Center for the
American Dream
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The Greatest Invention

How Automobiles Made America Great

by Randal O'Toole

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Abstract

The automobile has been widely criticized for its social costs, including accidents, pollution, and changes to urban form. But few of the critics consider the many benefits that the auto has produced for the average American. This paper fills that gap, showing that the automobile has played a large or dominant role in:

- Increasing personal incomes by seven times;
- Increasing personal mobility by six to eight times;
- Increasing homeownership rates by nearly 50 percent;
- Reducing the cost of consumer goods and increasing the variety of such goods by up to 100 times or more;
- Enabling the civil rights and women's liberation movements;
- Making outdoor sports and numerous other recreational and social opportunities available to the average person;
- Providing rapid access to fire and other emergency services and swift escape from natural disasters.

Automobiles, trucks, and tractors also allowed a significant improvement in land uses in this country. Since they replaced horses for most farming and hauling uses, farmers converted 80 million acres of horsepasture to forests, which are far superior for wildlife and watersheds, and another 40 million acres of pasture to the production of higher-valued crops. In comparison, the 21 million or so acres of low-density suburban development that has taken place since 1945 is relatively insignificant.

Because of these benefits, it is reasonable to call the mass-produced automobile the greatest invention in the 230 years since the American republic was founded. Those who seek to reduce the amount of driving people do by imposing disincentives to the auto or allowing traffic congestion to increase risk killing, or at least limiting, the automotive goose that laid the golden egg of American prosperity.

This paper recommends that governments should be neutral regarding people's transportation choices, only insuring that people pay the full costs of their choices. Transportation agencies should be led by transportation professionals, not political appointees, and funded as much as possible out of user fees such as gasoline taxes, tolls, and transit fares. Subsidies needed for purposes of social equity should be given to transportation users, not transportation bureaucracies. These policy guidelines will insure that government programs produce transportation systems that are safe and efficient, allowing the nation to continue enjoying the benefits of the greatest invention in its history.

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Executive Summary

In 1900, the United States was a rich and growing nation, yet many of the benefits of that wealth were accessible to just a few. Only the wealthy, and some whose jobs depended on travel, frequented passenger trains, dined regularly in restaurants, or regularly wore fine clothes.

For many urban dwellers, life was harsh: living in high-density tenements, walking to factory jobs that demanded long hours and offered low pay. Life in rural areas was, in many ways, even worse. While a larger share of families owned their own homes, they were rarely able to leave their farms. Life for women in particular was especially lonely.

The mass-produced automobile changed everything. The moving assembly lines that Henry Ford developed to build his Model Ts increased worker incomes and made mobility affordable to the average family. The use of trucks for shipping, especially when aided by intermodal containers, greatly reduced consumer costs.

Some of the benefits that are largely or entirely due to the automobile include:

- In 1900, the average American traveled less than 3,000 miles per year, mainly on foot, and many lived and died without ever journeying more than fifty miles from home. Today the average American travels close to 20,000 miles per year, mostly in automobiles, and thinks nothing of taking trips of several hundred miles;
- In 1900, homeownership was affordable only to the wealthy, rural landowners, and white-collar workers. The automobile made homeownership affordable to working-class families and led to a nearly 50-percent increase in homeownership rates;
- In 1900, food and shelter alone consumed more than half of an average family's personal income. Today the average family eats much better and lives in a much nicer home, yet food and shelter consume only a quarter of its income, leaving more for recreation, education, and other things;
- In 1900, many women and most blacks were trapped in oppressive social systems. The automobile offered escape, enabling the civil rights and womens liberation movements;
- In 1900, the average grocery store stocked fewer than 300 items on its shelves. Today, the variety of foods and other consumer goods has increased by 100 times or more—and quality has increased as well;
- In 1900, only upper-class families could afford to take an annual vacation—most employees worked six days a week, fifty-two weeks a year. The automobile (and the moving assembly line that made mass production possible) reduced the work week and made annual vacations the norm;
- In 1900 outdoor sports such as skiing, backpacking, and river running were either accessible only to the very wealthy or did not exist at all. Today millions of people engage in innumerable outdoor sports each year, many of which are only accessible by auto.

Railroads, bicycles, streetcars, and subways have all played a role in American transportation. But no other form of transportation has produced such huge benefits at such a low cost as the automobile. Despite these benefits, some people argue that we should rely less on autos and more on other forms of transport. They support government policies, funding, and rules promoting alternatives to the auto and hindering driving.

It is wrong to imagine that America can limit automobility without reducing incomes and the other benefits automobiles have produced. Regions that try to discourage auto driving or that divert highway user fees to expensive transit schemes are only hurting their residents, especially low-income families for whom the automobile offers an escape from poverty. The nation should instead recognize that the automobile is the greatest invention in its history and create systems giving people the freedom to choose how they travel while insuring that they pay the full costs of their transport choices.

Introduction

In the 230 years since the republic was founded, no invention has enhanced the quality of life of the average American as much as the mass-produced automobile. Neither railroads, nor electricity, nor telephones, nor computers, nor the Internet have led to as many improvements in personal mobility, income, homeownership, consumer goods, recreation and social opportunities, or other aspects of our personal lives.

Since the auto was invented, personal mechanized travel has increased by at least sixteen times. This increase in mobility is largely responsible for a sevenfold increase in inflation-adjusted worker incomes and a 50-percent increase in homeownership rates. Thanks in large part to trucks, freight transport costs have declined by 90 percent. This cost reduction, combined with the automobility of consumers, has increased the variety of consumer goods by roughly one hundred times.

While the share of personal incomes spent on transportation has only slightly increased since 1929 (and has declined since 1950), thanks in large part to automobility the shares Americans spend on food, clothing, housing, and household goods have dramatically declined. This has enabled Americans to spend more on recreation and education, taking advantage of opportunities provided by better transportation. The automobile has also increased social opportunities; improved access to health care; and contributed to the emancipation of women and minorities.

Americans today are far better off than they were one hundred years ago in almost every way, and it is no exaggeration to attribute most of that improvement to the automobile. The only inventions that might come close to the auto are the railroad and the computer. But gains in personal mobility, income, homeownership, and other lifestyle improvements were far greater between 1900 and 1980 than they were before 1900, when the railroad was the major form of transportation, and after 1980, when computers began to influence every American's life.

Moreover, the benefits of the automobile have been far more egalitarian than the benefits of, say, the railroad. While rail travel was largely limited to the wealthy and to people whose jobs depended on such travel, auto ownership today is prevalent in almost every social class in America. Auto drivers have virtually the same access to American streets and highways whether they drive the latest model Bentley or a twenty-year-old Yugo. The egalitarian benefits of autos extends to other aspects of American life as well: While homeownership in the first half of the twentieth century was limited to white-collar workers, farmers, and the wealthy, the second half saw its extension to blue-collar workers.

Despite these huge benefits, for forty years critics of the automobile have waged a continuing drum beat against autos and highways. Such critics point to the high social costs of driving, such as air pollution and auto fatalities. Yet, besides ignoring the benefits of driving, the critics also ignore the huge decline in these social costs over the past several decades.

- Fatality rates have declined from an average of 50 per billion vehicle miles in the 1960s to just 15 in the 2000s.[1]
- Pedestrian fatality rates have declined from more than 12 per billion vehicle miles in 1956 to just 1.6 in 2004.[2]
- Though we drive nearly three times as many miles as we did forty years ago, total emissions of major pollutants (carbon monoxide, nitrogen oxides, hydrocarbons, and particulates) have declined by more than 60 percent, while emissions of lead from autos have fallen by 99.99 percent. Meanwhile, the fuel economy of the average American motor vehicle has increased by more than 42 percent since 1973.[3]
- Fatality and pollution rates continue to decline, meaning autos and highways are getting safer and cleaner despite increases in driving.
- University of California economist Mark DeLucchi estimates that the total subsidies and social costs of the automobile, when measured per passenger mile, are only about one-tenth of the subsidies alone to mass transit.[4]

Even though relieving congestion reduces air pollution and new roads tend to be safer than old ones, auto critics have successfully convinced many metropolitan areas to slow or halt new road construction. The result has been significant increases in congestion, which wastes people's time, increases fuel consumption and pollution, and drives up consumer costs. One reason this has happened is that people take automobiles for granted and have largely forgotten just how beneficial they have been. The purpose of this paper is to rectify that by detailing the many benefits of automobility.

Mobility

People who have grown up in the auto age can hardly imagine how much the automobile has changed people's lives. Automobiles have hugely increased the sheer mobility of the American people. Comparing driving today with transit and train riding in the past clearly reveals the benefits of automobility.

