

Statistics Canada's Experiences in Using Paradata to Manage Responsive Collection Design for Computer-Assisted Telephone Interview Household Surveys

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Abstract

Paradata research has focused on identifying opportunities for strategic improvement in data collection that could be operationally viable and lead to enhancements in quality or cost efficiency. To that end, Statistics Canada has developed and implemented a responsive collection design (RCD) strategy for computer-assisted telephone interview (CATI) household surveys to maximize quality and efficiency and to potentially reduce costs. RCD is an adaptive approach to survey data collection that uses information available prior to and during data collection to adjust the collection strategy for the remaining in-progress cases. In practice, the survey managers monitor and analyze collection progress against a predetermined set of indicators for two purposes: to identify critical data-collection milestones that require significant changes to the collection approach and to adjust collection strategies to make the most efficient use of remaining available resources. In the RCD context, numerous considerations come into play when determining which aspects of data collection to adjust and how to adjust them. Paradata sources play a key role in the planning, development and implementation of active management for RCD surveys. Since 2009, Statistics Canada has conducted several RCD surveys. This paper describes Statistics Canada's experiences in implementing and monitoring this type of surveys.

Keywords: Paradata, responsive collection design, active management, productivity, cost and quality indicators

1. Introduction

Highlights of previous research (Laflamme and Mohl 2007) have identified the necessity of developing an adaptive and responsive data-collection strategy (Groves and Heeringa 2006) to make the most efficient use of available resources during the collection period. RCD is an adaptive approach to survey data collection that uses information available prior to and during data collection to adjust the collection strategy for the remaining cases. The main idea is to constantly assess the data-collection process using the most recent information available (active management), and adapt data-collection strategies to make the most efficient use of remaining available resources. In other words, the collection strategy needs to respond and evolve through the collection cycle in a timely, consistent and predictable manner for the units that still remain in progress.

Active management is defined as a set of plans and tools used to manage survey data collection while it is in progress. Activities generally include planning, monitoring, performing timely analyses, identifying problems, implementing corrective actions, reporting and communicating. Active management has three main objectives in the RCD context. The first is to determine data-collection milestones where changes to the collection strategy are required. The second objective is to identify problems as early as possible and correct them (if required) before collection has finished, while the third (which is a more global objective) is to make effective use of collection resources to find the most appropriate balance between data quality, timeliness and survey costs. Active management is a key element in the decision-making process of any RCD strategy, since timely changes need to be implemented during the course of the data-collection period, based on current and empirical observations. This paper describes Statistics Canada's experiences in implementing and, especially, in monitoring these types of surveys. In particular, this paper presents the plans, tools and strategies used to actively manage RCD surveys and describes how these strategies evolved and improved over time.

2. Data-collection context and data sources

At Statistics Canada, data collection for CATI surveys is conducted from call centres located in and managed by regional offices (ROs). All survey applications are built using the Blaise software, and the call scheduler system automatically delivers individual cases to interviewers working out of a centralized environment (Statistics Canada currently has five RO call centres

