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Traffic Mitigation Programs

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Traffic mitigation programs are measures aimed at a reduction of the negative effects of road transportation in urban areas through the management of traffic levels. They usually consist of regulations on the use of some links in the road network or of measures influencing travel demand, the choice of modes of transport, or the assignment of traffic to the network.

The programs address issues such as congestion, environmental quality, road safety, pedestrian mobility, and energy consumption. Despite the potential benefits, these programs face several constraints regarding their effectiveness in influencing traffic levels and behavior, as well as social and political support for their introduction.

Traffic Restriction

Traffic restriction measures limit traffic in some parts of the road network. The limitation can be permanent or temporary (valid only at specific times of the year, week, or day) and can apply to all or some vehicles, depending on their characteristics (for example, size, age, contribution to the emission of air pollutants, or license plate number).

One example of traffic restriction is the limitation of traffic in all roads and streets within a specific area of the city. This policy is known as areawide traffic restriction and is often applied in the city center, with examples found throughout Europe. The restriction may apply to private vehicles only or to all motorized traffic. However, in most programs, the restricted links are open to local residents and, at some times of the day, to freight vehicles.

These measures are introduced as a means to reduce traffic levels and congestion in areas with high concentrations of travel destinations for work, study, or shopping trips, and where the road capacity is insufficient to meet the demand for road space. The policy also promotes the mobility of pedestrians, as the limitation of road traffic is usually applied in conjunction with the “pedestrianization” of some streets.

The reduction of traffic has benefits in terms of reduced accident risk, air pollution, and noise in the areas of application. The introduction can then be justified in terms of social equity, because, in many cities, the central areas are inhabited by populations particularly vulnerable to deteriorations in pedestrian mobility and environmental quality, including the elderly, low-income populations, and racial minority communities.

Road space rationing is another example of traffic restriction policies. In this case, the restrictions are based on vehicle license plate numbers and apply on certain days of the week only. The measure has been used in Athens, Greece, several Latin American cities (such as Mexico City; São Paulo, Brazil; and Santiago, Chile), and more recently in Beijing, China. The restriction usually applies to road links where congestion is particularly high, such as the main commuting corridors from suburbs to major centers of employment.

Empirical studies show that the application of road space rationing leads not only to the reduction of congestion in the restricted links but also to reductions in the emission of air pollutants at the city scale. By restricting the possibility or reducing the convenience of car trips, the policy may also contribute to a modal shift to public transit or non-motorized modes.

Despite the potential economic, social, and environmental benefits, the introduction of traffic restriction measures often meets with strong opposition. Some of the arguments deal with the loss of freedom for road users, who are forced to reduce the number of trips, change to alternative means of transport, or use alternative routes—leading to increased time and

monetary costs and losses in comfort and convenience. Critics also raise doubts regarding the effectiveness of the policy in decreasing traffic-related problems at the city scale, because traffic levels may increase in the roads used as alternatives to the restricted links. In the case of area restrictions, the policy may also lead to an increase in car parking space or in cruising for parking at the fringes of the areas of application. Critics also question the effects of the policy on retail business and employment in the areas of application.

Area Licensing in CBD

Area licensing programs control road use in a section of a city by allowing access only to licensed users. The licenses are granted in exchange for a fee but can also be distributed for free to residents or workers in the area of application of the policy. Bus traffic and other means of public transportation are often exempted. Area licensing programs are usually applied in central business districts (CBD) or in other areas with high business concentration, employment, and services.

The oldest example of this policy is the Singapore Area Licensing Scheme. The program was introduced in the Singapore city center in 1975. Free access was granted to some vehicle types, including buses, taxis, and high-occupancy vehicles. The program was later extended to a series of expressways outside the city. The system was converted to an electronic road pricing program in 1998.

Other cities have since adopted similar programs, usually called “cordon tolls” and based on the collection of fees for entrance into the city center by a vehicle. Several European cities have implemented cordon tolls, including London; Oslo, Norway; and Stockholm, Sweden.

Area licensing programs address similar objectives to areawide traffic restriction policies, namely, the reduction of congestion in areas where road capacity is insufficient to meet high volumes of traffic. The restriction of the number of licenses granted reduces travel demand and increases average speeds in the areas of application of the policy. The reduction of traffic levels also improves local environmental quality. Studies evaluating the impacts of the Singapore Area Licensing Scheme provide significant evidence of the benefits of this type of policy, including the stability of traffic, congestion, and emissions of air pollutants.

Area licensing is a type of road pricing program, and, as such, it shares some of the advantages and disadvantages of economic-based policy instruments. The granting of licenses is a source of revenue for the transport authority, which can be reinvested in the improvement of the public transit network. On the other hand, the application of a fee to use roads has important social equity implications because it prices out some users of the system.

Because of these disadvantages, the introduction of area licensing programs and related policies often lack the necessary social and political support. This explains the failure in the introduction of some projects, such as the Edinburgh, Scotland; and Hong Kong, China, electronic road pricing programs.

The earliest known traffic restriction measures were implemented by Julius Caesar in Rome in 45 b.c.e. Carriages and horse-drawn carts created congestion problems, so the center of Rome was off-limits between 6 a.m. and 4 p.m. The policies of today serve the same objective: The reduction of a negative impact generated by peak urban travel demands. As seen in the sky above this typical Southern California rush hour traffic jam, air pollution is one of those negative impacts.



