

# Internet-Based Survey Research: Small- and Large-Scale Research for Business Decisions

Albert R. Hollenbeck, Ph.D., *Senior Research Advisor, AARP Knowledge Management*

**Abstract**—Large-scale ( $n > 2000$ ) surveys are used to monitor AARP membership and general US population while small-scale ( $n < 2000$ ) surveys are used to monitor the internal organization. Both types of Internet-based surveys are used to inform business decision-making for AARP. This paper will trace the genesis and 5 years of Internet-based survey research at AARP and compare and contrast these approaches with traditional survey research approaches. Suggestions for future applications of Internet-based survey research will be explored. AARP is one of the world's largest membership organizations, with over 35 million members.

**Index Terms**—Internet, survey research, business decision-making.

## I. INTRODUCTION

As the Internet gained acceptance in the general population and businesses started realizing the virtues of electronic commerce, non-profit organizations generally lagged in their understanding and implementation of Internet technologies. In 1997, AARP (a large non-profit membership association) ventured into the Internet-based survey field. At that time little was known nor reported in the literature other than speculations ranging from methodological criticisms of the Internet as a survey medium to glowing praises of Internet survey efficiencies and low data collection costs. This paper will explore my experiences and how AARP embraced the Internet and utilized web-based technology to inform business decision-making. We employed a cautious and systematic approach to both use the strengths of the technology and to understand its methodological and practical limitations. We are still using and learning about Internet-based survey research today.

Part II of the paper briefly describes AARP and its membership base. Part III traces my observations of the genesis of large- and small-scale Internet-based survey research at AARP and their role in decision-making. Part IV compares and contrasts 5 years of Internet-based survey research approaches with traditional survey research approaches. Part V describes several future applications of

Internet-based survey research. Finally, I will offer some general conclusions based on these experiences in Part VI.

## II. WHAT IS AARP?

AARP was formerly known as the American Association of Retired Persons (AARP). AARP describes itself as “a nonprofit, nonpartisan membership organization for people 50 and over. We provide information and resources; advocate on legislative, consumer, and legal issues; assist members to serve their communities; and offer a wide range of unique benefits, special products, and services for our members. These benefits include AARP Webplace at [www.aarp.org](http://www.aarp.org), *AARP Modern Maturity* and *My Generation* magazines, the monthly *AARP Bulletin*, and a Spanish-language newspaper, *Segunda Juventud*. Active in every state, the District of Columbia, Puerto Rico, and the U.S. Virgin Islands, AARP celebrates the attitude that age is just a number and life is what you make it.” [1]

With over 35 million members, AARP is one of the world's largest membership organizations. Primary member age segments are: 50-59 (30%), 60-74 (42%), and 75+ (26%). Females (55%) outnumber males (45%) and most members are either married (76%) or widowed (12%). Less than half (48%) of members are retired, and almost one-third (30%) are employed full-time. The majority of members are well educated (27% are high school graduates, and 67% have post-secondary education). More than eight in ten (81%) are middle-income or higher, and almost nine in ten (89%) are homeowners.

## III. INTERNET-BASED SURVEY RESEARCH AT AARP

In 1999 I reported on the genesis of a programmatic research effort at AARP, summarizing the challenges we faced, how we addressed those challenges, the research plan that emerged, and progress we made to date [2]. One of the last studies cited in that report foreshadowed how several large-scale public release survey research studies would be conducted at AARP [3]. This was the final study in a series of three studies [3, 4, 5] that guided AARP's decision to offer web-based e-learning opportunities for members and others on AARP Webplace. This study was also one of the first large-scale studies to be publicly reported that followed Dillman's [6] suggestion of employing mixed-mode survey designs to understand differences between traditional survey research approaches and emerging Internet-based surveys (see section

IV for a more complete discussion of these differences). Researchers still understand little about how survey mode affects large-scale research, but each study adds more to our knowledge base.

