



**Perception of living conditions, noise and air
quality in the "Libertà" district**

**Quasi-Experimental design research by survey
and interviews to local expert witnesses**



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Edited by

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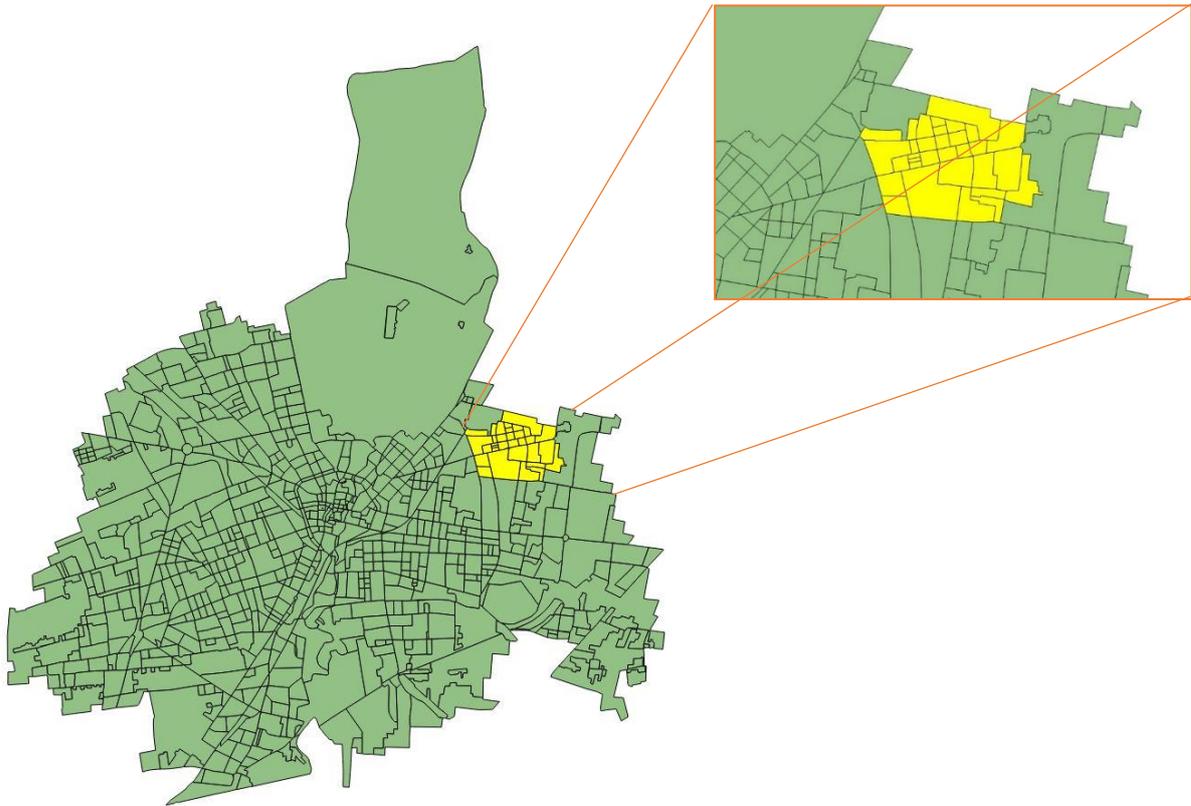
The Communication and Social Research Department (Sapienza, University of Rome) participates in the research thanks to a special agreement with ISPRA.

Note: in the paper is used the European number format for decimal notation (comma) and thousands separator (dot).



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The MONZA project also includes the study of the effects of the planned actions (infrastructural, organizational and awareness raising interventions) on the local social system¹.



¹ For further information on the socio-economic framework of the city of Monza, see Statistical Attachment D - Socio-economic framework maps.

Introduction

The purpose of the survey, both cognitive and practical-operational, is the analysis of the effects of the actions expected by the LIFE MONZA project (infrastructural, organizational and awareness raising interventions) through the identification and evaluation of opinions, perceptions and attitudes of the population concerned about several liveability aspects of the district and the environmental-social well-being conditions.

The diachronic study carried out involved the creation of two surveys: the first one (pre-test), aimed to define the ex-ante situation, the second one (post-test), aimed to observe the conditions after the implementation of the infrastructure interventions considered by the project, to evaluate the changes that it has occurred. The collection was carried out through semi-structured questionnaires administered to samples of the population residing in the "Libertà" district, separated for the two time phases. The pre and post-test questionnaires share some questions, to allow a satisfactory comparison between ex ante and ex post situations. In summary, the questionnaires were designed to collect the information necessary to evaluate the possible effects of the intervention. The possible effects can be classified into two macro categories:

- a) "desired" effects (e.g. reduction of noise pollution, improvement of air quality, traffic rationalization, etc.);
- b) possible effects, direct and / or indirect, unexpected, positive and / or negative. The research design is based on the quasi-experimental design n. 12 present in the classic "Experimental and quasi-experimental designs for research" (Campbell and Stanley, 1966; tran. It. 2004). The original design (separate pre-post samples) is usually used for large populations. If it is not possible to identify-differentiate casually subgroups to discern the selection treatments, it is possible to use a procedure similar to that used for experimental research: the randomization.

In the design, the R indicates that the two samples (EG and CG) were obtained by random assignment (see the paragraph on the sampling plan) from a population which, even if it changes (due to phenomena such as mortality, migration, etc.), would have insignificant differences in the two

		T ₁	T _x	T ₂
Control group (CG)	R	O ₁	(X)	
Experimental group (EG)	R		X	O ₂

observations (O1 and O2), conducted in two moments (T1 and T2). Tx moment is the moment in which re-qualification interventions of District were carried out. The first sample (the CG in the survey design) also benefits from the redevelopment actions of the district, exactly as for the second sample, the GS. The main difference between the two groups is that for the first one the X is "ineffective", in the sense that the research design does not provide any effects measurement (for this reason it is indicated in brackets), instead for the second one (EG) these effects are measured. In addition to the structured questionnaire, the research design provided also face-to-face interviews with stakeholders of the municipal

administration, traders and the Third Sector Organizations, operating in the territory of the redevelopment intervention.

1. The questionnaire

The questionnaire² is structured in two main sections. This report refers to the contents of the first section.

The questionnaire first section is composed by 41 questions regarding:

- *Socio-demographic characteristics of the respondent;*
- *Information about the respondent's home (location, indoor noise exposure, time spent at home);*
- *Quality of life in the district (opinions on social, economic and environmental aspects);*
- *Perception of air pollution;*
- *Perception of noise;*
- *Information on health and quality of life;*
- *Mobility;*
- *Knowledge of the MONZA project and its possible social impacts on some aspects of the local system.*

The questionnaire's second section is a "short" test on health and quality of life, proposed by the Occupational Medicine Group of the University of Florence, which will provide the related data analysis.

2. The sampling plan

Pre-Test sampling plan					
Gender	Spatial Collocation	Age			Total
		18-35	36-60	61-80	
Female	Within 30 mt	6	12	6	24
	Over 30 mt	59	131	81	271
Male	Within 30 mt	6	11	5	22
	Over 30 mt	58	120	75	253
Total		130	273	167	570

The selection of the sample provided for a stratified random sampling method, considering as the reference population the citizens residing in the study area aged between 18 and 80 and 3 stratification variables: (gender, age class³ and spatial collocation in relation to Libertà avenue⁴).

The reference population, defined as the universe of citizens residing in the study area between the ages of 18 and 80, was

² File A - Pre-test questionnaire.

³ The age classes considered are three: 18-35; 36-60; over 60.

⁴ In the sampling plan, the entry of home was considered as a point of reference, classifying the spatial collocation into two classes: within 30 meters and over 30 meters from the edges of Libertà avenue.

equal to 6.150 units. To determine the sample size a calculation formula was used which takes into account the correction factor for populations⁵.

The sample consists of 570 units⁶, divided between the 12 cells of matrix identified by the intersection of the stratification variables (gender, age class and spatial collocation), proportionally to their incidence in the resident population⁷.

The list of the population from which the sample was extracted was provided by the Municipality of Monza.

In addition, two lists of names and addresses for replacements have been prepared (reserve sample). The same procedure was repeated for the second survey (post-test). In this case, compared to the population of the pre-test, the number decreased by 64 units. The sampling plan established the number of interviews for each of the 12 profiles, defining as final aim a total number of interviews equal to 571.

Post-Test sampling plan					
Gender	Spatial Collocation	Age			Total
		18-35	36-60	61-80	
Female	Within 30 mt	6	12	6	24
	Over 30 mt	58	131	85	274
Male	Within 30 mt	6	11	5	22
	Oltre i 30 mt	57	119	75	251
Total		127	273	171	571

3. The collection arrangements

First of all, considering the sampling plan, a door-to-door questionnaire administration was carried out, thanks to the support as data collector of the "Carlo Porta"⁸ high school students.

However, the practical impossibility of "door-to-door" administration has been noted – certainly preferable for the purpose of achieving an adequate response rate and to avoid the sample self-selection.

ISPRA, with the Municipality of Monza, the University of Florence, the Vie en.ro.se Engineering and the "Carlo Porta" high school, has identified a solution to the problem, although it is aware of the risk of not guaranteeing the sample representativeness achieved.

According to this solution, both sections of the questionnaire were sent from the Municipality with a cover letter in early February 2018. The letter contained instructions for completing the questionnaire

⁵ The adopted formula is: $n = (z^2pq / e^2) (1-f)$, where "n" is size of the sample, "z" is the coefficient dependent on the level of confidence that the result is within the error limit established "e"; "P * q" expresses the variability; "1-f" the correction factor for finite populations (with "f" sampling fraction where $f = n / N$, with N indicating the reference population).

⁶ For the sample size calculation, it was considered an estimate confidence level of 95,46%, within an error limit of 4%. The distribution of independent variables considered the least favorable hypothesis: each individual characteristic is equally distributed. The calculation also considered the correction factor for finite populations.

⁷ With $z = 2$ (confidence level of 95,46%), sampling error of 4%, dispersion value expressed by $p * q$ more unfavorable (i.e. in the hypothesis that every single characteristic is equally distributed, e.g. present / absent, yes / no, etc., with a probability of 50%), therefore $p = 0,50$ and $q = 0,50$.

⁸ To involve local stakeholders in the project, a school-work alternance project was implemented through a convention of the Municipality with the "Carlo Porta" high school, which involved an entire class. The project considered the identification of some tutors from the same administration in collaboration with the other partners.

electronically. After two weeks of data collection, a second and, subsequently, a third reminder letter should have been sent, the latter one again together with the questionnaire (for those who had lost it). Indeed, the first reminder was done indirectly through local media, while the direct reminder to the sample (the letter with questionnaire) was done only once in May.

According to this strategy, the "Carlo Porta" high school researchers, tutors and students simply collected the completed questionnaires. During this activity, in order to increase the data quality and completeness, in case the respondent delivered a not completed or only partially completed questionnaire, the researchers had the chance to clarify any doubts by asking to fill all the questions of the questionnaire. A special workstation has been assigned to this activity at the questionnaire delivery office.

Two locations have been identified for the delivery of the paper questionnaires:

- **Liceo "Carlo Porta"** (Via della Guerrina, 15), which guaranteed a dedicated space, with some seats, for students and tutors and a specific workstation to be used for the possible compilation of the questionnaire on site;
- **Centro Civico Libertà** (Viale Libertà, 144), which for few days organized a co-working room available with tables and seats for up to twenty people.

As a conclusion, the questionnaire was administered in two ways: paper (the questionnaires sent by post were completed in self-administration mode and delivered by the respondents to collection centres set up for this purpose) and online (always in self-administration mode, with the direct access of each respondent to the questionnaire via Limesurvey⁹).

The analyses described in the following chapter refer to the first survey (pre-test), where the elements of greatest interest and relevance are presented; detailed tables and some additional graphs are shown in Statistical Attachment E.

Pre-test highlights

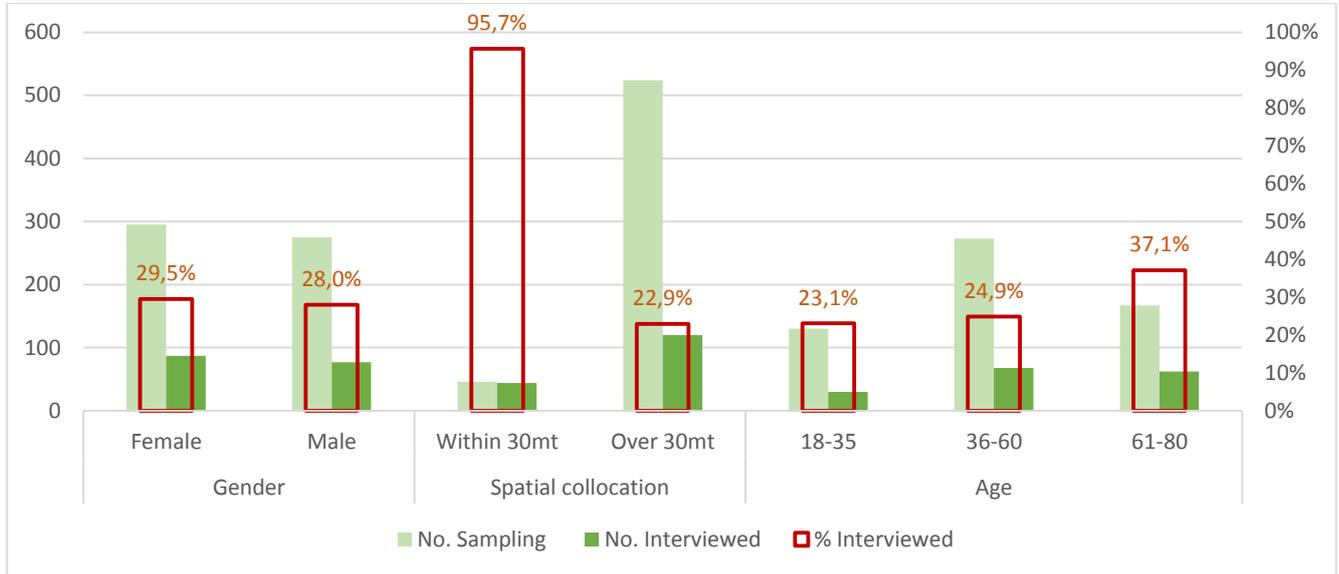
4. Pre-test respondents

The pre-test involved 177 respondents, around 31% of the cases expected by the sampling plan. Observing the composition of the sample achieved, it is possible to note some elements of interest, also for the purposes of the general targets of the research.

Gender, spatial collocation and age

⁹ Limesurvey is an open source software; it was used not only to create and manage the web version of the questionnaire, to which the respondents had direct access, but also for the data entry of the paper questionnaires by ISPRA staff (we underline that the questionnaires completed via web by the respondents and those entered starting from the paper questionnaires were recorded in two separate tables to keep track of the administration method).

The gender does not seem to influence the willingness to participate in the research, contrary to the age class.



In fact, the sample coverage is higher for all respondents over 60 years (over 40%). According to that, we point out in the sample surveys that it is usual to find greater availability and participation in the non-active population groups who have left the labour market.

Pre-test respondents					
Gender	Spatial collocation	Age			Total
		18-35	36-60	61-80	
Female	Within 30 mt	10	10	7	27
	Over 30 mt	12	27	21	60
Male	Within 30 mt	5	7	5	17
	Over 30 mt	7	24	29	60
Total		30	68	62	164

Missing: 13 (7,3%)

Libertà: over 97%. For this reason, it seems extremely plausible that the spatial proximity of these respondents to Libertà avenue has sensitized them to the problems to which the LIFE MONZA project is dedicated, creating a greater level of interest and willingness to participate in the research..

Observing the sample size, it is possible to note a certain proportionality, although far from the target, especially for respondents located more than 30 mt far from Libertà avenue.

The element of greatest interest is the percentage of participation, among the respondents sampled for the class referring to the spatial location, which identifies the respondents with the entry of their home within 30 mt from Viale

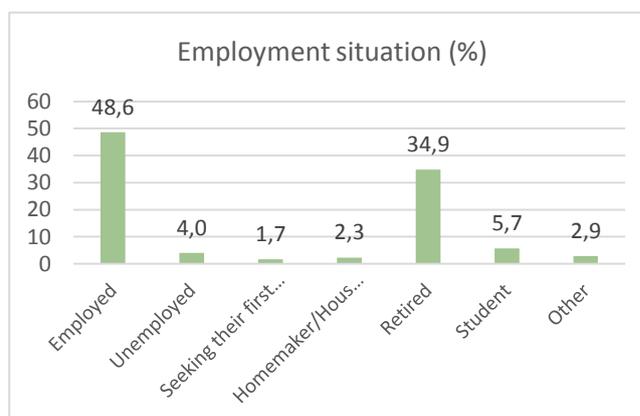
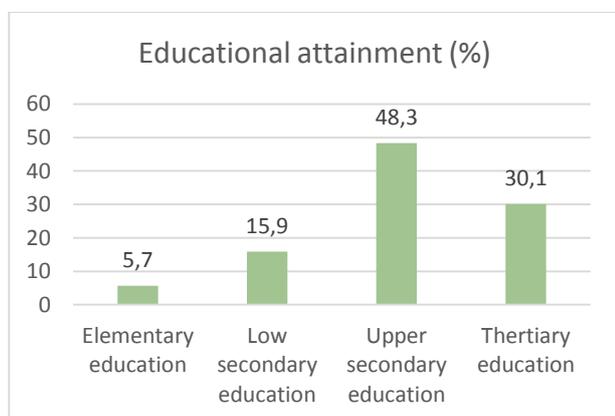
Region of origin

We collected sample stratification variables and other socio-demographic characteristics of the respondents, potentially relevant for the interpretation of their perceptions and opinions.

