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Mode and incentive effects in an individual register frame based Swiss election study

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Summary

We analyze the effects of a randomized telephone / web mode experiment in a Swiss election survey. The web sample was further randomly divided into a group who received an unconditional 20 Sfr. postal cheque and a group without incentive. The sample of each of the three resulting designs is representative of Swiss citizens with the right to vote and was drawn at random from a register of individuals. This register guarantees almost full coverage and includes basic socio-demographic characteristics.

We examine various survey quality measures in all three designs: response rates, sample composition, item nonresponse, straightlining, primacy, recency, and cost. While the response rates are comparable in the telephone and the web with incentive designs, in the web mode without incentive it amounts to about half of the one with incentive. The incentive is found to strongly increase the response rate especially for young people, while the effect on older people is limited. While young people are underrepresented in the telephone survey, and overrepresented in the web surveys, older people are underrepresented in all designs, but even more so in the web surveys. Item nonresponse occurs to a higher extent in the telephone survey. There are few differences with respect to straightlining, primacy and recency effects. Regarding cost, the web survey is much less costly, even with an incentive.

Based on these findings we tend to consider web with incentive as a real alternative to the telephone mode usually used in the survey examined, especially when taking into account its reduced costs, and its comparatively high survey data quality. In the long term, while the increasing coverage problems of telephone surveys speak against this mode, the opposite is true for web surveys. This might eventually solve the remaining problem of reaching older people with web surveys.

Mode and incentive effects in an individual register frame based Swiss election study

Oliver Lipps¹, Nicolas Pekari¹

1. Telephone surveys in Switzerland – current situation

In Switzerland, as in most other developed countries, telephone surveys have been challenged by a growing problem of undercoverage resulting from both a decreasing proportion of households with a landline telephone and an increase of those with unlisted landline telephone numbers (Ernst Staehli 2012; Von der Lippe et al. 2011). This is particularly relevant as not covered or not listed individuals are known to differ from those with a registered landline telephone (Busse and Fuchs 2012; Lipps and Kissau 2012). Among the different subsamples (those with easy to find numbers, those with difficult to find numbers, those with an unlisted number, those without a landline telephone) the group without a landline telephone is the most different one with respect to the socio-demographic variables available from the sampling frame (Lipps et al. 2013). Indeed, Brick (2011) considers undercoverage as “more insidious than nonresponse [with] the potential for bias with substantial undercoverage ... in many ways more similar to the potential for bias in volunteer samples” (p.885). In addition to coverage problems, increasing costs are generally an issue in telephone surveys. Whether new technologies like the increasing availability of caller IDs pose challenges on nonresponse rates in telephone surveys is less clear (see e.g. Brick and Williams 2013).

Since 2010, the Swiss Centre of Expertise in the Social Sciences (FORS) has been allowed to use samples drawn by the Swiss Federal Statistical Office (SFSO) from its

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recently harmonized frame of individuals residing in Switzerland, based on population registers, for its core surveys. This sampling base (SRPH="Stichprobenrahmen für Personen und Haushalte") guarantees almost complete population coverage. In addition, sampled individuals can be addressed personally with an advance letter. This may help increase participation, amongst others by increasing the likelihood that the sampled person actually receives the letter (Sztabiński 2011). Also, it eliminates the need for household screening to identify a target individual (which possibly involves additional contact attempts) thus reducing nonresponse (Lipps and Pollien 2011), and coverage problems due to underreporting of household members (Tourangeau et al. 2012). Furthermore, the frame provides basic demographic information of all sample members.

However, for surveys which draw samples from this register but still use the telephone as the principal mode of data collection, the coverage challenge remains because the SRPH does not include telephone numbers. These need to be separately identified and matched. The SFSO is able to automatically match samples against their own register of telephone numbers 'CASTEM'², of which the publicly listed fixed-line telephone numbers are provided to the survey company. Because this procedure is not able to match all sample members, the question arises of how to treat those with a missing number. In two recent surveys in Switzerland, commercial sources that include listed landline telephone numbers were used to match missing telephone numbers. A postcard asking for a phone number concluded the search procedure. We refer to Lipps et al. (2013) for a discussion of coverage and also nonresponse issues in these two surveys.

To test whether alternative survey modes are able to improve undercoverage and cost issues in telephone surveys, the Swiss quadrennial election survey Selects³ decided to conduct a web experiment in the context of the 2011 survey, which was run alongside the usual telephone mode. The web design also includes an incentive experiment.

In this paper, we first review findings from web and incentive experiments before describing the experimental design in Selects 2011 and formulating hypotheses about expected effects from the mode/incentive experiment. We test various data quality effects in the three designs (telephone, web without, web with incentive): response rates, sample composition, item nonresponse, straightlining, primacy, and recency effects, before we analyze cost issues and conclude in the final chapter.

² "Cadre de sondage pour le tirage d'échantillons de ménages", see <http://www.bfs.admin.ch/bfs/portal/de/index/news/00/08.html> (in German).

³ see Lutz 2012 for an overview.

2. Web data quality issues from a brief literature review and hypotheses

We base our hypotheses on effects of modes and incentives on a short literature review, starting with evidence of mode effects. In the existing literature, assessing data quality of web surveys has mostly been done by comparing with paper-and-pencil surveys. Results show that both data quality measures and response rates⁴ were often similar between these visual modes (Dillman et al. 2009). One data quality related exception across the self-administered modes is reported by Lozar Manfredo and Vehovar (2002): Using an experiment with both modes presented in a very similar layout, they find much higher item non-response rates with the web mode compared with mail. The few existing comparisons with interviewer-based telephone or face-to-face modes also show that data quality from web surveys do not differ significantly from the more traditional methods (de Leeuw 2005; Couper 2011).

