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Influence of (Pre-interview) Notification on Response Rates in Telephone Surveys

Influencia de las notificaciones (previas a la entrevista) en la tasa de respuesta en encuestas telefónicas

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Key words

Telephone Survey
- Meta-analysis
- Pre-notification
- Cooperation Rate
- Response Rate

Abstract

One of the great challenges faced in a context of declining survey response rates is to increase the cooperation of the people selected to be surveyed. This research note focuses on the effectiveness of a pre-interview contact as a strategy to increase telephone survey cooperation rates. To this end, an exhaustive analysis was conducted of the research published in five databases that collect sociological works, the findings of which were examined using the meta-analysis technique. The results revealed that the use of notifications increases cooperation rates in telephone surveys with an effect size of 1.24, which increases in surveys carried out on mobile phones.

Palabras clave

Encuesta telefónica
- Metaanálisis
- Notificación previa
- Tasa de cooperación
- Tasa de respuesta

Resumen

En un contexto de descenso de las tasas de respuesta de las encuestas, aumentar la colaboración de las personas seleccionadas para ser encuestadas es uno de los grandes desafíos. Esta nota de investigación se centra en la eficacia del contacto previo a la entrevista como estrategia para aumentar la colaboración en encuestas telefónicas. Para ello, lleva a cabo un análisis exhaustivo de las investigaciones publicadas en cinco bases de datos que recogen trabajos sociológicos, cuyos hallazgos son analizados con la técnica del metaanálisis. Los resultados desvelan que la utilización de notificaciones consigue un aumento de la tasa de cooperación en las encuestas telefónicas con un tamaño de efecto de 1,24, que se incrementa en las encuestas realizadas a teléfonos móviles.

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INTRODUCTION

Telephone surveys began to be widely used in the United States in the 1930s (Massey, 1988). Although some organisations had used the telephone for electoral polling, and this data collection method was extensively employed in health research during the 1950s and 1960s (Nathan, 2001), telephone surveys were mainly used as a supplementary method during this period.

In the 1960s, the population with a telephone in the United States grew to reach 90 % of households (Nathan, 2001), which was the decisive factor behind the large expansion of the telephone survey. This factor was compounded by the implementation of computer-assisted telephone interviewing (CATI) in 1971 and samples with random number systems (Couper, 2017; Dillman, 2017). This marked the end of the "dominance" of mail and face-to-face surveys, which had been the most commonly used modes of survey questionnaire administration until then (Lyberg and Kasprzyk, 1991). The telephone survey has been predominant in North America, Australia and most European countries since the mid-1980s (Leeuw and Hox, 2015).

This has taken place in parallel with a major phenomenon in the survey field, namely the progressive decline in response rates, a situation that jeopardises the future viability of the survey (among others, Massey and Tourangeau, 2013). This reduced level of cooperation has been more pronounced in telephone surveys. Thus, for example, the response rate of the barometers (periodic surveys) conducted by the Pew Research Center (a US think tank) decreased from 9 % in the period 2013-2016 to 6 % in 2018 (Kennedy and Hartig, 2019).

Several factors can explain this situation: the difficulty in distinguishing between residential and business numbers; calls that are never answered; the widespread use of answering machines; and the high volume of telephone contacts for commercial purposes (among others, Dillman, 2017; Couper, 2017). Using a notification and conducting a detailed examination of the responses makes it possible to differentiate between residential telephones—the research object—and other types of telephones (businesses, non-existent telephones, etc.).

Parallel to these factors, it is worth noting the expansion of mobile telephones, which have absorbed landlines (Lavrakas *et al.*, 2017), with many people now using only mobile phones. In fact, 46 % of dwellings in Spain were accessible only by mobile phone in 2024, double those in 2019 (Instituto Nacional de Estadística-INE, 2024). The problem with this situation is that it does not affect all social sectors equally and that people with only mobile phones are different from those with landline telephones (Lavrakas *et al.*, 2017).

To remedy this situation, a number of strategies have been developed that help both to locate the unit of analysis and to reduce the number of rejections. Some of these have been ineffective, and therefore telephone response rates continue to decline, leading to a loss of representativeness (e.g. Luiten, Hox and Leeuw, 2020). One of the most commonly used strategies is to send a letter by ordinary post as a notification of an upcoming telephone call to conduct a survey. The letter provides information about the public body that is conducting the survey and its topic, as well as the next contact to be made by an interviewer. It is signed by the survey manager (or relevant person).

