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## Mobilität von Kindern und Jugendlichen

Entwicklungen von 1994 bis 2010

Analyse basierend auf den Mikrozensusen «Mobilität und Verkehr»

### Mobilité des enfants et des adolescents

Evolution de 1994 à 2010 - Analyse basée sur les micro-recensements «Mobilité et transports»

## The findings at a glance

The mobility patterns of children and adolescents are constantly changing. The analysis below follows on from earlier research and portrays developments and trends over the years 1994, 2000, 2005 and 2010. The most significant findings are summed up below.

- Reduced access to bicycles. In 2010, children in particular once again had less unlimited access to bicycles than in previous years. Seventy-five per cent of 6- to 12-year-olds had their own bicycles, compared to 89 per cent in 1994. For 13- to 15-year-olds, the figures stood at 91 and 94 per cent respectively.
- More children and adolescents had public transport passes. As in previous years, markedly more children and adolescents had public transport passes in 2010 than in 2005. Four out of five adolescents aged between 16 and 20 had at least one pass, as against 65 per cent in 1994.
- Are mopeds making a comeback? After dropping sharply for many years, the number of adolescents with unlimited access to a moped rose in 2010. In fact, among 14- and 15-year-olds, the percentage (20%) was even higher than in 1994 (18%).
- Rising levels of motorization. The availability of motorized means of transportation rose among adolescents aged 14 to 20, after having fallen in 2000 and 2005.
- Bicycle parking spot situation could be improved. A relatively high percentage of children and adolescents had access to a spot to park their bicycles at home (83%), at school (77%) or at destination (88%), but the spots often fell short in terms of quality.
- The number of trips to and from school fell as distances and travel times increased. Because of the growing centralization of educational facilities, distances and – for adolescents – travel times rose; by the same token, the number of trips to and from school per day fell.
- Primary school pupils went to school on foot less frequently, adolescents more frequently on foot and by public transport. Because of the longer distances involved, children were less likely to walk, instead taking public transport or being driven. Adolescents also used public transport more frequently and walked more at the destination. They travelled more ecologically, whereas children became more inactive.
- Boys and girls increasingly tending to use the same mode of locomotion. Girls and young women travel a bit more frequently on foot or on public transport, boys and young men a bit more frequently by bicycle. The gap between the two had nevertheless narrowed over time.
- Bicycle use stabilized in French-speaking Switzerland, walking less popular. In French-speaking Switzerland, bicycle use stabilized at a low level and walking among primary school children (again) fell, after having increased significantly in 2005.
- Distances and duration of leisure-related trips fell as of 2005; however the number of journeys remained unchanged. Half of all leisure-related trips were under 2 km and took less than 15 minutes.
- Walking to and from leisure activities increased significantly, especially for short distances. In 2010, almost 6 out of 10 leisure-related trips up to 3 km were made on foot (5 out of 10 in 1994). Even for trips over 3 km, walking accounted for 7 per cent, or almost twice as much as bicycling (4%).
- More young men (16-20) were wearing out the soles of their feet rather than the treads of their tires. In 2010, young men walked to and from more than a third (36%) of their leisure activities (2000: 23%). Over all, young people used motor vehicles less to travel to and from leisure activities.
- Bicycle use to and from leisure activities seems to have “bottomed out”. No further drops were recorded in bicycle use; girls (6-12) were even taking somewhat more frequently to their bikes, and in suburban areas bicycle use increased slightly. Bicycle use to and from leisure activities was largely unrelated to type of geographical area involved or the number of cars in the household. Major differences persisted between German- and French-speaking Switzerland.
- The mobility patterns of children and adolescents in Italian-speaking Switzerland were similar to those of their counterparts in French-speaking Switzerland, especially in terms of walking and bicycle use; on the other hand, Italian-speaking children and adolescents were slightly more inclined to use motor vehicles and less inclined to use public transport.



## Summary

### Initial situation and purpose

The day-to-day mobility patterns of children and adolescents differ from those of the adult population. Children and adolescents do not yet have access to the same means of transportation as adults. Since most of them still attend some kind of school or training facility, their most common destinations are educational institutions and leisure activities. Besides public transport, they travel most frequently on foot and by bicycle. The means of transportation differ starkly depending on the age group and purpose of travel, and change over time.

The present analysis, which was commissioned by the Human-Powered Mobility Unit of the Swiss Federal Roads Office (FEDRO), follows on from two earlier studies<sup>3</sup> and describes – supplemented with data from the 2010 “Mobility and Traffic” microcensus – developments and trends at four points in time, namely 1994, 2000, 2005 and 2010.

The data show that the mobility patterns of children and adolescents are constantly changing. Because those patterns diverge increasingly with age, this newest report adapts the analyses accordingly, focusing on the 6- to 12-, 13- to 15- and 16- to 20-year-old age groups. Depending on the purpose of travel or the analysis unit, more specific age groups were also analysed.

### Mobility conditions

Reduced access to bicycles. In 2010, children in particular once again had even less unlimited access to bicycles than in previous years. Among 6- to 12-year-olds, the figure fell from 89 per cent in 1994 to 75 per cent in 2010. Among 13- to 15-year-olds, on the other hand, 91 per cent still owned their own bicycles (94% in 1994). A greater percentage in all age groups had to make arrangements to use a bicycle. The reason for the drop in bicycle access in the youngest age group is unknown. Access to bicycles was higher in German-speaking Switzerland and in the countryside.

Bicycle parking spot situation wanting. A relatively high percentage of children and adolescents had a spot to park their bicycles at home (83%), at their training facility / school (77%) or at destination (88%), but the spots often fell short in terms of quality. At home access to them could be improved, and outside the home protection against theft (places to attach bikes) and roofing could be improved.

More frequent ownership of a public transport pass. While fewer children and adolescents had access to bicycles, in 2010 substantially more once again had a public transport pass. Four out of five adolescents aged between 16 and 20 had at least one pass (they numbered 65% in 1994). Children and young teens were less likely to have a pass.

