Light goods vehicles 2022 – Methodology report

Report: 2023:17

Date: May 25, 2023

TRANSPORT ANALYSIS

Content

1   Introductory remarks

Light goods vehicles 2022 is the first Swedish full-scale pilot collection of data to produce statistics on traffic and transport with light goods vehicles (LGVs). Data collection was carried out with questionnaires addressed to owners of 10,000 light goods vehicles. This document is a methodological report that describes how the collection and production of statistics took place. The statistics are presented in tables (Excel) and in a descriptive report. Both are published on the website of Transport Analysis www.trafa.se/en/light-goods-vehicles/.

In this methodology report, we explain how the collection of questionnaire data and the production of statistics were carried out. Chapter 2 describes the sampling frame, population, and sample for the questionnaire data collection. Chapter 3 describes our questionnaire, how we processed the responses, the response rate, and the burden on respondents. Chapter 4 describes how statistics were produced from the questionnaire responses. A paper version of the questionnaire is shown in Appendix A and a web version in Appendix B.

2   Population and sample

Use of registers

The sampling frame for the survey collection is all company-owned light goods vehicles in traffic in the Swedish Transport Agency's road traffic register, with the exception of certain vehicles (see below). To find the light goods vehicles we wanted to direct the survey to, we have used the following registers:

- The road traffic register of the Swedish Transport Agncy

    - www.transportstyrelsen.se/en/road

- Vehicle mileage calculated from odometer readings from inspection sessions

    - www.trafa.se/en/road-traffic/driving-distances-with-swedish-registered-vehicles

- The statistics business register of Statistics Sweden

    - www.scb.se/en/finding-statistics/statistics-by-subject-area/business-activities/structure-of-the-business-sector/statistical-business-register

- Telephone number of a private operator (telephone number for preparatory calls and reminders to non-responders).

Population

We wanted our statistics to focus on light goods vehicles (LGVs) used for freight transport and/or service (carpentry, plumbing, etc.). The sampling frame for the questionnaire survey was all Swedish-registered LGVs in traffic that were owned by "companies", which in this case are legal entities or sole traders. In order to get a more focused population of LGVs for the survey, we have excluded,

- LGVs 30 years and older, i.e. vintage vehicles,

- specialised vehicles such as fire trucks, ambulances and mobile cranes, and

- certain sectors that do not use the vehicles themselves (rental and leasing companies).

The survey was distributed to respondents in the four quarters of 2022, and we defined a new population frame for each quarter. It was necessary to draw the population frame 1.5 months before the start of each quarter. This was in order to have time to match data on LGVs with other registers, match on telephone numbers, send out surveys well in advance of the measurement day, and so on.

Table 1. Sampling frame, population, and sample for the survey collection, per quarter 2022.

Quarter	Frame defined in the register, date	Number of LGVs in the frame, approx.	Number of LGVs in the population, approx.	Number of LGVs in the sample
Quarter 1 2022	November 15, 2021	462,000	412,000	2,500
Quarter 2 2022	February 15, 2022	453,000	420,000	2,500
Quarter 3 2022	May 15, 2022	456,000	432,000	2,500
Quarter 4 2022	August 15, 2022	458,000	413,000	2,500
Year 2022	**-**	**457,000 (average)**	**419,000 (average)**	**10,000**

The sampling frame averaged around 457,000 LGVs over the four quarters, while the population was around 419,000 vehicles, i.e. about 8 per cent less than the sampling frame. The fact that the population is so much smaller than the sampling frame is explained by the net of under- and overcoverage as described in the next section.

Undercoverage and overcoverage

In a survey, "lead times" necessarily arise, causing differences between the defined frame and the population. In our data collection, it took a minimum of 1.5 months and a maximum of 4.5 months from the date when the frame was defined from the register to the specific measurement date of the respondent (Table 1). The differences that occur between the frame and the population are in the form of undercoverage and overcoverage, with overcoverage being greater than undercoverage.

Undercoverage

Undercoverage refers to the vehicles that should have been included in the sampling frame and the population but that were missing from the population and thus did not receive a survey. Vehicles that have been added between frame construction and the measurement date are those that have recently been newly registered and those that were privately owned when the frame was defined but were sold to a company before the measurement date.

Overcoverage

Overcoverage refers to vehicles that were included in the frame but that would not be included in the population on the day of measurement and thus should not have received a survey. This applies to vehicles that were company-owned but sold to private individuals, those that were discontinued on the day of measurement or that had been scrapped/exported, and rental cars or specialised vehicles that were not excluded from the frame. For example, it was not possible to identify some work vehicles and some rental cars by their body code or industry code. The overcoverage also includes some vehicles being used under operational leasing (where the lessee is unknown to us) that we were not able to exclude from the sampling frame.

Stratification

The main purpose of stratification in this survey is to have a homogenising effect on the survey variables freight weight and mileage. Since no survey on LGVs has been carried out before, there is no data on freight weight, but there is register-based information on mileage. A further purpose of the stratification is to ensure the possibility of separate reporting of results for different reporting groups. The sample was stratified on four dimensions according to Table 2 below. With the chosen categorisations of the stratification variables, 2×3×3×3=54 strata were obtained. To distinguish Goods/Services, we have used industry codes (SNI) according to Table 3.

Table 2. Stratification variables and their categorisations.

Variable	Categories
Goods/Services (industry)	Goods
	Services/crafts
Vehicle body	Flatbed
	Van
	Other
Vehicle kms per year	< 10,000 kms
	10,000 – 19,990 kms
	20,000+ kms
Maximum load capacity	< 600 kgs
	600 - 999 kgs
	1,000+ kgs

Table 3. Categorisation into goods or services based on the industry in which the company operates.