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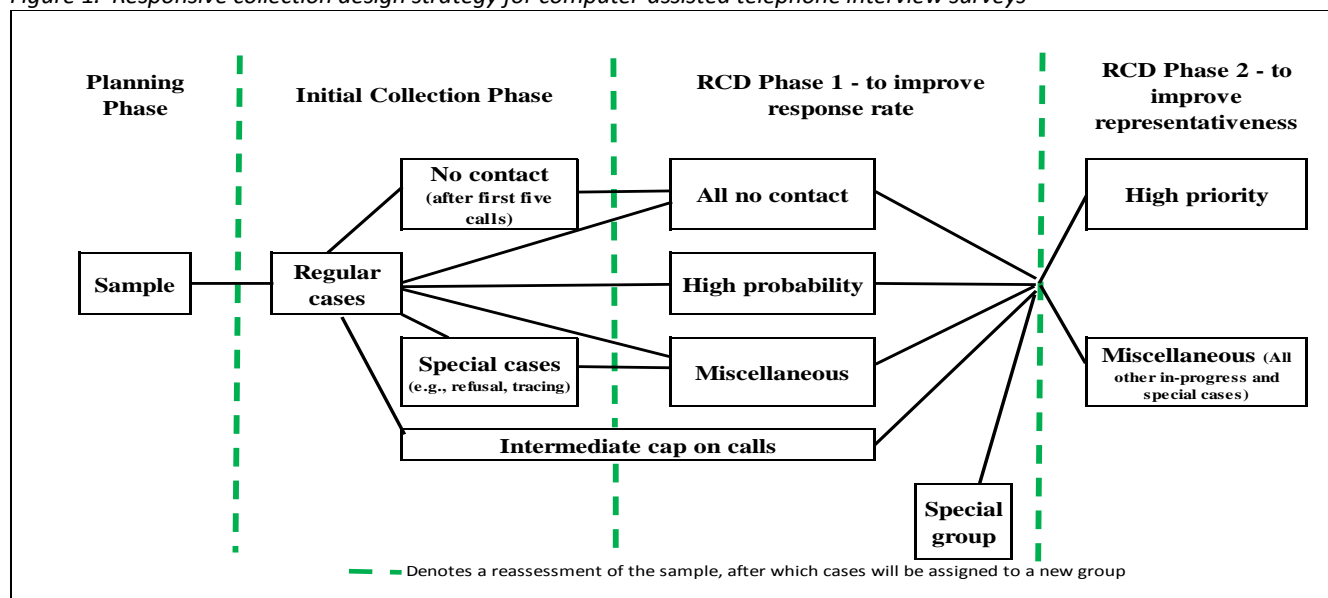
across the country). To assign a case to an interviewer, the call scheduler takes into account the profile of the interviewer, paradata information collected since the beginning of the data-collection period (e.g., outcome and number of calls), the Blaise group of each case (e.g., regular cases and refusal cases) and some other data-collection parameters (e.g., the cap on calls and time slices).

Active management uses and integrates a number of data sources to monitor data-collection progress and performance, such as the Blaise Transaction History (BTH), interviewer payroll hours, financial and production budget information, sample design and targeted response rates. The BTH refers to the record of calls that contains detailed information about each call made during data collection, including the date, time and duration of the call (system time), and the result of the call or visit. Payroll hours refer to interviewer pay claims for all collection activities (e.g., interviewing, training and administration). Paradata and other data sources can be available prior to data collection (e.g., sample design and budget information) or can become available at the beginning of collection and be accumulated throughout the collection period. For example, the BTH and the interviewer payroll information accumulated from the beginning of the data-collection period are available in a timely manner (the day after data are collected or recorded). The sample design and frame information (e.g., demographic characteristics of sample units by stratum) are used in conjunction with the paradata to enhance the analytical value of active management monitoring reports. The results of the response propensity model that uses data from previous collection cycles (when available) and from the current collection cycle are also used indirectly in the active management strategy for RCD surveys (Tabuchi et al. 2010).

3. Responsive collection design strategy

The first two RCD surveys were tested and implemented in 2009 and 2010 using control groups to assess the impact of this new adaptive approach (Laflamme and Karaganis 2010). Since then, Statistics Canada has conducted numerous surveys using RCD, which has been the standard approach for all CATI surveys since January 2015 (Figure 1).

Figure 1. Responsive collection design strategy for computer-assisted telephone interview surveys



The first step, planning, occurs before data collection starts. During the planning process, data-collection activities and strategies for the other three steps, including the development of response propensity models, are developed and tested. A logistic model is used to evaluate the likelihood of a case being interviewed during collection and to categorize each in-progress case on a daily basis.

The second step, initial collection, constitutes the first portion of data collection, from the collection start date until it is determined when RCD Phase 1 should begin. Cases for which contact has not been made after the first five calls are redirected to the “no-contact” group and then targeted by the ROs to make sure that the appropriate amount of effort is put into these cases. An intermediate cap on calls has also been introduced to prevent cases from reaching the cap (i.e., the maximum number of calls allowed) before the last data-collection step. During this initial collection step, many key indicators of the quality,

productivity, cost and response potential of in-progress cases are closely monitored to identify when RCD Phase 1 should be initiated.

The third step (RCD Phase 1) categorizes in-progress cases using information from before collection began and paradata accumulated during collection to better target the data-collection effort. In particular, the “all no contact” group consists of all cases for which no contact has been made since the start of the collection period (no matter the number of calls). The “high-probability” group includes in-progress cases with the highest probability of completion, as assigned by the response propensity model. The objective of this step is to improve overall response rates. During this step, monitoring of key indicators continues. In particular, the sample representativeness indicator provides information on the variability of response rates between domains of interest (e.g., sample design stratum) to help determine when Step 4 (RCD Phase 2) should begin.