Are mopeds making a comeback? There was a time when moped use among teens over 14 was commonplace, but fewer and fewer had access to this mode of locomotion in recent years. In 2010, however, more adolescents once again had unlimited access to a moped. In fact, the percentage of 14- and 15-year-olds with access to a moped was even higher (at 20%) than in 1994 (18%), and 16- and 17-year-olds increasingly had access not only to mopeds, but also to small motorbikes. Roughly 13 per cent of that age group had unlimited access to a motorbike in 2010. Access to mopeds was higher than average in German-speaking Switzerland, in the countryside and among adolescent boys.

Another change in trend for motorcycle and car driver's licences? Possession of a motorcycle or car driver's licence dropped sharply among 18- to 20-year-olds between 2000 and 2005, but rose again for motorcycles from 8 to 12 per cent. The percentage in this age group with a car driver's licence remained stable in 2005 and 2010, at 41 per cent. In 2000, 60 per cent had such a licence.

<sup>3</sup> See Daniel Sauter, *Mobilität von Kindern und Jugendlichen. Fakten und Trends aus den Mikrozensen zum Verkehrsverhalten 1994, 2000 und 2005*, commissioned by the Swiss Federal Roads Offices (FEDRO), Materialien Langsamverkehr No. 115, 2008, with a summary in English.

Daniel Sauter, *Mobilität von Kindern und Jugendlichen: Vergleichende Auswertung der Mikrozensen zum Verkehrsverhalten 1994 und 2000*, commissioned by the Swiss Federal Office of Sport (FOSPO), Magglingen, 2005, with a summary in English.

Both reports are available at [www.langsamverkehr.ch](http://www.langsamverkehr.ch).

Access to cars growing, to motorcycles stable. In 2010, 53 per cent of 18- to 20-year-olds with a driver's licence always had access to a car (in 2005, this was the case for 51 per cent, and in 1994 for only 33 per cent). Unlimited access to motorcycles remained unchanged at 37 per cent.

Degree of motorization once again rising overall. Considered overall, access to motorized means of transportation once again increased among adolescents aged 14 to 20, after having dropped between 2000 and 2005. Unlimited access to a motor vehicle increased from 14 to 20 per cent among 14- and 15-year-olds, from 22 to 26 per cent among 16- and 17-year-olds and from 34 to 36 per cent among 18- to 20-year-olds.

High percentage of children and adolescents in households with several cars. In 2010, almost half (47%) of children and adolescents aged 6 to 20 were living in a household with two or more cars, and a further 45 per cent in households with one car. Conversely, only about 8 per cent lived in car-free households. The percentage of those living in car-free households has remained relatively stable since 2000, whereas the percentage of those living in households with several cars continued to grow – from 31 per cent in 1994 to the aforementioned 47 per cent in 2010.

### **Mobility on the reference date (purpose, tours, trips, distances and travel time)**

Stable rates of mobility. On average, 91 per cent of children and adolescents were mobile on the date of the census. This was just barely more than the Swiss population overall (89%) and more or less the same as in 2005 and 1994. On weekends, especially on Sundays, substantially fewer children and adolescents were on the move than during the week. The percentage of those who did not leave the house on Sundays rose, from 15 per cent in 1994 to 21 per cent in 2010.

Few changes in the distribution of destinations. Between 1994 and 2010 there were only minor shifts in the distribution of destinations. At slightly over 40 per cent each, education- and leisure-related travel accounted for the biggest proportion of trips among 6- to 15-year-olds, although the percentage of school trips fell slightly. Among older adolescents, work and shopping accounted for more trips than during the childhood years. Shopping and leisure-related trips (recreational shopping) were often combined among children and adolescents and therefore difficult to count separately.

On average two tours per day; relatively few but growing number of combined trips. On average, children and adolescents made 1.8 tours per day, i.e. they left home on average almost twice a day in order to pursue an activity and return home. Roughly two thirds (63%) of the tours comprised only two legs, i.e. the outward and inward journey. In 31 per cent of cases, the tours comprised three legs, i.e. another activity was slotted in and a combined trip made. In 6 to 9 per cent of cases, the tour consisted of just *one* leg, in other words a round trip from door to door (an example being a walk). For adolescents between 16 and 20, the average tour was 26 km and 59 minutes long, although half of all tours were under 11 km and lasted only about 40 minutes.

Rise in number and distance of trips, but shorter travel time. In 2010, children and adolescents made 3.7 trips per day, slightly more than in 2005. There was a slight fall in the number of education-related trips per day, but a very slight increase in the number of leisure-related trips. The daily distance travelled also rose in 2010, but this may have a methodological explanation (more accurate route assessment). Unlike the number and distance of trips, and in a change from previous censuses, daily travel time fell between 2005 and 2010. On average, adolescents continued to spend more time on the move every day than the overall population.

Adolescents in French-speaking Switzerland (16 to 20) less frequently on the move every day, for shorter distances and less time. Adolescents in the French-speaking part of Switzerland made fewer trips than their German-speaking colleagues (3.5 vs 3.8), covered shorter distances (35 km vs 46 km) and were on the move less long (86 minutes vs 96 minutes).

City-dwelling children made more trips every day, but over shorter distances and with shorter travel times. Up to the age of 15, children in town made more trips than their colleagues in suburban areas and in the countryside but covered shorter distances, especially compared to those living in rural areas. Among adolescents aged 16 to 20, differences in the number of trips had shrunk to almost nil, but those living on the land covered substantially greater distances (51 km vs 41 km in suburban areas and 37 km in town).

## Changes in mobility and choice of mode of locomotion (all purposes)

Presentation by “pure” and combined modes of locomotion. The choice of mode of locomotion was surveyed for each leg of the trip. The results can be presented in various ways, however, not only by leg of the trip but also by the trip itself, travel time or distance covered. Depending on how the results are presented, different perceptions emerge. Owing to various selection criteria, this analysis is based on trips in which “pure” and combined modes of transportation are counted together. The possibility to make international comparisons was an important factor in this context.

Walking, whether on its own or in combination with another mode, used for many trips. Children and adolescents made 38 per cent of all trips exclusively on foot. In a further 26 per cent of trips walking was combined with other modes of locomotion. This attests to the importance of walking as an independent mode of locomotion and the crucial role it plays as a link between means of transportation.

