Center for the American Dream
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No Two Ways About It:

One-Way Streets Are Better Than Two-Way

by Michael Cunneen and Randal O'Toole

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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.

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Cover photo: Logan Street in Denver was once part of a one-way couplet, then was converted to a two-way street. Since the other street in the couplet was also turned into a local street, this has significantly increased traffic on Logan, raising the ire of residents on the street. *Back cover:* Street transitioning from one-way to two-way. *Photos by Joe Weaver.*

Contents

Executive Summary

A recent article in the *New York Times* describes a transportation planner in the Netherlands who advocates making streets city safer by making them more dangerous. He removes all traffic signals, stop signs, lane striping, and even the division between street and sidewalk. In his view, this forces drivers to drive more safely because they can no longer rely on signs and signals to tell them what to do.[1]

This plan may sound radical, but the Netherlands has nothing on urban planners in Denver. For decades, Denver planners have been following a policy of making streets safer by making them more dangerous. Specifically, planners have converted one-way streets to two-way traffic even though all available research shows that one-way streets are much safer for both autos and pedestrians.

The *New York Times* article gives no indication that the Netherlands' planner has made any attempt to find out whether his theories work, that is, whether streets with no signals or signs actually have fewer accidents. In contrast, Denver planners have measured the safety of streets before and after conversion from one-way to two-way traffic, and found that the conversion led to a 37-percent increase in accidents. Rather than conclude that such conversions are a bad idea, the planners merely said they expected this result and went on to convert more streets.

For decades, fast and efficient transportation has been a major goal of traffic engineers. Urban planners might appropriately question this goal if it conflicted with safety, yet engineers have always claimed that safety was even more important than speed or efficiency. Regardless of the priority, it appears that in many cases safety is not only compatible with but is in large part is a prerequisite for speed and efficiency.

Today, urban planning is dominated by an anti-auto mentality that overrides common sense. In their efforts to discourage driving, planners are willing to accept more congestion, more air pollution, and greater numbers of accidents—all of which result from converting one-way streets to two-way. Denver planners are pioneers in this mentality: They first proposed to convert one-way streets to two-way in 1976, and (after overcoming the objections of the city's traffic engineer) made their first conversions in 1987.

Planners sometimes say that two-way streets are superior to one-way because they are slower. In fact, traffic speeds are independent of whether the streets are one-way or two-way and can most easily be controlled on one-way streets through the use of coordinated signals that can be set for almost any desired speed. Two-way streets suffer more delay and therefore have slower average speeds than one-way streets, but not necessarily slower top speeds. It is questionable whether slower average speeds is a real safety improvmeent if top speeds remain the same.

Planners also sometimes argue that two-way streets are better for businesses on those streets because it is easier for patrons to reach those businesses. But traffic flows on one-way streets can be significantly higher than on two-way streets. So it is no surprise that numerous studies have shown that businesses actually do better on one-way streets than two-way.

In converting one-way to two-way streets, Denver planners also sometimes converted collector streets (streets that carry a significant share of through traffic) to local streets. Again, this is independent of whether the streets are one-way or two-way, as many cities have local streets that have one-way traffic.

Of those Denver one-way collector streets that were converted into two-way collector streets, a post-conversion analysis found no measurable benefit other than a "perceived preference" for two-way streets.[2] The analysis did not say who perceived that preference or whether the preference was influenced by planners' erroneous claims that two-way streets would be safer or less congested. It is difficult to imagine that this "perceived preference" should override the safety, pollution, and traffic flow benefits of one-way operation. Yet Denver planners continued to convert one-way streets to two-way operation.

Denver residents should revolt against this deadly form of social engineering. Conversions of one-way streets to two-way should be halted. Collector and arterial streets that have already been converted should be changed back. The city should discharge planners who place their personal, anti-auto prejudices over the safety of its residents.

Engineering vs. Planning

Converting one-way streets to two-way traffic is one of the latest fads of urban planning. Such conversions will increase congestion, pollution, and traffic accidents, but planners ignore these problems and talk about how they will lead to more "vibrant" streets, whatever that means. The debate over one-way streets in Austin, Columbus, Denver, and many other cities calls attention to recent urban transportation trends as planners have gained power at the expense of traffic engineers.