The last step aims to reduce the difference in response rates between the domains of interest. Its goal is to improve sample representativeness by targeting cases that belong to the domains with lower response rates or to the domains where the differences between the observed and the target response rates are largest.

4. Active management for responsive collection design

The purpose of active management in the RCD context is to provide timely and relevant data on survey progress and performance, based on key indicators and customized information, to identify when data-collection milestones are met and when changes to the collection strategy are required. It can also be used to identify problems as early as possible and correct them (if required) before collection has finished. The overall objective of active management is to make effective use of collection resources to find the most appropriate balance between data quality, timeliness and survey costs. The first part of this section describes the key indicators used to actively manage RCD surveys. Section 4.2 presents the strategy for identifying data-collection milestones (i.e., when to initiate RCD phases 1 and 2). Section 4.3 describes some of the other active management tools used to identify problems as early as possible and correct them, and how to use remaining collection resources effectively.

4.1 Key indicators

Response rate is not the only key indicator that should be considered when monitoring and assessing data-collection progress and performance. Response rate should be used in conjunction with other measures that constitute, in some way, a data quality and cost framework for RCD. In the Statistics Canada context, these other measures are survey efficiency, productivity, the proportion of budget spent (cost) and representativeness, as well as the response potential of in-progress cases.

The efficiency indicator is defined as the proportion of total calls that result in a complete interview (i.e., the number of completed interviews over the total number of calls). The productivity indicator is defined as the ratio of the production system time devoted to the interviews themselves (i.e., the total time logged into the system by the interviewers once a case is open) to the total system time, which includes all unsuccessful and successful calls (Laflamme 2009). The productivity indicator can also be seen as the efficiency indicator with each call weighted by its duration.

The proportion of the budgeted interviewer payroll hours (financial information) and of the system time hours (production information) spent from the beginning of the survey are both used as cost indicators. The correlation between production and financial information is very high throughout the collection period. If timely financial data are unavailable, the proportion of the budgeted system time spent is a very good proxy for a cost indicator, especially for ongoing surveys.

The response potential of in-progress cases is based on two measures. The first measure is the proportion of regular in-progress cases (cases with no special outcome, such as a refusal), while the second measure gives an indication of the effort already put into these cases. The proportion of more difficult cases (those that generally require more data-collection effort to get an interview or to confirm a non-response) generally increases as the survey progresses. Figure 2 shows an example of how these key indicators progress through the collection period.

Finally, the selected representativeness indicator provides information on the variability of response rates between domains of interest. It is simply defined as 1 minus 2 times the standard deviation of the difference between the observed and the target response rates by domain of interest. The implemented representativeness indicator is conceptually different from the *R* indicator proposed by Schouten et al. (2009).

These main indicators are used, along with the response rates, to identify when changes to the collection strategy are required (Section 4.2). These indicators are also used, with other indicators, to monitor RCD surveys and make the best use of data-collection resources, while taking into account the trade-off between quality and cost (Section 4.3).

