

Summary:

Inspection of pedestrian crossings in 50 km/h zones in Oslo

An inspection of 85 pedestrian crossings in 50 km/h zones on national roads in Oslo suggests that only 10 pedestrian crossings should be kept without changes, while 23 pedestrian crossings should be removed, 16 should be upgraded, 35 should be somewhat changed, and one should be moved.

Criteria for making pedestrian crossings from 2007

The objectives of pedestrian crossings are to improve the conditions for pedestrians regarding mobility, safety and subjective safety. To these purposes, numerous crossings have been made in Norway.

However, pedestrian crossings are not an unambiguous safety measure, and therefore the Norwegian Public Roads Administration in 2002 started to assess if this practice should be continued. The resulting Handbook 270, entitled "Gangfeltkriterier" (Criteria for making pedestrian crossings), recommends where new pedestrian crossings can and should be made. The criteria laid down may also be used in an assessment of existing pedestrian crossings.

The objective

The objective of this project has been to make an inspection of 85 pedestrian crossings in 50 km/h zones on national roads in Oslo and to recommend measures to improve safety. More precisely, we have set out to answer the following three questions:

1. *Criteria:* Are the 2007 criteria for making pedestrian crossings fulfilled?
2. *Risk assessment:* Is the risk for pedestrians high, medium or low?
3. *Regulations:* Are there any flaws in the regulations governing locations, design, markings, signs or maintenance of the pedestrian crossing?

Six different studies

To answer these questions, the following six studies have been carried out:

1. *Traffic counts:* Existing counts of average daily traffic (ADT) or qualified estimates
2. *Pedestrian counts:* Manual counts of pedestrians and bicyclists in and near the pedestrian crossing for a total of four hours in the morning and afternoon rush hours
3. *Conflicts:* Simultaneously with the pedestrian counts, observation of conflicts in the pedestrian crossings

4. *Speed measurement*: Radar measurement of car speed in both directions for about 24 hours
5. *Accidents*: Police recorded accidents from 2004-2008 in and near the pedestrian crossing
6. *Road design*: On-site inspection where data regarding location, design, marking, signs and maintenance of the pedestrian crossing are registered.

85 pedestrian crossings in the study

The Norwegian Public Roads Administration has selected pedestrian crossings for inspections. 31 pedestrian crossings are on ordinary roads and 54 are on access ramps. The pedestrian crossings are divided between 43 in intersections with three arms, four in intersections with four arms, 22 in roundabouts, 12 on road sections and four on access ramps without intersections. Eight pedestrian crossings are regulated by traffic lights.

The criteria are not fulfilled in 26 pedestrian crossings

In 26 pedestrian crossings (31 %), the criteria for making a pedestrian crossing in 50 km/h zones are not fulfilled. In six of these 26 pedestrian crossings the speed level is too high and the remaining 20 pedestrian crossings have too few pedestrians and bicyclists in the peak hour.

High and medium risk in 62 pedestrian crossings

The risk assessment for vulnerable road users shows the following risk in the pedestrian crossings:

- *High risk*: 12 pedestrian crossings (14 %)
- *Medium risk*: 50 pedestrian crossings (59 %)
- *Low risk*: 23 pedestrian crossings (27 %).

Pedestrian crossings with high and medium risk normally have many accidents, high speed level, few pedestrians, bad sight, long crossing distance, more than two traffic lanes in the same direction, and/or insufficient marking, signs or road light.

Large and small remarks to 79 pedestrian crossings

The registration of flaws regarding locations, design, marking, signs or maintenance of the pedestrian crossings shows the following:

- *Many remarks*: 40 pedestrian crossings (47 %)
- *Few remarks*: 39 pedestrian crossings (46 %)
- *No remarks*: 6 pedestrian crossings (7 %).

The remarks are categorised as follows:

- *Markings*: 31 pedestrian crossings (36 %)
- *Signs*: 43 pedestrian crossings (51 %)
- *Road light*: 36 pedestrian crossings (42 %)
- *Waiting area*: 12 pedestrian crossings (14 %)
- *Sight*: 32 pedestrian crossings (38 %)
- *Design*: 22 pedestrian crossings (26 %)
- *Location*: 21 pedestrian crossings (25 %).

39 pedestrian crossings should be removed or upgraded

Based on the registrations, analyses and assessments the following solutions are recommended for the 85 pedestrian crossings:

- *Remove*: 8 pedestrian crossings (9 %)
- *Remove, but keep possibility for crossing*: 15 pedestrian crossings (18 %)
- *Move*: 1 pedestrian crossing (1 %)
- *Maintain and upgrade*: 16 pedestrian crossings (19 %)
- *Maintain, few changes*: 35 pedestrian crossings (41 %)
- *Maintain, no changes*: 10 pedestrian crossings (12 %).

Among the 23 pedestrian crossings that should be removed, 20 are on access ramps, of which 16 are in intersections with three arms. None are equipped with traffic lights. For 21 pedestrian crossings the criteria are not fulfilled. The last two are recommend to be removed because of high or medium risk and many remarks.

Four of the 16 pedestrian crossings that should be upgraded, do not fulfil the criteria for making a pedestrian crossing, because the speed level is too high. If the speed level is not reduced, the four pedestrian crossings should be removed. It is assessed that seven pedestrian crossings have high risk and nine have medium risk for vulnerable road users. 14 of the pedestrian crossings carry numerous remarks. For a majority of the 16 pedestrian crossings the upgrade should include speed reducing measures and/or shorter crossing distance.

There is a need for inspections of pedestrian crossings

Almost half of the inspected pedestrian crossings should be changed significantly (removed or upgraded). Only about 10 % need not be changed.

A large part of the pedestrian crossings are problematic regarding traffic safety. This result correspond with findings from other projects. Actually, it seems that pedestrian crossings in 60 km/h zones are even more problematic.

This and other studies confirm that there is a great need for inspection of all pedestrian crossings in Norwegian cities. Also, it is quite important that the recommendations resulting from the inspections be implemented. It is recommended that the results of all of these inspections be assembled, with a view to assess if certain types of pedestrians crossings are more problematic than others.