in sixth place, just behind San Francisco/Oakland/San Jose. So China's cities have large populations compared to U.S. city propers because they cover larger geographic areas. Shanghai's density is one-third that of New York City's, 3,000 people/km^2 versus 10,194.

The U.S. is in third place among the world's largest countries in population, and is also third in total area. In 2100, it is projected to still be up there in fourth place in population. It's a big country in all ways, but it doesn't have many big cities and only one really big city. This is not likely to change by the time 2100 A.D. rolls around, even if New York City Mayor Adams converts all of the metropolises office space to condos, coops and rentals.

The Industrial Revolution effect is losing its charm

China's population grew, doubling in size from 1956 to 2022, for the same reasons western countries grew: a (generally) more peaceful world got richer and healthier. Population growth has slowed in China for the same reasons it has slowed in most other industrialized countries: people feel they have better things to do with their time and money than take care of lots of children. China's cities grew to their stupendous sizes for the same reasons cities in the industrialized West grew as they took part in the first,

[12] https://www.visualcapitalist.com/wp-content/uploads/2019/04/10-most-populous-u-s-cities.html

second and third Industrial Revolutions.[13] Now, as the country experiences the same forces which have affected cities in America, Britain, Germany and all Western countries, it is highly likely that its cities will go through the same phases of negative and positive growth as other countries. The county's government has not shown that it can wave a magic wand and control its population growth, so there is no evidence it will be able to control its decline.

Until now, city growth within countries has been somewhat of a zero-sum game, with winners and losers. As Detroit waned, Austin waxed. Youngstown, Ohio had 168,330 inhabitants in 1950, while Phoenix had 106,000. Look at where they are now. Phoenix is up to 1.6 million while Youngstown is down to 60,000! Phoenix began to blossom as Youngstown began to droop. Youngstown attracted capital because it had coal and iron. Capital was used to invest in mining the coal and building a steel industry. More investments were made in building all of the houses, shops, schools, etc. for the workers and their families who were attracted from other parts of America and from abroad. Then the iron and coal ran out. The city was no longer attractive for capital, investment or people, and it contracted. Heard this before? Where did all the people from Youngstown and Detroit and Scranton go? Phoenix, Houston, and Austin to name a few places.

Phoenix grew mainly because people wanted to live there, not because they thought they could "make it" there. It has great weather if you like places that are hot and dry (although now all the lawn sprinkler systems have changed the city's micro-climate to hot and muggy). A detached house with a decent amount of land is very affordable.[14] Phoenix needed water and air conditioning to make living there possible. That's where the capital and investment came in. It had essentially unlimited amounts of space for growth, which made living there much less expensive than in places like New York, Boston, and San Francisco, cities with limited expansion possibilities. Businesses that needed people and not much of anything else moved there. That attracted more people and the perpetual growth machine was in action.

[13] http://www.michaellsena.com/wp-content/uploads/2019/10/The-Dispatcher_October-2019.pdf

[14] Median house price is one-half that of Boston, according to https://www.bestplaces.net/compare-cities/boston_ma/phoenix_az/costof-living

China's national, regional and local governments provided the capital for investments in creating the places where people from the rural areas could come to work in the factories that would drive China's growth. They didn't need to import people from Ukraine and Italy to mine coal and work in dress factories, and they didn't need to bring people to China by force to pick cotton. China had its own, vast labor force who could be "encouraged" to the city work centers thousands of miles away from their rural homes with salaries which were low compared to Western standards, but enormous compared to what could be eked out from the land. It could place its citizens in the dangerous jobs in mines and mills without having to depend on desperate immigrants or seasonal migrants, like most of the Western cities.

There actually is something new under the sun

But now, there are real changes afoot. The industrial revolutions were a true paradigm shift in how work was performed, and they totally altered the reasons for why people lived where they did. The first industrial revolution was the beginning of the end of the "putting-out system", in which companies obtained raw materials, but outsourced manufacturing to self-employed craftsmen who worked from home. These craftsmen were paid for the products they delivered, not for their labor. The only reason for anyone to move was to find a position as an apprentice to a craftsman or because the town or village where you lived had an overabundance of the trade you knew, and you weren't among the top picks for being chosen by the putting-outers. By building factories, business owners could concentrate and automate work and pay employees a wage. People moved to the towns where the factories were located, and factory locations were chosen based mostly on their location to receive the necessary raw materials and produce the energy needed to drive the new machines. With globalization, factories could move to wherever the combination of labor and operations costs were lowest. With the advent of containerization, China became the factory for the world, while India became the world's back office with the development of telecommunications and the Internet.

As wages in China and India increase, the factories and back offices will move to lower-cost locations, and as long as there are physical products that need to be produced and back-office tasks that require human hands to make and perform them, these new places will be where the bottom of the wage scale is located. However, eventually—it might take 77 years, maybe less, but not

much more—the perpetual motion machine will stop for the entire world, just like it appears to have already stopped in the U.S. and Europe. Odd as it may seem, it looks more like big cities in the U.S., Europe, Japan, South Korea and probably even China, will get smaller while smaller cities—especially those that lost population, but have preserved their infrastructures—will grow. They won't grow much, just enough to make them interesting places to live again. And the big cities won't shrink so much that they don't remain places that are pleasant enough to set up house to have a place to live and work.

The return of the 'live where you work' model

Skilled freelance workers in the U.S. earned $247 billion in 2021, up from $135 billion in 2018.[15] Since the 4th quarter of 2019, the number of jobs in three sectors, technology, finance, and professional services, have increased 6% faster in more rural areas than in San Francisco or New York City. The first of these two statistics does not mean that people are leaving cities. It just means that more people are becoming self-employed, rather than working as an employee for a wage. This situation may be forced on them by employers who contract with job shops (called staffing, recruiting, and workforce solutions industry) to provide workers to fill all types of positions, from programmers to project managers. They can carry company IDs, sit next to permanent employees and eat in the same cafeteria, but they are easier to fire in a downturn, and quicker and easier to hire in an upturn.

The way work was performed during the pandemic showed that all non-essential workers, whether they were permanent or contractors, did not all need to be in a physical location to get their jobs done. Post-pandemic, both companies and workers are using the lessons learned to save money on the employer side and increase quality of life on the worker side.

Mayor Adams' strategy of opening up more space for people to live in his five boroughs might well succeed, as long as the city does not lose all the other attractions which made the businesses want to locate there because those businesses saw the city's attractions as a way of attracting workers. The concept hasn't helped Detroit. Riding around central city on the *People Mover* (I have done it), you can see plenty of empty offices and abandoned buildings. Attempts are being made to get people to live in the

The Detroit People Mover

The system was designed to move up to 15 million riders a year. In 2008 it served approximately 2 million riders. This meant the system averaged about 7,500 people per day, about 2.5 percent of its daily peak capacity of 288,000. In 2006, the Mover filled less than 10% of its seats.

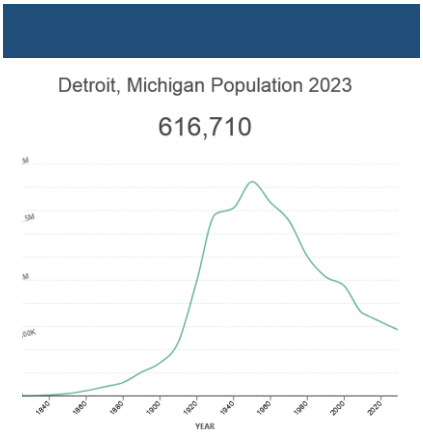
[15] *Freelance Economic Impact Report*. FIVERR INTERNATIONAL LTD. (2022).

empty spaces, but Detroit's population needle continues to point downward.

The second statistic says that people want space, lower costs, more freedom of movement, and the other things that can be found outside of big cities. The residential vacancy rate for China's largest cities was 7% in 2021, and 12% for the second-tier cities, higher than the global average. Young people in the rural areas of China are beginning to resist the lure of money in the big cities. They grew up with absentee parents who traveled home once during the New Year holiday with gifts and promises to come home for good or to provide a home for them when they earned enough money and obtained the necessary permits to reside permanently in the cities. Rural-to-city migrants faced difficult working conditions as laborers in factories or, more recently, couriers for China's e-commerce giants. A stringent residency system, called "hukou", has prevented migrants from accessing public health care and schools, or buying property in their city of work.[16]

Chaguan, *THE ECONOMIST* reporter for China, rode the train along with 8.3 million Chinese travelling home for New Year. He left Guangzhou for Xinjiang in the far west. The older people he talked to said that it was more chaotic thirty years ago, when "passengers would climb through windows into trains so full that people would sleep on luggage racks or stand in lavatories".[17] People carried home so many gifts and items for the home that were difficult to buy in the rural villages that there was hardly room for the passengers. It's not that way today, said Chaguan. Employers allow flexible holiday periods so everyone is not leaving and returning at the same time. This is partly because the labor force is shrinking and employees are harder to find and keep. The gifts that people carried home can now be ordered online and delivered anywhere. Instead of taking the train, migrants share rides in private cars.

