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WORKING DOCUMENT

From: To:	General Secretariat of the Council Working Party on Land Transport
N° Cion doc.:	ST 8255/25 + ADD 1 ST 8259/25 + ADD 1 - 4
Subject:	Proposal for a Directive of the European Parliament and of the Council amending Directive 2014/45/EU on periodic roadworthiness tests for motor vehicles and their trailers and Directive 2014/47/EU on the technical roadside inspection of the roadworthiness of commercial vehicles circulating in the Union Proposal for a Directive of the European Parliament and of the Council on the registration documents for vehicles and vehicle registration data recorded in national vehicle registers and repealing Council Directive 1999/37/EC - Comments from Germany

Delegations will find, attached, comments from **Germany** on the above-mentioned proposals.

18. July 2025

Revision of Directive 2014/45/EU; 2014/47/EU and 1999/37/EC
Comments provided by Germany on the 'Roadworthiness Package"

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- with regard to stationary noise measurement

The Federal Government is critical of the proposed expansion of requirements on periodic roadworthiness tests ("Hauptuntersuchung" in Germany) for category L vehicles, which would make stationary noise measurements for these vehicles mandatory. Specifically, we take the following view:

Rejection of mandatory stationary noise measurements for motorcycles

Justification:

The current periodic roadworthiness test of category L vehicles in Germany includes a visual inspection of their noise-emitting components as well as a subjective assessment of the vehicle's noise in motion and of noise emissions from the stationary vehicle by the inspector during the test ride (e.g. brake test). If this subjective assessment concludes that there are irregularities, stationary noise emissions must be measured in proximity to the vehicle's exhaust. The resulting stationary sound pressure level is then compared with the stationary sound pressure level stated in Part I of the registration certificate. If the result is above a tolerance level that takes all measurement errors in the context of type-approval testing into account[1], this has to be documented as a major deficiency resulting in failure of the inspection. Mandatory measurement of the stationary noise of category L vehicles with internal combustion engines would only increase the cost of a periodic roadworthiness test without leading to a detection of more vehicles with excessive noise levels, as many vehicle owners replace (illegal) exhaust silencers that are too loud by silencers meeting legal noise requirements prior to a periodic roadworthiness test or make sure that retrofitted silencing systems meet the legal requirements again.

[1] in accordance with the Guidelines on stationary noise testing of motorcycles within the framework of the periodic roadworthiness tests under section 29 StVZO and surveillance of noise emissions of motorcycles in road traffic ("Richtlinie zur Standgeräuschmessung") (BMVBS S 34/36.20.00-04 of 9 March 2006, Transport Gazette p. 338)

For motorcycle exhaust silencing systems, this takes less than 30 minutes. For the reasons mentioned above, selective retesting of stationary noise emissions within the scope of the main inspection has proven successful in Germany.

Proposal:

Further development of the monitoring system to improve noise emissions in real-world traffic:

From Germany's point of view, noise emissions in real-world traffic can only be significantly improved by monitoring noise emissions, including stationary noise emissions, during road traffic checks. Combining marking of exhaust silencers that have passed stationary noise measurements during a periodic roadworthiness test (for instance by means of a heat-resistant sticker on the underside of the silencer) with an option to inspect these during road traffic checks would be conceivable. This would facilitate road traffic checks. Another option would be to subject motorcycles (or only motorcycles with non-original or retrofitted exhaust silencing systems) to a one-off mandatory stationary noise measurement within the scope of the main inspection and, if they pass, mark them for subsequent inspections (periodic roadworthiness tests /road traffic checks) using the sticker mentioned above.

This would reduce the additional effort, facilitate subsequent checks and inspections and eliminate the benefit of swapping out silencing systems with excessive noise levels prior to a periodic roadworthiness test.

- with regard to shortening inspection intervals

In addition to our voiced concerns regarding Recital 16 and Article 5 No. 1a) (shortening of inspection intervals as part of the COM's proposed amendments to Directive 2014/45/EU) submitted by Germany on May 15, 2025 (WK 6746/25 REV 4 Page 31 and 100), a "Cost-benefit analysis on shortening the inspection periods for older motor vehicles" by the Federal Highway and Transport Research Institute is submitted as an annex. This cost/benefit analysis may be published.