In 1920, the United States had the world's most intensive network of both intercity trains and urban mass transit. This was the apex of the pre-auto public transportation system, with close to 20,000 scheduled intercity trains every day and streetcar or other transit systems in nearly every city of 10,000 people or more. Per capita use of both transit and intercity rail peaked around 1920. In that year, the average American traveled about 440 miles on intercity passenger trains and about 590 miles on urban transit.[5] Counting only those Americans who lived in urban areas, they rode an average of 1,600 miles per year on transit.

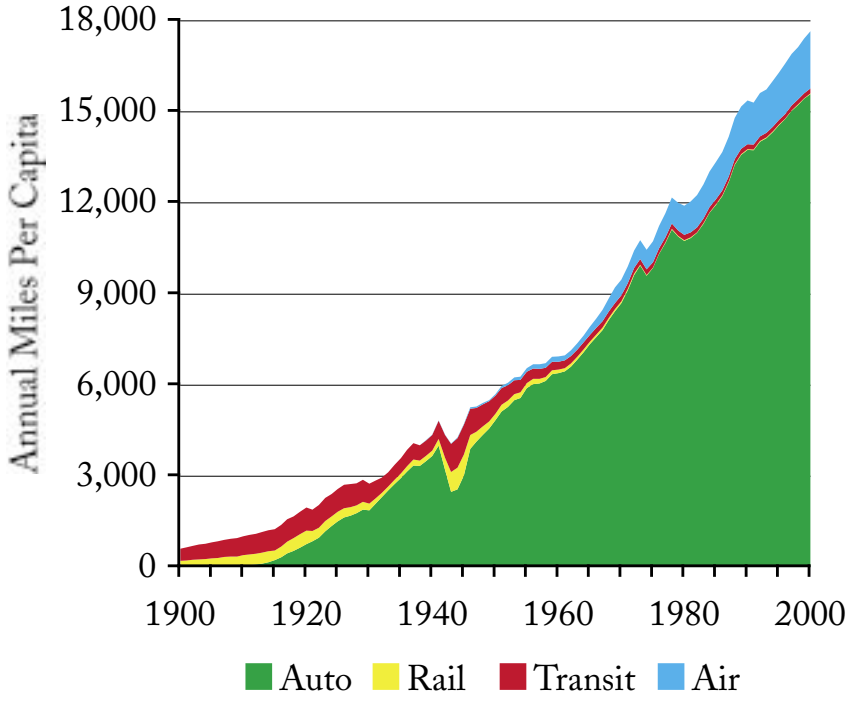
Think about that for a minute. Imagine being confined to one 440-mile out-of-town trip each year. That is less than a round trip from Boston to New York City or a one-way trip from Atlanta to Orlando. Meanwhile, 1,600 miles of urban transit per year is only 5.1 miles per workday (at the six workdays per week common in 1920). If you live more than 2.5 miles from work, that leaves none for shopping, recreation, or socializing. Imagine being limited to one round-trip per day to anywhere in your city that is further than you can easily reach on foot and to no more than one intercity round trip per year.

It is far more likely, of course, that some people—mainly the wealthy and certain white-collar workers—were highly mobile, taking several transit trips each day and numerous intercity train trips each year. Meanwhile, almost everyone else, including factory workers and other low-income urbanites as well as farmers and other ruralites, was confined to travel within walking distance or, in the case of farmers, within horseback-riding or horse-and-wagon distance of their homes.

Lack of mobility was a particular hardship for rural residents. "No burden has ever set quite as heavily on farming and upon the farm family as has the curse of isolation and loneliness," wrote the editor of *American Agriculturalist* in 1927.[6] Women felt this isolation the most, as they made fewer trips beyond the farm.[7] Even small town residents were isolated in the sense that they rarely met anyone except their neighbors.

Residents of rural areas and small towns were quick to see the benefits of automobility. "We'd rather do without clothes than give up the car," a small-town resident told sociologists in the 1920s.[8] "I'll go without food before I'll see us give up the car," echoed her neighbor.[9] When researchers asked a farm woman

Figure One
Personal Mobility in the Twentieth Century



The automobile has vastly increased the mobility of the average American. Even in their heyday, intercity passenger trains and streetcars contributed relatively little to average mobility. Source: Federal Highway Administration, Highway Statistics Summary to 1995 *and* Highway Statistics *for individual years since 1995; American Public Transportation Association,* Transit Fact Book *for various years; Bureau of Transportation Statistics,* National Transportation Statistics*; and Census Bureau,* Historical Statistics of the United States: Colonial Times to 1970. *Auto data before 1930 estimated based on vehicle registrations.*

why her family purchased a car when their home still lacked indoor plumbing, she responded, "Why, you can't go to town in a bathtub!"[10]

By comparison with 1920, in 2004 the average American traveled more than 16,000 miles per year by auto, or nearly sixteen times as many miles as they ever rode on trains or public transit.[11] Although only 21 percent of our population today is rural, 40 percent of the driving is rural, suggesting that urbanites do a lot of intercity driving. The 60 percent that is urban translates to about 12,500 miles per urban resident per year, nearly eight times as many miles as the average urbanite ever rode on mass transit.

Before the railroad, the average American walked perhaps 2,000 miles per year. Railroads and streetcars may have doubled this mobility, but automobiles quadrupled the mobility provided by rail lines and walking put together.

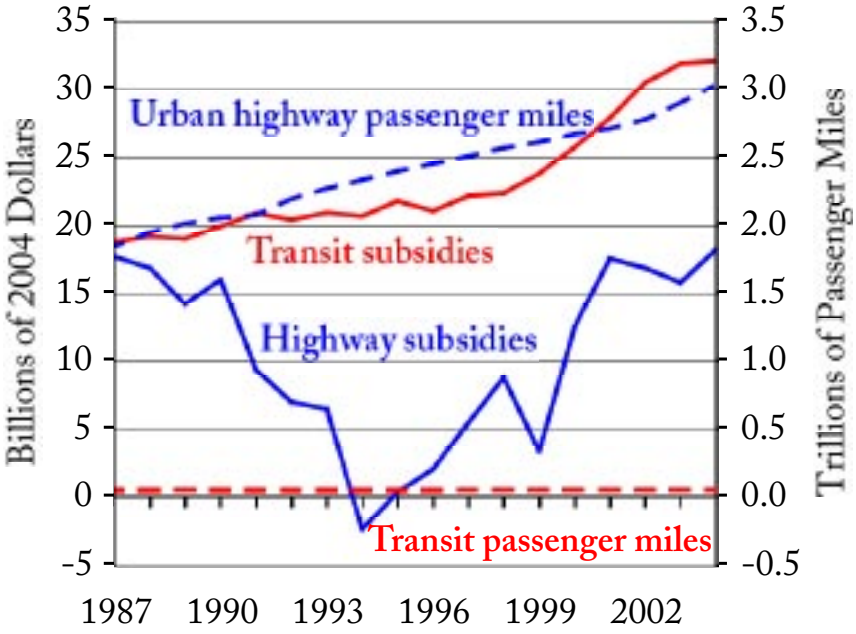
Not only are we more mobile, this mobility is far more egalitarian than public transportation was in its golden era. Well over 90 percent of American families have at least one car, and many of those who don't could own one but choose not to. Some new cars cost more than $100,000 while some used cars cost less than $1,000, but they all have more-or-less equal access to nearly all of America's highways, roads, and streets.

Admittedly, automobility has not yet reached every American family. Nearly 95 percent of white families own one or more cars, but only about 75 percent of black families do. Yet both of these percentages are far higher than the percentages of Americans who regularly traveled by train or urban transit in 1920. Low auto ownership rates among black families should raise a red flag to those who seek to curb future increases in driving and auto ownership: their efforts will make it especially hard for the nation's remaining low-income people to get out of poverty.

It is worth noting here that America's automobility has been achieved with a minimum of subsidies. Since 1932, when the first federal gasoline tax was dedicated to highways, highway user fees including gas taxes, weight-mile taxes, and tolls have covered the vast majority of highway costs each year. On the average, since that year, user fees have covered more than 88 percent of the costs of building, maintaining, and operating highways. By comparison, since 1987 (the earliest year for which complete data are available), transit fares have covered less than a third of transit capital and operating costs.

Figure two shows that total transit subsidies since 1987 were more than twice as great as total highway subsidies. Yet transit usage has remained relatively flat: between 1987 and 2004, transit passenger miles grew by 22 percent while urban auto passenger miles grew by 66 percent.

Figure Two
Transit and Highway Subsidies and Use, 1987–2004



Despite the fact that highways move roughly a hundred times as many passenger miles as urban transit, transit subsidies have been significantly greater than highway subsidies since at least 1987, the earliest year for which complete data are available. This chart compares urban highway passenger miles with transit passenger miles; total highway passenger miles are about two-thirds greater. Source: Highway data from tables HF10 and VM1 of Highway Statistics *for the years indicated; transit data from American Passenger Transportation Association,* Public Transporation Fact Book, *various years.*

Incomes

Auto critics claim the increased mobility provided by the auto does not translate to increased access to jobs, goods, and services. Instead, they say, urban sprawl has spread things out, thus forcing people to travel more than they would have to in a pedestrian- or transit-oriented city. This is simply untrue. In fact, automobility has produced huge benefits, and low-density urban development enables people to take best advantage of those benefits.

