

*Data extracted in April 2018
Planned article update: April 2019*

This article describes developments in [passenger car](#) stocks and new registrations in the [European Union \(EU\)](#), focusing in particular on passenger cars powered by '[alternative fuels](#)'.

Overview

Despite an increase over the last years, passenger cars powered by alternative fuels, including hybrid cars, only made up a small share of the fleet of passenger cars in the EU in 2016. This is reflected by the share of cars powered by alternative fuels being low among the newly registered passenger cars.

Overall, the passenger car fleet in almost all of the [EU Member States](#) has grown over the last five years. The highest number of cars per inhabitant was recorded in Luxembourg, followed by Italy, Malta and Finland. In 2016, Poland had by far the highest share of passenger cars older than 20 years, followed by Estonia and Malta.

Preferences with regards to petrol or diesel powered passenger cars vary across the EU Member States; amongst the Member States for which recent data are available, cars with petrol powered engines make up the majority of registered passenger cars in most of the countries; diesel powered passenger cars dominate in only eight Member States. When looking at petrol and diesel engines together, the medium sized engines dominated the passenger car fleet in most EU Member States; however, in Malta, Hungary, Portugal and Romania the smallest engines dominated.

New passenger car registrations

The preferences for whether a new passenger car should be powered by a petrol or diesel engine vary across EU Member States. For the 21 Member States, for which detailed data are available, eleven registered higher petrol share; this changes from the past, when a majority of Member States recorded a higher diesel share.

New passenger cars by type of engine fuel, 2016

	Total	Petrol	Diesel	Alternative energy
Belgium	546 142	256 076	285 653	4 413
Bulgaria	238 877	:	:	:
Czech Republic	257 854	:	:	:
Denmark	222 474	140 317	80 216	:
Germany	3 285 904	1 746 308	1 539 596	65 703
Estonia	23 020	16 592	6 393	35
Ireland	149 763	41 160	105 257	3 346
Greece	106 617	:	:	:
Spain	1 230 104	509 247	715 543	5 314
France	1 984 471	928 357	1 032 695	23 419
Croatia	96 455	20 490	74 421	1 544
Italy	1 848 841	:	:	146 790
Cyprus	27 956	17 590	10 344	22
Latvia	16 768	9 381	7 287	100
Lithuania	139 871	36 296	100 495	3 080
Luxembourg	50 561	:	:	:
Hungary	238 655	122 444	110 271	5 940
Malta	16 712	11 176	5 451	87
Netherlands	382 515	304 645	72 356	5 514
Austria	329 604	136 148	189 139	4 317
Poland	1 361 270	718 969	530 548	111 753
Portugal	272 603	:	:	:
Romania (*)	332 223	148 062	181 809	2 352
Slovenia	64 899	31 429	32 589	881
Slovakia	151 870	:	:	:
Finland	119 000	79 042	39 556	402
Sweden	387 997	177 903	202 383	7 711
United Kingdom (†)	2 665 251	1 390 355	1 264 307	10 589
Iceland	:	:	:	:
Liechtenstein	1 984	951	985	48
Norway	171 633	86 537	56 095	29 001
Switzerland	319 300	188 600	125 600	4 500
Turkey	746 074	271 453	460 829	13 792
Former Yugoslav Republic of Macedonia	30 423	:	:	:

(:) not available.

(*) 2015 data instead of 2016.

(†) Great Britain only.

Source: Eurostat (online data codes: road_eqr_carmot and road_eqr_carpda)



Table 1: New passenger cars by type of engine fuel, 2016 - Source: Eurostat (roadeqrcarmot) and (roadeqrcarpda)

In 2016, the highest shares of petrol powered cars among the new registrations were noted in the Netherlands (79.6 %), Estonia (72.1 %), Malta (66.9 %), Finland (66.4 %), Denmark (63.1 %), Cyprus (62.9 %), Latvia (55.9 %), Germany (53.1%), Poland (52.2 %), the United Kingdom (52.2 %) and Hungary (51.3 %). In contrast, the highest shares of diesel cars among the new passenger cars were recorded in Croatia (77.2 %), Lithuania (71.8 %), Ireland (70.3 %), Spain (58.2 %), Austria (57.4 %), Romania (54.7 %: data 2015), Belgium (52.3 %), Sweden (52.2 %), France (52 %) and Slovenia (50.2 %).

