

Traffic Calming Schemes In Sakarya: Applications And Public Perceptions

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Abstract: As being one of the main tools in urban transport planning and traffic management, traffic calming is gaining more attention in the recent years. Furthermore, it is expected that its use will be increased significantly in the near future. This paper is mainly assesses the implementation of traffic calming schemes in Sakarya and the response from the public. A questionnaire based research was designed and undertaken in some traffic calmed areas of Sakarya. The results obtained indicate the fact that the implementations and their public perception need to be improved through better technical applications and public consultation process. The results conclude that there is a significant dissatisfaction among the people from poorly designed and applied schemes ending up damaging environment and being very unsightly. The paper also discusses the possible recommendations and suggestions about the ways of improving the traffic calming schemes and expected benefits in Sakarya

Introduction

The term traffic calming is very loosely used and can therefore mean different things to different people. Although there is no single common definition of traffic calming accepted by interested authorities [1], it can be defined as the techniques aimed at reducing vehicle speeds in residential areas, without restricting access. As a result of this, vulnerable road users and residents are protected, and the quality of life is improved for those living in the neighbourhood. As one of the main figures in the field of traffic calming, Hass-Klau [2] regarded traffic calming as 'the street regulations and combinations of transport policies used for the Dutch woonerven, which enforces the reduction of motor vehicle speeds to walking pace, giving equal rights to all road users and alleviates the adverse environmental safety and severance effects of motor vehicles.

The developments and applications of traffic calming schemes all over the world, especially in the Europe, has quite rightly brought the subject into the agenda of the transportation related people; researchers, transport professionals and highway authorities.

Although one of the main objectives of the traffic calming schemes is related to the safety of the traffic environment, the degree of danger felt by people using the streets is also another important aspect of traffic calming applications. This research reveals the public perception of the applied traffic calming measures in city of Sakarya, Turkey.

Traffic Calming in Europe

With the increasing public awareness of environmental issues in Germany, Federal Ministry of Regional Planning, Housing and Urban Development handled the issues related to traffic calming. The Ministry played the leading role in financing traffic calming related applications and first publication about on the analysis and practical experiences of traffic calming in 1978/79 was revealed. The two following publications from the same Ministry were Planning Booklet on Traffic Calming (1982) and Cost of Traffic Calming (1983). These publications, along with others, changed the attitudes of people and, accordingly, the organisations in highway and transportation related issues had no longer any question about the need for traffic calming on residential streets. The recent studies [3] state that German cities obtained 50 percent increase in bicycle use, 57 percent reduction in fatal accidents, 45 percent reduction in severe accidents, 40 percent reduction in slight injuries, 43 percent reduction in pedestrian accidents, 16 percent reduction in cyclist accidents, 16 percent reduction in traffic accident costs, 66 percent reduction in child accidents through the implementation of traffic calming projects.

As being the origin country of traffic calming, Woonerf schemes of the 1970's, engineers in Delft demonstrated that the speed of vehicles could be reduced through specific design measures. The first applications became so successful not only in terms of traffic management and design but also public perception. The following years led to new applications in many towns and cities, even villages, and legal legislation was introduced in 1976 [4]. The reliable and steady positive results obtained from the research projects in Netherlands [5] formed the basis for the evolution of traffic calming design of our modern days.

Britain was slow to start the debate and discussion on the notion of traffic calming as the main objectives of traffic calming was seen to reduce the accidents and Department of Transport claimed that accident levels were relatively low compared the other European countries. In the following years, with the changing attitudes, some local highway authorities such as Kent & Hetfordshire took the initiative and started carrying out some traffic calming projects without any clear official approval from the DOT. Britain is now one of the leading countries of the Europe to implement the wide range of traffic calming schemes successfully [6].