Almost all the interviewees have the Italian citizenship (176, one case preferred not to answer the question). The 74,6% of the interviewees were born in Lombardia and over 44% in the province of Monza and Brianza. However, the sample includes people who were born in other regions (44), in particular in South Italy (especially in Campania, Sicilia, Puglia and Calabria) or in other provinces (22% of the interviewees were born in the province of Milano), who may have moved due to study or work reasons. Three respondents (1,7% of the total) were born abroad.



Educational qualifications and employment situation



Among the most relevant characteristics for the analysis of opinions and attitudes, therefore of quality of life perception, there are those related to socio-cultural status. The sample has a significant incidence of high school graduates (48,3%) and university graduates (30,1%). As to working condition, it mainly includes employed people (48,6%) and retired (34,9%)¹⁰.

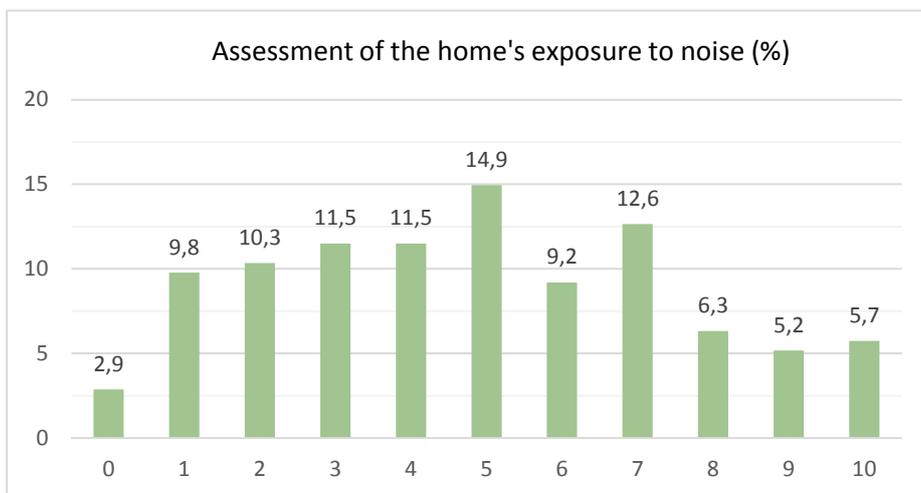
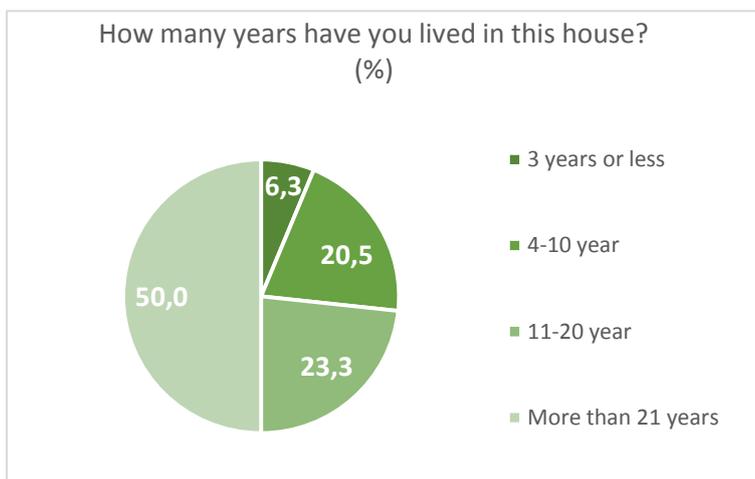
In addition, over 40% of respondents work or worked in commerce and services area, while the 24% of them in industry, most of them as employees (more than 87%).

¹⁰ Further information on the distribution of graduates and employed workers in the Monza area are in the Statistical Attachment D.

5. Home and district at the pre-test

About a quarter of respondents (25,6%) live in houses facing Libertà avenue, 68,4% of respondents live within 100 mt from Libertà avenue.

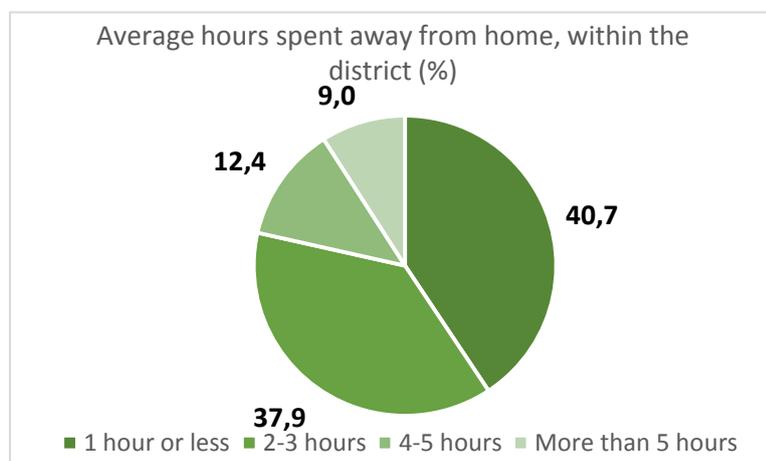
Half of the interviewees have been living in the same house for more than 20 years, only 6,3% for less than three years. The sample is therefore mainly composed of people who have been living in the district for many years. Compared to the characteristics of the house, 28,4% of the respondents report the presence of acoustic insulation measures. Only 8,2% of the respondents live on the ground floor or mezzaniner, 21,1% live on the first floor, approximately 26% live on the fifth or higher floors. Almost a fifth of the sample spends



more than 16 hours at home, the rest of them spend between 9 and 12 hours.

The assessment of the home exposure to noise is quite varied, presenting an overall asymmetrical distribution on the left (it means that it has higher frequencies for low scores than for high ones).

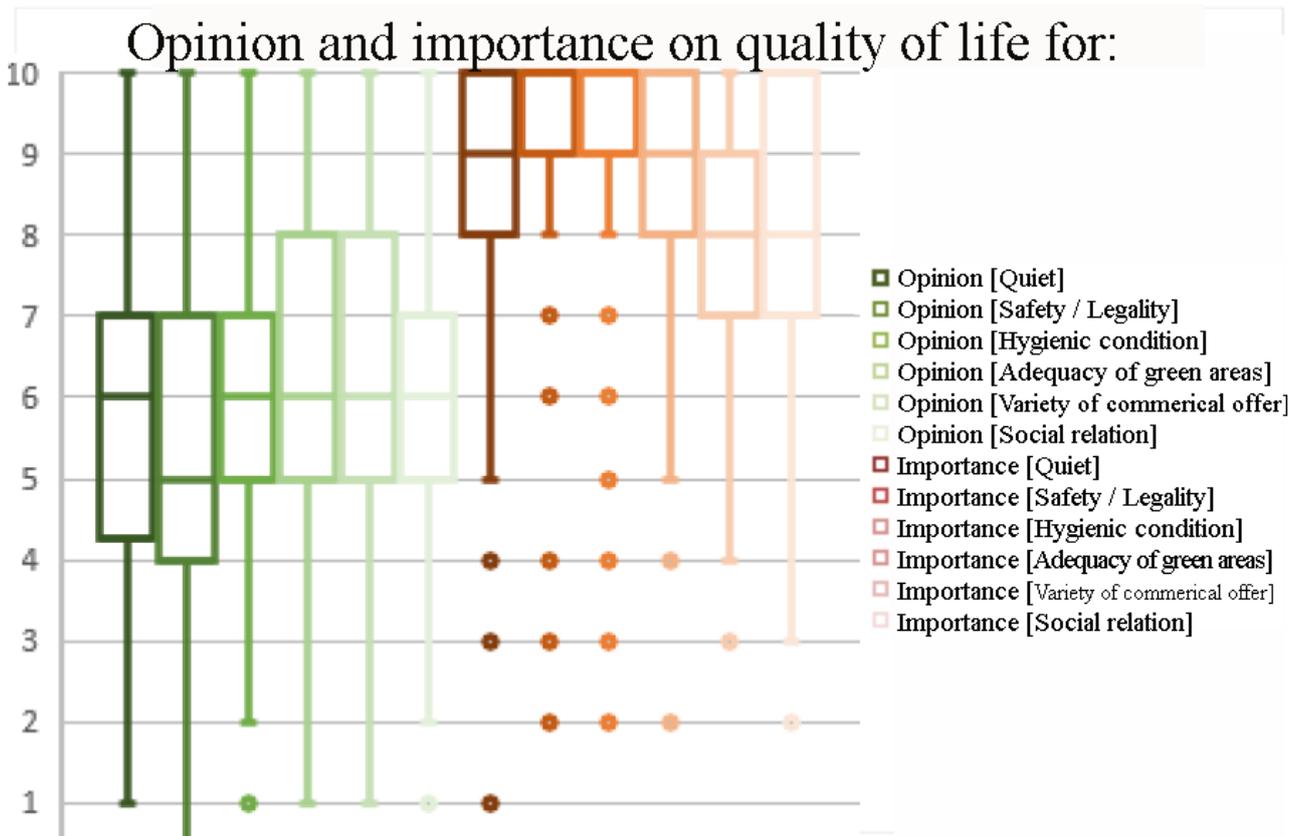
Most of the respondents stay in the district, outside home, for no more than three hours a day (78,6% in total), 40% of them for no more than one hour. However, the values related to the life quality judgements in the district have an asymmetric distributions to the right (it means higher frequencies for higher scores than for low scores).



“Safety” and “legality” are the least appreciated aspects, with a higher frequency of low scores.

“Hygienic conditions” and “social relations” are the aspects which the most respondents have agreed, with more distribution scores. “Variety of the commercial offer” and “green areas” have higher but less uniform scores.

The distribution of judgements about the “quiet level” does not differ much from the others, however it has a relatively high share of 5 and 7 at the expense of sufficient (6) and higher scores (8, 9 and 10), thus presenting the average lower than the median.



The distributions of the scores¹¹ for the importance are in most cases more concentrated than those of the judgements expressed. The respondents attribute to all the elements mentioned a rather high importance, almost all the averages are higher than 8, but “safety”, “legality” and “hygienic conditions” are the most important aspects for the quality of life, followed by the adequacy of the “green areas” and by the “quiet

¹¹ The graphical representation of the distribution of scores related to judgment and importance uses the box plot or box and whiskers plot. The boxplot is obtained by reporting the 5 summary numbers on a vertical axis: minimum, 1st quartile (Q1), median, 3rd quartile (Q3), maximum. The cell of the box plot has Q1 and Q3 respectively as lower and upper ends. The median divides the box into two parts. The whiskers are obtained by joining Q1 to the minimum and Q3 to the maximum. By comparing the lengths of the two whiskers (which represent the distances between Q1 and the minimum and between Q3 and the maximum) and the heights of the two rectangles that make up the box (which represent the distances between Q1 and median and between median and Q3) information on the symmetry of the distribution is obtained: this is all the more symmetrical as the lengths of the whiskers are similar to each other and the heights of the two rectangles are similar to each other. It is also highlighted the presence of any outliers through the points outside the boxplot.

level”, while the “variety of the commercial offer” and the “social relationships” collect lower and more diversified scores.

The collection tool was built to allow different operational definitions of the concept of satisfaction with air and life quality to be followed when analysing data:

- a direct operational definition, which uses a single indicator and which detects the quality of life satisfaction with direct question (d.33);
- the most common operational definition, which detects the satisfaction with a battery of indicators, then summarized in quality of life index in the district. The same weight is assigned to all the indicators, according with the assumption of equivalence of the indicators, extremely widespread in social research (S1); indicating with "s" the satisfaction score assigned, with "j" the item number and with "k" the total number of items:

$$S_1 = \frac{\sum_{j=1}^k S_j}{k}$$

- a further operational definition considers the different indicators weight (according with their importance for the respondents) in determining the overall satisfaction; this activity implies not only the collection of satisfaction on a battery of indicators but also the collection of the importance that the respondent attributes to each indicator. The final index is composed by weighting the satisfaction for the importance of each aspect (S2), indicating with “s” the satisfaction score assigned to the indicator, with “p” its importance, with “j” the item number and with “k” the total number of items:

$$S_2 = \frac{\sum_{j=1}^k (s_j p_j)}{\sum_{j=1}^k p_j}$$

Starting from the individual judgments expressed, it was therefore possible to calculate a synthetic index that expresses the overall judgment on the life quality in the district (d.18), also attributing as weight the importance scores that the respondent assigns to the corresponding aspect (d..19) a weighted index was calculated in order to return a value that better reflects the actual subjective perception of individuals (S2).

Considering both the absolute judgment and the one weighted for importance, the life quality is superior for respondents who live over 30 mt from the Libertà avenue; the difference, however, is not statistically significant¹². As in the pre-test, "Quality of life index in the district" (S1) was developed in the post-test. In

¹² The analysis of variance (ANOVA) is useful if you intend to study the relationship between a categorical variable (X) and a cardinal variable (Y):

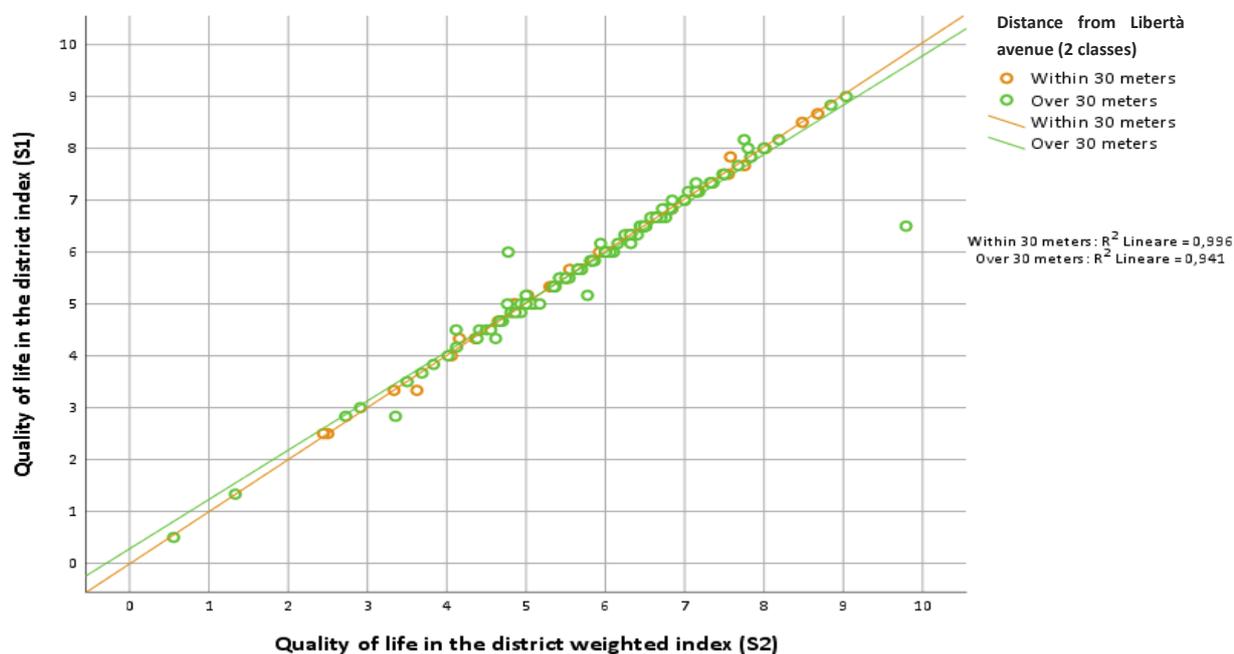
- X is in an independent hypothesis, its individual categories (modalities) are called "groups";
- Y is hypothetically dependent on X.

The purpose of the analysis of variance is to test the hypothesis that the variance of Y depends on X, or in other words that the means of the groups constituted by the modalities of X (in our case the proximity to Viale Libertà) on the variable Y (perception quality of life and air) are significantly different.

In short, it is possible to check the presence or absence of a relationship between the two variables by looking at the significance level of the Fisher F test. If the significance value is greater than 0,05 (5% statistical error)

addition, "Weighted index of quality of life in the district" was calculated that reflects the subjective perception of the individuals (S2). Considering the values of both indices, quality of life is superior for respondents who live over 30 mt from the Libertà avenue. In relation to index S1, the differences between the two groups are not statistically significant (see note 12); however, they are significant in reference to the weighted index (S2), but only at the level of 0,10 (and not at the level of 0,05).

