Building and managing an online panel
with phpPanelAdmin

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Online data collection within social and behavioral research is burgeoning. For surveying individuals online, researchers are increasingly relying on online panels and similar subject pools. phpPanelAdmin is a Web-based platform that is intended to assist researchers in quickly setting up and managing an online panel. phpPanelAdmin solves many problems that can arise when one is collecting data in online panels. As an open-source program placed under GNU General Public License, phpPanelAdmin (www.goeritz.net/panelware) is not only free of charge but free of restrictions on its use, modification, and distribution. Building a new online panel—which before required weeks and special skills—is now possible within minutes and at no cost. Furthermore, phpPanelAdmin can be connected to an existing online panel or even be used for managing offline subject pools. Functions include creating a panel sign-up form; automatically unfolding the panel database; searching for panelists; viewing, modifying, and deleting panelists' data; deleting and cloning variables; drawing samples; sending e-mail to panelists; exporting data; displaying panel statistics at a glance; identifying duplicates; creating and managing e-mail templates; executing user-defined SQL statements; and obtaining help.

For many organizational, educational, social, and behavioral research projects, Web-based data collection is methodologically and economically advantageous, especially if it is carried out in Web-based subject pools, so-called *online panels*. In the classical sense, a *panel* is a longitudinal study in which the same information is collected from the same individuals at different points in time. In contrast, an online (access) panel has come to denote a pool of registered people who have agreed to occasionally take part in Web-based studies. Online panels are employed as a sampling source for longitudinal as well as for cross-sectional studies with different topics (Göritz, Reinhold, & Batinic, 2002).

Online panels and similar respondent lists have several advantages over Web-based studies with ad hoc recruitment of respondents, such as short field times, the availability of panelists' historical and profile data, the potential to obtain large samples at reasonable costs, and ethical benefits (for a detailed discussion of benefits and limits, see Couper, 2000; Göritz, 2007). Because studies that are run in online panels are computer-assisted as well as Internet-based, they have additional assets (see Birnbaum, 2004; Fricker & Schonlau, 2002; Kraut et al., 2004). Computer delivery allows for the inclusion of multimedia stimuli, the collection of data in electronic form, and cost savings for interviewers and consumables. The use of the Internet as a research platform allows for study participation that is independent of the time of day and of geographical location and offers more cost savings because there are no expenses for interviewers and laboratories.

As a consequence of its many benefits, online data collection has become widespread and is likely to grow further. With both the severe drop in response rates with telephone interviewing and the increasing penetration of the Internet into the population, the Internet is expected to become the most widely used mode of data collection in the long term. The bulk of online interviews is conducted in online panels and similar respondent lists (Batinic & Moser, 2005; Couper, 2000; Göritz et al., 2002), because it is expensive and time-consuming to recruit respondents for each research project afresh. In academic research, a similar trend is unfolding.

In academia, infrastructural weaknesses—especially the lack of free software for setting up and managing online panels—have hindered researchers' use of online panels. To overcome this adoption barrier, phpPanelAdmin—a Web-based open-source program for setting up and administering online panels—has been created.

There are three alternatives to using a free and comfortable tool such as phpPanelAdmin for administering online panels. (1) Use a proprietary program; the downsides of using commercial software are higher costs, the curtailing of one's options in both designing the panel and tailoring the management software, and a dependence on the software company. (2) Program a management tool oneself; the disadvantage of homemade tools is that they require time and programming skills. (3) Do not use a tool, but in-

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stead administer the panel by hand or by direct manipulation of the panel database; the downsides of this approach are that it is error-prone, reduces efficiency in the long run, and requires considerable technical skills. Using a free program might be attractive, therefore, especially for academic researchers, who tend to have a smaller budget and who tend to run a small to moderate number of studies in their panels. An average level of computer literacy is sufficient to use phpPanelAdmin. No programming experience is required.

phpPanelAdmin—An Open-Source Tool for Setting Up and Administering Online Panels

phpPanelAdmin is a Web-based platform that is intended to assist researchers in quickly setting up and efficiently administering an online panel. phpPanelAdmin has been placed under GNU General Public License. As free software, phpPanelAdmin is not only free of charge but also free of restrictions on its use, modification, and distribution (for details, see www.gnu.org/licenses/gpl.txt). phpPanelAdmin itself makes use of other free and widespread open-source software (i.e., MySQL database) and programming languages (i.e., PHP, HTML, and JavaScript).

