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# Cover photo

The route through the Schöllenen gorge between Göschenen and Andermatt in the canton of Uri is part of the Swiss motorway/national roads network. It has a height difference of 357 metres over a distance of 5.1 kilometres. FEDRO will be renovating this stretch in the period from 2014 to 2019 at a cost of around 105 million Swiss francs. (Report, page 15) (Photo: Jacques Perler)

# **Editorial**



Dear Reader.

The Swiss Federal Roads Office (FEDRO) is the Swiss authority that is responsible for the country's mobility and road infrastructure of national importance. Our mandate incorporates strategic and legislative duties, and we are also directly responsible for the ongoing development, maintenance and operation of the motorway and national roads network, as well as for traffic management.

Our activities therefore encompass the main variables that influence mobility, i.e. road users and vehicles, in that we

co-determine the legal and enforcement provisions stipulating who may use our roads and the conditions under which they may do so.

Furthermore, with respect to motorway infrastructure our goal is to provide road users with an infrastructure that is safe, compatible with the environment and spatial planning, functional and available to the greatest possible extent. Given this broad range of duties and practical activities, we have a correspondingly comprehensive opportunity and risk profile, which requires us to have a certified quality assurance system and a well-established risk management programme.

However, the best management instruments and reporting data are useless if they are not accepted, further developed and put into practice by our personnel. In view of this, our recruitment and training policy is based on the motto, "It's all about people".

This year's annual report contains an overview of the ongoing challenges and projects within the Federal Roads Office. I would like to thank you for your interest in individual mobility and road transport, and as always, wish you a safe and pleasant journey!

# Jürg Röthlisberger

Director of the Swiss Federal Roads Office (FEDRO)

# New director, new organisational structure

The Federal Roads Office has had a new director since 1 March 2015.

After a term of office of 12 years, Rudolf Dieterle entered retirement and handed over the management of FEDRO to Jürg Röthlisberger, who had previously been head of the Road Infrastructure Division and Rudolf Dieterle's deputy. At the same time, the organisational structure was also changed, and FEDRO now has six divisions.

On 19 September 2014, the Federal Council appointed Jürg Röthlisberger (50) Director of FEDRO. Jürg Röthlisberger earned a degree in construction engineering from the Federal Institute of Technology and subsequently worked for a construction firm and an engineering company. In 1997 he switched to the Federal Administration where he was initially area manager for Eastern Switzerland at FEDRO. In 2004 he was appointed Vice Director of the Road Infrastructure Division, which is responsible for the construction, maintenance and operation of the motorway/national roads network.

He played a decisive role in the transfer of the network to the federal government following the entry into effect of the redistribution of financial responsibility and the accompanying division of duties between the federal government and the cantons. In order to be able to perform the new tasks associated with this move, FEDRO created five regional offices within the Road Infrastructure Division that were the responsibility of Jürg Röthlisberger.

# Road Infrastructure Division split into two regional centres

Since the introduction of the redistribution of financial responsibility and division of duties, the mandate of the Road Infrastructure Division has grown increasingly complex. FEDRO was confronted with major challenges, including constantly increasing traffic volume and higher demands on traffic flow, road safety, noise abatement and environmental protection. In order to be able to effectively fulfil its mandate in the future, it was clear that the organisational structure of FEDRO needed to be adapted. Consequently, the Road Infrastructure Division, which has more than 250 personnel deployed at eight locations, was formed into two regional centres: the new Road Infrastructure Division, West-

ern Region, encompasses the region of Estavayer-le-Lac and Thun, while the Road Infrastructure Division, Eastern Region incorporates the region of Bellinzona, Zofingen and Winterthur.

### Two new Vice Directors

Two new Vice Directors were appointed to manage these two centres. The head of the Western Region is Jean-Bernard Duchoud (47) from Valais. Since 1999 he has held a variety of functions at FEDRO, most recently deputy to the head of the Road Infrastructure Division and head of the Technical Support section. He holds a degree in civil engineering from the Federal Institute of Technology, Lausanne. Guido Biaggio (44) from the canton of Ticino was appointed head of the Eastern Region on 1 May. He was previously Managing Director of the construction company LGV Impresa Costruzioni SA in Bellinzona and holds a degree in civil engineering from the Federal Institute of Technology, Zurich.

In order to fulfil the increasing demands on accounting and reporting and to bring financial controlling, motorway investment controlling and risk and quality management at FEDRO closer together, a new Steering and Finance Division was created which comprises three sections: Finance and Controlling, Motorway Investment Controlling and Risk and Quality Management. The head of this division is Christian Kellerhals, who previously held the position of head of the Investment Planning/Corporate Services section within the Road Infrastructure Division.



### The new FEDRO management team

On the left (from bottom to top): Jürg Röthlisberger (Director), Katrin Schneeberger (Deputy Director, Political and Official Affairs Division), Sylvia Meister (Executive Assistant), Werner Jeger (Vice Director, Road Traffic Division), Erwin Wieland (Vice Director, Road Networks Division) and Michael Müller (head of Information and Communication section).

On the right (from bottom to top): Michael Studer (head of Personnel), Christian Kellerhals (head of Steering and Finance Division), Jean-Bernard Duchoud (Vice Director, Road Infrastructure Division, Western Region) and Guido Biaggio (Vice Director, Road Infrastructure Division, Eastern Region).

Accident Statistics, Analyses, Safety Criteria

### Organisational chart of the Federal Roads Office (FEDRO) Valid from 1 July 2015 Federal Roads Office **Executive Assistant** J. Röthlisberger, Director Personnel Finance Inspectorate Road Infrastructure Political & Official Road Infrastructure Steering and Finance **Road Networks Road Traffic Division** Division **Affairs Division** Division (West) **Division (East)** Division J.-B. Duchoud, C. Kellerhals K. Schneeberger, E. Wieland, G. Biaggio, W. Jeger, **Deputy Director** Vice Director Vice Director **Vice Director** Vice Director Investment Planning/Corporate Services East Road Network Planning Political, Economic and Operations Registration, Liability, Finance and Controlling International affairs Penalties **Human Powered** Investment Planning/Cor-Legal Services and Land Technical Support F3 Traffic Regulations Acquistion Mobility porate Services West Technical Support <u>Technical Support</u> Driver and Vehicle Risk and Quality Standards, Research, Information and Communication Safety F1/F2 F4/F5 Registers **Traffic Management** Regional Office **Regional Office** Vehicles Estavayer-le-Lac Regional Office Regional Office Thun **Swiss Traffic** Vehicle Homologation Services **Management Centre** Regional Office Bellinzona Language Services Data Management Mobility

# The duties of the FEDRO divisions

The Federal Roads Office (FEDRO) now comprises six divisions:

Steering and Finance/Political and Official Affairs/Road Infrastructure, Western Region/Road Infrastructure, Eastern Region/Road Networks/Road Traffic.

# 1\_Steering and Finance

This division was created on 1 March 2015. It is responsible for finance, as well as for risk and quality management, and comprises three sections:

- Finance and Controlling
- Motorway Investment Controlling
- Risk and Quality Management

# 2\_Political and Official Affairs

This division comprises six sections that are responsible for a broad variety of activities:

- Political, Economic and International Affairs
- Legal Services and Land Acquisition
- Information and Communication
- Information Technology
- Services
- Language Services

# 3\_Road Networks

This division focuses on strategic duties relating to motorways/ national roads, including long-term planning and traffic management. It is also responsible for road research and for ensuring that the latest scientific findings are incorporated into the relevant standards, as well as for activities relating to human-powered mobility. It comprises the following five sections:

- Road Network Planning
- Human Powered Mobility
- Standards, Research, Safety
- Traffic Management
- National Traffic Management Centre







# 4\_Road Infrastructure, Western Region

This division incorporates the Regional Offices of Estavayer-le-Lac and Thun. It is also responsible for coordinating the operation of the overall Swiss motorway/national roads network. Its main duties are as follows:

- Construction of motorways and national roads
- Maintenance of the existing network
- Technical support in the Western Region
- Operation, Swiss-wide coordination and management of the two Regional Offices

# 5\_Road Infrastructure, Eastern Region

This division incorporates the Regional Offices of Zofingen, Bell-inzona and Winterthur, which are responsible for the following four main tasks:

- Construction of motorways and national roads
- Maintenance of the existing network
- Technical support in the Eastern Region
- Operation and management of the three Regional Offices

# 6\_Road Traffic Division

This division deals with all aspects of road traffic and technical requirements on vehicles. It comprises the following seven sections:

- Registration, Liability, Penalties
- Traffic Regulations
- Driver and Vehicle Registers
- Vehicles
- Vehicle Homologation
- Mobility
- Accident Statistics, Analyses, Safety Criteria







# Fund for financing motorway and agglomeration traffic

In order to secure the financing of motorway and agglomeration traffic over the long term, the Federal Council has decided to create a special fund at the constitutional level with an unlimited duration. In February 2015, it submitted its Dispatch to Parliament on the Fund for the Financing of Motorway and Agglomeration Traffic.

The volume of private motorised transport has more than quadrupled in Switzerland since 1960. This puts a strain on the infrastructure, increases the costs for operation and maintenance, and gives rise to traffic problems. Between 85 and 90 percent of all traffic jams occur on motorways in urban regions.

At the same time a financing gap is becoming apparent, since expenditure is exceeding revenue and the reserves for the special financing of road traffic will have been almost exhausted by the end of 2018. With its Dispatch to Parliament, the Federal Council is creating the prerequisites for eliminating the structural short-comings in the existing system, securing the financing of the motorways and federal contributions for agglomeration programmes, and eliminating bottlenecks on a step-by-step basis. This will enable Switzerland to continue to benefit from a safe and efficient transport network.

Because the new fund will require an amendment to the Federal Constitution, the Swiss electorate will have the final say.

# Increase by six cents per litre of fuel

The new fund is to exist for an unlimited period and be anchored in the Federal Constitution. The aim is for the funding of motorway tasks and the federal contributions to agglomeration programmes to be financed from a single source. This will give rise to better planning and implementation certainty, as well as greater transparency. As is the case with the railway infrastructure fund, existing and new revenue will be earmarked to flow directly into the new fund.