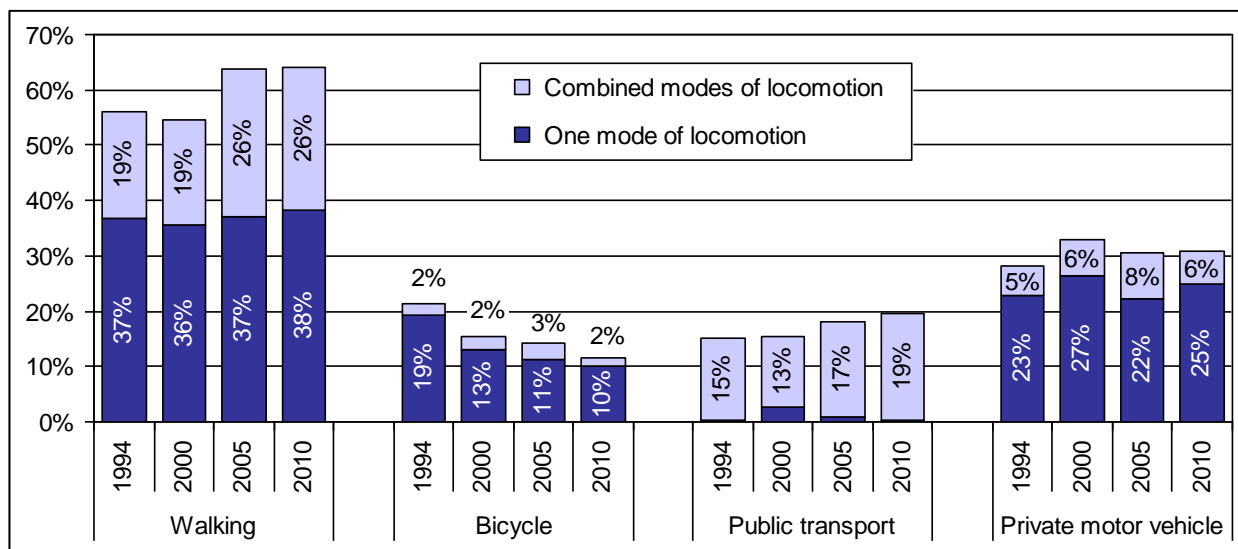
Micromobility devices probably underestimated in the microcensus. Scooters, kickboards and roller blades were used to go to school mostly by 6- to 12-year-olds, where they accounted for 3 to 4 per cent of trips. For methodological reasons – for example, in some cases it was the parents who provided information for their children – the proportion of such devices may have been underestimated, a hypothesis that is borne out by the findings of other studies.

Bicycles were rarely used in combination with other modes of locomotion and lost ground. Bicycles were rarely used on the same trip in combination with other means of transportation. Even the combination of bicycle and public transport was relatively infrequent in terms of percentage. Since 1994, the number of “pure” bicycle journeys in particular has dropped sharply. Steep declines were also recorded between 2005 and 2010 for trips on which bicycles were used in combination with other means. Those accounted for barely 2 per cent of all trips in 2010.

Public transport and walking frequently combined. Trips involving public transport were almost always, by nature, combined with other modes of locomotion – essentially walking. The percentage of such trips continued to rise in all age groups.

Astonishingly, motorized trips were rarely combined – parking space must usually be available near the destination. Motorized trips were for the most part “pure”, i.e. they involved only one means of transportation and were relatively rarely combined with other means (only 6 per cent of trips in which one leg was made in a motor vehicle were combined). This means that, for most trips, there must be a nearby parking space at the start and at the destination. After having dropped, the percentage of “pure” motor vehicle trips rose again slightly in 2010; combined trips, on the other hand, fell between 2005 and 2010.

Figure Z-1E: Trips by 6- to 20-year-old children and adolescents using one or several modes of locomotion in 1994, 2000, 2005 and 2010 (basis = 9,847, 18,631, 18,785 and 34,864 resp.)

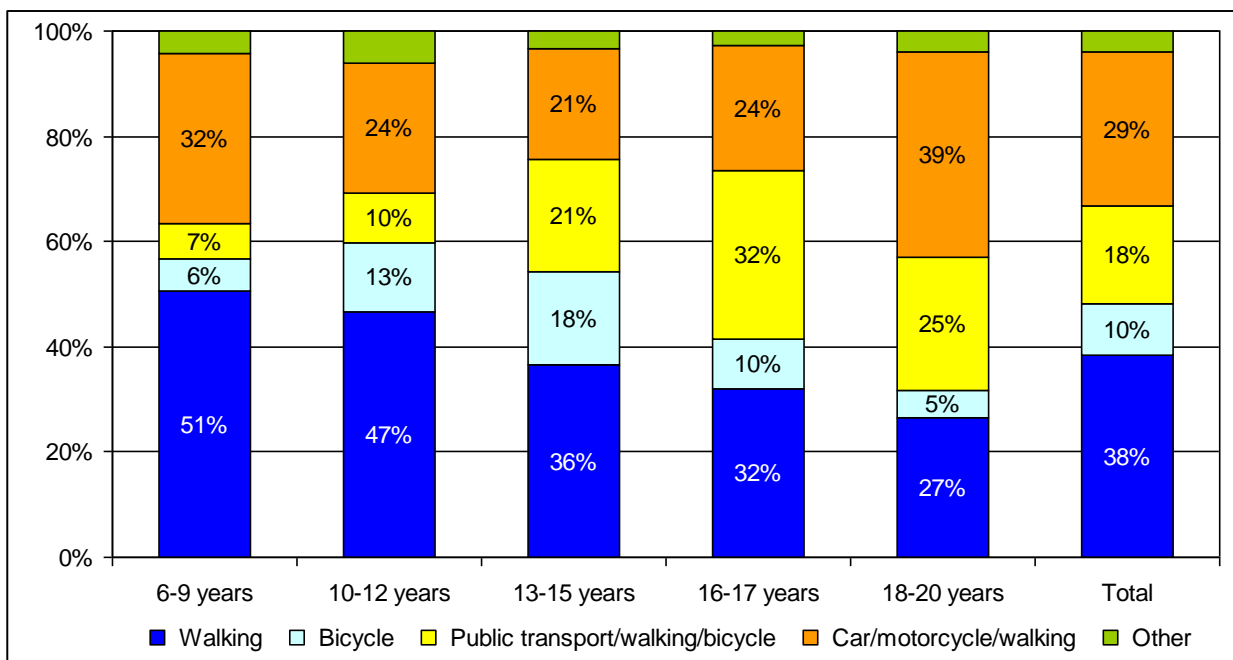


Source: Federal Statistical Office (FSO) and Federal Office for Spatial Development (ARE): Microcensus mobility and traffic

