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BEYOND NUMBERS: THE USE AND USEFULNESS OF DATA FOR EDUCATION IN EMERGENCIES

Elizabeth Buckner, Daniel Shephard, and Anne Smiley

ABSTRACT

Recognizing the lack of knowledge about how to improve data systems for education in emergencies (EiE), we examine in this article how EiE professionals use data and what makes data "useful" to them. Drawing from 48 semistructured interviews from a purposive sample of professionals working in the EiE field across the humanitarian, development, and stabilization sectors, we explored the primary ways EiE professionals use data. Using inductive and emergent coding, we identified the key themes, which we then disaggregated by participants' sector and role in EiE operations. Our findings indicate that there is a common need across sectors for data that inform operations. However, participants working at a national or local level spoke the most about operational uses of data and the least about strategic uses, such as policymaking and advocating. Meanwhile, there was a notable emphasis among actors at the global level on strengthening data systems and their strategic uses. In this article, we also highlight the myriad nontechnical factors that shaped participants' perceptions of usefulness, including the politicization of data, users' expertise in analysis, and personal and institutional relationships. We argue that conversations about improving data for use in EiE must not focus exclusively on tools or techniques but also on people, institutions, and contexts.

INTRODUCTION

It can be difficult for those working in education in emergencies (EiE) to find timely and accurate data. Studies find that EiE professionals lack data on where children in emergency settings are located, their educational needs, and the specific barriers they

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face in accessing education (Anselme, Ghosn, and van de Brug 2019; Mendenhall, Russell, and Buckner 2017; Montjourides and Liu 2019). The lack of data to inform EiE can prevent organizations from reaching those in need, undermine the efficient allocation of resources, and make it difficult for organizations to measure their impact accurately (Anselme et al. 2019). There have been calls to improve data collection, coherence, and sharing between actors in EiE as part of a broader shift toward more responsive and longer-term programming (UNOCHA 2017; UNGA 2016). Numerous stakeholders, including the Inter-agency Network for Education in Emergencies and USAID's Education in Conflict and Crisis Network, have identified the critical need to improve data tools and systems for the EiE field.

That said, there is less agreement on how to improve data for EiE (Cambridge Education 2017; Montjourides 2013), or for humanitarian responses more broadly (cf. Bhimani and Song 2016). This is because data collection and analysis can be time and resource intensive and, as such, some argue that focusing on data systems diverts resources from program implementation. Calls to improve data for EiE tend to assume that more is always better without necessarily clarifying what types of data are most needed and useful. Recognizing this gap in understanding, we examined how EiE professionals use data and what factors make data most useful for them.

Drawing from 48 interviews with EiE professionals working across the humanitarian, development, and stabilization sectors for a broad array of organizations, including United Nations agencies, donor agencies, and various implementing international nongovernmental organizations (INGOs), we explored how data are used in EiE. Our findings situate six uses of EiE data within two broad families of use, operational and strategic, which are prioritized differently by different actors in the field. An important and perhaps surprising finding is that there are relatively small differences in terms of data needs and uses across the humanitarian and development sectors; these needs and uses vary more according to respondents' proximity to project implementation. Those working in global or regional organizations or institutions that are farther removed from project implementation tended to discuss their role in terms of strengthening systems. They also tended to focus more on the data needed for strategic purposes, namely, advocacy and policymaking. However, data often were collected by entities closer to implementation, and they focused more on the operational uses.

Our findings also point to ways of strengthening data use in EiE that require more than technical solutions. While standardized indicators and responsive tools are certainly needed, our respondents also pointed out that data needs and uses are

highly context dependent and that numbers often are politicized. As such, we argue that building trust, institutionalizing data systems, and building technical capacity are necessary to improve the use and usefulness of data for EiE.

LITERATURE REVIEW

We conceptualize data as the qualitative and quantitative facts and information researchers use to synthesize and summarize more complicated and contextual realities. The many common examples of EiE data include how many children are of school age, how many are accessing various education programs, how those children are performing in school, the location and physical infrastructure of existing schools, where various EiE organizations are operating, and how much humanitarian funding is devoted to education.

Data collected for EiE differ from education development data in several important ways that may affect their use and usefulness, namely, the roles governments and international organizations play in collecting data, the geographic coverage of the data, the speed of the planning and policymaking cycle, and the type of data collected (Brown and Ngoga 2019; Buckner, Smiley, and Cremin 2019; MacEwen 2019; Montjourides and Liu 2019; Segniagbeto 2019).

Education development data are traditionally collected by a government through education management information systems (EMIS), which are implemented through either a school census or a more dynamic school-based data-collection process (UNESCO 2019). These data are then reported in a dashboard or statistical yearbook for the entire nation, with prespecified subnational disaggregation (such as states or regions). The data are commonly collected and reported on an annual basis and ideally used to inform policies and budgets for future years. Such EMIS data focus primarily on access but increasingly also on learning outcomes, in keeping with Sustainable Development Goal (SDG) 4—"Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all"—and the so-called learning crisis (World Bank 2018).

