

## Internet polls: New and old challenges

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### Abstract

The paper describes the current situation regarding polls conducted on the Internet in two areas: sampling issues and questionnaire issues. It begins with a discussion of the various problems concerning coverage, creation of the sampling frame, the initial sample, management of operations, and weighting. Then it looks at the problems associated with questionnaire development. Following these considerations, it presents a review and discusses the future prospects for each point covered. It concludes with the idea that, despite the problems identified, Internet polls are extremely flexible and useful data collection tools. They are likely to become the primary mode of collection, but before that can happen, certain problems will have to be resolved.

Keywords: Internet polls; Polling methods; Methodology.

### 1. Why discuss Internet polls?

The Internet is being used more frequently as a means of administering polls. Not only is it used for marketing surveys, but also for sociopolitical polls, including voter intention polls. Internet polls are also used in academic research, and there are 'international' polls conducted on the Internet to profile public opinion in developing countries where Internet access is not widespread. The Internet is also used as a primary or complementary mode of administration for some surveys carried out by statistical agencies. For example, the Census of Canada and the National Household Survey conducted by Statistics Canada in 2011 employed the Internet as a complementary mode of administration. Therefore, it is appropriate to examine the challenges presented by this new data collection option.

Why is the Internet being used to conduct polls? First, Internet access is growing rapidly, even in developing countries, especially since wireless and mobile access does not require the construction of expensive infrastructure. According to Internet World Stats (<http://www.internetworldstats.com/>, November 2013), in 2012 Internet penetration was greater than 75% in major European countries, Japan and South Korea. It was less than 15% in Algeria, 34% in Vietnam and 36% in Mexico, but 51% in Morocco and 66% in Argentina. Second, administering a questionnaire via the Internet is very inexpensive; it is probably the least costly mode available at present. It saves the cost of paper, postage, interviewers, telecommunications and transportation associated with other modes of administration. Third, polls conducted on the Internet have some of the advantages of self-administered polls, such as less social conformity pressure, and some of the advantages of face-to-face polls, notably the possibility of presenting video materials.

The rapid development of information and communications technologies (ICTs) requires a regular review of developments in Internet polls and the main challenges they present. The article describes the major classical methodological challenges and the new challenges presented by Internet polls. It concludes with a review of the current state of affairs and a look ahead to the future for each challenge.

### 2. What is an Internet poll?

Very simply, an Internet poll is a poll conducted via a website. Behind this generic label, however, there are many approaches to recruiting respondents. Cooper (2000) describes eight recruitment methods: three non-probabilistic

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and five probabilistic. The non-probabilistic methods are the vox pop on media sites, recruitment of volunteers for a single survey, and recruitment of volunteers for a panel that will be used for many surveys. For the last two methods, participants are usually 'rewarded' in various ways, including access to monetary or other gifts and the possibility of winning various prizes. These rewards are seldom substantial, which is consistent with the codes of ethics of associations of research professionals (such as the Marketing Research and Intelligence Association and the American Association for Public Opinion Research). However, they are often used as a selling point to recruit people for panels. The five probabilistic selection methods are website exit polls (in which visitors to a website are intercepted at random and asked to respond to a questionnaire); email lists of organizations or associations (for employee or member polls); multi-mode polls with the option of using the Internet; panels of Internet users recruited by another method (by telephone, in person, by mail), who represent only Internet users; and polls that are designed to represent the entire population and whose participants are recruited by another method and provided with Internet access if they do not have it. Only this last method can be used to create a probabilistic sampling frame for the entire population. However, since this method is very expensive, most Internet polls intended to represent the entire population currently use panels of volunteers at least some of whom are recruited in a non-probabilistic way.

### **3. Classical methodological challenges**

When we look at poll errors, we usually refer to total error (Tourangeau, Conrad and Couper 2013), which consists of two types of error: non-observation errors, associated with the absence of certain people from the sample of respondents; and observation errors, associated with the collection instrument. This section deals with non-observation errors, which are associated with coverage, sampling and non-response.