Turkey is still its infancy regarding the traffic calming applications and the reviews of the current applied measures. The local authorities have the power to implement the schemes whenever and wherever they think they are necessary. The residents' opinions are frequently neglected in the process. However, it is quite clear that the purpose of the proposed schemes need to be communicated to local residents and all interested parties not only to get their opinions but also to inform them about the technical necessities and possible benefits of the project to justify the application in their mind.

The main objective of this research is to determine through a questionnaire if the traffic calming schemes in Sakarya are readily acceptable by the general public and make some recommendations based on the analysis of the questionnaire.

The Need for Questionnaire Survey

A survey is not synonymous with a particular technique of collecting information.[7]. The way of data collection and the analysis method to be employed are the distinguishing features of the surveys. As the measurement of perception of the public attitude is at the core of this study, it is believed that the questionnaire based survey would be most appropriate for giving the freedom to the people to express their ideas. The same consideration affected the selection of the type of the attitude measurements and, accordingly, The Continuous Rating Scale and Linkert Scale were employed as the type of rating scale. It is thought that these two rating scales are quite appropriate to get a true and unbiased response by giving the best possible amount of freedom and flexibility to the respondents.

The questionnaire is designed to get the opinion of the people affected by the traffic calming schemes regarding the main aspects below.

1. the necessity of the project
2. the location and the appearance
3. the effects on journey times
4. the effects on route choice
5. the effects on pedestrian safety
6. the effects on how the street look
7. the effect on noise levels
8. the effect on the safety of pedal cyclists
9. whether the participants wish to see traffic calming schemes increased.

The following sections are related to the presentation and analysis of the data obtained.

The Selection Criteria of the Applied Projects

In this study, the Cark street and 503th street were selected as the fields of the study as these two streets are quite busy in terms of vehicle and pedestrian movements along with the intensity of the residential areas. In addition, these streets are regarded as the main projects implemented in Sakarya by the local authority.

While the first street is a two-way district distributor, the second one is one-way local distributor. The applied technique on both streets is speed humps. Humps are located near to schools, mosques, crossings and junctions where it is thought that the vehicle speeds need to be reduced to an acceptable levels if there is a danger for pedestrian safety,. The visibility of the humps are enhanced through reflective paints and colouring.

The selected streets are heavily used ones as they are linking the city centre with the most developed parts

of the city.

Appraisal of Results

In order to get the very first impression and general ideas of the participants to traffic calming concept, the first question was related whether the traffic calming should be increased in the city as a whole.

The obtained results are illustrated in Figure 1.

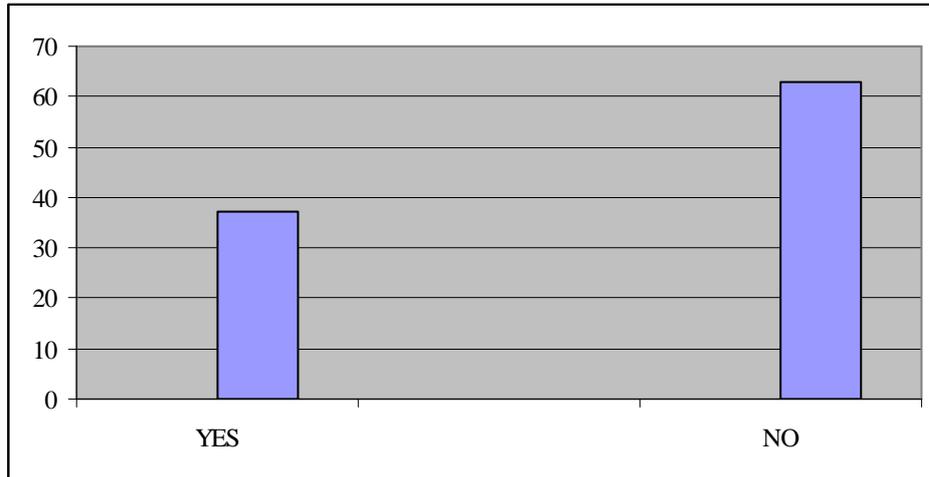


Figure 1. Do You Think That the Implementation of Traffic Calming Projects Should be Increased

This result clearly indicates that the general attitudes of the public towards traffic calming schemes are not in favor. The split is very significant and illustrates the fact that the City Council engineers are facing a big challenge regarding their traffic restraint policies in order to reduce in the percentage of population opposing traffic calming schemes.

