



How do motorists react to long road works? The case of Glion Tunnel

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The case of Glion Tunnel

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Abstract

Do motorists modify their behaviour as a result of significant changes in traffic conditions? Do they revert to a cheaper and faster mode of transport? Do they fully analyse all mobility possibilities? Is public transport a real alternative?

The partial closure of the Glion motorway tunnel (A9, between Montreux and Villeneuve) during two eight-month periods provided a unique occasion to look at these questions. It could serve as a “mobility laboratory” since the work would place heavy restrictions on motorists.

The study by the Cellule d’Analyse des Mobilités Urbaines (CAMUS-LASUR-EPFL) was commissioned by the cantons of Vaud and Valais as well as the Swiss Federal Roads Authority. It involved distributing questionnaires in trains and on the motorway, as well as conducting a series of qualitative interviews. The study revealed that making people change their modal behaviour is a complex process. First, the introduction of a public transport service alone, even if it is cheaper and quicker than the car, is not enough to ensure that it is used, particularly at the weekend. Second, a non-negligible share of motorists who took part in the surveyed preferred not to modify their behaviour. This is evidence of the importance of “ability/skills” in relation to public transport use, with a number of respondents indicating that they had rediscovered it as a result of the construction work in Glion.

*The complete study (in French) can be downloaded at:
http://lasur.epfl.ch/camus/download/GlionMobilite_Rapport_final.pdf*

Keywords

Car use – public transport – modal shift – public policies – communication

1. Background and methodology

The Glion motorway tunnel, made up of two 1,350-metre-long tubes, was put into operation in 1970. The ventilation system had ceased to meet current norms, so it was decided to install a new system (removal of false ceiling, installation of new ventilators) and to adapt the tunnel so as to facilitate any repair and maintenance work over the next 20 years. Budgeted at CHF 110 million, the work involved successively closing each tube over a period of two years (each time from April to November). There would be a two-way traffic flow in the tube that remained in service.

This would mean a large reduction in the capacity of this section of the motorway (from 3,600 vehicles per hour to 1,400 or even 900 vehicles per hour in the Valais-Vaud direction). Drivers were faced with **five mobility alternatives**:

- Spatial transfer: taking alternative routes
- Temporal transfer: travelling before or after usual time
- Modal transfer: use of public transport
- Status quo: drivers do not modify their behaviour and run the risk of being caught in traffic jams.
- Foregoing travel plans.

Automatic counting on the motorway, at motorway exits and on various major trunk roads (carried out by the firm Robert Grandpierre & Rapp) provides quantitative information on behavioural development, but offers no indication of the motivating factors behind such changes. The aim of this study is in fact to analyse these motivating factors.

What methodology should be used to meet this objective? Representative population opinion polls are insufficient. For example, we have no information on the reference population that uses the Glion tunnel (sociodemographic characteristics). It would also be difficult, if not impossible, to have a demarcated area in which the survey is to be conducted. We decided to take a rather new approach:

- Self-administered questionnaires (one double-sided A4 page) distributed through various channels (see below) and returned to the EPFL in a pre-paid envelope;
- Qualitative interviews (approximately one hour) with questionnaire respondents;
- Analysis of articles taken from daily newspapers before and after the work on the tunnel, with the purpose of discovering the context in which the various services and advice concerning Glion were conveyed.

We selected **four distribution channels**, enabling us to cover three central issues of our analysis: leisure traffic / commuter traffic; use of car / use of public transport; weekday traffic / weekend traffic.

The four channels were: CFF trains (questionnaire distributed by the CFF on one week day and once at the weekend; 800 returned questionnaires, thus a response rate of 26%); park-and-rides situated along the Simplon route (125 returned questionnaires, thus a response rate of 27%); the motorway (distribution on one week day and once at the weekend at the *Chablais* motorway services, traffic redirected by the police; 860 returned questionnaires, thus a response rate of 48%); owners or tenants of holiday homes in Valais (questionnaire distributed by tourist offices or associations; 330 returned questionnaires, thus a response rate of 12%). Overall, the response rate was good to very good for this type of survey.

The **qualitative survey** is a direct extension of the questionnaire-based survey. Generally, the aim of this second research phase was to ascertain elements which improve our understanding of individual behaviour by asking a restricted and carefully selected sample of people who completed the written questionnaire and expressed a willingness to be interviewed on the topic.

In this instance, we chose to centre the qualitative survey on four specific target groups, defined by a combination of two dimensions:

- First, we singled out commuters living in Valais or in the Swiss Chablais region, who frequently pass through Glion, and tourists living in the Lake Geneva or Lake Neuchâtel regions, who regularly visit Valais or the Swiss Chablais region.
- Second, we identified two types of individual in each of these groups: those who opted for a modal transfer (shift from car to public transport), and those who continued to travel by car in spite of the inconveniences caused by the construction work on the Glion tunnel.