While the availability and accuracy of data are concerns in the field of international education development (Gustafsson 2015; Omoeva et al. 2013; UNESCO 2017), emergency settings, which tend to be volatile and localized, pose distinctive challenges for data collection and use for various reasons (Brown and Ngoga 2019). First, governments may stop their data-collection efforts entirely in emergency contexts or have incomplete coverage in the areas affected by the conflict or

disaster (GPE and IIEP 2016; ODI 2016). This may be because of a reprioritization of resource allocation or a lack of access to the area. As a result, international organizations and local civil society organizations often begin to collect data. Second, because emergencies usually have differential effects across a country, data-collection efforts and data needs may differ by locality (Buckner et al. 2019; Montjourides 2013). This may result in different data-collection systems being used in different locations and new data-collection needs arising in areas affected by an emergency. Third, the volatility of the initial phase of an emergency requires more rapid data collection and data use, as annual data quickly become obsolete (Montjourides 2013; Montjourides and Liu 2019). As a result, humanitarian data are sometimes collected daily and weekly during the acute phase of an emergency. Finally, education service provision changes during an emergency in terms of what is delivered and who is delivering it (Buckner et al. 2019; Mert and Kesbiç 2019). This fact, and the volatility of the situation, generate a need to coordinate tracking of data on education activities, such as who is delivering what, where, when, and to whom (the 4Ws). As a result, more data may be collected on activities and on access to those activities than on learning and other education indicators (Mert and Kesbiç 2019). As a result, the humanitarian and development sectors tend to have different indicators, timelines, reference populations, and actors involved in the collection, aggregation, and dissemination of data (Buckner et al. 2019; MacEwen 2019; Segniagbeto 2019).

PRIMARY USES OF DATA IN EiE

Despite the well-documented challenges of accessing reliable data in EiE contexts, data are important in EiE for many reasons. However, gaps remain in the understanding of how EiE data are used. Drawing from previous work on EiE data (Buckner et al. 2019) and from our own interviews, we focus on six of the broad range of uses identified in the literature, namely, planning, coordinating, monitoring, evaluating, policymaking, and advocating. In this section, we discuss these primary uses of EiE data.

Planning

Data often are used in EiE to inform program design and plan specific actions. Given the volatility of humanitarian settings, planning often is ad hoc and urgently needed. This differs markedly from the multiyear education-sector planning that is a norm in education development (Segniagbeto 2019). In EiE, data on the scale of an emergency, on the geographic distribution of the young people affected, and

on the existing education infrastructure can all be important for program design. Anselme et al. (2019, 23) state that the "main challenge in designing programmes in emergencies is the lack of disaggregated, reliable, and up-to-date data." Nonetheless, studies have shown that data from baseline surveys or risk assessments are important to program planning. For example, Davis and Payan (2019, 94) report that, after a baseline survey was conducted in Honduras, "school communities developed immediate, cost-effective policies and practices to reduce school-based violence."

Coordinating

Various forms of data are used to help EiE actors coordinate a humanitarian response. Those in a cluster system, for example, can use data to avoid conflict or duplication, identify opportunities for collaboration, and optimize the distribution of activities.[1] In order to improve coordination between EiE service providers and local education systems, UNESCO's International Institute for Educational Planning has supported data collection and joint sector planning as, for example, in Ethiopia (MacEwen 2019).

Monitoring

Implementing partners and donors often generate data to monitor programs. Monitoring data are used in EiE to understand program implementation, examine progress toward goals, ensure accountability, and provide feedback (Cambridge Education 2017, 2). An example of this use is the monthly or quarterly education cluster dashboards that use data on the number of children reached, relative to the target numbers and the need (Global Education Cluster 2020).

Evaluating

Data also are used to assess impact and performance, and to generate evidence for good practice (Liket, Rey-Garcia, and Maas 2014, 176). EiE evaluation data may include data on academic attainment, learning outcomes, and social and emotional learning. For example, data from early grade reading and numeracy assessments have been used to evaluate education interventions (Piper et al. 2020). Bogdanov, Basenko, and Zaleska (2019) reported on experimental and quasi-experimental research conducted to assess the effectiveness of mental health

1 The cluster system refers to groups of humanitarian organizations, both UN and non-UN, in each of the main sectors of humanitarian action, including education, that are tasked with coordinating activity within that sector. EiE activities often are coordinated through an education cluster and produce data that feed into the 4Ws.

programming among displaced children in Ukraine, and Alexander and Christia (2011) measured the effects school segregation in Bosnia and Herzegovina had on altruism among students.

Policymaking

Data are also used to inform the design of organizational or governmental policies. Although policymaking is often highly politicized and may or may not be responsive to data, Montjourides (2013, 87) argues that "data are useful in improving policymaking or the efficiency of government spending." This can involve using data to determine priority areas, funding allocations, and thresholds. Examples of this are using data to develop conflict-sensitive education-sector plans or to determine the thresholds for participation (such as age) in certain education programs.[2] Studies have found that a lack of disaggregated data and data on outcomes hinder EiE policymaking (Mert and Kesbiç 2019). In contrast, Tolani, Morales, and Wheaton (2019) explain how a USAID rapid education and risk analysis tool was used to inform the organizations' priorities in South Sudan. Yemen also used data from the humanitarian sector to inform the development of its transitional education sector plan, which was finalized in 2019 (Yemen Ministry of Education 2019).

