Abridgment

Parking Management Through Wheel Clamping

D. MAHALEL and M. LIVNEH

ABSTRACT

The use of wheel clamping for the enforcement of parking prevention policy is described. From the experience gained in Israel and Europe, this device allows more successful execution of an aggressive enforcement policy with relatively restricted means than does any conventional tactic. Where wheel clamping has been employed, the level of traffic regulation compliance has risen and traffic flow has improved. Because of the strictness of this enforcement means, a selected and gradual use is recommended. At first, it should be intended only for serious parking offenses that cause maximum obstruction. The wheel clamp enables effective enforcement of parking prohibition so that traffic management plans can be implemented that authorities hesitated to implement in the past because of low levels of enforcement.

Parking management is part of the general policy of traffic management, and their goals are similar: to define the operational strategy by which the best use can be made of the existing infrastructure. Parking policy determines the allocation of the limited parking places available, and parking tactics deal with the means of carrying out this policy.

The problems that parking policy deal with are the optimal equilibrium between travel lanes and parking lanes, priority for public transport and restriction of the number of parking places, for whom the parking places are intended (i.e., commuters, long-duration visitors, short-duration visitors), and so on.

The common tactics for realizing parking policy are parking tickets, towing, residential parking permits, parking meters, and park-and-ride systems. Implementation of these and other tactics requires the following systems: police, data processing, collection, judicial, and so forth. The strong demand for parking places, on the one hand, and the small supply, on the other, place on the responsible authority the frequent need to enforce parking prohibitions. In light, however, of the large resources that this action requires (in terms of manpower, machinery, and equipment), enforcement is not carried out with the necessary efficiency. As a result, drivers learn that the penalty probability in the case of illegal parking is not high, and the demand for parking is increased once more.

In Israel, in view of the recognition that the accepted tactics for enforcing street parking prohibitions (tickets and towing) were of limited efficiency, the use of wheel clamps was tested. A wheel clamp is a metal clamp that fits over the wheel and prevents the car from moving. The device was tried in Jerusalem and Tel-Aviv to prevent on-street parking. It has been used in London and Amsterdam for more than a year.

The advantages and disadvantages of wheel clamps are evaluated and the experience that has been gained with this means of parking-prohibition enforcement is described.

Transportation Research Institute, Technion-Israel Institute of Technology, 32000 Haifa, Israel.

AN EVALUATION OF WHEEL CLAMPING

The main advantages of wheel clamping compared with other means of enforcement may be summarized as follows:

1. Option to carry out aggressive enforcement with restricted means,
2. High exposure of others to penalty,
3. Stricter penalty for the driver in terms of time, and
4. Feasibility under any condition.

The primary advantage of clamping for the responsible authority (police or municipality) is the ability to execute an aggressive act of enforcement with relatively restricted means. Whereas a towing team, which generally numbers one or two, plus an accompanying traffic warden or policeman can carry out an average of one to two tows an hour, a similar traffic team can carry out 12 to 15 clampings in that time span. The clamping team, moreover, does not need a tow truck, only a regular van. In addition, the fine-collection arrangement is reduced, because there is no need to send out notices for payment, give penalties in case of nonpayment, and so on. The driver whose vehicle has been clamped has to show up himself in order to release the vehicle, and payment of the fine is a condition for its release.

The high exposure of others to the penalty is a direct result of the fact that the device that clamps the wheel is really obvious and the clamped vehicle remains for a number of hours on the spot where it was caught. During this time, curious onlookers clearly see the penalty, other drivers are deterred from parking illegally, and the impact of the clamp is engraved on the memory more than any other means. In contrast, a towed vehicle is simply taken away and has no impact except to free a spot for the next vehicle to park.

Another effect of clamping is the delay in time to which the affected drivers are subjected. Whereas a parking ticket does not delay the driver, clamping does delay a driver for a relatively longer period even than towing. The driver whose vehicle has been clamped is not only required (as in some towing cases) to come to the police vehicle impoundment area and pay the fine. In addition, this driver must return to the vehicle and wait for the wheel clamp to

be released. This process can take time, depending on how well the authority is organized. Apparently, this penalty is more painful than a fine.

Still another advantage to clamping is that it permits a continuous row of vehicles to be penalized without having to ensure maneuvering space for them, as is required in towing. This allows the penalty to be employed in cases where the illegal parking is alongside or near a fire hydrant, crosswalk, or bus stop, where towing may not be possible.