- with regard to the manipulation of odometers

From Germany's point of view the compliance effort for the new database is to be carefully reviewed. Manipulations take place before the data is entered into the

database. Germany thus prefers technical solutions to impede manipulations. The world forum for the harmonization of vehicle regulations WP.29 has adopted new requirements in March 2025 in UN-regulation No. 39. These requirements will be applied in the EU from 2028 onwards. Odometer need to fulfil the requirements of UN-regulation No. 155 on cybersecurity from that point on. Germany questions the need and necessity of an additional database.

- with regard to the registration documents for vehicles and vehicle registration data (Art. 1, subject matter and scope)

We suggest the addition of new number 3 in Art. 1:

"3. This Directive shall also not apply for law enforcement authorities (armed forces, police, border control, civil and disaster protection, etc.), their vehicles, vehicle registers, electronic systems on roadworthiness certificates and other documents."

From Germany's perspective it should be ensured that vehicles belonging to public authorities (military, police, customs administration, etc.) are not required to maintain or carry digital registration documents, as the use of digital registration documents is impractical in these areas. It should also be ensured that internal registration data of these institutions do not have to be transmitted to other member states.

- with regard to the proposed use of MOVE-HUB for exchanging information

As stated by Germany in WK 9412/25, p. 138-140, Article 15(2) constitutes the obligation of the Member States to connect their national registers to the Commission's MOVE-HUB. The aim is to permit real-time data exchange. To date, the MS vehicle registers have already been connected via EUCARIS. EUCARIS is an established and reliable system for data exchanges between the contracting states and/or Member States, which has established itself as the standard in the Union law context (e.g. within the framework of the CBE Directive). EUCARIS already provides technical solutions for all data exchange purposes envisaged in the RWP. With EUCARIS Operations and the EUCARIS Secretariat, the EUCARIS General Assembly and the EUCARIS Technical Working Group, EUCARIS also offers a structure that allows the Member States that use it to discuss and find joint solutions to legal and technical questions. Germany also considers EUCARIS preferable from

a technical perspective. For example, the MOVE-HUB provides a hub architecture with a central data-transmitting entity. By contrast, EUCARIS is a peer-to-peer network, via which states exchange data with one another directly. Considering the volume and scope of the personal data that is to be exchanged for the purposes of the Directive, a peer-to peer model is more conducive to data protection.
The mandatory connection to MOVE-HUB would create a duplicate structure, which Germany considers unnecessary. Besides the once-off costs incurred by the Member States to produce the required software, permanent maintenance and upkeep would be necessary and would require the provision of additional resources. What is more, the connection would be a potential source of error that no technical requirement could justify. Moreover, the connection to a new system would delay the implementation of the Directive. As a result, EUCARIS should be the default, with connection to MOVE-HUB as a voluntary option.

In general to address our critique, Germany asks the EU- Commission to elaborate further on the relationship between EUCARIS and MOVE-HUB and how their intended roles are defined in EU-law.

Germany upholds its already written comments and reserves the right to make further comments, including on those elements of the RWP on which we do not comment in this statement.

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Federal Highway and Transport Research Institute **Bergisch Gladbach, 3 July 2025**

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U5p – KNA_Roadworthiness

Cost-benefit analysis on the shortening of inspection intervals for older motor vehicles within the scope of the EU Roadworthiness Package

Decree: Federal Ministry for Digital and Transport, ref. RV 3/7341.6/10-51 of 28 April 2025

Federal Highway and Transport Research Institute **Bergisch Gladbach, 3 July 2025**

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Results of the cost-benefit analysis on the ‘Hauptuntersuchung’ (HU)

1. Executive Summary

The EU Roadworthiness Package aims to increase road safety, reduce the burden on the environment caused by emissions and noise and facilitate the free movement of goods and people within the European Union. It is to ensure that vehicles are operated safely and in an environmentally friendly manner throughout their entire service life, to prevent fraud and to simplify the re-registration of vehicles. In view of technological developments and new environmental standards, the European Commission has proposed an update of the provisions.

The analysis for this opinion is focused on the PO2 policy option of the EU Roadworthiness Package[1]. It includes, among other things, an annual periodic roadworthiness test (equivalent to the ‘Hauptuntersuchung’ (HU) in Germany) for motor vehicles of categories M1 and N1 from ten years of age. The European Commission expects the reform to result in considerable once-off and recurring costs, in particular due to the expansion of the inspection infrastructure and staff training. The total costs caused by the PO2 policy option are estimated at 69.5 billion euros (2026-2050 present value) for all Member States over the 25-year term, with the largest share being accounted for by the periodic roadworthiness tests. This opinion does not include an analysis of the emissions part of the HU.