4.2 Determining critical data-collection milestones

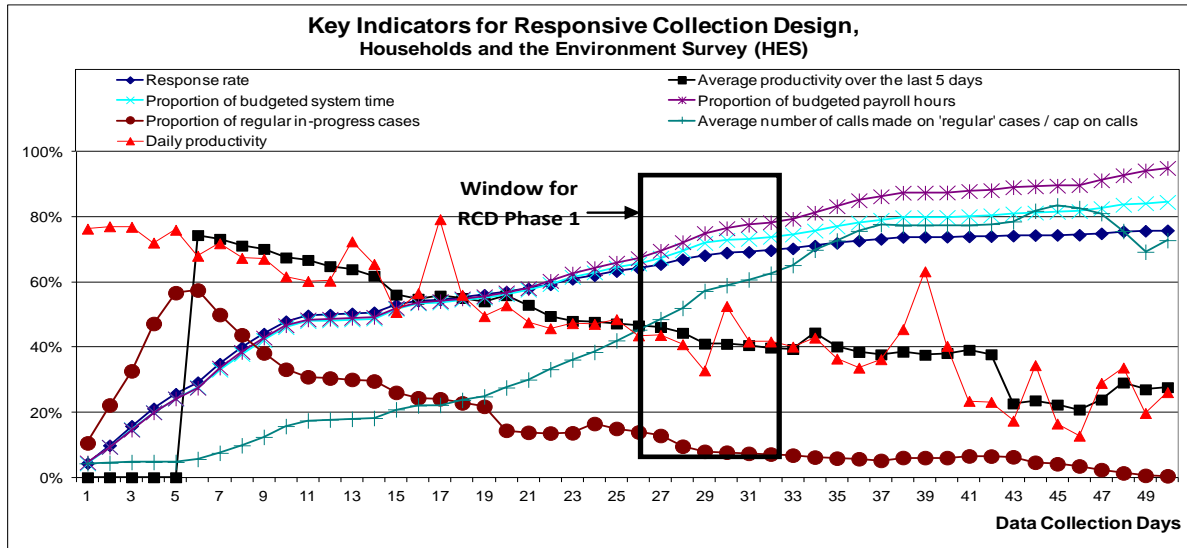
The decision process to determine when to move from one data-collection step to another needs to be planned before data collection begins. Decisions about collection strategy changes for RCD are based on cost, productivity, the response potential of in-progress cases, data-quality indicators and response rates. During the planning step, information from the previous data-collection cycle is used to recalculate all key indicators for every survey by RO. It should be noted that the shape of the series and their relationship are generally similar by RO, even though each RO tends to progress at a different pace.

One of the main objectives of this analysis is to determine the conditions or thresholds for each key indicator to identify when changes to the collection strategy are required (i.e., when RCD phases 1 and 2 should be initiated). In other words, the decision to begin each RCD phase is based on a set of conditions for these key indicators that determines the window for each RCD phase, as shown in Table 1. Once decided, the same thresholds will be used for all ROs, even though the monitoring (and decision process) is done independently. However, these conditions can always be readjusted during collection, according to the progress and performance of the survey, to take into account unexpected problems or circumstances.

4.2.1 Moving from the initial collection step to RCD Phase 1

During the initial step, survey progress is closely monitored and analyzed against a predetermined set of key indicators and conditions to decide when to begin RCD Phase 1. As shown in Figure 2, the Households and the Environment Survey response rate increased at the same rate as the two cost indicators (the percentage of budget spent) at the beginning of the survey. However, once the average productivity over the previous five days reached about 45% (i.e., 45% of the total system time is devoted to interviews), the gap between the response rate and the two cost indicators starts growing (the same effort yields fewer interviews than at the beginning). Early on, the proportion of in-progress regular cases starts to drop, while the ratio of the average number of calls made for the regular in-progress cases divided by the global cap on calls for the survey continues to rise rapidly. This also suggests that effort is being spent on a smaller number of cases with less productivity. This is particularly obvious after the lines of these last two series cross. Using a conservative approach, the window to initiate RCD Phase 1 was identified to be between the 26th and 31st days of data collection. Current RCD surveys use a more aggressive strategy to initiate RCD Phase 1, to take advantage of RCD earlier in the process. In this case, the current strategy would have identified the period between the 15th and 20th collection days as a more suitable window.

Figure 2. Key responsive collection design indicators



To facilitate interpretation and decision making for survey managers, the six key indicators and the status of each condition (one condition per indicator) at a given point in time during collection are integrated and consolidated into a single dashboard, as shown in Table 1.

The value of each indicator and the status of each condition (1 means that the condition is met) are presented in Table 1. The sum of the conditions is used to determine the status of each RO with respect to the initialization of RCD Phase 1. Therefore, when the sum of the six conditions is between 1 and 3, there is no need to start RCD Phase 1. However, when the sum of conditions is 4 (yellow line), this RO is approaching the threshold for moving to the next step. Finally, when the sum of conditions is 5 or 6 (red line), the RO should switch to the next phase if it has not already done so.