What Chaguan observed is actually a trend confirmed by official Chinese statistics.[18] Millions of Chinese did not report for work in cities when the COVID restrictions on travel were removed. In a



*Getting smaller does have benefits. Detroit came in last on the **TomTom 2022 Traffic Index**, having the shortest commuting time and lowest cost for the commute among 50 cities worldwide. London was the biggest loser in first place on both measures.*
https://www.tomtom.com/traffic-index/

[16] Back then, it ensured that people born in the countryside were not free to migrate to the cities. Today, they can migrate, but in most cases, they can't access social-welfare benefits – healthcare or education or pensions – in the cities even when they live there. They have to pay for private clinics in the cities or travel all the way back to the countryside for healthcare.

[17] *THE ECONOMIST JANUARY 21ST 2023*, 'Riding the slow train in China'

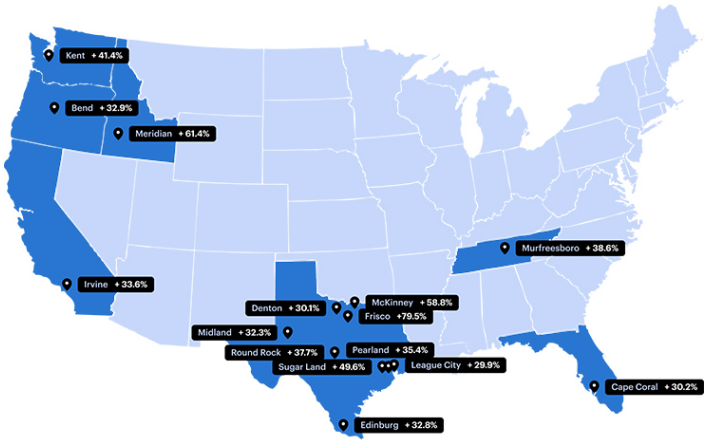
[18] https://www.cnbc.com/2021/06/28/reverse-migration-is-picking-up-in-china-as-workers-leave-big-cities.html

battle of wills, the Chinese people have proven to be worthy foes of officialdom. They aren't having more children, they wouldn't continue to stay at home to support the government's Zero Covid policy, forcing the government to abandon the policy that it has had since Covid first appeared in Wuhan. Now, they are going to find ways to make a living where they live.

Where are the places that most people want to live?

The simple answer to this question is that if they can choose, they choose places where they can have the most freedom to move and where they get the most space for their money. Here are some factoids about growth in the United States:[19]

- Among cities with a population of at least 100,000 in 2020, Frisco, Texas, had by far the most explosive growth, with a 79.5% total increase since 2010 — 18% higher than the next fastest-growing city.
- Texas is home to 9 of the 15 fastest-growing cities in the U.S. by percentage population growth between 2010 and 2020. Seven are suburbs of Dallas, Houston or Austin.
- All 15 of the fastest-growing cities in the U.S. by percentage population increase are in the Southern or Western U.S.
- The city with the largest absolute increase in population between 2010 and 2020 is Phoenix, which grew by over 262,000 people. Phoenix is currently the fifth-largest city by population in the U.S.
- Five of the 10 fastest-growing cities in the U.S. by raw population are in Texas: In order from highest to lowest population increases, they are San Antonio, Houston, Austin, Fort Worth and Dallas.



As you can see on the map to the right, Texas is where the biggest growth is occurring, and it's not in the big cities. All fifteen towns have populations of between 100,000 and 250,000, and they have grown by between 30% and 80% since 2010. Of the top ten cities in 2010, only Phoenix and San Antonio had positive growth between 2020 and 2021.[20] New York was down almost 4%, and San Jose (Silicon Valley) was down almost 3%. This is not just knee jerk reaction stemming from the

[19] https://www.consumeraffairs.com/homeowners/fastest-growing-cities.html

[20] https://en.wikipedia.org/wiki/List_of_United_States_cities_by_population

pandemic. This has been in process for the past decade, and it will continue. According to address-change-request data from the UNITED STATES POSTAL SERVICE, "permanent address change requests jumped 3.3% to over 10.2 million between 2019 and 2020. 2021 saw similar results with only a slight drop in volume from 2020. The USPS data suggests that many are leaving large cities and chilly states for less congested areas and warmer climes".[21]

When it comes to the U.S., it is very clear that people are moving from car-unfriendly states to states that welcome all cars, including SUVs and pick-ups. California, New York, and Massachusetts are losing population, mainly due to high taxes and extremely high living costs.[22] Wisconsin and Michigan are also losing the population contest, mainly due to the jobs situation. I have seen no studies connecting flight from the ICE enemy states to dissatisfaction with car policies, but I know from personal experience that my move from Cambridge, MA to the Boston suburbs was partly as a result of my daily struggle with keeping my windshield free of parking tickets—even though I clearly displayed my resident parking permit. The situation in Europe is complicated by the existence of an *über Regierung* in the form of the EUROPEAN UNION that has taken it upon itself to pass an ICE ban in all EU countries by 2035, and the UK, Switzerland, and Norway, who are not members of EU, still follow its lead. So there is no place to go.

Transport when the 'putting-out' system returns

More and more people are opting to lower their wages if they have to, or give up a permanent job in order to work as a contractor, so that they can work closer to or in their home. They seem to be ready to give up a daily, weekly, or yearly commute from the place where they have their permanent residence and which they call 'home' to an urban center where they have to work. New York City, Los Angeles, Chicago, Miami, Boston, Seattle, San Francisco, San Diego, Minneapolis–St. Paul, Philadelphia, and Washington, D.C. are among the twenty largest metropolitan areas in the U.S. which were growing in 2011 and then, in 2021, they all shrank by a combined 900,000 people,

[21] https://www.forbes.com/home-improvement/features/states-move-to-from/; https://thehill.com/changing-america/enrichment/arts-culture/3479076-americans-are-moving-out-of-major-cities-and-opting-for-southeastern-states-data-show/

[22] California, New York, and Massachusetts have led the call for banning internal combustion engine vehicles by 2035. High-growth states Texas, Arizona and Florida are conspicuous by their absence from this list.

equal to the size of two Wyomings.[23] It will be a tough sell to get them back by converting empty office space into apartments. For Chinese migrant workers, it will not be a option to take up a Mayor's offer to move into their former office that has been converted to a permanent residence. The laws will have to change to allow a person who has been born in a village to have the same rights in a city as a person who has been born in that city.

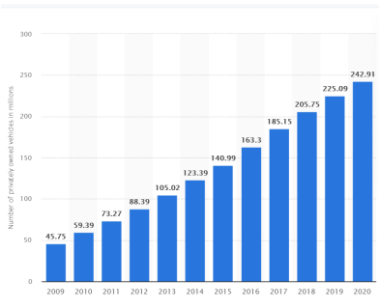
We have seen where people want to live when they have the choice. Now, the question is what will that mean for transport? Will the moves into ranch houses in the wide open spaces of Texas and Arizona lead to a reversion to traveling by mustang horses? It's possible. They are more climate friendly than farting cows. But a bike will get you there faster, costs less in upkeep, and is probably safer. If there is no reason to travel to an office, grocery store, clothing or hardware store because everything is delivered to your home like it was back in the days of ordering everything from the SEARS AND ROEBUCK catalog, maybe you can manage with a regular bike for each family member, and a cargo bike to carry the kids. I don't think so. It gets pretty hot in Phoenix and Texas, and trips to church (I think they will still exist in 77 years), away baseball and soccer matches, potluck dinners with friends, those weekend trips to the lake and vacation trips to the mountains and the shores will require more than a bike—or a horse—can offer.

What about personal aerial devices. Will their time ever come? It's also possible. They offer many advantages over motorized land vehicles, like no flat tires, no worries about hitting a moose, no red lights, no skidding on icy roads. The list is long. But if your engine konks out, it won't be just a matter of pulling over into the breakdown lane. It's difficult to imagine what a flight control system would look like if we simply put our roads up in the air. I think PADs will be great as taxis, to carry the deal-makers who continue to have offices in the middle of NYC and London to the airports or from office tower to penthouse. Maybe they will be the answer for emergency work vehicles, like ambulances, fire 'trucks', police 'cars', which need to get places quickly and without traffic delays. I have a strong feeling that if personal aerial devices do become common, they will have to be able to operate both in the air and on the ground.

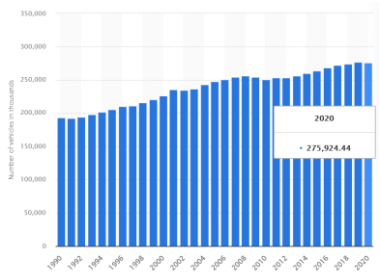
[23] https://www.theatlantic.com/newsletters/archive/2022/04/metro-areas-shrinking-population-loss/629665/

A car by any other name will still be a car

We continue to buy cars. There are about the same number of cars rolling around the streets of China and the U.S today. They may have different shapes and names, different fuels, different mechanisms to make them move, different things going on inside their cabins, but they are personal motorized vehicles. Governments (almost) everywhere are doing all they can to convince their citizens to purchase battery electric vehicles. Sooner rather than later, governments and their citizens will realize that the BEV solution was a flash in the pan. It's too expensive, not sustainable in the long run and too much of a pain. Someone will come up with a better way to run cars that will be much more climate-friendly and much more convenient than plugging your vehicle for however long it takes you to get to the next plug. Just as the car OEMs have figured out how to adjust to the unwelcome BEV intrusion, they will adopt to a more welcome one.

