ISSN 2013-9004 (digital); ISSN 0210-2862 (paper)
https://doi.org/10.5565/rev/papers.3073

Strategies to improve response rates to online surveys

Vidal Díaz de Rada
I-COMMUNITAS. Institute for Advanced Social Research
Universidad Pública de Navarra. Departamento de Sociología y Trabajo Social
https://orcid.org/0000-0002-9638-3741
vidal@unavarra.es

Received: 13-01-2022
Accepted: 02-03-2022
Published: 20-10-2022

Recommended citation: Díaz de Rada, Vidal (2022). "Strategies to improve response rates to online surveys". *Papers*, 107 (4), e3073. <https://doi.org/10.5565/rev/papers.3073>

Abstract

A historical overview of data collection tools shows a progressive decline in face-to-face and telephone surveys, as they have been replaced by self-administered surveys. Technological advances in recent years have led to a vast increase in the use of online surveys. However, many of these studies have had very low response rates, some in the low double digits. To remedy this situation, this paper outlines five effective strategies for improving response rates to online surveys. These specifically involve taking the utmost care when accessing respondents, contacting the target sample several times, adjusting the duration of fieldwork, informing respondents in advance that they have been selected to participate in the survey, and the use of rewards. The application of these strategies achieves a significant increase in response rates and better sample representativeness.

Keywords: self-administered surveys; online surveys; response rate; noncontact; fieldwork

Resumen. *Estrategias para mejorar la respuesta de las encuestas en línea*

Una visión histórica de las herramientas de recogida de información desvela un progresivo descenso de las encuestas cara a cara y telefónicas, que han sido sustituidas por las autoadministradas. Los avances tecnológicos han supuesto un gran incremento de las encuestas a través de la red en la segunda década del siglo xxi. Ahora bien, muchas de estas investigaciones presentan tasas de respuesta muy bajas, algunas de menos de dos dígitos. Para solventar esta situación, este trabajo presenta cinco estrategias efectivas para mejorar la respuesta de las encuestas a través de la red. Concretamente, poner máximo cuidado en el acceso a la persona encuestada, contactar varias veces con la muestra objetivo, ajustar la duración del trabajo de campo, notificar a la persona que se va a encuestar que ha sido seleccionada para participar en una investigación, y utilizar gratificaciones. La aplicación de estas consigue un notable aumento de la tasa de respuesta y, además, una mejor representatividad muestral.

Palabras clave: encuestas autoadministradas; encuestas en línea; tasa de respuesta; sin contacto; trabajo de campo

Summary

1. Introduction

A review of survey use in opinion and market research has shown a progressive decline in the use of administered surveys, as they have been replaced by self-administered online surveys (Cernat and Revilla, 2021). This mode of data collection has seen a remarkable increase, as noted in the Study on the *Estudio de la industria de los estudios de mercado y opinion (* (Opinion and Market Research Industry (ESOMAR, 2018), which found that the use of self-administered surveys in Spain doubled between 2007 and 2018.

As Table 1 shows, self-administered surveys in Spain accounted for a meagre 14% of all surveys conducted in 2005. However, seven years later (2012) they had increased by 5%, and had reached 27% by 2016. As of 2020, more than one third of all surveys were conducted without an interviewer, using the online mode, according to the *Estudio de la Industria de los Estudios de Mercado* [Study on the Market Research Industry] *(AEDEMO-ANEIMO, various years;* Insights and Analytics, 2019) available at the time of writing (November 2021). The year 2014 marked the loss of dominance of administered modes of data collection (face-to-face and telephone) in favour of self-administered modes. More recently, the health crisis brought about by Covid-19 resulted in a drastic decrease in the use of face-to-face surveys in 2020, a situation that has led to an increased use of online, self-administered modes, as some experts have argued (e.g. de Leeuw, 2020; Evelant, 2020).

This increasing use of online surveys by private opinion and market research companies has also been seen in academia. Scholars are clearly gen-

Table 1. Distribution of surveys conducted in Spain by the private opinion and market research sector, by mode of administration (%)

	2000	2005	2010	2012	2014	2015	2016	2017	2018	2019	2020
Face-to-face	38	34	24	25	20	19	17	15	14	15	10
Telephone	41	40	23	22	17	16	16	19	16	11	14
Self-administered											
Postal	6	4	2	2	2	2	2	1	1	1	0
Online		10	16	17	21	23	25	26	28	31	35
Others		0	23	21	37	38	37	36	36	38	37
Turnover*	15	12	12	13	3	2	3	3	4	5	3

*In million euros

Source: AEDEMO-ANEIMO, Insights and Analytics 2019.

erally aware of end-of-degree projects and PhD theses that have used online surveys (for example Álvarez García et al., 2020; Ripoll García, 2020; Zuloaga Obregón, 2020, among others). In addition, an increasing number of articles that have used this mode of data collection are published in academic journals, for example De-Juanas Oliva et al., 2020; Espinar-Ruiz et al., 2020; Pierella et al., 2020, to cite the first three results from a search performed in *Google Scholar* in December 2021. In fact, this search yielded more than one hundred published research studies conducted in Spain that have used the internet to administer surveys (in addition to those that have been submitted to journals but are still being evaluated).

However, many of these studies had very low response rates, some in the low double digits, as noted by Tourangeau, Conrad and Couper (2013). Response rates markedly lower than 35% are now common (as the classic meta-analysis by Shih and Fan (2008) showed), even when dealing with specific samples (Dillman, 2019). The few studies published in Spain have shown that this situation is not found in other countries (Díaz de Rada, 2001 and 2016). Thus, for example, Sánchez Carrión and Segovia Guisado (2008) found a response rate of 29%; Rodríguez Jaume and González Río (2014), of 27.6%; and Sánchez Fernández et al. (2009), of 18.4%. This last study dealt with a general population, while the first two considered samples of students and foster families respectively. An exception was the study by Muñoz Leiva et al. (2010), which achieved a response rate of 48.5% after sending four reminders and a 'submission confirmation'. These low response rates raise serious doubts about the representativeness of their findings.

Advantages of online surveys include lower measurement error (Tourangeau, Conrad & Couper, 2013; Wentz, 2021, among others) and cheaper data collection (Díaz de Rada, 2015; Díaz de Rada & Domínguez, 2014; Tourangeau, Conrad & Couper, 2013, among others). These advantages are slightly 'tarnished' if one considers the characteristics of the response group, which is notably different to the group that cooperates in the survey (Díaz de Rada, 2011; Rao & Pennington, 2013, among others); something that makes the extrapolation of results difficult (Sturgis & Luff, 2021).

Against a background of the widespread use of online surveys in Spain, this paper presents a number of strategies to improve response rates.[1] Some experts (including Tourangeau, Conrad & Couper, 2013) have noted that the recent development of online surveys means that fewer resources are available to increase cooperation. As Tourangeau, Conrad and Couper (2013) have pointed out, "it is possible that because Web surveys are still relatively new, we simply have not yet developed the strategies to increase response rates in Web surveys as we have with more traditional modes of data collection."

1. Of the multitude terms used to refer to this mode, the term 'online' will be adopted in this paper. Vehovar and Manfreda (2017) considered the term 'online' to refer to internet surveys and electronic surveys that are shared via alternative communication networks, such as the mobile phone network in the case of surveys conducted via SMS.

The low response rate of the online survey requires the use of a number of strategies to maximise cooperation (Blohn & Koch, 2021; Sun et al., 2020). In other words, it is not a matter of sending out the survey and 'keeping your fingers crossed', but of employing a range of resources that have been proven to achieve high response rates (e.g. Brosnan et al., 2021; Sun et al., 2020). The five most effective strategies involve taking the utmost care when accessing respondents, contacting the target sample several times, adjusting the duration of fieldwork, informing respondents in advance that they have been selected to participate in the survey, and the use of rewards.

2. Looking after recruited participants

The online survey and the telephone survey (the second most commonly used type, according to Table 1) share the advantage that there is no need for travel, which makes it easier to adapt to times preferred by participants, but adds the complication of not having an interviewer to encourage cooperation. In terms of adjusting to respondents' timetables, another aspect that differentiates this type of survey from administered modes (face-to-face and telephone) is that it involves asynchronous communication, so the selected person may answer the questions in their own time. Therefore, unlike administered surveys, which must be answered when the interviewer contacts the recipient,[2] self-administered surveys can be postponed until a more convenient time chosen by the 'interviewee'.[3]

Thus, instead of having contact with (or being visited by) an interviewer, the person selected for an online survey receives a proposal for collaboration by post, email or text message. It is important to note the timing for contact, because this has certain implications: potential respondents are contacted *before* receiving the questionnaire, *upon receiving* the questionnaire (either as a printout or usually as a link), and they receive a *reminder* to *answer* the questionnaire.

The first communication (*before)* is called the introduction or pre-notification. It informs addressees that they have been selected to participate in a survey, and conveys the importance of cooperation, in order to arouse their interest.[4] The second communication includes the questionnaire, with instructions on how to answer it, and thanks the respondent for their time and effort in completing it. The third is sent only to those selected who have not yet responded. Of the three, the second communication is the most important; in fact, some surveys use neither the first nor the third.

2. It must not be forgotten that when the selected person cannot answer at that time, the interview may be delayed or rescheduled, but this is not the most usual situation.
3. Quotation marks are used here because if there is no interviewer, there is no interviewee either, but rather a questionnaire 'respondent'. However, the term in quotation marks will be used ('respondent') to refer to responses in online surveys.
4. This will not be covered here, as it is an optional element and is also used as a resource in face-to-face and telephone surveys.

