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Document de travail

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How do the collection mode and questionnaire used affect the European indicators in the French Labour Force Survey ?

Klara Vinceneux

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Abstract

As part of the future Framework Regulation for the Production of European Statistics on Persons and Households (Integrated European Social Statistics - IESS), aimed at harmonising and standardising social statistics surveys, the questionnaire for the French Labour Force Survey (EEC) is slated to be re-designed. The expected changes to the questionnaire module dedicated to position on the labour market (Labour Status module) will probably impact measurements on the main labour market indicators, first and foremost, employment and unemployment rates. Participating in the task force in charge of developing the European questionnaire model, INSEE responded favourably to the call for proposals issued by Eurostat in 2015 to conduct a pilot test of "At work" questions on this future new module. The Institute thus implemented an experimental survey, the main objective of which was to test for a "questionnaire effect" on the employment rate and the unemployment rate in particular, but also to analyse the connection between changes to questions and the resulting estimates.

With reflections ongoing as to how to implement the multi-mode approach in its surveys (especially the Internet), INSEE chose to conduct this test online without any interviewer intervention. 40,000 households were surveyed exclusively online : half received the current questionnaire from the Labour Force Survey ; the other half received a version proposed by Eurostat. Comparing responses to the two versions, researchers were able to identify a "questionnaire effect" as regards the main labour market indicators. To illustrate, online, the unemployment rate calculated based on the current questionnaire was 12%, as compared to 11% based on the version proposed by Eurostat.

Once the "questionnaire effect" was analysed, the data collected online were then compared and contrasted with data collected at the same time in face-to-face situations, through the French Labour Force Survey. This "mode effect" was analysed and broken down into a "selection effect" and a "measurement effect", as recommended in the literature. Analysing respondent profiles revealed a "selection effect" in the web survey. Specifically, households with high incomes have a greater propensity to respond via the Internet. The same applies to households that own their place of residence, and households residing in urban municipalities. People aged 65 or over, on the other hand, are less represented among respondents to the online survey than are young people. Once adjustments had been made for this "selection effect", the gap in unemployment rate was 2 points : it rose to 12% when calculated based on data collected online, versus 10% in face-to-face situations. Comparison of data adjusted for the "selection effect" also revealed an over-representation of the unemployed as defined by the ILO among the online respondents.

In conclusion, this test made it possible to demonstrate that a change in questionnaire or the integration of the Internet as a data collection mode could have an impact on the main labour market indicators. However, it also revealed potential positive impacts of a change in collection mode, which could be a facilitator for certain respondent profiles.

Keywords : Web data collection, mode effect, questionnaire effect, survey methodology, multi-mode.

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Introduction

The questionnaire used in the French Labour Force Survey is slated to change, in part due to the adoption of the future European regulation on social surveys (Integrated European Social Statistics – IESS) applicable to The Labour Force Survey (LFS), of which the Labour Force Survey is the French version. Stricter harmonisation of the part of the questionnaire used to qualify labour status within the meaning of the International Labour Office (ILO), may result in a break in series with the main labour market indicators, first and foremost, the employment rate and the unemployment rate. In 2015, Eurostat launched a call for applications to conduct a pilot test on the questions in the module, including questions on labour market situation, one of the aims of which was to better take into account different forms of employment. Participating in the task force in charge of drawing up the European questionnaire model, INSEE proposed to test this part of the questionnaire for Eurostat.

Further to that commitment, INSEE implemented the so-called "Labour status module" experiment in 2016. Its main objective was to measure a possible "questionnaire effect" on the employment rate and the unemployment rate. The experiment was also intended to analyse the effect of each change introduced on these indicators.

For feasibility reasons, the test was carried out entirely via questionnaires made available online, without any interviewer intervention. The test was carried out as part of the Multimode Experimental Project on the Labour Force Survey, in preparation for the overhaul of the French Labour Force Survey. 40,000 households were surveyed exclusively online : half received the current questionnaire used in French Labour Force Survey ; the other half a version proposed by Eurostat.

This document presents the main findings from the data collected as part of the "Labour status module" experiment. It initially proposes an estimation of the questionnaire effect on employment, unemployment and inactivity indicators, comparing the results received via each of the two samples interviewed online (European questionnaire and current French questionnaire). Where the questionnaire effect is proven on the main labour market indicators, it then endeavours to identify the existence of a "mode effect" induced by online data collection on the main labour market indicators, by comparing data collected online with data collected at the same time in face-to-face situations as part of the French Labour Force Survey. This "mode effect" was analysed and broken down into a "selection effect" and a "measurement effect", as recommended in the literature. Lastly, the question of data aggregation in the presence of a"mode effect" on indicators is addressed in an

annex. Should data collected online be subject to adjustment ? If so, how does one go about calculating indicators adjusted for the "measurement effect" ? Is it possible to build indicators that limit breaks in time series by considering face-to-face data collection as the reference collection mode ? Is it legitimate to do so ?

1 The "Labour status module" experiment : selected field and survey methodology

1.1 The field

The experiment was carried out on a sample of households in mainland France, in which the reference person (or spouse, where applicable) was under 71 years of age. As the French Labour Force Survey focuses on ordinary dwelling, communities were excluded from the field. Individuals were interviewed in their usual place of residence and only those ages 15 or over were asked to complete a questionnaire.

1.2 Methodology and protocol

The sample plan was designed from the Statistical Housing Directory, constructed from the tax files for 2015. Taking into account the objectives of the survey, the survey plan was designed to minimise the variance in estimators of target variables (i.e. the unemployment rate and the employment rate).

A so-called "large-scale" online experiment carried out during 1st quarter 2016 and also pertaining to the first wave in the French Labour Force Survey were used to build homogeneous response groups according to the characteristics of the households found in the housing tax data. The "Labour status module" sample was stratified based on four variables determined by analysing the factors behind non-response as observed in the context of the large-scale experiment : the age of the reference person, the household's income, the occupation status and the existence of an email address in the tax files. The survey design was thus conceived to improve the accuracy of the estimates based on the responses of the sub-populations in which non-response was most frequent.

The total sample size was 40,000 dwellings. The allocation determined for each stratum was proportional to the number of dwellings per stratum taking into account the rate of response to the large-scale test in the stratum, as well as over-representation of those under 26 and those ages 26-30.

To illustrate :

$$n_h = \frac{R_h}{\sum_{h=1}^{17} R_h} \cdot 40000 \qquad\qquad R_h = \frac{r}{t_h} \cdot N_h$$

with n_h the allocation of the stratum, N_h the size of the stratum in the sample frame, r the over-representation multiple in the stratum (depending on age) and t_h the stratum of the collection rate in the previous test.

A random sampling was made to determine which type of questionnaire would be offered to each household surveyed. Half of the sample was given access to the (online) questionnaire used in the current French Labour Force Survey ; the other half to the questionnaire proposed by Eurostat. Taking into consideration the objectives, the questionnaire was limited to the section on dwelling, the Labour status module, based on which the main indicators expected from the survey can be estimated, and the module B which lets to qualify the jobs occupied.

The questionnaire covered the reference weeks from 16 to 22 May, 23 to 29 May or 30 May to 5 June, depending on the sub-sample to which the households belonged. The data were collected from 23 May to 26 June 2016.

2 Overall experiment findings

2.1 Response rate

The overall response rate, defined as the share of households that validated at least one individual questionnaire, is 30%, once the initial weightings were taken into account (Table 1).

Some characteristics appear to be linked to response rate. For instance, households having declared income higher than 40,000 euros, owned their main place of residence, resided in a house, and whose reference person was between 30 and 59 years old or with a child, were over-represented among the respondents. The same went for "connected" households, i.e. having given an email address to the tax office when paying housing tax.

Conversely, other characteristics appear rather over-represented among households that sent a reply card indicating their unavailability or unwillingness to participate in the online survey. For instance, households that declared income below 40,000 euros, were not connected, and made up of individuals 50 years of age or older (particularly 60 years of age or older) or without children were over-represented among households unable or unwilling to participate in the online survey (regardless of whether they had

FIGURE 1 – Collection result and response rate

Share (%)

	Before weighting			After taking into account survey weights		
	Eurostat	French LFS	Total	Eurostat	French LFS	Total
In the scope	**100**	**100**	**100**	**100**	**100**	**100**
Respondent	**24**	**23**	**24**	**31**	**30**	**30**
Survey validated and at least one individual questionnaire validated	23	22	22	29	28	29
Survey not validated but at least one individual questionnaire validated	1	1	1	2	2	2
Non respondent	**75**	**76**	**75**	**69**	**70**	**69**
Survey not validated and no individual questionnaire validated	3	3	3	4	4	4
Without information	39	40	39	39	40	40
Reply card send	17	17	17	15	15	15
Impossible to reach	16	16	16	10	10	10
Out of scope	**0**	**0**	**0**	**0**	**0**	**0**
Total	**100**	**100**	**100**	**100**	**100**	**100**
Number of individuals	***19 945***	***19 952***	***40 000***	***11 045 100***	***11 054 800***	***22 099 900***

Scope : Households surveyed in main place of residence.
Source: "Labour status module" experimentation.

started to fill out one or more questionnaires).

Overall household participation (complete or partial responses) depended very little on the proposed questionnaire. This was due in particular to the fact that the protocol was the same, regardless of the questionnaire proposed. The share of respondents, defined as the share of households having validated at least one individual questionnaire, was slightly higher amongst households having received the Eurostat version (31% after weighting) compared to the others (30%).

Excluding the households that were impossible to reach (envelope not deliverable), the overall response rate was 27% (34% after taking the survey weights into account) (Table 2). This is significantly lower than the EEC response (79%, see below). The figure amounts to 34% in households sampled to answer the Eurostat version of the questionnaire and 33% in those that received the questionnaire from the current French Labour Force Survey.

The overall response rate among contacted households varied in the same way as the overall response rate, depending on the characteristics of the household. The slight difference previously observed in the overall response rate for households that received the version of the questionnaire proposed by Eurostat is magnified in specific populations.

FIGURE 2 – Collection results and response rate among households contacted

Share (%)

	Before weighting			After taking into account survey weights		
	Eurostat	French LFS	Total	Eurostat	French LFS	Total
In the field	**100**	**100**	**100**	**100**	**100**	**100**
Respondent	**29**	**28**	**28**	**34**	**33**	**34**
Survey validated and at least one individual questionnaire validated	28	26	27	33	31	32
Survey not validated but at least one individual questionnaire validated	1	2	2	2	2	2
Non respondent	**71**	**72**	**71**	**65**	**67**	**66**
Survey not validated and no individual questionnaire validated	4	4	4	4	4	4
Without information	47	47	47	44	45	45
Reply card send	20	20	20	17	17	17
Total	**100**	**100**	**100**	**100**	**100**	**100**
Number of individuals	***16 708***	***16 749***	***33 457***	***9 864 876***	***9 904 565***	***19 769 441***

Scope : Contacted households surveyed in main place of residence.
Source: "Labour status module" experimentation.

This is the case for households that declared income in excess of 40,000 euros, 45% of which validated at least one questionnaire when they received the Eurostat version, compared with 42% when they received the current French Labour Force Survey version. Similarly, the gap is larger among younger and older households. "Non-connected" households responded proportionately more to the Eurostat version of the questionnaire, achieving a response rate of 24%, compared to 22% among households that received the current version. In contrast, households with three or more children responded more to the current version of the questionnaire than to the Eurostat version.

2.2 The share of interruptions and discontinuations

The discontinuation rate, defined as the proportion of households that started to fill out at least one dwelling and/or individual questionnaire, but did not validate the survey or ultimately returned a reply card, out of the total households contacted (excluding non-distributable mail), **amounted to 14% in this experiment** (once the survey weights were taken into account -âĂŞ Table 3. **Most discontinuations occurred in households that completed the dwelling questionnaire and started filling out at least one individual questionnaire (9%)** ; the others did not start entering any individual questionnaire data (4.5%) or sent a reply card (2.2%).

The discontinuation rate was barely higher among households that received the questionnaire from the current French Labour Force Survey than in those surveyed via the questionnaire proposed by Eurostat. This can be ex-

FIGURE 3 – Discontinuation rate among households contacted

Share (%)

	Before weighting			After taking into account survey weights		
	Eurostat	**French LFS**	**Total**	**Eurostat**	**French LFS**	**Total**
Total	11,9	13,3	12,6	12,9	14,1	13,5
Filling out the housing questionnaire started	4,6	4,4	4,5	4,6	4,5	4,5
Filing out the housing questionnaire and individual questionnaires started	7,3	8,9	8,1	8,3	9,6	9,0
Total	**11,9**	**13,3**	**12,6**	**12,9**	**14,1**	**13,5**
Survey not validated	9,9	11,1	10,4	10,8	11,8	11,3
Filling out the housing questionnaire started	3,6	3,4	3,5	3,6	3,5	3,6
Filing out the housing questionnaire and individual questionnaires started	6,3	7,7	6,9	7,2	6,9	7,7
Reply card sent	2,0	2,3	2,2	2,1	2,3	2,2
Filling out the housing questionnaire started	1,0	1,1	1,0	1,0	1,0	1,0
Filing out the housing questionnaire and individual questionnaires started	1,0	1,3	1,1	1,4	1,1	1,3

Scope : Contacted households surveyed in main place of residence.
Source: "Labour status module" experimentation.

plained by the fact that the individual questionnaire proposed by Eurostat was reduced (via Labour status module) compared to that of the current French Labour Force Survey.

For reasons that are probably similar, **those filling out the Eurostat questionnaire less frequently interrupted their response process : 41% of validated individual questionnaires showed interruption in data entry lasting more than or equal to ten minutes, compared with 42% of those in the French Labour Force Survey (Table 4).**

Lastly, 36% of the households surveyed connected to the site to start entering data. Out of them, 81% validated the survey, 16% started but did not complete data entry and 3% ultimately sent a reply card (Table 5).

FIGURE 4 – Percentage of respondents posting interruptions of 10 minutes or more

Share (%)

Number of individual questionnaires to fill out	Before weighting			After taking into account survey weights		
	Eurostat	French LFS	Total	Eurostat	French LFS	Total
One	37,8	39,5	38,6	33,7	36,0	34,8
Two	39,4	41,4	40,4	38,4	40,3	39,4
Three or more	51,0	50,6	50,8	47,8	48,2	48,0
Total	**42,2**	**43,6**	**42,9**	**40,5**	**42,3**	**41,4**

Scope : All validated individual questionnaires.
Source: "Labour status module" experimentation.

