INNOVATION PATHWAYS IN THE TRAINING OF THE PERMANENT CENSUS INTERVIEWERS AND STAFF (2018-2024)[1]

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Abstract. A crucial element for the survey's success is, undoubtedly, the participation of the interviewers in a dedicated training course before starting the fieldwork phase. In this context, the Italian National Institute of Statistics (Istat) has now developed a specific know-how aiming to improve it year after year, also based on the feedback provided by teachers and students. Over time, the training courses have shifted from being entirely in-person to a blended format, introducing new IT support tools such as Moodle.
The purpose of this research is to outline the evolution of the training models for the interviewers of the Permanent Census of Population and Housing from the first year of this new modality (2018) to today (2024). This evolution is the result of the comments and suggestions provided by the interviewers and staff at the end of the training course through the compilation of a satisfaction questionnaire.
The analysis employed non-parametric statistical techniques, including the Kruskal-Wallis test and Dunn's *post hoc* comparisons, to evaluate trends across years.
The results obtained highlighted a positive trend in the appreciation by the learners regarding the usability of the platform, the availability of materials and the support provided by teachers. The data collection process and analysis allowed us to constantly refine the training path, implementing targeted changes to respond to emerging needs, thus confirming the success of the model. The evolution of the system emphasized how the circular approach, based on feedback, continues to guarantee more effective learning and increasing satisfaction of the learners.

1. Introduction

The training of interviewers before the start of fieldwork is undoubtedly a crucial factor in the success of the survey as it represents the transition from the planning phase, in which the research design was developed, to the data collection phase (Istat, 2019). Indeed, the interviewers play a pivotal role in contacting the survey units and motivating them to participate in the survey. Moreover, conducting an interview

[1] The authors share contents and views expressed in this paper. However, N. Balì drew up the sections 1, G. D'Ambrosio the section 2, A. Lugli the section 3, N. Mirante the sections 4 and 5 and M.T. Fiori the section 6.

requires a series of competences, not limited to guiding the interview, that include managing appointments, asking questions exactly as worded in the questionnaire to avoid the interviewers' effect (West *et al.*, 2013), accurately recording the answers, and ensuring a comfortable interview environment (Gubrium *et al.*, 2012). So, recognizing the key role of interviewers means paying particular attention to the definition of training processes for both surveyors and field staff, essential to ensure that all interviewers acquire the competencies required to perform their tasks in accordance with the high-quality standards established for national statistical surveys (Istat, 2012).

Over time, both training courses and supporting materials have been significantly shaped by methodological and technological advancements. These developments have led to increasingly differentiated training designs, tailored to the specific objectives of each survey and the corresponding data collection techniques (Istat, 2019). Specifically in the case of the Permanent Census of Population and Housing, introduced in 2018 to replace the traditional Census carried out every ten years, a range of new organizational aspects, data collection methods, and technological tools have been implemented (Mirante *et al.*, 2025). In this context, the transition to the new Census model necessitated the redefinition of the training strategy, for example by introducing training models for interviewers based on e-learning or blended approaches, aimed at designing a permanent training model in the light of a circular approach (Istat, 2024).

In recent years, several national statistical agencies and academic institutions have experimented with e-learning or blended training programs for interviewers involved in large-scale surveys and censuses. For example, the U.S. Census Bureau has implemented self-study and web-based modules as part of its interviewer training since the 2010 Census, complemented by classroom and on-the-job sessions (Goerman *et al.*, 2019). Similarly, Statistics Canada employs a blended approach to interviewer training for its Continuous Household Surveys, combining virtual learning environments with monitored field practice and continuous feedback via its Computer-Assisted Personal Interviewing (CAPI) system. The Brazilian Institute of Geography and Statistics (IBGE) has also integrated digital resources into its training programs for enumerators during national census operations, supported by cognitive testing studies to enhance data reliability. In Europe, organizations such as Statistics Netherlands (CBS) emphasize structured training and supervision processes, increasingly supported by e-learning components, as key factors for maintaining data quality in household and demographic surveys (Kockelkoren, 2011). At the international level, the United Nations Statistics Division has promoted e-learning platforms for capacity building in official statistics, including modules on survey methodology and data collection practices. Although these initiatives share common objectives with the Italian National Institute of Statistics (Istat), few published

studies have systematically evaluated the effectiveness of e-learning specifically for interviewer training in the context of continuous or permanent census operations (Sun *et al.*, 2024). Therefore, the present study contributes to the existing literature by providing an empirical evaluation of e-learning training outcomes for interviewers in the Italian Permanent Census of Population, offering a novel perspective on digital training within official statistics.