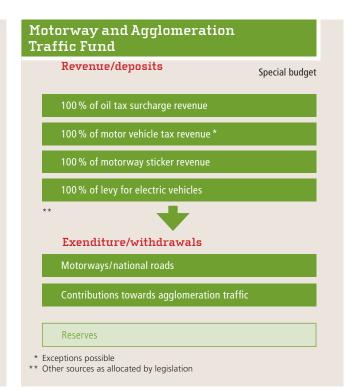
In order to cover the impending financing gap, the Federal Council intends to allocate revenue from motor vehicle tax to the new fund; in the past few years this has amounted to around 375 million Swiss francs per annum. It also intends to initially increase

the oil tax surcharge by six cents per litre; the current surcharge is 30 cents. However, financial resources are not to be built up in advance. The development of income and expenditure and the required level of future investment are the decisive factors here. The timing of the increase will depend on the development of the fund's proceeds and the effective requirements.

The fuel tax tariffs have not been adapted to inflation in the past few decades. The oil tax surcharge has remained unchanged since 1974, and the oil tax since 1993. Furthermore, new vehicles consume much less fuel than older models, and the tax burden measured in terms of average travel distance has fallen sharply in the past few years. The Federal Council therefore feels that an increase in the oil tax surcharge would be acceptable.



Fifty percent of the oil tax revenue is to be earmarked for the special financing fund, and this will secure the financing of contributions to the cantons and railways. These contributions mostly take the form of annual global or lump-sum payments. For the Motorway and Agglomeration Traffic Fund, various existing financing



sources as well as new ones are to be earmarked. This fund is for financing the motorways and national roads, plus contributions towards agglomeration traffic. The annual amounts required for financing these two areas depend greatly on the progress of construction.

# Contribution by electric vehicles towards financing

As a further measure aimed at covering the financing gap, the Federal Council aims to include holders of vehicles with alternative drive technologies, e.g. electric cars, in the financing of the fund, though not before 2020.

# Around 800 million a year

The measures aimed at covering the financing gap are expected to generate additional revenue of around 800 million Swiss francs per annum between 2018 and 2030. On the expenditure side, with regard to the motorway network the Federal Council is targeting savings and efficiency gains amounting to around 200 million Swiss francs per annum and is also considering postponing or prolonging projects aimed at eliminating bottlenecks.

Alongside the new fund, the existing fund for the special financing of road traffic with the earmarking of half the oil tax revenue is to be retained. The latter is used, for example, for financing contributions to the cantons. The contributions towards main roads in mountain and outlying regions, which are currently subject to time limits, are now to be paid out without restriction.

# STEP strategic development programme

In order to maintain the efficiency of road infrastructure, targeted capacity expansions are required in addition to the preservation of substance and the completion of the network. In the motorway network, these expansions are to be managed and implemented in STEP (strategic development programme for the motorways and national roads). Here, as a rule, the Federal Council will submit a Dispatch to Parliament every four years concerning an expansion project, and simultaneously petition a credit commitment. Parliament decides on projects and their prioritisation, as well as their financing, and specifies what is to be realised in each four-year period.

The STEP programme currently includes projects with an investment volume of 16 billion Swiss francs. These projects are associated with the ongoing elimination of bottlenecks programme, and are listed in prioritisation modules 1, 2 and 3. STEP also includes the planned additions of the Morges bypass and the Glattal motorway stretch into the motorway network. This means that the planning for eliminating these two severe bottlenecks can be initiated. \_\_\_\_\_

# 1.95 billion Swiss francs for completion, maintenance and expansion

The federal government is to invest around 1.95 billion Swiss francs in the motorway/national roads network in 2015. Of this amount, 630 million have been budgeted for the construction of new stretches, and 1.24 billion will be spent on the expansion and maintenance of the existing network. 75 million Swiss francs will be used for eliminating bottlenecks.

The basis for this year's construction work on new stretches is the eighth long-term construction programme for the completion of the motorway/national roads network, which was adopted by the Federal Council in February 2012. This year's priorities concern the continuation of construction projects that are already in progress, and include the following stretches:

- A9 in Upper Valais
- A16 (Transjurane) in the cantons of Bern and Jura
- Eastern segment of the Biel bypass (A5)
- Prättigauerstrasse (A28) in the canton of Grisons

A total of 630 million Swiss francs is available for the construction of new stretches of motorway to complete the originally planned network. The required resources are to be provided from the Infrastructure Fund. The largest credits have been allocated to the following cantons: Valais, 260 million Swiss francs; Bern, 207 million; Jura, 81 million; Grisons, 22 million; Neuchâtel, 16 million. Approximately seventy percent of the credit facility will be spent on projects in the French-speaking part of the country and Valais. The completion of the planned network is to remain a shared responsibility between the federal government and the cantons, even after the entry into effect of the redistribution of financial responsibility. As before, the cantons assume responsibility for development, while FEDRO is the supervisory authority.

# Maintenance and expansion (modifications)

A total of 1.24 billion Swiss francs is available for maintenance and expansion work (particularly in the form of modifications of existing stretches) in 2015. The required resources are to be provided from the Fund for the Special Financing of Road Transport. Work on the following projects will commence in 2015:

- A2	BS	Basel eastern ring-road (renewal and
		expansion of traffic management system)
- A2	BL/SO	Eptingen – Hägendorf
		New stretch, Belchen renovation tunnel
- A2	TI	Airolo – Quinto
- A4	SZ	Küssnacht – Brunnen
- A6	BE	Rubigen — Thun — Spiez
- A9	VS	Ried/Brieg — Schallbett
- A13	GR	Thusis — Sufers (safety shaft)
- A14	LU	Rotsee – Buchrain
- A6	BE	depot (renovation)

The main work is to be continued on the following stretches:

_	A1	VD/FR	Faoug – Kerzers
_	A2	NW	Acheregg – Beckenried
_	A4	SH	Galgenbuck tunnel (new)
_	A5	NE	Colombier – Cornaux
_	Α9	VD	Vennes – Chexbres (renovation)
_	Α9	VS	Sion and surroundings
_	A13	GR	Roveredo bypass

To obtain comprehensive information (in German, French or Italian) about the other main construction projects on the Swiss motorway network, please visit: www.autoroutesuisse.ch

# Elimination of bottlenecks (widening to increase capacity)

A total of 75 million Swiss francs is available for projects within the scope of the elimination of bottlenecks programme in 2015. Most of this budget will be spent on widening the Zurich northern bypass (A1) to six lanes.

# Five major projects on the motorway/national roads network

# 1\_A13: Thusis-Sufers Construction of safety shaft

Construction of safety shaft plus other measures. ... transit lines for electricity and telecommunications to be separated from the tube in order to protect them against physical interference. ... uniform control centre for tunnel installations (ventilation, emergency alarm). ... during construction work, the existing traffic flow on the A13 will be maintained. ... duration of construction of Viamala safety shaft, 2015–2017. ... duration of construction of Crapteig, Bärenburg and Rofla safety shafts, 2017–2022. ... total costs, 125 million Swiss francs (Viamala, 25 million).

# 2\_A6: Rubigen-Thun-Spiez Total renovation

Comprehensive renovation of the A6 stretch between Rubigen and Spiez; duration, 2015 to approx. 2024. ... first section, Rubigen-Kiesen (from 2015); the 40-year-old concrete surface is to be replaced with a low-noise mixture ... approx. five kilometres will be renewed each year ... new ecological drainage system. ... new operating and safety equipment. ... additional noise protection barriers ... renovation of Allmend tunnel from approx. 2017 ... total costs, approx. 700 million Swiss francs.

# 3\_A4: Galgenbuck tunnel New construction

New 1,138-metre, two-lane tunnel near Schaffhausen South junction. ... the Galgenbuck tunnel passes beneath the municipality of Neuhausen am Rheinfall. ... long-term functionality of the Schaffhausen South junction and easing transit traffic in the municipality of Neuhausen am Rheinfall. ... drilling work

commenced in summer 2013. ... excavation to be carried out through blasting from the western tunnel portal. ... challenges: variable, heterogeneous geology; drilling beneath developed zone; new tunnel passes just beneath a tunnel belonging to German railways. ... tunnel expected to be opened in 2019. ... total costs, 240 million Swiss francs.

# 4\_A2: Eptingen-Hägendorf Construction of Belchen renovation tunnel

3.2 kilometre Belchen renovation tunnel on the A2 between Eptingen and Hägendorf, to the west of the two existing tubes located at the same height. \_\_\_ excavation volume: approx. 470,000 cubic metres. \_\_\_ duration of construction: 2015–2022. \_\_\_ average daily traffic volume: approx. 55,000 vehicles. \_\_\_ total cost: approx. 500 million Swiss francs.

# 5\_A9: Vennes-Chexbres Renovation

This 12.5 kilometre stretch of the Lake Geneva motorway was constructed in 1974. \_\_\_ project: installation of low-noise road surface, replacement of noise protection barriers and safety barriers, renewal of seals on bridges, replacement of electromechanical installations (dynamic display of speed limits). \_\_\_ duration of construction: 2014–2017. \_\_\_ total cost: approx. 450 million Swiss francs.

# Investment in safe and ecological motorways and national roads

In 2015, the federal government is to invest around 1.24 billion Swiss francs of the budgeted 1.95 billion in maintenance and expansion work (in particular, modifications).

This type of work includes measures to improve tunnel safety and noise protection, as well as environmental compatibility.

The funds are primarily to be invested in the existing network, with more than half earmarked for maintenance and thus for the preservation of the value and substance of the network. The remainder is to be used for expansion work (primarily modifications). Changing social demands and new scientific findings resulting in updated standards mean that the motorways and national roads need to be constantly further developed and modernised. Here, FEDRO is focusing on the following four areas of activity.

# Tunnel safety

The motorway/national roads network has 239 tunnels with a combined length of 251 kilometres. 157 tunnels currently comply with all safety guidelines and standards, which apply to the indication of safety installations, tunnel ventilation, escape routes and power supply.

The proportion of the tunnels that meet the corresponding criteria are as follows: indication of safety installations, 91 percent; tunnel ventilation, 83 percent; escape routes, 81 percent; power supply, 93 percent. It is important to ensure that those tunnels that do not comply with all the latest standards and guidelines can be used safely and without concern. Following the implementation of tunnel safety measures in the period from 2008 to 2014, the proportion of fully compliant tunnels (i.e. those meeting all requirements) was increased from 46 to 66 percent. In all, 126 measures are still required in order to meet all the currently applicable standards and guidelines.

On average, the expenditure for implementing tunnel safety measures will amount to around 92 million Swiss francs up to 2025, compared with around 50 million Swiss francs in the period from 2008 to 2014.