A few decades ago, engineers made most urban transportation plans and decisions. Their first priority was safety and their second priority was efficient movement of traffic. The engineers carefully studied the effects of any changes or improvements they made to see if they were good or bad, and they published their results for other engineers to see.

Practical Traffic Engineering for Small Communities, published in 1958 by Pennsylvania State University, offers numerous examples of the engineers' method.[3] The guide presents hundreds of case studies asking such questions as:

- Will traffic signals reduce pedestrian accidents?
- Is parallel parking less prone to accident than angle parking?
- Will putting grooves in pavement reduce accidents?

Notice the heavy emphasis on *reducing accidents*, in keeping with the engineers' first priority of safety. Improving traffic flows and reducing congestion are important, of course, but only if they can be done without reducing (and preferably by increasing) safety.

Most of the studies described in this manual followed a common method. Data were gathered for a year or more. Then some action—installation of a traffic signal, grooving of pavement, etc.—was taken and, sometimes after an adjustment period, data gathered again. The two periods were compared.

Sometimes two similar streets—say, one with parallel parking and one with angle parking—were compared. Sometimes a control street was used for comparison, or perhaps the city as a whole. For example, accidents on a particular street might decline after the pavement was grooved even though accidents increased in the city as a whole. In any case, the point was to carefully evaluate whether the action produced positive benefits and perhaps to assess if they were worth the cost.

The Case for One-Way Streets

After World War II, Americans who still lived in cities began a rapid movement to the suburbs and they were followed by retail shopping malls. Downtown retailers worried that this competition would have an advantage over them because the suburbs were less congested.

Traffic engineers offered a solution: convert two-way streets to one-way. This would produce several benefits. First, one-way streets with the same number of lanes as two-way streets can move 20 to 50 percent more cars because of fewer turn delays. According to one estimate, seven lanes of a two-way street are needed to move as many vehicles as four lanes on a one-way grid because people turning left or right impose fewer delays on people behind them.

Second, traffic signals on a one-way grid can easily be coordinated so drivers can proceed at a continuous speed without stopping frequently for red lights. Third, as engineers would prove over and over again, one-way streets were safer for both auto users and pedestrians. Finally, something that became important only after 1970, since traffic moved more smoothly, one-way streets produced less air pollution than two-way streets; frequent stops and starts are a major source of pollution.

One study found that converting two-way streets to one-way led to a 19-percent increase in traffic at speeds that averaged 37-percent faster. This wasn't because the maximum speed limit on the one-way streets was any greater than on two-way streets, but because drivers experienced 60 percent fewer stops. To top it off, there was a 38-percent decrease in accidents.[4]

Engineers reported similar in city results after city:

- Portland found 51 percent fewer accidents at intersections and 37 percent fewer between intersections.[5]
- The Oregon State Highway Department found that one-way streets in a dozen Oregon cities, ranging from Astoria to Eugene, led to an average of 10 percent fewer accidents and 23 percent more traffic—meaning the accident rate per million vehicle miles declined by 27 percent.
- Sacramento found 14 percent fewer accidents on streets converted to one-way operation despite a 17-percent increase in accidents in the city as a whole.[6]

Pedestrians particularly benefit from one-way streets. Two-way streets produced 163 percent more pedestrian accidents in Sacramento, and 100 percent more pedestrian accidents in Portland OR, Hollywood FL, and Raleigh NC. One study called one-way streets "the most effective urban counter-measure" to pedestrian accidents.[7]

Many downtown businesses initially resisted one-way streets, worrying that customers going in the other direction would miss them or not bother to drive around the block to shop. But after some streets were converted, most businesses saw the benefits of increased traffic—meaning more customers—and became believers.