So, following these premises, the objective of this research is to explore learners' assessments of the Italian Permanent Census of Population and Housing self e-learning training over the years from 2018 to 2024.

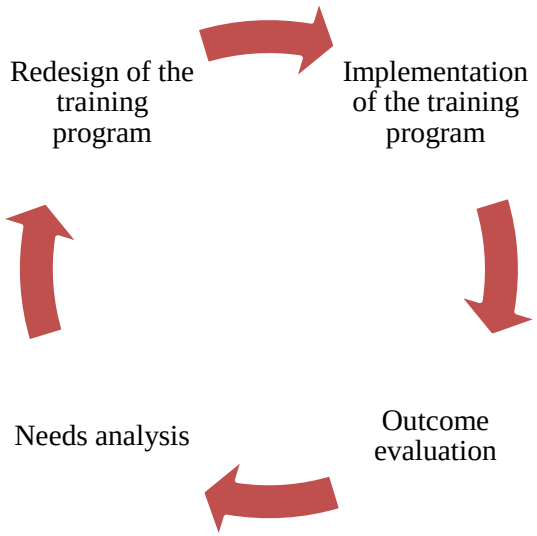
2. From linear to circular: a new training approach for the Permanent Census of Population and Housing

As mentioned in the introduction of this work, following the definition of the new model of the Permanent Census of Population and Housing, also the training models for interviewers and staff have been modified (Castagna, 2022). In detail, the training approach shifted from linear to circular, which aim is to support learners in their professional activities – specifically during the data collection phase – by providing agile, accessible, and practical solutions to real-world problems within a framework of continuous improvement. For this reason, the circular approach is structured in four phases:

- *Needs analysis*: this phase involves identifying educational needs and learner requirements through tools such as questionnaires.
- *Training program design*: this phase emphasizes collaboration among all stakeholders involved in the training design process, ensuring that the educational intervention aligns coherently with the identified needs.
- *Implementation of the training*: this phase represents the moment when the actual training activities take place, actively involving both trainers and trainees.
- *Outcome evaluation*: this final phase aims to assess whether the training objectives have been achieved, while also identifying and addressing any residual learning gaps that may have emerged during the course.

This scheme is summarized in the following Figure (Figure 1).

Figure 1 – *Circular approach implemented for the training course for the interviewers and staff of Italian Permanent Census of Population and Housing 2018-2024.*



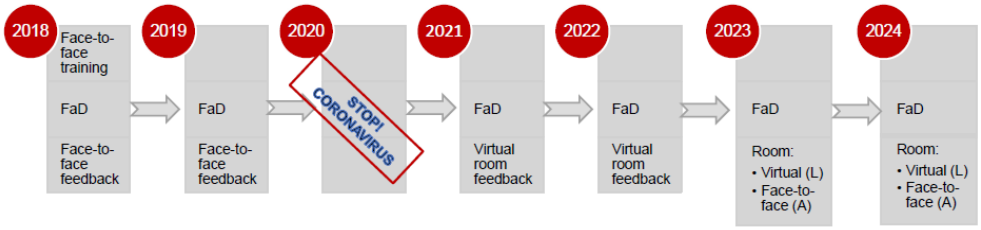
Consequently, in line with a continuous improvement perspective, the training model is periodically revised based on the feedback collected through course evaluation anonymous questionnaires, which learners are invited to complete upon conclusion of the training courses.

3. The transition to a blended learning model

Following this framework and in compliance with the needs of the interviewers and field staff, training models moved from being entirely face-to-face to a blended format, incorporating new IT support tools such as Moodle LMS[2] (Learning Management System) for self-e-learning (the so-called "FaD" – Formazione a Distanza accessible through the link https://formazionereti.istat.it/). The onset of the COVID-19 pandemic further accelerated the demand for greater flexibility and adaptability in training methodologies (Figure 2).

[2] Modular Object-Oriented Dynamic Learning Environment (Moodle) is a computer system for creating and sharing educational materials online.

Figure 2 – *Training models in the Italian Permanent Census of Population and Housing 2018-2024.*



Overall, the adoption of the platform has facilitated the shift from a traditional training model to a continuous training framework. This approach is supported by regularly updated instructional materials, which remain accessible to trainees throughout the entire duration of the survey, enabling autonomous learning.

4. Methodology

As outlined before, the training programs for the Permanent Census of Population and Housing comprised two distinct phases: a face-to-face component and an e-learning part (FaD). The present article is exclusively focused on the self-e-learning training element.