## Noise protection

To date, the federal government has spent 2.8 billion Swiss francs on noise protection in the motorway/national roads network, resulting in noise reduction along approximately 1,650 kilometres. Work is still required on the remaining 220 kilometres. FEDRO regards this as a high-priority project and aims to implement noise protection measures on a further 140 kilometres by 2018 at a cost of 300 million Swiss francs. Work on the remaining 80 kilometres will be carried out after 2018 at an estimated cost of around 200 million Swiss francs.

In view of the constantly increasing traffic volume on numerous stretches of motorway in densely populated areas, protecting residents from excessive noise has become a permanent task. This also means that additional measures are required on those stretches on which noise protection measures have already been implemented. Wherever possible, these measures are implemented directly on the motorway infrastructure, and include low-noise road surfaces, noise protection barriers, overhead structures, etc. The type and extent of these measures depends on the requirements stipulated in the federal noise abatement legislation. FEDRO anticipates that a further 1.3 billion Swiss francs will have to be spent on noise protection measures up until 2030.

Thanks to the measures that have already been implemented, the number of residents exposed to excessive road noise has been approximately halved to around 100,000.



Maintenance work on the Acheregg-Beckenried stretch. (Photo: FEDRO)

# Wildlife corridors

In Switzerland there are 40 national wildlife corridors that are interrupted by motorways/national roads. Around one-fifth of these had been modified by the middle of 2014 or are currently being adapted, i.e. equipped with appropriate bridges. Roughly one-third of the wildlife corridors are currently in the project planning stage.

On average, the costs for a wildlife bridge are around 5.5 million Swiss francs, meaning that the estimated overall costs of this programme are approximately 220 million Swiss francs.

# Runoff treatment plants

Pollutants are deposited on road surfaces as the result of exhaust emissions and abrasion from brakes and tyres. Unless preventive measures are taken, these pollutants run off with rainwater into meadows and fields. In view of this, FEDRO has initiated a comprehensive programme aimed at installing runoff treatment plants. The various pollutants that build up on the road surface are conveyed by rainwater into the motorway drainage system, where they are fed into a runoff treatment plant. To date, 40 of these facilities have been put into operation at a total cost of 481 million Swiss francs. Road runoff is regarded as heavily polluted on stretches with a daily traffic volume of more than 14,000 vehicles, and this is defined as the threshold for installing a runoff treatment plant.

# Renovation of the Chillon viaduct

The Chillon viaduct on Lake Geneva was opened to traffic in 1969 and is currently undergoing total renovation that will take three years (from 2012 to 2015). The concrete needs special treatment in order to halt the process of alkali-aggregate reaction.

The Chillon viaduct – which actually consists of two parallel viaducts – is one of the most spectacular engineering structures in the Swiss motorway network and provides a vital link between the Rhone Valley and Vevey. Around 50,000 vehicles travel along this stretch every day, and on Friday evenings and at weekends the volume rises to 7300 vehicles an hour during peak periods.

But in recent years, inspections have revealed that the condition of this dual viaduct has seriously deteriorated. A comprehensive renovation is required, which will cost around 70 million Swiss francs. Within the scope of this renovation, all railings and crash barriers, as well as the road surfaces and seals, will have to be replaced. Reinforcing the support structures, in order to ensure that the viaduct is able to withstand earthquakes, is an important part of the project. In addition, the carriageway joints and abutments also have to be replaced. Work will initially be carried out on the lakeside viaduct, then on the viaduct on the mountain side, so that one viaduct will always be open and the traffic flow will not have to be completely interrupted. \_\_\_\_\_



## High-performance fibre concrete

The Chillon viaduct has suffered damage due to a process called alkali aggregate reaction, which is a chemical reaction between the cement and the silicic acid in the concrete aggregate that influences the structure of the viaduct. This results in cracking and spalling. For this reason, the viaduct needs to be subjected to a special treatment. The entire carriageway slab will also be coated with a high-performance fibre concrete layer that is four to five centimetres thick. This additional layer will increase the load capacity of the viaduct both longitudinally and laterally and will prevent the characteristic negative influences of alkali aggregate reaction on the concrete. The concrete layer is highly impermeable to water, has a high degree of longitudinal flexibility and thus protects the viaduct against corrosion. Finally, a new road surface will be installed on the viaduct. Work is expected to be completed in the course of 2015.

# Renovation of the historic Schöllenen route

Between 2014 and 2019, FEDRO is to renovate the historic national road through the Schöllenen gorge between Göschenen and Andermatt at a cost of around 105 million Swiss francs — a project that poses some major challenges.

The Schöllenen route is a national road with some unusual features. Hardly any other stretch in the motorway/national roads network has so many sharp bends over such a short distance. It has a height difference of 357 metres over a distance of 5.1 kilometres, and it winds its way through a stunning natural land-scape from Göschenen to Andermatt.

This stretch is to be comprehensively renovated by 2019. In addition to the preservation of value, the focus is above all on road safety. The project poses some major challenges for the project management, engineers and construction companies, including, in particular, maintaining traffic flow during the construction work. Solutions have to be found not only for motorised road users, but also for cyclists and hikers: as a category 3 national road, this route is open to all traffic, with the sole exception of articulated vehicles and heavy goods vehicles with trailers. One of the main tasks concerns the replacement of the road surface, which has to meet particularly high requirements. Due to the extreme weather conditions and high volume of traffic, the road surface has to be as robust as possible.

Preparatory work was initiated in October 2013, and the goahead for the construction work was given in April 2014.

# Road through a railway tunnel

One of the biggest challenges concerned the renovation of the Umerloch tunnel in 2014, which had to be periodically closed to traffic. While this work was in progress, traffic was diverted to the track of the Matterhorn-Gotthard railway, which runs parallel to the road. To enable this, the track was made accessible to road traffic with the aid of concrete elements. Thanks to this innovative solution, it was possible to reduce the overall duration of the project by almost a year. In 2015 the focus will be on the renovation and partial renewal of the Tanzenbein South gallery and the renovation of the road and retaining walls in the stretch between Schöllenmätteli and the northern portal of the Heuegg gallery. Due to the local weather conditions, work can only be carried out between April and November. The project is scheduled for completion by the end of 2019 and will cost around 105 million Swiss francs. The implementation of these measures will ensure that all road users will be able to continue to safely use this route that runs through magnificent mountain scenery.



- Improvement of the road surface
- Renovation of engineering structures
- Modification of drainage system
- New arrangement of cycle and hiking routes
- Replacement of supply lines \_\_\_\_\_



# Solutions for bottlenecks in Basel, Lugano/Mendrisio and St Gallen

In 2030, around 490 of the approximately 1900 kilometres of motorways and national roads will be frequently congested. With a view to eliminating major bottlenecks, FEDRO has been carrying out various project studies, including for the regions of Basel, Lugano/Mendrisio and St Gallen.

The aim behind these studies is to comprehensively examine possible options for eliminating congestion and identify the most effective measures. The findings obtained from the studies for Basel, Lugano/Mendrisio and St Gallen are now available, but it is not yet possible to define a timeframe for the implementation of the various measures. Parliament is ultimately responsible for deciding on the release of the necessary financing, though the cantons will also be asked to contribute towards the costs on a case-by-case basis.

# 

# Basel: new Rhine tunnel

In view of the very high traffic volume, heavy use of the national road by urban and regional traffic and the importance of Basel in terms of overall north-south transit traffic, there is an urgent need for action in the Basel region. Unless measures are taken to increase capacity, the national road will be congested in the future for two to four hours every day.

The solution developed by FEDRO and supported by the authorities of the cantons of Basel-Stadt and Basel-Land includes the construction of a new tunnel between Birsfelden and the northern bypass near the Wiese junction. This new Rhine tunnel would be able to significantly ease congestion on the national road. If necessary, it would also be possible to implement a structural expansion of the option for traffic to and from Germany at a later date. The advantages of the Rhine tunnel include the positive effects in terms of quality of life, which would be considerably higher with the selected solution than with the other options.

# St Gallen: third tube for the Rosenberg tunnel

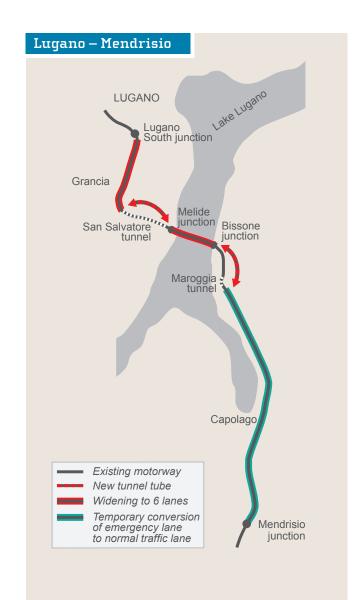
In the region of St Gallen, the Kreuzbleiche-Neudorf stretch is especially problematic due to the very high traffic volume and the density of connections to numerous other routes.

The solution here would be to widen the existing national road between Kreuzbleiche and Neudorf. This option envisages the construction of a third tube for the Rosenberg tunnel and the permanent conversion of the existing emergency lane into a normal traffic lane. In comparison with the other options examined, this would permanently solve the congestion problem at a relatively modest cost. This project also includes the construction of a new access road that would ease the traffic situation in the inner-city road network.

# Lugano/Mendrisio: two new tunnel tubes

Unless countermeasures are taken, the heavy flows of commuter traffic from Italy will give rise to major traffic problems on the A2 between Lugano and Mendrisio by 2030. Unlike other problem stretches, this section is characterised by periods of congestion due to one-way commuter traffic. Here, the route becomes congested in the direction of Lugano in the morning and in the direction of Mendrisio and Italy in the evening.

As is the case in St Gallen, the most effective solution here would be to expand the existing infrastructure. In addition to widening the stretch between Lugano South and the San Salvatore tunnel, this option envisages the construction of a third tube for the San Salvatore and Maroggia tunnels. In order to minimise the impacts on nature and the landscape, the capacity increase on the Melida causeway would largely be accomplished by converting the existing physical infrastructure. This would involve the temporary use of the emergency lane south of the Maroggia tunnel.



# Use of emergency lanes to prevent traffic jams

The volume of traffic on the motorway/national roads network has more than doubled since 1990. According to various forecasts, around 490 kilometres of motorway will be frequently congested by 2030. As a short- to medium-term measure, FEDRO is opening emergency lanes to traffic at certain times of day.