Advocacy

Finally, data are also used to persuade individuals, often policymakers, to prioritize a problem or solution, to allocate funding to a set of actions, or to change an official organizational or governmental policy. Various authors and organizations have argued that data can be used effectively to secure resources and prioritize EiE (Cambridge Education 2017, 2; Global Education Cluster 2017, 12). Indeed, humanitarian response plan data can unlock specific funds, such as those from the Global Partnership for Education (GPE 2017; ODI 2016, 24). Haavisto and Goentzel (2015, 301) explain that "humanitarian organizations have also recognized that if supported by data, funding appeals are more likely to reach a wider audience." Dutton (2019, 27) reports similarly that data systems for tertiary education in Jordan were used to inform advocacy at international donor forums.

While the literature identifies the many ways data are used in EiE, a need remains for a deeper understanding of what types of data and analysis are needed to support the various uses effectively. Up to now, there has been little systematic

2 Although related to planning, we distinguish policymaking as applying data to a broader set of decisions beyond a single intervention. The use of data for policymaking often involves seeking longer-term changes at a system level, while planning aims at shorter-term goals linked to a particular intervention.

examination of which uses are most common among EiE actors and what types of data are needed to support each of these uses most effectively.

FACTORS AFFECTING DATA USE IN EiE

In addition to documenting the many uses of data in EiE, the growing literature on how data are used in education and beyond shows that the process of moving from data collection to data usage is neither linear nor technocratic (Levin 2013; Maxwell, Rotz, and Garcia 2016), as many other social, cultural, and political factors come into play (Levin 2013). This point certainly applies to the humanitarian context and the distinct organizational cultures of humanitarian and development organizations. The significant body of literature on evaluations' utility to nonprofits has found that, despite increasing pressure for organizations to evaluate program effectiveness, many staff report feeling that they are "drowning" in data that do not improve programs (Snibbe 2006, 39; Liket et al. 2014).

Studies on program evaluations highlight the variety of factors that determine whether evaluations are utilized, including organizational readiness, the user friendliness of results, decisionmakers' prior education, and the degree of stakeholder collaboration (Cousins and Leithwood 1986; Hoefer 2000). Studies also have highlighted the fact that various members of a single organization may have differing concepts of data and their use (Maxwell et al. 2016). As such, the importance of building relationships between those who generate and use data is widely accepted as a crucial determinant of utilization (Bach-Mortensen, Lange, and Montgomery 2018; Donnelly and Searle 2017; Liket et al. 2014; Patton 2008; Ramírez, Kora, and Shephard 2015). Most of this literature addresses evaluations conducted by nonprofit organizations. As a result, it does not address the particularities of data collection and usage in EiE contexts, which pose their own challenges. Thus, there is a need to understand if there are any factors specific to the EiE context.

Prior studies have documented the various issues EiE actors face when collecting data in crisis contexts (Anselme et al. 2019). For this study, we drew from the existing literature to examine how data are used by diverse stakeholders working in EiE, what contextual and organizational factors affect their perceptions of data utility, and what makes data useful for their purposes. With this article, we aim to contribute to ongoing initiatives to improve the use of data to provide quality education for all children and youth affected by emergencies.

DATA AND METHODS

Data for this study come from 48 semistructured interviews we conducted with professionals working primarily in EiE and education development in conflict-affected areas. We conducted the interviews in two waves. We focused first on interviewing respondents (N=35) whose work related to the conflicts in Iraq, Syria, and Yemen. For the second wave, we expanded our sample to include those working in EiE more broadly (N=13) using a combination of purposive and snowball sampling. The purposive sampling included a targeted recruitment of interview participants by organization type (humanitarian, development, and stabilization) and the geographic level at which they worked (global, regional, and national). We initially identified interviewees through their affiliation with targeted humanitarian and development organizations, UN clusters, or the Inter-agency Network for Education in Emergencies, and subsequently expanded their numbers through snowball sampling.

Interview participants worked at a variety of humanitarian INGOs (N=17), USAID (N=15), and United Nations agencies or clusters (N=14). Thirteen worked in education development, twenty in the humanitarian sector, and five in postconflict stabilization; the remainder worked in multiple categories or were not classified. Eighteen participants worked at the global level, four at a regional level, and twenty-two primarily at a national or local level. Respondents included education specialists, data specialists, EiE specialists, and program managers. Their experience in EiE ranged from less than a year to 19 years. A limitation of our sample is that the national and local respondents were primarily identified through their international partners and therefore consisted predominantly of the national and local branches of INGOs.

We conducted semistructured interviews that lasted 30 to 60 minutes and followed a standardized protocol. We captured data from the first wave of interviews by taking notes. We (the authors) and a research assistant recorded and transcribed the second wave of interviews. Using a sample of transcript excerpts, the coders tested interrater reliability and reached acceptable agreement using a coding framework that combined predetermined and emerging categories. We primarily took a grounded and inductive approach to our analysis, through which we identified emergent themes. In addition to coding primary uses, users, and data characteristics, we identified a number of important codes that emerged during the analysis, including politicization, relationships, and capacity.