"Of course, there were some retailers who opposed" one-way streets, wrote the director of the Portland Retail Trade Bureau in 1953. "Today, those very same people would not go back to two-way traffic."[8] Around the same time, the director of the Retail Merchants Association of Sacramento wrote that, while there was some initial skepticism, Sacramento businesses "are now almost 100% in favor of" one-way streets. "There was a feeling on the part of filling station and apartment owners the one-way system on 16th would hurt their business. This has proved to be the exact opposite. Business has improved in this area and property values have risen substantially."[9]

In 1949, the Traffic Engineering Department of the City of Fresno, California, made a nationwide survey of cities with one-way streets. A questionnaire to traffic engineers and police came back with unanimous responses in favor of one-way streets. This was so striking that the city worried that "officials might have been prejudiced." So it sent a second survey to merchant associations, and it came back almost as favorable: only ten percent reported opposition to one-way streets.[10]

Engineers in Sacramento and Olympia, Washington actually compared retail sales before and after one-way streets. Olympia found that businesses on one-way streets were doing better than comparable businesses on two-way streets.[11] Sacramento also found that businesses grew faster (or, in some cases, shrank less—the study was done at the beginning of a recession) than similar businesses in the city as whole.[12]

The only dissenting voices seem to have come, ironically, from auto dealers and possibly some other auto-related businesses. No study ever found that one-way streets hurt these businesses, but some auto-related businesses continued to resist one-way streets. "The only vehement opposition we have had lately," says the Portland merchant association, "has been an automobile concern that happens to be on a through artery and still feels that one-way streets has hurt its business."[13]

The Anti-Auto Movement

In the 1960s, a flurry of books appeared critical of automobiles and highways. Ralph Nader charged that poor auto design led to many fatal accidents. Others worried that air pollution was darkening skies and making people sick. Both allegations were largely true, and they led to federal legislation requiring safer and cleaner cars that proved remarkably successful. Fatality rates per million vehicle miles today are 75 percent less than they were fifty years ago. Total auto emissions have declined by more than 60 percent even though we drive two-and-one-half times as many miles as we did in 1970.

Despite these successes, animosity toward the automobile has only increased. One reason for this can be traced to the inflation of the 1970s, during which highway construction costs grew dramatically but were not matched by growth in highway revenues. Since most highway user fees came from gas taxes, which were based on the number of gallons sold rather than the value of those gallons, the revenues did not grow with inflation. Though states and the federal government raised gas tax rates, they lost the race to inflation and more fuel-efficient cars: After adjusting for inflation, auto drivers today pay only half as much gas tax for every mile they drive as they paid in 1960.

As a result, highway construction after 1970 could not keep pace with demand. This meant urban roads got more and more congested. Yet people continued to drive more, with per capita driving growing by about 2 percent per year. While this growth briefly slowed during the energy crises of the 1970s, the long-term response to higher gas prices was that people bought more fuel-efficient cars and then drove more than ever. This further reduced gas tax revenues so that, after adjusting for inflation, revenues per mile of driving in 2000 were only half as much as they were in 1960.

When roads became too congested, many people drove at different times or found different routes or modes. This meant there was a large pent-up demand for highways during peak periods, so when a new freeway did open it was almost immediately congested as people changed times, routes, or modes—a phenomenon

economist Anthony Downs calls "triple convergence."[14] This led to the myth that "building roads simply leads to more driving," when in fact the increased driving was taking place whether the new roads were built or not—just not at times or on routes most convenient to drivers.

One result of the increasing criticism of the auto was that transportation engineers began to lose the favor of city officials. Elected officials turned instead to urban planners, who promised a more holistic view of transportation. What they delivered was far different.

Urban planners claimed they would assess the effects of transportation on land use, air quality, housing, employment locations, the size of retail shops, urban vitality, a sense of community, and a host of other variables. This made their job far more complex than the simple safety-plus-efficient traffic flows criteria used by engineers. Too complex, in fact: Attempts to assess too many variables weighed using different and incomparable measures are quickly overwhelming. To make their jobs more manageable, planners resorted to following fads.

The Pedestrian Mall Fad

One fad, for example, was to "revitalize" downtowns by closing streets to auto traffic and turning them to pedestrian malls in a conscious attempt to compete with suburban shopping malls. Starting in the mid-1960s and accelerating in the early 1970s, more than seventy U.S. and Canadian cities tried this out.

Far from revitalizing retail districts, most of the pedestrian malls killed them. Vacancy rates soared, and any pedestrians using the malls found themselves walking among boarded up shops or shops that had been downgraded to thrift stores or other low-rent operations. Despite these failures, cities continued to create pedestrian malls as late as 1980, and might still be doing so were it not for intense opposition from retailers who had seen the failures elsewhere.