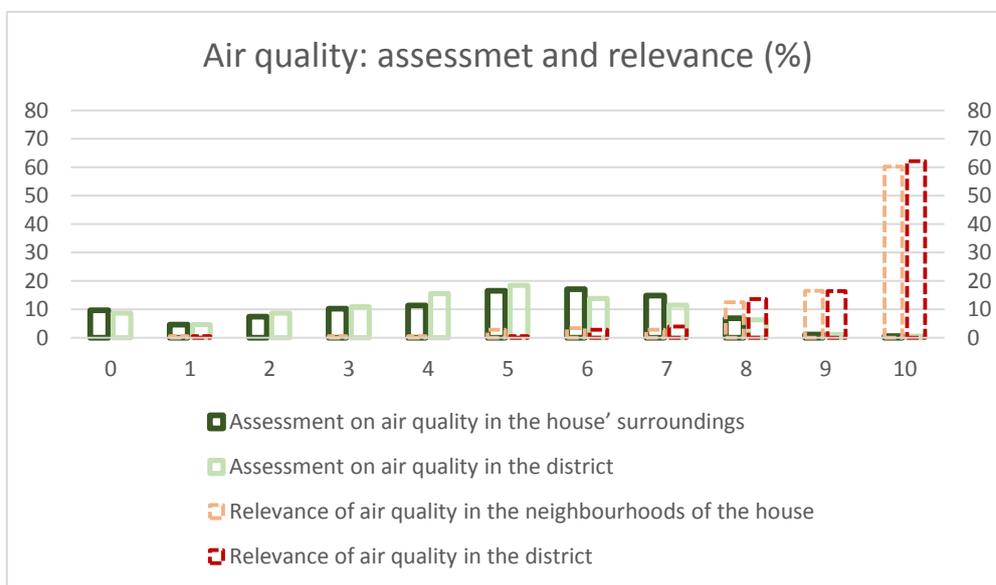
ANOVA – Quality of life indices in the district by distance from Libertà avenue			
Distance from Libertà avenue		Quality of life index in the district (S1)	Weighted index of quality of life in the district (S2)
Within 30 mt	Mean	5,6383	5,5690
	N	44	37
	St. Dev	1,53343	1,51045
Over 30 mt	Mean	5,8667	5,9394
	N	126	115
	St. Dev.	1,42825	1,43791
Total	Mean	5,8075	5,8493
	N	170	152
	St. Dev.	1,45505	1,45956
ANOVA	F	,803	1,813
	Sig.	,372	,180



there is a too high probability and therefore not statistically acceptable that between the groups of X (proximity to Libertà avenue) there is no appreciable difference in the answers given to the variable Y (perception of quality of life).

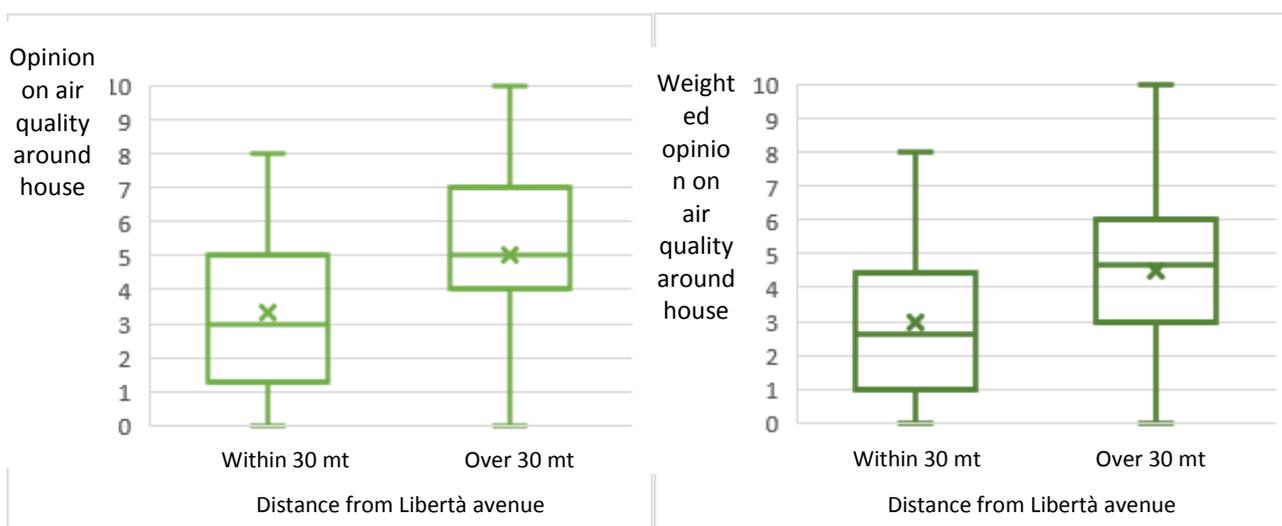
6. Pollution and quality of life at pre-test

The expressed judgments on the air quality in the district and nearby houses have similar profiles, with a higher incidence for the scores around five, even if those referring to the surroundings of the house are slightly higher. The importance



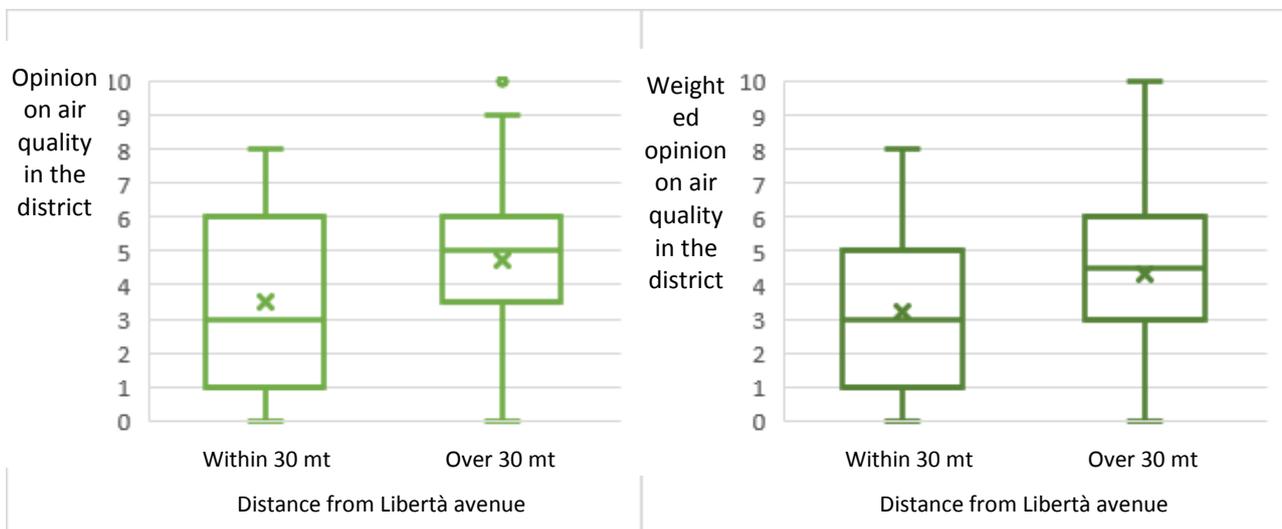
assigned to air quality is quite high in both cases, however it is more felt if it refers to the surrounding area of the house (with the highest percentages of scores equal to 10) than to the district in general (with the largest percentages of scores assigned equal to 9).

Regarding to the air quality judgement nearby the house, the difference between the respondents who live within 30 mt of Libertà avenue and those who live at a greater distance is evident.



This happens in both cases considering the absolute value of the opinion expressed and by relating this value to the importance assigned by the same respondent to the evaluated aspect (that means, weighting the opinion expressed on the importance assumed by the aspect).

The judgments expressed by the residents of the two groups formed according to the distance from Libertà avenue are very similar. In fact, even the people who live over 30 mt from Libertà avenue have the same negative perception about the air quality. The worsening of the scores in the "Weighted Index of Quality of Life in the District" makes us understand that the citizens who have judged air quality as insufficient are also those who have declared that the air quality is a very important factor. The respondents more dissatisfied are also more attentive and they look at this environmental aspect with greater attention. The difference between the two groups is less consistent if we consider the air quality in the district. The judgments of the residents over 30 mt from Libertà avenue are more concentrated, than the one of the residents within 30 mt from Libertà avenue. This happens in both cases considering the absolute value of the judgment or weighting it for the importance assigned by respondents (the variability of the judgments increases in the case of residents located more than 30 mt from the avenue).

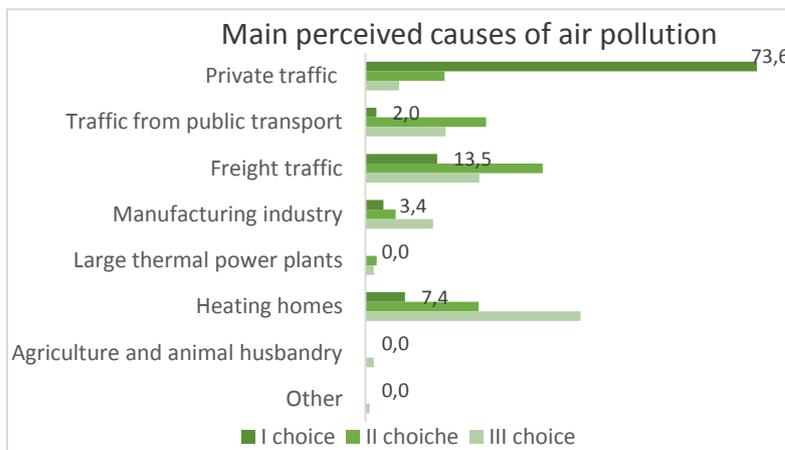


Overall, 51,2% of respondents are fairly informed about the problems of air pollution; 31,4% much informed and 11% little informed; only 6,9% declares that they are not informed at all about this issue.

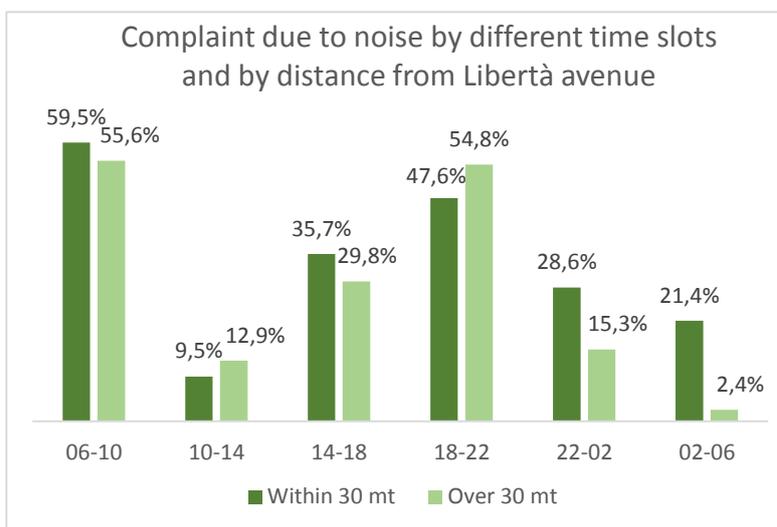
The main sources of information are internet and the television (68,6%). Other sources of information are: newspapers (40%); radio (22,9%); associations (13,7%); magazines or books on the topic (12,6%) and periodicals (12%). School is reported as a source of information not only by the students (10), but also by other respondents (4), maybe teachers.

Only one respondent declared to be not interested in the topic. In most cases, the number of sources cited is less than three - 1 (17,7%), 2 (32%), 3 (32%) - but this indication does not necessarily correspond to a low level of information.

Most respondents (77,6%) reports private traffic as the main cause of air pollution in the district. Among the most cited causes are: transport of goods (9,1%) and house heating (5,7%). In second place: transport of goods (33,1%); house heating (24,3%) and public transport (20,7%). Finally, in third place: house heating (37,3%) and transport of goods (30,7%).

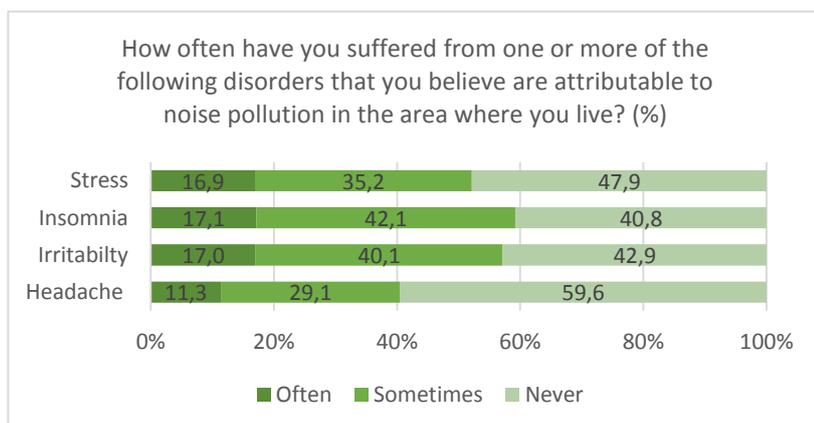


Noise pollution is perceived as a problem more than air pollution; traffic is indicated among the main sources of noise pollution by 91% of respondents. 62,9% indicate only one source of noise pollution, the second source indicated are animals, with a relative frequency of only 13%.



The time slots in which there is a greater nuisance due to noise pollution correspond to the hours of intense traffic: 6-10 a.m.; 18-22 p.m..

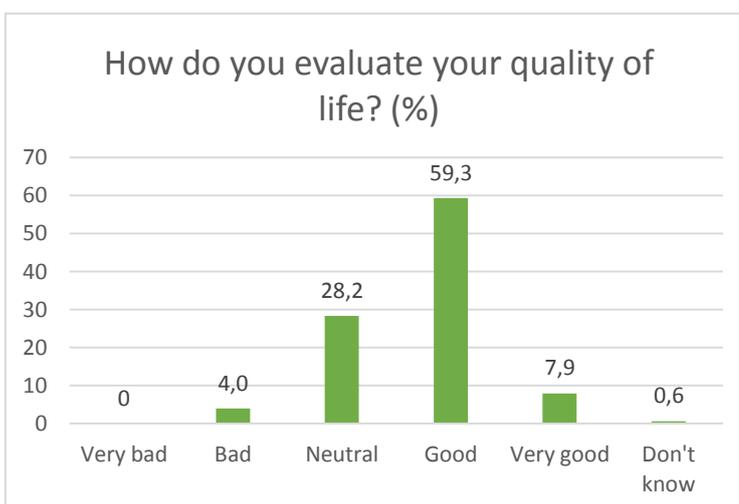
Both time slots were reported by more than 50% of respondents. Precisely: 41,9% reports only one time slot, 44,8% two time slots, the remaining 13,4% reports more than 3. Residents who live within 30 mt from Libertà avenue report more frequently the time slots 14-18 p.m. and 22 p.m. - 6 a.m.



Stress, difficulty in sleeping, irritability attributable to noise pollution are frequently indicated by about 17% of respondents; 11% reports headaches. 20,3% of respondents never suffered of these discomforts, 3,4% says they have little concentration; 5,7% of respondents are very unsatisfied of sleep, 10,9% are unsatisfied.

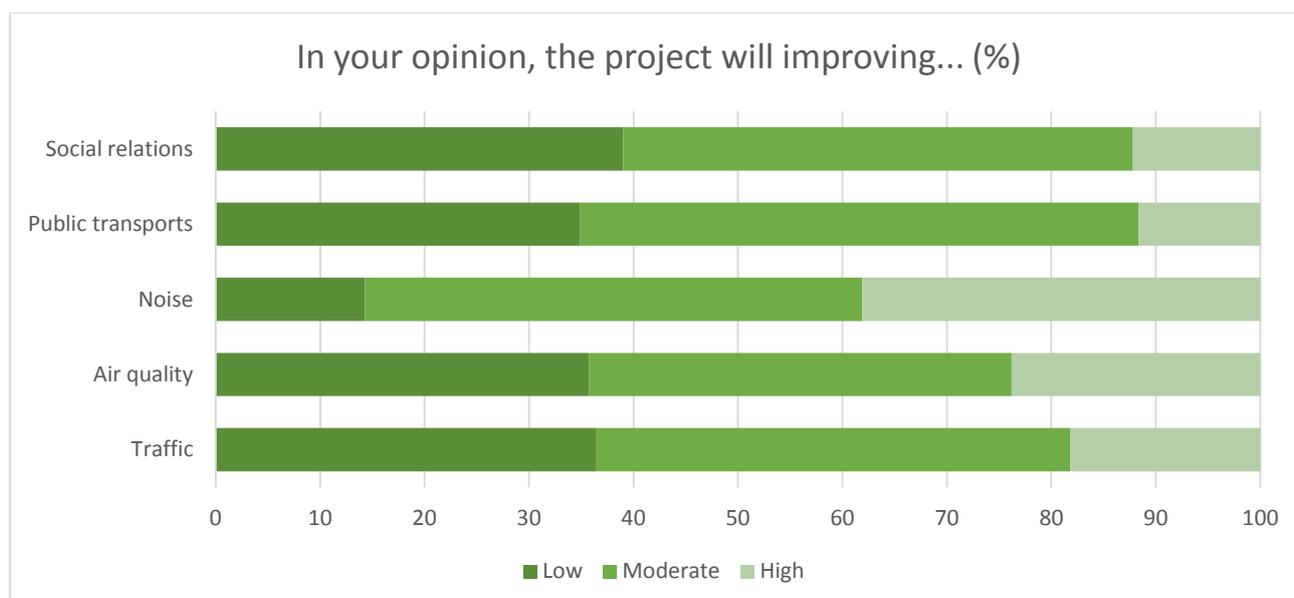
Considering overall noise, pollution, climate and the other environmental characteristics, 61,9% of respondents consider the environment in which they live safe enough for health, but 27,8% of them consider it unsafe and 4,5% not at all sure, while only 5,1% say they find it very safe (one case indicates "very much").

