



11

Mobility and transport

839-1700

# Mobility and Transport

Pocket Statistics 2017



Schweizerische Eidgenossenschaft  
Confédération suisse  
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Swiss Confederation

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# 1 Parameters for transport

Permanent resident population	8.33 m	End 2015
Real GDP (at year 2000 prices)	CHF 594 bn	2015
Change in transport performance – passenger transport	+27%	2000–2015
Change in passenger transport prices	+3%	2000–2015
Change in goods transport prices	+9%	April 2001– October 2015

Sources: FSO – Swiss CPI, STATPOP, PPI: Goods transport, PPI

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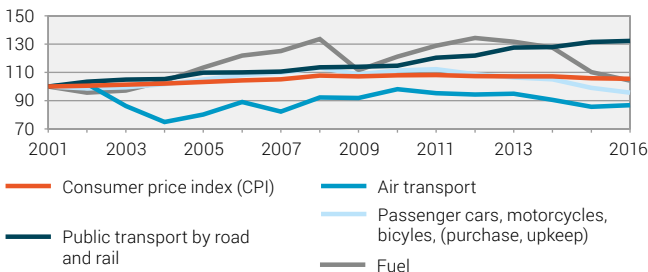
Progress made in the area of mobility and transport must be considered in the context of various framework conditions. In addition to geographic conditions and the state of technology, Switzerland's population and economic growth needs to be taken into account first and foremost. Prices also have a key role in terms of expenditure relating to different transport services.

At the end of 2015, more than 8 million people lived in Switzerland – 16% more than in 2000. The real gross domestic product (GDP) rose by 29.5% over the same period. National and international economic interdependence also increased. These factors led to growth in the volume of transport.



## Price movements<sup>1</sup> in passenger transport

Index 2001=100



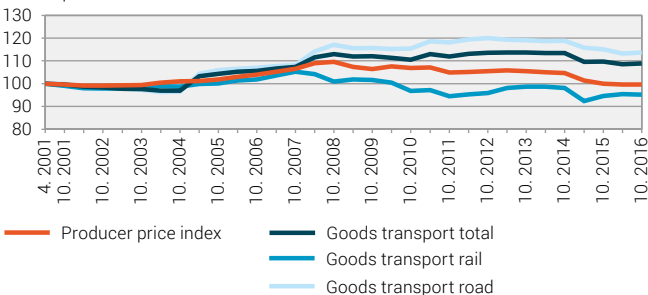
<sup>1</sup> average annual values

Source: FSO – Swiss CPI

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## Price movements in goods transport

Index April 2001=100



Sources: FSO – PPI, PPI: Goods transport

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## 2 Public funding for transport

Public expenditure on transport	CHF 16.5 bn	2014
Transport's share of total public expenditure	10%	2014
Confederation's share of public expenditure on transport	54%	2014

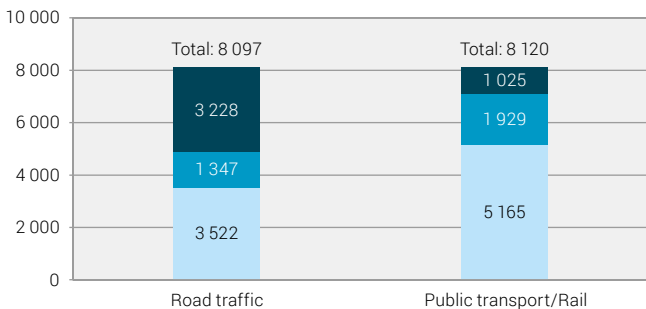
Source: FFA – Switzerland's financial statistics

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In 2014, the Confederation, cantons and communes spent CHF 16.5 billion on road and rail transport. Operations and investments in road infrastructure and contributions to road and rail public transport were financed. The Confederation assumed 54% of the total expenditure and the cantons and communes 21% and 25% respectively.

## Public expenditure on transport in 2014

CHF million



Communes
  Cantons
  Confederation

Other expenses (water transport, air transport, transport planning): CHF 313 million

Source: FFA – Switzerland's financial statistics

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### 3 Transport infrastructure

National highways	1 823 km	2015
of which motorways	1 440 km	2015
Cantonal roads	17 898 km	2015
Railway network length	5 196 km	2015
Number of train stations and stops	1 735	2015

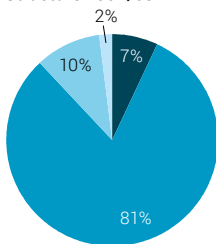
Sources: FSO – Public transport statistics;  
FEDRO – Length of Swiss motorway network

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Swiss transport infrastructure is very developed compared with that of other countries. It takes up just over 2% of the national territory and around one third of housing and infrastructure areas. Switzerland has 5 200 km of railway lines, 1 800 km of major roads and 18 000 km of cantonal roads in 2015.

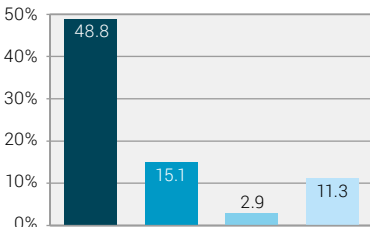
## Area occupied by transport infrastructure

Structure 2004/09



Total: 952 km<sup>2</sup>

Increase 1979/85–2004/09

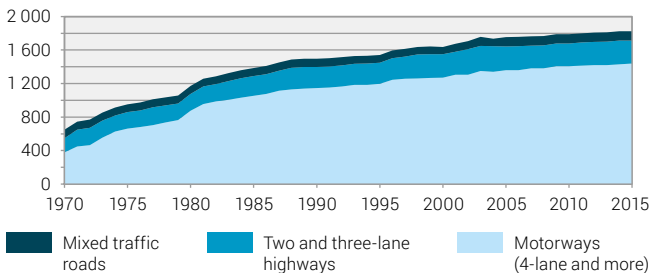


Source: FSO – Land use statistics

© FSO 2017

## Length of national highways

Kilometres



Source: FEDRO - Length of Swiss motorway network

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## 4 Transport enterprises

Enterprises in the transport sector	13 097	2014
Employees (FTE) in transport	169 116	2014
Proportion of enterprises in the transport sector from all enterprises in Switzerland	2.3%	2014
Proportion of employees (FTE) in transport from all employees in Switzerland	4.4%	2014