To the author's knowledge, phpPanelAdmin is the only free program of its kind. One can use it to set up and manage a new online panel, or one can connect it to an existing online panel. In addition, phpPanelAdmin can be used for managing offline subject pools (e.g., those that are made up of students who need to take part in laboratory-based studies for course credit). phpPanelAdmin can also be used alongside one's customary commercial panel-management tool to combine the best features of both. This versatility is possible because there are almost no constraints on the profile data to be (or to have been) collected from panelists and no constraints on the format of these profile data. This is accomplished by minimizing the amount of hardwiring that is needed to connect individual database fields to the administrative layer. Instead, the administrative interface within phpPanelAdmin unfolds in a manner that is dependent on the given database structure of the panel at hand.

phpPanelAdmin is the condensed experience of 10 years of work with online panels. The author has built and maintained two online panels—one that is company owned and one that is for noncommercial scholarly research (www.wisopanel.uni-erlangen.de). She has conducted more than 100 individual studies within these panels. phpPanelAdmin supports the main tasks and steps that are involved in setting up and managing an online panel. Features include template-assisted creation of a panel sign-up form; automatic setup of the panel database; the ability to search for individual, or groups of, panelists; viewing, modification, deletion, and export of panelists' profile data; deletion and cloning of variables; the drawing of random samples; the sending of personalized e-mail to samples or to individual panelists; access to panel statistics at a glance; identification of duplicate panelists; creation and management of e-mail templates; execution of user-defined Structured Query Language (SQL) commands; and access to help.

Technological Environment and Setup of phpPanelAdmin

To use phpPanelAdmin, one needs a Web server (e.g., Apache) with an interpreter for the scripting language PHP (version 4.3 or above) and a Web-enabled MySQL database. For full functionality, JavaScript and cookies must be enabled in the browser. If e-mails are to be sent out of phpPanelAdmin—for example, to send a welcome message to new panelists or to invite panelists to a study—PHP needs to be configured to send e-mail via an e-mail server. There is no limit, other than the one that is posed by the hard drive's capacity, as to how many variables or panelists the panel may harbor. Once the technological environment is in place, one must download and then unzip phpPanelAdmin (www.goeritz.net/panelware/). One can consult the documentation that is part of phpPanelAdmin for step-by-step instructions on how to set up a new online panel with phpPanelAdmin, or on how to connect phpPanelAdmin to an existing panel.

Administer an Online Panel With phpPanelAdmin

Using the search screen (see Figure 1), one can search for one or more panelists by using one search criterion or a combination of several criteria. All fields that exist in the profile data table are displayed within drop-down menus and thus can be chosen as search criteria.

One can perform the following operations on the panelists who are identified in a search (see Figure 2): view and modify their profile data, draw a sample, send e-mail, delete profiles, or export profiles. When one draws a sample, there is the choice to put all of the checked panelists into a sample or to draw a desired number into a sample at random out of the checked panelists. When one uses the e-mailing function, one can choose from one of the existing e-mail templates or type in a new text. In the e-mail message, one can include personalized text that is fetched from the database prior to sending the message. If, for some unexpected reason, the sending of the e-mail(s) is interrupted, one can resume where it left off. Moreover, one can perform the following operations on profile variables: (1) Delete one or more profile variables in all panelists or (2) clone one profile variable into another variable for all panelists.

In addition to including the search function, the header menu that can be reached from all pages within phpPanelAdmin (see top of Figure 1) encompasses the *panel overview*, *duplicates*, *sql query*, *e-mail templates*, *help*, and *logout* functions. The e-mail templates, help, and logout functions are self-explanatory. Through the *panel overview* function, one can obtain real-time panel statistics at a glance. The duplicates function helps one identify panelists who have registered multiple times. Through the sql query interface, the advanced user can send queries written in SQL to the database tables that are part of phpPanelAdmin.

Conducting a Study in the Online Panel

phpPanelAdmin is not wired or limited to any survey tool or provider; that is, phpPanelAdmin and the study to

Search Panelist(s)

Case-Sensitivity:	● no (P = p)	○ yes (P ≠ p)
Order Results by:		
id	● ascending	○ descending

Search Criterion	**Search Type**	**Search Pattern**
id	● = ○ < ○ >	%
		● or ○ and ○ or not ○ and not
email	● = ○ < ○ >	
		● or ○ and ○ or not ○ and not
sex	● = ○ < ○ >	
		● or ○ and ○ or not ○ and not
stamp	● = ○ < ○ >	
		● or ○ and ○ or not ○ and not
browser	● = ○ < ○ >	

| More Fields | Reset Form | Perform Search |

Figure 1. Browser view of the search mask in search.php.

be conducted are independent. This means that one is free to use whatever questionnaire-generating software or field partner that one likes—if one relies on those at all. It also does not matter where the study is hosted.

In terms of open-source programs for creating a Web-based study, a researcher might try Generic HTML Form Processor (Göritz & Birnbaum, 2005). This is a free program for facilitating data collection with HTML forms. It automatically creates a MySQL database with a table in it containing columns that are named according to the variables that were submitted through the HTML form. Generic HTML Form Processor thus relieves researchers from writing a script that parses form input and writes the form input into a database, as well as relieving them from setting up a database in the first place. Generic HTML Form Processor can be used for one-page surveys, multiple-page surveys, surveys with input validation, random assignment of participants to experimental conditions, skip patterns, and password protection. One can obtain this program, along with a tutorial and examples, online (www.goeritz.net/brmic/).

