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Technical Inspection of Vehicles in Uzbekistan

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Abstract: The article analyzes the procedure for determining the technical inspection interval depending on the vehicle's purpose, owner and age. A method is proposed for digitally recording diagnostic results and for separating the primary inspection from a repeat visit. Between 2021 and 2025, the number of registered vehicles increased by 44.8 percent, while the number of people killed in road traffic accidents per 10,000 vehicles fell from 6.3 to 4.0. Because inspection results and accident records are not linked, the independent effect of inspection on this change cannot be determined.

Keywords — mandatory technical inspection, brake test stand, diagnostics, vehicle fleet, repeat inspection, road traffic safety.

Introduction and Research Method

A technical inspection station answers two questions. When must this vehicle undergo inspection? Which measurement confirms the condition found during the check? To answer the first question, paragraphs 5–6 of the Regulation were used as the basis; for the second, diagnostic equipment appropriate to the vehicle type [1–3].

Three types of evidence were distinguished for the analysis. Regulatory documents define the inspection procedure, open statistics show the change in the fleet and in accidents, and a systematic scientific review sets the limits for interpreting observational results [1–6].

Determining the Inspection Interval

First, the vehicle's purpose is checked. For example, if of two passenger cars manufactured in the same year one is used for personal needs and the other for commercial passenger transport, their inspection intervals differ [1].

Table 1. Inspection intervals under paragraph 5 of the Regulation [1]

Vehicle or condition of use	Inspection interval
Passenger cars carrying passengers on a commercial basis, buses, trolleybuses, trams; trucks equipped for regular carriage of people with at least 8 seats besides the driver's; vehicles adapted for special, oversized, heavy and dangerous loads, and their trailers	Twice a year

Vehicles of legal entities, and categories M2, M3, N and O of individuals (except the first row)	Including the 6th year — once every two years; over 6 years — every year
Categories M1 and L of individuals (except the first row)	Up to and including the 10th year — voluntary; 11–14 years — once every two years; from 15 years — every year
Trailer	Within the period set for the towing vehicle
Vehicle fitted with an STG-3 gas cylinder, if not included in groups “a”, “b”, “v” of paragraph 5	Once every three years

Example of Determining the Interval

A 12-year-old M1 car used for personal needs undergoes inspection once every two years. If an M1 car of the same age is used as a taxi, the condition of commercial passenger transport prevails. Its first inspection is carried out from 1 March to 30 June, and the second from 1 September to 31 October

Assessing Technical Condition with Instruments

Table 2. Object of inspection and diagnostic means [1]

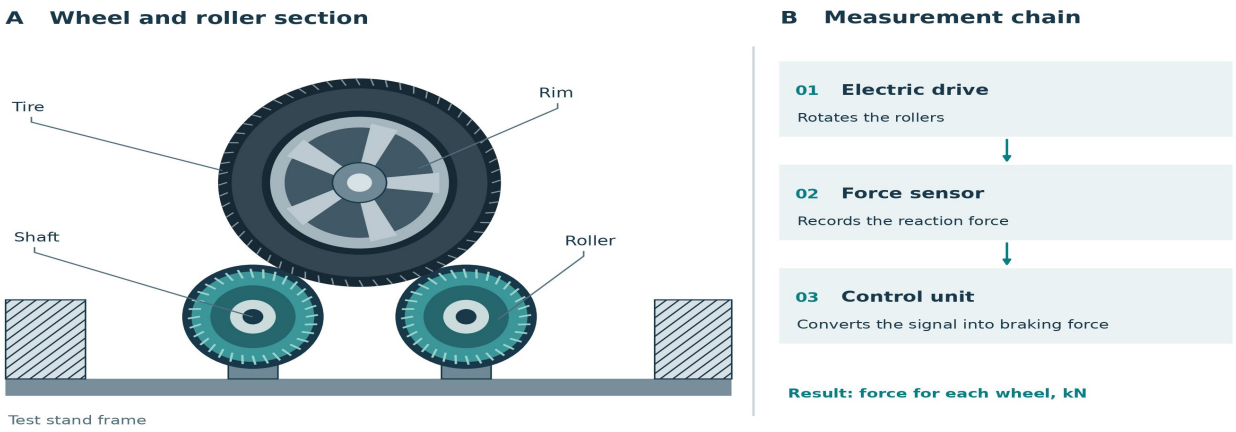
System	**Control method or equipment**
Brake system	Diagnostic equipment for the brake system and its electronics; checking pressure and leak-tightness in pneumatic and pneumohydraulic systems; braking path for vehicles with automatic control
Steering and suspension	Device for measuring play in the steering; test stand for checking play in steering and suspension components
Coupling device	Device for checking the clamping force of the coupling mechanism
Lighting	Instrument for checking the luminous intensity and direction of lamps
Tires	Tire diagnostic equipment
Windows	Light transmittance meter
Exhaust gases	Gas analyzer for gasoline engines; smoke meter for diesel engines
Engine and noise	Meter for rotation speed and oil temperature; noise meter
Electric vehicles	Instruments for checking battery voltage and current and the condition of wiring; diagnostic software
Gas cylinder systems	Pressure testing of STG (LPG)/SNG (CNG)/mixed-fuel systems (tightness and reliability of connections)
Identification	Camera system recognizing license plates; conformity of unit numbers with documents

If the inspection report states, together with the instrument name, which wheel, axle or system was checked, the result of the next inspection can be compared with the initial measurement. For example, adding to the entry “defect in the brake” the force values at the left and right wheels of the front axle and their unit shows the mechanic which side must be checked.