The qualitative survey was based on 28 semi-directive telephone interviews, lasting between 45 and 90 minutes.

2. Surveys conducted in trains and on the motorway: how did modal behaviour change?

Without going into the finer details here, there are four principal results of the study.

A. The modal transfer to public transport during the week worked well, and the majority of new users stated that they would continue to use the train in 2005, and even after completion of construction work on the Glion tunnel. Here the respondents have clearly changed their normal behaviour due to restrictions that they deemed to be intolerable. It further illustrates that individuals do not automatically opt for a modal shift despite the competitive public transport services on offer and unless they have first given serious thought to their travel needs.

Members of the public did avail of the extra commuter train services, the annual CFF railcard with several months travel made free of charge, as well as the park-and-rides set up along the entire Simplon route. A large share of individuals who infrequently travelled this route by train or who never took public transport prior to the work at Glion declared that they were ready to use this mode of transport in the future: 65% on weekdays during winter 2003-2004; 43% at the weekend in the same time period (respondents appeared to favour car use maybe for family skiing trips), with rates rising to 78% for weekdays when the second tube was closed, and 67% at the weekend. Concerning 2006, 55% of the new public transport users surveyed declared that there was a high probability that they would continue to take the train. Effective information campaigns by the CFF and the authorities have certainly had a significant effect on individuals' modal behaviour during the week.

B. The picture for weekends is not so clear-cut: there is a relative degree of ignorance concerning certain extra services introduced as a result of the construction work, as well as a less sustainable modal transfer against the backdrop of fewer trips to Valais.

The percentages set out in Point A confirm that fewer new train users will continue to take public transport at the weekend than during the week. This is further supported by the disadvantages of train travel cited by respondents: public transport system perceived as complicated, the journey time, or the need for a car on arriving at their holiday destination. Furthermore, some services were scarcely publicised. For example, less than 90% of our sample was aware of the extra coach services that departed from low-lying train stations in Valais (to allow travellers to leave from Lausanne before 7pm at the weekend) and served most holiday resorts in the canton. To exacerbate the situation, the CFF did not publish the timetable of these coach services on its website.

During the second phase of work on the Glion tunnel in 2005, 24% of motorists surveyed stated that they intended to travel less frequently to Valais. It shows the force of the perceived impact of this construction work among our survey sample group. This finding, in particular, prompted the public authorities to rethink a wide range of accompanying measures for the 2005 period (promotional tourist offers, frequent information campaigns for pleasure trips on public transport).

C. Many holiday-home owners visited Valais less frequently

According to our survey, 42% of respondents travelled to Valais less frequently since work began on the Glion tunnel, and 24% stated that they intended to travel there even less during the second phase of construction work. This reduction should be seen in terms of the household type. For example, families are more likely to forgo travelling, as they tend to have a rather rigid timetable (for example, leaving much later on Friday, but maybe with a return on Monday morning). Being forced to leave early enough to avoid the tailbacks on Sunday may spoil the weekend, and mean that the trip is not worth the trouble. Childless couples tend to opt for other destinations (for example, the Jura), while families with children tend to rediscover the joys of their home town rather than spend the weekend in a hotel in another location.

Undoubtedly, the press significantly influenced the situation (for example, there were a large number of negative articles presenting future tailbacks as simply hellish). The qualitative survey showed that some residents in the canton of Valais saw their friends from the canton of Vaud less regularly, as the latter refused to travel due to the “state of psychosis fed by the press”. The findings of our survey provide irrefutable evidence of the importance of information and an active press campaign.

D. What reasoning underpins modal behaviour? We can offer three observations. First, only 40-55% of survey respondents displayed “rational behaviour” (i.e. they compared the travel options available to them, and were willing to change their behaviour if there was a better choice than their existing one); almost one third of the motorists surveyed preferred not to change their habits, even it meant being stuck in traffic jams. Second, train users showed a greater readiness to assess a variety of solutions (55% against 40-42%). Third and finally, holiday makers and holiday-home owners most frequently stated their intention to avoid travelling (14%, double that of other surveys).

To obtain a general overview of the reasoning behind the travel behaviour of respondents in the various surveys, we asked the respondents to explain their decision. From this perspective, those surveyed were invited to choose one of the following four statements which best corresponded to their attitude to a situation, such as the construction work at Glion:

- “My travel behaviour remains practically unchanged, even though I may get caught up in traffic jams”;
- “I weigh up all my transport options (changes to timetable, to route or mode of transport) and opt for a solution that means I lose as little time as possible”;
- “I do everything possible to avoid going through the Glion tunnel, even if the journey is longer, because I hate being caught up in traffic jams”; and,
- “I prefer not to travel”.

