

Evaluation of study by the European Commission, Directorate-General for Mobility and Transport, Directorate DG - MOVE, Unit C2 - Road Safety

Study title: "Study on the inclusion of light trailers and two- or three-wheel vehicles in the scope of the periodic roadworthiness testing"

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Final report

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Purpose of the evaluation

Our evaluation only comprises the two- or three-wheel vehicles (moped) part of the study mentioned above. The purpose of our evaluation is to determine if the study fulfills the criteria for good research. The main qualifications for a good study that are commonly listed are:

1. Clear purpose
2. Research methods defined in a clear manner with sufficient detail
3. Planned and executed objectively, in a systematic and logical way
4. Limitations and assumptions clearly highlighted
5. Sufficient, reliable and valid data used
6. Limitations of the data understood
7. Conclusions justified by the data

The study evaluated

Study on the inclusion of light trailers and two- or three-wheel vehicles in the scope of the periodic roadworthiness testing was published by Directorate-General for Mobility and Transport, Directorate DG - MOVE, Unit C2 - Road Safety in February 2019.

The study was made by:

CITA, The International Motor Vehicle Inspection Committee

CVH, Center for Vehicles of Croatia

DEKRA was founded in 1925 as a vehicle inspection company and has since developed its services to cover many safety areas.

The Institute for Economic Research and Consulting, IERC GmbH, was founded in 2003 as a private research institute by Prof. Dr Wolfgang H. Schulz.

ISVA-UC3M is the Institute of Motor Vehicle Safety belonging to the Carlos III University of Madrid.

Comments on the makers of the study:

It is easily noted that all the participants of the study are either institutions related to vehicle PTI or research related to PTI. In the participants there were no officials and parties specialized in accident analysis. Also, no user or vehicle industry groups were present.

Purpose of the study

Quote from the study:

The purpose of this study is to gather factual information, conduct a detailed technical analysis and make a policy recommendation based on quantified arguments of the possible Scenarios for the periodic technical inspection of light trailers in categories O1 and O22 and two- and three-wheel vehicles in each subcategory of L vehicles.

The main result of the study was a cost and benefit analysis of introducing PTI for mopeds and light trailers.

Evaluation of criteria 1: Clear purpose

Conclusion: The purpose of the study is clear and stated above.

Evaluation of criteria 2: Research methods defined in a clear manner with sufficient detail

The basic methods of the study for mopeds were:

- Using a hypothesis that by introducing PTI fewer accidents would occur
- Accident statistics in Spain was analyzed
- Analysis was done using a simple regression model from accident statistics
- In regression model all other influencing factors were considered as constant

Quotes from the study:

The proposed hypothesis for Spain is thus that the regions that had already introduced PTI measures would experience fewer (fatal) accidents than those that as yet had no periodic inspections.

*Studying road safety indicators before and after provides a precise view of the impact of the measure **since it avoids the limitations of other approaches such as accident analysis.***

Comment:

Accident analysis is commonly regarded as the most accurate way of assessing the benefits of PTI. From traces of accidents it is possible to analyze if the vehicle condition had an effect on the accident. It is strange why this method was considered as limiting and completely abandoned.

Quotes from the study:

*The approach to understanding the relationship between the PTI and accidents is to apply a panel data regression. In this case, a panel data model with fixed effects is used. **The state fixed effects are used since we cannot be sure that there might not be other factors that would influence the outcome.***

Other factors that would influence the outcome could be the quality of roads, the cultural acceptance of drinking and driving in certain regions, the weather conditions and so on. These factors are hard or impossible to measure.

***Therefore, these factors are regarded as constant over time** in the given regions since we can expect that they will change only very slowly, but we still account for them in the model.*

Comment:

All other factors than PTI were considered as constant in the study. If the other factors cannot be measured or evaluated, it should be considered if the data is usable at all. It is obvious that there are other factors. Here they are just ignored.

