Living with Smartphones:

Does Completion Device Affect Survey Responses?

Amber D. Lambert
Assistant Research Scientist
Indiana University
adlamber@indiana.edu

Angie L. Miller
Assistant Research Scientist
Indiana University
adlamber@indiana.edu

Presented at the Annual Forum for the Association of Institutional Researchers
Orlando, FL
May 2014

Abstract

With the growing reliance on tablets and smartphones for internet access, understanding the effects of completion device on online survey responses becomes increasing important. This study uses data from the Strategic National Arts Alumni Project (SNAAP), a multi-institution online alumni survey designed to obtain knowledge of arts education, to explore the effects of what type of device a respondent uses has on his/her responses. The type of devices that respondents use does seem to affect how they respond to the survey. Differences in the characteristics of those using the devices as well as how the devices affect survey completion, time spent responding, willingness to answer complex and open-ended questions, and lengths of open-ended responses are discussed.

Keywords: smartphones, completion device, survey response

Living with Smartphones: Does Completion Device Affect Survey Responses?

Surveys have become ubiquitous in multiple arenas. With the expansion of online survey platforms available to lay populations, nearly everyone can think of him or herself as a survey researcher. Many people are inundated with market research and customer service surveys on a weekly, if not daily basis. Institutional research is no stranger to this survey enchantment. In higher education, surveys are used frequently for collecting information to demonstrate effectiveness and identifying areas for improvement (Kuh & Ikenberry, 2009). Student surveys are perhaps the most closely associated with assessment in higher education, as they are asked to evaluate the quality of their instruction, satisfaction with a variety of institutional aspects, and their social and academic behaviors (Kuh & Ewell, 2010). However, surveys are an important means to gain information from other stakeholders as well, such as faculty, staff, and alumni (Cabrera, Weerts, & Zulick, 2005; Kuh & Ewell, 2010). Surveying a variety of institutional affiliates, in addition to students, can provide multiple perspectives for institutions attempting to gather data for the purposes of curriculum improvement, internal evaluation, accreditation, outcomes assessment, and strategic planning, just to name a few.

Because survey data can hold the key to so much important information, it becomes even more imperative that the design of the survey is carefully considered. Although online surveying is more efficient and convenient, survey response rates have actually been falling (Atrostic, Bates, Burt, & Silberstein, 2001; Baruch, 1999; Porter, 2004). A decade ago, as surveys transitioned from paper to online formats, much research was done to explore how the new mode of delivery affected responses (Dillman, 2007). When web-based surveys were first introduced, there were notable concerns with issues of sampling bias and coverage (Couper, 2000), but as internet access has grown exponentially, more pressing concerns lie with the impact of mode on

the responses themselves. While the online mode does not seem to have an impact on the content of one's response (Denscombe, 2006; Miller, Miller Kobayashi, Caldwell, Thurston, & Collett, 2002), there are design elements, including potentially humanizing aspects of the interface, that can potentially influence respondent behavior (Tourangeau, Couper, & Steiger, 2003). Incorporating technological elements to make surveys dynamic instead of static (such as skip logic to automatically move past certain items, or Java-based programming to remove ineligible response options) can greatly assist respondents in their cognitive processing if the survey has a non-linear format in which not all items are applicable to all respondents (Norman, Friedman, Norman, & Stevenson, 2001; Tourangeau, 2004). Other design issues, including how page breaks and scrolling contribute to respondent breakoff (Couper, Traugott, & Lamias, 2001; Peytchev, 2009; Peytchev, Couper, McCabe, & Crawford, 2006; Saxon, Garratt, Gilroy, & Cairns, 2003), the effectiveness of progress bars on completion rates (Couper et al., 2001; Villar, Callegaro, & Yang, 2013; Yan, Conrad, Tourangeau, & Couper, 2010), browser compatibility and response placement (Kaye & Johnson, 1999), and even color contrast and placement of emphasis (Tourangeau, 2004) have all been explored in the context of online surveys.