Table 1. Dashboard of key indicators for responsive collection design Phase 1

Regional Office	Response Rate		Productivity (Average over last 5 days (%))			Budget and Cost				Propensity of In-Progress Cases				Sum of conditions
	Response Rate %	Cond. 1	Initial	Current	Cond. 2	% of budget payroll hours	Cond. 3	% of budget system time	Cond. 4	% of regular in-progress cases	Cond. 5	Average number of calls for regular in-progress cases divided by the cap on calls	Cond. 6	
Edmonton	52.2%	1	64.3%	41.6%	1	56.6%	1	62.4%	1	28.3%	0	7.2	0	4
Halifax	52.6%	1	63.6%	45.5%	1	62.8%	1	69.8%	1	27.0%	0	7.7	0	4
Sherbrooke	46.3%	0	66.9%	58.3%	1	49.8%	0	50.7%	0	34.5%	0	3.4	0	1
Sturgeon Falls	64.2%	1	74.4%	46.6%	1	67.2%	1	65.6%	1	13.9%	1	11.3	1	6
Winnipeg	62.4%	1	69.9%	46.8%	1	69.8%	1	69.0%	1	12.5%	1	13.0	1	6

4.2.2 Moving from responsive collection design Phase 1 to Phase 2

During RCD Phase 1, which aims to improve response rates, the same key indicators used in the initial step are monitored, along with two additional ones (the representativeness indicator and the average response rate increase over the last five days), to determine when a given RO should initiate RCD Phase 2. The decision to initiate the last RCD phase is based on the representativeness indicator and the other key indicators, with a new set of conditions. Another dashboard (similar to Table 1) is also produced to monitor collection during RCD Phase 1. For the moment, no specific conditions are set for the representativeness indicator during the planning step. The representativeness indicator is mainly used as a qualitative indicator to evaluate the trend of sample representativeness over time at regional and national levels. The last step prioritizes (without subsampling) cases that belong to under-represented groups of interest (i.e., the domains of interest with the lowest response rates or the domains where the difference between the observed and the target response rates is the largest). RCD Phase 2 should not be initiated too late during data collection to provide some flexibility and time to improve sample representativeness.

4.3 Active management and other monitoring tools

The analysis of data from previous collection cycles (or from previous survey cycles of comparable surveys in terms of sample design) during the planning step is generally used to improve existing active management tools and develop new approaches to closely monitor collection progress, to assess data-collection performance and to identify or predict problems during data collection. The strategy that is adopted takes advantage of the active management experiences and the lessons learned from previous surveys. This section provides an overview of some of the most useful and important tools used during collection. All reports that monitor survey performance and progress by RO also provide a summary at the national level for senior management.

4.3.1 Responsive collection design key indicators report

The RCD key indicators report is the main report that provides a comprehensive overview of the current survey performance and progress. It consolidates in a single tool all key indicators and other relevant production and financial measures to provide complementary information for a better appreciation of the current operational status. This is the first report survey managers look at to closely monitor survey progress and compare results observed in the field against planned survey progress and assumptions.

In summary, this tool provides the first basic information about the number of resolved and in-progress cases (see 4.3.2) and the number of complete interviews, non-response cases and out-of-scope cases, including response and hit rates. It also gives the proportion of never-contacted cases (see 4.3.5), the proportion of cases with at least one refusal, and the effort spent on refusal conversion, as well as the refusal conversion rates (see 4.3.6). In addition, it shows the distribution of collection effort by period of day and by group of cases (e.g., regular, refusal and no contact; see 4.3.3 to 4.3.7). There is also information about the average time of interviews, productivity and the average time spent by case for different types of cases.

From a financial perspective, the RCD key indicators report provides both system time and payroll hours budgeted, and the proportion of both budgets spent. For example, it permits the comparison of the response rate progress and budget spending during collection, which is often a very good indication of how collection is progressing. Additional relevant financial measures are also displayed to assess whether planning assumptions are still aligned with what is observed in the field. Other relevant measures presented in this consolidated report include time per unit for respondents, non-respondents and out-of-scope cases. The main objectives of this report are to determine whether the survey is progressing as expected and to identify whether collection is facing (or going to face) operational problems.

More detailed information is given in a series of other RCD reports that perform more in-depth analyses to identify issues and their origin to determine the most appropriate solutions or interventions (if required). The rest of this section is an overview of some of these important active management tools, which are used in conjunction with this main report during data collection for RCD surveys.

4.3.2 Data-collection progress and effort

This report not only gives a snapshot of the current survey progress status, but also provides the daily effort, progress and results from the beginning of data collection. For example, survey progress can be monitored using the daily and cumulative number of resolved cases (and, consequently, the proportion of in-progress cases) at the end of every data-collection day, by final status of the case (respondents, non-respondents, out-of-scope cases and cases that reached the cap on calls). During collection, in-progress cases are targeted to monitor the effort already put into these cases, to evaluate their characteristics and to assess their relative likelihood of being interviewed. In fact, changes to the collection strategy or corrective actions have an impact only on in-progress cases, as no action can be taken on resolved cases. This is one of the reasons why many RCDs focus on in-progress cases.