MAJOR FINDINGS: DATA USES AND USEFULNESS IN EiE

In this section, we discuss three overarching findings. The main finding from our analysis of the primary uses of data was that EiE professionals have an overarching concern for data they can use to inform operations. We also found that proximity to programming matters; for example, those working at a national or local level spoke the most about operational uses of data, while those working at the global level emphasized more strategic uses, especially the need to strengthen data systems. Although prior research has pointed to major differences between humanitarian and development data systems, our findings indicated that professionals working in EiE tend to use data in similar ways, regardless of sector. The noteworthy difference that emerged instead was between actors operating at a global or cross-national level and those working at a national level.

The second major finding was that, when we examined what characteristics of data collection or presentation made data useful to users, no single characteristic was consistently preferred. Respondents noted instead that data collection and presentation should be tailored to the context, intended uses, and users' expertise.

Finally, in keeping with the literature on data and evaluation mobilization, our interviews pointed to myriad nontechnical factors that affected EiE professionals' perceptions of data usefulness, including politicization, analysis expertise, and personal and institutional relationships. These factors affected how stakeholders viewed data, specifically whether they perceived it as reliable, accessible, and interpretable. In the following sections, we first address how interviewees said they primarily use data and then discuss the factors shaping their interpretations of its usefulness. We then address the many other factors that affect their perceptions of the usefulness of data.

SIX DATA USES: DISTINGUISHING THE OPERATIONAL AND THE STRATEGIC

A Focus on Operations

The interviews confirmed the six data uses in the literature, as noted above, while adding important nuances. They specifically revealed that respondents tend to group the major data uses identified in the literature into two overarching categories, one associated with operational and administrative concerns (i.e., planning, coordinating, monitoring, and evaluating) and the other encompassing

strategic and systemic concerns (i.e., policymaking and advocacy). Table 1 provides an overview of the six uses, with illustrative quotations from our interviews.

Table 1: Data Use Typology for EiE and Illustrative Quotations

Family	Use	Quotations from Interviews
Operational	**Planning**	"[We] need to have conversations on what data we need—needs assessments, contextual analyses, rapid education and risk analyses—to understand where our humanitarian aid comes in." (203, DEV, Global) "The main purpose is to inform the humanitarian plan . . . because humanitarian planning is done through what they call the HPC [humanitarian planning cycle]; we really target the humanitarian needs overview as the key planning document." (506, HUM, Global)
	Coordinating	"[I am] trying to push [international organization name] to improve information management and coordination." (203, DEV, Global) "I think [what] any coordinator needs in an emergency response, particularly a sudden onset, . . . is an information manager, because without managing information that you have and having some grasp of the data that you already have available and the information gaps, you really can't do your job, you really can't coordinate." (505, HUM, Global) "Data can be useful for the government to coordinate different actions through the sector." (508, DEV, Other)
	Monitoring	"We put together a monitoring framework that tracks key contextual indicators . . . and will be responsive and flexible and prepared for changes that may come up in [country]." (209, HUM, National) "We want to support countries and make sure that when they do . . . monitoring of their implementation they're using the best available data." (508, DEV, Other) "I would say that the most important use that I see for refugee education data is to monitor . . . the equity of [the] education system and . . . their access, and the quality of learning that they have access to." (510, HUM, Global)

Family	Use	Quotations from Interviews
	Evaluating	"[Donor] is funding [NGO] to do work on data analysis and impact evaluation on learning outcomes, attainment." (108, HUM, Global)
		"[International organization name] is trying to use data on [the] successful transition from primary to secondary school as a proxy for quality education." (211, HUM, National)
		"Some partners who maybe get funding from [donor] really want to know the impact of their interventions on reading test scores or whatever . . . They will be collecting that information." (505, HUM, Global)
Systemic or Strategic	**Policymaking**	"[Organization] is looking at the reporting needed for the [government] strategy." (401, DEV, Global)
		"I guess really the highest level that we use data [for] would be that of policymaking." (507, HUM, Global)
	Advocating	"[We] use the data for advocacy." (110, HUM, National)
		"We do a lot of analysis to help us in that advocacy." (502, HUM, Global)
		"We see new areas emerging in terms of advocacy, with new data coming out." (507, HUM, Global)

One clear finding was that nearly all respondents emphasized the need to support operations. Respondents representing organizations with different mandates and various levels of experience all spoke about operations as the central use for data in EiE, pointing to a shared assumption that data should be used to inform operations, even if there are challenges in terms of accuracy. Planning, coordinating, monitoring, and evaluating were the most common responses to open-ended questions about the general purpose of data for respondents' work in EiE. Content analysis confirmed that these were the most frequently mentioned uses, especially planning and monitoring. One humanitarian actor declared that "we like our data to be used for planning and monitoring all these different things. At the core of it, it needs to serve an operational purpose" (503, HUM, Global).[3]

3 Parentheses after each quotation include three pieces of information about the interview respondent: (1) a de-identified number for each respondent, (2) the sector the respondent works in (HUM=humanitarian, DEV=development, STA=stabilization), and (3) whether they work at a national level or a cross-national (regional or global) level.

This was also true for development actors. One responded to which uses are most common: "Definitely the planning category" (508, DEV, Global).