Whatever the setup of the study, it is usually desirable to know who among the invited panelists has heeded the request for participation in a study. This information is important for the panel's quality management; besides, it is the precondition for merging panelists' profile data with data from a particular study. To keep track of respondents from the panel into the study, one can append their ID and/or other unique identifiers to the URL of the survey when sending out e-mail from phpPanelAdmin (see below for details).

A Typical Example of Usage

This section describes the typical steps that are needed to conduct a study in an online panel that is administered through phpPanelAdmin. As a sample scenario, suppose our panel contains 8,000 German panelists from all walks of life. Among other profile data, such as the panelists' ID and e-mail address, we have their surname, their sex (1 = *female*, 2 = *male*), and a five-digit postcode. The aim is to conduct an experiment among 700 panelists who live within postal areas that start with an 8 or a 9. There are two experimental groups to which respondents will be randomly assigned. The conditions differ in the instruction on the first study page; thus, the two groups will be invited to different study URLs. In each condition, 350 panelists will be invited.

First, on the search screen we identify all panelists who have a postal code starting with 8 or 9, using the wildcard symbol % (see Figure 3). This results in a list of 1,498 panelists (see Figure 4). Next, we draw a random sample of 700 panelists from the 1,498 eligible panelists (see Figure 5) and designate a name and value for the new sampling variable (see Figure 6). Next, we randomly divide the 700 panelists into the two experimental conditions, Group 1 and Group 2 (for a detailed description as well as screen shots, see the documentation).

We are now ready to invite the participants to the study using the e-mail feature. If, as in Germany, women and men are addressed differently (e.g., as *Frau* and *Herr*), the salutation in the invitation e-mail needs to be varied accordingly. In sum, there are four groups of invitation e-mails to send out: (1) women in Group 1, (2) men in Group 1, (3) women in Group 2, and (4) men in Group 2. One can prepare an e-mail template beforehand or have the four versions handy in a text file. For example, the text for Group 1 might read

Dear Frau ##surname##,
We invite you to take part in a study about XXtopicXX. It takes approximately XXnumber_of_

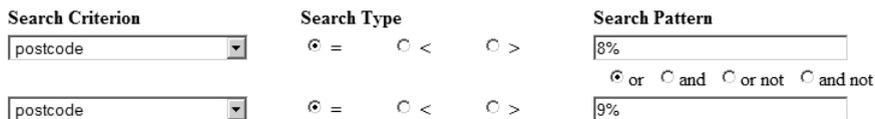**Figure 2. Browser view of available functions in search.php.**

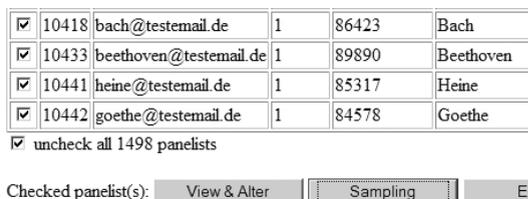**Figure 3. Browser view of example search in search.php.**

Figure 4. Browser view of example search result in search .php.
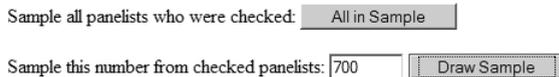
Sampling

Figure 5. Browser view of sampling example in select.php.
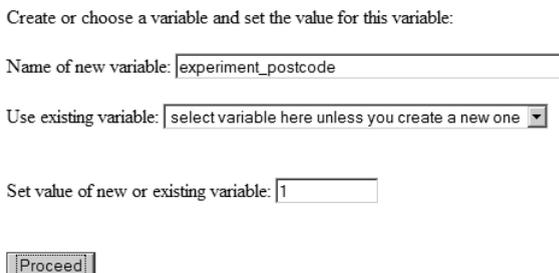
Sampling

Figure 6. Browser view of sampling example in sampling.php.

minutesXX min to fill out the questionnaire. The study is open until XXdeadlineXX.
To access the study, please click on: http://www .XXyour.panel.net/studyXX.htm?code=##id##

Kind regards,
The Panel Team

We would replace the placeholders "XX . . . XX" with our own text and proceed accordingly with the three remaining groups.

Panel Maintenance

The term *panel maintenance* refers to all of the undertakings that are ultimately aimed at promoting the quan-

tity and quality of data that are collected in the panel. This section provides suggestions as to which maintenance measures might be used and how phpPanelAdmin can assist in their implementation.