FIGURE 5 – Survey progress among households with recorded log-in

Share (%)

	Before weighting			After taking into account survey weights		
	Eurostat	French LFS	Total	Eurostat	French LFS	Total
Recorded log-in	**100**	**100**	**100**	**100**	**100**	**100**
Survey validated	82	79	80	82	80	81
Survey started not validated	15	17	16	15	16	16
Reply card sent	3	4	3	3	3	3

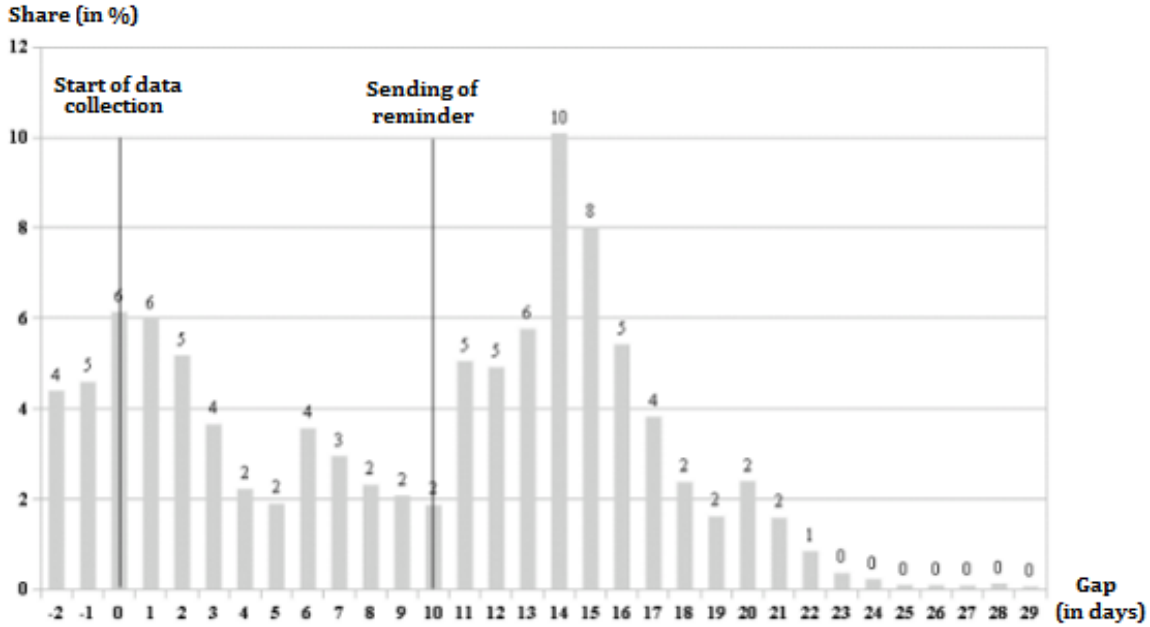
Scope : Households surveyed in a main residence, contacted, for which a log-in was recorded.
Source: "Labour status module" experimentation.

2.3 Validation of individual questionnaires

The validation date of individual questionnaires appears to be connected to the date of receipt of a letter and/or e-mail, whether the initial notification letter or a reminder (sent ten days after the start of data collection) (Graph 6).

Individual questionnaires were more often validated at the beginning or end of the week, and nearly 30% on the weekend (Graph 7).

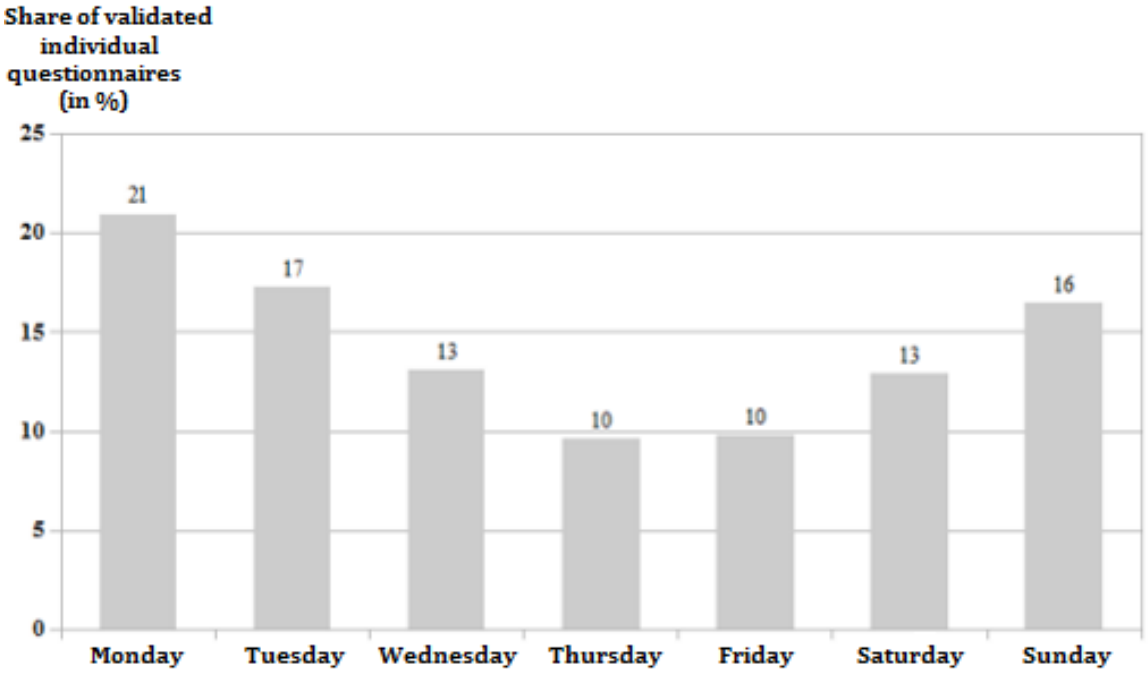
FIGURE 6 – Breakdown of number of days elapsed between start of data collection and validation of individual questionnaire



Scope: Individual questionnaires validated in a responding household.
Source: "Labour status module" experimentation.
Note: As the site opened early, some questionnaires may have been filled out before the official collection start date.

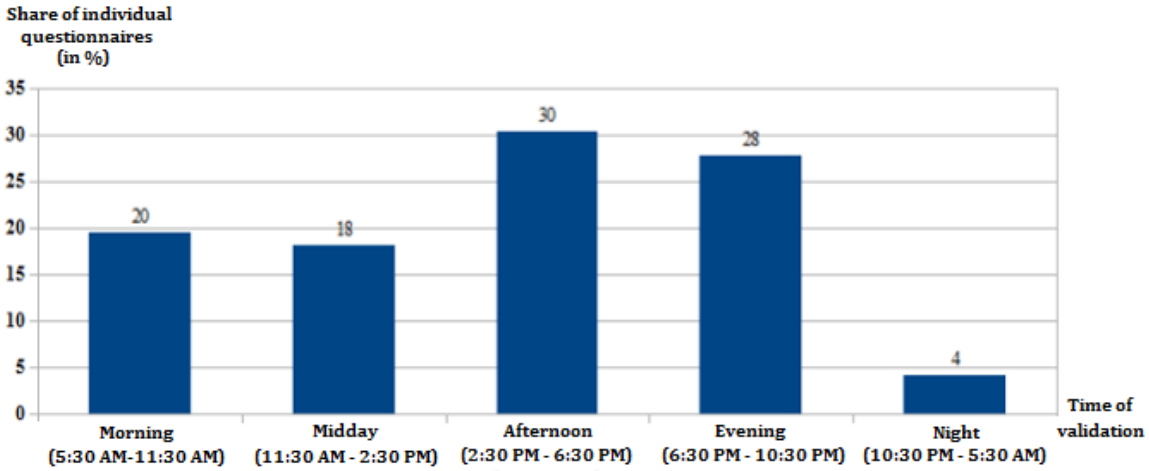
Lastly, the majority of respondents chose to validate their questionnaire in the afternoon or evening (58%) ; 20% validated in the morning ; 18% between 11 :30 AM and 2 :30 PM and 4% at night (Graph 8).

FIGURE 7 – Breakdown of validation dates for individual questionnaires by day



Scope: Individual questionnaires validated in a responding household.
Source: "Labour status module" experimentation.

FIGURE 8 – Breakdown of individual questionnaires by time of validation



Scope: Individual questionnaires validated in a responding household.
Source: "Labour status module" experimentation.

2.4 The completion rate

The completion rate, i.e. the share of households that validated all their individual questionnaires out of all responding households, **was barely higher among households that received the questionnaire proposed by Eurostat than among those that received the current French Labour Force Survey version** (93% vs. 92%, once sampling weights were taken into account). Limiting the field to households with at least two individual questionnaires to be entered, the situation remains the same, but the completion rate decreases slightly, to 91% and 90% respectively (Table 9). As above, this is probably due to the fact that the version proposed by Eurostat is shorter and more intuitive than the current version of the French Labour Force Survey questionnaire.

FIGURE 9 – Rate of completion

Share (%)

	Before weighting			After taking into account survey weights		
Completion rate	**Eurostat**	**French LFS**	**Total**	**Eurostat**	**French LFS**	**Total**
At least 2 individual questionnaires to enter	90,1	88,8	89,5	90,5	89,6	90,1
Total	93,6	92,5	93,1	93,0	92,1	92,6

Scope: Individual questionnaires validated in a household that validated at least one individual questionnaire.
Source: "Labour status module" experimentation.

2.5 The adjusted proxy rate

The adjusted proxy rate, i.e. the number of individual questionnaires entered by a relative of the person to whom the questionnaire was originally addressed, compared to the number of individual questionnaires minus the number of households that validated at least one questionnaire [1], **amounted to 16.3%**, once the initial weightings were taken into account (Table 10).

The most common proxy questionnaire respondents were young people under the age of 29 and/or inactive persons (neither in employment nor unemployed within the meaning of the ILO). Thus, 54% of proxy questionnaire respondents were registered as inactive, compared to 34% of the total population surveyed. The questionnaires pertaining to women were also more often entered by proxy than the others (55% of questionnaires versus 45% for men). **After weighting, the adjusted proxy rate**

1. Number of IQs validated by a proxy/(number of IQs validated - number of households having validated at least one IQ).

was barely higher among the respondents to the questionnaire proposed by Eurostat than among those who responded to the current French Labour Force Survey questionnaire (19.9% versus 19.2%). For comparison purposes, the corrected proxy rate of the current French Labour Force Survey was 48% in face-to-face situations and 74% by telephone in Q2 2016.

FIGURE 10 – Adjusted proxy rate

Share (%)

	Before weighting			After taking into account survey weights		
	Eurostat	French LFS	Total	Eurostat	French LFS	Total
Adjusted proxy rate	15,9	15,7	15,8	16,6	15,9	16,3

Scope: Individual questionnaires validated in a household that validated at least one individual questionnaire.
Source: "Labour status module" experimentation.

3 The questionnaire effect : methodological aspects

In the context of the "Labour status module" experiment, the potential impact of a modification to the questionnaire on estimated main indicators in the French Labour Force Survey was identified by comparing the results when households received the current version of the questionnaire, used in the French Labour Force Survey, and when they received the version proposed by Eurostat. The questionnaire effect measured by comparison was then an effect observed in the context of an online experiment. Consequently, the resulting findings cannot necessarily be transposed to the framework of a modified questionnaire using the traditional first interview in face-to-face situation protocol, until further research is conducted. A similar experiment carried out under the same conditions as the current French Labour Force Survey, i.e. with an interviewer and upon first interview, could make it possible to estimate the actual impact of a change in questionnaire on the main labour market indicators upon first interview.

3.1 Methodology implemented to adjust for non-response

To observe a potential impact of the questionnaire on the main indicators calculated from the Labour Force Survey, one solution is to compare the indicators calculated from the treated non-response data [2]. However, given the

2. The results shown below are data adjusted for non-response. However, the analyses carried out on the data adjusted for non-response confirm the results found after treatment of total non-response.

low response rate recorded in this experiment, and in order to find indicators comparable to those of the French Labour Force Survey currently underway in the field, it is preferable to treat the non-response.

The method implemented consists first, of analysing total non-response, by considering, as previously, any household that has validated at least one individual questionnaire and has not returned a reply card, as a respondent household. This analysis will make it possible, via a re-weighting method, an upward adjustment in the weights of the responding units, thereby offsetting the impact of non-responder households on the estimate. To secure the reliability of the estimated main indicators calculated from the Labour Force Survey, adjustments need to be made to the initial weights, taking into account the total non-response. Partial non-response (where a household has not validated all of its individual questionnaires) will subsequently be corrected by adjusting the weight of the individuals who responded upwards, to compensate for the lack of response from the non-responding individuals in the household.

The procedure is as follows :

— **Stage 1 :** Selecting the auxiliary variables connected with having responded, as well as the variable used to determine the respondent's status with regard to employment (employed, unemployed, inactive) in households that have responded at least partially to the survey. If one of the chosen variables is connected with response probability, but not with the target variable, then it is preferable not to use it, as it will have no impact on reducing the non-response bias but could contribute to increasing the variance of the estimators.

— **Stage 2** : Modelling response indicator variable using the variables selected in the previous stage, and based on the validated individual questionnaires :

Either r_i a dummy variable for unit i such as :

$$r_i = \begin{cases} 1 \text{ if the household is considered respondent} \\ 0 \text{ otherwise} \end{cases}$$

— **Stage 3** : Creating homogeneous classes based on the estimated response probability, estimated on the basis of sample households. The response probability estimated in the previous step could possibly be used directly to calculate the adjusted weights. This would involve using the estimated probabilities by logistic regression in the previous stage, dividing the weight of each household responding by the inverse of the estimated probability. However, doing so could lead

to biased estimators if the form of the function (here, logistic) were poorly specified. Forming homogeneous classes of respondents, of a non-parametric nature, protects against possible poor specification in the form of the logistic function. To define classes of households that are homogeneous in terms of response probability, four methods are used :

— Ascending Hierarchical Classification in 3 classes (AHC) ;
— the equal quantiles method resulting in 5 classes (QE5) ;
— the equal quantiles method resulting in 10 classes (QE10) ;
— the Haziza and Beaumont method (H-B) resulting in 11 classes.

— **Stage 4** : Calculating the weights adjusted for non-response, based on the response rate observed in each of the classes built in the previous step. Once the homogeneous household classes have been established, the response rate specific to each of the classes can be calculated, regardless of the method used to form them. For each class formed, the probability of a household's belonging to the class is estimated by :

$$\hat{p}_g = \frac{n_{rg}}{n_g}$$

where n_{rg} refers to the number of households responding in the class g and n_g denotes the number of households in the class g. Thus, the estimated response probabilities are those shown in the table 11.

FIGURE 11 – Calculating estimated response probability by class

	AHC	EQ5	EQ10	HB
Class 1	0,13	0,11	0,10	0,10
Class 2	0,28	0,15	0,11	0,12
Class 3	0,45	0,22	0,14	0,16
Class 4		0,30	0,17	0,20
Class 5		0,41	0,20	0,25
Class 6			0,25	0,29
Class 7			0,28	0,32
Class 8			0,32	0,35
Class 9			0,37	0,41
Class 10			0,46	0,44
Class 11				0,49

Reading note: In class 1, based on the ascending hierarchical classification method (AHC), the estimated response probability is 13%; in Class 1, built using the 5 equal quantiles method (EQ5), the estimated response probability is 11%; in Class 1, formed using the 10 equal quantiles method (EQ10), the estimated response probability is 10%; In Class 1, constructed from the Haziza-Beaumont method (HB), the estimated response probability is 10%.

The weight adjusted for the non-response of a responding household in the class is then calculated, for each method, as follows :

$$w_i^* = w_i \frac{1}{\hat{p}}$$

where w_i^* refers to the weight adjusted for non-response and the initial survey weight, taking into account the response probabilities observed in the context of the "large-scale experimentation".

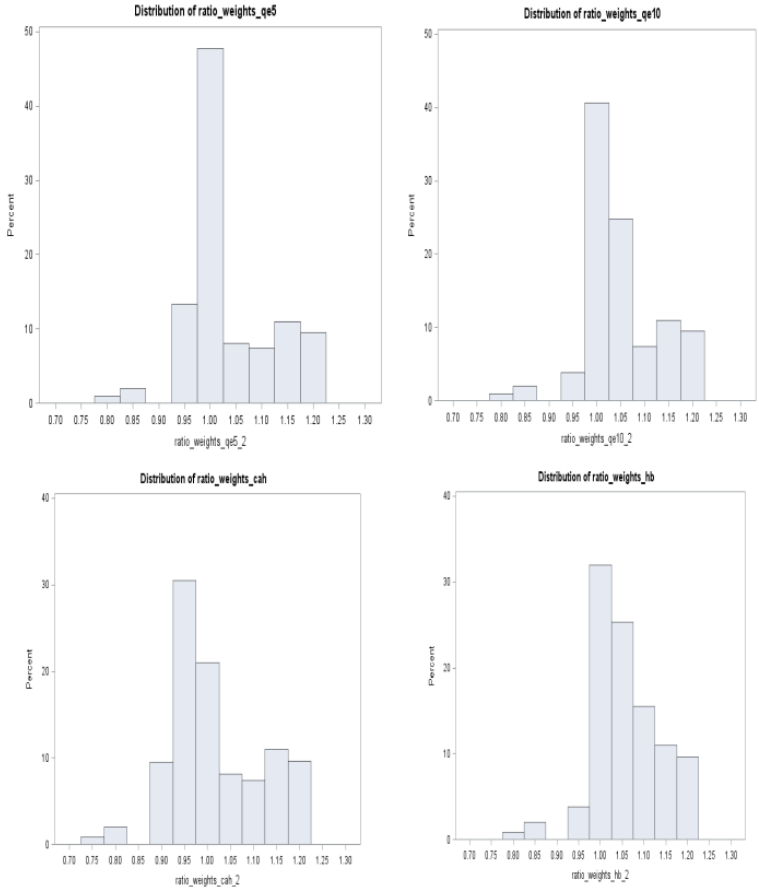
— **Stage 5** : Adjusting for partial non-response and calculating individual adjusted weights, with each individual in the household initially being ascribed the household's adjusted weight. Secondly, the weights of individuals who did not validate their individual questionnaire are allocated equally among the respondents' weights.

