

Unanswered calls in the Swedish Labour Force survey

Alexander Astlind, Statistics Sweden, alexander.astlind@scb.se

Sara Frännlid, Statistics Sweden, sara.frannlid@scb.se

Tiina Orusild, Statistics Sweden, tiina.orusild@scb.se

Abstract

The Swedish Labour Force Survey (LFS) has in recent years faced an increasingly challenging response climate. This development has resulted in declining response rates and rising data collection costs. A substantial share of interviewer resources is spent on unanswered calls, which has intensified the need for a more efficient and cost-effective data collection process.

To address these challenges, Statistics Sweden launched a project in 2024–2025, partly funded by EU funds, with the objective of improving cost efficiency while maintaining data quality. One part of the project focused on analyzing unanswered calls.

Both the number of non-responding respondents and the share of interviewer time spent on unanswered contact attempts have increased over several years. Some measures, such as introducing mixed-mode data collection, have already helped reduce the volume of unanswered calls, from over 100,000 in January 2023 to approximately 85,000 per month by the end of 2024, but the issue remains substantial.

The analysis shows that around 80 percent of all respondents who eventually participate do so within the first five days of the data collection period. During the same time frame, 50–60 percent of all unanswered calls are made, indicating that the number of unanswered calls per completed interview increases as the field period progresses.

The Swedish LFS uses so-called processing groups, to which each respondent is assigned before data collection begins. These groups are primarily defined by rotational group and previous contact outcomes, and they differ in the number of contact days.

*Based on the project's findings, there are indications that the number of unanswered calls could be reduced, thus lowering costs, by shortening the number of contact days for some of the processing groups. Importantly, such adjustments appear feasible without causing any substantial negative impacts on the final survey estimates. **Keywords:** Labour Force Survey, Data collection, Unanswered calls*

1. Introduction

The Swedish Labour Force Survey (LFS) plays a central role in producing timely and reliable labour market statistics. But in recent years the survey has faced a deteriorating response environment with declining participation rates and increasing data collection costs. The nonresponse rate in the LFS has increased from around 20 to 57 percent between 2008 and 2024. It is therefore of importance to optimize resources to achieve a cost-effective data collection. In response to these challenges, Statistics Sweden initiated a development project in 2024-2025, partly funded by the European Union, with the aim of improving the cost efficiency of the LFS while upholding data quality. One component of this project focused specifically on understanding the dynamics of unanswered calls and identifying potential adjustments to the data collection process that could reduce unnecessary interviewer effort.

Previous changes, such as the introduction of mixed-mode data collection, have contributed to lowering the overall volume of unanswered calls, yet the issue remains. Moreover, patterns observed in the fieldwork indicate that most successful interviews occur early in the data collection period while unanswered calls accumulate disproportionately as the field period progresses. These findings suggest that the current allocation of contact days may not be optimal.

This report examines these patterns in detail and evaluates whether a reduction in the number of contact days for some sample groups could decrease the number of unanswered calls without significant changes to key survey estimates.

2. Sampling design and the data collection process

The LFS is a sample survey of individuals and is conducted every month throughout the year. Respondents answer questions about their situation on the labour market during a specific week of the reference month.

There are two types of samples in the LFS: annual and monthly. The annual sample is selected once a year in November and includes respondents that will participate for the first time the following year. Each respondent is included in the survey eight times

in total, once each quarter, for a period of two years meaning that the rotation is such that $7/8^{\text{th}}$ of the sample recures at a three-month interval and $1/8^{\text{th}}$ of the sample is replaced with a new sample of individuals.

Starting in April 2024, the data collection in the Swedish LFS has been carried out using a mixed-mode approach combining telephone and web. Most interviews are conducted within 15 days after the end of the reference week, but processing of respondents may take place until the end of the data collection period a few days prior to publication.

Before the data collection period commences each respondent is assigned to a processing group. The processing groups are mainly defined by rotational group, the result from previous contact attempts, and a time slot¹ assigned to the respondents. The number of contact days vary between the groups. The purpose of the processing groups is to use different strategies in the different subsets of the sample.

The interviewers' work is the most time-consuming part of the LFS data collection process. In 2023, around 150 interviewers spent a total of 105 273 working hours on the LFS. Most contact attempts do not result in a completed interview and nearly 60 percent of the interviewers' time in the call management system is spent on unanswered calls. One way of reducing the costs for the data collection period is to reduce the number of contact days, at least in some of the processing groups.