With the HU as the subject of studies, this analysis does not cover the entire PO2 policy option of the EU Roadworthiness Package but rather highlights the goal formulated therein of avoiding accidents involving fatalities and serious injuries. Factors reducing the benefit-cost ratio, such as one-off investment costs to be borne by the public, are not taken into account, and investment costs to be borne by the vehicle inspection agencies and inspection organizations responsible for the HU are accounted for by the inspection fees or charges to be paid by the vehicle owners.

For Germany, this analysis estimates that the costs for the HU under the PO2 policy option will total around 1 billion euros per year. Taking into account the accidents that could be avoided by preventing technical deficiencies, the reform would probably prevent accidents and thus economic accident costs of up to 300 million euros. The benefit-cost ratio of shortening the inspection intervals of HU in Germany is therefore significantly lower than one. This means that the costs caused by shortened HU intervals are higher than the benefit generated by the prevention of accidents.

The calculations are to serve as guidance to the Federal Ministry of Transport (BMV) for the consultations within the Council Working Group at the level of the European Union and, due to a lack of data, only give an approximative description of the situation.

2. Period under consideration

The calculations are based on the data from 2023. This is the most up-to-date accident data available as a basis for benefit calculations. The prices for the HU are the 2023 prices. As the price limits of the schedule of fees for measures relating to road traffic (GebOSt) have not been adjusted since 2022, it was also possible to use the prices from the cost schedules for 2025 for determining the prices for 2023, in addition to the GebOSt.

[1] European Commission (2025): COMMISSION STAFF WORKING DOCUMENT: EXECUTIVE SUMMARY OF THE IMPACT ASSESSMENT REPORT.

3. Vehicles under consideration

The calculations covered passenger cars of the vehicle category M1 and light commercial vehicles of the vehicle category N1. For both vehicle categories, the maximum permissible weight is 3.5 t and their drivers must have a category B driving licence. Since the analysis is based on the legal situation in Germany, only vehicles registered in Germany were considered for calculating the costs and benefits.

4. Scenarios under consideration

In addition to other amendments, the proposal of the European Commission to update the Roadworthiness Package involves shortening the inspection intervals of periodic roadworthiness tests. Under the proposal, passenger cars and light commercial vehicles older than 10 years have to undergo annual periodic roadworthiness tests in the future. Up to now, periodic roadworthiness tests (or HU in Germany) are mandatory for passenger cars and light commercial vehicles every two years.

5. Calculation of costs

The costs indicated below are the additional costs compared to the current legal situation. The additional costs will arise when tests currently not mandatory will become necessary in the future. The analysis considers the specific costs incurred by the vehicle owners for the service itself as well as abstract costs incurred because the vehicle cannot be used for other purposes during the tests (losses in wealth creation). Costs arising from the fact that vehicle owners cannot carry out other activities while driving to the HU or because a service vehicle cannot be used for commercial purposes during a HU are not considered. There is not enough data available for both cases.

The prices for the HU are calculated in a three-stage procedure. The background is that usually, every federal state commissions an inspection service ('provider') with the operation of the technical vehicle inspection agencies in accordance with the GebOSt[2]. In addition, all providers in every federal state operate inspection organizations that are more flexible in setting their prices. To calculate the prices, the weighted mean values of the fees laid down in the fee tables of the different inspection organizations as well as the fees laid down in the GebOSt for the vehicle inspection agencies were used. The providers' fees may vary by federal state (e.g. Dekra). This cost-benefit analysis takes into account the fee tables of the providers TÜV-SÜD, TÜV-Nord, TÜV-Rheinland, Dekra, GTÜ and KÜS and is thus based on the prices of all large HU providers. According to the Federal Motor Transport Authority, these six providers carry out 96% of the HU in Germany[3].