Having this information makes it easier to contact the *selected* person, as it is a more professional way of asking for their participation. It also helps to remove any

initial reticence they may have about co-operating, because the importance of both the survey and their participation is communicated more effectively. Pre-notification is a more suitable mechanism for legitimising the demand on respondents' time that cooperation entails, while also reducing the "surprise" factor associated with an unexpected visit or phone call, and potentially decreasing "impromptu refusals" (impulsive refusals).

The aim of this paper is to analyse the extent to which a pre-notification of telephone contact leads to an increase in the response rates of telephone surveys. Research published between 2010 and 2024 is analysed in order to fulfil that aim.

Methodology

Similar research frequently yields different—at times, even contradictory—findings. Meta-analysis is a method for synthesising the evidence accumulated about a specific research question (Botella and Zamora, 2017). It is the most appropriate means of avoiding findings being classified as inconclusive, a label typically applied when studies on a given topic reach divergent conclusions. Some publications have questioned the effectiveness of (pre-interview) notifications as a tool to increase response rates (e.g. Capistrano and Creighton, 2022), despite the fact that they are frequently used in *large* surveys. In fact, the much cited meta-analysis by De Leeuw *et al.* (2007) found an increase in the telephone survey cooperation rate of more than ten percentage points. However, this effect, found in research published before 2007, may have disappeared or declined in recent years. The aim of this paper is to test the extent to which pre-interview notifications influence the cooperation of the selected respondents, focusing on the most recently published research, namely the period between 2010 and 2024.

Sources of information

Five databases were used to locate research on the subject published in the last fifteen years. The Web of Science was initially used, followed by the Social Sciences Citation Index-SSCI and Scopus, Sociological Abstracts and, finally, the Applied Social Sciences Index and Abstracts-ASSIA.

1) Web of Science (WOS) is a bibliographic platform that enables users to access and simultaneously search across its Core Collection, CAB Abstracts, Food Science and Technology Abstracts, MEDLINE and other databases. It contains approximately 133 million records.
2) The Social Sciences Citation Index is specific to the social sciences and covers 3400 scientific journals, with approximately nine million records.
3) Scopus collects journal articles, conference papers and book chapters. It indexes more than 16 000 scientific journals in the social sciences and humanities. It contained 51 million records after 1995 and more than 100 million in 2024.
4) Sociological Abstracts includes information from more than two thousand international scientific journals in the field of sociology, as well as books, book chapters, theses and conference proceedings.
5) ASSIA has collected publications in the applied social sciences from 1987 until the present day. It contains records from approximately five hundred scientific journals, yielding a total of approximately 470 000 records.

It is our understanding that these five databases provide sufficient information on the importance of pre-interview notification

to increase response rates in telephone surveys.

Eligibility and inclusion criteria for studies

Three terms, or keywords, were considered for the selection of publications: 1) using the "telephone survey" as the collection technique under study; 2) having "pre-interview notification" as an intervening factor; and 3) having "cooperation rate" as the outcome, considering to what extent the so-called intervening factor (notification) affects cooperation. Let us look in detail at how each of these terms is defined.

The literature review (among others, Frey, 1983; Lepkowski *et al.*, 2008) yielded four terms referring to the telephone survey: "telephone survey", "phone survey", "telephone interview" and "phone interview". In order to take into account the plural forms of these, the singular form of the term was searched for by adding an asterisk at the end of that term.

The texts on survey non-response (among others, Dillman *et al.*, 2002; Stoop *et al.*, 2010) used various terms to refer to people's willingness to cooperate, whether considering response rate, cooperation or contact. This is why the terms "response rate", "response", "cooperation rate" and "contact" were used.

Pre-contact notifications are also subject to terminological variability: "advance letter" (Beullens *et al.*, 2018), "advance postcards" (Brenner and Buskirk, 2022), "lead letter" (Badoe and Biney, 2017), "notification" (Lynn and Taylor, 1998) and "prenotification" (Conrad *et al.*, 2013).

Search strategy

Given that these terms do not always appear in the publication titles, the abstract of each contribution was searched. This approach increased the comprehensiveness of the data collection.

