NatCen
Social Research

THE NATCEN REMODEL APPROACH

A systematic approach to transforming social surveys

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1 THE NATCEN REMODEL APPROACH

The majority of high-quality surveys in the UK have traditionally been administered face-to-face, which has long been considered the 'gold standard' of survey design. However, reliance on a single mode of data collection is becoming increasingly risky. Falling response rates, changing societal expectations and rising costs mean that survey commissioners and methodologists are increasingly looking towards more agile and affordable data collection methods.

But changing survey mode is also risky. Any change in mode, or modes, involves complex trade-offs regarding representation, measurement, respondent experience, time and cost, which are rarely fully understood.

The direction and extent of these trade-offs will differ for each survey. It is important to consider the impact of any of change in mode thoroughly before making an informed decision about the long-term design of a survey.

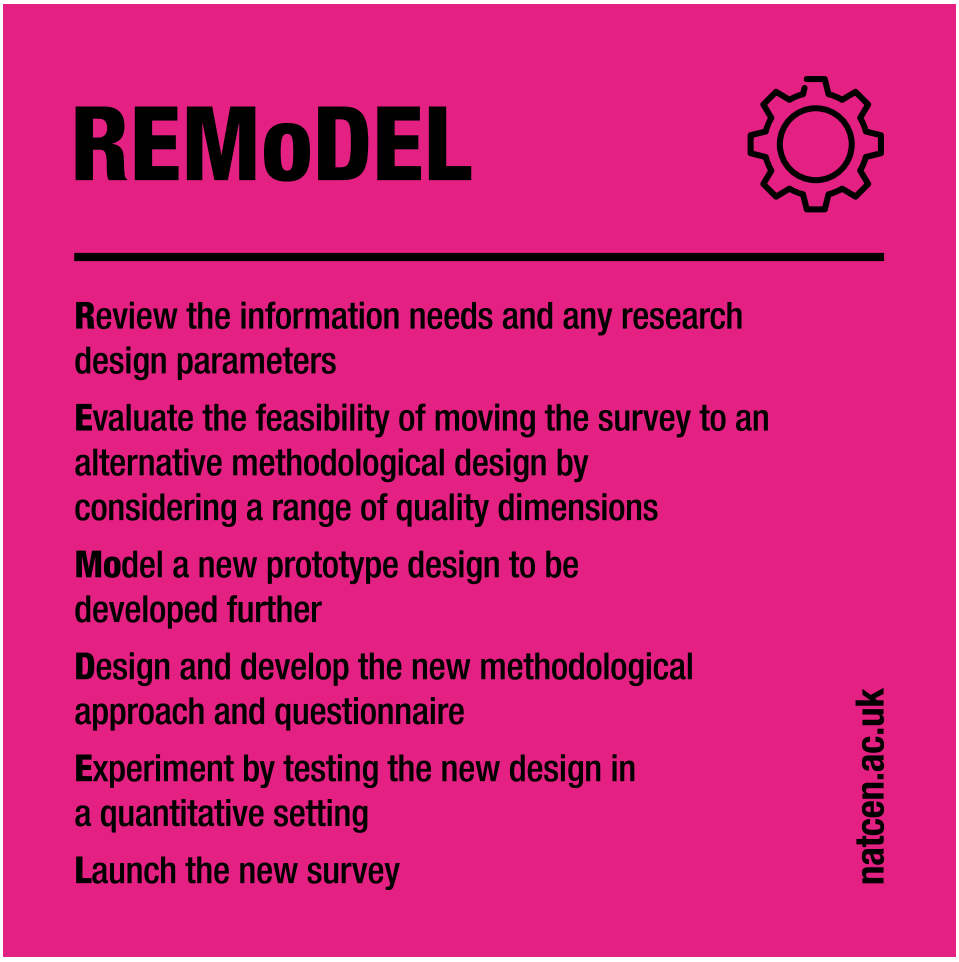
The NatCen Centre for Social Survey Transformation aims to help survey commissioners understand these trade-offs.

To this end we have developed the REMoDEL approach. This provides a clear, systematic process for transforming social surveys and generating robust evidence around the trade-offs involved.