Category	SNI1	Explanation
Goods	A	Agriculture, forestry and fishing
Goods	B	Mining and quarrying
Goods	C	Manufacturing
Goods	G	Wholesale and retail trade; repair of motor vehicles and motorcycles
Goods	H	Transportation and storage
Goods	I	Accommodation and food service activities
Goods	N	Administrative and support service activities
Service	-	Missing
Service	D	Electricity, gas, steam and air conditioning supply
Service	E	Water supply; sewerage, waste management and remediation activities
Service	F	Construction
Service	J	Information and communication
Service	K	Financial and insurance activities
Service	L	Real estate activities
Service	M	Professional, scientific and technical activities
Service	O	Public administration and defence; compulsory social security
Service	P	Education
Service	Q	Human health and social work activities
Service	R	Arts, entertainment and recreation
Service	S	Other service activities

Sample and day of measurement

The companies, i.e. the owners of the total of 10,000 light goods vehicles, each received a questionnaire for a specific measurement day during the year. The measurement days were evenly distributed over the 365 days of 2022, i.e. both weekdays and weekends. This gave 27 or 28 LGVs each day in 2022, adding up to a total of 10,000 vehicles.

3   Questionnaire, respondents, and response rate

Designing a simple questionnaire

We wanted to make the questionnaire as simple as possible to give the impression that it would not be too difficult to answer and to encourage a relatively high response rate. Responding to the questionnaire was voluntary.

The paper questionnaire fits on four pages and the language is simple. We consulted a language expert, who significantly reduced the word count from our initial drafts and also suggested a clearer layout. A paper questionnaire was sent to all respondents. The questionnaire also included a reference to a web page with the respondent's ID and password, giving them the option to answer the questionnaire digitally.

When constructing the questions, we used our own small pilot survey of just over 200 light goods vehicles conducted in 2018 and the conclusions drawn from it. We also used other countries' LGV questionnaires as models, notably from the Netherlands and Norway. The paper questionnaire is shown in Appendix A, and the online questionnaire is in Appendix B.

Checking questionnaire responses

Of course, the paper questionnaire does not allow for logical checks or warnings if extremely high/low values are given. In the web survey, no logical checks (for consistency between questions) were added.

Limitations on how to respond in an online survey can create irritation/frustration for respondents. In this full-scale pilot collection, we wanted to allow respondents to answer relatively freely with few restrictions in the form of logic checks. Thus, illogical/inconsistent answers may have been given; for example, a respondent may have indicated that the LGV was used for Crafts and services with goods (question 3) and, later, that it was loaded with 0 kg of goods (question 5), even though they had previously indicated "with goods".

Below are examples of three questions that were mandatory – kilometres driven, goods loaded (in kg), and number of stops – and the limitations/warnings made for these in the web survey. All three had soft controls, i.e. after a warning, the respondent could still enter a relatively extreme answer.

Question 4 (kilometres driven): Indicating the number of kilometres driven was mandatory. The following checks were in place:

o The data could not be negative.

o It was possible to answer with decimals (both points and commas as decimal separators).

o If the stated number of kilometres was > 2,000, a warning was issued saying "The number of kilometres driven on the day of the survey is unusually high". This was a soft check.

Question 5a (goods loaded, in kg): Providing information on the weight of the goods was mandatory. The following checks were available:

o If no answer was given, a prompt appeared: "Missing data. If you did not load any goods, enter 0 kg."

o The answer could not be negative.

o It was possible to answer with decimals (both points and commas as decimal separators).

o If the stated weight of goods was > 10,000, a warning came up saying "The weight of goods loaded during the measurement day is unusually high". This was a soft check.

Question 6 (number of stops): Indicating the number of stops was mandatory. If the number of stops was > 100, there was a warning: "The number of stops is unusually high." This was a soft check.

Some respondents completed both the online and paper versions of the questionnaire, with different sets of answers. We reviewed responses that were inconsistent and tried to resolve them by looking at the industry and company's activities, vehicle characteristics, mileage, and other available information.

Response rate

The response rate was 47 per cent for the whole year (Table 4). Of those who responded to the questionnaire and where the LGV was used on the day of measurement (i.e. not stationary), 31 per cent responded to the paper questionnaire, 60 per cent to the web questionnaire, and the remaining 9 per cent by telephone. Those who responded by telephone were respondents who called the support centre, where it was easiest to receive answers directly during the call.

The response rate was higher in the first and fourth quarters, when we put more resources into phone calls before the survey was sent out to prepare the respondents (Quarter 1), as well as extended phone reminders to those who did not respond within a certain time frame (Quarter 4). Calls made before and/or after the survey was sent out were obviously effective. Of those who received a reminder by phone, almost 50 per cent later responded to the survey.

The response rate was lowest in Quarter 3 and lowest in June (36 per cent, not shown in the table), which is probably explained by the holiday season.

Table 4. Number of responses for different modes of response and response rate in per cent.

Quarter	Paper	Web	Phone	Standstill	Non-response	Response rate %	Number in sample
1	115	374	15	686	1,190	47	2,500
2	105	357	55	553	1,070	50	2,500
3	113	308	17	566	1,004	44	2,500
4	163	313	45	686	1,207	41	2,500
Total	496	1352	132	2,491	4,471	51	10,000

Note: The response rate is calculated as (number of responses received)/(number of responses received + non-response). In addition, there is over-coverage, which means that the number of responses received + non-responses does not add up to 2,500 per quarter.