Traffic Restraint

Traffic restraint programs usually involve a regulated reorganization of city traffic to discourage the use of private vehicles and to promote public transportation and nonmotorized mobility. The programs are usually presented as an alternative to both regulatory instruments restricting traffic and to economic instruments (such as area licensing programs and road pricing) because of the limitations on the social and political feasibility of these policies. The main objective of traffic restraint programs is to influence people's travel decisions in order to arrive at a desirable level of total traffic or modal split between motorized and nonmotorized travel and between private and public transportation.

The use of traffic restraint as a strategic means to control travel demand has been used in Paris, France, since the beginning of the 21st century, with generally positive results. The program has been applied at the metropolitan level and includes several interrelated measures to make public transportation, walking, and cycling more attractive when compared with car travel. Interest in the application of some of these measures has also grown in other cities throughout the world.

A common traffic restraint measure is the reassignment of road space between various road users. This involves the reduction of the number or the width of general-use vehicle lanes and the increase of the number of bus and bicycles lanes and/or the widening of pedestrian pavements. The policy brings clear benefits to the mobility of users of nonmotorized modes and public transportation. However, inefficiencies can be created if the new lanes are used below their capacity and if congestion is increased in the general-purpose lanes.

Car use can also be limited by parking policies. This involves, for example, the reduction of the number of parking spaces, including the implementation of new bus or bicycle lanes and widening of pedestrian pavements. The increase of parking fees is another possibility for decreasing the attractiveness of car travel in urban areas. The benefits of these policies are, however, dependent on the sensitivity of car users to the availability and price of parking. In addition, congestion and pollution may increase as some drivers spend longer times cruising for parking.

Changes in speed limits are another instrument of traffic restraint, with a growing number of examples of cities introducing speed limits of 12 miles per hour (20 kilometers per hour) or 19 mph (30km/h) in some residential areas. In recent years, the policy has started to be introduced at the level of whole administrative areas. This is, for example, the case of Islington, a ward in central London, where the entire street network has a speed limit of 20 miles per hour, including not only side streets but also main roads. The reduction of speed limits has obvious benefits in terms of road safety for car users, cyclists, and pedestrians. However, critics have expressed concern about the effect of this type of policy on overall congestion and air pollution emissions.

Traffic Avoidance

Traffic avoidance programs are policies that promote the reduction of road traffic through the substitution of some of its functions. These policies are usually subject to less social and political protest, because they do not seek traffic reduction through the direct regulation of the transport sector and, as such, they are not restrictions to the choices of households and firms in the transport market. The target of these programs can be passenger or freight travel.

Policies directed at passenger travel may aim at a reduction of the need to travel or at a change in trip frequencies. The measures are not specific to transport planning but are instead an element of policies in other sectors, such as employment, education, and public administration. One example is the promotion of programs and activities that reduce the number of total trips, such as work-from-home (also known as telework or telecommuting), distance learning, videoconferencing, Internet shopping, and electronic government. An alternative policy is the promotion of programs that modify the temporal pattern of passenger trips in order to distribute these trips evenly throughout the day and reduce congestion in peak periods. An example of this type of policy is the provision of incentives for firms to implement flexible work time schedules.

Policies can also aim at a change in the means of transportation used to access certain destinations. This is, for example, the case of measures to promote ridesharing (that is, the use of cars or vans to transport workers accessing the same area). This policy reduces traffic levels for the same number of passengers sharing. Ridesharing trips can be organized by companies that provide vehicles and link passengers traveling to the same destination. Programs can also be organized by companies for their employees or by large retail shops for their customers.

Freight traffic can also be influenced by traffic avoidance policies. The reduction of this type of traffic is an objective of special importance in road traffic management because large freight vehicles are responsible for more congestion, noise, and air pollution than other vehicles. Public policies in this field usually aim at encouraging freight firms to shift from air and road transport to less polluting means, such as rail and water. This can be achieved by improving rail and port infrastructures or providing tax advantages to firms using these means of transport. Other policies aim at a reduction of road freight transport by promoting more efficient distributional channels, for example, by reducing the number of trips by changing scheduling and routing.

Traffic avoidance policies in the freight transport sector operate at a global, national, or regional level. At the city level, there is a smaller scope for reducing the number of trips or changing transport mode because freight transport serves a large number of businesses dispersed throughout the city. The policies, in this case, focus on creating conditions for the

firms to change delivery times, with the objective of avoiding high volumes of freight traffic during peak commuting hours. This involves, for example, the restriction of freight vehicles in some areas of the city at some times of the day.

- roads
- pedestrians
- licenses
- freight transport
- transportation
- public transportation
- vehicles

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See Also:

- [Automated Road-Pricing and Toll-Collection Systems](#)
- [Automobile Access Programs](#)
- [Congestion Mitigation and Air Quality Program](#)
- [Cordon Travel](#)
- [Parking Planning and Management](#)
- [Road Pricing Schemes, U.S. and International](#)
- [Telecommuting and Telecommunications](#)
- [Traffic Demand Management](#)

Further Readings

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