By using well-established techniques based on a deep understanding of the research literature, and placing emphasis on empirical evidence, the REMoDEL approach is methodologically neutral. It aims only to identify the optimal solution to any specified research needs.

Figure 1:1 outlines the key features of the REMoDEL approach:

Figure 1:1 The NatCen REMoDEL approach



2 HOW THE REMODEL APPROACH WORKS

The NatCen REMoDEL approach breaks down the survey transformation process into six discrete stages, or work packages. Each of these stages seeks to address specific issues relevant to the transformation process – from defining the design parameters, to assessing and quantifying the trade-offs involved in alternative designs and, ultimately, launching a new survey. To achieve this, each stage has its own defined aims and outputs.

Below, we outline how each stage works. This includes the overall aim of the stage, what issues it seeks to address, and what outputs are produced.

2.1 REVIEW

2.1.1 Aim

The aim of this stage is to identify what information the survey commissioner, data users and wider stakeholders require from a survey. This is used to summarise the information needs (the research questions) and any associated requirements of the design (the design parameters).

These design parameters could include a definition of the target population, any analytical requirements, the importance of maintaining any existing time series, required timeframes for delivery and the budget envelope.

We use a number of techniques to gather this information such as workshops, in-depth interviews, surveys and consultations, depending on the specific requirements of each project.

2.1.2 Output

The output of this stage is a clear set of research questions and design parameters for the survey.

2.2 EVALUATE

2.2.1 Aim

Having established the design parameters required to meet the research questions, the next stage is to evaluate the feasibility of alternative survey designs. The aim of this stage is to identify the most suitable survey design to develop in detail.

To achieve this, we first determine the potential survey designs to evaluate. This is based on an expert review of the design parameters. In this expert review a number of survey design specialists and methodologists will suggest modal designs which have the potential to meet the design parameters.

We would then typically shortlist around five potential designs for further review.

For each of these potential designs we then consider their strengths, limitations and risks to summarise the potential trade-offs each bring. To do this in a systematic way we consider a range of quality 'dimensions' concerned with the quality and usability of the data which would be generated. These quality dimensions are based on a modified version of the Total Survey Quality framework (Biemer, 2010)[1] and are outlined in Table 2:1.

Table 2:1
Evaluative dimensions of total survey quality

Data quality dimensions

Dimension	Description
Accuracy	Measurement and representation error are minimised
Credibility	The data will be sufficiently robust and reliable to support its intended uses
Comparability	The data will allow any comparisons required by the analysis objectives
Coherence	Data gathered from different modes and sources can be combined
Completeness	The data gathered answers the research questions while minimising the burden on respondents

Data user dimensions

Dimension	Description
Relevance	Data satisfy users' needs
Timeliness	The data is available in sufficient time to meet information needs.
Cost-effectiveness[2]	Approach offers value for money

Dimensions adapted from Paul P. Biemer, Total Survey Error: Design, Implementation, and Evaluation, The Public Opinion Quarterly Vol. 74, No. 5, Total Survey Error (2010), pp. 817-848

1 Paul P. Biemer, Total Survey Error: Design, Implementation, and Evaluation, The Public Opinion Quarterly Vol. 74, No. 5, Total Survey Error (2010), pp. 817-848

2 Cost-effectiveness replaces the usability/ interpretability criterion in the original framework – the extent to which survey documentation is clear and survey meta-data are well-managed – to reflect the concern here with evaluating potential designs rather than outputs. Similarly, Accessibility – access to the data is user-friendly – is dropped from the original framework as that is concerned with output rather than design.

Not all dimensions will be relevant to all surveys, so we select those which are relevant to the design parameters and research questions. For each dimension we devise a series of indicators based on the specific requirements of the new survey. This creates a proforma. We then systematically review each design against the proforma to assess the extent to which it meets the survey requirements.

At this stage the review is primarily a qualitative assessment, based on the methodological literature and our experience of conducting survey research, of how well a design meets each indicator (see Section 3 for a description of each dimension).

2.2.2 Output

The output of this stage is a clear assessment of each shortlisted survey design against the indicators of data quality and usability. For each design we produce a summary table to allow a clear assessment of the trade-offs involved with each design option. We then work with the survey commissioner to identify which design, or designs, to develop further.