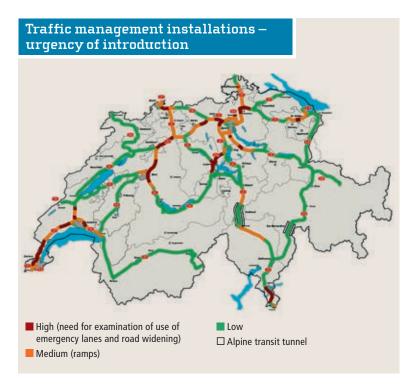
Around 20,000 traffic jam hours are recorded each year on the motorway/national roads network. Traffic jams are harmful to the environment and give rise to high economic costs. FEDRO is currently planning expansion measures aimed at eliminating the worst bottlenecks, but until these projects have been implemented, interim measures will be required. Traffic flow can be improved and road safety can be enhanced by opening emergency lanes to traffic.

The current trial opening of emergency lanes to traffic on the A1 between Morges and Ecublens that was initiated in January 2010 has confirmed the positive findings from other countries: significantly smoother traffic flow, lower accident rates (generally down by 15 percent), reduction in emissions of pollutants by 10 percent, reduction of noise levels by up to 2.4 decibels. The plan is to open emergency lanes on stretches in agglomerations between two neighbouring junctions and during peak periods.

### 15 projects

Since the general concept was given the go-ahead, 15 projects have been launched. Each project is subject to complex approval procedures and has to be harmonised with expansion projects in the programme to eliminate bottlenecks and the respective maintenance projects.

The goal is to implement this solution on approximately 125 kilometres of motorway. The first stretches are to be put into operation in the Winterthur and Lausanne regions in 2017 and 2019 respectively, while others are planned in the regions of Aargau, Basel, Bern, Geneva, Lausanne and Zurich. The overall implementation costs are expected to amount to around a billion Swiss francs. For the temporary use of an emergency lane the surface has to be strengthened (to accommodate heavy vehicles), structural modifications have to be carried out on short bridges and overhead structures, and additional emergency bays have to be installed. Furthermore, traffic signals have to be installed that can be centrally operated for traffic control and monitoring purposes.



Swiss motorway/national roads network: colour coding indicates urgency of introduction of use of emergency lanes. (Illustration: FEDRO)

# Automated monitoring and control of traffic

Since May 2014, FEDRO has been operating a new traffic management program called "FA VM", which was designed to improve traffic management by enabling better monitoring and control of traffic.

"FA VM" stands for "Fachapplikation Verkehrsmanagement" (Traffic Management Application). It is used by FEDRO's traffic management centre in Emmenbrücke (canton of Lucerne) and cantonal police forces to monitor the traffic situation more effectively, as well as to automatically record and process traffic data and implement traffic management measures.

### Dynamic display of speed limits

With the aid of dynamic displays for indicating speed limits, FEDRO is able to increase the capacity of the motorways and national roads. The available capacity can best be utilised when vehicles travel at a speed of around 80 km/h. By temporarily reducing the maximum permissible speed from 120 km/h to 100 or 80 for a limited time, it is possible to optimise the volume of traffic travelling on a heavily frequented stretch of motorway. In this way it is often possible to keep traffic flowing smoothly and prevent or ease congestion.

# Already installed on 170 kilometres of motorway

Dynamic display of speed limits has already been installed on around 170 kilometres of motorway. On around 130 kilometres these displays also include hazard and traffic jam warnings. In the next few years, FEDRO aims to implement dynamic displays on around 400 kilometres of motorway. As a rule, implementation will go hand in hand with ongoing maintenance projects..

## Inclusion of roadwork sites

Planning was initiated in 2008. The project was implemented in 2012, and the system was handed over for operation in May 2014. Then, in September 2014 an important component was added, namely an application for managing roadwork sites. This means that the status of road works on the motorways and national roads can now be monitored in the system.

Now, for the first time, all data for monitoring and controlling traffic on the motorways and national roads are readily available at a central location, and the prerequisites have been created for the direct operation of traffic control systems from the traffic management centre in Emmenbrücke. The introduction of this system means that traffic monitoring on the motorways and national roads is now fully digitised.

# Standard scenarios in the event of accidents

The traffic management application also provides the basis for precise traffic forecasts, as well as the opportunity to quickly initiate measures to ensure smooth traffic flow. In the event of traffic accidents, it is now possible to trigger standard scenarios for controlling traffic flow with the aid of traffic management plans stored in the system. .....

# First follow-up inspection after five years

Cars and motorcycles have to be periodically inspected. Since these vehicles now meet higher standards thanks to the technological progress that has been made, at the beginning of 2015 the Federal Council decided that the first periodical inspection will in future only have to be carried out five years after initial registration.

With effect from February 2017, cars and motorcycles will only have to be inspected for the first time by the relevant cantonal road traffic authority five years after their initial registration (though by the sixth year at the latest). This decision by the Federal Council takes account of the technological progress made in motor vehicles.

Cars and motorcycles in use on our roads today meet a significantly higher standard than was the case when the existing inspection deadlines were introduced around 20 years ago, as the lists of defects compiled by road traffic authorities and official accident statistics clearly show. According to police statistics, vehicle defects account for less than one percent of road accidents. Extending the deadline for the first inspection will ease the burden on vehicle holders.

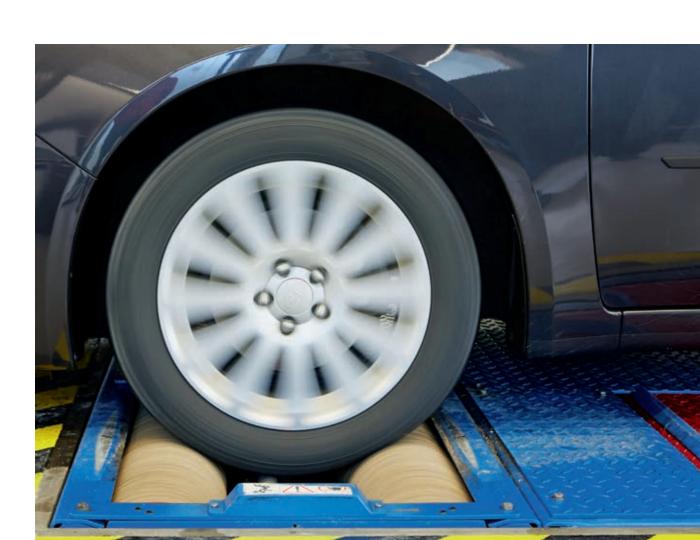
Light trailers with a maximum total weight of 750 kilograms are to be entirely exempt from the requirement of periodical inspections. For medium-weight trailers (total weight above 750 kilograms but below 3.5 tonnes), the third and all subsequent inspection intervals are to be shortened by one year. It is the responsibility of the cantons to take the necessary measures to secure compliance with the inspection deadlines, e.g. by providing the necessary inspection personnel or outsourcing inspections to private test centres. In order to give the cantons sufficient time to prepare, the changes are to enter into effect on 1 February 2017. .....

### Motorcycle and car dealers

At the same time as the Federal Council decided to extend the first inspection deadline, it took other decisions that will affect motorcycle and car dealers. For example, it decided to adopt the technical requirements of the EU relating to noise levels of motorcycles. This means that, with effect from 2017, the registration of motorcycles that are equipped with systems designed to produce more noise (exhaust tuning systems) may be prohibited. Another decision already entered into effect on 1 April 2015 relating to the allocation of licence plates to car dealers. The applicable criterion for the number of licence plates allocated to a dealer now takes the number of sold light motor vehicles into account. This means that companies acting solely as car dealers will be able to obtain several licence plates and thus enable several potential buyers to test drive their vehicles.



A car is subjected to a thorough examination during the periodical inspection.  $(\mbox{Photos:}\mbox{ OCN Fribourg})$ 



# Improved instruction for the protection of young drivers

The standard of driving instruction in Switzerland is to be further improved.

The Federal Council wants to optimise the two-phase driving instruction system and thus help young drivers in particular to avoid causing accidents.

Since 1 December 2005, people wishing to obtain a driving licence have had to complete two phases of driving instruction. Initially, new drivers only receive a provisional licence. They then have to complete two further education courses within three years.

The statistics show that, almost ten years after the introduction of the two-phase system, it is still the group of drivers aged between 18 and 24 that accounts for the most road accidents, namely 6955 in 2014. In view of this, the Federal Council wants to optimise basic driving instruction in Switzerland, and in the course of 2015 FEDRO will be initiating a corresponding consultation procedure regarding the revision of the ordinance.

The two-phase system is to be retained, but the first phase up to the practical driving test will be more effectively harmonised with the second phase, which involves the three-year provisional period. Based on the findings obtained from an evaluation, the initial instruction phase is to be intensified. Here, instruction in road use is now to take place prior to the theory examination, and candidates' understanding of the traffic regulations and acceptance of defensive and courteous driving behaviour are to be promoted. In the theory examination, too, a stronger emphasis is to be placed on understanding and observing traffic regulations in order to prevent candidates simply learning them by heart.

# Braking and energy efficiency

In a new two-hour compulsory basic driving course for licence category B, the focus will be on important topics such as emergency braking and the principles of energy-efficient and ecological driving behaviour. In addition, learner drivers under the age of 25 who wish to obtain a category B licence are to gain as much practical experience on the road as possible in the form of accompanied driving during a one-year period before they take the practical driving test.

Corresponding measures introduced in various European countries have shown that the risk of new drivers causing accidents lessens in proportion to the number of hours of accompanied driving. In order to prevent this concept from leading to an increase in the minimum age for obtaining a driving licence, the age at which a learner's licence can be obtained for category B is to be reduced to 17.

## Improvement of first aid courses

Measures are also to be introduced to improve the quality of first aid courses. The approval process for providers of first aid courses is to be reorganised and more specific requirements are to be formulated for the auditing of the quality assurance of all compulsory courses.



Learner driver taking the theory examination. (Photo: OCN Fribourg).

# Further education within six months

During the practical driving test, attention will be focused on the demonstration of skills rather than on errors. Here, candidates will largely be able to choose the route themselves and will also have to choose their parking spaces themselves. This will render the test more demanding, and passing it will no longer depend on avoiding mistakes.

In view of the intensification of the initial phase up to the driving test, the two-day compulsory education courses can be reduced to one day. Here the focus is to be on typical accidents caused by young drivers and how to avoid them, and the instruction is to primarily be based on practical experiences at a training centre and on the road.



# Accurate breath test to replace blood test

The new accurate breath test approved by Parliament within the scope of the "Via Sicura" road safety programme is to be introduced on 1 March 2017. Ordering a blood test will then only be required if there is suspicion of drug consumption, or in exceptional cases, or if the person concerned requests one.