Comparison of changes in the modal split, or the composition of transport, by leg and trip show hardly any difference between the two types of evaluation. In order to assess changes more accurately and limit the methodology's impact on the presentation, the data were compared by leg and by trip. The result showed that the changes using that approach ran essentially parallel. Since legs were not fully integrated into the 1994 and 2000 micro censuses, their comparability is limited. In terms of the trips, the changes were somewhat "ironed out". This helps the interpretation of a time sequence.

The younger they were, the more likely children and adolescents were to make daily trips on foot. In 2010, 6- to 9-year-olds made almost half of all trips on foot; 18- to 20-year-olds made a little more than one quarter of all trips on foot. The number of trips made using public transport increases with age. At the age of 13 a particular jump happens, when they move from primary to secondary school. Bicycles were used most frequently by 13- to 15-year-olds. It was in that age group that the proportion of trips made in a motor vehicle was lowest. As of 18, the legal driving age, the number of trips made in a motor vehicle is significantly higher. Considered over time and across all age groups, the proportion of pedestrian trips and trips made using public transport increased slightly, whereas the proportion of bicycle and motor vehicle trips fell slightly, especially as of 2000.

Figure Z-2E: Choice of mode of locomotion for all purposes by age in 2010  
(basis = 34,834 trips by 6- to 20-year-old children and adolescents)



Source: Federal Statistical Office (FSO) and Federal Office for Spatial Development (ARE): Microcensus mobility and traffic

Boys and teenage men used bicycles more frequently than their female counterparts. This was particularly the case between the ages of 13 and 15. Girls in that age group were more likely to travel by public transport or motor vehicle. Between 6 and 12 years of age, girls made up for their low bicycle use by making more trips on foot. As of 16, the difference between the sexes took the form of a higher proportion of trips by public transport for teenage girls and a higher proportion of motor vehicle trips for teenage boys.

Walking more frequent among younger children in German-speaking Switzerland and older children in French-speaking Switzerland. Systematically fewer trips were made by bicycle in French-speaking than in German-speaking Switzerland. This was most obviously the case between the ages of 13 and 15. On the other hand, French-speaking children up to the age of 15 traveled more frequently by public transport or motor vehicle; as of 16, the differences between the two language areas virtually disappeared. Across all age groups, the proportion of travel by public transport increased in French-speaking Switzerland between 2005 and 2010 at the expense of travel by motor vehicle, whereas the proportion of travel on foot and by bicycle remained stable. In German-speaking Switzerland, there were only slight and statistically insignificant changes.

The further the distance from the city centre to suburban areas and the countryside, the lower the number of trips on foot and the higher the number of trips made in a motor vehicle. The same holds true for bicycle travel up to the age of 15: the more rural the setting, the higher the number of bicycle trips. However, the proportion of bicycle travel in all types of area was equally high for those over 16. Among all age groups, the proportion of trips made on foot rose in town and in suburban areas and remained the same in the countryside. Bicycle use started losing ground in 2000 in all geographical areas, whereas public transport gained ground. Fewer trips were made by motor vehicle in the city centre, but roughly the same number was made in suburban areas and in the countryside.

On short distances of less than 1 km travel on foot predominated, accounting for three quarters of trips; among 13- to 15-year olds, bicycles also accounted for a large proportion (18%). This age group made one third of trips between 1.1 and 3 km by bicycle. Distances of over 3 km were primarily traveled by motor vehicle (especially among 6- to 12-year-olds) or by public transport (among adolescents). On short distances, the tendency to walk rose over time and bicycle travel tended to fall. On longer distances, public transport gained ground on travel by motor vehicle or bicycle.

Children and adolescents from car-free households travelled much more frequently on foot than those from households with one or more cars, who travelled more often by motor vehicle. Bicycle use was unrelated to whether or not the household had a car. Across all age groups, the situation in households with cars had changed little since 2005; in car-free households, the proportion of travel on foot rose and the use of public transport fell. These values are based on relatively small samples.

### **Trend in relation to travel to and from school**

Number of school-related trips falling. Primary and secondary school children made on average over three school-related trips per day. Adolescents made about 2.5 trips per day. Between 2005 and 2010, the number of school-related trips fell above all among 6- to 9-year-olds, possibly as a result of the growing centralization of kindergarten and primary school sites and the introduction of school lunch programmes and after-school facilities. A fair number of children still went home for lunch, while many others ate and were supervised at a site other than the school, for example an after-school centre.

All age groups had longer school trips. Between the ages of 6 and 15, in the countryside and in French-speaking Switzerland among primary school children, the trip to school grew longer. This may be connected to the centralization of school sites, for example in the canton of Vaud. Despite that development, the average school-related trip for primary school children remained short. Among the youngest, 7 out of 10 school trips were less than one kilometer. Only at the tertiary level (occupational training, high school) are the distances significantly larger. As for the number of school-related trips, various developments in respect of distance overlapped and offset each other. Centralization led to longer school trips, a development that was slightly attenuated by individual trips made at noon, i.e. to the lunch table or to a park. The distance travelled in such cases tended to be short.

Duration of school-related trips among adolescents lengthened. As the distances rose, so did the duration of school-related trips. Among those over 16, each trip lasted 25 to 30 minutes. Primary school children, on the other hand, tended to be under way for as long in 2010 as in 1994, i.e. on average 12 minutes; two thirds of trips were nevertheless shorter.