As a first step for calculating the weighted mean values, a mean value was calculated for the inspection organizations of every provider across all federal states. The share of passenger cars per federal state in the overall vehicle population in 2023 was used for the weighting[4]. As a second step, the share of the individual providers in the annual HU was used for the weighting[3] to calculate a mean value for the HU for the inspection organizations across all providers in Germany. The net prices after deduction of the turnover tax were considered[5]. As a third step, the share of the HU carried out by the inspection organizations of the

[2] Gebührenordnung für Maßnahmen im Straßenverkehr (GebOSt).
[3] KBA (2025): Hauptuntersuchungen. Available at: https://www.kba.de/DE/Statistik/Fahrzeuge/Fahrzeuguntersuchungen/_fahrzeuguntersuchungen_node.html [accessed on 17 June 2025].
[4] KBA (2024): Bestand an Kraftfahrzeugen und Kraftfahrzeuganhängern nach Zulassungsbezirken. Available at: https://www.kba.de/DE/Statistik/Produktkatalog/produkte/Fahrzeuge/fz1_b_uebersicht.html [accessed on 17 June 2025].
[5] In a model of the economy including companies, consumers and a government, companies and consumers pay taxes to the government. The government invests these taxes in the public domain, e.g. infrastructure, national defence and transfer payments. This means that the taxes to be paid flow back to the consumers and are therefore not considered in the cost-benefit analysis.

providers was multiplied by the mean value of the price for HU carried out by the inspection organizations and added to the product of the share of the HU carried out by the vehicle inspection agencies and the price cap laid down in the GebOSt[6].

Figure 1 illustrates the costs for a HU. It is based on the population of passenger cars and light commercial vehicles in 2023 that are older than 10 years[7]. The line under the motor vehicles population shows the price for the HU (see above). In the long term, every motor vehicle must undergo a periodic inspection after two years – this means half of the passenger cars every year. As a result, shortening the inspection intervals for older motor vehicles will lead to additional costs of 1 billion euros in comparison with the current legal situation.

Figure 1 also contains the value for the losses in wealth creation, i.e. for activities in the private sphere for which the passenger car cannot be used. This value is taken into account in a sensitivity analysis. The value used for private passenger cars was taken from the economic accident cost calculation of BASt[8] and is based on the assumption that a passenger car is not available for half a day during the HU but would be without the legislative change. There is not enough data for calculating the losses in wealth creation of commercial passenger cars, light commercial vehicles and time costs for vehicle owners. Since the HU can be scheduled and activities can be planned around this inspection, the losses in wealth creation are shown separately.

Without taking into account the losses in wealth creation, shortening the inspection intervals of the HU for older motor vehicles will lead to additional costs of 1 billion euros in comparison with the current legal situation.

Costs of the HU	
Number of passenger cars (older than 10 years)	24,203,159
Number of commercial vehicles (older than 10 years)	1,138,351
Price of a HU	€ 79.34
Share of the vehicles to be tested per year	50%
Additional costs for annual HU	€ 1,005,249,466
Loss in wealth creation (passenger car/day)	€ 55.53
Loss in wealth creation resulting from the annual HU	€ 336,030,125
Total costs for annual HU	**€ 1,341,279,591**

Figure 1: Costs of the HU[9]

Assumptions:

- 86% of vehicles are tested by inspection organizations and 14% of vehicles by vehicle inspection agencies. The market shares of the providers are relevant.
- Losses in wealth creation are only determined for private passenger cars and the duration of half a day.

[6] Statista (2016): Wer wacht über die Verkehrstauglichkeit?. Available at: https://de.statista.com/infografik/11017/ hauptuntersuchungen-von-fahrzeugen-in-deutschland-nach-proeforganisationen/ [accessed on 17 June 2025].
[7] Sonderauswertung des Kraftfahrtbundesamtes.
[8] Baum H., Kranz T., Westerkamp U. (2010): Volkswirtschaftliche Kosten durch Straßenverkehrsunfälle in Deutschland, Berichte der Bundesanstalt für Straßenwesen, Mensch und Sicherheit 208. Bergisch Gladbach: BASt.
[9] The share of vehicles to be tested per year results from the fact that vehicles would in future be tested twice as often as today. Under the assumption that the tests of the vehicles to be tested today are spread evenly over the two years, in the future, half of the vehicles would have to be tested additionally every year.

6. Calculation of benefits

The objective of the shortening of the HU inspection intervals is the prevention of accidents. As a consequence, the costs resulting from preventable accidents are the benefits society derives from the legislative change. The calculations are based on accident data from the official 2023 accident statistics, that is on all accidents caused (or contributed to) by technical deficiencies in a vehicle of category M1 or N1 registered in Germany.

The accident cost rates calculated annually by BASt, not broken down by accident localities, were used for the calculation. The most current cost rates are from 2023. So far, two scenarios have been examined. One of those, however, can be considered as a 'maximum scenario'. Based on the methodology used, it is unlikely that a calculation will yield a greater benefit than that calculated for this scenario. The maximum scenario itself is also considered unlikely and serves as a theoretical basis for an upper limit.

