

## **EFFICIENCY OF SURVEYORS' TRAINING: IN-PERSON MEETINGS VERSUS DISTANCE LEARNING<sup>1</sup>**

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**Abstract.** Since 2010 the Italian National Institute of Statistics (Istat) has experimented with a blended training model, for the Labor Force survey, with face-to-face training modules and online modules for specific topics. This approach was adopted structurally in 2017 with the pilot survey of the Permanent Population Census. The technological, organizational and methodological framework constructed subsequently made it possible to react promptly to the restrictions imposed by the 2020 lockdown, quickly replacing in-person teaching with live training events. The return to "normality" has led to some requests to return to the pre-2020 training mode of face-to-face classroom meetings.

The aims of the paper are, first, to evaluate the effectiveness and efficiency of resuming the previous training model and, secondly, to identify different groups of respondents who could benefit from each approach. We analyzed two different training experiences: the first in relation to the Survey on Aspects of Daily Life (ADL) was entirely online; the second concerned two editions of the Survey on Income and Living Conditions (EU-SILC), with the 2021 edition entirely online and the 2022 edition entirely in presence.

For the EU-SILC, we compared the results of the final learning tests with those obtained the previous year when the training was conducted exclusively online. We have applied a statistical analysis based on a logistic model to evaluate the effect of the different training models on the performance.

In 2023, for both surveys considered, we administered a questionnaire to capture the learners' views and conducted a non-participant observation to assess the quality of the interaction between the teachers and learners and the level of classroom attention and engagement. We adopted a cluster analysis to identify different groups of respondents who could benefit from each approach.

The results show that the face-to-face training model is more effective than the online model, with a better learning experience for experienced surveyors. The interviewers who attended both online and face-to-face sessions preferred the latter, at least for online sessions organized as long live sessions. They considered that any remote training should be of a shorter duration and include more discussion elements and strategies to reduce the distance, using tools that allow greater connectivity, such as icebreakers.

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<sup>1</sup> Nunzia Bali is the author of paragraphs 1, 1.1, 1.2 and 4; Gabriella Fazzi is the author of paragraphs 2 and 3.1; Francesca Rossetti is the author of paragraph: 3.2. The authors thank the reviewers for their valuable insights and constructive comments, that helped to improve the paper.

## 1. Introduction

During the Covid-19 pandemic, the training activities of the network of surveyors were carried out exclusively at a distance, making it possible to continue the training. Once the emergency phase was over, the online training experience highlighted positive aspects such as economic savings for Istat and a better balance between work and private life for the trainers and trainees. The number of sessions carried out to train and support the different interviewers responsible for the data collection phase increased. However, in-person training undoubtedly has its advantages and strengths: a direct interaction, experiential learning, a personalization of the content and the creation of relationships, as well as an increased motivation and commitment, thereby enriching the classroom training experience (Rotondi, 2000).

We used the start-up and training phases of two household surveys with different mixed mode data collection techniques and different interviewer networks. In particular, we considered the Survey on Aspects of Daily Life (ADL), characterized by a Computer Assisted Web Interviewing Computer Assisted Personal Interviewing (CAWI-CAPI) technique and conducted by means of a public interviewer network, and the EU-SILC survey, characterized by a Computer Assisted Telephone Interviewing - Computer Assisted Personal Interviewing (CATI-CAPI) technique and conducted by means of a private interviewer network. On both occasions, we used a range of tools to collect the data and information (satisfaction questionnaires, non-participant observation forms and learning evaluation tests) capable of providing answers to meet our objectives.

In the design phase of the training course, we devised an evaluation plan for the methods used to verify the quality of the training activities. The training model for both surveys involved theoretical<sup>2</sup> phases alternated with technical-practical<sup>3</sup> phases, defining a schedule that balanced theoretical and practical aspects. It included general issues (methodology, administration strategies and an interpretation of the questions and technical aspects more closely linked to the use of electronic instruments) and specific issues associated with the typical features of the two surveys (Bali and Federici, 2014).

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<sup>2</sup> The theoretical training was aimed at training the interviewers on the content, objectives, methodology, regulatory aspects, questionnaire structure, behavioral rules to adopt with the respondent during the questionnaire administration and strategies to motivate respondents reluctant to cooperate.

<sup>3</sup> The technical and practical training was conducted for the private network by the company appointed by Istat in tandem with Istat personnel. It was aimed at illustrating the software's functioning in the management of the electronic questionnaire and the contact management system. This training was also designed to train the interviewers in the administration of the questionnaire through a simulation of an interview.