While many respondents mentioned using data for evaluations within this broad family of uses, they often lamented that improvement was needed in this area. This was in contrast to monitoring, which indicates the important distinction between these two uses both conceptually and in practice. Respondents noted that the lack of data for evaluations was common to both governments, which "are not performing well but they don't have the data to show it" (201, DEV, National), and humanitarian organizations, which "don't really have any information on quality" (207, HUM, National). As one respondent put it, "I would say all of those [uses are important], except perhaps [evaluating]. Not that evaluating isn't important, but I just don't know that we [need to] do it so much" (508, DEV, Global). In short, while respondents think it is important to use data to evaluate operations, they also recognize that, in practice, this is rarely happening.

Differences across Sectors and Levels

A second set of findings concerned differences in emphasis according to where EiE professionals worked, including their primary sector and proximity to operations. Humanitarian actors stated that they use data for coordinating substantially more often than development actors. Humanitarian actors readily discussed the importance of using data to coordinate, particularly through the education cluster (see Table 2), as well as the challenges of doing so. One respondent said, "[Sometimes the] 4Ws aren't shared back due to political sensitivities—it is difficult to know who's doing what where" (303, HUM, National). Discussions of using data for coordination were less common among development actors.

Table 2: Differences between Humanitarian and Development Actors

Development	Humanitarian
Data for coordinating are less salient	**Data for coordinating are more salient**
"Well, all the others we use very regularly, so . . . [on] the planning . . . and the design of program and the monitoring, we'll have regular progress reports . . . similarly with the evaluating [and] . . . policymaking. Of course, we've got a new government at the moment so a lot of data we have is feeding into that, . . . and we are using quite a lot of data to support our advocacy to rally the international community . . . Coordination [is] less." (504, DEV, Regional)	"Because as soon as you start demonstrating to people that you can give them data, that you can analyze information in a way they can't and give them a picture—a whole picture—of where the needs are, where the gaps are, where there might be duplication, then they see the utility of coordination and they want to participate." (505, HUM, Global)
Data are most readily linked to SDG4	**Data are most readily linked to Grand Bargain and the New Way of Working**
"Otherwise, because of SDG4 reporting by country, if countries aren't including migrants, refugees, [and] IDPs in their country-level data—all of those children . . . it won't just be [data] for education indicators but for all indicators [that] will be missing." (504, DEV, Global)	"And so, we are basically reporting against . . . our commitments to the Grand Bargain, for example, [and the] New Way of Working, and data around that . . . So, I mean, you might want to also look at the Grand Bargain [and] New Way of Working; these are frameworks that have a number of commitments that many, many partners signed up to." (502, HUM, Global)

Another important difference concerns how humanitarian and development actors framed the need to improve data systems. The common points of reference for humanitarian actors working in global organizations are the Grand Bargain (IASC 2016) and the New Way of Working (UNOCHA 2017). These global agreements call on humanitarian actors to be more transparent and inclusive, with data playing an important role. Meanwhile, development actors focused on the SDGs, specifically SDG4, which commits all nations to ensure access to quality education for all. A number of respondents explained that data systems for SDG4 were not well equipped to account for learners affected by conflict and displacement.

Another important finding had to do with differences based on proximity to operations. We found that actors who are working at a cross-national (i.e., global or regional) level emphasized different uses for data than those who worked at a national or local level. For brevity's sake, we refer to these two groups as global

and national, respectively. Global actors discussed policy and advocacy more frequently than those at the national level (see Table 3). This distinction was best encapsulated by a respondent who has two roles, one at a national level and one at a global level. They stated that, in their national role, they focused on planning, monitoring, and coordinating. However, when working at the global level "for the fragile and conflict-affected states . . . it's definitely [more about] policymaking and sometimes advocating" (508, DEV, Global).

Table 3: Differences between Global and National Actors in Terms of Strategic Data Use and Capacity-Building

Global/Regional	National/Local
Heightened strategic data use focus	**Heightened operational data use focus**
"Policymaking—of course we've got a new [donor] government at the moment so a lot of data we have is feeding into that . . . [and] we are using quite a lot of data to support our advocacy to rally the international community." (504, DEV, Regional)	"Data [are] used to design programs." (303, HUM, National)
"I mean, [for the global level] we use data to drive home a point . . . like you said, to promote financing for activities or changes in policy and organizational or governmental levels." (509, Other, Global)	"They are a starting point to understand where we would be operating." (306, HUM, National)
"There is not much policy-level work that we do on that, but what we do is, when we have multiyear programs, those are done in protracted crisis . . . so we have, in some locations, links to policy strengthening and systems strengthening efforts." (502, HUM, Global)	"[We] use [platforms] to translate the data into practical actions." (204, DEV, National)
	"[Organization] is open to them monitoring their own projects." (205, DEV, National)
	"[A] big part of the new activities that were launched is the feedback of information, learning loops, to improve the design of activities and programs." (209, DEV, National)
	"[We] conduct ASER tests at the beginning and end of the school year." (302, HUM, National)
	"[We] coordinate pretty closely with governments, really trying to build strong relationships with governments." (110, HUM, National)