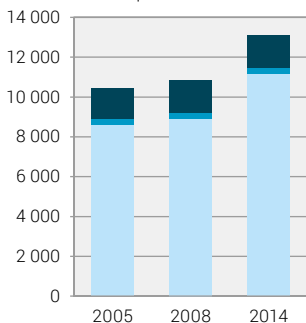
Sources: FSO – STATEM, STATENT

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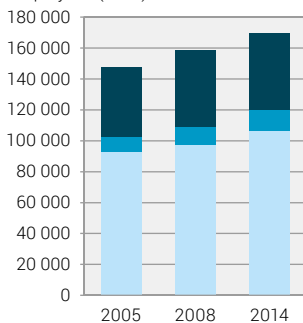
In 2014, there were 578 100 enterprises in Switzerland in total. 13 100 of these were active in the transport sector. Since 2005, there has been an increase of around 2 700 transport companies (+26%). The total number of employees (full-time equivalents – FTE) rose by 15% to 169 100 over the same period. (All figures pursuant to the NOGA classification FSO-50)

## Transport enterprises and employees

Number of enterprises



Employees (FTE<sup>1</sup>)



- Warehousing and provision of other services in transport sector
- Water transport and air transport
- Land transport and transport via pipelines

<sup>1</sup> full-time equivalents

Sources: FSO – STATEM, STATENT

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## 5 Means of transport

Road motor vehicles (excluding mopeds)	6.0 m	2016
of which passenger cars	4.5 m	2016
of which motorcycles	0.7 m	2016
of which goods vehicles	0.4 m	2016
Tractive railway vehicles	3 238	2015
Cableway vehicles	39 146	2015
Aircraft registered in Switzerland	3 494	2015

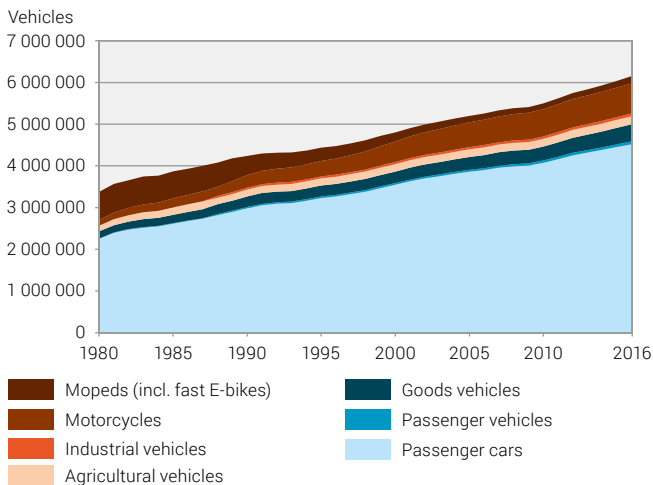
Sources: FSO, FEDRO – MFZ; FSO – Public transport statistics;  
FSO, FOCA – AVIA\_ZL

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The number of road vehicles (excluding mopeds) has more than doubled since 1980. Around three quarters of them are passenger cars. In 2016, there were an average of 543 passenger cars per 1 000 inhabitants in Switzerland, with considerable regional differences. Moreover, for some time a trend towards four-wheel drive vehicles, diesel-powered vehicles and motorcycles has been observed.



## Stock of road motor vehicles

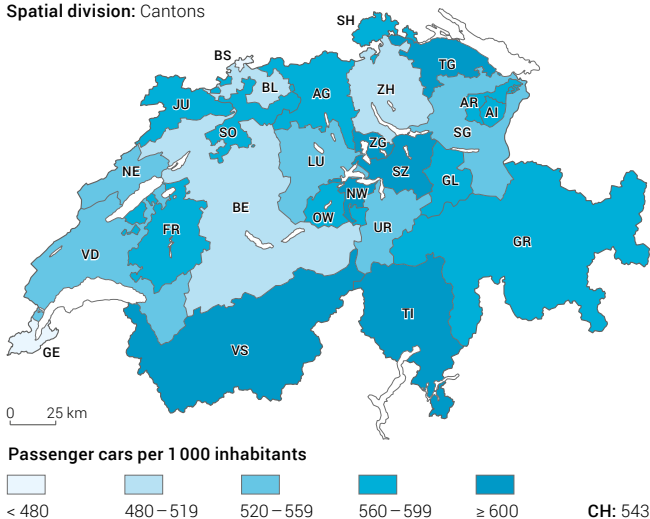


Sources: FSO, FEDRO – MFZ;  
 FSO – Survey about mopeds, conducted by the cantons

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## Level of motorisation in 2016

Spatial division: Cantons

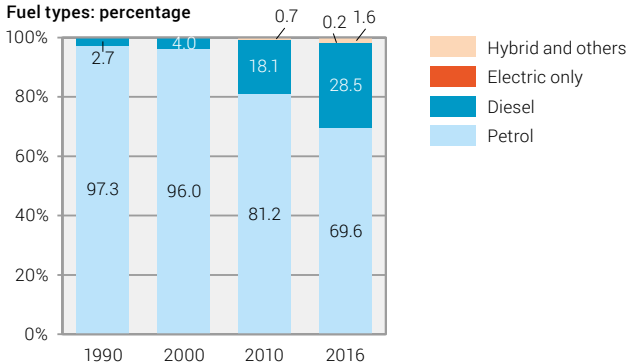


Sources: FSO – STATPOP; FSO, FEDRO – MFZ

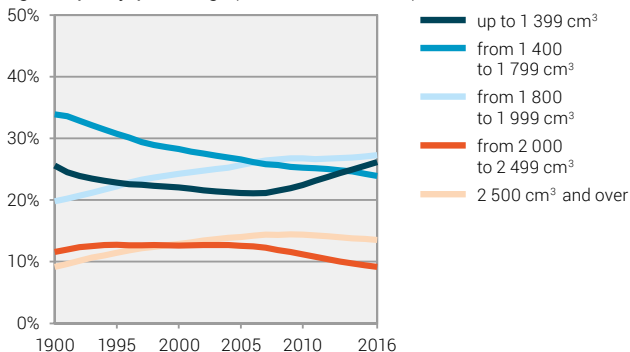
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## Passenger cars by fuel and engine capacity