Respondent burden/load

The last question of the questionnaire (question 7) concerns the time taken to answer the questions, including the time taken to collect the data (from colleagues, registers, etc.).

Table 5 shows the time taken to answer the questionnaire. It shows that the median time was about 4 minutes. P90 = 10 minutes means that 90 per cent of all respondents completed the survey in 10 minutes or less. The average time to complete the survey was 6 minutes.

Table 5. Time taken to complete the survey.

Quarter	P10	Q1	Median	Q3	P90	Mean	No of responses to the question	No of respondents
1	1	2	4	5	10	5	995	1,146
2	1	2	4	5	10	6	993	1,036
3	1	2	3	5	10	5	886	982
4	1	2	4	5	10	7	998	1,158
Total	1	2	4	5	10	6	3,872	4,322

Note: P10 and P90 are percentiles for 10 and 90 per cent respectively. Q1 and Q3 are quartile 1 and quartile 3, i.e. 25 and 75 per cent respectively.

There are 4,322 respondents to the survey, of which 3,872 responded to the question on time spent. If we assume that the time spent by those who did not respond to the question is equivalent to those who did respond to it, the total time spent on responding to the survey can be calculated as 4,322×6=25,932 minutes. This corresponds to about 430 hours or about a quarter of a year's labour. Assuming SEK 965 per hour for responding[1], this means a cost to the respondents of just above SEK 410,000 (approximately 41,000 Euros).

---

[1] According to Statistics Sweden (see Official statistics of Sweden 2022, part 1. Annual Report, Official statistics of Sweden 2022, part 1. Annual Report (scb.se))

4 Statistics based on the questionnaire

Statistics have been scaled up to population levels

All measures in the tables in the Excel appendix have been scaled up to population levels. The statistics thus represent all light goods vehicles in the population, i.e. all company-owned LGVs excluding those older than 30 years, specialised vehicles, and rental vehicles.

The statistics produced from the survey data are published in an Excel appendix and described in a report, both of which are published on the Transport Analysis website (www.trafa.se/en/light-goods-vehicles/). They consist of totals and average values for all LGVs and different subgroups. The statistics are published for the following subgroups, and how industries and commodity groups are defined is described in the Excel appendix.

- Hire or reward / On own account
- Industries
- Main commodity group
- Geographical area of use (Greater Stockholm, Greater Gothenburg, Greater Malmö, and Rest of the country)
- Quarter
- Part of the week, i.e. on weekdays (Monday to Friday) and weekends (Saturday and Sunday)

Definition of primary use of an LGV

In the questionnaire, we asked about the primary use of the LGV on the day of the survey, i.e. what was the vehicle mainly used for (question 3). The alternatives we captured are as follows, where the longer description comes from the question in the questionnaire.

- **Distribution transport**: Transport of goods or commodities with several stops for loading and unloading along the way, such as distribution rounds or collection rounds
- **Line haul**: Transport of goods or commodities, where the entire load was carried directly from one place to another; one or more such trips may be made during the measurement day
- **Crafts and services with goods**: Craft or service vehicle with goods or merchandise which would be used or installed in the work – materials, white goods, spare parts, etc.
- **Crafts and services without goods**: Craft or service vehicle without goods or merchandise – only tools or machinery
- **Agricultural and forestry use**
- **Other** (e.g. private errands)

However, the option Agriculture and forestry use was not included in the questionnaire. When the questionnaires were processed, it turned out that it was difficult for respondents in agriculture and forestry to choose one of the options in question 3 of the questionnaire. We

have therefore retrospectively added this type of use and we have simply assumed that companies with SNI codes 01, 02, and 03 or that, in the response "Other" in the free text stated "forestry", "agriculture", "farming" or similar, have used their LGV in their operations. It seemed most fair to do so because this sector has traffic and transport that does not really fit into the other alternatives. In addition, agriculture and forestry is the second-largest owner industry of LGVs, so it feels important to ensure that this industry is visible in the statistics.

Tonne-kilometres

In the survey, we only asked how far the car was driven in kilometres (question 4) and the total weight loaded during the day (question 5). In other words, we do not know where different quantities were loaded and unloaded and so we do not know the true transport work. Therefore, the transport work in tonne-kilometres must be estimated.

- Answer option 1 is distribution

- Answer option 2 is line haul.

- Answer option 3 is crafts/services with goods

- Answer option 4 is crafts/services without goods

- Answer option 5 is other types of transport (can be with or without goods)

3. Vad användes lastbilen till, i huvudsak, under mätdagen?

Välj **ett** alternativ – det som var den **längsta sträckan** som kördes under dagen.

För godstransport eller varutransport

☐ Transport av gods eller varor, med flera stopp för lastning och lossning längs vägen, till exempel distributionsrundor eller uppsamlingsrundor.

☐ Transport av gods eller varor, där hela lasten fraktades direkt från en plats till en annan. En eller flera sådana turer kan göras under mätdagen.

Som hantverksbil eller servicebil

☐ Hantverksbil eller servicebil, **med** gods eller varor, som skulle användas eller installeras i arbetet – material, vitvaror, reservdelar etc.

☐ Hantverksbil eller servicebil, **utan** gods eller varor – bara eventuella verktyg eller maskiner.

☐ **Annat, nämligen** _____

Figure 1. Question 3 in the questionnaire for light goods vehicles (available in Swedish only, a translation can be found in Appendix A).

