

# The Neo-Humanitarians: Assessing the Credibility of Organized Volunteer Crisis Mappers

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**Abstract:** Volunteer crisis mappers are a recent phenomenon driven by technological advances, online communities, and volunteerism. With the rise of interactive websites, social media, and online mapping tools, individuals across the world are able to collectively participate in collecting data in response to a crisis. Although these volunteers provide needed technical assistance to humanitarian efforts, their lack of affiliation with ‘formal’ actors, such as the United Nations and the International Committee of the Red Cross, and the very fact that they are volunteers, makes them a dubious data source. Concerns about the quality of amateur mapping and data efforts are raised in the neogeography literature, while questions related to the use of data and new technology have come out in several recent publications by humanitarian actors. Most of these concerns and criticisms assume that volunteers have no professional training related to their work as volunteers; it is suspected that the work they produce does not conform to professional and ethical standards.

This paper analyzes the credibility of crisis mapping volunteers when they work as part of a volunteer organization. These organizations are the most recent development of the movement and are a key step in formalizing relationships with the same ‘formal’ actors who first doubted the volunteers’ contributions. By investigating both the volunteers and their organizations, this paper presents evidence that points to a more professional cadre of volunteers than what is assumed by the literature and critics. Further findings indicate trends and means for distinguishing types of volunteers and volunteer organizations that will hopefully aid future studies of this growing phenomenon. As volunteer crisis mapping organizations play a larger and more integrated role in humanitarian responses, it is crucial that the literature acknowledge the varieties of approaches and individuals that are involved in this movement.

**Key Words:** crisis mapping, credibility, volunteered geographic information, neogeography

## Introduction

In the past decade the Internet has seen a deluge of new, interactive websites and tools, including the creation of Google Maps and social media sites. These tools enable anyone with an internet connection to be a creator, leading to an explosion of user-generated content, much of which is embedded with geographic information (Goodchild 2007; O'Reilly 2005). During a humanitarian crisis – either a manmade or natural disaster – much of this user-generated content can be a useful source of unfolding events. This application of online content added to online volunteerism and communities led to the creation of volunteer crisis mappers, ad hoc groups of online mappers who compile geographic data about an unfolding humanitarian crisis. They have created maps of building damage and trapped

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victims, analyzed satellite imagery to identify signs of armed conflict, and cleaned Twitter datasets to isolate useful information about unfolding events. Since their beginnings, some of these volunteers have organized themselves into groups so that their responses are less ad hoc and their approach is consistent. They are the neo-humanitarians – a new, web-enabled work force that operates outside of the professional, ‘formal’ sector of humanitarian response.

Perhaps the most notable volunteer crisis mapping response was that which came in response to the earthquake in Haiti in 2010. Foreign governments, international humanitarian agencies, and NGOs, rushed to aid the Haitian government and local people, but to do their work, even to get started, these actors needed information – maps of the affected areas, assessments of building damage, and names of missing people. Yet, comprehensive maps and many other records did not exist or were lost in the wreckage. While the UN, the International Red Cross and USAID scrambled to coordinate a relief effort, two independent, volunteer-led responses emerged to fill the spatial information gaps: Humanitarian OpenStreetMap (HOT) and the Ushahidi Haiti Project.

OpenStreetMap (OSM) is an open-source, online mapping platform that allows volunteers to upload GPS data and trace elements from satellite images to contribute to a crowdsourced online map of the world. The Humanitarian OpenStreetMap Team (HOT) is an off-shoot volunteer organization that applies the OSM platform to improve map data for humanitarian situations. In Haiti, HOT remote volunteers took high resolution satellite images of the damage and traced over roads and buildings to create a detailed, up to date map for humanitarian responders (Zook, et al. 2010). Figure 1 shows the incredible amount of detail added to the OSM map of Port-au-Prince, Haiti by the HOT volunteers (Maron 2010).



