

**“TRAFFIC GROWTH IN THE CONTEXT OF ECONOMIC
DEVELOPMENT - WHAT TRAFFIC CALMING MEASURES CAN BE
TAKEN?”**

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Received 20 September 2016; accepted 16 December 2016;
published online 26 December 2016

Abstract

Transport is vital for economic development. Economic development is causing traffic growth. Growth of traffic causes various economic, social and environmental problems. This article explores how effective traffic calming measures should be used in order to avoid environmental problems. The article reveals best traffic calming strategies in theory as well as practice used in the United Kingdom which can be applied in the territories where problems arise from the economic development. By giving the best theoretical and practical strategies the article concludes with ethical and moral approach to be considered by all transport users.

Keywords: economic development, transport, traffic calming, environment,
residential areas.

JEL classification: L91, O16

Introduction

Transport has become a very vital aspect of our normal daily lives. It is almost impossible to imagine our lives without the contribution of comfortable transport (Docherty and Shaw, 2011).

However, since the industrial revolution in Europe, transport has had different impacts not only on people's lifestyles but also on the development of infrastructure in towns and cities. Car ownership has been continuously increasing and there is no doubt that various methods of transport are also being developed day by day which have a considerable impact on the environment, and on the socioeconomic and cultural life of towns. These impacts have both positive and negative implications. For example, on a positive note transport offers the opportunity to travel easily and

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supports economic development; however, congestion problems, severe accidents, noise, and air pollution are among the negative implications of traffic growth.

Transport plays an important role in the economic development (Banister, 2012) of the country and, since the second half of the last century, transports planners and engineers as well as policy-makers have started to think about how to accommodate growing traffic volumes within the cities. Thus, tackling the negative impacts of traffic growth is one of the main goals for planners and engineers (Goodstein, 2011).

Traffic calming measure techniques is one of the most widely-used design strategies deployed to solve the problems caused by traffic growth.

Considering all the above-mentioned facts, this article intends to investigate appropriate engineering techniques of traffic calming measures to achieve an improvement in conditions for pedestrians in residential areas in inner cities.

The article starts with an exploration of traffic growth from the aspect of economic development, its impacts, and the way engineers and planners face the implications of the development of transport. Then it briefly examines traffic calming issues and their emergence, discussing their main directions. Moreover, the article will discuss the benefits and costs of traffic calming; the conclusion will answer the central question by proposing appropriate measures for the improvement of conditions for pedestrians in the inner city residential areas.

Economic development and traffic growth

Economic development accelerated traffic growth during the last century and, as a result of this development, people benefited from the comfort provided by new transport methods, such as buses, trains, cars, trams and other private methods. Traffic growth also caused suburbanization as it became easier for people to travel long distances, and planners have started to look for ways of accommodating the growing traffic within the existing infrastructure in order to ensure the safety of pedestrians. (Headicar P., 2009) Phillip B. Goodwin (Button and Hensher, 2001) points out that “the most influential thinking among transport planners and political bodies was influenced by two main presumptions:

1) Growth of traffic during 20th century in mobility was, in general terms, to be encouraged rather than discouraged, but was in any case largely outside the scope of any policy intervention: it was viewed as an autonomous and inevitable trend, driven primarily by the free choices of individuals, and enabled by the steady growth of real income that all countries sought to provide.

2) Therefore the main objective of policy in national and local government was to accommodate this growth in as civilized and efficient a manner as possible, providing

sufficient road capacity to guarantee reasonably free movement, and control systems which would manage the resulting traffic at acceptable standards of safety and impact.”

It is obvious that traffic growth causes environmental damage in terms of emitted gases and land given over to road construction. Therefore, this directly affects the public mood as well; for example, historically we have seen public demonstrations against the construction of motorways which required the demolition of houses and the cutting of green space. (Button and Hensher, 2001)

What is traffic calming?

Traffic calming “emerged in Europe in the 1960s from a number of sources; for example, the Dutch Woonerf or 'Living Yard' created streets that had one shared surface with much planting of vegetation to slow speeding traffic through inner city streets” (Jeff Kenworthy, 2000), while the original pedestrianisation schemes were developed in cities such as central Copenhagen (ITE, 1997).

“Traffic calming is a term used to refer to a collection of mainly engineering techniques which alter the character or appearance of the highway and have the effect of reducing the speed of motor vehicles” (Headicar P., 2009). Its design strategies aim at reducing the negative impact of vehicles on the environment and preventing accidents as well as providing safe free movement for pedestrians.

Usually, before taking the calming measures, planners take into consideration speed and flow of vehicles, pedestrians, cyclists and residents, as well as accident levels and special features in the area (Slinn M., et al., 2005). Meanwhile, consultation also should be conducted with local residents so that engineers and planners can gain their support for the changes to be carried out in a specific area. In the UK, of course, City Councils are responsible for any kind of changes in traffic calming and, therefore, all consultation events and sessions are announced on websites inviting people either to attend public discussions or to have their say by using the feedback forms.