By 2002, more than three out of four pedestrian malls had been partly or entirely reopened to traffic. In most cases, this led to an immediate and often dramatic decline in retail vacancy rates. Five more cities were considering such reopenings.

Only nine pedestrian malls were considered successful, and seven of these were in university or resort towns, which have higher-than-usual concentrations of pedestrians. Denver's 16th Street mall, which is open to buses, is one of the two exceptions. In most cases, then, malls do not create pedestrians out of auto drivers. They only worked when the pedestrians were already there.

Why did it take planners fifteen years to realize that pedestrian malls rarely worked? Why did it take another twenty years for most cities to reopen their streets to autos? One answer is that planners are resistant to reality. They told themselves and everyone else that their projects were successful no matter how badly they turned out in fact.

The Two-Way Conversion Fad

Having failed in their efforts to close streets to autos, planners began trying to reduce auto flows through various forms of so-called traffic calming. This usually means putting barriers in roads that force cars to slow down, but one form of traffic calming consists of turning one-way streets back to two-way operation.

Planners argue that converting one-way to two-way streets will make them more pedestrian friendly and better for business. They offer no evidence for these claims, which had been disproved by engineers fifty years ago. But few people remembered the benefits gained from converting two-way to one-way streets, so many believed the planners.

As early as 1976, the city of Denver considered converting several one-way streets to two-way operation. The city's director of traffic engineering wrote a lengthy memo predicting that this action would increase accidents, congestion, and air pollution. He could find no evidence to support claims that property values on two-way streets were greater than on one-way streets. He concluded that "the benefits to the total neighborhood [of converting to two way] would be negligible."[15]

The report may have delayed one-way conversions in Denver, but it did not stop them. About a decade later, Denver converted several one-way streets to two-way operation.

A 1990 review of the conversions found that virtually all of the engineer's predictions had come true. Accidents increased an average of 37 percent "as is expected with two-way operations."[16] Congestion increased as well

along with the pollution that accompanies congestion.

One of the cases reviewed in the report was a pair of one-way collector streets, Grant and Logan, that had been converted to two-way. Prior to the conversion, each street carried about 7,000 cars a day. As a part of the conversion, Grant was downgraded to a local street, thereafter carrying just 600 cars a day. The report found that such downgrades "strengthened the residential status of those streets."[17] It did not provide any evidence for this or even offer a way to measure it, but of course any local street will be more attractive to residents than busy collector streets, regardless of whether they are one- or two-way. Another report noted, however, that residents on Logan were angered to realize that traffic on their street significantly increased to 11,600 cars a day.[18]

The only benefit the 1990 review could find for turning other one-way collector streets to two-way collectors was "a *perceived preference* for two-way operations"[19] (emphasis in the original). Again, the report did not document this or suggest how it could be measured. Despite this negative finding, Denver continued to convert one-way streets to two-way and is studying further conversions today.

Other cities have gone through similar experiences. In 1993, Indianapolis converted a major route to two-way operation. After three years, accidents on that route had increased 33 percent.[20] In 1996, Lubbock, Texas, converted several one-way streets to two-way. Two years later, monitoring found a 12-percent decrease in traffic on those routes, but 25 percent more accidents causing 34 percent more property damage.[21]

Despite these results, proposals to convert one-way streets to two-way are being taken seriously in Austin, Berkeley, Cambridge, Chattanooga, Cincinnati, Columbus, Louisville, Palo Alto, Sacramento, San Jose, Seattle, St. Petersburg, and Tampa, among other cities. Though the benefits are meager—and may be limited to a "perceived preference" for two-way streets—the proposed conversions are costly:

- St. Petersburg estimates that restriping, signal changes, and other changes required to convert streets from one-way to two-way cost more than $140,000 per intersection;[22]
- Conversion of nine one-way streets to two-way in downtown Austin is expected to cost $15 million;[23]
- San Jose spent $15.4 million converting ten streets to two-way;[24]
- A plan to turn a one-way couplet in Hamilton, Ontario to two two-way streets is estimated to cost CA$3.2 million (about US$2.0 million);[25]

Conversions are costly in other ways as well, namely in terms of accidents, congestion, and pollution. Austin planners admit that their plan of converting nine streets will increase traffic delays by 23 percent and downtown air pollution by 10 to 13 percent.[26]

Conversions of one-way streets to two-way are also often accompanied by other so-called traffic calming measures, including:

- Reducing the number of lanes of auto traffic;
- Narrowing lane widths;
- Adding circles or other barriers to intersections
- Removing right- and/or left-turn lanes;
- Adding median strips or other barriers to streets.