In the EU Member States and EFTA countries for which recent data are available, an increase in the share of new registrations of passenger cars powered by alternative fuels (including hybrids) can generally be observed in the period from 2014 to 2016, although at a low level in most countries. In 2016, the highest share by far of alternative fuels in new registrations could be seen in Poland (8.2%) and Italy (7.9%) and, from the EFTA countries, in Norway (16.9%). Far behind followed Hungary (2.5%), Liechtenstein (2.4%), Ireland and Lithuania (both 2.2 %) and Germany and Sweden with a share of 2.0% of passenger cars with alternative fuels amongst the new registrations. However, for the large majority of Member States, registrations of new passenger cars with alternative fuels made up less than 2 % of the total registrations in 2016.

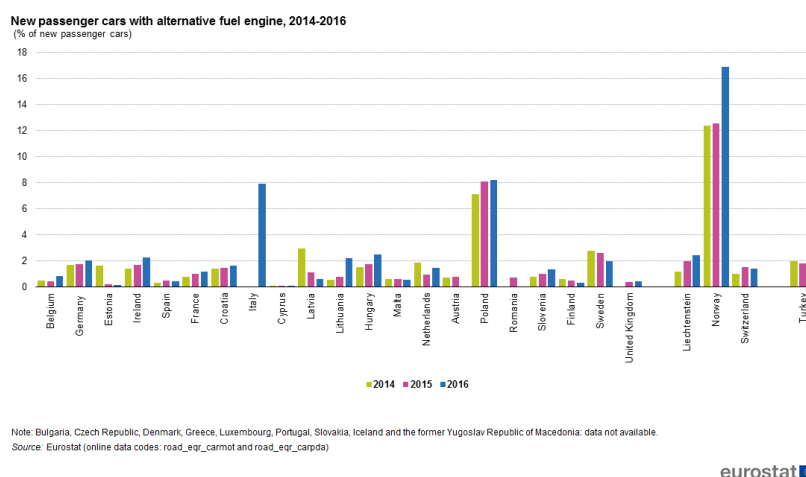


Figure 1: New passenger cars with alternative fuel engine, 2014-2016 (% of new passenger cars)
- Source: Eurostat (roadeqrcarmot) and (roadeqrcarpda)

The share of registration of new passenger cars powered by alternative fuel fluctuates in several countries; indeed, as can be seen from Figure 1, the share of cars with alternative fuels in the total new registrations increased from 2014 to 2016 in several countries. One of the reasons behind this is the variety of government incentives to stimulate the share of cars with lower emissions, and the timing of when these incentives are introduced. These incentives include e.g. tax reductions, subsidies or specific privileges such as access to lanes reserved for public transport, free parking, etc. Another main influence is the number and variety of passenger car models with alternative fuel engines offered, as well as the prices of such models.

Highest number of passenger cars per inhabitant in Luxembourg

In 2016, the highest number of registered passenger cars was observed in Germany with 45 million cars. Thereafter followed Italy (37 million cars) and France (32 million cars). Over the five year period from 2012 to 2016, there was strong growth in the number of registered passenger cars in several Member States. The highest growth over this period was recorded in Estonia (17%), followed by Slovakia and Poland (both 16%), Portugal (14%), Malta and the Czech Republic (both 13%).

Passenger cars

(number)