Need to build data system capacity	Need to build data-collection capacity
"Then we look at, for example, capacities around data and information systems . . . And finally, we also do capacity development for grantees, also helping them to develop these frameworks, but also at a global level developing global and regional public goods around measurement, around data analysis, around a strong, for example, EMIS system for EiE purposes . . . We are we are contributing to these kinds of global products." (502, HUM, Global) "We are also interested in the wider global public good of having better data on these populations . . . and setting up systems at [the] country level." (504, DEV, Regional) "We try also to play this role of supporting the countries in trying to decipher the complexities of the data . . . That's another way to say, basically, [that] our mission [is] capacity development." (501, DEV, Global)	"[There are] challenges around capacity-building—how to use the tool, what the tool is for, not trying to enhance results, enumerator training." (302, HUM, National) "Not clear how data is gathered and validated—I've never been able to be confident on how they gather their data—and then hiring someone to verify it internally to them." (210, DEV, National) "[The] capacity of people on the ground to do ongoing learning/data outcomes is challenged." (307, STA, National)

Actors working at the global level often talked about the role of data within a system and the use of data to inform the policies of a system or to advocate for changes to one. Such system-level discourse referenced the use of data directed at both global and national policy and advocacy. This duality occurred in part because global respondents often see governments as their primary stakeholders. As one respondent working at the regional level put it, "We are also interested in the wider global public good of having better data on these populations . . and setting up systems at country level" (504, DEV, Regional). Although the focus on operations is shared at the global level, as noted above, we found it was combined with a more consistent focus on strategic data use for "systems strengthening."

DATA USEFULNESS: THE IMPORTANCE OF CONTEXT, USES, AND USERS

In this section, we address what respondents said make data useful. Our key finding was that there are no particular characteristics that make data inherently useful. Respondents consistently indicated instead that data collection and presentation should be tailored to the context, intended uses, and the users' expertise.

The Importance of Context

In terms of frequency, respondents overwhelmingly indicated that the frequency of data collection should be closely related to how volatile a situation is and how rapidly data could become out of date. For example, timely data such as biweekly or even daily reports were deemed most useful when an emergency is most acute and population movements most volatile. However, in protracted crises with relatively stable populations, less frequent data are sufficient. One respondent who worked in global development explained: "If variation in the numbers is extreme . . . then it's relevant to have numbers refreshed every week. But if a situation is more stable . . . then it's not relevant to make the same computations every week" (501, DEV, Global).

Moreover, despite a general preference for more frequent and specific data for operational uses, respondents also agreed that actors often cannot collect any more data than they already are. For example, a participant who worked in the humanitarian sector explained that "even what we're doing already is incredibly hard for us to do. So adding layers of measurement or layers of data collection on[to] what we're doing is really asking a lot" (505, HUM, Global). This participant pointed to logistical and resource challenges in collecting more data. Other participants noted the same constraints in terms of data analysis and use. One participant explained: "Sometimes more frequent is problematic because then you have too much information and people don't have the capacity, meaning the skills or the time, to actually analyze it" (509, HUM and DEV, Global).

Tailoring Data to Intended Uses and Users

In addition to the most useful frequency of data collection and presentation being dependent on the context, respondents indicated that it should reflect the intended use. They said that less frequent data were needed for more strategic uses, such as policymaking and advocacy, whereas more frequent data might be needed for more operational uses:

> Well, it depends for what purpose. So, for advocacy purposes . . . you need to have something that's within the last year . . . but . . . it's not that you need things at quarterly intervals or anything. You know, I think annually . . . is quite useful for certain issues . . . but obviously . . . with an emergency response . . . When I was supporting our office . . . we were getting one [update] every fortnight and certainly we were getting daily reports on the movement of people. And so it just depends on the nature of the crisis and how much movement is involved of people . . . and therefore how much planning you need to do in order to make sure that your programs are responsive. (504, DEV, Regional)

The responses were similar when respondents were asked what level of data granularity was most useful. While they again said it depends on the context and the use, there was a general preference for highly detailed data. The most important reflection for the purposes of our use framework is that operational uses required more granularity than strategic uses.

Many respondents preferred getting raw data they could link to other data sources and analyze to address specific questions and uses. However, this preference carried the frequent caveat that an organization receiving raw data needed to have the capacity to analyze it; the lack of this capacity was noted as a frequent shortcoming. In short, when we examined how data are used and what makes them useful to those working in EiE, what emerged was a complicated landscape that defied simplification and in which context, purpose, and capacity were all important factors.

Contextual Factors: The Role of Politics, Relationships, and Institutional Capacity

In keeping with the literature on the use of data, our interviewees pointed to myriad nontechnical factors that affect EiE professionals' perceptions of data and their potential usefulness to them. In this section, we discuss three themes that emerged from the data that affect stakeholders' interpretations of the validity and reliability of data, as well as those that affect their perceptions of accessibility and interpretability. Table 4 presents key findings with quotations.

Table 4: Social and Political Factors Affecting Data Availability and Usefulness

Considerations	Quotations from Interviews
Political Concerns	"It's not in the interest of the government to put that information public because it won't paint a great picture." "The politics play a huge role, make it easier or harder . . . in some cases to get the information that you need." "That is tricky because UNICEF has the best of interests in getting more funding, but the story that they tell is usually the most dire." "Refugee education data might be a very, very sensitive topic in many contexts, either because there might be a lot of investments done and the data is not showing results yet. And so . . . there is a fear that donors might be discouraged or maybe the data looks, quote unquote, *good*."
The Role of Relationships	"In South Sudan, where the government is very involved, . . . it's being supported by the development partners, often the same development partners that are coordinating the cluster. So those kind of links are already established, and trust makes it able to access data that they might not otherwise have if the government was doing it by itself."
Institutionalization of Capacity	"It's not [as if] everybody else . . . is also fluent in using statistical software as . . . big datasets, so we try also to play this role of supporting the countries in trying to decipher the complexities of the data." "We have people in the team who have the capacity to actually analyze that as well. So, you know, ideally the raw data should be analyzed, but if there is the possibility to mine the raw data and even for extra bits that we could bring from it, then that's also useful."

