

What mobility for teenagers ?

Results from a quantitative and qualitative survey

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Results from a quantitative survey in five European countries

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The objectives

This topic aims at understanding precisely what are the mobility behaviors and aspirations of people under 18. The increasing use of ICT enables a larger access to several information (vehicle availability, travel times, costs, etc.) and payment systems. Do they help young people to travel on a daily basis? Does a better communication between parents and children help a larger autonomy for young people?

In the last decades, the image of the transport system was built around the paradigm of technical progress. In this context, the individual car was considered “progress” relative to public transport, as it freed users from the constraints of specific routes and schedules, and allowed for independent travel in the comfort of a private space. Is this image still relevant for young people?

Our aim is to specify the factors that play a role in modal choice and the effective daily mobility behaviors of under 18.

1. Methodological choices

Thanks to the results given by the EPFL Social Media Lab, a short literature review on teenagers' mobility and the experience we have on such inquiry techniques, we have built a questionnaire on mobility behaviors and aspirations especially dedicated to 14-17 years old people. This questionnaire was validated by Toyota the 16th of May 2016. The French and English questionnaires are attached to this deliverable.

During the second part of May and the first part of June, the French version of the questionnaire was translated in Italian, Spanish and German.

Targeted people are under 18 (i.e. 14, 15, 16 and 17 years old). To contact them, we decided to use Facebook. One fanpage was set up to present the survey. A link appears on the fanpage to directly access the survey. We have then paid (during 3 to 4 months depending on the countries considered) for an advertising campaign on Facebook to invite teenagers accessing this fanpage. That makes appearing the adverts in the news feed. Several publications were also written to make the fanpage the more attractive as possible.

The same method was applied for the 5 countries where we wanted to carry out the survey. You can find here the links to access these fanpages.

In France:

<https://www.facebook.com/Enqu%C3%AAte-sur-la-mobilit%C3%A9-des-adolescents-631795146978647/>

In Spain:

<https://www.facebook.com/Encuesta-sobre-la-movilidad-de-los-adolescentes-728845557255314/>

In Germany:

<https://www.facebook.com/Umfrage-zur-Mobilit%C3%A4t-von-Jugendlichen-1005289722873060/>

In Italy:

<https://www.facebook.com/Sondaggio-sulla-mobilit%C3%A0-degli-adolescenti-150109068745519/>

in UK:

<https://www.facebook.com/Getting-around-a-study-on-the-mobility-habits-of-adolescents-1123211061086807/>

This method appears quite efficient to contact teenagers, known as the most difficult population to survey. Starting and closing dates of the data collection for each country are presented in table 1.

Table 1: Description of the field work and samples

Colonne1	starting date	dosing date	Number of questionnaires	Number of completely filled questionnaires	Number of completely filled questionnaires of 14–17yo persons
France	13.06.2016	03.09.2016	3026	1988	1917
Germany	07.07.2016	26.09.2016	3000	1656	1652
Great-Britain	14.07.2016	26.09.2016	2465	1056	1039
Italy	14.07.2016	24.08.2016	3305	1789	1754
Spain	04.07.2016	25.08.2016	3034	1704	1649

2. Description of the sample

Web designed survey are known to produce high abandonment rates. Even if the software used (Unipark) allows persons to stop answering the questionnaire and to start again precisely at the question they were, we suffers a high abandonment rates in all countries.

Then, some questionnaires were filled by persons who are less than 14 years old or more than 17 years old. These answers were not considered in the analysis.

- **Weighting**

To weight the sample, we used data from OECD¹. Tables 2 and 3 present the distribution of teenagers characteristics by countries' survey, distributed according to the gender and the age.

Table 2: National populations from 14 to 17 years old

14 years old	girls	boys
France	12.09%	12.70%
Germany	12.45%	13.11%
Italy	12.05%	12.80%
Spain	12.23%	12.90%
Great-Britain	11.98%	12.59%
15 years old	girls	boys
France	12.26%	12.86%
Germany	12.23%	12.92%
Italy	12.09%	12.84%
Spain	12.12%	12.75%
Great-Britain	12.14%	12.75%
16 years old	girls	boys
France	12.35%	12.92%
Germany	11.90%	12.56%
Italy	12.07%	12.86%
Spain	12.03%	12.78%
Great-Britain	12.15%	12.89%
17 years old	girls	boys
France	12.12%	12.69%
Germany	12.06%	12.76%
Italy	12.26%	13.03%
Spain	12.18%	13.00%
Great-Britain	12.41%	13.09%

¹ <http://stats.oecd.org/Index.aspx?DataSetCode=RPOP&Lang=fr#>

Tale 3: Survey samples from 14 to 17 years old

14 years old	girls	boys
France	5.79%	3.97%
Germany	4.97%	4.85%
Italy	5.31%	2.91%
Spain	1.58%	0.49%
Great-Britain	4.81%	10.30%
15 years old	girls	boys
France	13.94%	6.89%
Germany	10.24%	10.18%
Italy	12.21%	9.70%
Spain	11.34%	3.88%
Great-Britain	11.93%	12.80%
16 years old	girls	boys
France	21.76%	13.31%
Germany	14.96%	14.23%
Italy	18.95%	12.73%
Spain	24.92%	8.13%
Great-Britain	14.44%	16.36%
17 years old	girls	boys
France	22.76%	11.59%
Germany	20.41%	20.17%
Italy	20.55%	17.64%
Spain	38.27%	11.40%
Great-Britain	15.88%	13.47%

We then calculated a weight, to avoid a distortion of results. Such weights are presented on table 4.

Table 4: weights applied

14 years old	girls	boys
France	2.09	3.20
Germany	2.51	2.71
Italy	2.27	4.40
Spain	7.76	26.60
Great-Britain	2.49	1.22
15 years old	girls	boys
France	0.88	1.87
Germany	1.20	1.27
Italy	0.99	1.32
Spain	1.07	3.29
Great-Britain	1.02	1.00
16 years old	girls	boys
France	0.57	0.97
Germany	0.80	0.88
Italy	0.64	1.01
Spain	0.48	1.57
Great-Britain	0.84	0.79
17 years old	girls	boys
France	0.53	1.10
Germany	0.59	0.63
Italy	0.60	0.74
Spain	0.32	1.14
Great-Britain	0.78	0.97

Table 3, that concerns survey samples, shows that we obtained more numerous answers from girls than from boys. This higher response rate from girls concerns all the ages, with the exception of in Great Britain (where boys answered more than girls) and in Germany (where both answered similarly). We also have more responses from the oldest teenagers (16-17 years old compared to 14-15 years old). This tendency appeared to be linked (at least in France) with a higher equipment rate and higher rate use of Facebook from girls than boys and oldest than youngest).

Table 5: Smartphone equipment rates and social network participation rates in France²

Smartphone equipment rates in France		
ages	girls	boys
14-15 years old	79%	67%
16-17 years old	88%	74%
Social network participation rates in France		
ages	girls	boys
14-15 years old	90%	85%
16-17 years old	92%	82%

Source : CREDOC, Enquêtes "Conditions de vie et aspirations", 2014 et 2015

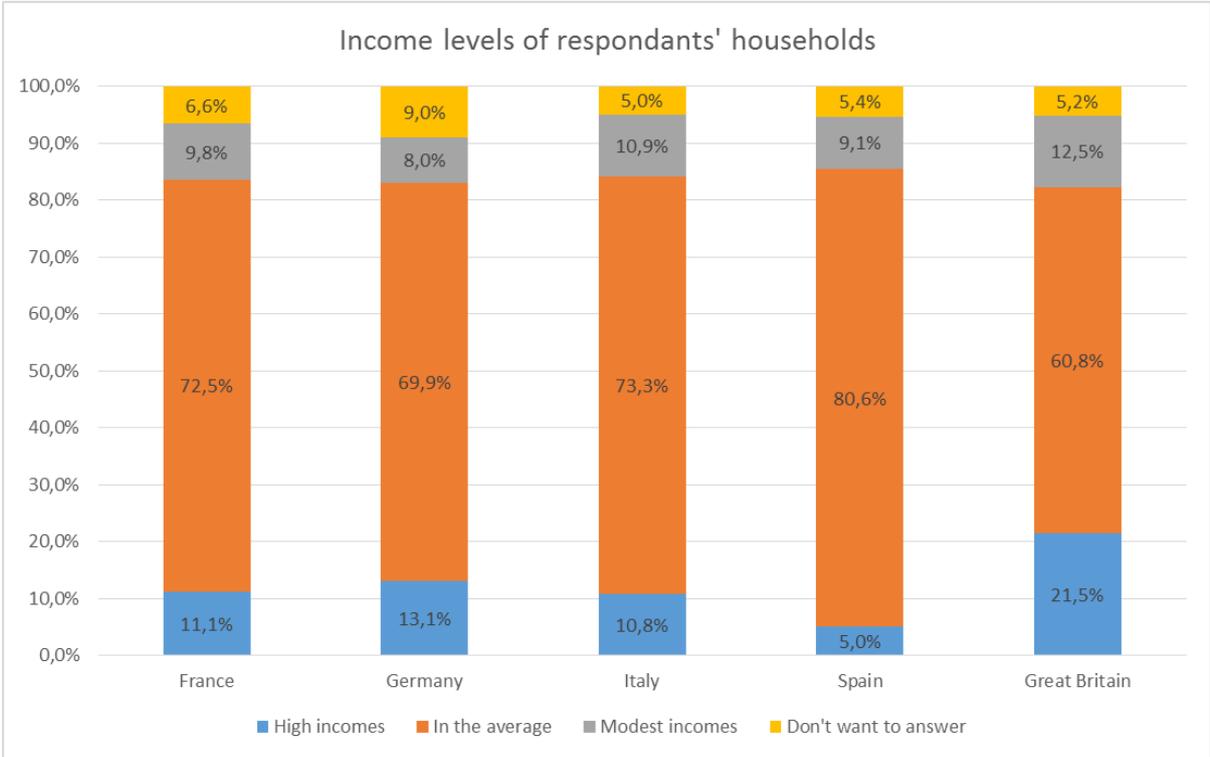
² We thank especially Jorg Muller in CREDOC for the discussion we have had and for the data he accepted to share with us.

Concerning teenagers from our sample, 98% of them declare to have a smartphone, and 97% answered the questionnaire on it. This rate is higher than the 14-17 years old possession rate of smartphone in France, which was 81% in 2015³. Active persons on Facebook, especially during teenage years, use a smartphone to surf on Facebook. At the European level, the activity on social networks appears to be more developed by young girls (from 16 to 19) in France, Italy and Germany, but not really in Spain and United-Kingdom⁴.

- **General insights**

Incomes were asked with a voluntary large question, to avoid respondents to refuse answering. These objectives were reached as from 5% in Italy to 9% in Germany refused to answer this question. In all countries, a large majority declared to live in a household whose incomes are situated in the average.

Graph 1: Income level of the household



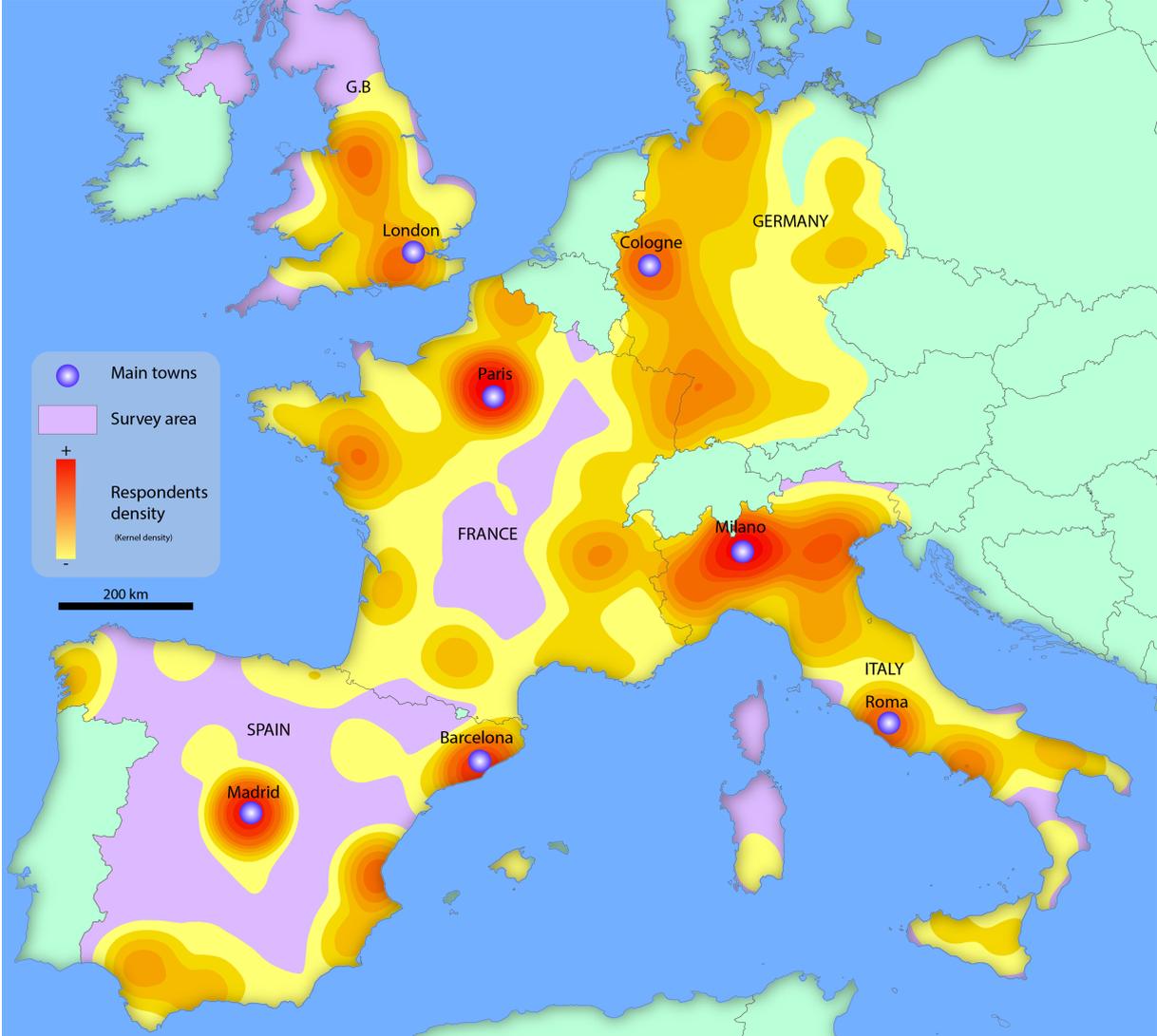
These elements cannot be checked and it is very difficult to explain national differences. The definition of what is “high incomes” or “low incomes” remains free and is specific for each of the respondents. We then propose not to harmonize this element but using this information to explain tendencies and results we will then describe in this document.

To better know where surveyed persons are living, we produced a map. Here, respondents appear sparse in the whole country. We can also notice that major cities are visible on the map. In fact, teenagers from large cities are slightly over-represented in all countries. As for

³ http://www.arcep.fr/uploads/tx_gspublication/CREDOC-Rapport-enquete-diffusion-TIC-France_CGE-ARCEP_nov2015.pdf
⁴ <http://ec.europa.eu/eurostat/web/youth/data/database>

incomes information, we propose to use “degree of urbanity”⁵ of each municipality of residence to explain behaviors and preferences of teenagers then presented.

Graph 2: Spatial repartition of surveyed persons



⁵ <http://ec.europa.eu/eurostat/fr/data/database>

3. Results presentation

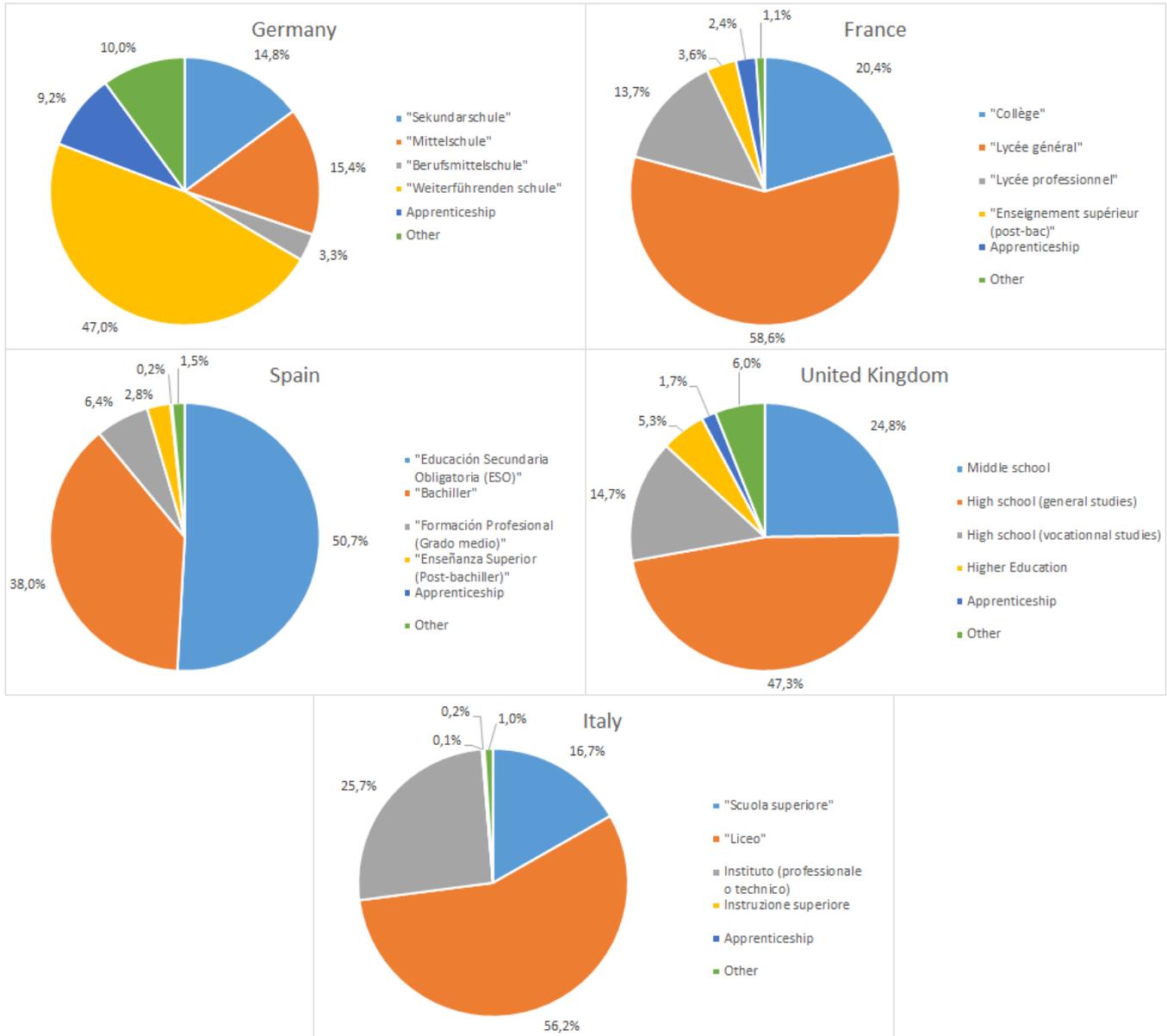
The presentation of results will follow the large topics of the questionnaire:

- Activities and transport modes used
- Mobility and insecurity
- Images on transport modes
- ICT
- Driving licenses and small vehicles

- **Activities and transport modes used**

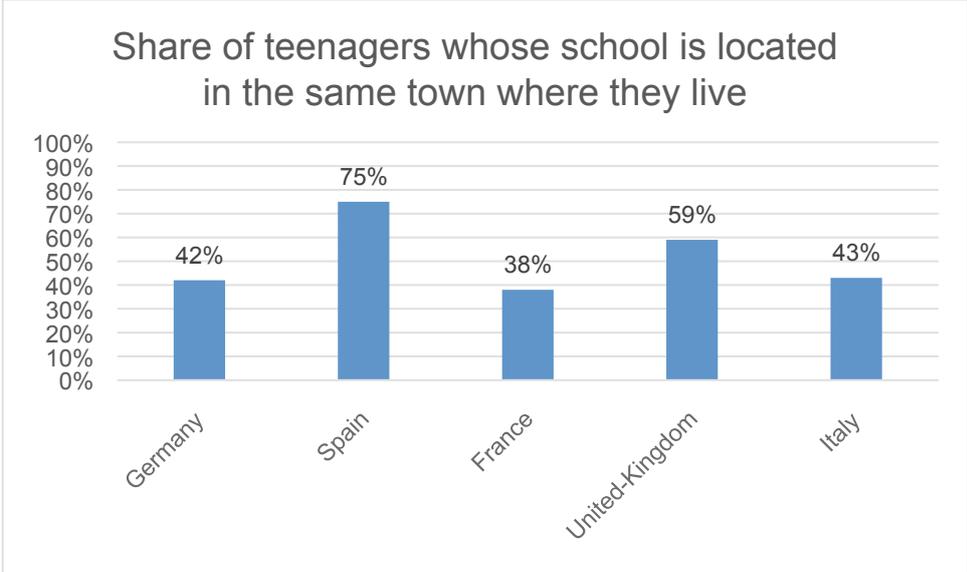
The most important activity in the daily life of teenagers is school. The majority of surveyed people in France, UK and Italy used to go in a general high school, but differences between education system produce some important differences, especially between these three countries and Spain (where the majority of teenagers surveyed are in education “secundaria obligatoria” – before “bachiller” (high school)) and with Germany where most of teenagers from our sample are after the “abitur” (A-level in England).

