



## The Hague, Netherlands

*Spitsmijden*, Dutch for avoiding peak traffic, is a project that aims to influence the travelling behaviour of commuters between the city of The Hague and its suburb Zoetermeer. During the 50-working-day experiment, 340 frequent drivers looked for alternatives for using the heavily congested stretch of the Dutch A12 motorway from Zoetermeer towards The Hague. The participants were rewarded if they switched to alternatives, and it worked. The number of participants driving in peak morning traffic was cut in half (170 of 340 participants).

### Why was this reward scheme proposed in The Hague?

The purpose of the experiment was to study whether a reward stimulus could be a possible control instrument to influence mobility behaviour. In this way, congestion could be reduced at relatively low cost and in a relatively short time. As a secondary effect, the negative effects of new infrastructure could be prevented. Obtaining public revenues was not a goal.

### What were the features of The Hague scheme?

The participating volunteers were selected from those who commuted at least three times per week from Zoetermeer towards The Hague. Of these, 98% lived in Zoetermeer and 56% of them worked in The Hague. After subscribing and filling out several forms about personal characteristics and preferences, the participants were able to choose from two variants: a monetary reward varying from €3 to €7 for each morning rush hour the participants avoided or the right to keep the allocated smartphone after the experiment.

In the latter case, the participants' behaviour was monitored. The smartphone provided access to a special website, showing actual travel times. On the *Spitsmijden* website, every participant had to fill in a logbook each day.

The participants would receive a reward only for the number of times they avoided morning rush hour by either travelling at an off-peak time, using another mode of transport or working at home. The maximum number of rewards per week was dependent on the rush-hour

travel frequency in the situation before the experiment. The few alternative routes and entrance and exit ramps made the experiment relatively easy to control. An on-board unit (OBU) was installed in the participants' cars. Electronic vehicle identification (EVI) beacons, which proved very reliable, were placed on the main exit roads of Zoetermeer. At these and other locations, camera systems for licence plate registration were also placed in order to compensate for any unsuccessful EVI registrations and to register total traffic volumes.

## How was The Hague scheme developed?

The experiment is a joint initiative of public, private and scientific partners and is sponsored by Transumo, a Dutch platform of companies, governments and research institutes to develop knowledge of sustainable mobility.

Eligible drivers included all frequent morning rush-hour car commuters on the A12 going toward The Hague. If their license plate was listed in the database they were invited to participate. There was a maximum number of participants.

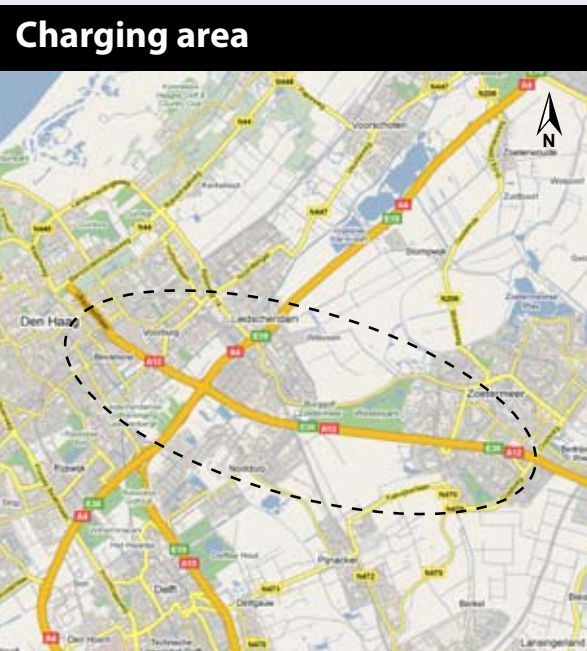
It was a small experiment. Large-scale implementation of a rewarding scheme would raise several questions. Politicians may ask: why pay for good behavior? The recommendation to only reward a selected group can raise questions of equity. Also, the first volunteers might comprise those who can most easily, or most enthusiastically, adjust their behaviour. Implementing a reward scheme seems to be best promoted and led by private parties, funded by government, and evaluated by universities.

## Impacts of The Hague scheme

At this point, only the changes in commuters' behaviour are known in detail. A reduction of rush-hour car trips by about 50% was observed, largely realised by delaying or advancing departure times. Also a slight shift to public transport occurred. One special circumstance was the delay of the public transport project RandstadRail, an important rail link between Rotterdam and The Hague.

One important observation is that a relatively low reward (€3) results in a significant effect in avoiding traffic. The additional value of higher rewards is relatively slight. The majority of the participants resumed their old behaviour patterns after the conclusion of the experiment.

Forty-three percent of participants had quite a bit of trouble adjusting their behaviour, mainly due to obligations at home or work. The same number found it relatively easy to do so. Eighty-six percent of the participants indicated that they would participate in a similar trial if they were given the chance.



## Conclusion

A preliminary conclusion of *Spitsmijden* is that rewards lead to substantial decreases in the number of car trips during rush hour. This is a promising result for an experiment using a new technique for traffic management unique to the Netherlands.

The second phase of the experiment and further research will provide more information on costs and benefits. In the meantime, some organisations have followed the successful example of *Spitsmijden* by implementing reward schemes to deal with roadworks.

When a reward is offered for avoiding rush-hour traffic, two new traffic peaks arise: just before and just after the given rush-hour. The models should be enhanced further in order to define optimal rewarding schemes and amounts.

The results achieved during the experiment will probably be impossible to realise during a large-scale version of the experiment with an identical set-up. Before transferring *Spitsmijden* to another region, it should be noted that too high a reward and/or to many participants may lead to net losses in travel time. If these elements are set at the right level, however, significant gains in travelling time can be achieved along with a positive effect on traffic circulation. The concept and the technology proved to work quite well.