In June 2012, within the debate on the "Via Sicura" road safety programme, Parliament adopted a resolution to introduce the new accurate breath test. This means that it will also be possible to submit the results of breath tests that indicate a level of 0.08 percent or above to law courts, as long as the test has been carried out with an approved device. A consultation procedure was held at the beginning of 2015 under the leadership of FED-RO, and the new breath test will be officially introduced on 1 March 2017.

Breath tests can already be carried out today in order to assess whether a driver is unfit to operate a vehicle, but the result can only suffice as evidence if the reading is below 0.08 percent and the tested person recognises it by signing the report. In all other cases, a blood test is required in order to provide evidence of drunkenness.

High-tech breathalysers are now available that can also detect alcohol levels of 0.08 percent and above with a high degree of accuracy so that they can be used as evidence. These devices measure milligrams of exhaled breath per litre. A reading of 0.25 milligrams is equivalent to an alcohol level of 0.05 percent.

Blood tests will only be necessary in future if there is a suspicion of drug consumption, or if the driver concerned expressly requests one, or in special circumstances (e.g. if the driver is suffering from a respiratory disease). These highly accurate breathalysers have already been in use for a number of years in many EU countries and elsewhere.



Breathalysers with a high degree of accuracy are carried in police cars. (Photo: METAS)

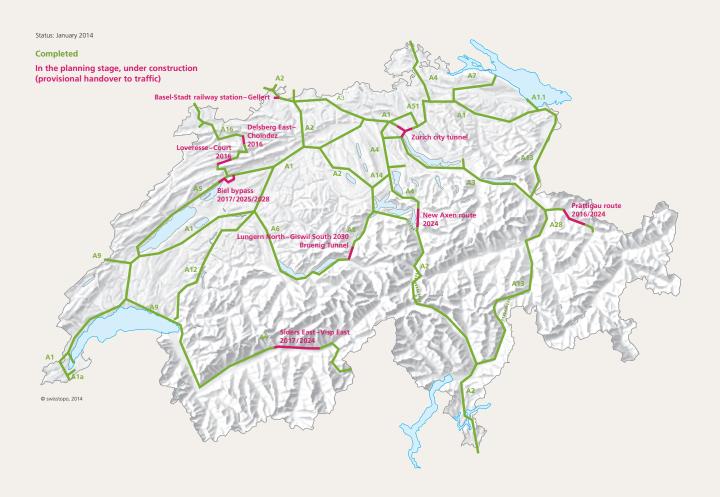
Levels unchanged		
	Breath alcohol concentration (indicated by breathalysers from 1 July 2016)	Blood alcohol concentration
Failure to observe alcohol prohibition (e.g. new drivers, professional drivers)	≥ 0.05 mg/l	≥ 0.010 percent
Driving under the influence of alcohol	≥ 0.25 mg/l	≥ 0.050 percent
Driving with qualified alcohol concentration	≥ 0.40 mg/l	≥ 0.080 percent

# Facts and figures

# Opening of three new motorway stretches

Three stretches of motorway with a total length of 11.7 kilometres were opened in the course of 2014: on the A5 in the canton of Neuchâtel, the A16 in the canton of Jura and the A28 in the

canton of Grisons. This brings the total length of the network to 1823.3 kilometres. When it has been completed it will have a total length of 1892.5 kilometres.



2014: openi	ing of three stre			
Motorway	Canton	Stretch	2 lanes	4 lanes
A5	Neuchâtel	Serrières – Areuse		1.7 km
A16	Jura	Bure – Pruntrut-West		8.8 km
A28	Grisons	Pagrüeg – Mezzaselva	1.2 km	

# The Swiss motorway/national roads network

Total length by road category [km]														
	7-la	ane	6-la	ane	4-1	ane	3-1	ane	2-la	ane		-traffic ads	Tot	:al
	in use	planned	in use	planned	in use	planned	in use	planned	in use	planned	in use	planned	in use	planned
Zurich			32.5	37.1	105.5	110.9	1.9		11.1	11.1			151.0	159.1
Bern			13.2	13.2	129.3	136.7			46.9	62.6	19.4	19.4	208.8	231.9
Lucerne			2.6	2.6	55.9	55.9							58.5	58.5
Uri					37.1	53.0			16.3	6.3	16.1	10.0	69.5	69.3
Schwyz					43.2	52.7			2.2		4.3		49.7	52.7
Obwalden					1.8	1.8			22.3	31.1	13.3	1.0	37.4	33.9
Nidwalden					22.9	22.9			2.9	0.9		2.0	25.8	25.8
Glarus					16.6	16.6							16.6	16.6
Zug					17.7	17.7							17.7	17.7
Fribourg					84.2	84.2							84.2	84.2
Solothurn					43.8	43.8							43.8	43.8
Basel-Stadt			3.5	3.5	6.0	8.0							9.5	11.5
Basel-Landschaft			9.5	9.5	20.7	20.7							30.2	30.2
Schaffhausen						1.9			17.2	17.2			17.2	19.1
St Gallen					139.8	139.8							139.8	139.8
Grisons					43.6	50.2			94.6	112.1	27.9		166.1	162.3
Aargau	1.2		11.5	11.5	86.6	87.8							99.3	99.3
Thurgau					42.8	47.3							42.8	47.3
Ticino			7.3	7.3	101.7	108.8			27.8	20.7			136.8	136.8
Vaud			3.4	3.4	189.1	189.8			12.8	12.8			205.3	206.0
Valais					60.1	89.6			15.6	15.6	28.6	28.6	104.3	133.8
Neuchâtel					34.6	32.9			3.0	3.0	1.9	1.9	39.5	37.8
Geneva					27.2	27.2							27.2	27.2
Jura					34.1				8.2	47.9			42.3	47.9
Total	1.2		83.5	88.1	1,344.3	1,400.2	1.9		280.9	341.3	111.5	62.9	1,823.3	1,892.5

The motorways comprising the Swiss network have between 2 and 7 lanes. The majority of stretches [1333.8 km] are 4 lanes. The cantons with the most kilometres of motorway are Bern [208.8 km], Vaud [205.3 km] and Grisons [166.1 km]. The "planned" columns in

the table refer to the resolution concerning the motorway network that was adopted in 1960. At that time, there was no need for 7-lane motorways. In the meantime, a 1.2-kilometre 7-lane stretch exists in the canton of Aargau.

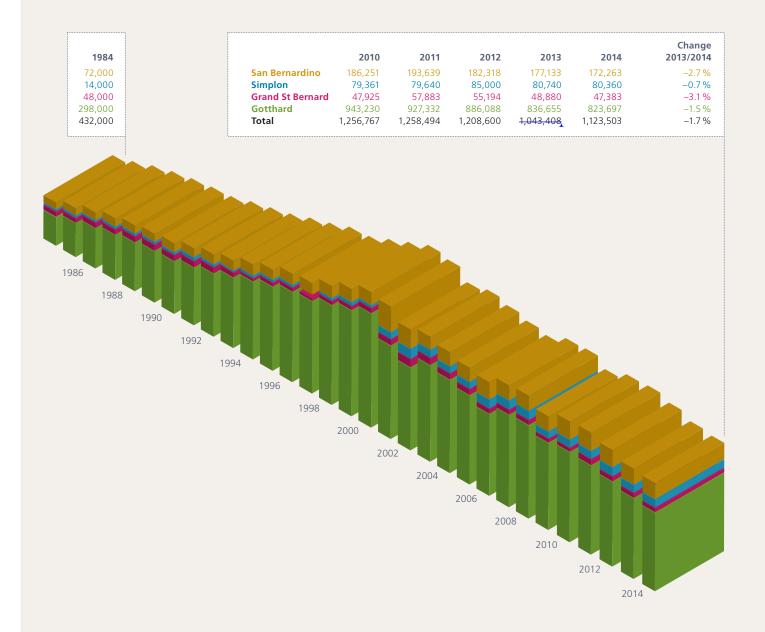
# 2014: opening of three new tunnels – Number of tunnels on the motorway/national roads network: 239

Tunnel	Motorway/ national road	Stretch	No. of tubes	Length	Height	Costs (million Swiss francs)
Serrières	A5	Serrières – Areuse	2	1.26 km	5.2 m	162
Bure	A16	Bure – Pruntrut-West	1	3 km	5.2 m	183
Bois de Montaigre	A16	Bure – Pruntrut-West	2	850 m	5.2 m	113

# Further decline in the volume of goods transport through the Alps

In 2014, a total of 1,123,503 goods vehicles crossed through the Alps on Swiss roads - 19,905 (or 2.7 percent) fewer than in 2013. The downward trend is therefore continuing, following a 5.4 percent decline in the previous year. The figure of 1.123 million goods vehicles is slightly below the average for the past ten

years (1.25 million). The reduction in 2014 was recorded at all transalpine routes, though the Grand St Bernard route accounted for the largest decline. The largest number of HGVs was recorded on the Gotthard route last year.



# Further increase in the number of vehicle kilometres

In 2014, a total of 26.890 billion kilometres was travelled on Switzerland's motorways — an increase by 1.9 percent versus 2013.

The traffic volume on the motorways and national roads increased again last year. The accumulated distance travelled by all vehicles in 2014 amounted to 26.890 billion kilometres, which corresponds to an increase by 1.9 percent (or 504 million vehicle kilometres) versus 2013, the year in which the 26 billion mark was surpassed for the first time.

The number of motor vehicles on the motorways and national roads is measured at 246 traffic counting stations. The recorded figures are used for calculating the average daily traffic volume, i.e. the average volume of traffic over a period of 24 hours every day of the year (cf. map on pages 30 and 31).

In 2013, vehicles covered an accumulated distance of 61.692 billion kilometres on the overall Swiss road network — 1.4 percent more than in 2012. The Swiss road network comprises 1,800 kilometres of motorways and national roads, 18,000 kilometres of cantonal roads and 51,000 kilometres of municipal roads. .....

Tra	affic volume (daily no. of	vehicles)		
		2013	2014	Change in %
A1				
ZH	Wallisellen	142,242	144,134	+1.3
AG	Neuenhof	127,705	129,932	+1.7
AG	Baden, Bareggtunnel	123,957	126,781	+2.3
ZH	Zurich northern bypass, Seebach	109,122	110,182	+1.0
ZH	Zurich northern bypass, Affoltern	106,371	107,408	+1.0
AG	Würenlos	123,972	126,027	+1.7
ZH	Weiningen, Gubrist	107,106	108,610	+1.4
A2				
BL	Muttenz, Hard	128,387	130,882	+1.9
BS	Basel, Gellert Nord	104,934	-*	
A6				
BE	Schönbühl, Grauholz	104,038	106,337	+2.2

<sup>\*</sup> The Basel Gellert measuring station was temporarily out of operation in 2014 due to technical work.