Broken down per survey, the results reveal the reasoning behind the choice of transport and the types of journeys made:

Table 1 Types of modal behaviour due to construction work similar to Glion

	Change as little as possible	Compare solutions	Avoid going through the road work	Avoid travelling	Don't know
Survey in trains	11%	55%	20%	8%	7%
Survey on motorway	28%	42%	21%	7%	2%
Survey holiday homes	28%	40%	16%	14%	3%

Source: Jemelin et al (2005)

To summarise the results of the quantitative part of our research (questionnaires), we created a typology that covers reactions to more difficult travelling conditions on a major trunk road, effective behaviour during the closure of the tunnel (changes to timetable or itinerary, modal transfer, or status quo), the routine use of public transport in general, and the modal practices during construction work on the main Lausanne-Aigle road.

The introduction of these variables led to the identification of **five types of rail user**:

Type 1 – Rational users

This group reacted to the comparative efficiency of the different modes of transport, and they chose the option which took the least time to travel to and from the Lake Geneva and Chablais regions. As a general rule, they opt for a modal transfer - from the car to the train. They make up 21% of the survey sample and have differing profiles.

Type 2 – Regular public transport users

Public transport users did not change their behaviour. They account for 53% of the survey sample, and show an over-representation of students and schoolchildren.

Type 3 – Motorists forced to take the train

Ideally, these motorists would not change their behaviour, but the length of tailbacks has forced them to take the train. They account for 9% of the survey sample, have differing profiles and rarely travel between the Chablais and the Lake Geneva regions.

Type 4 – Motorists who forego travelling

These are devoted car users with little experience of public transport. The majority decided against undertaking pleasure trips between the Chablais and Lake Geneva regions, opting for the train solely for essential journeys. They make up 7% of the survey sample, with women being in the overwhelming majority.

Type 5 – Qualitative multimodals

They use the car and public transport for their day-to-day journeys, but transferred to the train during the building work at Glion, as they found the tailbacks to stressful. They account for 10% of the survey sample and have differing profiles.

The same variables led us to distinguish **three types of motorway users**.

Type 1 – Motorists who change their travel schedule

Having compared all the options, they decide to adapt their travel schedule to save time. They frequently travel on the A9, account for 47% of the survey sample and have differing profiles.

Type 2 – Motorists who decide against certain journeys and transfer to the train

Considering that the work on the Glion tunnel seriously affected accessibility to Chablais and/or the Lake Geneva regions, these motorists decided against some journeys and tended to

transfer to the train for essential trips taken at peak times. Occasional users of the A9 account for 6% of the survey sample, with an over-representation of people living alone or students.

Type 3 – Motorists whose behaviour remains unchanged

These motorists are characterised by their unaltered behaviour. As a general rule, they do not use public transport and account for 47% of the survey sample. Their profiles vary.

These two typologies clearly show that modal behaviour and the reasoning behind it differ and do not necessarily equate with finding the shortest travelling time. Two other types of behaviour are also identifiable: foregoing a journey (given the number of people concerned, it illustrates the volatility of traffic flows) and the unyielding influence of routine, as 47% of motorists who took part in the motorway survey generally made few changes, if any, to their behaviour.

3. Qualitative interviews: what motivates change and resignation?

“As soon as the tailbacks began, I looked into the price of a railcard. I said to myself ‘OK, this is totally ridiculous, forget about the car and just take the train!’ But if I am to be entirely honest, I probably would not have instinctively taken the train, if all this work wasn’t going on around the Glion tunnel. I mean, I live just beside Vevey, I am used to [...]. I mean, I have been doing this journey by car for almost ten years now! [...] In fact, all this disruption actually has its positive sides, as I now take public transport; something I had somehow forgotten over the years [...]”.

The first half of the survey sample consisted of people who chose to continue to travel by car, despite the disruptions (traffic jams, highly variable journey times, the length of tailbacks differing considerably during the week, having to leave home early to avoid the traffic, etc.). Consequently, we observed a wealth of different factors involved in car dependency:

- A number of cases of commuter travel rely heavily on how accessible home and work are by car. Put another way, public transport links between home and work would involve a prohibitive increase in the commute time (often doubling travelling time, even if account is taken of the option to use a park-and-ride, linking the main train station near to the person’s home).
- Sometimes, the individual has an atypical work schedule (early in the morning, late in the evening), which rules out any possibility of taking public transport due to a lack of services.
- Our sample also included several people for whom the car is simply an essential occupational tool. Even if on certain days, they could forgo the use of their service vehicle, people automatically continue to do so because it is free (cost of commuting borne by the employer).
- Finally, there is a series of cases where respondents regularly use their car to transport relatively cumbersome goods or personal effects. Such an undertaking would be considerably more complicated on public transport.