Wheel clamping does have some disadvantages as a tactic. One clear disadvantage compared with towing is that the vehicle clamped continues to occupy the space and may obstruct traffic until it is released. Towing, by contrast, removes the vehicle immediately from its spot so that it does not continue to create an obstruction. From the experience with clamping in Jerusalem and Tel-Aviv, it appears that this disadvantage is not as significant as might have been expected. The reasons are as follows:

1. The level of enforcement before the introduction of clamping was so low that there were, in any case, many obstructions to traffic from illegally parked vehicles. In the worst case, then, clamping only returns the situation to what it was previously.
2. The Israeli experience and also that in London point out that clamping enables an aggressive level of enforcement in the wake of which there is a significant improvement in the traffic flow.
3. It is always possible to combine towing and clamping. Towing can be selectively applied to extreme cases of traffic obstruction.

EXPERIENCE WITH WHEEL CLAMPING

The Jerusalem Experience

In the central business district (CBD) of Jerusalem, there are some 5,500 parking places (legal and illegal), of which 58 percent are on street; some 60 percent of this on-street figure are illegal spots. During peak-period traffic, 65 percent of the spots that are forbidden to parking are occupied by a vehicle. These statistics certainly show the surplus demand for parking places.

The use of wheel clamps in Jerusalem is restricted (1) to main arterials in the CBD, spots and junctions where parking creates serious traffic problems, and reserved parking spots, as for the disabled diplomats, police, and so on.

The experiment started with 5 streets containing 230 potential illegal parking spots and was gradually expanded to a larger number of streets. The number of wheel clampings in the first week of the experiment was about 40, and it declined over time. By the 10th week, clamping was 60 percent of what it had been in the first week, and the number of potential illegal parking spots where this enforcement means was carried out was increased by a factor of 2.47 (or from 230 to 570). During the first week, the number of clampings constituted 18 percent of the number of illegal parking spots, whereas during the 10th week it was only 4.6 percent. The number of streets on which this enforcement was carried out was increased from 5 to 16.

No systematic investigation was made of travel speeds in thoroughfares where the enforcement was undertaken, but the personal impression of city engineers was that following the use of wheel clamps, a great easing took place in the traffic flow. Travel speeds increased, and in areas where there had been traffic jams in the past, the traffic now flowed freely.

The municipality estimated that public response was favorable: some citizens called for expansion of the use of wheel clamping to other areas of the city and there were no violent reactions on the part of drivers.

Some 7 months after the start of wheel clamping, its use had been expanded to 30 streets, which have a total of 1,120 potential illegal parking spots. The daily number of wheel clampings stands at 45, or 4 percent of the number of illegal parking places.

In the opinion of city traffic engineers, the experiment has met with success. Wheel clamping enabled the start of an aggressive policy of parking enforcement with relatively limited means, something that the other enforcement means did not permit.

The Tel-Aviv Experience

In Tel-Aviv, the gap between the demand for parking spots and those available is higher than it is in Jerusalem. This situation has caused an excess of traffic offenses: parking on the sidewalk, at bus stops, on crosswalks, and in vehicle travel lanes. Often, there is double and triple parking.

Because of the parking problem, there was a feeling at City Hall that a massive enforcement had to be carried out with wheel clamps. Some 100 vehicles a day were clamped in the first few weeks. Wheel clamping was performed on a large number of streets and for any parking offense. At the same time, however, the enforcement machinery was not set up to deal with releasing the clamped vehicles, with the result that there was a 6- to 7-hr gap between the time when the driver paid the fine and the time when the vehicle was released. Then, too, cars were clamped in the evening; because the drivers could only pay the fine the next day, the penalty of wheel clamping stretched
for up to 20 hr.

Public opposition to this punishment was widespread in Tel-Aviv. There were even incidents of violence involving physical damage to the clamps. A citizens organization was set up expressly to cancel this coercive measure. In the wake of these sharp reactions, the municipality changed its enforcement policy after some 4 weeks. Clamping was limited only to the main traffic arterials, and only for the most severe parking offenses: blocking pedestrians' way on a sidewalk, in an intersection, on a crosswalk, and at a bus stop. In light of the change of policy and despite the large number of clampings (120 per day), the driver population of the city came to terms with the measure, and gradually parking lots in the periphery of the CBD began to fill up. Currently, the city plans an expansion of the use of the wheel clamp, but very gradually and selectively.