The necessity of the projects applied on the selected streets is perceived by the public given by Figure 2.

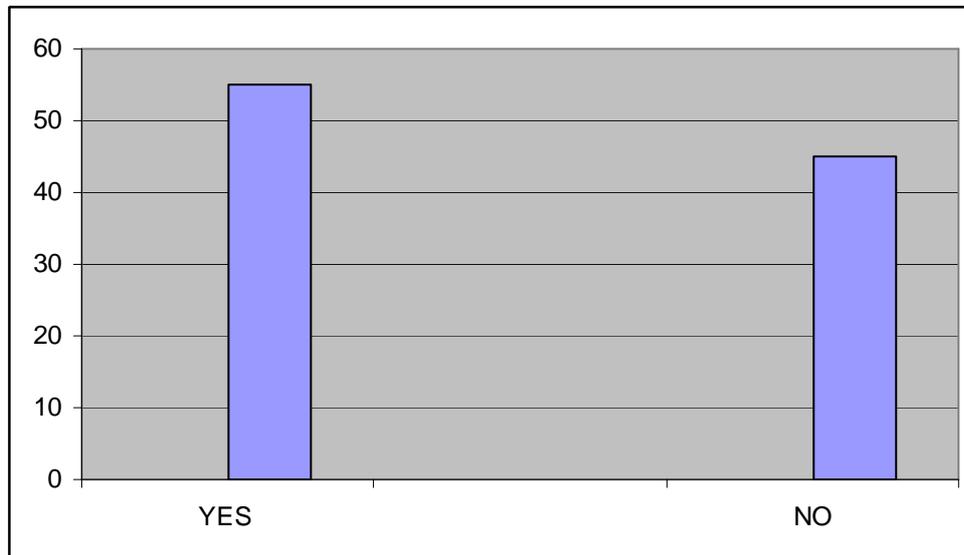


Figure 2. Do You Think That The Applied Project is Necessary

The Figure 1 and Figure 2 seem to be showing opposing conclusions. It is believed from Figure 2 that people are interested in having a better and safer traffic environment, Figure 1, however, indicates that if the applications are not projected and carried out properly, this is what makes the people to be against the general concept of traffic calming.

Figure 3 illustrates the public opinion for the location and appearance of the humps.