AARP continues to employ the mixed-mode survey model for both large-scale surveys and small-scale census population studies. AARP's use of Internet-based surveys is growing rapidly for both large- and small-scale studies<sup>2</sup> (See **Figure 1: Growth of Internet-based Survey Research at AARP 1997 to 2003 (projected)**). Since my first report [2], several AARP researchers conduct Internet-based survey work, but we have not been as systematic in examining methodological issues as we were in the earlier studies. In conducting employee opinion surveys of AARP staff (approximately 1,860 employees sampled one-third at a time) we use three survey modes—Internet, paper, and toll-free telephone completion option. We obtain enough responses in each mode to justify the expense of multiple modes and to give us coverage for those without Internet access. Using multiple modes also helps to alleviate fears of confidentiality breaches by those insecure with technology, and to provide a sense of inclusion to those without technology. The results of these studies go directly to management and are being used to make decisions concerning AARP's evolving "People Strategy." For example, these surveys have helped to identify personnel practices that are strong and those that employees say need improvement, such as having explicit criteria for job advancement. For other organizational employee studies AARP researchers have gone to an almost exclusive Internet-based survey mode. AARP researchers have also utilized Internet survey techniques on our employee Intranet to automate routine data collections, such as feedback forms and voting annually for employee elective holidays.

Similarly, for some large-scale public release survey studies several AARP investigators have employed mixed-mode designs to supplement traditional techniques for hard-to-sample populations. For example, in a recent study on "Public Attitudes Toward Aging, Beauty, and Cosmetic Surgery," [7] the investigator used traditional Random-Digit-Dial (RDD) telephone techniques for the general population sample combined with an Internet-based methodology for the hard-to-reach population of people having had cosmetic surgery.

#### IV. TRADITIONAL SURVEY RESEARCH APPROACHES

**Table 1: Survey Error Types by Telephone and Online Surveys (See VIII. ANNEX)**

Survey research methodology has progressed through various stages of development from face-to-face interviews, mailed paper surveys, telephone (RDD and toll-free-call-in) surveys, to Internet-based online surveys. As each new method developed, it was compared to earlier methods. This comparison to the standard in use ultimately determined the acceptability of any new technique by survey researchers. Unfortunately, although a method may be standard, all

techniques exist in environments that fluctuate over time, which affects the viability of the technique. Table 1 illustrates this point by comparing sources of measurement error (adapted from Groves, 1989 [8]) based on our current experiences with telephone and online surveys. Others may report different experiences than ours and different experiences across different modes of survey delivery.

In summary, AARP employs Internet-based survey research techniques as an adjunct to large-scale survey research projects. For small-scale survey research projects, particularly organizational studies, we are moving to an almost exclusive use of Internet-based research as the primary delivery mode. Because of the ease of online survey administration, one risk we are starting to observe in our organizational studies is respondent saturation, or response burden. We are attempting to control this by only posting one survey project at a time. Nevertheless, this means that AARP employees have a new survey to respond to almost every 3 weeks. One of the advantages in large-scale research with panels is that if the panel is large enough, response burden may not become as critical an issue as it is with relatively small populations such as employee workforces less than 2,000 people.

#### V. FUTURE APPLICATIONS OF INTERNET-BASED SURVEY RESEARCH

##### A. Large-Scale Studies.

Because of the limitations of Internet-based surveys indicated earlier in Table 1, I see the immediate future for Internet-based surveys at AARP continuing along the lines of current practice. US population-based studies will continue to employ a mixed-mode survey format when it is applicable to the research questions under study. One possible extension of this approach could be to utilize the unique strengths of multiple methods. AARP addresses a number of public policy issues and related programmatic efforts for our US aging population. A mixed-mode survey approach could leverage resources to track public attitudes about important issues or programs over time. Such a research design might involve three phases. Phase 1 could be a mixed mode survey (telephone, mail, and Internet panel) used to collect baseline data on a range of issues and programs. Phase 2, on a regular or episodic basis, could be the use of an Internet panel to track and screen for changes in public attitudes, awareness, or program use over time. The baseline serves as the threshold comparison and the panel responses yield quick and relatively inexpensive reads of the public across time. When the screen indicates a significant deviation from baseline, Phase 3 could be implemented. In Phase 3, traditional telephone and/or mail surveys would be employed to explore in-depth the change in opinion on an issue or the use of a program.

Of course, this simple multi-phased model of semi-continuous assessment can be combined with more sophisticated research designs. For instance, the basic description here suggests a cross-sectional survey design, but with an Internet panel both longitudinal and cohort-sequential designs are possible. These latter two designs could possibly minimize the need to re-calibrate the baseline over time. Each

<sup>2</sup> For internal AARP studies we use EZSurvey by Raosoft, [www.raosoft.com](http://www.raosoft.com).

particular design might allow the teasing out of the effects of time of measurement, cohort, and age—an obviously critical variable for AARP.