High percentage walk to school – downward trend among primary school pupils, rise among adolescents. In Switzerland, 7 out of every 10 children in lower primary school (6-9 years) walked to school, but only 6 out of every 10 who were in middle primary school (10-12 years) and 4 out of 10 in secondary school. Among the youngest, the percentage of those walking to school steadily dropped, from 77 per cent in 1994 to 71 per cent, whereas among those 13 and older the percentage of those walking to school rose (for example, among 13- to 15-year-olds from 31 per cent in 1994 to 37 per cent in 2010).

Bicycle use has apparently bottomed out. Bicycle use dropped only in the main user group (13 to 15 years olds) and among 18- to 20-year-olds between 2005 and 2010. In the other age groups, bicycle use stagnated or even increased slightly. Overall, bicycle use to go to school has dropped sharply since 1994, i.e. by about two fifths across all age groups, from 21 per cent in 1994 to 13 per cent.

Public transport more frequently used to go to school. The use of public transport has grown almost as steeply since 1994 – by about 30 per cent – as the use of bicycles has dropped during the same

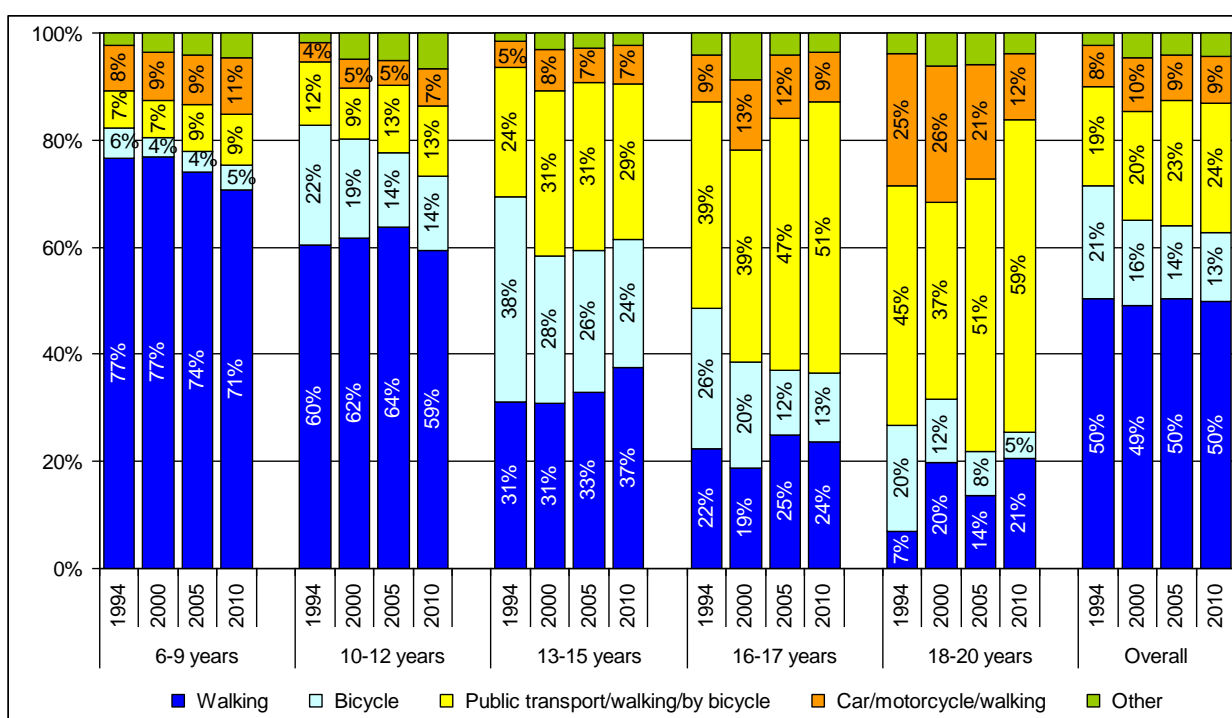


timeframe. In the case of both diminishing bicycle use and increasing public transport use, the changes were less marked between 2005 and 2010, hovering at around plus 4 per cent for public transport across all age groups. Only among 18- to 20-year-olds was there once again a marked increase.

The youngest increasingly chauffeured, adolescents made less frequent use of motor vehicles. Among primary school children, the proportion of those driven to school increased slightly – in 2010, 11 per cent of 6- to 9-year-olds were driven to school – but the percentage of adolescents travelling by motor vehicle dropped sharply as of 16.

Primary school children less active on the way to school, adolescents travelling more ecologically. Among 6- to 12-year-old children, the decreasing number of trips made on foot or by bicycle was offset by more trips on public transport and by motorized means of transportation. Among adolescents, on the other hand, the proportion of trips on foot and public transport rose, whereas those involving motor vehicles or bicycles fell. The latter nevertheless showed a tendency to stabilize.

Figure Z-3E: Choice of mode of locomotion for educational purposes in 1994, 2000, 2005 and 2010 by age group (basis = 3,730, 6,737, 7,435 and 12,152 trips by children and adolescents respectively)



Source: Federal Statistical Office (FSO) and Federal Office for Spatial Development (ARE): Microcensus mobility and traffic

Girls' and boys' choices of modes of locomotion tending to dovetail. This is especially true for adolescents as of the age of 13. While the use of bicycles among 13- to 15-year-old boys once again dropped sharply, from 32 to 26 per cent, it rose very slightly among girls, from 21 to 22 per cent. Among 16- to 20-year-olds there was hardly any difference in the use of motor vehicles between the sexes. In both cases the use of motor vehicles fell by about 10 per cent, more among teenage boys than girls.