2.3 MODEL

2.3.1 Aim

In practice, the total survey quality optimisation strategy is iterative. Therefore, once we have conducted a top-level review against the dimensions outlined in the Total Survey Quality framework and agreed the most promising design (or designs), we develop the chosen methodological approach. The aim of this stage is to produce a detailed summary of the proposed design features. These could include the mode or modes to be used, the sampling approach, the communication and contact strategy, the incentive strategy, the fieldwork approach, assumptions around response rates, and the required data outputs.

At this stage we work with the survey funder to discuss the potential trade-offs (which are outlined in the 'Evaluate' stage) that the chosen design may bring and work through mitigation strategies to minimise those trade-offs and ensure that the design is responsive to their needs.

The end goal is to model an approach that allocates the resources available to meet the survey objectives in such a way as to maximise the accuracy of the data collected.

2.3.2 Output

The output of this stage is a detailed summary of the proposed key design features. At this stage we would also identify any evidence gaps – such as the likely response rate, or the optimal approach to administering particular questions in particular modes – that would benefit from further research and experimentation.

2.4 DESIGN

2.4.1 Aim

Once the preferred approach has been outlined, the next stage is to design and develop the new survey. The aim of this stage is to have a fully designed survey, ready to begin field trials.

This stage could involve a number of different worksteams, including the (re)design and testing of data collection tools (this can include both questionnaires and non-questionnaire data collection tools, such as diaries), the design of contact strategies and respondent-facing materials, the design of field documents and instructions, and the design of detailed fieldwork procedures.

With any survey transformation, a particularly key workstream will be the questionnaire design. To transition existing surveys to new mode(s) we follow an iterative approach. The first step is to conduct a desk review of the existing questionnaire to focus on what adaptations might be required to optimise the instrument for alternative mode(s) of administration. To achieve this, we use two systematic review tools:

- The Questionnaire Appraisal System-99 (QAS-99)[3], which assesses individual survey questions in relation to eight dimensions, derived from the literature to identify any issues for consideration; and
- The NatCen Mode Effect Framework (d'Ardenne et al, 2017)[4], which focuses on three main types of measurement risk when comparing data collected using different data collection modes:
  - Risk of interviewer effects (i.e. where interviewer presence/ absence can impact on the quality of data collected);
  - Risk of satisficing (i.e. where respondent short-cutting behaviours or the difficulty of the task could impact on the quality of data collected); and
  - Risks from presentation effects (i.e. where changes from big-screen to small-screen or aural to visual administration could impact on the quality of data collected).

If the survey is to involve a web element, at this stage we will also give consideration to the visual appearance of questions, to ensure that questions can be administered appropriately on a range of devices with different screen sizes.

3 Willis, G. and Lessler, J. (1999) 'Question appraisal system QAS-99', Rockville, MD: Research Triangle Institute.

4 d'Ardenne, J., Collins, D., Gray, M., Jessop, C., Pilley, S. (2017) Assessing the risk of mode effects: review of proposed survey questions for waves 7-10 of Understanding Society, Understanding Society Working Paper 2017-04, Colchester: University of Essex. Available at: https://www.understandingsociety.ac.uk/research/publications/524254

If the survey is to be mixed mode it is also important to outline whether the design should aim to be 'unimode' (where questions and answer categories are presented in the same way across modes), or 'optimode' (where the questions are designed with mode-specific variations with the aim of achieving similar answer distributions in each mode, when sample effects are controlled for, meaning they have functional equivalence).

The output of this step is a short report which assesses the risk of measurement error when transitioning the questionnaire from one mode to another, and a marked-up questionnaire which identifies questions which may prove to be problematic.

The next step is to work with the survey commissioner to discuss the trade-offs and adaptations which should be applied. We recommend that this is best achieved via a workshop where key decisions, such as the length of the questionnaire and type of adaptations that should be applied, can be made.

We would then re-design the questionnaire for administration in the new mode, which can be an iterative process.

Once a draft the questionnaire has been finalised it is ready for testing. This can involve cognitive testing, user testing, usability testing, or quantitative testing, depending on the type of changes or the objectives of the survey.

Other worksteams considered in this stage would include the design and testing of any communication strategy and associated materials (including the materials themselves and processes around administering them, such as gaps between mailings and the number of calls to make); the precise sampling design and the fieldwork approach.