From 2018 to 2024 (except for 2020), the FaD courses were delivered via the self-learning platform Moodle. This platform provided learners with access to a variety of materials, which were organized into different sections. These included learning modules, intermediate self-assessment tests, a final learning test, additional materials, and a course evaluation anonymous questionnaire.

Learners who successfully completed the FaD were invited to fill in the evaluation questionnaire. In order to give the trainees more freedom, completing the questionnaire was anonymous and not mandatory.

The questionnaires were designed to gather feedback on the perceived quality of the FaD. We were particularly interested in receiving evaluations on the following areas: platform usability, material quality, teacher support, overall course satisfaction and any additional suggestions. Except for the final domain, all domains were measured using a Likert-type scale. All questionnaire items were mandatory, resulting in a complete dataset with no missing values.

At the conclusion of each training year, the collected questionnaires were analyzed with the objective of identifying areas for enhancement in subsequent

years. Following a review of the suggestions, we implemented those that were feasible.

The present study analyzes data collected from questionnaires completed by learners between 2018 and 2024, by using appropriate statistical tests. For each domain, a trend evaluation was conducted over the years.

Non-parametric tests were applied due to the ordinal nature of the data (Likert scale). Specifically, the Kruskal-Wallis test was used to assess differences across years, as it does not assume normality and is suitable for comparing multiple independent groups. It provides a global test of whether differences exist among independent groups. Dunn's *post hoc* test was employed to identify pairwise differences following significant Kruskal-Wallis results. This choice was preferred over ordinal regression because the primary aim was to detect distributional differences rather than model predictors of satisfaction. To strengthen methodological transparency, the main Kruskal-Wallis and Dunn's results are reported in the results section. The data were also visualized in graphical form (line graph).

5. Results

Between 2018 and 2024, 100,429 learners completed FaD training, with an average questionnaire response rate of 21.34% (N=21,433).

The socio-demographic characteristics remained stable over the years. Overall, the majority of respondents were woman (65.18%), the median age was 46 years (range 18-80 years) and 52.14% of the sample had received a high school education. Almost half of the sample lived in northern Italy (45.02%), while 38.60% lived in the south and 16.38% in the centre.

No statistically significant differences were found across years in terms of professional role (interviewer, supervisor, coordinator, staff member or back-office operator), prior Istat experience (having or not having participated in other Istat surveys), or Census expert status (having or not having previously worked on the Census). Also, no statistically significant differences were observed when the data were stratified by role or Census status (expert or non-expert). Therefore, we reported the overall results for each questionnaire domain.

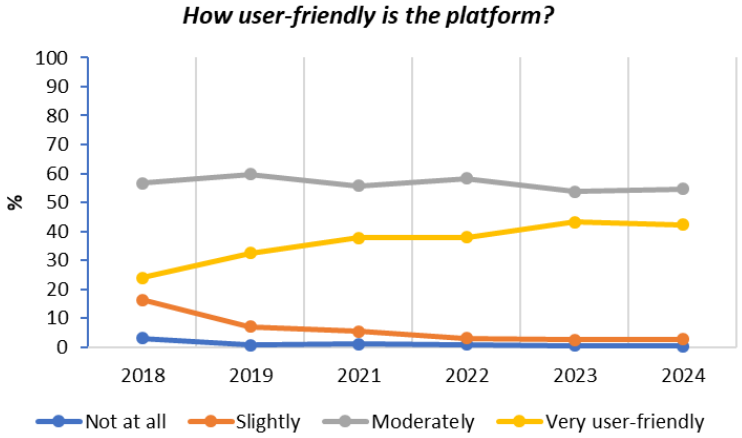
Similar percentages were observed for each domain of the questionnaire, indicating a significative positive trend over the years (Table 1). This is a sign that the improvements made to the FaD courses were in line with the learners' requests.