The communication enclosed with the questionnaire (known as an invitation to participate) can be sent by post, e-mail or text message. Each has advantages and disadvantages (Einarsson, Cernat & Shlomo, 2021), as will be noted in the following paragraphs, but sending a personal message (Heerwegh, 2005; Wenz, 2022) addressing a specific person (e.g. Dear Mr. Perez; Dear Antonio) should be a priority. A personal message increases the feeling of being appreciated for those selected, as they have the impression that their opinion is important and valuable to the researcher. Personalisation enhances the connection between the researcher and the selected person (Dillman et al., 2014), increasing the perceived reward for participating, which generates better response rates. In fact, research has found that response rates increase between 7.8% and 8.0% when personalised invitations are used (Heerwegh, 2005; Muñoz Leiva et al., 2010). Although some studies reported that there was no difference (e.g. Porter & Whitcomb, 2007; Sánchez Fernández et al., 2009), a meta-analysis by Edwards et al. (2009) found clear evidence that personalisation has an impact on response rates.

This initial message (the invitation) is essential. Some studies have found that the behaviour of people selected is strongly influenced by the first contact (e.g. Pratesi et al., 2004), so it is advisable to spend some time and effort preparing the introductory message.

— The use of postal communication allows greater access to the sample insofar as it cannot be unconsciously 'filtered' (spam). In addition, the existence of such communication reduces people's distrust of digital communication. While postal communication involves greater effort on the part of the researcher, it also gives the recipient the perception that THEIR opinions are wanted, as it creates a more personal relationship. Another advantage is the existence of a document that 'reminds' respondents that they have been asked to participate in a survey (Keusch, 2012; Dillman, 2019). The other side of the coin is that the need to know the full postal address involves longer fieldwork and higher costs (Díaz de Rada & Domínguez, 2017).

  The letter should be brief, clear and concise. It should provide the same information that appears in the introduction to face-to-face and telephone surveys. In the absence of an interviewer to guide the interview, it is necessary to provide instructions on what the selected person should do, including the reason for the communication (answering some questions), details of the organisation/institution conducting the survey, the research objectives, why and how potential participants have been selected, the importance of their answers, how to access the questionnaire and how to respond, the privacy of submitted data, the statistical confidentiality of data collected, how to contact the researcher, and thanks to those selected for their collaboration (Dillman, Smyth & Christian, 2014).

  It is advisable to use simple language and a message that appeals to the selected person's altruistic cooperation, as demonstrated by Fazekas et al. (2014) in their study conducted in Germany to analyse the impact on

response rates of requesting cooperation by appealing to altruism or selfishness. Appealing to altruism increases response rates by 4% compared to appealing to selfishness by offering possible benefits (either individual or group benefits) (27% and 23.25% respectively). Fazekas et al. also studied the effect of language complexity and concluded that simple versus complex language showed a difference in response rates of 7.2%, with response rates of 28.7% and 21.5% respectively. This study found no difference for language tone, as the use of formal and informal tone provided similar response rates, namely 25.5% and 24.75%.

Other researchers, such as Díaz de Rada, Domínguez and Pasadas (2019), have recommended conciseness. They argue that the introductory letter should contain very concise information about the study's objectives, privacy and contact details, whereas the rest of the information should be moved to the survey's website. The link to the questionnaire and the password should appear in a visible place, preferably separate from the text (if possible, using a different colour font, or bold or underlined text).

— When using e-mail, attention should be paid first of all to the subject line of the message (DeAngelo & Feng, 2020; Bernner et al., 2020). This is essential, as it is the first thing that the addressee perceives. It could be said that it is the equivalent of the 'envelope' in traditional postal communication. A good subject line prevents e-mail from being deleted without being read; and, once it has been read, it greatly increases the chances of collaboration (DeAngelo & Feng, 2020).

Research has analysed the extent to which the text included in the subject line influences response rates. For example, Guéguen and Jacob (2002a) and Joinson and Reips (2007) noted that mentioning an authority or institution increased collaboration, while others considered that collaboration increased when the recipient was interested in the research topic (Cook, Heath & Thompson, 2000; Edwards et al., 2002; Marcus, Bosnjak, Lindner, Pilischenko & Schutz, 2007) or had some affinity with the researcher (Guéguen & Jacob, 2002b; Guéguen, Jacob & Morineau, 2010). This was noted in one of the most recent publications on the subject (Brenner et al., 2020), which stressed the importance of explaining the research topic of the survey in simple terms by referring to the sponsor of the research, and not to the representativeness or accuracy of the study.

Kent and Brandal (2003) showed that the subject line "Win a weekend for two to Nice" reduced the response rate by 16 points (from 68% to 52%); while Trouteaud (2004) succeeded in increasing the response rate by 5% by changing the subject line "Share your advice and opinions now with [Name of Company]" to "Please help [Name of Company] by sharing your advice and opinions". Díaz de Rada et al. (2019) noted that changing the subject line of the message in a study of resident junior doctors increased collaboration from 28.3% to 41.3%.

With regard to the content of the message, the recommendations set out above for the use of ordinary mail should be followed, albeit in a more

synthetic form due to the fact that screen reading is different to reading on paper (Nielsen, 2006 and 2009; Loranger 2014). Notwithstanding this recommendation for brevity, a study by Kaplowitz et al. (2012) compared two messages, of 182 and 82 words respectively, and found that certain groups (e.g., teachers and university employees) required more detailed messages.

As indicated above, the mail invitation should include a link to the questionnaire and the password to be used, both placed separately from the text and in a highlighted format. Although Couper (2008) recommended placing the link at the top of the message, to save respondents from having to scroll down, we consider it more appropriate to place it at the bottom of the page to *force* respondents to read the message. Studies such as Kaplowitz et al. (2012) achieved even greater response rates by doing this.

— The use of text messages sent to users' mobile phones provides a new (and inexpensive) means to access potential respondents, given the increasingly popular use of mobile phones. According to data collected by the National Statistics Institute (2019), 86% of the Spanish population between 16 and 74 years of age had accessed the Internet using a mobile phone in the previous three months, which exceeded access using a computer (29%) or a tablet (22%).[5]

The small size of the screen and the greater effort involved in reading on these devices requires more concise information (Toepoel, Vera et al., 2021), and a link to the questionnaire and password. While the content did not change, the length of the message was reduced to fewer than 160 characters.

A disadvantage of using this tool is that it increases responses to the questionnaire via mobile phone (e.g. Brosnan, Grün & Dolnicar, 2017; Cunningham, et al. 2013; Lugtig & Toepoel, 2016), which means that the questionnaire must be designed to be answered on small screens, or messages must be sent that encourage recipients to answer using a computer (e.g. Peterson, 2017). The main advantage is the increase in the participation of certain groups that would not have collaborated as much if other modes had been used, as shown by Revilla and Höhne (2020) in their comparison of the collaboration of millennials (born between 1982 and 2003), Generation Xers, Boomers, and Silents.

Whereas the three channels of communication (post, email, text message) can be used sequentially, some experts recommend using the post when there is no previous relationship with the addressee, in order to promote greater effectiveness (Vehovar, Lozar Manfreda & Batageli, 2000; Bandilla, Couper & Kaczmirek, 2012, among others). It is also extremely important to carefully document returns, noting which channel was employed (if more than one was

5. Access outside the home and workplace was included (type of mobile devices used to access the Internet, outside the usual dwelling or workplace, in the past three months).

used). This also requires infrastructure to deal with possible calls and requests for information received during the process of accessing respondents.[6]

The asynchronous nature of the online survey demands a change of strategy in the timing for sending the invitation, which is completely different to the strategy for administered surveys. Much research has been conducted on the best day to send out a questionnaire, with the consensus agreeing that weekdays are better than weekends, although there is little agreement on which weekday. Lindgren et al. (2020) found that Wednesday was the day that yielded the highest response in the first 24 hours, achieving a response rate of 39%. Ideally, the questionnaire should be received a few minutes before recipients open their mailbox, to ensure that it appears at the top of their inbox list and achieves high visibility (Griggs et al., 2021). The study by Lindgren et al. indicated that the highest response rate in the first 24 hours was achieved for questionnaires sent out at 12:20, although there was little difference with the rest of the morning mail-outs.

In one of the few papers published on the subject in Spanish, Díaz de Rada, Domínguez and Pasadas (2019) considered that the effectiveness of each invitation channel varied according to the time of day and the day of the week. Thus, e-mail was more effective in the mornings and on working days, whereas text messages worked better at the end of the morning and in the evenings, because are used less in educational and work environments. In the case of text messages, immediacy of access to the message should be taken into account, as text messages are perceived immediately. In addition, attention should be paid to the delivery status of the message, i.e., whether the tool used has the capacity to identify the messages that have been delivered and those that have not been delivered.

To conclude this section on contact protocols in online surveys, it is worth noting the enormous importance of this aspect, as demonstrated by Lozar Manfreda (2008) and Daikeler et al. (2020) in their respective meta-analyses.