Primary school children in French-speaking Switzerland travelled far less frequently to school on foot. The percentage of 6- to 12-year-olds going to school on foot fell steeply in French-speaking Switzerland, from 68 to 57 per cent; in German-speaking Switzerland it dropped from 72 to 68 per cent. And yet, the percentage in French-speaking Switzerland had risen by the same proportion between 2000 and 2005. The increase had been explained at the time by the many activities to promote walking to school. Those activities were continued and yet walking had clearly become less popular. Among 6- to 9-year-olds, walking was replaced above all by travel by public transport, and among 10- to 12-year-olds by car rides. In all likelihood, the centralization of school sites in individual cantons resulted in longer distances to school and in walking being replaced by travel on public transport and in some cases by the “family chauffeur”. Should that assumption be correct, it would show the extent to which structural changes can undermine the positive impact of campaigns.

Bicycle use in French-speaking Switzerland stabilized at a low level, further slight decreases in German-speaking Switzerland. Contrary to German-speaking Switzerland, bicycle use in French-speaking Switzerland stopped decreasing and stabilized at 4 per cent across all age groups. This means that bicycles are only marginally used in French-speaking Switzerland for education-related travel. In German-speaking Switzerland, the percentage again fell slightly, from 18 to 17 per cent, and was therefore four times higher than in western Switzerland.

Walking less frequent in the countryside, with more trips by public transport; some positive signs for bicycle use. The percentage of trips made on foot did not change in town across all age groups, but dropped noticeably in the countryside, especially among 6- to 12-year-olds, probably as a result of the longer journeys. On the other hand, the proportion of trips made on public transport increased, especially among 16- to 20-year-olds, again because of the longer distance. There was a sharp concomitant drop in motor vehicle use. In the city core, slightly more bicycle trips were once again made up to the age of 15. In suburban areas and in the countryside, the trend, except among 6- to 12-year-olds, was again towards fewer bicycle trips, although the drop was slight.

The more rural and high-income the municipality, the lower the percentage of trips on foot and therefore the higher the use of public transport and motor vehicles. While 72 per cent of 6- to 12-year-olds in suburban municipalities went to school on foot, in peripheral rural and high-income municipalities only about 55 per cent did so. In rural municipalities this meant that public transport was more frequently used, although motor vehicle use remained – surprisingly – relatively low. In high-income municipalities children are more frequently driven by the “family chauffeur” – 15 per cent of the time, trending downward since 2005.

Slight increase in bicycle use on distances of 1 to 3 km. Although bicycle use continued to lose ground on distances of up to 1 km and over 3 km, a slight increase was observed in distances of between 1 and 3 km by 6- to 15-year-olds. With the exception of the youngest children, the proportion of trips on foot over distances of up to 3 km rose sharply, especially among 13- to 20-year-olds. This reflects a fundamental change in behaviour: because more children and adolescents travelled to school on public transport, more short trips were made (on foot), for example during the lunch break, in the vicinity of the school. Previously more return trips were made home and back to school over the lunch hour, and they tended to be (more) frequently made by bicycle.

Children from car-free households walked more often, were driven less often. Children and adolescents from car-free households walked to school much more often and were driven much less often than those from households with several cars. This was the case in town, in suburban areas and in the countryside. In suburban areas, for example, the percentage of children being driven to school at school-starting age – 6 or 7 years old – was 20 per cent in households with two or more cars, 0 per cent in car-free households and 10 per cent in households with one car.

### **Trend in relation to leisure travel**

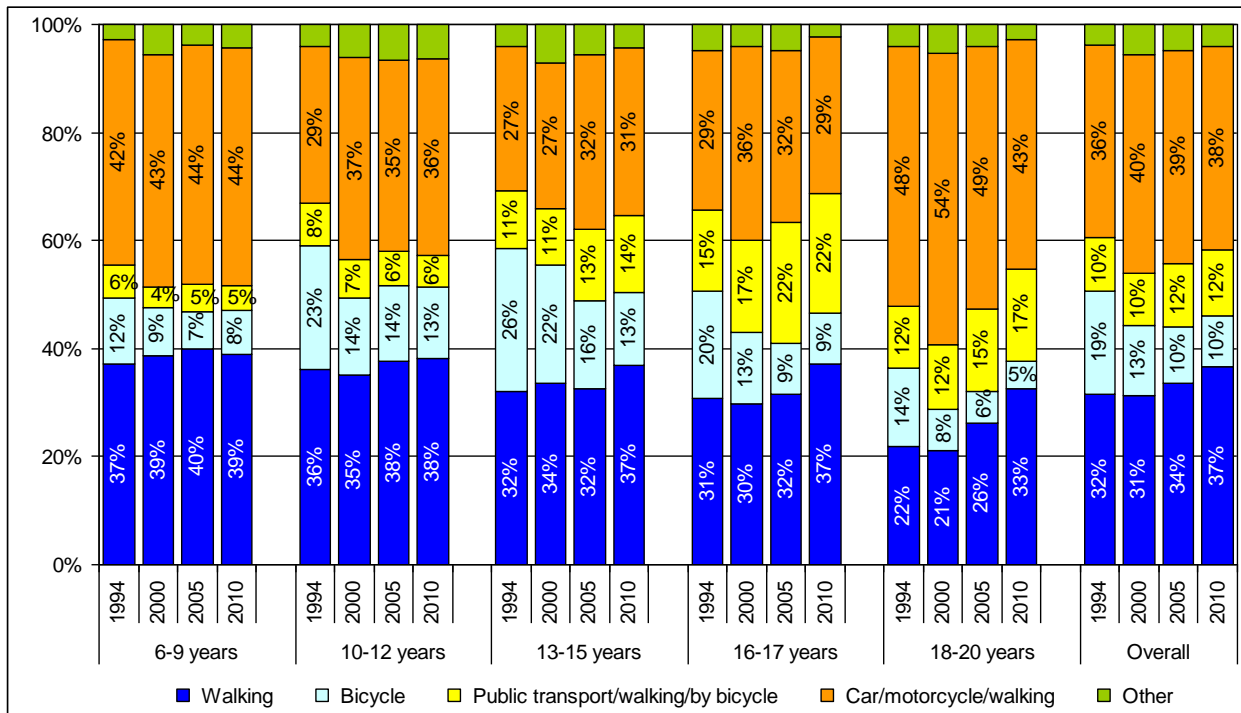
The number of trips for leisure purposes by children and adolescents relatively stable at 1.5 per day. After having dropped sharply between 2000 and 2005, especially among adolescents, there was little change in the number of leisure-related trips between 2005 and 2010. The differences between age groups were minimal.

