

FIFTH INTERNATIONAL WORKSHOP ON BUSINESS DATA COLLECTION METHODOLOGY

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Subject matter edits in online forms: Problem definition, exploration, development and alternatives

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Background on ABS online form development and in-form edits

The Australian Bureau of Statistics (ABS) has used online and other electronic forms to collect data for almost twenty years. Our early online forms were limited to a handful of quarterly economic collections with few questions and simple structures. These online forms were static instruments that looked like the equivalent paper form with little additional functionality. In 2012, the ABS adopted a new online form platform, Blaise IS, and over the next three years, rolled out online forms for almost all of our business collections. The large amount of operational, technical and methodological resources required to design, develop and deploy so many online forms within a short time-frame meant that there were few resources available for developing functionality beyond presenting forms in a tabbed format with a navigation bar for moving among tabs, relevant question templates and other necessary basic elements.

This stage of Blaise IS online form development did include the use of one type of in-form edit. All forms included character edit functionality, usually in case respondents entered alpha or special characters into numeric fields. The presentation of these edits was problematic in a number of ways, including that the edits were triggered when respondents entered commas and decimal points within their number answers. Although there was interest in examining form paradata to understand how often these character edits were triggered, there have not been resources to extract and analyse that paradata. The general thinking on this subject is that respondents rarely attempt to put alpha characters in online response boxes and therefore there are no obvious positive or negative benefits to character edits.

A refresh on the layout of the online form template in 2014 allowed us to take more complex business forms online and to improve the presentation of all forms generally. The changes at this stage included a wider question space, a wider and two-level navigation bar, reorganisation and improvement of some of the common instructional elements at the beginning and end of the form, the addition of a page at the start of the form that included a preview (a PDF of the paper form) of all future questions and question level elements including calculation buttons, in-form boxes to allow respondents to explain inconsistent splits and totals. Other functionality was developed as needed for specific collections.

Survey manager stakeholders were keen to use the 2014 refresh to develop in-form edit functionality, specifically, the ability to implement logical edits. The 2014 refresh design work was closely tied to the development of an online form for a collection that we had been unable to take online through the previous form layout. The SMA wanted hard logical edits on responses to questions where respondents (to a paper form) sometimes selected logically inconsistent combinations of response categories. Although small in scope, this development work allowed different forms design, IT and methodology

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advisers to work through how to build and present edits. This type of logical edit was developed, tested with business survey respondents, determined to be of low risk and, therefore, implemented. To date, the impact seems to have been low with no negative feedback from respondents or the SMA. Unfortunately, we have not had the resources to obtain and analyse the paradata associated with this form to quantify how often the edits triggered and how respondents changed their answers.

New in-form edit development and implementation

Most survey managers are content with basic character and logical edits that are used on their online forms. Some survey managers, particularly high-profile sub-annual collections, are reluctant to use in-form edits that might lead respondents to either not complete their forms or to report inaccurate data with intent to complete their form. Unfortunately, the edit-type that many survey managers would most appreciate – flags on changes in data since the previous cycle – have not been possible due to confidentiality restrictions on returning data to units. These survey managers use alternative methods for improving data quality or accept the data as fit-for-purpose.

However, for some collections, typically annuals and bi-annuals where respondents are less likely to be trained in answering questions, there is interest in using in-form edits where possible. A key motivator here is the need to keep micro-editing costs as low as possible. Survey managers are therefore keen to use all of the available functionality to reduce costs. As with all form design work, Methodology is keen to collaborate with survey managers, the forms design team and technical support areas to ensure that form design delivers survey managers data of the quality that they require. We therefore developed ways of evaluating, developing and implementing in-form edits, or their more effective alternatives.

When survey managers start new cycle conversations with stakeholders in forms development, including Methodology, they outline data quality problems or directly request edits. The first stage of this conversation is oriented at defining the problem and setting the parameters of a simple cost benefit analysis. Subject matter areas will be asked:

- In simple terms, what is the data quality problem?
- How much of a problem was this in previous cycles?
- Was the problem correctable by auto-corrects or simple clerical editing?
- What proportion of businesses had to be called to discuss the problem?
- What proportion of businesses that were called were significant contributors?
- What proportion of phone calls identified answers that were incorrect and lead to changed answers?
- What proportion of phone calls were relevant to and therefore may have been required for macro editing anyway?

These questions are not always easily answerable – especially when management information is insufficient or difficult to assemble and analyse – but survey managers often find this a valuable process because it allows them to quantify and clarify their intent within their own areas. It is common to also discuss whether in-form edits are the best solution for outstanding problems. The conversation here includes discussion of:

- Can the problematic question/s be improved?
- Is there an obvious fix for the question or is conceptual and cognitive testing required to investigate improvements?

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- What would be the timeline for improvements: In the next cycle or another acceptably near cycle?
- If there is a delay on improvement, is it worth testing the efficacy of edits before improvements can be made?

