



## LIFE E-VIA

“Electric Vehicle noise control by Assessment and optimisation of tyre/road interaction”

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## Table of contents

<i>Executive Summary</i> .....	3
<b>1</b> <i>Techniques for end-users questionnaires submission</i> .....	4
1.1 Standard methods .....	4
1.2 Methods preferably adopted during the Covid-19 pandemic .....	6
1.2.1 <i>Focus on questionnaires about acoustic perception</i> .....	8
<b>2</b> <i>Techniques for carrying out soundwalks</i> .....	11
2.1 Standard methods .....	11
2.2 Methods preferably adopted during the Covid-19 pandemic .....	13
2.2.1 <i>Standard soundwalks with health and security protocols</i> .....	13
2.2.2 <i>Virtual soundwalks</i> .....	14
<b>3</b> <i>Conclusions</i> .....	16
<b>4</b> <i>Acknowledgments</i> .....	16
<i>References</i> .....	16

## Executive Summary

The aim of the current Report is to provide an updating about the most recent questionnaires submission strategies and methodologies to carry out soundwalks.

Specific attention has been given to literature and materials produced during the spread of the Covid-19 pandemic.

The outputs of the research summarized in the current Report will be particularly useful for Vie en.ro.se partner in the frame of Action B5, in order to properly organize the soundwalks foreseen during the EV Festival and to submit questionnaires both on electric buses and on electric taxis.

Regarding questionnaires, beside the traditional submission techniques (face-to-face, telephone, with CATI system, self-completion questionnaires and web surveys), during the Covid-19 pandemic interviewer-administered phone surveys and online surveys have been, as expected, the most addressed submission strategies. Some protocols have also been defined, together with practical suggestions and operative indication, in order to overcome possible obstacles and inefficiencies related to these methodologies.

Regarding soundwalks, traditional procedures deal with listening to the sounds present at different listening points identified along a route and filling in a questionnaire in which you indicate your perceptual sensations. In a recent initiative organised in 2018 in Italy, the listening concerned both the original soundscape of the different listening points and also an “activated” soundscape by means of sound designed ad hoc for that location, according to its use and function.

Regarding the organization of soundwalks during the Covid-19 pandemic, in some cases already planned soundwalks have been post-poned or cancelled, in other cases they have been organized but with smaller groups than foreseen, using face masks, guaranteeing social distance and applying specific health and security protocols.

Moreover, a new modality for alternative soundwalks has been the one concerning virtual tours to be joined directly from home.

# 1 Techniques for end-users questionnaires submission

## 1.1 Standard methods

An interview is defined as standardised when information is collected by the interviewer through a more or less structured questionnaire. The questionnaire, in fact, makes it possible to create a situation in which, ideally, all respondents are uniformly subjected to the same stimulus (question).

The degree of freedom granted to the interviewer is less than in non-standardised interviews, since the procedural rules, defined upstream by the researcher, are more numerous and binding.

At least five types of standardised interview can be identified: face-to-face, telephone, with CATI system, self-completion questionnaires and web surveys [1].

In the **face-to-face interview** the interviewer is physically present and, therefore, it is easier for him/her to adequately fulfil his/her functions:

- obtain the cooperation of the respondent
- to encourage the respondent to make the maximum effort to carry out the tasks and responsibilities involved in the interview, i.e. to maintain a high level of co-operation and attention during the interview
- managing the question-and-answer process, which includes formulating the questions, making sure that the questions are well understood by the respondent, elaborating on the respondent's answers that are unclear or too general, and faithfully recording the answers
- provide explanations about the study and about not entirely clear questions to the respondent

Because of the better opportunities to secure the cooperation of the respondents, the researcher can use longer questionnaires than in the other modes of completion (self-completion and telephone interview). It also allows the use of show-cards, i.e. articulated questions that the respondent has the opportunity to read directly. Moreover, it offers more possibilities to check the reliability of the answers. The most obvious limitation is associated with increased survey costs, both from a purely economic point of view and in terms of the time needed to complete the data collection phase.

In the **telephone interview** there is no physical presence of the interviewer and communication with the interviewee is exclusively oral. The spread of the telephone interview in recent years has been very rapid and, in some Countries, such as the United States, it has become the most widely used survey instrument.

The reasons for this spread are:

- the high costs of the face-to-face interview. In contrast, with the telephone there are advantages in terms of cost, time and organisational factors
- increasingly less willingness of people to be interviewed at home or in the workplace
- low willingness of people to fill in a questionnaire and return it to the sender
- the lack of physical presence of the interviewer reassures the respondent against risks of theft or attempts to sell products

However, the telephone interview has limitations that should be taken into account:

- it is more likely to be rejected or cut short after the start because the interviewer has fewer tools to encourage cooperation.
- it is not very suitable when the topic is very sensitive
- it does not allow for a high level of in-depth analysis of the contents
- questions should be short, they should not include long lists of answers, they should not be too articulate, they should not bore the interviewee by making him/her answer only 'yes' or 'no'
- many people have started to defend themselves against uninteresting phone calls by using the answering machine.