Distances for leisure purposes fall. The distances covered in 2010 fell slightly in most age groups – they have barely changed overall since 1994. The average trip was somewhat more than 8 km, but half were shorter than 2 km (median) and 36 per cent shorter than 1 km.

Length of leisure-related travel fall. In 2010 the average leisure-related trip lasted 26 minutes, whereas in 2005 it lasted 33 minutes. The differences between age groups were minimal. Half of all trips by 6- to 12-year-olds and 40 per cent of those by older adolescents lasted less than 10 minutes. Only about one fifth of trips lasted more than 30 minutes.

Bicycle use for leisure-related travel apparently stabilizing – walking on the increase. Since 1994 bicycle use across all age groups had dropped by practically half, from 19 to 10 per cent. Between 2005 and 2010 the downward trend continued only among 13- to 15-year-olds. Adolescents in particular showed a markedly stronger inclination to walk to and from leisure activities, while the percentage of trips made by motor vehicle fell. There was only a slight increase in the use of public transport. In 2010, 12 per cent of leisure-related trips were made on public transport, although the figure was higher (19%) among 16-plus year-old adolescents. Three to four out of ten leisure-related trips were made using motor vehicles.

Figure Z-4E: Choice of transport mode to/from leisure activities 1994, 2000, 2005 and 2010 by age (basis = 4,518, 7,889, 7,995 and 14,227 trips by 6- to 20-year-old children and adolescents)



Source: Federal Statistical Office (FSO) and Federal Office for Spatial Development (ARE): Microcensus mobility and traffic

Young men much more likely to walk and less likely to use motor vehicles in their free time. Young men between the ages of 16 and 20 made more than a third of their trips (36%) in 2010 on foot. The corresponding figure in 2000 was 23 per cent. The percentage of trips using a motor vehicle decreased from 49 to 38 per cent. Among young women of the same age a similar, albeit less marked trend was observed.

Young women more likely to use public transport than their male colleagues. Public transport again gained ground, especially among young women, who were much more likely than their male colleagues to use public transport for leisure-related travel. They also increased their use again 2010 while their male counterparts did not do so. Bicycle use and motorized travel were thus replaced by increased use of public transport and walking.

6- to 12-year-old girls (once again) cycling more, even though the proportion – as for boys – dropped steeply after 1994. Particularly noticeable was the drop among 13- to 15-year-old girls: in 1994, slightly more girls (27%) than boys (26%) used bicycles for leisure-related travel, whereas in 2010 only 10 per cent of girls and 16 per cent of boys did so, a drop of 63 and 38 per cent respectively.

In French-speaking Switzerland, a clear increase in walking and use of public transport and a concomitant decrease in motor vehicle use among adolescents. This development slowly narrowed the gap between the two language regions. Major differences persisted in terms of bicycle use: in western Switzerland only half as many trips (5.5%) were made by bicycle as in German-speaking Switzerland (11%). Instead, children up to the age of 15 in French-speaking Switzerland were much more often driven. Among adolescents over the age of 16 there were only slight differences in motor vehicle use, above all because the percentage in French-speaking Switzerland in this age group dropped steeply.

Bicycles "reappearing" in suburban areas? Walking in town steadily increasing. Walking also trended upwards in the countryside, but at a far slower pace. Although the number of bicycle trips continued to fall in the city core and in the countryside in 2010, it increased slightly in suburban areas. This was true above all among 6- to 12- and 16- to 20-year-olds. Interestingly, the number of motor vehicle trips fell slightly in all areas in 2010, while use of public transport increased only in the countryside.

In suburban and periurban areas and in rural and high-income municipalities especially many motorized trips. It was in these areas that children and adolescents travelled most often by car and least often on foot. In town and in the inner ring of suburbs, on the other hand, the percentage of pedestrian journeys

was highest (38% to 41%). In almost all areas the trend was towards more walking. In rural areas public transport was only marginally used for leisure-related travel. It is noticeable that bicycle use did not vary much in the various areas – it accounted for 8 to 10 per cent of trips across all age groups.

Adolescents tended increasingly to walk to and from leisure activities, especially on short trips. In 2010, almost 6 out of 10 leisure-related trips up to 3 km were made on foot, whereas in 1994 the corresponding figure was 5 out of 10. On the other hand, one quarter of trips were once made by bicycle, a figure that had fallen to 13 per cent in 2010, i.e. by almost half. The percentage of public transport use on leisure-related short trips remained relatively stable; the number of motorized trips fell.

Walking also astonishingly popular at distances of over 3 km. Walking accounted for 7 per cent of trips and was therefore almost twice as popular as bicycling at 4 per cent. The percentage of trips on public transport rose over longer distances, but the proportion of motorized trips had fallen since 2000.

Children and adolescents from car-free households much more likely to travel on foot or by public transport in their free time. The number of cars in the household also had a major impact on the mode of locomotion for leisure purposes. Children and adolescents from households with one or several cars were much less likely to walk (33%), and therefore much more likely to be driven (45%) than children from car-free households (47% vs 16%). Interestingly, there was almost no difference between the types of household in terms of bicycle use. In all types of household, however, the trend was away from bicycle use and towards walking and public transport. The pattern was the same in all age groups and in town, suburban areas and the countryside.

Improved public transport networks and changes in behaviour probably spark a walking boom. One possible explanation for the sharp increase in walking in respect of leisure-related activities could be that more and above all lengthier trips were made using public transport, for example for trips to town. Public transport was used because the child or teen already had a pass for school use and the network was constantly being improved (more connections, night buses/trains, special passes for teens, etc.). When the young people reached their destination, they essentially travelled on foot or by public transport. The number of “exclusively” pedestrian trips therefore increased, as did the number of those that combined walking with public transport. Generally speaking, they replaced trips that were once made on motor vehicles or by bicycle.

