

# The Antiplanner

*Dedicated to the sunset of government planning*

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## Transportation Resiliency in a World of Black Swans

2001: Terrorists fly commercial airliners into the World Trade Center and Pentagon, leading to—among many other things—the shutdown of commercial air service in the United States for several days.

2005: Hurricanes Katrina and Rita slam into the Gulf Coast, leading some 4 million people to evacuate their homes and causing hundreds of deaths and severe hardships for thousands of people who were unable to evacuate.

2008: The deflation of the housing bubble leads to the second-worst financial crisis in American history and the largest decline in personal travel since World War II.

2020: The COVID-19 pandemic shuts down much of the American economy, resulting in, among other things, 80 percent reductions in travel by airlines, transit, Amtrak, and other modes.

Events such as these are known as **black swans** (a color of birds that people didn't believe existed until their **discovery in Australia** in 1697), defined as unexpected events that can send major shock waves through an economy. While the details of each event are unpredictable, however, the existence of black-swan events is well known and, as suggested above, they take place with some regularity.

In order to thrive in spite of such events, the United States needs a resilient transportation system, one that can keep operating both during and after black-swan events. It must be able to withstand terrorist attacks, minimize the spread of pandemic diseases, help people flee from and recover from natural disasters, and not impose a huge burden on taxpayers in recessions and depressions.

The good news is we already have such a system. The bad news is that powerful political forces have been seeking to dismantle that system for many years. The system, of course, is motor vehicles and highways, possibly the most resilient transportation modes ever designed.

I don't say this with any sense of glee. I've always hated driving, and my own preferences are cycling for urban travel and passenger trains for intercity travel. But, unlike cars, neither bicycles nor passenger trains will do much to help people evacuate from large urban areas or protect themselves from pandemics.

### Terrorist Attacks

On September 11, 2001, terrorists smashed two airplanes into the World Trade Center towers, each of which were about **3.5 million square feet** and covered 2 acres, and a third plane into the Pentagon, which was and is about **6.6 million square feet** covering 34 acres. The attacks totally demolished the towers, killing 2,606 people, while the crash into the Pentagon damaged only around 5 percent of the building, killing 184 people.



*The attack on the Pentagon damaged only a small portion of the building. Department of Defense photo.*

The lesson from this, **wrote** military historian Stephen Ambrose after the attacks, is “don't bunch up.” The concentration of people in two towers were much more vulnerable to attack than people in the sprawling Pentagon. “In this age of electronic revolution,” Ambrose continued, “it is no longer necessary to pack so many people and office into such small space as lower Manhattan. They can be scattered in neighboring regions and states, where they can work just as efficiently and in far more security.”

The same rule, “don't bunch up,” applies to transportation resiliency. When terrorists have aimed at transportation targets, they haven't gone after automobiles and highways. Instead, they've blown up **airplanes**, **high-speed trains**, and **subways**.



Railways are especially [tempting targets](#) because, even if the bomb doesn't directly kill a lot of people, it can shut down the system and disrupt the economy for days if not weeks. In contrast, highways are poor targets because a single bomb is not likely to kill many people and, even if it puts one road out of commission, there are usually alternate routes that people can use.

While automobiles have been used in [car bombings](#), the car is usually just the means of attack, not the target itself. The exception is when the goal is to [kill specific occupants](#), in which case the crime is a murder or assassination, not a terrorist attack. Car bombings are common in the Middle East but rare in the United States: Wikipedia lists [just six](#) in the last hundred years, only one of which was by foreign terrorists and none of which caused significant damage to the transportation system.

## Pandemics

In March, a Detroit bus driver [complained](#) that a passenger coughed without covering her mouth. A few days later he came down with symptoms of coronavirus and little more than a week later he was dead.



*Social distancing can be difficult on a subway. Photo by Adrian Black.*

“Mass transportation systems offer an effective way of accelerating the spread of infectious diseases,” [concludes](#) one research paper. Another [specifically mentions](#) train stations “as high-risk for respiratory disease transmission.”

By contrast, driving in a personal automobile is the safest form of transportation during an epidemic. Although driving is down during the coronavirus pandemic, this is due to stay-at-home orders, not to any inherent risk of getting the disease from driving itself.

## Natural Disasters

Before Hurricane Katrina, about 100,000 residents of New Orleans lived in households without cars. This was about 27 percent of the city's population. Of the nation's major urban areas, only New York had a greater share of carless households. When levees failed in the wake of the storm, people with cars were able to escape, while those without cars were left behind. Some 1,200 people died,

most of them in New Orleans.