The paper is organized as follows: sections 1.1 and 1.2 describe the data collected from the ADL Surveys and EU-SILC surveys, with a description of the training activities; section 2 presents the method of the training evaluations, with a focus on the post-assessment tests and questionnaire evaluation design; and section 3 shows the analysis of the post-assessment and questionnaire results.

### *1.1. The Survey on Aspects of Daily Life (ADL) and Training Activity*

The first edition of the ADL survey dates back to 1993 (Istat, 2023). Since then, it has undergone considerable methodological changes over the years, which have also affected the training of the municipal network. For several years, the training plan adopted saw the application of a traditional cascade type of training model from the center to the territory (with central Istat staff training the colleagues of the territorial offices, who in turn trained the municipal managers and then the interviewers). Subsequently, in 2017, a mixed training model was introduced, with a combination of self-study accompanied by in-person training elements, a model which was used until 2019.

In 2020 and 2021, with the health emergency resulting from the Covid-19 pandemic, the training was fully delivered online and the virtual classroom replaced in-person classroom training. This modality was also adopted in 2022 following an internal reorganization of the institute, which changed the organizational structure of the territorial offices.

We aimed to take into account the training experiences realized with the permanent censuses (Agriculture, Non-Profit Population and Enterprises, etc.) (Bali et al., 2023) and the awareness of the importance of the training element in terms of the quality of the information collected. Accordingly, we set ourselves the objective of reviewing the training strategies for the AVQ survey in 2023, envisaging the integration of several training modes aimed at fostering moments of discussion on specific activities (Bali, 2019).

A new training framework was thus designed for the actors involved in the municipal network. The main steps, entirely online, were:

- a consultation, before the launch of the survey, with a small group of municipal managers belonging to large and small municipalities in the north, center and south, aimed at gathering valuable suggestions to fine-tune the entire training system and to set in motion a training circularity system to optimize the whole survey process;
- short virtual meetings organized from 8 February to 17 March 2023 managed centrally with about 1,000 municipal officers divided into 5 groups, focusing on the tasks necessary to launch, manage, train and monitor the survey;

- self-study online modules and self-study FAD training for interviewers with a pass mark of 8 or higher on a final test.

Table 1 presents a summary table of the training activity numbers.

**Table 1** – *ADL participants in the training activity. Year 2023.*

	N
municipal managers participating in consultations	10
municipal officers participating in online meetings	1,001
<u>interviewers involved in the self-study online modules</u>	<u>1,884</u>

*Source: our elaboration of data from 2023 attendance in the training activities.*

### 1.2. *The Survey on Income and Living Conditions (EU-SILC) and the Training Activity*

Since 2004, Italy has participated in the EU-SILC (Statistics on Income and Living Conditions) statistical system with a complex survey on income and living conditions. The data collection has been entrusted to a survey network managed by a private company. Training for this survey was always centrally managed by Istat and delivered in a face-to-face mode until 2020. Since 2023, there has been a return to in-presence training.

In 2023, experienced interviewers, involved in the 2022 edition, and new interviewers participated in the in-presence training. The course took place from 20th to 24th February 2023 with two training sessions: the first was delivered to 124 experienced CAPI or CATI interviewers; the second to 84 new CAPI or CATI interviewers.

## 2. Methods for the training evaluation

The primary goal of this research was to compare and evaluate the efficiency and effectiveness of online and in-presence training methods (Nagy and Duma, 2023). We used the post-assessment test results after the 2022 and 2023 EU-SILC training as proxy indicators of efficiency and effectiveness. The test was designed to evaluate learning outcomes and included a varying number of questions, ranging from 10 to 15, pertaining to the survey's objectives and aims, the content of the questionnaire and the most relevant defining aspects.

The secondary goal was to identify specific groups of people who could benefit more significantly from each method. We used data collected by means of a course

evaluation questionnaire completed at the end of the ADL 2023 and EU-SILC 2023 training to capture the trainees' views.

At the end of each meeting the participants were required to evaluate whether the training session had been helpful to them. The evaluation questionnaire included indicators of course satisfaction related to the following dimensions: the training organization, the training duration, the didactic management, the clarity of the content, the completeness of the issues presented, the utility of the course for the job and overall satisfaction. Each indicator was operationally defined according to a 5-point scale (from “not satisfied at all” to “completely satisfied”).