2.4.2 Output

The output of this stage is a fully designed survey which is ready for experimentation and field trials.

2.5 EXPERIMENT

2.5.1 Aim

Wherever possible when transforming a survey it is important to obtain quantitative evidence of the impact of any changes in mode or questionnaire design. This is so that key assumptions can be tested and refined and that any trade-offs in representation, measurement, respondent experience, time and cost can be fully understood prior to making any transition.

The aim of this stage is to fill any evidence gaps identified in the Model and Design stages, to test and finesse any assumptions made in the survey design, and provide robust evidence on any trade-offs inherent in the new mode(s).

Well designed, robust experimentation early on is likely to save time and money in the long-run through identifying any issues with the new design at an early stage and ensuring the final survey outputs meet appropriate data quality and usability standards.

The exact scope of this experimentation will depend on the aims and objectives of the survey and the extent of the transformation. It could be in the form of a pilot, or dress rehearsal, to test key assumptions, conduct split-sample experiments (for instance, to assess the impact of different response options, communication strategies or incentive strategies) and, ultimately, refine the design/administration of the survey. Or it could be in the form of a 'parallel run', conducting the new survey design alongside the existing design for a specified period of time to quantify the extent of both selection and measurement effects. If switching mode with the objective of continuing to collect trend data we recommend a parallel run where at all possible – without one it will be impossible to truly understand the impact of the change in mode on survey estimates.

We work with survey commissioners to design experiments which meet their aims and objectives within their timeframes and available budgets.

After any piloting and/or parallel running, we would advise on any further refinements and whether further experimentation or testing is required.

2.5.2 Output

The output of this stage is a report, or series of reports, outlining the findings of any experimentation with recommendations for any refinements to the design and administration of the survey.

2.6 LAUNCH

Once the new design has been selected, developed and tested the final stage is to launch the new survey. A key aspect of the total survey error quality approach is to ensure continuous improvement. As such, we recommend regular reviews of surveys to ensure that they continue to deliver the required level of data quality and usability in answering their bespoke research questions.

3 EVALUATIVE DIMENSIONS OF TOTAL SURVEY QUALITY

As outlined in the previous section, a key aspect of the 'Evaluate' stage is to systematically review each survey design against a range of dimensions concerned with the quality and usability of the data.

The dimensions we use to achieve this are based on a modified version of the Total Survey Quality framework (Biemer, 2010)[5].

To aid the usability of this stage, and to make it easier to assess where the trade-offs within each design lie and what their impact will be, we group the dimensions into those which are solely concerned with data quality – those which determine the validity of the estimates produced from the survey – and those which are concerned with the usability of the data. The latter can be seen as a constraint on the former, but are essential in ensuring that the data is used and is impactful.

Below, we describe each dimension and how we seek to assess survey designs against them.

3.1 DATA QUALITY DIMENSIONS

3.1.1 Accuracy

Measurement and representation error are minimised

Total Survey Error (TSE) refers to the accumulation of all errors that may arise in the design, collection, processing, and analysis of a survey. We assess the potential accuracy of each survey design by considering the potential impact of all sources of bias (systematic error) and variance (random error) that may affect the validity of survey data, using the classification of error sources developed by Groves et al (2009)[6], which groups errors into measurement errors and representation errors.

The goal of this dimension is to identify the risk of potential errors in validity, measurement, processing, coverage, sampling and non-response for each design.

5 Paul P. Biemer, Total Survey Error: Design, Implementation, and Evaluation, The Public Opinion Quarterly Vol. 74, No. 5, Total Survey Error (2010), pp. 817-848

6 Groves, R., Fowler, F., Couper, M., Singer, E., & Tourangeau, R. (2009). Survey methodology. Second Edition Hoboken, NJ: Wiley pp. 49-64. See also, Saris W.E. (2014) Total Survey Error. In: Michalos A.C. (eds) Encyclopedia of Quality of Life and Well-Being Research. Springer, Dordrecht. https://doi.org/10.1007/978-94-007-0753-5_3034

3.1.2 Credibility

The data will be sufficiently robust and reliable to support its intended uses

Any survey design needs to be proportionate to the intended use of the data. To assess the potential credibility of the data produced from a survey we consider the extent to which the design facilitates users' analytical requirements and whether it would stand up to scrutiny. That is, whether the data will be sufficiently robust and reliable to support its intended uses.