**Figure 1 OSM Haiti Before (left) & After (right) HOT Mapping (Source: Maron 2010)**

Ushahidi is also an online, crowdsourced mapping platform. It enables people to submit reports via SMS or email, and, once the information is verified, categorized, and geotagged, it is added to an online map. The Ushahidi Haiti project was started by a group of graduate students at Tufts University, organized by Patrick Meier, then the Director of Crisis Mapping at Ushahidi and also a Ph.D. student at the Fletcher School at Tufts. The team of students used the Ushahidi platform to map information coming from affected communities in Haiti via social media. The result was a simple, interactive web map that showed nearly real-time visualizations of calls for assistance in Haiti (Morrow, et al. 2011).

Both of these responses are notable for several factors: they were organized and fueled by volunteers using an open, collaborative production model; they provided information that was not otherwise available to humanitarian actors in a very short period of time; and they applied very recent developments in online mapping technologies. However, because these efforts were not initiated by any of the ‘formal’ humanitarian actors present in Haiti (like the UN, the Red Cross, USAID), these ‘formal’ actors were not immediately aware of these new information sources, and when they became aware of them they suffered from “data overload” (Nelson, et al. 2010). Furthermore, humanitarian actors did not know if they could trust these new information sources because they were produced by remote volunteers, a new and unknown labor source (Morrow, et al. 2011). Meanwhile, the local population engaged by these projects expected a response in return for their participation, but responses were rare and inconsistent due to the lack of project ownership among actors on the ground (Clemenzo 2011; Morrow, et al. 2011).

Herein lies the contradiction of recent volunteer crisis mapping efforts – they are doubted and questioned for the same reasons that they are innovative and flexible: the volunteers. Because they do their crisis mapping for free and at their own will the volunteers are criticized for lacking ethical codes and failing to maintain professional standards (Raymond, et al. 2012). These critiques come directly from the humanitarian sector as well as being supported by the neogeography literature. So this study will use these two sets of literature to frame the analysis of the case organizations.

The research questions can be framed thus:

- Who are these crisis mapping volunteers and do they make credible sources?
- As organized groups can they meet professional standards of engagement, production and analysis?

First, the paper will briefly summarize the relevant literature and the development of the volunteer crisis mapping movement. Then, it will look at the volunteer themselves and attempt to answer some questions relevant to their credibility as sources, namely their professional experience, motivation, and possible biases. Finally, it will analyze the volunteer crisis mapping organization, an important unit of analysis that has been previously overlooked in the literature. Taking two organizations, the GIS Corps and the Standby Task Force, as cases, it will assess how these organizations affect both the credibility of their volunteers and the institutional linkages with ‘formal’ actors.

### **Literature Review**

With the rise of Web 2.0, the interactive websites, social media, and web-based mapping tools that have recently redefined the Internet, the distinction between the user and producer of data has blurred (O'Reilly 2005). There is great positive potential in these tools; they are easily scalable, require few resources, and rely on free labor (ie. crowdsourcing). They can open up participation opportunities, bringing in previously disengaged groups, such as young people, and give government processes a sense of user-friendly transparency (Johnson & Sieber 2012). In addition, the user-generated content that is the outcome of these sites can be an incredibly rich data source, particularly in the sense of representing local knowledge (Zook, et al. 2010). However, these tools can just as easily reproduce

existing inequalities in society, the most obvious example being the digital divide (Crutcher & Zook 2009; Elwood 2007; Goodchild 2007).

In terms of the effect on mapping, some argue that these new tools will have a democratizing effect on mapmaking, wresting it out of the control of a codified professional and academic cadre (Goodchild 2009). Others raise concerns that existing societal inequalities will be replicated and harder to detect in the form of amateur maps (Elwood 2007; Zook, et al. 2010). With these new tools nearly anyone to make a map that appears to be worthy of authority, yet the neogeography literature assumes that “anyone” lacks the professional standards and academic rigor needed to create a map worthy of such authority (Goodchild 2007). Perhaps not all amateurs lack a professional understanding of mapping and data practices, but often by being identified as an amateur that is implied. As Goodchild (2009, p. 88) explains, “Terms such as *professional* convey an immediate sense of care, attention to detail and adherence to rigorously applied standards, whereas the very term *amateur* suggests poor quality and is even used pejoratively.” Flanagin and Metzger (2008, p. 139) suggest that these amateur mappers “are not trained or even necessarily interested in geography as a science.” However, Goodchild points out that amateurs can be trained, and such as in the case of citizen science, can produce high quality work (2007).