Recently, the **CATI** (Computer Assisted Telephone Interviewing) system has combined the telephone with a computer that can read the questions and immediately type in the answers in a pre-coded format. In this way it is possible to carry out:

- an automatic control of the logical coherence of the answers
- real-time data processing
- a control on the sample, with the opportunity to make corrections if necessary

The limits of the interviews with this system concern:

- all critical findings valid for telephone interviews
- in addition, the use of the computer calls for a mechanical and rapid conduct of the interview, with very serious consequences for the quality of the data
- poor possibility of recording comments on the side of the answers
- is more suitable for opinion polls

Regarding **self-completion questionnaires**, this method is also widely used in social research and its only advantage is that it considerably reduces survey costs.

There are also those who claim that the answers can be more reliable in the absence of the interviewer (considered, in this way, as the main source of bias). In reality, in the absence of the interviewer, it is not possible to operate any kind of control (not even on the identity of the person giving the answers). The only advantage in terms of data quality is that it compresses the risk of socially desirable answers. If questionnaires are sent out by post there is a further risk of substantial sampling errors (for example, only subjects with certain characteristics could return the questionnaire). Therefore, it is advisable that the sending of the questionnaire is, at least, preceded by a telephone contact that motivates the subjects to fill in the questionnaire.

Of course, of all the types of questionnaire administration, the self-filled questionnaire is the one that is most binding in the questionnaire design phase (few questions, maximum simplicity, extremely clear instructions, etc.).

Among the forms assumed by the survey research following the profound process of digitalisation which has invested our society, there is the **Internet-based survey**, the two maximum expressions of which are the e-mail survey or the closed web survey. These address circumscribed and known populations, with respect to which a mailing list is available, used to define the public to whom to reserve the compilation, and the open web survey, in which the link to the questionnaire is published on one or more web pages accessible to all or, at least, to the always more vast Internet audience.

At the top of the list of the advantages of the web survey is the conspicuous reduction of the costs of the research activity, since, as is known, a series of substantial expense items (among which those for sampling, for the training of the surveyors, for the conduction of the interviews, for the data entry) are eliminated, and in

comparison, those typically connected with the online survey are derisory, such as those for the online sponsorship and highlighting of the survey.

The disadvantages of the open web survey include the cost of sponsoring and highlighting a link to a questionnaire online.

Among the disadvantages of the open web survey, the statistical non-representativeness of the sample, linked to the self-selection of cases, stands out. Among the most obvious disadvantages are: a) the limited number of cases in the majority of the cases that can be reached overall; b) the problem of coverage with reference to specific social categories (non-internet users); c) the impossibility, given the absence of the interviewer (who also has the function of motivating the interviewee, arousing their interest, establishing a motivate the interviewee, arouse his interest, establish a climate of trust, support the interpretative processes of the questions, which has undoubtedly positive implications in terms of data quality) to capture the extra-verbal aspects of the interview; d) the impossibility of setting up very extensive and/or complex questionnaires; e) the unbalance of the sample on some variables is strongly connected with the greater propensity to answer online questionnaires than others, although the outcomes of the survey also depend on the topic.

## **1.2 Methods preferably adopted during the Covid-19 pandemic**

Since the beginning of 2020, in order to face the Covid-19 pandemic, methods for carrying out surveys have progressively moved to the “web” or “digital” modality. In fact, in order to maintain the social distance, many conventional methods for obtaining behavioural data from people (eg, pencil-and-paper surveys as a part of representative population house surveys) are not feasible during the pandemic.

In the last year there has been a significative increase in interest in mobile phone surveys as researchers and operational teams in order to better understand the various impacts of the Covid-19 pandemic [2-3]. Experiences with rapid response surveys during Ebola outbreaks in Sierra Leone and Liberia, coupled with lessons from mobile phone surveys in many developing countries during non-crisis periods offer some lessons and guidance in this sense. In order to create a sample of respondents according to this method it is possible to a) Sampling from respondents of a baseline (usually face-to-face) survey that had a representative frame and a high response rate, obviously covering just who previously provided the phone number; b) Obtaining a list of valid phone numbers from a telecom company or private firm; c) Using Random Digit Dialing (RDD) and making the sample size as larger as desired but with the possibility of being highly inefficient at the same time.

