Non-response in an International Mixed Self-Administered Survey

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Abstract

The reduction of non-response is one of the greatest challenges facing survey research in the 21st century. This paper compared the non-responses obtained with two self-administered questionnaires to a general population survey, and it compares non-responses identified for everyone.

In the current study, from the 13,164 interviews sent that were not responded to, 2,480 were due to the letters being returned unopened. This is a large group, 15.8% of the initial sample. The first wave achieved a cooperation rate (COOP2) of 15.66%, and the second 9.5%. Despite this reduced response rate, there was no difference for gender and level of studies, while regarding age, a lower rate of participation was seen among the young and a greater participation among the old. As regards the geographic areas, non-response is higher in Maghreb and Latin American countries. Two in every three citizens in the European countries did not respond, a percentage that is reduced to 58% in North America.

The response rate, often used as an indicator of survey quality (2006among others, Stoop, 2005; Beullens & Loosveldt, 2012), does not always indicate biased estimates. The same is true here: a subsequent survey, conducted by telephone, with high levels of cooperation, showed behavioral and attitudinal traits similar to those detected in the study that used a self-administered questionnaire.

1. Introduction

The reduction of non-response is one of the greatest challenges facing survey research in the 21st century. In-person (face-to-face) surveys have to overcome a broad use of video-entry phones and a large number of gated communities which, together with the growing replacement of landline phones with cell phones, and the high use of telephone marketing, have seen a notable decline in cooperation with "interviewer-administered" surveys (among others, De Leeuw, 2008; Loosveldt, 2008; Dykema, Basson & Schaeffer, 2008; Lavrakas, 2008; Steeh, 2008; Tucker & Lepkowski, 2008). It is, in short, one more step in the process of decreasing cooperation with surveys that was discovered in the United States in the mid 1970s (Rossi et al., 1983).

In contrast, surveys without an interviewer (self-administered), in recent years have not experienced this reduced response rate to such a large extent, but they face other problems. The literature on the subject identifies four major drawbacks of the mail survey:

1) Low response rates (among others Labovitz & Hagedorn 1971; Babbie 1973; Meyers & Grossen 1974; Black & Champion 1976; Bailey 1978; De Leeuw, 1992; Jenkins & Dillman, 1997; Redline & Dillman, 2002; De Leeuw, Hox & Huisman, 2003);

2) the need for a long period of time spent on fieldwork;

3) the presence of errors due to the manual transcription of data (Ilieva et al., 2002: 361); and,

4) the incorrect completion of the questionnaire. This last refers to the high number of questions left unanswered or double answers for questions where there should only be one answer (De Leeuw, 1992; De Leeuw et al., 2003; Dillman 2012).

The first drawback is not always accurate when considering that numerous surveys have achieved high response rates in such different settings as Australia (Graetz 1985), United States (Dillman 1983 & 1991; Cook et al., 2000; Lozar Manfreda et al., 2008; Shih & Fan, 2008), Japan (Jussaume & Yamada 1990) and several European countries (Nederhof, 1983 & 1985; Lynn, 1991; De Leeuw, 1992; Hox & DeLeeuw, 1992; DeLeeuw & Hox, 1996; Díaz de Rada 1999; Díaz de Rada 2001; Dillman et al., 2014).

With respect to the second drawback, the slowness of the mail survey disappears when the paper medium is replaced by a digital medium conveyed via a different communication channel, that is, an online computer-based questionnaire. As regards the presence of errors due to the manual transcription of data–the third disadvantage– the web questionnaire records the information when the questionnaire is answered, performing checks "in real time", which involves a significant improvement in the quality of the information collected as well as a significant reduction in survey costs.

In terms of the poor completion of the questionnaire—the last of the criticisms mentioned—numerous studies have shown the low number of unanswered questions, longer answers to open questions, as well as more honest answers to sensitive questions (among others, De Leeuw, 1992; Díaz de Rada 1999 & 2001; Díaz de Rada & Dominguez, 2014).

Other advantages of Web surveys –when compared to mail surveys– is the possibility of accessing people who are distant and dispersed in a fast and economical way, with results being available quickly, while   reducing measurement error due to the flexibility of the questionnaire. The web makes it possible to use visual tools (free of charge) that allow for greater interaction with the respondent. In addition to the ease of use of the different types of questions available (multiple choice, open...), other visual elements can be employed, such as font types and sizes, colors, shadowing, symbols, drawings, pictures, etc.. Tourangeau et al. (2013) added the ease of use of automatic drop-down definitions (which are automatically activated after a period of inactivity) and the use of "virtual interviewers" (Conrad et al., 2008). All of the above ultimately makes it possible to adapt the survey to each type of respondent.