Once the publication period had been defined as being from January 1, 2010 to December 31, 2024, the search terms were combined systematically. Each search began with the term used to refer to the notification ("advance letter"), followed by the mode of interview ("phone" or "telephone"), and ended with the terms used to refer to response rates ("cooperation rate", "response rate", "response", and "contact"). In order to maximise the number of results, successive searches were then performed by replacing the notification term "advance letter" with "advance postcard", "lead letter", "notification" and "prenotification".

Chart 1 shows the first search strategy, the one related to "advance* letter". Three additional searches were conducted using this term and changing the mode of data

CHART 1. *Example of a search strategy*

Advance* letter*
+ Telephon* survey
+ Cooperat*
+ Respons*
+ Response rate
+ contact

Source: Prepared by the authors.

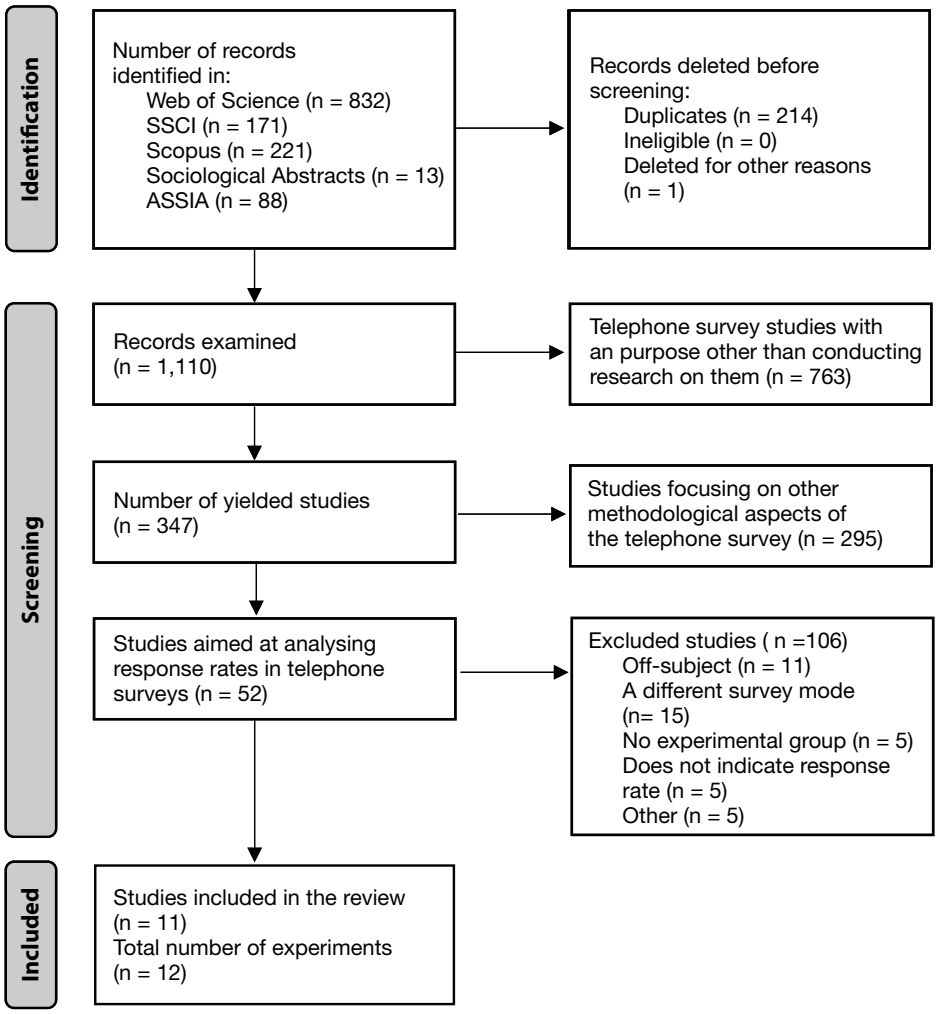
collection: replacing "telephon* survey" with "phone survey"; "telephone interview"; and "phone interview", respectively. These four combinations were repeated using all the terms relating to prior notification: "advance postcard", "lead letter", "notification" and "prenotification". The four words referred to response remained unchanged.

The four search strategies, which combined the types of notification, the four terms used to define the telephone survey and the four terms relating to response, generated sixty-four search strings. These searches yielded 1325 primary documents when applied to the databases referred to above, as shown in Chart 1.

Extraction of data from selected studies

The 1325 documents referred to above were reduced to 1110 after repetitions had been removed.