Three main mobile phone modes for low- and middle-income country research can be identified, beside the already mentioned computer-assisted telephone interviewing (CATI), which consists of interviewer-administered phone surveys:

- interactive voice response (IVR) surveys, automated voice surveys
- short message service (SMS) surveys that use text messaging
- web surveys completed by mobile device, which may work for some surveys of entrepreneurs and firms, but since they require smartphones, are typically out of reach of many poor households

The World Health Organization provided a guideline in which practical suggestions and operative indications (see Figure 1) are provided to Member States in order to prepare and submit questionnaires during Covid-19 pandemic [4].

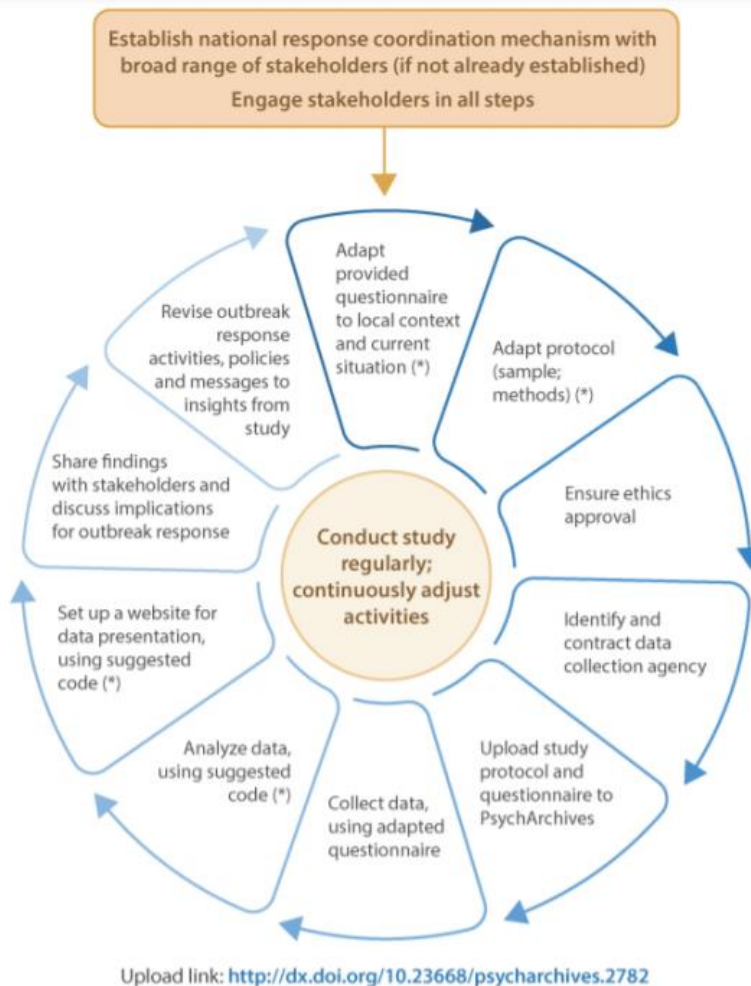


Figure 1: WHO recommended steps and process for surveys design [4]

Regarding the submission mode, the online one is suggested, with the possibility of posting the protocol and questionnaire on PsychArchives.org: <https://hdl.handle.net/20.500.12034/2392>. For data collection, a time frame of 38-48 hours is suggested to make the questionnaire available online, possibly accompanied by telephone-assisted data collection.

During the Covid-19 pandemic the International Sexual Health and Reproductive Health (I-SHARE) project has coordinated more than 30 separate online surveys and due to this very consistent work, considerations about the study design, implementation, and data analysis used can contribute to improve the rigor of online surveys [5]. Among them, it is interesting to mention the following ones:

- in online surveys specific real-time assessment of recruitment efforts can ensure that specific subgroups are included in the panel. For example, placing online and offline advertisements can increase online survey participation among men, ethnic or racial minorities, and other groups.
- online health research surveys can still use population-representative sampling frames. Several population-representative cohorts have organized follow-up online surveys among a subset of individuals during the Covid-19 pandemic.
- survey implementation measures, such as creating partnerships with local organizations, can increase interaction and the digital visibility of the study, and establish trust in online research studies.

Also according to UN Women [6], remote data collection (e.g. through mobile phones) or delay field data collection should be prioritized in the current period (see Figure 2), maximizing participation and inclusiveness through remote means following COVID-19 health and safety protocols.