Graph 3: Studies of 14-17 years old surveyed persons



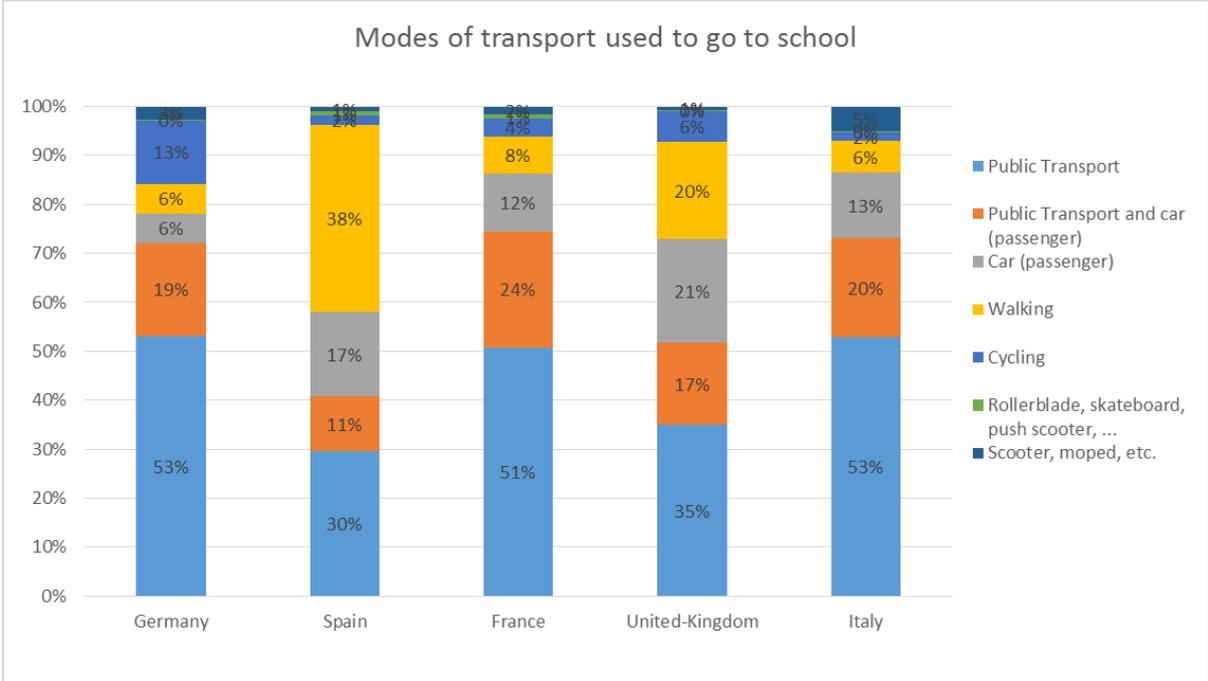
These important differences between countries are linked with variable geographical distances from home to the school where teenagers used to go on a daily basis. Then, Graph 4 shows in Spain 75% of surveyed teenagers go in a school that is located in the town where they live, vs 38% in France or 42% in Germany. This relative proximity helps walking or cycling to go to school.

Graph 4: Proximity from home to school through the presence of school in the living town



Public transport is highly developed in France, Italy and Germany. Almost three-quarters use them, sometimes (24% in France) after or before being taken in a car.

Graph 5: Transport modes used to go to school



In Spain, the share of teenagers who used to walk toward the school is very high (38%), due partly to the relative proximity from home to school we talked about before. It also remains quite high in UK. The proximity is not the only criteria to explain such a propensity to walk in several countries compared to others, the autonomy parents are ready to give to their children is another central aspect. It seems also that cultural differences remain important as this difference concerning the propensity to walk teenagers have remains very important if we only consider the most urbanized residence areas. It can also be linked with a less developed

public transport system in UK, where commuting time from home to school by walk are higher than in other countries. In Spain, the better distribution in space of the school teenagers sued to join is a good explanation for the high propensity of walk (trip times are lower than in other countries).

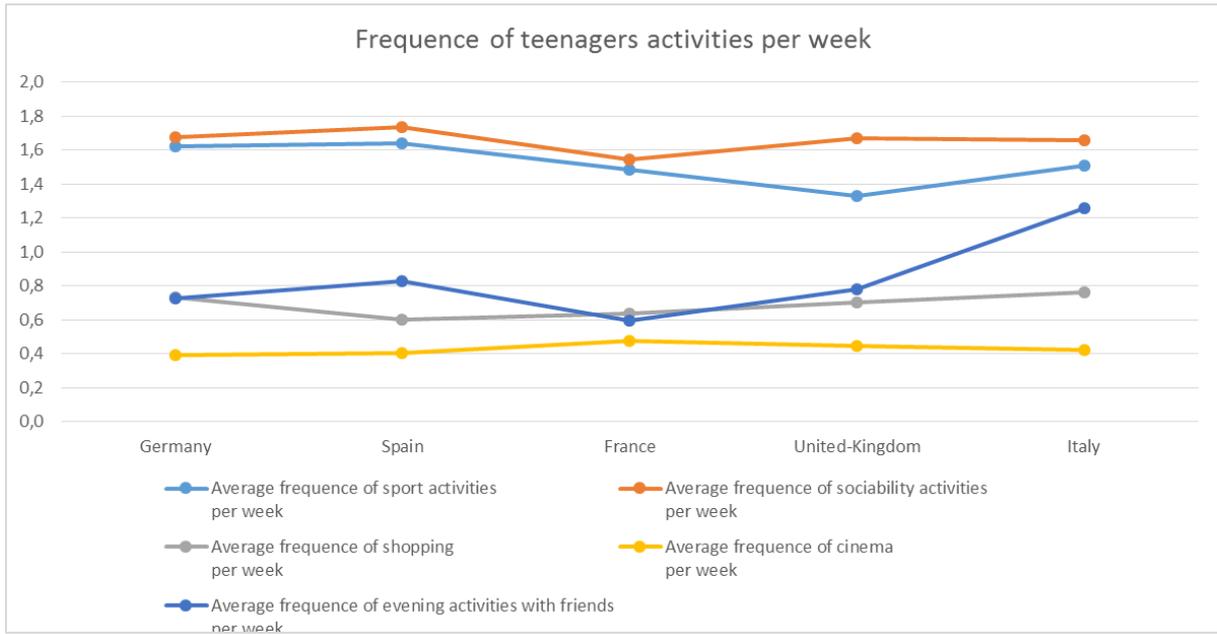
Bicycle is the transport mode for 13% of German teenagers to join the school. Cycling, as for walking, is relied to the autonomy and independence parents give. Culture remains an important factor to explain the specificity of Germany at this level. Scooter and moped are not used by a large part of teenagers, with the exception of Italy where 5% of teenagers we surveyed declared using this kind of vehicle.

The school plays a central role in the daily life of teenagers, but they also used to travel for other activities. We questioned in the survey the frequency of this kind of trips. Graph6 shows sport and sociability activities are quite frequent, they generate between one and two round trips per week. Shopping activities, evening activities with friends and cinema are less frequent but are not far from one round trip per week. We can also note that in Italy, evening activities with friends are largely more frequent than in other countries. Teenagers growing up will tend to go out during the day and evening more frequently but trips for sport activity will decrease in frequency. It is interesting to note here that outings with friends during the day or the evening are the activities the less dependent from parents. It then appears that autonomy is gained also through some changes in the activities teenagers do. Gender effects are not very important, with the exception of sport activities (that concerns more boys than girls) and shopping activities (mode girls than boys). Finally, incomes and urbanization degree play a strong role for all activities, always in the same direction: the higher incomes are, the more you travel and the more urbanized your living town is, the more you will travel.

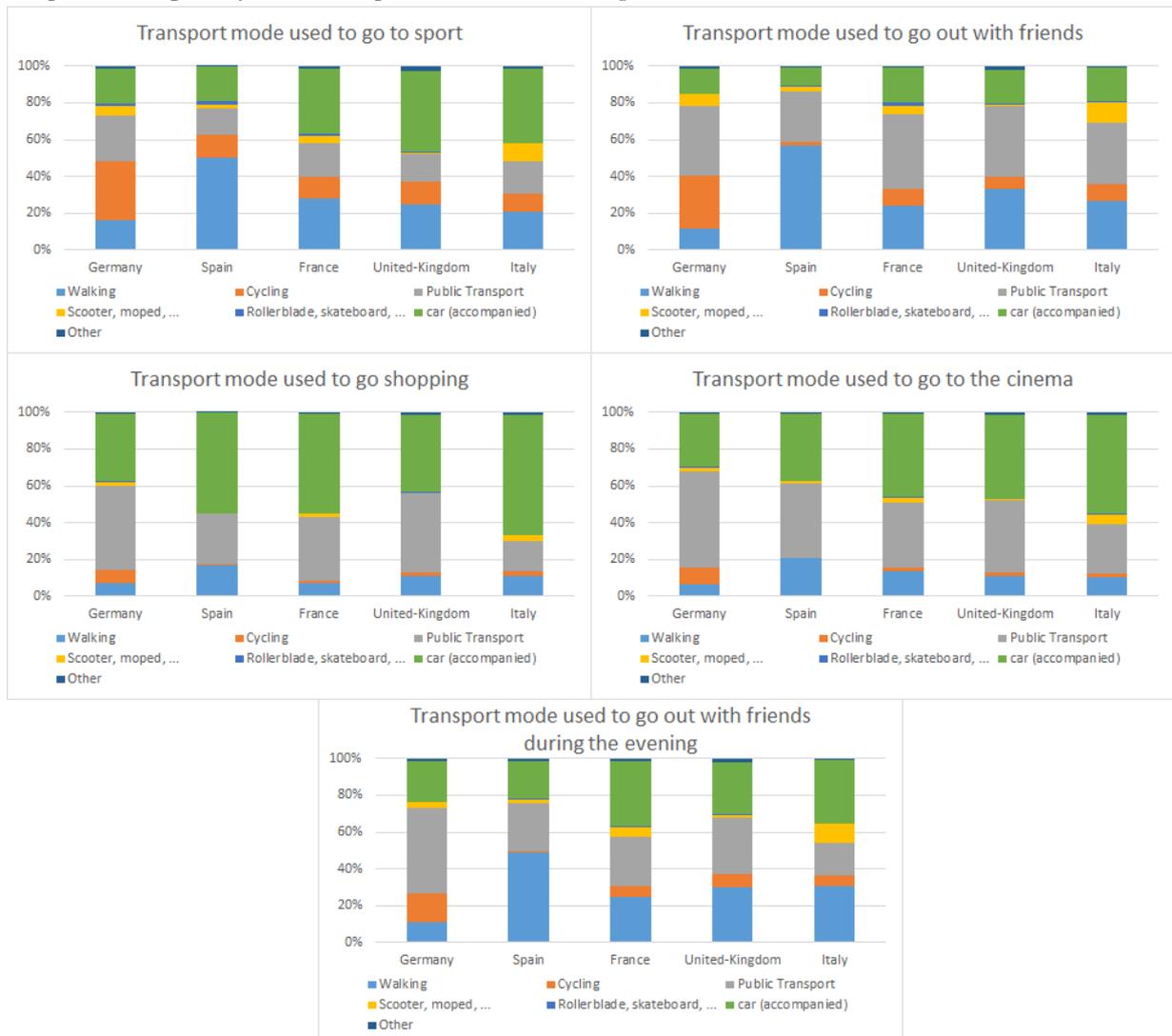
We then observe the lower rate of public transport use for these activities compared to school trips. The important use of car to go shopping is partly due to the presence of family members quite often to make this activity. For the cinema, the sports and to go out with friends, the use of car as passenger is directly linked with an accompaniment of parents without any participation in the activity. This situation is especially noticeable when teenagers go out with friends during the day or the evening, or when they go to cinema, because for these activities, they generally travel with their friends. Then, to be constrained relying on parents in these cases can specifically be difficult to live through.

Teenagers' activities we studied generate some quite long trips, especially the ones for shopping, and successively cinema, outings in the evening, outings during the day and sports. This last activity is more often a local activity, which takes place in the residence city for a large part of teenagers. Travel time, and also the transport mode used to join other activities is highly dependent to the place teenagers live. Living in a rural areas necessitate a limitation in the activities made and a higher need for rides by parents.

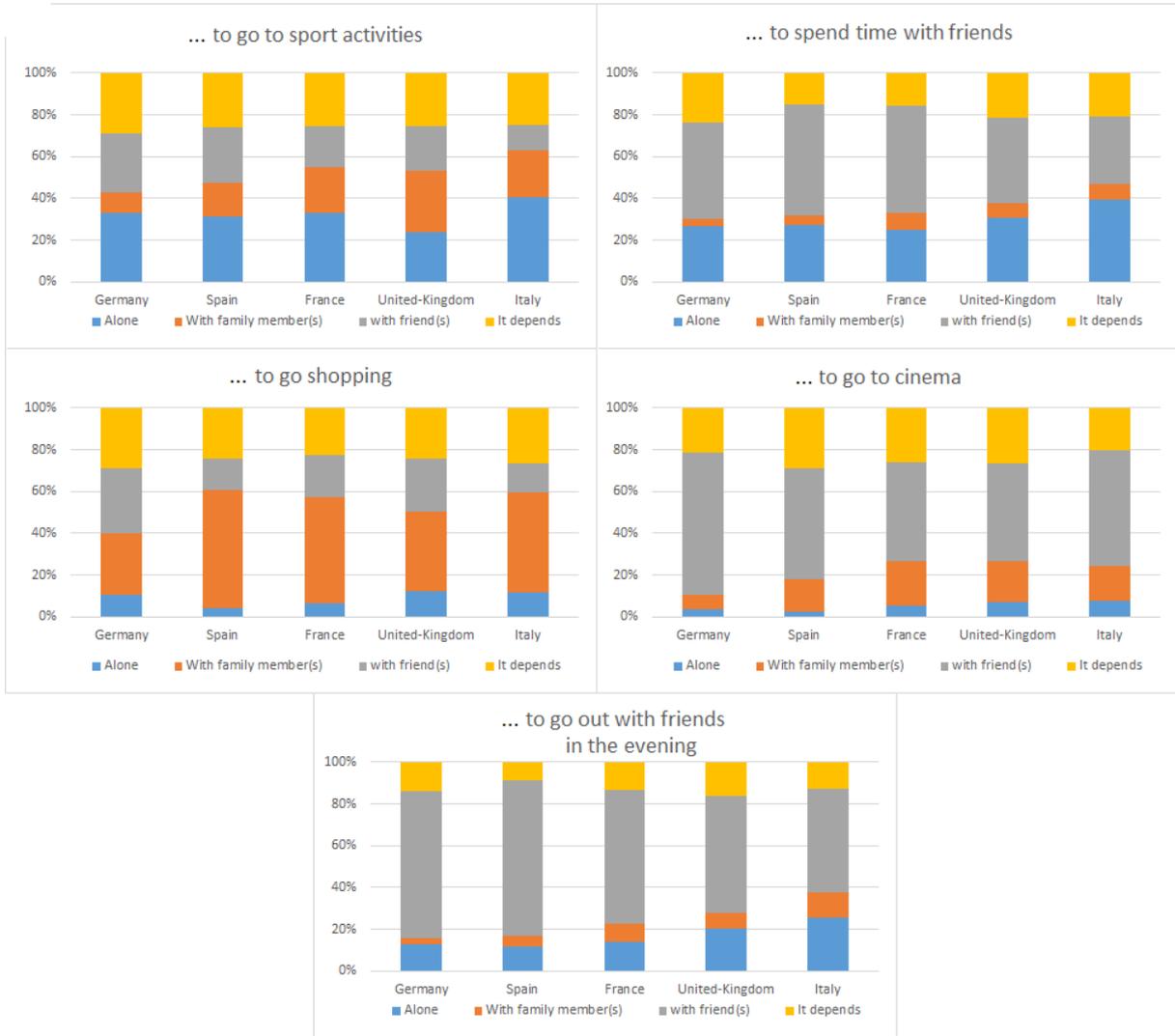
Graph 6: Frequency and transport modes used to go to several activities



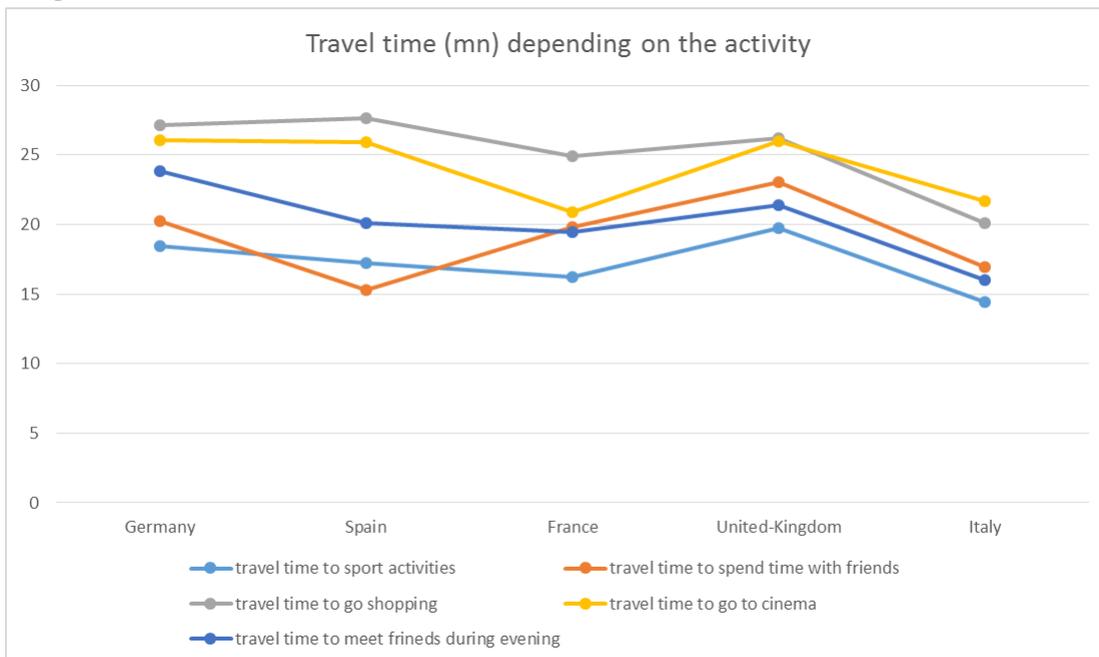
Graph 7: Frequency and transport modes used to go to several activities



Graph 8: Who travel with me to join the activity?



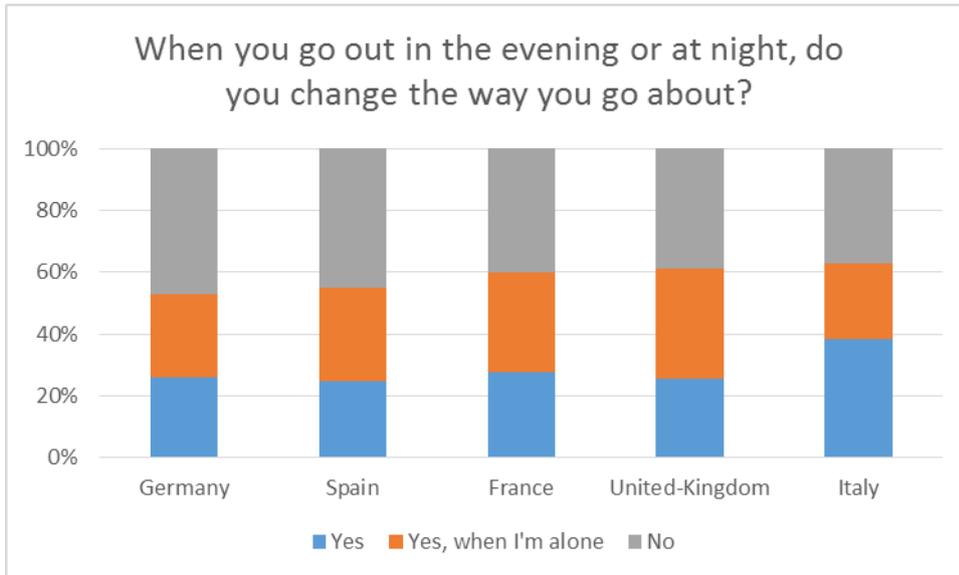
Graph 9: Travel time to several activities



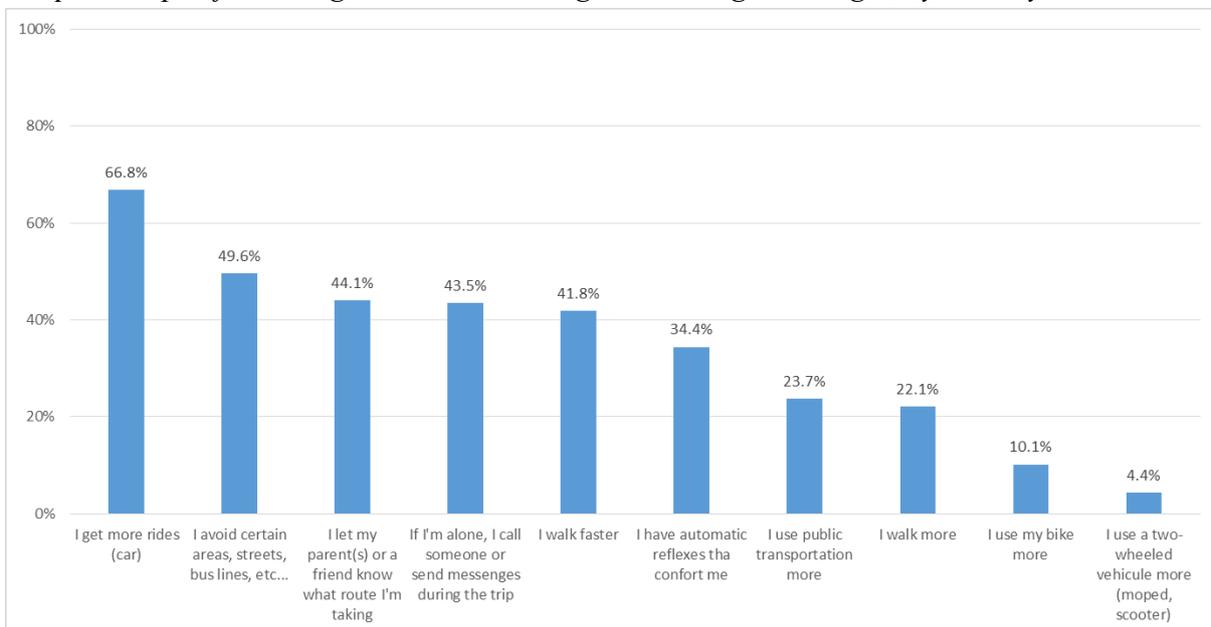
- **Mobility and insecurity**

We first asked teenagers whether they use to change the way to travel when it is evening or night. Answers are quite balanced, but national differences are low. In all countries we studied, around 60% of teenagers used to change the way they travel the evening or at night. But strategies then adopted are different depending on the country where teenagers live.

