

## Three Steps Toward Sustainability: Spreadsheets as a Data-Analysis System for Non-Profit Organizations

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**Abstract:** *Many non-profits face barriers developing systems to collect and analyze data that can leverage the type of information that their funders and stakeholders require. Constraints such as limited evaluation expertise, time, and money make this virtually impossible to achieve without a viable solution. In an increasingly competitive environment, it is imperative that non-profits find innovative ways to track and measure their work within their evaluative capabilities. There are different ways in which evaluators can help even the most constrained non-profit organizations capture their reach and make the most of their existing data. This article proposes a three-step framework for the development of a data-collection and -analysis system through the use of spreadsheets. Not only is this proposed system feasible within the constraints of the non-profit sector, but it is also valuable for the sustainability of their services over time.*

**Keywords:** *capacity building, data analysis, data collection, evaluation capacity, non-profits, spreadsheets*

**Resumé :** *De nombreuses organisations à but non-lucratif font face à des obstacles en ce qui concerne la mise en place de systèmes de collecte et d'analyse de données pour offrir des informations pertinentes pour leurs bailleurs de fonds et parties prenantes. Le fait d'avoir une expertise limitée en évaluation, des contraintes de temps et financières sont des obstacles qui rendent impossible l'implantation de solutions viables. Dans un environnement de plus en plus concurrentiel, il est impératif que les organisations à but non-lucratif trouvent des moyens innovants pour monitorer leur travail en respectant leur capacité évaluative. Les évaluateurs disposent de divers moyens pour aider les organisations à but non-lucratif, même celles disposant de très minces ressources, à évaluer leur portée et à tirer le meilleur parti des données dont elles disposent. Le présent article propose une procédure en trois étapes pour l'élaboration d'un système de collecte et d'analyse des données faisant appel à des chiffriers. Non seulement il est possible d'implanter un tel système compte tenu des contraintes du secteur à but non lucratif, mais il apporterait beaucoup pour la pérennité des services.*

**Mots clés :** *amélioration de la capacité, analyse des données, collecte de données, capacité évaluative, organisations à but non-lucratif, feuilles de calcul électroniques*

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While, the demand for services from non-profit organizations continues to rise, the amount of government funding to support non-profits has been on the decline (Carman & Fredericks, 2010). With decreased government funding and increased competition in the non-profit sector, it has become critical for non-profit organizations to report organizational activities and demonstrate positive measurable outcomes (Brudney, Russell, & Fischer, 2017; Hackler & Saxton, 2007). However, constraints on resources and technical expertise often prevent non-profits from understanding and reporting on the impact of their services (Le Dantec & Edwards, 2008). Non-profit organizations face capacity deficits that impede their ability to manage data, track client outcomes, and assess program effectiveness. In fact, studies have shown that a very small number of non-profit organizations evaluate their programs, and even fewer have staff members with evaluation experience (Despard, 2016). This article addresses some of these challenges by proposing the development of a data-collection and -analysis system that meets both the information needs of the organization and the evaluation expectations of their funding partners. Designing and incorporating a strong and sustainable data-collection and -analysis system not only helps to demonstrate the program reach and impact but also helps ensure long-term support from funders and stakeholders.

Although research in data management is well established in the literature, few articles investigate data management in the context of small non-profit organizations (Fitch & Shaffer, 2007). To date, the majority of research in this area has focused on the underutilization of technology by non-profits and the environmental constraints that impede their ability to implement and sustain information-management practices (Polonsky, Landreth Grau, & McDonald, 2016; Volda, Harmon, & Al-Ani, 2011). Studies have shown that despite the current emphasis on evaluation, non-profit organizations have made minimal progress toward improving their evaluation practices. For example, they often find themselves collecting a large amount of data that does not contribute to their strategic plan (Liket, Rey-Garcia, & Maas, 2014). Although this article speaks primarily about the use of spreadsheets, there are numerous other technological tools available to help non-profits tell compelling stories about their work through infographics and data visualization (Erete, Ryou, Smith, Fassett, & Duda, 2016). These tools can also provide a baseline for analyzing and measuring outcomes and offer data-driven insights for program improvement. However, despite their availability and their usefulness in capturing several types of program data, they remain underutilized (Azzam & Robinson, 2013). This article addresses a gap in the literature by offering technological solutions for program evaluation that are realistic even within the evaluative capacity of the smallest non-profit organizations. More specifically, this practice note describes a three-step framework for the use of spreadsheets in developing and implementing a system that is accessible, adaptable, reliable, and ultimately sustainable over time.