#### **3.1 Coverage and exclusion**

Internet access is clearly 'the' question when we look at coverage and exclusion. First, access varies from country to country. At present, it is about 80% in most developed countries, but much lower in other countries. However, Internet access varies by place of residence, level of education, age and lifestyle. For example, Bigot, Croutte and Recours (2010) compared Internet users and non-users who responded to a survey of French residents' living standards and aspirations, a probabilistic face-to-face survey conducted by France's Research Centre for the Study and Monitoring of Living Standards (CREDOC). They found significant differences before adjustment in 71 of the 191 variables (37%), including all socio-demographic characteristics except sex. After adjustment, differences remained for 12% of the variables, including those related to cultural practices and opinions on customs. One might assume that this problem could be overcome by selecting a probabilistic sample and providing Internet access to respondents who do not have it. However, the people selected still have to be able to learn how to use the Internet. A certain level of literacy is required to respond to any self-administered poll, but to respond to an Internet poll, one also needs a good level of technological literacy. Hence the population that has access to the Internet and is able to use it to respond to a poll is a subset of the population, and that subset has distinct characteristics.

#### **3.2 Creation of the sampling frame**

Having defined the population, we have to attempt to construct a sampling frame that covers it as completely as possible. For telephone and face-to-face polls, the frame consists of telephone numbers and household addresses. It is possible—easy in some countries, less so in others—to construct sampling frames that correspond reasonably well to the set of all households. The samples must be in two stages, since we will first have to select a household at random from the frame and then a person from the selected household. In principle, only people who do not have a telephone, have no fixed address or do not live in a private household are excluded from such frames. For Internet polls, however, there are substantial differences. First, an email address is usually associated with one person and not with a household. Second, there is no list of email addresses, and it is practically impossible to make one. To construct a sampling frame, some pollsters have taken an indirect approach, asking people who respond to their telephone polls for their email addresses and then emailing them an invitation to join a panel. This is a probabilistic method that is likely to produce a sample of Internet users. One might assume that pollsters would use this method in an effort to gradually build an email address frame for the population. However, that is not what happened. Most pollsters and list suppliers combined several methods and resorted mainly to recruiting volunteers by placing advertisements on their own websites, other websites, search engine sites and social media sites. In the end, there is

considerable variation in the quality of opt-in panel frames. Some panels contain people recruited both probabilistically and non-probabilistically, and some pollsters use only the probabilistic portion of their panel frame for certain types of polls. Others use panels composed exclusively of volunteers, and the same list suppliers may serve more than one pollster. A smaller number of pollsters use only probabilistic recruitment and generalize their results only for Internet users. In any case, there seems to be a 'limit' to the accumulation of members in panel frames, since there is every indication that pollsters have stopped adding to their frames and are content to simply replace those lost by attrition. 'Maintaining' the frame certainly takes some follow-up, which adds to the cost.

Whatever the method used to recruit them, people who are contacted are then invited to complete a questionnaire, sometimes highly detailed, concerning their contact information, characteristics, lifestyles, consumption habits, *etc.* This stage, which makes it possible to check the identity of respondents and target certain markets for marketing polls, may be an obstacle for some people, particularly in emerging democracies. After disclosing all this information, do respondents still have faith that their responses will be kept confidential (Lozar Manfreda *et al.* 1998)? Do some respondents decide not to register because they are put off by the amount of specific information they are asked to provide? In short, this stage may lead to additional exclusion biases.

### **3.3 Construction of the initial sample**

After the panel is formed, the initial sample must be constructed for each poll. Best practice would be to select the smallest possible initial 'representative' sample and attempt to persuade as many members of the sample as possible to complete the poll. However, most pollsters who use opt-in Internet panels employ the quota method instead. They send out a very large number of invitations (in some cases, more than 100 times the desired number of respondents) and stop accepting respondents as the quotas, generally set by age and sex and sometimes by region and language, are filled.