Self-administered modes tend to have lower response rates than interviewer-based modes on the one hand, but have a lesser tendency for social desirability bias on the other (e.g., Dillman et al. 2009; Chang and Krosnik 2010): In general, due to the absence of an interviewer, and therefore social desirability effects, sensitive questions are more likely answered honestly in self-administered modes (Schonlau et al. 2007). Finally, in visual modes, such as web administered questionnaires, respondents tend to think in the order in which the response categories are presented and are more likely to choose those presented at the beginning of a list of response alternatives than those at the end (primacy effect). On the contrary, in an aural format, such as telephone, respondents are expected to wait until the interviewer has read all the response categories and are thus more likely to start thinking about the last alternatives read to them (recency effect) (e.g., Christian et al. 2008). De Leeuw (2005), Dillman and Christian (2005) and Dillman et al. (2009) note, however, that the evidences found so far are not completely consistent.

There are few studies that compare web with telephone (Dennis et al. 2005), and most of them do not use general population representative samples as we did in our experiment. One study using address-based random samples shows that while it is challenging to obtain representative samples of respondents in either mail only or web only modes, mail-only and web with mail follow-up designs yield similar results regarding the socio-demographic composition of the net sample (Messer and Dillman 2011). This finding

⁴ If well-designed advance letters are sent before the web request, see Kaplowitz et al. (2004).

suggests that it may still be difficult to access the general population by web only. In particular, web respondents tend to be younger on average. While landline coverage rates are higher for older people, they tend to refuse to be interviewed more often (Lipps et al. 2013). Overall, however, older people are still likely to be overrepresented in telephone surveys. Of particular relevance for the present study, Fricker et al (2005) compare web with telephone mode, where only people with access to web were selected from a RDD sample, and randomly assigned to CATI or web mode. Although cases assigned to the web mode were offered a larger incentive, much fewer completed the online questionnaire than the telephone survey. However, the two samples had similar demographic characteristics. Respondents to the web mode gave less differentiated answers to batteries of attitude items than their counterparts in the telephone survey. Web respondents answered a higher percentage of knowledge items correctly, very probably due to the possibility to ask someone else or to look the information up, and feeling less pressed to give an immediate answer. Ye et al. (2011) found in a recent meta-analysis that telephone respondents are significantly more likely than respondents in other modes to give extremely positive answers (also Dillman and Christian (2005), and Christian et al. (2008)). One possible reason is that while in visual modes all categories may be labeled, there is pressure in aural modes to only mention the endpoints, due to memory effects (Dillman et al. 2009). Christian et al. (2008) conclude that “the lack of a show card or other visual presentation to help telephone respondents remember the response categories and perhaps the faster pace of telephone interviews seem to encourage telephone respondents to select the extreme positive category more frequently than respondents to other modes” (p. 272).

Concerning the effects of incentives, a number of experiments have been designed to try to address the general problem that web surveys produce rather high nonresponse rates compared with other survey modes (Bosnjak 2006), especially compared with interviewer-based modes. Based on two meta-analyses, (material) incentives appear to significantly increase both the motivation to start and – conditional on starting – to finish a web survey (Görizt 2006). This incentive effect on response is also observed in other modes (Singer et al. 1999, Singer 2002). In addition, also derived from meta-analyses on studies which use probability-based samples, prepaid incentives are more effective than contingent incentives in web surveys (Bosnjak 2005; Su et al. 2008), especially cash (van Veen et al. 2011), and larger incentives are also more effective (Schaurer et al. 2012). This is in line with evidences found in other modes (e.g., Singer, van Hoewyk and Maher 2000). As for sample composition, there seems to be only small incentive effects (Görizt 2004). In a study with college students comparing a \$2 prepaid incentive plus a \$10 incentive

promised upon completion with a \$10 prepaid incentive only, while men were more likely to respond in the higher incentive scheme than the pre-incentive only condition, women showed no difference (Patrick et al. 2012). The \$2 prepaid plus a \$10 promised incentive results is more cost efficient and at the same time results in a higher response rate.

In a web survey with different incentive conditions, treatment had no significant effect on respondents' willingness to disclose sensitive information (van Veen et al. 2011). And while straightlining (the absence of variance in question batteries) does not seem to be affected by different incentive conditions, item nonresponse is higher if no incentive is offered (op.cit.).

From the literature review, we derive the following hypotheses, irrespective of person-group considered:

1. *Response rates* are the same in the web with incentive design, and lower in the web design without incentives compared to telephone interviews.
2. *Sample composition*, in terms of available socio-demographic variables from the sampling frame, is different from the target composition in both web designs compared to the telephone design. Specifically, young people are overrepresented in the web designs, older people in the telephone design. Sample composition in both web designs is the same
3. *Item nonresponse* is higher in the web designs compared to telephone, and within web, higher if no incentive is offered
4. *Straightlining* is higher in both web designs compared to telephone
5. There are more *primacy* and less *recency* effects in both web designs

3. Experimental design

The Selects team set up an experiment alongside the regular CATI survey in the context of the 2011 survey. The CATI sample included in our analyses contains 6,024 survey eligible sample members, stratified by Swiss cantons (NUTS 3 level) with small cantons oversampled to a minimum of 100 respondents each⁵. The field period ran from October 24 (the day after the election) to November 25, 2011. In addition to the CATI sample, 996⁶ Swiss citizens selected in a simple random sample (SRS) design received an advance letter with the invitation to complete the Selects 2011 survey online, including a survey

⁵ The stratification and the oversampling are taken into account in the statistical analyses.