— **Stage 6** : Correcting the weights adjusted for non-response, by calibrating each of the two samples. The calibration method is used to supplement the prior treatment of total non-response and is aimed at bringing the resulting estimates in line with certain context variables. The calibration variables used are gender and age.

At the end of this stage, the adjusted non-response weights are used to calculate an estimate of the main indicators calculated from the Labour Force Survey, starting with the employment rate.

The weight ratios found between the weights adjusted for non-response and the final weights after calibration are shown below (Illustration 12).

FIGURE 12 – Weight ratios



3.2 Concepts defined by the International Labour Office (ILO)

Subsequently, the various concepts defined by the International Labour Office (ILO) will be used to define the indicators analysed.

A person is in employment within the meaning of the ILO (or employed) if :

— he or she is 15 years of age or older and has worked at least one hour of paid work during the reference week ;
or if :

— he/she was temporarily absent during the reference week but has maintained a formal tie with employment (illness not exceeding one year, leave, holiday, strike, training leave, maternity or parental leave not exceeding three months, technical unemployment, etc.).

A person is unemployed within the meaning of the ILO if :

— he/she is 15 years of age or older and is not employed during the reference week ;
— and available to work within two weeks' time ;
— and has undertaken an active job search in the previous month, or found a job that starts within three months.

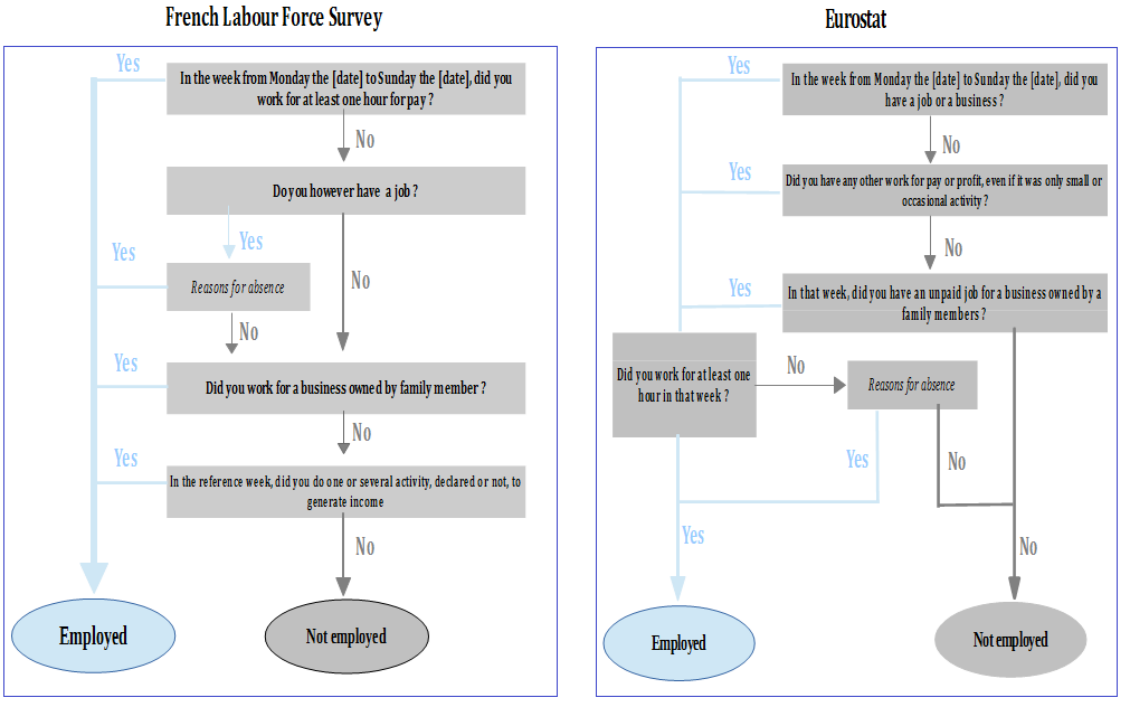
A person is inactive within the meaning of the ILO if he/she is 15 years of age or older and is neither employed nor unemployed within the meaning of the ILO during the reference week.

3.3 Main differences between the two versions in Labour status module

3.3.1 Concept of employment within the meaning of the ILO

As regards the concept of employment within the meaning of the ILO, the questionnaires have two major differences (Illustration 13) :

FIGURE 13 – Comparison of flowcharts relating to the concept of employment within the meaning of the ILO



— **A difference in concept between "At work" vs "One hour", results in considering more people as being in employment via the current questionnaire than via the version proposed by Eurostat.** While the questionnaire from the current Labour Force Survey directly raises the question of whether the individual has worked for at least one hour during the reference week, the version proposed by Eurostat gives priority to questions relating to being in employment or self-employed, being engaged in paid activity or being a family helper or co-worker spouse. Thus, in the current French Labour Force Survey questionnaire, the mere fact of being a family helper or co-worker spouse or declaring having engaged in paid activity (declared or otherwise), is sufficient to place the respondent in the category of occupied assets.

— **In contrast, as the list of grounds for absence associated with the different groupings is restricted, more people are considered in employment under the questionnaire proposed by Eurostat than under the current questionnaire.**

Below is the detailed list of observed differences (Table 14) :

FIGURE 14 – Comparaison des modalités d'absence dans les deux versions proposées du questionnaire

Labour status module - French LFS		**Labour status module – Eurostat**	
Why were you not working that week?	**Employed**	**What is the main reason for which you did not work during the week from .... to ....?**	**Employed**
Paid leave (including RTT, compensation rest	Yes	Leave/holiday	Yes
Sick leave (incl. child illness) or occupational accident	If cessation does not exceed one year	Sick leave	Yes
Maternity/paternity leave	Yes	Maternity/paternity leave	Yes
Part-time	Yes	**Adjusted working hours (flex-time, compensatory rest, period preceding a new job)**	Yes
Parental leave Other types of paid leave	If cessation lasting 3 months or less	Parental leave	If cessation lasting 3 months or less, or paid
Training paid for by employer or as part of work-study contract or apprenticeship	Yes	**Other grounds**	If cessation lasting 3 months or less
Partial unemployment	Yes		
Strike Inclement weather Suspension, end of employment period	Yes YesNo		
Off-season during seasonal activity, or period preceding start of new employment	No	**Off-season**	If tasks or work in connection with activity

— In the current French Labour Force Survey, a person is considered to be in employment while on sick leave, provided that this leave has an estimated total duration of less than one year. In the version proposed by Eurostat, anyone who declares being on sick leave is

considered to be in employment, regardless of the duration of the leave.

- The version proposed by Eurostat regards a person who has declared paid parental leave as employed, in contrast to the current French Labour Force Survey ; as a result, a person on parental leave receiving a common benefit of child education "PréParEe" (ex CLCA) would be considered as employed.
- The version proposed by Eurostat classifies a person who has declared a reason other than those proposed as being employed, as the total duration of the interruption is estimated at three months or less. The "other reasons" response is not provided in the current version of the French Labour Force Survey questionnaire.
- The current French Labour Force Survey questionnaire considers a person absent due to pending termination of employment as not employed. In contrast, the Eurostat version would consider that same person as employed.
- Lastly, while a person reporting to be in the "off-season" period is not considered employed under the current French Labour Force Survey, the opposite is true in the version proposed by Eurostat, if the person declares having performed a task related to seasonal activity.

All in all, the two main differences in questionnaire theoretically have a contrary effect on whether a person is considered as employed within the meaning of the ILO.

3.3.2 Concept of unemployment within the meaning of the ILO

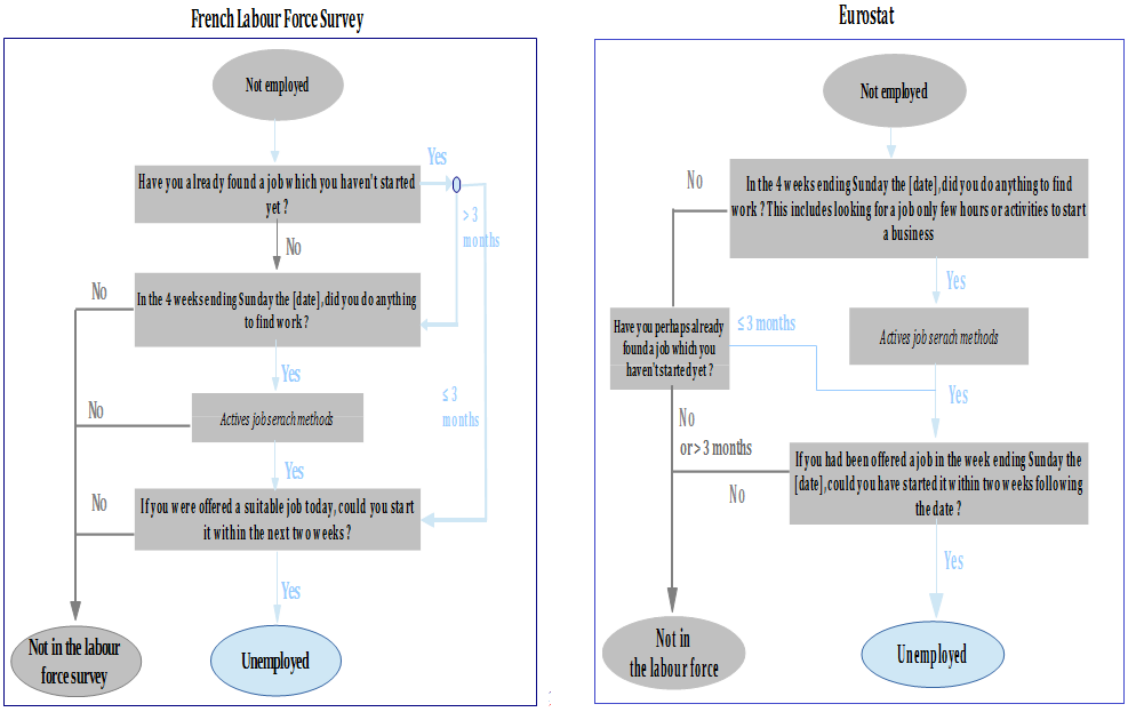
As regards the concept of unemployment according to the ILO, the questionnaires show five differences (Illustration 15) :

- The order of the questions about having found a job that starts later, first of all, and about having looked for a job, secondly, is reversed.
- People who declare having found a job that starts in more than three months' time are asked about their job search in the current questionnaire, not in the European version.

These first two differences theoretically lead to more people being considered inactive in the current French Labour Force Survey questionnaire.

- The question about being available for work within two weeks is worded differently in the two versions and leads to a person's being consi-

FIGURE 15 – Compared flowcharts relating to the concept of unemployment within the meaning of the ILO



dered more often as inactive in the questionnaire proposed by Eurostat.

Eurostat : "If you had been offered a job during the week from Monday... to Sunday...(i.e., the reference week), would you have been available to start work within two weeks ?"

EEC : "If you found a job that suited you, would you be available to start work within two weeks ?"

The addition of the proposition "during the week from Monday... to Sunday...", demands that the respondent project into the past and adds an additional constraint to the declaration of availability. This addition may therefore lead to a lower declaration of availability in the European questionnaire. While the respondent is required only to take position with regard to a job which he/she might deem suitable in the French questionnaire, he/she must do so on a theoretical set of jobs in the questionnaire proposed by Eurostat. This may therefore lead the respondent to more readily declare being unavailable in the European

questionnaire and therefore more often be considered inactive.

— The question regarding the desire to work is positioned differently in the two questionnaires. Although it appears after the question on job search, but before the question on job search procedures in the questionnaire proposed by Eurostat (and is only addressed to those who declared they had not sought employment), it comes before all the questions relating to job search in the current French questionnaire.

— Lastly, the list of activities considered as part of an active job search is reduced in the version proposed by Eurostat, such that a person will more often be considered inactive (Table 16). In particular, the terms "Competitive examination to enter civil service, a public institution or a local authority" and "Move to a trade show, job fair or trades forum" are not listed in the European questionnaire.

Contrary to the first two differences described above between the two questionnaires, the latter would tend to result in more people being considered inactive based on the questionnaire proposed by Eurostat than based on the current questionnaire used by the French Labour Force Survey.

FIGURE 16 – Comparison of job search activities in the two proposed versions

Labour status module - French LFS	Labour status module – Eurostat
Made contact with Unemployment Office, APEC, placement office, Chamber of Commerce and Industry or another public body	Have you made contact with the Unemployment Office, APEC, the Chamber of Professions or another public body?
Contact with a temporary work agency or placement firm?	Have you contacted a temporary work agency or placement firm?
Personal contacts, friends or family	Have you asked around you (family, friends, acquaintances)?
Work contacts, former colleagues, union	
Posted job profile on social media	Have you posted or updated your CV online?
Test or job interview	Test or job interview
Competitive examination to enter civil service, a public institution or a local authority	X
Submitted an unsolicited job application (at job fair or company)	Have you sent an unsolicited job application to an employer?
Sent an unsolicited job application by post or e-mail or at the Company's website	
Attended a trade fair, job fair or professions forum	X
Took action to purchase an existing business, operation or firm	Have you undertaken any action to set up your own business?
Prospected for land, premises or equipment	
Took action to secure financial resources	
Filed for a permit, licence or other form of authorisation to set up own business	
Placed an advertisement to find a job	Have you put up an ad or responded to a job offer (including online)?
Responded to an advertisement for a job	
Looked at advertisements for vacant jobs	Have you looked at job offers during this time (including online)?

4 The questionnaire effect : results

4.1 The questionnaire effect on the main indicators

As part of this experiment, all indicators are calculated on the population limited to households whose reference person (or spouse thereof, where applicable) is under 71 years of age. Given the differences between the two versions of the questionnaires shown above, the main indicators are likely to diverge from one population to another, without it being possible to determine a priori in what direction [3].

Employment rate, defined as the ratio between the number of people in employment and the number of people ages 15 or above, **has almost the same value in both populations and amounts to approximately 57%** (Table 17).

FIGURE 17 – Main indicators calulated after treatment of non-response

Indicators		AHC	EQ5	EQ10	HB
Employment rate	Eurostat	57,5	57,2	57,1	57,0
	French LFS	57,7	57,2	57,0	57,0
	Gap French LFS – Eurostat	0,1	-0,1	-0,1	0,0
Activity rate	Eurostat	64,5	64,2	64,2	64,1
	French LFS	65,4	65,1	65,1	65,0
	Gap French LFS – Eurostat	0,9	0,9	0,9	1,0
Unemployment rate	Eurostat	10,8	10,9	11,1	11,1
	French LFS	11,9	12,2	12,4	12,4
	Gap French LFS – Eurostat	1,1	1,3	1,3	1,3
Share of unemployed people	Eurostat	7,0	7,0	7,1	7,1
	French LFS	7,8	7,9	8,1	8,0
	Gap French LFS – Eurostat	0,8	0,9	1,0	0,9
Share of inactive people	Eurostat	35,5	35,8	35,8	35,9
	French LFS	34,6	34,9	34,9	35,0
	Gap French LFS – Eurostat	-0,9	-0,9	-0,9	-1,0
Total population	*Eurostat*	*44 765 308*	*44 765 308*	*44 765 308*	*44 765 308*
	French LFS	*44 765 308*	*44 765 308*	*44 765 308*	*44 765 308*

Note : AHC=Ascending Hierarchical Classification ; EQ5 = 5 equal quantiles method ; EQ10 = 10 equal quantiles method ; HB = Haziza-Beaumont method.
Scope : Individual questionnaires validated in a household that has validated at least one individual questionnaire (households whose reference person (or spouse, where applicable) is 70 or under).
Data adjusted for non-response (EQ10 method)
Source : « Labour status module » experimentation.