ADL municipal officers who had attended an in-person training in the past, and EU-SILC expert interviewers who had attended the online training in 2022 and the in-person training in 2023 were asked for a comparative evaluation of the virtual classroom vs. the in-person training experience. The evaluation of the training modality (online or in-presence) was operationally defined according to a 7-position scale, where the respondent was asked to assess whether, on the different dimensions proposed, they considered online or face-to-face training more effective. The dimensions analyzed were: clarity of the content; interactions with the instructors; interactions with the other participants (peers); ease of making a contribution; balance with other commitments; ability to stay focused; and opportunity to participate in workshops.

### **3. Results**

#### *3.1. Analysis of the post-assessment results*

For the ADL post-assessment the required pass mark for the test was 8 out of 10, with each participant being able to try as many times as necessary to pass the test. The average score obtained by the municipal officers (about 1,000 respondents) and interviewers (about 1,200 respondents) was 8.8; 57% of the municipal officers obtained a vote higher than 8 after one attempt compared with 45% of the interviewer group. In the municipal officer group only 14% tried four times or more compared with 22% of the interviewer group.

For the EU-SILC survey the required pass mark for the test was 7 out of 10. For this survey we could compare data from two different years: 2022, when the live training was completely online, and 2023, when we returned to in-presence training.

The 2022 post-assessment result, measured as the average score obtained by 241 interviewers, was 6.9. In 2023 this increased to 8.5. It is important to assess whether this increase was due to the return to the face-to-face modality and whether the effect of the experience gained by the interviewers or the different composition of the

groups should be taken into account. In order to analyze the impact of the different training models adopted with respect to the EU-SILC in 2022 and 2023, the interviewers' performances in the final learning test were used.

The data used to achieve this objective were collected during the training activities, selecting all the learners who would be interviewers in the survey and had completed the training cycle: 241 in 2022 and 282 in 2023. The performance indicator used was the percentage of correct answers in the final test; the indicator takes a value of 1 when the number of correct answers exceeds 70.0%, and 0 when it falls below this threshold. The test, different for each training session, included a varying number of questions, ranging from 10 to 15. It is important to remember that the minimum pass score for this test is 60.0%. The mean value of the indicator recorded was 68.9%. To assess the likelihood of the interviewers achieving a positive outcome at the end of the training course, a logistic model was constructed. In the model the dependent variable used is the performance indicator. Table 2 reports the explanatory variables used in the model.

**Table 2** – *Explanatory variables and mode encoding applied. EU-SILC trainees. Years 2022, 2023.*

Explanatory variables	Code
Learning model	0=online (year 2022); 1= in-presence (year 2023)
Geographical area	1=North-west; 2=North-east; 3= Centre; 4= South
Sex	0=Male; 1=Female
Interviewer's experience	0=no experience; 1= with experience
Age	1=under 35 years; 2=35-44 years; 3=45-54 years; 4=over 54 years
Data collection technique	0= CATI; 1=CAPI
Educational level	0=secondary school certificate; 1= tertiary certificate

*Source: our elaboration of data from 2022 and 2023 EU-SILC post-assessment tests.*

Table 3 reports the Chi-square statistics with the associated p-values (the variables without significance in the model are highlighted) and the odds ratio, which represents the coefficients in the logistic model for the explanatory variables. In particular, the significant variables are the year of the survey, which represents the different training models, and the interviewer's experience. Comparable outcomes were achieved when utilizing indicator variables for each mode among the explanatory variables.

**Table 3** – Explanatory variables, Chi-square statistics with p-value associated. EU-SILC trainees. Years 2022, 2023.

Explanatory variables	odds ratio	Pr>Chi-Sq
Learning model	6.1	<.0001
Geographical area	1.0	0.8793
Sex	1.0	0.9164
Interviewer's experience	1.9	0.0054
Age	1.1	0.6478
Data collection technique	<0.0	0.9878
Educational level	0.8	0.4499

Source: our elaboration of data from 2022 and 2023 EU-SILC post-assessment tests.

The model shows that the propensity to have a good result in the training course is six times greater with the face-to-face training model applied in 2023 compared with the online model applied in 2022<sup>4</sup>. Experience is the only interviewer characteristic with any significance. The odds ratio value suggests that the propensity to have a good result for the interviewers with experience is double that of the interviewers without any experience.