Out of 121 cases, only 11,1% use public transport to go to work; out of 47 cases, only 16,5% use public transport for study purposes; out of 160 cases, only 6,8% use public transport for other activities (leisure, culture, shows, sports, etc.). Overall 33,3% are dissatisfied with the quality of public transport (11,5% are very dissatisfied). Quality of life is mostly assessed positively (good or very good), although there is no shortage of respondents who express a neutral assessment (neither good nor bad).



7. LIFE MONZA project: awareness and expectations

About one out of five of respondents (21,7%, i.e. 44 cases) know LIFE MONZA project. Compared to the level of confidence that the respondents give to the impact of the project on the targets, 38,1% of them believe that the project will have a positive impact on the noise level of the environment, while only 11,6% of them declare this opinion compared to the public transport area.



8. Preparatory conclusion

The pre-test survey on the perception of living conditions, noise and air quality in the Libertà avenue allows us to make some considerations already in this first phase. The subsequent phases and in particular the second survey will allow a precise and specific comparison between the post-intervention situation and the previous one.

Despite the sample's limited number of answers (overall the pre-test engaged 177 respondents, about 31% of the cases expected by the sampling plan), the outcomes variety allows all comparisons between T0 and T1 (pre and post-test). All the types included in the sampling plan were achieved; a kind of proportionality was respected between the different types, except for the respondents with a spatial collocation within 30 mt from Libertà avenue, who responded in greater quantities (97%). According to the spatial concentration of the residents within 30 mt from Libertà avenue, it is possible to argue that the daily proximity of these respondents to the area of intervention has sensitized them to the problems the LIFE MONZA project focuses on, creating more interest and a greater willingness to participate to the research. The sample has a significant incidence of high school graduates (48,3%) and university graduates (30,1%); it mainly includes employed (48,6%) and retired (34,9%). These characteristics, relating to the socio-cultural status of the respondents, are very relevant for the analysis of opinions and attitudes and, therefore, for the perception of the quality of life.

The values relating to the life quality assessments in the district have right-skewed distribution (i.e. higher frequencies for high scores than for low ones). "Safety" and "legality" are the least appreciated aspects, with a higher frequency of low scores. "Hygienic conditions" and "social relations" are the aspects which the most respondents are agreed, with more concentrated distribution of scores, the "Variety of the commercial offer" and the "Green areas" have higher but also less uniform scores. The distribution of judgments on the "quiet level" has a high incidence of scores that stand around 5 and 7. The judgments expressed on the air quality in the district and in the surrounding areas of the house have similar profiles, with a higher incidence for the scores around 5, even if those referring in the surrounding areas of the house are slightly higher. The importance assigned to air quality is rather high in both cases, however it is more felt if it refers in the surrounding areas of the house (with the highest percentage of scores equal to 10) than to the district in general (with the highest percentage of scores assigned equal to 9). The difference between the two groups is less consistent if we consider air quality in the district.

The values of the two weighted indexes of quality of life in the district report negative evaluations by citizens. These citizens have declared that air quality is a very important factor; those who are most dissatisfied are also more attentive at this environmental factor.

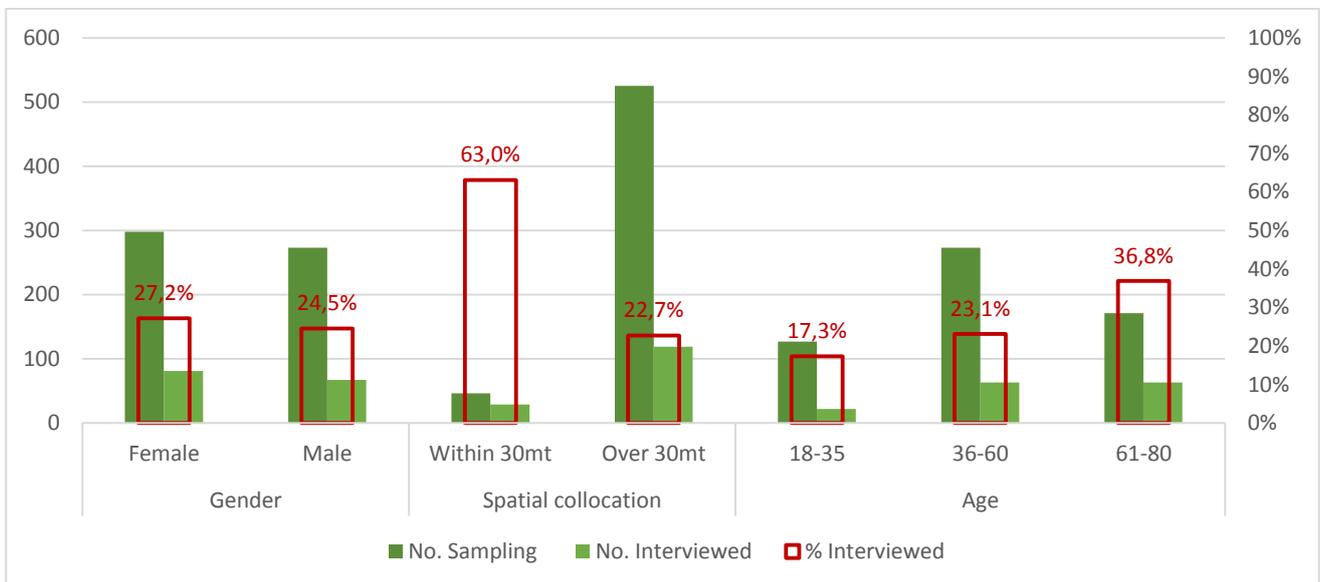
Most respondents (77,3%) report private traffic as the main cause of air pollution in the district. Traffic is indicated among the main causes of noise pollution (91% of respondents). About one out of five of respondents (21,7%, 44 cases) knows the LIFE MONZA project; those who claimed to know it, declare that the project is "little" sufficient or "rather" sufficient to improve the life quality. 38,1% of respondents believe that the project will have a significant impact on noise pollution, only 11,6% of them present this opinion in relation to the quality of public transport.

Post-test highlights

9. Post-test respondents

The post-test involved 148 respondents, 25,9% of the cases expected by sampling plan. As in the pre-test, the reasons for this failure can be attributed to the limits of the postal survey methodology, and to the "sensitivity" of some questionnaire items about health and life quality, which prevented the compilation success.

Gender, spatial collocation and age



Like the pre-test, the variable "gender" doesn't seem to have influenced the propensity to participate in the research, even if there is a slight prevalence of female respondents (55%) and over 60 (36,8%).

Unlike the pre-test, not all types expected in the sampling plan have been achieved. There are missing values of young males under 35 and who have a residence within 30 mt from Viale Libertà. There are few answers to the questionnaire even for respondents with a spatial collocation over 30 mt from Libertà avenue.

Post-test respondents					
Gender	Spatial collocation	Age			Total
		18-35	36-60	61-80	
Female	Within 30 mt	5	7	5	17
	Over 30 mt	11	31	22	64
Male	Within 30 mt		5	7	12
	Over 30 mt	6	20	29	55
Total		22	63	63	148

Region of origin

In the post-test, all respondents have the Italian citizenship (148), only one respondent has double nationality (italian and polish) and 3 others were born in a foreign country (2%).

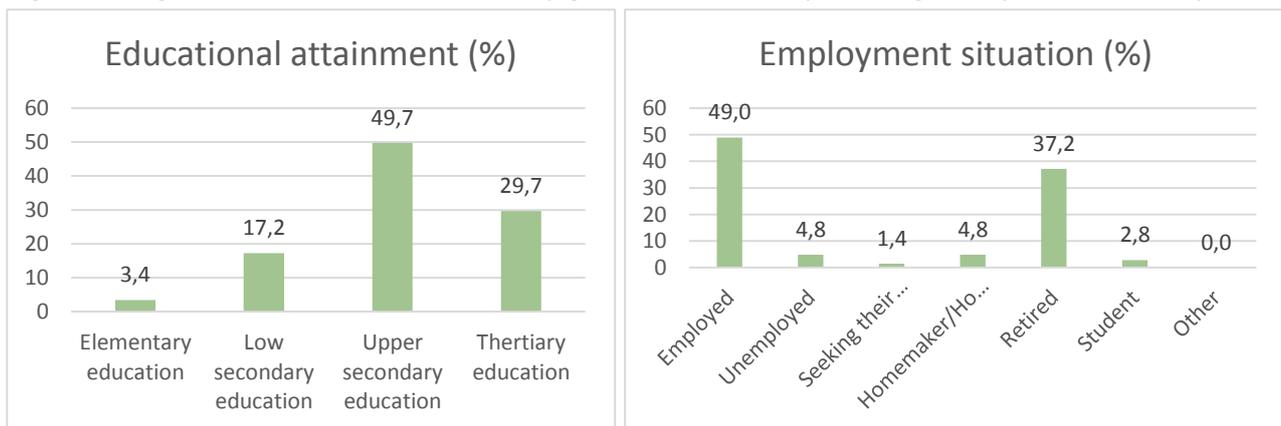
62,2% of respondents were born in Lombardia, a slight decrease compared to the pre-test (74,6%), with almost 40% of births in the province of Monza and Brianza (44% at the pre-test).

53 respondents, however, were born in other regions, especially in the South (Puglia, Campania, Sicilia and Calabria in particular), or in other provinces (almost 15% of the respondents were born in the province of Milano)



Educational qualifications and employment situation

Among the most relevant characteristics for the analysis of opinions and attitudes, about the perception of the life quality, there are those related to socio-cultural status. The sample has a significant incidence of high school graduates (49,7%) and university graduates (29,7%), percentages very similar at the pre-test.



The sample includes mainly employed (49%, in the pre-test they were 48,6%) and retired (37,2% against 34,9% in the pre-test), a slightly increase compared to pre-test.

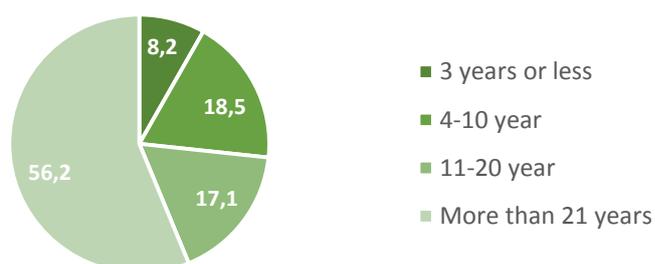
10. Home and district at the post-test

As in the pre-test, also in the post-test about a quarter of the respondents (23%) lives in houses facing Libertà avenue, but 71,6% of them live within 100 mt from the avenue, while almost one in five lives within 30 mt from Libertà avenue.

More than half of the cases have been living in the same house for more than 20 years (56,2%), only 8,2% for less than three years. Even the sample of the post-test is therefore composed mainly of citizens who have been living in the district for many years.

Compared to the characteristics of the house, 28,4% of respondents in post-test report the presence of acoustic insulation measures, the same percentage registered in the pre-test. Only 7,5% live on the ground floor,

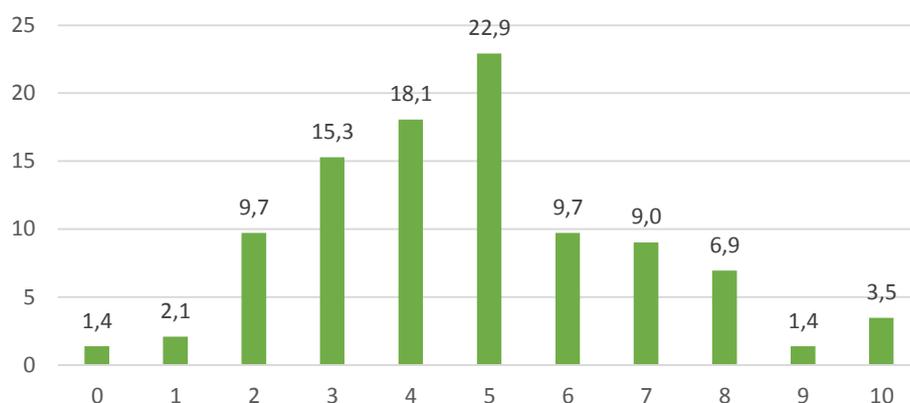
How many years have you been living in this house? (%)



19,2% on the first floor, while approximately 22,6% live on the 5° floor or higher floors.

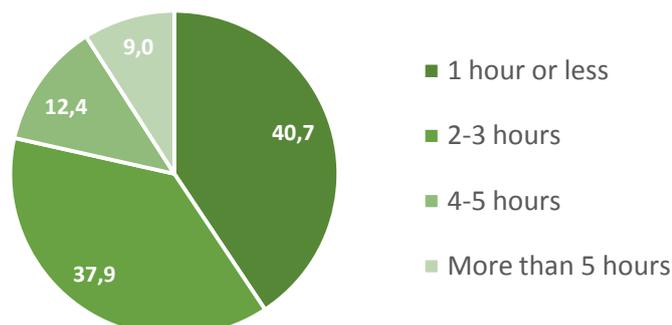
Post-test respondents spend less time at house. Only 10,8% spend more than 16 hours inside their home, while 41,8% spend no more than 8 hours there.

Assessment about home exposure to noise (%)

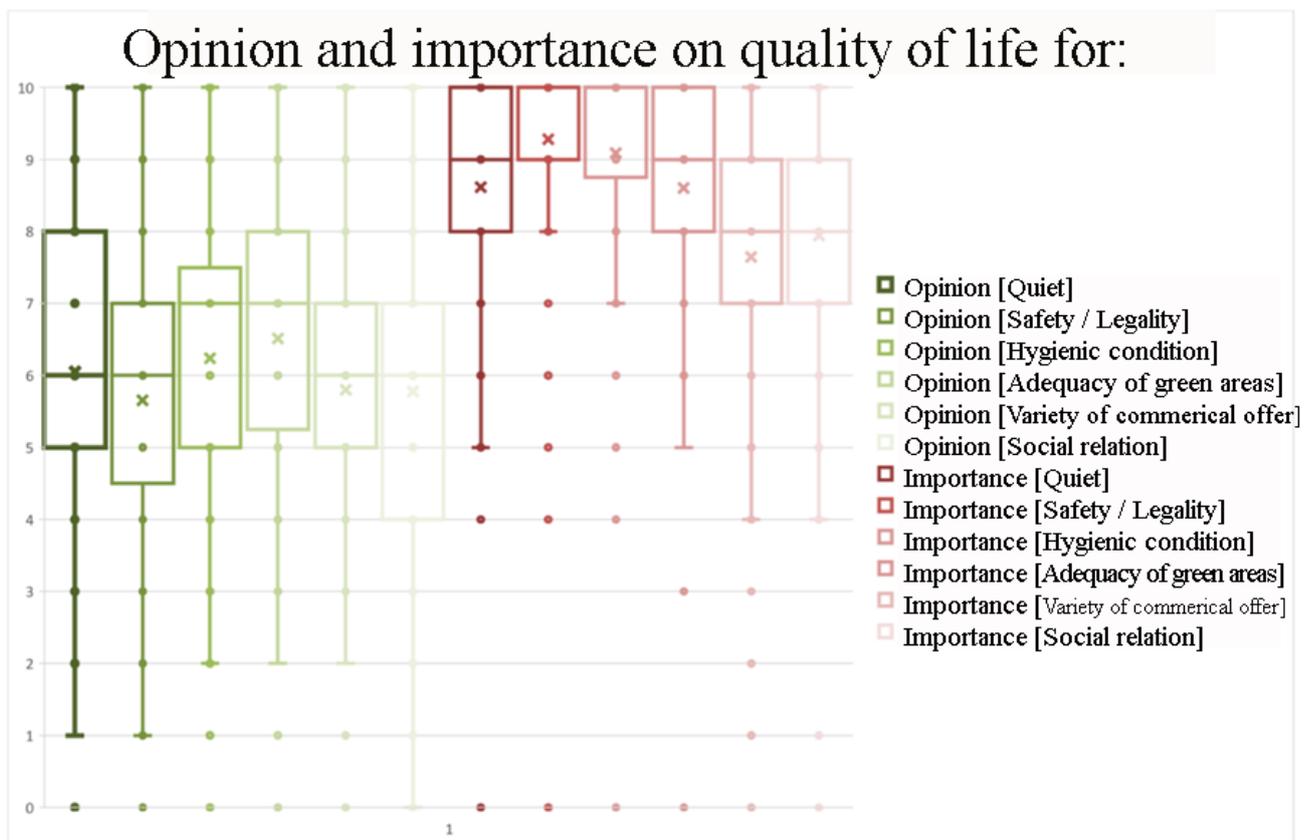


The assessment of home exposure to noise is quite varied, however, presenting an asymmetrical distribution towards high scores. In almost 70% of the cases, the score assigned to the noise perceived by the apartment was less than or equal to 5 points out of 10.

Average of hours spent away from home, within the district (%)



Most of the respondents live outside the home for no more than three hours a day (74,3% overall), 41,9% for no more than one. All values are substantially similar to those registered in the pre-test. The judgments on the life quality in the district have right-skewed distribution (i.e. higher frequencies for high scores than for low ones). Even in the post-test, “safety” and “legality” represent the least appreciated aspects, with a higher frequency of low scores. “Hygienic conditions”, “social relations” and the ‘quiet level” are the aspects with the scores concentrated between 4 and 8. The “variety of the commercial offer” and the “green areas” have higher but also less uniform scores.