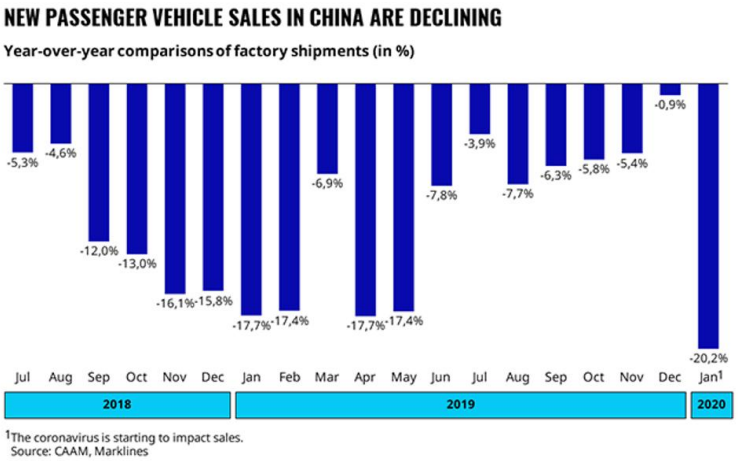


Number of privately owned vehicles in China from 2009 to 2020 (in millions)
Source: Statistica 2023



Number of privately owned vehicles in the United States from 2009 to 2020 (in millions)
Source: Statistica 2023

Fleet sales make up about half of all car sales in major European markets including Germany, France and the UK, and many of those are for company cars. If we are not using at least one of our multiple family cars to get at least one of the family members to work, perhaps we won't buy as many cars as we used to. Sales of cars in the U.S. have been relatively stable, with up and down years. Cars sales in China definitely began to cool well before Covid, and they will continue to remain flat as long as only one-half of the population can afford them, that is the middle class who have permission to live in cities. That market appears to be saturated.



At some point, we may not buy our own cars. We may have a car for a particular amount of time or to do a particular job, and the car will be the most appropriate one for the job. We may develop a car-like mobility solution that will take us from almost where we are to almost where we want to be in almost the same time as it would take if we used our own car parked in our garage or common parking lot. Highly automated technology is getting us close to an affordable and safe solution. Many of those living in 2100 may be living and working at home, but they won't be staying at home—unless we really mess things up.

Getting to 2100 and beyond

I said at the outset that things are going to be very different at the start of the next century compared with how they are today, but it may not look and feel that way. The two pictures of a residential street in the sidebar illustrate what I mean. You can tell that the picture of Gloucester, Massachusetts painted by Edward Hopper is from an earlier time than the one of Raleigh, North Carolina by the age of the cars, but nothing else. It's my guess that the views of the places where people are moving to now will look more like these places in 2100 than the residential tower block in Shanghai shown below. Unless Russia does to Sweden what it is trying to do now to Ukraine, which is to bomb it out of existence, there will still be people walking down the main street of our little town of Vadstena in Sweden in seventy-seven years.

Street Scene, Gloucester
A painting by Edward Hopper
1934

A street scene in Raleigh, North Carolina showing new homes in 2022. Not much has changed in what Americans want in 88 years.

A residential tower block in Shanghai, China in 2023.

I have two suggestion for Mayor Adams to get to 2100: First, don't install a Ferris Wheel anywhere in the city. People don't want to live in Coney Island. They want to go there for amusement and then return to their homes. They want to live in neighborhoods where children are polite and their neighbors are kind and considerate, where the streets are clean, public surfaces are free from graffiti, the garbage is picked up regularly, they can see trees and flowers growing naturally, and where they feel safe. They want to be able to relax from their daily chores, and sometimes they want to clear their minds and leave their neighborhoods for places where there is wind in the trees and the sound of water running in a brook or waves rolling onto sand. This is why trolleys and cars were invented after people crowded into cities along with the first Industrial Revolution. If you make it harder for your residents to leave, they will stop being residents. Help them find places to put their transport devices.

My second suggestion to Mayor Adams (and the mayors of other cities that have an increasing amount of unused office space) is to gently nudge the companies that are still renting space in the city to give more space to the employees who are willing to make the commute. When I was looking for space in downtown Boston in 1978 for our digital mapping skunk works, raw office space was going for less than $3.00/square foot/year, and built-out space was around $5.00. In the second quarter of 2022, the cost of downtown Boston office space was $65.[24] Based on inflation, $3 is worth $13 today. The '70s were pre-boom years for Boston, and

Storgatan
Vadstena, Sweden

[24] https://www.statista.com/statistics/1272212/office-space-rental-rates-by-district-boston/

when it boomed in Boston, it really boomed, five times more than inflation. We all had plenty of elbow room back in 1978. Pre-Covid, office workers were elbow-to-elbow as companies tried to squeeze as many staff as they could get away with into super expensive quarters. Too expensive. Spread them out and let them have some thinking and breathing room. Maybe they'll come in more often and spend some money while they are there.

I have one suggestion for the Chinese Communist Party: Start to prepare for right-sizing your country and your cities, because with the policies you have established to control your citizens, the only direction both will go is down. The alternative would be to get rid of your ridiculous "hukou" system, which forces both the rural poor and the wealthy and middle classes to stay put. Neither can move to where they might want to live, and the poor are forced to become migrants without rights to cities in order to feed their families. With deindustrialization, people in rural areas can have greater access to opportunities to work where they live, and those who have had to live at greater expense in cities can choose to move to more affordable locations. This sounds like 'freedom', so the CCP might find it unacceptable. But one can dream.

I have a number of suggestions for leaders of the industry that has provided the majority of personal mobility in the form of four-wheeled motorized transport for the past seventy-seven years. GENERAL MOTORS, FORD, CHRYSLER/FIAT/PEUGEOT THROUGH STELLANTIS, TOYOTA, HONDA, NISSAN, RENAULT, MERCEDES-BENZ, BMW, and VOLKSWAGEN are still with us today because you did the right things in 1956. You maneuvered your way through financial downturns, globalization, and suburbanization. You developed products that people bought as tools which they used to solve their lives' daily puzzles and to enjoy the increased amount of free time they were receiving as a result of all the affordable, labor-saving products being invented. You have managed to adapt to safety and environmental restrictions which have required that you find and develop new materials and manufacturing processes. You have found ways to sell your cars that all of these restrictions have made more expensive. You are still in business. Those who didn't do the right things are not, even though some of them have their names pasted on ersatz versions of what they once were (e.g., MG).

Whether you see the dawn of the next century, either in your present form or as part of GEELY, BYD, or SAIC, depends on what you

decide to do today. You have some precedents to help you in your deliberations. I have listed a few of them in the following list.

Why They Are Still Here

- *In 1956, GM controlled half of the U.S. auto market, the world's largest. That is the year Alfred P. Sloan retired. He was the man who made GM big. If GM hadn't been big in 1956, it would be gone now. Bigness, not products, saved it.*
- *Chrysler would be gone today if it had not gotten Jeep as part of the American Motors acquisition, and had not invented the minivan. Some would say that it would be gone if it had not received a government loan of $1.5 billion in 1979. It was not to save its automobile production, but to save its M-1 Abrams tank production.*
- *Ford would be gone today if it had not developed an affordable and dependable pick-up truck and shed all of the baggage it had collected in the form of luxury car companies.*
- *Volvo would be gone today if it had not built the XC90 SUV in 2002. It stubbornly resisted building one on the principal that they did not project the company's image of safety. Ford forced them to do it, and it was the one good thing that Volvo got out of that eleven-year relationship.*
- *Toyota, Honda and Nissan would never have gotten traction in the U.S. in the 60s if they hadn't developed cars that didn't need an oil change, and could continue running if their owners ignored maintenance altogether.*

An auto show in the 1950s

There are many things that could happen in the future, but seventy-seven years is too short a time for major changes—unless, of course, we initiate our own catastrophic event. It's too short a time for all of us humans to shrink like the incredible shrinking Scott, or like horses during the *Paleocene-Eocene Thermal Maximum*, or *PETM*, about 56 million years ago, so that we use less of everything. That level of adaptation will take a few hundred thousand years or more.

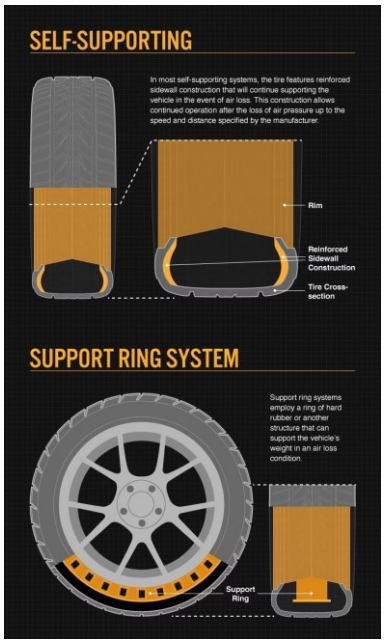
An illustration of the earliest-known horse Sifrhippus, dwarfed next to a modern domestic horse. (Image credit: Danielle Byerley, Florida Museum of Natural History)

The biggest changes will be in how we get jobs done, both our own personal and family daily chores and the work we do in exchange for the means to live. A big part of getting jobs done involves how we move ourselves and things around. With deindustrialization, societies have an opportunity to begin replanning and rebuilding their communities to make them places where their inhabitants spend the majority of their time, not just the small amount of time when they are not somewhere else, as is the case today.