Now as internet access shifts away from laptops and desktops to smartphones and tablets, survey researchers must again explore how completion device influences response patterns and data quality. While smartphones and tablets offer the convenience of internet access virtually anywhere, the touch screen functioning, truncated viewing area, and smaller keyboard layout make them more conducive to certain activities (such as checking email and watching funny cat videos on YouTube) but less conducive to others (such as selecting radio buttons from a large item matrix or typing in extensive and detailed responses to open-ended prompts). Recent studies (Buskirk & Andrus, 2012; Peytchev & Hill, 2010) suggests that additional scrolling and

typing difficulties associated with mobile devices introduce additional burdens onto survey takers and negatively impact their survey-taking experience. Other research comparing survey patterns between PC (laptop and desktop), tablet, and smartphone users found that young people were more likely to use smartphones for survey completion, while young and employed people were more likely to use tablets, suggesting that if the goal of the survey is to reach younger populations then the survey programming should be smartphone-enabled and that testing should be done with tablets and smartphones (de Bruijne & Wijnant, 2014). Furthermore, Mavletova (2013) found that mobile phone respondents had lower survey completion rates and shorter length of open-ended answers, and that the mobile phone users were significantly younger than those using a PC. However, this same study did not find differences based on gender or level of education concerning the type of device that respondents used to complete the survey.

Given this information, it is imperative that institutional researchers and others interested in higher education survey results understand the impact of device on survey respondents. While most have accepted web-based survey delivery, and all of the strengths and weaknesses that accompany it, as a necessity, the field must now advance one step further in collecting knowledge on how web-based surveys translate to smartphones and tablets. Therefore, the goal of this study is to explore patterns in responses to a multi-institution alumni survey, looking at how type of completion device is impacted by various demographic variables, including age, income, gender, and current employment status. Additionally, this study examines relationships between type of device and a variety of other survey-taking characteristics, including breaking off before completion, backing up in the survey, time duration, item nonresponse for complicated question layout, and open-ended text box completion, as well the length of open-ended responses.

Methods

Participants

This study used data from the 2012 and 2013 administrations of the Strategic National Arts Alumni Project (SNAAP). SNAAP is an online alumni survey designed to collect data annually about the educational experiences and careers of alumni from arts high schools, art and design colleges, conservatories, and arts schools, departments, and programs within comprehensive universities. SNAAP data contains a variety of vital topics of interest to institutions including alumni satisfaction with their institutional experiences, preparation for any further education, career paths, relevance of arts training in careers, resources and supports for career success, effects of student loan debt, and impact of and satisfaction with income. The participants were 58,768 alumni from 109 different arts high schools, undergraduate, and graduate colleges or arts programs within larger universities. All alumni from each program or institution were invited to participate. Of those who participated, 1,389 were high school level alumni (2%), 44,644 undergraduate level alumni (76%), and 12,735 graduate level alumni (22%). Of these alumni, 41% were male, 59% female, and 0.2% transgender. The majority of alumni (85%) reported their ethnicity as Caucasian. The average institutional response rate was 18%.

Measures

The measures were questions included in a larger survey that was administered to participants online. Participants were emailed an invitation including a link to the survey. Participants could log in multiple times, so they were not constrained to complete all questions during a single setting. Participants were not required to answer any of the items; therefore, they

could advance through the survey even if they did not respond to individual items throughout the instrument.

For this study, we utilized responses to demographic questions on the survey itself, as well as several metadata measures. These metadata measures provide information about various survey-taking behaviors that were available through the online data collection platform. The grouping variable of interest was completion device. Of those responding, the majority completed the survey on computer (42% used a PC and 43% a Mac), but a nontrivial number of alumni answered the survey using a smartphone (9%) or tablet (5%). Virtually all respondent devices could be tracked through the software, but there was a trivial "other" (.4%) category, meaning that these respondents' devices could not be traced. Additionally, this study used the dichotomous metadata measures of breakoff status (whether or not respondents reached the end of the survey and hit the "submit" button), backup status (whether or not respondents used the browser to go back to previously completed pages), and item nonresponse for complex matrix layout items (whether or not respondents left any of these matrix items missing, see Figure 1 for example). There was also the time duration variable of interest, which recorded how long (in minutes) respondents spent with the survey open in their browser. Finally, there were metadata measures concerning the open-ended questions, of which there are 10 on the SNAAP instrument, placed all throughout the survey. There were dichotomous variables for whether or not respondents wrote any response in the open text box, as well as, interval variables for the length of those responses that were written.