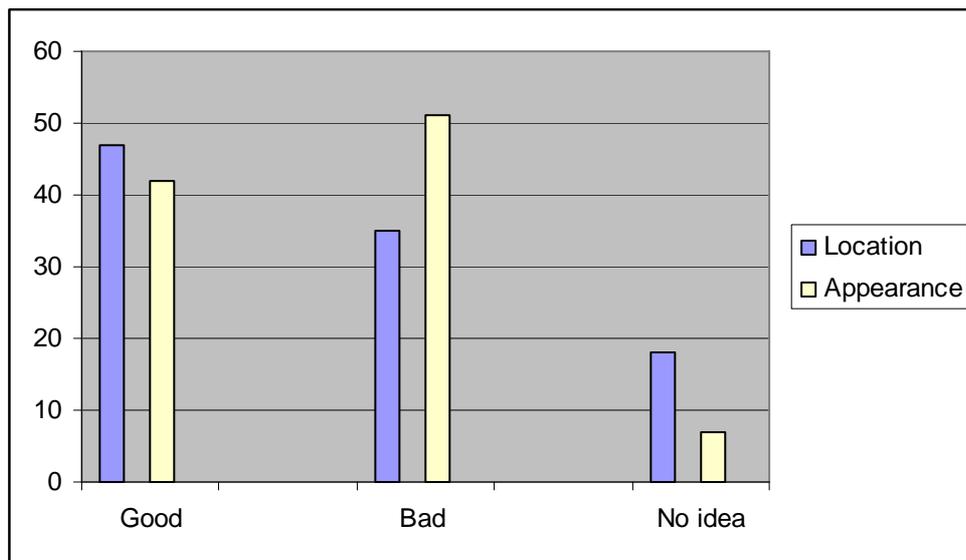


Figure 3. What Do You Think About the Location and Appearance of the Humps

As figures imply, almost 50 per cent of the general public has the idea that the location of the humps are determined properly. Those against the location are generally the people having their residents or shops in the vicinity of the application area. The respondents' perception towards the appearance of the humps are negative. This is mainly because of the fact that the applied humps do not have proper markings and design features.

As the main objective of the traffic calming is to slow drivers down, it should result in an overall increase in journey time. The following figures show the results of the survey regarding this point and the effect of the projects on the route choice behaviour of the people, respectively.