Table 1 – *Kruskal-Wallis Test Results by Domain.*

Domain	H statistic	df	p-value	Significant (p<0.05)?
Platform usability	721.29	5	0.0001	Yes
Course usefulness	244.62	5	0.0001	Yes
Topics to add	342.10	5	0.0001	Yes
Support from teachers	51.50	5	0.0001	Yes
Overall satisfaction	462.42	5	0.0001	Yes

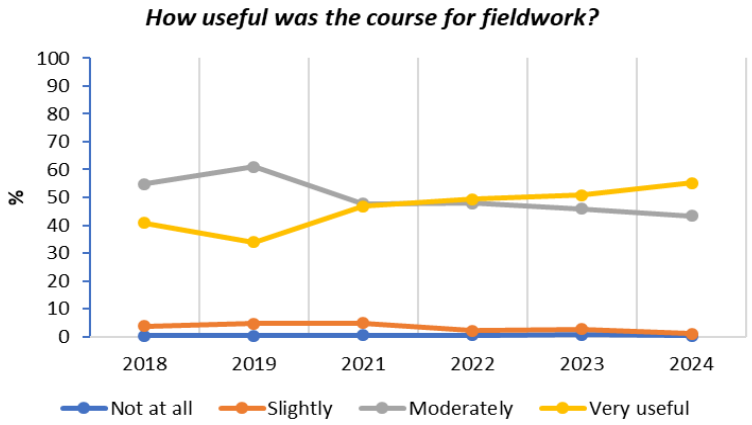
As shown in Figure 3, the majority of respondents defined the platform as either 'very' or 'moderately' user-friendly. These percentages increased statistically over the years (Kruskal-Wallis test, $p < 0.001$). Dunn's test revealed that all pairwise comparisons between years were statistically significant ($p < 0.001$), except for the comparison between 2021 and 2022 ($p = 0.046$) and between 2023 and 2024 ($p = 0.270$), which were not significant. Notably, the proportion of respondents who rated it as 'very user-friendly' or 'moderately user-friendly' significantly increased from 80.56% in 2018 to 96.96% in 2024.

Figure 3 – *Results to the question "How user-friendly is the platform?" by years.*



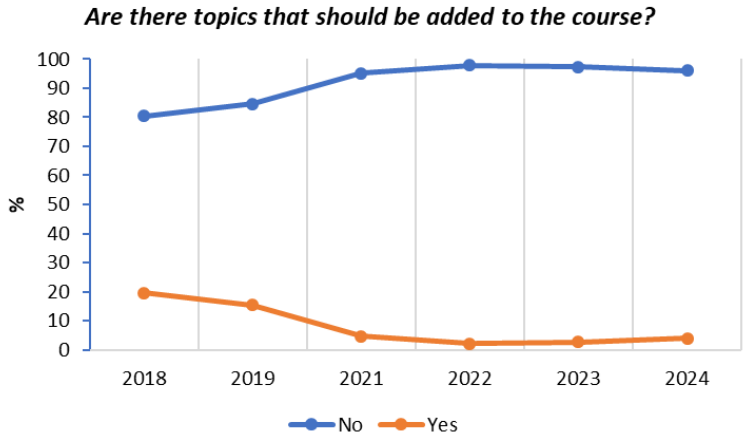
In answer to the question "*How useful was the course for fieldwork?*" (Figure 4), 40.87% of the 2018 sample answered 'very useful'. This percentage rose to 55.13% in 2024 (Kruskal-Wallis test, $p < 0.0001$). Dunn's test indicated that all pairwise comparisons between years were statistically significant ($p < 0.001$), except for the comparison between 2021 and 2022 ($p = 0.179$).

Figure 4 – *Results to the question "How useful was the course for fieldwork?" by years.*



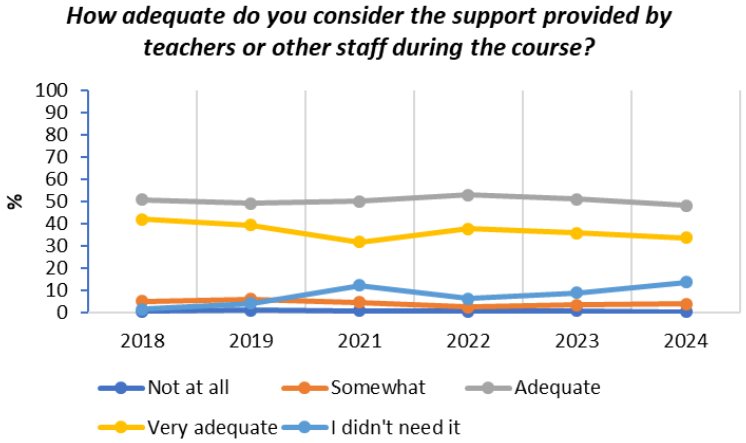
As shown in Figure 5, while in 2018 as many as one-fifth of the respondents (19.49%) believed that 'There were topics to be added to the FaD' this percentage dropped significantly over the years to 3.98% in the year 2024 (Kruskal-Wallis test, $p < 0.0001$). Dunn's *post hoc* test showed that most pairwise comparisons were statistically significant ($p < 0.001$), except for 2021 *vs.* 2024 ($p = 0.171$), 2022 *vs.* 2023 ($p = 0.178$), and 2023 *vs.* 2024 ($p = 0.0586$).