There were also demographic variables of interest for this study, collected from the respondents in the final section of the survey instrument. The continuous variable of age was collected from a write-in number box, while income was converted using the midpoint of each of

12 different response ranges. The categorical variable of gender had the three response options of male, female, and transgender. The categorical variable of current employment status had seven different response options: full-time (35 hours or more per week), part-time only, unemployed and looking for work, in school full time, caring for family full time, retired, and other.

Analyses

To test the statistical significance of the findings for dichotomous or categorical variables, chi-square analyses were run between the four device groups. These analyses were run for gender, current employment status, breakoff status, backup status, item nonresponse status (for two sets of matrix layouts), and open-ended response status (for 10 open-ended questions). For continuous items, ANOVAs and Mann-Whitney non-parametric tests were used to compare means and medians between groups (Field, 2009). These comparisons were done for age, income, duration, and length of open-ended responses.

Results

When looking at the demographics and characteristics of those using these devices, many statistically significant and substantive differences are found. Not surprisingly, alumni using a smartphone for survey completion are more likely to be younger (on average 10 years) than those using other devices (see Table 1). Also, those using tablets on average have higher incomes than other alumni (see Table 1). Females are more likely ($\chi^2 = 141.045$, $p < .001$) than their male counterparts to use smartphones or tablets (see Table 2). Finally while the differences in employment by the type of device that was used to complete the survey were statistically significant ($\chi^2 = 657.952$, $p < .001$), Table 2 shows that for the most part these differences were not substantively drastic except for a few instances. Those using PCs and tablets were much

more likely than their Mac and smartphone user counterparts to be retired (10.1% for tablets and 9.3% for PCs versus 6.0% for Macs and 2.9% for smartphones). Those using smartphones were also more likely than their peers to be in school full-time.

Perhaps more importantly, the types of devices that respondents use also seem to affect how they respond to the survey. As shown in Table 2, smartphone users were far more likely ($\chi^2 = 2923.123$, $p < .001$) not to complete the survey once they had started it (42% drop-off rate compared to 13% for PCs, 15% for Macs, and 16% for tablets). For those that do complete the survey, smartphone users spent a statistically significant greater amount of time on the survey than their counterparts (see Table 3). There were no statistically significant differences ($\chi^2 = 4.494$, $p > .25$) between those who backed up in the survey and those that did not by survey completion device (see Table 2). Surprisingly, as shown in Table 2, respondents using smartphones were nearly twice as likely to respond completely to questions with complex layouts, like large tables with many response options and items ($\chi^2 = 77.680$, $p < .001$ for complicated question 1; $\chi^2 = 78.319$, $p < .001$ for complicated question 2).

The final area that we explored was how device affected responses to open-ended questions (those with open text boxes where alumni were allowed to elaborate on their answers or answer questions that did not have pre-determined response options). For all 10 questions, the differences between device type for whether they wrote responses in the open-ended questions was statistically significant (χ^2 ranging from 22.687 to 306.556, $p < .001$). However, the substantive differences were not so clear cut. There were a few exceptions (like questions 2, 6, 7, and 9), but for most of the questions, the differences were only a few percentage points (see Table 4). While smartphone and tablet users were only slightly less likely to answer open-ended questions, their responses to those questions were much shorter. For many of the questions, the

median length of responses for tablet and smartphone users was nearly half of those for alumni using traditional computers (see Table 5).

Discussion

The results of this study suggest that there are differences in type of completion device based on certain demographic characteristics, and in turn that device does have some influence in particular survey-taking behaviors. Many patterns of results are consistent with previous literature on the subject. Our study found that there were differences for type of completion device based on age, with younger respondents more likely to use smartphones, mirroring the results of de Bruijne and Wijnant (2014) and Mavletova (2013). This finding is not surprising, given that younger populations more readily adopt new technology, and many are very accustomed to smartphone use in general. There were also differences based on current employment status, with retired respondents more likely to use tablets. This is possibly another generational effect that speaks to the technological needs and uses of older individuals (who make up the majority of the retired population). Older individuals might be less likely to use smartphones due to the difficulty involved in smaller, truncated screens, which previous research suggests place additional burdens on survey respondents (Buskirk & Andrus, 2012). However, older individuals might appreciate the simplicity of tablets in their quick startup time and icon-based interfaces, and they provide larger viewing areas than smartphones. If people are retired, they are unlikely to need a desktop or laptop computer for extensive work purposes, and may instead prefer tablets for the streamlined ability to check email, social media, and get online. It may be that the generational effects are not simply explained by whatever is the newest technology, but also by how the functional aspects of the technology meet the unique needs of the population.