The biggest benefit is increased incomes. The incredible mobility provided by the automobile has significantly boosted personal incomes in the last century. We typically think that people buy cars only when they can afford to do so, but the reality is more complex. Incomes are increased by auto ownership as much as if not more than ownership is increased by higher incomes.

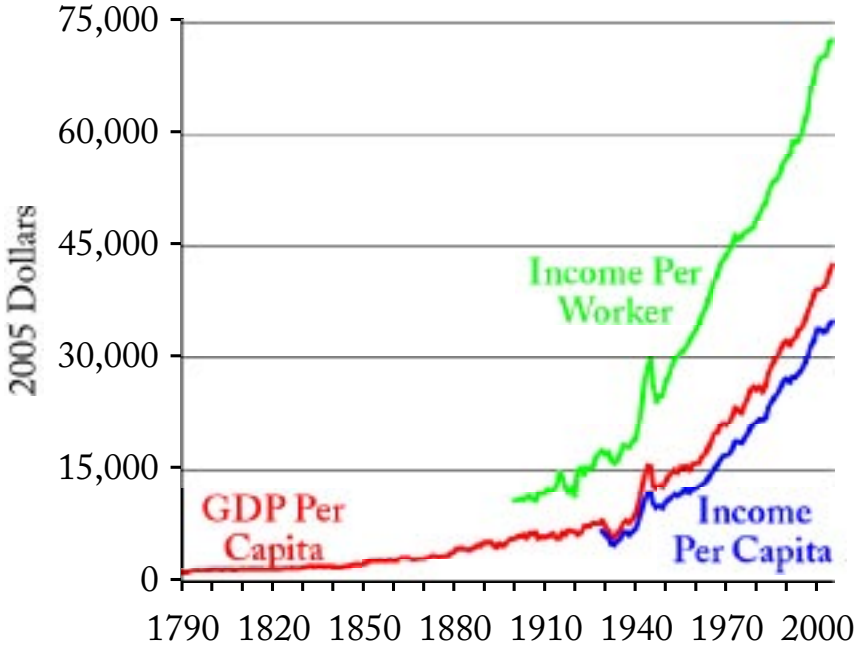
One hundred years ago, the average American worker earned, after adjusting for inflation to today's dollars, about $10,600 a year.[12] By 1929, when half of all American families owned an auto, this had increased to $17,000 a year.[13] Today, income per worker exceeds $72,000 per year, close to seven times what it was before the automobile. Per capita incomes and gross domestic product have grown by even more, partly because automobility has increased the number of women who work. Much if not most of the increase in incomes is due to the automobile.

Compare changes in income during the auto age with changes during the railroad age. In the seventy years from 1830, when the first railroads began operating in the U.S., to 1900, per capita gross domestic product (adjusted for inflation) increased by 225 percent. In the seventy years from 1900, when the first autos began appearing in the U.S., to 1970, per capita gross domestic product increased by 275 percent. Since then, it has doubled again.[14] Both periods included depressions, wars, and the emergence of other technologies, yet it is clear that the gains in the latter period were greater than the first.

One reason autos increase incomes is that they give people access to far more jobs than they could reach on foot or by mass transit. In Cincinnati, a typical, medium-sized urban area, most residents can reach 99 percent of the region's jobs within twenty minutes of driving. But even allowing forty minutes—twice as long as the auto trip—most residents can reach only 40 percent of the region's jobs riding public transit.[15]

Numerous studies show that auto ownership can play a huge role in helping low-income people escape poverty. "Car ownership is a significant factor in improving the employment status of welfare recipients," say UCLA planners Paul Ong and Ellen

Figure Three
Income Per Worker and Per Capita



Twentieth-century America saw the largest increase in personal incomes of any nation or period in history. Most of this increase is probably due to the automobile. Incomes per capita increased by more than incomes per worker because a greater share of women worked at the end of the century, and this is also partly due to the automobile. "Personal income" is defined to include employer contributions to health insurance, pensions, and social security, so is more than average salaries and wages. Source: Census Bureau, Historical Statistics of the United States: Colonial Times to 1970*; Bureau of Economic Analysis,* Personal Income and Outlays.

Blumenberg.[16] Helping the poor, say Yale economist Katherine O'Regan and University of California (Berkeley) economist John Quigley, means "promoting the mass transit system that works so well for the nonpoor—the private auto."[17]

One Portland study found that people without a high-school diploma were 80 percent more likely to have a job and earned $1,100 more per month if they had a car. In fact, the researcher reported that owning a car was more helpful to getting a job than getting a high-school equivalent degree.[18] Another study by University of California researchers found that closing the black-white auto ownership gap would close nearly half the black-white employment gap.[19]

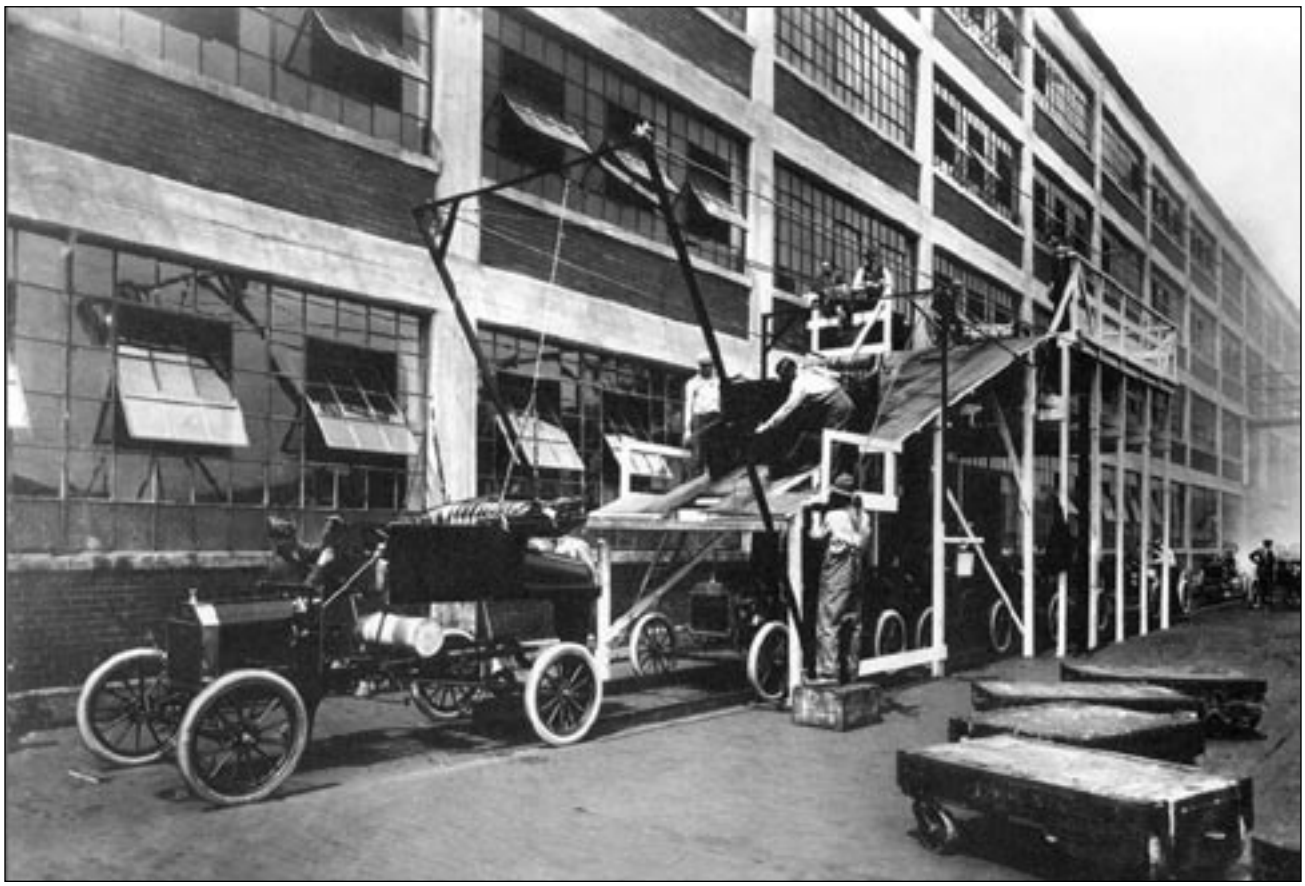
Auto ownership is so important to helping people out of poverty that welfare agencies in more than fifty urban areas in twenty-five states have started "ways-to-work" programs that help low-income people buy their first cars.[20] These programs offer people low-interest loans of up to $4,000 to buy a used car or smaller loans to help people repair a non-working car they already own.