	2012	2013	2014	2015	2016
Belgium	5 444 000	5 493 472	5 555 499	5 623 579	5 712 061
Bulgaria	2 807 000	2 910 235	3 013 863	3 162 037	3 143 568
Czech Republic	4 706 000	4 729 185	4 833 386	5 115 316	5 307 808
Denmark	.	.	.	.	2 465 538
Germany	43 431 000	43 851 000	44 403 000	45 071 000	45 803 560
Estonia	602 100	628 565	652 950	676 596	703 151
Ireland	1 951 130	1 984 550	2 018 310	2 060 170	2 102 720
Greece	5 167 557	5 124 208	5 110 873	5 107 620	5 160 056
Spain	22 248 000	22 025 000	22 029 512	22 355 549	22 876 830
France	32 132 000	32 858 000	32 531 000	32 326 000	32 076 000
Croatia	1 445 000	1 448 000	1 474 000	1 499 802	1 552 904
Italy	37 078 000	36 963 000	37 080 753	.	37 876 138
Cyprus	475 000	474 561	478 492	487 692	508 284
Latvia	618 270	634 600	657 799	679 048	664 177
Lithuania	1 753 407	1 808 982	1 205 668	1 244 063	1 298 737
Luxembourg	355 900	363 247	372 827	381 103	390 935
Hungary	2 986 030	3 040 732	3 107 695	3 196 856	3 313 206
Malta	249 612	256 096	265 950	275 380	282 921
Netherlands	7 916 000	7 932 290	7 979 083	8 100 864	8 222 974
Austria	4 584 000	4 641 308	4 694 921	4 748 048	4 821 557
Poland	18 744 000	19 389 446	20 003 863	20 723 423	21 675 388
Portugal	4 259 000	4 327 478	4 699 645	4 722 963	4 850 229
Romania	4 487 000	4 696 000	4 908 000	5 155 000	.
Slovenia	1 066 030	1 063 800	1 068 360	1 078 740	1 096 523
Slovakia	1 824 200	1 879 800	1 949 100	2 034 574	2 121 774
Finland	3 037 000	3 105 834	3 172 735	3 234 860	3 322 672
Sweden	4 446 349	4 494 661	4 584 711	4 668 262	4 767 262
United Kingdom (*)	28 722 000	.	.	30 250 294	30 850 440
Iceland	.	.	.	.	.
Liechtenstein	28 000	28 100	28 470	28 802	29 241
Norway	2 443 000	2 500 000	2 555 000	2 610 000	2 662 910
Switzerland	4 255 000	4 321 000	4 384 000	4 458 000	4 524 000
Turkey	8 648 880	9 283 923	9 857 915	10 589 337	11 317 998
Former Yugoslav Republic of Macedonia	302 000	346 798	371 449	383 833	394 934

(.) not available.

(*) Great Britain only.

Source: Eurostat (online data code: road_eqs_carmot)