Graph 10: changing in the way to travel during the evening or at night



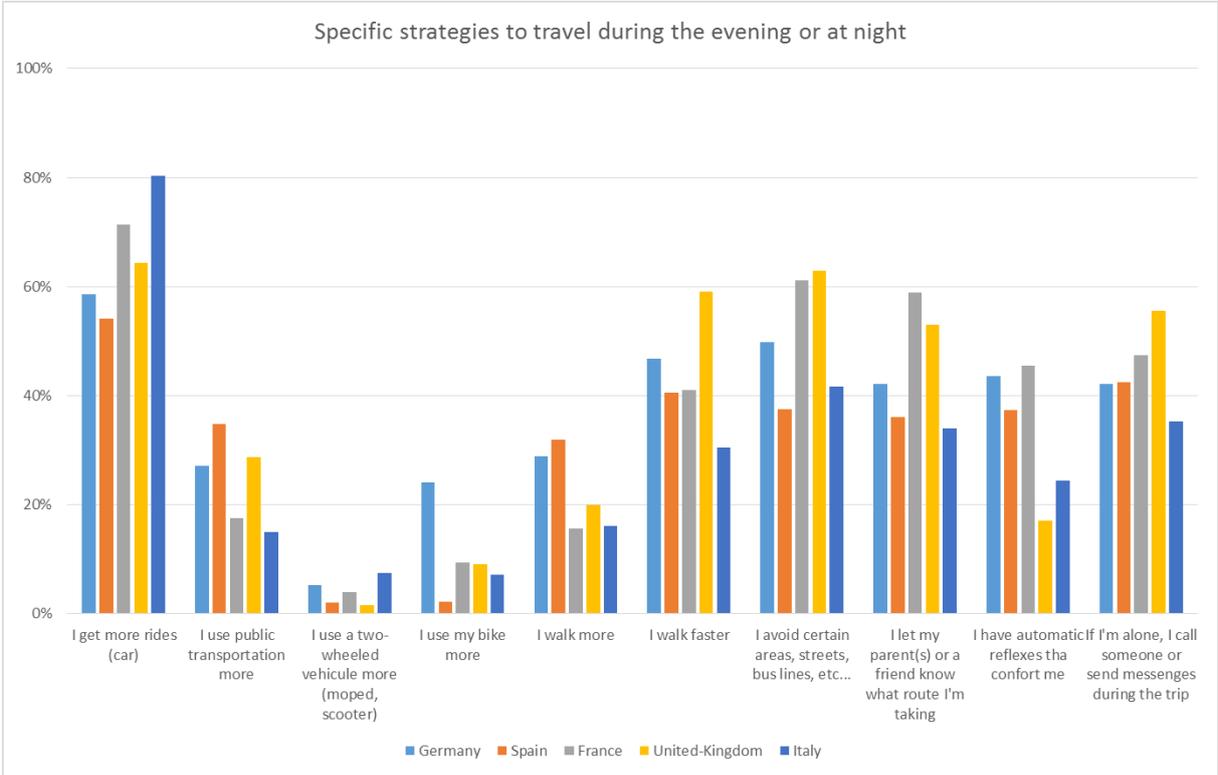
Graph 11: Specific strategies to travel during the evening or at night, by country



The propensity to change the way to travel during the evening or at night tends to increase in urban areas. At an individual scale, it is then interesting to note that the youngest are more often insecure than oldest, and girls than boys. Boys also used to change the way to travel the night, but to react with a drop in the public transport offer. They will then walk and use bicycle.

Strategies teenagers used are quite diversified. To get a ride remains the most frequent decision they take before travelling during the evening or at night. Avoiding certain zones come after as the second decision to take. Then, to let parent(s) or friend(s) know what route they take, and sending messages or calling appear to be strategies quite shared. Having a smartphone facilitates such behaviors.

Graph 12: Specific strategies to travel during the evening or at night, by country



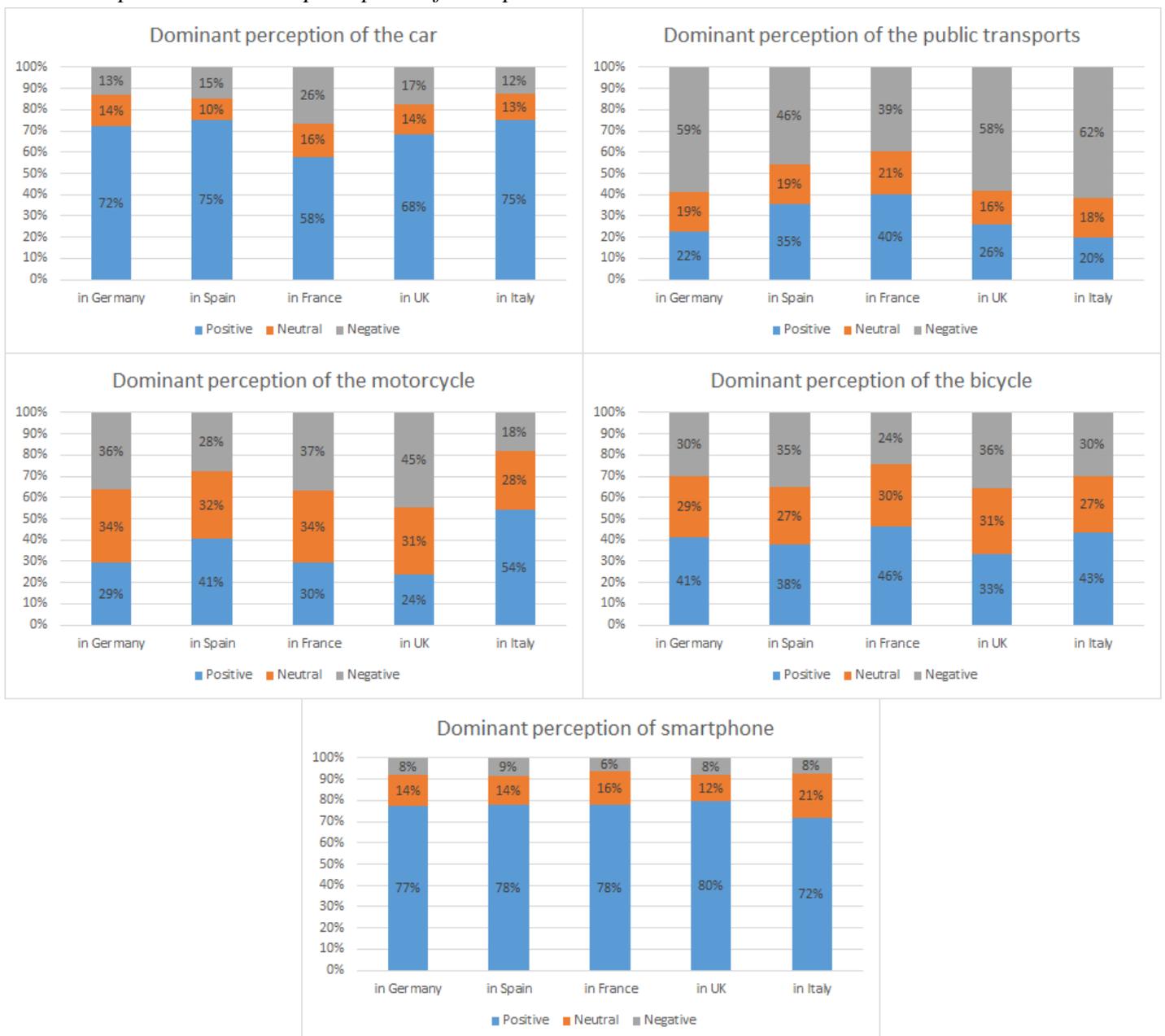
National differences are interesting concerning these strategies. Italy appears to be a country where motorized transport modes (especially cars and moped/scooters) are well used solutions to feel safer at night. In Germany, using the bike appears largely more developed than in other countries we studied.

Authorization from parents play of course a very important role in the way teenagers will travel during the evening and at night. Around 22% of teenagers (without national differences) declared their parents let them go out at night as late as they want. This figure increases from around 10% at 14 years old to 45% at 17 years old. 35% of girls have such an extended authorization vs 65 of boys. The curfew stays a well-developed habit of parents (around 55% of teenagers are concerned, a little bit more often girls than boys). The smartphone finally offers a new option: to be reached at any time. It appears very developed In France or UK (more than 60% of teenagers are concerned) but less in Italy and Spain where only around 35% are concerned. This option concerns all ages, girls and boys, rural and urban areas.

- **Images on transport modes**

Adjectives or nouns were asked to the teenagers on each transport modes. The car appears to be quite well valued by young people. Until 75% (In Italy and in Spain) of teenagers globally have a positive image of the car. We already can note the specific case of French teenagers, who are only 58% to have a positive image of cars. Public transports have a quite bad image in all countries we studied, even if discourses are more positive in Spain and France. Images on motorized two-wheels are quite balanced. National differences are very important at this level, as we can observe that 54% of Italian have a globally good image on this mode, vs 24%, 29%, 30% and 41% respectively in UK, Germany, France and Spain. Bicycles globally have a good image, but a large part of teenagers keep a negative image of this mode. We can finally note the very positive image of smartphone among teenagers.

Graph 13: Dominant perception of transport modes



If no differences appear depending on the age, sex, incomes and residence density on the dominant perception of the car, we can note for public transports that perception is better in dense cities than in rural areas. Concerning motorcycles, boys have a better perception than girls. And finally, the dominant perception of bicycle tends to slightly decrease with age in all countries with the exception of Germany. A gender effect is also noticeable as 46% of boys have a good image of bicycles, vs 35% of girls.

We now propose to have a look more specifically on adjectives teenagers used to qualify transport modes. The positive perception of cars by teenagers is linked with its characterization of a fast, convenient and comfortable transport mode (Table 6). Negative perceptions generally concern the fact cars pollute and are expensive. International differences are really interesting at this stage, as 32.5% of French teenagers said cars are pollutant, only 10% of teenagers from UK did. Even if there is a low percentage of teenagers who declared car makes autonomous and free, this is more cited in this case than for smartphone. 4% of teenagers in UK and 5.5% in France mentioned that car was linked with their parents, which suggests a sort of generation break-up.

Table 6: perceptions of the car by country

Germany		Spain		France		UK		Italy	
Fast	67.7%	Fast	67.7%	Fast	50.7%	Fast	54.9%	Comfortable, pleasant, nice	69.6%
Convenient	37.4%	Comfortable, pleasant, nice	55.7%	Convenient	44.2%	Convenient	53.7%	Fast	52.2%
Comfortable, pleasant, nice	33.3%	Pollutant	25.3%	Pollutant	31.5%	Comfortable, pleasant, nice	28.1%	Convenient	31.1%
Pollutant	17.1%	Convenient	23.1%	Comfortable, pleasant, nice	27.0%	Other positive answers	16.7%	Pollutant	16.3%
Expensive	12.7%	Safe	19.6%	Uncomfortable, unpleasant	13.2%	Expensive	14.1%	Safe	12.1%
Makes autonomous, free	11.7%	Expensive	11.7%	Expensive	11.7%	Uncomfortable, unpleasant	12.7%	Expensive	10.6%
Other positive answers	10.6%	Other positive answers	9.4%	Other positive answers	7.7%	Pollutant	9.9%	Makes autonomous, free	6.6%
Other	7.1%	Uncomfortable, unpleasant	9.2%	Makes autonomous, free	7.6%	Not Convenient	6.7%	Other positive answers	5.6%
Safe	6.8%	Other	6.9%	Not Convenient	7.2%	Other negative answers	6.7%	Other	5.1%
Relaxing	6.0%	Makes autonomous, free	4.5%	Safe	5.8%	Safe	6.4%	Not Convenient	5.1%
Uncomfortable, unpleasant	5.1%	Cheap	3.9%	Relaxing	5.6%	Other	6.2%	Uncomfortable, unpleasant	4.9%
Restrictive	4.5%	Dangerous, unSafe	3.6%	Parental or adult dependence	5.5%	Makes autonomous, free	6.1%	Essential, necessary	4.1%
Essential, necessary	3.6%	Not Convenient	3.5%	Tiresome	5.1%	Parental or adult dependence	3.7%	Beautiful	3.4%
Noisy	3.0%	Other negative answers	3.4%	Other	4.6%	Dangerous, unSafe	3.7%	Restrictive	3.2%
Tiresome	2.6%	Essential, necessary	3.4%	Restrictive	3.6%	Relaxing	3.7%	Relaxing	3.0%

Public transports are criticized to be uncomfortable or unpleasant by 30% to 40% of teenagers depending on the country. With the exception of France (and Spain), a very little part of teenagers are talking about an ecological mode to characterize public transports.

Table 7: perceptions of public transports by country

Public transports									
Germany		Spain		France		UK		Italy	
Uncomfortable, unpleasant	37.9%	Slow	40.9%	Convenient	42.0%	Uncomfortable, unpleasant	41.1%	Uncomfortable, unpleasant	39.6%
Slow	25.5%	Uncomfortable, unpleasant	35.2%	Uncomfortable, unpleasant	29.7%	Slow	31.9%	Not Convenient	38.0%
Not Convenient	24.2%	Convenient	27.3%	Tiresome	19.1%	Not Convenient	29.9%	Slow	31.4%
Expensive	21.9%	Comfortable, pleasant, nice	23.4%	Not Convenient	17.2%	Convenient	27.1%	Convenient	20.9%
Restrictive	20.5%	Cheap	21.6%	Comfortable, pleasant, nice	16.1%	Expensive	26.1%	Comfortable, pleasant, nice	19.3%
Convenient	16.4%	Expensive	18.9%	Fast	15.7%	Comfortable, pleasant, nice	15.2%	Healthy	17.4%
Fast	14.2%	Ecological	11.3%	Ecological	14.4%	Cheap	14.3%	Expensive	11.7%
Comfortable, pleasant, nice	10.8%	Not Convenient	11.1%	Cheap	14.4%	Other negative answers	9.8%	Dangerous, unSafe	10.5%
Ecological	9.4%	Fast	10.5%	Slow	14.2%	Dangerous, unSafe	9.5%	Other negative answers	7.4%
Other	8.7%	Other	7.8%	Expensive	12.6%	Fast	9.2%	Cheap	5.7%
Cheap	8.5%	Other positive answers	7.2%	Other	8.3%	Other positive answers	8.9%	Fast	5.7%
Tiresome	8.2%	Safe	6.9%	Restrictive	6.0%	Other	5.9%	Other	4.4%
Noisy	6.9%	Dangerous, unSafe	5.7%	Noisy	5.8%	Tiresome	5.0%	Ecological	4.0%
Other positive answers	3.9%	Restrictive	5.3%	Makes autonomous, free	4.8%	Ecological	4.5%	Noisy	3.4%
Essential, necessary	3.9%	Other negative answers	3.8%	Other positive answers	3.9%	Noisy	2.6%	Other positive answers	3.2%

Images of motorcycles are very different depending on the country considered (Table 8). The dangerous side of this mode is cited everywhere, but by 12% of German teenagers, vs 38.5% of these from UK for example. As for both first transport modes, a large part of adjectives and nouns given by teenagers concerns the functionality of the modes. However, in this case, some elements cited by teenagers highlight a sensible relationship that seems to exist between teenagers and motorcycles. Some very positive and negative views are gathered in “Other positive answers” and “other negative answers”. Aesthetic answers also are given to describe the object that is for some teenagers something beautiful, nice, and for others it is ugly... We can then note that for all transport modes, the aesthetic dimension is more important for Italian than for other teenagers.

Table 8: perceptions of motorcycles by country

Motorcycles									
Germany		Spain		France		UK		Italy	
Fast	25.1%	Fast	49.1%	Dangerous, unSafe	35.6%	Dangerous, unSafe	38.5%	Fast	43.6%
Convenient	18.8%	Dangerous, unSafe	33.8%	Convenient	29.1%	Fast	23.2%	Comfortable, pleasant, nice	37.8%
Slow	17.9%	Comfortable, pleasant, nice	26.3%	Fast	25.5%	Other negative answers	21.9%	Dangerous, unSafe	29.0%
Expensive	13.0%	Convenient	18.1%	Pollutant	15.1%	Comfortable, pleasant, nice	17.0%	Convenient	26.2%
Uncomfortable, unpleasant	13.0%	Uncomfortable, unpleasant	11.6%	Expensive	11.4%	Convenient	14.5%	Expensive	7.0%
Dangerous, unSafe	11.9%	Pollutant	11.5%	Comfortable, pleasant, nice	10.0%	Uncomfortable, unpleasant	13.1%	Other	6.9%
Noisy	11.8%	Other	10.7%	Noisy	9.3%	Other positive answers	11.9%	Other positive answers	6.8%
Pollutant	11.7%	Other positive answers	8.9%	Makes autonomous, free	8.7%	Other	9.2%	Uncomfortable, unpleasant	6.7%
Other positive answers	11.5%	Not Convenient	8.0%	Other	7.2%	Slow	8.9%	Makes autonomous, free	6.7%
Makes autonomous, free	9.8%	Expensive	7.1%	Other positive answers	7.0%	Expensive	8.9%	Pollutant	6.4%
Comfortable, pleasant, nice	9.3%	Noisy	5.1%	Other negative answers	5.9%	Not Convenient	8.9%	Beautiful	6.3%
Useless	6.9%	Other negative answers	5.0%	Slow	5.5%	Makes autonomous, free	3.4%	Not Convenient	3.0%
Other	6.0%	Makes autonomous, free	3.4%	Not Convenient	5.4%	Cheap	3.1%	Cheap	3.0%
Other negative answers	5.5%	Slow	3.2%	Uncomfortable, unpleasant	4.4%	Noisy	3.1%	Noisy	2.9%
Not Convenient	3.9%	Cheap	2.2%	Restrictive	2.6%	Useless	2.9%	Other negative answers	2.8%

Bicycle has quite a good image among teenagers (table 9). It is considered as a healthy way to travel. It appears also to be viewed as ecological, convenient and fast by some respondents. Negative aspects concerns the fact it is considered as tiresome, slow and uncomfortable.

Table 9: perceptions of bicycles by country

Bicycles									
Germany		Spain		France		UK		Italy	
Tiresome	34.2%	Tiresome	26.9%	Healthy	35.8%	Healthy	36.6%	Comfortable, pleasant, nice	28.9%
Healthy	30.0%	Healthy	23.6%	Convenient	28.9%	Tiresome	32.4%	Convenient	26.4%
Fast	25.6%	Fast	23.5%	Tiresome	24.2%	Comfortable, pleasant, nice	29.7%	Uncomfortable, unpleasant	23.5%
Convenient	24.4%	Uncomfortable, unpleasant	20.3%	Ecological	20.4%	Fast	19.8%	Fast	20.8%
Slow	20.8%	Slow	20.2%	Comfortable, pleasant, nice	18.2%	Slow	17.0%	Tiresome	19.1%
Ecological	14.0%	Convenient	18.9%	Fast	17.5%	Dangerous, unSafe	16.6%	Slow	16.4%
Uncomfortable, unpleasant	12.6%	Dangerous, unSafe	16.9%	Slow	11.7%	Convenient	15.0%	Ecological	13.2%
Makes autonomous, free	10.0%	Comfortable, pleasant, nice	16.2%	Not Convenient	10.3%	Not Convenient	13.1%	Dangerous, unSafe	12.2%
Comfortable, pleasant, nice	9.4%	Ecological	15.4%	Other	10.3%	Other positive answers	10.8%	Healthy	12.1%
Cheap	8.1%	Other positive answers	9.7%	Dangerous, unSafe	9.5%	Uncomfortable, unpleasant	10.6%	Other	6.0%
Other positive answers	7.0%	Cheap	9.6%	Makes autonomous, free	6.6%	Other negative answers	8.3%	Cheap	5.7%
Restrictive	5.7%	Other	7.1%	Cheap	6.1%	Other	7.0%	Other positive answers	5.3%
Other	5.1%	Not Convenient	6.9%	Other positive answers	6.1%	Makes autonomous, free	6.5%	Not Convenient	5.1%
Dangerous, unSafe	4.5%	Other negative answers	3.5%	Uncomfortable, unpleasant	5.9%	Cheap	6.0%	Makes autonomous, free	4.4%
Not Convenient	4.2%	Safe	3.0%	Other negative answers	3.1%	Ecological	5.2%	Beautiful	4.3%

We then decide to make further analysis on adjectives cited by teenagers to better know the factors that play a role among gender, age, urbanity of the residence place and households incomes. Logistic regressions were realized and are presented table 10. For each transport mode, results have to be horizontally read. For instance, concerning the adjective convenient to qualify the car, the results we obtained show girls (G) mentioned it more than boys (B) did, the older respondents are, the more it is cited, the less your living city is urbanized, the more

it is cited, and finally, the richer you are, the more you will mention this adjective. As logistic regression is a model, all these factors are considered together in the analysis.