At this stage, survey managers may decide that problems are less important than initially thought or identify alternative strategies and withdraw their edit request.

If the outcome of the SMA's simple cost benefit investigation identifies that in-form edits are still of value to the collection, we move on to designing the edits. The first stage focusses on identifying the conditions for the edit being triggered. Survey managers specify response activity at or among questions and how the online form could flag the need to present the edit. Sometimes it is simple but other times it is more difficult to identify problematic activity live within the form, for example if responses from two questions should be consistent but if, as is almost always the case, respondents can complete the questions in non-consecutive order, the edit will not fire at the related question.

If an in-form edit can be specified and will be flagged within the form, the survey managers need to work through how to present the edit to respondents. The visual presentation format (in-line with the problem question or response) is pre-set by form design standards but the survey managers need to provide the first draft of the wording. This requires the survey managers to translate their concerns into words that will be understood by respondents. Survey managers are provided examples of edit messages. Where appropriate, we encourage word-subbing of respondents' answers, and question numbers if a relational edit, into the edit messages.

A typical edit message is one or two sentences that provides:

- A clear diagnosis of the problem that is directly related to the respondents' own response behaviour
- A clear direction on what the respondent should do

We explain that any edit message must be written so that it can be understood AND acted upon by respondents. The highly illustrative anti-example of in-form edit messages is the typical software or systems message wording - User error #123456!! This writing task is often a challenging because it raises questions about the ability of respondents to understand relationships that we regard as correct or typical, but respondents may not agree with for their business or have thought about. This is particularly troublesome in situations where an answer or combination of answers would be considered to be highly unusual but is still possible. We suggest that pointing out respondents' unusualness within a form is not helpful and may be better discussed by phone.

For obvious reasons, the question of whether an edit should be hard or soft is considered at the same time as the drafting of the edit message. Survey managers are most likely to want hard edits on key questions where they have previously had an unacceptable level of non-response. The greatest challenge to uses of hard edits is that they stop respondents from scanning through a form to assess their task and work out how they should arrange response.

Testing of in-form edits

An early lesson from logical edit development was that edits are quite difficult to test in cognitive and usability testing. We took the prototype online form with all of its refreshed layout and new functionality out to businesses and observed them walking through and completing the form as they

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would normally. None of the test participants triggered the edits. Our test protocol was that, after reaching the end of the form, participants were asked to return to questions and provide answers that would trigger the edits and then to reflect on what they saw. All of the test participants identified and understood the edit message, but they also said that they thought there was not much point to the messages as they would never make such “silly mistakes” because the questions were “very clear.”

In subsequent business and household testing, we had consistent experiences. It is unlikely that edits fire in these tests and the use of hypothetical scenarios is not very effective. We suspect that there is a test effect with cognitive and usability test participants not being representative and being diligent and compliant in testing. Obviously, also, if forms are designed well and for a range of respondent capabilities, edits are also most likely to only be relevant for a small fraction of the sample and useful test participants require careful purposive sampling. We do approach businesses with problematic response for questionnaire redevelopment testing and may do so for upcoming edits development.

Conclusion and alternatives to in-form edits

In general, while we support the development of effective in-form edits, we see limited value in the use of in-form edits. The positive, respondent-centred orientation of good old-fashioned question design methods combined with new online user experience design techniques are far more likely to ensure that respondents can respond in ways that we need them to respond. When forms are developed with the needs, resources, motivations of respondents in mind, our statistical needs are met. In-form edits are not a replacement for good question or form design and can use up scarce technical and other resources in implementation. In form edits, require judicious use and careful design so that they assist respondents to complete forms. Most importantly, any in-form edits should only assist those that need assistance and not be an impediment to the majority of respondents with no needs for assistance to complete their form easily.

Our earlier web form development (2012 to 2014) highlighted how the separation of content across tabs and, simply, on screen meant that respondents found it difficult to understand complex questions and the relationship with other questions. Our online form design introduced error that was not present in paper forms. In 2014, we introduced a page at start of all business forms that encouraged respondents to download and use a PDF of the form’s questions. This has been very effective for data quality and is much appreciated by respondents, particularly those in large businesses where the responding person has to share questions with colleagues who are sometimes interstate or overseas.

Summary pages presented immediately before submission, in which responses (or lack of response) is arrayed so that respondents can visually assess their response patterns, identify problems and navigate back to complete the form, correctly. Respondents can easily navigate back through a form without a summary page, but we found that the presence of a summary page encourages and facilitates more respondents to check their answers. This functionality has been very helpful for financial forms where items should reconcile as per a balance sheet.

Our current summary pages are static, without either edit message or links back to questions. We would like to explore the development of active summary pages that include edits. We welcome any thoughts and advice from BDCM workshop members on how to develop these or any better alternatives!