Dispatch Central

Your life rides on your tires—or tyres[25]

BESIDES RUNNING OUT of gas, what's the last thing you need to have happen if you are driving on a deserted road after dark? A flat tire. Before r*un-flat tires (RFTs),* you had four choices: change the tire using the spare; call for roadside assistance, if you had it; wait for someone to drive by who would stop and change your tire for you (and not mug you); or walk home. None of those options are really good because they all involve some degree of exposure to unsafe consequences. *Run-flat tires* allow you to keep driving to get home or to a safe place. Another advantage of RFTs is that a blowout does not cause you to lose control of the car.



Background on Run-flat Tires

A run-flat tire is a pneumatic vehicle tire that is designed to resist the effects of deflation when punctured, and allow the vehicle to continue to be driven at reduced speed for limited distances. Although they are filled with air, they are self-supporting if some or all of the air is expired. Michelin was among the first to develop them, introducing one sold for military use in 1934. There are two types, those that are self-supporting and those that have a supporting ring. Beginning in the 1980s, automobile OEMs began to substitute RFTs as original equipment and eliminated the spare tire and tools to change tires in order to reduce the curb weight of the vehicle.

There are disadvantages to RFTs, otherwise all new cars would be delivered with them. Currently, according to *CONSUMER REPORTS*, less than 30% of new cars come with RFTs. Around 10% of new cars have full-sized spares, 60% have space-saver, temporary spares, and 30% have either repair kits or RFTs.[26] RFTs are more expensive to purchase than regular tires, and there is not a wide a variety of them to buy. They deliver a harder ride because their sidewalls have less give, but adjustable suspension systems can accommodate the difference. It seems that the advantages

[25] Is it 'tire' or 'tyre'? It depends on where you live. 'Tire' is the preferred spelling in the United States and Canada, while 'tyre' is more common in other varieties of English outside of North America because that is the way the word is spelled in Britain. So they are both correct, but if you use 'tyre' in your English class in Sheboygan, Wisconsin, your likely to lose points.

[26] https://www.consumerreports.org/tires/some-newer-cars-are-missing-a-spare-tire-a9928775934/

far outweigh the disadvantages. So why develop something new if the solution we have looks like it covers all the bases?

The SMART TIRE COMPANY isn't actually developing something new. It is bringing something created for another market, outer space, to Planet Earth. Its *Shape Memory Alloy Radial Technology* (*SMART*) tire was created by NASA for Lunar and Martian roaming, where there are no roads, and where temperatures can get pretty hot and very cold.[27] The super elastic tire are airless, so there are no flat tires. They are made from nickel titanium, which is a so-called 'shape memory alloy' (SMA) that is elastic like rubber, but strong like titanium.

Tires that have been used for the Lunar Terrain Vehicles and the Mars Rovers have been made of aluminum, steel and titanium, but have had a different form from what we know as Earth tires. They look like old tractor tires, as can be seen in the photo of the Mars Perseverance Rover. The new SMA tires will be used on future planet roving missions, and SMART has developed a tire that has a lower weight that can carry a higher load, has (supposedly) greater fuel efficiency, and reduces the amount of waste tires cause at their end-of-life. Globally, an estimated one billion tires per year reach the end of their useful lives.[28] More than half of these tires are burned for fuel, and much of the rest end up in landfills and add 20-30% of microplastics to the oceans.

Does the compay have legs (or wheels)? It's hard to say. It was founded in 2020 by Earl Cole and Brian Yennie. Brian is the brains behind the technology and Earl is the CEO with a marketing background. It has crowd funding, but not much ($1.3 million). They have a couple of employees working on their first commercial product, which is due to be introduced this year. A set of four SMART tires will cost a consumer up to $3,000, which is

[27] The moon has temperature ranges between $+120^0$ and -130^0 Celsius. Mars temperatures get down to -128^0 Celsius.

[28] https://www.wbcsd.org/Sector-Projects/Tire-Industry-Project/End-of-Life-Tires-ELTs

three times more than a set of premium tires. This is because the cost of the nickel titanium. It does not look like this particular attempt will be able to deliver a breakthrough, but there are plenty of tire companies that can pick up the thread and tailor a new product.

One of those companies is Michelin with its *Unique Puncture-proof Tire System* (*UPTIS*) prototype, which is a combined airless tire and wheel assembly for passenger cars. It will be brought to market in 2024 as a result of a partnership between Michelin and General Motors. As part of a joint research agreement, Michelin UPTIS has already been tested on vehicles the Chevrolet Bolt EV in real-world conditions. It combines an aluminum wheel and a flexible load-bearing structure made from glass fiber reinforced plastic (GFRP).

Michelin Unique Puncture-proof Tire System (UPTIS)

Britain's cars have hit some bumps in the road

ONCE UPON A TIME, Great Britain (England, Wales, and Scotland) was an automotive powerhouse. In the 1950s, only the U.S. produced more cars than Britain.[29] In 1957 it was passed by Germany; in 1963 Japan topped it; in 1964 it was France; in 1974 it was Italy; in 1976 Russia (?) moved up (and then quickly down); Canada's turn came in 1979; Spain passed it in 1982; South Korea moved up in 1991; China shot past in 1998; Mexico was next in 2000, Brazil in 2001, India in 2005, Thailand in 2008, Iran in 2009, Turkey in 2018, Czech Republic in 2019. We can stop here. In 2022, the country produced only 775,014 cars. That's down from 1.7 million in 2016. What has happened?

Two of the most mentioned reasons for the country's automobile manufacturing demise are its decision to leave the EU and the country's poor support for electrification, compared to other European countries. A third reason that is given is that car manufacturing has been globalized and it's a natural course of events that other countries with lower production costs would be more suitable production locations than high-cost Britain. The latter is the economists' standard reason for all such occurrences. It all evens out in the end, they say. For Great Britain's sake, we should all hope so because there are 182,000 jobs at stake, and 3% of its GDP is at risk.[30]

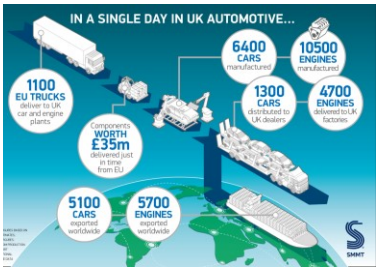
[29] https://statisticsanddata.org/data/top-countries-by-motor-vehicle-production-1950-2020/

[30] THE ECONOMIST JANUARY 28TH 2023. "Carmaking in Britain" (page 28).

Current explanations of why Britain's car manufacturing industry has tanked appear to be written by journalists and financial analysts who are fresh out of college and never bothered to study the history of the country's automobile history. Britain lost its car industry when it sold its companies to foreigners: American (VAUXHALL to GM; JAGUAR and ASTON MARTIN to FORD), German (BENTLEY to VW; ROLLS-ROYCE, LAND ROVER, and MINI and TRIUMPH to BMW), Indian (JAGUAR and LAND ROVER to TATA), China (ROVER and MG to SAIC; LOTUS and LONDON ELECTRIC VEHICLE COMPANY (LONDON TAXI) to GEELY), Italian (MORGAN to Italian Investors), French/Italian (VAUXHALL to STELLANTIS).[31] Japan's NISSAN and TOYOTA, and America's FORD still have operations in Britain, but they have no country loyalty to the UK. HONDA simply shut down its Swindon manufacturing facility in 2021 deleting 150,000 cars from the production total, claiming that Brexit made it too difficult to do business on the western side of the British Channel. What's left? ASTON MARTIN, which is publicly traded and has Canadians and Saudi Arabians as its principal investors.

With foreign ownership, the British car companies, even those that were managed by Brits and not imported executives, were left completely at the mercy of events outside of the country. Decisions were never going to be made to protect operations and jobs within Britain if those decisions were not in the best interests of the parent company as a whole.

Britain's car companies were bought up by foreign companies because they were not successful, and they were not successful because: 1) the quality of the majority of their products was less than stellar; or 2) if the quality was good—or at least decent—the cost of production required that the cars could only be sold to a small group of wealthy buyers. Between 1990 and 2021, total sales of passenger cars and light commercial vehicles in Britain have ranged between 1.6 million and 3.1 million. Sales were 1.6 million in 2022, the lowest in thirty years, with VAUXHALL, NISSAN and TESLA as the top brands.[32] Twenty percent of the cars that are produced in the UK are distributed to UK dealers. The rest are exported, and the EU is the biggest importer (see graphic right).[33]



[31] http://www.michaellsena.com/wp-content/uploads/2019/04/The-Dispatcher_May-2019.pdf

[32] https://www.best-selling-cars.com/britain-uk/2022-full-year-britain-best-selling-car-models-in-the-uk/

[33] https://www.smmt.co.uk/industry-topics/europe-and-international-trade/key-exports-data/

Britishvolt was going to fix the electrification problem

Current common wisdom claims that if you are going to build electric cars, you need to have a 'gigafactory'[34] where you are building them. Those batteries are big and bulky and costly to ship around the world. Since cars are built in Britain, and none of the usual suspects (e.g., LG CHEM, NORTHVOLT, PANASONIC, CATL) seemed interested in building a battery factory, two Swedish entrepreneurs raised their hands and offered to open one. The details of this sad saga are too gory to go into in depth, so I will just touch on the highlights.