We won't explain all the result obtained, but some of them appear very interesting and necessitate to be presented and discussed.

Table 10: factors playing a role in the adjectives cited

Cars	Gender	Age	Urbanity	Incomes	Motorcydes	Gender	Age	Urbanity	Incomes
Fast		-	+		Fast		-	+	
Convenient	G	+	-	+	Convenient	G	+		+
Comfortable, pleasant, nice	G		+		Comfortable, pleasant, nice				
Safe		-	+	-	Makes autonomous, free	B		-	
Makes autonomous, free		+	-		Slow	B		-	+
Pollutant	B	-	+		Expensive		+		-
Expensive		+	+		Dangerous, unsafe	G		+	
Uncomfortable, unpleasant		-	+		Noisy	B			
Not Convenient		+	+		Pollutant	B			
Dangerous, unsafe	G			-	Uncomfortable, unpleasant				
Public transports	Gender	Age	Urbanity	Incomes	Bicydes	Gender	Age	Urbanity	Incomes
Fast			+		Fast	B	-	+	
Convenient	G	-	+		Convenient	B			
Comfortable, pleasant, nice		-	+		Comfortable, pleasant, nice	B			
Ecological	B	+	-	+	Ecological				
Cheap	B	+			Healthy			-	
Uncomfortable, unpleasant	G	-	+		Uncomfortable, unpleasant	G			
Slow	B		+		Slow		+	-	
Not Convenient	G	+	-		Dangerous, unsafe	G		+	
Expensive		+		-	Tiresome	G	+	-	

The first element we wanted to highlight concerns gender differences. The image of car is globally better for girls than boys, especially because of its convenient and comfortable/pleasant/nice aspects. More generally, we can observe, for all transport modes, a higher consideration of security issues (that are linked with road safety and protection from aggression) by girls and higher environmental considerations by boys. This last result is very important because we can observe that, with the age, women are more environmental friendly than men. A shift then occurs during higher education. Another profound and significant difference between boys and girls concerns bicycles. Boys more often mention the fast, convenient and comfortable nature of this transport mode, and girls more often cite its uncomfortable, dangerous and tiresome nature... This tendency will then continue to play an important role in the uses of bicycles by men and women, which remains very different for all age groups.

With age, teenagers become more and more autonomous and free in their mobility behaviors and on the financial aspect. That element explains why cheap and expensive evocations increase with age. In this context, car remains a relevant instrument of emancipation.

Teenagers living in urban areas tend to often mention the fast, comfortable and safe nature of the car, while these living in rural areas will orientate their discourses toward the convenient and autonomous "guarantor" aspects. Finally, concerning the car, we can note that negative adjectives are more frequently cited in urban areas. Conversely, positive aspects concerning public transport are more present in urban areas, with the exception of the ecological issue.

Some questions were asked to better understand teenagers' relationship with transport modes. We can observe for example, that from 83% in France to 90% in Germany declare to choose the fastest transport mode. Teenagers are often not in a modal choice situation because in most cases, they have few alternatives to be compared. But their will to travel on a fast way appears quite clearly here. Beyond this first element, discourses on public transports show some others modal choice logics at play. A majority of teenagers in all countries like traveling in public transport to discuss with friends (it concerns 55% in Italy, 56% in Germany, 57% in Spain, 58% in UK and 68% in France). We can here observe better consideration French teenagers have on public transportation we already discussed. The need to respect time schedules is presented as an important constraint especially in Italy (63% are concerned), but at a lesser extent in Germany (46% are concerned).

Then, many teenagers agree with the idea public transportation are dangerous during the evening. It concerns around 42% of them in all countries but Italy (around 62%). Girls are largely dominant among teenagers who worry about that element.

Concerning the driving license, the first result is quite impressive, as 61% totally agree to say that it is a priority in France, and this figure reaches 73% in Italy and 74% in Germany! If also considering the share of teenagers who somehow agree with that idea, around 10 to 20% only considers getting the driving license is not a priority. That element can be linked with the large majority of teenagers who considers car as a way to become more independent and free. We can then note that it concerns 86% of Italians, a figure largely higher than in other countries.

Learning the rules and being able to pay the driving license appear to be quite problematic for a little part of teenagers, a part that tend to be slightly higher in France.

A large part of teenagers we surveyed declare cars are responsible for major ecological issues, this tendency has to be qualified with the answers they gave sooner in the questionnaire when we asked them to mention freely some adjectives or nouns that would qualify transport modes. Environmental issues are important issues for many teenagers, but for a large majority of them, this element comes after many others that concern speed, convenience, comfort, etc.

We can finally note that answers are very different by countries to the questions linked with small electric vehicles as the future of mobility. 78% of Spaniards seems to be convinced, as only 50% of UK and German teenagers are.

Table 11: Reactions of teenagers on some mobility assertions

I'm always looking for the fastest form of transport						
	Germany	Spain	France	United-Kingdom	Italy	
Completely agree	41.2%	47.4%	36.8%	30.4%	41.4%	
Somewhat agree	48.8%	38.9%	45.8%	56.1%	45.5%	
No opinion	1.5%	7.3%	3.3%	3.5%	4.1%	
Somewhat disagree	7.7%	4.7%	11.1%	8.5%	7.3%	
Completely disagree	0.7%	1.6%	3.0%	1.4%	1.7%	

I like using public transport because I can discuss with friends during the travel						
	Germany	Spain	France	United-Kingdom	Italy	
Completely agree	22.0%	25.8%	30.4%	19.9%	14.1%	
Somewhat agree	34.4%	31.8%	37.4%	38.0%	41.1%	
No opinion	6.3%	19.6%	9.5%	11.9%	9.8%	
Somewhat disagree	25.0%	9.9%	13.6%	15.8%	20.8%	
Completely disagree	12.4%	12.9%	9.2%	14.4%	14.2%	

I don't like using public transport because of the schedules to be respected						
	Germany	Spain	France	United-Kingdom	Italy	
Completely agree	22.9%	22.1%	24.1%	17.5%	30.8%	
Somewhat agree	23.7%	30.1%	29.7%	33.0%	31.9%	
No opinion	6.7%	17.0%	6.5%	12.6%	5.9%	
Somewhat disagree	24.5%	17.7%	21.4%	20.5%	19.4%	
Completely disagree	22.3%	13.1%	18.3%	16.3%	12.1%	

Using public transport is dangerous in the evening						
	Germany	Spain	France	United-Kingdom	Italy	
Completely agree	14.8%	16.0%	13.9%	9.8%	28.3%	
Somewhat agree	26.3%	26.7%	25.1%	35.7%	33.6%	
No opinion	7.7%	17.3%	15.9%	11.2%	8.9%	
Somewhat disagree	31.9%	26.2%	24.8%	26.0%	19.0%	
Completely disagree	19.2%	13.9%	20.3%	17.4%	10.2%	

Getting a driver's license is a priority for me						
	Germany	Spain	France	United-Kingdom	Italy	
Completely agree	74.0%	69.2%	60.8%	52.5%	73.2%	
Somewhat agree	16.0%	18.9%	20.8%	24.3%	17.8%	
No opinion	2.6%	3.3%	2.7%	5.4%	2.1%	
Somewhat disagree	4.7%	6.1%	8.7%	11.1%	5.1%	
Completely disagree	2.6%	2.5%	7.0%	6.7%	1.8%	

Learning the rules of the road seems difficult						
	Germany	Spain	France	United-Kingdom	Italy	
Completely agree	4.5%	7.7%	11.8%	9.1%	3.4%	
Somewhat agree	10.9%	14.9%	24.7%	26.7%	21.0%	
No opinion	6.2%	18.3%	5.3%	5.5%	6.7%	
Somewhat disagree	33.3%	33.5%	28.9%	30.2%	36.7%	
Completely disagree	45.1%	25.6%	29.2%	28.4%	32.1%	

The cost of getting a driver's license is problematic for me						
	Germany	Spain	France	United-Kingdom	Italy	
Completely agree	20.5%	24.3%	34.7%	23.0%	15.2%	
Somewhat agree	28.0%	34.9%	30.8%	28.3%	29.2%	
No opinion	7.7%	13.6%	7.9%	11.3%	12.5%	
Somewhat disagree	26.5%	13.1%	13.9%	17.0%	19.5%	
Completely disagree	17.3%	14.1%	12.7%	20.5%	23.5%	

Having a car is necessary to become free and independent

	Germany	Spain	France	United-Kingdom	Italy
Completely agree	45.1%	38.7%	43.8%	36.8%	56.2%
Somewhat agree	29.1%	31.4%	29.2%	29.8%	29.8%
No opinion	4.7%	6.3%	2.7%	3.3%	1.4%
Somewhat disagree	14.3%	15.0%	15.2%	15.4%	9.1%
Completely disagree	6.8%	8.6%	9.1%	14.7%	3.4%

In general, I can totally imagine using only carsharing

	Germany	Spain	France	United-Kingdom	Italy
Completely agree	5.6%	2.3%	5.6%	6.8%	2.0%
Somewhat agree	11.7%	7.8%	12.9%	18.0%	5.6%
No opinion	7.7%	20.5%	10.4%	13.6%	12.8%
Somewhat disagree	27.1%	21.0%	25.3%	26.2%	24.3%
Completely disagree	47.9%	48.3%	45.9%	35.4%	55.3%

The car isn't good for evenings out because of the risks and tests associated with alcohol consumption

	Germany	Spain	France	United-Kingdom	Italy
Completely agree	33.1%	26.4%	28.2%	19.9%	9.1%
Somewhat agree	24.8%	26.4%	30.7%	30.7%	23.1%
No opinion	9.5%	7.6%	8.1%	9.0%	8.5%
Somewhat disagree	14.3%	18.2%	17.5%	19.9%	30.1%
Completely disagree	18.4%	21.4%	15.5%	20.4%	29.3%

Cars create major ecological issues

	Germany	Spain	France	United-Kingdom	Italy
Completely agree	30.0%	38.9%	44.4%	32.9%	26.0%
Somewhat agree	37.0%	44.9%	34.6%	34.6%	41.3%
No opinion	7.6%	8.6%	8.0%	10.1%	9.0%
Somewhat disagree	17.9%	4.8%	9.2%	13.6%	15.9%
Completely disagree	7.5%	2.8%	3.7%	8.8%	7.8%

Vehicle design (car, motorcycle, scooter, bike), is very important

	Germany	Spain	France	United-Kingdom	Italy
Completely agree	23.2%	32.9%	28.3%	35.8%	22.3%
Somewhat agree	39.2%	31.0%	37.8%	36.0%	42.4%
No opinion	3.6%	14.7%	5.8%	10.7%	5.9%
Somewhat disagree	23.2%	15.0%	18.3%	12.3%	21.2%
Completely disagree	10.8%	6.4%	9.8%	5.3%	8.2%

In the coming years, I want to use environmentally-friendly means of transport

	Germany	Spain	France	United-Kingdom	Italy
Completely agree	16.4%	32.8%	31.7%	35.1%	30.9%
Somewhat agree	30.1%	31.1%	34.1%	32.9%	39.1%
No opinion	16.1%	20.3%	15.8%	12.2%	13.4%
Somewhat disagree	25.4%	9.7%	11.7%	11.6%	11.2%
Completely disagree	11.9%	6.0%	6.7%	8.3%	5.4%

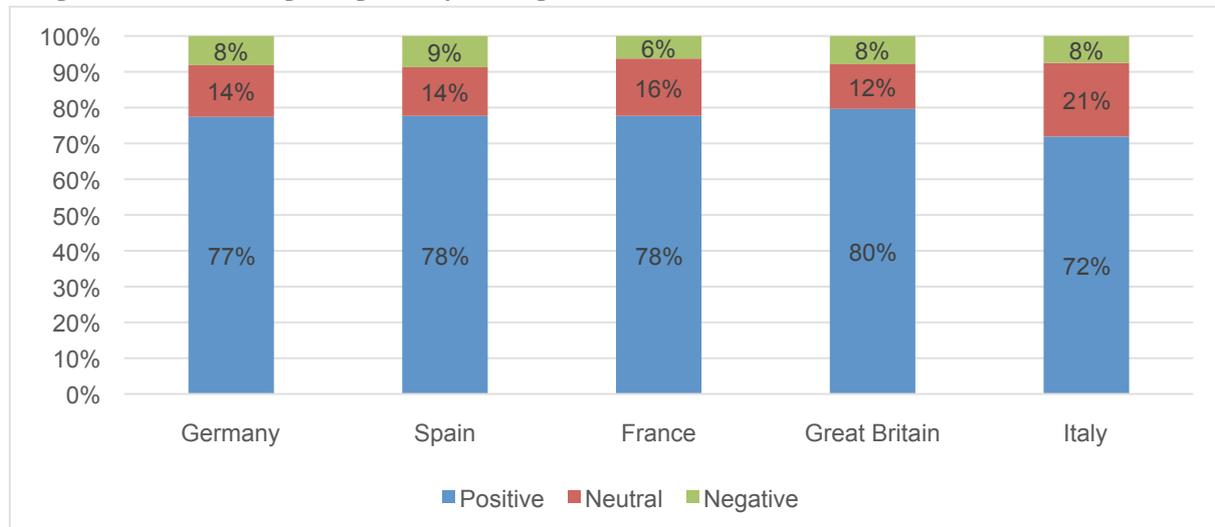
Small electric vehicles are the future of mobility

	Germany	Spain	France	United-Kingdom	Italy
Completely agree	20.9%	50.8%	29.1%	15.1%	27.1%
Somewhat agree	30.7%	26.8%	33.1%	34.5%	38.6%
No opinion	16.5%	12.7%	15.9%	15.3%	11.8%
Somewhat disagree	19.5%	5.6%	12.9%	16.7%	15.6%
Completely disagree	12.4%	4.0%	9.1%	18.3%	6.9%

- **Information and communication technologies (ICT)**

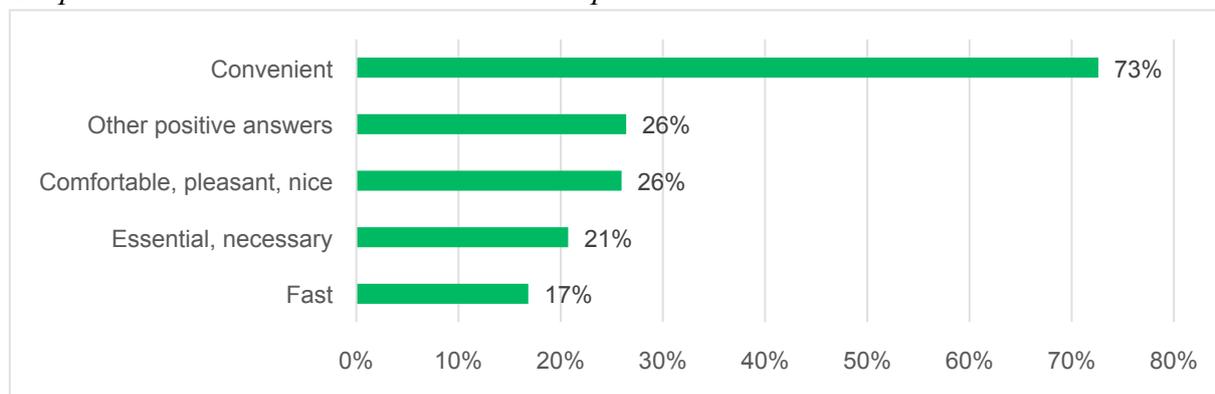
The majority of teenagers have an internet access at home and to their smartphone (85%). As already said before, teenagers from our sample are well-equipped with smartphones. Around 97% of them have one. No differences between surveyed countries, age, gender or residential context were highlighted by our analyses. Overall, respondents are connected to mobile internet. The smartphone perception (Graph 14) is generally positive (around 75%). Only 6 to 8% of respondents have a negative perception of smartphone in all surveyed countries.

Graph 14: Dominant perception of smartphone



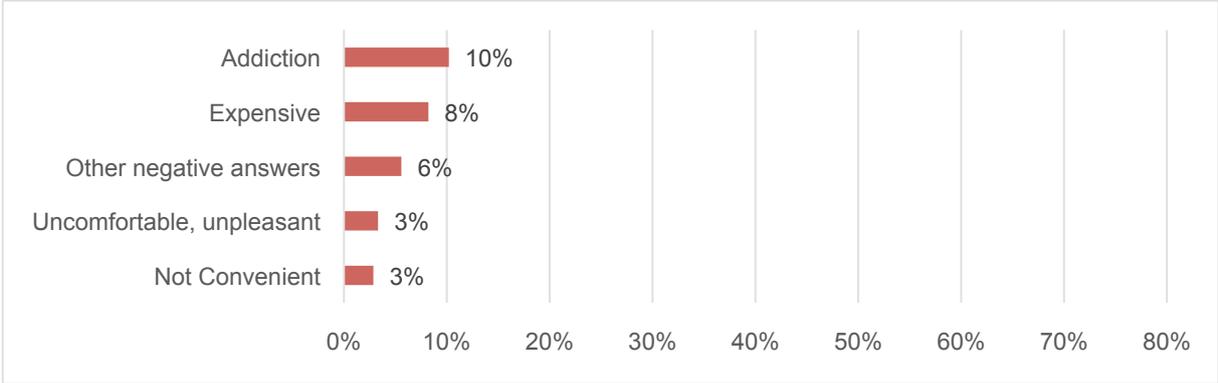
This positive image is linked with several different qualities (Graph 15). The majority (73%) of respondents considers that smartphones are convenient in daily life. The smartphone is also considered as comfortable, pleasant and nice (26%). This adjective was often used to deal with sociability possibilities offered by this tool. 21% of teenagers declare that the smartphone is essential or necessary, which is quite high compared to figures obtained for cars (from 3 et 4% depending on the country). Besides, smartphones give to teenagers the possibility to perform others activities during travel times. Finally, the global positive aspect reveals that this object plays a preponderant role from a useful, recreational and social point of view.

Graph 15: Positive terms associated to smartphone



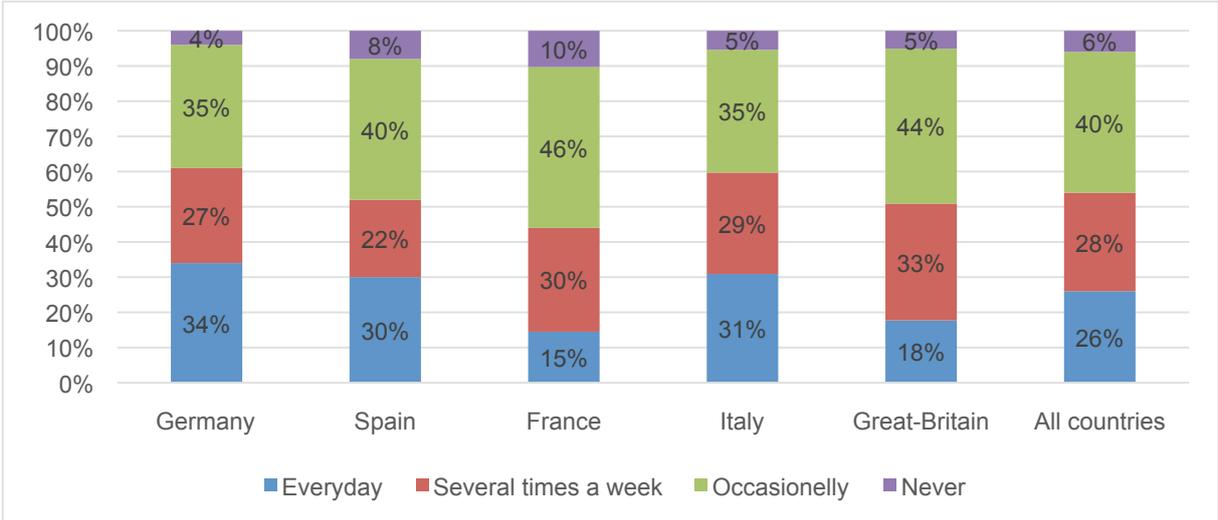
The smartphone sometimes takes on a negative dimension. Even if this dimension is lower than positive aspect, smartphone involves addiction for 10% of respondents, which refers to the preponderant role in the frame of practices developed around mobility of teenagers (travel planning, recreational and social activities). 8% of respondents consider that smartphone is expensive. This result suggests potential disparities between teenagers according to their parent’s incomes.