All these drawbacks, except the first one, no longer exist when Web surveys are used. Therefore, this paper will focus on the first aspect, namely the 'more fragile' characteristic (among others Tourangeau et al., 2013; Dillman et al., 2014; Callegaro et al., 2015) of the self-administered survey.

This paper compared the non-responses obtained via multiple modes to a general population survey, and it compared non-responses obtained using each mode. A sample of Spanish immigrants abroad received an envelope by (ordinary) mail in which they were informed that they had been selected to participate in a study. Inside was a paper questionnaire with a prepaid preaddressed envelope and a cover letter where the research aims were explained, as well as indicating that the questionnaire could be answered by ordinary mail or by Internet (a Web address and a unique password for each respondent was supplied). The main hypothesis of the study postulates that the non-response rate of web surveys is similar to that of mail surveys.

2. Method and Data

With the aim of understanding the situation of citizens of this particular Spanish region living abroad, a questionnaire was designed. This questionnaire contains 59 questions (120 variables), organized into seven major thematic sections: a) socio demographic features; b) living arrangements and living conditions, c) concerns, work and income; d) use of institutional care; e) evaluation of various Andalusian and Spanish institutions, life satisfaction; f) closeness to/distance from the Spanish region; and, g) social situation in the region and their reasons for emigrating (only answered by those born in the Spanish region).

Using the Electoral Census of Residents in Other Countries (*Censo Electoral de Residents en el Extranjero* (CERA), in March 2008 there were 144,007 over 18-year-old residents in other countries. The *CERA* is the official up-to-date register of Spanish citizens living outside Spain with the right to vote (or suffrage). Spanish legislation obliges Spanish citizens who reside outside Spain to be registered, as required by Article 2 of Royal Decree 3425/2000, of December 15, 2000, regarding registration of Spanish citizens in the Registration Records of Consulate offices (INE[1], 2013). Researchers had available the following variables: name and

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[1] INE stands for "Instituto Nacional de Estadística", the Spanish Census Bureau.

surname, home address, age, gender and town where each of the persons in the sample framework was registered.

Two groups could be differentiated within the above: those born in and then emigrated from one Spanish region, and those born abroad - descendants of the first group - who had maintained their Spanish nationality.

It should be noted that it is only possible to be included, or to modify data in the register, in the consulate of the country of residence, and that inaccuracies may exist due to death, or failure to update the home address. In this specific case it was considered that the records were up-to-date - or at least in better condition than in former times - due to the two elections held in March 2008 to the regional and to the Spanish Parliament, as the corrections from the election period had been included.

A two-stage sampling method was used, stratified by geopolitical groups according to the number of residents in each country. Firstly, countries have been selected by each geopolitical group, a calculation was made of the number of questionnaires corresponding to each country in proportion to the number of Spanish people living in it. All those countries where the number of interviews were 25 or above, were included in the sample with the appropriate number of interviews. The rest of the interviews for each geopolitical group were divided into "packets" of at least 25 interviews (the highest number possible) and these packets were assigned to the remaining countries with a probability proportional to the number of Spanish people in each country.

In a second stage, with the aim of achieving the sized sample established, and taking into account the experience of previous studies that recommended choosing at least 10 elements for each theoretical sample unit (Moscoso et al., 2010), a sample of 24,000 units was selected.

The implementation procedures typically used in self-administered surveys were employed (Dillman et al., 2009: chapter 7), the exception being that a single reminder was used (Rao & Pennington, 2013) and no monetary incentive was offered. Financial issues, related to the cost involved in sending letters to 20 countries (distant places such as Australia and Argentina), and time concerns (given the need to allow time for the questionnaires to be returned) prevented the use of any further reminders. Specifically, each person selected received an envelope sized 229 x 324 mm. by (ordinary) mail in which they were informed that they had been selected to participate in a study. Inside was a paper questionnaire (210 x 297 mm.), a prepaid preaddressed envelope (114 × 162 mm.), and a cover letter where the research aims were explained, as well as indicating that the questionnaire could be answered by ordinary mail or by Internet (a Web address and an ID number[2] for each respondent was supplied).

3. Results

3.1 Response rate

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[2] The ID number prevented the respondents from completing the survey more than once.