Fuel types: percentage



Engine capacity: percentage (excl. electric vehicles)

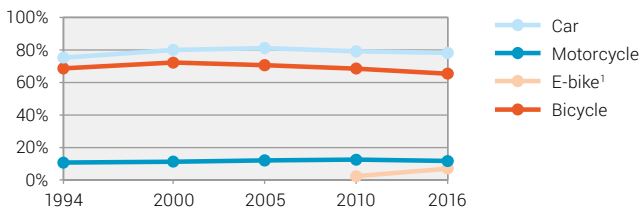


Source: FSO, FEDRO – MFZ

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## Household vehicle ownership

Share of households with one or more vehicles in the respective category

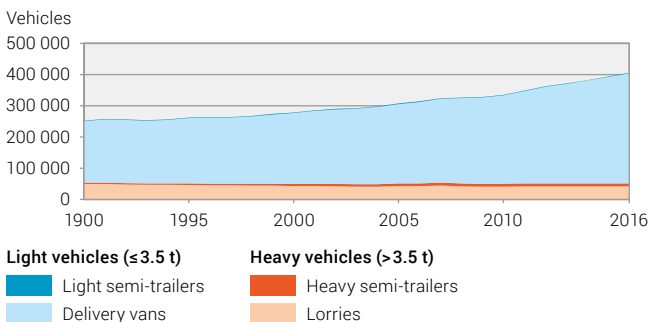


<sup>1</sup> Before 2010 this was included in the "bicycle" category.

Source: FSO, ARE – MTMC

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## Goods vehicle stock



Source: FSO, FEDRO – MFZ

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## 6 Use of means of transport

Kilometre performance	m veh.-km.	
of private motor vehicle traffic	57 272	2015
of road transport of goods	6 364	2015
Domestic transport as a percentage of heavy road transport of goods	75%	2015
Traffic jams on highways	24 066 hours	2016

Sources: FSO – Goods transport statistics, Passenger transport performance, © FSO 2017  
Public transport statistics; FEDRO – Annual report on traffic and national roads

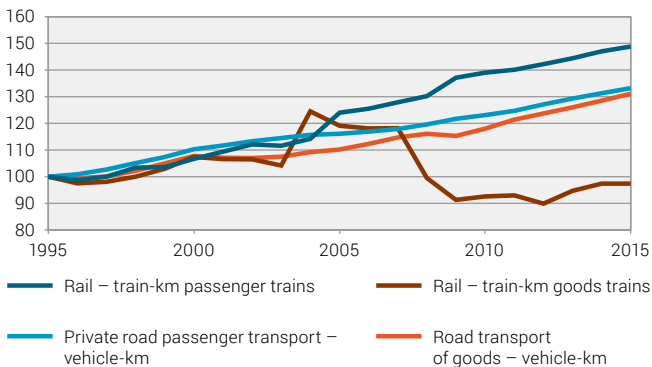
The choice of transport means and vehicle occupancy influences road and rail traffic. In 2015, the occupancy rate for passenger cars was 1.56 persons per car.

In passenger transport, transport performance by rail has increased by 40% since 2000 and by road (private motor vehicles) by 21%. The kilometre performance of road transport of goods as a whole increased by 22% over the same period.

In air transport takeoffs and landings at the three national airports of Zurich, Geneva and Basel-Mulhouse more than doubled between 1970 and 2015.

## Kilometre performance

Index 1995=100



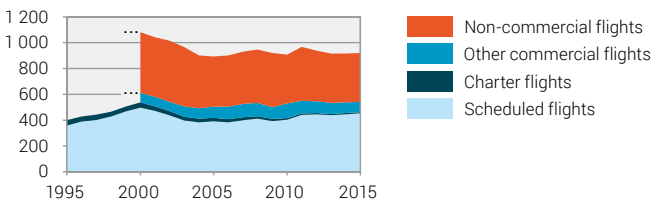
Sources: FSO – Goods transport statistics, Passenger transport performance, Public transport statistics

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## Takeoffs and landings in civil aviation

National and regional airports

Thousand movements

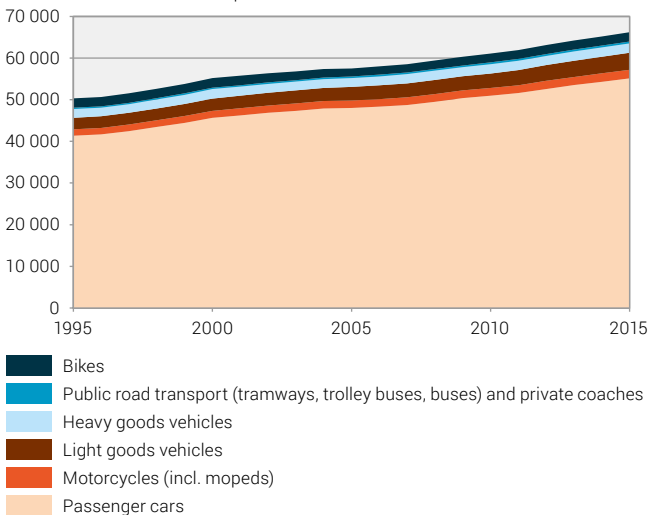


Source: FSO, FOCA – AVIA\_ZL

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## Kilometre performance in road transport