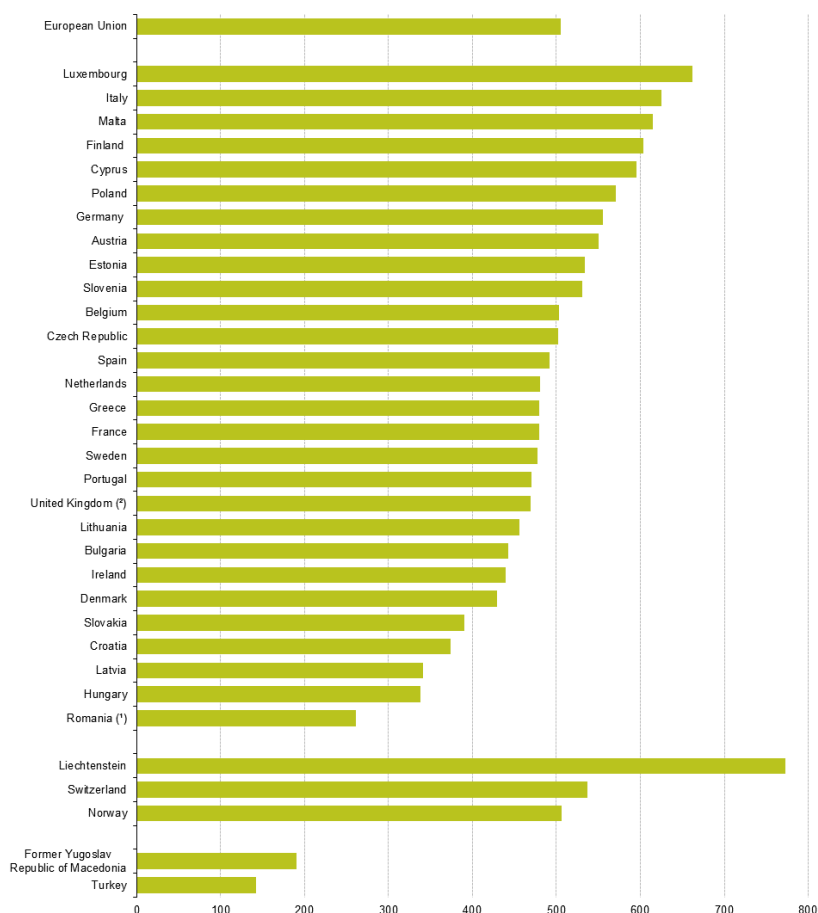


Table 2: Passenger cars (number) - Source: Eurostat (roadeqscarmot)

Only three Member States recorded a decline in the number of registered passenger cars over the period observed: Greece experienced a fall of 0.15% and France 0.17% from 2012 to 2016; in Lithuania, the number of registered passenger cars slumped by 26% over this period, mainly due to a change in register procedures in 2014, where cars that do not have compulsory technical inspection or where vehicle owner's compulsory civil liability insurance had expired by 1 July 2014 were removed from the register. Consequently, Lithuanian data from 2014 onwards cannot be directly compared to data for earlier years.

Amongst the EU Member States with the highest 'motorisation rates', i.e. passenger cars per 1000 inhabitants, there are several smaller countries. Luxembourg (662 passenger cars per 1000 inhabitants) heads the list; however, this figure may be influenced by cross-border workers (i.e. not inhabitants) using company cars registered in the country. In second place follows Italy with 625 cars per 1000 inhabitants. Other countries with a high motorisation rate include Malta (615 cars), Finland (604 cars) and Cyprus (595 cars).

Number of passenger cars per 1000 inhabitants, 2016



(!) 2015 data instead of 2016.
 (*) Great Britain only.
 Source: Eurostat (online data code: road_eqs_carhab)



Figure 2: Number of passenger cars per 1000 inhabitants, 2016 - Source: Eurostat (roadeqs-carhab)

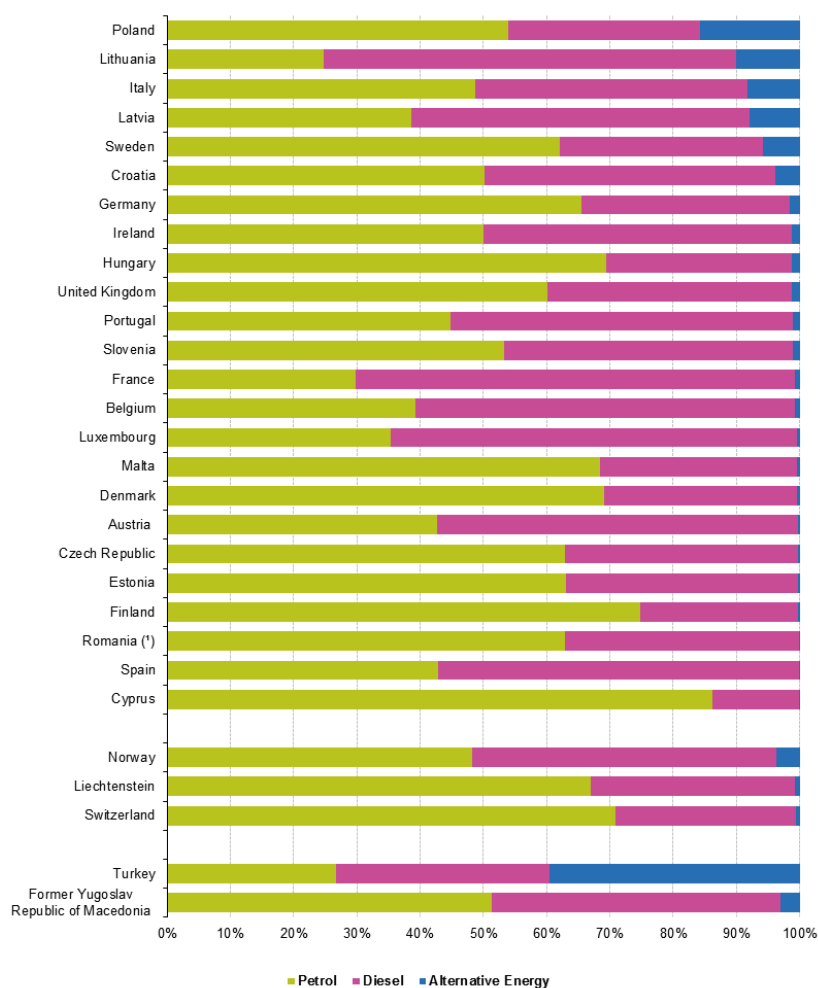
At the other end of the scale, a particularly low motorisation rate is recorded in Romania (261 cars: 2015 data), despite a growth in the number of registered cars of almost 19% over the period 2011-2015. The motorisation rate in the two EU candidate countries for which data are available is substantially lower than in the Member States. The smallest value, 142 cars per thousand inhabitants, was recorded in Turkey.