Unlike previous studies, our results indicate that there are some differences in completion device based on gender and income. Tablet users had significantly higher incomes compared to other device users. Does this mean that tablets are still considered to be "luxury" items? If most people have either a computer or a smartphone (or both) for their internet access needs, is one less able to justify the purchase of a tablet for personal use? The convenience of tablets for travel and other situations may not outweigh the cost of an additional device, especially if one already has access to a smartphone and a computer. The gender differences found in the study are also interesting but require some speculation as to their explanation. Women were more likely to complete the survey with a smartphone, and while this may speak to women being more frequent users of smartphones, another rationale for this finding relates to the idea that women are more compliant to survey requests in general. If women are more likely than men to complete a survey on their smartphones, perhaps this is because they are more complaint to the survey request *regardless* of the device on which they received it. In other words, it may be that if men receive a survey request while checking email on their smartphones, they are more likely to disregard it, knowing that it might be more burdensome to take a survey from this device. They may intend to "do it later" when they have access to a traditional computer. Women, however, as the more conscientious and willing survey takers, may want to comply with the request immediately, even if that means completing the survey from a smartphone. More research, particularly using methods of user testing and cognitive interviewing, is needed to further address these potential differences in compliance and motivation.

Results from analyses of metadata measures also suggest that type of completion device can impact various aspects of survey-taking behavior. Taking surveys on smartphones and to a certain extent tablets as well, does seem to increase respondent burden, as indicated in previous

research (Peytchev & Hill, 2010). Smartphone users were far more likely to abandon the survey, suggesting that difficulty in reading questions, selecting responses, and advancing through multiple screens can outweigh the intentions of the respondent to complete the survey. Even for those smartphone users who did manage to "power through" to the end, they require more time to complete the survey. This result is not surprising given the extra time that is necessary to scroll both vertically and horizontally, as well as type out text responses on touch screen keypads. The issue of open-ended questions is further illuminated when looking at the likelihood of even responding to the questions and the length of the responses. Smartphone and tablet users were less likely to answer open-ended questions, and when they did choose to type out a response it was much shorter in length than those of desktop and laptop users. Perhaps this pattern will change as more smartphones and tablets are accompanied by voice-dictation functions, but the data form this study suggest that a reliance on open-ended questions may be problematic if many respondents are completing the survey with smartphones or tablets. The respondent desire to keep responses short (if they even leave a response at all) might have a negative influence on the quality of the data.

A final noteworthy finding of interest was that smartphone users were actually more likely to full complete complex layout item sets. At first glance, this result seems counterintuitive because these questions may require more horizontal and vertical scrolling on a truncated screen in order to access the stem and response options, so one would expect fewer complete responses. However, our results indicate the opposite finding. While more research is needed to determine the exact cognitive processes of smartphone respondents for these types of item sets, we suggest two possible explanations. The first reason may be that those who preserved to these points in the survey (which were located about one-third and one-half of the

way through) on their smartphones and had not yet abandoned the survey are the more dedicated and conscientious survey takers. Therefore, their responses were more complete, and would be more complete regardless of the type on which they were taking the survey. A second possible explanation involves the approach to answering these sorts of complex questions. It may be that on a smartphone, even though there were 16 total items in the set, the respondent can only view one or two items at a time. Therefore, he or she must shift to a more methodical, algorithmic approach and simply focus on one item at a time, rather than using a more heuristic approach and viewing the set of items as a whole, which one might do with a larger screen. There is much debate on using these types of questions on surveys, regardless of mode (Dillman, 2007), so this finding introduces another layer of complexity that takes smartphone users into account.

Limitations

Although there are many informative aspects of this study, there are some limitations of the data that should be noted. The sample available for this study may not be representative of all survey takers, as SNAAP only surveys arts alumni. Furthermore, before these alumni can become eligible for the sample, their institutions must choose to participate in the project itself, leading to potential selection bias for certain types of institutions. Additionally, alumni response rates are lower than other types of survey response rates in higher education, such as student and faculty surveys. However, research suggests that lower response rates do not always negatively impact response representativeness on key characteristics (Lambert & Miller, 2014). But even given these limitations, this study still provides insight concerning the impact of device type in wed-based survey methodology.