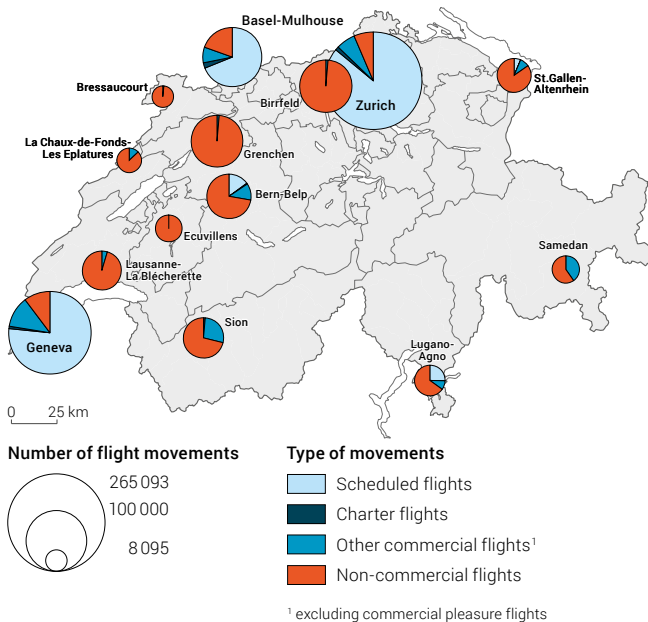
Million vehicle-kilometres resp. timetable kilometres



Sources: FSO – Goods transport statistics, Passenger transport performance, Public transport statistics

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## Take-offs and landings in civil aviation in 2015



Source: FSO, FOCA – AVIA\_ZL

© FSO 2017



## 7 Passenger transport performance

Passenger transport performance by rail and road (incl. non-motorised traffic)	129.7 bn pkm	2015
Private motorised road transport	96.5 bn pkm	2015
of which passenger cars	91.0 bn pkm	2015
Public road transport (tramway, trolley bus, bus)	4.4 bn pkm	2015
Rail transport (railways, cog railways, funicular railways and cable cars)	20.8 bn pkm	2015
of which railways	20.4 bn pkm	2015
Human-powered mobility (on foot, by bike)	8.0 bn pkm	2015
Air passengers in scheduled and charter flights	51.8 m	2016

Sources: FSO – Passenger transport performance, Public transport statistics;  
FSO, FOCA – AVIA\_LC

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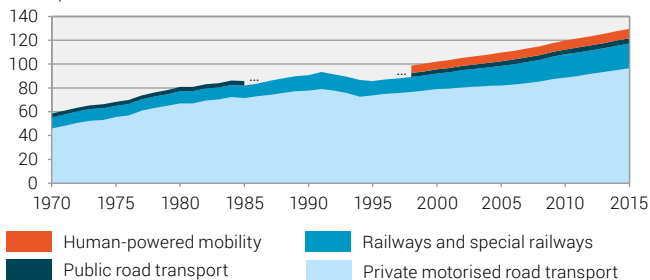
The sum of all the distances covered on road and rail by residents and foreigners in Switzerland was more than 129 billion person-kilometres in 2015. This represents an increase of 27% compared to 2000.

74.4% of transport performance in 2015 was accounted for by private motorised transport, 19.4% by public transport and 6.2% by non-motorised transport.

Between 2000 and 2016, the number of passengers in scheduled and charter flights increased by 50%.

## Passenger transport performance

Billion person-kilometres

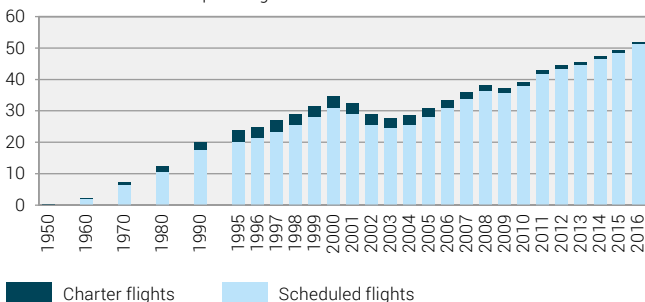


Source: FSO – Passenger transport performance

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## Air passengers – scheduled and charter flights

Million local and transfer passengers



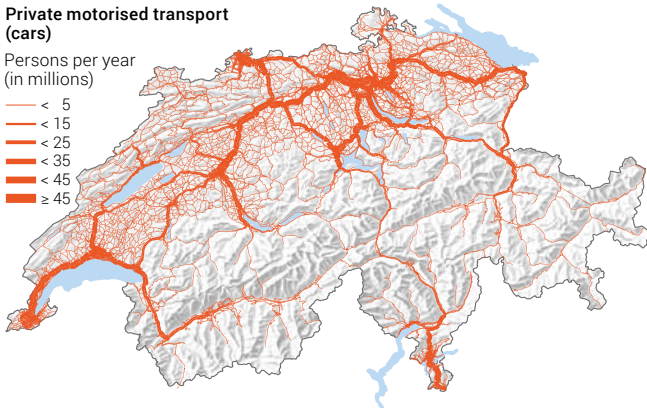
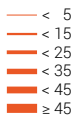
Source: FSO, FOCA – AVIA\_LC

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## Passenger traffic flows in 2015

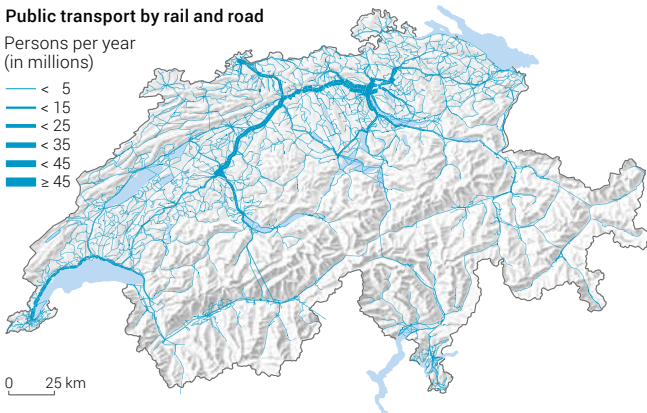
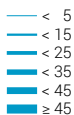
### Private motorised transport (cars)

Persons per year  
(in millions)



### Public transport by rail and road

Persons per year  
(in millions)