Small petrol engines more common than medium-sized and large engines

Passenger cars with small petrol engines more common than medium-sized and large engines in the majority of Member States

In 16 of the 24 Member States for which information is available, the majority of passenger cars were powered by a petrol engine in 2016. The eight Member States where there were more diesel cars than petrol cars were Belgium, Spain, France, Latvia, Lithuania, Luxembourg, Austria and Portugal (see Figure 3).

Passenger cars by type of engine fuel, 2016
(% of all passenger cars)



Note: Bulgaria, Greece, Netherlands, Slovakia and Iceland: data not available.
(*) 2015 data instead of 2016.
Source: Eurostat (online data code: road_eqs_carpda)



Figure 3: Passenger cars by type of engine fuel, 2016 (% of all passenger cars) - Source: Eurostat (roadeqscarpda)

In Malta, more than half of all passenger cars had small petrol engines in 2016, with the share of small petrol-driven passenger cars reaching 56% of the total, followed by Hungary with 47%. In Cyprus, medium sized petrol engines powered 47% of the passenger cars. Large petrol engines can be found in passenger cars in particular in Estonia (12% of all passenger cars) and Finland (9.0%) and in the EFTA countries Lichtenstein (19%) and Switzerland (13%).

Petrol-driven passenger cars by size of engine, 2016

	Petrol engine			Share of all passenger cars (%)		
	≤ 1399 cm3	400 cm3 - 1999 cm	≥ 2000 cm3	≤ 1399 cm3	400 cm3 - 1999 cm	≥ 2000 cm3
Belgium (*)	1 472 038	616 931	149 803	25.8	10.8	2.6
Bulgaria						
Czech Republic	2 161 593	1 040 307	135 561	40.7	19.6	2.6
Denmark						
Germany	15 394 491	12 011 661	2 568 354	33.6	26.2	5.6
Estonia	96 489	265 508	81 086	13.7	37.8	11.5
Ireland	718 560	317 040	16 630	34.2	15.1	0.8
Greece						
Spain	5 317 254	3 844 939	656 961	23.2	16.8	2.9
France	7 111 000	2 137 000	338 000	22.2	6.7	1.1
Croatia	557 899	205 353	16 974	35.9	13.2	1.1
Italy	8 312 496	9 827 804	337 238	21.9	25.9	0.9
Cyprus	187 076	237 179	13 552	36.8	46.7	2.7
Latvia	58 329	166 082	31 995	8.8	25.0	4.8
Lithuania						
Luxembourg						
Hungary	1 546 214	696 975	57 979	46.7	21.0	1.7
Malta	157 817	31 957	3 979	55.8	11.3	1.4
Netherlands						
Austria	1 321 068	569 979	165 688	27.4	11.8	3.4
Poland	7 056 735	4 198 180	439 273	32.6	19.4	2.0
Portugal	1 830 498	301 909	39 284	37.7	6.2	0.8
Romania (*)	2 148 000	1 036 000	58 000	41.7	20.1	1.1
Slovenia	380 221	192 182	11 434	34.7	17.5	1.0
Slovakia						
Finland	732 897	1 442 191	312 683	22.1	43.4	9.4
Sweden	1 701 389	899 281	357 495	35.7	18.9	7.5
United Kingdom (*)	10 140 786	7 133 192	1 384 491	32.9	23.1	4.5
Iceland						
Liechtenstein	5 938	8 013	5 652	20.3	27.4	19.3
Norway	410 996	712 949	159 106	15.4	26.8	6.0
Switzerland	1 142 700	1 453 700	606 900	25.3	32.1	13.4
Turkey (*)	1 728 527	1 254 607	49 005	15.3	11.1	0.4
Former Yugoslav Republic of Macedonia						

(.) not available.