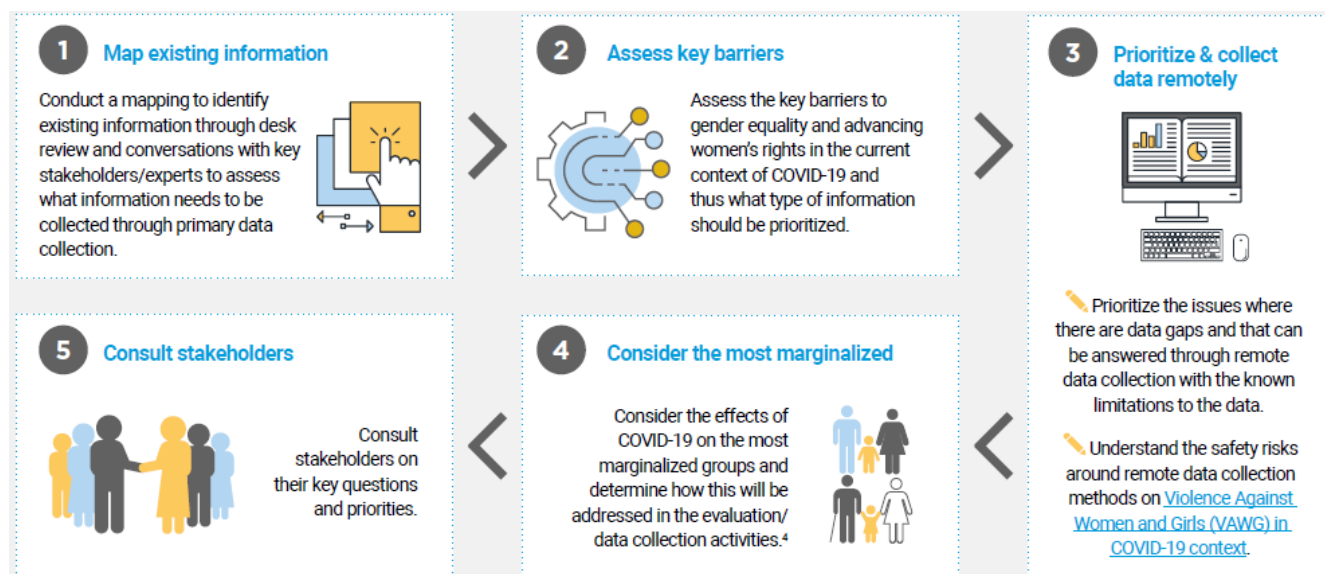


Figure 2: Managing evaluation during the Covid-19 pandemic-preparation phase [6].

Also in the case of surveys about violence against women and girls (VAWG), technologies such as mobile phones or web-based platforms may facilitate remote data collection and the documentation of evidence of VAWG during the COVID-19 pandemic [7]. However, during confinement and staying at home measures, ensuring privacy and guaranteeing confidentiality will be nearly impossible and, at the same time, the risk of violence to women and their children may increase. Moreover, electronic communications can be traced by perpetrators who and this could lead to further and even more severe abuse.

Education has been one of the sectors affected by the crisis caused by the pandemic, with educational provision both in Europe and globally going mainly online.

While in higher education (especially Universities), on one hand, this new moment has highlighted certain advantages to on-line studying including lower living costs for students who would otherwise study away from their family home. On the other, it has underlined inequalities between students particularly in relation to differences in terms of digital skills and home environment resources, also depending on the number of family members and how many of them need to carry out “smart” school or working.

In April 2020 a questionnaire about insights on student experiences during the Covid-19 pandemic has been filled by 17,116 respondents (European students) from 41 European Countries [8]. The survey was conducted online, on SurveyMonkey, allowing to reach such a broad sample.

### 1.2.1 Focus on questionnaires about acoustic perception

The spread of the Covid-19 pandemic, beside the several and serious health effects on the worldwide population, has also led to changes affecting the sound environment. These are not limited to sound energy reduction. But also extended to a hierarchical reorganization of sound sources. As a consequence, inhabitants began to experience a different sound perception (individual experience on this change in the sound environment).



In this frame, Acoucité has launched an on-line perception survey and advertised in the professional networks of the association, on social networks, and in the French written, radio and television press [9].

Between the 18th of March and the 11th of May 2020, 3242 questionnaires out of 3883 responses were validated in France. The method of dissemination of the survey probably had an important influence on the responses obtained: for example in Nantes, the Coceta (from French “Collectif des Citoyens Exposés au Trafic Aérien région de Nantes”, meaning Collective of Citizens Exposed to Air Traffic in the Nantes Region) spread the link of the Acoucité online survey to their members; as a consequence almost all respondents from Nantes are located in the communes close to the airport (or under the air corridor).

In 2020 Vie en.ro.se Ingegneria, with the collaboration of the Acoustical Society of Italy (AIA), has personally carried out a survey for the evaluation of the peculiar and unexpected scenario related to soundscape perception, which has been constituted after the spread of COVID-19, by means of the submission of an online questionnaire [10]. Differently from previous studies and due to the peculiar historical period, in the present research, the soundscape perception is mainly intended as personal evaluation of the outside acoustical environment in the pre-lockdown period and in the lockdown one, as perceived in an indoor space as the respondents' houses.