3. The results presented in table 17 are calculated after processing for non-response. As the response behaviour is generally identical regardless of the type of questionnaire used (Eurostat or French LFS), the differences between indicators can be calculated without treatment of non-response. The observed gaps are then identical to those calculated after treatment of non-response.

Activity rate, defined as the ratio between the number of active people, whether employed or otherwise (occupied and unemployed within the meaning of the ILO) and the number of people ages 15 or above, **is slightly higher with the current version of the French questionnaire (65% vs 64%).**

Subsequently, the same applies to the unemployment rate, defined as the ratio between the number of unemployed people within the meaning of the ILO and the number of working people, employed or otherwise, (12% versus 11%), and the proportion of unemployed people defined as the ratio between the number of ILO unemployed people and the number of people ages 15 or over (8% versus 7%).

Conversely and complementing the above **the share of the inactive people**, defined as the ratio between the number of inactive people (neither employed nor unemployed ILO) and the number of people ages 15 or over **is higher among the respondents to the questionnaire proposed by Eurostat**.

Given the small differences observed between the selected reweighting methods, the results subsequently presented will be those found using the "EQ10" method.

What happens to the "questionnaire effect" on the main indicators, once household characteristics are taken into account ?

4.2 The "questionnaire effect" on the main indicators by characteristics

The difference in the employment rate observed between the estimates found based on responses to the current French Labour Force Survey questionnaire (57.0%) and that of respondents to the version proposed by Eurostat (57.1%) is very small (0.1 point - Table 18).

Although the gap is also relatively small when taking into account the characteristics of the individuals surveyed and the households to which they belong, there are categories of people for whom the "questionnaire effect" had a more marked impact on employment rate. In particular, the employment rate is higher when calculated based on responses to the Eurostat questionnaire among those aged under 20 or those aged 50 to 59 ; among households whose reported income is less than 10,000 or between 20,000 and 30,000 euros or more than 40,000 euros ; and among connected households. For some characteristics, the "questionnaire effect" works in the opposite

direction : among young people ages 20 to 29, the employment rate is higher among respondents to the current questionnaire of the Labour Force Survey than among those who responded to the questionnaire proposed by Eurostat (58.3%). Similarly, individuals whose questionnaire was completed by a relative had an employment rate of 40.0% when they responded to the current questionnaire from the Labour Force Survey, compared with 38.5% when they responded to the questionnaire proposed by Eurostat.

FIGURE 18 – Main indicators by characteristics

	Employment rate (in %)		Activity rate (in %)		Unemployment rate (in %)		Share of unemployed people (in %)		Share of inactivities (in %)	
	Eurostat	FLFS	Eurostat	FLFS	Eurostat	FLFS	Eurostat	FLFS	Eurostat	FLFS
Total population	57,1	57,0	64,2	65,1	11,1	12,4	7,1	8,1	35,8	34,9
Gender										
Female	54,7	55,0	61,6	62,8	11,3	12,5	6,9	7,8	38,4	37,2
Male	59,4	58,9	66,6	67,2	10,9	12,4	7,3	8,3	33,4	32,8
Age of respondent										
Under 20	8,4	7,1	11,3	13,0	25,3	45,3	2,9	5,9	88,7	87,0
Ages 20-29	58,3	60,9	71,1	75,7	18,0	19,5	12,8	14,8	28,9	24,3
Ages 30-39	78,4	78,6	88,0	88,6	10,9	11,2	9,6	9,9	12,0	11,4
Ages 40-49	82,1	82,8	89,8	90,6	8,6	8,7	7,7	7,9	10,2	9,4
Ages 50-59	77,2	74,1	84,4	82,5	8,5	10,2	7,1	8,4	15,6	17,5
Ages 60-69	17,2	17,2	18,9	19,3	8,9	11,1	1,7	2,1	81,1	80,7
70 and above	0,8	2,9	0,8	2,9	0,0	0,0	0,0	0,0	99,2	97,1
Declared income in 2015										
Under €10,000	38,3	35,8	57,8	58,2	33,8	38,4	19,6	22,4	42,2	41,8
Between €10,000 and 20,000	55,1	56,4	64,9	67,4	15,1	16,3	9,8	11,0	35,1	32,6
Between €20,000 and 30,000	60,6	59,2	65,7	66,8	7,7	11,3	5,1	7,6	34,3	33,2
Between €30,000 and 40,000	59,7	62,4	63,8	66,7	6,4	6,5	4,1	4,3	36,2	33,3
Above €40,000	62,1	61,2	65,6	64,7	5,4	5,4	3,5	3,5	34,4	35,3
Type of housing unit occupancy										
Rental	56,7	55,6	68,2	67,8	16,9	18,1	11,5	12,3	31,8	32,2
Ownership	57,0	57,7	61,1	62,8	6,6	8,2	4,1	5,2	38,9	37,2
Type of housing unit occupancy										
Apartment	57,6	57,3	67,5	68,5	14,6	16,4	9,9	11,2	32,5	31,5
House	56,7	56,8	61,9	62,8	8,5	9,6	5,2	6,0	38,1	37,2
Response by proxy										
Yes	58,5	58,3	65,8	66,6	11,0	12,4	7,3	8,3	34,2	33,4
No	38,5	40,0	43,7	45,7	11,9	12,4	5,2	5,6	56,3	54,3
Connected household										
Yes	62,6	61,9	68,7	68,8	8,9	10,0	6,1	6,9	31,3	31,2
Non	50,0	50,2	58,3	60,0	14,4	16,2	8,4	9,7	41,7	40,0

Scope : Individual questionnaires validated in a household that has validated at least one individual questionnaire (households whose reference person (or spouse, where applicable) is age 70 or under). Data adjusted for non-response (EQ10 method).
Source : « Labour status module » experimentation.

The difference in unemployment rate observed between the estimates found based on responses to the current French Labour Force Survey questionnaire (12.4%) and that of respondents to the version proposed by Eurostat (11.1%) is more prominent (1.3 point - Table 18). The version proposed by Eurostat could there-

fore cause the proportion of ILO unemployed people to be underestimated, compared with the questionnaire currently used in the French Labour Force Survey.

Exceptions aside, the observed gap seems relatively homogeneous, regardless of the characteristics of the individuals surveyed or the households to which they belong. However, there is a significant gap for those under 20 : the estimate based on the version proposed by Eurostat results in an unemployment rate of 25%, compared with 45% in the questionnaire used for French the Labour Force Survey. The changes made to the questionnaire are therefore believed to have had a particular impact on young people (and therefore potentially on students). To a lesser extent, the difference in unemployment rate is also greater among households with incomes below 10,000 euros or between 20,000 euros and 30,000 euros.

The proportion of inactive people is estimated at 35.8% based on the Eurostat questionnaire, compared with 34.9% using the current French Labour Force Survey questionnaire. The difference between the two questionnaires is therefore estimated at an average of 0.9 point.

The observed gap is again relatively homogeneous by the characteristics of those surveyed or the households to which they belong. However, there are significant gaps along certain characteristics already identified in the employment rate analysis. For instance, the gap is nearly 5 points among 20-29 year old. It is also more prominent in households whose reported income is between 10,000 euros and 20,000 euros or between 30,000 euros and 40,000 euros ; in non-connected households or for instance in those whose questionnaire was completed by a relative (proxy). In contrast, in the same way as for the employment rate and in symmetrical fashion, the questionnaire effect has an impact among people ages 50 to 59 : the proportion of inactive people is lower among respondents to the questionnaire proposed by Eurostat (15.6%), than among those who responded to the questionnaire from the French Labour Force Survey (17.5%).

Analysis by socio-demographic characteristics therefore shows that the gap is mainly driven by the under-30s and to a lesser extent by the 50-71 years old. These populations are less often unemployed in the Eurostat questionnaire than in the current French Labour Force Survey questionnaire.

4.3 Breakdown of the "questionnaire effect"

Employment status (in particular, the distinctions between occupied, inactive, unemployed and inactive) depends on successive responses to a range of questions.

Subsequently in this analysis, the indicators and breakdowns presented will be calculated on the age group 15-74 so as to have a comparable base, regardless of the questionnaire studied (Eurostat or current). Furthermore, as previously, the results shown will be calculated based on the weights adjusted for non-response using the "EQ10" method (Table 19).

FIGURE 19 – Distribution of respondents depending on employment status

		EQ 10	
Status with regard to employment (ages 15-74)		**Total population**	**Share (in%)**
Employed ILO	Eurostat	25 539 806	57,4
	French LFS	25 509 288	57,3
Unemployed ILO	Eurostat	3 180 220	7,2
	French LFS	3 617 024	8,1
Inactive ILO	Eurostat	15 750 317	35,4
	French LFS	15 369 070	34,5
Total population	Eurostat	44 470 343	100,0
	French LFS	44 495 383	100,0

Scope: Individual questionnaires validated by individuals ages 15 to 74, in a household having validated at least one individual questionnaire (households whose reference person (or spouse thereof, where applicable) is age 70 or less). Data adjusted for non-response (EQ10 method).
Source: "Labour status module" experimentation.

4.3.1 Breakdown of effects on employment

By limiting the focus to the 15-74 age group, the employment rate amounts to 57.3% when calculated based on respondents to the current questionnaire and 57.4% when calculated based on respondents to the European questionnaire. After breaking down the origin of the occupied active individuals (depending on the questions based on which they were deemed employed within the meaning of the ILO), it appears that the change in structure of the questionnaire had no impact on the employment rate. However, occupied workers who reported having worked at least one hour during the reference week accounted for 94.1% of the total working population among respondents to the French Labour Force Survey questionnaire, compared to 95.1% of respondents to the questionnaire proposed by Eurostat (Figures 21 and 23). Light offsetting is performed based on other criteria. For instance, more

respondents to the current questionnaire than to the questionnaire proposed by Eurostat said that they had been absent for employment-related reasons, that they had been family helpers or that they had been involved in paid work (declared or not) during the reference week.

Nor do the respondents to the Eurostat questionnaire appear to report temporary or supplementary activity. On the other hand, there are slightly more respondents declaring that they perform multiple activities (6% in the questionnaire proposed by Eurostat compared with 5% in the current questionnaire).

A more fine-grained analysis of the breakdown of absences confirms that the change of questionnaire has an impact on the share of employed people (Table 24).

Several factors are behind this result :

— The people absent due to sick leave were all considered to be employed in the questionnaire proposed by Eurostat, while only 90.5% were considered so based on the current questionnaire of the French Labour Force Survey ;
— Persons absent due to parental leave were considered to be employed in the current questionnaire only when the provisional duration of leave did not exceed three months ; conversely, they were considered in the version proposed bu Eurostat when leave was remunerated or its provisional duration was less than three months. Thus, 85% of those who declared that they were on parental leave were considered to be employed with the questionnaire proposed by Eurostat, compared with only 10% with the French questionnaire (Table 25).

FIGURE 20 – Decision tree on employment – French LFS questionnaire

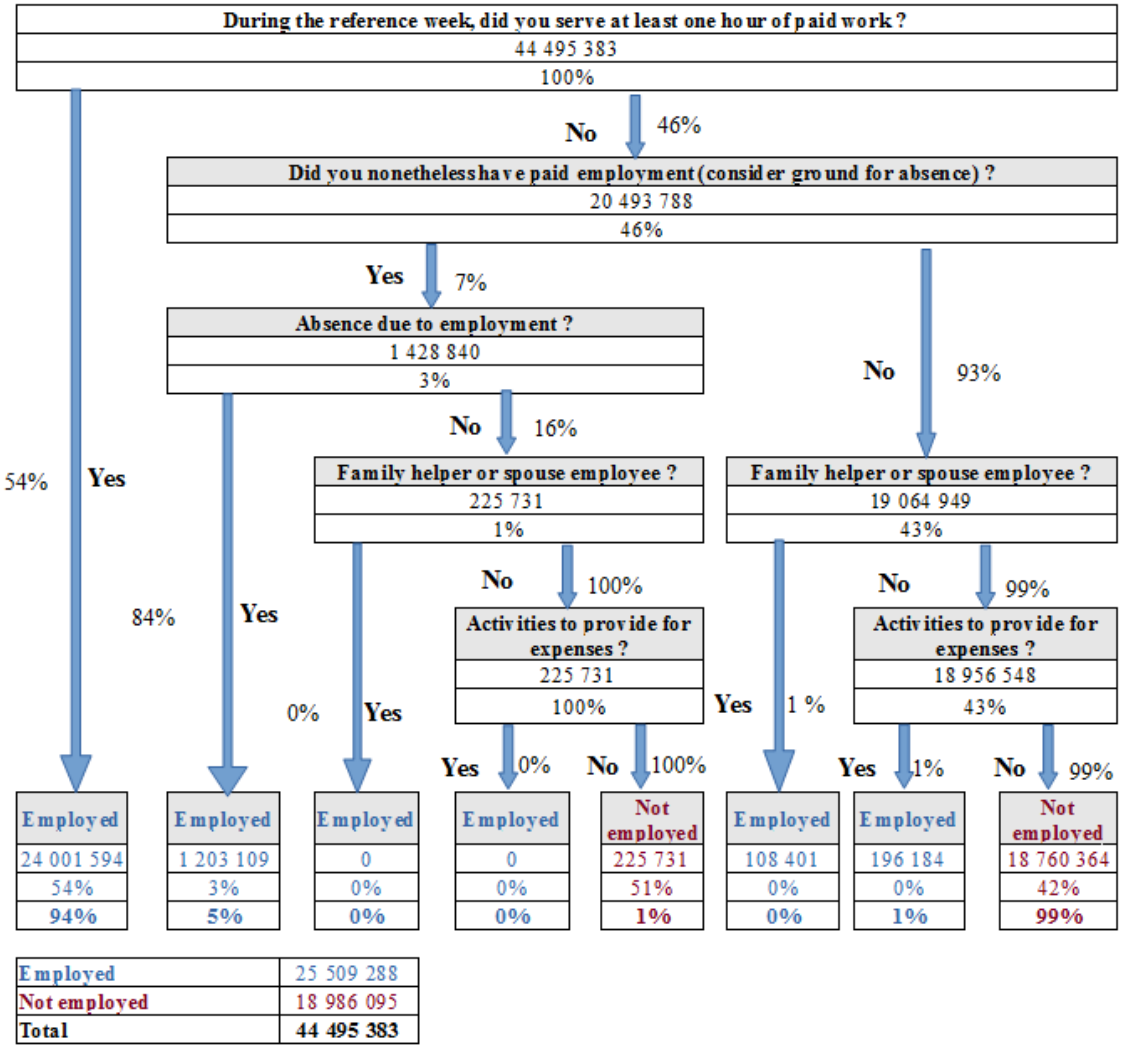


FIGURE 21 – Breakdown of employed people held based on employment identification – French LFS questionnaire