Conclusion:

The study ignores the most commonly used accident analysis methods. Instead a simple regression model was used where all other factors affecting the accident figures are regarded as constants. It is obvious that the assumptions made are not correct.

The methods do not fulfill the criteria of good research.

Evaluation of criteria 3: Planned and executed objectively, in a systematic and logical way

Conclusion:

Since the methods of the study were questionable and the main assumptions simply wrong, it is obvious that the study was not planned and executed objectively. It fails the criteria.

Evaluation of criteria 4: Limitations and assumptions clearly highlighted

Quote from the study:

Therefore, these factors are regarded as constant over time in the given regions since we can expect that they will change only very slowly, but we still account for them in the model.

Comment:

If factors are considered as constant, they do not have affect in a simple regression model. Saying that the factors are accounted is simply misleading. There is no discussion why such assumptions were made. If factors are hard or impossible to measure, they simply cannot be considered as constant without evaluation. There is no evaluation on limitations in the study. Big assumptions were made.

Conclusion:

The study fails the criteria.

Evaluation of criteria 5: Sufficient, reliable and valid data used

The study uses accident data from certain areas of Spain. Only the quantity of accidents was used and a regression was made based on that. There is other data available from accidents like the main reasons for them. It would be beneficial for a PTI study to study what the causes of accidents were, in what kind of ways PTI could affect the accidents and what effect PTI had to the accidents through causality.

Conclusion:

The accident data is most likely reliably but only a quantitative figure of it was used. The mechanisms of PTI effect were not studied at all. The study fails the criteria.

Evaluation of criteria 6: Limitations of the data understood

Conclusion:

Limitations of the data are passed or not discussed at all. The study fails the criteria.

Evaluation of criteria 7: Conclusions justified by the data

Quotes from the study:

*The result of the regression is that in the past the number of moped accidents was reduced **due to the application of PTI**. On average 284 moped accidents were avoided each year. The question arises of how trustworthy this result is. The results of a regression can be proved by statistical variables, which measure the significance of the whole model and the regression coefficients.*

*The **regression coefficients reflect the causal relationship** between PTI and accident reduction.*

The next question is whether the whole approach is trustworthy. This means that all variables included in the model make sense and that there is no kind of conflict between the independent variables.

The statistical variable for this assessment is the adjusted R-square (R^2).

Comment:

Causal relationship cannot be proven if other factors affecting the results are not analyzed. Credibility of the results was evaluated based only on regression R-square value.

Quotes from the study:

The cost and benefit analysis performed in this study shows a very strong relationship between the introduction of PTI for mopeds in Spain and reduction in the number of crashes. It concluded, with a likelihood of 99%, that 284 road accidents per year could be avoided due to the application of PTI for mopeds. This results in an 18% decrease in the total number of crashes during the period, with absolute values of five deaths, 53 severe injuries and 262 minor injuries per year.

Comment:

It is needless to say that without proper data a cost and benefit analysis is useless. A likelihood of 99 % for reducing 18 % accidents due introducing PTI sounds unbelievable and it is.

Ultimately a major conclusion was made:

This could then be generalized to the whole group of L vehicles.

Wow! That is the mother of all assumptions. That sentence underlines how arrogant research we are dealing with.

Conclusion: The study fails the criteria.

Summary and conclusion of the study

Most studies done on the effect of PTI have come to a conclusion that PTI can reduce accidents due to reducing the technical deficiencies that were the primary causes of accidents. Generally technical deficiencies are the primary causes in 0-1.5 % of the accidents. This was proven also in the German statistics mentioned in the study. This is the order of magnitude to expect for reducing accidents from a PTI study. A 18 % reduction should really ring a bell. In the study this figure has been taken without any questioning.

The study fails all but the first criteria of good research. It is in general worthless. It is biased, uses data that is selected suitable for purpose, ignores other studies done, uses wrong methods, does not consider limitations of the data and draws the wrong conclusions. The worst of all, it is published under the name of the European Commission, which should be a reliable source. The ones who did the study should be ashamed!