The director of one of the nation's largest mass transit agencies responded in horror to this idea. "We can't give cars to low-income people," he said. "It would cause too much congestion!"[21] Indeed, the Soviet Union proved that poverty is one way to prevent congestion, but that does not mean it is a good thing.

From an employer's viewpoint, automobiles provide a more productive workforce because it gives them access to more potential employees who are likely to have the skills they need. Greater productivity in turn means that employers can pay their employees more.

Automobiles also increased productivity and incomes by ushering in the age of assembly-line production. While Henry Ford did not invent the assembly line, he was the first to use a moving assembly line to build automobiles. This method of production turned out to be so profitable, yet so boring, that Ford doubled wages to $5 a day and reduced workdays from nine to eight hours—steps he called "one of the finest cost-cutting moves we ever made" because it increased morale and reduced employee turnover.[22]

The year before introducing the moving assembly line, Ford sold a basic Model T touring car for $690.



Ford's original moving assembly line starts cranking out the Model Ts in 1913.

Within three years of adopting the assembly line, this price had dropped by almost 50 percent to $360. Eventually, the price fell below $300.[23]

Increased worker incomes and reduced prices meant that, for the first time, workers could afford to buy the cars they were making. But assembly lines also meant that workers were more likely to use cars to get to work. Prior to assembly lines, goods were typically manufactured in multi-story buildings. Ford's workers shaped body panels on the fourth floor, painted them on the third floor, assembled them to chassis on the second, and finishing touches made on the first to create an automobile. Moving assembly lines stretched production out horizontally, so a factory that once occupied a city block might now cover hundreds or thousands of acres. Ford's Rouge River plant, for example, was a mile wide, one-and-a-half miles long, and once employed 100,000 workers—far more than could live within easy walking distance.

This Model T Tudor Sedan cost $580 in 1925 (about $6,500 in today's dollars), twice the cost of the least-expensive Model Ts in that year.

While workers might be able to walk to the old-style factories, the large expanse covered by the assembly lines dictated that some form of mechanized transportation was needed to get workers to their jobs. This produced a synergistic effect: assembly lines increased worker incomes so they could afford to own cars, and because they could own cars more industries could build far-flung factories using moving assembly lines. These industries moved from urban centers to suburban areas were land was less expensive. This industrial sprawl effectively rules out other forms of commuting, so Americans could not possibly have the incomes they enjoy today without cars. Critics call this "auto dependence," but it is more accurate to say that the automobile liberated American workers to find better jobs and live in their own homes in more desirable low-density neighborhoods.

Researchers at New York University have shown that increased incomes are closely tied to increased auto ownership in nations throughout the world.[24] They attribute the growth in auto ownership to rising incomes, but in other countries, as in the U.S., the relationship is actually more complex. Countries that have tried to restrict auto driving and auto ownership have lower incomes than those in the U.S., partly as a result of those restrictions.

Western Europeans drive only about 70 percent as many miles per capita as Americans.[25] But that doesn't mean they take transit all that much more: the average Parisian travels 1,300 miles per year on transit, less than American urbanites used transit in 1920. But they drive close to 4,000 miles per capita per year in cities, plus thousands more between cities.[26]

Though Europeans drive more than they ride transit, they are still less mobile overall than Americans. This could be partly a function of structure: European cities are denser and so people don't need to go as far to get to various destinations. But it is probably more due to economics: per capita incomes are lower, unemployment rates are higher, and, thanks to taxes, the cost of driving is higher, so people cannot afford to drive as much. The high taxes imposed on fuel may discourage driving, but they also reduce Europe's economic productivity.

Several members of the European Parliament recently charged that European policies of heavily taxing autos and fuel in order to heavily subsidize railroads were "strangling Europe's potential."[27] They cited research showing that, despite these policies, the passenger and freight movements over the roads were twenty times as valuable as those over rail lines.[28] Further increases in taxes aimed at reducing driving would "potentially endanger the European economy with all the consequences, for unemployment in particular, that this would entail."[29]

Americans should heed the same warning. Disincentives to the automobile are likely to harm the economy, with the greatest impact falling on low-income families. Whatever the problems with driving—pollution, energy consumption, etc.—solving them with new technologies will be more successful and have fewer economic impacts than attempting to reduce per capita driving.

Freight Transport Costs

Highway trucks have contributed to a huge reduction in transport costs, which in turn significantly reduces consumer costs. "In the United States transport costs before 1900 were enormously high," say economists Edward Glaeser and Janet Kohlhase.[30] They observe that transportation's share of our economy has fallen from 8 percent in 1929 to just 3 percent today and the overall cost of moving manufactured goods has fallen by 90 percent.[31]

The biggest decline has been in the cost of shipping by rail. But this disguises the fact that the combined cost of rail-and-truck together is far less than the cost of rail alone. Rail costs were once high because of the high cost of gathering cars from various origins, sorting them, breaking them up, and delivering them to various destinations. Today, trucks do these jobs much more economically, while rails are dedicated to moving large volumes of commodities, such as coal, grain, or containers, from one point to another. Without the trucks, and streets on which they can drive—whose costs are shared with car drivers—freight transport would be far more expensive than it is today and modern "just-in-time" manufacturing methods would be impossible.

A major contributor to the reduction in freight costs is the intermodal shipping container. First developed in the 1950s, shipping containers allow easy transfer of freight from ships to railcars to trucks, thus allowing each form of transport to do what it does best: move across oceans and waterways, move large quantities from point to point across land, and move small quantities from their origins or to their final destinations. Development of the modern intermodal container is credited to the owner of a trucking company who sought to gain an advantage over rivals by reducing costs.[32]

Containers reduced the cost of moving freight between ships, rails, and trucks by 94 percent, says economist Michael Levinson in The Box: How the Shipping Container Made the World Smaller and the World Economy Bigger *(p. 48). Photo by Albert Theberge.*

Railroads could not move containers as efficiently as they do were it not for highways and trucks that can do the initial pickup and final delivery. Photo by Sean Lamb.

The reduction in transport costs combined with the revolution in telecommunications led *Economist* writer Frances Cairncross to pronounce the "death of distance."[33] Manufacturers can make components in five different countries, ship them to another country for assembly, then ship them elsewhere for final assembly, delivery, or sale.

Another symptom of the death of distance is the increasing number of exurbanites: people with urban tastes and occupations living in small towns or rural areas. By some accounts, exurbs are growing faster than either suburbs or cities.[34] Thanks to low-cost delivery of goods by companies such as UPS or FedEx, Americans can live in remote areas without having to give up many of the amenities once exclusively enjoyed in big cities.

Consumer Costs

Thanks to reduced freight costs and the automobile, many consumer costs have dramatically declined in the past century. In particular, food, clothing, housing, and household good costs have all greatly declined when measured as a share of personal income (table one and figure five).

As the table shows, food costs have declined by nearly 50 percent even as the quality and variety of foods available have significantly increased. Clothing costs have declined by nearly two thirds, while the cost of other household goods has declined by a third.

Housing expenses have declined by only 8 percent since 1929, yet the average home today is much larger, much higher in quality, and much more likely to be owned by its occupants than housing of 1929. Homeownership rates have increased by nearly 50 percent, from less than 48 percent in 1930 to nearly 69 percent today. This was almost entirely due to the increased mobility that automobiles offered to blue-collar workers.

The reductions in these costs have allowed consumers to devote more of their incomes to recreation, education, and charity. Unfortunately, the biggest cost increases have been in government and health care. Except to the extent that better transportation has improved personal productivity and allowed health care and government to take a larger share of incomes, these increases are independent of transportation issues.

Table One
Consumer Costs as a Share of Personal Income

	1929	1950	2005
Transportation	9.0	11.0	10.2
Food	25.4	24.9	12.6
Clothing	13.2	10.3	4.5
Housing	13.7	9.5	12.7
Household goods	12.6	12.7	8.6
Recreation	5.2	4.9	7.4
Education	0.9	0.8	2.2
Personal care	1.2	1.0	1.1
Personal business	1.3	2.8	6.3
Foreign travel	0.7	0.4	1.0
Charity	1.4	1.0	2.2
Medical care	3.8	4.1	17.4
Taxes	2.1	10.7	20.4

Data will not add to 100 percent due to rounding and omission of a few minor costs. Source: Bureau of Economic Analysis, Personal Incomes and Outlays.