The removal of profiles with bounced e-mail keeps panelists' profiles up to date. One can delete obsolete profiles by starting from the search screen in phpPanelAdmin. Since e-mail addresses can become obsolete, it is useful to collect not only a panelist's e-mail address but also their postal address, their phone number, and/or a second e-mail address at sign-up. One can collect these additional profile variables by including respective fields in the sign-up form that is part of phpPanelAdmin. Moreover, it is recommended to remove duplicate panelists from the panel. phpPanelAdmin's duplicates interface renders this cleaning process easy.

It is also useful to have panelists update their profiles themselves from time to time and—if appropriate—to ask them to affirm their panel membership. In phpPanelAdmin, one might create an e-mail template that asks panelists to check their profile. Although it might suffice to have panelists send in their updates via e-mail in a small panel, in a large panel it is more efficient either to collect the new profile data through a Web form and later overwrite the old profiles, or to set up a new instance of the panel and have panelists with ongoing commitment register anew.

To optimize data quantity and quality, panelists should be surveyed neither too often (to prevent participation fatigue and panel conditioning) nor too rarely (to prevent them from forgetting about their panel membership). The precondition for balancing each panelist's survey load is to track their participation history. One measure toward this goal is to preserve the sampling variables in phpPanelAdmin that were used for inviting panelists to studies. Each sampling-variable name contains the date when it was created; and the sampling variable itself contains the values that indicate each person's invitation status. For clarity, it is useful to weave the study's title into the name of this sampling variable. The second step to producing a participation history is to feed participation data from the study at hand back into the profile data table. The help section in phpPanelAdmin presents an example of how data can be fed back through the sql query interface. Devising and consistently practicing an informative naming scheme for relevant events (e.g., invitation to a study, response to a study, retention in a study) can greatly facilitate this endeavor.

To increase the response and retention rate in a study, it can be helpful to offer participants incentives. In a nutshell, lotteries are sometimes effective, but often only when they are used for the first time with a particular sample (Bošnjak & Tuten, 2003; Göritz, 2006; Göritz & Wolff, 2007; Tuten, Galešić, & Bošnjak, 2004). When postpaid online payments are used for the first time, they can be ineffective (Bošnjak & Tuten, 2003) and even lower response rates (Göritz, Wolff, & Goldstein, 2008, 2009), but they may be useful when employed in the longer term. Offers to donate to charity seem to reduce the response rate (Göritz,

Funke, & Paul, 2009). Prepaid incentives yield mixed results, depending on the type of incentive (e.g., loyalty points, tangible gifts), but they do not seem to be harmful (Bošnjak & Tuten, 2003; Göritz, 2008). The help section in phpPanelAdmin contains an example of how rewards can be credited to panelists through the sql query interface.

There is a trade-off, furthermore, between data quantity and data quality as a function of how long a study is fielded. The response rate rises with the number of days a study is in the field, at the expense of the retention rate and response completeness (Göritz & Stieger, 2009). To prevent loss of data, it is recommended to back up the panel regularly—for example, by using the export feature in phpPanelAdmin.

Finally, phpPanelAdmin can support the researcher in conducting research in an ethical manner (for details, see Barchard & Williams, 2008). For example, a researcher can obtain panelists' informed consent by including a consent form with a checkbox that is unchecked by default in the panel sign-up form that is part of phpPanelAdmin. In the file config_signup.php, moreover, one can switch on validation in the sign-up form to ensure that only those people whose informed consent was obtained are able to register for the panel. With regard to enabling participants' withdrawal, in config_signup.php the researcher can switch on an opt-out procedure that enables panelists to quit their panel membership with two mouse clicks at any time. If a researcher collects sensitive data that can be traced to participants, he or she may prefer not to record panelists' IP address. Logging of the IP addresses can be switched off in config_signup.php.

Experience With phpPanelAdmin

phpPanelAdmin has been tested thoroughly on both rented server space and dedicated servers. We are always trying to improve this program. We therefore request that anyone who finds a reproducible bug contact us to explain specifically what did not work as expected and under what circumstances. Because this program is open source, one can add new functions and features at any time. If anyone has created a feature that might be useful to others, we hope that he or she will send it to us. We might incorporate it into the next release of phpPanelAdmin.

phpPanelAdmin has been designed for intuitive, quasi-instant usability. On the basis of runs with several testers, it is estimated that a user with general computer literacy will need 1 h to set up an online panel with phpPanelAdmin or to connect phpPanelAdmin to an existing panel for the first time. If phpPanelAdmin does not run properly, it is often useful to start over by downloading a fresh copy of the program. Once familiarity with phpPanelAdmin is achieved, one can build a new panel within minutes. In comparison with the time and cost it takes to set up an online panel and to develop administrative routines from scratch—a process that may take several months and that requires special skills—phpPanelAdmin can effectively lower the barrier for adoption of online panels in social and behavioral research.

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