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THE "TRAUNTFELS STUDY"

The Trautenfels Study was a traffic study in the framework of a project dealing with the traffic on Austrian transit routes. This project was financed by the Bundesanstalt für Straßenwesen in Germany and by the Ministry of Science in Austria and the Austrian Road Safety Board.

Main Aims of the Study

- Description of typical behavior of car drivers belonging to different nationalities in order to get hints how to influence the behavior of those groups (the conflict registration was done out of the car following the subject's cars).
- Diagnosis of selected dangerous spots in the Austrian traffic road network.
- Modification of those spots based on the conflict registrations, and after studies in order to analyse the changes in traffic behavior.

Behavior Observations

Observations were done out of a car following the subjects' cars; the probability of any selected subject leaving the main road was very low, so it was quite easy to get samples big enough to provide for data which can be compared to each other. Observations were done without the knowledge of the observed subjects, thus half an hour was sufficient to collect all the data necessary. However, on federal roads, where the observations were done, very few conflicts happened during half-hour-rides, so we could not use conflict numbers as criteria for the description of typical behavior of different nationalities.

Diagnosis of Dangerous Spots, Counter Measures and After-Studies, however, were based on on-the-spot-registration of traffic-conflicts.

Interrate Correlation

As known, up to now no satisfying correlations between traffic-conflicts and accident data could be found in order to proof that traffic-conflicts and accident data mediate the same problems. However, there are very important pre-conditions for validation studies in this respect:
Critical events - especially traffic conflicts - have to be registered with sufficient reliability.

Different observers looking at the same events should register the same things.

The consequences resulting from conflict observations of different teams should be comparable (of course, considering typical national differences in coping with traffic problems).

Aims of International Cooperation

Within the framework of the project, we aimed at two things:

1. Comparison of the processes leading to countermeasures, and evaluation of countermeasures.

Austrian experts had done diagnosis on 12 spots in the Austrian transit-route-network, they had suggested counter-measures on selected six of those spots and analysed the situation after the setting of the countermeasures. Those steps should be compared with similar steps of non-Austrian teams; the comparison should be done vicariously on two of the six modified spots.

2. Comparison of diagnosis: Diagnosis itself should be analyzed, vicariously comparing the Austrian diagnosis of one spot to the results of several other non-Austrian teams. This comparison was done after the setting of countermeasures, the non-Austrian teams not being informed about the nature of the countermeasures.

Calibration

For a quantitative comparison of a number of different teams of conflict observers, it is necessary that data themselves be quantitatively comparable. This pre-condition is not in itself provided for when looking at results of different countries. In order to make data comparable, we have to calibrate them. The most important calibration study up to now was the one done in Malmö. Cooperation in Trautenfels done to provide a kind of an internal validation for diagnosis-
data was a good opportunity to collect more data for
calibration-calculations, and, what is more, on a type of
intersection which up to now was analyzed quite rarely.

Working Plan

In pre-tests resp. in the before-study - the international work was
done parallely to the after-study - the Austrian team had counted between
1 and 5 conflicts per hour on the junction of the national roads
(3 308 / B 345 / B 146 / B 75) in Trautenfels. For methodological
work on calibration, though, at least 50 conflicts observed by
at least 2 teams were needed. In order to get that number, 30 hours
of observation were planned, almost half of them during week-end
traffic.

The teams taking part - Finland, France, Israel, the Netherlands,
Sweden, the United States of America and Austria - should take
their place at the junction as they were used to, trying, though
not to catch the traffic-participant's eye too much. The minimum
number of observers necessary to cover the cross-road should be
present at any time of the observation period. All the teams
agreed on the inner junction area as being the actual observation
area (see figure 1). However, observers were allowed to cover
a larger part of the cross-road than the actual observation area,
according to their usual way of looking at similar road-sections.
The only pre-condition was, that every team should cover all of the
actual observation area.

Resulting Data

1. 166 conflicts were gathered, 81 of them were observed by at
least two teams. Data were passed on to the SWOV in the Netherlands
for calculation.

In the framework of the Trautenfels calibration study we tried
to get answers to some special questions connected to calibration
problems:

- If the situation judged as a conflict by other teams was not
  registered as a conflict by one special team, that team should try
to specify what the reason was for missing the conflict using
the video recordings of the collected traffic-conflicts (e.g.
Figure 11: Junction of the national roads B 25 / B 145 / B 146 / B 308
conflict outside observation area; at the border of observation area; not seen from the observer's post; view temporarily obstructed by a truck; observer distracted, etc.)

- If the situation was considered not a conflict what were the reasons, (e.g. no collision course; no evasive action; evasive action not an emergency action, but a preventive one; no surprise, communication among road-users, no violation of right-of-way, etc.; time to accident too large, minimum time to collision too large, relation speed-distance mediates no danger; relation speed TTC or TTA mediates no danger; mistake of judgement)?

2. Also using video recordings the teams should try to reconstruct their decision on the severity of the conflict (speed; speed related to TTC or TTA; distance between road-users versus speed; strength of the evasive action; elements of surprise, e.g. visibility, violation of right-of-way, etc.; probability of collision; outcome: probability of injury, e.g. type of road-users involved, angle of collision, etc.).

3. If a traffic conflict was not registered by one special team because it was missed this team should try to relocate that event on the severity-scale using the video-tape, if possible. Dealing with these questions we expected some information about the criteria influencing the reliability of conflict registration. Another aim was to make the processes of decision concerning severity of traffic conflicts clearer.

More information about data processing and calibration results, see report of Siem Opps and Richard van der Horst.