Figure Four
Transportation Costs

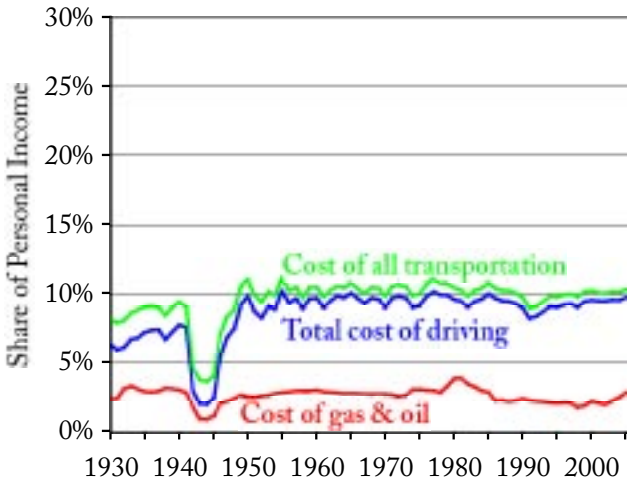
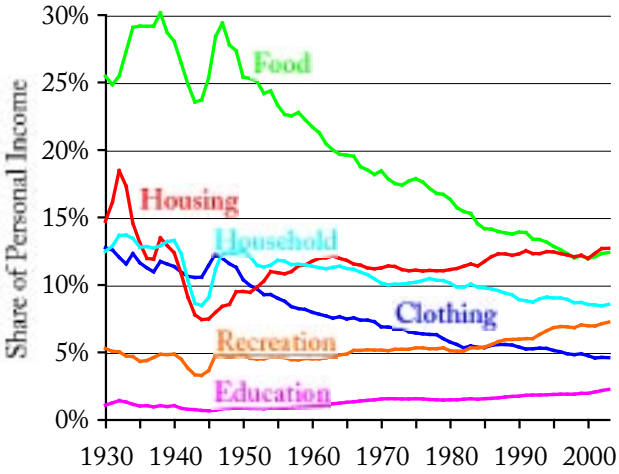


Figure Five
Personal Costs



The share of personal incomes consumed by transportation costs increased from about 9 percent before the Great Depression to around 10 percent after 1950. This small increase enabled the huge increase in personal incomes shown in figure three and the large decline in food, clothing, housing, and household good costs shown in figure five. Source: Bureau of Economic Analysis, Personal Incomes and Outlays.

Consumer Goods

The increased affordability of consumer goods has been accompanied by a huge increase in the variety of those goods. Grocery stores have grown from stocking a few hundred different products on their shelves in the 1910s to tens of thousands of different products today. A similar diversity of products can be found in clothing, hardware, electronic, and any number of other types of retail outlets.

I first noticed this diversity when I was grocery shopping and discovered that the store I was in sold more than fifty different kinds of mustard. Baseball fan Barry Levenson had a similar epiphany in 1986 when, depressed after his beloved Boston Red Sox lost game seven of that year's World Series, he wandered into a supermarket and discovered the wide variety of mustards. "I took a vow," he now says, to "collect mustards until the Red Sox win a World Series."[35] By the time that happened in 2004, he had collected 4,257 different varieties of mustard—and continues to collect them for his Mustard Museum in Mount Horeb, Wisconsin.[36]

While you can't find 4,000 varieties of mustard in any single place outside of the Mount Horeb Mustard Museum, you can still find plenty of variety in most supermarkets. According to a report published by the Dallas Federal Reserve Bank, from the early 1970s to the late 1990s, the number of varieties of milk on a typical supermarket's shelves increased from 4 to 19; the number of breakfast cereals increased from 160 to 340; the number of soft drink brands increased from 20 to 87; and the number of over-the-counter pain relievers increased from 17 to 141.[37]

Variety such as this is made possible by trucks that deliver goods and automobiles that deliver customers. Without automobiles, a store cannot attract enough diverse customers to support the kind of diversity that supermarkets provide. For the first half of the twentieth century, the Great Atlantic and Pacific Tea Company (A&P for short) dominated the grocery industry. At its peak, A&P owned more than 18,000 neighborhood grocery stores. Because each store served only a few hundred to a few thousand families, the typical 1912 A&P sold just 300 different products, increasing to 600 by 1924.[38]

In 1930, Michael Cullen opened what many regard as the nation's first supermarket on Long Island, New York. Unlike A&P and other grocery stores, the King Kullen Market was located not in a residential neighborhood but in a vacant garage in a business district. Cullen's idea was to have a large store offering more than a thousand different products located in an area with plenty of free parking. By marking up prices just 5 percent or less above his cost, Cullen attracted customers from 75 to 100 miles away and made up in volume what he lost in low mark ups.[39]

A&P, Safeway, Kroger, and other grocery chains soon replaced their neighborhood stores with supermarkets. In 1932, Kroger opened the first *park and shop*: a free-standing store featuring its own parking lot for 75 cars.[40] As more people bought cars, the supermarkets' customer bases grew and so did the stores. Because 25,000 people will have a wider diver-

Though larger and possibly more colorful, this Hispanic supermarket in San Jose is not much different in overall design than the first Krogers park-and-shop in 1932. Because park-and-shops could attract more customers to an individual store, they could offer a greater variety of goods than a neighborhood store that served only those within walking distance. Photo by the author.

Grocers can offer hundreds of varieties of fresh foods only because of the trucks that bring the foods to markets and the autos that help purchasers carry them away. Photo by Ken Hammond.

sity of tastes than 5,000, a store serving 25,000 can offer more products. By 1952, a typical supermarket had 4,000 products for sale; by 2000, it had 25,000, and some had more than 100,000.[41]

Today, traditional supermarkets no longer dominate the grocery business. Instead, they must compete with convenience stores such as 7-Eleven, natural food stores such as Whole Foods, limited-assortment stores such as Trader Joes, club warehouses such as Costco, and supercenters such as Wal-Mart and Target. The consumer is the winner as each new format offers more choice and lower costs. None of these types of stores would be possible without automobiles.

Automobiles have led to a similar diversity in other retail fields. When Sears the catalog company began opening retail stores in 1925, it purchased large lots on the outskirts of downtown retail districts so it could provide free parking. This enabled it to become the nation's leading retailer for many decades.

The adoption of parking areas by retailers and other businesses led to the strip development, which auto critics particularly revile. "The highway strip is not just a sequence of eyesores," argues James Kunstler. "The pattern it represents is also economically catastrophic, an environmental calamity, socially devastating, and spiritually degrading."[42] "Strip development is contrary to the basic elements of good planning," claims an urban planner. "It consumes open space and depletes natural resources, impedes pedestrian and non-motorized traffic, grows outward from the limits of existing development, and ruins any sense of place."[43] Of course, neither writer documents his claims, which are fundamentally based on aesthetics.

The problem, as sociologist Herbert Gans has noted in another context, is that planners often view the world through the eyes of a tourist rather than those of a resident.[44] While tourists seek aesthetic pleasure, residents want serviceability. From a residents' point of view, strip developments make perfect sense.

Unlike some other kinds of retail developments, strips never exist in isolation. Instead, they are invariably surrounded by low- to moderate-density housing. The commercial development itself is typically just 200- to 400-feet deep. Behind the businesses is often a narrow band of apartments, which buffer the commercial area from neighborhoods of single-family homes.

In other words, businesses and residents sorted themselves into the places they prefer. Most families want to live on quiet streets, while retailers prefer to locate on arterials where they are visible to large numbers of potential customers. Illinois historians John Jakle and Keith Sculle traced this sorting process over time on University Avenue, a boulevard connecting Champaign and Urbana, Illinois. In 1919, University had more than 150 homes, three fourths of which were owner occupied, but only nine businesses. As the street became a major automotive corridor, the number of homes declined while the number of businesses grew. By 1989, there were only eighteen homes—just two of which were owner occupied—and seventy-three businesses. The number of businesses declined slightly from 1979 as some grew larger while smaller businesses such as gas stations moved to other areas.

Auto critics often blame strip developments on past zoning practices that mandated a separation of uses. In fact, you will find strip developments in cities that have no zoning; zoning that reinforces strip developments merely reflects the preferences of homeowners and businesses.

Table Two
Homes and Businesses on University Avenue

Year	Dwellings	Businesses
1919	151	9
1929	153	23
1939	145	50
1949	138	71
1959	112	94
1969	69	92
1979	39	96
1989	18	73

Source: John A. Jakle & Keith A. Sculle, The Gas Station in America *(Baltimore, MD: Johns Hopkins, 1994), pp. 212 & 214.*

Strip developments do "things no city can do without," observes Portland State University planning Professor Carl Abbott, noting that they provide low-cost space for start-up companies, specialty businesses, and retailers that serve minorities. Referring in particular to Portland's 82nd Avenue, Abbot says, "This corridor of asphalt, car lots and old-world politics keeps Portland honest."[45]

In 2003, I did a census of businesses on McLoughlin Boulevard, a strip near my former home in suburban Portland. For a five-mile stretch, McLoughlin featured more than 100 businesses per mile. This represented a density of about 1.3 businesses per acre, only a little less than the density of Oregon's largest shopping mall. This density undermines the claim that strips are a waste of open space. Moreover, the range of businesses available on McLoughlin was much larger than found in any shopping mall.