As previously mentioned, with the aim of obtaining an effective sample of 2,400 units, 10 individuals for each sample unit were selected, which generated a selection of 24,000 addresses that were divided into two random subsamples of the same size, one subsample for each wave. The 12,000 letters generated a large number (1,873) of returns by the mailing service. Therefore, only 84.3% of the questionnaires sent to the first subsample are considered to have arrived at their destination.

The first wave generated 1,580 completed questionnaires, achieved a cooperation rate (COOP2) of 15.66%[3]. 16 weeks after the first mail-out, non-respondents received another envelope with a personalized letter of introduction, their password number, a questionnaire and a postage-paid envelope. It was considered necessary to delay the reminder for such a long period, in contrast with other studies (Dillman et al., 2009), because this was an international study with questionnaires being sent to distant places such as Australia and Brazil. In fact, some "late" responses were received up to three and a half months after the first mail-out. The reminder contained a cover letter—slightly modified—signed by the research director, the questionnaire and the prepaid envelope for the answers.

After one mail-out and one reminder had been sent, 2,198 responses were received and, more importantly, the predicted sample size in seven of the twenty countries that participated in the study had been achieved (See these seven rows in Table 1). The residents in Argentina and Uruguay were the most collaborative, as they responded to the first questionnaire without a reminder. The rest of the countries who had complied with the sample size were Cuba (RR6 34.05%), Brazil (23.31%), Australia (22.94%), Italy (22.31%) and Switzerland (see seven top lines of Table 1)

[Table 1]

In 13 countries[4] were needed to complete the sample, which meant that a new mail-out was sent to people who had not been previously contacted (lower section in Table 1). While it was foreseen from the start that this would be necessary, it was delayed in anticipation of a high response rate, due to the fact that the subject of study was attractive to the respondent and that two channels (mail and Internet) were available to send the reply. Taking into account the number of returned questionnaires and the response rate obtained, it was concluded that the sample of 12,000 people selected for the second wave was very large, so it was reduced to 3,698 based on the RR6 response rate of the first wave without a reminder, for each country (see column entitled 'Wave 2, ‒Mail 6 months later' in Table 1). The strategy of sending a reminder in the first wave involved, on the one hand, a reduction in the risk of self-selection and, on the other, significant cost savings by reducing the second wave of 12,000 selected to 3,698 interviews mailed[5].

As far as the envelopes sent were concerned, "not dividing" the sample would have involved sending 24,000 letters. Dividing the sample into two parts, which were used sequentially,

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[3] Decreased until 13.2% inte RR6 response rate (AAPOR, 2011).
[4] Germany, Andorra, Belgium, United States, France, Greece, Guatemala, Ireland, Morocco, Mexico, Netherlands, United Kingdom, and Venezuela.
[5] This implies not sending 8,302 letters. The 12,000 selected for the second wave minus the 3,698 that were sent.

involved sending 11,959 letters and 7,184 reminders in the first wave, and 3,698 in the second (shaded columns in Table 1). A total of 22,841[6], which was 1,159 less than if they had been sent at once.

Six months after the first mail-out 3,698 letters were sent to thirteen countries to individuals drawn from the unused subsample (9[Th] column in table 1, titled Wave 2). This second mail-out generated 295 answers: a completion rate of 9.5%, or 7.98% using RR6 because 607 were returned due to incorrect addresses. On the other hand, for the second mail-out, which was aimed at people who had never been contacted, did not have an updated address directory (as it was six months older), and no reminder was sent. A more out-of-date address directory caused a decrease in response rate in some countries in comparison with that of the first wave without the reminder.

3.2. Non interviewed participants.

The study of non-response in self-administered surveys sent to the addressees is a complex subject, to the extent that it includes both those who could not be contacted and those who decided not to participate. In the current study, from the 13,164[7] interviews sent that were not responded to, 2,480[8] were due to the letters being returned unopened. This is a large group, 15.8% of the initial sample. It is important to pay attention to this, as these selected people did not have the opportunity to decide to participate or not in the study, since they did not receive the communication.

Important differences exist in the reasons for the returns in each wave. In the first, 58% of the returns were due to the addressee being unknown, 22% were sent to incorrect addresses, and 16% were due to the residents having changed addresses. No reason was given for 4% of the returned letters. In the second wave, 81% were returned due to being "incorrectly addressed" and there were 13% where the addressee was unknown, although these percentages inverted for the second wave were mainly from letters addressed to Germany (returns without any information amounted to 6% of the total).