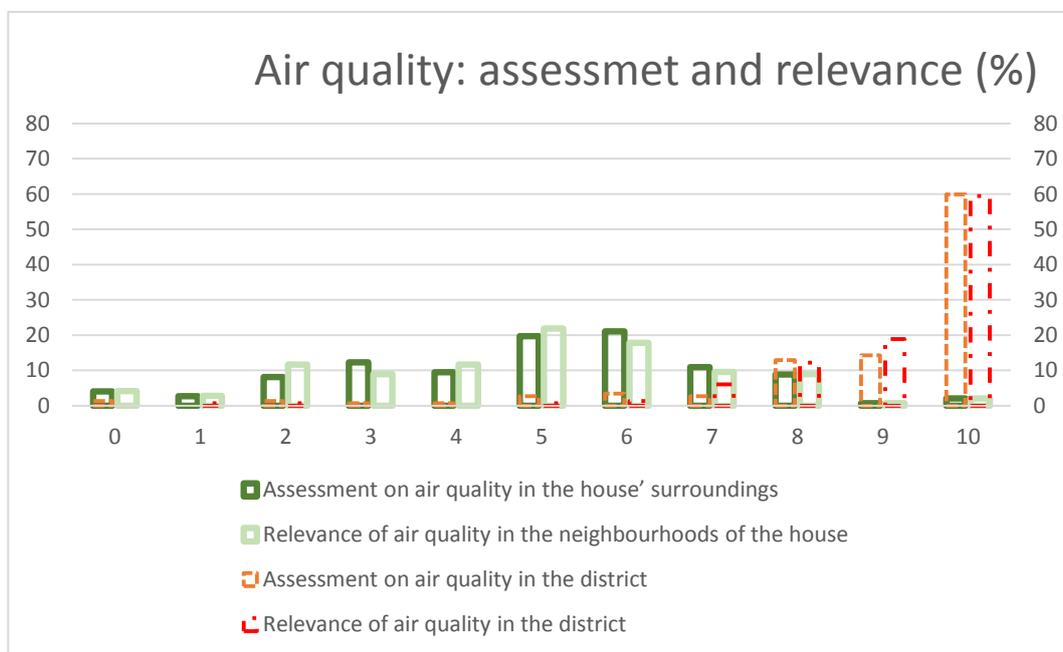
Considering the values of both indices, the life quality is superior for respondents who live over 30 mt from the avenue. In relation to index S1, the differences between the two groups are not statistically significant (see note 12); however, they are significant if we refer to the weighted index (S2), but only at the level of 0,10 (and not to the level of 0,05).

ANOVA – Quality of life indices in the district by distance from Libertà avenue			
Distance from <i>Libertà avenue</i>		Quality of life index in the district (S1)	Weighted index of quality of life in the district (S2)
Within 30 mt	Mean	5.6690	5,6075
	N	29	26
	St. Dev.	1,80238	1,87586
Over 30 mt	Mean	6,1000	6,2063
	N	117	114
	St. Dev.	1,45477	1,35694
Total	Mean	6,0144	6,0951
	N	146	140
	St. Dev.	1,53303	1,47796
ANOVA	F	1,848	3,538
	Sig.	,196	,062



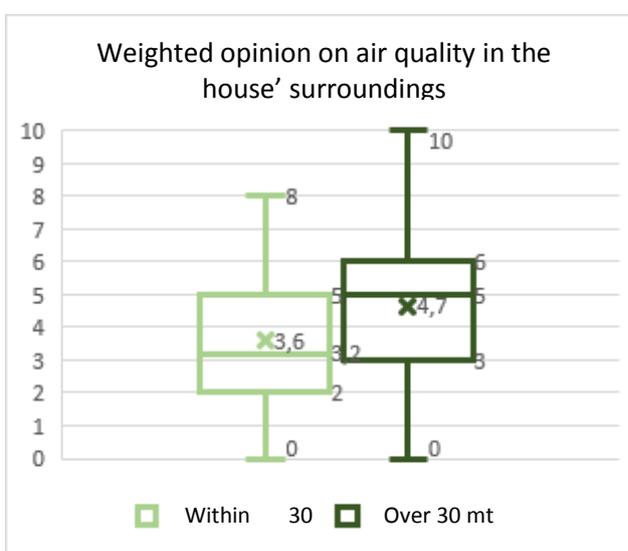
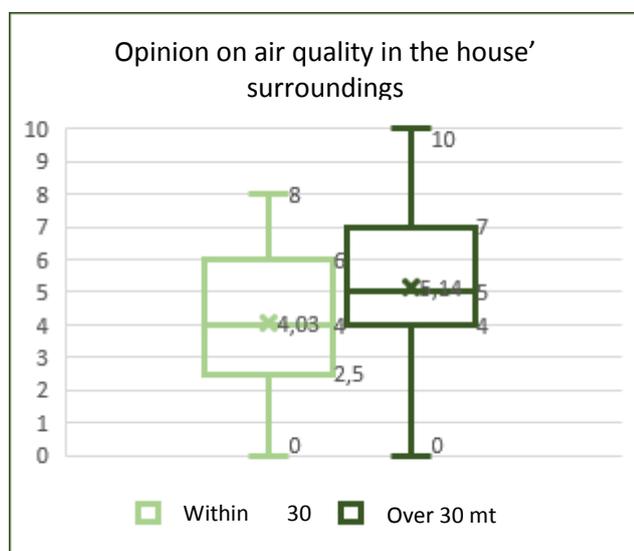
11. Pollution and quality of life at post-test

As in the pre-test, the judgments expressed on the “air quality in the district” and “air quality nearby the house” have a higher incidence for the scores around 5, even if those referring to the surrounding

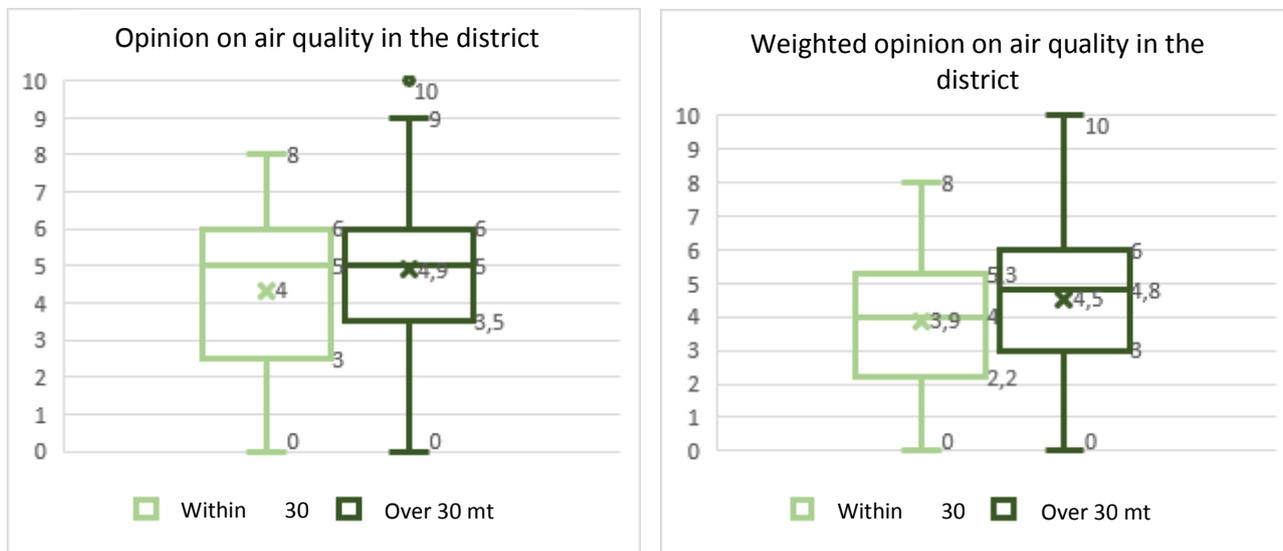


areas the house are slightly higher. The importance assigned to air quality is rather high in both cases, however it is more felt if it refers in the surrounding areas of the house (with the highest percentage of scores equal to 10) than to the district in general (with the largest percentage of scores assigned equal to 9).

Also in the post-test, the judgment on the air quality in the surrounding areas of the house highlights the differences between the respondents with housing within 30 mt from Libertà avenue and those who live at a greater distance: the closest residents to Libertà avenue express judgments of inferior quality. This result is confirmed both cases looking at the absolute value of the opinion expressed, and comparing this value to the importance assigned by the same respondent to the aspect assessed.



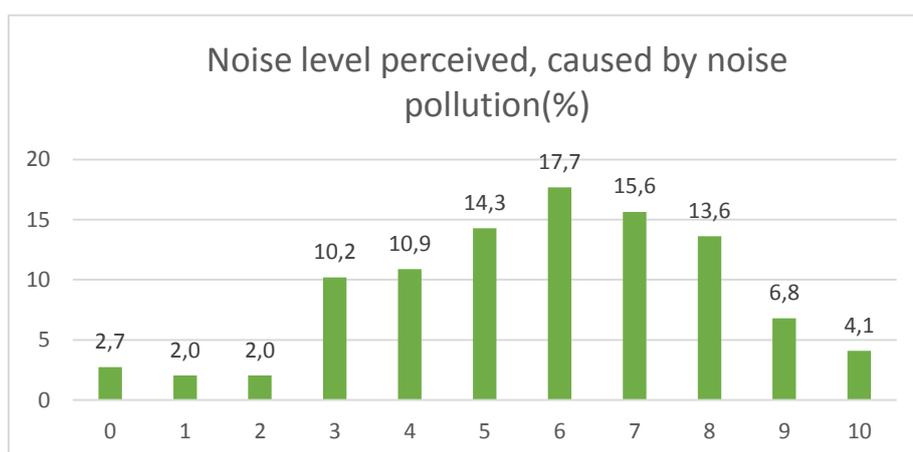
Also for the air quality in the whole neighbourhood, even at the post-test the difference between the two groups is less consistent.



54,5% of the sample feel "fairly informed" on the problems of air pollution, growing compared to the pre-test (51,2%). 6,2% feel "very informed"; 7.6% feel "not informed".

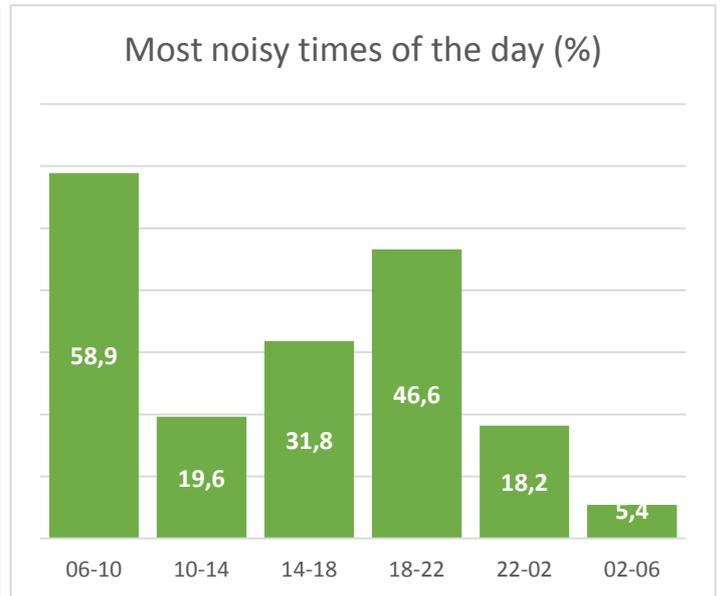
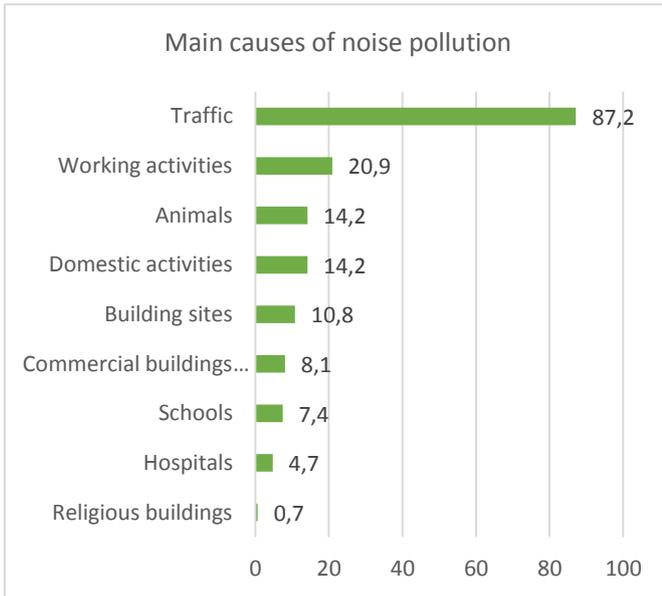
The primary source of information is the television (64,9%), followed by internet (61,5%). To learn out about environmental issues, respondents read newspapers (37,8%); listen to the radio (29,1%); participate in environmental associations (10,8%); and read the periodicals (9,5%). Specialized magazines (6,8%) and the school (6,1%) are residual sources. Only 2 respondents (1,4%) declare that they have not source of information on the issue.

Respondents were asked to express the level of discomfort caused by noise pollution on a scale from zero (absent) to 10 (strong). As can be seen from the graph, the curve outlined by the 11 items seems shifted to the left compared to a normal curve. Most respondents



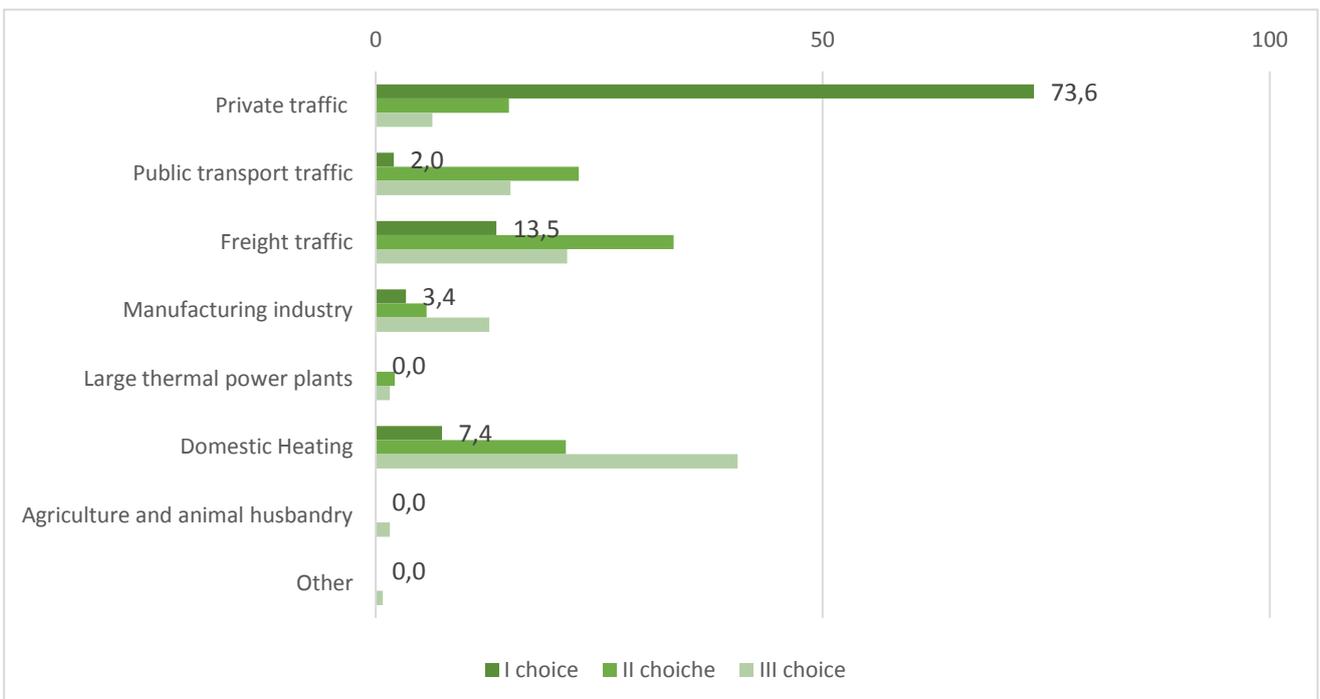
position on gradients 5, 6, 7 and 8 which together collect 61,2% of the answers.

According to respondents, the main cause of noise pollution is the traffic (indicated by 87,2%) followed by work activities (20,9%) and then animals and domestic activities, each indicated by 14,2% of respondents.



The times of the day when the noise discomfort in the district is greater are morning (06-10) and evening (18-22) hours.