In addition to three dozen car dealerships, 60 other auto-oriented businesses, 70 restaurants, 22 grocery stores, and two dozen banks and other financial institutions, McLoughlin offered nearby residents opportunities to:

- Buy and learn how to play musical instruments;
- Buy dance costumes and learn how to dance;
- Buy rubber stamps, skateboards, sports cards, flowers, and scuba diving equipment;
- Rent a U-Haul to carry the things they buy;
- Store their purchases in one of three storage facilities;
- Buy food for their dog at one of two pet shops, bathe it at a do-it-yourself dog wash, and take it to one of two veterinarians;
- When they go hunting with their dog, they can take whatever they kill to the Sausage Kitchen to have it smoked and made into sausage.
- If these choices give residents a headache, there is even a headache clinic to relieve their pain.

Strip developments such as the Portland area's McLoughlin Boulevard, shown here, may not be pretty, but they provide an incredible array of convenient services for local residents. Photo by Dorothy Jones.

Amish do not drive, but they depend on cars and trucks with hired drivers to take them and their goods to markets in Pennsylvania and nearby states. Photo by C. P. Zilliacus.

Thus, a typical strip development offers a tremendous amount of consumer choice. This choice results from the competition that is possible when people are mobile enough to choose among retailers. In turn, this choice reduces consumer costs. When Wal-Mart begins selling groceries in a community, for example, the average price of groceries in that community falls by 6 to 12 percent.[46] Similar savings follow the introduction of other new retail formats.

Most of the prescriptions planners offer in place of strips would reduce this consumer choice. One critic of strip developments says plans should require "retail clusters or nodes around major intersections, and allow some transitional uses like professional offices along the rest of the road."[47] Limiting the number of street access points to retail sites would drive up the price of retail land, increase consumer costs, and reduce the number and variety of retail establishments available to consumers.

Even more prescriptively, New Urbanism calls for more pedestrian-friendly "main streets," with stores fronting on the sidewalks, parking (if there is any at all) in the rear, and apartments upstairs. This leads to a very different mix of stores than is found on a strip development. Given the competitive disadvantage of hidden parking, stores on such main streets tend to become boutiques serving niche markets rather than selling general consumer goods.

Social & Recreational Benefits

Very few Americans today can imagine the social and recreational benefits provided by the automobile because few have lived in a society without autos. Before the auto, rural residents, particularly women, could live for months at a time without seeing anyone except for their direct family members.[48] Even urban residents could be isolated from their families: people who moved from their hometowns might return to see their families only once or twice in their lifetimes. Passenger trains did not fill this gap because many could not afford to frequently ride them.

The automobile gave low-income people access to recreation opportunities previously available only to the rich, and created forms of recreation that didn't even exist before 1900. Photo by the author.

The automobile eliminated this social and familial isolation. For the past fifty or so years, Americans have thought little of driving several hundred miles to visit friends or family. Many happily take longer trips of 4,000 to 6,000 miles every year or so. Whether it is friends across town or grandma across the country, the automobile has kept Americans in frequent personal contact with one another.

The auto has also opened the door to all sorts of recreational opportunities that previously existed only for the rich, if they existed at all. "Use of the automobile has apparently been influential in spreading the 'vacation' habit," commented the authors of *Middletown* in 1929. "The custom of having each summer a respite, usually of two weeks, from getting-a-living activities, with pay unabated, is increasingly common among the business class, but it is as yet very uncommon among the workers."[49]

The first car to enter Yellowstone Park was a Model T Ford in 1915. Fewer than 52,000 people visited Yellowstone that year. Park Service photo.

Today, of course, nearly every American family takes vacations every year. Skiing, backpacking, fly fishing, boating, surfing, and beachcombing are only a few of the many outdoor sports that are enabled by the automobile. As just one example, in 1904 only about one out of every 6,000 Americans visited Yellowstone National Park. By the mid 1960s, it was more than one out of every 100 Americans.[50]

Today, Yellowstone receives about 3 million visitors per year, nearly all of them arriving by automobile. Park Service photo.

Health and Safety

While autos have been accused of killing people, they have also greatly contributed to public health and safety. Thanks to paved streets and automotive technology, fire departments save hundreds of thousands of homes and thousands of lives from fire each year.[51] Paramedics and ambulances also save thousands of lives every year.

As just one example, rapid response can save the lives of thousands of Americans who suffer from sudden cardiac arrest each year. If treated with a defibrillator within two minutes, about 90 percent survive; after six minutes, only 10 percent survive.[52] By reaching victims within six minutes, fire departments and paramedics in America's fifty largest cities alone save close to 1,000 lives a year.[53]

Emergency service providers absolutely depend on automobility and the highways paid for by auto drivers.

Another benefit of automobiles was vividly demonstrated during the recent flooding of New Orleans caused by Hurricane Katrina. Residents of New Orleans and nearby communities who owned cars were able to quickly evacuate prior to the hurricane. Residents without cars were left behind.

Natural disasters tend to be more devastating to developing nations because people in developed countries have the mobility to escape predictable events and to move to areas with food, safe water, and other essentials after unpredictable events. Due to our own increasing automobility, disaster-related deaths in the United States have steadily fallen from more than 10,000 in 1900, the year of the Galveston hurricane, to a few dozen a year in recent years.

New Orleans was exceptional because, in terms of mobility, it was more like a third-world country than an American city. According to the 2000 census, a full third of New Orleans households do not own an automobile, compared with just 7 percent in the rest of the nation. While many pundits tried to make it a racial issue—"the white people got out," said an article in the *New York Times*—it was not. As the *Times* itself noted, both white and black families who had cars got out, while families without cars (which were mostly black) for the most part did not.[54]

When Hurricane Rita struck the Gulf Coast a few weeks later, close to three million people evacuated, nearly all by car. While people complained of congestion, anyone who wanted to leave was able to get out before the storm hit. Rita led to only thirty fatalities, 24 of them from a fire on a bus transporting carless people.[55] This is less than 3 percent of the number attributed to Katrina. Automobiles clearly saved lives that might have been lost due to Rita.

Many argued that transit should have worked to get people out, ignoring the fact that it did not. Evacuation by automobile would create too much congestion, they added, ignoring the fact that people with cars escaped in spite of congestion. One New Orleans planner who did not own an automobile, but managed to escape Katrina by renting one of the city's last available rental cars, perversely argued that the problem was too much auto dependence, implying that if fewer people drove, they would be more used to taking transit.[56] Never mind that this would leave them dependent on the competence of public officials who failed to implement their carefully prepared emergency plans to evacuate transit-dependent people from New Orleans.[57]

Others fantasized that trains could have evacuated New Orleans residents who lacked automobiles. But a new Amtrak plan to store 24 passenger rail cars in New Orleans and also use cars from regional trains only has the capacity to evacuate about 4,000 people, less than 4 percent of the number of pre-Katrina New Orleaneans whose families lacked cars.

Automobiles give people the freedom they need to deal with disasters on their own terms and timetables. Even if buses or trains were available, people would be reluctant to take them. Would the bus or train take them where they wanted to go? Would they be available when the people were ready to go? Could people take their pets and precious belongings? Could they come back when they wanted to return? No one wants to be dependent on the whims of other people's rules and schedules.

Freedom

As most teenagers know, the key to the family automobile is the key to freedom. And not just for teenagers: auto ownership has helped both women and minorities achieve personal freedom and civil rights.

Sandra Rosenbloom is a University of Arizona researcher who studies the importance of autos to women. Unlike men who tend to drive straight home from work, women use cars to do errands such as shopping and picking up the kids. "Working mothers are much more dependent on driving alone than comparable male parents," she says. Efforts to discourage auto driving, she says, penalize women much more than men.[58] When auto-hater Jane Holtz Kay responds that it is "grim" that women have to suffer "vehicular bondage," Rosenbloom answers, "You wouldn't believe how owning their first car frees women." (Kay's non sequitur response: "How like a man.")[59] One advantage of private autos is that they offer women greater security than public transit.

"The civil rights movement, which began with the Montgomery Alabama bus boycott, would have been a failure had it not been for the automobile," says *Washington Post* writer Warren Brown. Because of this, he adds, "I've always viewed automobiles as freedom rides."

The Montgomery Alabama bus boycott was possible only because blacks used automobiles for carpooling and ride sharing. The bus on which Rosa Parks refused to give up her seat to a white man is now preserved in the Henry Ford Museum in Dearborn Michigan.