Sources: FSO – GEOSTAT; ARE – traffic modeling (DETEC), INFOPLAN

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## 8 Travel behaviour of the population

Average daily distance per person (inside Switzerland)	36.8 km	2015
Average daily travel time per person (inside Switzerland, incl. waiting and transfer times)	90.4 min	2015
Average annual mobility per person (inside Switzerland and abroad; incl. all trips)	24 849 km	2015
Share of distances abroad	45%	2015
Share of distances by aeroplane	36%	2015

Source: FSO, ARE – MTMC

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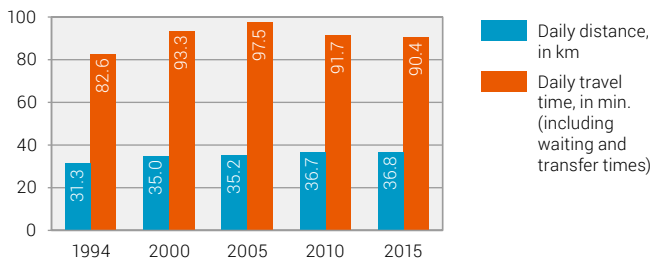
On average, each Swiss resident covered a daily distance of just under 37 km within Switzerland in 2015. Two thirds (65%) are largely covered by passenger cars. Leisure activities account for the main trip purpose followed by commutes to work.

The average total distance travelled in Switzerland and abroad by a person from the permanent resident population was 24 849 km in 2015, of which 13 754 km (55%) in Switzerland and 11 095 km (45%) abroad. The car was the most important transport means with 10 371 km per person and year, ahead of the aeroplane with 8 986 km.

The Swiss resident population undertook a total of 22.8 million overnight trips in 2015. Besides Switzerland, the most popular destinations were Germany, France and Italy.

## Average daily distance and travel time per person

In Switzerland



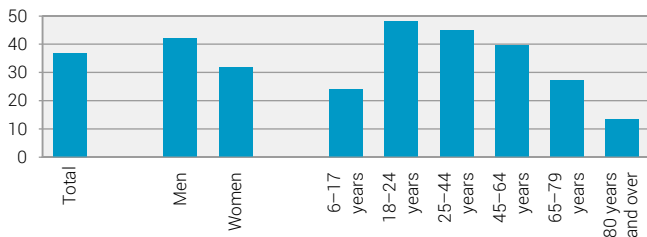
Source: FSO, ARE – MTMC

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## Daily distance by group of population in 2015

Average daily distance per person; in Switzerland

Kilometres

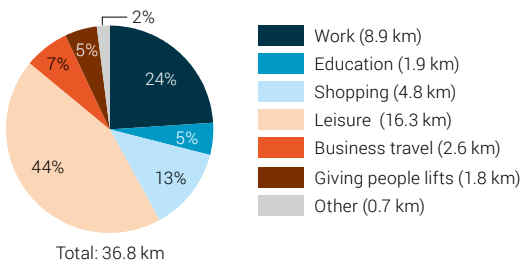


Source: FSO, ARE – MTMC

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## Daily distance by trip purpose in 2015

Average daily distance per person; in Switzerland

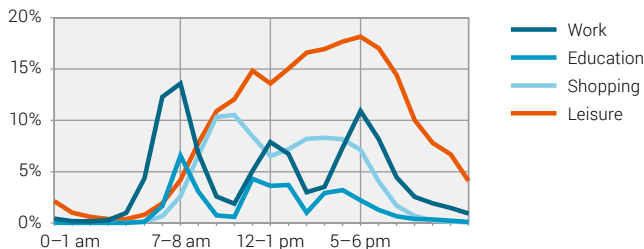


Source: FSO, ARE – MTMC

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## Mobile persons over the course of the day by trip purpose in 2015

Share of the population on the move; in Switzerland

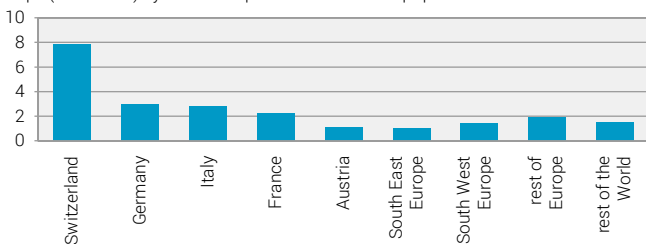


Source: FSO, ARE – MTMC

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## Trips with overnight stays by destination in 2015

Trips (in millions) by the Swiss permanent resident population

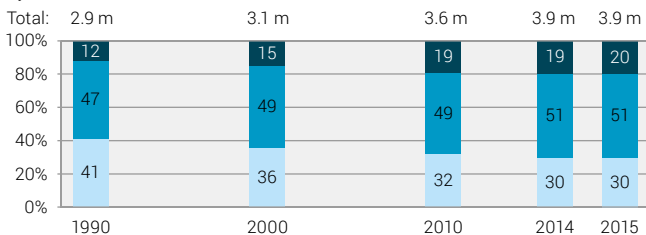


Source: FSO – Travel behaviour

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## Commuters per commute to work

By status of commune in 2015



Commuters between different cantons

Commuters between different communes but within canton of residence

Commuters within commune of residence

Before 2010, the total consists only of employed persons who are known to commute.

From 2014, missing values are inserted and incoherent ones replaced.

Sources: FSO – Commuting, Structural survey

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## 9 Goods transport performance

Goods transport performance	27.9 bn tkm	2015
of which rail transport	10.7 bn tkm	2015
Transalpine trips by heavy goods vehicles (through Switzerland)	0.98 m	2016
Rail share of goods transport in transalpine goods transport (through Switzerland)	71%	2016

Sources: FSO – Goods transport statistics, Public transport statistics; FOT, FEDRO – Transalpine goods transport

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In 2015, the goods transport performance amounted to around 27.9 billion tonne kilometres. If the entire period from 1980 to 2015 is considered, transport performance increased by 91%. The rail share of goods transport fell from 53% to 38%.

