

THE EFFECT OF DIFFERENT TIMING SCHEMES ON PEDESTRIAN BEHAVIOUR AT SIGNAL CONTROLLED JUNCTIONS

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The research included a literature survey and field studies. The field studies were made in Helsinki at three pedestrian crossings in signal controlled intersections. Two of the pedestrian crossings were in the centre of Helsinki (field observations for 6 hours) and one was in the suburb (field observations for 8 hours). The field observations were made with three different traffic signal timing schemes at all intersections. Two of the timing schemes were traffic actuated: the present one and the fast mode control and one was fixed-time control. During the fast mode control the green phase for the vehicles was cut off more easily than during the present control. If there was a clear gap (more than two seconds) in the vehicle flow the pedestrians got a green phase. The field studies included conflicts, waiting times in samples for pedestrians crossing the street against red light and against green light (100 pedestrians), accepted gaps for pedestrians going against red light, crossings outside the pedestrian crossing and traffic volumes.

There were very few conflicts observed during the field studies. The risks for pedestrians were low also for pedestrians crossing the street against the red light. There was no safety difference observed between different timing schemes.

The waiting times were longer for pedestrians crossing the street when the light was green than for those who crossed against the red light. That was because over half of the pedestrians who crossed the street against red light didn't stop at all but those who obeyed the law had to wait for the green light. In two field study sites waiting times decreased for all pedestrians when changing from the present control to fast mode control. In one field study intersection the waiting times for pedestrians increased because the all green phase for the pedestrians was cut off. The pedestrian waiting times were longest for the fixed-time control as expected on the basis of literature survey.

During all of the timing schemes over 60 % of the pedestrians crossing the street against the red light accepted a gap between five and ten seconds. A gap less than five seconds was accepted by 6 - 12 % of the pedestrians going against red light.

We expected after the literature survey that there would be more vehicles crossing the pedestrian crossing during the red light for pedestrians when changing from the present control to the fast mode control (because the vehicle flow was cut off if there were no vehicles driving across the pedestrian crossing). The vehicle flows remained anyhow just about the same.

We also expected that there would be less pedestrians crossing the street against the red traffic light when changing from the present control to the fast mode control. During the field studies the number of pedestrians going against red light increased in all the pedestrian crossings that were observed.

In the suburb there were clearly more pedestrians crossing the street outside the zebra crossing when changing from the present control to the fast mode control and still more when changing to the fixed-time control. In the centre the differences were not so clear. On the basis of the field studies the fixed-time control was the worst choice of the three different signal control schemes from the pedestrian's point of view. That was because the fixed-time control is so unflexible. The

waiting times for pedestrians were also longest for the fixed-time control. The best choice from the pedestrian's point of view was the present signal control scheme. The present timing programs have been made better and better for each intersection. The special tailoring of the signal control scheme for each intersection (all green phase for pedestrians, the active priority for public transport, co-ordinated traffic signals and so on) makes the crossing more comfortable for the pedestrians than just simply making the control faster.