Britishvolt was founded in 2019 by two individuals, Lars Carlström and Orral Nadjari, neither of whom had any sort of background in batteries of any kind. Carlström had been a SAAB dealership sales manager, which seems to be the extent of his automotive experience. Nadjari had been an investment banker. They apparently saw an opportunity to attract investment capital from both private investors and the British government. They chose a site in northern England for the factory that would have the capacity of 30 gigawatt hours per hear (GWh) and employ 2,500 people. For reference, TESLA's gigafactory in Germany has a capacity of 35GWh.

Carlström left the company in December 2020 when it became known that he had been convicted of tax fraud in Sweden, and Nadjari resigned his CEO position in the summer of 2022. The company struggled to sign up customers for its planned production. GEELY's *LOTUS* and ASTON MARTIN showed interest, but never signed on the dotted line. The government was ready to pump in £100 million in December to support building the factory, but it cancelled its planned infusion when it learned that the money would be used to keep the company in operation rather than on construction. BRITISHVOLT went into receivership in January. There is some interest in picking up the pieces, including Australian Recharge Industries. Carlström offered a priceless reflection on the situation: "We could probably have seen a more prosperous project if a number of things had been done in a different way."[35]

[34] The term 'gigafactory' was first used by Elon Musk in 2013 to denote a factory that would be "something that is comparable to all lithium-ion production in the world all in one factory. The word comes from the prefix 'giga', which comes from the Greek *gigas*, meaning 'giant'. In other words, it is a 'giant factory'.

[35] https://www.thisismoney.co.uk/money/markets/article-11378529/Britishvolt-moved-fast-says-former-boss-Lars-Carlstrom.html

Expensive cars are selling like hotcakes

Torsten Müller-Ötvös, CEO of Rolls-Royce Motor Cars

Rolls-Royce sold a record number of cars in 2022, a total of 6,021, up 8% from 2021. This is the first time in its 118-year history that it has sold more than 6,000 cars in a single year. Torsten Müller-Ötvös, CEO of *Rolls-Royce Motor Cars*, a wholly-owned subsidiary of BMW, said in an interview that the company had achieved this feat in spite of a drop in orders from Russia due to its war with Ukraine and in spite of recession pressures.[36] *"We haven't seen any slowdown or downturn. We haven't seen any negative impact,"* he assured the interviewer.

The average price of a *Rolls* was $534,000 in 2022, much higher than its listed manufacturer's suggested retail prices (MSRP). This is because Rolls-Royce makes mostly "bespoke" cars, customized to the buyer's specifications. Its *Bespoke Customization Program* staff help customers decide what options to add, what color combinations to choose, what one-of-a-kind touches they can request to make their car uniquely theirs. Precious. For those who watched the World Cup Football (a.k.a. soccer) competition this past summer, it will not be a surprise to hear that the Middle East is the leading region for ultra-customized, so-called 'High Bespoke' vehicles. Maybe Christian Ronaldo stopped by the VIP Bespoke office in Dubai to buy his third *Rolls*. He already owns a *Cullinan* and a *Phantom Drophead*, one of the most expensive production cars made, along with a large collection on *Ferraris*, *Bugatti*, *Lamborghinis*, *Maseratis* and more.

What's the largest market overall for RR? It's still the U.S., accounting for 35% of global sales. Second is China, which suffered a slight decline, but still made up a non-shabby 25% of the total. Müller-Ötvös believes that China will be its largest market in the future. *"I foresee that market being quite a stunning business for us," he said. "Particularly in the luxury segment, it's in growth mode. I would not be surprised to see one day China being the largest region for us worldwide."*

***Rolls-Royce Cullinan** is the world's most expensive SUV with a base price of $348,850. But don't expect to leave the dealership without paying in the vicinity of half a million dollars or more.*

The company's SUV, the *Cullinan*, was its best seller in 2022, making up about one-half of global sales. Its *Ghost* model accounted for over 30% of sales, while the *Phantom* accounted for about 10%. In 2022, it launched the *Spectre*, Rolls-Royce's first electric vehicle and the beginning of its plan to become fully electric by

[36] https://www.cnbc.com/2023/01/09/rolls-royce-2022-sales-soar-ceo-says-no-slowdown-in-spending-by-the-rich.html

2030. It has a starting price of $413,000, and had more than 300 preorders from U.S. customers before it was officially unveiled last October.

"I'm not saying we're immune from recessionary tendencies. We have seen years when our business was affected. So let's cross our fingers that isn't happening this year. I'm cautiously optimistic about us delivering another strong year in 2023," he said. That's reassuring, Torsten.

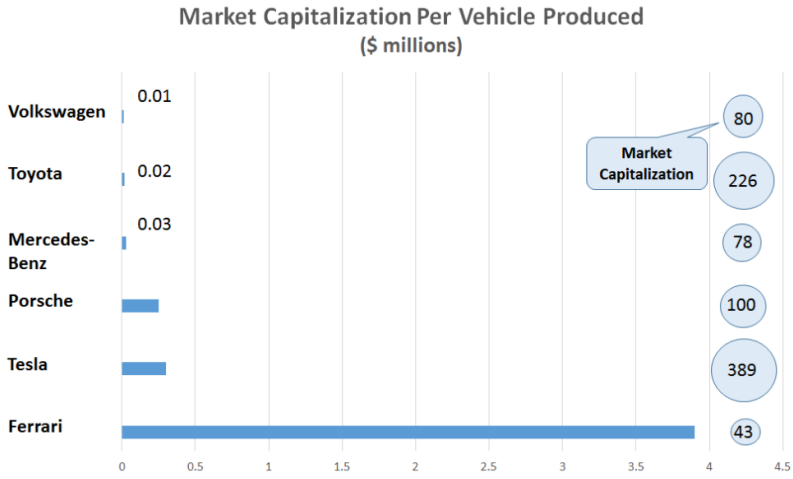
Expensive Cars for expensive tastes—and big pocketbooks

ROLLS-ROYCE has company in the winner's circle. *'The fanciest vehicles are selling fast'*, was the headline in *THE ECONOMIST JANUARY 14TH 2023 Business Section* article on high-performance motoring.

"Global car sales in 2022, at around 79 million vehicles, are below the level of a decade ago. Yet demand for fancier sets of wheels costing more than €100,000 ($107,000) grew by around 6.5% a year over the same period, according to Bernstein, a broker."

This is a FERRARI, the new Purosangue *(Italian for* 'Thoroughbred'*. What is it about expensive cars and rear-hinged rear doors? A Rolls-Royce SUV and a Ferrari crossover. My, my, times have changed.*

FERRARI sold 20% more cars in the period between January and September 2022 compared to the same period a year earlier. BENTLEY, owned by VW, sold more than 15,000 vehicles for the first time in its history, 4% more than in 2021. ROLLS-ROYCE, FERRARI, and LAMBORGHINI (the latter also owned by VW) accounted for almost all sales of cars costing more than $250,000. FERRARI, LAMBORGHINI, PORSCHE, and BENTLEY were the big 2022 sellers in the $150,000-$250,000 bracket.



THE ECONOMIST article included a chart it had produced titled '*Wheels of fortune*' (cute) which shows the market capitalization per vehicle produced. I have reproduced the chart here. Market caps are as of the 11th of January 2023. TESLA may still have an oversized market cap, but FERRARI outdistances it and PORSCHE by four furlongs and M-B, TOYOTA, and VW by a country mile. The article ends by warning that the super-expensive cars are losing two of their heretofore advantages: superfastness and supper-smoothness/super-silenceness, with FERRARI in the former group and RR in the latter. I doubt that the 6,021 RR buyers thought they were buying a more expensive version of a TESLA, or that anyone who owns a FERRARI would be in the market for a ZEEKER.

Stop signs in the postmodern age

What's not clear?

ARE STOP SIGNS merely a suggestion, like the lane marking lines on main roads in Moscow, or are they a command? Do they say to the approaching driver: "Are you feeling lucky, punk? If so, just continue right through as if you didn't see me." Or do they shout: "NOT ANOTHER INCH!" telling the driver that those wheels better stop rotating or the policeman waiting around the corner will haul your butt into the hoosegow faster than you can pronounce the word POSTMODERNISM.

Sweden's automobile association, **M**, performed a spot test of drivers' behavior at stop signs in eighteen communities around the country. It found that 27% of motorists did not stop at the stop signs. (It's an average of 30% in the U.S.)[37] When it came to bicyclists, fully 90% did not stop, and among electric scooterists it was 78% that did not stop. Motorcyclists were best of the bunch, 85% stopping where they should.