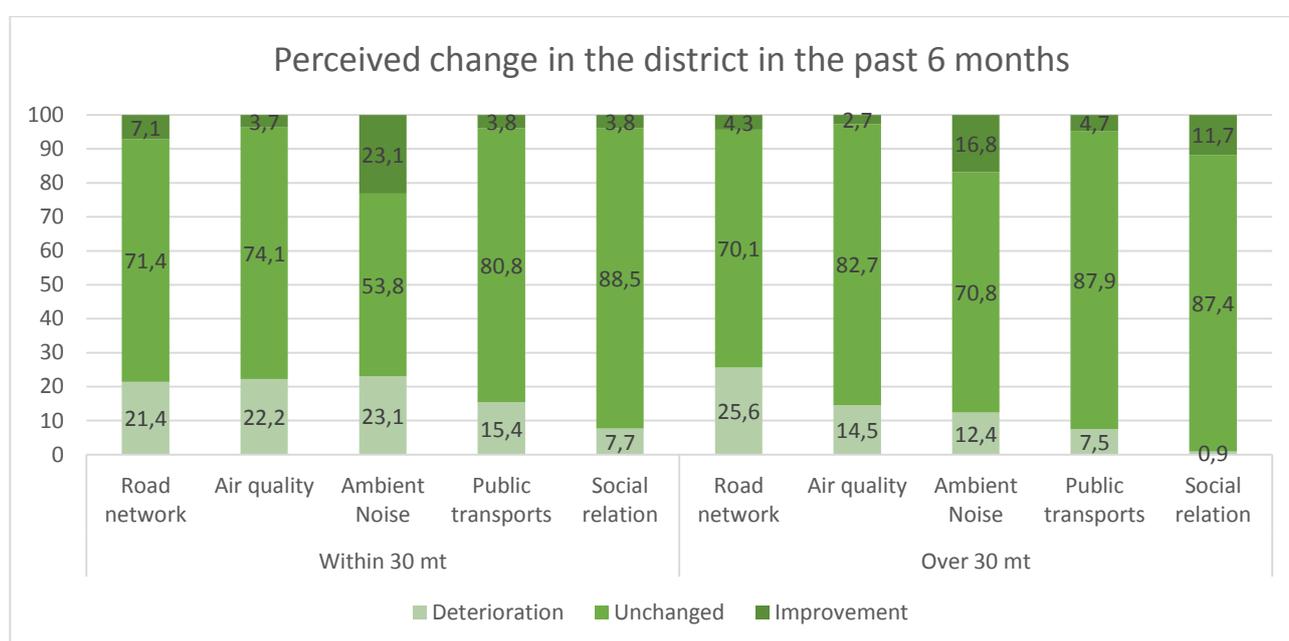
As causes of air pollution in the Libertà avenue, 73,6% indicates the private traffic as the primary cause.



12. The perceived change in the post-test questionnaire

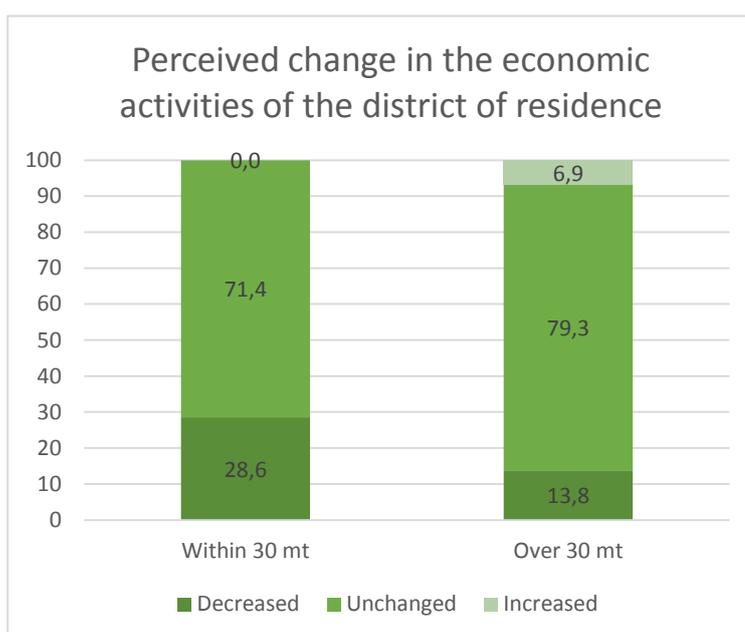
In relation to the pre-test, further 3 questions were included in the post-test in order to observe the subjective perception of the change occurred in the district about some fundamental aspects related to a good life quality (viability, air quality, noise pollution, public transport and social relations).

Analysing the responses about change in the last 6 months, we note that for both groups (within and over 30 mt from Libertà district) the situation is unchanged. Residents who live within 30 mt of Libertà district report a reduction in the noise pollution. This improvement is an indicator of impact of the "Noise Low Emission Zone".



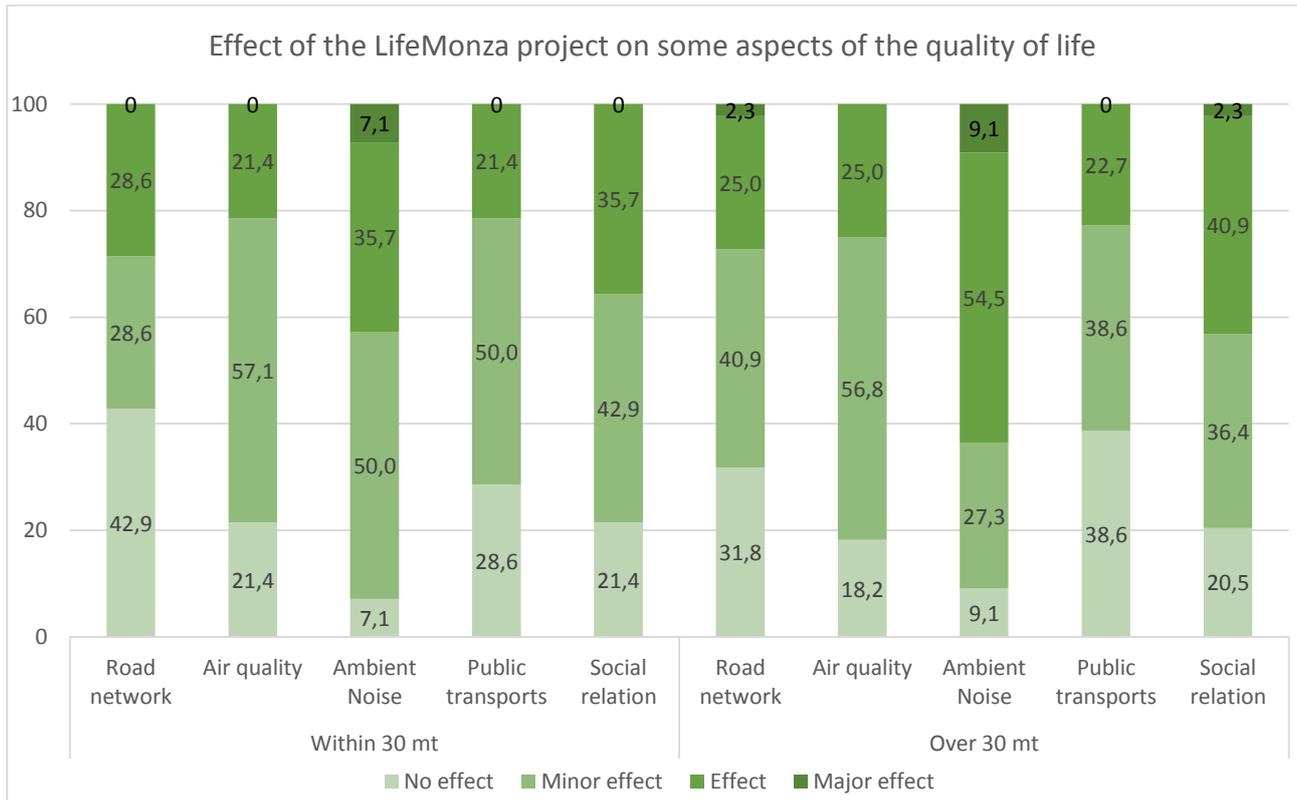
Regarding to the commercial and economic activities of the district, respondents who live within 30 mt of Libertà avenue declared that the number of commercial activities is decreased.

To the people who declared that they know the "Life Monza" project, a question was also asked to evaluate the influence of the interventions on some aspects of the life quality. 58 people declared they know the project (39,2% of the total in the post-test), 14 of them live in the redevelopment works area (within 30 meters from Viale Libertà) while 44 live over 30 mt from



Libertà avenue.

In general, in both groups is reported a reduction of the noise pollution. The other aspects received negative evaluations (public transport and in general viability). With the non-pedestrianization of Libertà avenue, the project was unable to affect positively the traffic reorganization in the target area.



The quality of life in the district before and after the intervention (x)

This final paragraph compares the data of the pre-test and post-test surveys, after the interventions of the project “Life Monza”. The main target is to evaluate the change after the redevelopment operations, and to verify whether it has generated an improvement in the life quality of the district. The outcomes of the life quality indices in the district (S1, simple index; S2, weighted index) will be compared in the two pre-test (T1) and post-test (T2) collection times and for the different groups: experimental (EG) and control (CG). We specify that, according to the sampling plan, the EG and the CG are part of the same population¹³ sampled in two different times: before the interventions (the CG) and after the interventions (the EG) for the redevelopment of the district.

In order to carry out this type of analysis it is necessary to relate the quality of life index scores (S1 and S2) detected in both observation moments (T1 and T2).

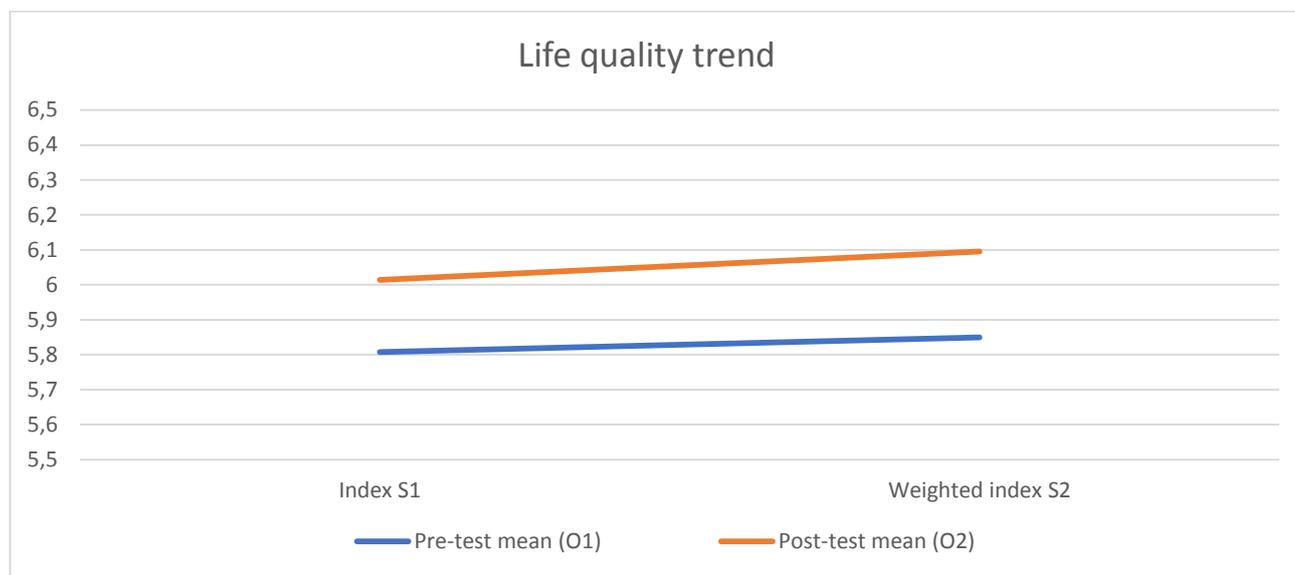
It's useful to refer to the Analysis of Variance (see note 12) which allows us to test whether the change in the perception of the life quality, observed for the two groups in the two different times (before and after the interventions), is statistically different. The post-test survey expected to show that the life quality perceived by the respondents, following the redevelopment interventions, is statistically higher than the life quality before the interventions.

The table below shows (observing both the S1 and S2 indexes) the increase of the percentage of the perceived life quality. The S1 index goes from an average value of 5,80 tenths to one of 6,01 (+0.21); while the weighted index (S2) increase is 0,26 tenths, since it goes from an average value of 5,85 (pre-test) to one of 6,1 (post-test).

ANOVA – Quality of life indices in the district by distance from Libertà avenue			
Observation		Quality of life index in the district (S1)	Weighted index of quality of life in the district (S2)
Pre-test	Mean	5,8075	5,8493
	N	170	152
	St. Dev.	1,45505	1,45956
Post-test	Mean	6.0144	6,0951
	N	146	140
	St. Dev.	1,53303	1,47796
Total	Mean	5,9031	5,9671
	N	316	292
	St. Dev.	1,49277	1,47103
ANOVA	F	1,510	2,042
	Sig.	,220	,154

¹³ This research design is called “Matching Through Cohort Controls” (Shadish, Cook e Campbell, 2002)

Although we observe increases in the perceived life quality in the district, these data are not statistically significant. This could be an effect determined by various factors, such as the reduction in the number of interventions expected by the “Life Monza” project, due some organizational reasons, or the change of municipal administration.



The table below shows the scores recorded during both the pre-test and post-test for the items used in the data processing of the synthetic indexes (d.20) and some items relating to noise pollution and the judgment on air quality (d.18, d.23, d.25, d.30).

	Pre-test	Post-test
18. Home exposure to noise	4,8	4,8
20. Opinion on the quality of live in the Libertà district: Quiet	5,8	6,1
20. Opinion on the quality of live in the Libertà district: Safety/Legality	5,3	5,7
20. Opinion on the quality of live in the Libertà district: Hygienic condition	6,0	6,2
20. Opinion on the quality of live in the Libertà district: Adequacy of green areas	6,0	6,5
20. Opinion on the quality of live in the Libertà district: Variety of commercial offer	6,0	5,8
20. Opinion on the quality of live in the Libertà district: Social relations	5,9	5,8
23. Opinion on the quality of live in the surrounding of the house	4,6	4,9
25. Opinion on the quality of live in the district	4,4	4,8
30. Perceived personal nuisance caused by noise pollution in the area of residence	5,5	5,8

Semi-structured interviews to qualified witnesses

Introduction

The semi-structured interviews¹⁴ were realized to some local qualified witnesses (i.e. *key informants*)¹⁵, and it was mostly focused on social and economical effects resulting from action taken in Libertà neighborhood, in order to increase the information from the diachronic sample survey – both in terms of motivation and deepening of the trends arising from the quantitative analysis of the data, and in order to acquire knowledge on aspects not found in the questionnaires.

The actors to be involved were identified as “significant” or “representative” in order to the issues considered, belonging to the socioeconomic and cultural structure of the neighborhood or, if “out of neighborhood”, provided with information, skills or experiences concerning it, able to ensure relevant responses to the different constituent aspects of local social dimension of the issues related to the actions of the LIFE Project “MONZA”. According to this approach, including the findings of a rapid survey carried out in the local press and “social media” and the conversations with both the Contact person of the Municipality for the Project and the coordinator of the Civic Center “Liberthub”, who actively collaborated in the organization of the meetings, a number of people that can be attributed to the following three main categories were selected and interviewed:

- 1) Local witnesses of **civil society**: citizens' associations, religious organizations, teachers, local press journalists, ordinary citizens directly concerned or experienced (12 interviews);
- 2) Local **Public Administration** witnesses: local administrators, environment and mobility official experts (2 interviews);
- 3) **Local economic operators**: real estate agencies, traders, pharmacists (5 interviews).

The interviews were taken between May 13 and June 11 2019, the most of them at the Civic Centre, the others at the interviewees' place of business (offices and shops), “face to face”, using a recorder. In order to facilitate the comparison between representations and arguments put forward by witnesses on the various issues they are involved in, it was decided to “semi-structuring” the interviewing process while maintaining the necessary room for freedom and adherence to individual specificities, through a path containing the main questions to be addressed (knowledge of the LIFE project “MONZA” and its planned measures, which of them have proved to be positive, the interventions impact on traffic, air quality, noise,

¹⁴The “*semi-structured*” interview is meant to be a “qualitative” interview that can be both “guided” (a set list of issues is given) or “free” (the interviewed can talk freely on a given theme); *this is a guided one*. It is worth mentioning that discursively interview is meant to analyze social currencies through people’s feelings (Corbetta, 1999, p. 408).

¹⁵ About *Key informants* in social research see Dal Zotto (1988), pp.132-144.

neighborhood livability and commercial activities, the effects on real estate market, overall assessment of the project).

Records have been transcribed almost entirely, with minimal intervention on expressive forms aimed at the maximum safeguard of communication content (see **annex G**). Following a reading/rereading phase of the corpus the text thus obtained summary and classification of the arguments have been raised, according to a scheme designed to bring them back to the main focal points.

Main outcomes

1. Knowledge of the LIFE Project “MONZA”

Most respondents (15) **know “MONZA” LIFE Project**: in 11 cases it was evident the presence of a fairly thorough knowledge, while only partial information was found in the other 4; the three traders interviewed and the pharmacist, despite having noticed some changes in the neighborhood – were not aware of them before the interview.

2. Repave and noise pollution reduction

The action considered the more positive and that found the maximum consensus among respondents due to its effectiveness was that of **low-emissive asphalt repaving**, for 15 of them it led to a **significant reduction of traffic noise**. See the following examples:

“Repaving actually had some positive effects, as in the past people living in the buildings in front of the Civic Centre [place of the interview, *ed.*] always complaint; I have no longer heard complaints, [although] definitely cars pass in the same quantity” (**interview no. 1**).

“As far as noise is concerned a difference has been noticed” (**no.2**).