Brake Diagnostics and Digital Recording

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Figure 1. Side section of a roller brake test



stand and the measurement chain. The section shows one wheel. The diagram is not to scale.

Reading the Measurement Result

In a conditional example, a braking force of 2.4 kN was recorded at the left wheel and 2.0 kN at the right wheel. The difference is 0.4 kN. Relative to the larger value, the discrepancy is (2.4 − 2.0) / 2.4 × 100 = 16.7 percent. Both initial values are kept in the report. To draw a conclusion on conformity, comparison with the norm applicable to the vehicle category and the test method used is required.

Proposal for a Digital Report

Under the current procedure, inspection data are entered into the “Technical Inspection” module [1, 2]. For analysis, it is proposed to link each measurement with the inspection number, date, equipment identifier, axle checked, unit of measurement and criterion applied. In this way, during a repeat visit it becomes visible exactly which defect has been eliminated.

For example, when a vehicle returns after repair, the initial and repeat visits are recorded separately and linked to a single inspection case. At the end of the month they are not counted as two independent vehicles.

Vehicle Fleet and Safety Indicators

Table 3. Indicators for Uzbekistan at the beginning and end of the period [6]

Indicator	**2021**	**2025**	**Change**
Population, persons	35,271,276	38,232,254	+8.4%
Registered vehicles, units	3,821,869	5,532,396	+44.8%
Vehicles per 1,000 population, units	108.4	144.7	+33.5%
Deaths per 100,000 population, persons	6.9	5.7	−17.4%
Deaths per 10,000 vehicles, persons	6.3	4.0	−36.5%

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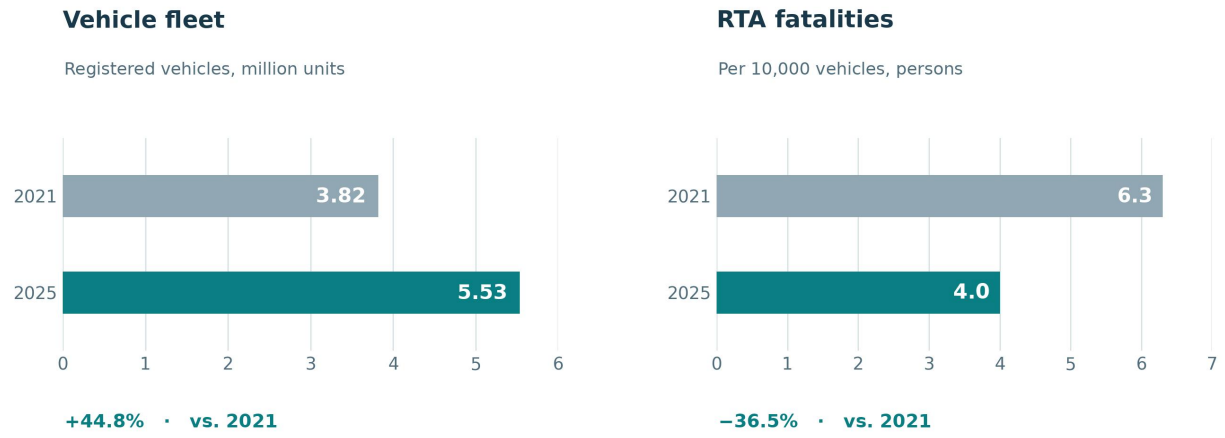


Figure 2. Comparison of 2021 and 2025. Each chart uses its own unit of measurement [6].

The relative indicator was calculated by the formula R = (D / N) × 10,000. Here D is the number of people killed in RTAs during the year, and N is the number of registered vehicles. For 2025: 2,188 / 5,532,396 × 10,000 ≈ 3.95, i.e., 4.0 people when rounded to one decimal place [6].

Fleet size does not fully express the actual load on an inspection station. A taxi that comes twice a year and a privately owned car on the voluntary schedule are each counted as one unit in the fleet. To plan station capacity, the vehicles expected to arrive by category and the repeat visits must be calculated separately.

Fleet statiAssessing Inspection Quality and Conclusion

stics show the change at the country level. To assess the quality of work of an individual station, it is proposed to calculate the following three indicators for the same reporting period and vehicle category.

Indicator	**Basis of calculation**
Defect detection at primary inspection	Primary inspections in which a defect was found / total primary inspections
Defect elimination at revisit	Vehicles whose initial defect was eliminated / vehicles rechecked for the same defect
Non-conformity in control	Cases where the conclusion changed at control inspection / cases rechecked in control

In a conditional example, over a month, a defect was found in 36 of 240 primary inspections. Of these, 30 came back, and in 27 the elimination of the initial defect was confirmed. The share of primary detection is 15 percent, and the share of elimination among those who returned is 90 percent. The technical condition of the six vehicles that did not return remains unknown.

Interpreting the Results

If mainly suspicious cases are selected for control inspection, the share of non-conformity found does not represent the work of all inspection stations. When comparing stations, the method of selection for control, and the age and purpose of the vehicles, must be indicated together. A station serving older vehicles may record a higher share of defects.

Conclusion

Between 2021 and 2025, the death rate per 10,000 vehicles decreased. To assess the contribution of periodic inspection to this change, records are needed on the vehicle's latest inspection date, the defect found, mileage and any subsequent accident. An international systematic review also shows that the available observational studies are insufficient to draw causal conclusions [4].

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