### **3.4 Operations management and the response rate**

In a meta-analysis of 45 experiments comparing the Internet mode with other modes, Lozar Manfreda *et al.* (2008) showed that response rates are an average of 11 points lower for Internet polls than for other types of polls. In the case of opt-in panels, rates can be as low as less than 1%. The low cost of boosting the number of invitations appears to have prompted some pollsters and researchers to favour respondent volume over representativeness. These low completion rates are the result of a sample management approach that could increase coverage biases. This approach favours people who respond faster, but those respondents do not necessarily have the same socio-cultural and socio-political profile as 'busy' people. In addition, this approach has a snowball effect. It leads to an increase in the number of invitations received by members, especially when they belong to groups that are underrepresented in the frames. Those members are eventually overwhelmed by the numbers of invitations they receive and stop responding, which results in a further increase in the number of invitations needed to reach the required final sample size. The result is inevitably a further decline in the participation rate. Ultimately, pollsters are left with samples of quasi-professional respondents, who are attracted by the possibility of compensation or by the survey topic and are more likely to be unemployed, single and childless. However, this approach is avoidable. Acceptable participation rates could be achieved by using known methods developed for self-administered polls: strict management, various reminders, *etc.* (Dillman 2000). Some pollsters are doing so by investing the necessary resources.

Nevertheless, a better understanding of the Internet as a communications medium will be needed. All the evidence indicates, for example, that email reminders do not work as well as postal or telephone reminders (Tourangeau *et al.* 2013). Experience shows that postcard reminders, for example, would be particularly effective. Email is an 'instant' medium: while a postcard can be left in a prominent place to serve as a reminder, emails disappear from view very quickly, especially for heavy users. Current email management applications do not make it easy to flag emails so that the respondent is reminded of them.

### **3.5 Possible solutions: Weighting and adjustment**

Researchers have tried to find ways of ensuring that Internet polls that use opt-in panels represent the entire population or at least come close to doing so by using various adjustment and pairing methods. The adjustments use propensity scores based on propensity to access the Internet and various variables related to lifestyle. In an analysis

of eight studies comparing various adjustment methods designed to reduce the biases of Internet polls, including four on opt-in panels, Tourangeau *et al.* (2013) concluded that adjustments correct at most 60% of the biases, that they sometimes increase the biases up to a factor of more than 2, that the estimates may be altered by as much as 20 points, and that there are substantial differences between variables, as the adjustments sometimes eliminate the biases and other times exacerbate them considerably. Similarly, Loosveldt and Sonck (2008) showed that weighting by propensity score helps compensate for the proportion of urban residents and employed people, but that differences remain with regard to job satisfaction, interest in politics and attitudes toward immigrants in Belgian Flanders.

### **3.6 A summary of classical challenges**

Problematic approaches combine and work together to produce biased samples. This is demonstrated by a number of research studies. Blasius and Brandt (2010) attempted to construct a sample from an opt-in panel that would be representative of the German census for age, sex and level of schooling. They succeeded in doing so only for the 18-to-49 age group; beyond that age, there were not enough members. Comparing this sample with two other samples from the census and the General Social Survey shows that the sample from the Internet panel contains proportionally more unmarried or divorced people, fewer church-goers and, in the area of values, more people who value *laissez-faire* attitudes, wealth and self-actualization. Similarly, Stephenson and Crête (2011) compared two polls conducted in Quebec in 2007 by the same firm with the same questionnaire, one by telephone and the other with a sample from an opt-in Internet panel. They showed that 36 of the 52 variables (69%) had a significantly different distribution, even after weighting. Like Blasius and Brandt (2010), they noted the smaller proportion of people practising a religion in the Web sample and, with regard to opinions, a greater propensity to think that “we have gone too far in accommodating cultural minorities in Quebec.”