### B. Small-Scale Studies.

I anticipate a continued trend toward automated Internet-based studies and data collections. There are obvious exceptions to this trend. For instance, AARP holds a National Day of Service, initiated in honor of September 11, 2001. Employees volunteer and work throughout locations in the Metropolitan Washington, DC, area. Here, paper surveys are more timely and effective in the collection of participant feedback as groups of employees return by bus from their work assignments. For this type of evaluation project and other employee/staff trainings involving evaluations, however, more appropriate evaluation efforts are needed than simple, post-event reactions.

Working with the AARP's Organizational Learning and Performance (OLP) Unit we have outlined a training evaluation model following Kirkpatrick's four levels of evaluation—reaction, learning, behavior, and results [9]. As with other types of post-training evaluations, investigators can now use online surveys, prompted by emails, to assess retention (post-training survey). The other levels of evaluation may also be conducted online. Learning (through both pre- and post-training surveys), behavior (through pre-, post-, and follow-up surveys), and results (through pre-, post-, and follow-up surveys combined with outcome measures) are all somewhat amenable to online data collection techniques. While this research program has not been implemented at AARP for various reasons, the OLP unit's interest in and commitment to evaluation provided initial funding for purchasing and maintaining AARP's online surveying capability.

## VI. CONCLUSIONS

Presently, reports in the literature on mixed-mode Internet-based surveys offer mixed results [10, 11]. I continue to view large-sample survey projects employing Internet-based techniques cautiously:

- Random sampling designs are still limited on the Internet to known populations or large panels of individuals.
- We see a definite adjunct role in mixed-mode survey designs where the questions under study call for a judicious application of Internet-based models.
- An immediate future roll for Internet-based surveys may be to monitor populations under study and trigger more traditional survey techniques, as required.

For small-sample Internet-based survey research I have been committed to employing this approach where appropriate. We have found it to be a viable alternative to traditional techniques where entire populations have Internet access at their desktops or access is available to them at terminals in the workplace.

- We continue to explore ways to automate routine data collections using Internet-based survey techniques.
- We are expanding our use of more sophisticated evaluations using these techniques to collect data.
- Internet-based surveying has become a preferred mode for many organizational research studies.

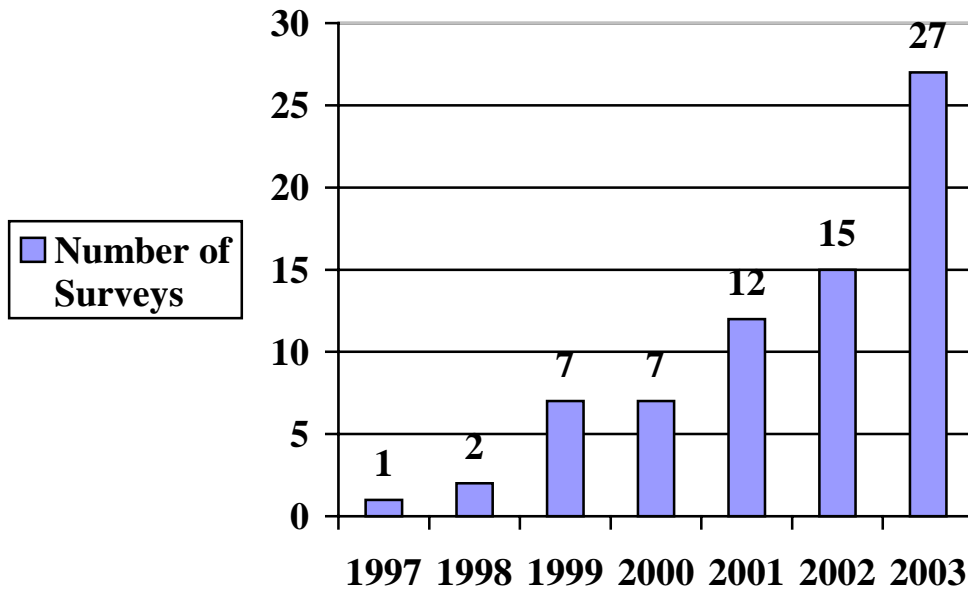
What I concluded about Internet-based surveys over two years ago seems just as true today: "What we knew yesterday is not invalidated; we simply need to shift our thinking from what was impossible several years ago to what is possible and rather easy to do today [2]." In hindsight, I would add that we are making that shift, but that it is being made in an appropriately cautious way as we catch up to the rapid technology changes around us.