Traffic calming can be divided into eight main dimensions:

1) Legislation and enforcement

It is well-known that there are speed limits for driving on the roads, defined by legislation; however, not all drivers always obey these rules. Therefore, the tools of legislation and enforcement are applied; for example, video cameras can detect a car's speed and pass it on to the general system of legal enforcement bodies for taking measures against breaches of the law (Kettering Borough Council, 2010); (David Williams, 2008).

2) Surface treatment and signing

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Surfaces can be textured and coloured using surface treatment and signing; together, these give drivers an understanding that they are entering a speed-limited area, for example in villages or town areas. This should be done in such a way that a driver, when entering (Coughlan, 2005) any area, will understand that this is a place where people are living (Slinn., et al, 2005). Surface treatment and well signing would be appropriate methods to be used in residential areas.

3) Vertical deflections

Vertical deflection traffic calming measures usually cover different kinds of speed humps installed on the roads to reduce vehicle speeds for safety and environmental protection purposes.

Speed humps, which are made up of asphalt or thermoplastic materials nowadays, first emerged in the 1980s and, during the 90s; they were commonly adopted for use throughout the UK (Slinn., et al, 2005) However, emergency response vehicles and buses can be delayed by up to 10 seconds per road hump, which has raised some concerns. Thus, it is more appropriate to apply speed cushions on roads frequently used by emergency response vehicles and bus operators. Speed humps should be installed in residential areas instead.

4) Horizontal deflections

Another option recommends installing road chicanes to reduce vehicle speeds in residential areas; these allow a two-way traffic flow with a central island or pedestrian refuge. Otherwise, if there is low traffic flow on the road, vehicles are able to proceed through the chicanes with minimal loss of speed (Surrey Country Council, 2010). However, road chicanes are not always successful; for example, on October 1st 2010, there was accident which ended with loss of life in Cuddesdon Road, Oxford, due to a chicane on road, the Oxford Mail reports (Allen, 2010)

5) Gateways and entry treatment

Different kinds of tools are being used to change driver’s perceptions while entering an area (Slinn M., et al., 2005)

6) 20 mph zones

Generally, it is most convenient to apply 20mph zones in those residential areas where pedestrians and cyclists are moving daily. Entrances to and exits from the zones must be supplied with good signs. These have had efficient results as “the Transport Research Laboratory reviewed results from 250 zones in England, Wales and Scotland and the outcome is described in TRL Report 215 - Review of Traffic Calming Schemes in 20 mph zones. The main findings indicated that average speeds were reduced by 9 mph, and annual accident frequency fell by 60%” (Department of Transport, 1999)

7) Home Zones and the Woonerf concept

“The Home Zone concept was first developed in the late 1960s in the Netherlands, where the term “Woonerf” is used – literally “living yard”. Streets based upon the Home Zone idea are commonplace throughout the Netherlands, Denmark and Germany. In these countries the concept has evolved further and is now also applied to shopping centres and other mixed–use areas” (Chartered Institution of Highways & Transportation). The idea of sharing one’s home and street with traffic resulted in the emergence of home zones, by making possible children’s activity in the streets, which were transformed into a kind of common free available space for children to play in as well as for the improvement of the environmental state of urban areas. “The 1998 Government White Paper on the Future of Transport - entitled 'A New Deal for Transport: Better for everyone' - refers to Home Zones as "a valuable tool in improving places where people live and children play" (Institute of Highway Engineers UK). Apparently, local councils are responsible for facilitating public discussions on applications for home zones. For instance, in Cavell Way in Sittingbourne, Kent, in order to face the needs and approach of residents, 65 children have been involved in public discussions by contributing their views on how they see their local environment, concluding by generating their own model environment. The event was organized by the Council and the local housing association, Moat Housing Society (Department for Transport,2002). However, creating home zones is not cheap, as the application of “conventional traffic calming is 10 times cheaper than establishing home zones” (Slinn M., et al., 2005). In 1999, the government announced that pilot areas will be tested with home zones in nine cities, where pedestrians will be given new priority over motor vehicles in certain streets and where children will be allowed to play outside on the streets (BBC News, 1999).

Besides Woonerf, there is also, the Winkelerf concept, which is mostly used for shopping areas; however, both principles have to be approved via consultation and obviously it takes time to complete this process.

8) Lorry control schemes

This method of traffic restriction is well-known due its application in 30 Boroughs in the London area. The main idea is to prevent the usage of vehicles exceeding 18 tonnes in weight during normal working days and letting them in and out at weekends; this rule also forces drivers to obtain permission before using city roads (London Lorry Control, 2010).

Traffic calming measures in inner city residential areas

The main purpose of applying traffic calming measures is to reduce the rising number of traffic accidents resulting in severe injuries. Therefore, before making a decision to calm traffic in any given area, engineers should take statistics into account when examining locations for the application of measures. One of the main reasons

why traffic calming has occurred is that planners have recently decided that dependence on private transport should be reduced in favour of public transport usage.