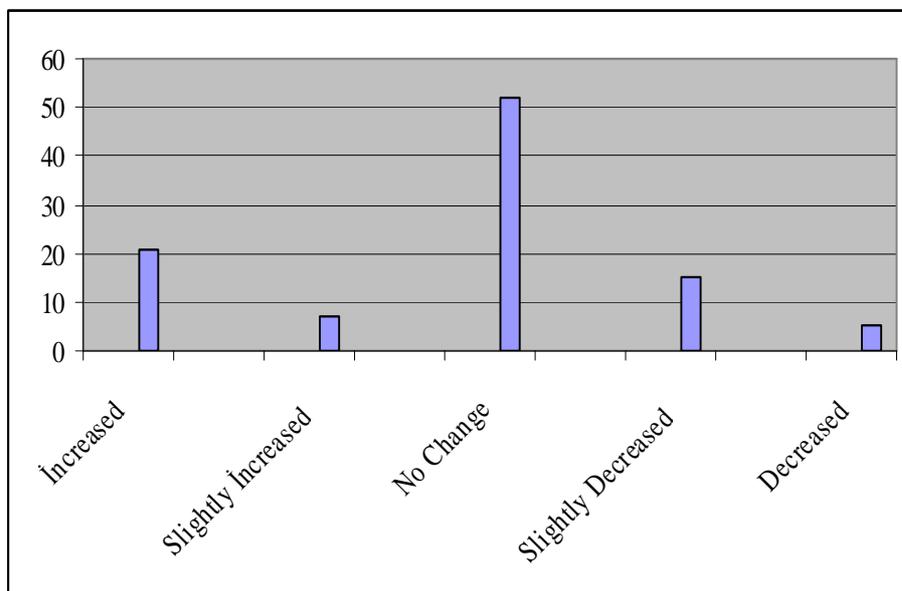


Figure 4. Effect of Traffic Calming on Journey Times

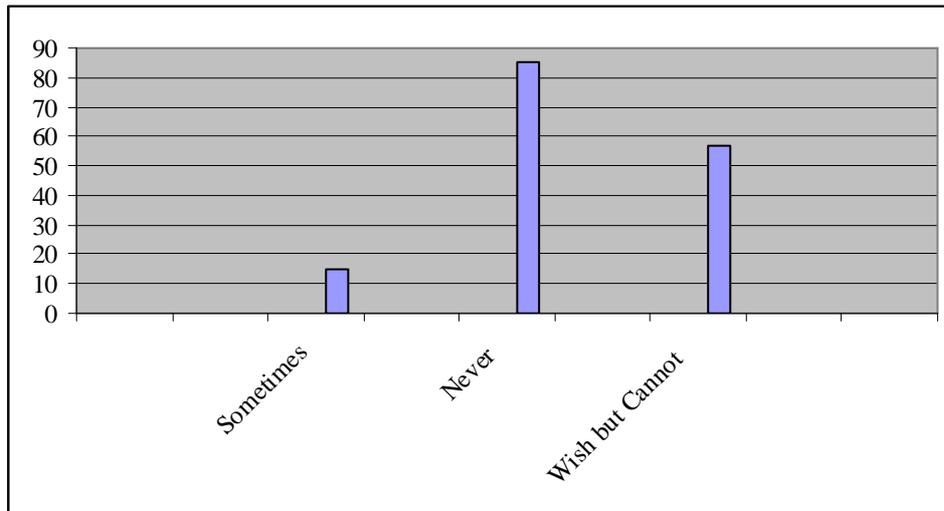


Figure 5. Effect of Traffic Calming on Route Choice

Figure 4 and 5 imply interesting results. As most of the people normally do not perceive increases or decreases in journey times unless they are large and significant, more than 50 percent of the respondents stated that they did not have any impression that the journey time was extended. Although, one of the drawbacks of traffic calming schemes is that drivers seek alternative routes without any measures on them, overwhelming majority of the participants expressed that they never changed their routes. This is mainly due to the nature of the selected streets of the study. The streets are the main and possibly shortest routes in time even with applied measures compare to the other alternative routes. Another explanation of this is that drivers do speed up between the humps in order to offset the lost time due to the speed reductions on humps. A lot of respondents, on the other hand, wish to chance their routes to escape the negative effects of the humps but due to the lack of alternative routes they cannot change the road that they drive on.

The perception of the public regarding the noise level is given by Figure 6 below.

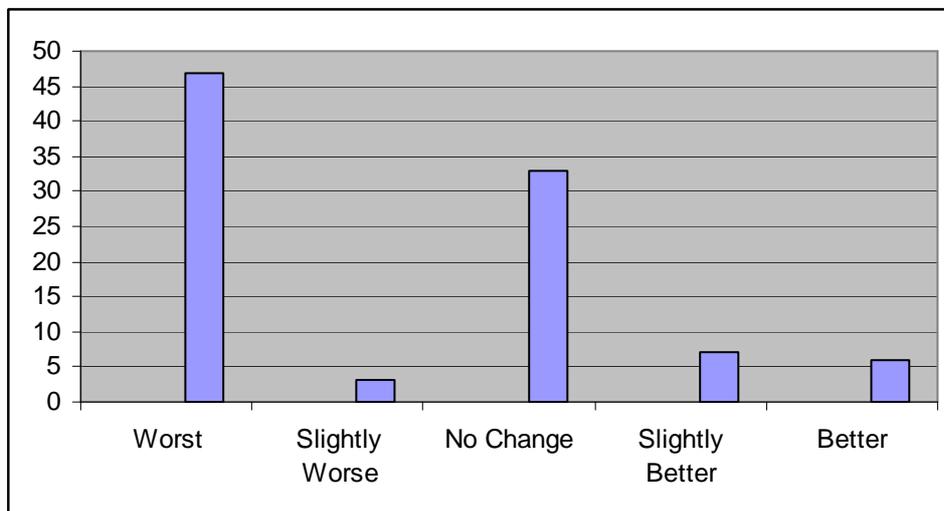


Figure 6. Effect of Traffic Calming on Noise Levels

There seems to be significant proportion of people saying that the noise levels had gone up. This is primarily because of the sudden braking noise of the cars when they reach the speed humps, and the sudden acceleration noise for speeding up just after humps.

As far as pedestrian and pedal cyclists' safety are concerned, the public perception is formed as below.