4.3.3 Distribution of in-progress cases by Blaise group

During collection, cases can be assigned to different Blaise queues (e.g., regular cases or refusals), depending on the outcome of a call. At the start of collection, cases are generally assigned to the regular case group. As the survey progresses, some cases are resolved, some are recorded as refusals, and some others require special actions and are redirected to different Blaise queues. This means that the characteristics of in-progress cases change during collection. In fact, as the survey progresses, the overall response potential of in-progress cases decreases (along with the survey efficiency and productivity), because cases

are, on average, less likely to respond. Therefore, the distribution of in-progress cases by Blaise group, as well as the average number of calls made for cases in each group, is monitored throughout collection.

Six main Blaise groups are defined in the RCD strategy throughout collection:

- 1) regular: cases in the initial collection step, or cases where contact was made and there was no explicit refusal in RCD Phase 1
- 2) no contact: cases with no contact after five call attempts in the initial collection step, or never contacted (no matter the number of calls) in RCD Phase 1
- 3) refusal: cases with at least one refusal
- 4) senior interviewer: cases that require special attention
- 5) high probability in RCD Phase 1
- 6) the intermediate cap on calls group.

The proportion of in-progress cases in a given group defines the relative size of the group. Since the relative size and the call efficiency of each of these groups vary during collection, each RO needs guidelines to help with interviewer assignment between these groups, especially once RCD Phase 1 begins. In practice, there is always a trade-off between the relative efforts that need to be put into the six main Blaise groups.

4.3.4 Efficiency monitoring tools

The efficiency indicator (i.e., the number of completed interviews over the total number of calls) can be monitored by Blaise group and by day throughout the collection period. As a survey progresses, the call efficiency generally decreases from 8% to 10% at the beginning of the survey (e.g., for the regular group) to around 1% near the end of the collection period (e.g., for the no-contact or intermediate cap on calls groups). In practice, to have a relatively stable call efficiency indicator that accounts for large variations in terms of collection effort (e.g., generally low volume of calls during weekends), a call efficiency average over the last four days is used.

In any survey, in-progress cases can typically be divided into six important categories (the six main Blaise groups). The effort put into each of these groups during collection can greatly affect the outcome of collection, because the six groups usually have a very different efficiency distribution over the collection period (see figures 3, 4 and 5). Monitoring the call efficiency of the various groups is helpful in increasing global efficiency, because it allows collection strategies to be adapted to put proportionally more effort into the most efficient groups (i.e., maximize call efficiency over all collection). Therefore, it seems reasonable to consider the relative size and call efficiency of a group when choosing which cases to work on and how much effort to put into them, from an operational perspective. In other words, relatively more effort (compared with the relative size of the group) should be put into the more efficient groups to improve cost efficiency and the potential response rate throughout the collection period.

This approach constitutes the cornerstone of the guidelines for interviewer assignment across Blaise groups that will be gradually implemented in the global RCD strategy in 2016. These guidelines also include new active management monitoring tools that will be discussed in detail in a subsequent paper. Sections 4.3.5 to 4.3.8 provide an overview of the characteristics of some of the six main Blaise groups, with regard to their relative group size and call efficiency during collection, from the active management perspective.

4.3.5 No-contact cases

When deciding on a model to predict the efficiency of a call, one of the best variables to consider is contact information (i.e., whether contact has previously been made with the sampled unit).