Distribution (D/U rounds)

Distribution can consist of both distribution and collection rounds, here called D/U rounds. The variables we need are the following:

TD = total quantity of goods, is known

ND = number of stops, is known

LM = total distance travelled, is known

NC = number of times new loading takes place (number of "trips" or "rounds"), is unknown

f = 0.9 is a constant factor for how much of the distance travelled is with goods.

The question that arises is:

- Can we estimate NC, the number of times new loading takes place (number of trips), or can we assign NC a standardised value for all LGVs?

For D/U rounds, NC will be assigned the value 1.5 or 2 based on the following analysis and reasoning.

The maximum load capacity for each individual vehicle is known from the frame (register data). If a vehicle has a maximum load capacity of 1,000 kg and has loaded 600 kg of goods during the day, this weight of goods may have been distributed during one (1) round. One aspect to consider is the volume of the goods. For high-density goods (e.g. metal goods), the maximum load capacity is a limiting factor, while for low-density goods (e.g. parcels), the volume is a limiting factor. Therefore, in the example, it is possible that 600 kg of goods at 1000 kg maximum load capacity may have been distributed during one round. If the goods are bulky, two rounds may be required to distribute them all. On the other hand, if 1,200 kg of goods are loaded and distributed during the day, at least two rounds are required to distribute them.

Based on this reasoning, we form the following variable for each LGV *i* with a freight weight greater than 0:

$$a_i = \frac{TD \times b}{maxlv} \tag{1}$$

where TD is the weight of the goods with the above designations, and b is a factor that takes into account the relationship between density and volume. If b is set to 2, it is assumed that the goods are of such a nature that when the vehicle is fully loaded in terms of volume, the goods weigh half the maximum load capacity. With the above example, we would numerically obtain:

$$a_i = \frac{600 \times 2}{1000} = 1{,}2$$

This means that since the goods are bulky, 600 kg of goods cannot be distributed in just one round, so two rounds are required. If we apply the factor b=1.5 we get

$$a_i = \frac{600 \times 1.5}{1000} = 0{,}9$$

This means that the volume is not restrictive, and that 600 kg of goods can be distributed in one round. It appears that NC can be assigned to the nearest integer greater than a_i in programming, a function called ceil in many languages is used to assign a decimal number to the nearest higher integer. We therefore assign the number of rounds (NC) as follows:

$$\widehat{NC} = ceil(a_i)$$

We use this sign $\widehat{}$ i.e. $\widehat{NC}$ to emphasise that it is an estimate.

Since different types of goods require different volumes, the analyses have been divided by type of goods. Table 6 shows which value of factor b in (1) that the analyses gave was appropriate to use. It can be mentioned that this procedure introduces some measurement uncertainty for the target variable tonne-kilometres. With other factors, the number of rounds would be different for individual vehicles with the result that tonne-kilometres would be estimated differently.

Table 6. Factor b used in the calculation of the number of rounds for each type of goods.

Type of goods	Factor b
Building materials	2
Food, beverages and tobacco	1,5
Machinery and equipment	1,5
Agricultural and forestry products	1,5
Paper products	1,5
Mail and packages	2
General cargo	2
Other	1,5
No cargo	-

It is possible to carry out a kind of sensitivity analysis by setting b=1 for all types of goods (i.e. all the maximum load capacity can be utilised, the volume is not limiting) to setting, for example, b=5 (which means that only 1/5th of the maximum load capacity can be utilised and that the volume is thus very limiting). However, no such sensitivity analyses have been carried out. To summarise, the following expression is used to calculate the transport work for D/U rounds

$$TonKm_{D/U} = \frac{1}{2}\frac{TD}{\widehat{NC}}(LM \times 0,9)\left(1 + \frac{\widehat{NC}}{ND}\right)$$ (2)

Line haul

The simplest type of line haul is where the LGV is loaded at A, driven to B, unloaded, and returned empty (Figure 2).

Figure 2. Line haul with 1 stop
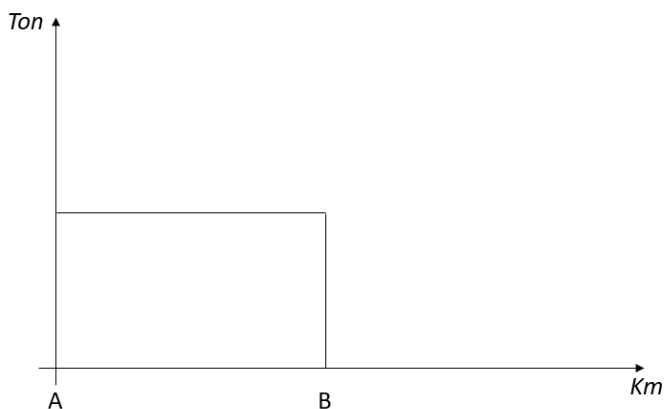
In this case, the LGV is full and empty for the same distance and the transport work is correctly estimated by the formula

$$TonKm_{linje} = \frac{1}{2} \times TD \times LM$$ (3)

The LGV's line haul could of course be more complicated, for example, unloading half the load at one point, driving on and loading more, and then driving on for unloading. Such extended

driving patterns would lead to a factor other than 0.5. But instead of the factor 1/2 in the expression (3), an arbitrary factor c could be used according to c×TD×LM. However, there is no information from the questionnaire indicating what such a factor c could be. Therefore, for line haul, the expression (2) is used to calculate tonne-kilometres. We summarise by reproducing the expression here

$$TonKm_{linje} = \frac{1}{2} \times TD \times LM \qquad (4)$$

Crafts and services with goods

It is difficult to calculate the transport work for a vehicle carrying goods. An example:

- The LGV is parked in the construction company's car park. The day starts with a trip to a timber yard to buy wooden boards. The boards are then transported to a work site and unloaded. Later in the day, the vehicle (without goods) goes to another site to carry out work. Then it goes back to the construction company's car park.