FIGURE 1. *Flow diagram of the screening of primary documents*



Source: Prepared by the authors based on PRISMA, 2019.

Following this initial selection, documents were screened by reading the *abstracts*. This process was carried out individually by three reviewers, who then worked together on the discrepancies until a consensus was reached. This stage began by excluding those studies that were not aimed at investigating telephone surveys, but used this tool solely as a mode of data collection (763 documents). The present paper focuses on response rates rather than on other aspects of telephone survey research; accordingly, 295 papers were excluded on the grounds that they fell outside the scope of the subject under consideration. When addressing the remaining studies, attention was paid to whether two random groups had been used, one that received an advance letter and one that did not; and to whether research had been conducted using telephone surveys or a different mode of data collection. Finally, a total of eleven papers were selected. They had been published between 2010 and 2024 and presented twelve experimental situations. The articles that met these conditions were selected as primary papers for meta-analysis.

The following information was extracted from the twelve documents: year of fieldwork; country of collection; type of telephone used; total sample size; cooperation rate of both the experimental group and control sample (see Table 1). In line with the latest edition of AAPOR (2023), cooperation rate was defined as the proportion of all cases interviewed of all eligible units ever contacted, a measure used on many occasions as a response rate (among others, in the European Social Survey).

Publication bias

A meta-analysis of publications requires an analysis of the extent to which published research is similar to unpublished research, known as publication bias.

To conduct this type of assessment, graphical tests are typically used, particularly the funnel plot. However, it has low reliability when the number of studies is small (Sterne, Gavaghan and Egger, 2000), as in the present case. In these situations, statistical tests should be used, namely Kendall's rank correlation coefficient and Egger's test.

As a reminder, the variable under study is cooperation rate, and the hypothesis to be tested is that the use of pre-response notifications in a questionnaire leads to an increase in cooperation. Given the type of data available (cooperation rates), a meta-analysis based on the ratio of proportions was used to estimate the effect, following the recommendations made by Botella Ausina and Sánchez Meca (2015).

Results: measuring the effect

Table 1 presents the studies analysed, detailing the country where the fieldwork was conducted, type of telephone, sample sizes and cooperation rates of the experimental group (with pre-notification) and control group (no pre-notification). The two right-hand columns show the effect size together with its sample variance. The effect size of 1.24 in the first study shown in Table 1 is the ratio of the cooperation rate in the experimental group to that of the control group (0.532/0.430). It should be noted that all effect sizes but one have values greater than 1, which means that the use of pre-interview notifications was successful in increasing the cooperation rate. This increase reached 1.79 in the 2015 Australian study (Dal Grande *et al.*, 2016) and a slightly lower value in the most recent study, the one performed by Kocar (2022).

TABLE 1. *Cooperation rates, effect size and variance (by date of collection)*

	Cooperation rates							
Author	Year of data collection	Experiment location	Type of phone	Sample size	Experimental group	Control group	Design effect	Variance
Vogl, 2018	2007	Germany	Landline	936	0.532	0.430	1.24	0.005
Von der Lippe, 2011	2009	Germany	Landline	4,751	0.406	0.335	1.21	0.001
Carey *et al.,* 2013	2011	Australia	Landline	244	0.784	0.797	0.98	0.004
Koitsalu *et al.,* 2018	2012	Sweden	Landline	20,958	0.355	0.290	1.22	0.000
McLean *et al.,* 2014	2013	Australia	Landline	1,512	0.249	0.200	1.25	0.009
Skalland, 2015								
Landline	2013	Columbia	Landline	20,403	0.921	0.905	1.02	0.004
Mobile	2013	Columbia	Mobile	21,941	0.781	0.478	1.63	0.011
Dal Grande *et al.,* 2016	2015	Australia	Mobile	520	0.286	0.478	1.79	0.034
Aizpurua *et al.,* 2018	2017	Midwest (USA)	Mobile	1,200	0.877	0.775	1.13	0.001
Schell *et al.,* 2018	2017	Canada	Landline	279	0.593	0.500	1.19	0.012
Harrison *et al.,* 2019	2017	England	Landline	3,000	0.331	0.287	1.15	0.003
Kocar, 2022	2020	Australia	Mobile	7,675	0.025	0.018	1.37	0.025

Source: Prepared by the authors.