Krosnick and his colleagues (Malhotra and Krosnick 2007; Pasek and Krosnick 2010) made similar observations. Internet polls include fewer Blacks, fewer people with little education, more people who favour the war in Iraq and more people who supported Bush than Kerry in 2004. In addition, the relationships between the predictive variables and voting behaviour were different (Malhotra and Krosnick 2007). Compared with a random-digit-dialling (RDD) telephone poll, the modal response proportions differed by an average of 13 points, and the differences ranged up to 30 points. Similarly, significant differences emerged in the prediction of census participation, the evolution of opinions over time and the relations between variables (Pasek and Krosnick 2010). Lastly, Durand (2012, 2013) showed that Internet polls almost always differ from other polls in predicting election results in Canada.

In short, all the evidence points to non-insignificant and sometimes substantial differences between Internet polls, particularly those which use opt-in panels, and other polls that use probabilistic samples. These differences appear not only in demographic characteristics but also, even after demographic differences are controlled for, in values, opinions and attitudes. These differences are generally non-constant and non-systematic. With regard to opt-in Internet panels, the relative bias associated with the use of volunteers adds to the bias due to the exclusion of people who do not have Internet access, and there are relatively constant differences with respect to religious practice (less common) and attitudes toward diversity (more negative). When quotas are applied successfully, we find problems similar to those encountered in other quota-based samples: adherence to quotas does not ensure adequate socio-political representation (Durand, Blais and Larochelle 2005; Curtice and Sparrow 1997). In addition, adjustments sometimes reduce but seldom eliminate the coverage, selection and non-response biases inherent in opt-in panels.

## **4. The questions and the questionnaire: More challenges**

A great deal of research has been done on the wording and presentation of questions, and many advances have been made in the case of Internet polls (Tourangeau *et al.* 2013). Some of the recommendations in the research studies have been incorporated into most software applications. For example, Web questionnaires generally provide an indication of questionnaire progress and allow the respondent to go back; table formats are used for lists of items that have the same response choice. In addition, most firms automatically reject questionnaires that are completed too quickly. However, it is still common for questionnaires not to allow non-response at the question level.

A questionnaire is not a simple list of questions. It is a comprehensive tool, both an instrument of measurement and a mode of social interaction. Unlike other self-administered questionnaires, Internet poll questionnaires are displayed in a fragmented way: either question by question, page by page, or questions in succession. This is due to the fact

that the first applications were developed for use by interviewers and not by respondents. The respondent cannot view the whole questionnaire, and therefore loses sight of previous items as he or she proceeds through the questions, and has no idea what is coming next. Reading on screen presents inherent difficulties, different from those of reading print (Jabr 2013). While digital reading applications have been developed to replicate reasonably well the ‘feel’ of reading print, Web questionnaire applications have, for the most part, not yet reached that level. For example, one can imagine how useful it would be to have vertical strips at the left of the screen that would allow the respondent to determine where he or she is in the questionnaire and navigate more easily (Tourangeau *et al.* 2013). In addition, some questionnaires are far too long, and reading them on screen is more likely to lead to eye strain (Jabr 2013). In this case, too, the low cost of Internet polls means that researchers have less incentive to restrain themselves. This results in high dropout rates, and the longer the questionnaire, the higher the rate (Tourangeau *et al.* 2013).

## 5. Current situation and future prospects

How can we sum up the various challenges mentioned, and what are the future prospects for addressing them?

With regard to coverage, it is clear that the Internet is becoming *the* medium of communication. Soon, access will be so widespread, at least in the most developed countries, that exclusion problems might- be considered negligible. It seems likely that technological advances will continue to facilitate Internet access and will eventually make it available to everyone at a low cost. In that event, the email address is likely to become an address unique to each person, just as the mailing address or land-line telephone number was until quite recently. When that happens, coverage problems will be solved in practice, but not frame construction problems.

