

Barriers to implementation: do municipal civil servants have sufficient knowledge on effective road safety measures?

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Abstract

Two questionnaires were distributed among municipal civil servants of Dutch municipalities to investigate their knowledge of the effectiveness of road safety measures and how they assess this effectiveness. The results show a lack of knowledge, especially of the effectiveness of traffic education and publicity campaigns. Moreover, the effectiveness of measures for which municipal civil servants often use informal sources is in most cases incorrectly assessed. Habits ('I just think so') appear to largely contribute to the assessment of the effectiveness of traffic education and publicity campaigns. For dissemination strategies, municipal civil servants prefer a range of options. Remarkably, these were not the knowledge sources they indicated as their knowledge sources in the survey. An effective dissemination strategy to broaden the knowledge of municipal civil servants on the effectiveness of road safety measures might therefore be difficult to formulate.

Keywords

Road safety knowledge; Effectiveness of road safety measures; Municipal civil servants

Introduction

Road crashes are a major cause of fatalities and serious injuries in Europe (European Commission, 2022; Weijermars et al., 2018). To prevent crashes and to develop efficient road safety policies it is important for municipal civil servants to have sufficient knowledge of effective road safety measures. Although effective road safety measures have been disseminated through books (Elvik et al., 2009) and websites (SafetyCube DSS, 2016), measures are still not implemented as widely as necessary to achieve road safety goals (European Commission, 2019). Previous research has identified implementation barriers such as political motivation and budget restrictions (Bax, 2011). Related to this, a study by Bax et al. (2020) showed a first glimpse on the fact that municipal civil servants experience difficulties in correctly assessing the effectiveness of road safety measures. This gave reason to further investigate this (Bax et al., 2021): how is the effectiveness of road safety measures assessed by municipal civil servants and upon which knowledge is this based?

Theories on knowledge use show that knowledge has to be received, read, and understood firstly before it can impact policy (Knott & Wildavsky, 1980). Other theories focus on dissemination barriers for the use of knowledge (Landry et al., 2001). These topics were investigated in the present study. As a case study, two questionnaires were distributed among Dutch municipalities. The first questionnaire included questions about the knowledge of the effectiveness of road safety measures (Bax et al., 2020). In the second questionnaire the municipal civil servants were asked where they obtained their knowledge and which dissemination strategies they preferred (Bax et al., 2021).

Methods

Survey design first questionnaire

To investigate 'knowledge', it is important to know how knowledge is described in existing literature and what types of knowledge can be identified that are relevant for municipal civil servants. A literature review led to a list of knowledge types that are relevant for civil servants:

1. Situational knowledge: knowledge of the local situation and about local (crash) figures;
2. Conceptual knowledge: knowledge of important road safety theories, concepts and measures;
3. Procedural knowledge and skills: here defined as knowledge of data and skills to handle them;
4. Strategic knowledge: knowledge of the different actors affecting the policy and the budget to implement the policy;
5. Cultural knowledge: views about the impact of policies on road safety.

The first questionnaire was designed around these five knowledge types. The questions about the knowledge of the effectiveness of road safety measures were included in the 'Conceptual knowledge' part of the questionnaire. These questions were factual questions with a right or wrong answer. The respondents were asked to assess the effectiveness of the following seven road safety measures:

1. Installing separated bicycle tracks at 50 km/h urban arterials;
2. Installing roundabouts inside the urban area with separated bicycle tracks and right of way for cyclists;
3. Electric bicycle training for seniors;
4. Traffic education at primary schools;
5. Publicity campaigns about cycling MONO (not using a mobile phone);
6. Publicity campaigns about cycling MONO combined with targeted enforcement by the police;
7. Distributing free helmets among children at primary schools supported by education and information for parents.

This questionnaire was completed by 135 of the 355 (38%) Dutch municipalities.