3. Distribution of unanswered calls across contact days

Between January 2023 and December 2024, most unanswered calls occurred within the first five days of the data collection period. Before the introduction of mixed-mode data collection in April 2024 this number typically amounted to around 60 000 but shortly after the introduction the number decreased to about 50 000 calls per month. During contact days 6-10, the number of unanswered calls decreases over the period gradually, from around 40 000 per month to below 30 000 at the end of 2024. After contact day 10 the number of unanswered calls remains relatively stable throughout the period, averaging around 10 000 per month

¹ Which defines when a respondent is called in a day.

Response patterns follow a similar distribution, just over 80 percent of those who respond do so during the first five days, while days 6-10 contribute to around 15 percent. Contact attempts made on day eleven and later contribute only about 3 percent of the responses but still generate around 10 percent of all unanswered calls. This indicates the increasing effort interviewers need to take to complete interviews as the fieldwork progresses.

4. Distribution of unanswered calls across processing group

Table 4.1. below summarises the relationship between processing group, sample size, the number of unanswered calls and number of respondents across different contact day intervals, and the time spent on average on unanswered calls per month. The results show substantial variation between groups, reflecting differences in previous response behaviour and the number of contact days allocated.

Table 4.1 Average number of unanswered calls, estimated time spent, and completed interviews per month and contact day (January 2023 – December 2024)

Processing group	Sample size	Total unanswered calls, (time in hours) / interviews	Day 1	Day 2	Days 3-4	Days 5-6	Days 7-10	Days 11-15
Rotational group 1	2 180	17 613 (998) / 1 004	2 094 (119) / 375	1 997 (113) / 170	3 108 (176) / 178	2 526 (143) / 120	4 355 (247) / 110	3 243 (184) / 49
Interview on last occasion	5 668	27 690 (1 569) / 4 766	4 720 (267) / 2 073	2 560 (145) / 780	6 098 (346) / 922	4 238 (240) / 485	5 504 (312) / 376	3 420 (194) / 121
Rotational group 2 - no prior interview	650	6 790 (385) / 88	645 (37) / 21	726 (41) / 13	1 363 (77) / 18	1 341 (76) / 16	2 600 (147) / 20	-
-	-	-	Day 1	Day 2	Days 3-4	Days 5-6	Days 7-8	-
Rotational group 3, 5, 7 - no prior interview	1 800	15 742 (892) / 113	1 697 (96) / 18	1 991 (113) / 13	4 004 (227) / 24	3 655 (207) / 28	4 056 (230) / 24	-
Rotational group 4, 6 - no prior interview	1 104	4 988 (283) / 31	1 040 (59) / 10	1225 (69) / 8	2471 (140) / 12	-	-	-
Rotational group 8 - no prior interview	446	965 (55) / 4	420 (24) / 2	497 (28) / 2	-	-	-	-

Among respondents included in the LFS sample for the first time, interviewers required an average of 17.5 contact attempts to obtain a completed interview. During the final five contact days this number rose to 66 attempts, indicating that substantially more effort is required to achieve successful interviews. For the respondents who participated the previous wave the required effort was considerably lower. In this group interviewers needed roughly six attempts per completed interview, thus increasing to

28 attempts during the final five days. The groups with no prior interview are consistently more difficult to reach and the effort required also increases in later rotational groups. If no contact is made in the first wave, interviewers need on average 77 attempts per completed interview. For those who remain nonrespondents in subsequent waves the number of attempts rises sharply with around 139 attempts in rotational group 3, 5 or 7; 161 attempts in rotational group 4 or 6; and approximately 241 attempts in the final rotational group. A number that rises even more on the final days. The average time spent per unanswered call in the interviewer management system is roughly two minutes. To account for the additional time needed before the next attempt can be made this figure is multiplied by a factor of 1.7 to approximate the actual time required per attempt. Since the average time spent on an unanswered call does not vary much across processing groups, the time required per completed interview follows the same pattern as the number of unanswered calls per interview.

5. Reducing contact days for some processing groups

The effects of a shortened number of contact days were evaluated by re-coding all interviews conducted after specified cut-off points as nonresponse. With this approach we could assess how the shortened field period would affect some LFS key estimates. The new cut-off values were chosen in a pragmatic manner by balancing considerations of response representativity, the total number of interviews lost, and the potential reduction in interviewer workload. Table 5.1 summarises the proposed strategy.