This three-step framework was developed to address the needs of non-profit organizations in Northern Ontario. These organizations were offered free evaluation support as part of a government-funded initiative to support non-profit

organizations in measuring and tracking their work with youth. The objective of the three-year initiative was to provide useful insights to the organizations about the impact of their programs. As a solution to some of the constraint-related issues they experienced in their day-to-day operations, spreadsheets were used to support their evaluation needs.

In this article, we highlight three key elements that support the use of spreadsheets for evaluation: accessibility, adaptability, and reliability. Accessibility refers to the organization's ability to acquire and utilize technological and capacity-building tools despite their financial constraints. Adaptability refers to an organization's ability to integrate data collection and analysis into their existing organizational processes while using its current resources. Lastly, reliability refers to a system that provides a sustainable infrastructure whereby data can be collected and analyzed consistently over time. With these elements properly integrated into the data-analysis system, the evaluation processes will more likely be sustained.

## STEP ONE: ACCESSIBILITY

There are two conflicting factors that evaluators must consider when designing a sustainable data-collection and -analysis system. On the one hand, the system needs to capture and produce information detailed enough to meet the expectations of funders, and on the other hand, it needs to be simple enough for non-profit organizations to use consistently and with minimal support. The system also needs to complement the data flow and resource capacity of the organization, if it is to be sustained over time. Designing a system that is simple to use but also meets the complex needs of the organization is one of the key challenges of evaluation work.

The first step in developing and implementing a data-collection and -analysis system is meeting with the non-profit organization to ensure that the proposed system is feasible, understandable, and manageable, within their evaluative capacities. Understanding the technological capacity of the client, and their level of familiarity with the proposed solution, is paramount when introducing a new system. While larger for-profit organizations may have staff that are well educated on the value of effective data collection and analysis, many non-profits are less aware of the importance of these systems (Thatcher, Brower, & Mason, 2006). In addition, non-profits often lack the expertise, financial resources, training, and access to the necessary hardware and software. These factors combined make it difficult for non-profits to cultivate the expertise necessary to support complex data-management systems (West & Green, 2008). In many instances, this makes the use of spreadsheets the most suitable solution, as most organizations have access to spreadsheets and are familiar with their functions.

While technologically complex solutions may be attractive, they require a great deal of resources to use and maintain. For example, a database crash could require expensive technical support that may be outside the limited budgets of non-profit organizations. Although not particularly elegant or cutting edge, spreadsheets are a realistic way for non-profits to gather and analyze data. Spreadsheets can vary

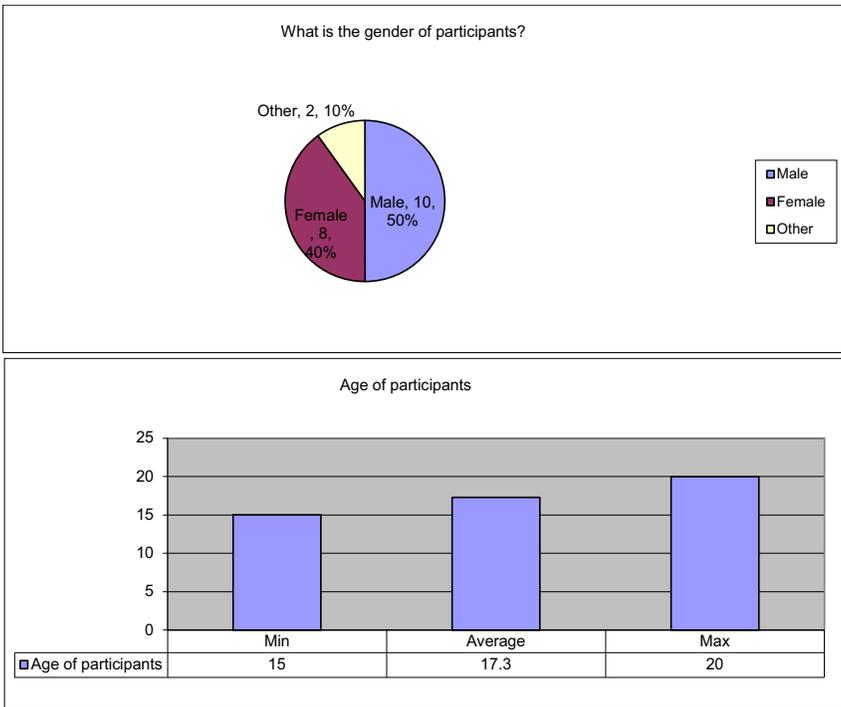
in complexity and have the potential to be a very powerful tool as data are added over time. Using a spreadsheet is not always an obvious choice, but it is generally the quickest and most user-friendly option. For example, spreadsheets can be a simple way to collect demographic data about service users, manage caseload requirements, track attendance, and organize user-satisfaction results. In this respect, spreadsheets can be an easily accessible, adaptable, and reliable option for data entry and analysis. If implemented with careful consideration of the organization's evaluative capacities, they can provide a practical and sustainable solution to the challenges faced by many non-profit organizations in evaluating their services.