(*) In the category 'Up to 1399' there are 25 725 passenger cars included of engine unknown

(*) 2015 data instead of 2016

(*) Great Britain only

(*) In the category 'Up to 1399' there are 167 054 passenger cars included of engine unknown

Source: Eurostat (online data code: road_eqs_carmot)

eurostat 

Table 3: Petrol-driven passenger cars by size of engine, 2016 (% of all passenger cars) - Source: Eurostat (roadeqscarmot)

Overall, passenger cars with small engines usually use petrol as fuel; there are relatively few passenger cars with small diesel engines in the EU. Medium sized engines dominate amongst the diesel-powered passenger cars in all Member States for which data are available. This is particularly the case for countries with the highest overall share of diesel powered passenger cars, France and Belgium, as well as in the other countries (Austria and Spain) where more than half of the passenger cars were diesel cars.

Diesel-driven passenger cars by size of engine, 2016

	Diesel engine			Share of all passenger cars (%)		
	≤ 1399 cm ³	1400 cm ³ - 1999 cm ³	≥ 2000 cm ³	≤ 1399 cm ³	1400 cm ³ - 1999 cm ³	≥ 2000 cm ³
Belgium (*)	352 333	2 607 496	469 393	6.2	45.6	8.2
Bulgaria						
Czech Republic		1 619 965	333 910		30.5	6.3
Denmark						
Germany	346 923	10 535 913	4 206 471	0.8	23.0	9.2
Estonia	3 066	138 870	116 500	0.4	19.7	16.6
Ireland	80 860	835 680	107 730	3.8	39.7	5.1
Greece						
Spain	840 772	10 595 123	1 596 620	3.7	46.3	7.0
France	2 368 000	17 863 000	2 008 000	7.4	55.7	6.3
Croatia	39 725	574 585	97 576	2.6	37.0	6.3
Italy	167 783	14 012 832	2 083 342	0.4	37.0	5.5
Cyprus	3 644	33 169	33 451	0.7	6.5	6.6
Latvia	14 487	204 315	136 241	2.2	30.8	20.5
Lithuania						
Luxembourg						
Hungary	63 848	710 117	197 032	1.9	21.4	5.9
Malta	7 202	68 333	12 526	2.5	24.2	4.4
Netherlands						
Austria	106 585	2 161 479	482 319	2.2	44.8	10.0
Poland	299 256	5 245 825	1 009 064	1.4	24.2	4.7
Portugal	310 835	1 868 969	445 240	6.4	38.5	9.2
Romania (*)	96 000	1 535 000	275 000	1.9	29.8	5.3
Slovenia	18 171	413 971	68 517	1.7	37.8	6.2
Slovakia						
Finland	14 462	495 161	318 571	0.4	14.9	9.6
Sweden	75 727	1 048 728	408 400	1.6	22.0	8.6
United Kingdom (*)	580 448	8 667 410	2 742 685	1.9	28.1	8.9
Iceland						
Liechtenstein	207	5 498	3 725	0.7	18.8	12.7
Norway	49 154	861 609	370 403	1.8	32.4	13.9
Switzerland	30 900	846 700	413 900	0.7	18.7	9.1
Turkey (*)	916 668	2 719 919	167 307	8.1	24.0	1.5
Former Yugoslav Republic of Macedonia						

(.) not available.

(*) In the category 'Up to 1399' there are 15 129 passenger cars included of engine unknown.

(*) 2015 data instead of 2016.

(*) Great Britain only.

(*) In the category '1400 cm³ - 1999 cm³' there are 7 556 passenger cars included of engine unknown.