### 3.2. The Evaluation Questionnaire Results

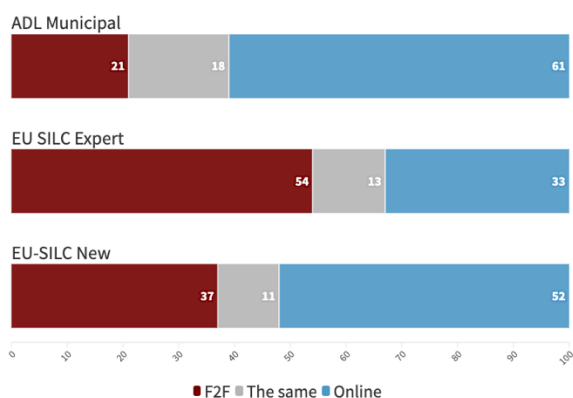
The ADL evaluation questionnaire was completed by 240 out of 1,001 municipal officers, with a response rate of 24.0%. The response rate for the EU-SILC 2023 questionnaire was higher, thanks to the reminders issued by the external company, namely 47.6% for the group of expert interviewers (59 out of 124) and 85.7% for the group of new interviewers (72 out of 84).

Figure 1 presents the preferences for the online or face-to-face modality among the ADL and EU-SILC trainees. More than 60% of the ADL municipal officer group answered that they would prefer to participate in the training online, with only one out of five (20%) indicating that they would like to return to in-presence training. The role of these respondents, working at the statistical offices of the municipalities, can perhaps explain this result. They are involved in several activities and this training can be better balanced with other work duties if it is online, without the time and expense required for travelling.

<sup>4</sup> The EU-SILC survey is managed by a private company, and in 2022 the contract with the company responsible for the data collection process commenced, which involved recruiting and organizing the data collection network. This was a particularly challenging undertaking in the context of the pandemic. Undoubtedly, an established organizational structure greatly assisted this activity in 2023, resulting in improved training outcomes.

It is interesting to compare this response with the answer to the same question given by the EU-SILC interviewers. More than half of the experts, who had undertaken the training online in the previous year, did not want to return to the previous online method. On the other hand, half of the new interviewers would prefer online training. If we review the schedule and organization of the online training during 2022, we can better understand the response of the expert interviewers. In 2022 the online training had been organized with live events, with trainers speaking in a virtual classroom during a 3-day event, 6 hours a day. The interviewers who experienced the 2022 online training remarked that when the online training consisted simply of the online transposition of a classic frontal lesson, the “original” frontal lesson was preferred.

**Figure 1** – Preferences for the online or F2F (face-to-face) modality among the ADL and EU-SILC trainees. Year 2023 (Percentage values).



Source: our elaboration of data from 2023 ADL and EU-SILC evaluation questionnaires.

To support this interpretation, we can rely on the answers given on the scale proposed to compare the online and in-presence training with respect to the different dimensions. We have classified the answers on the 7-point scale as a dichotomy (better online vs better in-presence), excluding the middle position (indifferent). We have thereby constructed an index, being a rate of “online propensity”, such that

$$\text{online propensity} = \frac{N \text{ better online}}{(N \text{ better online} + N \text{ better in presence})}$$

This index varies from 0 (when everybody prefers the in-presence training) to 1 (when everybody prefers the online training). If the value is equal to 0.5, it means that the two methods are evaluated as equal with respect to that aspect.



As expected, the values are higher for the ADL group on each dimension, especially for the “balance with other commitments”. The municipal officers also recognized the ability to stay focused, as they participated in short online events of a maximum of 4 hours, partly dedicated to practical training. The interaction is obviously the component that we sacrifice when we deliver the training online, thereby reducing the possibility of speaking with the instructors and the other participants.

Peer interaction is the critical aspect of the online training, evaluated with a 0.1 rating by the EU-SILC expert interviewers. In an online class informal interactions with colleagues are absent, including all the practical tips, information and opportunities for collaboration that a “shared coffee break” can allow.

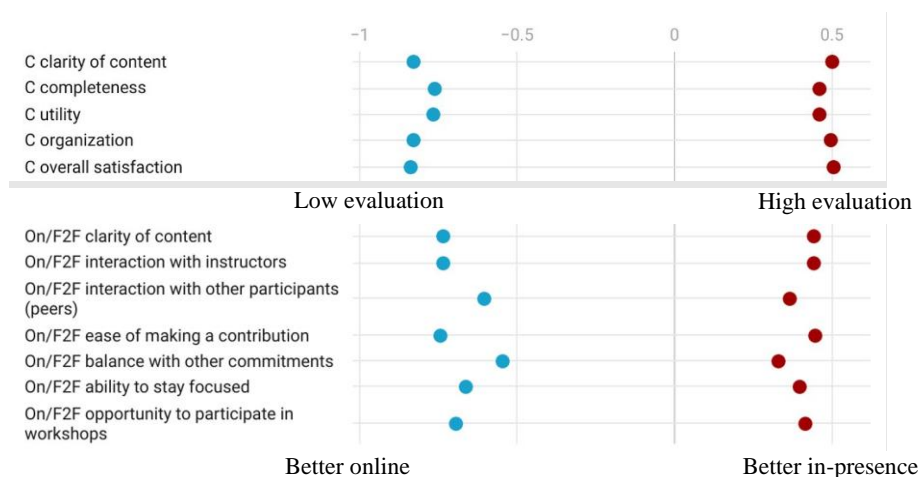
**Table 4** - *Online propensity index, ADL and EU-SILC trainees. Year 2023 (scale of 0 to 1).*