The structure of the designed questionnaire consists of 18 questions divided into 5 sections:

1. *Personal data*, to collect subject data in relation to age, gender, place of living, education and employment;
2. *Context analysis*, for the definition of health condition during Covid-19 quarantine;
3. *Dwelling*, for questions related to the features of the dwelling- and *questions related to the period before the DPCM 11/03/2020*, which suspended all the unnecessary businesses and delayable activities;
- 4-5. *Perception of the environment*, where the same questions are asked for a direct comparison of the pre-lockdown and the lockdown period.

The schematic structure of the questions is displayed in Table 1. Different question types have been used: (a) “Select one”, a multiple-choice question where only one answer can be selected; (b) “Geopoint”, a collection of GPS coordinates; (c) “Integer”, the input is an integer; (d) “Question matrix”, a group of questions displayed in a matrix form. Regarding the scales adopted in the questionnaire, for sections 4 and 5 indicated in Table 1 a typical five-level Likert scale has been adopted.

The questionnaire has been distributed in the Italian language version and was filled in by people living in Italy.

Table 1: Contents of the questionnaire [10].

Section	Question	Question type
1. PERSONAL DATA	1: Age	(a)
	2: Gender	(a)
	3: Place of living	(b)
	4: Education	(a)
	5: Employment	(a)
2. CONTEXT ANALYSIS	1: Families/friends under trustee lockdown or quarantine for Covid-19	(a)
3. DWELLING	1: Type of dwelling	(a)
	2: Number of flatmates	(c)
	3: Year of dwelling construction	(a)
	4: Acoustic improvements after the construction	(a)
	1: Noise coming from outside the house	(a)

PERCEPTION OF THE ENVIRONMENT	2: Type and intensity of sounds heard from home	(d)
	3: Annoyance of sounds heard from home	(d)
4. QUESTIONS RELATED TO THE PERIOD BEFORE THE DPCM 11 MARCH 2020: Italian management of the Covid-19 epidemiological emergency /	4: Intensity and origin of sounds coming from the neighbourhood	(d)
	5: Annoyance of sounds coming from the neighbourhood	(d)
	6: Description of soundscape	(d)
5. QUESTIONS RELATED TO THE CURRENT PERIOD (lockdown period)	7: Assessment of soundscape	(a)
	8: Relevance of soundscape in relation to the context	(a)
	9: Overall assessment of soundscape	(a)

Before submitting the questionnaire, a pilot test has been carried out among a small group composed of authors' colleagues but not expert in acoustics which gave good feedbacks in the structuring and understanding of the questions.

Due to the Covid-19 epidemiological emergency, the distribution of the survey has been possible only using software for collecting and managing online data. The Kobo toolbox, free and open source, has been used. The link for filling in the questionnaire was sent by email to all the members of AIA and shared via social networks. Consequently, the sample was based on voluntary respondents, neither on random sampling nor based on other non-probabilistic methods.

395 questionnaires were collected between 27<sup>th</sup> March to 16<sup>th</sup> June 2020, although only 323 were statistically analysed. The remaining questionnaires were considered invalid as no statistically significant data had been entered (in many cases just the date and time of the start of the filling in were present).

Moreover, during the (International Noise Awareness Day – INAD) 2019 edition [11], a website [12] was also set up to collect indications, through simple questionnaires, of the sounds or noises that remain in people's memories, even if they have disappeared or are destined to be forgotten. The questionnaire is open to all and has allowed to collect data from a mixed sample of population. In fact, it is made up of a personal part followed by the request for the insertion of a maximum of three sounds or noises that belong to the memory of the interviewee [13]. At the end of February 2021, about 630 people answered the questionnaire and about 1700 lost sounds have been indicated. The strategy adopted to conduct the survey (online mode) had been defined before the spread of the Covid-19 pandemic, but it has been obviously maintained also after and it is still under use.

## 2 Techniques for carrying out soundwalks

### 2.1 Standard methods

A. Radicchi in her “A Pocket Guide to Soundwalking” [14] highlights that “to experience the work of architecture and of the city necessarily implies a spatial and temporal dimension as well as a perception involving all the senses. Therefore, experiencing space by walking through it, has always been a point of reference for the architect-urbanist who is not merely fascinated by the physical form of the city, but also by understanding how common people experience the spaces of everyday life, how they perceive them and what values and meanings are attributed to them”. This appears to be an important premise for the definition of sound walks as a multisensory tool to get to know and perceive the city from the point of view of ordinary people, using immersive techniques.