Table 5.1 Effects of proposed strategy: Monthly average estimated reduction in number of unanswered calls, lost interviews, and estimated time saved (January 2023 – December 2024)

Processing group	Current number of contact days	Proposed number of contact days	Average decrease in unanswered calls per month	Average interviews lost per month	Average time saved (hours)
Rotational group 1	15	12	1 629	21	92
Interview on last occasion	15	12	1 748	51	99
Rotational group 2 - no prior interview	10	6	2 600	20	147
Rotational group 3, 5, 7 - no prior interview	8	6	4 056	24	229
Total			10 033	115	569

The estimated time savings associated with the reduces number if unanswered calls is estimated to be around 6 800 hours per year. Using this strategy, the average

monthly differences between the published key estimates (e.g. unemployment and employment) between January 2023 and December 2024 remained small. For major domains, including individuals aged 15-74 (overall, by sex, and by domestic/foreign background), as well as age groups 20-65 and 15-24, the deviations in the estimates were all below 2 000 persons. Table 5.2 summarizes the results.

Table 5.2 Effects of proposed strategy: Average estimated difference and largest monthly difference between proposed strategy and published (January 2023 – December 2024)

Domains	Averaged difference between proposed and published estimates (thousands)		Largest difference between proposed and published estimates during the time period	
	Employed	Unemployed	Employed	Unemployed
15–74-year-olds, total	0.6	-0.2	8.3	8
15–74-year-olds, men	1.7	-1.0	9.3	5.7
15–74-year-olds, women	-1.2	0.8	-8.0	4.6
15–74-year-olds, domestic born	1.4	-0.9	9.7	-4.4
15–74-year-olds, foreign born	-0.9	0.7	-4.9	-6.0
20–65-year-olds, total	-0.9	-0.6	-7.8	-4.3
15–24-year-olds, total	0.9	-0.3	2.7	5.5

The proposed strategy would likely be implemented without hesitation if the LFS were a single cross-sectional survey as the effects on the estimates seem to be moderate. But the probability of responding in the current wave increases substantially if a prior contact has been established in a previous wave. To account for this dependency, we carried out a worst-case analysis in which any respondent that was recoded as nonresponse due to the new cut-off values where recoded as nonresponse in all following waves. Table 5.3 summarizes the results.

Table 5.3 Estimated worst-case effects of proposed strategy: Average and maximum monthly difference compared with published results (January 2024 – December 2024)

Domain	Averaged difference between proposed and published estimates (thousands)		Largest monthly difference between proposed and published estimates (thousands)	
	Employed	Unemployed	Employed	Unemployed
15–74-year-olds, total	10.1	-19.2	52.2	-73.4
15–74-year-olds, men	22.1	-17.5	44.4	-44.4
15–74-year-olds, women	-12.0	-1.7	-43.6	-37.9
15–74-year-olds, domestic born	13.9	-18.9	43.3	-57.9
15–74-year-olds, foreign born	-3.7	-0.2	39.3	-41.6
20–65-year-olds, total	8.9	-18.4	43.2	-63.4
15–24-year-olds, total	1.4	-9.0	43.4	-42.6

These results indicate substantially larger deviations in key estimates across all examined domains when the worst-case assumption is applied. The impact on the LFS

estimates is therefore potentially substantial which indicates that any reduction in contact days is best implemented with caution while monitoring the long-term data quality.

6. Conclusions and further work before implementation

The analyses presented in this report demonstrate that a reduction in contact days for selected processing groups has the potential to substantially decrease the number of unanswered calls and reduce interviewer time by several thousand hours per year. Under baseline assumptions the effects on key labour-market estimates are small which suggest that the current data collection process could be more streamlined without compromising quality, but the worst-case scenario highlights some long-term data quality concerns that must be addressed before implementation. Moving forward, several areas is therefore required further investigation:

- An intermediate case scenario: To more realistically assess how reducing contact days could affect key estimates model, an intermediate case scenario will be developed in which response probability of answering in the next wave are more realistically modelled.
- Evaluating the effects on overall response representativity: Some processing groups are systematically harder to reach than others. Adjusting the number of contact days in these groups may therefore influence the composition of respondents, something we will need to assess before any implementation.
- Long-term quality monitoring: Since some quality concerns may accumulate over time a structured plan for monitoring long-term effects must first be established before implementation.
- Pilot test: An implementation will be preceded by pilot studies on subsets of the sample designed to evaluate the effects on response patterns and key estimate.

In conclusion, the proposed reduction in contact days shows clear potential for improving data collection efficiency but several methodological and quality related question must first be resolved before any changes can be introduces in practice.