For accidents involving minor material damage, information on accident causes is available only for a small share of the accidents. It is assumed that the share of technical deficiencies in these accidents is the same as that in accidents involving minor material damage overall.

For both scenarios, the work scenario and the maximum scenario, assumptions are made about the underreporting percentage as regards accidents registered by the police[10], technical deficiencies found in the HU[11] and technical deficiencies identified by the police as accident causes. As regards the registration of accidents by police, the following underreporting percentages are assumed:

- The percentage of accidents not registered by police is between 0% for accidents involving fatalities and 50% for accidents involving material damage.
- The percentage of accidents where police did not recognize the technical deficiency as the accident's cause is based on two sources providing differing data.
    - The 2012 analysis entitled 'Preliminary results of the cost-benefit analysis' on the 'Proposal for a Regulation of the European Parliament and of the Council on periodic roadworthiness tests for motor vehicles and their trailers and repealing Directive 2009/40/EC' assumed the following underreporting percentages: fatalities (10%), seriously injured casualties (30%), slightly injured casualties (50%), material damage (70%). This assumption is carried forward.
    - According to a current evaluation of GIDAS (German In-Depth Accident Study) by Directorate F of BASt, in 55.56% of accidents involving technical deficiencies as per GIDAS in the survey period both the GIDAS survey teams and the police identified a technical defect as the cause of the accident[12]. Conversely, according to this evaluation, 44.44% of these accidents in the GIDAS database were not simultaneously registered by the police as part of the accident recording. This means that the actual number of accidents caused by technical deficiencies in the vehicle is estimated to be almost twice as high as the number recorded in the official accident statistics.

Further assumptions made for the maximum scenario:

[10] Baum H., Kranz T., Westerkamp U. (2010): Volkswirtschaftliche Kosten durch Straßenverkehrsunfälle in Deutschland, Berichte der Bundesanstalt für Straßenwesen, Mensch und Sicherheit 208. Bergisch Gladbach: BASt.

[11] Verein für Qualitätsmanagement in der Fahrzeugüberwachung e.V. (2024): Jahresbericht 2023 über die Ergebnisse unangekündigter Nachkontrollen entsprechend Beschluss der 36. AKE-Sitzung.

[12] To calculate the underreporting percentage, the hypercube weighting method was used to correct the statistics for structural distortions in the GIDAS sample compared to the national statistics. The calculation of the underreporting percentage considered all accidents in which at least one M1/N1 vehicle that was more than 10 years old was involved and in which at least one accident cause for one party involved in the accident was a technical deficiency. The underreporting percentage is derived from the share of accidents involving a technical deficiency in the years 2019-2023 where the GIDAS survey teams found a technical deficiency but the police did not during the accident recording.

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- All accidents recorded in the official statistics and caused by the relevant vehicles due to technical deficiencies can be prevented. This is also true for accidents where other causes were also indicated.
- In the HU, all technical deficiencies are identified and subsequently remedied.

Further assumptions made for the work scenario:

- Accidents for which other causes are indicated in addition to a technical deficiency cannot be prevented altogether. For these accidents, the assumed reduction potential corresponds to the share of technical deficiencies as accident cause in the accident causes in total.
- The technical deficiencies occur evenly distributed over the period between the respective HU. Since the period between the HU will be cut by half for the majority of vehicles, it is assumed that the number of accidents involving technical deficiencies can also be halved.
- During the HU, a maximum of 87% of the technical deficiencies are found and subsequently remedied. Thus, the reduction potential is reduced by 13%[11].

7. Benefit-cost ratio

The benefit-cost ratio for each of the various scenarios is smaller than one. Even in the maximum scenario, it does not exceed the value of one third. Figure 2 shows the benefit-cost ratios based on the underreporting percentage of technical deficiencies the police did not recognize as the actual accident cause from the preliminary 2012 cost-benefit analysis as shown in section 6.

Benefit-cost ratio	**Maximum scenario**	**Work scenario**
Benefit resulting from prevented accident costs	€ 302,214,132	€ 73,382,751
Additional costs resulting from the annual HU	€ 1,005,249,466	€ 1,005,249,466
Benefit-cost ratio	0.30	0.07

Figure 2: Benefit-cost ratio - regular scenarios with underreporting percentage

Figure 3 instead shows the benefit-cost ratios based on the GIDAS evaluation values for the percentage of technical deficiencies the police did not recognize as the actual accident cause.