- If a crafts/services LGV has transported goods, we know nothing about the distance the goods have travelled. Some kind of assumption needs to be made here. The reported amount of goods and distance travelled needs to be multiplied by a factor less than 1 according to the following scheme:

- A factor = 0.5: we make the assumption that 50 per cent of the distance was driven with freight.

- A factor = 0.4: we make the assumption that 40 per cent of the distance was driven with freight.

- And so on.

We have data on the number of stops made by these commercial vehicles, but it is unclear how this information should be used here. In consultation between Transport Analysis and Statisticon, it was decided to use a factor of 0.5 for commercial vehicles with goods. This means that the method for calculating transport work for goods vehicles will be the same as for line haul, i.e.

$$TonKm_{hantv\_m\_gods} = TD \times (0.5 \times LM) = \frac{1}{2} TD \times LM \qquad (5)$$

Crafts and services without goods

Tonne-kilometres of these LGVs will be 0.

Other use

Some of those who stated "other use" were carrying goods, and therefore transport work must be calculated. Some respondents who chose this option gave a free text response that makes it possible to identify the type of transport carried out. One possibility is, for this purpose, to classify the free text responses into one of the categories

- D/U round,

- Line haul,

- Crafts and services with goods,

and then use that use area's expression for transport work.

For those who have not provided a free text answer, a decision needs to be made regarding which expression to use for the transport work. It should be mentioned that there are only just under 50 vehicles that have goods among those with use = 5 (Other). We therefore choose to calculate the transport work in the simplest way:

$$TonKm_{annan\_anv} = \frac{1}{2}TD \times LM \qquad (6)$$

Non-responses

Non-response is compensated for by straight expansion within each stratum. Partial non-response is very limited. Where partial non-response occurred, imputations were carried out with the imputation methods as follows:

- **Kilometres driven**: The register-based data on annual mileage was used and divided by the number of days in traffic to give the average daily mileage (in km).

- **Weight of goods**: The median weight of goods was calculated for the four uses of distribution, regular services, crafts and services with goods, and other uses crossed with the eight different commodity codes (with goods). This gives 32 cells of freight weight, and in each cell the median weight was calculated. This median weight was used to impute freight weight for the 30 vehicles with no freight weight.

- **Number of stops**: Only four respondents did not answer the question on the number of stops. Their vehicles were assigned the value 1 for the total number of stops and were categorised as "other

Statistics have not been calibrated

In our annual data collection for heavy goods vehicles, excessive immobilisation is a major problem. Exaggerated standstill means that respondents say more often than is true that their LGV was stationary during the measurement period (one week) in order to avoid answering the questionnaire. We have found that this reported standstill is exaggerated through comparison with the statistics on kilometres driven. Since 2012, a simple standstill survey has been carried out by telephone to a small sample of LGV owners, where the reported standstill percentage is used to weight the statistics of *Light goods vehicles 2022*.

We do not know whether downtime is exaggerated in *Light goods vehicles 2022*. We believe that the problem is considerably less than in our statistics on heavy goods vehicles, because the survey on LGVs is so easy to answer and thus there is less incentive to exaggerate downtime.

We have not calibrated the statistics in *Light goods vehicles 2022* against the statistics of *Vehicle kilometres*, since it is a pilot survey. If statistics on LGVs are to become a recurring publication, calibration should be considered.

However, we have compared the statistics *Vehicle kilometres*, which are based on odometer readings, with the estimated enumerated mileage based on survey data. According to *Light goods vehicles 2022*, company-owned LGVs travelled an average of 12,670 km in 2022 (with a 95 per cent confidence interval of 11,810–13,520 km). According to our statistics on *Vehicle kilometres*, company-owned LGVs travelled an average of 14,960 km in 2022, i.e. 18 per cent farther. To make a very simple calibration, the statistics we present here can be multiplied by 1.18. No calibration has been made in either the statistical tables or the figures in this report.

Leasing

Leasing is complicated to fully measure using data from the road traffic register, which is our source for all our statistics on vehicles. The most common type of leasing – financial leasing – is comparable to a car loan, and for these vehicles the users (lessees) are known and treated as owners in our statistics. However, a growing form of leasing is operational leasing, which is more like a car hire arrangement. For these vehicles, we often only know the lessor (e.g. a financial institution or a bank) and not the lessee. Often these vehicles are not marked as leased in the road traffic register and thus we cannot know how many there are, nor could we reach the users/lessees with our survey. Due to the above circumstance in the road traffic register, we underestimate leasing in our vehicle statistics, although it is unclear by how much. The problem is probably greater for passenger cars, where operational leasing has increased in recent years.

We exclude certain industries based on their primary SNI code (Table 7). These include companies whose primary activity is renting and leasing. This includes, for example, pick-up trucks that are rented to private individuals for moving house.

Table 7. Industries (SNI) excluded from the population.

SNI	Explanation
77110	Renting and leasing of cars and light motor vehicles
77120	Renting and leasing of trucks
45110	Sale of cars and light motor vehicles
45191	Sale of lorries, buses and specialised motor vehicles
45192	Sale of caravans, motor homes, trailers and semi-trailers
85530	Driving school activities
85324	School activities for occupational drivers

For vehicles that are leased (to individuals or companies), there are two different types of leasing:

- Financial leasing, which can be seen as much like a car loan. This is by far the most common form of leasing in Sweden.