⁶ Excluding ineligible cases like sample member deceased, moved abroad, etc.

description and the Selects 2011 URL⁷. Another 485 randomly selected Swiss citizens received the same advance letter which however contained a 20 Sfr. (prepaid) post cheque. In both web designs, two reminders were sent. The announcement letters were sent on October 21 so that they would be received on October 24 or 25, and the reminders sent on November 4 and November 16. The last respondents included in the data responded on December 12. The telephone and the web questionnaire were essentially the same, with only some changes made to question wording to adapt them to the web mode. In the following chapters we analyze the effects we expect on data quality according to our hypotheses.

4. Response rates

In this chapter, we analyze response rates (RR2; AAPOR 2011) in the three designs for the sample members distinguished by experimental design and the variables available from the sampling frame. Group-specific response rates (in proportions) are presented in Table 4 1.

All person-groups exhibit a higher response rate in the telephone mode when compared with web without incentive. Web with incentive and telephone have more similar response rates: only young (18-30 years) and middle-aged (45-58 years), married people, and those living in municipalities with 2-10 K inhabitants show significantly higher response rates in the web plus incentive condition. Older people (73+ years) have a lower response rate. When comparing the two web designs, the incentive boosts the response rates significantly for almost all person-groups. Only the 73+ group shows no significant increase.

⁷ www.selects2011.ch

Table 4-1: Response rates (proportions) in the different designs. **(*) / #(###) = significantly different effects on 1 (5) % level (Pearson χ^2 test) compared with telephone (asterisk) / compared with web without incentive (hash mark). Data: Selects 2011.

| Sampling frame variable category | Telephone | | Web without incentive | | Web with incentive | |
|----------------------------------|-----------|-----------------------|-----------------------|-----------------------|--------------------|-----------------------|
| | N | Mean (Standard Error) | N | Mean (Standard Error) | N | Mean (Standard Error) |
| 18-30 years old | 946 | .43 (.02) | 218 | .24 (.03)** | 106 | .51 (.05)* ## |
| 31-44 years old | 1226 | .43 (.01) | 237 | .23 (.03)** | 107 | .49 (.05) ## |
| 45-58 years old | 1671 | .41 (.01) | 244 | .30 (.03)** | 127 | .47 (.04)* ## |
| 59-72 years old | 1371 | .42 (.01) | 204 | .17 (.03)** | 98 | .41 (.05) ## |
| 73+ years old | 792 | .29 (.02) | 93 | .12 (.03)** | 47 | .17 (.06)** |
| Married | 3538 | .41 (.01) | 535 | .23 (.02)** | 248 | .49 (.03)** ## |
| Single | 1525 | .41 (.01) | 333 | .24 (.02)** | 154 | .42 (.04) ## |
| Widowed | 446 | .31 (.02) | 43 | .07 (.04)** | 35 | .26 (.07) ## |
| Divorced | 486 | .38 (.02) | 85 | .24 (.05)** | 48 | .38 (.07) ## |
| >100K inhabitants | 555 | .39 (.02) | 99 | .18 (.04)** | 61 | .39 (.06) ## |
| 20-100K inhabitants | 627 | .43 (.02) | 113 | .28 (.04)** | 64 | .45 (.06) ## |
| 10-20K inhabitants | 966 | .42 (.02) | 183 | .21 (.03)** | 74 | .41 (.06) ## |
| 5-10K inhabitants | 1056 | .39 (.02) | 163 | .21 (.03)** | 87 | .51 (.05)** ## |
| 2-5K inhabitants | 1530 | .38 (.01) | 238 | .24 (.03)** | 110 | .48 (.05)** ## |
| <2K inhabitants | 1290 | .41 (.01) | 200 | .23 (.03)** | 89 | .38 (.05) ## |
| Women | 3162 | .40 (.01) | 507 | .20 (.02)** | 254 | .46 (.03)** ## |
| Men | 2862 | .41 (.01) | 489 | .25 (.02)** | 231 | .42 (.03) ## |
| Sample members | 6024 | .40 (.01) | 996 | .23 (.01)** | 485 | .44 (.02)** ## |

To control for co-varying socio-demographic variables, we run a multivariate logistic model in the next step. We report predicted probabilities (Mood 2010) for all three designs in Table 4 2. The predicted probabilities to respond estimated from the multivariate logit model do not differ much from the bivariate proportions with the exception of the widowed. Note that for all person-groups, significance of the estimated mean response rates from a certain design are to be interpreted relative to the relations in the respective reference categories. For example, to compare the response rates in the 45-58 years age groups of the two web designs, the relation of the respective response rates must be interpreted relative to the relation of the response rates of both reference categories. In this case, the relation of the 46% response rate in the web with incentive design and the 29% response rate in the web without incentive design must be compared to the relation of the 58% and 23%, respectively, in both reference categories. In this case the response rate is relatively

lower in the 45-58 age group in the web with incentive design, and the difference is significant on the 5% level.

Table 4-2: Predicted probabilities to respond (holding the other variables at their mean) and test of differences across conditions. All main effects controlled. **(*) / #(##) = significantly different effects on 1 (5) % level compared with telephone (asterisk) / compared with web without incentive (hash mark). Data: Selects 2011.