Survey design second questionnaire

To design the second questionnaire, eight municipal civil servants from municipalities with different sizes were interviewed during semi-structured interviews. The aim of the interviews was to gather as much reasons as possible for why municipal civil servants find it difficult to correctly assess the effectiveness of road safety measures. The collected answers from the interviews served as answer categories for the same questions in the questionnaire. These were questions about where respondents receive their knowledge of effectiveness of road safety measures from, questions about existing factsheets related to road safety measures, and questions about which things would help to give the civil servant a better view on effectiveness. Furthermore, the questionnaire also included questions about how often and for what reasons the effectiveness of road safety measures is discussed within the municipality and if civil servants receive questions about this effectiveness and from whom. Lastly, the questionnaire closed with a few general questions about the name of the municipality, the position of the respondent, and the amount of FTE's spent on road safety. The second questionnaire was completed by 153 of the 352 (43%) Dutch municipalities.

Data analysis

Because of the exploratory character of the studies, only the descriptive statistics of the results are shown. This relates to the aim of the study, which is to gather insight in the reasons why municipal civil servants lack knowledge about the effectiveness of road safety measures.

Results

First questionnaire

In the first questionnaire, the respondents were asked to assess the effectiveness of seven road safety measures. The knowledge of the effectiveness of these measures varies. The effectiveness of infrastructural measures and of education combined with enforcement is correctly assessed by 19% to 66%, depending on the measure. The effectiveness of publicity campaigns and education measures (without any additional measures) is often assessed incorrectly: depending on the question, 4% to 39% of the respondents assess effectiveness correctly. 46% to 97% of the respondents assess the effectiveness of publicity campaigns and education measures to be reasonable to excellent, whereas the actual effect is only slight or unexplored.

Second questionnaire

In the second questionnaire, the respondents were asked about the knowledge sources they use to assess the effectiveness of three road safety measures:

1. the construction of an urban roundabout with a bicycle track and right of way for cyclists;
2. traffic education for primary school children;
3. publicity campaigns.

These measures were selected as the results from the first questionnaire showed that respondents scored worst at assessing the effectiveness of these measures: they were too negative about the high effectiveness of roundabouts and too positive about the mostly limited effectiveness of traffic education and publicity campaigns (without additional enforcement). The respondents had to provide the top three sources on which they base their effectiveness assessments. Table 1 shows the top three sources for each measure.

Road safety measure	Most frequent score	Second most frequent score	Third most frequent score
Roundabouts	Knowledge gained by personal experience <i>(I have actually observed the effectiveness of this measure)</i>	Knowledge gained through formal channels <i>(I have read this in a book/ professional journal/on a website)</i>	Knowledge gained through formal channels <i>(I was taught this during my training)</i>
Traffic education	Habit/no immediate reason <i>(I just think so)</i>	Knowledge gained from personal experience <i>(I have actually observed the effectiveness of this measure)</i>	Knowledge gained through formal channels <i>(I have read this in a book, professional journal, or on a website)</i>
Publicity campaigns	Habit/no immediate reason <i>(I just think so)</i>	Knowledge gained from personal experience <i>(I have actually observed the effectiveness of this measure)</i>	Knowledge gained from personal experience <i>(As a road user, the measure would/would not work for me, so I do/do not expect it to work for others)</i>

Table 1: Sources most often mentioned and weighted by the position in each respondent's top three (N=158).

For all measures, knowledge gained by personal experience is mentioned every time and twice for publicity campaigns. Habits are mentioned for traffic education and publicity campaigns, but not for

roundabouts. Knowledge gained through formal channels is mentioned twice for roundabouts, but not for publicity campaigns. Particularly for traffic education, the statement 'The provincial/national government is financing this measure, which makes me assume the measure is effective' was ticked as an answer, although less often than the reasons above.

To investigate whether existing information about effectiveness is clear, is new, and whether this information is trusted, text fragments from existing fact sheets about the three questioned measures were presented. Most respondents found the information about roundabouts (72%) and publicity campaigns (72%) 'reasonable to very clear' (both around 21% very clear). The information about traffic education was found 'reasonable to very clear' by 61% of the respondents (of which 12% very clear). Phrases with scientific language and long, complex sentences with double negatives were found least clear. Especially the information about traffic education contained new information for almost all respondents. For the information about publicity campaigns this was around two-thirds of the respondents and for roundabouts less than half of the respondents. In general, the existing information is believed by most of the respondents (varying from 68% to 100% per phrase). A remarkable result is that the phrases which are believed less, are the phrases that were appointed as new information. Despite the new information and the high trust in the existing information, most respondents were not willing to adapt their policy (varying from 85% for roundabouts, 89% for publicity campaigns, and 96% for traffic education).