The lesson of the Tel-Aviv experience was that the public has to be gradually accustomed to obeying parking prohibitions. A drastic means like wheel clamping, therefore, should be employed selectively. At first, it should be limited only to areas where illegally parked vehicles cause serious disruptions to the traffic flow; then after the public has become accustomed to obeying the strictest parking regulations, it can gradually be accustomed to obeying the less serious ones as well.

Experience in London

In London, wheel clamping has been in use since May 1983 for the following parking offenses: on yellow lines (67 percent of all vehicles clamped), in private residential areas (23 percent), and at meters

(10 percent). Clamping is not intended for dangerously or obstructively parked vehicles.

According to Kimber (2), the main change in Londoners' parking behavior was that motorists stayed on yellow lines for shorter periods than before. Although the number of cases of illegal parking did not change appreciably, the average illegal parking time decreased by 40 percent; as a consequence, the density of parked vehicles decreased by 30 percent.

One of the main advantages of this density change was the reduction in journey times for through traffic. The net reduction associated with parking density reductions on yellow lines was estimated at between 8 and 14 percent. Kimber emphasizes that "these consequences are thought to follow from the greater deterrent effects of clamping compared with vehicle removal, and result probably from the greater conspicuousness of clamps and clamping teams. In contrast, once a vehicle has been removed, nothing visible remains as a deterrent to others."

Use in Amsterdam

According to a short report (3), wheel clamps have been in use to enforce parking regulations in Amsterdam since August 1983. First results were encouraging: the level of noncompliance was reduced from 60 to 20 percent, and long-time overstaying at meters lessened from 30 to 10 percent.

SUMMARY AND DISCUSSION

Wheel clamping is a means of enforcing parking prohibitions that enables carrying out an aggressive policy of enforcement. With relatively restricted means, a stronger impact can be created with this tactic than with any other accepted one (towing, fines, etc.).

The experience of the two largest cities in Israel (Jerusalem and Tel Aviv) points out, however, that this bitter medicine has to be used selectively. At least in the initial stages of its introduction, wheel clamping has to be purposefully directed only at areas where severe traffic obstructions are caused because of the illegal parking of vehicles. Drivers apparently find it easier to come to terms with this particular penalty when they understand the severity of the offense. In cases in which the wheel clamp was used on vehicles that officially were committing an offense but were not actually interfering with traffic, drivers found it difficult to accept the penalty and there was deep bitterness. It is reasonable to assume that after the population of drivers has become accustomed to a high level of enforcement of parking regulations, it will be possible to expand the use of the wheel clamp to other areas.

In contrast to the situation that prevailed before the introduction of wheel clamping, the quantity of offenses following its employment decreased immeasurably. Despite the fact that the vehicle clamped continues to constitute an obstruction until its release, the overall effect is that of a significant improvement in the traffic flow. It should be noted that it is always possible to combine conventional enforcement means, like towing, with wheel clamping; in such a case, the towing could be intended for those places where the traffic offense is especially obstructive.

The wheel clamp is an effective lever for enforcing traffic prohibitions so that traffic management plans that authorities hesitated to implement in the past can be carried out. In Haifa, for example, the police believed that they could not enforce a parking prevention policy with conventional means. Accordingly, when the second author of this paper was Deputy Mayor of Haifa, he formulated a plan to give priority to public transport in the CBD, in which two of the three lanes in each of two main arterials were specified for public transport. Wheel clamping was to be an integral part of the enforcement tactic. Its use would have provided a solution for implementing an aggressive policy of parking prevention. As part of the plan, too, the areas of permitted parking in the CBD were expanded on the basis that these new parking spots did not constitute traffic obstructions.

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REFERENCES

1. H. Eini. Enforcement Through Denver Booting (in Hebrew). Traffic and Transportation, No. 7, 1985.
2. R.M. Kimber. The Effects of Wheel Clamping in Central London. TRRL LR 1136. U.K. Transport and Road Research Laboratory, Crowthorne, Berkshire, England, 1984.
3. Traffic Engineering and Control, Vol. 25, No. 6, June 1984.

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