Graph 16: Negative terms associated to smartphone



Concerning daily travels, internet access appears to be an important component in all surveyed countries. Indeed, 54% of teenagers use regularly internet to plan their daily travels (Graph 17) and 40% occasionally. Some differences appear between countries. The most regular users are German and Italian teenagers (60%). There are no differences between girls and boys about smartphone using in the frame of travels planning.

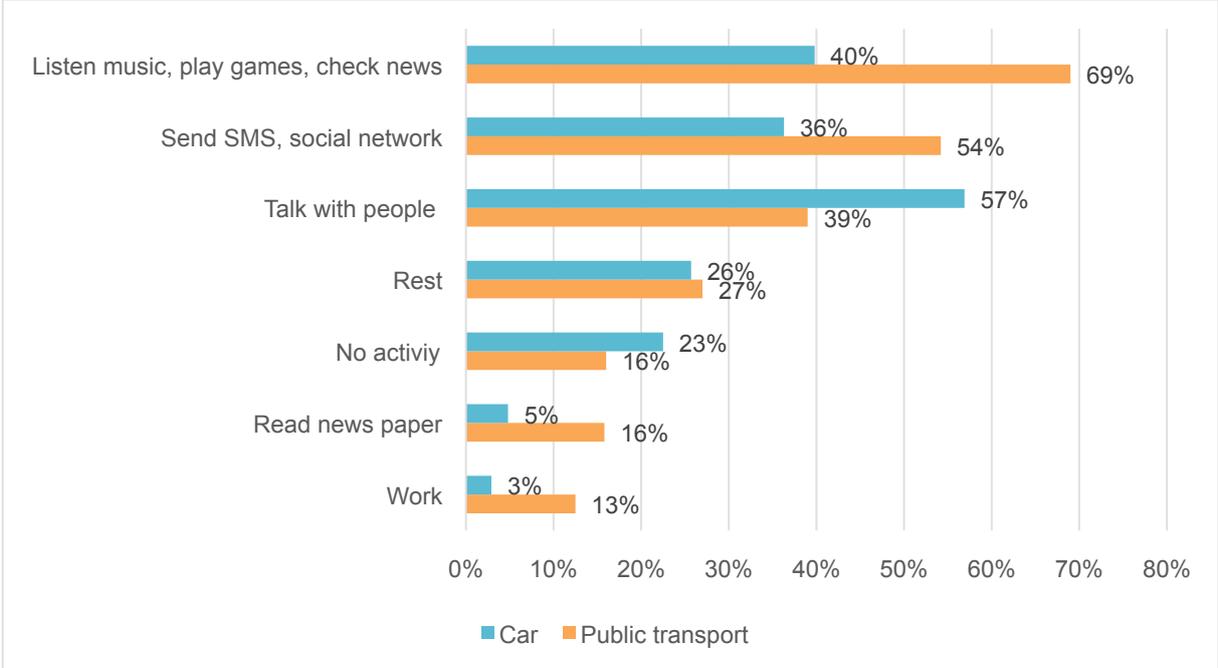
Graph 17: Use of internet for planning daily travels



If teenagers mainly use their smartphone for daily travels planning, they also used it to do some different activities during daily travels. Graph 18 presents the different activities performed by teenagers during travel times depending on the transport mode used. Then, during public transport travel time, 70% of respondents use smartphones to listen music, play games or check news and 54% of teenagers communicate with their parents or friends by

using social networks or SMS. Smartphone appears to be a useful tool helping teenagers pass their time in public transport, and, more surprisingly, in cars also when they are accompanied to access some activities. In such conditions however, they will more easily talk with people travelling with them. No significant differences appeared between the countries, which make the smartphone a tool developed beyond cultural differences.

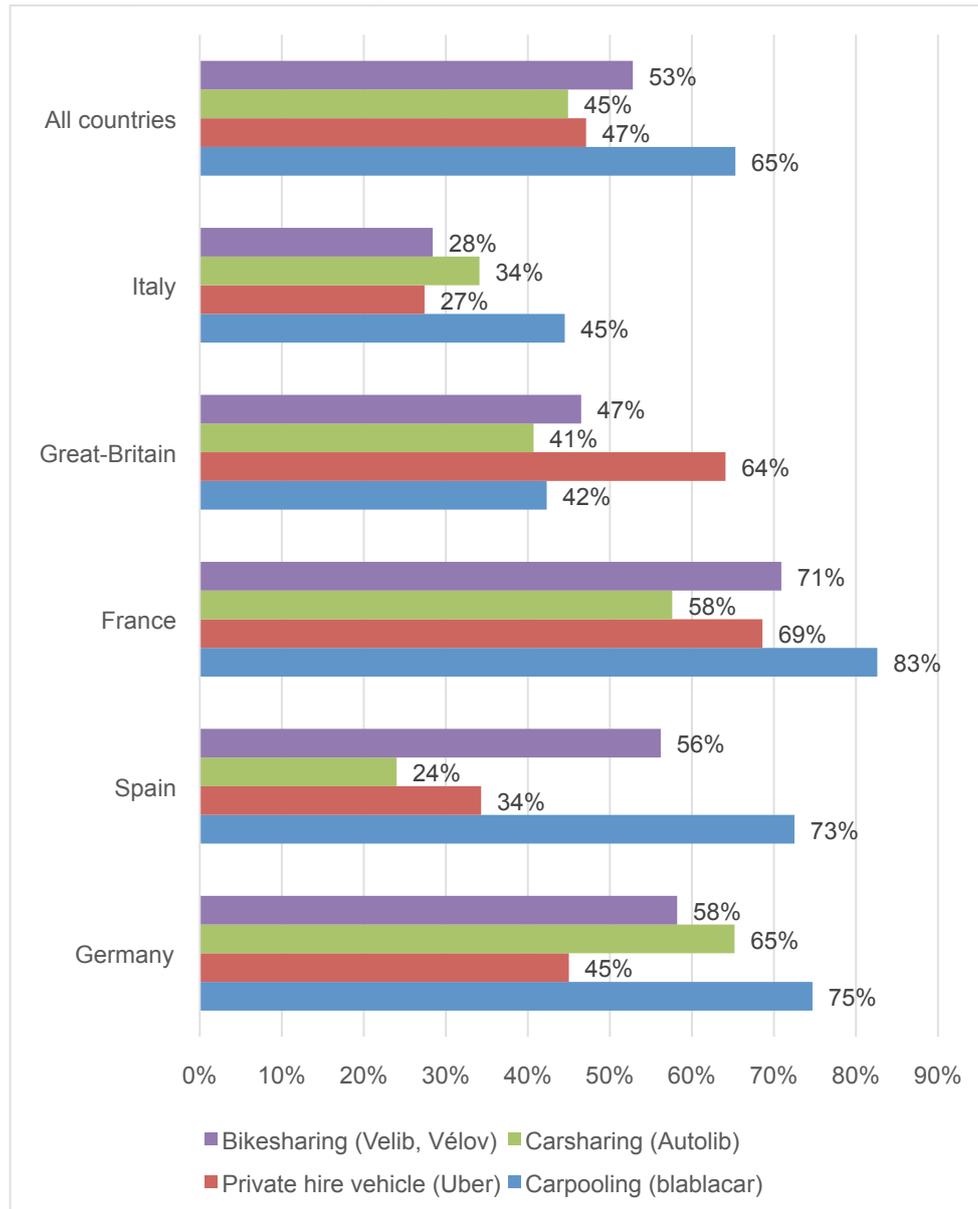
Graph 18: Activities during travel time



Internet access seems to influence the knowledge of new mobility services young people have. Looking overall at the results, around 50% of respondents know carsharing, bikesharing and private hire systems, and nearly two thirds of respondents declare knowing carpooling systems. Boys have a better knowledge of such services than girls have, that is also probably linked with the most freedom parents give to boys. Besides, young people from high incomes households have a better knowledge of mobility services. Important differences appear according to countries. German and French respondents have the best knowledge of mobility services (respectively 70% and 61%). The mobility services knowledge is less good in Italy, Spain and Great Britain. In Italy (45%) and Spain (73%) carpooling remains the best known mobility service. In Great Britain, private hiring services, as Uber, appears to be well known.

As teenagers haven't a driving license, they can't access carsharing systems, which explains the fact it remains thus not yet well known. We can consider that the knowledge of mobility services is largely dependent from the offer developed around the living place. For example, carpooling and bikesharing are well developed in France (Blablacar, Vélib, Vélov). This may explain the knowledge French teenagers have of such services.

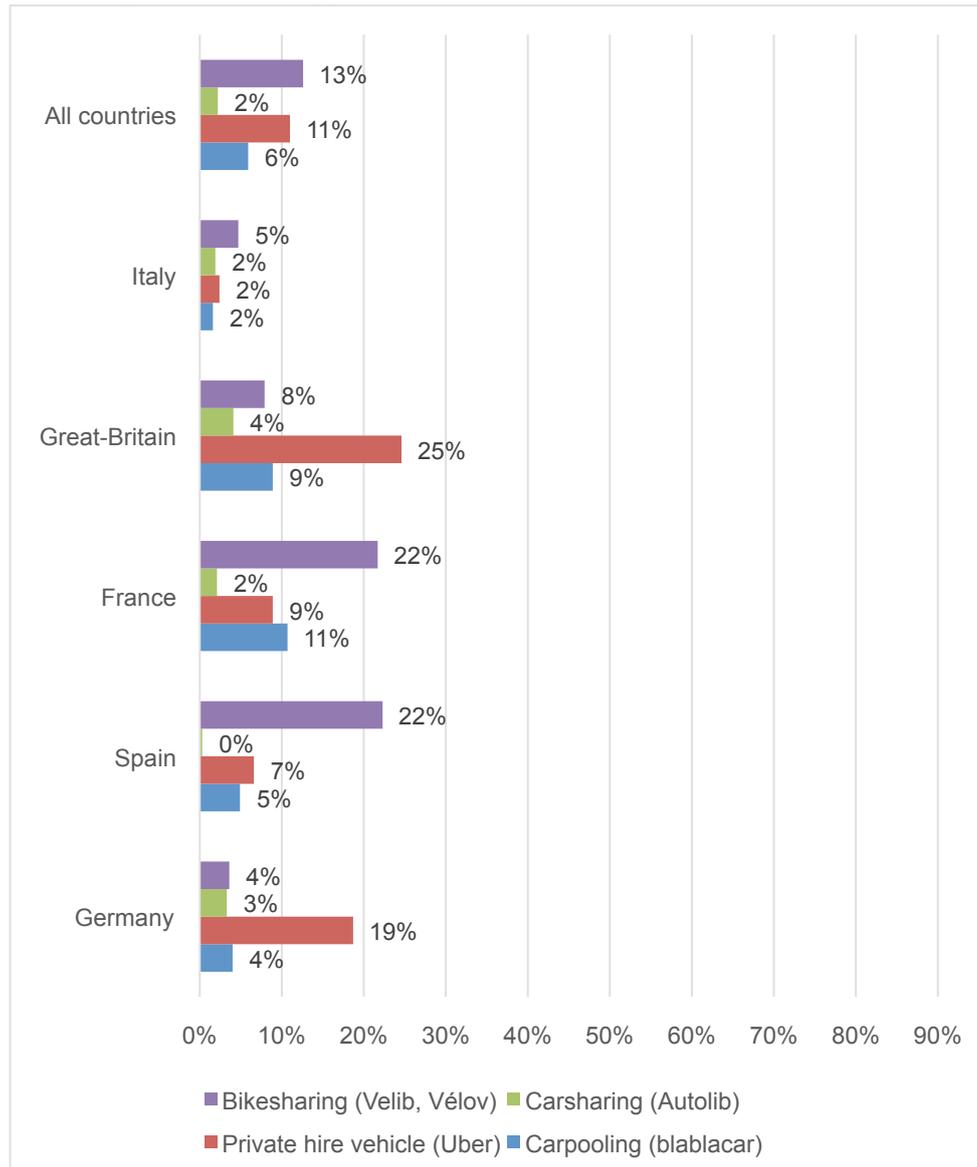
Graph 19: Mobility services knowledge



Even if teenagers have a quite good knowledge of new mobility services, their use remains low in general. On a global point of view, bikesharing systems (13%) are the most commonly used. This result comes mainly from uses measured in France (22%) and Spain (22%). Private hire systems is also quite often used, that is an interesting result knowing that it is quite new. Teenagers' use of such service is particularly high in United-Kingdom (25%) and Germany (19%).

Mobility services uses largely depend on household incomes. Teenagers from high level incomes households have a higher propensity to use bikesharing (15%) or private hire systems (24%) than teenagers from poor households. Residential context also plays a role. No gender differences appear, with the exception of bikesharing systems uses, which is directly linked with the higher use of bikes boys have.

Graph 20: Mobility services using

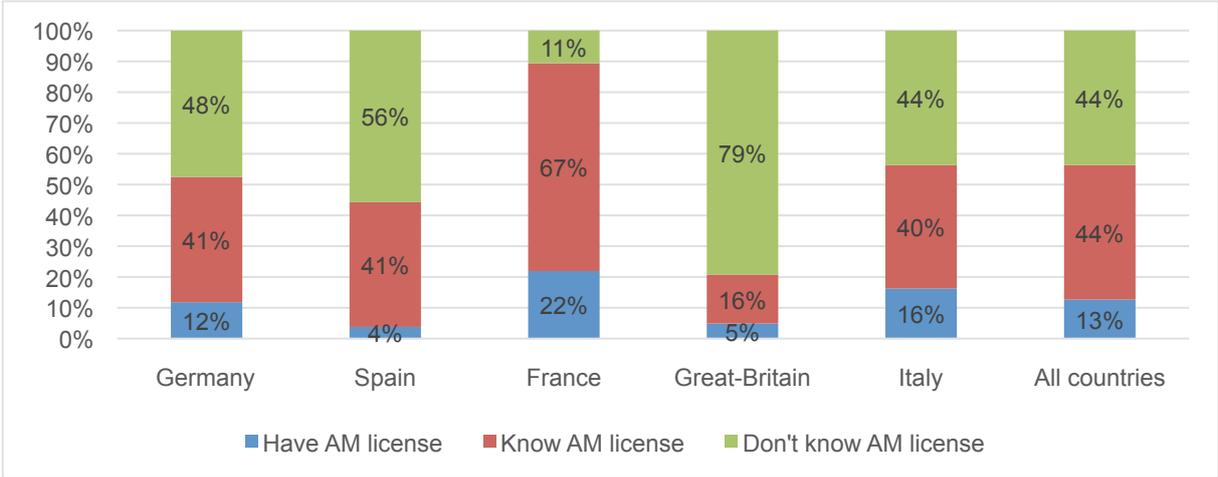


- **Driving licenses and small vehicles**

Driving licenses analysis aims at discussing the way teenagers try to develop their autonomy before reaching the majority. In this way, some licenses (as AM/BSR or A1 and B1) could be relevant. However, results we obtained (Graph 21) highlight the low take-up rate of AM license (13%), even if it is higher for boys (16%) than girls (10%). Besides more teenagers have AM license in rural area (20%) than urban area (10%). 44% of respondents know AM license and 44% don't know this driving license. Concerning the national repartition of AM licenses, big differences appear. 22% of French teenagers have an AM license and 16% of Italian teenagers. German respondents (12%) are in line with the average of the five countries. Apart respondents from Great Britain (16%) a significant part of respondents know AM license (around 40% for Germany, Spain and Italy) especially in France (67%). However, a large part of teenagers doesn't know AM license in Great Britain (79%), in Spain (56 %) and

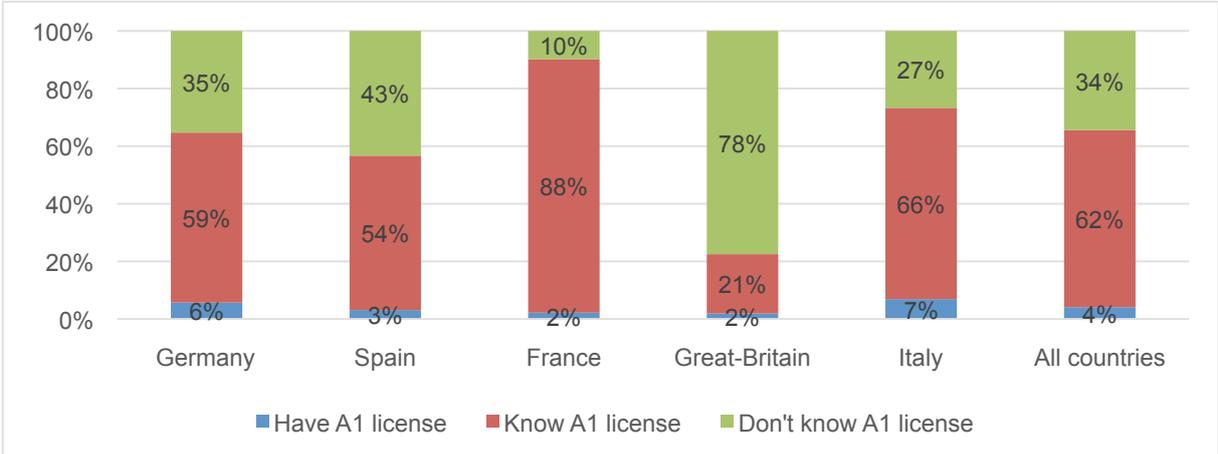
in Italy (44%). France appears as a specific case with a good knowledge of AM license. In this country, only 11% of respondents don't know AM license. These results suggest an important heterogeneity concerning road-training and information policy according to countries.

Graph 21: AM License repartition



The share of teenagers who have A1 License (Graph 22) is low in all countries (4%). There is a difference between boys and girls. Only 2% of girls have A1 License against 6% of boys. However, respondents are familiar with this kind of driving license (62%), with the exception of United-Kingdom where only 21% of respondents reported knowing A1 License.

Graph 22: A1 License repartition



On a global point of view, results obtained show an increase familiarity of A1 License than AM license on the part of teenagers. This difference can be explained by a lack of information concerning AM license at the European Level. Furthermore, AM license rules are recent and then remains badly known by teenagers.

Respondents have different kinds of reactions on AM License. These reactions concern its utility compared with the classical driving license one. For a majority of respondents, AM license is considered as useful (Graph 23) especially in Italy (45%) and Spain (43%). This

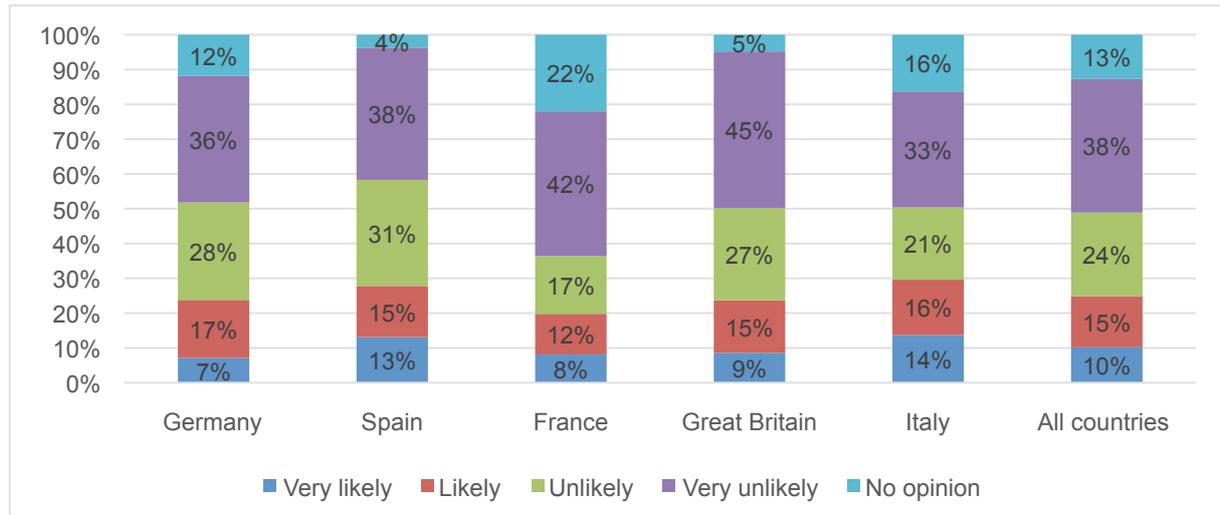
first result shows a positive image of the AM license in term of its possible convenience. On the other hand, AM license appears not be able replacing the classical driving license according to 62% of all countries respondents, and especially in Italy (72%). Furthermore, the large majority of teenagers (79%) couldn't imagine living their whole life only with the AM License.