- Operational leasing, which can be seen as a long-term rental of a vehicle. This is much less common, but it is a growing form of leasing in Sweden. This type of leasing can be called a few different things, for example, "subscription".

Vehicles leased under financial leasing are registered to the leasing company, such as a construction company or a parcel distributor, i.e. to those who actually use the vehicle. In contrast, vehicles leased under operational leasing are (usually) registered to the lessor, such as a bank or a financial institution. This means that we could not find the actual user of the LGV in cases where the lessor's address was the only one available. We could not expect the lessor to forward the questionnaire to the lessee. These companies have therefore been excluded (Table 7).

We discovered at a late stage that a handful of banks and financial institutions owned a large number of LGVs. This is operational leasing but where the lessor has a completely different industry code than those we anticipated (Table 7). We excluded these financial institutions and their LGVs from the sample.

Appendix A Questionnaire, paper version

The original questionnaire (in Swedish) is attached in the end of this Appendix. Page 1 of the questionnaire includes description of the purpose of the questionnaire, short description of Transport Analysis and our mission, together with a short text on that LGVs are increasing quickly in numbers, but that the knowledge about the use of these vehicles is very limited. The first page also contains web addresses, id and password to the web questionnaire, email addresses to support service handled by the consultant and email and phone number to two employees at Transport Analysis. The questions of the questionnaire are translated to English below.

1.   Where is the LGV usually used?

The LGV with registration number ABC123 is registered in the municipality XXX. Is the vehicle usually used in that municipality?

☐ Yes

☐ No, it is usually used in municipality _____

2.   Was the LGV run on the measurement day YYYYMMDD?

☐ Yes   If yes, continue with question 3.

☐ No   If no, continue with question 2a.

2a. Why was it not run?

☐ The LGV was off road registered or deregistered in the Road Traffic Register.

☐ The LGV was sold.

☐ The vehicle was rented or lent to someone else.

☐ Other (the LGV was being repaired, there was no driver available, vacation, no work that day, etc.).

Proceed to question 7

3. What was the LGV used for, mainly, during the measurement day?

Choose *one* alternative - the one that was the **longest distance** travelled during the day.

Freight transport or goods transport

☐ Transport of cargo or goods, with several stops for loading and unloading along the way, for example distribution rounds or collection rounds.

☐ Transport of cargo or goods, where the entire load was transported directly from one place to another. One or more such trips can be made during the measurement day.

As a craft vehicle or service vehicle

☐ Craft car or service car, with goods or freight, to be used or installed in
the work - materials, appliances, spare parts, etc.

☐ Craft car or service car, without cargo or goods - possibly only tools or machines.

☐ **Other, namely** _____

4. How far was the vehicle driven during the measurement day, in total?

Estimate as close as possible, if you do not know exactly. _____ kms

5. What did the LGV transport?

5a. How many kilos of goods or freight were loaded on the LGV during the measurement day, in total?

Estimate as close as possible, if you do not know exactly. Include the weight of load carriers - pallets, boxes, cages, etc. Do not include on work tools and equipment carried in the LGV to perform the job.

_____ kilos

Example: In the morning, 500 kg is loaded at the terminal. The goods are distributed. After lunch, new load with 600 kg. A total of 1,100 kg was loaded on the vehicle during the day.

5b. What type of goods or freight were transported, mainly, during the measurement day?

Choose <u>one</u> alternative. Choose the one that had the greatest weight in kgs during the day.

☐ Building materials - wood products, pipes, parts, insulation, etc.

☐ Food, beverages and tobacco

☐ Machinery and equipment - appliances, electrical appliances, etc. but not tools or machines used to perform the job

☐ Agricultural or forestry products - animal feed, manure, firewood, soil, etc.

☐ Paper products - newspapers, advertising, books, etc.

☐ Post and packages

☐ General cargo - mixed goods that are transported together

☐ Other, namely _____

☐ No goods and no freight were transported

6. How many stops did the LGV make during the measurement day, in total?

By stop we mean that the vehicle stops at an adress / place, for goods to be loaded or unloaded,
, or to perform work or service.

_____ stops

6a. Where did the LGV stop during the measurement day?

Include stops at your own workplace. Write the number of stops per line.

A private per son's address _   _____ stops

Construction site   _____ stops

Parcel agent or parcel cabinet   _____ stops

Other – your own company, terminal, office, shop, industry, barn or similar   _____ stops

Total number of stops during the day (same amount as in question 6 above)   **_____** *stops*

7. How long did it take to answer the questions?
Include on the time it took to collect the information.
_____ minutes.

8. Other

If we have more questions about the vehicle, who can we contact?

Company / vehicle owner   Contact person
Email   Phone

Do you have something you want to add?

_____
Send the questionnaire in the enclosed envelope. Postage will be paid by us.

Thank you very much for your cooperation!

TRAFIK ANALYS

ENKÄT FÖR

Regnr: ABC123
Mätdag: Onsdag 4 maj 2022

Svara gärna på webben med dator eller mobil, med inloggningsuppgifter eller QR-koden här intill.

www.trafa.se/lastbilar
Id: ABC123
Lösenord: XXXXXXX

Skicka in ifylld enkät helst samma vecka som mätdagen.

Företag

Adress

Postnummer postort

Enkät om lätta lastbilar
Vart nionde fordon i Sverige är en lätt lastbil
– hjälp oss förstå hur de används

Hej!