French Labour Force Survey	Total population	Share	Employment rate
During the reference week, did you serve at least one hour of paid work ?	24 001 594	94,1	53,9
Did you nonetheless have paid employment (consider grounds for absence) ?	1 203 109	4,7	2,7
Are you family helper, or spouse employee ?	108 401	0,4	0,2
Also during the reference week, did you engage in one or more activities, declared or undeclared, to provide for your expenses ?	196 184	0,8	0,4
Employed	**25 509 288**	**100,0**	**57,3**
Total	**44 495 383**	-	-

FIGURE 22 – Decision tree on employment – Eurostat questionnaire

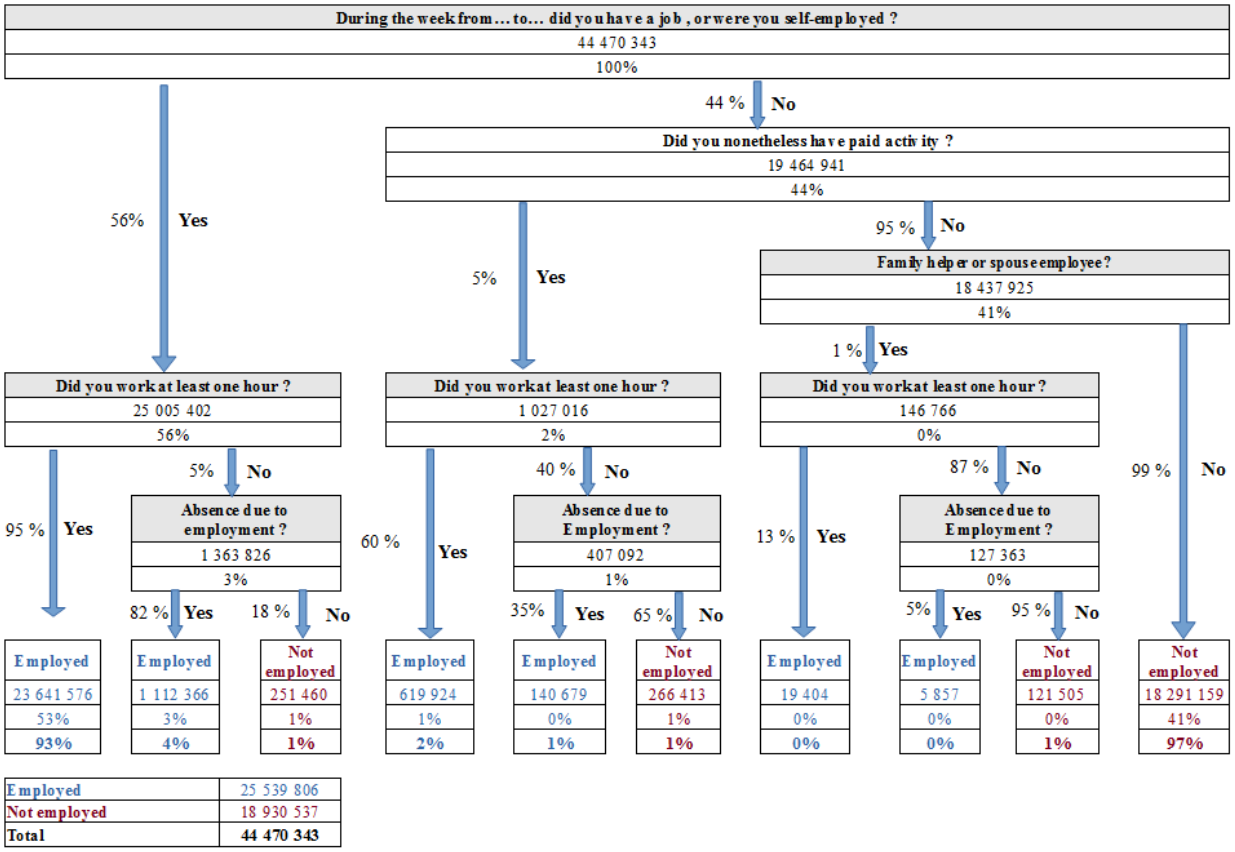


FIGURE 23 – Breakdown of employed people held based on employment identification – Eurostat questionnaire

Eurostat	Total population	Share	Employment rate
During the reference wee, did you serve at least one hour of paid work ?	24 280 904	95,1	54,6
Did you have a job, or were you self-employed ?	1 112 366	4,4	2,5
During the reference week, did you work, without being paid, as a family helper, or spouse employee (consider grounds for absence) ?	5 857	0,0	0,0
Did you nonetheless have paid employment, declared or undeclared, even if it was occasional work or a mini-job (consider grounds for absence) ?	140 679	0,6	0,3
Employed	**25 539 805**	**100,0**	**57,3**
Total	**44 470 343**	-	-

FIGURE 24 – Proportion of people in employment based on absence mode selected

Labour status module – French LFS				Labour status module – Eurostat			
Why were you not working that week ?	**Share in %**	**Employed**	**Share in employment**	***What is the main reason for which you did not work during the week from … to … ?***	**Share in %**	**Employed**	**Share in employment**
Paid leave (including RTT, compensation rest…)	22,3	Yes	100,0	Leave/Holiday	23,4	Yes	100,0
Sick leave (including child illness) or occupational accident	42,0	If cessation does not exceed one year	90,5	Sick leave	0,0	Yes	100,0
Maternity/Paternity leave	12,4	Yes	100,0	Maternity/Paternity leave	0,0	Yes	100,0
Part-time	4,0	Yes	100,0	**Adjusted working hours (flex-time, compensatory rest, period preceding a new job)**	**0,0**	Yes	**100,0**
Parental leave	7,1	If cessation lasting 3 months or less	10,1	Parental leave	0,0	If cessation lasting 3 months or less, or paid	84,8
Total of other types of paid leave	**10,6**		**64,0**				
Other types of paid leave	*4,4*	*If cessation lasting 3 months or less*	*53,1*				
Training paid for by employer or as part of work-study contract or apprenticeship	*2,2*	*Yes*	*100,0*	Other grounds	35,0	If cessation lasting 3 months or less	**11,9**
Partial unemployment	*1,9*	*Yes*	*100,0*				
Strike	*0,4*	*Yes*	*100,0*				
Inclement weather	*0,0*	*Yes*	*0,0*				
Suspension, end of employment period	*1,8*	*No*	*0,0*				
Off-season during seasonal activity, or period preceding start of new employment	**1,6**	**No**	0,0	**Off-season**	**3,1**	**If tasks or work in connection with activity**	**27,9**
Total	**100,0**		**18,1**	**Total**	**100,0**		**66,3**

FIGURE 25 – Distribution of people who chose parental leave as a reason for absence in the Eurostat questionnaire

Number of persons absent due to parental leave	**75 078**
Share receiveing salary or compensation	84,8
paid at least partially by the employer	17,2
not paid by the employer	67,7
Share not receiving salary or compensation	15,2

Scope: Individual questionnaires validated by an individual ages 15 to 74, in a household having validated at least one individual questionnaire (households whose reference person (or spouse thereof, where applicable) is age 70 or less), having declared absence due to parental leave.
Data adjusted for non-response (EQ10 method).
Source: "Labour status module" experimentation.

— Seasonal workers were considered to be employed based on the questionnaire proposed by Eurostat, since they reported having carried out tasks or work related to the activity, whereas they were not considered so in the current questionnaire.
— Lastly, as a number of grounds for absence were combined into the ca-

tegory "other reason" in the questionnaire Eurostat, it would have had a downward effect on the employment rate. The estimated length of absence for these other reasons is generally greater than three months or not entered.

In summary, the two questionnaires appear to capture employment in a similar way. The two main differences appear to have no effect on the employment rate. For example, the order of questions designed to capture employment information appears to be without significance. The question "Have you executed at least one hour of paid work during the reference week ?" remains the most discriminating, whatever its placement in the survey. Making it appear earlier would therefore reduce the response burden.

Lastly, the list of grounds for absence associated with the different groupings being restricted and the grouping of reasons being modified, more people are considered in employment based on the Eurostat questionnaire than based on the French Labour Force Survey questionnaire. Furthermore, the changes made have an impact on the very definition of the concept of employment : for example, a seasonal worker is considered, off-season, to be employed based on the Eurostat questionnaire whenever a task or work connected with that individual's primary activity was carried out during the period of absence (which is not the case with the current questionnaire).

4.3.2 Breakdown of effects on unemployment

By limiting the focus to the 15-74 age group, the share of unemployment stands at 8.1% when calculated from respondents to the current questionnaire and 7.2% when calculated from respondents to the Eurostat questionnaire (Illustrations 9 and 10). This difference is the result of a combination of factors.

First of all, fewer respondents to the questionnaire proposed by Eurostat reported they had found a job starting in three months or less. This is due quite simply to a change in the positioning of the question. While all non-active workers are asked whether they have found a job starting within three months in the French Labour Force survey, only those who say that they did not seek employment within four weeks of the reference week are asked the question in the version proposed by Eurostat.

Moreover, fewer respondents to the questionnaire proposed by Eurostat

have carried out at least one active job search method.

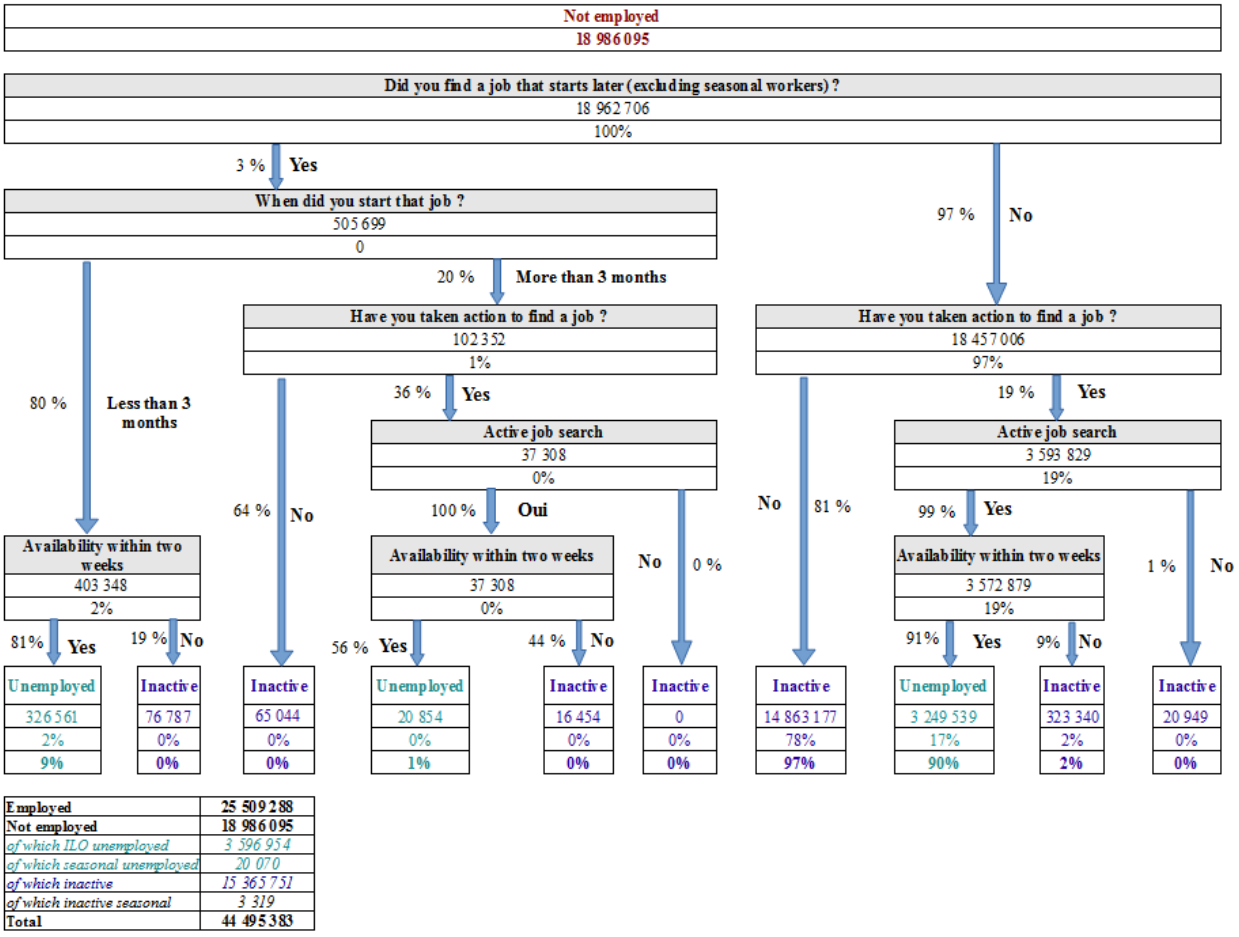
This can be explained by the removal of two items from the list of active job search methods in the European questionnaire compared to the French questionnaire : registration for a public service competitive examination on the one hand and travel to a trade fair or an employment forum on the other.

Lastly, the complexity of the question regarding availability in the questionnaire proposed by Eurostat has probably caused the number of people available to work within two weeks to be underestimated. While the questionnaire currently used for the French Labour Force Survey asks about availability within two weeks of the time of response, and is about a job that may be suitable for the respondent ("If you find a job that suits you, would you be available to begin it within two weeks ?"), the Eurostat version requires that the respondent take position retrospectively ("If you were offered a job during the reference week, would you have been available to start work within two weeks ?").

All in all, a combination of three factors explains why the estimate of unemployment rate is lower in the questionnaire proposed by Eurostat : reversing the order of questions related to finding a job starting at a later date and having taken action to find a job ; the number of job search methods considered active methods ; the complexity of the question relating to being available to work within two weeks.

It is important to emphasise that all the results presented here are difficult to extrapolate to a modification of the questionnaire administered by an interviewer. In fact, the gaps occur on a sample of 40,000 households surveyed on the Internet, in first questioning, without any intervention by an interviewer (to introduce the survey in particular or to provide explanations on certain complex issues). Moreover, estimates are found by comparing online respondents, who probably do not offer a perfect representation of all households surveyed in the French Labour Force Survey. This analysis will be the focus of the second part.