In [14] the origin of soundwalks, as a method to exploring the world by walking belongs to the history of mankind, going back to the late Bronze Age. In the modern era “Sensewalks”, usually dealing with everyday experiences of the city focusing on one particular sense have been introduced. Accordingly, soundwalks can be considered as a particular case of sensewalking, as can be lightwalks and smellwalks. Murray Schafer introduced the term “soundwalk” for the first time in the 1970s in the frame of the World Soundscape Project (WSP), wanting to emphasize the action of “listening” as a means to increase awareness of the notion and evaluation of soundscapes. A. Radicchi provides a useful scheme for soundwalking design, classifying the soundwalk according to the purpose, the kind and providing also operative instructions, as shown in Figure 3.

Purpose	Kind	HOW TO/Instructions
<b>Civic and political</b> <i>To increase sonic awareness of listening and the soundscape culture</i>	Silent soundwalks	Define a route, potentially with several listening stops along it. Then, walk in a line at a slow pace and stick to the route, in silence. If listening spots are part of the soundwalk, stop the group at these points and focus on listening for one minute, in silence. Then go on. At the end, a group discussion takes place. Questionnaires and maps can be handed out to facilitate the discussion. Participant data collection is not recommended during the soundwalk.
<b>Educational</b> <i>To train for soundscape action research</i>	Commented soundwalks with simple evaluation points	Define a route with several evaluation points along it. Then, walk in a line at a slow pace and stick to the route, in silence. Stop the group at the evaluation points, focus on listening for one minute, in silence. Then start the group discussion. Then go on and repeat the procedure at each evaluation point. At the end, a group discussion takes place. Questionnaires and maps can be handed out to facilitate the group discussions during the soundwalks and at the end. Data collection is encouraged during the soundwalk.
<b>Research</b> <i>To evaluate the soundscapes in order to develop analyses, evaluation and planning criteria</i>	Solo soundwalks	Walk in silence along an open, imaginary, improvised route. Follow your ears and let them guide you in the sonic exploration of the area. Data collection is highly recommended immediately upon completion, in the form of a sonic diary/sonic notes/sonic mental maps. Recording the solo soundwalk and listening to it when back home is highly recommended to reflect on variations in perception. Binaural recordings are highly recommended.
	Soundwalks with complex evaluation points	Define a route with several evaluation points along it. Then, walk in a line at a slow pace and stick to the route, in silence. Stop the group at the evaluation points, focus on listening for one minute, in silence, and start the collection of mixed data. Then go on and repeat the procedure at each evaluation point. At the end, a group discussion takes place. For comparative analyses, the collection of mixed data implies: <ul style="list-style-type: none"> <li>• Quantitative data: DB(A) measurements, source definition;</li> <li>• Qualitative data: field recordings, psychoacoustics analyses, questionnaires, pictures, videos. Binaural recordings are imperative in order to develop psychoacoustics analyses.</li> </ul>

Figure 3: A. Radicchi 2017 - A Pocket Guide to Soundwalking, proposing four methods of soundwalking, according to civic and political, educational and research purposes [14].

In September 2019 the staff of Vie en.ro.se Ingegneria supported A. Radicchi in the organization and in the conducting of a “Education” soundwalk in Florence, in the frame of the Erasmus + Noise NTP project.

The route and stages were defined in such a way that the length of the walk did not exceed 2 km and that it stopped at a number of interesting and stimulating listening points (a schoolyard, the falls of a river, a park, an urban residential context, etc.). At the beginning of the sound walk, in addition to providing some operational instructions to the participants, “ear cleaning” exercises were carried out at each listening point. In addition, a questionnaire was administered to the participants, collecting information about the sounds they heard and their pleasantness.

In April 2019 a workshop titled “Urban Sounds and soundscapes” lasting two days was organized in Pistoia (Italy) involving, among the staff members also Vie en.ro.se personnel.

During the soundwalks organised in the city centre, it has been tried to go beyond the standard soundwalk approach, consisting in exploring the soundscape of a place as it is and trying to switch on the selected listening points of the city changing noisy or anonymous places into sounding ones also by asking participants about how they perceived the original and the “activated” place. The squares, courtyards, and open spaces through which the soundwalks took place have been “switched on” by musicians, actors, performers, singers and also historic cars. The activation of each point was given as the soundwalk stopped in the point proximity.

At the end of each soundwalk a questionnaire was given to each participant (about 50). First of all, personal information was asked. Then, for each listening point, the typology and intensity of the heard sounds were asked on a scale from 1 (meaning not heard) to 5 (predominant sound) followed by the quality of the sound environment and the landscape and their relevance. Finally, comments expressed as phrases or drawings about the sound excitements were asked. Further details are reported in [15].