*Despite congestion, 3.7 million people were able to evacuate the Houston area in a day or two. Congestion could have been reduced by reversing some of the in-bound freeway lanes. Photo by Ed Edabl, FEMA.*

A few weeks later Hurricane Rita struck Houston. Alarmed by what happened in New Orleans, 3.7 million people evacuated the Houston area, nearly all in automobiles. There were traffic jams, but everyone who wanted to leave got out before the hurricane hit. Though the Houston urban area had nearly four times the population of the New Orleans urban area, Rita resulted in only a tenth as many fatalities.

One of the reasons why New Orleans was such a disaster was the difficulty in marshalling buses to evacuate people who didn't have cars. The city had written a plan for such an evacuation but failed to implement it. The buses that did operate refused to carry people's pets, so many people refused to use them anyway. People who owned automobiles didn't have any of these problems.

After the 2004 storms, some people argued that passenger trains would have done better at moving people out of harm's way. But Amtrak only has about [1,230 passenger cars](#) with an average capacity of about 80 people (including dining car, lounge, and other non-revenue seats). It would have taken two days to bring these cars to New Orleans or Houston, and then it would have taken about ten round trips of all of those cars to move everyone out of the New Orleans area and 38 roundtrips to evacuate Houston. Even if one trainset could handle three round trips per day, the total time required would have been more than five days for New Orleans and more than two weeks for Houston, by which time the hurricane would have come and gone.

The largest mass transportation evacuation that has ever taken place was the movement of people from San Francisco after the 1906 earthquake. The Southern Pacific Railroad generously offered people free transportation out of the region. The railroad moved [225,000 people](#)—more than half the combined population of San Francisco and Oakland—in 739 trains, but doing so took five days. Trains today can carry twice as many people as in 1906, but it would still take days to move all of the people from a major urban area. Automobiles can do the same in a few

hours especially since they can take multiple routes out of the region.

Hurricanes and earthquakes are far from the only natural disasters experienced in America. Wildfires, floods, tornados, tsunamis, and even volcanos can force people to evacuate their homes. Many of these take place in areas nowhere near a rail line or large-scale bus transit systems. While the United States has fewer than [140,000 miles](#) of rail routes, it has [2.8 million miles](#) of paved roads providing service to practically every community in the nation.

### Financial Panics

The [dot-com crash of 2000](#) didn't have the national impact of the 2008 financial crisis, but it had a severe impact on Silicon Valley, which is served by the Valley Transportation Authority (VTA). In just two years, the sales tax revenues supporting VTA operations declined by nearly 40 percent. This created a [financial crisis](#) for VTA, which was forced to cut bus service by 15 percent and light-rail service by 34 percent. The agency funded some of its operations from funds that had been dedicated to capital improvements and even had to [sell land](#) it had planned to use as a park-and-ride station just to make its payroll.

Airlines, railroads, and transit systems are all highly labor intensive, which makes them vulnerable to a loss of fares and, where subsidized, tax revenues during a recession. By contrast, highway operations are not as labor intensive, and the most important highway costs, maintenance, can be deferred for a year or two without slowing down traffic. Since a lot of maintenance is proportional to use, maintenance of a highway system funded out of user fees can fluctuate with user fees without any degradation at all.

### Reducing Transportation Resiliency

The anti-auto, anti-highway activists ignore the advantages of automobiles in dealing with black swans. The keep-Portland-weird crowd even claims they are going to be able to deal with major earthquakes using [bicycles](#). Anyone looking at photographs of the [1964 Alaska earthquake](#) will realize how unrealistic that idea is.

Instead of preparing for black swans, anti-auto groups are preparing to make them worse. A terrifying example is Paradise, California, which was threatened by a wildfire in 2008. This led to a [grand jury report](#) recommending that the city improve its evacuation routes. Instead, the city put its only four-lane road on a "road diet," reducing it to two lanes. When [another fire](#) scorched the city in 2018, 85 people died, some of them [burned in the cars](#) while stuck in traffic.

Few urban planners are willing to learn the lessons of New Orleans and Paradise. For example, Los Angeles is road dieting [Venice Boulevard](#) despite it being a major [tsunami evacuation route](#). Repeated demands that more money be spent on transit and Amtrak, and less spent on roads (unless it is to reduce their capacity), makes the na-

tion less resilient to black swans.