FIGURE 26 – Decision tree on ILO unemployment – French LFS questionnaire

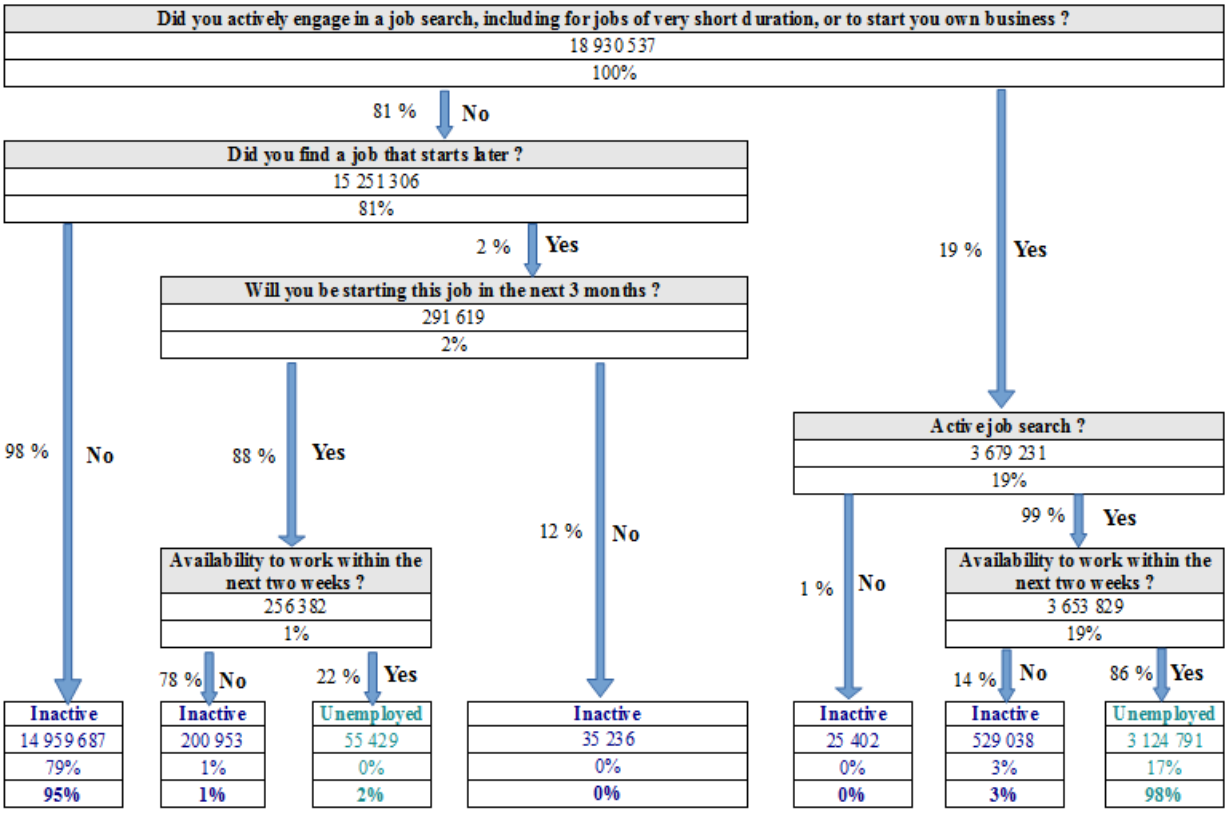


Employed	**25 509 288**
Not employed	**18 986 095**
of which ILO unemployed	*3 596 954*
of which seasonal unemployed	*20 070*
of which inactive	*15 365 751*
of which inactive seasonal	*3 319*
Total	**44 495 383**

FIGURE 27 – Breakdown of ILO unemployed according to unemployment identification – French LFS questionnaire

French Labour Force Survey	Total population	Share	Share of unemployment
Did you find a job that starts later (less than 3 months) ?	326 561	9,1	0,7
Did you find a job that starts later (more than 3 months and active job serach) ?	20 854	0,6	0,0
During the period from... to... did you actively look for a job (consider activities undertaken) ?	3 249 539	90,3	7,3
Unemployed	**3 596 954**	**100,0**	**8,1**
Total	**44 495 383**	-	-

FIGURE 28 – Decision tree on ILO unemployment – Eurostat questionnaire



Employed	25 539 806
Not employed	18 930 537
of which unemployed	3 180 220
of which inactive	15 750 316
Total	**44 470 343**

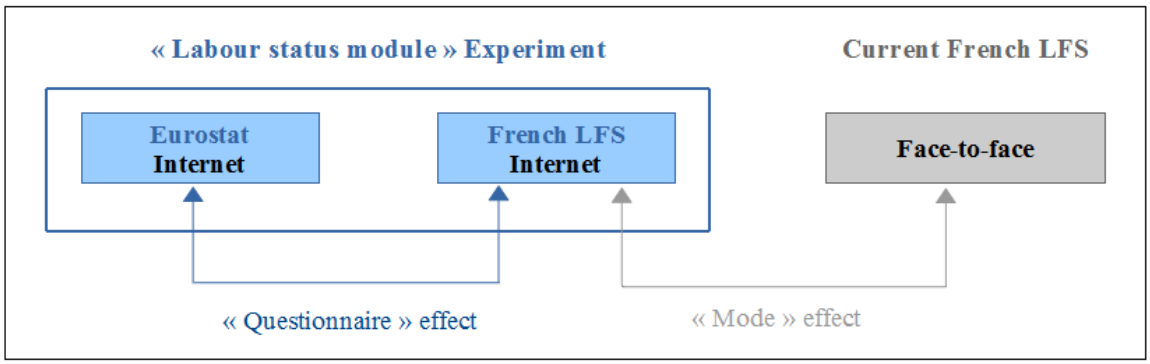
FIGURE 29 – Breakdown of ILO unemployed according to unemployment identification – Eurostat questionnaire

Eurostat	Total population	Share	Share of unemployment
Did you find a job that starts later (less than 3 months, and not declaring having actively sought a job) ?	55 429	1,7	0,1
Did you find a job that starts later (more than 3 months and active job search) ?	0	0,0	0,0
During the period from... to ... did you actively look for a job considering activities undertaken) ?	3 124 791	98,3	7,0
Unemployed	**3 180 220**	**100**	**7,2**
Total	**44 470 343**	-	-

5 Mode effect : selection effect and measurement effect

Once the "questionnaire effect" has been studied in comparison with the data received from respondents to the french Labour Force Survey questionnaire and from respondents to the questionnaire proposed by Eurostat, a potential mode effect can be estimated by comparing the data collected online on the French Labour Force Survey questionnaire with those collected, at the same time, on the ground, in face-to-face situation, by the interviewers (French LFS) (Illustration 30).

FIGURE 30 – Questionnaire effect, mode effect and collected data



5.1 Selecting a comparable field

Before proceeding with any analysis, a comparable field needs to be delineated from within the data collected in face-to-face situations and those collected online via the "Labour status module" experiment. Initially, only the data collected by the French Labour Force Survey in the first wave during the second quarter of 2016 were used, so as to have a common time range. Then, as a second stage, only households surveyed in their main place residence and whose reference person (or spouse where applicable) was age 70 or under were kept in the database. Once this selection was made (i.e. a comparable field was established), the response rates found for each of the two samples were compared.

The overall response rate was much higher when the survey was conducted in face-to-face situation by an interviewer (79%) than when it was offered online as part of the "Labour status module" experiment (26% - Table 31).

FIGURE 31 – Response rate by mode

	Face-to-face		Internet	
	Total population	**Share (in %)**	**Total population**	**Share (in %)**
In the field	9898	100	16749	100
Respondent	7827	79	4355	26
Non-respondent	2071	21	12394	74

Scope: Households surveyed in a main place of residence, including the reference person (or spouse thereof, where applicable) is 70 years of age or less; Mainland France.
Sources: "Labour status module" experiment; Current French LFS, Q2 2016.

5.2 Breakdown of mode effect

The mode effect encompasses two distinct effects :

— **the selection effect** : do online respondents have the same characteristics as face-to-face respondents ?

— **the measurement effect** : given equivalent socio-demographic characteristics, do the interviewees respond in the same way in face-to-face situation and online ?

The selection effect can be defined as the effect of socio-demographic differences found between respondents online and those surveyed in face-to-face situation. Since the two surveys ("Labour status module" experiment online and French Labour Force Survey in face-to-face situation) are mandatory, the selection effect should, in this context, be less strong than it would be if the respondents had had the choice between responding online or face-to-face with an interviewer. **The measurement effect**, on the other hand, can be defined, with equal socio-demographic characteristics, as the gap induced by the differences observed in the responses given to the web questionnaire, relative to those entered by the interviewer during the face-to-face data collection.

5.3 The selection effect

Initially, the characteristics of respondents to the French Labour Force Survey, interviewed in face-to-face situation wave 1 by an interviewer at their main place of residence during the second quarter of 2016, are compared to those of online respondents in the current French Labour Force Survey questionnaire, as part of the "Labour status module" experiment.

Online respondents do not have the same profile as those who responded to the interviewers. In particular, households with incomes in excess of 40,000

euros account for 43% of online respondents, while they amount to only 30% of respondents in face-to-face situation (Table 32). Similarly, home-owning households are over-represented among online respondents. Lastly, residents of the Paris region, and more generally residents living in urban areas, are over-represented among online respondents.

FIGURE 32 – Characteristics of responding households according to data collection mode

Share (in%)

	Data collection mode	
Characteristics of household	**Face-to-face**	**Internet**
Income declared in housing tax		
Under €15,000	20	12
Between €15,000 and €40,000	50	46
Above €40,000	**30**	**43**
Occupancy status		
Rental	35	30
Ownership	**64**	**69**
Not reported or other	2	1
Type of municipality		
Rural	29	24
Urban	**71**	**76**
Type of housing		
Lone housing, outside conurbation	**17**	**21**
In housing development, residential area or city	48	41
City building	20	18
Project housing or large-scale housing complex	9	5
Multi-mode : buildings and houses	**5**	**10**
Not reported	0	5
Region		
Ile-de-France	**14**	**19**
Other regions	86	81
Total	**100**	**100**

Scope: Individual questionnaires validated in a household that has validated at least one individual questionnaire (households whose reference person (or spouse where applicable) is age 70 or under).
Sources: "Labour status module" experiment; Current French LFS, Q2 2016.

As pertains to individual characteristics (Table 33), men are more likely to respond online than women. Younger people are over-represented among those responding online, while those 65 or older are more likely to respond in face-to-face situation.

Analysis of the characteristics of the respondents in each of the two samples has therefore made it possible to highlight the

existence of a significant selection effect between the "face-to-face" and "Internet" data collection mode.

FIGURE 33 – Characteristics of respondents based on data collection mode

Share (in%)

Characteristics of individuals	Data collection mode	
	Face-to-face	Internet
Gender		
Male	**47**	**50**
Female	53	50
Age of individual as at last date of reference week		
15-29	21	22
30-39	15	19
40-49	18	19
50-64	27	29
65 and above	19	11
Total	100	100

Scope: Individual questionnaires validated in a household that has validated at least one individual questionnaire (households whose reference person (or spouse where applicable) is age 70 or under).
Sources: "Labour status module" experiment; Current French LFS, Q2 2016.

5.4 The measurement effect

5.4.1 What is the measurement effect ?

The measurement effect caused by using different data collection mode is defined as the gap created by a response behaviour varying from one mode to another, given populations with equivalent characteristics.

When it exists, **it can result from a variety of factors :**

— **social desirability** which could, for example, cause a respondent not to admit having given up on finding a job, or to report more job search activity when in front of an interviewer ;
— **reclassifications made by the investigator** when inconsistencies are detected in the responses provided ;
— **examples contributed by investigator** guiding the respondent to types of responses more often than others ;
— more generally speaking, **difficulties in understanding** the concepts or response items ;
— the initial lack of interest, possibly aggravated by the length of the questionnaire, which would lead the respondent to choose the first response items suggested without reading the following ones, in order to complete the questionnaire more quickly ("satisficing").

5.4.2 How can the measurement effect be isolated ?

In order to isolate the possible measurement effect within the mode effect, adjustment needs to be made for the selection effect shown above. Consequently, the two samples (face-to-face and Internet) must be made comparable by treating total non-response.

Thus, total non-response is treated in two stages, in both samples, as shown previously : total non-response is first corrected by reweighting, i.e., by adjusting upwards the weights of the respondent units within homogeneous response groups formed on the basis of the information available in the sample frames used to construct the samples ; secondly, calibration is performed on a few additional variables to make the sampled population consistent with the French population in the field covered by the survey.

The methodology applied is therefore fully comparable to that previously used in the analysis of the questionnaire effect.

The stage consisting of setting up homogeneous response groups in the face-to-face survey leads to the above response probabilities, which vary from 60% to 87% depending on the method used for forming the response groups mined and according to the classes considered (Table 34).

Once total non-response has been adjusted for, partial non-response is treated as previously and individual adjusted weights calculated, each individual in the household being initially assigned the adjusted household weight. Secondly, the weights of individuals who have not validated their individual questionnaire are distributed fairly among the respondents' weights.

The weights corrected for non-response are calculated on the sample surveyed in face-to-face situation, then corrected again by means of calibration. The calibration method makes it possible to supplement the prior treatment of total non-response and is aimed at bringing the resulting estimates in line with certain context variables. The calibration variables used are, as above, gender and age.

By the end of this stage, the two samples are similar in terms of sociodemographic characteristics. The weights, corrected for non-response and calibrated, therefore make it possible to calculate an estimate of the main indicators from the sample surveyed in face-to-face situation. It will thus be possible to compare them with the estimates derived from the sample surveyed directly online and assess what was previously called the measurement effect.

FIGURE 34 – Calculating estimated response probability by class

	AHC	EQ5	EQ10	HB
Class 1	0,68	0,70	0,65	0,60
Class 2	0,77	0,77	0,73	0,65
Class 3	0,85	0,78	0,75	0,74
Class 4		0,85	0,77	0,77
Class 5		0,86	0,79	0,78
Class 6			0,80	0,85
Class 7			0,84	
Class 8			0,86	
Class 9			0,86	
Class 10			0,87	

Reading note: In Class 1, based on the ascending hierarchical classification method (AHC), the estimated response probability is 68%; in Class 1, built using the 5 equal quantiles method (EQ5), the estimated response probability is 70%; in Class 1, formed using the 10 equal quantiles method (EQ10), the estimated response probability is 65%; in Class 1, constructed from the Haziza-Beaumont method (HB), the estimated response probability is 60%.

5.4.3 The measurement effect on the main indicators

Setting aside the "Ascending Hierarchical Classification" method, the gap between the employment rate calculated from the sample surveyed online in the context of the "Labour status module" experiment and that calculated from data collected in face-to-face situation in the context of the French Labour Force Survey is small (Table 35). The data collection mode therefore does not seem to have had a significant impact on the employment rate.

FIGURE 35 – Main indicators calculated from Labour status module

Share (in%)

Indicators		AHC	EQ5	EQ10	HB
Employment rate	EEC face-to-face	56,7	56,7	56,7	56,7
	EEC Internet	57,7	57,2	57,0	57,0
	Gap Face-to-face/Internet	**-1,0**	**-0,5**	**-0,3**	**-0,3**
Activity rate	EEC face-to-face	62,9	62,8	62,9	62,9
	EEC Internet	65,4	65,1	65,1	65,0
	Gap Face-to-face/Internet	**-2,6**	**-2,3**	**-2,2**	**-2,2**
Unemployment rate	EEC face-to-face	9,8	9,8	9,8	9,8
	EEC Internet	11,9	12,2	12,4	12,4
	Gap Face-to-face/Internet	**-2,1**	**-2,4**	**-2,6**	**-2,6**
Share of unemployed	EEC face-to-face	6,1	6,2	6,1	6,2
	EEC Internet	7,8	7,9	8,1	8,0
	Gap Face-to-face/Internet	**-1,6**	**-1,8**	**-1,9**	**-1,9**
Share of inactive	EEC face-to-face	37,1	37,2	37,1	37,1
	EEC Internet	34,6	34,9	34,9	35,0
	Gap Face-to-face/Internet	**2,6**	**2,3**	**2,2**	**2,2**
Total population	EEC face-to-face	*44 765 308*	*44 765 308*	*44 765 308*	*44 765 308*
	EEC Internet	*44 765 308*	*44 765 308*	*44 765 308*	*44 765 308*

Scope: Individual questionnaires validated in a household that has validated at least one individual questionnaire (households whose reference person (or spouse if applicable) is 70 years old or younger). Data corrected for non-response.
Sources: "Labour status module" experiment; Current French LFS, Q2 2016.

In contrast, the measurement effect is observable and substantial on all other indicators, for which it varies from 1.6 points to 2.6 points depending on the indicators and methods considered.

However, it is important to bear in mind the low response rate online, which could lead to more inaccuracy in the estimates made when using data collected online, compared to those collected in face-to-face situation.

5.5 The limits when estimating the measurement effect

5.5.1 An unobservable selection effect

Considering the magnitude of the gaps observed (particularly on the unemployment rate), it is possible that the measurement effect, defined as the effect of responding online rather than in face-to-face situation, given similar socio-demographic characteristics, may not be a "pure" measurement effect. Since the ILO's definition of the concept of unemployment is constructed based on a number of clear and successive questions, it may

seem surprising that an effect of such magnitude is observed. In particular, it may be conceivable that the selection effect could not be fully adjusted for using the available socio-demographic variables. In particular, it does not appear unreasonable to think that people considered to be unemployed with the help of the answers provided can be more likely to respond online than in face-to-face situation.

After analysis, unemployed people are, in proportion, much more present in the sample of individual questionnaires completed online than in the questionnaires collected in face-to-face situation. 13% of the households who responded online include at least one unemployed person, compared to 9% of households who responded to an interviewer. Moreover, this observation is the same, regardless of the household's membership (Table 36).