	ADL	EU-SILC
clarity of the content	0.6	0.3
interactions with the instructors	0.3	0.2
interactions with the other participants (peers)	0.3	0.1
ease of making a contribution	0.4	0.2
balance with other commitments	0.8	0.4
ability to stay focused	0.6	0.3
opportunity to participate in workshops	0.6	0.3

*Source: our elaboration of data from 2023 ADL and EU-SILC evaluation questionnaires.*

Finally, we performed a cluster analysis on the EU-SILC questionnaire results to reveal any specific group that could be better suited to receiving online training. The cluster analysis was conducted using k-means clustering (Seol, 2022) on Jamovi software (Navarro and Foxcroft, 2019).

We included in the analysis the variables related to course satisfaction (cfr. § 2) with respect to the clarity of the content, completeness of the issues presented, utility of the course for the job, organization and overall satisfaction. We also included the indicator of preference for the online or in-presence training modality for the several dimensions described in § 2 and reported in Table 4.

**Figure 2** – Centroids of the clusters, EU-SILC trainees. Year 2023.

Source: our elaboration of data from 2023 ADL and EU-SILC evaluation questionnaires.

Figure 2 reports the centroids of the two clusters <sup>5</sup>. It is possible to characterize two groups. The first is composed of the experts (the centroids of the cluster for the “experience” are -0.180 for group 1 and 0.109 for group 2), who gave a better evaluation with respect to the 2023 training and declared a preference for the face-to-face modality. The second group, composed of the new interviewers without any previous experience of this training, gave a more critical evaluation of the course attended, demonstrating a greater propensity for the online modules. The results indicate that the evaluation of the present course could have influenced the preference for the online or in-presence modality.

#### 4. Conclusions

The results of the data analysis open up a reflection on a number of relevant issues in relation to how to manage 'knowledge' which has to be transferred to interviewers and managers of a public and private survey network and how to reinterpret training after the pandemic.

The results of the logistic model applied to the EU-SILC interviewer post-assessment show that the propensity to score well in the training course is six times higher for the face-to-face training model than for the online model, and twice as high for the experienced interviewers as for the inexperienced interviewers.

<sup>5</sup> The results are based on 77 valid answers, the variables being standardized.

As highlighted by the evaluation questionnaire results, the expert interviewers who attended both online and in-presence sessions, preferred the latter, at least when the online sessions were organized as long live sessions. They considered that remote training should be of a shorter duration and include more discussion elements and strategies to reduce the distance, using tools that allow a greater connectivity, such as icebreakers. Microlearning or 'small bites' is regarded as more effective (Hug, 2005), i.e., training designed in many small learning units. In this way, there is no risk of spending too much time in front of a device screen, thereby reducing the possibility of fatigue and distraction but at the same time favoring the possibility of taking notes and acquiring the correct information.

According to the Hug (2005), blended models, which combine the learning phase online (with live events and self-paced learning modules designed for distance learning) should be considered, taking into account the survey technique, the survey network - public or private - and the degree of experience of the participants to be trained.

In-presence training itself requires a shift towards more streamlined training, combining and integrating theoretical and practical knowledge using physical and digital spaces. In-person meetings should be organized to facilitate the interaction between peers and trainers (Eom, 2016).

A new phase of the training study of the Census Population Network is under way, with two separate groups receiving fully online training and one group receiving face-to-face training. This further experience will make it possible to assess the effectiveness of training courses which differ in terms of content, training method, survey characteristics and type of participant to be trained.

We maintain that different learning models should be designed in an adaptive mode to meet the needs of different learners and networks, municipal or private, expert or new, with different roles, interviewers or managers. The goal should be not only that of transmitting specific training 'content' but also, above all, of constructing the role of operator of official statistics.

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