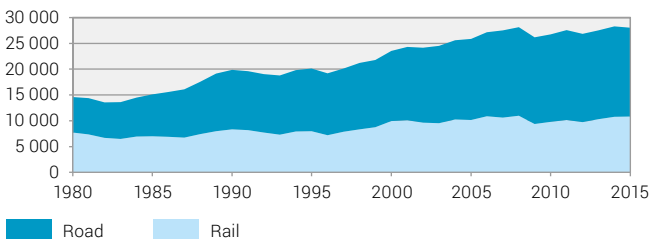
In 2015, transport performance of domestic heavy vehicles amounted to 11.0 billion tonne-kilometres and transport performance of foreign heavy vehicles in Switzerland to 5.3 billion tonne-kilometres.

The number of transalpine trips through Switzerland by heavy goods vehicles increased fivefold between the opening of the Gotthard tunnel in 1981 and the year 2000. Since 2001, the values have decreased slightly. In 2016, a total of 40.4 million net tonnes of goods were transported by road and rail over Swiss alpine passes; 71% by rail. Its share in transalpine transport has decreased since 1981 but is still considerably greater than in Austria and France.



## Goods transport performance

Million tonne-kilometres

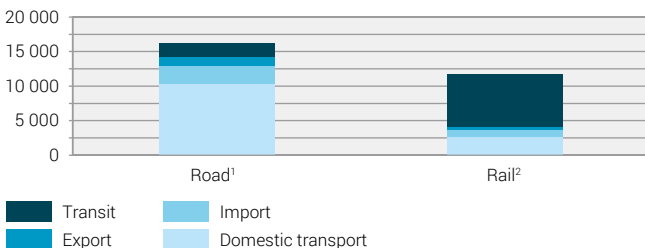


Sources: FSO – Goods transport statistics, Public transport statistics

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## Domestic and international transport performance by road and rail in 2015

Million tonne-kilometres



<sup>1</sup> heavy goods vehicles only

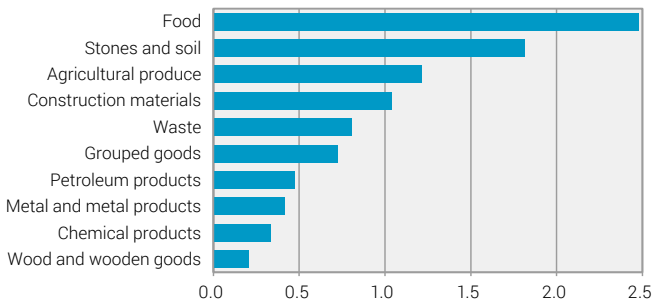
<sup>2</sup> including the proper weight of goods vehicles (incl. trailers), containers and swap bodies in intermodal transport

Sources: FSO – Goods transport statistics, Public transport statistics

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## Transport performance of domestic heavy vehicles by selected groups of goods in 2015

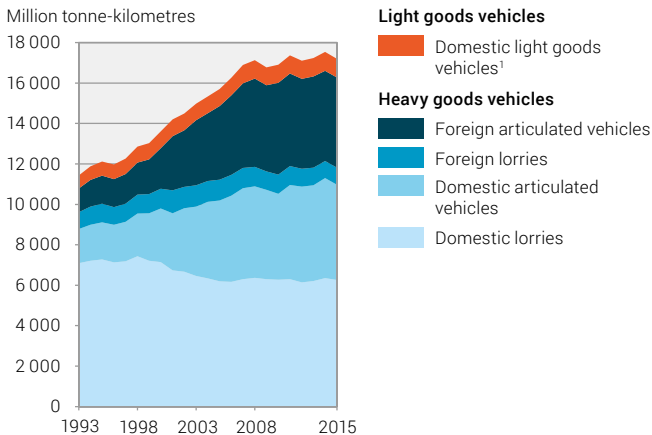
Million tonne-kilometres



Source: FSO – Goods transport statistics

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## Road transport performance by vehicle type and registration



<sup>1</sup> Transport performance of foreign light goods vehicles not surveyed because this is minimal.

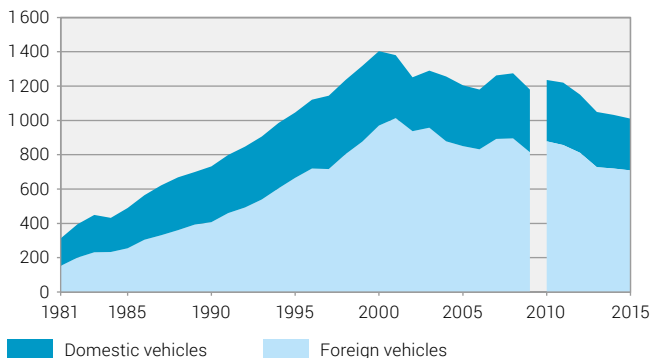
Source: FSO – Goods transport statistics

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## Transalpine goods transport by road

Number of trips of heavy goods vehicles in Switzerland

Thousand vehicles



Change of method: As of 2010, control station data from the performance-related heavy vehicle fee are used (until 2009: data were taken from the Swiss automatic road traffic counts)

Source: FOT, FEDRO – Transalpine goods transport

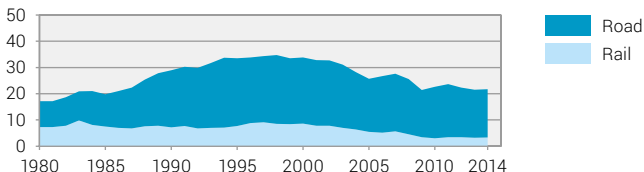
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## Transalpine goods traffic volumes