Figure 5 – *Results to the question "Are there topics that should be added to the course?" by years.*



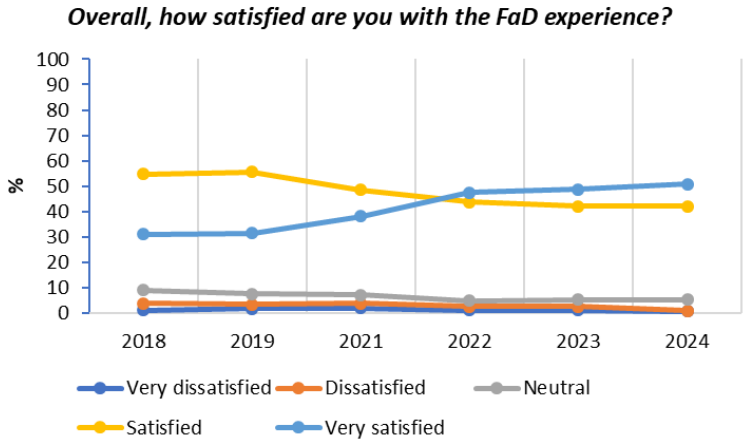
Regarding the support received from teachers or other staff during FaD (Figure 6), it is interesting to note that the proportion of respondents who said they did not need support has increased over the years (from 1.50% in 2018 to 13.65% in 2024; Kruskal-Wallis test, $p < 0.0001$). Dunn's test demonstrated that most pairwise comparisons were statistically significant ($p < 0.001$), except for 2018 *vs*. 2019 ($p = 0.343$), 2021 *vs*. 2022 ($p = 0.139$), 2021 *vs*. 2023 ($p = 0.441$), and 2022 *vs*. 2023 ($p = 0.170$). This is undoubtedly a sign that learners are becoming familiar with the IT platform.

Figure 6 – *Results to the question "How adequate do you consider the support provided by teachers or other staff during the course?" by years.*



There was also a statistically significant increase in overall satisfaction with FaD (Figure 7). The proportion of users who said they were 'very satisfied' increased from 31.14% in 2018 to 50.85% in 2024 (Kruskal-Wallis test, $p < 0.0001$). Dunn's test showed that most pairwise comparisons were statistically significant ($p < 0.001$), except for 2018 *vs*. 2019 ($p = 0.235$) and 2022 *vs*. 2023 ($p = 0.214$).

Figure 7 – *Results to the question "Overall, how satisfied are you with the FaD experience?" by years.*



6. Discussion and conclusions

The transition to the new Permanent Census of Population and Housing model replacing the traditional one required a new planning of the training strategy. Moreover, an unpredictable condition such as the Covid-19 pandemic emergency, led to an urgent rethinking of the training model to continue to let the trainees achieve satisfying levels of competencies, necessary to perform the tasks required for national statistical surveys.

The need for redefinition of the strategy year after year led to the adoption of a circular approach, starting with the annual evaluation of the previous outcome through satisfaction questionnaires, investigation of the emerging needs through the analysis of the answers to both closed and open-ended questions with suggestions or negative comments provided by the interviewers. This evaluation led to a redesign and new implementation of the training program in order to support trainees in their professional performance.

So, the present study, focused on the analysis of the effectiveness of the training models for both interviewers and staff, allows us to highlight that from the first year of this new approach (2018) to today (2024), there was a favorable evaluation of various aspects of the self-e-learning model and a positive trend regarding platform usability, availability of useful materials and teachers support. This approach also led the system to become more user-friendly, flexible and familiar, therefore ready to adapt to the training needs for other national statistical surveys.

Several potential biases should be considered when interpreting the findings of this study. First, data were collected through self-reported questionnaires, which may introduce social desirability bias or response bias. Second, the relatively low response rate could limit the representativeness of the sample and increase the risk of non-response bias. These factors may affect the generalizability of the results. Nevertheless, the consistency of trends observed across multiple years provides some reassurance regarding the robustness of the findings. Future studies should explore strategies to increase participation and assess whether improvements in satisfaction translate into better field performance.

In summary, the following results were obtained: positive growth in satisfaction rate of training courses was observed over time; the need for support to increase familiarity with the platform was limited; complaints about missing content decreased and alignment between training needs and delivery improved.

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