The highest design effect was found in three of the four studies that conducted data collection using mobile phones. It could therefore be argued that notification increased the response rates in mobile phone surveys to a larger extent, although the low effect reported in the study by Aizpurua *et al.* (2018) makes it difficult to generalise these findings. However, it should be noted that the control group of the latter had a high cooperation rate (77.5 %).

Studies in Europe, specifically in Germany, Sweden and England, showed an effect size slightly above 1.2, with the exception of England, where it was 0.05 lower. This is a larger effect size than those found in other countries such as Canada and the US Midwest. Mention should also be made of an effect size slightly below 1 (Carey *et al.*, 2013). Nevertheless, this should be considered with extreme caution, as it was based on a very small sample, with only 139 interviews in the experimental sample and 140 in the control sample.

Another aspect worth mentioning is the weak relationship between pre-notification and response rates over time, i.e. the fact that its influence neither increased nor decreased over the years. Rather, there were highs and lows, with no clear influence of time. Thus, both the studies by Dal Grande *et al.* (2016) and by Skalland, Zhao and Jeyarajah (2015), which were based on mobile phone surveys and fieldwork conducted in 2013 and 2015, reported the largest effect sizes, with results exceeding those of the earlier studies.

It should also be noted that, when calculating the pooled effect, the studies considered were not replicas of other studies, but had important differences. It was therefore not advisable to use a fixed effects model, and a random effects model was chosen instead (Botella and Sánchez, 2015). In this case, the pooled

TABLE 2. *Effect size (random models)*

	Random-effects model (K = 12)					
	Estimate	Standard Error	Z	P	Confidence intervals	
					Lower	Upper
Intercept	1,24	0,0615	20,2	<0,01	1,424	1,365

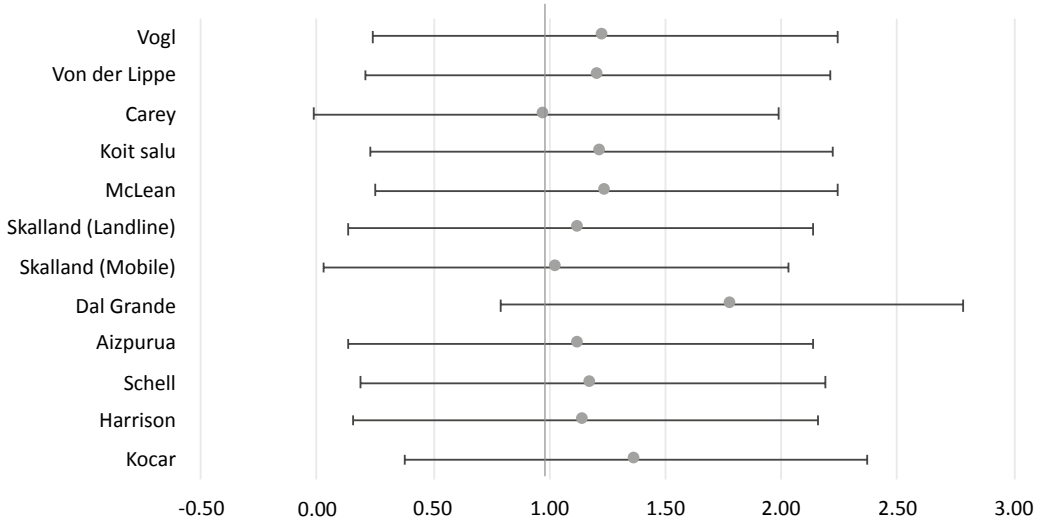
Source: Prepared by the authors using Jamovi.

effect size was 1.24, with a standard error of 0.0615, which yielded a Z-value of 20.2 and a $p < 0.0001$ (Table 2). This information indicates that the use of pre-response notifications can be guaranteed to increase the response rate.

After selecting the model, heterogeneity was assessed, as it also indicates whether a fixed- or a random-effects model is appropriate. I^2 was used for this purpose. This measure compares variability due to real differences between estimates with random variability and is characterised by being independent of the number of studies as well as being insensitive to effect size. According to the criteria proposed by Higgins *et al.* (2003), who classified heterogeneity into four groups, the value obtained (98.8 %) fell within the "high" range, as it clearly exceeded the 75 % threshold. As argued by Huedo-Medina *et al.* (2006: 203), obtaining high heterogeneity among effect sizes indicates that the assumed model is appropriate. Having an I^2 value of 99.8 % thus justified the use of the random effects model.