The information from the sample framework –although scant– allows a brief description of the returns to be made. The analysis in Table 2 shows that 27% of the letters returned were from North America, and around 20% from European countries. The low number of migrants in North America (676, 4%) means that the focus should be more on European residents. The high number of returns from European countries could be explained by the fact that 43% of residents are below 45 years old, an age group with high residential mobility for job or study purposes, due to the economic scenario in Europe in 2009. It is also a common destination for young people who move to learn languages[9], or to enter the job market (one in four had arrived after 1987). That is, together with the "expert", settled migrants, there were also - more recently - migrants with greater mobility. This argument also serves to explain the high rate of returns from North America, where the majority of immigrants arrived after 1987. A

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[6] 11,959 letters wave 1+ 7,184 reminders wave 1 + 3,698 wave 2
[7] 11,959 letters wave 1+ 3,698 wave 2 – 2,493 respondents
[8] 1,873 wave 1+ 607 wave 2
[9]   When those under 60 years are considered, the percentage is 66%.

third reason to explain the European returns could be related to the difficulty in writing postal addresses in other languages, with addresses with spelling mistakes and therefore, a greater number returned by the postal service[10].

In light of these arguments, we believe that these high rates of return are mainly related to the efficiency of the services in European and North American countries, which returned the majority of letters with incorrect addresses or when it was not possible to locate the addressee. Therefore, while in Europe and North America undelivered letters are returned to the sender, this does not happen in other countries; which is why the low rates in Oceania and Latin America are not "altogether" real. Other arguments to support this will be presented later.

[Table 2]

With respect to the rest of the socioeconomic variables, there was no difference for gender and educational level, while regarding age, a lower rate of participation was seen among the young and a greater participation among the old. 39% of the questionnaires were sent to under 44 year-olds, obtaining 29% of responses. The oldest age-group, which made up 61% of the theoretical sample, provided 71% of the total responses. In other words, the over-60-year-old group returned fewer questionnaires, as opposed to the 30-to-44-year-old-group (low participation and a large number of returned letters). They are arguments that support the explanations of the previous paragraph, to the extent that the former have a high residential stability, and the latter, being younger, greater mobility.

Table 2 also shows the characteristics of people who did not respond. Non-response is higher in Maghreb and Latin American countries. Two in every three citizens in the European countries did not respond, a percentage that is reduced to 58% in North America. Could uprooting be used as an explanation for low participation? Three issues allow this question to be answered: place of birth, degree of identification with their roots, and number of journeys made. Looking at these answers in the two contexts with lower response rates:

- While two in three migrants in Latin America and Maghreb were not born in the Spanish region, 42% identified very strongly with their roots and 30% identified fairly with them. Only 9% felt little or no identification with them.

As regards the journey, 53% had never travelled totheir region, and 41% had travelled there between 1 and 5 times.

- 76% of those resident in Europe were born in the Spanish region, 56% felt very strongly identified with their roots and 30% fairly identified. A bare 5% felt no identification.

In terms of the number of journeys made, 14% had made 1 to 5 journeys, and another 18% between six and ten. In other words, 67% had travelled there more than ten times.

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[10] Note that in the previous paragraph it was mentioned that 22% of the returns were due to incorrect addresses, a percentage that increased to 81% in the second wave.

4. Conclusions

Europe and Latin America are the areas with the highest migration rates, with 93.1% of the migrants residing there[11], and therefore these are the regions to which more attention should be paid. The comparison between the universe and the sample obtained in these areas reveals a lower participation of European migrants[12] and a greater participation of Latin American residents[13], with similar differences—of 10%—but in reverse. In other words, 63.2% of all migrants live in Europe and 29.9% live in Latin America, while 53% of the answered questionnaires were sent from Europe and 41% from Latin America. The different participation levels may be due to the greater "closeness to their country of origin" of European immigrants, which allowed them to make a large number of trips, and the remoteness of residents in Latin America, who yearned more for their country of origin. In other countries there were only slight differences observed.

The sample obtained involved a decrease in the number of Europeans and young people, in favor of residents in Latin America and over 45 year-olds. These deviations, about 10% in each variable, did not change when considering the subgroups formed by the combination of both variables; that is, when analysing the participation of Europeans under 44 years old (lower response rate) and Latin Americans over 44 years old (greater cooperation).