The only methods available for constructing a sampling frame of email addresses for the entire population are too expensive to be accessible to most potential users and sponsors. Consequently, this is not currently a solution, which forces users to resort to opt-in panels. However, this has encouraged the development of diverse non-probabilistic recruitment methods. We are also seeing the development of probabilistic methods based on telephone or postal recruitment. The task is to assemble lists of email addresses for all populations so that samples can be selected. This is a difficult task that will conflict with the need to respect people’s right to privacy, which is becoming more strictly defined. Canada’s new anti-spam law, for example, will prohibit sending emails to people without first obtaining their consent, and it will outlaw the collection of email addresses on the Internet. Meanwhile, existing frames should be developed to include as many new ‘members’ as possible via telephone recruitment or some other probabilistic means. Lastly, the full potential of panel frames should be exploited to acquire a clearer understanding of volunteer profiles and non-response profiles. Nevertheless, in such a context, it will probably be necessary to take steps to provide the public with more information about the benefits of research and to actively seek public buy-in and co-operation.

To construct initial samples from panel frames, we seem to have returned to the *modus operandi* followed under the quota method: samples that are much larger than necessary, and therefore a very large number of invitations to members, with even more to members with characteristics that are underrepresented in the panel frame. In addition, the use of monetary incentives has become the norm, with the potential biases that it creates. Even though the incentives are not large, they are the main ‘selling’ point in the advertisements to recruit members. Reverting to known reliable methods of managing operations—closed samples and methods of maximizing the response rate, such as a variety of reminders—would be an important step forward that would be easy to implement. There is nothing forcing pollsters to operate the way they do now, given that the impact of this approach on the biases in samples of respondents may be substantial.

With regard to the adjustment of samples, many studies have been done on the effectiveness of methods based on pairing, inclusion probability (propensity scores) and the use of external variables. These efforts have produced results that are rather disappointing, variable and unpredictable. Is there any way of ensuring that an opt-in sample is representative of the population in all circumstances? Or in certain circumstances? Or of achieving predictable biases? The simple answer to this question is no. Consequently, it would seem more productive to focus research on constructing probabilistic samples and on weighting probabilistic samples of Internet users. It would allow for a better understanding of whether, and under what circumstances, it is possible to make inferences about the

population based on these samples by using information collected on the differences between Internet users and non-users in probabilistic samples.

Lastly, with respect to questionnaires, many studies have been carried out on the layout of the screen page, progress indicators, indications to respondents, and the impact of allowing or disallowing question-level non-response. However, concerning the overall presentation of the questionnaire as an instrument, there have been few advances in recent years, in particular with regard to allowing the respondent to view the entire questionnaire or respond to it as if it were in paper format. This type of format is available for digital books and could probably be implemented for questionnaires. The respondent could be given the option of completing the questionnaire as if he or she were paging through a paper booklet, knowing the number of pages, and so on. Another option is the strip on the left that would provide more complete information about questionnaire progress. In addition, ways should be found to take advantage of the fact that open-ended questions are much easier to process electronically. The main obstacles to their use in other modes—the need for the interviewer to note the response and the need to decipher and transcribe responses—are absent from Internet polls. Respondents might appreciate this opportunity to present their opinions in a less constricted way, and responses would be better understood. Lastly, for research, guidelines need to be developed on the maximum length of lists of questions and of online questionnaires in order to reduce dropout rates and provide researchers and pollsters with information on what limits should not be exceeded.

## 6. Conclusion

The picture painted here of the current state of Internet polls may appear negative. However, it is important to understand that this mode of survey administration is quite recent, that developments in communications media have taken place very rapidly, and that the various players have had to adapt quickly. The fact remains that the Internet is becoming the leading mode of data collection in the industrialized countries and emerging democracies. It is a flexible mode that has some significant advantages, including the possibility of presenting video materials, using open-ended questions, and allowing respondents to complete the questionnaire at their convenience without bothering them or imposing a specific schedule on them. However, it will become the tool of choice if and only if some basic problems are solved. The absence of a reliable sampling frame is probably the most serious problem, and the costs of conducting a poll with a probabilistic sample are currently prohibitive. The current operations management approach produces unacceptable response rates and increases the burden on panel members. Attempts to adjust samples after the fact have not yielded the desired results. The questionnaire is not yet a general, user-friendly instrument. Nevertheless, as was the case initially for face-to-face interviews and later telephone interviews, the public will have to ‘learn’ how to respond to Internet polls. A great deal of work remains to be done to promote the importance of collaboration.

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