Source: Eurostat (online data code: road_eqs_carmot)

eurostat 

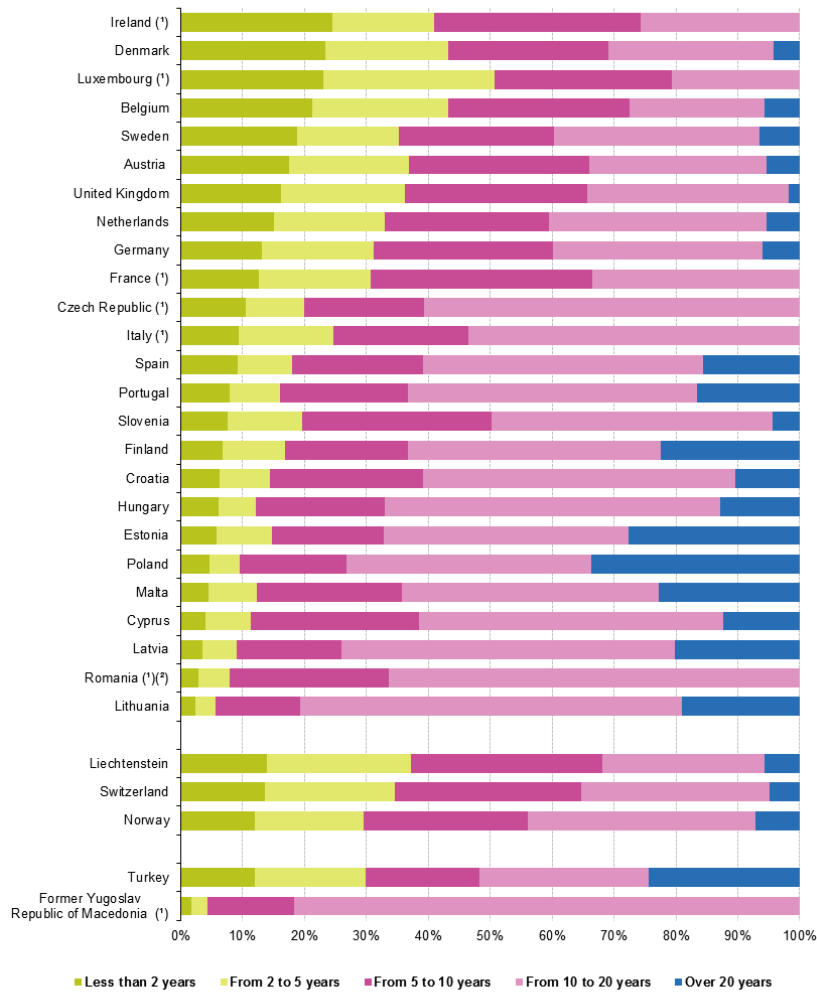
Table 4: Diesel-driven passenger cars by size of engine, 2016 (share of total registered passenger cars %) - Source: Eurostat (roadeqscarmot)

Despite efforts across Europe to increase the share of cars with low [CO₂emissions](#), the share of passenger cars powered by alternative fuels remained low in most Member States in 2016. In most of the Member States, passenger cars using alternative energy represented less than 1% of the total passenger car fleet. The most striking exception is Poland, where the share of passenger cars powered by alternative fuels reached 16% in 2016. This is to a large extent due to a high number of cars retro-fitted for LPG (liquefied petroleum gas) use. Other countries with notable shares of passenger cars using alternative fuels are Lithuania (10%), Italy and Latvia (both 8%) and Sweden (6%).

Highest share of passenger cars over 20 years old in Poland

Several Member States reported a large share of 'old' passenger cars (20 years or older) in 2016. The Member States with the highest shares were Poland (33.7%), Estonia (27.6%), Malta (22.8%), and Finland (22.5%). In contrast, the shares of the 'youngest' passenger cars (less than 2 years old) were highest in Ireland (24.6%), Denmark (23.3%), Luxembourg (23.1%) and Belgium (21.2%).

