

## 1. Research notes



# The rationales that underlie modal practices

## Research notes

Encouraging a modal shift from individual transportation to less polluting modes such as public transport, walking and cycling, is now a key recommendation of the UN to reach the goals set by the Paris Agreement. Achieving this ambitious goal requires a detailed understanding of the reasons behind modal practices. Why do some prefer the car to the train, or the bicycle to the bus? What factors lie behind these practices? This report summarizes the main results of a research project (carried out before the Covid 19 pandemic) on the motivations that govern modal practices in the cities of Bern, Geneva and Lausanne.

## Research participants

- Vincent Kaufmann

## Method

The survey was conducted in 2019 among almost 5,000 people representing the working population of three cities: Bern, Geneva and Lausanne. Similar surveys had already been conducted in 1994 and 2011, allowing us to measure how the rationales underlying modal practices in daily life have evolved over a 25-year period. These long-term developments are particularly interesting for identifying changes in attitudes towards different means of transport, but also how offering better alternative mobilities to cars affects the ways in which people in the three cities consider them in their daily practices.

## Key results

The research led to three important findings.

### The gradual erosion of a predisposition to car use

The first result is that the strong predisposition to car use that was observable in the 1993 survey had considerably decreased by 2019. In other words, the reflex use of cars without considering possible alternatives has faded in favor of more open and diversified approaches.

This observation is reflected in how views of different transportation means have evolved over time. For the automobile, first of all, in 2019 33% of respondents attached negative adjectives to it (polluting, expensive...), compared to only 12% in 1994. The image of public transport has improved, but it remains rather mixed: in 2019, 50% of respondents used positive adjectives (39% in 1994) and 38% negative adjectives (46% in 1994). The main drawback of public transport seems to be its slowness. Cycling and walking have mainly been praised (over 85% positive adjectives), although cycling is still described as dangerous, especially by 15% of the residents of central urban districts.

### The development of multimodality

The second important result, which echoes the gradual erosion of the predisposition to car use, is that virtually the entire working population regularly uses several modes of transport in their daily lives. The time when people used their cars exclusively seems to be over: a majority of respondents are favorably disposed to the use of modes other than cars or motorized two-wheelers.

According to the longitudinal analysis of the data, the erosion of the predisposition to car use and the development of multimodality are a consequence of the marked improvement, in the three cities studied, in alternative transport options to cars. In each city, public transport has been considerably improved since the 1990s, with the construction of new tram lines (Bern, Geneva) or metro lines (Lausanne), more interconnected networks of bus lines (including in peri-urban areas) and the development of suburban express trains (like the French RER) to connect city centers to the near and distant suburbs through diametrical lines. Measures to promote the use of bicycles have also been developed in the three cities, such as urban greenways and, more generally, designated cycle paths separated from traffic.

These results show that a majority of inhabitants are ready to exclusively use alternative modes, other than the individual car, if an even more competitive option in terms of convenience, time and flexibility existed..

### The growing importance of comfort in modal choices

Another lesson: one of the determining criteria for modal choice is now the quality of travel time. This is probably due to the widespread use of connected devices that make it easier to carry out activities while traveling. With a smartphone, tablet or laptop, it's now easy to indulge in all kinds of activities, from social media to direct messaging, emails and watching movies or videos. Engaging in such activities, however, requires certain favorable conditions, such as an available seat on urban public transport, or a table with an electrical outlet and Wifi connection on a train.

This result also shows the value of thinking about pedestrian comfort in the public space, the need for facilities such as benches and even tables, and the importance of developing mobility threshold spaces such as interchange stations. This is why shelters to protect users from the rain and wind while waiting, barriers that dull road noise, covered bicycle parking spots, the presence of shops nearby and direct paths, are all aspects that make the use of public transport and combined modes (bicycle and public transport, car and public transport, etc.) attractive to users.

## A typology of the rationales underlying modal practices

For a synthetic and segmented vision of the results obtained, we established a typology of the rationales that underlie modal practices. From an epistemological point of view, it is built from Max Weber's three rationales for individual actions: instrumental action (optimization on objective criteria such as price and time), traditional action (habits and routines) and affective action (beliefs, values and preferences). The typology allows us to capture the combinations of these three rationales at the individual level.