More than just transportation, automobiles offer people a medium for personal expression that in some cases becomes a form of art. Photo by the author.

Blacks were able to boycott the Montgomery bus system by sharing rides to work, school, and church. Black ministers (and one white minister of a black congregation) organized car pools with hundreds of cars. Black taxi drivers gave rides to fellow blacks for 10 cents (the bus fare) despite threats of legal action if they did not charge the minimum 45-cent taxi fare. Black churches purchased station wagons to help their parishioners support the boycott. In short, says Brown, blacks used "their private automobiles to drive around Jim Crow."[60]

It is no coincidence that the civil rights movement and the women's liberation movement both took place after the automobile became the dominant formof transportation in America. More than any other invention, the automobile offers people freedom and opportunity without regard to race, creed, or gender.

Land Use

Automobiles are blamed for "wasting" land in the form of urban sprawl. Yet autos actually have produced significant land-use benefits.

Consider first the land supposedly wasted by sprawl. According to the U.S. Department of Agriculture, urban land increased from 15 million acres in 1945 (the earliest year for which data are available) to 60 million acres today. During this time, urban populations increased by 160 percent, so if densities had remained the same as in 1945, urban areas would occupy only 39 million acres today. Thus, some 21 million acres of urbanization might be attributed to post-war automobile-oriented sprawl.[61]

Of course, this "sprawl" is not necessarily a bad thing. Low-density development is a part of the American dream of owning a home and a piece of land that families can use as playgrounds for children and pets, gardens, or other purposes. Large yards do destroy open space so much as they convert one form of open space—farms and forests—to another—backyards. From the point of view of watersheds and certain kinds of wildlife, backyards may even be better than intensively managed crop lands.

Still, automobiles have more than made up for the 21 million acres of low-density development. Thanks to autos, trucks, and tractors, farmers across the country no longer needed to dedicate tens of millions of acres of land to pasture for horses. As a result, between 1920 and 1970, farmers returned 82 million acres of pasture land to forests.[62] This may well have been the largest area of deforested land ever to be reforested. The number of acres reported as forest lands has declined since 1970, but nearly all of that decline resulted from the transfer of federal forest lands to the National Park Service, which (by U.S.D.A.'s reckoning) takes them out of the forest land category.[63]

Forest lands provide much more biodiversity than pasture lands. Instead of producing fodder for horses, these lands now offer habitat for wildlife, wood for housing, and cleaner water for fish and downstream users.

At the same time, farmers converted millions of other acres of pasture lands to crop lands. When horses were the main source of farm power, virtually all farms had to dedicate a portion of their acreage to pasture. Now farmers can dedicate their most productive lands to growing crops, while less productive lands are used for range or forests.

Today, the United States has about 440 million acres of crop land, which is about 40 million more than it had in 1920.[64] Nearly all of this increase came from pasture lands. Since pasture land is one of the least valuable uses of agricultural lands, this conversion contributes to overall agricultural productivity.

Thanks to the automobile, nearly 200,000 square miles of horse pastures have been converted to forests, and close to 30,000 more have been converted to highly productive crop lands. Photo by efleming.

By any measure, the total amount of urbanized land represents no more than 5 percent of the United States as a whole, and urban sprawl has had a negligible effect on farms, forests, or open space. As the U.S.D.A. says, urbanization is "not considered a threat to the nation's food production."[65]

Yet the automobile's positive impact on the nation's forests and crop lands has been much more significant, as it increased crop lands by 10 percent and forests by more than 13 percent. When adding the 80 million acres of forest lands to the 40 million acres of crop lands, autos improved the management of nearly six times as many rural acres as the 21 million acres that have been developed into low-density urban areas since 1945. On balance, autos, trucks, and tractors did far more good than harm to America's overall land uses.

SOVs and SUVs

SOVs—single-occupant vehicles—and SUVs—sport-utility vehicles—have been particularly demonized by auto critics. "Why does a 110-pound woman need a 3,000-pound car to buy a 1-pound loaf of bread?" they ask.

Perhaps she does not, but it is rare that anyone drives a car to just buy a loaf of bread. Women in particular are more likely than men to chain trips together, dropping clothes at the dry cleaners, buying groceries, and picking up children at daycare on the way home from work. Such trip chaining would be extremely difficult on foot or by mass transit, which is one reason why transportation analysts find that "women tend to be more dependent on single-occupant vehicles" than men.[66]

Single-occupant vehicles are most common for commuting. According the Department of Transportation surveys, the average occupancy of commuter cars is 1.14, while the overall average occupancy is 1.63. Occupancies are greatest for "social and recreational" trips (2.03), and somewhat lower for "shopping" (1.79) and "other family or personal business" trips (1.83).

A decline in average occupancies since the 1970s reflects a parallel decline in household size. In 1977, when average occupancy was 1.90, household size averaged 2.90. Since then it has fallen to 2.63, one more than today's average occupancy. This suggests that average occupancy tends to equal household size minus one.[67]

Could the people in the single-occupant vehicles on this highway save time and money by carpooling? Probably not, because modern urban areas have too many origins and destinations to make carpooling convenient. Could higher densities make carpooling convenient enough to reduce congestion? No, because densities have to increase roughly sixteen times to reduce driving by half, which would make eight times as many cars and that much more congestion.

This helps explain why the decennial census reports that the share of workers who carpooled declined from nearly 20 percent in 1980 to only 11 percent in 2000.[68] Contrary to stereotype, most carpooling does not consist of co-workers sharing a car to work, but family members sharing a car from home. As family size declined, the opportunities for such carpooling shrank as well. (Dwindling household sizes are also a major factor in the decline in urban densities that critics call "sprawl."[69])

This means that the dominance of single-occupant vehicles for commuting is not due to some irrational "addiction" or "love affair" with automobiles. Instead, it is merely a symptom of deeper demographic changes: smaller families and fewer extended families living under one roof. To significantly increase the amount of carpooling, auto critics would have to somehow reverse these demographic trends.

Of course, even when families have more than one worker, they may not be able to carpool. In today's mobile society, the best jobs a husband and wife can find may be tens of miles apart. So they may choose to locate their homes midway between the jobs and each commute in their single-occupancy vehicles.

"I am a committed New Urbanist who is absolutely delighted with my residential choice" (a home on a small lot in a New Urbanist neighborhood), writes an associate professor of geography named Sriram Khé. "On the other hand," because he and his wife work in two different metropolitan areas, "I drive 65 miles each way to work, which means I am a poster-child for urban sprawl."[70] Thus, shrinking household size combined with the likelihood that both men and women in a household are pursuing professional careers, rather than settling for a convenient but low-paying job, has steadily reduced American carpooling.

The increasing use of SUVs also reflects a demographic trend: the aging of the population. Sport-utility vehicles did not become popular because Americans suddenly decided to go four-wheeling across the landscape. Instead, SUVs are more comfortable and offer drivers better visibility than modern passenger cars.

- Because SUV seating positions are more up-

Before World War II, most cars were "SUVs" in the sense that they were taller and less energy efficient. Photo by Chris 73.

right—in auto lingo, SUVs have a higher "hip height"—they are more comfortable for baby boomers' aging knees, hips, and lower backs.

- Because the eye level is higher, drivers can see further down the road: adding about ten inches to the height of a car can increase the distance to the visible horizon by a quarter mile. This is especially important after dark for baby boomers losing their night vision.

In these respects, SUVs are nothing new. Before World War II, almost all family cars were built with high hip heights and eye levels. After the war, most manufacturers adopted lower, sleeker designs, and people who wanted higher hip heights in a new vehicle were limited to pick ups or jeeps. In the mid-1980s, Chrysler introduced the minivan and purchased AMC, which made the Jeep. The growing popularity of both these designs led to the development of more vehicles with higher hip heights.

After the war, automakers promoted lower, more aerodynamic designs. While these designs may have saved energy, they also made it more difficult for people to enter and exit the cars and reduced driver visibility. Photo by Morven.

Today, most SUVs are "car based," meaning the chassis and engine of, say, a Toyota Camry or Ford Fusion are matched to the body of an upright SUV. Even many cars that are not clearly SUVs, such as the Toyota Prius, PT Cruiser, and "crossover" vehicles such as the Chrysler Pacifica, are built with higher hip heights.

After 1948, this Jeepster was one of the few automobiles, other than pickups, that still offered the upright seating of pre-war autos. Photo by Stephen Foskett.

All of this means that the demonization of SUVs misses its target. People did not buy SUVs because they saw themselves as great explorers or off-road enthusiasts. Instead, they were simply seeking vehicles that were more comfortable and safer to drive. The auto industry responded with a wide variety of choices, few of which are true SUVs in the sense of being capable of four-wheeling on low-quality roads.

In short, SOVs and SUVs are the result of natural demographic trends that are virtually impossible to influence. No matter what their occupancy, and no matter how tall they are, autos are a valuable addition to American life.