3. Increased number of contacts

It is generally agreed that having a higher number of contacts is one of the main factors in increasing the response rate of online surveys, and is also one of the most widely used strategies for increasing participation. The classic study by Heberlein and Baumgarther (1978), which reported a relationship of 0.63 between the number of contacts and the response rate in postal surveys, can be applied to online survey research. Research (including Sheehan, 2001; Sheehan & Hoy, 1997; Dillman et al., 2014; Dillman, 2017; and McMaster et al., 2017) has found that increasing the number of deliveries[7] can increase

6. For a more detailed discussion of these aspects, we recommend reading pages 48-52 of the paper by Díaz de Rada, Domínguez and Pasadas (2019).
7. Note that they are no longer called 'contacts', as there is no evidence that all mail-outs are actually received by the addressee. In fact, the international literature on the subject uses the term *reminder,* which is the term used here.

response rates by up to 25%. The meta-analysis by Göritz and Crutzen published in 2012 quantified the increase in response rate when using more than one mail-out by 16%, from an average (response) rate of 49.5% to 65.6%. In their view, this situation was explained by the fact that successive contacts lead respondents to perceive the research as being more important. This greater dedication on the part of the researcher produces a kind of 'correspondence' in the selected sample that leads to greater effort being expended to answer the questionnaire.

Logically, the reminder strategy requires identifying each sample unit, as the notification should only be received by those who have not participated. Analysis of the paradata (Kunz et al., 2020) plays a crucial role in the use of this strategy. It indicates which questionnaires have reached their destination, which have been opened, etc., and provides information on the optimal time to send reminders. However, unlike other modes, the online survey has specific resources such as e-mail and short messages or text messages sent to mobile phones.[8]

The online survey typically engages in far fewer re-contacts than the earlier modes, very often limited to four or five (Sánchez Fernández et al., 2009), although there is a large body of research that has carried out far fewer reminders (Fazekas et al., 2014; Kaplowitz et al., 2004; Lozar Manfreda & Vehovar, 2008; Porter & Whitcomb, 2007, Rao & Pennington, 2013; Wiley et al., 2009, among others). Callegaro et al. (2015) and Daikeler et al. (2020) recommended using two reminders, which was followed by Díaz de Rada and Domínguez (2016) and achieved an overall response rate of 15.9% (18.4% at first submission and 8% after sending a reminder).

In the study on working conditions in Slovenia (reproduced in Table 2), the first reminder (after the invitation) generated 540 additional responses from a sample size of 1370, which represented an increase of 39.4%, and produced a cumulative response rate of 91.2%. It is important to bear in mind that most of the responses (403) were issued on the same day the reminder was sent, whereas a remarkable number of responses were obtained over the following two days (44 and 30, respectively), with a notable decrease from that time onwards. This is in line with the findings of studies carried out in other countries, which have noted that "the probability of survival decreases dramatically after sending out the e-mail invitations. Most reactions happen during the first 10 days of the survey period." (Pratesi et al., 2004: 15).

The effect of the second reminder was significantly lower, with only 120 responses, which only increased the response rate by 9% as a percentage of the total number of questionnaires. This low effectiveness indicates that a 'saturation point' had been reached, which seems to suggest that it would be better not to send any more reminders at that point.

This use of two reminders was justified by the large number of responses to the invitation, which does not always happen. For example, Kaplowitz et al.

8. Provided that this information is available in the sample frame.

Table 2. Effect that sending successive reminders had on response rates

				EFFECT OF REMINDER		
	No. of responses	%	Invitation	First reminder	Second reminder	Accrued response
Initial invitation	512	37.4%	37.4%			37.4%
Day 1:	104	7.6%	45.0%			45.0%
Day 2:	41	3.0%	48.0%			48.0%
Day 3:	30	2.2%	50.1%			50.1%
Day 4:	12	0.9%	51.0%			51.0%
Day 5:	4	0.3%	51.3%			51.3%
Day 6:	7	0.5%	51.8%			51.8%
7 days Total 710						
First reminder	403	29.4%		29.4%		81.2%
Day 8:	44	3.2%		32.6%		84.5%
Day 9:	30	2.2%		34.8%		86.6%
Day 10	13	0.9%		35.8%		87.6%
Day 11	10	0.7%		36.5%		88.3%
Day 12	5	0.4%		36.9%		88.7%
Day 13	6	0.4%		37.3%		89.1%
Day 14	11	0.8%		38.1%		89.9%
Day 15	11	0.8%		38.9%		90.7%
Day 16	1	0.1%		39.0%		90.8%
Day 17	3	0.2%		39.2%		91.0%
Day 18	3	0.2%		39.4%		91.2%
Day 19	0	0.0%		39.4%		91.2%
Day 20	0	0.0%		39.4%		91.2%
14 days Total: 540						
Second reminder	68	5.0%			5.0%	96.2%
Day 22	9	0.7%			5.6%	96.9%
Day 23	22	1.6%			7.2%	98.5%
Day 24	7	0.5%			7.7%	99.0%
Day 25	2	0.1%			7.9%	99.1%
Day 26	3	0.2%			8.1%	99.3%
Day 27	1	0.1%			8.2%	99.4%
Day 28	4	0.3%			8.5%	99.7%
Day 29	0	0.0%			8.5%	99.7%
Day 30	1	0.1%			8.5%	99.8%
Day 31	3	0.2%			8.8%	100.0%
11 days Total: 120						
Total number of responses	1,370	100				

Source: Working conditions in Slovenian Science, 2011; reproduced from Callegaro et al., 2015: 21.

(2012) sent three reminders, out of which the second increased the response rate from 32% to 40% for teachers, and from 15% to 19% for students. Better results were provided by the two studies cited by Rao and Pennington (2013), where the second notification added around 25% of the responses, and the third 10-11%.

Dillman, Smyth and Christian (2014) pointed out that the third reminder works reasonably well, and recommended the use of up to six contacts (invitation and five reminders), depending on the survey's needs and objectives. In fact, Dillman et al. (2014) recommended not setting the number of reminders in advance, but deciding on the number of reminders based on how the data collection process progresses. However, Sánchez Fernández et al. (2009) and Deutskens (2004) considered that sending more than four or five reminders does not lead to significant increases in response rates, as there is a 'saturation point' in the reception and reading of e-mail messages.

Dillman et al. (2014) recommended tailoring the content of each reminder. In other words, they found that repeatedly sending the same message did not produce substantial increases in response rates (Dillman, 2021), and it was necessary to adapt the message to each circumstance:

— The first reminder (second contact, after the invitation) should stress the importance of the survey by using different words to those used in the invitation, attach the URL and the access code, and emphasise that response time is important.

  The subject of the message should also be changed: the research title mentioned in the invitation, "WSU [Washington State University] Student Experience Survey Invitation" was changed to "Voice Your Opinions about WSU".

  It is normally dispatched three days later.

  The second reminder (third contact), sent six days after the previous reminder, emphasised the importance of the recipient's participation and thanked them for it. A brief reference was made to the purpose of the study, focusing the discussion on the importance of collecting opinions from as many people as possible.

  The subject of the email was changed to "How do you rate WSU?"

— The third reminder (fourth contact), sent 19 days after the second, again emphasised the importance of contacting as many participants as possible, specifically encouraging those who had not yet collaborated to do so. The importance of the study and the positive effects of responding to it were also mentioned.

  The subject of the message, in this case, was "Help WSU Understand the Student Experience".

— The fourth reminder (fifth contact), sent six days after the previous one, noted in a friendly way that the study was about to end, and that there was little time left to complete the questionnaire if they wished to be part of the survey. The subject of the email changed to "Last Chance to Help WSU Understand the Student Experience".

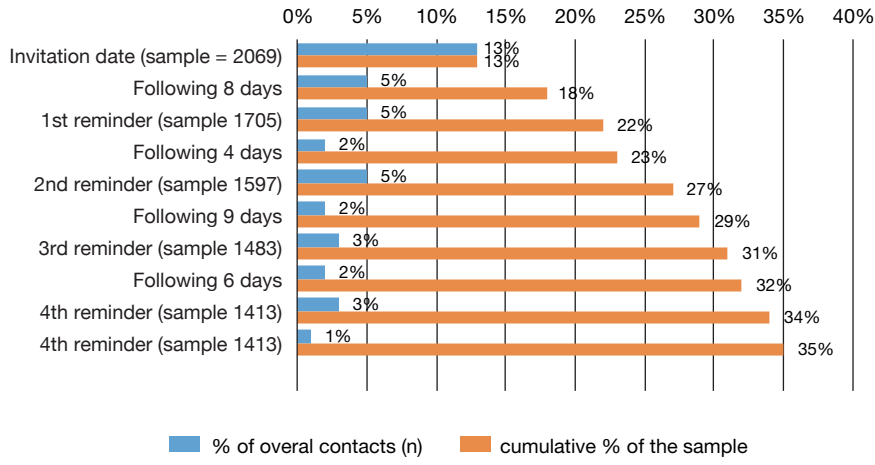
These changes to the content of the messages were accompanied by four recommendations regarding writing: use full stops separating sentences, and capital letters after each full stop; avoid writing the whole text in capital letters; do not use acronyms; and avoid using special characters and other symbols. In short, the idea is to avoid the informal style that is typically found in emails (Lorainer, 2014) in order to maintain the seriousness and professionalism of the research (DeAngelo & Feng, 2020).

These four contacts, administered over thirty-four days (10 November to 14 December), produced an overall response rate of 20%, double the response rate after the initial invitation (9%). The second reminder yielded 5% of responses, the third and fourth 3% each, and the fifth a meagre 2% (Dillman et al., 2014).