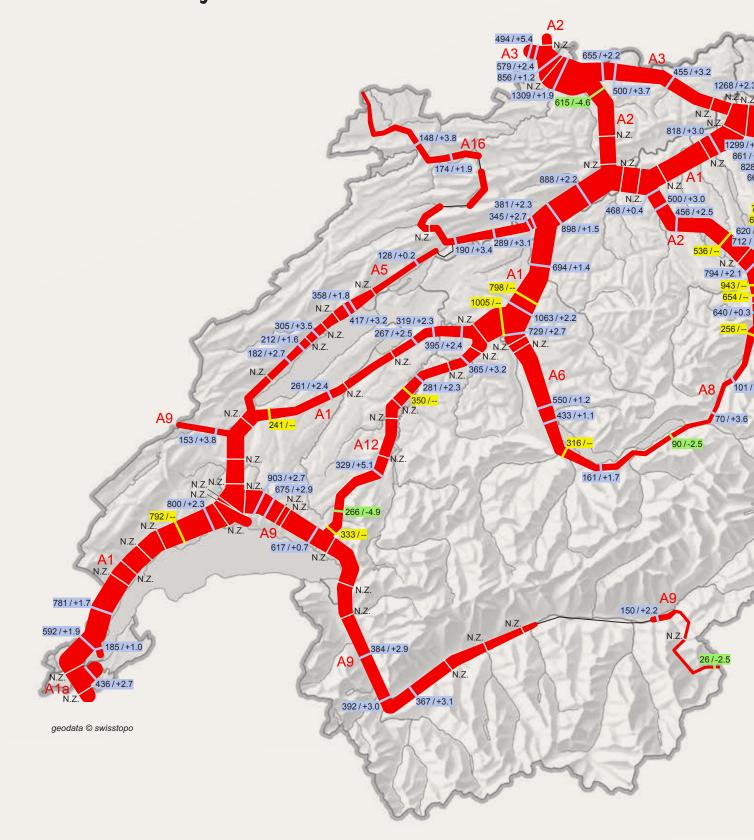
# Travelled kilometres on the motorway network

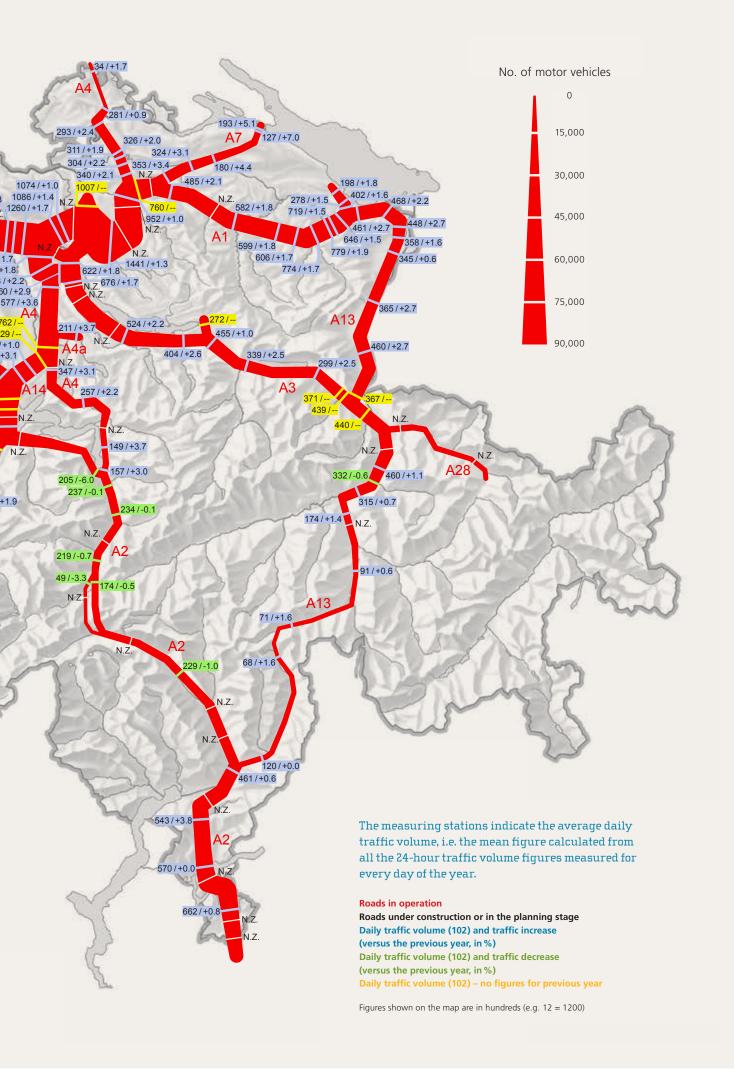
Change in %	Billion km	Year
	25.161	2010
+2.8	25.874	2011
+0.28	25.947	2012
+ 1.7	26.386	2013
+1.9	26.890	2014

# Number of traffic jam hours on the motorway/national roads network

Cause	2013	2014	Change in %
Congestion	17,144	18,395	+7
Accidents	2,345	2,322	-1
Roadworks	991	674	-32
Others	116	150	+29
Total	20,596	21,541	+5

# Map of traffic volume on the motorway network in 2014





# Fewer road accidents with fatalities and serious injuries in 2014

In 2014, 243 people died as the result of accidents on Switzerland's roads. This was 26 fewer than in the previous year. The number of fatalities thus fell sharply for the second year in succession. At the same time, the number of serious injuries decreased by 86 to 4043.

In 2014, a total of 17,803 accidents occurred on Swiss roads resulting in 243 fatalities, 4043 serious injuries and 17,478 minor injuries. The number of fatalities thus fell by ten percent versus 2013 and by 24 percent in comparison with the average for the period from 2009 to 2013, while the number of serious injuries fell by two percent and eight percent respectively. In this context, improvements to motor vehicles probably played a role, as can be deduced from the fact that, in absolute terms, there has been a notable decline in the number of seriously injured passengers in cars in the past few years.

# Negative figures with respect to cyclists

In 2014, 29 cyclists lost their lives — twelve more than in 2013, and the number of serious injuries rose by 13 percent versus the previous year. This negative balance prompted FEDRO to carry out an in-depth analysis of accidents involving cyclists and to implement measures where necessary.

With respect to accidents involving electric bikes, the negative trend since 2012 persisted in 2014: 145 e-cyclists were seriously injured – an increase of 31 versus 2013.

# Decline in the number of fatally injured pedestrians

In 2014, 43 pedestrians lost their lives on Swiss roads – the lowest number in recent years. In comparison with the average for the past five years, this represents a decline by 38 percent. This balance includes accidents on pedestrian crossings as well as at other locations.

The number of fatalities on pedestrian crossings last year was 14 (down by 39 percent in comparison with the five-year average).

# Fewer serious injuries on the motorways

The number of accidents on motorways and national roads remained more or less unchanged versus the previous year, and the consequences of accidents were less serious in 2014: with 26 fatalities and 242 serious injuries, the number of accidents with grave consequences was the lowest in recent years. \_\_\_\_\_

Total

Total

Change in % since 2013

Change in % since 2013

### Accidents **Persons** Fatalities 229 243 25 26 Severe injuries 3,818 4,043 242 204 17,478 mit Leichtverletzten 13,756 1,608 2,381

17,803

1,837

+1.9

+0.2

21,764

2,649

+0.5

21,764

2,649

+0.5

-1.3

113

Accidents resulting in injuries and fatalities

Accident statistics by road	users	
Pedestrians	2,322	
	10	
Driver/passenger(s), of which:	19,442	
	2,639	
in cars		10,253
		2,366
in heavy goods vehicles		89
		27
on motorcycles		4,000
		132
on bicycles		3,777
		1
in public transport		256
		0
in other forms of transport		1,067

### Types of accidents resulting in injuries and fatalities Due to Due to drink driving Total speeding Skidding, single-5,311 1,416 824 vehicle accident 652 Overtaking 801 29 15 Rear-end collision 3,882 233 114 21 Turning out of road 1,506 4 16 0 0 2,193 10 26 Turning into road 0 0 Crossing lane 916 10 15 0 0 0 Head-on collision 649 136 43 31 Parking accident 240 6 2 0 0 Collision with 55 2,081 69 pedestrian 6 0 Collision with an 89 0 2 animal Other accidents 4 135 3 6 0 Total 17,803 1,918 1,119 1,837 287 78 Change in % +1.9 -8.2 -12.2 since 2013 +0.2 -8.0 -25.0