3.1.3 Comparability

The data will allow any comparisons required by the analysis requirements

Comparability is often a user-led objective for any survey transformation, but is also a key measure of data quality. For example, surveys may have a long-established time-series and an objective for the survey transformation may be to minimise the impact on the time-series. Or, a key design parameter may be to make robust demographic or spatial comparisons, in which case it is important to ensure comparability of estimates across these dimensions.

Factors which may impact on comparability include the demographic profile of the achieved sample, when the research takes place (which is particularly important for questions involving the measurement of behaviours) and whether the mode of the survey will create any measurement differences.

To assess the potential comparability of data in a given design we consider the likely differences between the existing design and the alternative design(s) when making demographic, spatial and temporal comparisons.

3.1.4 Coherence

Data gathered from different modes and sources can be combined

Surveys may include both questionnaire and non-questionnaire data (for instance, they may have a diary element), they may be multi-mode (using different modes in one survey to collect different sorts of data from the same person/ business), mixed-mode (using one or more modes to collect the same data from different people/ businesses), or they may need to be linked to other data sources, such as administrative data.

In each of these instances it is important that the data can be combined with confidence. It is particularly important to consider the impact of mode effects when considering mixed-mode designs.

At this stage we evaluate any risks to reliability when combining data from difference sources.

3.1.5 Completeness

The data gathered answers the research questions while minimising the burden on respondents

With falling response rates in social surveys, and competing demands on potential respondents' time, it is vital to minimise burden on respondents. Surveys which are high burden are more likely to be susceptible to non-response errors, such as unit non-response (people not taking part in the survey at all) or item non-response (people not answering particular questions), and measurement errors such as satisficing (people not giving sufficient cognitive effort to answer a question). As such, it is important to balance the need to gather sufficient information with which to answer the survey's information needs with the objective of reducing burden on respondents.

At this stage we assess the likelihood of each design generating sufficient information to meet the specified information needs, the risks of non-response, and the potential burden on respondents.

3.2 DATA USER DIMENSIONS

3.2.1 Relevance

Data satisfy users' needs

This dimension considers whether the data generated through the design will satisfy user needs. Considerations include whether the achieved and effective sample sizes are sufficient for the analytical requirements, and whether the data collected is capable of answering the research questions.

3.2.2 Timeliness

The data is available in sufficient time to meet information needs

The timeliness and punctuality of data are a key user dimension. Requirements around the timeliness of data can be seen as a constraint on survey design against which to trade-off quality dimensions such as accuracy, credibility and comparability. However, timeliness is essential to the survey meeting its objectives. For example, the policy need for specific data may be time-bound; in that instance for the survey to be useful it needs to meet that timeframe.

To assess this, we estimate the required time for data collection, data processing and weighting for each design to determine whether it meets any specific requirements around data delivery.

3.2.3 Cost-effectiveness

Approach offers value for money

In any survey the key objective of the design is to maximise accuracy within the time and budget available. As such, value for money is a key consideration in determining total survey quality. Within the Total Survey Error paradigm we aim to ensure that quality indicators such as accuracy, credibility and comparability are maximised within the overall budget for the work. For each design we will estimate the cost of delivery which will help to quantify any trade-offs in data quality.

4 REMODEL APPROACH IN ACTION

The NatCen REMoDEL approach is flexible and adaptable. It can be applied to any survey transformation – from full-scale modal transformations (switching from one mode to another), to exploring alternative approaches to collecting particular types of data (such as digitising diary data collection, or using objective measurement).

NatCen has a long history of transforming social surveys and has applied the REMoDEL approach successfully on a number of different research projects. Most notably, the REMoDEL approach has provided the structural framework for the British Social Attitudes survey Transformation Programme.

4.1 BRITISH SOCIAL ATTITUDES TRANSFORMATION PROGRAMME

The NatCen Centre for Social Survey Transformation is currently overseeing the British Social Attitudes (BSA) Transformation Programme. This is a three-year programme (2020-2022) to review the end-to-end design of the BSA and explore the feasibility of transitioning the BSA from a face-to-face design to a web-first design.