As with two-way streets, these actions will tend to increase congestion, pollution, and possibly accidents. To the extent that they succeed in "slowing" traffic, they will also succeed in killing businesses that depend on a regular flow of customers. Even if slowing traffic was a sound goal, it can easily be done on one-way streets by simply retiming traffic signals. This would maintain safety and prevent delays caused by left-turning cars.

The Urban Cargo Cult

Clearly, planners and engineers think in dramatically different ways. Engineers think in terms of safety and efficiency. Planners demonize the auto for killing people and polluting the air, then willfully promote transportation policies that increase accidents and air pollution. Engineers experiment and publish their findings. Planners implement and declare victory no matter what the reality.

If planners no longer considered safety and efficient transportation the top priorities, what they wanted instead was almost indefinable. Planners in Albuquerque advised, "The slowed and more congested auto travel which is projected to accompany the conversion [of one-way to two-way] promotes a positive ambiance of urban activity and vibrancy."[27] Like an urban cargo cult, this appears to say, "popular places are congested, so if we can congest an unpopular place it will have the ambiance of popularity even if our actions actually reduce the number of people able to get to the area."

No doubt planners believe they are thinking on some entirely different level. "A pedestrian-oriented hierarchy of transportation promotes density, safety, economic

viability, and sustainability," say planners in Austin, Texas. While the first three claims are wrong or at least questionable, the real key may be "sustainability," which in transportation planning is a code word for "anything but automobiles."

To support a program that involved converting downtown one-way streets to two-way, Austin planners convinced the city council to pass a resolution identifying a "transportation hierarchy" in which pedestrians were given first priority, public transit second, bicycles third, and private motor vehicles last. "The safety and comfort of pedestrians is of greater concern than the convenience of a driver," says the resolution.[28] This assumes that pedestrian safety and comfort is incompatible with the convenience of drivers. At least in the case of one-way streets, the reverse is true.

Planners fantasize that mixing housing with commercial uses will lead to more walking and less driving as people find stores, restaurants, and even jobs within walking distance of home. While there is a market for this kind of development—mainly among young singles or childless couples—it can be quickly saturated. Planners try to attract more people to such developments through subsidies or force more people to live in such developments by using urban-growth boundaries or other land-use regulation to drive up the cost of the single-family housing. Yet there is no evidence this will lead people to reduce the amount of driving they do.

Portland, Oregon, for example, boasts of the Pearl District, just north of downtown, where several thousand housing and office units have been developed in the past five years. To attract people to the area, the city spent more than $170 million on various subsidies, including $50 million on a streetcar connecting the district with downtown.

"Yet during the peak commuting hours of 6:30 AM to 8:30 AM, the streetcar averages fewer than 120 passengers per hour," says John Charles of Portland's Cascade Policy Institute. "The most common sight in the Pearl District during those hours is an underground garage door opening for another private vehicle to emerge from an upscale loft or condo complex."[29]

One study by smart-growth advocates found that people in neighborhoods that were denser, more pedestrian friendly, and had better transit service drove less than people in other neighborhoods. The authors claimed this proved that smart-growth planning reduces driving. Yet they only proved that such neighborhoods attract people who want to drive less. Their own data showed that, of the three urban areas they compared, the one with the highest density, most pedestrian-friendly design, and most intensive transit service also had the most per capita driving.[30]

Conclusions

On just about any ground imaginable—safety, congestion, pollution, and effects on most businesses—one-way grids and one-way couplets are superior to two-way streets for moving people and vehicles. The idea that building pedestrian-deadly environments can create pedestrian-friendly neighborhoods is just a planning fantasy. Denver officials who truly want to create livable, safe environments for pedestrians and businesses should return transportation planning to the engineers, whose programs are grounded in reality, not fantasy.

In the long run, Denver and other cities need to rethink their support for urban planning. Why should cities employ members of a profession that advocates policies that reduce safety, increase pollution, and waste people's time? It is time to return to the methods and vision of the engineer.

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