# 90,442 more vehicles on Switzerland's roads

2014 inventor	v of motor	vehicles i	in Switzerl	and				
Total	Motor vehicles (total) 5,784,084	Cars 4,384,490	Passenger transport vehicles 62.436	Goods vehicles 382,281	Agricultural vehicles	Industrial vehicles	Motorcycles 699.219	Mopeds incl. fast electric bikes 153,348
		,,						
Lake Geneva region	1,067,600	822,262	10,737	65,832	23,142	10,198	135,429	14,103
Vaud	503,127	397,551	5,158	29,640	13,724	3,974	53,080	7,966
Valais Geneva	268,093	205,075	3,049	18,390	7,879	4,513	29,187	2,617
Geneva	296,380	219,636	2,530	17,802	1,539	1,711	53,162	3,520
Central plateau	1,305,888	971,268	16,435	86,920	60,289	15,906	155,070	49,128
Bern	714,853	512,043	10,086	50,898	38,441	9,999	93,386	30,751
Fribourg	222,000	172,240	2,405	13,450	9,874	2,160	21,871	6,436
Solothurn	195,310	150,356	1,939	12,693	5,415	1,942	22,965	8,448
Neuchâtel	119,378	95,191	1,489	6,553	2,950	1,149	12,046	2,180
Jura	54,347	41,438	516	3,326	3,609	656	4,802	1,313
Northwest Switzerland	754,571	581,847	7,619	52,232	17,751	6.333	88.789	25,846
Basel-Stadt	86.015	67,028	777	7,932	170	631	9,477	3,574
Basel-Landschaft	185,406	143,596	1,858	12,754	3,853	1,591	21,754	6,646
Aargau	483,150	371,223	4,984	31,546	13,728	4,111	57,558	15,626
Zurich	906,010	709,008	8,955	57,792	15,946	10,033	104,276	19,182
Eastern Switzerland	867,259	641,547	9,748	59,973	42,876	13,697	99,418	23,768
Glarus	30,167	22,572	290	2,159	1,358	600	3,188	802
Schaffhausen	59,430	43,785	798	3,901	2,878	725	7,343	1,731
Appenzell A. Rh.	41,122	30,312	485	2,257	2,355	559	5,154	1,665
Appenzell I. Rh.	12,948	8,951	98	786	1,223	234	1,656	488
St Gallen	357,911	268,737	3,755	24,228	15,018	4,902	41,271	10,127
Grisons	150,339	107,662	1,972	11,947	9,408	3,891	15,459	2,701
Thurgau	215,342	159,528	2,350	14,695	10,636	2,786	25,347	6,254
Central Switzerland	586,116	439,719	6,618	38,208	26,096	6,479	68,996	18,386
Lucerne	278,102	204,286	3,199	18,549	14,252	2,734	35,082	9,402
Uri	26,019	19,018	347	1,510	1,297	476	3,371	815
Schwyz	124,008	94,458	1,297	7,606	5,257	1,596	13,794	3,932
Obwalden	30,056	21,454	398	2,045	2,009	472	3,678	1,431
Nidwalden	33,962	25,705	408	1,804	1,320	326	4,399	1,150
Zug	93,969	74,798	969	6,694	1,961	875	8,672	1,656
Ticino	296,640	218,839	2,324	21,324	3,995	2,917	47,241	2,935
Federal administration	0	0	0	0	0	0	0	0

Source: Swiss Federal Statistical Office

As of the end of 2014, the number of vehicles registered in Switzerland was  $5.784\,\mathrm{million} - 90,442\,\mathrm{more}$  than in the previous year. The number of registered cars was  $4.384\,\mathrm{million}$ , which represents an

increase of around  $64,\!000$  vehicles. The number of motor vehicles in Switzerland has more than doubled since 1980.

# 304,083 cars put into circulation

New registra	tion of m	otor ca	rs			
	2004	2010	2011	2012	2013	2014
Туре						
Limousine	195,211	199,688	206,969	196,221	17,454	163,298
Station wagon	58,725	88,052	111,628	128,957	127,985	134,195
Convertible	13,540	8,857	9,358	8,867	7,625	6,590
Engine capacity (cc)						
Below 1,000	5,715	9,463	9,653	13,548	18,907	18,942
1,000 to 1,399	44,711	83,629	97,643	89,272	80,098	77,576
1,400 to 1,799	64,113	77,754	85,228	78,913	75,025	68,020
1,800 to 1,999	78,331	75,218	81,249	94,510	84,036	86,115
2,000 to 2,499	33,136	19,358	21,875	23,217	21,540	20,847
2,500 to 2,999	22,245	19,944	21,121	21,434	19,429	20,816
3,000 and over	19,205	11,030	10,734	12,227	9,727	9,819
Electric motor	20	201	452	924	1,392	1,948
Gear mechanism						
Automatic		60,183	66,935	74,151	69,916	69,916
Manual	191,625	222,670	243,846	238,988	221,389	211,701
Hydrostatic		30	18	17	13	7
Others		13,714	17,156	20,889	18,836	18,666
Fuel						
Petrol	197,776	200,576	211,540	200,576	185,070	180,875
Petrol and battery		4,246	5 4 4 4	5,721	6,193	6,165
Diesel	69,280	90,547	109,324	124,911	115,656	113,304
Others	420	1,228	1,647	2,837	3,235	3,739
Drive						
4×4	55,475	82,849	94,709	112,469	111,502	117,039
Rear-wheel drive	25,171	18,790	19,553	19,416	14,924	15,511
Front-wheel drive	186,830	194,929	213,637	202,075	183,698	171,513
Others		29	56	85	30	20
Total	267,476	296,597	327,955	334,045	310,154	304,083

Source: Swiss Federal Statistical Office

In 2014, 304,083 cars were put into circulation — around 6000 fewer than in the previous year. In 2000 and 2001, the corresponding number was around 314,000. Then in the next few years this number fell to well below 300,000 before it climbed again to reach 327,000 in 2011. The trend in favour of diesel engines persisted in the passenger car segment. Demand for electric and hybrid vehicles is constantly increasing, though their proportions are still very low. With respect to colour, white vehicles have been enjoying increasing popularity since 2007.

77 7 1 7	
Vehicle re	distration
	9
statistics	

	2004	2014
Cars	267,476	304,083
Passenger transport vehicles	2,770	4,167
Goods vehicles	22,495	33,405
Agricultural vehicles	3,335	3,326
Industrial vehicles	2,729	4,086
Motorcycles	47,871	47,521
Trailers	17,630	21,952
Total vehicles	364,306	418,540
Total motor vehicles	346,676	396,588

Source: Swiss Federal Statistical Office

In 2014, the number of new motor vehicle registrations was 396,588, including 304,083 cars (down by 1.4 percent versus 2013). However, the decline was less pronounced than in 2013 [–6.7 percent]. The record number of motor vehicles put into circulation was reported in 2013 [430,973], which was probably attributable to the new regulations governing the  $\rm CO_2$  emissions of new motor vehicles, which entered into effect on 1 July 2012.

# Special Fund for the Financing of Road Transport

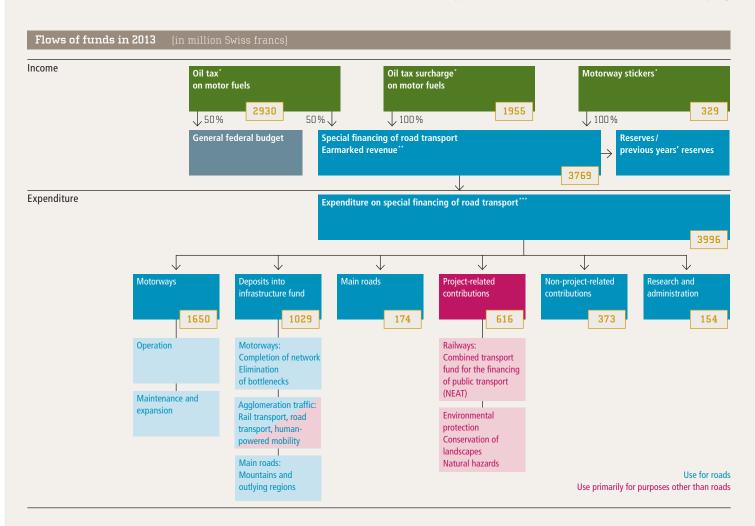
Expenditure relating to road transport is financed at the federal level via the Special Fund for the Financing of Road Transport. This Fund comprises revenue that is earmarked for the financing of road transport projects. It is financed from oil tax revenue (50 percent), revenue from the oil tax surcharge (100 percent) on fuels (excluding aviation fuels) and the net proceeds from sales of motorway stickers. The applicable official tax rates and fees are as follows: oil tax for petrol, 43.12 cents and for diesel, 45.87 cents per litre (unchanged since 1993); oil tax surcharge, 30 cents per litre (unchanged since 1974). The motorway sticker ("Vignette") costs 40 Swiss francs a year (unchanged since 1995).

The Special Fund for the Financing of Road Transport is used for financing a variety of activities relating to road transport. Resources are taken from the Fund to cover the costs of the federal road infrastructure (i.e. the motorway/national roads network) as well as to finance contributions to the cantons for their road infrastructure and other contributions towards other

er federal duties associated with road transport (cf. diagram: Project-related contributions).

The annual expenditure for each area is decided by Parliament within the framework of the federal resolution on the budget. The annual differences between income and expenditure increase or decrease the reserves from the previous years. A financing gap of around 1.3 billion Swiss francs per annum has to be anticipated from 2018/19.

In addition to the Special Fund, the Infrastructure Fund was officially introduced in 2008. It is financed through the Special Fund for the Financing of Road Transport (deposits). The money deposited in the Infrastructure Fund is used for financing the motorways and national roads (completion, elimination of bottlenecks), transport infrastructure in towns and urban centres (private motorised transport, public transport, human-powered mobility) and main roads in the mountains and outlying



- \* Net income
- \*\* Including miscellaneous income (19 million Swiss francs)
- \*\*\* Figures taken from the national budget.

regions. With the introduction of the Infrastructure Fund, the financing of the motorways was thus shared between two dedicated funds.

# Motorway and Agglomeration Traffic Fund

On 18 February 2015, the Federal Council submitted its Dispatch to Parliament concerning the creation of a Motorway and Agglomeration Traffic Fund for the purpose of closing the financing gap and for the development of STEP (Strategic Development Programme for the Motorways and National Roads). The Federal Council is calling for the current financing structure (Special Fund and Infrastructure Fund) to be adapted (cf. pages 8 and 9).

Special Fund for the Financing of Road Transport: Expenditure, 2012–2014		(in million Swiss francs)		
		2012	2013	2014
Motorways/national roads	Operation	329	353	346
	Maintenance/expansion	1,213	1,108	1,304
Infrastructure Fund	Annual deposit	928	1,026	1,029
Main roads	Contributions to cantons	168	172	174
Project-related contributions	Remuneration, combined transport; contributions for private railway sidings, terminals, etc.	180	199	205
	Fund for major railway projects (NEAT quarter)	265	277	266
	Environmental protection	102	108	98
	Protection of cultural heritage and landscapes	15	15	15
	Disaster prevention: protection against flooding	50	41	32
Non-project-related	General contributions to cantons	368	367	365
contributions to roads	Contributions to cantons without motorways	8	7	7
Research/administration		160	148	154
Total expenditure*		3,784	3,821	3,996

Withdrawals from the Infrastructure Fund, 2012–2014**	(in million	(in million Swiss francs)	
	2012	2013	2014
Completion of the motorway network	678	627	547
Elimination of bottlenecks on the motorways	76	95	67
Contributions to transport infrastructure in towns and urban centres	417	399	291
Contributions for main roads in the mountains and outlying regions	44	45	46
Total withdrawals/expenditure	1,215	1,166	951

<sup>\*</sup> Figures taken from the national budget.

<sup>\*\*</sup> According to the liquidity statement.