FIGURE 36 – Presence of ILO unemployed according to household membership

Share (in%)

Household membership		Data collection mode	
		Face-to-face	Internet
One member	No unemployed	94,3	90,0
	One unemployed	**5,7**	**10,0**
Two members	No unemployed	91,2	87,4
	One unemployed	**8,3**	**11,1**
	Two unemployed	**0,5**	**1,5**
Three members or more	No unemployed	80,9	79,1
	One unemployed	**15,9**	**17,9**
	Two unemployed	**2,8**	**3,0**
	Three or more unemployed	0,4	0,0

Scope: Individual questionnaires validated in a household that has validated at least one individual questionnaire (households whose reference person (or spouse if applicable) is 70 years old or younger). Data corrected for non-response.
Sources: "Labour status module" experiment; Current French LFS, Q2 2016.

The data thus appear to confirm the assumption that the unemployed people are more likely to respond online than in face-to-face situation. This is ascribable to multiple factors. In particular, due to a feeling of guilt stemming from their situation, the unemployed people could be apprehensive about interviewer questions about employment. In addition, the name of the survey, "Labour Force Survey", could de-incentivise the unemployed people to participate in the survey, as their situation is not an employment situation. Online, the ability to log in freely can have a positive impact on the response rate of the unemployed people. This is due to the fact that, with this data collection mode, they can have a look and immediately see that their situation

is taken into account in the questionnaire. Lastly, the unemployed people, some of whom are job-seekers (i.e. registered with "Pôle Emploi", the French employment agency), are required to connect online in order to update their profile each month. They are also required to check their email regularly, as "Pôle Emploi" may have sent them a job offer, to which it is mandatory that they respond. The unemployed people thus form, at least partially, a particularly connected population, perhaps more inclined to respond online. However, the low response rate calculated from data collected online lends more credence to the hypothesis of over-representation in the unemployed people among online respondents, even with given observable characteristics.

The observed measurement effect could thus constitute a residual mode effect that would include the selection effect linking to the target variable, not taken into account by the socio-demographic variables available to treat total non-response within the two samples.

Other limits could potentially weaken the estimation of the measurement effect, in particular, the method used for treating partial non-response within a household.

5.5.2 Number of online unemployed people artificially increased by treating of partial non-response

The previous analyses revealed that the partial non-response was more common within the online respondents households than within the face-to-face respondents.Furthermore, the "incomplete" households (i.e. the households in which at least one person didn't respond) which responded online, include more often at least one unemployed person than the "incomplete" households which responded in face-to-face situation. The methodology used to treat the partial non-response within the "incomplete" households is based on a re-weighting : the weights of individuals who did not validate their individual questionnaire are allocated equally among the respondents' weights. Thus, the choice of this methodology may have a direct impact on the weight of the unemployed people. In particular, this methodology could explain partially the over representation of unemployed people among the online respondents.

To quantify the impact of this methodology on observed deviations, the indicators are recalculated without any partial non-response processing being applied. In other words, the weight of non-respondents in a household is not redistributed across that of respondents (its value is automatically reduced to 0) and only the weight of respondents is taken into account when calculating the indicators.

FIGURE 37 – Comparison of indicators by methodology chosen to treat partial non-response

Processing for partial non-response	Collection mode	Emplyment rate (%)	Activity rate (%)	Unemployment rate (%)	Share of unemploymed (%)	Share of inactive (%)
With	Face-to-face	56,7	62,8	9,8	6,2	37,2
	Internet	57,2	65,1	12,2	7,9	34,9
Gap Face-to-face/Internet		*-0,5*	*-2,3*	*-2,4*	*-1,7*	*2,3*
Without	Face-to-face	56,7	62,8	9,8	6,1	37,2
	Internet	56,9	64,8	12,2	7,9	35,2
Gap Face-to-face/Internet		*-0,2*	*-1,9*	*-2,4*	*-1,8*	*1,9*

Scope: Individual questionnaires validated in a household that has validated at least one individual questionnaire (households whose reference person (or spouse, where applicable) is 70 years old or under).
Data adjusted for non-response ("EQ5" method).
Sources: "Labour status module" experiment; Current French LFS, Q2 2016.

When no processing occurs for partial non-response, the observed deviations remain broadly similar to those observed previously, when there is treating for partial non-response (Table 37). This demonstrates that the proposed methodology for adjusting for partial non-response has no major impact on previous estimates of the residual mode effect, once the selection effect, not related to the target variable eliminated.

Gaps between the indicators calculated from each of the two samples could also reflect the impact of the responses provided by proxies, which are much more numerous in face-to-face situations than online.

5.5.3 Do more face-to-face proxies lead to fewer unemployed people found in face-to-face interviews ?

There could be a potential "proxy effect" on the shares of unemployed people calculated from either of the samples. The proxy rate is much higher in face-to-face situation than online : 23% vs. 6%. Furthermore, the probability of the respondent's being inactive is higher when the questionnaire has been completed by a proxy, regardless of the data collection mode. The proxy effect could therefore automatically lead to an overestimation in the number of inactive found face-to-face. However, the "proxy effect" is amplified online. A questionnaire filled out by a proxy online often leads, in proportion, to inactive status than a questionnaire completed in face-to-face situation by a

proxy. A questionnaire filled out by a proxy online is 2.4 times more likely to result in the individual's being categorised as inactive than a questionnaire completed by the actual individual. In contrast, a questionnaire filled out by a proxy on the Internet is 1.2 times more likely to result in the individual's being categorised as inactive than a questionnaire completed by the person concerned.

From a theoretical point of view, the two effects thus offset each other in such a way that the overall "proxy effect" cannot alone explain the gap observed in the French Labour Force Survey's main indicators.

Lastly, differences between the sampling methods used may constitute a final identifiable limit to the proposed estimates.

5.5.4 An estimation bias potentially induced by slightly different sampling methods

Although the fields have been made comparable, some differences between the two samples remain nonetheless :

— The sample frames differ : the French Labour Force Survey's sample is derived from the housing tax registry, whereas that of the "Labour status Module" experiment was taken from the Statistical Housing Directory (based on housing tax registry).
— The survey plan differs : the French Labour Force Survey uses a two-stage stratified sample, stratified by region in mainland France, balanced on a number of characteristics found in the survey base and uniformly distributed over time ; in contrast, the "Labour status Module" sample was stratified according to four variables determined by an analysis of the factors explaining non-response in the context of the "large-scale experiment" (carried out previously, under similar conditions, Box 2).
— The French Labour Force Survey's sample contains vacant housing or secondary places of residence, which are only investigated if they have become main residences, in contrast to what was done with the "Labour status Module" sample.
— The reference weeks are not exactly identical : the data from the "Labour status Module" experiment match up with the reference weeks between 16 May and 5 June 2016 ; whereas all data relating to the French Labour Force Survey's reference weeks in second quarter 2016 were selected in order to increase the size of the sample while maintaining a consistent data collection period. By limiting the data collected in face-to-face situations to the three reference weeks defined for the "Labour status Module" experiment results in similar conclusions,

with gaps between indicators being slightly amplified.

These differences can also lead to a bias on the estimated residual mode effect, although the latter cannot be measured.

In conclusion, the main limitation on estimating the measurement effect highlighted in previous analyses appears to be that linked to the impossibility of perfectly correcting the selection effect using only the explanatory variables available in the sample frames. It would therefore be possible for the estimated measurement effect to include an uncorrected selection effect directly linking to the target variable. However, the low response rate calculated from data collected online lends more credence to the hypothesis of over-representation in the ILO unemployed people among online respondents, even with given observable characteristics.

6 Conclusion

The "Labour status module" experiment highlighted the risks inherent in rolling out a new questionnaire when it comes to estimating the main indicators calculated from the Labour Force Survey. In particular, it reveals that a change in the questions, as slight at it may be, can be the cause of a break in time series, for instance, when question order is reversed, when some questions are removed, or for instance when statements are reworded to take into account new European directives. The questionnaire is currently being overhauled and special care will thus need to be taken with each modification during the pilot test planned as part of the project, so as to anticipate as much as possible any breaks in time series.

Furthermore, the 100%-Internet experiment has revealed, for the first time, a significant potential mode effect on the estimation of some of the main indicators, particularly the unemployment rate (around two points). A more detailed analysis of the mode effect has highlighted a selection effect due to socio-demographic characteristics, resulting in an over-representation of the highest-income households, men, people aged 30 to 39, and residents of the Ile-de-France region among online respondents, compared to the population responding in face-to-face situation. Beyond this conclusion, the work carried out led us to consider, and then confirm, the hypothesis according to which the unemployed people tend to respond more to Labour Force Survey online than they would do in face-to-face situation, i.e. the hypothesis of a selection effect directly connected with the target variable.

Provided this hypothesis is proven, Internet [4] as a new data collection mode in the French Labour Force Survey could have the beneficial effect of remedying a potential lack of coverage of the unemployed people in the current French Labour Force Survey and could improve the estimates made. Building from that assumption, correcting the data collected online prior to aggregation with the data collected in face-to-face situations could give rise to a bias and lead to less reliable estimates than those obtained without any particular processing for the mode effect. Once again, the introduction of Internet as a new data collection mode during the pilot test in 2020 will therefore need to be an opportunity to pay particular attention to the mode effects in waves 2 to 6.

4. The plan to overhaul the Labour Force Survey provides for the introduction of online data collection as an option to the interviewees for waves 2 to 6 in addition to telephone data collection. The first interview will take place in face-to-face situation.

Box 1 - Identifying individuals carrying the measurement effect with a view to possible correction of data collected on the Internet before aggregation

Correct the online responses or not ?

Given the scale of the measurement effect which has been estimated in this paper, it could be interesting to think about the next step which is combining data. With data collected online on the one hand and in face-to-face situation on the other hand, is it better, or not, to correct data before combining ? If so, which one and how to proceed ? It should be remembered that this situation remains theoritical : it is not intended to offer web and face-to-face situation as two concurrent data collection modes in wave 1 of the future French Labour Force Survey. However, it's scheduled to introduce online data collection as an option to the interviewees for waves 2 to 6 in addition to telephone data collection.

So let's assume that data collected online and in face-to-face situation allow us to calculate indicators as reliable as possible and as representative of the labour market situation as possible.

There are two options :

— Combining data collected without any treatment on one of the two samples (face-to-face or Internet). This is equivalent to assume that the measurement bias is limited here by the closeness of the questionnaires in the two modes and by the similar quality between data collected online and in face-to-face situations.

— Correcting data collected from one sample, assuming that the other one is the reference mode. This reference mode could be the historical mode, which allows to calculate long time series for instance. It could also be a mode considered as the most reliable (the quality of responses collected by the other mode is also supposed to be lower).

Here, from a historical perspective, the reference mode is face-to-face. However, taking into account the previous analyses, there is no evidence that correcting data collected online could improve the quality of the labour market indicators. Combining data without any correction could even allow to reduce the coverage bias of unemployed people in the French Labour Force Survey if those latter had a preference for responding online.

In order to refine analysis on the measurement effect and, in particular, to better understand the persisting gaps in the unemployment rate, one solution consists of identifying individuals likely to promote the effect. For this purpose, a method designed by Stéphane Legleye [5] [1], aimed at identifying individuals with common socio-demographic characteristics but a different response behaviour in each of the two modes, was applied. It made it possible, where necessary, to adjust for individuals identified as carrying the measurement effect, whose response was considered to be erroneous compared to that expected in the data collection mode considered as the reference.

The "common support" approach

This methodology comprises multiple stages :

— First of all, a probability of responding online rather than in face-to-face situation (or propensity score) is calculated for each individual in the total sample (face-to-face and web respondents). The variable for the collection method (face-to-face/Internet) is modelled by logistic regression by integrating the available socio-demographic variables. The model thus constructed makes it possible to calculate, for each individual, a predicted probability to respond in face-to-face situation (Illustration 38).

— Secondly, for each web respondent with a propensity score $sp_{Internet}$, an individual responding in face-to-face situation with a propensity score $sp_{Face-to-face}$ is sought, and drawn randomly in the interval $[sp_{Internet} - 0,25 \cdot \sigma_{sp_{Internet}}; sp_{Internet} + 0,25 \cdot \sigma_{sp_{Internet}}]$.
As soon as an individual has been randomly selected within the defined interval, a pairing is performed. A similar operation is carried out for each face-to-face respondent.

— All individuals for whom a "twin" within the meaning of the propensity score was found goes into the "common support". Online respondents for whom no twins were found form a set of individuals "specific web respondents" ; symmetrically, individuals who responded in face-to-face situation for whom no twins were found among online respondents, form a set of individuals "specific face-to-face respondents" (Illustration 39). "Specific" individuals may carry part of the measurement effect. Assuming there is a selection effect adjusted for socio-demographic variables, individuals likely to carry the observed mode effect are potentially among the individuals who responded

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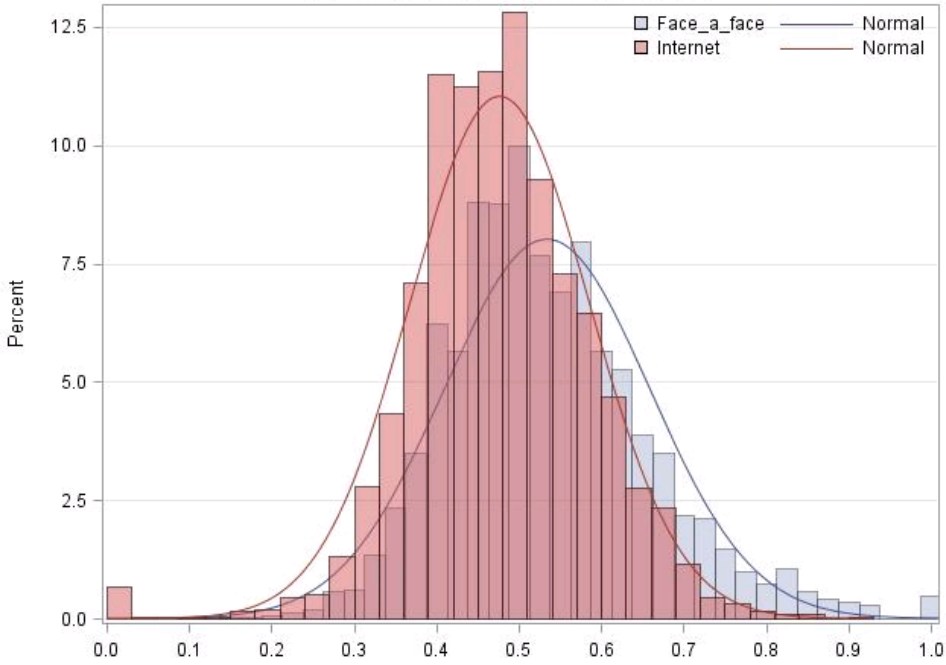
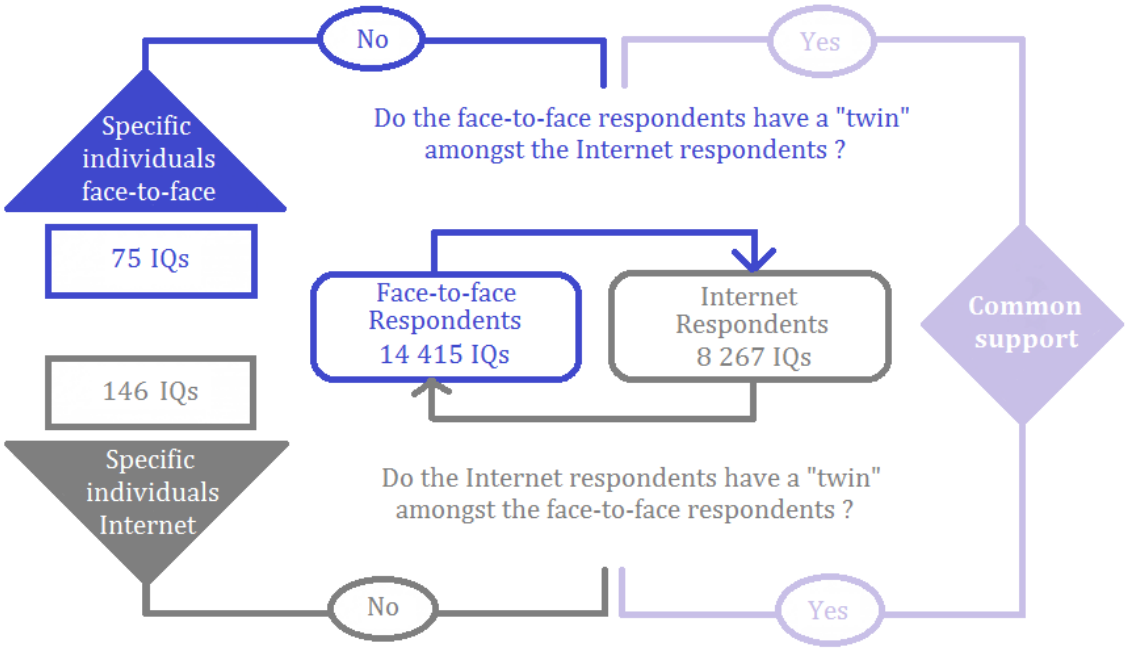
FIGURE 38 – Distribution of propensity scores by data collection mode



online with a different labour market status than the face-to-face respondents with whom they were matched.