| Sampling frame variable category | Telephone | | Web without incentive | | Web with incentive | |
|----------------------------------|-----------|-----------------------|-----------------------|-----------------------|--------------------|-----------------------|
| | N | Mean (Standard Error) | N | Mean (Standard Error) | N | Mean (Standard Error) |
| 18-30 years old (reference) | 946 | .45 (.02) | 218 | .23 (.03) | 106 | .58 (.06) |
| 31-44 years old | 1226 | .42 (.02) | 237 | .23 (.03) | 107 | .49 (.05) |
| 45-58 years old | 1671 | .40 (.01) | 244 | .29 (.03) | 127 | .46 (.04) # |
| 59-72 years old | 1371 | .41 (.02) | 204 | .17 (.03) | 98 | .39 (.05) |
| 73+ years old | 792 | .29 (.02) | 93 | .13 (.04) | 47 | .17 (.06)* # |
| Married (reference) | 3538 | .41 (.01) | 535 | .22 (.02) | 248 | .49 (.03) |
| Single | 1525 | .38 (.02) | 333 | .23 (.03) | 154 | .34 (.04) # |
| Widowed | 446 | .37 (.03) | 43 | .11 (.06) | 35 | .39 (.10) |
| Divorced | 486 | .38 (.03) | 85 | .22 (.04) | 48 | .36 (.07) |
| >100K inhabitants (ref.) | 555 | .40 (.02) | 99 | .17 (.04) | 61 | .42 (.06) |
| 20-100K inhabitants | 627 | .43 (.02) | 113 | .27 (.04) | 64 | .45 (.06) |
| 10-20K inhabitants | 966 | .42 (.02) | 183 | .21 (.03) | 74 | .41 (.06) |
| 5-10K inhabitants | 1056 | .39 (.02) | 163 | .23 (.03) | 87 | .50 (.05) |
| 2-5K inhabitants | 1530 | .38 (.01) | 238 | .23 (.03) | 110 | .45 (.05) |
| <2K inhabitants | 1290 | .40 (.02) | 200 | .23 (.03) | 89 | .37 (.05) |
| Women (reference) | 3162 | .40 (.01) | 507 | .20 (.02) | 254 | .46 (.03) |
| Men | 2862 | .40 (.01) | 489 | .24 (.02) | 231 | .41 (.03) |
| Sample members | 6024 | .40 (.01) | 996 | .22 (.01)** | 485 | .43 (.02)## |

Only few person-groups behave differently from each other, i.e., the relationships of most person-groups are similar to the relationships of the response rates in the respective reference groups. Only people 45-58 years old, 73+ years old, and singles respond less in the web with incentive design relative to the web without incentive. Compared to telephone, only people aged 73+ respond less in the web with incentive. This shows a comparatively homogenous behavior across the groups, as only three person-groups are affected (at the 5% significance level).

To conclude, we find generally much smaller response rates in the web without incentive design compared with telephone (-18% points), strong incentive effects on responding to the web survey (+21% points), and no significant difference between telephone and web with incentive (+3% points). Our hypothesis concerning response rates in the different designs is therefore confirmed.

While all person-groups in the web without incentives design behave similarly when compared with telephone, there are small person-group specific differences between web with incentive when compared with telephone, and across both web designs: first, people over 72 years old show a smaller than expected response rate in the web with incentive design when compared with telephone. Second, the 45-58 and the 73+ age groups, as well as single people exhibit only small positive incentive effects when comparing the web designs.

An interpretation for the low response rate of elderly people in the web design without incentive is that they simply have less access to a computer (and/or an internet connection) or that they do not have the necessary capacities for using computers. Thus even a relatively high incentive does not lead to a substantial increase of their low response rate in a web survey. Limited access to the internet may also play a role in the case of single people for whom the incentive does not largely increase response rates either. An explanation could be that larger households benefit from economies of scale of internet access. An interpretation of the relatively small increase due to the incentive of the 45-58 years old may be that this comparatively well-off group considers the incentive worth 20 Sfr. for a 30 minute questionnaire as a too low compensation for the time invested. Therefore the economic exchange theory may apply here.⁸

5. Sample composition

In this chapter, we examine sample composition in the three designs. We report cross-tabulations, with the distribution of the gross sample from the Selects 2011 Rolling Cross Section (RCS) subsample (see Lipps et al. 2013) (N=20,725) as the target distribution⁹. We present significance of cell differences of the each person-group proportions in the three designs compared with the gross sample proportions. Note that the chi² contributions from the distribution differences are not comparable unless the sample size is about the same (as is the case in the two web designs). Much of the results are as could be anticipated from the response rates analyzed in section 4.

⁸ For an overview of theories explaining incentive effects in surveys see e.g. Ryu, Couper, and Marans (2006).

⁹ The sampling design for the Selects 2011 RCS sample is SRS. No weights are therefore necessary to analyze its distribution.

Table 5-1: Distributions of respondents in different samples including gross sample. **(*)** = adjusted residual is significantly different from gross sample on 1 (5) %. Data: Selects 2011.

| Sampling frame variable category | Gross sample [prop.] | Telephone prop.] | Web without incentive [prop.] | Web with incentive [prop.] |
|----------------------------------|----------------------|------------------|-------------------------------|----------------------------|
| 18-30 years old (reference) | .207 | .168** | .231 | .252 |
| 31-44 years old | .224 | .215 | .244 | .243 |
| 45-58 years old | .253 | .281** | .324* | .280 |
| 59-72 years old | .194 | .242** | .151 | .187 |
| 73+ years old | .123 | .094** | .049** | .037** |
| Chi ² | | 55.3 | 17.4 | 15.8 |
| Married (reference) | .517 | .599** | .542 | .570 |
| Single | .312 | .260** | .356 | .304 |
| Widowed | .068 | .058 | .013** | .042 |
| Divorced | .103 | .083** | .089 | .084 |
| Chi ² | | 50.9 | 11.8 | 4.0 |
| >100K inhabitants (ref.) | .109 | .104** | .080 | .112 |
| 20-100K inhabitants | .121 | .122 | .142 | .136 |
| 10-20K inhabitants | .167 | .168 | .169 | .140 |
| 5-10K inhabitants | .167 | .167 | .156 | .206 |
| 2-5K inhabitants | .231 | .237 | .249 | .248 |
| <2K inhabitants | .204 | .202 | .204 | .159 |
| Chi ² | | 15.0 | 3.0 | 5.5 |
| Women (reference) | .526 | .515 | .458* | .542 |
| Men | .474 | .485 | .542* | .458 |
| Chi ² | | 1.4 | 4.1 | 0.2 |
| Sample members / respondents | 20,725 | 2,354 | 225 | 214 |

As expected from our hypothesis, young and single people are underrepresented among the telephone respondents, old and widowed people among the web respondents, the latter especially in the web without incentives condition. Both effects are very likely due to undercoverage rather than to nonresponse: young people have a lower likelihood to possess a landline telephone, older people access to the internet. Comparing the two web designs, the design with incentive is less biased overall, primarily because of the better representation of widowed people. In addition, there is an overrepresentation of men in the net sample of web without incentive, creating an additional bias in this design compared to that of web with incentive.