A greater influence of successive reminders was reported in one of the few Spanish studies published to date. The initial rate of 16.33% in the study by Muñoz Leiva et al. (2010) increased to 48.5% after sending four reminders and a 'closure of survey' email. The increases in response were 3.6% after the first reminder, 6.9% after the second, 2.86% after the third, and 3.54% after the fourth. The 'closure of survey' notice represented an increase in collaboration of 5.28%.

Two studies carried out in Spain by the Instituto de Estduios Avanzados do Andalucía del Consejo Superior de Investigaciones Científícias-IESA/CSIC reported a 68% collaboration rate in a survey of a specialised population (scientists) where reminders were decisive, as 15% of the sample participated after receiving three contacts, representing almost a quarter of the collaborations

Figure 1. Influence of the use of reminders on survey collaboration (general population)



Source: e1605 survey conducted by the IESA/CSIC, reproduced from Díaz de Rada et al., 2019: 136.

(Díaz de Rada, Domínguez & Pasadas, 2019). Similar increases were detected in a general population study with four reminders: a total collaboration rate of 35%, with 11% of the sample collaborating after the second contact (2 + 3 + 2 + 3 + 1 in Figure 1). This 11% of the total response rate (35%) represented one third of those who responded (Figure 1). It is clear from Figure 1 that each reminder produced a reactivation of the response.

Despite these 'good results', the meta-analysis carried out by Lozar Manfreda et al. (2008) compared studies with one and two contacts and showed that the response rate of the online survey was 5% lower than the other modes, a difference that increased to 16% when analysing studies using three and five reminders. These results were consistent with the study by Shih and Fan (2008)[9] and the more recent study by Daikeler et al. (2020). This ultimately reveals that the strategy of increasing the number of reminders is more successful for other modes than for the online survey.

4. Importance of fieldwork length

Speed of collection is one of the great advantages of the online survey. Even when several reminders are used, data collection is very fast, mainly because of the large number of responses obtained after the first mail-out (Ilieva et al., 2002; Pratesi et al., 2004, among others), which is very different to those in telephone surveys, where procrastination is common. Axel Brust et al. (2020) and Ilieva et al. (2002) estimated that the average time taken to respond to an online survey is 5.59 days.

See, for example, the study shown in Table 2, which obtained 33% of responses on the first day, rising to 51.8% (710) six days later. This was a significant improvement on the figures in Ilieva et al. (2002), which calculated that 34% of responses are received in less than two weeks, and 33% between two weeks and three months. Table 2 above also shows that two weeks after the invitation, a further 540 questionnaires were collected, bringing the number to 91.2% of the total sample.

More extreme results were reported by Wygant and Lindorf (1999), who received 80% of the questionnaires within two days. Basso and Rathod (2004, cited by Callegaro et al., 2015), also found that 60% of the questionnaires were answered 24 hours after the invitation, and 80% after 2.5 days. Similarly, Schaefer and Dillman (1998) presented studies that completed the sample in 9.16 days.

Considering that the largest number of questionnaires are received on the day that they are sent, Crawford et al. (2004) recommended taking advantage of this effect and sending the reminder shortly after the day when the invitation was issued. Comparing the outcomes of sending the reminder two and four days after the invitation found response rates of 36% and 33%, respectively – longer than the study by Ilieva et al. (2002). The latter recommended

9. In this study, differences were slightly lower: 4% in the first case and 14% in the second.

sending the reminder within five to six days of the invitation. In a similar vein, Sánchez Carrión (2008) noted that the earlier the reminder is sent, the higher the response rate: "In line with our expectations, the early follow-up had a higher response rate (21.2%) than the late follow-up (19.5%)". This showed that reminder timing does not influence the quality of response, as has been pointed out in research carried out in other countries (Deutskens et al., 2004). In fact, a study conducted in Spain by Sánchez Fernández et al. (2009) compared the effect of sending a reminder one week and two weeks after the last contact, with the former showing a higher response rate (28.4% vs. 24%), as did another study by Muñoz Leiva et al. (2010), which compared the outcomes of sending reminders every 10 or every 20 days.

In addition to increased response rates, 'extending' fieldwork length in this way by using reminders makes it possible to include less cooperative population groups (which usually have specific socio-demographic features) in the study. Cooperation rates are lower among youth and minorities (Rao & Pennington, 2013; Díaz de Rada, 2021, among others), and extending the fieldwork period through successive reminders means that these groups can be included in the sample. Along these lines, Rao and Pennington (2013) found that late participants are similar to never-responders, echoing what has been found with postal surveys (Díaz de Rada, 2005).

Regarding when to terminate the fieldwork in order to proceed with the analysis, Callegaro et al. (2015) argued that one week after the last reminder was an appropriate time to close the fieldwork, although if time is of the essence this can be reduced to three or even two days. The studies by Sánchez Fernández et al. (2009) and Muñoz Leiva et al. (2010), cited above required 50 days and 30 days respectively to collect the information (using five reminders), a period that would have been significantly reduced if all reminders had been sent on a weekly basis (for Sánchez Fernández) or every ten days (for Muñoz Leiva).

At this point it is necessary to mention the 2013 survey of language uses in Catalonia (*Encuesta de usos lingüísticos de Cataluña 2013)*, for which fieldwork took seven months to complete, much longer than other research on the subject. A search on page 25 of the report published by the Biblioteca Técnica de Política Lingüística (2018) showed that a large number of completed questionnaires were received within the first ten days, totalling 11.2% of all questionnaires answered (Díaz de Rada, 2021). From the eleventh day onwards, there was a low response rate, with noticeable increases after receipt of the two additional reminders (sent by post). From this point on, there was a noticeable drop in cooperation, coinciding with the August holidays. The September reminder produced a spike in the number of people who responded to the online survey, encouraged by telephone contact. Therefore, it was found that different collection modes were mutually supportive (Biblioteca Técnica de Política Lingüística, 2018).

Sending the second reminder one week after the first and choosing a different time of the year (without having the August holiday period in between) could have shortened the fieldwork by two months. However, using a personalised re-

contact strategy (either by post, SMS, or telephone) would have undoubtedly increased the response rate of the online mode at a much lower cost.

5. Informing people in advance that they have been selected to participate in a survey

In self-administered surveys, Dillman et al. (2009) found that in a postal survey, informing people in advance that they had been selected to participate in a survey led to an increase in the response rate of 3-6%, although in a later study (2014) they reported that this approach is rarely used in online surveys. This is in line with the meta-analysis by Daikeler et al. (2020), which found that the impact of informing selected people in advance for online surveys is lower than in traditional modes.

Rather than whether or not to inform potential participants in advance, research has found that it is the instrument used to inform them that really influences response rates. Using the post is more effective than using e-mail, as shown by Crawford et al. (2004), Kaplowitz et al. (2004), Keusch (2012), and Porter and Whitcomb (2007) , among others.

Kaplowitz et al. (2004) and Crawford et al. (2004) found that postal pre-notification increased the response rate by 9% (from 20.4% to 29.7%) for a sample of students, while Harmon et al. (2005) showed the effectiveness of a postal survey versus e-mails with attached letters. The response rate for pre-notification by post was 7% higher than for letters attached to an e-mail.

In a sample of establishments where both postal and e-mail addresses were available, Sakshaug et al. (2019) found that pre-notification by post had a 4% higher response rate than by e-mail (7.95% vs. 4.08%); this exceeded the difference identified by Porter and Whitcomb (2007), where postal pre-notification outperformed email by 2%. Compared to not informing in advance, e-mail pre-notification increased the response rate by 2% (36.3% vs. 38.2%), whereas when the post was used, the figure rose to 4% (36.3% vs. 40.4%).

The impact of pre-notification by e-mail is lower than by text message (SMS), as demonstrated by Bosnjak et al. (2008), who found a response rate 13 points higher for text messages than e-mails. These authors also found that e-mail pre-notification achieved the same response rate as non-pre-notification; this was in line with previous findings by Felix et al. (2011) and Hart et al. (2009).

Pre-notification by e-mail is less effective. Daikeler et al. (2020) suggest that this is because with other survey modes, respondents perceive the researcher's interest in contacting them, and acknowledge the effort made in locating them, which indicates the importance of the survey and increases its legitimacy (Evans & Mathur 2005). In Daikeler's view, this explains why people are more likely to overlook e-mail pre-notification than pre-notification via traditional communication channels (Crawford, Couper & Lamias 2001). Another reason may be that a large number of people do not actually see the email pre-notification, because it goes directly into their spam folder.

6. Use of rewards

Response rates in online surveys are maximised when incentives are used, as meta-analyses by Edwards et al. (2009) and Görtz (2006), among others, have shown. After reviewing 32 studies based on samples of 212,810 people, Görtz (2006) concluded that rewards motivate people to start responding to surveys; whereas Edwards et al. (2009) conducted an analysis of 26 other studies which revealed that the reward encourages participants not to submit partially questionnaires. They found that material incentives increased response by 4.2%, but it should be noted that the effect may be larger, because most of the studies analysed used conditional incentives. Lozar Manfreda and Vehovar (2008) considered that the impact of rewards depends on the country where the survey is conducted, the type of population targeted, and the subject of the survey.