Vi hoppas att du vill svara på några frågor om hur din lastbil användes, en viss dag. Längst upp ser du vilken lastbil (registreringsnumret) och vilket datum (mätdag) vi har frågor om. Fyll i svaren på de följande sidorna, och skicka till oss i det bifogade kuvertet. Du kan också besvara enkäten på webben, i mobil fungerar också.

Vi som ligger bakom undersökningen är Trafikanalys, en statlig myndighet som har i uppdrag att bland annat ta fram och sprida officiell statistik på transportområdet.

Idag är vart nionde fordon i trafik i Sverige en lätt lastbil (totalvikt max 3,5 ton). De lätta lastbilarna har nästan fördubblats i antal under 2000-talet. Det är framför allt de företagsägda lätta lastbilarna som ökar i antal.

Du får denna enkät för att du är företagare och äger en lätt lastbil. Dina uppgifter kommer att kombineras med uppgifter från ägare till totalt 10 000 lätta lastbilar. Vi kommer att använda

era uppgifter för att ta fram statistik, som presenteras i tabeller och en rapport. Dina svar hanteras med sekretess[1].

Vi har gett Statisticon i uppdrag att genomföra undersökningen. Om du har frågor får du gärna kontakta dem på:

telefon 010-130 80 44 eller
lastbilar@statisticon.se

Du kan även kontakta oss på Trafikanalys som jobbar med detta:

maria.melkersson@trafa.se
telefon 010- 414 42 16

jonas.ingman@trafa.se
telefon 010- 414 42 49

Stort tack för din medverkan!

Maria Melkersson
projektledare

Vi vill nu att du svarar på några frågor om din lätta lastbil, för en speciell dag, i ditt fall [Matdag] (hela dygnet). Fyll gärna i blanketten i slutet av dagen så du minns hur lastbilen användes. Du kan också fylla i på webben, med dator eller mobil.

ENKÄT FÖR
Regnr: ABC123
Mätdag: Onsdag 4 maj 2022

www.trafa.se/lastbilar
Id: ABC123
Lösenord: XXXXXXX

1. Var brukar lastbilen användas?

Den lätta lastbilen [Regnr] är registrerad i [Kommun].
Används bilen oftast där?

☐ Ja.

☐ Nej, den används oftast i _____ kommun.

2. Kördes lastbilen under mätdagen [Matdag]?

☐ Ja.   Om *ja*, fortsätt med fråga **3**.

☐ Nej.   Om *nej*, fortsätt med fråga **2a**.

2a. Varför kördes den inte?

☐ Lastbilen var avställd eller avregistrerad i vägtrafikregistret.

☐ Lastbilen var såld.

☐ Lastbilen var uthyrd eller utlånad till någon annan.

☐ Annat (bilen på reparation, fanns ingen förare, semester, inget arbete den dagen etc.).

} Gå vidare till fråga **7**

3. Vad användes lastbilen till, i huvudsak, under mätdagen?

Välj *ett* alternativ – det som var den *längsta sträckan* som kördes under dagen.

För godstransport eller varutransport

☐ Transport av gods eller varor, med flera stopp för lastning och lossning längs vägen, till exempel distributionsrundor eller uppsamlingsrundor.

☐ Transport av gods eller varor, där hela lasten fraktades direkt från en plats till en annan. En eller flera sådana turer kan göras under mätdagen.

Som hantverksbil eller servicebil

☐ Hantverksbil eller servicebil, **med** gods eller varor, som skulle användas eller installeras i arbetet – material, vitvaror, reservdelar etc.

☐ Hantverksbil eller servicebil, **utan** gods eller varor – bara eventuella verktyg eller maskiner.

☐ **Annat, nämligen** _____

4. Hur långt kördes lastbilen under mätdagen, totalt?

Uppskatta så bra som möjligt, om du inte vet exakt.

☐☐☐☐ km

5. Vad transporterade lastbilen?

5a. Hur många kilo gods eller varor lastades på lastbilen under mätdagen, totalt?

Uppskatta så bra som möjligt, om du inte vet exakt. Räkna med vikten av lastbärare – lastpallar, lådor, burar etc. Räkna *inte* med arbetsverktyg och utrustning som fraktas i bilen för att utföra arbetet.

☐☐☐☐ kg

Exempel: På morgonen lastas 500 kg vid terminalen. Godset distribueras. Efter lunch, ny pålastning med 600 kg. Totalt har då 1 100 kg lastats på lastbilen under dagen.

5b. Vilken typ av gods eller varor transporterades, i huvudsak, under mätdagen?

Välj *ett* alternativ. Välj det som hade **störst vikt** i kg under dagen.

☐ Byggmaterial – trävaror, rör, delar, isolering etc.

☐ Livsmedel, drycker och tobak

☐ Maskiner och utrustning – vitvaror, elektriska apparater etc.
men *inte* verktyg eller maskiner som används för att utföra jobbet

☐ Jordbruksvaror eller skogsbruksvaror – djurfoder, gödsel, ved, jord etc.

☐ Pappersprodukter – tidningar, reklam, böcker etc.

☐ Post och paket

☐ Styckegods – blandat gods som transporteras tillsammans

☐ Annat, nämligen _____

☐ Inget gods och inga varor transporterades

6. Hur många stopp gjorde lastbilen under mätdagen, totalt?

Med stopp menar vi att lastbilen stannar till vid en adress/plats, för att **varor ska lastas på eller av**, eller för att man ska **utföra arbete eller service**.