For dissemination strategies, municipal civil servants preferred a range of options; from learning from best practices, courses, and webinars to easily accessible and short publications. Remarkably, these were not the knowledge sources they indicated as their knowledge sources in the survey. An effective dissemination strategy to broaden the knowledge of civil servants on the effectiveness of road safety measures might therefore be difficult to formulate.

Discussion

Although the response for both questionnaires was high (38% and 43%), the sample may not be random. Non-responding municipalities may have less interest in and/or knowledge of road safety. The results are therefore difficult to transfer to the non-responding municipalities. Furthermore, there was no standardised questionnaire available to assess the knowledge of municipal civil servants about road safety. The questionnaire is therefore created by the authors themselves. To decrease to size of the questionnaires, the questions only cover a selection of all aspects in the road safety field.

Conclusions

The results of the questionnaires lead to the following tentative conclusions:

- A lack of knowledge seems apparent, especially of traffic education and publicity campaigns. Municipal civil servants often assessed the effectiveness of road safety measures incorrectly: too positive for the mostly limited effectiveness of traffic education and publicity campaigns, and too negative for the high effectiveness of roundabouts.
- The effectiveness of measures for which municipal civil servants often use informal sources is often assessed incorrectly. They may (although this was not investigated) supplement their lack of formal knowledge with knowledge gained by personal experience.
- Habits ('I just think so') appear to largely contribute to the assessment of the effectiveness of traffic education and publicity campaigns. It is unclear what the 'just thinking' is based on.
- Municipal civil servants judge existing information to be generally clear and they trust the information. A lack of clarity and trust do therefore not seem to be the reasons why these formal knowledge sources are not used to assess effectiveness. Municipal civil servants do,

however, appear to have less confidence in parts of the texts that contain information that is new to them.

- Information and subsidies originating from other authorities appear to affect the perception of the effectiveness of measures. For traffic education in particular, some municipal civil servants indicated that provincial or national subsidies, teaching material and material for publicity campaigns encourage their assessment of such measures as being effective.

Perspective for improvements

An exploratory study is not ideal for making recommendations. This report lays the foundations for knowledge of the sources on which municipal servants base their effectiveness assessments. Follow-up research is necessary to test the – tentative – conclusions above and to concur with the literature about the use of knowledge in other fields.

Based on the ideas of municipal civil servants themselves and on previous literature studies (Bax, 2011), some perspectives for improving knowledge of effectiveness may be given:

- Since knowledge of roundabouts more often stems from formal knowledge sources than is the case for knowledge of education or publicity campaigns, it seems sensible to investigate whether in traffic engineering courses enough attention is paid to the effectiveness (or lack of effectiveness) of traffic education and publicity campaigns.
- Municipal civil servants indicated that having more time to spend on road safety might help to keep up with the literature on effectiveness.
- Provincial and national authorities providing subsidies and methods for a certain measure is reason for municipal civil servants to suppose that the measure is effective. Therefore knowledge of the effectiveness of measures is also important at provincial and national levels, so that only effective measures are subsidised and a mistaken perception of the effectiveness of a measure is prevented.
- The question is whether (still) clearer and more accessible information will contribute to more knowledge of the effectiveness of measures at a municipal level. Although respondents often said they wanted additional and more accessible information, they hardly mentioned current information about education and publicity campaigns as a source for their effectiveness assessments. Whether more accessible formal data sources will indeed help, may be determined by monitoring the use of these sources.
- Respondents said to appreciate learning by example. Particularly in formal knowledge sources about publicity campaigns and education, examples of effective measures are missing, probably because in these areas only few effective measures are known. More research into the effects of education and publicity campaigns in Dutch projects could provide these examples.

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