Another consideration to ensure accessibility of the data-collection and -analysis system is the use of language. Using language that is intelligible to the non-profit organizations makes the analysis of the data less challenging for them to interpret. Using labels in question form rather than in "coded" syntax is a good way to ensure that the people using it can quickly access and manipulate data. Questions such as "How many participants are in the program?" and "What is the gender breakdown by age for participants?" allows the results of complex formulae to be captured and instantly displayed. If the output of the analysis is categorized by simple phrases, it can be easily interpreted and used in a report. It can also be communicated to stakeholders numerically and visually with the aid of a graph or chart (as seen in [Figure 1](#)). The spreadsheets should also include a tab or section for just graphs and charts for an easily accessible visual representation of the data ([Shiri, 2016](#)). Eliminating the appearance of complexity can also put the organization at ease and expedite the implementation of a new system.

The use of specialist jargon, particularly when discussing statistics, can also be intimidating and give the impression that the process requires advanced knowledge. In reality, the evaluation tools required by the organization can be fairly simplistic if developed for long-term use. Having access to something as simple as the demographics of program participants can be useful for evaluation purposes. Fostering the development of a system that is both practical and straightforward is the best way to ensure it will be adopted and used. As the capacity of the organization increases over time, the data can be used in new ways.

In cases where the organization is having a difficult time conceptualizing the new spreadsheet system, it is important to develop a model of how the data will be collected and analyzed. Once the organization establishes a level of comfort with the look and feel of the interface, the system and processes can be refined. It is important that the process of refining the system continue until the system is easy for the organization to use and resembles a computerized version of the paper forms they are used to. This allows the program staff to enter data while keeping with the familiar visual cues of their existing paper or electronic documentation systems. Most important, it should capture the type of information required by their funders. Using an iterative process to develop the tool is key to ensuring that the data-management and -implementation process is effective and used.

For evaluators, there are some simple strategies that can be used to help make the program staff more comfortable entering data and using the evaluation tools.



**Figure 1.** Program Dashboard (Fictitious data used for illustration)

Taking a hands-on approach by sitting with the staff to demonstrate how to appropriately enter and map data from various sources can increase their comfort level significantly. The staff should also be encouraged to review this process on an ongoing basis to ensure consistent data entry and data normalization. Manuals can also be created specifically for the organization. These manuals can include simple instructions, and screenshots can be embedded into the manual to offer visual prompts for each step in the process. Short and simple tutorial videos can also be created as an effective way of increasing their comfort level and enhancing their efficiency with the system. There are also many free resources that non-profit organizations can access to support their efforts to evaluate. YouTube videos and other online tutorials can be very useful to non-profit organizations should they need support later or require a refresher. Making non-profits aware of the resources that are available to them will help mitigate any concerns they have about using the system independently, and it will ultimately enhance their evaluative capacity.

Another consideration should be whether tensions exist between using the system and maintaining the status quo. These tensions can be easily addressed by demonstrating how entering and analyzing data can directly meet their evaluation and funding requirements. While there may be some hesitancy initially, it is

important to acknowledge it and work with the resources that are available to the organization to create an easy and organic process. Alternatively, implementing a system that adds an additional layer of complexity will only leave the organization with evaluation tools that they are ill equipped to handle and unable to sustain.

## **STEP TWO: ADAPTABILITY**

Ensuring that the system is versatile and amenable to changes within organizational structure is the second step in developing and implementing a data-collection and -analysis system for non-profit organizations. Understanding how data move through the organization is critical and helps the evaluators ascertain how the analysis system should be constructed. Understanding this will inform the process of how data are entered, organized, and analyzed. Also, knowing where the data originate allows for the creation of complementary data-analysis systems. The idea is that the system supplements but does not replace the normal workflow of the organization. Building a system that considers the existing flow of data allows for the integration of the organization's current processes in the evaluation and simplifies the task of data entry while limiting data duplication and errors.