6. Item nonresponse¹⁰

To analyze item nonresponse we only use the 104 questions that were not filtered, meaning that all respondents were asked all of these 104 questions. We analyze the mean number of invalid responses (“don’t know” or “refuse to say”)¹¹ of respondents by survey mode and person-groups. We do not present bivariate statistics but use a multivariate model instead to control for collinear effects from the onset. Because the variance of the dependent variable is much higher than its mean, we use a negative binomial model and again report model predicted mean numbers of item nonresponse answers in Table 6-1.

Both web designs have significantly lower item nonresponse rates than telephone, whereas the difference between the two web conditions is not significant. This goes against both of our hypotheses. As for person-group specific effects, only men in the web with incentive design show relatively less item nonresponse than in telephone. They also show more item nonresponse in the web with incentive than in the web without incentive condition. In addition, older people (73+ years old) report significantly less item nonresponse in the web without incentive condition than in the telephone design. The special CATI situation with a supposed (felt) pressure may explain this.

¹⁰ 24 people who started the web questionnaire but didn’t complete the survey are excluded from this analysis.

¹¹ Including skipping questions in the web modes.

Table 6-1: Predicted number of item nonresponses (holding the other variables at their mean) and test of differences across conditions. All main effects controlled. **(*) / #(##) = significantly different effects on 1 (5) % level compared with telephone (asterisk) / compared with web without incentive (hash mark). Data: Selects 2011.

| Sampling frame variable category | Telephone | | Web without incentive | | Web with incentive | |
|----------------------------------|-----------|-----------------------|-----------------------|-----------------------|--------------------|-----------------------|
| | N | Mean (Standard Error) | N | Mean (Standard Error) | N | Mean (Standard Error) |
| 18-30 years old (reference) | 406 | 11.1 (.8) | 52 | 8.8 (1.6) | 52 | 8.7 (1.0) |
| 31-44 years old | 501 | 10.0 (.5) | 55 | 7.4 (1.2) | 52 | 7.6 (1.2) |
| 45-58 years old | 659 | 10.0 (.5) | 73 | 5.0 (.7) | 60 | 6.2 (.7) |
| 59-72 years old | 565 | 9.9 (.5) | 34 | 5.2 (.9) | 40 | 5.1 (.7) |
| 73+ years old | 223 | 12.5 (.8) | 11 | 4.3 (1.0)* | 8 | 5.3 (1.9) |
| Married (reference) | 1413 | 9.8 (.3) | 122 | 5.3 (.6) | 122 | 5.7 (.6) |
| Single | 595 | 10.8 (.6) | 80 | 6.5 (1.0) | 65 | 7.6 (1.1) |
| Widowed | 134 | 12.1 (1.1) | 3 | 9.5 (2.9) | 9 | 8.6 (2.2) |
| Divorced | 184 | 11.6 (1.1) | 20 | 8.5 (2.1) | 18 | 8.9 (1.5) |
| >100K inhabitants (ref.) | 204 | 8.5 (.6) | 18 | 5.3 (1.3) | 24 | 6.5 (1.0) |
| 20-100K inhabitants | 263 | 9.4 (.6) | 32 | 7.3 (1.3) | 29 | 7.4 (1.5) |
| 10-20K inhabitants | 395 | 10.6 (.6) | 38 | 6.8 (1.4) | 30 | 7.0 (.9) |
| 5-10K inhabitants | 425 | 10.9 (.6) | 35 | 6.0 (1.0) | 44 | 6.0 (.8) |
| 2-5K inhabitants | 574 | 11.0 (.5) | 56 | 5.6 (.8) | 53 | 5.6 (.7) |
| <2K inhabitants | 493 | 10.7 (.5) | 46 | 6.2 (.9) | 34 | 8.1 (1.3) |
| Women (reference) | 1207 | 13.2 (.4) | 103 | 7.5 (.7) | 116 | 7.3 (.6) |
| Men | 1147 | 7.4 (.3) | 122 | 4.6 (.5) | 98 | 6.1 (.6)** ## |
| Respondents | 2354 | 10.4 (.2) | 225 | 6.1 (.5)** | 214 | 6.7 (.4)** |

7. Straightlining

Straightlining is analyzed as the percentage of question batteries (N=20) of the 88 unfiltered questions with four or more items, in which all items were given the same value. We start again with the multivariate general model (assuming a binomial distribution, and using a logit link), and depict the predicted mean proportion of straightlined batteries in

Table 7-1.