Planning of traffic calming measures in residential areas has to be conducted in a sensitive way, so that environmental and safety conditions can be improved, as these kinds of areas in particular are defined as ‘rat-run’ places for pedestrians.

Eventually, traffic calming measures have been installed in residential areas to reduce vehicle speeds and volumes by maintaining a balance between vehicles and pedestrians moving in and out in the area in accordance with high safety levels. Meanwhile, this article has examined some vertical deflection traffic calming techniques which are usually applied in residential areas to prevent road accidents. There is no doubt that the number of road accidents can be reduced by good design and better management of vehicles and infrastructure. Since the beginning of the 1960s casualties caused by traffic growth have increased enormously; however, the UK government aimed to decrease the number of injuries by setting a target and, using a well-implemented policy, a decline was achieved by the 1990s and moreover “slowing of traffic growth resulted in a drop of one-fifth in casualties in just six years since 2000-2006” (Hedigar P., 2009).

No calming measure should affect the travel duration as the main idea is to decrease the speed of vehicles and keep speeds stable in order to prevent any casualties, as well as to protect the environment. It is well-known that transport is a big source of air pollutants and it has been proved that CO₂ emissions caused by vehicles depend on design of vehicles, driver behaviour, speed, engine size and efficiency issues (Hedigar P., 2009). This means that traffic calming measures directly affect the reduction of CO₂ caused by vehicles, as driver behaviour and vehicle speeds are already being regulated by traffic calming schemes.

One of the most widespread traffic calming methods is road-narrowing. If we take “Road-narrowing in Cooper Avenue in Walthamstow” as a case-study we observe that the narrowed road caused new problems for residents and drivers as buses began to mount the pavements, posing danger to lives. The problem is that, even though the road has been narrowed, the speed limit remains at 30mph. Some residents consider that either a 20mph limit should have been adopted instead of 30mph, or speed humps – which are very cheap and more efficient than road narrowing – should have been installed (Guardian, 2010).

Conclusion

Why it is necessary to adopt traffic calming measures in residential areas? Considering this question, we can say that, recently, traffic growth has impacted on pedestrians in different ways; for example, vehicles speeding in narrow residential streets are alarming and a possible danger to human life.

In order to plan and implement the most appropriate traffic calming measures for residential areas, assumptions about vehicle types first have to be considered by engineers, depending on the type of vehicle characterized for the place where measures are to be taken, as the measures' effectiveness may vary in accordance with vehicle type. For instance, using road humps to slow down buses is not as effective as speed cushions, and road humps make noises which can annoy the closest residents.

Taking into consideration all the above-mentioned reasons, the article raises the importance of traffic calming in residential areas for major purposes, such as improving the safety of non-motorized road users, protecting the environment, and preventing congestion and noise problems.

I would also advocate either home zones or speed humps in the residential areas and slowing vehicle speeds to 20mph as the most convenient measures to decrease the speed of vehicles entering residential areas.

As transforming streets into home zones is very expensive, speed humps can be used instead but speed cushions should be used on bus routes in residential roads. Some specialists consider speed humps inconvenient due to the noise caused when vehicles are passing over them; moreover, some drivers consider them very damaging to their vehicles.

Meanwhile, one-way roads within residential areas could make a great contribution to the improvement of conditions for pedestrians and the environmental state of the area as a whole. Apart from one way roads, cul-de-sacs are also advised to be applied in residential areas.

It is also possible to create pedestrian zones banning the entrance of vehicles at particular times of day in residential areas in existing inner cities. For instance, traffic can be restricted from early morning until the evening and the same can be applied to the parking of cars in these kinds of areas. Exceptions should be made for emergency vehicles.

Local authorities in the UK have been receiving a high number of requests for the installation of traffic calming measures where they are demanded by residents. However, considering the fact that all of these measures cost money, some are opposed to traffic calming measures in the future, preferring to use the money for educational programmes. This means that authorities consider educational programmes very useful in terms of educating drivers and pedestrians on how to behave in order to mitigate the real dangers (BBC News, 2002). In fact, some critics of traffic calming consider it a very abstract notion, as traffic is not a human being so it cannot be calmed down. They consider these measures expensive and prefer to have educational policies as well.

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Despite all the criticism, the statistics say that traffic calming has managed to decrease the number of casualties by slowing vehicle speeds in residential areas.

In conclusion, it is necessary to stress the official statistics which show that, in the event of being “hit by a car at 20mph, one out of 40 pedestrians will be killed, 97% will survive,” (ROSPA, 2010) which definitely means that the number one reason for severe accidents is speed. Therefore, I would advocate the use of speed humps and speed tables to prevent speeding in residential areas. Moreover, the strict control by using the cameras should be enabled in order to tackle with irresponsible reckless drivers.

Apart from being a practical approach, this is also a moral and ethical approach that should be taken up by each driver, as everyone should understand that being in a rush doesn't give one the right to put someone's life in danger. Not only the drivers but also all transport system participants should consider this point in their daily life.

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