

# TESTING AND DIDACTING EQUIPMENT

## Age structure for passenger cars moving on roads of the selected area of the Silesian Voivodeship

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**Keywords:** Transport, Vehicles, Vehicles, age, condition

**ABSTRACT:**

The article analyses the anniversaries, meter indications and car brand in the 2625 group of cars which have been subject to technical tests since the beginning of 2020. The obtained results were compared to average values for the entire Poland.

## Struktura wiekowa samochodów osobowych poruszających się po drogach wybranego obszaru województwa śląskiego

**Słowa kluczowe:** transport, samochody, pojazdy, wiek, stan techniczny

**STRESZCZENIE:**

W artykule przeanalizowano roczniki, wskazania liczników oraz marki samochodów w grupie 2625 samochodów, które od początku 2020 roku poddane zostały badaniom technicznym. Uzyskane wyniki odniesiono do wartości średnich dla całej Polski.

## 1. INTRODUCTION

According to the published [1] data on the roads of the Silesian Voivodeship, 2,500,000 cars were moved in 2019 – in Poland this is a large amount, since the only region with a higher number of cars is the Mazovia Voivodeship.

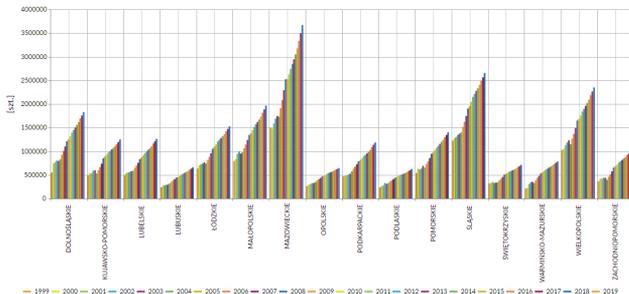


Figure 1 Number of cars in individual provinces of Poland

An important aspect with such a large number of cars is their age structure, which unquestionably affects the emission of pollutants to the atmosphere, as well as one of the road safety components. Another circumstance which constitutes a potential technical condition affecting the environmental load of the course. It is not new that car components (including environmental elements) are characterised by a certain reliability of the often determined number of kilometres travelled. It is problematic to determine the exact value of the average car mileage in Poland (depending on e.g. its age). This problem is due to a number of circumstances. The registration of the car mileage in Poland takes place, among others, during periodic vehicle technical inspections. The waveforms recorded by the testing inspector are transmitted to the Central Vehicle and Driver Register (CEPiK) – and so recorded are official data. It should be noted that in 2018 63% of all cars registered in Poland were imported cars [2]. The data of these vehicles have been entered into the official system during the first technical examination carried out in Poland.

However, other sources indicate that as many 85% [3] of cars brought to Poland may have false mileage indications – these indications are probably understated in order to increase the value of the car, for example. The above circumstances make it problematic to determine the real structure of the traffic of trucks moving on Polish roads.

The article attempted to compare the available data on the age and mileage of cars moving on

the roads of the Silesian Voivodeship with the data recorded since the beginning of 2020.

## 2. TESTS

The tests were carried out at the Basic Vehicle Inspection Station located in a typical industrial location in Gliwicki county. The anniversaries of car production, their waveforms, type and brand of the vehicle as well as the result of the technical inspection were recorded. The observations were conducted from 01.2020 to 15.06.2020 and related to each vehicle in which the technical test was conducted. 2936 vehicles (including 2625 passenger cars) were tested during the period described.

The results were recorded in the PRO-Substation computer program, where the analysis was carried out and reports were generated.

Below is a graph showing the number of tested cars depending on their anniversary.

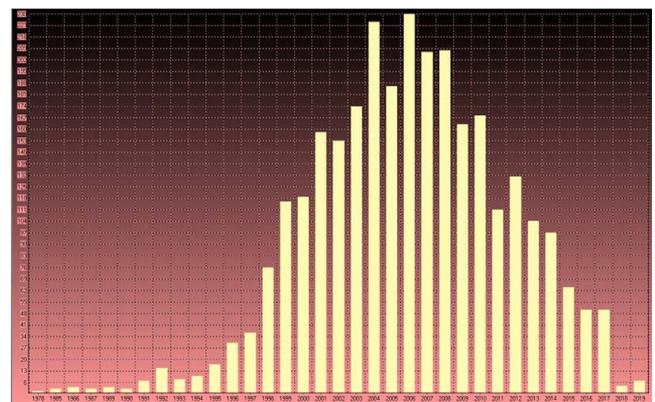


Figure 2 Anniversaries of tested vehicles

Among the tested copies, the largest number included cars manufactured in 2006 – represented 7.83% of all tested vehicles. Further analyses carried out in this article ignore cars manufactured after 2018 due to the fact that such cars, unless equipped with additional equipment (e.g. LPG gas supply systems) or do not perform special functions in accordance with the applicable regulations, must appear on the first technical test only in 2021. Based on the collected results, it was possible to determine the average age of the analysed cars, i.e. 14.021. Therefore, the average age of the tested vehicle group was 21.08% higher than the average age of the car in Poland of 11 years and 7 months [4].