From this analysis, eight types can be identified. Each corresponds to a specific disposition with regard to the different transportation means that may be used in daily life:

**Table 1. Description of the rationales underlying the typology of modal practices**

Type	Description
Exclusive motorists	In their daily life, they only use their automobile and never any other means of transport; their activity schedule is structured around how accessible places are to their type of vehicle.
Predisposed to individual motorized transport	They have a marked preference for the use of cars and motorized two-wheelers for the freedom they offer in terms of space and time. These people are attached to moving through space quickly and individually.
Efficiency comparators	These people are primarily interested in the relative efficiency of different modes of transport. They will thus favor the fastest transportation means and the one that offers the best quality/price ratio.
Comfort comparators	These people are above all sensitive to travel comfort. The search for comfort and ergonomics during travel time is motivated in particular by the desire to use travel time as free time, or even as working time.
Predisposed to individual modes	This group is characterised by their attachment to travel autonomy. These people want to avoid as much as possible the specific constraints of public transport systems, namely fixed routes, timetables and the presence of other users.
Predisposed to alternative modes	These people do not like to drive and prefer to use other means of transport. Note that in this case, their motivation not to use cars is not necessarily related to ecological considerations, but to the stress caused by driving (traffic jams, accidents, etc.).
Predisposed to active modes	They favor the use of active transportation means (bicycle, electric bike and walking) for the physical exercise they offer in daily life, and they avoid as much as possible travelling by motorized means of transport.
Environmentalists	They favor ecological means of transport, in line with their values. Their view of different modes of transport is influenced by environmental considerations.

The distribution of these eight types within the labor force of the three cities reveals several trends (Table 2).

First of all, it appears that the "exclusive motorists" are marginal in the two French-speaking cities, and have completely disappeared in Bern, while there are more people "predisposed to motorized individual transport" in Lausanne. These differences are explained above all by the urban mobility policies implemented in the different cities: they are more ambitious in terms of modal shift and discouraging the use of cars when coming to the city in Bern, while they are less restrictive in Lausanne. In Bern, the number of parking spaces in central urban districts has been significantly reduced, which is partly due to the fact that since the 1980s almost no underground car parks have been built in the center of Bern. Lausanne, on the other hand, did not pursue such a policy, instead developing public transport infrastructure on fully dedicated lanes, with metro lines M1 and M2, the LEB (Lausanne-Échallens-Bercher line) and the tramway.

Differences also appear depending on the geographical context of residence. For the "exclusive motorists," the "predisposed to individual motorized transport," the "efficiency comparators" and "predisposed to individual modes," we systematically see an over-representation of people living in the suburbs. For the "predisposed to alternative modes" and "active modes," the opposite trend can be observed, which makes sense given that urban centers are better suited to the use of public transport and soft mobility. In addition, the environmentalists stand out among the inhabitants of the city of Bern.

**Table 2. The weight of the different types in the working population of the cities of Bern, Geneva and Lausanne.**

		Exclusive motorists	Predisposed to indiv. motor. trans.	Efficiency comparators	Comfort comparators	Predisposed to individual modes	Predisposed to alternative modes	Predisposed to active modes	Environmentalists
Geneva	Center	1%	3%	18%	15%	10%	30%	14%	9%
	Dense suburbs	2%	6%	23%	11%	15%	23%	11%	8%
Lausanne	Center	2%	7%	21%	13%	11%	29%	10%	8%
	Dense suburbs	6%	10%	28%	12%	16%	15%	6%	6%
Bern	Center	0%	0%	32%	12%	10%	25%	8%	13%
	Dense suburbs	0%	3%	38%	8%	21%	20%	6%	5%

Regarding the distribution of the eight types through the prism of socio-demographic characteristics, there is no significant difference according to the respondents' gender. However, the distribution of the typology according to age categories indicates an evolution of modal choice rationales throughout the life course (Table 3). The proportion of "comfort comparators" in the sample increases with age, while the youngest appreciate independence and are more strongly represented among the "predisposed to individual modes."

When we analyze the education level, we see that the "environmentalist" type correlates closely with higher levels of education, while respondents from higher education are under-represented among the "predisposed to alternative modes." Those having completed an apprenticeship or with a lower level of education are for their part numerous among the "efficiency comparators."

**Table 3. The distribution of respondents by modal choice rationale by gender, age and education, in % of respondents (online reading).**