Benefit-cost ratio	**Maximum scenario**	**Work scenario**
Benefit resulting from prevented accident costs	€ 220,962,124	€ 56,835,090
Additional costs resulting from the annual HU	€ 1,005,249,466	€ 1,005,249,466
Benefit-cost ratio	0.22	0.06

Figure 3: Benefit-cost ratio - regular scenarios with values to determine an underreporting percentage based on GIDAS

8. Sensitivity analysis

The sensitivity analyses below are carried out under otherwise unchanged conditions by modifying the base scenario. There are values from various sources on the underreporting percentage of accidents with unrecognized technical deficiencies. One of these values is based on a GIDAS evaluation and, within this evaluation, on the comparison of the technical deficiencies recognized as accident causes by police and by specifically trained survey teams.

Scenario 1 is based on the underreporting percentage of technical deficiencies the police did not recognize as the actual accident cause from the preliminary 2012 cost-benefit analysis as shown in section 6. Scenario

2 is instead based on the underreporting percentage of deficiencies the police did not recognize as the actual accident cause from the GIDAS evaluation as shown above/in section 6.

The sensitivity analysis shows the change in the benefit-cost ratio if the assumed underreporting percentage of deficiencies the police did not recognize as the actual accident cause is one-fourth higher or lower.

Benefit-cost ratio (underreporting percentage of techn. deficiencies)	**Maximum scenario 2**	**Work scenario 2**
Benefit-cost ratio with 25% lower underreporting	0.18	0.05
Benefit-cost ratio with 25% higher underreporting	0.28	0.07

Figure 4: Benefit-cost ratio with fewer unrecognized technical deficiencies in the official statistics

If the underreporting percentage is not taken into account, the calculation yields the following results:

Benefit-cost ratio (without underreporting percentage)	**Maximum scenario 1**	**Maximum scenario 2**	**Work scenario 1**	**Work scenario 2**
Benefit resulting from prevented accident costs	€ 94,473,542	€ 94,473,542	€ 58,291,769	€ 58,291,769
Additional costs resulting from the annual HU	€ 1,005,249,466	€ 1,005,249,466	€ 1,005,249,466	€ 1,005,249,466
Benefit-cost ratio	0.09	0.09	0.06	0.06

Figure 5: Benefit-cost ratio without underreporting percentage

If, in contrast, the original model including the underreporting percentage assumptions is used again and, instead of the weighted mean values of the prices of the inspection organizations and the GebOSt, only the GebOSt fee range for the vehicle inspection agencies is used as a basis, the costs of the HU decrease considerably. The reason for this is that the inspection organizations can charge higher prices. While the inspection organizations of a provider are entitled to perform a HU, the vehicle inspection agencies are obliged to do so. As shown in Figure 6, the change in the benefit-cost ratio would be small, even in the maximum scenario.

Benefit-cost ratio (GebOSt)	**Maximum scenario 1**	**Maximum scenario 2**	**Work scenario 1**	**Work scenario 2**
Benefit resulting from prevented accident costs	€ 302,214,132	€ 220,962,124	€ 73,382,751	€ 56,835,090
Additional costs resulting from the annual HU	€ 674,084,166	€ 674,084,166	€ 674,084,166	€ 674,084,166
Benefit-cost ratio	0.45	0.33	0.11	0.08

Figure 6: Benefit-cost ratio with prices exclusively in accordance with GebOSt

If losses in wealth creation were taken into account, the benefit-cost ratio would fall considerably and the inclusion of more precise data would result in even greater losses in wealth creation. The extent to which losses in wealth creation actually occur is unknown due to a lack of data.

Benefit-cost ratio (losses in wealth creation)	**Maximum scenario 1**	**Maximum scenario 2**	**Work scenario 1**	**Work scenario 2**
Benefit resulting from prevented accident costs	€ 302,214,132	€ 220,962,124	€ 73,382,751	€ 56,835,090
Additional costs resulting from the annual HU	€ 1,005,249,466	€ 1,005,249,466	€ 1,005,249,466	€ 1,005,249,466

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Loss in wealth creation resulting from the annual HU	€ 336,030,125	€ 336,030,125	€ 336,030,125	€ 336,030,125
Benefit-cost ratio	0.23	0.16	0.05	0.04

Figure 7: Benefit-cost ratio with losses in wealth creation

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