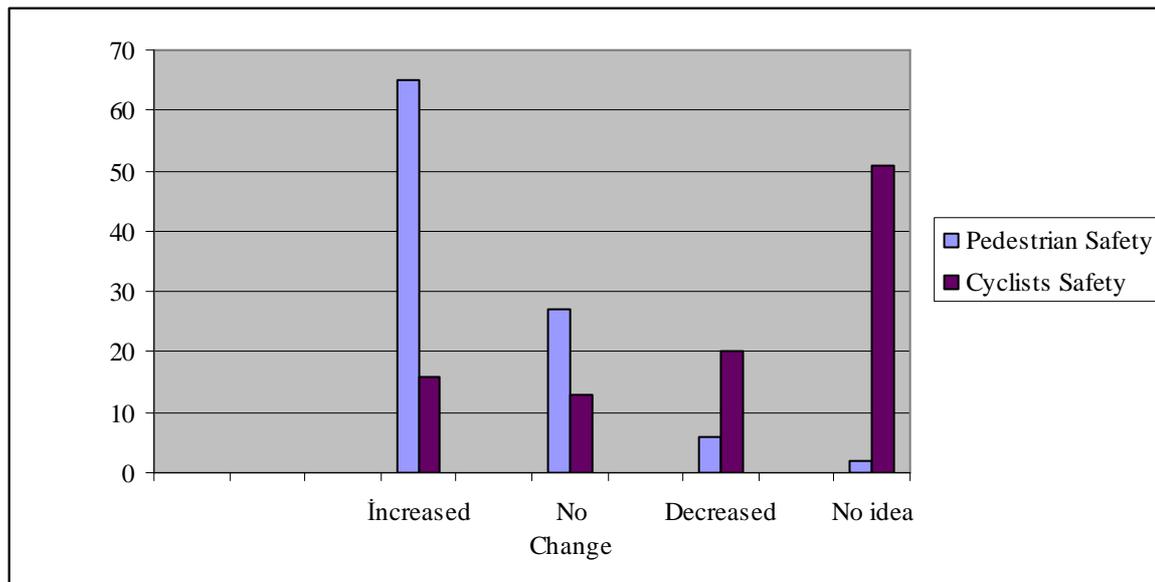


Figure 7. Effect of Traffic Calming on Pedestrian and Pedal Cyclist

As expected, majority of the people perceived that pedestrian safety was improved. Although only a small percentage of the respondents believe that traffic calming resulted in a decreased pedestrian safety, it is very important that these people should also be persuaded about the significant contribution that traffic calming can make to the overall pedestrian safety.

Making sense of the combination of these results are not easy, but it can be said that 63 percent of the participants did not want to see an increased traffic calming but 53 percent of them also believed that traffic calming applications are necessary. While the first figure illustrates the reaction of the people to the applied schemes, the second one indicates the fact that people are in favor of the idea of traffic calming if they are designed and applied properly. People are aware of the benefits of the traffic calming measures and can justify them in spite of the disbenefits; increased noise level and travel time.

Conclusions and Recommendations

It is obvious that the important role that traffic calming plays and will continue to play in traffic management and restraint projects, a priority should be given by public authorities to make sure that people are given enough information about the projects and communicated for the feedback.

As the aim of this research has been to evaluate the public perception of the traffic calming schemes in Sakarya and make the recommendations of how to improve this perceptions, the following recommendations are done in the light of this study and obtained results.

1. Without any doubt public should be consulted prior to the implementation of traffic calming measures. The current system in Sakarya seems to be not inclusive enough. Public should not be given the impression that decisions are made well before and public consultation exercise done as window dressings afterwards.
2. Questionnaires should be sent out in the early stages of the plans in order to judge if the public assume that schemes are necessary.
3. Initiatives should be introduced for educating the public on the benefits of traffic calming schemes. Local tv and radio stations along with newspapers may be used for this purpose to make sure that information is given as widely as possible.
4. As majority of the people support the idea of traffic calming but criticise the current implementations, the utmost care should be paid for the future applications to be designed and carried out with a predetermined standards. This will surely make the engineers' job in the future easier to get public support as public might change their perception about the applied traffic calming schemes in the past.
5. As people are quite keen to change their routes to escape the disbenefits of the applied traffic calming measures, the effects of any implementation should be considered as a package by including the possible alternative routes of the streets and roads subject to implementation.

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