Graph 23: Some reactions concerning AM License



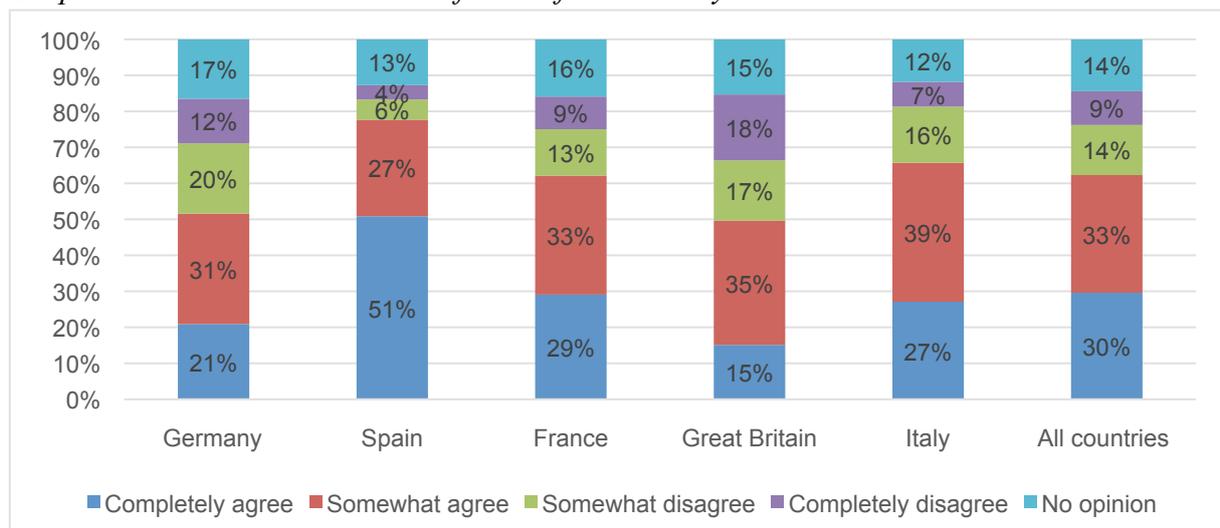
A large majority of respondents (62%) doesn't plan on getting AM license. Apart France, this trend concerns all countries without major differences. This result is similar according to gender and residential context.

Graph 24: Possibility of getting AM License

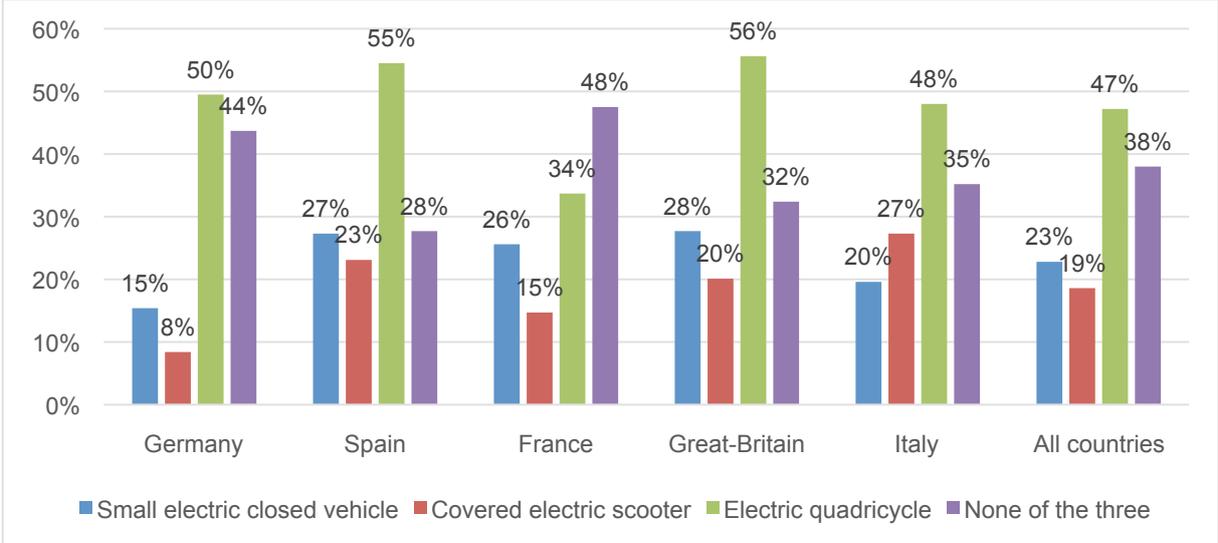


Perspectives offered by small electric vehicles seem to be attractive for young people. As suggested by the results (Graph 21), this kind of vehicle could be part of the future of mobility to 63% of respondents. Spanish teenagers (78%) particularly agree with this perspective. The image of electric technology seems to encourage using small electric vehicles and getting AM license. Graph 21 shows respondents to be interested in different kind of small electric vehicles. However, 38 % of them still consider that small electric vehicles are not adapted and would not be a motor to get an AM license (48%). Electric quadricycle reveals to be the most attractive mode among the three proposed vehicles. This result concerns all countries without difference. Respondents in all countries rank electric closed vehicle in second position (23%). Apart in Germany (15%), this result is applicable to all countries.

Graph 25: Electric vehicles as the future of the mobility



Graph 26: The vehicles that could motivate to take the AM/BSR driving test



4. Transport mode choice of teenagers

By comparing our findings on the perception of transport modes and those concerning actual modal practices, we were able to categorize respondents into eight main types of users, corresponding to the main logics of action underlying modal choice.

The first three types describe people who prefer to use the car (being accompanied):

- **Exclusive car users**, who generally travel accompanied by car, whose activities and schedules are structured around the accessibility offered by this mode of transportation.
- **Open-minded car users**, who generally travel accompanied by car, but whose images of alternative modes is high.
- **Constrained public transports users**, who are forced to use another mode of transportation than cars, usually due to their bad access to an accompanied motorized mobility.

Three other types generally prefer alternative modes (public transportation and soft modes):

- **Exclusive alternative modes users**, who travel only in alternative transport modes (public transports, bikes, etc.).
- **Alternative mode seekers**, who prefer other modes than the car because of their convenience.
- **Civic environmentalists**, who prefer other modes than the car because of their personal convictions.

One user group is potentially open to all modes:

- **Multimodalers**, who choose their transport mode based on its effectiveness. Depending on the reason for the trip, the time of day, the destination and other constraints, they can just as easily drive as take the train, walk or cycle.

Finally, a residual group was identified:

- **Proximity anchors**, who have a bad image of both public transports and cars and then prefer staying in the proximity of the household.

Results obtained confirm the large use of alternative transport modes of minors, due to the fact they have no autonomous access to a car.

Table 12: modal choice typology for teenagers by country

	Germany	Spain	France	United-Kingdom	Italy
Exclusive car users	5.2%	11.9%	5.5%	12.3%	8.9%
Openminded car users	2.6%	11.8%	6.4%	7.4%	7.1%
Exclusive alternative modes users	32.3%	24.7%	20.0%	21.6%	15.5%
Constrained public transports users	34.6%	23.4%	22.8%	29.2%	42.3%
Alternative mode seekers	1.7%	2.1%	7.4%	4.1%	2.1%
Multimodalers	11.6%	11.9%	17.8%	14.5%	13.7%
Civic environmentalists	7.7%	10.4%	13.1%	2.9%	4.5%
Proximity anchors	4.3%	3.8%	6.9%	8.0%	5.9%

Figures are quite different depending on the country considered. We can note the higher size of the group “exclusive alternative mode users” in Germany, because of their important use of bike to travel. We can also note the big share of teenagers in the group constrained public users. For them, the access to a car will generally be a question of time. They are waiting for the majority to get the driving license and then drive.

The size of the civic environmentalist group is then largely dependent on the country we consider. It is more than four times bigger in France than in UK for example....

To better understand these differences, we observed in other analysis that the part of exclusive alternative users was largely higher and the part of constrained public transport users was lower in urbanized zones than in non-urbanized ones. We can also note that proximity anchors are more numerous to live in rural areas.

Conclusion

Modal practices between home and school places revealed being very different according to the country considered. A very high use of bike is then visible in Germany, walking trips are frequent in Spain, and motorized two-wheels are more present in Italy. Even if the density of the residential place, here considered through an urbanity rate, play a role in the modal choice, the national specificities we present here remains true as in highly as in lowly urbanized areas. It then appears that the mode used to commute between home and school largely influence the mode teenagers will used to join the other daily leisure trips (sports, cinema, shopping and other various outings). This result highlights the existence of different cultures of mobility. Teen age is a learning age, especially on the mobility point of view. That suggests the importance to develop modal skills to orientate future usages of teenagers.

Motorcycles, i.e. scooters and moped appear to be a convenient mode, quite largely appropriated, to improve the mobility of teenagers and their independence. But this mode still remains controversial and many teenagers have a passionate relationship with this object, in a positive or a negative way. The image it has to be a dangerous mode, that is objectively well known, plays a direct role on the discourses of teenagers and therefore on the usages they will accept to develop.

Representations were quite precisely studied through specific questions in the questionnaire. The way each mode is convenient or not, and comfortable or not, are largely present in teenagers' answers. Functional features are central for them. Environmental consciousness is not very developed in this young population, even if it is a little bit more the case in France. But despite the presence of pollution issues, behaviors of French teenagers are not especially oriented toward "green" modes. At this level, German teenagers, without talking about environmental problems, are more virtuous in their mode choices. On a more general point of view, a direct link can be underlined between the presence of environmental discourses and the (bad) dominant perception on cars. Both of these elements will then have an influence on the declaration teenagers make that getting the driving license is not a priority.

Concluding on transport modes' images teenagers have is finally not possible without insisting on the fact that the symbolic place of the car remains extremely strong. It is still a powerful symbol of freedom and independence. Today, ICTs don't replace cars in the heart of teenagers.

Gender questions also appeared very present when assessing mobility discourses and practices of teenagers. The way girls are talking about transport modes on one hand and their mobility behaviors on the other hand are largely impacted by a search for security. The fear to encounter potential abusers, the lack of well-being in public transports and in some doggy spaces, but also road (un-)safety are elements that are often mentioned by young girls, largely more often than by young boys. It is interesting here to note that the stronger environmental awareness and the more frequent use of public transport, which we know are feminine features when considering adults, don't characterize teenage girls. Boys from our sample are more environmentally concerned.

ICTs, and more specifically smartphones, are largely used by teenagers to plan their travels but also during the trips. Many of them drive them back on themselves in using smartphone in public transport and then create a “familiarity bubble” (with virtual sociabilities), during the period they travel. In a car, smartphone stay important and largely used, but teenagers declare chatting more frequently in cars than they used to do in public transport. Are public transports less and less collective transports?

Smartphone also helps people to use new mobility services. In the case of teenagers, we can consider such services are well known, but they still are rarely used, with the exception of Uber on United-Kingdom and Germany, and bikesharing systems in France and Spain.

Certainly, the smartphone has taken just recently a large place in the daily life of teenagers, with a gain of autonomy and security (informing someone they will or are travelling or talking/sending a message a doggy situations). But the car is not affected and stays an emancipation and empowerment tool. A large majority of teenagers thus consider car-driving license as a priority as soon as they will be major.

Compared to the car-driving license, AM license is considered as unnecessary. This relative disaffection indicates a low willingness/capacity to switch from usual transport mode (public transport, accompaniment by parents) to mini vehicles. Even if electric vehicles are considered by many as the future of mobility, mini-electric vehicles don't seem, at least today, to meet respondent's mobility needs. Even if it may not concern a majority of teenagers, electric quadricycles appear to be attractive for a larger part of the population than others do.

These results suggest that the combination of the AM license low attractiveness and the mini electric vehicle perception doesn't promote the use of mini-E.V. Thus, teenagers probably are not still ready to more largely use mini E.V..

Results from this survey are rich and we consider it could be relevant to conduct such a survey in other European and non-European countries. We know have a relevant questionnaire in five languages, which is a latent resource that could be used in the future.

We can wonder whether other social groups could be more interested by this kind of mobility services. Young workers and students probably are good leads as they are not under parents' responsibility anymore and they are known to search for flexibility in their mobility. These categories also often have a driving license and a road experience. We could finally question the way cities where accessibility is impaired by steep slopes wouldn't be more adapted than relatively flat cities. Qualitative interviews might help us understanding opportunities and possible brakes of such a system.

Results from a qualitative survey in Grenoble metropolitan area

Guillaume Drevon, Emmanuel Ravalet et Vincent Kaufmann

Deliverable 4 – final version
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Introduction

- **Objectives**

This report aims to precise mobility needs and difficulties encountered by teenagers in their mobility. In the context of an increasing use of ICT, the topic is also to understand the role of technologies concerning mobility planning and travel activities. We then want to precise the acceptance of Mini-EV in mobility habits. Analyses we will present take also into account parents rules, autonomy degrees and the influence of the social environment on mobility of young people.

- **Survey configuration**

The qualitative survey was made within the metropolitan area of Grenoble. The sample is composed of 18 teenagers under 18 years old (assuming a diversity in age, gender, social conditions and residential context) and 10 parents. Individual interviews were completed by a Mini EV training. Debriefing interviews after training allow collecting some opinions following the test of Mini-EV vehicles on 64 teenagers. The qualitative survey was conducted thanks to the support of the *Institut des Métiers Techniques* (IMT) and the *Lycée Guynemer* from Grenoble.

- **Structure of the document**

The first part of the document provides information on methodology and sample composition. The second part focuses on practices, habits and preferences of teenagers and Mini EV acceptance. The third part of this document finally describes the rules defined by parents to on the mobility behaviors of their children and the degree of autonomy according to parents' views. This part presents parents' perceptions about Mini EV uses by their children. The last part concerns teenagers Mini EV perception following the training.

1. Methodological choices

Results from the quantitative surveys were presented in the deliverable 2. Such a method allows highlighting general tendencies and statistical relations. Qualitative methods allow a more in-depth analysis of opinions and perceptions. When quantitative investigations are explanatory, qualitative ones are comprehensive. Both approaches are complementary in collecting and articulating original data about mobility.

1.1. Interviews

Basing on interviews contents, the qualitative survey allows to identify individual logics. Results reveal opinions and perceptions associated with each theme discussed during the interview. The qualitative approach completes quantitative results basing on an in-depth study at six levels:

- Mobility needs of teenagers and difficulties their encounter
- Autonomy of teenager's
- Parental rules and degree of autonomy given to teenagers
- Teenagers' acceptance of Mini-EV
- Parents' acceptance of Mini-EV
- Post-test Perceptions of teenagers

Interviews were conducted on the basis of a list of topics, with open questions. This is what we name an interview grid. Each grid is adapted to each study level with specific topics (teenagers, parents and Mini-EV experience).

1.2. Teenager's interview topics

The teenager's interview grid is composed of 6 topics:

1. Daily mobility configuration and satisfaction
2. Week-end mobility configuration
3. Knowledge of mobility services
4. ICT's uses
5. Autonomy
6. Mini-EV perception

These first interviews were completed by those of teenagers' parents. The same method is applied.

1.3. Parent's interview topics

The interviews parents grid is composed of 4 four topics:

1. Family daily mobility configuration
2. Mobility children needs and autonomy degree
3. Technologies role
4. Mini EV perception

1.4. Teenager's interview topics after Mini EV experience

The third level of interview is dedicated to collect opinions and perceptions about Mini EV after the first use. The grid is composed of 4 topics:

- First feelings
- Safety
- Comfort
- Potential use

Teenagers have been recruited due to the collaboration with their high school. Following recruitment, teenagers' interviews have been made in the frame of their high school. The first high school was the *Institut des Métiers Techniques* (IMT) and the second the *Lycée Guynemer* at Grenoble. Parents were interviewed in their homes in October 2016. Teenagers interviews after Mini EV experience were made in the frame of two training days in each high school on 3 November (*Institut des Métiers Techniques*) and 16 November (*Lycée Guynemer*).

2. Description of the sample

Qualitative approaches are not supposed to cover a representative sample, but a diversified one, on a social basis. . This kind of approach aims to understand perceptions and opinions at the individual level. The process requires an in-depth discussion, where the building of a confidence relationship is central.

2.1. Socioeconomic characteristics

The sample is composed of 18 teenagers under 18 years old. The sampling process takes into account a search for diversity in age, gender, social conditions (Table 1) and residential locations profiles. 7 boys and 11 girls participated in the survey. The sample is composed of 6 teenagers who are 15, 8 are 16 and 5 are 17 years old. 10 of the surveyed teenagers live in urban area and 8 in peri-urban area. 3 teenagers live in household with high incomes, 7 with medium incomes and 8 with low incomes. The diversity of teenagers profiles allows to take into account differences according to gender, age, socio-economic and spatial context. This survey configuration avoids discussion with unique perspective from teenagers and their parents.

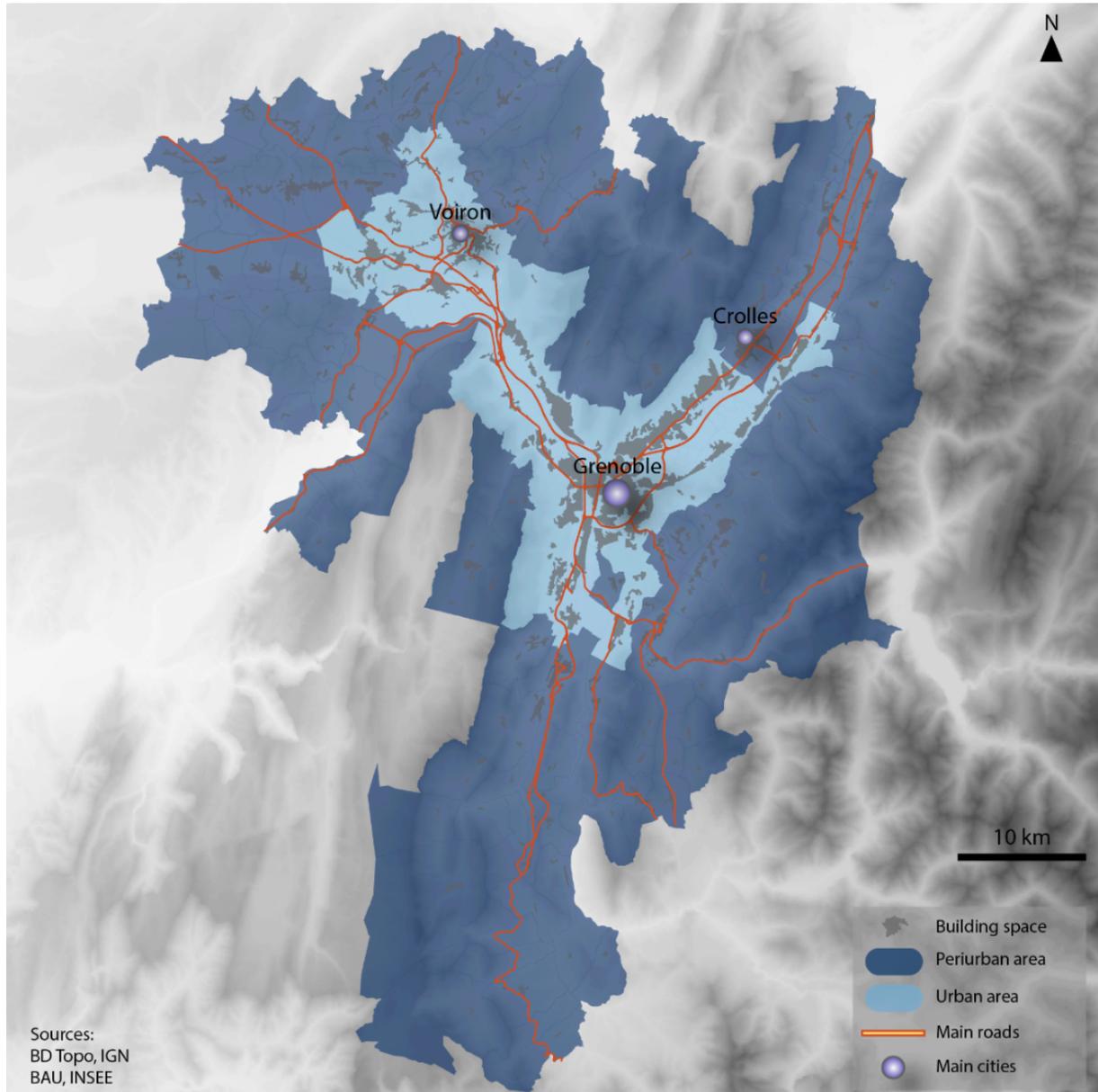
Table 1: Socioeconomic characteristics of surveyed teenagers

Gender	Number	Age	Number	Incomes	Number
Boys	7	15 years old	6	High	3
Girls	11	16 years old	8	Medium	7
		17 years old	4	Low	8

2.2. Residential context

The diversity of the teenager's residential context is also taken into account in the sampling process. As shown on the figure 1, the metropolitan area of Grenoble is composed of two kinds of space. The first is the urban area. This kind of space is characterized by an important density of public transport services. The peri-urban area is the second kind of space. In this kind of space, the public transport services are lower than in the urban area in terms of frequency and density. The sampling method considers whether teenagers live in the first or the second kind of space. Indeed, the residential context shall have a significant effect on the mobility needs and autonomy of teenagers.

Figure 1: Spatial typology of Grenoble metropolitan area



The sample is composed of 10 teenagers who live in the urban area and 8 in the peri-urban area.

3. Results from the interviews of teenagers on mobility

This part is composed of four sections. The first section relates to the mobility configuration during the school week and the week-end. results show different behaviors profiles according to practices. The second aspect refers to the autonomy of teenagers and rules which frame their mobility. The third section is dedicated to uses of ICT and associated practices. The last aspect concerns Mini-EV acceptance and the perception of this kind of vehicle.