Conclusion

Given the rapid changes associated with technology, faculty, administrators, and policy makers need to understand how the data they collect from surveys are affected by the devices respondents are using. As more people are replacing computers with smartphones and tablets, especially when traveling, more survey responses will be made through this technology. Therefore, it is important to know how respondent demographic characteristics play a role in the type of completion device. Additionally, type of device does have an impact on certain survey-taking characteristics, including breakoff status and open-ended response completion, and there is potential for these to negatively influence data quality. These results suggest that survey designers may have to rely less heavily on questions with complex layouts, long verbiage, and those with open-ended responses when creating their instruments. As technology continues to develop at a rapid pace, more research is needed on technology advances and the use of survey research in higher education and beyond.

References

Atrostic, B. K., Bates, N., Burt, G., & Silberstein, A. (2001). Nonresponse in U.S. government household surveys: Consistent measure, recent trends, and new insights. *Journal of Official Statistics, 17*(2), 209-226.

Baruch, Y. (1999). Response rates in academic studies – a comparative analysis. *Human Relations, 52*, 421-434.

Busirk, T.D., & Andrus, C. (2012). Smart survey for smart phones: Exploring various approaches for conducting online mobile surveys via smartphones. *Survey Practice, 5*(1).

Cabrera, A.F., Weerts, D.J., & Zulick, B.J. (2005). Making an impact with alumni surveys. *New Directions for Institutional Research, 2005*: 5-17. doi: 10.1002/ir.144

Couper, M. P. (2000). Web surveys: A review of issues and approaches. *Public Opinion Quarterly, 64*, 464-494.

Couper, M. P., Traugott, M. W., & Lamias, M. J. (2001). Web survey design and administration. *Public Opinion Quarterly*, 65, 230-253.

de Bruijne, M., & Wijnant, A. (2014). Mobile response in web panels. *Social Science Computer Review*, 0894439314525918.

Denscombe, M. (2006). Web-based questionnaires and the mode effect: An evaluation based on completion rates and data contents of near-identical questionnaires delivered in different modes. *Social Science Computer Review, 24*(2), 246-254. doi: 10.1177/0894439305284522

Dillman, D.A. (2007). *Mail and internet surveys: The Tailored Design Method* (2nd ed.). Hoboken, NJ: John Wiley & Sons, Inc.

Field, A. (2009). *Discovering statistics using SPSS* (3rd ed.). London: Sage Publications.

Kaye, B. K., & Johnson, T. J. (1999). Taming the cyber frontier: Techniques for improving online surveys. *Social Science Computer Review,* 17, 323-337.

Kuh, G. D. & Ewell, P. T. (2010). The state of learning outcomes assessment in the United States. *Higher Education Management and Policy, 22*(1), 1-20.

Kuh, G. D. & Ikenberry, S. O. (2009). *More than you think, less than we need: Learning outcomes assessment in American higher education*, Urbana, IL: University of Illinois and Indiana University, National Institute of Learning Outcomes Assessment.

Lambert, A.D., & Miller, A.L. (2014). Lower response rates on alumni surveys might not mean lower response representativeness. *Educational Research Quarterly, 37*(3), 38-51.

Mavletova, A. (2013). Data quality in PC and mobile web surveys. *Social Science Computer Review, 31*(6), 725-743. doi: 10.1177/0894439313485201.

Miller, T. I., Miller Kobayashi, M., Caldwell, E., Thurston, S., & Collett, B. (2002). Citizen surveys on the web. *Social Science Computer Review, 20*(2), 124-136.

Norman, K.L., Friedman, Z., Norman, K., & Stevenson, R. (2001). Navigational issues in the design of online self-administered questionnaires. *Behavior & Information Technology, 20*(1), 37-45. doi: 10.1080/01449290010021764.

Peytchev, A. (2009). Survey breakoff. *Public Opinion Quarterly, 73*(1), 74-97. doi: 10.1093/poq/nfp014.

Peytchev, A., Couper, M.P., McCabe, S.E., & Crawford, S.D. (2006). Web survey design: Paging versus scrolling. *Public Opinion Quarterly, 70*(4), 596-607. doi: 10.1093/poq/nfl028.