Figure 3. Efficiency of no-contact cases

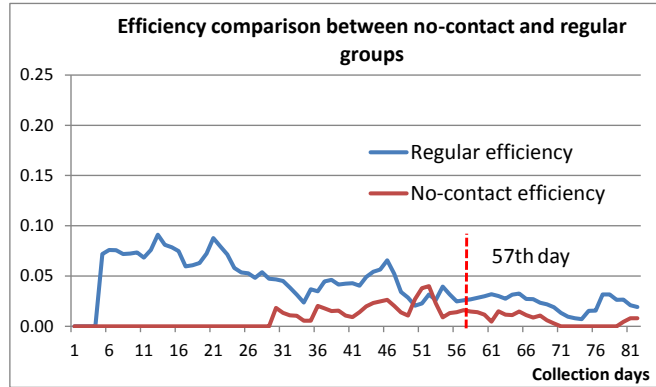
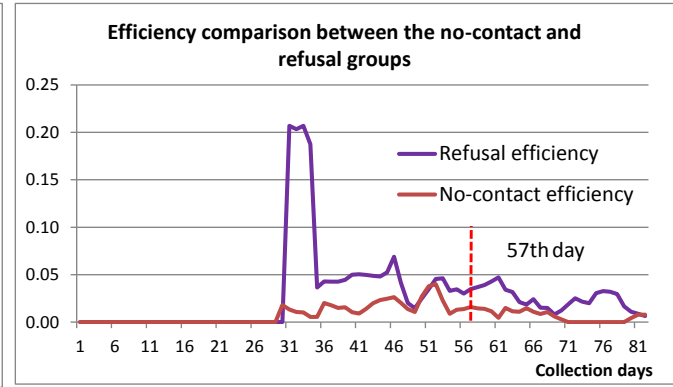


Figure 4. Efficiency of refusal conversion



At the start of collection, the potential of this information is relatively limited, because cases with few calls and with no contact still have a reasonable call efficiency. However, as collection advances, the no-contact cases eventually show very low efficiency (typically below 1%). For RCD surveys, the no-contact group begins to be populated during the initial collection step with cases for which the first five consecutive calls result in no contact. It continues to be populated during RCD Phase 1, regardless of the number of call attempts. Figure 3 compares the efficiency of the regular cases with that of the no-contact cases. The no-contact group is empty until around Day 30, where a very low call efficiency is already noticed. There is a significant increase around Day 55 that is related to a large number of cases for which a second phone number is used (for about half of the cases, there are two or more phone numbers available). The intermediate cap on calls group has very similar call efficiency patterns by mid-collection period, compared with the no-contact group.

4.3.6 Refusal cases

Cases with at least one refusal slowly build up after collection begins and eventually represent a significant portion of the in-progress cases (i.e., the refusal group has a high relative size). Given the importance of this group, it is not surprising that a significant and timely effort on these cases is necessary to achieve good response rates. Figure 4 shows that refusal follow-up starts around mid-collection, with very good call efficiency results. At that time, call efficiency for the refusal group is usually higher than the call efficiency of the regular cases (comparing Figure 3 and Figure 4), with the call efficiency of the regular cases being higher than that of the no-contact cases. This suggests that relatively more effort should have been put into this group at this point in time. Cases in the senior interviewer group also often show a similar call efficiency pattern as cases in the refusal group.

4.3.7 High-probability cases

For all investigated surveys, the high-probability group typically experienced much greater efficiency than the regular group (see Figure 5). This is somewhat expected, since this group is composed of the cases that are more likely to respond (the more promising cases), as identified at the beginning of each day by the logistic propensity model during RCD Phase 1. In other words, the propensity model has properly identified cases that are more likely to respond. As a best practice, an RO should always have one interviewer working on these high-probability cases on any given day.

4.3.8 Overview of the guidelines for interviewer assignment

Sections 4.3.3 to 4.3.7 give an idea of the relationship between the relative size and the call efficiency of each main group. In practice, there is a trade-off between the proposed daily workload on each of the main Blaise groups. The proposed approach needs to take into account both relative size and call efficiency for the main Blaise groups on any given day.

Figure 5. Efficiency of high-probability cases

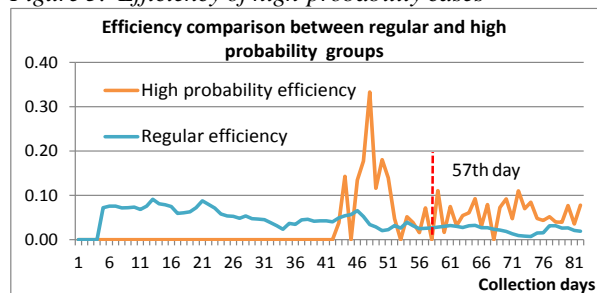


Table 2. Proposed workload on Day 57 (red line)