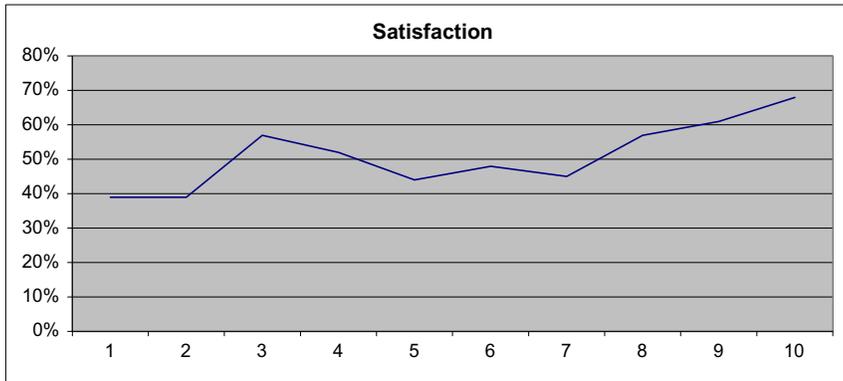
When working with smaller non-profit organizations, it is essential to find a balance between the capacities of the organization and the evaluation requirements of the funders. Most non-profit organizations have a sound and intuitive understanding of their program dynamics at a high level. In fact, many organizations collect large amounts of program data on participants such as demographic information, attendance records, and satisfaction rates, but many lack a simple and easy-to-use data-entry and -analysis system. For example, in a local non-profit youth program, a spreadsheet was created that mirrored the program registration form. The organization had been using the form to collect data for many years. In doing so, they had accumulated a large collection of program-level data, such as participant demographic information, attendance, and satisfaction results. To create a manageable data-entry and -analysis system for this program, these disparate pieces of data were integrated into one spreadsheet that could then track both client data (as seen in [Figure 2](#)) and satisfaction rates for program workshops (as seen in [Figure 3](#)). It was then simply a matter of the organization continuing the intake process they were already using. However, now the data were being entered in a format that made them useful.

In this case, the analysis of existing program data provided the organization with insightful information about the program users, such as family relationships, medical history, and other agency involvement. The tool allowed this organization to be in control of its data and to communicate its findings to funders and stakeholders when necessary, without the support of a third-party evaluator.

Spreadsheets may sometimes present challenges as a data-collection and -analysis system, and it is important to work through these challenges with the organizations. In the previously mentioned case, when the spreadsheet was created using Excel, it was noticed that several pieces of data were missing in the data

ID	First Name	Last Name	Gender	DOB	Age	City	Allergic to apples?	Happy?	First Name	Last Name
1	Cecelia	Hoffman	Other	May 3, 2001	17	Sudbury	Yes		First Name	20
2	Jim	Miles	Female	Tuesday, March 02, 1999	19	North Bay	No		Last Name	20
3	Carla	Stanley	Male	October 23, 1998	19	Sudbury	Unsure			
4	Emily	Lloyd	Male	June 30, 2002	16	Sault	No		Gender	
5	Darrel	Fernandez	Female	October 2, 2000	17	North Bay	No		Male	9
6	Meghan	Clayton	Other	April 21, 1999	19	North Bay	No		Female	8
7	Levi	Sutton	Female	March 19, 2001	17	Sudbury	No		Other	3
8	Christie	Lawrence	Female	April 25, 2003	15	North Bay	No			
9	Marco	Simpson	Female	July 22, 1998	19	North Bay	No		City	
10	Salvatore	Peterson	Male	August 25, 2002	15	Sudbury	No		Sudbury	11
11	Laura	Banks	Male	January 11, 1999	19	Sudbury	No		North Bay	8
12	Sylvester	Sims	Female	July 14, 1998	19	Sudbury	No		Sault	1
13	Kevin	Briggs	Female	August 30, 2002	15	Sudbury	No			
14	Fernando	Farmer	Male	October 24, 2002	15	Sudbury	No		Allergies	
15	Darryl	Paul	Other	July 27, 2001	16	North Bay	Unsure		Yes	1
16	Domingo	Rhodes	Male	July 31, 1998	19	Sudbury	No		No	17
17	Marion	Jacobs	Male	January 1, 2002	16	North Bay	No		Unsure	2
18	Shawna	Cox	Male	January 18, 1998	20	Sudbury	No			
19	Courtney	May	Female	July 28, 2002	15	Sudbury	No			
20	Sabrina	Nichols	Male	April 9, 1999	19	North Bay	No			
21										
22										
23										

Figure 2. Participant Information (Fictitious data used for illustration)



**Figure 3.** Participant Feedback (Fictitious data used for illustration)

set provided. The missing data posed some challenges when the population size was being determined. When different indicators were used for this, such as the number of participants and their program interactions, the results were varied. This made it difficult to accurately determine the population size. Without a complete picture of all the data, attempting to create a spreadsheet that could integrate historical data, and allow for future entries, became complex.