Peytchev, A., & Hill, C.A. (2010). Experiments in mobile web survey design: Similarities to other modes and unique considerations. *Social Science Computer Review, 28*(3), 319-

335. doi: 10.1177/0894439309353037.

Porter, S.R. (2004). Raising response rates: What works? *New Directions for Institutional Research, 121*, 5-21.

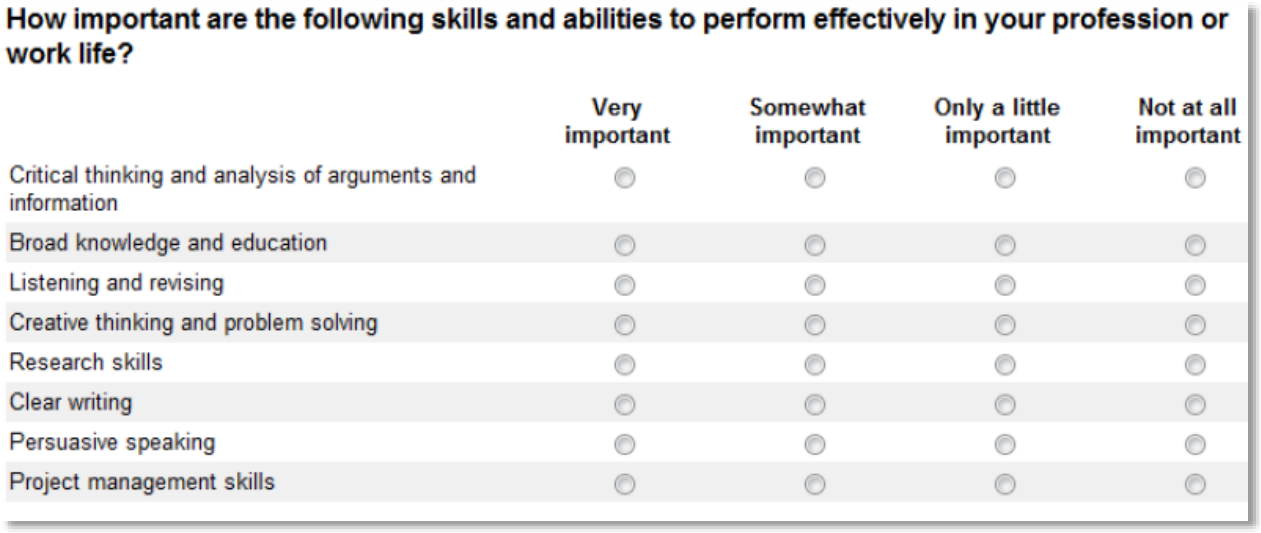
Saxon, D., Garratt, D., Gilroy, P., & Cairns, C. (2003). Collecting data in the information age: Exploring web-based survey methods in educational research. *Research in Education, 69*, 51-66.

Tourangeau, R. (2004). Survey research and societal change. *Annual Review of Psychology, 55*, 775-801. doi: 10.1146/annurev.psych/55.090902.142040.

Tourangeau, R., Couper, M.P., & Steiger, D.M. (2003). Humanizing self-administered surveys: Experiments on social presence in web and IVR surveys. *Computers in Human Behavior, 19*, 1-24.

Villar, A., Callegaro, M., & Yang, Y. (2013). Where am I? A meta-analysis of experiments on the effects of progress indicators for web surveys. *Social Science Computer Review, 31*(6), 744-762. doi: 10.1177/0894439313497468.

Yan, T., Conrad, F.G., Tourangeau, R., & Couper, M.P. (2010). Should I stay or should I go: The effects of progress feedback, promised task duration, an length of questionnaire on completing web surveys. *International Journal of Public Opinion Research, 23*(2), 131-147. doi: 10.1093/ijpor/edq046.



How important are the following skills and abilities to perform effectively in your profession or work life?