# 2.7 percent increase in the number of confiscated licences

In 2014, a total of 77,759 drivers had to surrender their licence due to traffic offences - 2060 (or 2.7 percent) more than in 2013. As in the previous year, the main reasons were speeding and drink driving. Withdrawals due to speeding rose by 0.9 percent to 29,971, compared with the all-

time high of 35,427 in 2010. The number of withdrawals due to drink driving fell in 2014, but the number of surrendered licences due to the unlawful use of mobile phones, navigation devices and multimedia equipment rose by 3.7 percent to 10,589. .....

Administrative measures			
	2013	2014	%*
Warnings to holders of a learner's licence	302	305	1.0
Warnings to holders of a driver's licence	47,658	50,586	6.1
Withdrawal of learner's licence	3,083	3,261	5.8
Withdrawal of driver's licence	75,699	77,759	2.7
Of which withdrawal of provisional licence	7,278	6,923	-4.9
Cancellation of provisional driver's licence	1,711	1,652	-3.4
Refusal of learner's or driver's licence	3,550	3,649	2.8
Refusal to accept a foreign driver's licence	18,813	19,872	5.6
Instruction in road use	2,551	2,158	-15.4
New driving test	2,818	2,763	-2.0
Examination by specialised psychologists	4,505	4,515	0.2
Special requirements	5,358	5,998	11.9

<sup>\*</sup>Change in percent

## Reasons for withdrawal

(in percent)

Speeding

■ Drink driving (> = 0.08%)

Inattention

Failure to give way

Failure to observe traffic signals

Unlawful overtaking

Other driving errors

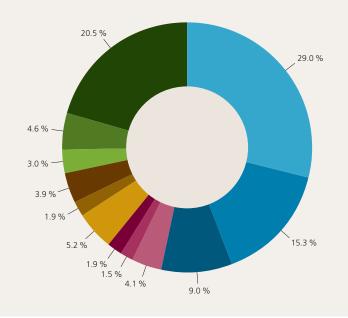
Alcohol addiction

■ Influence of medicaments or drugs

Drug addiction

Sickness or infirmity

Other reasons



	2014	%*
Reasons for withdrawal		
Speeding offences	29,971	0.9
Drink driving (> = 0.08 %)	15,781	-3.2
Inattention	9,341	0.3
Failure to give way	4,256	8.5
Failure to observe traffic signals	1,562	2.0
Unlawful overtaking	1,979	13.2
Other driving errors	5,359	4.3
Alcohol addiction	1,958	-7.0
Influence of medicaments or drugs	4,019	26.1
Drug addiction	3,171	-3.2
Sickness or infirmity	4,794	0.7
Other reasons	21,202	1.9
Duration of withdrawal		
1 month	31,734	3.9
2 months	2,178	1.3
3 months	16,598	2.2
4 to 6 months	8,644	-4.9
7 to12 months	2,793	- 10.9
More than 12 months	1,246	-3.4
Indefinite period	20,875	7.5
Permanent withdrawal	59	43.9
Age of persons affected		
Under 20	4,535	-5.0
20 to 24	12,203	0.7
25 to 29	11,079	1.5
30 to 34	9,369	3.7
35 to 39	8,113	6.9
40 to 49	15,999	0.7
50 to 59	11,533	4.3
60 to 69	5,592	5.7
70 and over	5,704	8.4
Reasons for withdrawal or refusal of learner's	/driver's licence	
Learner driving unaccompanied	406	-10.4
Driving error	2,167	8.8
Drink driving	806	-5.1
Driving without a licence	2,891	4.1

Failure to pass driving test

Sickness or infirmity

Reasons for warnings

Other reasons

Speeding

Inattention

Failure to give way

Unlawful overtaking

Other reasons \* Change in percent versus 2013

Theft

Driving despite withdrawal of licence

Drink driving (> = 0.050 to 0.079%)

Driving an unroadworthy vehicle

Failure to observe traffic signals

-7.4

-11.9 5.1

<del>- 17.7</del>

5.0

7.6

2.8

-1.5 -2.6

7.2

-6.5

17.5

121

2,351

42,752

6,287

3,840

2,092

1,929

796

# Addresses of FEDRO and regional units

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Swiss Federal Roads Office (FEDRO) Mühlestrasse 2, Ittigen CH-3003 Bern Phone 058 462 94 11 Fax 058 463 23 03 info@astra.admin.ch

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www.astra.admin.ch www.autobahnschweiz.ch www.verkehrsdaten.ch www.unfalldaten.ch www.truckinfo.ch

New location address for:

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# wiss traffic management centre (VMZ-CH)

Swiss Federal Roads Office (FEDRO) National traffic management centre Rothenburgstrasse 15 6020 Emmenbrücke LU Phone 058 482 83 11 Fax 058 482 83 12 vmz-ch@astra.admin.ch Offices of the Infrastructure division (construction, expansion and maintenance of the motorway network)

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Civil Engineering Department of the Canton of Bern Motorway maintenance depot, Spiez Gesigen 3700 Spiez

## Regional Unit II (cantons of Vaud, Fribourg, Geneva)

Place de la Riponne 10 1014 Lausanne

# Regional Unit III (cantons of Valais and Vaud)

Department of Transport, Civil Engineering and Environment Route des Iles/Les Ronquoz 1950 Sitten

# Regional Unit IV (canton of Ticino)

Divisione delle Costruzioni Area dell'esercizio della manutenzione Via C. Ghiringhelli 19 6501 Bellinzona

# Regional Unit V (canton of Grisons)

Grisons Civil Engineering Department Grabenstrasse 30 7001 Chur

# Regional Unit VI (cantons of St Gallen, Thurgau, Appenzell IR, Appenzell AR)

Motorway Maintenance Department, Canton of St Gall Martinsbruggstrasse 75b 9016 St Gallen

# Regional Unit VII (cantons of Zurich and Schaffhausen)

Civil Engineering Department, Canton of Zurich Walcheplatz 2 8090 Zürich

## Regional Unit VIII (cantons of Basel-Stadt, Basel-Landschaft, Solothurn, Aargau)

NSNW AG Northwest Switzerland Motorways Netzenstrasse 1 4450 Sissach

# Regional Unit IX (cantons of Neuchâtel, Jura and Bern)

Rue J.-L.-Pourtalès 13 Case postale 2856 2001 Neuchâtel

### Regional Unit X (cantons of Lucerne, Zug, Obwalden and Nidwalden)

zentras West Central Switzerland Motorways Nationalstrassen Flurweg 11 6020 Emmenbrücke

### Regional Unit XI (cantons of Uri, Schwyz and Ticino)

Department of Motorway Operations Werkhof 6454 Flüelen

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- AR Kantonspolizei Appenzell-Ausserrhoden Schützenstrasse 1 9100 Herisau Tel. 071 343 66 66, Fax 071 343 66 99 info.kapo@ar.ch
- BE Polizeikommando des Kantons Bern Waisenhausplatz 32 Postfach 7571, 3001 Bern Tel. 031 634 41 11 polizei.kommando@police.be.ch
- **BL** Polizei Basel-Landschaft Rheinstrasse 25, 4410 Liestal Tel. 061 926 30 60, Fax 061 921 45 81 pol.medien@bl.ch
- BS Kantonspolizei Basel-Stadt Zentrale 4051 Basel Tel. 061 267 71 11 infopolizei@jsd.bs.ch
- FR Police cantonale fribourgeoise Place Notre-Dame 2, 1700 Fribourg Tel. 026 305 17 17
- GE Police Cantonale de Genève Case postale 236, 1211 Genève GE 8 Tel. 022 427 81 11 presse@police.ge.ch
- **GL** Polizeikommando des Kantons Glarus Spielhof 12, Postfach 635, 8750 Glarus Tel. 055 645 66 66, Fax 055 645 66 77 kantonspolizei@gl.ch

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- TG Kantonspolizei Thurgau Zürcherstrasse 325, 8501 Frauenfeld Tel. 052 728 28 28, Fax 052 728 28 29 info@kapo.tq.ch
- TI Polizia cantonale Viale S. Franscini 3, 6500 Bellinzona Tel. 0848 25 55 55 polizia@polca.ti.ch
- UR Kantonspolizei Uri Tellsgasse 5, 6460 Altdorf Tel. 041 875 22 11, Fax 041 871 14 30 kantonspolizei@ur.ch
- VD Police cantonale vaudoise Route de la Blécherette 101, 1014 Lausanne Tel. 021 644 44 44, Fax 021 644 81 56 info.police@vd.ch
- VS Police cantonale Avenue de France 69, 1950 Sion Tel. 027 326 56 56, Fax 027 606 56 67 info@police.vs.ch
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- AR Strassenverkehrsamt Kt. Appenzell A.-Rh. Landsgemeindeplatz 9043 Trogen Tel. 071 343 63 11, Fax 071 343 63 29 strassenverkehrsamt@ar.ch, www.stva.ar.ch
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- LU Strassenverkehrsamt Kt. Luzern Postfach 4165, 6000 Luzern 14 Tel. 041 318 11 11, Fax 041 318 18 30 direktion.stva@lu.ch
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- TG Strassenverkehrsamt des Kantons Thurgau Moosweg 7a, 8501 Frauenfeld Tel. 052 724 32 11, Fax 052 724 32 58 info@stva.tg.ch, www.strassenverkehrsamt.tg.ch
- TI Sezione della circolazione Ticino Ala Munda, 6528 Camorino Tel. 091 814 91 11, Fax 091 814 91 09 di-sc@ti.ch, www.ti.ch/circolazione
- UR Amt für Strassen- und Schiffsverkehr Uri Gotthardstrasse 77a, 6460 Altdorf Tel. 041 875 22 44, Fax 041 875 28 05 www.ur.ch/assy
- VD Service des automobiles et de la navigation du canton de Vaud Avenue du Grey 110, 1014 Lausanne Tel. 021 316 82 10, Fax 021 316 82 11 info.auto@vd.ch, www.san.vd.ch
- VS Strassenverkehrs- und Schifffahrtsamt Kanton Wallis Avenue de France 71, 1950 Sitten Tel. 027 606 71 00, Fax 027 606 71 04 www.vs.ch/autos
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# Publishing details

## Publisher

Swiss Federal Roads Office (FEDRO)

# Research and text

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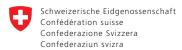
Swiss Federal Roads Office (FEDRO)

# Orders

Swiss Federal Roads Office (FEDRO)

# Swiss Federal Roads Office (FEDRO)

Federal Department of the Environment, Transport, Energy and Communications (DETEC) 3003 Bern Phone 058 462 44 11 Fax 058 463 23 03 info@astra.admin.ch www.astra.admin.ch



Swiss Confederation