Recommendations

Incessant and usually misinformed efforts by auto critics have led to numerous national, state, and local transportation policies aimed at discouraging or reducing driving.

- The Environmental Protection Agency and U.S. Department of Transportation give grants to anti-auto groups with the objective of reducing vehicle miles traveled.[71]
- Despite claims that transportation funding is somehow slanted towards highways, total subsidies to mass transit are almost twice as great as subsidies to highways even though highways carry a hundred times more passenger travel, and far more freight, than transit (see figure two).
- An Oregon land-use commission has directed major cities in the state to reduce per-capita driving by 15 percent by adopting land-use policies that discourage auto usage and encourage other modes of travel.[72]
- "Congestion is not going to be solved by building new roads," says Brennon Morioka, Hawaii's deputy transportation director for highways. "The more roads you build, the more you encourage people to drive."[73] This "induced demand" myth has frequently been proven wrong, yet it continues to drive bad transportation policy.[74]
- Denver, Indianapolis, Portland, Seattle, and many other cities have converted or are considering converting one-way streets to two-way operation. This reduces flow capacities, increases congestion, and leads to 25 to 35 percent more accidents between cars and pedestrians.[75]

Cities throughout the country are quietly imposing disincentives to the automobile by narrowing streets, placing speed humps or other barriers in the roads, converting one-way streets to two-way operation, and restricting parking. All these actions reduce roadway capacities in an effort to kill, or at least cripple, the automobile goose that laid the golden egg of American prosperity. Photo by the author.

These sorts of policies, attitudes, and actions increase congestion and traffic accidents and waste people's time and fuel. More important, they represent a dagger aimed at the heart of America's mobility. Advocates of these policies believe that America can somehow maintain the benefits of mobility without actually being as mobile.

They are not against driving, they say, they merely want to give people choices—choices that few people will actually make and that often require huge subsidies. To encourage people to use transit and other alternatives to autos, planners also admit they want to create "disincentives to driving." Their first choice would be to raise gasoline taxes, which now average about 40 cents a gallon, to $2 or $3 a gallon—never mind that Europeans have been paying such rates for years yet still drive as many miles per unit of gross domestic product as Americans. Yet it is unlikely that Congress will ever approve such high taxes.

The auto critics' second choice is to charge parking fees throughout metropolitan areas. Yet suburban shopping malls and office parks are unwilling to give up their free-parking advantage over downtown areas and have the political clout to prevent mandatory parking charges.

What regional planners can do, and are doing in many U.S. metropolitan areas, is divert highway funds to transit, bike paths, traffic calming (which should be known as "congestion building"), and any other activities that will not relieve congestion. "Congestion signals positive urban development," say planners in Portland, Oregon,[76] adding, "transportation solutions aimed solely at relieving congestion are inappropriate."[77]

This view is painfully short-sighted. According the Texas Transportation Institute, congestion costs travelers in America's major urban areas more than $63 billion and wastes 2.3 billion gallons of fuel per year.[78] This does not even count the cost to businesses and consumers of delays of freight deliveries. Congestion costs have nearly quintupled in the past twenty years, in large part because transportation planners have either given up trying to relieve congestion or

Another anti-automobile tactic is to divert highway dollars and other transportation funds into expensive rail transit projects. San Jose's planners want to spend 80 percent of the region's transportation funds on the light-rail and other rail lines. When built in the streets, as shown here, rail transit actually increases congestion. Rail construction has put San Jose's transit agency so heavily in debt that, to avoid defaulting, it was forced to severely cut both rail and bus service and has lost a third of its customers. Photo by the author.

actually seek congestion as a disincentive to driving.

It is time to replace those who want to increase congestion with people who recognize that mobility is America's strength and the source of much of the quality in our lives. Policies that discourage automobility should be replaced with ones that do not hinder the benefits created by automobility.

- Government should be neutral regarding people's transportation choices. Government's only role is to insure that people pay the full costs of their choices.
- As far as possible, transportation agencies should be apolitical, led by engineers and other experts who will make decisions based on safety, congestion, and other quantifiable measures.
- Transportation agencies should *not* attempt to account for non-quantifiable factors such as "a sense of community" or "the public interest." As noted by transportation economist Shorey Peterson in 1950 (and as verified by recent experience), such attempts lead to "the wildest and most irreconcilable differences of opinion" and make transportation projects "peculiarly subject to 'pork barrel' political grabbing."[79]
- Transportation agencies should be funded as much as possible out of user fees such as gasoline taxes, tolls, and transit fares. User fees should be designed to give agency managers positive feedback when they provide transportation facilities that people need, and negative feedback when they provide needlessly expensive facilities or facilities that people don't use.
- Subsidies should be based on social equity concerns that user fees cannot address. Such subsidies should be directed to transportation users in the form of transit or toll vouchers, not to transportation providers, so users can choose the transportation solutions that best meet their needs rather than have government planners build expensive systems that do not work.

The above policies will give transportation agencies incentives to make cost-effective plans and decisions. Until these incentives are firmly in place, transportation agencies should make cost-effectiveness in improving safety and reducing congestion their primary goal. Alternative transportation investments should be ranked by how well they achieve this goal and only those that best achieve it should be funded.

These simple guidelines will greatly improve America's transportation infrastructure. Though the policies themselves are not biased toward the automobile, they will facilitate auto usage by those who can and prefer to drive. This will allow the nation to continue enjoying the benefits of the greatest invention of the last 230 years.

A 1936 Delahaye with a Figoni et Falaschi body. In the late 1930s, Automobiles Delahaye was the pride of France, as the company built racing cars that could beat the German-subsidized Mercedes-Benz racing team. After World War II, French restrictions on the size of motors manufacturers could put in their cars effectively put Delahaye out of business. Photo courtesy supercars.net.

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About the Author

Randal O'Toole would rather pedal his bike through the mountains or take a train across the continent than drive a car. But more than thirty years of studying environmental issues has taught him that everyone else may not share his personal preferences, so it is better to find out how other people actually behave than to imagine how you would wish them to behave.

As the author of *Reforming the Forest Service* and *The Vanishing Automobile and Other Urban Myths*, O'Toole's economic research has earned him respect among environmentalists and free-market advocates alike. The Oregon Environmental Council has given him its prestigious Neuberger Award. Yale University named him its 1998 McCluskey Conservation Fellow; he was the Merrill Visiting Professor at Utah State University in 2000; and in 1999 and 2001 he was the Scaife Visiting Scholar at the University of California at Berkeley.

Center for the
American Dream
of mobility and home ownership

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About *The Greatest Invention*

The automobile has contributed more to the quality of life in America than any other invention, this paper argues. Since 1900,

- Personal mobility has grown from about 3,000 miles per year (mostly on foot) to nearly 20,000 miles per year (mostly by automobile) today;
- Incomes per worker have increased by nearly seven times and incomes per capita by even more;
- Homeownership rates have increased by nearly 50 percent;
- The cost of shipping freight has dropped by 90 percent, leading to a huge decline in the costs of food, clothing, and other consumer goods;
- The variety of goods available to consumers has increased by as much as 100 times;
- Social and recreation opportunities have greatly increased, as has access to health care;
- Farmers have reforested 80 million acres of former horsepasture lands.

Americans today are far better off than they were one hundred years ago in almost every way, and it is no exaggeration to attribute most of that improvement to the automobile. In contrast to the railroads, which at one time were frequented only by the wealthy and those whose jobs depended on travel, automobiles are far more egalitarian. To a large degree, for example, both the civil rights movement and the women's liberation movement were enabled by automobility.

These benefits have not come without cost. But Americans today spend only about 10 percent more on transportation (when measured as a share of personal incomes) than they did in 1929. Other costs have greatly declined: fatality rates per billion passenger miles have fallen by 70 percent since 1970, while the total amount of air pollution emitted by autos has fallen by more than 60 percent since 1970 even though we drive almost three times as many miles. Considering that the subsidies per passenger mile to Amtrak are four times as great and the subsidies to public transit systems are ten times as great as the subsidies plus the social costs of automobiles, it is hard to imagine any form of transportation that could provide as many benefits as automobiles at such a low cost.

About the Center for the American Dream

The Independence Institute's Center for the American Dream works to give people freedom of choice in land use and transportation while protecting urban livability and environmental quality. The "dream" of the Center for the American Dream is affordable homeownership, mobility, a clean and livable environment, and personal freedom for all Americans, not just an elite few.

The Center for the American Dream does not advocate that people drive everywhere or take public transit, live in low-density suburbs or high-density urban centers. All of these are legitimate lifestyles. The Center supports free-market solutions to urban problems such as value-priced roads and competitive transit, and opposes coercive planning efforts that attempt to engineer lifestyles through subsidies, regulation, and limits on personal and economic freedom.