“As for the noise pollution in the neighborhood, I can say the intervention was performed to artwork; something is actually improved. It is wonderful, because the sound absorber has a significant function”; the same interviewee reports an unexpected effect, the rapid consumption of the stripes on the new asphalt: “At first the matter was that when the road marking on the crossings were made, I think there was an inconsistency between the material they used and sound absorption asphalt as it stuck to the tires, so when the tires passed over the stripes began to fade. As I talked with municipal contact person, indeed, I think a proper solution was found as this lack was replenished” (**no.4**).

Interviewed **no. 5**, on the material that dampened noise points out that this was an **excellent action**; asked if she perceived less noise, answers “Exact. On summer you have to keep your windows open; if you don’t have air conditioner, this is really uncomfortable; it was a good match for the noise. Otherwise the situation is unchanged”.

“I can tell you that it is clear that flooring softens the noise. There was less noise from vehicles on the road” **(no.6)**.

“Among the actions undertaken, the most important was the repaving with low-emissive materials” **(no.7)**.

“Some people living right on the Libertà avenue told me that the new asphalt reduced the noise and, even if the traffic is still heavy, noise has been definitely lightened” **(no.8)**.

“The repaving was very exciting due to the immediate effect that anyone perceived as remarkable, as the noise reduction was so impressive that even those who didn’t know it asked why there was more silence [...] I am used to take my son to school and in my mind, even if I had never thought about it until I got there, the prevailing noise was the driveway; after the repaving, for the first time I can hear the noise of the inner way; people who have been living in those buildings, and who are in the Council told me that noise strongly decreased since the new sound absorbing asphalt took place, this is great..... This project has had a lot to do with this, it has been really remarkable” **(no.9)**.

“The findings and measures showed the **repaving gave a very tangible contribution indeed**, there is always a sum of effects that affects the accurate measurement we make, when we detect a noise or traffic measure, even when we go to do the blood tests we detect values that are altered or different from the standard than we expected because we have a history, we have baseline values like in blood tests. If we find any different, altered values, we can easily trace back this variation - based on our experience - to an external action; this is the case we are speaking about, because it is clear that having made this kind of intervention we expected a decrease of the acoustic impact, we have measured it and it is perfectly reasonable to assume that there is a direct cause-and-effect relationship between intervention and measurement; therefore I wouldn’t doubt this has been positive, despite some small problems in the phase of paving and above horizontal signs endurance” **(n.11)**.

“Well, as I said just before we can’t experience so much the benefit of repaving because we live in the inner part, but we are in touch with friends who live right in front of Libertà avenue, they noticed that **the noise feels much more attenuated**; it means that it works, the repaving is effective” **(no.13)**.

“It’s indisputable that the repaving brought a benefit as far as noise is concerned, this was perceived immediately, since the day after the roadworks were completed; **tire rolling now has a reduced impact**, you feel the engine, indeed it is even more dangerous when hybrid cars overcome, as they are soundless...” **(no.14)**.

“We clearly noticed **less noise**, even when it rains... in short, I don’t know how to say, it sprays less water from the ground. ... as for traffic it is the same; it’s a big difference!” **(no.15)**.

“I know a neighborhood redevelopment action: the renovation of road surface to reduce both air and noise pollution, right? I must say that you **can hear the difference in terms of noise**. I can’t say if air pollution decreased, but as far as noise pollution is concerned it actually did. I’m sure of that because I always keep the door of my store open, and so I can feel it” **(no.17)**.

“Let’s say the clear perception of the majority about the project, is: “They repaved with sound absorbing asphalt, so this must be Life Monza project to reduce noise pollution and make the neighborhood more

comfortable. A well defined suitable neighborhood was chosen; everybody noticed the repaving. Noise reduction had no need to be tested; I remember in these weeks some people drove down the avenue with open windows, posting on Facebook: “I’m going through the road, it’s pretty quiet!” ... so did I. I remember that the city council ex-member Mr. Confalonieri said: “this neighborhood was sorted as it has a well circumscribed perimeter, so let’s say that it was quite suitable for this kind of project, obviously - if a route crosses it all - people who live right on the route will feel loud noise, if you do not intervene on it. Everyone noticed the repaving of Libertà avenue. The lowering of the noise was perceived almost without needing to measure it, I mean that I remember that in those weeks there were people passing by with the car window down and someone posted on Facebook “I’m passing now, feel what a silence!” which I did too. **The lowering of the noise was macroscopically audible**, it was also nice to see the new smooth asphalt, it made a really nice effect. The intervention was made by night, so the discomfort lasted only a few days” (no.18).

“Another benefit is definitely getting an important route redeveloped; this is a not secondary issue because it also helps ordinary people to understand that very challenging objectives can be accompanied by concrete actions, and provide immediate benefit. As for the more ambitious target, the concrete perception of a lower emission and the containment of the noise pollution we have the first testimonies; we wish they weren’t only suggestions, at the moment. When the hot season comes there will be open windows, the vitality of the neighborhood will increase even as the use of the space, so we’ll be able to collect more witnesses and get an average; first feedback shows an improvement” (no.19).

A more cautious witness noticed some changes about the noise only in the early days (no.3), then he probably accustomed to the new standard.

Three witnesses **didn’t feel any changes in this context**. One of them says “I didn’t pay attention, there’s still a lot of noise” he didn’t feel the difference also because “here inside there’s always a lot of noise, as we have a machinery inside” (no.7).

“I can’t take a position about noise, because I live in Correggio street, that lies towards the ring road (...) neither about noise quality, as I don’t live in this area. Where me and my in-laws live, near the ring-roads, we can feel nocturnal noise and, most of all, we can feel background noise. I live in a very quiet area, my condo is really green and quiet, although I feel a strange background noise in the nighttime, far and heavy, I don’t understand if it comes from the ring-road. In the summer I have to sleep with ear plugs. I’m sure my daughters made me more sensitive about noise perception by night, it is annoying and it’s not easy to understand where it comes from. Not only Libertà avenue, all the area is strongly urbanized and busy” (no.12).

One witness, even if attending the area, didn’t realized any changes: “I can’t say, I don’t live in Libertà avenue but in an inner street. My parents’ house faces Libertà avenue, on the internal side, we were never affected by noise, so I can’t say anything on this topic” (no.10)

3. Pedibus

Despite some delays and difficulties **Pedibus** was finally launched; it is universally **appreciated and considered positive and effective** among all those who have stated they know it (11 people), especially because it **improves socialization of children and prevents air pollution**; read some feedback below:

“... I think it’s a good initiative (...) it is useful to both **pollution reduction and socialization**; when I go to school I’m not alone, I’m with my mates, doing physical activities and learning about road safety education, for example I learn to look around before crossing the street” **(no.1)**.

“We proceeded with Pedibus till the end of school, it should be a part of the educational offer. As it is a part of Life Monza project we are introducing it in some schools of this area. It doesn’t need to be a part of Life Monza. Pedibus will allow to reduce car quantity, and let children socialize. It’s been an interesting initiative” **(no.2)**.

“We joined Pedibus, **I think it’s really great, children love it**. It needs a little more time for their parents to be involved, either” **(no.4)**.

“Pedibus started late; thanks to Christian, who’s a smart guy, it worked well from the beginning but it has been a little hard. First group started 3 weeks ago, with the help of other principals we are spreading it in other schools in Monza” **(no.6)**.

“I was made aware of it because we spoke a lot about it in the State Council, other Councils in different neighborhoods took Pedibus as an example and imitated it (...) **it had a positive domino effect** (...) it was very much perceived by the parents, some volunteers were searched (...) it can become a good practice when it comes into everyday life (...) Pedibus is a good start, it can improve quality of life” **(no.8)**.

“(Pedibus) involved middle and primary schools, we started with these schools since they are located in the Life Project area. We activated three paths, one is working, the other two don’t have enough participants, at this stage. Next year I think they’ll be ready, too (...) when they see other children they emulate them”. The interviewed also speaks about some problems still affecting the initiative: “The principal doesn’t support us properly, we had lot of delays; he is too bureaucratic, he doesn’t want any responsibility related to parents insurance, so we can rely only on volunteers as they have a Municipal insurance; we started with 8 kids, now they are 11, they like it because they like to be together” **(no.9)**.

“Associations, volunteers and parents **were very interested in this issue**; there were some difficulties related to the insurance; **now we activated two out of three paths**, and we even have the spin-off of two schools that are part of Rodari Institute, they are Raiberti school and Rubinovich school, the parents heard about this initiative and decided to adopt it, as we hoped; we didn’t look for them, they looked for us in their own way and we gave our technical contribution on the basis of our experiences in Rodari school; this is a sign of a strong sensitivity on this topic which persuaded us that this model is the right one, as it is not on paid service like the cafeteria or whatever, but it is volunteer based” **(no.11)**

Among positive actions: “(There is) **Pedibus for sure**, although I guess many parents would walk the children on foot anyway, even the environmental impact of driving kids a short distance can be compared

to the one of a truck. However I think that taking children to school on foot is a good practice. As long as I could afford it I did it myself” (no.12).

“Pedibus started with some children, it would have been nice to realize three paths; there’s only one at the moment, due to problems related to parents’ insurance. Maybe there was a misunderstanding since the presentation of Pedibus in Rodari school, almost all of them supported it. Unfortunately they didn’t understand well how it works as they thought the children would have been picked up at home; this is definitely wrong, as Pedibus works like a bus line, with some stops the children must be accompanied to by their parents; all in all the matter is people need to be trained to understand the best for the children is to go together. I’m confident, there are also other schools involved. It will take time to get it” (no.13).

“... and then there is Pedibus that started some months ago, I know some of the volunteers and they told me this is a totally voluntary based initiative, low cost” (no.18).

“It’s a few years Pedibus is activated, it has been developed relying on parents or volunteers. Life Monza project gave us the chance to highlight this experiment in the neighborhood, thanks to many volunteers it can actually become a real everyday solution to the mobility issues in the neighborhood and in many areas of the city, and it also is an answer for the families to the doubts on home-school and viceversa transfers. There is the chance to improve the cheapest and healthiest mobility, this is perhaps the easier and the less obvious aspect, considering that every day we see lot of cars and the race to park as near as possible to the school, as if it was wrong for kids to go walking for hundreds meters” (no.19).

4. Guarded pedestrian crossings

Frequently there has been praise for guarded pedestrian crossings, that **improved social relationships and livability in the neighborhood** by increasing pedestrian safeness, as reported below:

“It’s a very dangerous avenue, so guarded pedestrian crossings are welcome” (no.1).

“These pedestrian crossings are amazing, people crossing don’t need to stop in the middle of the road as they have a safety corridor. Someone says it’s a little bit uncomfortable, the matter is it will take some time to make people aware of this” (no.4).

“The two pedestrian crossings had a **strong impact on the neighborhood life**, we thought they were Life Monza project, but they weren’t” (no.9).

“Guarded pedestrian crossings **connected both sides of Libertà avenue**. The crossing at the height of the Civic Centre, for example, allows to walk from one side of the avenue to the other; if it was a unique straight crossing it would make lot of weak people feeling unsafe” (no.11).

“Maybe that new crossings helped, because I know there were a lot of car crashes in last years, but probably this has nothing to do with Monza Life project. Citizens asked for safer crossings, able to slow down the traffic”. (no.12)

“We think the neighborhood is split in two parts (Libertà avenue is like a “blade”; when they started the repaving they also made the pedestrian crossing, that was actually an enhancement, [some kind of

overcoming of the community breakup]; someone complains about traffic island in the middle, as it reduces the roadside, so they can't overcome. It's sure now it's possible to move through Libertà avenue more easily and more safely than before." (no.14)

"The crossing made with boundaries are useful both for pedestrians and for car drivers" (no.15)

"They are **very smart** and I think they are effective, drivers look at the crossing and stop, slow down even before the pedestrian is actually on the stripes; this one used to be a dangerous crossing, and a lot of car crashes occurred. They made them in two critical points since children cross to go to school here, one at the height of the Villino pizzeria the other one was made just in front of Civic Centre" (no.17).

"The two pedestrian crossings are linked to the participatory project budget that Monza put in field eight years ago, they were one of the most important requests; the crossings don't come out only thanks to the Life Monza project, however they have been properly included" (no.18).

"Making pedestrian crossings safe was also useful in rearranging habits" (no.19).

5. Heavy vehicles stop

Despite previous paragraph, most of the interviewed (13) stated that **the heavy vehicles stop was not effective at all**, especially due to lack of planned controls; out of 6: 4 witnesses **didn't comment**, 1 – who was not aware about Life Monza project - **noticed that trucks number decreased**; another one points out **the effectiveness of the limit, as the heavy vehicles traffic actually decreased**. As well as in the previous paragraphs parts of relevant answers are reported below.

"Despite of restrictions on heavy vehicles transit more than once it was necessary to file a formal complaint on social networks or in the press, to make aware the municipality about the need of traffic police" (no.1).

"Road signs are not enough to stop heavy vehicles, some controllers would be needed, as this is a part of the project. This is an action to be taken to uphold the law" (no.2).

"Sometimes I saw traffic police stop big trucks, but they go by anyway, despite the prohibitions; I don't know if truckers are fined. They are both foreigners and italian trucks" (no.3).

"The transit of heavy trucks still goes on, despite the ban. There's no prevention; there are road signs indeed, but they are ignored. I heard: "Monitoring is expensive" but I know we are funded by Europe for all the extra expences" (no.4).

"While I was walking to get to the Civic Centre I saw trucks on the road, the project aimed to reduce their transit by adopting a few hours stop. As this didn't happen, the issue was reported to neighborhood Council. We won't give up deploying any strategy in order to improving life quality in the neighborhood, as stated in the project" (no.6).

"We noticed the number of trucks is decreased" (no.7).

"An attempt to limit the heavy vehicles crossing along this road has been made, it didn't work as they keep on ignoring the road signs" (no.8).

“We were told that heavy vehicles traffic would have been limited, the matter is the 3,5 tons limit already exists, so we said the matter is to make it being observed. The limit concerns all trucks but the heavy load trucks; so - if 20 heavy load trucks go by - the problem still exists. The executive said also these permits were removed, but the ones already planned still work, so in the next year and half we will be noticing them. This action didn't work properly” (no.9).

“This is very critical issue, traffic police didn't check properly due of a crew shortage: it's not possible to place a traffic policeman to check any single truck. The prohibition would have been more effective if it had been observed, unfortunately this was hard to get” (no.11).

“Restricted traffic area was already signed, despite of this the trucks used to pass anyway. Some truckers park their vehicles right in the avenue, so they enter and go along the road, we can see them in the rush hour (no.13).

“We still had some troubles with trucks, as nobody made the restriction to be effective and it's also impossible to place a patrol to fine them (...) We did expect more surveillance, precise monitoring in terms of road signs, there is a roundabout so the vehicles have to turn on the left and pass away; heavy vehicles are responsible in terms of noise, danger and pollution” (no.14).

“To be honest I didn't pay any attention” (no.15).

“I wasn't aware of this” (no.17).

“In my opinion the monitoring of trucks transit nearby the crossings is critical; it was banned in January but it wasn't actually carried out; the neighborhood Council asked Mr. Casati and Mr. Lattuada for information about missing controls: they answered they were impossible to do; we read in a local magazine a statement of the Public works Councilor: “We can't afford them, they are too expensive”. The matter is as far as we know in the Council – a significant part of the 280.000 euros attributed to the municipality was meant for an accurate checking, not for spot check” (no.18).

“The control campaign launched by our local Police is lasting over time even though not on a permanent basis, by frequent measures taken in different times of the day and in different days, including holidays; it allowed us to give a sign of presence even in controls, that was sometimes useful to discontinue habits of some truckers who kept on using these roads despite the ban, as they knew a check would have been very improbable. Even the communication campaign who came with these measures was useful to modify habits and to find different paths on the supracommunal territory, as they are the ones truckers should drive through” (no.19).

6. Awareness-raising, information and involvement initiatives

Awareness-raising, information and involvement initiatives – supported by everyone in principles – were **barely visible** by a lot of witnesses. Some interviewed said they were aware about school's initiative, this was considered **positive but limited to the involved schools**; some others pointed out **the long lasting lack of information** and a **significant absence of involvement**, others remarked positivity of attempts and bottom-up intervention hypothesis as well as the need “of the **local administration greater effort**” (no.8); in the most optimistic case the positivity of “good practices spreading” was reported, as well as a new knowledge of neighborhood critical issues regarding part of the population (no. 19).

For an analytical feedback, see the selected passages below:

“The Municipality sent information, both when it started with one City Council and with the other, during the consultation the project is being explained, I don't know about the answer because the Civic Centre is not attended by all people, not everyone uses the Civic Center in the same way, so in my opinion a well-informed person is the one that is already used to be informed about the public and social life of Monza”.