### **Additional considerations regarding school- and leisure-related travel and mobility in the Tessin**

Modes of locomotion used for short school- and leisure-related trips trending differently. In all age groups, the modes of locomotion used remained relatively stable when it came to short school-related trips (up to 3 km). However, there was a sharp increase in walking to and from leisure activities over short distances, while the proportion of bicycle trips continued to fall. Since 2000, there had also been a slight drop in the share of travel by motor vehicle. The changes vary according to the age group:

- Children aged 6 to 12 walked short distances less often, whether to go to school or for leisure activities. They made more trips on public transport or by motor vehicle.
- Adolescents aged 13 to 15 had a greater tendency to walk to school or to a leisure activity when the distance was short. Bicycle use fell marginally for trips to and from school but again dropped sharply for leisure-related trips. Public transport use also decreased for short school-related distances, and would appear to have been replaced almost exclusively by walking.
- Adolescents aged 16 to 20 were also increasingly likely to walk short distances. In 1994, 33 per cent of school-related trips under 3 km were made on foot against 55 per cent in 2010. Walking also rose sharply as a percentage (from 47% to 61%) when it came to leisure-related trips. In the meantime, adolescents make over 60 per cent of short leisure-related trips on foot.

Changes in bicycle use vary depending on the level of urbanization. Depending on the place of residence and the age group, bicycle use for school- or leisure-related travel varied slightly:

- in town, the number of children under 15 going to school by bicycle again rose, whereas the number going to their leisure activities by bicycle continued to fall;

- in suburban areas, bicycle use for leisure-related trips stabilized and even showed a slight tendency to rise, whereas for school-related trips it continued to plummet, in particular among those over 13;
- in the countryside, bicycle use lost ground in recent years, in particular in connection with leisure. However, the drop was less marked in the youngest age group between 2005 and 2010, and bicycle use even rose again for school-related trips. Adolescents aged 13 to 15 living in the countryside used bicycles much less frequently for leisure-related trips than to go to school.

Italian-speaking children and adolescents had similar mobility patterns as their French-speaking counterparts. This was the case in particular for bicycle use and walking. Bicycle use was much less common among Italian- and French-speaking than among German-speaking children and adolescents. The numbers for public transport use were similar for all three language regions, however. Italian-speaking children and adolescents traveled much more frequently by motorized means.

Italian-speaking children and adolescents aged 6 to 20 had similar mobility patterns as their French-speaking counterparts in terms of school-related travel. About 47 per cent went to school on foot, 33 per cent used public transport and 12 per cent were driven. As in French-speaking Switzerland, school-related bicycle use was negligible (4%).

Common points and differences between language regions were observed in terms of leisure-related trips. The common point is that walking accounted for the same percentage in all language regions and among all age groups, with one exception. On the other hand, the percentage of travel by other means of transportation varied: in Italian- and French-speaking Switzerland, for example, the percentage of bicycle trips was half that of German-speaking Switzerland. However, motorized travel was the highest in the Tessin, with travel by public transport accounting for a low percentage.

### Summary interpretation of the findings

The modes of locomotion used by children and adolescents changed radically between 1994 and 2010. Previous censuses had revealed a steep drop in bicycle traffic. Not only do the data collected for Mobility and Transportation 2010 provide fresh measurements, they paint a more comprehensive picture of changes since the first census in 1994.

A strong link was observed between structural changes and changes in the attitudes and behaviour of children and adolescents. In terms of structure, modifications in the education system – for example, the centralization of schools and the introduction of after-school facilities - had a particularly strong impact, especially on primary schools. But also adolescents had much longer trips to school. Secondly, the reorganization of public transport in the 15 years between 1994 and 2010 had notable repercussions on mobility. Improved services (night buses/trains, special train passes for adolescents, etc.) were more frequently used by children, and even more frequently by adolescents.

The situation was further affected by social changes, such as the fact that young people no longer considered it a priority to get a driver's licence. In 2010, 41 per cent of adolescents aged 18 to 20 had a driver's licence, compared to nearly 60 per cent in 2000. There are many reasons why so many young people opted not to get a driver's licence, but they would not be able to make that decision without alternative means of transportation. Those alternatives exist, in the form of improved public transport services. In 2010, nearly 80 per cent of 16- to 20-year-olds had at least one public transport pass, a substantial increase since 1994.

The structural and social changes affected the choice of mode of locomotion differently over time depending on the age group.

- A lower percentage of 6- to 12-year-olds walked or bicycled, a consequence of more distant schools – the percentage of children walking to leisure activities remained the same, for example – and of the fact that children use public transport or were driven to school by their parents.
- Among 13- to 15-year-olds, who hitherto used bicycles more than other modes, the percentage of bicycle trips fell steadily and clearly. Bicycle travel was replaced by walking, public transport and cars.
- Among 16- to 20-year-olds, more distant schools led to greater use of public transport. Good public transport services and the positive attitude of young people towards public transport – it offers the opportunity to talk, browse the Internet, sit quietly - resulted in trips previously carried out by bicycle or

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motor vehicle being replaced by travel on bus, tram or train (see also Sauter/Wyss 2014). This age group then undertook trips on foot while at school, during the lunch hour or after class. Some of those trips were related to school, others to leisure activities, as in the case of adolescents going from school to a park for lunch. When they returned, they were making a school-related trip. Since the young people already have a public transport pass to go to school, they also use it more frequently for leisure-related travel. Walking also increased exponentially. Not only were there more trips to and from the bus/train stop, the number of "purely" pedestrian trips also increased. This is probably related to the fact that young people set out using public transport, then walked most of the time once they arrived at their destination.

Overall, there would appear to have been a veritable paradigm shift in the modes of locomotion used by children and adolescents in the 15-year period concerned. Bicycling is the biggest loser, among both children and adolescents, although the situation seems to be stabilizing among children despite the fact that the number of young children (6-12 years old) with constant access to a bicycle fell. While children tended to be driven right up to their destination, adolescents had a growing tendency to snub cars, both for school/occupational training and leisure activities. Instead, they increasingly turned to public transport and were more likely to walk.