A spokesperson for **M** commented on the results: *"Stopping at stop signs is an important traffic safety question, and it is troubling that three of ten (car drivers) do not respect their obligation to stop."* Getting run into or over by a bicycle or e-scooter carrying someone and travelling at 25 miles per hour is no picnic either. Eight-to-nine out of ten can smash into you while you cross the street when you should have free passage.

What is it about the sign with the word STOP that is unclear? It has been around for over 100 years, and it's found in every country I've ever been in. Its purpose is the same everywhere, which is to alert people that they need to slow down and prepare themselves for a crosswalk, an intersection, or a driveway that has the right-of-way, and then to STOP. Stop means stop, not rolling through while hoping no one is coming to the left or right, referred to in some circles as a 'California stop'. The red octagon with white letters is intended to stand out so that drivers don't miss it. Students who are learning to drive are told what the sign means. Most drivers' tests ask the test taker to answer a question about what is expected of them when they approach a stop sign. So why the heck don't people do what is expected of them and STOP? Here are the four reasons:[38]

[37] https://www.trafficviolationlawfirms.com/Statistics.cfm

[38] https://www.witherspooncompton.com/blog/2021/12/reasons-people-dont-stop-at-stop-signs/

1. They didn't see it. It was obstructed by trees or bushes, or by vehicles, especially trucks and vans, that blocked sight of it;
2. They were distracted as they approached the stop sign, either by something they were doing in the car or something that happened outside the car;
3. Their vision was impaired, either temporarily as a result of drugs or alcohol, or because of a permanent condition; or
4. They chose not to stop.

The only valid argument in front of a judge is the first, and then it will be up to the accused to prove this was the case. A person could argue that they really would have stopped in cases two and three, but other forces took over their control. However, in case four, a person is essentially saying "That stop sign was not going to exert its control over me. Why should I let it? I have a right to go straight through an intersection when it suits me, and just as much of a right to demand that other people stop so they don't hit me. Stop signs are just another relic of patriarchal and colonial societies and a time when people with money and power subjugated people who were poor and without rights."

Am I woke enough, or am I just too blind to see?

According to *ENCYCLOPEDIA BRITANNICA* Editor, Brian Duignan, 'post-modernism', also spelled 'post-modernism', in Western philosophy is "a late 20th-century movement characterized by broad skepticism, subjectivism, or relativism; a general suspicion of reason; and an acute sensitivity to the role of ideology in asserting and maintaining political and economic power".[39] As stated in the Britannica text, it is a philosophical reaction to Western Enlightenment philosophy of the 17th through the 19th centuries, which held that there is an objective natural reality independent of human beings; that descriptive and explanatory statements of scientists and historians can, in principle, be objectively true or false; that through the use of reason, logic, science, and technology, humans can change themselves and society for the better; that reason and logic are universal; that there is such a thing as human nature, present in all humans at birth; that language is a mirror of nature, and though meanings of words can change over time, they mean the same thing to all who have command of the language; that knowledge can be acquired and this knowledge forms the basis of evidence or principles that are known immediately, intuitively, or otherwise

[39] https://www.britannica.com/topic/postmodernism-philosophy

with certainty; and that it is possible to construct general theories that explain aspects of the natural or social world.

Postmodernists believe the opposite. French philosopher and iconoclast, Michel Foucault, has served as an inspiration to post-modernists as a result of his views that "what counts as knowledge in a given era is always influenced, in complex and subtle ways, by considerations of power". Another Frenchman, philosopher and literary theorist Luce Irigaray, argued that the science of solid mechanics is better developed than the science of fluid mechanics because the male-dominated institution of physics associates solidity and fluidity with the male and female sex organs, respectively.

Basically, truth for postmodernists is whatever you believe it is. Astrology? Great. Witchcraft? You bet. Trump and Bolsinaro won the elections which they lost. Abso****inglutely. Left-wing wokers definitely do not have a lock on postmodernism. The ultra-right are no friends of the Enlightenment either. Although we might associate postmodernism with 'identity politics', and 'identity politics' with 'progressives', relativists at both ends of the political spectrum are just as likely to speed through, or simply roll through, a stop sign. Until we enter a new age of enlightenment, all would be advised to exercise caution when approaching an intersection at which you have the presumed right-of-way. There may be a postmodernist driving a car on the intersecting road who has no intention of yielding to anyone else's commands.

Toyota and BYD: Friends in a dream

IT WAS MACHIAVELLI in The Prince who said: *"Keep your friends close and your enemies closer."* His advice was meant for the ordained leader, but the ambitious novitiate was wise to follow his counsel. TOYOTA is the unquestioned global automotive leader in automobile sales. It sold 10.5 million cars in 2022, holding its title as global sales leader for the third straight year. In 2022, BYD (BUILD YOUR DREAMS), a Chinese vehicle manufacturer, moved up 11 places on the list of total cars sold in China to take third place overall and first place among the Chinese producers. SAIC/VOLKSWAGEN was first with 2.3 million sales, up 5.5% from 2021, and number two was TOYOTA with 1.86 million, up 10.8%. BYD sold 1.76 million cars and was up 157.1% (!). HONDA was fourth (1.39 m, -9.0%), CHANGAN fifth (1.1 m, +13.1%) and GEELY sixth (892,047, -16.8%).[40]

[40] https://www.focus2move.com/chinese-auto-market/

Of BYD's total sales, 911,140 of them were BEVs. TESLA was number one in global BEV sales with 1,313,851 in 2022 (which was its total since it sells only BEVs). BYD also sold 946,239 plug-in electric hybrids. BYD ended production of pure-petrol and pure-diesel models in March 2022. It sold only 5,049 non-plug-in cars during 2022, accounting for 0.27% of its total volume.

In 2019, BYD was not considered a threat to any of the top tier of global car companies, and not even to Chinese companies partnering with foreign brands or owning them, such as SAIC and GEELY. But something happened in 2019 that changed that picture. It seems that TOYOTA had an inkling that a change was in the air because in in that yea it registered a joint venture with BYD, called BYD TOYOTA EV TECHNOLOGY CO., LTD. (BTET). Its mission was to conduct research and development of battery electric vehicles, and develop BEVs for the Chinese market. The JV started operations in May 2020 with a Chairman from TOYOTA and a CEO from BYD.[41] What Toyota seems to have realized, which its competitors missed, is that BYD may sell cars—now, more BEVs than TESLA—but it is really in battery technology business.

BYD CO LTD. was founded in February 1995 and listed on the Hong Kong Stock Exchange on 31 July 2002. It began as a rechargeable-battery factory competing in the Chinese market against Japanese imports. BYD grew quickly, and within ten years it had captured more than half of the world's mobile phone battery market, becoming the largest Chinese manufacturer (and in the top four worldwide) of all types of rechargeable batteries. A year after the 2002 acquisition of TSINCHUAN AUTOMOBILE CO LTD, BYD AUTOMOBILE CO LTD was started. By 2010, it was the sixth largest in terms of sales volume. One of the major investors of BYD is Warren Buffett's BERKSHIRE HATHAWAY, which, until recently, held an 8.2% stake in the company that was purchased back in 2008 for $232 million.

In August of last year, TOYOTA showed a concept car, a sedan called the *bZ3*, which will be powered by BYD's *Blade* batteries and electric motors. The *Blade Battery* with LFP chemistry has been developed by BYD over the past several years. The singular cells are arranged together in an array and then inserted into a battery pack. Due to its optimized battery pack structure, the space utilization of the battery pack is increased by over 50% compared to conventional lithium iron phosphate block

[41] https://en.wikipedia.org/wiki/BYD_Company

batteries.[42] Its chief advantage is increased safety. Battery safety problems have been one of the main reasons for TOYOTA's cautious approach toward battery electric vehicles. LFP batteries address the safety issue, rather than the range issue.

Will TOYOTA and BYD restrict their cooperation to cars produced only for China, or will TOYOTA use BYD's battery and electric motor technology to extend its BEV range globally? News of the changing of the guard at TOYOTA in February, with Koji Sato taking over from Akio Toyoda, were accompanied by headlines like this one: *Reversing Course: Toyota's New CEO Plans to Speed Up Shift to Evs - Koji Sato calls for an "EV-first mind-set"*. TOYOTA's brand *LEXUS* will apparently lead the charge.

There is always a back story lurking there

As with all Chinese companies, BYD's story is not without its complications. Electric buses it sold in Albuquerque, New Mexico to the city transit agency (Yes, it's also in the electric bus business) were found to have serious quality deficiences. There have been accusations that the company is using forced Uyghur labor in Zinjiang. The *U.S. DEPARTMENT OF COMMERCE* has found that BYD circumvented tariffs on solar panels by routing them through other countries. It has managed to swim through the shark tank so far, but there is one situation it has not been able to explain: Why has one of its longest and most ardent supporter, Warren Buffett, suddenly started unloading his shares?

On the 30th of August 2022, it was reported that Buffett had sold 1.33 million of his 220.33 million shares. After the sale, he still owned 19.92% of the company. His original $230 million investment in 2008 was worth $8 billion in 2022. Even though the amount was tiny, BYD's stock fell a bit. A week later, Buffet sold more shares, and the stock fell by 20%. It kept selling, and as of February, 2023, Buffett's HATHAWAY has shed 95 million shares. BYD's stock has recovered and is close to where it was one year ago.