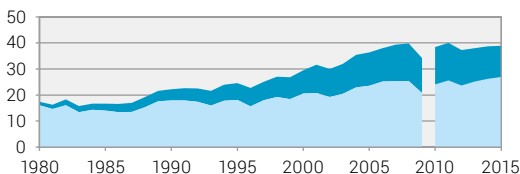
Mt. Cenis/Fréjus—Brenner alpine arc

Million net tonnes

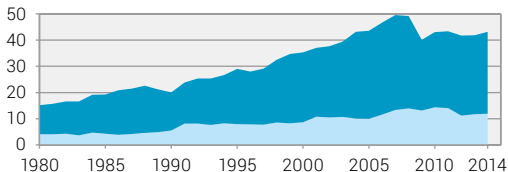
### France



### Switzerland<sup>1</sup>



### Austria

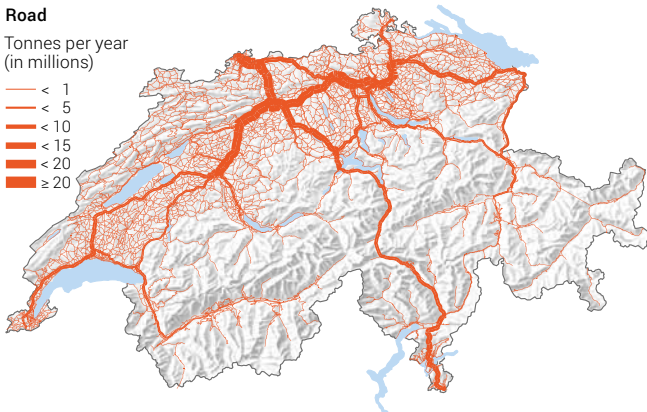
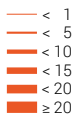


<sup>1</sup> Change of method for roads transport: As of 2010, control station data from the performance-related heavy vehicle fee are used (until 2009: data were taken from the Swiss automatic road traffic counts)

## Goods traffic flows in 2015

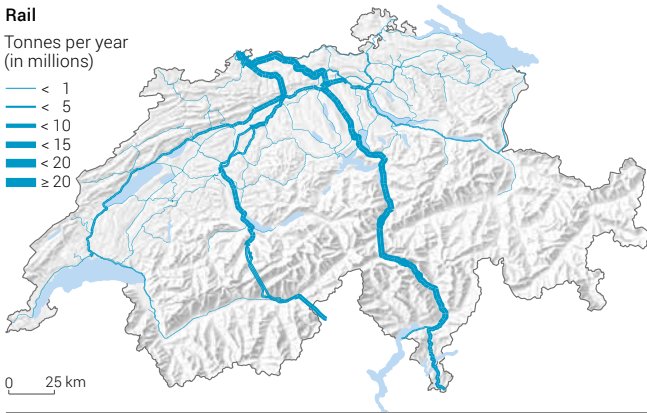
### Road

Tonnes per year  
(in millions)



### Rail

Tonnes per year  
(in millions)



0 25 km

Sources: FSO – GEOSTAT; ARE – traffic modeling (DETEC), INFOPLAN

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## 10 Accidents

### Persons killed

in road traffic	216	2016
in rail traffic (excluding suicides)	22	2016
in air traffic in Switzerland	5	2016

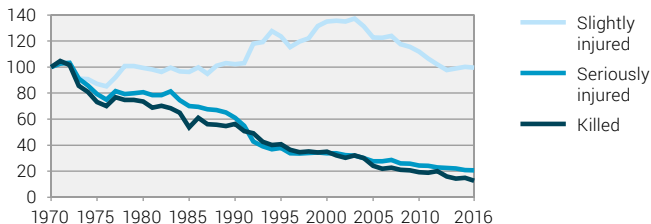
Sources: FSO – Public transport statistics; FSO, FEDRO – Road accidents;  
STSB – Statistics concerning accidents involving aircraft

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216 people in total were killed on Swiss roads in 2016 – 87% less than in 1970. This downward trend is due to technical, legal and educational reasons. The number of persons seriously injured in road traffic has fallen since 1970, reaching 3 785 in 2016. The number of those slightly injured, which has also fallen (but only from 2003 onwards), reached 17 607 in 2016.

## Victims of road accidents

Index 1970=100



Note: change in definitions of injured persons in 1992 and 2015.

Source: FSO, FEDRO – Road accidents

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## 11 Energy consumption and effects on environment

Transport share of energy consumption (final consumption)	36%	2015
Transport share of CO <sub>2</sub> emissions	39%	2015
Growth rate of transport CO <sub>2</sub> emissions	6%	1990 – 2015

Sources: SFOE – Overall energy statistics; FOEN – Greenhouse gas inventory

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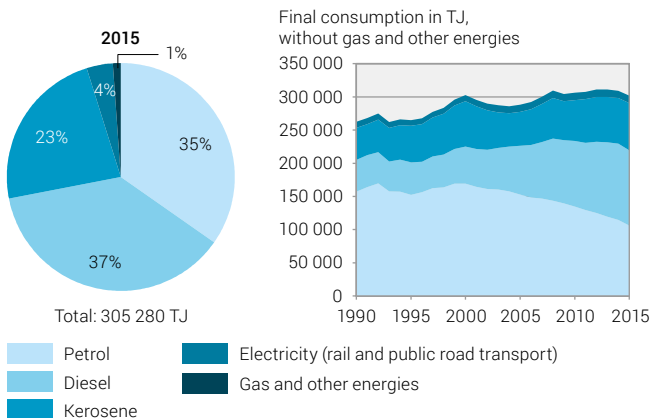
The benefit of mobility comes at the cost of undesirable effects, including the use of scarce energy resources, noise, air pollutants and greenhouse gases. Transport accounts for 36% of domestic energy sales. It is therefore the largest energy consumer group, ahead of the households and industry.

A large proportion of air pollution and the greenhouse gas carbon dioxide (CO<sub>2</sub>) comes from the road and air transport. Road transport is also the main source of nitrogen oxide (NO<sub>x</sub>) and also releases large amounts of health-damaging particulate matter (PM10).

Thanks to technological advances such as diesel-particulate filters and catalytic converters, air pollutant emissions caused by transport have been markedly reduced in recent years.