In the frame of the Positive Soundscapes project, a soundwalk route was designed in Manchester including the identification of specific types of location (urban square, busy shopping street, shopping precinct, urban green space, pedestrianised street) and ensuring they were close enough together to allow for a 30 minutes’ walk as described in [16]. Before the beginning of the soundwalk the participants were asked A set of pre-soundwalk questions were asked

about their professional background, their impressions of Manchester city centre, how their profession currently considers urban environmental sounds, if at all, and what their expectation is regarding what they hear in the urban environment.

The soundwalk was conducted in silence and participants were asked to concentrate on what they could hear as they walked and to look at the urban environments they passed through, in order to make connections between what they could see and what they could hear. At each of the five established stops, the group stopped in silence for one minute in order to listen to that specific space. A set of location specific questions was then asked in the form of a semi-structured interview in order that the researcher could ask for more detailed explanations when it was considered necessary. At the end of each soundwalk a set of post-soundwalk questions were asked.

## 2.2 Methods preferably adopted during the Covid-19 pandemic

After the spread of the Covid-19 pandemic, social and cultural activities have slowed down, mainly due to social distance rules and to public attention focused on other life aspects.

Since March 2020 “standard” soundwalks have been organized in some Countries, however specific health and security protocols have been introduced for participants and organizers. New perspectives in this framework are those related to “virtual” soundwalks.

### 2.2.1 Standard soundwalks with health and security protocols

On April 11 of the current year a soundwalk (SOUNDWALK+) will be organized at Griffith Park Merry Go Round Lot 2 Los Angeles (the event poster is shown in Figure 4), as a walk to the north end of the parking lot, and taking the stairs down to the park level. The entire SOUNDWALK experience is designed to last between 60 and 90 minutes. The option exists to stop and take breaks (with headphones on or off) at any time.

Classic instructions to participants have been accompanied by COVID-19 Safety Protocol additional details such as:

- attendees must remain with their own group for the entire time
- no aspects of the soundwalk will involve audience members congregating or mingling
- the attendance will be capped to 50 individuals per hour-long arrival window, with a maximum of 200 attendees over the course of the event.
- event facilitators will wear masks and will follow regular hand sanitization schedules
- all attendees must wear a mask upon arrival and check-in
- a strict social distancing protocol to ensure that all attendees and staff stay at least 6 feet apart at all times will be applied (Figure 5)

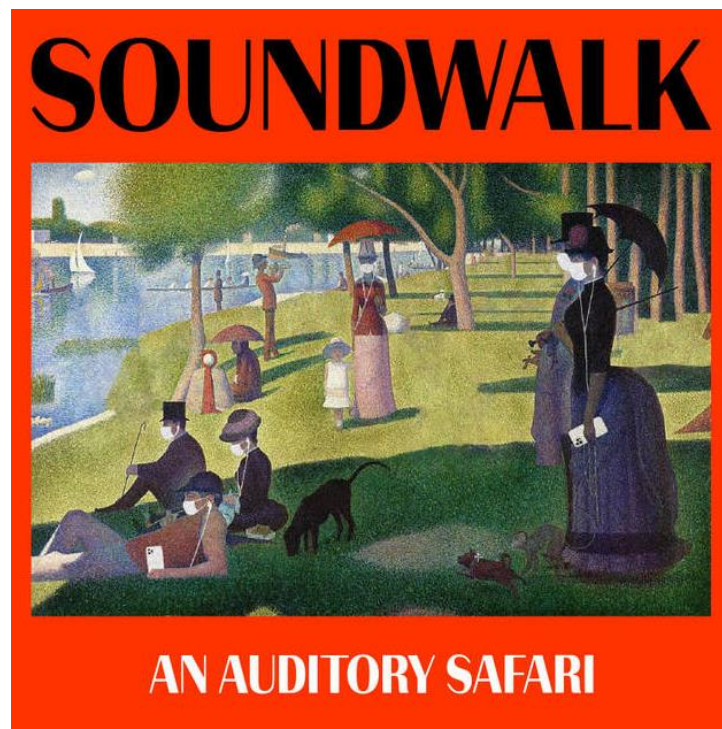


Figure 4: SOUNDWALK+ event poster

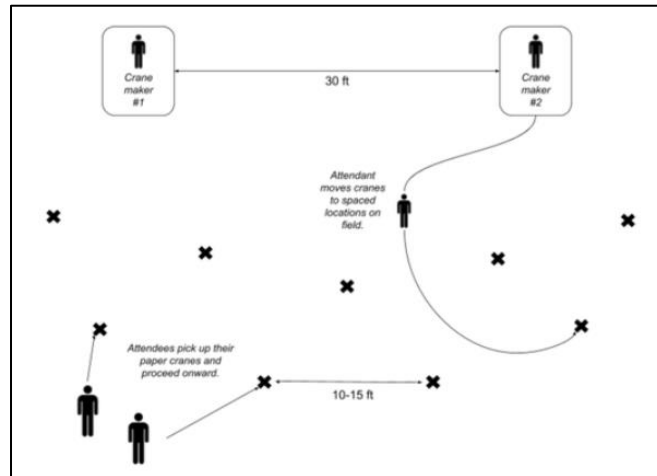


Figure 5: Some details of the COVID-19 Safety Protocol

Similarly, the soundwalk organized on 31 July 2020 at Tallulah Gorge State Park (Georgia, USA) was limited to 10 people. Social distancing has been required as well as face masks when in close proximity to others.