Table 7-1: Predicted proportions of straightlined batteries (holding the other variables at their mean) and test of differences across conditions. All main effects controlled. **(*) / #(##) = significantly different effects on 1 (5) % level compared with telephone (asterisk) / compared with web without incentive (hash mark). Data: Selects 2011.

| Sampling frame variable category | Telephone | | Web without incentive | | Web with incentive | |
|----------------------------------|-----------|-----------------------|-----------------------|-----------------------|--------------------|-----------------------|
| | N | Mean (Standard Error) | N | Mean (Standard Error) | N | Mean (Standard Error) |
| 18-30 years old (reference) | 406 | 5.9 (.7) | 52 | 5.7 (2.1) | 52 | 6.0 (1.7) |
| 31-44 years old | 501 | 5.5 (.5) | 55 | 5.9 (1.8) | 52 | 4.5 (1.4) |
| 45-58 years old | 659 | 6.4 (.5) | 73 | 10.0 (1.8) | 60 | 6.0 (1.2) |
| 59-72 years old | 565 | 7.8 (.5) | 34 | 9.6 (2.4) | 40 | 7.5 (2.0) |
| 73+ years old | 223 | 9.5 (1.1) | 11 | 21.0 (12.2) | 8 | 13.2 (5.1) |
| Married (reference) | 1413 | 6.6 (.3) | 122 | 9.2 (1.6) | 122 | 6.2 (1.0) |
| Single | 595 | 7.3 (.7) | 80 | 10.0 (3.0) | 65 | 7.6 (2.2) |
| Widowed | 134 | 4.7 (.7) | 3 | - | 9 | 2.3 (2.0) |
| Divorced | 184 | 6.7 (.9) | 20 | 12.3 (5.0) | 18 | 8.9 (2.2) |
| >100K inhabitants (ref.) | 204 | 5.8 (.7) | 18 | 6.7 (2.7) | 24 | 4.5 (1.5) |
| 20-100K inhabitants | 263 | 7.1 (.7) | 32 | 9.2 (3.6) | 29 | 9.7 (2.5) |
| 10-20K inhabitants | 395 | 6.5 (.6) | 38 | 10.4 (2.9) | 30 | 4.4 (1.5) |
| 5-10K inhabitants | 425 | 6.2 (.6) | 35 | 8.4 (2.3) | 44 | 9.1 (2.3) |
| 2-5K inhabitants | 574 | 7.2 (.6) | 56 | 8.8 (2.2) | 53 | 5.6 (1.4) |
| <2K inhabitants | 493 | 6.7 (.5) | 46 | 8.6 (3.4) | 34 | 6.0 (2.4) |
| Women (reference) | 1207 | 7.4 (.4) | 103 | 10.1 (2.2) | 116 | 7.7 (1.2) |
| Men | 1147 | 5.9 (.3) | 122 | 7.6 (1.4) | 98 | 5.1 (1.0) |
| Respondents | 2354 | 6.7 (.2) | 225 | 8.8 (1.2) | 214 | 6.4 (.8) |

Generally, we find more straightlining in the web without incentive designs than in the telephone and the web with incentive design, however the sample sizes are too small to produce significant results. It would also seem that there is a tendency of diminishing proportion of straightlining when an incentive is given, and this is true for almost all person-groups. Older people and women also seem to show a slightly higher tendency to straightline. Our expectation of generally more straightlining in the web designs is not met.

Primacy Effects

We model primacy as the proportion of first answer categories ticked, among the 88 unfiltered questions with four or more items. Similar to the previous chapter, we depict these proportions as predicted probabilities of a multivariate general model, again assuming a binomial distribution, and using a logit link, in Table 0-1.

*Table 0-1: Predicted proportion (in percentages) of first category ticked (primacy effects), (holding the other variables at their mean) and test of differences across conditions. All main effects controlled. **(*) / #(##) = significantly different effects on 1 (5) % level compared with telephone (asterisk) / compared with web without incentive (hash mark). Data: Selects 2011.*

| Sampling frame variable category | Telephone | | Web without incentive | | Web with incentive | |
|----------------------------------|-----------|-----------------------|-----------------------|-----------------------|--------------------|-----------------------|
| | N | Mean (Standard Error) | N | Mean (Standard Error) | N | Mean (Standard Error) |
| 18-30 years old (reference) | 406 | 13.6 (.4) | 52 | 14.1 (.8) | 52 | 15.2 (.7) |
| 31-44 years old | 501 | 14.4 (.3) | 55 | 14.7 (.6) | 52 | 14.9 (.7) |
| 45-58 years old | 659 | 14.5 (.2) | 73 | 15.6 (.7) | 60 | 15.1 (.7) |
| 59-72 years old | 565 | 14.5 (.3) | 34 | 15.9 (1.1) | 40 | 14.8 (.9) |
| 73+ years old | 223 | 15.1 (.4) | 11 | 18.7 (1.9) | 8 | 15.3 (2.1) |
| Married (reference) | 1413 | 14.2 (.2) | 122 | 14.6 (.5) | 122 | 14.8 (.4) |
| Single | 595 | 14.4 (.3) | 80 | 16.4 (.7) | 65 | 14.9 (.7) |
| Widowed | 134 | 14.4 (.5) | 3 | 15.3 (2.6) | 9 | 14.3 (2.4) |
| Divorced | 184 | 15.5 (.4) | 20 | 18.5 (1.8) | 18 | 17.0 (1.3) |
| >100K inhabitants (ref.) | 204 | 14.2 (.3) | 18 | 15.4 (1.0) | 24 | 13.8 (.7) |
| 20-100K inhabitants | 263 | 14.0 (.3) | 32 | 15.7 (1.2) | 29 | 16.3 (.8)* |
| 10-20K inhabitants | 395 | 14.4 (.3) | 38 | 14.5 (1.0) | 30 | 15.7 (1.1) |
| 5-10K inhabitants | 425 | 14.3 (.3) | 35 | 15.7 (.8) | 44 | 16.4 (.9)* |
| 2-5K inhabitants | 574 | 14.7 (.2) | 56 | 16.0 (.7) | 53 | 14.4 (.6) |
| <2K inhabitants | 493 | 14.4 (.3) | 46 | 15.2 (.9) | 34 | 13.8 (.8) |
| Women (reference) | 1207 | 14.0 (.2) | 103 | 15.0 (.5) | 116 | 14.6 (.5) |
| Men | 1147 | 14.8 (.2) | 122 | 16.0 (.6) | 98 | 15.4 (.5) |
| Respondents | 2354 | 14.4 (.1) | 225 | 15.5 (.4) | 214 | 15.0 (.4) |

As for primacy behavior distinguished by mode, we find no significant effects. All three designs exhibit the same proportion of first categories ticked by all person groups. If at all, one exception are people in communes with 20-100K or 5-10K inhabitants, who have - relative to the relation in the base category 100K inhabitants - a comparatively higher tendency to tick lowest categories in the web with incentive design compared to the

telephone survey. Finding no differences in privacy behavior across the different designs contradicts our hypothesis.