	Very important	Somewhat important	Only a little important	Not at all important
Critical thinking and analysis of arguments and information	○	○	○	○
Broad knowledge and education	○	○	○	○
Listening and revising	○	○	○	○
Creative thinking and problem solving	○	○	○	○
Research skills	○	○	○	○
Clear writing	○	○	○	○
Persuasive speaking	○	○	○	○
Project management skills	○	○	○	○

Figure 1. Example of "complex matrix" layout question set

Table 1

Average age and income of respondents by type of device on which the survey was taken

Device		Age	Income
PC	Mean	46.59	55,172.45
	N	21,005	17,976
	Std. Deviation	15.83	44,474.32
Mac	Mean	43.07	52,632.77
	N	21,371	18,397
	Std. Deviation	15.20	44,100.82
Smartphone	Mean	37.32	47,452.60
	N	3,063	2,848
	Std. Deviation	12.42	40,824.37
Tablet	Mean	46.45	60,997.26
	N	2,549	2,186
	Std. Deviation	14.43	48,138.70
Total	Mean	44.41	53,791.37
	N	48,188	41,580
	Std. Deviation	15.49	44,343.01
F		326.005	37.690
Sign		0.000	0.000

Note. Total will not match the sum of the four device categories because of the removal of the "other" category.

Table 2

Gender, employment status, completion status, backup status, and response to complicated questions by type of device on which the survey was taken

	PC		Mac		Smartphone		Tablet		Total	
Measure	*Count*	*%*	*Count*	*%*	*Count*	*%*	*Count*	*%*	*Count*	*%*
Gender										
Male	8,983	42.2%	8,845	40.9%	1,025	32.4%	958	36.8%	19,811	40.7%
Female	12,263	57.7%	12,765	59.0%	2,122	67.2%	1,639	62.9%	28,789	59.1%
Transgender	24	.1%	35	.2%	13	.4%	7	.3%	79	0.2%
Employment Status										
Full-time	13,960	65.5%	13,329	61.5%	2,031	64.9%	1,577	61.0%	30,897	63.5%
Part-time only	2,680	12.6%	3,441	15.9%	480	15.3%	363	14.0%	6,964	14.3%
Unemployed and looking	621	2.9%	738	3.4%	128	4.1%	76	2.9%	1,563	3.2%
In school full time	479	2.2%	728	3.4%	134	4.3%	64	2.5%	1,405	2.9%
Caring for family full time	260	1.2%	277	1.3%	83	2.7%	78	3.0%	698	1.4%
Retired	1,984	9.3%	1,296	6.0%	90	2.9%	260	10.1%	3,630	7.5%
Other	1,321	6.2%	1,858	8.6%	182	5.8%	169	6.5%	3,530	7.3%
Competition Status										
Complete	21,372	87.0%	21,707	85.4%	3,141	57.6%	2,593	83.8%	8,813	83.4%
Partial complete	3,183	12.9%	3,719	14.6%	2,310	42.4%	502	16.2%	9,714	16.6%
Backup Status										
Respondent did not back up	23,440	95.5%	24,281	95.5%	5,233	96.0%	2,943	95.1%	55,897	95.5%
Respondent backed up	1,115	4.5%	1,145	4.5%	218	4.0%	152	4.9%	2,630	4.5%
Response to Complicated Question 1										
Did not respond to all items	2,180	10.2%	2,152	9.9%	166	5.3%	240	9.3%	4,738	9.7%
Did respond to all items	19,192	89.8%	19,554	90.1%	2,975	94.7%	2,353	90.7%	44,074	90.3%
Response to Complicated Question 2										
Did not respond to all items	2,149	10.1%	1,983	9.2%	165	5.3%	219	8.5%	4,516	9.3%
Did respond to all items	19,189	89.9%	19,684	90.8%	2,967	94.7%	2,370	91.5%	44,210	90.7%

Table 3

Median time spent on survey (in minutes) by type of device on which the survey was taken

Device	Median	N	Std. Deviation
PC	27.62	21,372	244.61
Mac	27.60	21,706	297.08
Smartphone	31.82	3,141	99.38
Tablet	28.48	2,593	119.46
Total	27.98	49,016	258.10
F			5.907
Sign			0.000

Note. Total will not match the sum of the four device categories because of the removal of the "other" category.