3.1. Teenager's behavior

3.1.1. Mobility configuration

Bus is the main mode of transport used by surveyed teenagers (16/18). Few part of them use other modes like bike (1/18) or train (1/18). These modes are used as a complement of bus. Travel time varies according to the residential location place. Teenagers from peri-urban areas dedicate more time to their daily travel than teenagers who live in the urban area. For example, travel time between the home place and school place for teenagers who reside at Crolles or Froges (peri-urban area) exceeds one hour. In comparison, teenagers who reside at Grenoble, the travel time is around 30 minutes. This difference can be explained by the distance between home place and the school's location. Secondly, the public transport services are more important and direct within urban area than peri-urban area. Indeed, teenagers from peri-urban area use at least two different bus lines. The bus change between lines increase travel time and mobility hardships for surveyed teenagers.

3.1.2. Satisfaction

Surveyed teenagers are generally satisfied of their daily travels in bus. However, long travels generate fatigue and stress. Public buses service on two main public institutions. The first is the *Syndicat Mixte des Transports en Communs de l'Agglomération grenobloise* (SMTC), the second is *Transisère* (Isère department). SMTC manages public transport in urban area and *Transisère* organises public transport in peri-urban area. Teenagers are generally less satisfied concerning public transport services of *Transisère*. That can be explained by travel time more important in peri-urban area.

“Ça va bien, par contre pour les longs trajets, on est un peu serré” [It's all right, but during long tavelts it's a bit tiring.] Amandine

“ C'est fatigant, en fait. Je me lève à 5h30 chaque jour” [It is tiring, in fact. I wake up at 5:30 every day...] Eva

Reasons for dissatisfaction are associated to delays, transport strikes and traffic. Teenagers refer also to the lack of bus number during peak times. Transport schedules are sometimes unsuited regarding to school schedules. That concerns especially teenagers who reside in peri-urban area.

“Parfois, c’est en retard, parfois il y’a des grèves”. [Sometimes it's late, sometimes there are strikes.] Eva

“Mettre plus de bus aux heures de pointe.” [Put more bus at peak times.]
Johnathan

Promiscuity during transport time and nervous people are considered as discomfort factors by surveyed teenager.

“People are upset. We're too tight in the bus.” **Jérémy**

The teenager’s perception concerning their daily travels is rather mixed between problems encountered during travel times and satisfaction concerning the quality of service. These results suggest a sort of resignation. Even if, mobility services are sometimes unsuited especially in peri-urban area, teenagers haven’t other choice. That shows perspectives in term of potential services for young people especially in peri-urban area.

3.1.3. Week-end mobility configuration

The dissatisfaction concerning mobility is more important on the week-end period than on the week period. The lack of transport services appears as an important constraint for surveyed teenagers. During the week-end time, teenagers have to adapt their travels to bus schedules. Teenagers seem to prefer keeping their independence from their parents, but when there are no bus service, teenagers have to ask for a lift to their parents, or to other family members or friends.

“I go by bus ... Otherwise, it's my parents.” **Adda**

“Often, I go out with my boyfriend, he has the driving license and a car.”
Maelle

“I go to Grenoble with my parents or my cousin, they have a car ...” **Eva**

Needs in terms of mobility are very different according to surveyed teenagers. Analysis of their practices during the week and the week-end allows to establish three behavior profiles.

3.1.4. Behavior profiles

Basing on interviews, practices and perception of time and space, three behaviour profiles appear.

Hyper-mobile: The first profile concerns teenagers who live in the peri-urban area and use to make several activities especially in the city center (Grenoble). Activities performed in Grenoble are generally associated to leisure (going out with friends, shopping, cinema). These teenagers have important needs in terms of mobility. They use bus as much as possible, but their mobility is also based on family solidarity, and especially their parents who drive them to activities places.

Home-centred: The second profile concerns both teenagers from urban and peri-urban area. They make few activities. These activities are located near to the place of residence and take an important place in the week-end time (sport, voluntary work). They use to take the bus or other mode of transport (tramway, bike). Travels are mainly made in the periphery of Grenoble. Parents play a limited role in the mobility of their children. Their intervention is more punctual than in the case of teenagers from the first profile.

Home-assigned: The third profile corresponds to teenagers who made very few activities out of the home. The place of residence is mixed between teenagers from peri-urban and urban area. They are generally the most younger of the sample. These teenagers don't go out very often with their friends. They remain principally in the family frame. Activities during the week-end are mainly dedicated to family activities (visit to grandparents, family outing).

These first results suggest different degrees of autonomy according to profiles. Mobility needs and teenager's behaviours depend on different factors. The residential location place plays an important role. However, age and family lifestyle also influence teenager's mobility behaviors. This aspect will be further developed in the parent's interviews results.

3.2. Teenager's autonomy

The large majority of surveyed teenagers considers that they are autonomous concerning their mobility. Teenager's autonomy seems to depend on several factors.

3.2.1. Public transport services

The first factor concerns transport public services near to the place of residence especially during the week-end. The autonomy of teenagers who live in the peri-urban area is the most limited. The density and the frequency of public transport is less important than urban area. In the urban area context, the proximity of amenities and the density of public transport services appear to facilitate the teenager's autonomy. In the case of peri-urban context, teenagers are also more dependent on their parents.

“J'y vais en bus... enfin, le bus nous emmène, vu qu'on est dans un bus collectif. Sinon, c'est mes parents.” [I go by bus ... well, the bus takes us. Otherwise, it's my parents.] Adda

“C'est parce que des fois les bus est en retard, des fois il y a des grèves, le dimanche on n'a pas de bus...” [It's because sometimes the buses are late, sometimes there are strikes, on Sunday we do not have buses...] Eva

3.2.2. Two-wheels perception

As said before, two-wheels constitutes a solution to improve teenager's autonomy especially in the peri-urban context. However, family's rules limited using of this kind of vehicles. According to interviews, two-wheels are associated to risk of accident for parents. They generally don't allow to use two-wheels for their children. A part of teenagers considers that

scooter would help them to be more autonomous in their activities. This family's rule associated to two-wheels perception limited also teenager's autonomy.

“Ma mère dit c’est trop dangereux, je vais me casser la jambe, je vais me tuer.” [My mother says it’s too dangerous, I’ll break my leg, I’ll kill myself...] Barbara

“Le scooter ça m’aurait arrangé pour le travail mais ma mère, elle ne veut pas.” [The scooter would arranged me for work but my mother does not want it.] Eva

“Ouais, j’aimerais avoir un scooter, mais ils ne veulent pas. Mes parents disent que c’est trop dangereux, que je vais faire des bêtises avec.” [Yeah, I would like to have a scooter, but they don’t want to. My parents say it’s too dangerous, that I’m going to do stupid things with it.] Adda

3.2.3. Rules on schedules

All surveyed teenagers are subject to rules on schedules during the school week and the week-end. This kind of rule defined by parents' frames teenagers time activity out the home. Each teenager has a limited time budget imposed by parents. Reasons for rules on schedules are various. The first concerns teenager's safety facing a potential danger linked with people or places that are considered as dangerous. The second reason is associated to bad company for teenagers. Parents associate evening and night with bad company. For them teenagers are more exposed to danger during this period of the day. They consider that young people must be at home after school. Indeed, for parents, teenagers who go out the night are wrongly bring up and may become bad people. The third reason reflects cultural aspect. According to parents, they present specific moral principles from their family and their parents basing on social values.

“Parce qu’on est d’origine sicilienne. Moi, je suis la fille d’un Sicilien pur de souche. Quand j’avais son âge, je ne faisais pas ce qu’elle fait. Moi, j’étais à la maison. Je sortais de l’école à 16 heures.” [Because I’m from Sicilia. I’m a Sicilian’s daughter. When ’was her age, I didn’t do what she does. Me, I was at home. I was back to home after school at 4 P.M.] Ivanna’s parents

These principles influence parents' education way and rules for children. Moral principles regulate for example schedules outing, teenagers company or activity choices. Social rules frame young people education especially concerning schedules. Thus education and social values frame teenager's autonomy and their mobility. However, technologies seem to change the parent's autonomy perception of their children. For example, phone allows to keep the link between parents and teenager within mobility. This aspect will be further developed in the parent's interviews results.

“À 18h, tu prends le bus, à 19h tu dois être à la maison.” [6:00 pm, you take your bus, 7:00 pm you have to be at home.] Amandine’s parents

3.2.4. The car a solution for autonomy

Car driving license takes up most of discussion about autonomy. When young people look at the future of their mobility, they use to link it with the car. Perception of car is mainly associated to autonomy and freedom for teenagers. None of them envisage to keep on taking public transport in the future.

“L’idéal pour se déplacer, c’est la voiture, c’est inévitable...” [The ideal to move, is the car, inevitably...] Alan

“...pour l’autonomie... donc je dérangerais plus mes parents...” [for autonomy ... so I will not disturb my parents anymore.] Amandine

Even if teenagers consider be autonomous, results show a limited and framed autonomy for several reasons. Firstly, public transport services are heterogeneous according to residential context. Young people who live in peri-urban area are less autonomous than urban area because public transport service is less important in term of frequency and density. Teenager’s autonomy is limited by rules especially concerning use of two-wheels. Many parents instruct their children not to use moped for safety reasons. Family’s rules frame also schedules mobility for teenagers. Young people have at their disposal a limited time budget out of the house. Teenagers’ perception of the driving license and car confirm autonomy needs for many surveyed teenagers.

3.3. ICT uses

All surveyed teenagers have a smartphone with an internet access. This repartition corresponds to quantitative results from the European survey.

Uses of smartphone and mobile internet are diversified according to teenagers. Firstly, the smartphone is a tool for mobility. Secondly smartphone use is associated to social activities. Finally, smartphone allows to pass time with entertainment activities during travel time especially in bus.

3.3.1. A mobility tool

Technologies play an important role in daily mobility. The large majority of surveyed teenagers declare to use smartphone or internet for their daily travels. Teenagers use mobile apps to check bus schedules and mobility conditions (strikes, traffic conditions).

“Pour regarder les horaires, parfois. Je regarde le site Transisère et tout, ça me permet de regarder aussi...ça m’envoie des alerts.” [To check bus schedules, sometimes. I check the site Transisère and everything, it allows me to see also ... it sends me alerts.] Maelle

Geolocation technology also plays an important role especially when teenagers don’t know route to go at the place of destination. Teenagers regularly use route apps to plan their travels.

“J'utilise Google Maps pour aller dans les endroits que je connais pas” [I use Google Maps to go to places that I don't know.] Alan

“Je l'utilise pour connaître l'itinéraire” [I use it to know the route.] Amandine

“Je l'utilise pour le GPS” [I'm using it (smartphone) for GPS.] Barbara

Teenagers use very regularly their smartphone and mobile internet. This connection to mobility information seems to reinforce teenager's capacities of planning and adjusting mobility. For example, mobility apps give an information in real time, which allows adjustments by teenagers concerning their mobility plan. For surveyed teenager, smartphone allows a proactive position through adapted strategies facing mobility. This mobility tool gives to teenagers a better travel managing which makes teenagers' mobility more comfortable and less uncertain especially during the weekend time. Considering as a mobility tool, smartphone seems reassure teenagers for daily and weekend travels.

3.3.2. Connection and social activities

Surveyed teenagers have generally few social interactions with others public transport users. During travel time, social activities are dedicated to virtual activities. Indeed, the main use of smartphone concerns social activities. As shown by the quantitative survey, teenagers use their smartphone to communicate each other and with their parents. Teenagers principally use social network and send SMS.

“J'envoies des messages, j'appelle des gens. Je vais sur les réseaux sociaux.” [I send messages, I call people. I'm going on social networks.] Adda

“Pour la musique, pour les messages, avec mes amis et mes parents.” [For music, for messages, with my friends and my parents.] Sandra

For a part of surveyed teenagers, social networks and SMS are a mean to isolate themselves from others public transport users. Indeed, promiscuity and conflicts during travel time appear as source of stress or discomfort. Smartphone allows to tackle this situation of discomfort by using social activities through social network or SMS.

“Des fois on n'a pas forcément envie de voir certaines personnes. Voir les gens le matin, on n'a pas envie forcément voir plein de personnes quand on vient de se réveiller.” [Sometimes you don't want to see some people. Seeing people in the morning, you don't necessarily want to see lots of people when you wake up.] Marine

“Tout ça, c'est normal. Moi, je mets des écouteurs et j'attends que c'est fini”. [All this is normal. I put on headphones and I'm waiting for it to be over.] Marine

“... les gens, ils te bousculent déjà. Je ne suis pas quelqu'un d'agressif et je n'aime pas qu'on... genre qu'on me bouscule et tout. Et voilà. Enfin, je trouve les gens ils sont bizarres en fait. Ils sont stressés.” [... people, they

are already jostling you. I'm not an aggressive person but I don't like that ...jostling me. Finally, I find the people they are strange actually. They are stressed.] Jérèmy

Teenagers also make entertainment activities during travel time.

3.3.3. Entertainment activities

Smartphone supplies to teenagers a diversity of activities during travel time. The most important activity is listening music. Others surveyed teenagers use to watch videos or play games. These activities are made during travel time but also during waiting time at the stop bus.

Ecouter de la musique, tout le temps quand je suis dans le bus. [Listen music, all the time, when I'm on the bus.] Noémie

“Je suis dessus, je joue un peu pour passer le temps ou attendre le bus.” [I'm on it, I play a little to pass the time, or waiting for the bus.] Johnathan

“ Je regarde des vidéos de voiture ou de musiaue et tout. Ou j'écoute de la musique sur internet.” [I watch videos of cars or music videos and everything. Or I listen to music on the internet.] Jérèmy

Entertainments activities allow to pass time. As connection and social activities, entertainments activities enable to limit interactions with others people in the bus. For surveyed teenagers fill in time is also a mean to reassure themselves.

3.3.4. Parent's rules about smartphone

Smartphone is considered by teenagers as a communication tool especially with their friends. They few allude to exchanges with their parents. However, analysis of parents interviews highlights the importance of smartphone for parents. Due to phone, parents keep a link with their children during travel times and teenagers' activities. Parents establish rules based on this link. For example, a part of teenagers must send a SMS to their parents when they are arrived at the high school or during the travel time. For parents, smartphone is a mean to reassure themselves concerning safety of their children. However, a non-answer from their children generates also worries. Indeed, teenagers must respond to their parents in time. For parents, to keep the link trough the smartphone is a condition for the autonomy of their children especially for girls.

“Moi, je leur dis : je veux avoir un message quand ils arrivent, quand ils sont arrivés à destination, et quand ils arrivent à la maison.” [I tell them: I want to have a message when they arrive, when they get to their destination, and when they get home.] Jérèmy's parents

“Quand elle est dans le train, je veux qu’elle m’envoie un message pour me dire qu’elle est dans le train, je veux qu’elle m’envoie un message pour me dire : « je suis au lycée ». Voilà. Je suis comme ça. Je suis rassurée une fois qu’elle m’a dit qu’elle est dans le train et au lycée.” [When she's on the train, I want her to send me a message to tell me she's on the train, I want her to send me a message saying "I'm in high school." I am like this. I'm reassured once she told me she's on the train and in high school.] Amandine's parents

“C'est clair. Mais le peu de liberté qu'on lui laisse, c'est également par le biais du téléphone où on établit des règles. On veut savoir où elle est.” [It's clear. But the little freedom that is left to her is also through the telephone where rules are laid down. We want to know where she is.] Ivanna's parents

“Moi, je lui envoie un message, je n'ai pas de réponse, je lui envoie un deuxième avec un point d'interrogation, je n'ai pas de réponse, je l'appelle.” [I send her a message, I don't have an answer, I send her a second message, I don't have an answer, I call him.] Amandine's parents

Technologies and internet mobile have several functions. Firstly, smartphone is a tool for planning travels and routes especially when teenagers must go at place they don't know. Secondly, the smartphone is a mean for teenagers to communicate with each other by SMS and social networks. Even if teenagers don't talk directly of the link with their parents, this smartphone function appears as an important aspect of ICTs. For parents, smartphone is a safety guarantee for their children. The permanent link between parents and their children supplied by smartphone can be considered as a condition and a regulation component of teenager's autonomy. Entertainment activities supplied by smartphone allow to pass the time during travel and stop bus time. Social and entertainment activities carry out a protective function especially for girls as said before in the frame of the quantitative survey. This result suggest that teenagers are relatively not comfortable during their daily travels.

3.4. Mini-EV acceptance

Teenagers Mini-EV acceptance is approached through four different aspects. Firstly, the perception of electric technology and associated problems or benefits is discussed with surveyed teenagers. The second aspect concerns safety, especially in comparison with two-wheels. The perception of Mini-EV comfort is also discussed with teenagers. Finally, design aspect allows to understand the first feeling in the relation with the Mini-EV.

3.4.1. Electric technology

For surveyed teenagers, electric technology is relatively unfamiliar. The low noise in comparison with heat engine is considering as something strange. Indeed, teenagers are used to ambient noise.

“Je ne sais pas, je pense que c’est bizarre. Il n’y a pas de bruit, il y’a...c’est silencieux.” [I don’t know, I think it's weird. There's no noise, there's ... it's silent.] JérémY

Teenagers from our sample also link electric engines with a lack of autonomy. For them, electric engine generates a significant limitation in the capability of mobility. Beside, electric vehicles would be less reliable than classical cars.

“Après, on dira, un peu... l’inconvénient c’est l’autonomie” [After, we will say, a little bit... the drawback is autonomy...] Johnathan

“Tu ne peux pas faire de longs déplacements, si tu tombes en panne...” [You can’t make long trips, if you make long trips, if you break down...] Amandine

For a large part of surveyed teenagers, the main benefit is to allow limiting the pollution. Teenagers declare that electric vehicles will be developed and constitute a good solution for the future of the urban mobility.

“Comme je l’ai dit, ça pollue moins, donc c’est mieux. Parce que déjà que Grenoble c’est pollué.” [As I said, it pollutes less, so it's better. Because already that Grenoble it is polluted...] Alan

3.4.2. Safety

Most of surveyed teenagers considers that Mini-EV is more safe than two-wheels like moped or bike. For them, the Mini-EV’s safety can be comparable to a classical car. The comparison with a classical car refers to the car body. Teenagers consider that the Mini-EV car body allow to protect them against accident and bad weather.

“Je pense que c’est la même sécurité comme pour une voiture normale.” [I think it is the same security as for a normal car.] Tara

Mini-EV perception shows also apprehensions. Driving environment and others road users constitute an important source of fear in Mini-EV using for teenagers. The size of the vehicle in comparison with truck for example worries a part of surveyed teenagers.

“Si on tape un camion, on est mort.” [If we hit a truck, we're dead.] Eva

The lack of road experience seems also limit the desire of Mini-EV use. A part of surveyed teenagers think that they are not mature enough to drive a Mini-EV.

“Tu dois être un peu mature et connaître le code de la route.” [You have to be a bit mature and know the rules of the road.] Amandine

Surveyed teenagers consider that Mini-EV are broadly safe especially in comparison with bike or moped. Others factors like comfort and design must be take into account to understand the degree attractiveness.

3.4.3. Comfort, design and uses

Confort and design perception is mixed. Half surveyed teenagers consider that Mini-EV is comfortable. The comfortable aspect is associated with sitting position; these teenagers also suggest that they are protected from rain and wind in comparison with bike or moped.

“C’est plus confortable, on est assis dans un fauteuil, au chaud...” [It’s more comfortable, we are sitting in an armchair, warm...] Alan

Comfort is also linked with design of Mini-EV vehicles. Design perception is also mixed. Teenagers generally appreciate the Mini-EV futurist look. For example, teenagers compare the vehicle with a spaceship. The futurist dimension is attractive for them.

“Franchement, ouais je l’aime bien. A moi, ça m’inspire la nouvelle mobilité en fait. C’est mignon, j’aime ça” [Frankly, yeah I like it. Me, it inspires me the new mobility in fact. It is pretty, I like it...] Jérèmy

“Ça me donne envie d’essayer. Je ne sais pas, je pense que c’est mignon, C’est une voiture du futur un peu.” [It makes me want to try. I don’t know, I think it’s cute. It’s a car of the future a bit.] Maelle

Some of teenagers consider that the vehicle is not serious. They associate it with a toy. But the funny dimension can be also attractive for them.

“Pour moi, c’est un jouet. C’est très petit, c’est tout léger.” [For me, it’s are toys. It is very small, it is all light]. Adda

A small part of surveyed teenagers consider that the Mini-EV is completely unattractive. In any case the Mini-EV arouses interest and curiosity. Besides, a large part of teenagers is ready to use it for different kinds of uses. Some of them recognize the positive practical side, especially concerning vehicle parking and manoeuvrability. Surveyed teenagers declare that would use the vehicle rather in the urban context. Activities associated with the Mini-EV use refer to do shopping, go outside during the night. Discussions with teenager highlight also a gain in term of autonomy.

“Ça pourrait répondre à mes besoins quand je vais au centre-ville. Faire des courses avec ce type de véhicule.” [It could meet my needs when I go downtown. Go shopping with this kind of vehicle.] Johnathan

4. Parents interviews results

This part is dedicated to parent's interviews results. Three aspects are presented. The first refers to mobility needs of teenagers from parent's point of view. The second section concerns parent's rules about mobility of their children. The last part refers to Mini-EV acceptance for parents.

4.1. Teenager's mobility needs from parent's point of view

Discussions with parents highlight an important influence of parental authority on teenagers. Parents frame the mobility of their children according to three ways. First they control mobility needs and mode choice. Secondly, parents regulate also the mobility of their children with specific rules. The parental control is largely motivated by the protection of their children.