TOYOTA has, over the years, followed another piece of good advice: *"Never hate your enemies. It clouds your judgment."*[43]

[42] The lithium iron phosphate battery (LFP (lithium ferro-phosphate), or Li-IP) is a type of lithium-ion battery using lithium iron phosphate ($LiFePO_4$) as the cathode material, and a graphitic carbon electrode with a metallic backing as the anode.

[43] Michael Corleone in The Godfather (Mario Puzo, 1969)

Musings of a Dispatcher: Take a Walk on the Wild Side

IN THE DECEMBER issue of *THE DISPATCHER*, I mused on the subject of sidewalks and why we have them.

Why There Are Sidewalks

- *To provide a place for individuals who are moving on foot, or using aids for walking, such as wheelchairs, walkers, or strollers, or parents pushing prams, to reach their destinations in safety, avoiding the danger of being run into or over by all types of vehicles, and unhindered by any form of obstacle.*
- *To prevent the gunk and grime in the streets from coming into buildings. That's why sidewalks have curbs and are raised above the street surface.*

Take the sidewalks away from the three top street scenes to the left and what do you have? A person in a wheelchair, a person pushing a walker, and a person strolling along will be sharing the road with cars, trucks, buses and any other vehicle moving at a much higher speed. What else? The buffer between buildings and roads will be eliminated. Either all the buildings will need to be pushed back, as is the case on the right side of the ancient street in the fourth image, or the buildings will simply form the edge of the right-of-way, as is the case on the left side of the fourth image.

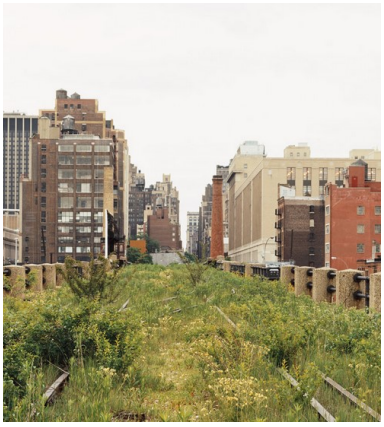
People who need to use wheelchairs and walkers, or who have either permanent or temporary disabilities that make walking difficult but who still need to walk because they don't own a car, or who can't drive a car, or don't have someone who can drive them, or can't afford to take a taxi, don't just live in cities where sidewalks are mandatory. They live everywhere, and the fact that there are no sidewalks where they live, like the subdivision to the left, makes their lives less safe and much less enjoyable. It may seem odd, but some towns don't give a hoot about this subset of the population. While they may not have an outright ban on the building of sidewalks, they do not demand that all homes are built with sidewalks or that all roads which do not have restricted access have sidewalks along at least one side. And when they do build sidewalks, they do not maintain them, do not build ramps at intersections for wheelchairs, walkers and prams.[44]

[44] https://www.aarp.org/livable-communities/info-2014/sidewalks-fact-sheet.html

Why Do People Build Streets Without Sidewalks?

"New Tracks"

I WONDER IF the artist who drew the cover for *THE NEW YORKER JAN. 2 & 9, 2023* issue read my *Musings* in the December 2022 issue of *THE DISPATCHER*. (Unlikely, but I can dream.) It's a perfect illustration of my closing thoughts in that article, the sidewalk as a destination event, disconnected from the hum-drum of life on the ground where streets abut curbs which form the edges of sidewalks, and the sidewalks serve a myriad of purposes, only one of which today is walking. The image is given the title "New Tracks" by the artist, Ryo Takemasa, who lives in Tokyo and Nagano, far from the scene he has drawn of New York City's High Line walkway. The artist has placed two parallel lines along one side of the pathway, reminiscences of the long-gone elevated railroad that snaked through Chelsea in Manhattan's lower west side. In Takemasa's image, bushes grow where rails once lay, rails that carried locomotives as heavy as the buildings along the path that those locomotives followed. The rails with bushes can be seen in the photo of the High Line before it became a destination.



The High Line

Takemasa has drawn a single pedestrian on what appears to be a frosty January morning with only the company of five identical pigeons to her left. The pigeons look lifeless sitting along a rail as if sculpted in place. Maybe they froze there overnight and will come back to life after the first rays of sunlight warm their bodies. The woman wears a green overcoat and a pale yellow knitted cap with a white tassel, clothes that a woman might have worn when the locomotives were running. She is walking away from us toward the horizon, but glances to her left at the pigeons or something further away, revealing her profile. A puff of her frozen breath is perhaps a reference to a billow of steam coughed up from a steam train from a bygone era. It must be cold up there on the elevated sidewalk with no 7-Elevens or Starbucks to duck into. It's like a narrow road in the middle of the countryside where there are no sidewalks, just a sliver of pavement on the inside of the white or yellow lines bordering the road, separating the road from the wilderness on either side. Before it was retamed, the High Line was the wilderness as we can see in the photo below *THE NEW YORKER* cover.

Living with and without sidewalks

With the exception of a graduate school year when I lived in the rural village of Skillman, NJ, in the vicinity of Princeton, during the first thirty-seven years of my life I lived in places with sidewalks. During that time, I did spend time in places without sidewalks, like Bedminster and Far Hills, New Jersey, and spent weekends during nine years in a pastoral New Hampshire town called Freedom, where sidewalks had not yet been invented. New Hampshire's unofficial motto could be "Live Without Sidewalks or Die". [45] It was in New Hampshire where I learned to always walk against traffic and wave to cars as they approached. Then the 'sidewalkless' period started. There were six years in Bolton, Massachusetts, two years in Lake Mary, Florida, and eighteen years in Åsa, a village in Kungsbacka, south of Göteborg, shown in photographs to the right, summer and winter.

We moved twelve years ago from our house in Åsa to a condominium in a small city with plenty of sidewalks. However, our condominium is in a former psychiatric hospital complex, and its buildings have been converted to mostly residences and schools. The area, called Sundby Park, is on a large island separated from the city by a narrow stretch of Lake Mälaren, and is surrounded by farms and horse stables. Working on the farms was part of the hospital patients' treatment. There are paths through parks, and some sidewalks along a few roads where hospital personnel lived, but our walks are mostly along narrow roads with narrow shoulders which are piled high with snow in the winters. So I can say that we are partly in and partly out of the world of sidewalks.

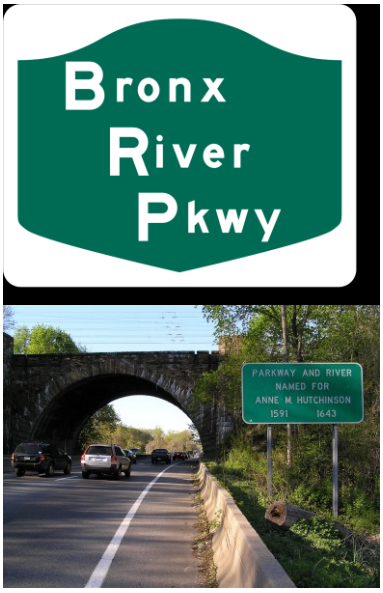
When walks were walks and not side affairs

I can understand why roads that were constructed hundreds or thousands of years ago do not have sidewalks along at least one side. Some of them exist to this day, both inside and outside of built-up areas, Outside of villages, people walked along paths that had been tread by animals. These paths were widened to accommodate small carts pulled by donkeys, oxen and eventually horses. The carts grew larger and the teams pulling them increased in size, but the pace of movement was still closer to a walk than a trot or a run, and there was not a steady stream of vehicles moving at high speed with which the walking person had to share the single right-of-way. Inside of villages, people and animal-drawn carts moved in the spaces between buildings. Why should there be more space taken from arable or buildable land

[45] New Hampshire's official motto is "Live Free or Die".

just to allow a person on foot to be given a way of safe and secure passage, separated from vehicles?

I can appreciate the thinking of the first builders of freeways[46] and parkways[47] and motorways and super highways who did not border their roads with pathways that could be used by pedestrians or anyone on a vehicle prohibited on the main rights-of-way, such as bicycles or mopeds. These roads often had so-called breakdown lanes which could be used as a sidewalk in an emergency, like running out of fuel, in order to carry oneself to the next interchange, but there are often signs at the interchanges warning pedestrians that walking along these roadways is not permitted. These roads were built to carry people over distances that were not normally walkable. A car travelling at 50 miles per hour (80 kph), covers a distance in five minutes that is almost twice as much as most people in America walk in a day.[48] The minimum allowable distance between interchanges on U.S. Interstate highways according to the FEDERAL HIGHWAY ADMINISTRATION is 1.5 kilometers in urban areas and 3.0 kilometers in rural areas. Why include protected pathways, separated from breakdown lanes, along highways if the distances that people would need walk are longer than most people want to walk?



Sidewalks are more than just safe havens

What I have trouble understanding is why we built residential subdivisions as late as the 1960s without compulsory sidewalks, and why we continue to construct roads today, like ones in new residential or multiuse subdivisions in Bolton, MA, Lake Mary, FL, and Åsa, Kungsbacka without sidewalks, that do not have sidewalks required by the building codes. Why are communities that do have sidewalks able to ignore laws that specifically require the provision of curb ramps? Since 1990, the *Americans with Disabilities Act (ADA)* has required government entities to provide people with disabilities access to programs and services enjoyed by their nondisabled peers. That includes sidewalks and curb ramps that make it possible to safely cross the street.