### 2.2.2 Virtual soundwalks

In [17] a combination of virtual models, game engine environment, built-in programming tools, animations, imported sounds registered in situ, permitted to recreate a closer urban experience of the soundwalk, and not only focus the attention on the sound components, have been taken into account also the visual stimuli. The user is also allowed to experience different paths and sonic scenarios also by activating and deactivating individually the various sound sources. The results of the research prove that these combined technologies can be effectively used for envisioning new trails in the research field of the sensory perception in the urban environment, by providing innovative means for obtaining multimodal and immersive representations.

According to *H. Westerkamp*, the pandemic offers new opportunities from an acoustical point of view: to go on a 1-person soundwalk, to listen more carefully to what we hear in our homes and neighbourhoods, to experience different soundscapes that have opened up acoustically and to sounds that were normally masked by traffic noise. In 1997 she wrote the *"Soundwalk from home"* when there was no warning of the pandemic-induced change in the soundscape in 2020. The author repropoed the text in 2020 without changing it in a significative way (see Figure 6).

Hear  
 the pauses  
 between sirens and horns and airplanes  
  
 The sounds of this season.  
  
 of clothes  
 and of wind.  
  
 Listen  
 into the distance  
  
 Stop  
 listening  
 for a moment.

If you walked with a friend,  
 find a place and sit at a safe distance.  
 Share and discuss your experiences and impressions, your thoughts.  
  
 If you walked by yourself,  
 write down your impressions and experiences in a sound journal,  
 and perhaps tell your housemates or friends about it.

Return home  
  
 Did you hear the sounds  
 of this place  
 of this time  
 in your life?

Put aside another hour  
 on another day  
 and go for a walk in your neighbourhood  
 do nothing but  
 listen

Listen.  
 Words on this printed page (on this screen),  
 are sound.  
 Listen.  
 Thoughts in your head  
 are sound.  
 Listen.  
 Life in your home, in your neighbourhood  
 is sound.  
 Listen.

Put aside one hour and go for a walk from your home. Do nothing but listen.  
 If you are walking with someone, make sure to stay at a safe distance from each other,  
 and refrain from talking.  
 Listen to everything,  
 to the sounds around you,  
 to the thought-voices inside you,  
 Listen in silence.

\*\*\*\*\*

Open the door of the building in which you live.  
 Listen as you step out. Walk and listen. Stop and listen. Go around the next corner and listen.  
 Find a favourite spot in your neighbourhood and listen. Don't speak to anyone.  
 Walk on and listen.

Listen  
 for voices  
 while walking.  
 Listen  
 for pauses.  
 Listen.

There are sounds because it is this time of day.  
 Stop and listen

Listen for hums and motors  
 for birdcalls  
 and for pauses between the birdcalls.

Listen for echoes.  
 Make sounds to find echoes.

Hear your breath  
 and its rhythm  
 your footsteps  
 and their rhythm.

Stop for a moment and listen to your thoughts. Let them pass like the sound of a car.  
 Follow them until you cannot hear them any longer.

Hildegard Westerkamp (February 1997 / April 2020)

Figure 6: Soundwalk from home, H. Westerkamp, 1997

Virtual soundwalks in Chicago, as 5 short time-based works encouraging relaxation, revealing underwritten histories, surprising with sounds and investigating ecology, have been launched online on 20 November 2020 and are still available on the Youtube Channel of the Midwest Society for Acoustic Ecology.

### 3 Conclusions

The emergence of the Covid-19 pandemic made it necessary to optimise existing questionnaire administration procedures, especially those using the web and mobile phones. Digital administration of questionnaires appeared to be the most effective strategy to reach a large number of people, while ensuring high health and safety standards. To do this, it was necessary to investigate the administration protocols in more detail, in order to also ensure a certain reliability of the sample and the answers provided.

At the same time, the number and type of questionnaires developed and disseminated increased in order to collect as much information as possible about this peculiar historical period.

Also regarding soundwalks, some changes took place with Covid-19. In particular, soundwalks organized in person followed specific new rules and protocols such as the use of face masks and the ensuring of social distancing while an increasing number of soundwalks are organised online as virtual tours.

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