## VII. REFERENCES

- [1] AARP Webplace [Online]. Available: <http://www.aarp.org>
- [2] Hollenbeck, A. "Using the Internet and World Wide Web (WWW): Amazing Sites/Amazing Insights." *The Psychologist-Manger Journal*, vol. 3 (2), 167-179, 1999.
- [3] Hollenbeck, A., Tartaglione, R. & Keenan, T., et al. "Learning Preferences Among Adults Age 50+: Survey on Lifelong Learning for NRTA by the AARP Research Group" (Emerging Media Research Support Team Monograph No. 10). Washington, D.C.: AARP. Released to the Public as "AARP Survey on Lifelong Learning" July, 2000.
- [4] Tartaglione, R., Privalsky, M. & Hollenbeck, A., et al. "Interests and Characteristics of Potential Online Learners—A Survey of AARP Webplace Visitors by Ronin Corporation" (Emerging Media Research Support Team Monograph No. 8). Washington, D.C.: AARP, 1999.
- [5] Tartaglione, R., Privalsky, M. & Hollenbeck, A., et al. "Interests and Characteristics of Potential Online Learners—A Survey of AARP Webplace Visitors by the NPD Group" (Emerging Media Research Support Team Monograph No. 9). Washington, D.C.: AARP, 1999.
- [6] Dillman, D. A. *Mail and Internet Surveys: The Tailored Design Method*, 2<sup>nd</sup> ed. New York: Wiley, 2000.
- [7] Barrett, L. L. "Public Attitudes Toward Aging, Beauty, and Cosmetic Surgery: Conducted by Roper Starch Worldwide Inc." AARP, Washington, D.C., Tech. Rep., 2001.
- [8] Groves, R. M. (1989) *Survey Errors and Survey Costs*. New York: Wiley, 1989.
- [9] Kirkpatrick, D. L. *Evaluating Training Programs: The Four Levels*. San Francisco: Berrett-Koehler, 1994.
- [10] Kwak, N. & Radler, B. "A Comparison Between Mail and Web Surveys: Response Pattern, Respondent Profile, and Data Quality." *Journal of Official Statistics*, vol. 18 (2), 257-273, 2002.
- [11] Wilkerson, J. M., Nagao, D. H. & Martin, C. L. "Socially Desirable Responding in Computerized Questionnaires: When Questionnaire Purpose Matters more

than the Mode.” *Journal of Applied Social Psychology*, vol. 32 (3), 544-559, 2002.

**Figure 1: Growth of Internet-based Survey Research at AARP 1997 to 2003 (projected)**



**Table 1: Survey Error Types by Telephone and Online Surveys**

<b>Type of Error</b>	<b>Telephone Surveys</b>	<b>Online Surveys</b>
1. <i>Coverage Error</i> —the effect on responses when all units of a population do not have a known probability greater than zero of inclusion in the sample drawn to represent the population.	In theory, telephone sampling can cover all of the US population. In practice, we find that the proliferation of wireless technology and of multiple telephone numbers for individuals make it increasingly difficult to claim total coverage.  The poor reputation of telemarketers may also discourage people from participating in legitimate telephone survey research.	The coverage of the US population is increasing as online penetration increases. Currently, there is no way to draw an online random sample. Web users do not represent the general population and findings cannot be interpreted as generalizable public opinions. Large web-based panels are emerging that allow population approximations, but coverage is not complete. For small-scale surveys, such as employee groups, census sampling can be employed.
2. <i>Sampling Error</i> —the effect on responses of only sampling a portion of the survey population rather than all members.	Typically, sample demographics are compared and then weighted to population parameters, unless the sample is too unrepresentative to make weighting viable.	Currently, within panels we find we can over-sample, then weight to population parameters. Several studies have indicated that smaller adjustments are needed than in RDD samples [3].
3. <i>Measurement Error</i> —The result of inaccurate answers to questions due to poor wording, interviewing, survey mode effects and/or the answering behavior of the respondent.	The major limitation we have found here is the consistency in wording items and response categories to other methods. Length often places too great a memory load on the listener, so items and responses are truncated.	Online surveys provide a familiar visual task similar to paper surveys. We have had problems with respondents' misuse of web-standard techniques (e.g., tabbing out of script boxes) or mismatched hardware/software.
4. <i>Non-Response Error</i> —the effect on responses of some people not responding, where had they responded, they would have provided a different distribution of answers.	Currently, we are seeing low response rates to RDD surveys requiring expensive and expanded call attempts. This is reflected in the degree of subsequent weighting and need to assess non-respondents.	Currently, response rates are generally higher than for other methods. We expect response rates to drop and non-response error to increase as the novelty of the method dissipates and becomes as ubiquitous as telemarketing.