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[46] Freeways are highways without toll fees

[47] Parkways are A broad landscaped highway, often divided by a planted median strip.

[48] Researchers say it takes roughly 2,000 steps to reach a mile. But the average American only walks about half the recommended amount of 10,000 steps, according to Catrine Tudor-Locke, director of the Walking Behavior Laboratory at Pennington Biomedical Research Center. Last year, she toldLive Science that your typical American takes about 5,900 steps a day.

The AMERICAN ASSOCIATION OF RETIRED PEOPLE (AARP) have put together a Fact Sheet on sidewalks which lists the benefits of sidewalks:[49]

- People who live in neighborhoods with sidewalks are 47% more likely to be active at least 39 minutes a day.
- A well-constructed walkway for a typical 50-foot-wide residential property might cost a builder $2,000, but it can return 15 times that investment in resale value.
- In a scenario where two houses are nearly identical, the one with a five-foot-wide sidewalk and two street trees not only sells for up to $34,000 more, but it also sells in less time.

AARP recommends that communities view sidewalks as a public benefit, built and maintained with public funds—just like roads—rather than pushing the obligation of constructing and maintaining them on the property owners. The fact sheet includes an example of a community in Kentucky where walking and bicycling to schools was prohibited by the local department of education because there were no sidewalks and it was judged to be too dangerous to walk and ride on the roads. The town government offered to build the three miles of sidewalks that were needed, and now many of the children walk and ride their bikes to school.

"An awful lot of communities have either disregarded their obligations under the ADA or made it the last priority," notes Tom Stenson, a lawyer with *DISABILITY RIGHTS OREGON*, a nonprofit advocacy group. *"There's a culture throughout America of not taking the needs of people with disabilities seriously."*[50] In Baltimore, just 1.3% of curb ramps meet federal standards, according to the city's own figures. In Oregon, about 9% of corners maintained by the state transportation department are compliant. San Jose, California counted 27,621 corners with faulty or nonexistent curb ramps. Boston estimates fewer than half of its curb ramps are compliant.

If you need to walk, you don't belong here

In 1974, I was working for an architecture firm in Boston. It had just opened a branch office in Phoenix, Arizona, and I was sent down there to help with the setting up of the computer-aided design and drafting system. The company had rented a house where personnel stayed during the setting-up period. This house, a small, one-storey ranch, was located about a mile from the multi-

[49] https://www.aarp.org/livable-communities/info-2014/sidewalks-fact-sheet.html

[50] https://time.com/6105909/sidewalk-accessibility-lawsuits/

storey office building where the new office was located, which was about the same distance I walked each day from the T-stop where I got off the Red Line from Harvard Square to the company's office near Copley Square. So I decided to walk on my first day there, dressed in a suit and carrying my briefcase, as usual. (It was January; I wouldn't have tried that during the ten hot months of the year.) There were no sidewalks, even though both the office and the house were in the downtown area of Phoenix. I mostly walked across lawns and along the edges of filling stations and strip malls. I left the office for home just before dark that first day. About half-way home, a police car stopped along the curb as I walked. A policeman got out and walked toward me. He asked me (politely) what I was doing. I told him (also politely) I was walking home from the office. "I guess you're not from here," he said. Didn't I know it was dangerous to walk in Phoenix? No, I didn't, but now I do, I said. During the rest of the week that I was there, I took a taxi to and from work. I haven't been back to Phoenix since then. I wonder if they've built sidewalks.

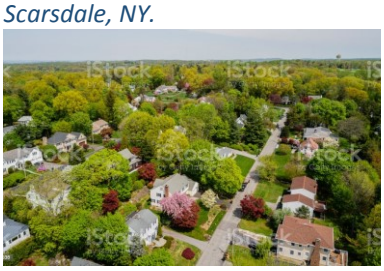
A postcard of central Phoenix from the 1960s. Split-level houses next to high-rise office blocks was not uncommon, as can be seen in this image of the city.

The American Dream: Levittown, USA

The photo above is an aerial view of one of the two Levittowns, one built on Long Island, NY and the other built in the vicinity of Philadelphia PA in the late 1940s and early 1950s. One of my college roommates grew up in the NY one. His family had moved from Brooklyn and were among the first residents. The Levittowns had sidewalks and Cape Cod-style bungalows. While this

may have been the American dream for people like my roommate's family who were living in cramped quarters in big cities, it was definitely not the dream for our wealthy classmates who lived in places like Scarsdale, NY (see right) or Greenwich, CT or Bedminster, NJ.

Not a sidewalk in site in this part of Scarsdale, NY.


…or this part, either.

No sidewalks please, we're snobs

Communities with minimum lot sizes of one or more acres[51] and single-use zoning that ensures that only residences are built, do not feel the need to provide sidewalks. The lower density of residences means that it is impractical to walk to anywhere other than perhaps to visit your neighbor. Far Hills, NJ is not what you would call a 'typical' American suburb, unless you have the cash to live in the company of some of the country's richest, with both old and new money.

Far Hills encompasses just five square miles in Somerset County, New Jersey, encircled by the equally upscale communities of Bedminster Township, Peapack-Gladstone, Bernards Township, and Bernardsville. It shares a public library, a community pool, athletic programs, civic organizations, and a school system with Bernardsville. It also shares a fire department and a first aid squad with neighboring Bedminster Township. Far Hills maintains the characteristic of its community through ten-acre minimum zoning laws, whereby large private properties and homes surround a small village, which was the creation of a wealthy New York businessman in the late 1800s. The beginning of rail service to nearby Bernardsville in 1870, opened the area to city people seeking a respite from the heat and hurry of urban life.[52]

But let's face it. If you aspire to live in a castle in Virginia Water in the Borough of Runnymede in northern Surrey, England on the Wentworth Estate, you don't want any Tom, Dick, or Harry (especially Harry) traipsing around your neighborhood, gawking at your *Rolls-Royce, Bentley* or *Range Rover*. The presence of sidewalks gives anyone leave to walk. The corollary is that the absence of sidewalks puts the whole question of whether even walking is allowed in doubt.


A castle called home in Virginia Water, Surrey, England

I found an information report prepared in 1957 by the AMERICAN SOCIETY OF PLANNING OFFICIALS titled *Sidewalks in the Suburbs*.[53] The

[51] The acre is a unit of land area used in the imperial and US customary systems. It is defined as 4,840 square yards, or 43,560 square feet, and approximately 4,047 m2, or about 40% of a hectare.

[52] https://www.co.somerset.nj.us/home/showdocument?id=5232

[53] https://planning-org-uploaded-media.s3.amazonaws.com/legacy_resources/pas/at60/pdf/report95.pdf

introduction to this begins with the following: *"Sidewalks typify the difficulties that beset suburban residential developments. Problems of municipal finance, design standards, and public vs. private responsibility are all involved. It seems almost axiomatic (*Ed: self-evident*) that sidewalks reduce traffic danger to pedestrians. And yet this belief has been questioned when applied to children. It has been suggested that "as accidents usually occur when they run into the roadway or emerge from behind parked cars," perhaps sidewalks do not contribute to their safety. And it has been hinted that sidewalks actually tend to encourage playing in the street rather than in off-street areas such as rear yards or a playground."*

What I learned during the years I worked as an urban planner is that a believable justification can always be found for doing the opposite of what seems totally axiomatic, whether it is building communities without sidewalks, running a super highway through a vibrant and functioning neighborhood, or closing down perfectly good nuclear power plants. In the 1957 report, there was not a single mention of persons with disabilities, and only one mention of elderly people and that was coupled with mothers with baby carriages. The main arguments in the report had to do with children. *"Sidewalks are an everyday part of the lives of youngsters, who give the suburban population pyramid its characteristic shape and for whom mass produced subdivisions mainly exist."*

It's not just children playing and walking or biking to school. It's everyone with a wide variety of needs. Providing safe passage for everyone, separated from vehicles of all types that can cause harm to individuals on foot, is what cities and towns of all sizes should have been doing in the past, and should be doing in the future. Don't complicate things by putting sidewalks up in the air or under the ground to separate the sidewalk users from cars. Cars don't ring doorbells, sit on stoops, buy newspapers at the local convenience store, or walk up the stairs to church. People do, and they do those things on foot. Give people a safe place to put those feet. Please. Thank you.

About Michael L. Sena

Through my writing, speaking and client work, I have attempted to bring clarity to an often opaque world of highly automated and connected vehicles. I have not just studied the technologies and analyzed the services. I have developed and implemented them, and have worked to shape visions and followed through to delivering them. What drives me—why do what I do—is my 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. Most importantly, I put vehicles into their context. It's not just roads; it's communities, large and small. Vehicles are tools, and people use these tools to make their lives and the lives of their family members easier, more enjoyable and safer. Businesses and services use these tools to deliver what people need. Transport is intertwined with the environment in which it operates, and the two must be developed in concert.

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