The product of many of these Web 2.0 tools and platforms is a kind of data that is both user-generated and contains geographic information, known as volunteered geographic information (VGI) (Goodchild 2007). VGI presents rich, large datasets, but it also raises several concerns about the reliability of the data, and the privacy and consent of the authors (Elwood, et al. 2012; Flanagin & Metzger 2008). Data reliability is impacted by the sheer size of data and the fact that it is coming from so many sources at once (Elwood, et al. 2012). Crowdsourced projects like Wikipedia have shown that typically the false reports or errors are grossly outweighed by the accurate information to the extent that the dataset as a whole is not corrupted. However, the effective anonymity of the crowd can create an opening for malicious intentions (Friedland 2010).

Although, by definition, VGI is “volunteered” the informed consent of the author is not guaranteed. Users creating content are not giving *informed* consent to have their data mined if they do not know or understand all of the uses for which such data could be used (Elwood 2007; Elwood, et al. 2012). In particular, users may not even realize that their data has a geographic component since that can be a secondary purpose or even added later by someone else (Flanagin & Metzger 2008). Privacy is similarly ambiguous with new social platforms and other interactive sites that produce VGI. Again, users may not realize that their information is accessible and can be traced back to them. Finally, as with any other technologically based information, VGI is biased towards those who have access to the Internet, devices to access the Internet, and to a lesser degree, those who speak English or another globally dominant language (Crutcher & Zook 2009; Goodchild, 2007). These challenges are inherent for any project that uses VGI, but when the users of the data are untrained to consider these weaknesses, they become a more serious concern.

In a humanitarian crisis – either an armed conflict or a natural disaster – there are several additional reasons to be concerned about the data that is used to make decisions. With the use of VGI, issues of

privacy and verification are heightened due to the situation of sources (often those being affected by the crisis) and the weight of decisions. For example, publishing locations of affected communities can put them at more risk in the case of violent conflicts (Reidenberg 2013). Furthermore, if VGI is over-representative of a certain group – perhaps due to income (access to internet devices) or available network signal – decisions can be skewed towards those groups (Crutcher & Zook 2009).

Humanitarian crises are chaotic, involve many actors, and require quick responses. With many actors working together and separately, a lot of information is collected in a short amount of time, leading to challenges in the application and management of data. Darcy et al (2013) find that not all data is necessarily used for making decisions. Humanitarian workers often refer to “data overload” when they have more data than they have time to process, and for the sake of expediency, can become “path dependent”, making decisions based on data that is familiar. Similarly, actors will often settle for “good enough” data because of the high stakes and short timeframe for making decisions. Effectively, they decide that the cost of taking the time to be more accurate would be higher than the cost of using the data at the “good enough” stage (Darcy, et al. 2013; Zook, et al. 2010).

New data sources and formats can further complicate this situation. Institutional preference or partnerships may require the use of a particular format or platform that is incompatible with others. For example, in Haiti, some field workers started using Google Maps to keep track of conditions such as road closures. This information would have been useful merged with the OpenStreetMap map of Haiti, but because Google is proprietary software and OSM is open-source, the two datasets were incompatible (Zook, et al. 2010). Still, these new data sources can be one of a few means to incorporate local perspectives and voices due to the rigid protocols and security clearances that surround the ‘formal’ humanitarian actors (Heinzelman & Waters 2010).

### *Methodology*

This paper is based on the findings of an original survey of volunteer crisis mappers, interviews with key leaders of volunteer crisis mapping organizations, and textual analysis of the online resources and records of the two case organizations. The two case organizations, the Standby Task Force and the GIS Corps, were selected for the responsiveness of their executive boards, and their representativeness of two types of volunteer organizations.