If postal addresses are not available, a common option is to send monetary rewards via PayPal, to make online transfers (Toepoel, 2016), or to use gift cards (for Amazon/Telefónica/El Corte Inglés, etc.). Bonsjal et al. (2002) analysed the impact on response rate of a non-conditional bonus of $2 (paid via PayPal before responding), a conditional bonus of $2 (paid via PayPal after responding), and the offer of two $50 and four $25 cash prizes. The first (non-conditional) reward produced an increase in response (relative to the control group) of 1.5%, the second of 3%, while the draw increased the response rate by ten percentage points. The authors explained the low effectiveness of non-conditional and conditional rewards payable through PayPal by the requirement to have an account, which involves paying a fee (Dillman et al., 2014), as opposed to the draw, which involved cash.

Stanley et al. (2020) used the 2015 and 2016 KnowledgePanel surveys to find that increasing the (conditional) incentive from $1 to $5 increased the response rate by nine percentage points (from 39.7% to 48.7%), and increased the time taken to answer the questionnaire by three minutes (it normally took ten minutes to answer). However, the change in reward amount did not affect partial non-response or length of response to open-ended questions. Most importantly, the authors demonstrated the absence of bias between the two samples and the similarity of these findings to the results found in probability samples using traditional modes.

Regarding the use of gift vouchers, Birnholtz et al. (2004) compared response rates for a survey invitation sent by e-mail along with a five-dollar Amazon gift voucher, the same gift voucher sent by post, and a cash gratuity for the same amount sent by post. The response rates were 32.4%, 40% and 56.9% respectively, which can be explained by considering the time needed to 'cash in' the gift voucher, and the fact that the gift voucher may generate expenditure if the desired purchase is more than that amount (Toepoel, 2016).

In summary, the effects of the type and timing of rewards are consistent with the considerations outlined in traditional modes (Alexander et al., 2008; Brenner & Buskirk, 2022: Gajic et al., 2012; Parsons & Manierre, 2013; Stanley et al., 2020, among others). However, online surveys use conditional

incentives[10] more frequently because of the high number of submissions that do not reach their destination (due to spam filters, etc.). Attaching a reward to all mail-outs may result in a significant proportion of them being lost by not reaching the addressee, significantly increasing the cost of the research.

As far as cost is concerned, it is clear that incentivised research is more expensive, but there are many exceptions (Simmons & Wilmot, 2004; Blohn & Koch, 2021). Callegaro et al. (2015) found that a study without incentives with a 5% response rate can be more costly (per respondent) than one that uses incentives and achieves a 30% response rate. An example of this was a study by Dykema et al. (2011) in which the non-incentivised group had a response rate of 3%, at a cost per respondent of $37. This response rate rose to 8.6% with the conditional incentive of entry to a $200 draw (at a cost of $66 per questionnaire answered). The response rate rose further to 15.4% when a $50 cheque incentive was used, at a cost of $84 per interview responded to. In other words, doubling the cost of the questionnaire (from $37 to $84) increased the response rate threefold.

All these situations are explained by the increase in the number of successful contacts, which some experts consider to be the major advantage of this strategy (Singer & Ye, 2013; Ernsy & Joye, 2017, among others). This is a consequence of reducing the number of successive contacts and, logically, the costs associated with them. Another explanation is that using an incentive involves less interviewer time in persuading the selected person to participate, and less time to convert refusals (Stoop et al., 2016).

To complete this discussion on incentives, several studies (including Cantor, O'Hare & O'Connor, 2008; Oscarsson & Arkhede, 2020; Oh et al., 2021; Stanley et al., 2020) have found that "the effects of incentives have not changed over time", and they are needed now that the response rate has fallen dramatically.

7. Conclusions

This paper has discussed the best ways to contact the selected person in advance of the data collection process, and the optimal way to reach the selected person. Making more than one contact with the study unit, extending fieldwork length and using rewards have all been shown to improve response rates. These are five strategies that have been proven to significantly maximise response rates, although most online research uses all these resources jointly. The two most commonly employed strategies are to increase the number of contacts and to use incentives (Dykema et al., 2011; Porter & Whitcomb, 2007; Sánchez Fernández et al., 2009; Muñoz Leiva et al., 2010; Sakshaug et al., 2019; Wiley et al., 2009, among others).

10. Conditional incentives are those that are delivered after the questionnaire has been answered, while non-conditional ones are delivered regardless of whether or not the questionnaire is answered.

Logically, this exhaustive *follow-up* to the fieldwork involves a significant increase in the cost of the research, especially considering that (inexperienced) researchers believe that sending an e-mail and waiting for a reply is all that is needed. Despite the cost increase, it is much more affordable than the cost of research using a different mode; the situation is far from that encountered in face-to-face and telephone surveys. Using data from the 2013 Survey of Linguistic Uses of the Population of Catalonia 2013, Díaz de Rada (2022) noted that the average cost per questionnaire completed using interviewer-administered modes was €25 for telephone questionnaires and €70.40 for face-to-face questionnaires, whereas the average cost of the self-administered modes was €1.78.Using face-to-face and telephone interviews would have added a cost of €110,887.87 to the online phase, thus increasing the cost of the survey to €250,463.87.[11]

Another example was the international study by Díaz de Rada and Domínguez (2017) in which they reported a cost of €4.18 per online questionnaire, €0.90 more than the postal survey. If the online mode had been the main mode and all responses had been received online, the cost would have been reduced to €0.60. These figures are similar to those found by Greenlaw and Brown-Welty (2009), who estimated a cost of $4.79 for each paper survey and $0.64 for each web-based one.

In an experiment conducted using the UK Household Longitudinal Study, Bianchi, Biffignandi and Lynn (2017) reported that the face-to-face survey cost £110, whereas the web-based survey cost £5. More recently, De Leeuw et al. (2019) found that a face-to-face survey was five to six times more expensive than a telephone survey, which was two to five times more expensive than a self-administered mail-out survey.

Bibliographic references

AEDEMO-ANEIMO (various years). *Estudio sobre la Industria de los Estudios de Mercado*. <https://www.aedemo.es>

Álvarez García, Cynthia Beatriz; Rosales Olivas, Adriana Nicole and Valera Lalangui, Luis Fernando Lucas (2020). *Análisis de la experiencia del usuario en la plataforma web para la compra de calzado deportivo en Runa Store*. Doctoral thesis.

Alexander, Gween L.; Divine, George W.; Couper, Mick P., et al. (2008). "Effect of incentives and mailing features on recruitment for an online health program". *American Journal of Preventive Medicine*, 30, 382-388. <https://doi.org/10.1016/j.amepre.2008.01.028>

Axel Brust, Oliver; Härder, Michael and Härder, Sabine (2020). "Procrastination and Participation in Telephone Surveys". *Bulletin de Methodologie Sociologique*, 145, 80-49. <https://doi.org/10.1177/0759106319888705>

11. This figure was obtained by considering the total cost of the study (€145,280) and replacing the price of the online questionnaires (€5,704) with the cost they would have incurred if they had been administered by an interviewer rather than being self-administered (€110,887.87).

BANDILLA, Wolfgang; COUPER, Mick P. and KACZMIREK, Lars (2012). "The mode of invitation for web surveys". *Survey Practice*, 5(3). <https://doi.org/10.29115/SP-2012-0014>

BASSO LARSEN, Ralph and RATHOD, Su (2004). "Response and Field Period Effects: The Effect of Time in Online Market Research and Consequences for Future Online Survey Strategies". *Survey Sampling International White Papers*.

BIANCHI, Annamaria; BIFFIGNANDI, Silvia and LYNN, Peter (2017). "Web-face-to-face mixed-mode design in a longitudinal survey: effects on participation rates, sample composition, and costs". *Journal of Official Statistics*, 33, 385-408. <https://doi.org/10.1515/jos-2017-0019>

BIBLIOTECA TÉCNICA DE POLÍTICA LINGÜÍSTICA (2018). *Anàlisi de l'Enquesta d'usos lingüístics de la població 2013:* volume 1, Coneixements, usos, transmissió i actituds lingüístics. Barcelona: Generalitat de Catalunya, Departament de Cultura.

BIRNHOLTZ, Jeremy P.; HORN, Daniel B.; FINHOLT, Thomas A. and BAE, Sung Joo (2004). "The Effects of Cash, Electronic, and Paper Gift Certificates as Respondent Incentives for a Web-Based Survey of Technologically Sophisticated Respondents". *Social Science Computer Review*, 22 (3), 355-362. <https://doi.org/10.1177/0894439304263147>

BLOHN, Michael and KOCH, Achim (2021). "Monetary Incentives in Large-Scale Face-to-Face Surveys: Evidence from a Series of Experiments". *International Journal of Public Opinion Research*, 33 (3), 690-702. <https://doi.org/10.1093/ijpor/edab007>

BOSNJAK, Michael; NEUBARTH, wolfgang; COUPER, Mick P.; BANDILLA, Wolfgang and KACZMIREK, Lars (2008). "Prenotification in web-based access panel survey: the influence of mobile test messaging versus e-mail on response rates and sample composition". *Social Survey Computer Review*, 26, 313-233. <https://doi.org/10.1177/0894439307305895>

BRENNER, Philip S. and BUSKIRK, Trent D. (2022). "Scratch the Scratch-off: Testing Prepaid and Conditional Incentives with Postcard and Letter Invitations in a Web-push Design with an Address-based Sample". *Field Methods*, 34 (1), 20-35. <https://doi.org/10.1177/1525822X211069640>

BRENNER, Philip S.; COSENZA, Caron and FOWLER, Floyd J. (2020). "Which Subject Lines and Messages Improve Response to E-mail Invitations to Web Surveys?". *Field Methods*, 32 (4), 365-382. <https://doi.org/10.1177/1525822X20929647>

BROSNAN, Kylie; GRÜN, Bettina and DOLNICAR, Sara (2017). "PC, phone or tablet? Use, preference and completion rates for web surveys". *International Journal of Market Research*, 59 (1), 35-55. <https://doi.org/10.2501/IJMR-2016-049>

BROSNAN, Kylie; KEMPERMAN, Astrid and DOLNICAR, Sara (2021). "Maximizing participation from online survey panel members". *International Journal of Market Research*, 63 (4), 416-435. <https://doi.org/10.1177/1470785319880704>

CALLEGARO, Mario; LOZAR MANFREDA, Katja and VEHOVAR, Vasja (2015). *Web Survey Methodology*. Londres: Sage.