It should be noted that several respondents took the trouble to analyse the public transport options available to them, in terms of both journey time and journey costs. Ultimately, the motivating factor behind their decision not to use the train was generally the increased journey time and the high cost of public transport. The negative estimation of the cost of travelling by public transport is most certainly due to ignorance of the effective costs of car journeys, as well as their infrequent use of the train (only following heavy snowfall, travelling to the airport prior to holidays, etc.). In such instances, they buy a full-price ticket (as they do not have a half-price railcard), thus leading them to think that train travel is expensive. In the

absence of a detailed comparison of the effective cost of a car journey and the purchase of a half-price railcard, individuals are likely to stick with their “initial impression”, thereby vindicating their decision to continue taking the car.

However, with regard to the second half of the survey sample (motorists who decided against commuting by car), how did they come to transfer, or not, to the train and why?

There were three different ways:

- The enforced modal transfer. For example, an employer obliges an employee to take the train to ensure that he/she arrives at work at a set time or that he/she can attend a pre-arranged meeting with a client.
- Definitive modal transfer. Changes extraneous to Glion (moving house, new job, accident etc.), together with the start of construction work on the tunnel, forced some respondents to opt for the train.
- Preferred modal transfer. Individuals who wanted to make the most of their time spent travelling opted for the train, as they were able to work during the journey. Having rediscovered this mode of transport, they intend to continue using it.

Finally, **with regard to holiday-home owners**, we have already referred to several findings in Chapter 2 (differences between families and childless couples). Generally, our survey showed that the issues arising from work on the Glion tunnel have more to do with maintaining the frequency of visits to Valais/Chablais than with the modal choice. In fact, a modal transfer to public transport for leisure travel is made difficult by the demands of tourists, particularly those who have a holiday home (luggage, miscellaneous objects, difficult access to holiday home, considerably longer journey times and thus less leisure time etc.). Nevertheless, it is feasible to persuade more judicious tourists to opt for public transport insofar as they can avail of good transport connections (enabling them to spend a long weekend or to leave in the morning) and as long as the journey is not too costly. Promotional offers may help to off-set the share of regular weekend tourists who have decided against travelling to Valais. The target public should be individuals who can adapt their travel schedules with ease, such as the retired population. In any case, according to the answers provided by the respondents, the construction work is not likely to have a long-term impact on leisure trips to Valais and Chablais, and their many attractions.

4. Conclusion: the importance of “abilities” for public transport use

“I really enjoyed this experience [travelling by train] and I would like to say that in some way, I shall not have to think twice about taking the train [...]. You kind of get the hang of it [...]. I don't mean that taking the train is a scary experience. You get more used to the train - you know that there is always a free seat and you get to know all the little tricks [to make the journey smoother]”.

In terms of modal “choice”, the study shows that there is no technical determinism involved (the simple availability of a public transport service, which is less expensive and faster than the car, is not enough to encourage people to use it, particularly at the weekend). Also, there is no determinism linked to restrictions: a non-negligible share of motorists surveyed preferred not to change their habits or to adapt their behaviour only slightly (change their travel schedule) rather than shift to another mode of transport. Finally, the Swiss public transport system is still considered complex and expensive, particularly by non-users, who justify their opinion by citing the cost of a full-price ticket. Furthermore, the fact that they rarely use the system undoubtedly contributes to their idea that the transport system is complicated.

Among people who regularly pass through Glion, those most affected – in terms of the disruptions they experienced – are individuals who are strictly confined to travelling at normal times, either due to work and/or their children's school. In fact, changing their travel schedule remains one of the easiest ways for motorway users to adapt their behaviour. Of course, social inequalities in terms of economic, social and cultural capital have serious repercussions on an individual's adaptability. In other words, the more monetary resources individuals have, the more people they know and the greater their abilities (capacity to use all transport combinations possible) and the easier it is “to circumvent the Glion problem”.

Generally, it would appear that this observation offers a particularly interesting guideline for the design of accompanying measures for similar construction projects in the future. To favour a reduction in car traffic and offer a suitable alternative to the car, we feel that all means of transport that can be used in a variety of combinations, should be promoted extensively: Park&Rail, Bike&Rail, taxis, car-sharing and other interesting possibilities to rent cars at the destination, the possibility to take one's bike on the train, or freely available fleets of bikes for hire in cities.

Finally, during the first phase of construction work at Glion, dependence on cars in the regions surveyed (particularly in Valais) was high. This is a serious risk factor for longer tailbacks, particularly given the expected rise in mobility in the years to come, or even for unforeseen problems on the roads. In our opinion, a multimodal vision of access is necessary if Valais is to remain easily accessible, especially at weekends.