The request I made was for **more information**. I think this was a little missing. My request is to have more information on the Project and how it will be carried out in the future" (no.2)

[about participatory events, besides those of Mapelli school] “No, honestly I remember nothing about this” (no.4)

“I came to know about the logo made by the students of Mapelli. An important element (...) [is] also the **lack of population involvement**. So, this last point is a serious matter, the other [the transit of heavy vehicles despite the ban] is serious but relatively severe. The problem of articulated trucks traffic is structural, I mean that they can be subject to STOP signs, whereas in terms of people involvement it was necessary to start a very interesting action, due to the following reason: in 2016 the municipal administration approved the regulation of the common goods and then created the civic Consults and Centre, so this is a missed opportunity to involve citizens in a better way. I note that the participation was not so large as expected, more publicity was needed, it was even necessary to better notify what was doing. Nobody was aware of operation's timing, neither in the Council nor in the neighborhood; there was a defective communication. I'm counting the handover between the old and the new administration, it means the issue is considered a common good and requires some efforts; the bottom up we talk about was not achieved; in my opinion this is the most important thing. As to the school's involvement the Mapelli Institute was requested for the logo. At that time I was not the principal anymore, I was made aware of this by a teacher. Mapelli is an Applied science high school, so there's no better opportunity to speak about this (...) it hasn't been publicized enough and there were no competent people to explain how the neighborhood is changing for the common good, even by adopting the actions requested to make the LIFE project effective: we are provided with the asphalt, with the machineries and with any other kind of stuff but the environment is also cultural background; definitely this approach was missing. A website was to be developed from the start of the project to share information and results: I haven't seen this website. Something more could have been done” (no.6).

“About planned measures: in my opinion there was a lack of involvement, we addressed this issue to the Council and **we would have appreciated a greater presence of the Municipality**; I can remember one, maybe two meetings with technicians since I am in charge. More detailed communication would be needed. The matter is to keep on raising people’s awareness, municipality technicians came only a couple of times; press articles are useful – even if I don’t know how many people actually read them – but the most effective solution would be staying here, telling everybody what’s going on; I know it’s a little hard to do this from Roma or Firenze, only Municipality could give a proper report ... It’s pretty easy to involve people here, Mapelli school made created a logo, as soon as someone kick-starts the others will follow, it is crucial to keep them watchful. I can suggest to maintain the website well highlighted, to take into account a proper backstage for more visible actions” **(no.8)**.

“For nearly two years we didn’t know anything more, however we didn’t worry so much; occasionally we saw control units for noise detection, then suddenly we were told about the repaving; we said: “Since the two last years you didn’t tell anything to us, now suddenly the works start, there isn’t any effective people’s involvement, it looked like it all had been already decided despite us... there was a long period of silence... (...) we have also slightly contested this: “You may have also made the right choices but you did not involve us ...” . (no.9)

[There were any involvement and participation opportunities? Did they have any effects?] “There were a few people at the presentation ... residents were not so many. There were people already involved in the Council or members of associations, all of them were already aware about the project and wanted to get a deeper knowledge of it”. [Not enough information neither participation?] “Only people that used to attend the Council knew this project; they asked: “Why there is this van outside, what is it for?” It detects air pollution or noise. It’s hard to get people involved: now we can use Facebook, we leaflet too, the problem is people don’t read flyers and, even if they use Facebook, the best would be to speak to them face to face” **(No.13)**.

[about initiatives to make people informed about the project] “We took part in this project because the Municipality aimed to sensitize resident students to make them a means of information. (...) There were many initiatives and massive awareness-raising actions involving whole classes, some trainers of the VIENROSE company - who collaborated with the Municipality to realize the project - came to our Institute and gave our students lessons on noise, acoustic impact and measures to reduce noise pollution; a general awareness involved a large part of the classes. With a smaller group we took part in a contest of ideas. The city wanted the boys to create a significant and representative logo: we participated and two students won this competition, so we also own the project logo” **(no.16)**.

“The night the works started we were taking part in a Council session, paradoxically the Council was not aware of. As far as the administration changed there has been a year of emptiness that regarded both undertaken initiatives and communication. During a year this Council I belong to as active citizen - did not know if and how the project was going on, we only saw from time to time the control unit. The participation unit par excellence, recognized during eight years of activity in the district, never received any information by the city, despite a series of official requests. About the educational issues, the school’s

involvement, the logo that was realized for school contest, especially the Mapelli... (...) In my opinion, it has to do with the communication gap. As a Monzese citizen, if it wasn't for my passion and my love for this neighborhood (...) if I was not born and still living here, I wouldn't have had any information on LIFE MONZA project by the Municipality, most of all after the change of administration" (no.18).

"The first benefit was to get a new awareness, therefore beyond a minority who actively participated in the project development, namely the classes and students of the neighborhood, there has been a large part of the neighborhood population that has become aware of a number of issues. Even the communication campaign that accompanied these measures, the fear to face an active road control, helped in changing some habits". [About an effective feedback in terms of sensitivity] : "We have had the opportunity to find it out in the Civic Centre, that is the core of social and cultural activities and initiatives (...) it has become a benchmark to both the dissemination of good practices and people who wanted to acquire information. As it is open every day it is also very busy; there's a small community of regular goers that has also participated in educational opportunities by guiding the boy's activities; they helped us to put up the posters. A critical mass was built up, that very often stimulates the debate; a series of seeds have been thrown : some of them have already given results, the majority will develop, perhaps more slowly" (no.19).

7. Impact of initiatives on traffic, air quality, neighborhood livability, economic activities and real estate values

As already partly implied in the previous paragraph on the lack of effectiveness of traffic limitation, conversations show the shared perception is that the situation is substantially **unchanged**. Several respondents highlighted the historical difficulties related to traffic and the need of more systemic actions than those that may come from the project, concerning the public transport system and travel alternatives, as well as the need for substantial changes in freight and people way transport. In this regard, a selection of responses is given below:

"The cars did not decrease at all, because to date this is the only road to reach the Centre from the outside and vice versa, bearing in mind that during rush hours drivers who have to reach Villasanta and Vimercate starting from Monza or Brianza do not use the Industry avenue, that is already congested; therefore the traffic here will never decrease, as this is the only entry and exit stretch of road. The problem is that in order not to let too many cars drive through there are not many solutions, in my opinion we need to change the mentality because public transport is poor, it doesn't allow to get to all working places, to go by bicycle is impossible as there are no cycle paths; you could increase them but the example is right near here: there is a large farmhouse just ahead of Esselunga market, the cycle path is interrupted so if someone wants to bike from the neighborhood to go shopping he can't go safely, and the traffic increases appreciably. Public transport gets delayed, there are often old vehicles that die on the road, and however if traffic is busy the bus gets stuck. This is a peripheral section, but at the same time it is not too far from the

centre, it is rather a peculiar situation, I do not see solutions at least for the next ten years, because even if you make underpasses or other, you simply increase the traffic, an excessive use of the car to make a few distance” **(no.1)**.

“As to the traffic it decreased a little, but to be fully operational other solutions are needed” **(no.2)**.

“Libertà avenue is just one of the arteries that go to clog towards downtown... there’s an underpass and there’s a problem there related to the timing of traffic light that creates a funnel effect, there’s no green wave, so you get stuck in traffic...” **(no.8)**

“As far as traffic is concerned, I don’t think it has undergone any significant changes as a result of the LIFE Monza Project, because there is no intervention in the Project that affected traffic. A slight traffic decrease might have occurred due to new authorizations block, but it is not clearly perceptible” **(no.9)**.

[on any possible changes in traffic]: “In rush hours definitely not. I have seen that the road system has also been changed from the side streets of the neighborhood, I probably think this makes sense just to relieve traffic, both from the point of view of safety and of traffic. Despite of this during rush hours traffic is congested” **(no.10)**.

“Nothing changed. Working on traffic issues is like playing chess, you should be able to predict the two or three next moves; in this case probably the theme is: there’s a heavy traffic crossing matter that should have been placed in terms of identifying the routes we allow heavy traffic to run and creating alternative paths; in a second time we will place some limitations, possibly redeveloping that stretch of road, declassifying and disqualifying it, making it part of a local road, a local area; this has not been done in these terms, so we suffer of this incomplete approach” **(no.11)**.

“In my opinion nothing has changed at all. In the rush hours it is still very hard to run Libertà avenue. I often have to go to my son in Meda - a little far from here - I go there to look after my niece and, I tell you the truth, if I leave at 7:30 – 8:00 am (...) It takes me longer to get to the end of Libertà avenue than to get to Meda from Monza (...) especially at schools getting out. When school are closed for holidays it’s very easy” **(n. 13)**.

“Nothing has changed about traffic” **(no.15)**.

“Absolutely not, there’s always heavy traffic. In the morning the queue is at least 25 mins” **(no.17)**

“In my opinion the improvement of traffic fluency is not so noticeable (...) in late 2017 a pedestrian traffic light has been activated beyond the bridge towards the center - outside the LIFE zone; when it turns to red, even if it is necessary for the pedestrian safety, it creates queues on the underpass, so it gets a little clogged” **(no.18)**.

Even as a result of the lack of local traffic reduction, all respondents felt that the **air quality** remained the same

Ten respondents commented the **neighborhood livability**, reporting a certain improvement.

One respondent pointed out that the neighborhood already had a good livability: “This neighborhood is provided with any kind of shops and services for all population groups; in my opinion it is excellent as to

pollution, noise and traffic”; the Life project has promoted “small improvements” mainly due to repaving, pedibus and pedestrian crossings, but the problem of pollution and traffic “cannot be fixed by a single project ... Much wider and long-term plans must be made” (see interview **No.1**).

The further people who gave an opinion on this topic confirm the positive contribution of the actions related to the livability improvement trend, in one case pointing out also the importance of “presence of monitoring units” that gives a positive sense of not being neglected (**no. 9**), in another case pointing out how the overcoming of the “barrier effect” improved social relations (**no.11**); further evidence, noticing in the actions of the project “a good start” for greater livability, highlights that the attempt to involve citizens on sustainability issues was positive:

“The attempt to involve both the community and reality of the neighborhood has been truly positive, although this target is always a little hard to get, so the fact that in the city there is an organization like the District Council is helpful, since not all municipalities can rely on this type of agency...” (**No. 8**)

According to the majority of respondents, virtually all those who spoke about this issue (13 people), the project’s impact did not affect local business. Someone says: “there’s a structured and historical neighborhood business that has not undergone changes” (**no. 8**), someone else notices the opening of new commercial activities that close after a short time, while the “historical” ones still go on (**no. 4**); there are those who point out that both local economic activities and employment were not affected by the undertaken actions (**no. 11**). There is only one case of a commercial operator who has noticed a slight decrease in activities during the last 8-10 months (**no.3**).

No significant effects were reported on the real estate market.

One subject reiterated that they are absent in relation to the LIFE Project, but he noted that in recent years the construction of new buildings has mildly improved the neighborhood's attractiveness for the real estate market (**no. 4**).

Two respondents, while stating that they could not comment on the actual impacts, considered that, at least theoretically, noise reduction could make it easier to buy houses previously considered too subject to noise pollution: “In theory there were properties overlooking this side, that in summer is so noisy that you think “I don’t buy the house, because either it faces toward inside or it’s too noisy”; nowadays if someone looks out he doesn’t hear all that noise anymore, ... it is very hard to verify if real estate value has changed; about the quality of life: if I have children, and I have to choose between two or three green neighborhoods I choose to live in the one where the Pedibus is already set; however let’s say that these are not fundamental levers ...” (**no. 9**).

“I know quite well this sector as I have relatives in my family who are involved in building design, so I know the quality standards of the current market and I can say with absolute certainty: yes! Because there is no doubt that just as the value of real estate increases in terms of energy sustainability (Class A buildings), also from the acoustic point of view, where already in the construction phase a series of interventions are put in

place, that contribute to the reduction of noise pollution. For this reason a district that lowers the level of noise emissions can only be more *attractive*" (**no.16**).

Finally, the owner of a local real estate agency says that, even if prices are unchanged, there was a decrease in sales time, due in any case to external factors and generally verifiable throughout the area of Monza:

"We came out from a difficult decade. At this time the real estate market has reached a high level as to number of trades. This would make me think that increasing demand and supply prices are higher, but no. Let's say that, like all the rest of the market, the sales time has shortened. It makes me think of an improvement, also in the area of Monza" (**no. 10**).

8. Overall judgement

The overall judgement on the Project "MONZA" is **generally positive** (in a range from "moderately positive" to "excellent"), but in many cases it is accompanied by clarifications and critical reports. It is often characterized by phrases like "useful but not sufficient interventions" (**no.2**), "positive, well studied (...), perhaps optimistic in the sense that there are things here to be solved, that would require (...) structural interventions" at local level (for example, at the level of public transport) (**no. 12**), "excellent project, however it didn't develop all its potential" (**no. 9**).

It is to be noted that some interventions announced were not carried out, e.g. "Zone 30", "Bike sharing", "Biciplan", (see the interviews **no. 9**, **no. 13**, **no. 14**); one of the witnesses says that – until now - LIFE Monza project has revealed itself to be an incomplete puzzle" (interview **no. 6**). Here is an excerpt from the comments: "A bird in the hand is worth two in the bush" ---- So the judgment on repaving and pedestrian areas is fine, but asking two tiles to do a five-tiles puzzle is a little different; the puzzle is the LIFE project, and it's incomplete. I gave indications, the project is interesting. But if you do not spend money on this what are the European funds for? The problem is that more could have been done but it hasn't, so that's ok" (**no. 6**).

"We were made aware that Mr. Confalonieri [Councilor in the previous administration] had a vision of global intervention in the neighborhood; he didn't care about the label "Project LIFE", he knew that there were one bike lane, one Biciplan and one Zone 30, so in his mind there was the need to put one of them in the participatory budget, another one in the citizenship covenant, the last in the LIFE Project... when he left every project remained in his head, except those that already have started through individual call. LIFE Project tapped the crossings into there, as to the Zone 30 there was no money enough, probably the funds had already been allocated; as it is difficult to realize a bike lane, it was thought to make a part of Zone 30; the new administration considered a priority to spend the LIFE funds allocated for mobility to realize something else, automatically the bike lane and the Zone 30 were not made anymore; therefore - since it

was not financed by MONZA LIFE - it has fallen, and also citizens' expectations have fallen ... this repaving is nice but... it is the only thing we see" (no.9).

"From a certain point of view I could give a positive feedback, because some gains were achieved both in terms of noise and pedestrian crossing. It would have been great if traffic limitation was really effective. I don't know if this was part of LIFE Monza project; at the beginning there was talk about realizing one Zone 30, but it wasn't (...) Despite some small improvements it seems that the expected bigger advantages were not achieved: Pedibus project was a good thing... we hope it will go on" (no. 13).

"I am satisfied with the project because we often move from the parish to the civic center, so we perceive this improvement; in my opinion the lack of realization of Zone 30 on the other side is the main deficiency, and this is to be highlighted; otherwise the decrease in noise is felt when you move around the neighborhood, even if the traffic has not decreased" (no.14).

Almost all respondents highlighted that the critical issues are those related to a **very poor and episodic information**, and to the **involvement of the neighborhood's population**: in some people's opinion it has been completely absent despite the announced programmes (as reported in a previous specific paragraph). Above the need to implement both communication and participation, and to sensitize the municipal administration about public information issue - also paying more attention in updating the website (cf. interview no. 8) - some operational suggestions are given in order to fix the lack of information, such as dissemination and publicity actions suitable to different population groups, as stated in the answer below:

"There are different targets within the project, and for each one of them we would need to identify a strategy: the contest is a proper target for high school students, it would be better to give to primary school children specific lessons, to make them understand the importance of what they are learning, possibly accompanied by a brochure to take home, so even mom and dad can understand what it is; there's no need to wait for the family's response; in the past - for example - during the lesson of sexual education one educator came to explain it, mainly about AIDS; some brochure were distributed, in order to encourage the exchange of views at home. The same thing happened both with tabagism and environmental education... educators accustomed to talk to the children are needed, as well as some paper stuff to let them bring home; it would be nice to make a project lasting all year in cooperation with teachers. Elderly are little involved, but maybe when they go to the pharmacy, thanks to the brochure they can figure out what goes on, for example they can understand "why there's that big van in front of the civic center" (no.1).

The inadequacy of communication shows that the importance of the participation of the district in this project has not been properly understood and emphasized. An example of this is found in some considerations of an active citizen of the Council:

"(...) this project could have been emphasized and given as an example of "best practice" in Europe... The pride of such an initiative that is being done in a city, in a neighborhood, unfortunately has little faded (...) in 2016 we had great expectations, we received this presentation and we said: "We must communicate it properly"; until early 2017 the project was well followed, then a year of total silence occurred. In my opinion this has affected the success of the project, which remains valid and important, even if only for

main interventions”. If it’s true that with the Pedibus or with the involvement of schools you can really complete the educational issue “since from the southernmost to the northernmost point there is more or less a kilometre I can always move on foot or by bicycle, I do not take the car”, this is valid at least for the neighborhood residents. I do not know if this will be realized in the time required, but living in a district that has been chosen for such a project gives satisfaction, both for those who live there and those who were born there” **(no.18)**

Over and above the critical issues made about the incompleteness of the actions, the talks did not reveal any signs of obstacles or popular opposition related to the actions taken. Some of them, for example the Pedibus, seem to be accepted as new positive models of sustainable behaviour, both from the social and environmental point of view, for the daily activity performances.

More far-reaching structural measures are expected to find a solution of the long-standing problems of mobility; even the limited improvement of the livability of the district can mainly be attributed to the reduction of traffic noise in Libertà avenue and to the attenuation of its “barrier effect” by means of protected crossings; it can be a positive factor for the growth of the neighborhood’s social and cultural activities and, in the medium to long term, for its qualitative and quantitative appreciation, also from the economic values point of view.



DIPARTIMENTO
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