BSA was created in 1983 and is now widely considered to be Britain's most authoritative and robust measure of people's attitudes. However, falling response rates and changing societal expectations mean that it is important to review the design to ensure that it continues to provide the most robust and reliable data possible.

To review potential alternative designs of BSA in a systematic way, we have used the REMoDEL approach to structure the process. Table 4:1 summarises how the REMoDEL approach has been used.

Table 4:1
Using the REMoDEL approach in the BSA Transformation Programme

Stage	Summary of steps taken and key outcomes
Review	**Steps taken** Consultation with survey funders, data users (internal and external) and management to determine BSA's key design parameters. **Key outcomes** Design parameters included: Maintaining long-term time-series is essential; data needs to be similarly robust as f2f BSA; Design needs to support multi-funder model (needs to be easily scalable); Data needs to be delivered to the same timescale as f2f BSA; Data collection costs need to be same or lower than f2f

Table 4:1
Using the REMoDEL approach in the BSA Transformation Programme

Stage	Summary of steps taken and key outcomes
Evaluate	**Steps taken** Five possible design options identified as being capable of meeting the design parameters and then systematically reviewed. These are: face-to-face; push-to-web; push-to-web with CATI opt-in; push-to-web with paper follow-up for non-responding addresses; and push-to-web with face-to-face follow-up with non-responding addresses. **Key outcomes** Push-to-web with face-to-face follow-up identified as approach most likely to maximise data quality within data user parameters, and therefore to be explored further Push-to-web with no alternative mode of completion rejected due to risk of coverage error Push-to-web with paper alternative rejected due to practicality of implementing in a multi-funder model Emergence of COVID-19 pandemic meant that face-to-face research was not feasible, so push-to-web with CATI opt-in also selected for further development
Model	**Steps taken** Both shortlisted designs were developed further with key evidence gaps identified **Key outcomes** Push-to-web with CATI opt-in approach deemed ready for further design with the aim of using the approach for the 2020 BSA (when the pandemic meant that face-to-face research was not possible) For the Push-to-web with face-to-face follow-up of non-responding addresses, some key evidence gaps were identified, including the potential response rate; how to operate respondent selection in the different modes; the optimal survey length; and the likelihood of measurement effects

Table 4:1
Using the REMoDEL approach in the BSA Transformation Programme

Stage	Summary of steps taken and key outcomes
Design	**Steps taken** Full review of the face-to-face classification/core survey questions using QAS-99 and the NatCen Mode Effect Framework Contact strategy and materials for each approach designed Cognitive and userbility testing conducted Sampling approach designed **Key outcomes** Questions at greater risk of measurement error identified Questions adapted, where possible, with unimode design principles, with the aim of minimising variance across modes, and as much as possible reflect the 'original' question wording to retain comparability Requirement for experiment of push-to-web with face-to-face follow-up agreed
Experiment	**Steps taken** Experimental design of push-to-web with face-to-face follow-up agreed with the aims of: measuring engagement and response rates; comparing characteristics of responding samples; comparing estimates generated in each design; and evaluating the design and operation of the survey. Fieldwork took place in Autumn/winter 2021. As face-to-face research was not possible in 2020 due to the pandemic, the push-to-web with CATI opt-in approach was put into field in 2020 to serve as a pilot. Findings would be compared with 2019 BSA **Key outcomes** Push-to-web with CATI opt-in approach deemed to be a success, with a comparable sample profile to the f2f BSA and similar estimates for some key social attitudes questions. However, the findings suggest some within-cell bias and a more politically-engaged sample. Experiment with face-to-face follow-up to test whether it corrects for this bias

Table 4:1
Using the REMoDEL approach in the BSA Transformation Programme

Stage	Summary of steps taken and key outcomes
Launch	**Steps taken** Push-to-web with CATI opt-in approach launched in 2020 and refined for 2021 and 2022 when face-to-face option is not available Full future design of BSA to be launched in 2023/24, depending on the outcome of the push-to-web with face-to-face follow-up design and any restrictions caused by ongoing pandemic **Key outcomes** Push-to-web with CATI opt-in approach launched successfully as alternative design while face-to-face research is not possible Full launch of future mode to be decided based on emerging evidence

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