The next figure that was recorded during the tests was the mileage of cars. The largest recorded

mileage of the car was 782 thousand km (1 case), the smallest recorded mileage from the analysed car anniversaries (until 2018 – for the reasons described above) was the mileage of 2 thousand km recorded for 3 cars. A graph showing the recorded values of waveforms (X axis) in relation to the number of occurrences (Y axis) is presented below.

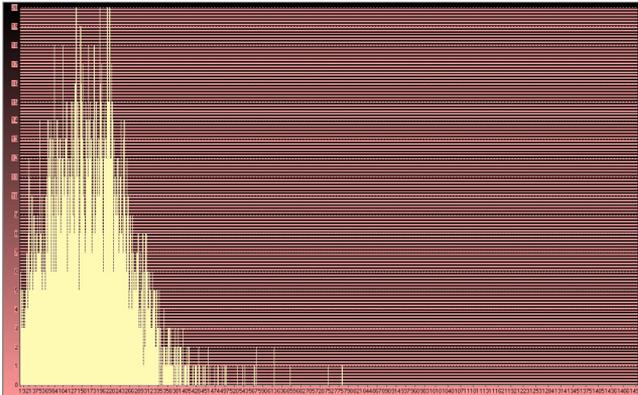


Figure 3 Runs of the tested vehicles

The most frequent waveform was approx. 230 thousand km. This value was recorded for 145 vehicles (4.85% of all tested vehicles). The collected data allowed to determine the average mileage for the entire tested vehicle group – 173,250 km. This was 11.64% lower than the average car mileage in Poland in 2019 of 196,086 km [5].

In addition, the vehicle brands appearing on the technical test were analysed. The summary of results is shown in the graph below. The X axis shows the vehicle brands, Y-axis shows the frequency of occurrences of the brand.

From the information gathered, it was possible to identify the brands most commonly appearing in the technical survey. The data are shown below.

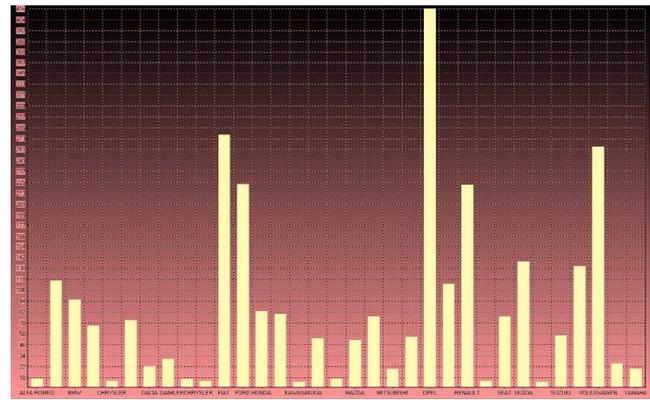


Figure 4 Brands of tested vehicles

From the information gathered about the vehicle brands, the general information that most of the cars tested were imported cars can be read out. This conclusion could be drawn from comparing the results obtained during the tests of car brands with the results of sales of individual new car brands in Poland. Publicly available information indicates that the brands sold most frequently are Skoda, Toyota, Volkswagen [6].

### 3. CONCLUSIONS

- 1) The average age of the car in the tested group is 14.021. It was therefore 21.08% higher than the average age of the car in Poland of 11 years and 7 months.
- 2) The average mileage of the car in the tested vehicle group is 173,250 km. This is 11.64% lower than the average car mileage in Poland in 2019 of 196,086 km.
- 3) It was clear from the data collected during the survey on vehicle brands that the major share of the tested cars was imported cars than acquired as new cars at Polish dealerships.

Table 4 Brands of cars most commonly used in the test

Make	Number of instances	Participation in all tested vehicles
OPEL	416	14,22%
VW	265	9,06%
FIAT	245	8,38%
RENAULT	223	7,62%
FORD	224	7,61%
SKODA	140	4,79%
TOIOTA	132	4,51%

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