Politicization of Data

Respondents in both rounds of interviews regularly noted that the availability and quality of data for use in EiE settings do not involve only technical considerations of data systems and platforms. They said that data use and usability are also influenced by political considerations, personal and institutional relationships that facilitate data sharing, and organizational structures that determine individuals' scope of work and mandates. In this section, we point out that data usage and usability cannot be separated from the context in which EiE professionals are

operating and, as a result, that the social and political aspects of data collection and usage must be considered.

The political sensitivity of conflict settings coupled with the humanitarian imperative of neutrality during a conflict create unique political barriers to data collection, sharing, and use. Respondents highlighted the fact that data availability reflects concerns over the power of numbers as tools of judgment, as one participant explained concisely: "Data gets picked up for political consumption" (301, HUM, National). There was concern that numbers are being manipulated, particularly in conflict settings or in contexts where governments and organizations are under pressure to be accountable to donors, which affected the perceived validity and reliability of data. Some respondents explained that they simply do not trust the data coming out of governments or, in some cases, UN agencies. One respondent, who worked at a global organization, explained: "The validity of the data that we have public access to is likely manipulated and highly politicized. There are not just thousands of refugees missing, but millions" (112, HUM, Global). Another respondent, who worked at a donor agency, explained that, before the Brussels Conference, a donor conference jointly organized by the United Nations and the EU focused on raising funds for the Syrian response: "The [education] ministry would change data to make them look worse before funding or better, depending on the situation" (201, Other, National).

Data sharing is complicated by the competing demands on organizations working in EiE. Data users need to maintain positive working relationships with the organizations and government actors that collect and disseminate the data while also recognizing that their dependence on them can limit external verification and validation. One participant explained:

> UNICEF is politically hampered in providing data because UNICEF is both humanitarian and development; they have a bilateral relationship with government. For example, if a child enrolls in an education program and only shows up once, they count toward the larger UNICEF number of beneficiaries. It is not in the interest of the government to make [attendance] information public because it won't paint a great picture. (213, HUM, Global)

Another respondent had similar concerns, stating that there are many "motivations for manipulation," both financial and political. The respondent, who works at a global advocacy agency, explained that UNOCHA needs to maintain its "brand"

and that this was associated with upholding "the status quo with governments" (112, HUM, Global).

Other respondents explained that there is great concern that data could draw attention to an issue or group that some would prefer not be noticed. One participant, who worked in a donor agency that was part of the EiE response to the Syrian refugee crisis, explained: "When data isn't there, it's not an accident" (504, DEV, Regional). They went on to say that some data are deliberately not collected because organizations or governments do not want it to be used in certain ways; they believed, for example, that their efforts should not be evaluated.

Respondents said that political dynamics limited their ability to share data because they could be used to identify program locations or organizations. They also suggested that the dynamics of politics and conflicts made it even more important to protect data. One respondent, who worked at a donor agency supporting the Syrian response, explained that the "4Ws aren't shared back due to political sensitivities, so it is difficult to know who's doing what where. Data is incomplete, which leads to duplicate efforts" (303, HUM, National). In short, our participants pointed out that data sometimes are not used to serve a neutral reporting of objective facts and instead are linked to the political and financial interests of governments, UN agencies, NGOs, and beneficiaries.

The Importance of Relationships

Recognizing the many ways data are used politically, our participants highlighted how important relationships are to information sharing. We found that generating, sharing, and using data all were facilitated by personal and institutional relationships that generated trust. Some respondents explained that their relationships with other organizations have facilitated data sharing and collaboration.

Our findings shed light on how the field of EiE already relies on professional and organizational relationships to share data. One respondent, who works at a UN agency, explained that governments and UN agencies are dependent on one another for data collection and sharing: "In my experience, it's very much about building relationships and trust relationships in order to, you know, get datasets from EMIS" in the countries where they work. Another respondent, who worked at a development and donor agency, explained further: "Certainly, my impression from talking with colleagues is that [data sharing] is very relational" (508, DEV, Global and National).

One respondent, who worked in the humanitarian sector, explained in detail how these personal relationships facilitated data sharing:

> You know, the prime minister, he's calling the [education] minister when he hears about the attacks that happened in [a part of the country]. He wants to know how many schools are there. But the ministry up until now has to scramble to get that information ready because they have to call UNICEF or they'd have to call someone else or someone else or someone else . . they can't get it that easily. That's just wrong, and too complicated. (510, HUM, Global)

Respondents also pointed out how data facilitate relationship-building among those working in humanitarian response and more generally in the field. For example, one respondent who worked in humanitarian response explained that, "to get people to participate in clusters, you have to show them [that] participation will result in something of value, so giving information is one way to get partners to show up, attend meetings, and share information" (505, HUM, Global).