_____ stopp

6a. Var gjorde lastbilen stopp, under mätdagen?

Räkna även med stopp på den egna arbetsplatsen. Skriv antal stopp per rad.

	Antal	
En privatpersons adress		stopp
Byggarbetsplats		stopp
Paketombud eller paketskåp		stopp
Annan – egna företaget, terminal, kontor, butik, industri, ladugård eller liknande		stopp
Totalt antal stopp under dagen (samma summa som i fråga 6 ovan)		**stopp**

7. Hur lång tid tog det att svara på frågorna?

Räkna med den tid det tog att samla in uppgifterna.

_____ minuter.

8. Övrigt

Om vi har fler frågor om lastbilen, vem kan vi kontakta?

Företag/lastbilsägare	Kontaktperson
E-post	Telefon

Har du något du vill tillägga?

Skicka blanketten i svarskuvertet. Portot betalar vi.

Stort tack för din medverkan!

Ring eller skriv om du har frågor till oss.

Appendix B Questionnaire, web version

TRAFIK ANALYS

Startsida Till enkäten Admin Välkommen Demo 96 Logga ut

Info

Regnr   ZZZ096
Företagsnamn Demo 96

3. Vad användes lastbilen till, i huvudsak, under mätdagen måndag 3 januari 2022?

Välj **ett** alternativ – det som var den **längsta sträckan** som kördes under dagen.

För godstransport eller varutransport
- ● Transport av gods eller varor, med flera stopp för lastning och lossning längs vägen, till exempel distributionsrundor eller uppsamlingsrundor.
- ○ Transport av gods eller varor, där hela lasten fraktades direkt från en plats till en annan. En eller flera sådana turer kan göras under mätdagen.

Som hantverksbil eller servicebil
- ○ Hantverksbil eller servicebil, **med** gods eller varor, som skulle användas eller installeras i arbetet – material, vitvaror, reservdelar etc.
- ○ Hantverksbil eller servicebil, **utan** gods eller varor – bara eventuella verktyg eller maskiner.

Annat, nämligen
- ○
- ○ Ogiltigt svar

Tillbaka Nästa

TRAFIK ANALYS

Startsida Till enkäten Admin Välkommen Demo 96 Logga ut

Info

Regnr   ZZZ096
Företagsnamn Demo 96

4. Hur långt kördes lastbilen under mätdagen måndag 3 januari 2022, totalt?

Uppskatta så bra som möjligt, om du inte vet exakt.

100   km

Tillbaka Nästa

TRAFIK ANALYS

Startsida Till enkäten Admin Välkommen Demo 96 Logga ut

Info

Regnr   ZZZ096
Företagsnamn Demo 96

---

5. Vad transporterade lastbilen?

5a. Hur många kilo gods eller varor lastades på lastbilen under mätdagen måndag 3 januari 2022, totalt?

Uppskatta så bra som möjligt, om du inte vet exakt. Räkna med vikten av lastbärare – lastpallar, lådor, burar etc. Räkna också med godsvikt på eventuellt släp. Räkna **inte** med arbetsverktyg och utrustning som fraktas i bilen för att utföra arbetet.

[100] kg

Exempel: På morgonen lastas 500 kg vid terminalen. Godset distribueras. Efter lunch, ny pålastning med 600 kg. Totalt har då 1100 kg lastats på lastbilen under dagen.

5b. Vilken typ av gods eller varor transporterades, i huvudsak, under mätdagen?

Välj **ett** alternativ. Välj det som hade **störst vikt** i kg under dagen.

○ Byggmaterial – trävaror, rör, delar, isolering etc.
○ Livsmedel, drycker och tobak
○ Maskiner och utrustning – vitvaror, elektriska apparater etc. men **inte** verktyg eller maskiner som används för att utföra jobbet
○ Jordbruksvaror eller skogsbruksvaror – djurfoder, gödsel, ved, jord etc.
○ Pappersprodukter – tidningar, reklam, böcker etc.
● Post och paket
○ Styckegods – blandat gods som transporteras tillsammans
○ Annat, nämligen:

[   ]

○ Inget gods och inga varor transporterades
○ Ogiltigt svar

[Tillbaka] [Nästa]

TRAFIK ANALYS

Startsida Till enkäten Admin Välkommen Demo 96 Logga ut

Info

Regnr   ZZZ096
Företagsnamn Demo 96

---

6. Hur många stopp gjorde lastbilen under mätdagen måndag 3 januari 2022, totalt?

Med stopp menar vi att lastbilen stannar till vid en adress/plats, för att **varor ska lastas på eller av**, eller för att man ska **utföra arbete eller service**.

[10] stopp

6a. Var gjorde lastbilen stopp, under mätdagen?

Räkna även med stopp på den egna arbetsplatsen. Skriv antal stopp per rad.

En privatpersons adress:
[   ] stopp

Byggarbetsplats:
[   ] stopp

Paketombud eller paketskåp:
[8] stopp

Annan – egna företaget, terminal, kontor, butik, industri, ladugård eller liknande:
[2] stopp

Totalt antal stopp under dagen (samma summa som i fråga 6 ovan):
[10] stopp

[Tillbaka] [Nästa]

TRAFIK ANALYS

Info

Regnr   ZZZ096
Företagsnamn Demo 96

7. Hur lång tid tog det att svara på frågorna?

Räkna med den tid det tog att samla in uppgifterna.

| 15 | minuter |

Tillbaka   **Nästa**

TRANSPORT ANALYSIS