Table 4

Whether or not a respondent wrote in the 10 open-ended questions by type of device on which the survey was taken

	PC		Mac		Smartphone		Tablet		Total	
Question	*Count*	*%*	*Count*	*%*	*Count*	*%*	*Count*	*%*	*Count*	*%*
Question 1										
Did NOT write something	4,765	34.5%	5,807	42.4%	744	37.7%	632	36.5%	11,948	38.3%
Did write something	9,039	65.5%	7,898	57.6%	1,230	62.3%	1,098	63.5%	19,265	61.7%
Question 2										
Did NOT write something	7,228	33.8%	6,928	31.9%	1,201	38.2%	1,015	39.1%	16,372	33.5%
Did write something	14,144	66.2%	14,778	68.1%	1,940	61.8%	1,578	60.9%	32,440	66.5%
Question 3										
Did NOT write something	16,724	78.3%	16,899	77.9%	2,574	81.9%	2,097	80.9%	38,294	78.5%
Did write something	4,648	21.7%	4,807	22.1%	567	18.1%	496	19.1%	10,518	21.5%
Question 4										
Did NOT write something	5,788	62.8%	3,983	60.3%	943	70.5%	711	65.6%	11,425	62.6%
Did write something	3,428	37.2%	2,619	39.7%	394	29.5%	373	34.4%	6,814	37.4%
Question 5										
Did NOT write something	19,446	91.0%	19,646	90.5%	2,906	92.5%	2,400	92.6%	44,398	91.0%
Did write something	1,926	9.0%	2,060	9.5%	235	7.5%	193	7.4%	4,414	9.0%
Question 6										
Did NOT write something	6,286	32.0%	6,777	33.4%	1,383	47.7%	909	38.8%	15,355	34.0%
Did write something	13,382	68.0%	13,507	66.6%	1,516	52.3%	1,433	61.2%	29,838	66.0%
Question 7										
Did NOT write something	2,560	13.0%	2,783	13.7%	591	20.4%	370	15.8%	6,304	13.9%
Did write something	17,108	87.0%	17,501	86.3%	2,308	79.6%	1,972	84.2%	38,889	86.1%
Question 8										
Did NOT write something	13,303	62.2%	13,983	64.4%	2,348	74.8%	1,871	72.2%	31,505	64.5%
Did write something	8,069	37.8%	7,723	35.6%	793	25.2%	722	27.8%	17,307	35.5%
Question 9										
Did NOT write something	16,989	79.5%	17,496	80.6%	2,752	87.6%	2,146	82.8%	39,383	80.7%
Did write something	4,383	20.5%	4,210	19.4%	389	12.4%	447	17.2%	9,429	19.3%
Question 10										
Did NOT write something	19,365	90.6%	19,643	90.5%	2,959	94.2%	2,413	93.1%	44,380	90.9%
Did write something	2,007	9.4%	2,063	9.5%	182	5.8%	180	6.9%	4,432	9.1%

Table 5

Median length responses to open-ended questions by type of device on which the survey was taken

Device		Q 1	Q 2	Q 3	Q 4	Q 5	Q 6	Q 7	Q 8	Q 9	Q 10
PC	Median	35	245	92	109	80	150	119	126	278	119
	N	9,039	14,144	4,648	3,428	1,926	13,382	17,108	8,069	4,383	2,007
	SD	50.08	426.84	212.87	213.18	150.07	194.52	202.78	164.34	363.87	286.35
Mac	Median	33	264	109	102	84	147	118	127	283	125
	N	7,898	14,778	4,807	2,619	2,060	13,507	17,501	7,723	4,210	2,063
	SD	48.45	458.49	210.85	188.51	180.06	201.17	206.43	165.08	399.88	266.77
Smartphone	Median	29	179	73	73	46	103	78	92	185	67
	N	1,230	1,940	567	394	235	1,516	2,308	793	389	182
	SD	28.70	305.00	135.84	111.15	83.63	124.94	117.37	120.12	337.23	133.72
Tablet	Median	30	184	75	83	52	122	91	113	228	102
	N	1,098	1,578	496	373	193	1,433	1,972	722	447	180
	SD	51.40	302.53	148.12	189.27	138.32	161.72	133.83	145.75	296.27	188.84
Total	Median	33	245	97	103	78	144	114	124	274	119
	N	19,344	32,582	10,564	6,844	4,441	29,964	39,046	17,381	9,468	4,460
	SD	48.41	431.56	206.28	199.40	162.13	193.99	198.16	162.61	377.40	269.10
F		16.515	55.793	16.902	14.318	10.893	54.968	76.387	20.970	13.151	5.917
Sign		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Note. Total will not match the sum of the four device categories because of the removal of the "other" category.