8. Recency Effects

As the complement to primacy, we analyze recency as the proportion of last answer categories ticked, again using the 88 unfiltered questions with four or more items. We model the predicted proportions of last answer categories by a multivariate general model, again assuming a binomial distribution, and using a logit link, and depict the predicted mean proportions in Table 8-1.

*Table 8-1: Predicted proportion (in percentages) of last category ticked (recency effects), (holding the other variables at their mean) and test of differences across conditions. All main effects controlled. **(*) / #(##) = significantly different effects on 1 (5) % level compared with telephone (asterisk) / compared with web without incentive (hash mark). Data: Selects 2011.*

| Sampling frame variable category | Telephone | | Web without incentive | | Web with incentive | |
|----------------------------------|-----------|-----------------------|-----------------------|-----------------------|--------------------|-----------------------|
| | N | Mean (Standard Error) | N | Mean (Standard Error) | N | Mean (Standard Error) |
| 18-30 years old (reference) | 406 | 6.4 (.2) | 52 | 7.6 (.7) | 52 | 8.1 (.7) |
| 31-44 years old | 501 | 7.4 (.2) | 55 | 9.7 (.7) | 52 | 8.6 (.7) |
| 45-58 years old | 659 | 8.0 (.2) | 73 | 10.6 (.5) | 60 | 9.2 (.6) |
| 59-72 years old | 565 | 8.0 (.2) | 34 | 11.3 (.8) | 40 | 10.6 (.7) |
| 73+ years old | 223 | 8.4 (.3) | 11 | 9.8 (1.0) | 8 | 13.5 (1.7) |
| Married (reference) | 1413 | 7.5 (.1) | 122 | 9.7 (.4) | 122 | 9.5 (.4) |
| Single | 595 | 8.1 (.2) | 80 | 10.9 (.8) | 65 | 10.3 (.9) |
| Widowed | 134 | 6.7 (.3) | 3 | 7.6 (1.5) | 9 | 8.7 (1.4) |
| Divorced | 184 | 7.5 (.2) | 20 | 10.1 (.8) | 18 | 8.1 (.9) |
| >100K inhabitants (ref.) | 204 | 8.7 (.3) | 18 | 8.4 (1.1) | 24 | 9.1 (.8) |
| 20-100K inhabitants | 263 | 8.1 (.3) | 32 | 10.7 (.8)* | 29 | 9.6 (.8) |
| 10-20K inhabitants | 395 | 7.8 (.2) | 38 | 10.2 (.7)* | 30 | 8.1 (.7) |
| 5-10K inhabitants | 425 | 7.2 (.2) | 35 | 10.5 (.8)* | 44 | 9.6 (.6)* |
| 2-5K inhabitants | 574 | 7.2 (.2) | 56 | 9.5 (.5)* | 53 | 10.0 (.7)* |
| <2K inhabitants | 493 | 7.3 (.2) | 46 | 9.9 (.7)* | 34 | 10.2 (1.0)* |
| Women (reference) | 1207 | 7.5 (.1) | 103 | 10.5 (.5) | 116 | 9.6 (.5) |
| Men | 1147 | 7.7 (.1) | 122 | 9.3 (.4)* | 98 | 9.4 (.4) |
| Respondents | 2354 | 7.6 (.1) | 225 | 9.9 (.3) | 214 | 9.5 (.3) |

People in the web designs have a tendency to tick the last response category more often than those in the telephone design, although the differences are not significant. Our

hypothesis is thus not confirmed in this respect. Compared to telephone (and relative to the base category 100K inhabitants), there are significantly more recency effects in smaller villages for web especially in the design without incentives, and – relative to the relation in the base category women – less for men in the web without incentive design.

9. Cost issues

As a final topic to compare mode effects, we briefly present cost by mode in this chapter. For the results to be more generalizable, we include two cost estimates for the web survey: the costs of the actual in-house survey and the estimated cost if the survey had been done by a survey company. The in-house web survey was realized by the Selects team, consisting of a project leader, a junior researcher, a doctoral student, and students for the administrative tasks of sending letters. The costs for the web component by a survey company are estimated based on two offers received during the call for tenders for the Selects 2011 project. The telephone (centralized CATI) survey was conducted by a professional survey firm. The costs provide a first idea about the possible cost savings by switching from a telephone mode to the web. In Table 9-1 we present a summary of the survey costs by design, assuming a targeted number of respondents of 2,000 individuals in each design. Costs for the incentivized version of the web are listed in brackets.

Table 9-1: Calculated unit costs for the Selects 2011 survey (in Sfr.), assuming a targeted number of 2,000 respondents in each design. Figures in brackets are for the incentive condition.

| Cost component | Telephone | Web In-House | Web Survey Firm |
|--|-----------|-----------------------|---------------------------|
| CATI total (survey firm) | 94.- | | |
| Web total (survey firm) | | | 38.- (30.-) ¹² |
| Programming and project management web | | 7.- | |
| Postage web (incl. reminders) | | 15.- (7.-) | |
| Coding open questions web | | 1.- | |
| Incentives web | | (12.- ¹³) | (12.- ¹³) |
| Total | 94.- | 23.- (27.-) | 38.- (42.-) |

Obviously web without incentive is by far the cheapest mode; when comparing with the in-house survey, the version with incentives costs about 25% more and telephone about four

¹² Estimation for fieldwork based on two offers from survey companies resulting from the call for tenders for Selects 2011.