CANTOR, David; O'HARE, Bárbara and O'CONNOR, Katheleen (2008). "The use of monetary incentives to reduce nonresponse in random digit dial telephone surveys". In: LEPKOWSKI, James M. et al. (eds.), *Advances in telephone survey methodology*. New York: Wiley.

CERNAT, Alexandru and REVILLA, Melanie (2021). "Moving from Face-to-Face to a Web Panel: Impacts on Measurement Quality". *Journal of Survey Statistics and Methodology*, 9 (4), 745-763. <https://doi.org/10.1093/jssam/smaa007>

COOK, Coleen; HEATH, Fred and THOMPSON, Russel L. (2000). "A meta-analysis of response rates in web- or Internet-based surveys". *Educational and Psychological Measurement*, 60, 821-826. <https://doi.org/10.1177/00131640021970934>

COUPER, Mick P. (2008). *Designing effective web surveys*. New York: Cambridge University Press.

CRAWFORD, Scott D.; MCCABE; Sean Esteban. et al. (2004). "Gaining response cooperation in college web based alcohol". Asociación Americana para la Investigación de la Opinion Pública-AAPOR, 59º encuentro anual, Phoenix, AZ.

CRAWFORD, Scott D.; COUPER, Mick P. and LAMIAS, Mark (2001). "Web surveys: Perceptions of burden". *Social Science Computer Review*, 19: 146-162. <https://doi.org/10.1177/089443930101900202>

CUNNINGHAM, John A.; NEIGHBORS, Clayton; BERTHOLET, Nicolas and HENDERSHOT, Christian S. (2013). "Use of mobile devices to answer online surveys: implications for research". *BMC (BioMedical) Research Notes*, 6, 1-4. <https://doi.org/10.1186/1756-0500-6-258>

DAIKELER, Jessica; BOSNJAK, Michael and LOZAR MANFREDA, Katja (2020). "Web versus other survey modes: an updated and extended meta-analysis comparing response rates". *Journal of Survey Statistics and Methodology*, 8 (3), 513-539. <https://doi.org/10.1093/jssam/smz008>

DE-JUANAS OLIVA, Ángel; GARCÍA-CASTILLA, Francisco Javier and PONCE DE LEÓN, Ana (2020). "El tiempo de los jóvenes en dificultad social". *Revista Española de Pedagogía*, 78 (277), 477-496. <https://doi.org/10.22550/REP78-3-2020-05>

DEANGELO, Tessa I. and FENG, Bo (2020). "From Inbox Reception to Compliance: A Field Experiment Examining the Effects of E-mail Address and Subject Line on Response and Compliance Rates in Initial E-mail Encounters". *Social Sciences Computer Review*, 38 (6), 766-778. <https://journals.sagepub.com/doi/10.1177/0894439319839924>

DE LEEUW, Edith (2020). "Mixed Mode and Mixed Device Surveys: Why, When, and How". WAPOR Webinar, 9 July.

DE LEEUW, E.D, SUZER-GURTEKIN, Z.T., HOX, J.J. (2019). "The design and implementation of mixed-mode surveys". In: JOHNSON, Timothy et al. (eds). Advances in Comparative Survey Methods: Multinational, Multiregional, and Multicultural Contexts. Hoboken, N.J.: Wiley. <https://doi.org/10.1002/9781118884997.ch18>

DEUTSKENS, Elisabeth; DE RUYTER, Ko; WETZELS, Martin and OOSTERVELD, Paul (2004). "Response rate and response quality of internet-based surveys: An experimental study". *Marketing Letters,* 15(1). 21-36. <https://doi.org/10.1023/B:MARK.0000021968.86465.00>

DÍAZ DE RADA, Vidal (2001). "Mail Surveys Using Dillman's TDM in a Southern European Country: Spain". *International Journal of Public Opinion Research*, 13(2). 159-172. <https://doi.org/10.1093/ijpor/13.2.159>

— (2005). "Measure and control of non-response in a mail survey". *European Journal of Marketing*, 39 (/2), 16-32.
<https://doi.org/10.1108/03090560510571990
— (2011). "Encuestas con encuestador y encuestas autoadministradas por internet. ¿Proporcionan resultados comparables?". *Revista Española de Investigaciones Sociológicas*, 136, 49-90.
<https://doi.org/10.5477/cis/reis.136.49>
— (2015). "Influencia de los aspectos visuales en los cuestionarios autoadministrados". *Papers*, 100 (1). 75-104.
<https://doi.org/10.5565/rev/papers.607
— (2016). "Altas tasas de respuesta en cuestionarios autoadministrados: un estudio de caso". In: Amparo Almarcha Barbado, Patricia González Almarcha and Laura Román Masedo (Eds.), *Donde la sociología te lleve* (pp. 217-230). A Coruña: Universidade da Coruña.
— (2021). "Estrategias de aumento de la cooperación en encuestas multicanal". *Sesión técnica en el Institut d'Estadística de Catalunya-Instituto de Estadística de Cataluña*, 17 June.
— (2022). "Concurrent mixed modes: response quality, speed and cost". *Field Methods*, 34 (3). 191-205
Díaz de Rada, Vidal and Domínguez, Juan Antonio (2014). "Response Quality of Self-Administered Questionnaires: A Comparison Between Paper and Web Questionnaires". *Social Science Computer Review*, 32 (2). 256-269.
<https://doi.org/10.4236/ojs.2014.45038>
— (2016). "Mail survey abroad with an alternative web survey". *Quality and Quantity*, 50, 1153-1164.
<https://doi.org/10.1007/s11135-015-0195-z>
— (2017). "Comparación de métodos de campo en la encuesta". *Revista Española de Investigaciones Sociológicas*, 158, 7-148.
<https://doi.org/10.5477/cis/reis.158.137>
Díaz de Rada, Vidal; Domínguez, Juan Antonio and Pasadas, Sara (2019). *Social Internet como modo de administración de encuestas*. Madrid: CIS.
Dillman, Don A. (2017). "The promise and challenge of pushing respondents to the Web in mixed-mode surveys". *Survey Methodology*, 43 (1), 3-30
— (2019). *Web-Push surveys: origins, use and unsolved challenges*, 2019 Distinguished Lecture, University of Maryland, 12 April.
— (2021). *Adapting Push-to-Web Survey Designs for Use in Different Countries and Situations*, conference paper at The World Association for Public Opinion Research (WAPOR) , 5 March.
Dillman, Don A.; Smyth, Jolene and Christian, Leah Melani (2009). *Internet, Mail and Mixed-Mode Surveys: The Tailored Design Method*, 3rd ed. New York: Wiley
— (2014). *Internet, Mail and Mixed-Mode Surveys: The Tailored Design Method*, 4rd ed., New York: Wiley
Dykema, Jeniffer; Stevenson, John; Day, Brendan; Sellers, Sherril L. and Bonham, Vence L. (2011). "Effects of Incentives and Prenotification on Response Rates and Costs in a National Web Survey of Physicians". *Evaluation & the Health Professions*, 34(4), 434-447.
<https://doi.org/10.1177/0163278711406113>
Edwards, Philip James; Roberts, Ian; Clarke, Mike J.; Diguiseppi, Carolyn; Wentz, Reinhard and Kwan, Irene (2009). "Methods to increase response to

postal and electronic questionnaires". *Cochrane Database of Systematic Review*, 8 (3), 1-10.
<https://doi.org/10.1002/14651858.MR000008.pub4>

EDWARDS, Phil; ROBERTS, Ian; CLARKE, Mike; et al. (2002). "Increasing response rates to postal questionnaires: Systematic review". *British Medical Journal*, 324, 1183-1185.
<https://doi.org/10.1136/bmj.324.7347.1183>

EINARSSON, H., CERNAT, A., and SHLOMO, N. (2021). "Reducing Respondent Burden with Efficient Survey Invitation Design". *Survey Research Methods*, *15*(3), 207-233.
<https://doi.org/10.18148/srm/2021.v15i3.7777>

EVANS, Joel R. and MATHUR, Anil (2005). "The Value of Online Surveys". *Internet Research*, 15: 195-219.
<https://doi.org/10.1108/10662240510590360>

ESOMAR (2018). *26 Questions to Help Buyers of Online Samples*. Amsterdam: ESOMAR.
<https://www.esomar.org/what-we-do/code-guidelines/28-questions-to-help-buyers-of-online-samples> (retrieved 20 October 2020)

ESPINAR-RUIZ, Eva; GONZÁLEZ-DÍAZ, Cristina and MARTINEZ-GRAS, Rodolfo (2020). "Análisis del consumo de noticias entre estudiantes de la Universidad de Alicante". *Convergencia. Revista de Ciencias Sociales*, 27, e13286.
<https://doi.org/10.29101/crcs.v27i0.13286>

FAZEKAS, Zoltán; WALL, Matthew T. and KROUWEL, André (2014). "Is It What You Say, or How You Say It? An Experimental Analysis of the Effects of Invitation Wording for Online*Panel Surveys*". *International Journal of Public Opinion Research*, 26 (2), 235-244.
<https://doi.org/10.1093/ijpor/edt022>

FELIX, Lambert M; BURCHETT, Helen E. and EDWARDS Phil J. (2011). "Factorial trial found mixed evidence of effects of pre-notification and pleading on response to Web-based survey". *Journal of Clinical Epidemiology,* 64 (5), 531-6.
<https://doi.org/10.1016/j.jclinepi.2010.06.001>

GAJIC, Alexandra; CAMERON, David and HURLEY, Jeremiah (2012). "The Cost-Effectiveness of Cash versus Lottery Incentives for a Web-Based, Stated-Preference Community Survey". *The European Journal of Health Economics*, 13 (6), 789-799.
<https://doi.org/10.1007/s10198-011-0332-0>

GÖRTZ, Anja S. (2006). "Incentives in Web Studies: Methodological Issues and a Review". *International Journal of Internet Science*, 1(1). 58-70.