Institutionalizing Capacity

We found that the ability to generate, share, and use data is determined by both institutional and individual capacity. Respondents mentioned the general need to strengthen capacity but their perspectives on what types of capacity were needed varied. We found that capacity-building did not always imply general training; for many respondents, capacity implied ensuring that organizations had access to specialized technical capacity. We found that there is a particular need to have someone within each entity who knows how to find, generate, and use data. For example, one respondent explained that their organization always publishes cleaned and aggregated data along with the raw data, but finds that, "if it is a big household-level survey, I have some doubts that this is used because often the cluster doesn't have the technical capacity to pull out statistics" (506, HUM, Global). One important example of this in EiE is the information manager, who is supposed to be one of the two staff members of every education cluster. One respondent explained:

> What any coordinator needs in an emergency response, particularly a sudden onset, is an information manager because without managing the information that you have and having some grasp of the data that you already have available and the information gaps, you really can't do your job, you really can't coordinate, you really can't advocate. (505, HUM, Global)

Unfortunately, only 31 percent of clusters had an information manager in 2018, a slight decline from 35 percent in 2017 (ECW 2019, 125).

Many respondents highlighted the need to build capacity for data creation, sharing, and use; the type of capacity needed differed according to the actor's sector. For example, development actors cited the need to develop their staff's capacity to navigate and use humanitarian data. A recurrent theme was that many actors in education development do not understand the complexities of the humanitarian sector or how to navigate its data systems. We also found differences across levels: global actors tended to frame the need for capacity-building in terms of the ability to use and analyze data. For example, respondents referred to "supporting the countries in trying to decipher the complexities of the data" (501, DEV, Global). Meanwhile, national actors tended to focus on building capacity to collect data. They highlighted the need for tools and for individuals with the capacity to collect reliable data (see Table 2). A recurring idea was that tools were needed that "validated" and were "responsive" to the conflict setting.

DISCUSSION AND CONCLUSION

We know that one of the major challenges facing the EiE field is a lack of reliable data to inform program design and implementation. Nevertheless, perceptions of the usefulness of data vary. In this article, we examined how professionals in EiE use data in their work and what makes data useful to them. Our findings highlight six primary ways EiE actors use data, which we organized into two categories: operational (i.e., planning, coordinating, monitoring, and evaluating) and strategic (i.e., policymaking and advocating). Moreover, we found that these uses were mentioned by actors working in the humanitarian and development sectors alike. A key finding throughout our interviews was that professionals working in EiE wanted data to inform their decisions about education programming and policy. As one of our respondents explained, their ultimate goal was to put data "in the hands of those making decisions." The overriding hope was that high-quality data systems and analysis could help to build a stronger EiE evidence base.

Indeed, participants expressed concern throughout our interviews that a lack of data likely limits the effectiveness of programs and the efficient use of resources, which ultimately results in fewer students and teachers being reached by education programs, or in less effective programming. Conversely, they felt that robust and targeted data collection and analysis would help inform and improve program operations, policies, and advocacy efforts.

However, we also found that respondents' proximity to implementation changed the way they thought about data. Individuals working in a specific country or crisis focused on the use of data for operational purposes and mentioned policymaking or advocating only in passing. Meanwhile, respondents working at the global level often spoke at length about the importance of using data to inform policy and advocacy in order to strengthen systems and develop global public goods. This finding is important, as it highlights the fact that current conversations tend to treat "data" in the abstract when, in fact, the current level of fragmentation means that many forms of data are not useful to others in the field. As efforts to standardize indicators move forward, it will be important to ensure that the same standardized indicators can be useful to actors operating at multiple levels. For example, future efforts should focus on aligning indicators and reporting mechanisms to meet the needs of both the operational uses of implementers at the local level and the strategic uses of the broader community at the global level. Similarly, global actors who provide funds for data collection should consider—and support—data systems that can be targeted specifically for the use of those closer to implementation, along with their own more strategic needs. This provides a productive starting point for the much-discussed need for standardization or for methods of linking datasets, as it highlights the need to be able to link, aggregate, and compare data that will be useful for policymaking and implementation in specific contexts and cross-nationally.

Finally, we explored what factors may make data useful, or usable, to EiE professionals. Our findings suggest that the field needs not only more data but better data. Our interviewees explained that, by better data to inform operations, they mean data that are up-to-date, geographically specific, and disaggregated by age and other demographic factors. They also mentioned other factors, such as context, politics, relationships, and organizational capacity. Our findings indicate that improving data and evidence for EiE depends not only on technical aspects of data but on institutional and relational factors that enhance data collection, data sharing, and data use. An important implication of this research is that having better data for the EiE field—which is a widely shared goal—means strengthening data systems throughout the data cycle, from collection to analysis to use. What might this look like? Our findings suggest that supporting data systems likely entails holding regular forums to strengthen personal relationships; creating safer ways to share politically sensitive data, such as more sophisticated masking procedures; and institutionalizing capacity for analysis, such as ensuring that every education cluster has an information manager to support the use of data. In short, improving data for EiE must not only focus on tools or techniques but must also attend to the people, institutions, and contexts that determine data creation and use.

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