Passenger cars by age, 2016
(% of all passenger cars)



Note: Bulgaria, Greece, Slovakia and Iceland: data not available.
 (*) the "from 10 to 20 years" breakdown includes passenger cars > 20 years.
 (**) 2015 data instead of 2016.
 Source: Eurostat (online data code: road_eqs_carage)



Figure 4: Passenger cars by age, 2016 (% of all passenger cars) - Source: Eurostat (roadeqscarage)

In recent years, a number of countries had programmes in place supporting purchases of new cars with low emissions while scrapping the owners' old car. The general aim of these programmes was the renewal of the passenger car fleet with lower emission cars, while simultaneously stimulating the economy. These programmes have had a certain influence on the age composition of passenger cars in individual countries. Such programmes were set up in almost half of the Member States; in this context, one should take note of the [reference year](#) when analysing these data.

Source data for tables and graphs

- [Passenger cars in the EU - update 2018](#)

Data sources

The Eurostat/ITF/UNECE Common Questionnaire on Inland Transport.

Coverage

The data in this article covers the [EU Member States](#) , the [EFTA countries](#) and the [candidate countries](#) ([list of countries and the corresponding country codes](#)).

Definitions

All definitions used are taken from the Eurostat/UNECE/ITF Glossary for Transport Statistics, currently in its 4th edition. This glossary can be found on Eurostat's website [Eurostat/UNECE/ITF Glossary for Transport Statistics](#) .

Passenger cars

Road motor vehicle, other than a moped or a motor cycle, intended for the carriage of passengers and designed to seat no more than nine persons (including the driver).

Included are:

- Passenger cars
 - Vans designed and used primarily for transport of passengers
 - Taxis
 - Hire cars
 - Ambulances
 - Motor homes
 - Micro-cars (needing no permit to be driven)

Excluded are light goods road vehicles, as well as motor-coaches and buses, and mini-buses/mini-coaches.

Motor energy

The principal type of motor energy used by the vehicle as certified by the competent authority of the country of registration. For hybrid or dual-fuelled vehicles adapted for using more than one type of motor energy (e.g. LPG and petrol, or electricity and diesel, etc.), the principal type of motor energy should be, where possible, an alternative fuel.

Alternative fuel

A type of motor energy other than the conventional fuels, petrol and diesel. Alternative fuels include electricity, LPG, natural gas (NGL or CNG), alcohols, mixtures of alcohols with other fuels, hydrogen, bio-fuels (such as biodiesel), etc. (this list is not exhaustive). Alternative fuels do not include unleaded petrol, reformulated petrol or city (low-sulphur) diesel.

Motorisation rate

The number of registered passenger cars per 1000 inhabitants.

Context

The Common Questionnaire on Inland Transport is a joint project of Eurostat, the International Transport Forum (ITF) and the United Nations Economic Commission for Europe ([UNECE](#)). The data are provided on a voluntary basis by a large number of countries, both within and outside the European Union. Data is collected from reliable sources, but data collection methodologies are not harmonised at EU level. Comparability across countries is restricted as the classifications used in the national vehicle registers are not harmonised. Vehicle registers may exclude taxis, pick-up and vans, and may also exclude very old vehicles. This article covers data provided by the EU Member States, the European Free Trade Association (EFTA) countries and EU candidate countries.

Other articles

- [Transport statistics introduced](#)
- [Stock of vehicles at regional level](#)
- [Motor trades statistics - NACE Rev. 2](#)
- [Passenger transport statistics](#)

Publications

- [Energy, transport and environment indicators — 2017 edition](#)

Database

- [Transport](#) , see:

Road transport (road)

Road transport equipment - Stock of vehicles (roadeqs)

Road transport equipment - New registration of vehicles (roadeqr)

Dedicated section

- [Transport statistics](#)

Methodology

- [Common Questionnaire for Inland Transport Statistics](#) (ESMS metadata file — railifesms)
- [Eurostat/UNECE/ITF Glossary for Transport Statistics, 4th edition](#)

Legislation

- [Roadmap to a single European transport area – towards a competitive and resource efficient transport system](#) (European Commission White paper: COM(2011) 144 final)
- [Handbook on statistics on road traffic - Methodology and experience](#) (UNECE, 2007)

External links

- [International Transport Forum \(ITF\) - Statistics](#)
- [United Nations Economic Commission for Europe \(UNECE\) - Transport statistics](#)