GÖRITZ, Anja S. and CRUTZEN, Rik (2012). "Reminders in Web-Based Data Collection: Increasing Response at the Price of Retention?". *American Journal of Evaluation*, 33(2). 240-250.
<https://doi.org/10.1177/1098214011421956>

GREENLAW, Corey and BROWN-WELTY, Sharon (2009). "A comparison of web-based and paper-based survey methods: testing assumptions of survey mode and response cost". *Evaluation Review*, 33, 464-480.
<https://doi.org/10.1177/0193841X09340214>

GRIGGS, Ashley K.: SMITH, Amanda C.; BERZOFSKY, Marcus E. et al. (2021). "Examining the Impact of a Survey's Email Timing on Response Latency, Mobile Response Rates, and Breakoff Rates". *Field Methods*, 33 (3), 253-267.
<https://doi.org/10.1177/1525822X21999160>

GUÉGUEN, Nicolás and JACOB, Céline (2002a). "Social presence reinforcement and computer mediated communication: The effect of the photography of a solicitor

on compliance to a survey request made by e-mail". *CyberPsychology and Behavior*, 5, 139-142.
<https://doi.org/10.1089/109493102753770525>
— (2002b). "Solicitation by e-mail and solicitor's status: A field study of social influence on the web', *CyberPsychology y Behavior*, 5, 377-383.
<https://doi.org/10.1089/109493102760275626>
GUÉGUEN, Nicolás; JACOB, Céline and MORINEAU, Thierry (2010). "What is in a name? An effect of similarity in computer-mediated communication". *E-Journal of Applied Psychology*, 6, 1-4.
<https://doi.org/10.7790/ejap.v6i2.179>
HARMON, Michele; WESTIN, Elisabeth and LEVIN, Kerry (2005). *Does type of pre-notification affect web-surveys response rates?*. Paper presented at the 60th annual conference of the American Association for Public Opinion Research, Miami.
HART, Ann Marie; BRENNAN, Caitlin, SYM, Donna and LARSON, Elaine (2009). "The Impact of Personalized Prenotification on Response Rates to an Electronic Survey". *Western Journal of Nursing Research*, 31 (1), 17-23.
<https://doi.org/10.1177/0193945908319249>
HEBERLEIN, Thomas A. and BAUMGARTHER, Robert (1978). "Factors Affecting Response Rates to Mailed Questionnaires: A Quantitative Analysis of the Publisher Literature". *American Sociology Review*, 43 (4), 447-462.
<https://doi.org/10.2307/2094771>
HEERWEGH, Dirk (2005). "Effects of Personal Salutations in E-mail Invitations to Participate in a Web Survey". *Public Opinion Quarterly*, 69 (4), 588-598.
<https://doi.org/10.1093/poq/nfi053>
ILIEVA, Janet; BARON, Steve and HEALEY, Nigel M. (2002). "Online surveys in marketing research". *International Journal of Market Research*, 44, 361-376.
<https://doi.org/10.1177/147078530204400303>
INSIGHTS AND ANALYTICS SPAIN (2019). XI Encuentro: la investigación a análisis. Datos para España y mundiales de Investigación de Mercados 2018.
JOINSON, A. N., and REIPS, U. D. (2007). "Personalized salutation, power of sender and response rates to web-based Surveys". *Computers in Human Behavio*r, 23, 1372-1383.
<https://doi.org/10.1016/j.chb.2004.12.011>
KAPLOWITZ, Michael D.; HADLOCK, Timothy D. and LEVINE, Ralph S. (2004). "A Comparison of Web and Mail Survey Response Rates". *Public Opinion Quarterly*, 68 (2), 94-101.
<https://doi.org/10.1093/poq/nfh006>
KAPLOWITZ, Michael D.; LUPI, Frank; COUPER, Mick P. and THORP, Laurie (2012). "The Effect of Invitation Design on Web Survey Response Rates". *Social Science Computer Review*, 30 (3), 339-349.
<https://doi.org/10.1177/0894439311419084>
KENT, Ray and BRANDAL, Hege (2003). "Improving email response in a permission marketing context". *International Journal of Marketing Research*, 45 (4), 1-13.
<https://doi.org/10.1177/147078530304500404>
KEUSCH, Florian (2012). "How to increase response rates in list-based web survey samples". *Social Science Computer Review*, 30(3), 380-388.
<https://doi.org/10.1177/0894439311409709>
KUNZ, Tanja; LANDESVATTER, Camille and GUMMER, Tobias (2020). "Informed consent for paradata use in web surveys". *International Journal of Market Research*, 62 (4), 396-408.
<https://doi.org/10.1177/1470785320931669>

LINDGREN, Elina; MARKSTEDT, Elias; MARTINSSON, Johan and ANDREASSON, Maria (2020). "Invitation Timing and Participation Rates in Online Panels: Findings From Two Survey Experiments". *Social Sciences Computer Review*, 38 (2), 225-244. <https://doi.org/10.1177/0894439318810387>

LORANGER, Hoa (2014). *Break Grammar Rules on Websites for Clarity*. Available at <https://www.nngroup.com/articles/break-grammar-rules>. Accessed 3 March 2022.

LOZAR MANFREDA, Katja and VEHOVAR, Vasja (2008). "Internet surveys". In: DE LEEUW, Edith. D.; HOX, Jox and DILLMAN, Don A. (eds.). *International Handbook of Survey Methodology*. New York: Lawrence Erlbaum Associates and European Association of Methodology, 264-284.

LOZAR MANFREDA, Katja; BOSNJAK, Michael; BERZELAK, Jerney; HAAS, Iris and VEHOVAR, Vasja (2008). "Web surveys versus other survey modes: a meta-analysis comparing response rates". *International Journal of Market Research*, 50 (1), 79-104. <https://doi.org/10.1177/147078530805000107>

LUGTIG, Peter and VERA TOEPOEL, Vera (2016). "The Use of PCs, Smartphones, and Tablets in a Probability-Based Panel Survey: Effects on Survey Measurement Error". *Social Science Computer Review*, 34 (1), 78-94. <https://doi.org/10.1177/0894439315574248>

MARCUS, Bernd; BOSNJAK, Michael; LINDNER, Stephen, et al. (2007). "Compensating for low topic interest and long surveys—A field experiment on nonresponse in web surveys". *Social Science Computer Review*, 25, 372-383. <https://doi.org/10.1177/0894439307297606>

MCMASTER, Hope Seib et al. (2017). "An experimental comparison of web-push vs. paper-only survey procedures for conducting an in-depth health survey of military spouses". *BMC Medical Research Methodology*, 17-73. <https://doi.org/10.1186/s12874-017-0337-1>

MUÑOZ LEIVA, Francisco; SÁNCHEZ FERNÁNDEZ, Juan; MONTORO RÍOS, Francisco e IBAÑEZ ZAPATA, José Ángel (2010). "Improving the response rate and quality in web-based surveys through the personalization and frequency of reminder mailings". *Quality and Quantity*, 44, 1037-1052. <https://doi.org/10.1007/s11135-009-9256-5>

NATIONAL STATISTICS INSTITUTE-INSTITUTO NACIONAL DE ESTADÍSTICA-INE (2019): *Survey on Equipment and Use of Information and Communication Technologies in Households. Latest data*. Madrid: NSI-INE.

NIELSEN, Jakob (2009). *First 2 Words: A Signal for the Scanning Eye*. Available at <https://www.nngroup.com/articles/first-2-words-a-signal-for-scanning/ . Accessed on 3 March 2022.

— (2013). *Website reading: it (something) does happen*. Available at <https://www.nngroup.com/articles/website-reading>. Accessed on 10 October 2017.