As can be seen in Table 1, variances were low, no doubt due to the large sample sizes. The studies by Dal Grande *et al.* (2016) and Kocar (2022) had the highest variances. However, the 95% confidence intervals (see Figure 1) show that the vast majority of the 12 studies considered had significant effect sizes. The exceptions were the studies by Carey *et al.* (2013), Skalland, Zhao and Jeyarajah (2015), con-

FIGURE 1. *Forest plot*



Source: Prepared by the authors.

ducted with mobile phones, and Schell *et al.* (2018). The minimum confidence interval values were 0.97, 0.83 and 0.85 respectively, all three lower than 1.

Finally, selection bias can be accounted for by using Kendall's and Egger's tests, which are less sensitive when there are few studies being considered. In the former, high (statistically significant) values indicate differences between published and unpublished studies, whereas low values indicate the opposite. This is the case here, since the value obtained, -0.030 (p = 0.947), indicates the absence of this kind of bias. Given its sensitivity when there are few studies being analysed, Egger's test was also applied (1.219, p = 0.223), again indicating the absence of publication bias.

These findings are in line with a similar study by Woolf and Edwards (2021), which analysed any type of pre-notification in all types of surveys (face-to-face, telephone, self-administered by mail, online, etc.). Looking at a similar time period, and using references from nine databases, Woolf and Edwards (2021) found one hundred and seven studies that tackled pre-notification. A thorough analysis of the telephone surveys selected by these authors revealed that there were no studies other than those included in this paper.

DISCUSSION

The study has shown that the use of pre-contact notifications increases cooperation rates in telephone surveys. The effects, calculated using the ratio of proportions, ranged from 1.02 to 1.79, although half of the studies conducted had effects around 1.2.

Effect sizes were higher in studies conducted in European countries than in those carried out in North America (Canada and the United States). This finding should be interpreted with caution, as the comparison was based on five European studies and four from North America. Given the limitation of working with only twelve studies, another finding of this research has been that the effectiveness of pre-notification does not increase over time.

The pooled effect size was 1.24, with a standard error of 0.0615 giving a confidence interval between the values of 1.124 and 1.365. The fact that the confidence interval does not contain 1 indicates that the use of advance notifications increases the response rate. The studies used were highly heterogeneous (Higgins *et al.*, 2003) and lacked selection bias. The reasons for this heterogeneity are varied and, in fact, constitute the main limitations of our research. Twelve studies with fieldwork conducted between 2007 and 2020 are insufficient to determine whether the effect of pre-notification is stronger in more recent or in earlier research, although no other publications exist for the period considered (Woolf and Edwards, 2021). No less important is the location, from Central European countries to Australia and the United States, the latter having one of the most "over-surveyed" societies (Presser and McCulloch, 2011). The findings reported here need to be corroborated in future studies.

An important aspect is the impact of the type of phone used, at a time when mobiles are replacing landline telephones. Three of the four studies had a higher pre-notification effect in mobile phone surveys, although the small number of experiments prevents generalising the finding that pre-notifications are more effective in this type of survey. This is an area that requires further research, given that landline-only surveys present significant biases.

These limitations are compounded by the different types of notification, as almost all surveys used conventional letters (paper) and only two studies employed text messages (Dal Grande *et al.*, 2016; Kocar, 2022). Greater use of the latter would be necessary to understand what their real effectiveness is.

Research on the content of pre-notification messages would also be valuable, considering not only word count but also the type of language used (whether common or specialised) and the motivational content addressed to selected respondents, factors that have been shown to influence outcomes in other contexts (Greenberg and Dillman, 2021).

While the low number of studies could be interpreted as an indicator of the discipline's lack of interest in the subject, it can be explained by the decline in the use of the telephone survey (Olson *et al.*, 2021). This situation was shown in a study of the top seventy-eight survey research companies in North America conducted by Kennedy, Popky and Keeter (2023). This team found that 61 % of the companies used different modes of survey in 2022 than in 2016, and only 10 % used the telephone as the only mode.

In light of these considerations, and considering the specific advantages of mobile telephones, it is important to reflect on what it means to increase the response rate of telephone surveys by 24 %, especially considering that this is the mode of data collection most affected by the decrease in the cooperation rate. Achieving an increase of this magnitude through a resource that does not require substantial financial investment represents a significant improvement in representativeness, while also making it possible to select individuals who *rarely* cooperate with this type of survey, thereby reducing a major source of bias in the results.

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