4.1.1. Public transport services

A large part of surveyed parents considers that public transport services are enough for mobility needs of their children especially in the urban area context. They also consider that their children haven't specific mobility needs in term of public transport. For all parents, the teenage time is a period of transition. Thus, the driving license constitutes the main objective especially for teenagers who live in peri-urban area.

“On a tout à côté de la maison, Jérèmy va au lycée, il a le tram... il a le tram d'un côté et le bus de l'autre. Axel, qui va au collège, pareil, il a le tram et le bus. Il y'a tout à côté de la maison, donc c'est bon.” [We have everything next door to the house. Jérèmy, to go to high school, he has the tram ... he has both the tram and the bus. Axel, who goes to college, like, he has the tram and the bus. They have everything right next door, so it's okay.] Jérèmy's parents

“Elle est déjà autonome. Non, il y'a pas de besoins particuliers. De toute manière, elle a 16 ans. Elle prépare le permis.” [She is already autonomous. No, there are no special needs. Anyway, she is 16 years old. She prepares the driving license.] Amandine's parents

Parents would like a public transport services improvement for their children. They wish also an increased autonomy for their children. Indeed, parents have to drive their children in some activities especially during the week-end. An improvement of public transport services allows to reduce the numbers of travels associated to children activities for parents. For this reason, parents wish strengthen mobility autonomy of their children.

“Si c'était possible, améliorer les possibilités de déplacement. Pouvoir aller à l'équitation, par exemple, ou revenir du travail le dimanche, pouvoir bouger en ville, aller voir des amis.” [If it were possible to improve travel

possibilities... Being able to go horseback riding, for example, or returning from work on Saturday evening, traveling on Sundays, being able to move around the city, visiting friends.] Eva's parents

Even if parents wish a better autonomy for their children all solutions are not acceptable especially concerning two-wheels.

4.1.2. Parent's perception of two-wheels

For young people, two-wheels appear as a good solution to strength teenager's autonomy in particular within peri-urban area. As shown in the previously part, parent's rules seem to limit two-wheels use. This limitation is mainly explained by safety reasons. All parents consider two-wheels as too dangerous. For parents this kind of vehicle without body exposes their children to an important risk of accident.

"Je pense que les deux roues sont super dangereux." [I think that two-wheels are hyper dangerous.] Maelle's parents

"Non, interdit. Ils n'ont pas le droit." [No, forbidden. They do not have the right.] Noemie's parents

"Non trop dangereux" [No, too dangerous.] Johnathan's parents

This restriction generates conflicts between parents and their children. Even if children and parents would like an improvement of autonomy, two-wheels seem to be an un-suited solution. Discussions suggest that mini vehicle with car body could be a good solution.

"Moi et mon frère, on aurait plutôt aimé avoir un scooter que prendre le bus, comme je vous l'avais dit." [Me and my brother, we would rather have a scooter than take the buses, as I told you.] Jérèmy facing his parents

"Personnellement, on est plus en sécurité dans une voiture, parce que on a la carrosserie plutôt qu'en scooter." [Personally, we're safer in a car, because we have the bodywork than motorcycle or scooter...] Jérèmy's parents

Children safety appears as the main preoccupation for parents. To reinforce safety and reassure themselves, parents instruct rules to their children.

4.2. Parental rules

Parents instruct to their children different kinds of rules like schedules, company or activity places. The degree of restriction varies according to parents. As said before in the previously part, these rules frame teenager's mobility.

“Je le dis franchement, oui, je mets des règles. Quand je dis une heure, ils doivent revenir dans les temps.” [I say frankly, yes, I put rules. When I tell an hour, they must return on time.] Jérèmy’s parents

4.2.1. Rules on schedules

The main parent’s rule concern schedules applied to back home after school or back home after activities. The schedules control by parents refer to teenager’s safety. However, the regulation of schedules is also associated to family’s time. Indeed, through schedules rules, parents wish to protect also times of their family like lunch time and social activities with household members.

“Elle doit être là pour le repas.” [She must be here for lunch.] Eva’s parents

“A partir de 19h, elle doit être là” [Starting at 7 pm, she must be here] Noemie’s parents

“L’hiver ils doivent être ici avant la nuit” [Winter they must be here before night] Johnathan’s parents

For teenagers, time budget out the home is limited by parent’s rules. Rules on schedules reflect teenager’s interviews. Autonomy is limited in time but also in space.

4.2.2. Places rules

Parents instruct also to their children rules concerning activity places. This kind of rule takes two forms. The first limits teenager’s activity spaces around the home place. The second kind of restriction forbids certain places.

“Je ne veux pas qu’elle aille trop loin. Elle peut un peu aller avec ses amis, mais elle doit respecter...” [I don’t want her to go too far. She can go a little with her friends, but she has to respect...] Eva’s parents

“Si elle va à Grand Place, par exemple, c’est seulement le matin, pas l’après-midi, trop de racailles.” [If she goes to Grand Place, for example, it is only in the morning, not in the afternoon, too many scums] Noemie’s parents

“Il y’a des endroits un peu... dangereux parce que des délinquants dans ce quartier.” [There are places a little bit ... dangerous because there are quite a few offenders in this neighbourhood.] Maelle’s parents

Schedules and places rules must be respected by teenagers. If teenagers don’t respect rules, they are punished by their parents.

4.2.3. Sanction

Sanctions take also different forms. Teenagers are punished at different levels. Firstly, at leisure’s level. Parents limit their children’s outing especially visit to friends and go shopping.

Inside the family's home, parents limit or cut teenager's leisure. For example, video-game console is forbidden and smartphone is removed.

“Si tu ne respectes pas les règles, je vais te pourrir la vie.” [If you do not respect the rules, I will rot your life.] Noemie's parents

“J'enlève la console de jeu, le smartphone et tout.” [I remove the game console, the smartphone and everything.] Johnathan's parents

Parental rules and associated sanctions play an important role on the teenager's mobility. That limits autonomy and frames teenager's behaviors. The parental rules explain behavior profiles of teenagers identified in the previously part. According to parental rules and the restriction degree, teenagers seem to adopt a specific behavior. The restriction degree can be explained by several reasons. The first refers to cultural aspect. Rules are established by parents according to their social values that regulate for example outing schedules or company. The second reason reflects the relation between parents and their children. A large part of surveyed parents talks about a confidence contract between themselves and their children. In the case teenagers respect parental confidence and rules they have a more important autonomy. Otherwise, the parents impose restrictions that limit the teenagers' autonomy.

4.3. Mini-EV acceptance by parents

Parent's Mini-EV perception is rather positive. Generally, Mini-EV arouse an important interest in term of safety. By comparison with two-wheels, parents would be ready to accept Mini-EV use by their children. For parents Mini-EV presents an interest for different kinds of use.

4.3.1. Two-wheels comparison and safety

The large majority of parents considers that Mini-EV is safer than scooter. For parents the Mini-EV car body allows a better protection for teenagers than two-wheels. The car body protects teenager from accidents and bad weather.

“Je pense que c'est plus sécurisant qu'un scooter.” [I think it's safer than the scooter.] Jérèmy's parents

“Je pense que ça reste moins dangereux qu'un scooter, parce que la carrosserie protège un peu plus.” [I think it's still less dangerous than a scooter, because the car body protects a little more.] Maelle's parents

“C'est plus protégé. Je ne verrais pas d'inconvénients. Pour moi, c'est plus sécurisé qu'un scooter.” [It's more protected. I would not see any inconvenience. For me, it's much safer than a scooter.] Ivanna's parents

Even if the Mini-EV presents a reassuring aspect for parents, they also talk about danger and have concerns associated to use by their children.

4.3.2. Barriers to use Mini-EV

There are several barriers from parents concerning Mini-EV use by their children. Parents talk about responsibility and assurance in the event of accident. Road environment and others road users are a source of danger for parents. Parents also talk about maturity and experience. For a part of them their children have a lack of road experience and Mini-EV would be not adapted.

“Je serai stressé. C’est plus en relation avec l’environnement, je veux dire le trafic...” [I will be stressed. It's more in relation to the environment, I mean, traffic...] Amandine’s parents

“Oui on peut écraser une personne avec ça. Ça nécessite une certaine maîtrise.” [Yes, we can crush a person with that. There needs a certain mastery.] Ivanna’s parents

“Je pense qu’ils sont trop jeunes pour conduire ça. Ils ne sont pas sensibles au danger.” [I think they're too young to drive that. They are not sensitive enough to the danger.] Noemie’s parents

Parents aren’t averse to the idea of Mini-EV use by their children. Mini-EV constitutes a serious alternative in comparison with public transport and two-wheels. The gain of time for parents (no need to drive children at their activity places), reinforced autonomy for teenagers are important points in favor of Mini-EV. According to these advantages, Mini-EV would be particularly well adapted to the peri-urban context. Besides, Mini-EV are considered safer than two-wheels. This argument is the most important for parents. However, risks from road (other users, traffic conditions), the lack of road experience for teenagers are also considered by parents like barriers to Mini-EV use by their children.

5. Debriefing after Mini-EV experience

This part is dedicated to the debriefing of Mini-EV training. The main objective is to better understand first perception, opinion and feelings about Mini-EV. 64 teenagers participated in the Mini-EV training. Participants were split into 11 groups. Teenagers experimented and evaluated Mini-EV. Following training, each group has been interviewed about first feelings, potential use, safety and comfort. Results are divided into three parts. First feelings helps us understand the first opinion about feelings, Mini-EV concept and design. The second part refers to the use perception. The third part concerns risk and safety perception. The last part allows us to present the potential of use for teenagers.

5.1. First feelings

This section is dedicated to the return on Mini-EV experience from feelings point of view. First feelings analysis allows us to understand teenager's opinion in term of speed, and maneuverability. This analysis is completed by comfort difficulties of use. Finally, this part shows potential uses for teenagers.

Generally, first feeling is very positive for teenagers. Speeding up is appreciated by teenagers. Electric engine supplies good feelings in term of speed and flow. For them, the Mini-EV answers well to command from user. Mini-EV braking is also appreciated by teenagers. On the whole, teenagers appreciate the Mini-EV.

“C’est sympa c’est fluide, ça prend de la vitesse rapidement. It takes speed quickly.” [It’s nice, it’s flow.] Group 6

“Bonne vitesse.” [Good speed.] Group 1

“Franchement c’est top, ça freine bien, ça a de la puissance.” [Frankly it’s top, It brakes good, It have power.] Group 6

“Il y’a une bonne reprise, une bonne nervosité au démarrage.” [There is a good pick up, good nervousness at start.] Group 3

Teenagers seem to be pleased with the Mini-EV concept. A part of teenagers considers that Mini-EV is better than two wheels like scooter in term practicality.

“Franchement, c’est un beau concept au lieu de circuler en scooter ou des trucs comme ça.” [Frankly, it’s a nice concept instead of scooter or stuff like that.] Group 6

“Franchement c’est bien, c’est un bon concept.” [Frankly it’s good, it’s a good concept.] Group 4

The Mini-EV design is also appreciated by teenagers. First perception refers to the aesthetically pleasing dimension. Generally, teenagers consider that the Mini –EV has a good design from aesthetic point of view. The vehicle is also attractive because the teenagers find it fun.

“Franchement ça pète...” [Frankly, it’s great] Group 4

“Franchement c’est marrant, c’est bien.” [Frankly, it’s fun, it’s good] Group 6

5.2. Perception of the vehicle use

For teenagers, Mini-EV use is simple in terms of taking in hand. A large of part of teenagers considers that the vehicle is easy to use. A part of teenagers appreciates the Mini-EV handling ability. They declare also that the Mini-EV is easy to drive and more generally easy to use. The simple dimension of use appears as an important advantage for teenagers.

“C’est facile, ce n’est pas compliqué.” [It’s easy, it’s not complicated]. Group 2

“C’est drôle, c’est facile à conduire.” [It’s fun, it’s easy to drive]. Group 8

“La maniabilité, la facilité de prise en main.” [Handling ability, the ease of taking in hand.] Group 3

“Le fonctionnement est simple, c’est marrant.” [Functioning is simple, it’s fun.] Group 10

Even if teenagers appreciate Mini-EV, they also highlight some lacking elements. Some of teenagers indicate that the single-seater design isn't enough. They would appreciate at least two seats to travel with another person. Teenagers suggest also several lacks in term of equipment. First a radio would be a good point for a part of teenagers. The lack of a real vehicle door also appears to be an important weakness. For them, the current zip isn't enough. That constitutes the main negative point according to them especially during the winter. This idea is also associated with the lack of heating system.

“L’inconvénient c’est qu’il y a qu’une place.” [The disadvantage is that there is only one seat.] Group 1

“Il manque la radio.” [The radio is missing] Group 3

“La fermeture éclair pour la porte c’est pas suffisant, c’est le gros point négatif.” [The zipper for the door is not enough, it's the most negative point.] Group 3

“L’hiver on risque d’avoir froid...” [In winter we risk being cold...] Group 6

“Il n’y a pas de chauffage dans les véhicules.” [There is no heating system in vehicles] Group 2

The perception of Mini-EV service is generally positive from the teenagers' point of view. The possibility of car sharing use without driving license appear as very interesting for

teenagers. A part of teenagers declares that the electric engine is a good point. In comparison with car, car-sharing service of Mini-EV is considered as the most practical for some teenagers. A membership costs around 40 euros (around one use per day) per month which is considered as acceptable by teenagers.

“Il n’y a pas besoin du permis en plus c’est électrique.” [There is no need for a driving license, then it’s electric.] Group 4

“Au moins on ne se casse pas la tête avec la voiture.” [At least, we don’t break the head with the car.] Group 5

“L’abonnement par mois c’est raisonnable et ça évite de pédaler.” [The subscription per month is reasonable and it avoids pedaling.] Group 6

5.3. Safety and risk perception

As said before teenagers consider that Mini-EV is safer than two wheels. This result confirms previous analyses. The Mini-EV car body seems to reassure teenagers. They feel protected in this kind of vehicle.

“Il y a une carrosserie, on se sent plus protégé en comparaison avec un scooter.” [There is a body car, we feel more protected in comparison with a scooter.] Group 2

Mini-EV inspires also a potential risk for teenagers. The lack of a real door and the size of the vehicle stir up concerns. As said before, teenagers consider that the light conception of the vehicle is a danger facing road environment. For them, the danger comes rather from others road users. In the event of lateral collision, some of teenagers considers that vehicle would not withstand to the shock.

“Il faut pas se prendre un choque sur le côté, il n’y a pas de porte, pas de protection.” [You must not take a shock on the side, there is no door, no protection.] Group 4

However, the insecurity feeling is relatively low for teenagers. They imagine use the vehicle for different kind of activity.

5.4. Potential uses

A part of teenagers declares that Mini-EV could be interesting for certain activities and context. For them, the vehicle is rather suited to urban areas. The size of the vehicle constitutes an important advantage. They would use Mini-EV alone and for short travels to go shopping and town centre.

“Pour la ville c’est bien.” [For the city, it’s good.] Group 5

“Pour les petits déplacements ça peut être sympa.” [For small trips it can be nice.] Group 4

“Pour se déplacer tout seul c’est bien.” [To move alone, it’s good.] Group 5

“Pour les petits trajets, dans les petits espaces ç’est bien surtout en ville.” [For small trips, in small spaces it’s well especially in town.] Group 7

“Pour faire les courses, aller en ville, c’est bien.” [For shopping, going to town centre it’s well.] Group 9

Even if teenagers would be ready to use the Mini-EV service, they will use occasionally in the future. They don’t project themselves as usual users of Mini-EV. The comparison with the car seems to limit the potential use of Mini-EV for teenagers. Teenagers project rather themselves as car users. Indeed, they expect driving license and consider Mini-EV as a temporary solution for their mobility.

“Non pas du tout, c’est bien mais mais... On ne le prendra pas ça tous les jours.” [Not at all, it’s good but ... We will not take it every day.] Group 1

“On préférerait une voiture mais pourquoi pas occasionnellement.” [We would prefer a car but why occasionally]. Group 2

“Non je ne me vois pas l’utiliser, on va passer le permis de conduire. On préfère avoir une vraie voiture.” [No I don’t see myself using it, we will pass the driving license. We prefer to have a real car.] Group 4

The teenagers’ opinion about Mini-EV is generally positive at several levels. They appreciate feelings brought by the vehicle. The design and the concept are also considered as a good point. Car sharing and membership service seem to be acceptable for teenagers. Mini-EV use is appreciated by teenagers. For them, the vehicle is easy to drive and to take on hand. Some lacks are also identified. Several equipments like radio and heating system would improve the vehicle’s comfort. A real door on the side of the vehicle is also expected by teenagers instead the current zipper. In their opinion, that could protect them facing bad weather especially during the winter. A large part of teenagers consider that Mini-EV is safer than two wheels. The car body constitutes the main advantage in term of safety. For surveyed teenagers, other road users are considered as the main source of danger. Some of teenagers think the Mini-EV is few robust facing to accident. For teenagers Mini-EV is particularly suited for short urban travels. They are ready to use occasionally this kind of vehicle but not every day. In the future, teenagers project themselves as car users. Mini-EV is rather considered as a temporary solution before passing driving license.

Conclusion

The mobility of teenagers is a complex topic. A mobility service suited to their needs must take into account an important variety of elements. This study adopted this way. By crossing teenagers' and parents' point of view, the study produced original results. Besides, the research process allowed us to test an operational dispositive with the Mini-EV.

The qualitative approach allowed us to understand in depth teenagers' habits, needs, difficulties and perceptions linked with their mobility. Parents' opinion about the mobility of their children helps us understand teenagers' mobility framing. The survey also revealed the ICT's role in the mobility of teenagers. The mobility solution proposed through Mini-EVs was also assessed by teenagers. Survey analysis allowed us to identify several results according teenagers' and parents' speech collected in the frame of individual interviews.

- **Resigned teenagers facing mobility**

Generally, surveyed teenagers use bus to travel from their home place to high school place. On one hand they consider themselves satisfied of public transport services but on the other hand they highlighted several difficulties during the high school week. Facing to their mobility conditions, teenagers appeared resigned. For teenagers, the weekend time is the most complicated period, especially when they live in the peri-urban area. The lack of public transport services and buses schedules make it difficult to travel. In the week period, they often remain dependant from their parents. They must ask them to move. According to public transport offer, age, familial rules, residential context and parents' disposal to drive their children, different kinds of behaviour profiles appear. From hyper-mobile to home assigned profile, teenagers' mobility needs are very variable. Among factors which contribute to form teenager' mobility behaviours, familial rules appear as the most important.

- **A mobility framed by parents**

Parents have an important role in their children mobility. They set the rules (schedules, forbidden places, company) and the degree of autonomy for their children. Results suggest a paradoxical autonomy for teenagers. Indeed, even if teenagers consider themselves as very independent, their parents provide them a low level of autonomy. Teenagers have a limited free time budget out of home and high school. These rules and the linked degree of autonomy depend of families' social values according to culture and safety of children. Rules are also applied to the modes of transport. For example, some parents strictly forbid two-wheels use. This using ban is rather associated to the safety of teenagers. Parents consider teenage period as a transition time awaiting the driving license. For them, having a car remains the main objective to reach for their children. Teenagers also share this opinion. Teenagers aren't alone facing their mobility choices. Teenagers are not free in their mobility choices. They have to respect parents' rules. These results suggest that a suited mobility service must take into account social, cultural and familial aspect associated to teenager' mobility.

- **ICTs beyond of only communication**

ICTs play an important role in the mobility of teenagers. As expected the smartphone connected to internet is a mobility tool to check buses schedules, traffic conditions and calculate routes. The smartphone supplies also entertainment activities, which allow to pass time during travels time. Teenagers use social networks and communicate each other. That confirms the results of the quantitative survey. The smartphone and associated activities have a protective function for teenagers. In fact, they use it to isolate themselves from other users of bus for protection and tranquillity reasons. For teenagers, their smartphone is a mean to reassure themselves and keep the contact with outside. Parents consider also the smartphone as a protective tool. For them, the smartphone is the best mean to keep the contact with their children. By this way they can also control the mobility of their children.

- **Mini-EV a partial solution**

The Mini-EV's perception is generally positive for teenagers and parents. Apart from road environment dangers the vehicle is considered as safer than two wheels. A large part of teenagers would be ready to use it in the frame of specific conditions (travels in urban area context, shopping activities). Parents also would be ready to leave their children use Mini-EV because they consider that this kind of vehicle is safer than scooter. Debriefing after Mini-EV experience confirm these results. Generally, teenagers appreciate Mini-EV and associated service. They could use it occasionally in urban context. However, they don't envisage regularly using Mini-EV. They consider it as a temporary solution. Indeed, they rather project themselves as a car driver. For them the driving license and the car remains the main objectives for the future of their mobility. Besides, the variety of the mobility needs of teenagers indicates that Mini-EV isn't always suited. Indeed, Mini-EV doesn't seem to meet needs of all teenagers. However, Mini-EV service could meet needs of certain teenagers as hypermobile profile. Indeed, this kind of teenagers have important needs in term of mobility. The Mini-EV could supply to them autonomy and flexibility for their mobility. Besides, they mainly reside in peri-urban area where transport public service is lower than urban area. Mini-EV could tackle this lack. That would involve to deploy and test Mini-EV service in peri-urban area.