Blaise Group	Regular	Refusal	Senior interviewer	No-contact	High probability	Overall
Size of the group	261	206	258	233	57	1,015
Relative size of the group	26%	20%	25%	23%	6%	100%
Observed efficiency	2.6%	3.5%	3.0%	1.6%	7.1%	18%
Proposed workload	22.8%	24.3%	26.5%	12.7%	13.8%	100%
Observed workload	22.3%	24.6%	0.8%	45.0%	7.2%	100%

Let W_G be the relative size of the group multiplied by the efficiency for the group in a given day. The proposed workload indicator for that given group and day is $W_G / \sum_G W_G$, as shown in Table 2 (after the 57th day of data collection). In other words, the proposed strategy for the interviewer assignment guidelines recommends putting proportionally more effort into the most efficient groups to maximize call efficiency over all collection.² In the given example in Table 2, a big portion of the workload (45%) was into the no-contact group, when it only represents 23% of the remaining cases. This group also shows relatively low efficiency (1.6%). Almost no work was put into the senior interviewer group. The high-probability group shows the greatest efficiency over the last four days (7.1%). Accordingly, the proposed workload for the high-probability group (13.8%) is greater than its relative size (6%). This example is typical of the mid-collection cycle, where the proposed workload is often a trade-off between the work that is put into the refusal cases (also including the senior interviewer group) and the work that is put into the no-contact cases.

4.3.9 Survey progress by domain of interest and sample representativeness

This report provides a detailed view of survey progress in terms of response rate by domain of interest by taking advantage of sample-design information available at the beginning of the data-collection period. In particular, it compares the expected response rates (or number of respondents) with those actually achieved, at a detailed level of aggregation not available in the standard survey reports. This last step aims to improve sample representativeness by targeting cases that belong to the domains with lower response rates or to the domains where the differences between the observed and the target response rates are the largest. Used in conjunction with the representativeness indicator, it also serves as a tool to prioritize the domains of interest for which progress is below expectations in RCD Phase 2.

4.3.10 Ad hoc reports

The active management reports do not aim to give answers for all possible issues. They are planned and designed from past experience to identify possible and common problems, along with other information that could explain the source of these problems. However, they are also built in such a way as to highlight key elements that could either identify the source of emerging or new issues, or point to the need for more in-depth investigation through ad hoc analysis. These ad hoc reports can be produced in a timely manner, as they take advantage of the consolidated information produced by the active management infrastructure.

5. Active management challenges

The first challenge for active management is to produce relevant, customized and manageable reports based on key indicators that can be easily analyzed and used by survey managers at different points in time during collection. Analyzing this information requires new analytical skills that need to be developed and maintained. A second challenge is to identify the information required for monitoring, management and analytical purposes. It is important to find the right balance between the amount of detailed information needed to manage RCD surveys and the amount of effort required by survey managers to analyze it. Some analytical information can be good to know, but only required at the end of collection. To that end, only the most important reports need to be used on a daily basis to monitor and manage the RCD surveys, to reduce survey management burden, while the other reports and analyses can be used when required.

2. Call efficiency information is not available before work starts in a given group. In this case, the workload is simply the relative size of the group.

6. Operational progress

From 2009 to 2014, Statistics Canada conducted an average of two or three RCD surveys per year as research to assess, improve and fine-tune the overall RCD strategy. Since January 2015, RCD has become the standard approach for all CATI surveys. Given that up to five or six concurrent CATI RCD surveys were in the field in 2015, there was an imperative need to develop a more robust standard approach to minimize the time, risk and burden of implementation and active management of RCD in a day-to-day production environment. To that end, the informatics infrastructure (including the active management customized reports and tools, the RCD components, the functionalities in the Blaise collection system and the testing procedures of the applications) was standardized and documented to minimize the number of components and make them easier to maintain. Training was provided to all key players on the RCD strategy and tools.

7. Conclusion

The purpose of active management in the RCD context is to closely monitor data collection while it is in progress, in order to identify and correct problems as early as possible and to determine data-collection milestones where changes to the collection strategy are required, all while using collection resources effectively. In the past, response rate was often the only measure used for monitoring and assessing data collection with a fixed budget. Response rate is used in the RCD context in conjunction with other indicators, such as survey productivity, call efficiency, cost and representativeness indicators, to make the best use of data-collection resources and to find the most appropriate balance between quality and cost. The availability and accessibility of timely paradata information that enables the evaluation of survey progress through key indicators are critical to the development and implementation of relevant active management tools. Without this information, it is almost impossible to build an effective active management strategy, which is the heart of any RCD.

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