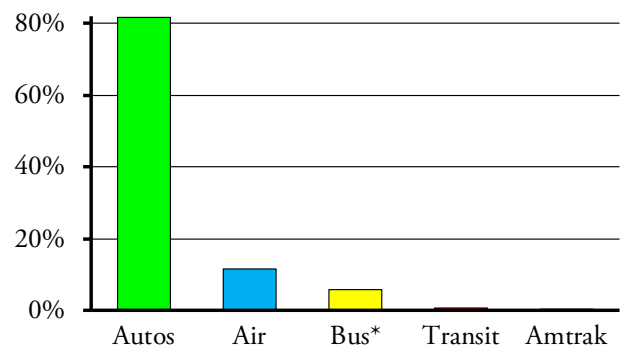
*The Venice Boulevard road diet turned a four-lane street into a two-lane street with a center left-turn lane. The city supposedly did it to increase safety but noted afterwards that it resulted in an increase in left-turn collisions, though claiming that—if you don't count the left-turn collisions—it resulted in an overall reduction in accidents. Photo from [Restore Venice Boulevard](#).*

### Promoting Resilient Transportation

Normally I oppose government policies that would give preference to any mode of transportation over others, but the need for resilience creates a good case for making an exception. However, there is no need to make an exception in this case as, given a level playing field, most people would choose autos for personal travel in any case.

In 2017, [81 percent](#) of all American passenger travel, measured in passenger miles, took place in cars, light trucks, or motorcycles. Highways also provided about 40 percent of all ton-miles of freight.

U.S. Passenger Travel in 2018



*The vast majority of American travel already uses the most resilient form of transportation. Source: National Transportation Statistics [table 1-40](#). \* Private buses only; public transit buses included in transit.*

While not everyone can drive, almost everyone lives in a household with at least one car and someone who can drive. Some [91.5 percent](#) of all American households have at least one car. In some urban areas, including Albuquerque, Ogden, and San Jose, [95 percent](#) of households or more have a car, suggesting that at least 40 percent of American households with no cars live without cars as a matter of choice and not because they can't afford them or are otherwise unable to drive.

Contrary to claims by transit agencies, transit is not an essential service, at least not outside of the New York urban area. In 2018, [95.4 percent](#) of working Americans lived in households with at least one car, and most of the

ones who had no cars didn't take transit to work. [Less than 2 percent](#) of workers in some urban areas such as Albuquerque, Austin, El Paso, and Ogden lived in households with no cars, again suggesting that more than half of the nation's carless workers do without autos as a matter of choice, not necessity. To use one extreme example, less than 20 percent of the 1.5 percent of Riverside-San Bernardino workers without cars took transit to work while more than half drove alone to work, probably in employer-supplied vehicles.

A new study estimates that [more than a third](#) of jobs can be performed from home, which is much more than the [5.3 percent](#) who actually did work at home in 2018. These are mostly middle-class jobs, and as shown in a [previous policy brief](#), transit is increasingly used by high-income workers, not working-class workers. Thus, any permanent increase in people working at home as the coronavirus pandemic winds down is likely to further eat into transit's share of commuting.

In short, providing a resilient transportation system doesn't require any government policies that are biased in favor of automobiles. It does, however, require an end to those policies that are biased against the automobile, and provides one more argument to end policies that are biased in favor of transit, Amtrak, and other less resilient modes of transportation.

## Reinforcing Resiliency

Millions of miles of paved roads, high auto-ownership rates, and immediate access to those automobiles make autos and highways the most resilient transportation system possible. Here are some things governments can do to maximize that resiliency.

*1. End subsidies to all forms of transportation.* Highways don't need subsidies as users are willing to pay the cost of construction and maintenance, whether out of gas taxes, tolls, or mileage-based fees. Subsidies to transit and other modes should end as people should not be encouraged to be dependent on less resilient modes of transportation.

*2. Stop road diets and other programs that reduce the capacity of roads to move traffic.* There are better ways of [protecting cyclists and pedestrians](#) that don't reduce the resiliency of the transportation system.

*3. Build new road capacity where it's needed.* While some urban areas, such as Houston and Phoenix, have built new highways to keep up with population growth, others, including Portland and Seattle, have made a deliberate decision to stop building roads based on the [absurd notion](#) that more roads only increase congestion. This policy makes these regions less resilient in the event of natural disasters.

*4. States should have evacuation plans in place to deal with natural disasters and other unusual traffic loads.* These plans should include low-cost modifications of highways with four or more lanes to make it easily possible to reverse traffic on some of the inbound lanes so that a maximum number of vehicles can use more lanes in the outgoing direction. Virginia has done this with [Interstate 64](#) to hasten evacuation of the Virginia Beach-Norfolk-Newport News area in the event of a hurricane, but most other states have not followed this example.

*5. Be prepared to completely shut down transit systems, Amtrak, and other mass transportation in future pandemics.* Transit agencies irresponsibly responded to the coronavirus by encouraging people to continue to ride transit, making foolish promises to ["wipe handrails once a day"](#) and take similar ineffective measures. The high rate of infections and deaths in New York City is at least partly traceable to that city's dependence on transit.

Without biasing people's personal choices in favor of one mode or another, these and similar steps can help the United States stay prepared for the next Black Swan, whether it be a natural disaster, pandemic, or some other completely unexpected turn of events.

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