## Energy consumption from transport

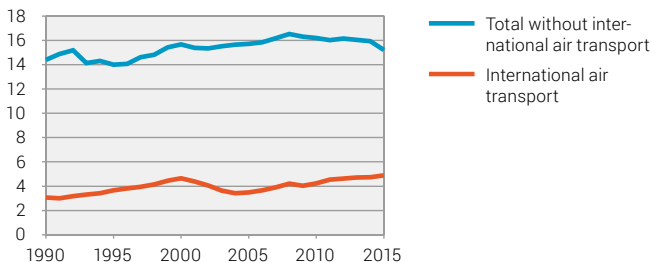


Source: SFOE – Overall energy statistics

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## CO<sub>2</sub> emissions from transport

Million tonnes of CO<sub>2</sub>

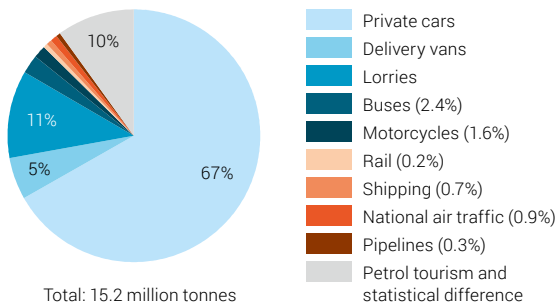


Source: FOEN – Greenhouse gas inventory

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## CO<sub>2</sub> emissions from transport by means of transport in 2015

Without international air transport



Source: FOEN – Greenhouse gas inventory

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## 12 Costs

Total transport costs	CHF 84.8 bn	2013
Passenger transport share	75%	2013
Goods transport share	25%	2013

Source: FSO – CFT

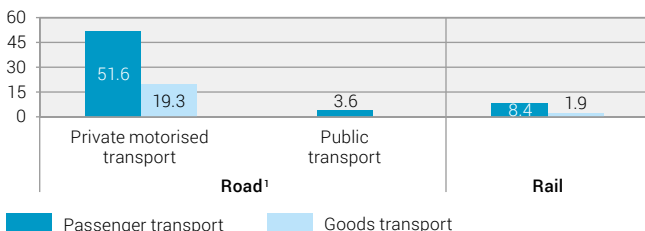
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The total costs of road and rail traffic amounted to CHF 84.8 billion in 2013. In total, three quarters of the transport costs could be attributed to passenger transport and a quarter to goods transport. With CHF 74.5 billion, motorised road transport generated costs approx. seven times greater than those generated by rail transport (10.3 billion). However, motorised road transport handles by far the greatest volume of transport.

The total costs for transport were broken down as follows: 67% for means of transport procurement and operation costs, 16% in infrastructure costs, 8% in accident costs, and 9% in environment and health costs. In motorised road transport, the share of means of transport costs is particularly high with 70%.

## Costs of passenger and goods transport by transport mode in 2013

CHF billion

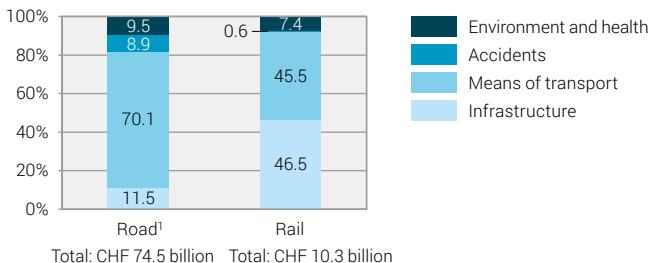


<sup>1</sup> without human-powered mobility

Source: FSO – CFT

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## Total cost of motorised road and rail transport by cost category in 2013



<sup>1</sup> without human-powered mobility

Source: FSO – CFT

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## Glossary

### **Daily distance**

Average distance travelled per person per day in Switzerland.

### **Goods transport performance**

Variable to describe performance in goods transport, which takes account both of weight of goods and the distance they are transported. The transport distance is expressed in tonne-kilometres.

### **Kilometre performance**

Distance covered by vehicles within a specific period of time. Kilometre performance is specified in vehicle kilometres (veh.-km), train or timetable kilometres.

### **Local passengers**

Airport's local passengers start or end their flight at the relevant airport.

### **Means of transport group**

Inclusion of different means of transport in the categories of public, private and non-motorised traffic.

### **Modal split**

Distribution of transport service among various transport modes (e.g. road, rail).



## **Non-motorised traffic**

By foot or bicycle.

## **Person-kilometres, pkm**

Unit used to measure the transport performance where one passenger-kilometre is a kilometre travelled by one person.

## **Tonne-kilometres, tkm**

Unit used to measure the transport performance which refers to the transport of one tonne over one kilometre. This is calculated including the weight of the packaging directly surrounding the goods. Unless otherwise specified, the weight of the vehicle and transport containers is not considered.

## **Total costs for transport**


Total costs borne by the consumer (private costs) and by third parties (external costs). Thus including immaterial costs such as certain accident damage and damage to the environment and health.

## **Transport mode**

Infrastructure or mediums by which means of transport move (road, rail, water, air). Transport modes are also used to group the means of transport.

## **Transport performance**

Total distance covered by persons in one year, measured in kilometres per person.



## Transfert passengers

Airport's transfer passengers are in transit and continue their journey with another flight. These passengers are counted twice, once on arrival and again on departure.

## Websites

Transport statistics (summaries)	<a href="http://www.transport-stat.admin.ch">www.transport-stat.admin.ch</a>
Transport policy (summaries)	<a href="http://www.are.admin.ch">www.are.admin.ch</a>
Roads	<a href="http://www.astra.admin.ch">www.astra.admin.ch</a> <a href="http://www.strasseschweiz.ch">www.strasseschweiz.ch</a>
Public transport	<a href="http://www.fot.admin.ch">www.fot.admin.ch</a> <a href="http://www.litra.ch">www.litra.ch</a>
Aviation	<a href="http://www.foca.admin.ch">www.foca.admin.ch</a>
Finances	<a href="http://www.efv.admin.ch">www.efv.admin.ch</a>
Accidents	<a href="http://www.unfalldaten.ch">www.unfalldaten.ch</a>
Energy	<a href="http://www.sfoe.admin.ch">www.sfoe.admin.ch</a>
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