OH, April Y.; CAPORASO, Andrew; DAVIS, Terisa et al. (2021). "Effect of Incentive Amount on U.S. Adolescents' Participation in an Accelerometer Data Collection Component of a National Survey", *Field Methods*, 33 (3), 219-235. <https://doi.org/10.1177/1525822X21989841>

OSCARSSON, Henrik and ARKHEDE, Sofia (2020). "Effects of Conditional Incentives on Response Rate, Non-Response Bias and Measurement Error in a High Response-Rate Context". *International Journal of Public Opinion Research*, 32 (2), 354-368. <https://doi.org/10.1093/ijpor/edz015>

PARSONS, Nicholas L. and Manierre, Matthew J. (2013). "Investigating the Relationship among Prepaid Token Incentives, Response Rates, and Nonresponse Bias in a Web Survey". *Field Methods*, 26 (2), 191-204.
<https://doi.org/10.1177/1525822X13500120>

PETERSON, Gregg; GRIFFIN, Jamie; LAFRANCE, John and LI, JiaoJiao (2017). "Smartphone participation in web surveys: choosing between potential coverage, nonrespone and measurement error". In: BIEMER, Paul P.; DE LEEUW, Edith; ECKMAN, Stephanie; EDWARDS, Brad; KREUTER, Frauke; LYBERG, Lars E.; TUCKER, N. Clyde and WEST, Brady T. (Eds), *Total Survey Error in Practice: improving quality in the Era of Big Data*. New York: Wiley.

PIERELLA, María-Paula; PERALTA, Nadia-Soledad and POZZO, María-Isabel (2020). "The first year of college. Working conditions, admission procedures and academic dropout from the teachers' perspective". *Revista iberoamericanda de Educación Superior* [online]. 11 (31), 68-84.
<https://doi.org/10.22201/iisue.20072872e.2020.31.706>

PORTER, Stephen R. and WHITCOMB, Michael E. (2007). "Mixed-mode contacts in web surveys: paper is not necessary better". *Public Opinion Quarterly*, 71, 635-648.
<https://doi.org/10.1093/poq/nfm038>

PRATESI, Monica; MANFREDA, Katja Lozar; BIFFIGNANDI, Silvia and VEHOVAR, Vasja (2004). "List-based Web Surveys: Quality, Timeliness and Nonresponse in the Steps of the Participation Flow". *Journal of Official Statistics*, 20 (3), 451-465.

RAO, Kumar and PENNINGTON, Julia (2013). "Should the third reminder be sent? The role of survey response timing on web survey results". *International Journal of Market Research*, 55 (5), 651-674.
<https://doi.org/10.2501/IJMR-2013-056>

REVILLA, Melanie and HÖHNE, Jan K. (2020). "Comparing the participation of Millennials and older age cohorts in the Cross-National Online Survey panel and the German Internet Panel". *Survey Research Methods*, 14 (5), 499-51.
<https://doi.org/10.18148/srm/2020.v14i5.7619>

RIPOLL GARCÍA, Guillermo (2020). *Valoración sensorial e instrumental de la carne de cabrito lecha*l, Universidad de Sevilla. Departamento de Ciencias Agroforestales

RODRÍGUEZ JAUME, María José and GONZÁLEZ RÍO, María José (2014). "Las encuestas autoadministradas por internet. Un estudio de caso: Las familias adoptivas y sus estilos de vida". *EMPIRIA. Revista de Metodología de Ciencias Sociales*, 29, 155-175.
<https://doi.org/10.5944/empiria.29.2014.12944>

SAKSHAUG, Joseph W. et al. (2019). "Paper, E-mail, or Both? Effects of Contact Mode on Participation in a Web Survey of Establishments". *Social Sciences Computer Review*, 37 (6), 750-765.
<https://doi.org/10.1177/0894439318805160>

SÁNCHEZ CARRIÓN, Juan Javier and SEGOVIA GUISADO, José M. (2008). "La participación y la influencia del recordatorio en las encuestas panel online a estudiantes universitarios". *EMPIRIA. Revista de Metodología de Ciencias Sociales*, 16, 135-161.
<https://doi.org/10.5944/empiria.16.2008.1393>

SÁNCHEZ FERNÁNDEZ, Juan; MUÑOZ, Francisco and MONTORO, Francisco J. (2009). "¿Cómo mejorar la tasa de respuesta en encuestas on line?". *Revista de Estudios Empresariales*, 1, 45-62.
<https://doi.org/10.17561/ree>

SCHAEFER, David R. and DILLMAN, Don A. (1998). "Development of a standard email methodology: results of an experiment". *Public Opinion Quarterly*, 62 (3), 378-397. <https://doi.org/10.1086/297851>

SHEEHAN, Kim Bartley and HOY, Marlea Grubbs (1997). "Using *e-mail* to survey Internet users in the United States: Methodology and assessment". *Journal of Computer-Mediated Communication*, 4, 3. <https://doi.org/10.1111/j.1083-6101.1999.tb00101.x>

SHEEHAN, Kim Bartley (2001). "E-mail survey response rates: a review". *Journal of Computer-Mediated Communication*, 4 (2). <https://doi.org/10.1111/j.1083-6101.2001.tb00117.x>

SHIH, Tse Hua and FAN, Xitao (2008). "Comparing Response Rates from Web and Mail Surveys: A Meta-Analysis". *Field Methods*, 20, 249-271. <https://doi.org/10.1177/1525822X08317085>

SIMMONS, Eleanor and WILMOT, Amanda (2004). "Incentive payments on social surveys: a literature review". *The Survey Methodology Bulletin,* 53, 3-11.

SINGER, Eleanor and YE, Cong (2013). "The use and effects of incentives in surveys". *The ANNALS of the American Academy of Political and Social Science*, 645, 112-141. <https://doi.org/10.1177/0002716212458082>

STANLEY, Marshica; ROYCROFT, Jessica; AMAYA, Ashley; DEVER, Jill A. and SRIVASTAV, Anup (2020). "The Effectiveness of Incentives on Completion Rates, Data Quality, and Nonresponse Bias in a Probability-based Internet Panel Survey", *Field Methods*, 32 (2), 159-179. <https://doi.org/10.1177/1525822X20901802>

STOOP, Iinkele; KOCH, Achim; HALBHERR, Verena; LOOSVELDT, Geert and FITZGERALD, Ronald (2016). *Field Procedures in the European Social Survey Round 8: Guidelines for Enhancing Response Rates and Minimising Nonresponse Bias.* London: ESS ERIC Headquarters. <https://www.google.com/search?client=firefox-b-1-ab&q=Field+Procedures+in+the+European+Social+Survey+Round+8%3A+Guidelines+for+Enhancing Response+rates+and+minimising+nonresponse+bias>, last accessed on 3 March 2022.

STURGIS, Patrick and LUFF, Rebekah (2021). "The demise of the survey? A research note on trends in the use of survey data in the social sciences, 1939 to 2015?". *International Journal of Social Research Methodology*, 24 (6), 691-696. <https://doi.org/10.1080/13645579.2020.1844896>

SUN, Hanyu; NEWSOME, Jocelyn; MCNULGY, Jennifer, et al. (2020). "What Works, What Doesn't? Three Studies Designed to Improve Survey Response". *Field Methods*, 32 (3), 235-252. <https://doi.org/10.1177/1525822X20915464>

TOEPOEL, Vera (2016). *Doing Survey online*. London: Sage.

TOEPOEL, Vera et al. (2021). "Probing in online mixed-device surveys: Is a research messenger layout more effective than a traditional online layout, especially on mobile devices?". *Bulletin de Methodologie Sociologique*, 151, 74-95. <https://doi.org/10.1177/07591063211019953>

TOURANGEAU, Rogert; CONRAD, Frederic G. and COUPER, Mick P. (2013). *The Science of Web Surveys.* Oxford: Oxford University Press. <https://doi.org/10.1093/acprof:oso/9780199747047.001.0001>

TROUTEAUD, A. R. (2004). "How you ask counts: A test of internet-related components of response rates to a web-based survey". *Social Science Computer Review*, 22 (3), 385-392. <https://doi.org/10.1177/0894439304265650>

VEHOVAR, V.; MANFREDA, K. L. and BATAGELJ, Z. (2000), "Design Issues in Web Surveys," paper presented at the AAPOR Annual Conference, May 17-21, Portland, OR, USA.
<https://www.amstat.org/sections/srms/proceedings/papers/2000_168.pdf>

VEHOVAR, Vasja and MANFREDA, Katja Lozar (2017). "Overview: Online Surveys", in *The SAGE Handbook of Online Research Methods*. Londres: SAGE.
<https://doi.org/10.4135/9781473957992.n9>

WENTZ, Alexander (2021). "Do Distractions During Web Survey Completion Affect Data Quality? Findings From a Laboratory Experiment". *Social Sciences Computer Review*, 39 (1), 148-161.
<https://doi.org/10.1177/0894439319851503>

WENZ, Alexander et al. (2022). "The Effects of Personalized Feedback on Participation and Reporting in Mobile App Data Collection?". *Social Sciences Computer Review*, 40 (1), 165-178.
<https://doi.org/10.1177/0894439320914261>

WILEY, James B; HAN, Vallen; ABAUM, Gerald and THIRKEL, Peter (2009). "Selecting techniques for use in an internet survey". *Asia Pacific Journal of Marketing and Logistics*, 21 (4), 455-474.
<https://doi.org/10.1108/13555850910997535>

WYGANT, Sara and LINDORF, Ralph (1999). "Surveying collegiate net surfers – web methodology or mythology?". *Quirk's Marketing Research Review*, July <www.quirks.com>

ZULOAGA OBREGÓN, José Luis (2020). *El impacto de los cursos Ecología y Geografía en la formación de la conciencia ambiental del alumnado de Estudios Generales Letras*, Doctoral thesis.