In consultation with the organization, decisions were made about what data should be included in the analysis, and how to best implement the necessary changes without losing the meaning of both the existing and new (future) data. In this case, the solution was to normalize and recode the data. Each entry was reviewed with the organization to determine what it meant and how to best code it. Once this process was complete, the gaps in data could be filled, and high-quality and accurate results could be provided to the organization. The new spreadsheet now provides a system that has long-term utility. By providing the organization with a system that continuously updates statistical and program information in real time, the organization can acquire an evidence base that supports the implementation of program improvements.

### STEP 3: RELIABILITY

Spreadsheets have proven to be versatile as an evaluation tool and can be adaptable to practically any application in the non-profit sector. However, it is important for evaluators to understand that the tools they develop are more likely to be adopted by the organization if they are easy to use and easy to access. With limited time and resources, non-profit organizations may lack the capacity or the capability to sustain ongoing data-entry and -evaluation practices. While many organizations seek to dedicate time for evaluation and analysis, this often takes a back seat to the critical daily work of the organization. Some organizations have access to a full-time database administrator, while others don't even have access

to the latest version of Microsoft Excel, and certainly not more advanced software packages. In these cases, it sometimes limits the complexity of what can be developed for the organization; however, there is a great deal of alternative software, including Open Office, Google Sheets, or older copies of the software, that non-profit organizations can access and utilize. Also, many companies offer discounted or donated software programs for non-profit organizations so they can automate their workflow and save time and resources.

In many respects, capacity building is more than implementing a new software program. It involves fundamentally understanding the client's available ecosystem of resources in an effort to determine what approach would be best. Designing a system to be reliable means understanding how it will be used and what inputs are required to perpetuate the system, for it to remain useful. The amount of time and effort needed to utilize the system will determine the client's ability to maintain it. Ultimately, once the system is implemented, it is the client's responsibility to enter data on a regular basis. Helping the organization develop an internal accountability process to ensure consistent data entry will also lead to the reliability of the system. With realistic time frames for data entry and reporting and with transparent expectations, the organization can better estimate the amount of time needed to meet the ongoing demands of implementing a data-entry routine.

Spreadsheets also offer many useful features that make them reliable in accommodating the evaluative needs of non-profit organizations. Since many organizations have a good idea of their current and future workload, tools can be built to accommodate growth several years into the future. By simply designing ranges, which accommodate many more fields than is currently required, the spreadsheets can provide ongoing cross-sectional and longitudinal insights for sometimes several years. For example, with a non-profit organization that provided supports to youth who faced barriers to employment, the spreadsheet was designed to be used for up to three years. Discussions were then held with the organization about how to effectively and consistently enter the data to ensure the reliability of the system within their organizational capacity. Identifying key players within the organization who could support data entry, and by specifying when and how this would be accomplished, helps the organization plan for consistent and ongoing use. Doing so may cause extra work for the evaluator and organization at the onset, but the long-term gain will far outweigh the extra time spent planning. Failing to consider future use will significantly limit the lifespan of the spreadsheet. Designing a system with an eye to future capacity is an important part of building sustainable tools and ensuring reliability.

## **IMPLICATION FOR PRACTICE**

The cornerstone of a successful evaluation is in the planning and understanding of the needs and evaluative capacity of the organization. This makes it possible to build an effective and adaptable tool that can be easily integrated into the

regular workflow process of the organization. With non-profit organizations that face numerous evaluation constraints, this also aids in building their evaluation capacities. Over the past decade there has been increased pressure for non-profit organizations to demonstrate their effectiveness and adhere to accountability and performance measures (Carman, 2009, pp. 374–390). In addition, the pressure to shift from output to outcome and impact evaluation adds to the already complex issues that non-profit organizations face in evaluating their programs (Stoecker, 2007). Giving non-profit organizations the skills they need to better harness and gauge their activities will lead to greater insight about their program's accomplishments, improve their services, and enhance their eligibility for funding (Carman & Fredericks, 2010, pp. 84–104). Understanding the organization's capacity with respect to technology and other organizational resources ensures that the evaluation process is viable and can be maintained on an ongoing basis. Developing a system that works with their existing tools also lends to its feasibility and sustainability over time.

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