Each of the individuals who responded online was matched with an individual who responded in face-to-face situation, as defined above, over a population of 8,121 individuals. These matched individuals, combined with all individuals who responded in face-to-face situation, constitute the common support (8,121 + 14,415 = 22,536 individuals). Within this common support, some individuals who responded online were paired with individuals who responded in face-to-face situation and did not have the same labour market status. Given the results observed on the main labour market indicators, individuals likely to carry the measurement effect would be unemployed online respondents, matched with inactive face-to-face respondents. This category represents 3% of the total common support (243 individuals) (Table 41). A part of the measure effect could also be carried by individuals who are not in the common support.

FIGURE 39 – Matching on propensity score



Scope: Individual questionnaires validated in a household that has validated at least one individual questionnaire (households whose reference person (or spouse, where applicable) is 70 years old or under).
Sources: "Module A" experiment; Continuous employment survey, Q2 2016.

FIGURE 40 – Employment status according to the belonging of the common support

	Employed	Unemployed	Inactive	Total
Common support	12158	**1439**	8864	22461
Specific individuals Internet	77	**8**	61	146
Specific individuals Face-to-face	23	**12**	40	75

Scope: Individual questionnaires validated in a household that has validated at least one individual questionnaire (households whose reference person (or spouse, where applicable) is 70 years old or under).
Sources: "Module A" experiment; Continuous employment survey, Q2 2016.

FIGURE 41 – Distribution of online respondents by labour market status of the matched individual

Type of matching	Labour market status of online respondents	Labour market status of face-to-face respondents	Not weighted population	Weighted population	Share (in %)
Convergent	**Employed**	**Employed**	2 969	19 096 629	44
	Unemployed	**Unemployed**	62	1 007 354	2
	Inactive	**Inactive**	1 397	11 015 450	25
Divergent	**Employed**	**Unemployed**	280	1 295 887	3
	Employed	**Inactive**	1 512	4 718 771	11
	Unemployed	**Employed**	364	1 290 876	3
	Unemployed	**Inactive**	243	1 130 808	3
	Inactive	**Employed**	1 158	3 639 408	8
	Inactive	**Unemployed**	136	648 177	1
Total individuals online in the common medium			**8 121**	**43 843 360**	**100**

Scope: Individual questionnaires validated in a household that has validated at least one individual questionnaire (households whose reference person (or spouse, where applicable) is 70 years old or under). Data adjusted for non-response ("EQ5" method).
Sources: "Labour status module" experiment; Current French LFS, Q2 2016.

Assuming that all of these individuals are carriers of the residual measurement effect (once the selection effect linked to socio-demographic variables has been removed) amounts to making the assumption that all of them have declared an erroneous labour market status compared to what they would have answered in face-to-face situation. If this is the case, a correction of their labour market status by an inactive status instead of their unemployed should lead to the cancellation of the measurement effect.

However, the correction of the labour market status of all individuals considered to carry the mode effect leads to a reduction in the online unemployment rate such that it becomes lower than the unemployment rate calculated from data collected in face-to-face situation in the context of the current French Labour Force Survey (Table 42).

On the basis of this result, it may prove interesting to try to use a less systematic method for correcting labour market status.

FIGURE 42 – Labour market indicators after adjustment on matched data

in %

Data collection mode		Activity rate	Employment rate	Unemployment rate	Share of unemployed
Face-to-face		62,8	56,7	9,8	6,2
Internet	**Before adjustment**	65,1	57,0	**12,4**	8,1
	After adjustment	62,2	57,0	**8,4**	5,7

Scope: Individual questionnaires validated in a household that has validated at least one individual questionnaire (households whose reference person (or spouse, where applicable) is 70 years old or under). Data adjusted for Non-response ("EQ5" method).
Sources: "Labour status module" experiment; Current French LFS, Q2 2016.

A method for adjusting prior to aggregating less systematic data

The idea consists of predicting the ILO labour market status of individuals surveyed online as unemployed and paired with people surveyed in face-to-face situation as inactive, based on information collected on people who have responded in face-to-face situation only, regardless of whether they belong to the previously defined common support.
The method is as follows :

— **Stage 1 :** Predict the ability to respond online rather than in face-to-face situation using available socio-demographic variables to determine the probability of responding online ;

— **Stage 2 :** Replace the labour market status of the unemployed people who responded via the Internet, previously paired with a face-to-face inactive person with missing values ;

— **Stage 3 :** For each of these individuals (online unemployed persons paired with an inactive face-to-face respondent), ascribe 10 labour market status predicted based on the following model, designed exclusively from data collected face-to-face :

Predicted labour market status = Predicted probability of responding online

The results found, very similar to the results observed previously, are shown in table 43.

FIGURE 43 – Labour market indicators after adjustment on matched data

in %

Data collection mode		Activity rate	Employment rate	Unemployment rate	Share of unemployed
Face-to-face		62,8	56,7	9,8	6,2
Internet	**Before adjustment**	65,1	57,0	**12,4**	8,1
	After adjustment	64,0	58,5	**8,5**	5,4

Scope: Individual questionnaires validated in a household that has validated at least one individual questionnaire (households whose reference person (or spouse, where applicable) is 70 years old or under). Data adjusted for Non-response ("EQ5" method).
Sources: "Labour status module" experiment; Current French LFS, Q2 2016.

The measure effect has been corrected at this stage. Two conclusions can be derived from this analysis : if the measurement effect is carried by

the individuals previously identified, not all of them have probably declared a different labour market status to the one they would have declared in face-to-face situation with an interviewer ; the residual mode effect, once the selection effect of the available socio-demographic variables is ruled out, is probably not a pure measurement effect. This could be, as some of the previous analyses suggested, at least partly a selection effect independent from the auxiliary information available, or even directly related to the target variable. This amounts to asserting that a certain number of respondents, with a specific profile, would have a higher propensity to respond online than in face-to-face situation, when their labour market status is that of an unemployed person.

Going further : using a more flexible adjustment method prior to aggregation

The above analysis leads to the hypothesis that only a few individuals within the common mediumsupport could cause a measurement effect included in the residual mode effect. In an attempt to identify the individuals most likely to carry the measurement effect, the analysis needs to be refined beyond a single propensity pairing, focusing more on the unemployed people, overrepresented among online respondents. More specifically, the ideal would be to determine which individuals have the greatest risk of being unemployed when responding online and inactive when responding in face-to- situation. The method considered here to achieve this objective consists of constructing a predictive model based on data collected in face-to-face situations, making it possible to estimate for not employed person who participated in the survey the probability of being inactive rather than unemployed. In order to improve the quality of the model, the "Registration with Pôle Emploi" variable, linked to the target variable (unemployed/inactive) is added to all socio-demographic variables used to date. However, this addition involves restricting the field to under 65 years of age.

The predictive model once established is applied to all individuals who responded online. Everyone is then assigned a predicted probability of being inactive as opposed to being unemployed. Ordering this probabilities makes it possible to identify the individuals declared to be unemployed when responding online and most likely to declare themselves inactive in face-to-face situation. If the residual effect is fully considered as a measurement effect and face-to-face is considered the reference data collection mode, it is then possible to adjust for the status of some of the individuals identified as most likely to declare themselves inactive in face-to-face situation. For example, adjustment for the individuals belonging to the quartile of the unemployed

people with the highest probability of declaring themselves inactive in face-to-face situation, leads to an unemployment rate of 9.7% versus 9.8% in face-to-face situation (Table 44).

FIGURE 44 – Labour market indicators after correction by quartile

in %

Data collection mode			Activity rate	Employment rate	Unemployment rate	Share of unemployed
Face-to-face			62,8	56,7	9,8	6,2
Internet	No adjustment for employment status		65,1	57,0	12,4	8,1
	After adjustment for employment status of individuals with probability of being inactive greater than:	0,50	63,1	57,0	9,7	6,1
		Q1 = 0,87	63,5	57,0	10,3	6,5
		Q2 = 0,94	64,5	57,0	11,6	7,5
		Q3 = 0,96	64,9	57,0	12,2	7,9

Scope: Individual questionnaires validated in a household that has validated at least one individual questionnaire (households whose reference person (or spouse, where applicable) is 70 years old or under). Data adjusted for Non-response ("EQ5" method).
Sources: "Labour status module" experiment; Current French LFS, Q2 2016.

The predicted probability for unemployed online respondent to be inactive in face-to-face situation is lower within the common support (Table 45). Thus people who are not in the common support have specific characteristics, even if it is complicated to determine which characteristics could explain the specificity of online respondents.

FIGURE 45 – Predicted probabilities to be inactive in face-to-face situation according to the belonging to the common support

	Common support	Excluding common support
Effectif	2733	56
Mean	0,78	0,82
Minimum	0,11	0,23
First quartile	0,49	0,84
Median	0,93	0,96
Third quartile	0,96	0,99
Maximum	1	1

Scope: Individual questionnaires validated online by unemployed or inactive people aged 64 or younger in a household that has validated at least one individual questionnaire (households whose reference person (or our spouse, where applicable) is 70 years old or older). Data adjusted for non-response (EQ5 method).
Sources : Labour status module experiment; Current French LFS, Q2 2016.

Box 2 - "Large scale" experimentation, results that confirm the analysis

What is "large-scale" experimentation ?

Two quantitative experiments were carried out in 2016 as part of the Muse project : the so-called "large-scale" experiment (EGE), comprising three questions asked a quarter apart, starting in March, June and September 2016, and the "Labour status module" experiment. The aim of the "large-scale" experiment was to study, on a large scale, the administering of the French Labour Force Survey Survey questionnaire online and to test a number of variants, with a view to designing the most incentivising protocol possible. The sample consisted of 40,000 dwellings drawn from the consolidated files of the 2015 housing tax. Like the "Labour status module" experiment, the EGE was conducted exclusively online.

The results confirm the mode effect observed from the "Labour status module" experiment

After selecting a field comparable to that of the "Labour status module" experiment, and applying non-response treatment equivalent to those performed in this document, it becomes possible to compare the indicators calculated on the basis of the data collected during the first interview of the "large-scale" experiment, with those calculated from the first interview in face-to-face situation in the French Labour Force Survey.

The mode effect observed after correction for non-response (i.e., treating the selection effect connected with the variables available in the sample frames) is comparable to that observed on the data collected from the "Labour status module" experiment, regardless of the indicator considered, although the magnitude of the gaps is slightly different (Table 46). The latter are less significant on the unemployment and inactivity indicators than they were when they were calculated from the "Labour status module" experiment. To illustrate, the unemployment rate calculated based on data collected in wave 1 of the EGE is, on average according to the method of processing the non-response considered, 11.2%, as opposed to 9.8% in face-to-face situation, and 12.2% based on data collected through the "Labour status module" experimentation. In contrast, the gaps are amplified on employment and activity indicators. Thus, the employment rate calculated from EGE data is 58.3% on average, 56.7% in face-to-face situations and 57.2% on the basis of data collected through the "Labour status module" experiment.

FIGURE 46 – Labour market indicators calulated from data collected within the framework of the EGE

in %

		AHC	EQ5	EQ10	HB	Mean
Employment rate	French LFS Face-to-face	56,7	56,7	56,7	56,7	56,7
	French LSE Internet	58,6	59,0	57,9	57,7	58,3
	French LFS Internet	57,7	57,2	57,0	57,0	57,2
	Gap Face-to-face/Internet French LFS	***-1,0***	***-0,5***	***-0,3***	***-0,3***	***-0,5***
	Gap Face-to-face/Internet LSE	***-1,9***	***-2,3***	***-1,2***	***-1,0***	***-1,6***
Activity rate	French LFS Face-to-face	62,9	62,8	62,9	62,9	62,9
	French LSE Internet	65,9	66,1	65,5	65,3	65,7
	French LFS Internet	65,4	65,1	65,1	65,0	65,2
	Gap Face-to-face/Internet French LFS	***-2,5***	***-2,3***	***-2,2***	***-2,1***	***-2,3***
	Gap Face-to-face/Internet LSE	***-3,0***	***-3,3***	***-2,6***	***-2,4***	***-2,8***
Unemployment rate	French LFS Face-to-face	9,8	9,8	9,8	9,8	9,8
	French LSE Internet	11,0	10,6	11,6	11,6	11,2
	French LFS Internet	11,9	12,2	12,4	12,4	12,2
	Gap Face-to-face/Internet French LFS	***-2,1***	***-2,4***	***-2,6***	***-2,6***	***-2,4***
	Gap Face-to-face/Internet LSE	***-1,2***	***-0,8***	***-1,8***	***-1,8***	***-1,4***
Share of unemployment	French LFS Face-to-face	6,1	6,2	6,1	6,2	6,2
	French LSE Internet	7,3	7,0	7,6	7,6	7,4
	French LFS Internet	7,8	7,9	8,1	8,0	8,0
	Gap Face-to-face/Internet French LFS	***-1,7***	***-1,7***	***-2,0***	***-1,8***	***-1,8***
	Gap Face-to-face/Internet LSE	***-1,2***	***-0,8***	***-1,5***	***-1,4***	***-1,2***
Inactivity rate	French LFS Face-to-face	37,1	37,2	37,1	37,1	37,1
	French LSE Internet	34,1	33,9	34,5	34,7	34,3
	French LFS Internet	34,6	34,9	34,9	35,0	34,9
	Gap Face-to-face/Internet French LFS	***2,5***	***2,3***	***2,2***	***2,1***	***2,3***
	Gap Face-to-face/Internet LSE	***3,0***	***3,3***	***2,6***	***2,4***	***2,8***

Scope : Individual questionnaires validated in a household that has validated at least one individual questionnaire (households whose reference person (or spouse where applicable) is 70 years old or under. Data corrected for non-response.
Sources : "Labour status module" Experimentation ; Large-scale Experimentation (LSE) ; Current French LFS, Q2 2016.

The gaps observed, slightly more marked in the context of the "large-scale" experiment, support the analysis set out in this document. The differences observed in the estimates made via the experiments studied can in particular be explained by a greater accuracy in the indicators calculated from data collected with the "Labour status module" experiment induced by a survey plan that takes into account the response rates observed by profile, under the EGE. This is because "large-scale" experimentation has made it possible to identify socio-demographic variables linked to non-response online. Based on these variables, strata have been built and used to overweight the households least likely to respond online in the "Labour status module" experimentation sample.

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