The response rate, often used as an indicator of survey quality (2006among others, Stoop, 2005; Beullens & Loosveldt, 2012), does not always indicate biased estimates (amons others, Keeter et al, 2000; Groves, 2006). There are numerous examples of situations where low response rates yielded better results than high response rates. The most classic examples notably include that of Visser et al. (1996), where a mail survey with a response rate of 20% provided better election predictions than those achieved by a telephone survey with a response rate three times higher (60%). The average errors of the surveys were 1.6% (email) and 5.2% (telephone), respectively. Similar situations have been encountered in other studies focused on a subject matter different from voting. This implies that neither obtaining high response rates nor correcting the bias of the sample composition necessarily produce better estimates (Groves, 2006). The same is true here: a subsequent survey, conducted by telephone, with high levels of cooperation, showed behavioral and attitudinal traits similar to those detected in the study that used a self-administered questionnaire.

On a different note, some experts have explained the low response rate to Web surveys by citing the difficulty involved in completing certain surveys (Tourangeau et al., 2013). This is not believed to have happened in this study, as much care was taken in designing an easy-to-use questionnaire, with interesting topics (Groves et al., 2006), which complied with specific Accessibility and Usability protocols, including those of regulation UNE 139803, and those established by the W3C consortium (Gouper, 2000). In fact, all participants who completed the Web survey gave more answers than those who responded to the paper questionnaire.

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[11] [9,864 + 4,660] / 15,600 (total)
[12] 9,864 (Europe) / 15,600 (total)
[13] 4,660 (Latin America) / 15,600 (total)

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List of Tables

Table 1: Process of response in each country (In descending order by First Wave RR6)

Respondents' Country of Residence	WAVE 1 Mail				WAVE 1 Reminder			WAVE 2 Mail					
	First Wave	Address error	Respondents	First Wave RR6	Reminder	Respondents	End First Wave RR6	Second Wave	Address error	Respondents	Second Wave RR6	Sample Obtained (**)	Global RR6
Argentina	2.410	72	566	23.49	(*)	-	23.49	(*)				566	23.49
Uruguay	164	2	36	21.95	(*)	-	21.95	(*)				36	21.95
Cuba	185	6	59	31.89	11	4	34.05	(*)				63	34.05
Brazil	815	65	140	17.18	311	50	23.31	(*)				190	23.31
Australia	170	14	22	12.94	143	17	22.94	(*)				39	22.94
Italy	130	31	19	14.62	85	10	22.31	(*)				29	22.31
Switzerland	630	185	90	14.29	427	44	21.27	(*)				134	21.27
Mexico	195	18	24	12.31	159	16	20.51	25	1	2	8.00	42	19.09
Ireland	130	16	16	12.31	103	3	14.62	68	14	6	8.82	25	12.63
France	2.520	638	261	10.36	2.246	189	17.86	500	60	55	11.00	505	16.72
Belgium	570	15	58	10.18	511	33	15.96	200	8	26	13.00	117	15.19
United Kingdom	525	80	51	9.71	463	40	17.33	150	6	7	4.67	98	14.52
United States	480	138	45	9.38	347	34	16.46	200	45	23	11.50	102	15.00
Greece	130	15	12	9.23	106	11	17.69	13	2	2	15.38	25	17.48
Netherlands	265	18	21	7.92	236	20	15.47	100	6	9	9.00	50	13.70
Venezuela	335	21	23	6.87	306	33	16.72	333	1	33	9.91	89	13.32
Germany	1.780	462	111	6.24	1.278	73	10.34	1.709	419	111	6.50	295	8.46
Guatemala	165	29	9	5.45	136	16	15.15	49	4	3	6.12	28	13.08
Morocco	120	14	6	5.00	111	14	16.67	111	13	9	8.11	29	12.55
Andorra	240	34	11	4.58	205	11	9.17	240	28	9	3.75	31	6.46
TOTAL	**11,959**	**1,873**	**1,580**	**13.21**	**7,184**	**618**	**18.38**	**3.698**	**607**	**295**	**7.98**	**2,493**	**15.92**

(*) Target sample size reached in the country.

(*)   Target sample size reached in the country.

(**)   Non-weighted sample obtained. In the Report, Moscoso et al. (2010) are weighted.

Note: The differences in the sample distribution with respect to the published report (Moscoso et al, 2010) are that in the latter, the data were weighted by country, while in the current study they are shown unbalanced, as it suited our research objectives better.

Table 2: Characteristics of respondents and non-respondents (raw percentage).

| | Answer | Non response | | Number of |
		Refused	Returned	cases[14]
Geographic Area (Chi-Square 764,144, signif. 0,00)				
European union	13%	67%	20%	8756
Rest Europe	15%	63%	22%	1108
Maghreb	13%	75%	12%	230
Latin America	22%	73%	5%	4660
North America	15%	58%	27%	676
Oceania	23%	69%	8%	170