¹³ For a nominal value of 20 Sfr., a non-cashed postcheque cost 3.50 Sfr., a cashed postcheque cost 23.50 Sfr.. 83% of the respondents cashed the cheque, 17% did not. Of the nonrespondents, 13% cashed and 87% did not. Given a response rate of 43%, the unit incentive costs amounts to $.43*(.83*23.5+.17*3.5) + .57*(.13*23.5+.87*3.5) = 12.1$

times as much. If the web component would have been realized by a survey company, the costs would have been about 10% higher for the incentive version, and 2.5 times as much for the telephone mode.

10. Summary and Conclusion

In the present study we analyzed effects of a combined mode (telephone and web) and incentive randomized experiment within the web mode in the 2011 version of Selects, a Swiss quadrennial election survey. The telephone and web questionnaires were the same with slight mode specific adaptations to the question texts. The incentivized web sample members received an unconditional 20 Sfr. post cheque with the advance letter, the control web sample members only the advance letter. The sample in each of these three designs is representative of the Swiss adult population and was drawn at random from a register of individuals. This register guarantees almost full coverage and includes basic socio-demographic characteristics such as age, sex, marital status, and exact address. We examined the following survey quality measures in all three designs: response rates, sample composition, item nonresponse, straightlining behavior, primacy effects, and recency effects. In addition, to be able to better assess the trade-off between data quality and costs we were interested in the differences of unit costs in the three designs. To analyze the quality measures, we used multivariate nonlinear models with the sampling frame variables as independent variables and used in particular conditional predicted probabilities (e.g., of participating in the survey).

We found similar response rates in the telephone and the web with incentive designs, but in the web without incentive design response rates amounted to about half of the other two designs. Interestingly, while incentives largely increased the response rate of the young people, they had only a small effect on response rates of older people. As for sample composition, young people were underrepresented in the telephone survey, and overrepresented in the web surveys. Older people were underrepresented in all surveys, especially in the web surveys. The incentive seemed to slightly improve representativity, especially with respect to the marital status and sex. While our expectations about response rates and sample composition were generally met, we were surprised about the weak effects of the incentive on response of older people, and in parts of singles. This probably means that for people who don't have access to the internet and/or are not experienced with the computer even high incentives do not help significantly to participate in web surveys. However, incentives worked very well to boost response among younger

people, who have in general good access to the internet. The slightly better overall representativeness of the net sample due to the incentive shows that incentives are able to bring people who are in general less willing to respond into the sample.

The higher item nonresponse in the telephone compared to both web designs was also unexpected. This finding might mean that respondents find questions easier to answer when they are in written form and might get more confused in a telephone interview, losing track of all the response options, especially if a question and the response categories are long. It may also be that respondents feel more pressed to provide a (quick) answer in a CATI situation, or a question is too sensitive to be answered to an interviewer, and thus more easily skip a question. On the other hand, it might also be easier for a person to click on just any answer when he or she cannot decide on a specific option as there is less fear of responding “incorrectly” than in a telephone interview. An in-depth analysis of the type of questions which show most difference in item nonresponse between modes could give more insight into this question.

Regarding the lack of difference between the two web conditions, and actually a slightly higher (although insignificantly so) number of item nonresponse in the incentive condition, the explanation might lie in the inclusion of less willing participants in the incentive design. These respondents feel morally obligated to participate in the survey, but might be less interested in doing so, and thus tend to respond less, which partly offsets the positive effect of the more willing participants who might respond more completely to the questionnaire due to the added motivation from the incentive.

Straightlining was slightly more common in the web without incentive condition. It seems that people invest less effort and concentration in a web survey without incentives, where both a “social control instance” (the interviewer) and a motivator (the incentive) are absent. This is true although the web without incentive design tends to contain the more interested people, compared to the other designs.

While we did not find particular differences in terms of primacy effects across the three designs, there were slightly less recency effects in the telephone design. Although both effects were not significant overall, especially the latter result ran counter to our hypothesis and we do not have a plausible explanation for this.

Compared to a survey of the general population, our findings are probably conservative. The reasons for this are first that we only sample adult people. More importantly,

foreigners are excluded from the sample considered here. Therefore, problems like language, literacy, and – last but not least – topic interest in and motivation to complete an election study should play a smaller role in our sample of adult Swiss citizens. These facts – sample and topic - need to be taken into account when generalizing our data quality results.

Finally, concerning unit costs, in our study web without incentive amount to about 23 Sfr., web with incentive to 27 Sfr., and telephone to 94 Sfr. We estimate that if the web survey would have been done by a survey company, the costs would have been 38 Sfr. without incentive, and 42 Sfr. with incentive. Therefore, in both scenarios, the web survey is much less costly, even with an incentive.

To draw a first conclusion to our primary interest to conducting this experiment, a web survey with a comparatively high incentive is competitive compared to the telephone survey in the context of an election study, both in terms of cost and data quality. This mode should be considered as an alternative to the telephone mode, at least for the sample of adult citizens. While internet coverage of older people is still an issue, it is very likely that this improves in the longer term. In contrast the (fixed line) telephone suffers increasingly from coverage problems especially for younger people. This makes the telephone increasingly problematic for general population surveys. Cost issues and continuing technological developments clearly also speak in favor of considering the web mode. This must however be interpreted in the context of increasing problems of all survey modes, as people are less and less available, more and more solicited, and just less open to respond to unsolicited communication. Further research on mode effects should also deal with substantive data quality issues like accuracy of the true voting turnout or parties voted for.

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