		exclusive motorists	Predisposed to indiv. motor. transport	efficiency comparators	comfort comparators	predisposed to individual modes	predisposed to alternative modes	predisposed to active modes
Geneva		<b>1%</b>	<b>5%</b>	<b>21%</b>	<b>13%</b>	<b>13%</b>	<b>26%</b>	<b>13%</b>
Gender	Male	2%	5%	20%	12%	13%	27%	12%
	Female	1%	5%	22%	14%	13%	25%	13%
Age	35 years and under	1%	6%	21%	7%	15%	24%	14%
	between 36 and 49 years old	1%	5%	23%	11%	12%	24%	15%
	50 years and over	2%	5%	20%	15%	13%	28%	11%
Education	Compulsory education and apprenticeship	3%	5%	27%	14%	14%	23%	8%
	Maturity, vocational school	2%	6%	22%	11%	15%	25%	11%
	University, higher education	0%	5%	18%	13%	12%	28%	15%
Lausanne		<b>4%</b>	<b>9%</b>	<b>25%</b>	<b>12%</b>	<b>14%</b>	<b>21%</b>	<b>7%</b>
Gender	Male	4%	9%	23%	9%	12%	23%	9%
	Female	4%	9%	26%	14%	15%	20%	7%
Age	35 years and under	1%	6%	23%	9%	19%	26%	13%
	between 36 and 49 years old	4%	7%	29%	8%	11%	24%	10%
	50 years and over	5%	11%	24%	15%	15%	18%	5%
Education	Compulsory education and apprenticeship	7%	10%	29%	12%	16%	18%	5%
	Maturity, vocational school	3%	13%	32%	9%	16%	11%	9%
	University, higher education	3%	7%	21%	13%	12%	26%	8%
Bern		-	<b>2%</b>	<b>36%</b>	<b>10%</b>	<b>16%</b>	<b>22%</b>	<b>7%</b>
Gender	Male	-	1%	37%	8%	21%	19%	9%
	Female	-	3%	35%	12%	10%	25%	4%
Age	35 years and under	-	3%	38%	7%	23%	18%	7%
	between 36 and 49 years old	-	0%	31%	7%	16%	25%	8%
	50 years and over	-	3%	38%	12%	12%	22%	6%
Education	Compulsory education and apprenticeship	-	0%	52%	7%	14%	19%	5%
	Maturity, vocational school	-	5%	30%	12%	21%	15%	10%

SCHOOL								
University, higher education	-	1%	35%	9%	15%	25%	6%	

## Conclusion

By analyzing the intensity of use of various transportation means according to the eight types identified, we can understand the levers that enable a modal shift towards sustainable modes of transport: each type is defined by a specific sensitivity to measures in terms of multimodal transport options and accessibility. We find that it is particularly interesting to analyze the use of individual motorized transport (which we want to minimize) through the lens of modal choice rationales. This analysis, presented in Table 4, confirms that the types that are favorable to individual motorized transport actually use them more intensively, and that those who are less in favour use them less. The "comparator" types have an intermediate use of cars and motorized two-wheelers. It also shows that car use is particularly low in Bern among users who do not favour its use, which is evidence that in this city, automobile alternatives are viewed positively.

**Table 4. Average weekly frequency of individual motorized transport use by modal choice rationales, in travel-days (rounded to the nearest unit).**

Residential context	Exclusive motorists	Predisposed to indiv. motor. transport	Efficiency comparators	Comfort comparators	Predisposed to individual modes	Predisposed to alternative modes	Predisposed to active modes	Environmentalists	Average
Geneva	12	7	5	5	7	3	4	3	4.8
Lausanne	11	8	6	6	7	4	5	5	5.9
Bern	-	8	4	3	6	2	2	2	3.7

If we look at people who are favorably inclined towards active modes and public transport in the same way, we only partially observe the same trend. In other words, many people who are favorably inclined towards walking, cycling and public transport, and who have unfavorable views of car use, still happen to be motorists, by default. This situation reflects a dependence on the car for many inhabitants today, because accessibility systems have been designed and constructed around car use for decades. This trend is generally more pronounced among the inhabitants of denser suburbs, but it is also the case among those living in the cities of Geneva and Lausanne, where modal shift policies are less proactive. We must also note that it mostly affects workers, whose jobs are often located far from city centers, in large industrial areas that have been designed to almost exclusively be accessed by individual car. Bern's urban area stands out from these trends thanks to exemplary coordination between urban growth and accessibility on foot, by bike and by public transport.

A comparison with the surveys carried out in the same three cities in the 1990s and 2010s shows that the inclination to use different transportation means evolve over time. Some types are clearly declining, such as the "exclusive motorists" and "predisposed to motorized individual transport," while others are emerging and developing such as the "comfort comparators" and "predisposed to individual modes." This should be seen as the result of evolving lifestyles combined with the long-term effect of the mobility policies pursued in the three cities of the study.

## To go further:

Kaufmann V., González J., Bernier E., Drevon G. & Messer M.A. (2020), Analyse des logiques de choix modal auprès de la population active urbaine : étude comparée du Grand Genève, du Canton de Vaud, et des agglomérations de Berne et de Bienne [Analysis of the rationales of modal choice among the urban working population: a comparative study of Greater Geneva, the Canton of Vaud, and the cities of Bern and Biel], Cahiers du LASUR 33e, EPFL.

Download (free): <https://infoscience.epfl.ch/record/286254?ln=fr>

### Mobility

For the Mobile Lives Forum, mobility is understood as the process of how individuals travel across distances in order to deploy through time and space the activities that make up their lifestyles. These travel practices are embedded in socio-technical systems, produced by transport and communication industries and techniques, and by normative discourses on these practices, with considerable social, environmental and spatial impacts.

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