The volunteer survey was administered through online message boards for volunteer crisis mapping groups (CrisisMappers.net and the Standby Taskforce blog), the contacts of interview subjects and the email listserv of one of the case organizations (the GIS Corps). It returned 81 unique responses, representing volunteers associated with several crisis mapping organizations. The respondents are a diverse group based on age, gender, nationality and educational experience. Although respondents listed affiliation with several crisis mapping organizations – the GIS Corps, the Standby Task Force, Crisis Commons, Humanitarian OpenStreetMap – and several other organizations, like the Peace Corps and Statistics without Borders, the majority of responses are in some way affiliated with the two case organizations, particularly the GIS Corps. Of the 81 responses, 69% indicate GIS Corps as the first organization they volunteered with, and 75% indicate at least some affiliation with the GIS Corps.

Interview subjects included founding board members of both case organizations, as well as two remote-sensing professionals from the human rights and humanitarian fields, and two former crisis mapping volunteers who had since entered the humanitarian field professionally. The initial interviews were also useful in defining the field and its major actors. The two organizations that became cases were chosen in part because they were the two volunteer organizations represented by my interview subjects. I chose to use both organizations because a comparison between the two highlighted differences that seem consistent across the broader landscape of volunteer crisis mapping organizations.

It should be noted that the nature of the volunteer crisis mapping community encourages openness, and consequently a remarkable amount of information is available online on the organizations' websites, and through the personal blogs of key participants.<sup>1</sup> These online resources included most of the practical documentation for past crisis mapping events, including training materials and sometimes the actual materials used to complete tasks. The information presented on these websites can also be considered a form of marketing material that shows how the organization conceives of itself and wants to be represented to the outside world, and it was also analyzed as thus.

### **Background**

The 2010 earthquake in Haiti was a watershed moment for the development of volunteer crisis mapping efforts. However, to understand the complete transformation that is taking place between these organized volunteers and the 'formal' humanitarian sector, it is necessary to start before Haiti.

Before Twitter, Facebook, and Google Maps, mapping and geospatial technology still played a key role in crisis responses. After the attacks on the World Trade Center in New York City, on September 11, 2001, nearby data and mapping experts sprang into action to help the response teams make sense of what had happened. Because this was one of the first times that GIS and remote sensing data had been used for such a situation, there was no protocol. Instead, ad hoc groups organized themselves based on experience and access to data. GIS professionals worked as volunteers out of the designated Emergency Mapping and Data Center at Pier 92 (Kawasaki, et al. 2013).

After the 2004 tsunami in the Indian Ocean, which hit 22 countries and resulted in a death toll estimated at more than 200,000 people, high-resolution images showing the affected areas before and after the tsunami were donated by private satellites and software companies (Laituri & Kodrich 2008; Underwood 2010). The relief effort was led by the UN, and the governments of several of the affected countries and the U.S. (Margesson 2005). Although the general public did not get involved in the data analysis, this was one of the first disasters that raised a significant amount of financial contributions through online communities, showing an engaged and aware digital public (Laituri & Kodrich 2008).

With the arrival of Google Maps in 2005, online mapping capabilities dramatically shifted, making space for ad hoc volunteer mapping efforts. Hurricane Katrina provided one of the first disasters on which to test out this new technology. The perceived failure of the FEMA response caused many individuals to

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<sup>1</sup> Personal blogs include those of Patrick Meier, of the Standby Task Force, formerly Ushahidi and the Digital Humanitarian Network; and Anahi Ayala Iaccui, and Helena Puig, both of Standby Task Force.

take up the relief effort themselves, via the Internet. They created websites with message boards for missing people to connect with concerned families and friends, lists of active relief centers and supplies that they needed, and maps – maps of people, damaged infrastructure, and the relief effort (Laituri & Kodrich 2008). Scipionus.com was a Google map that showed missing people, damaged buildings, and floodlines. It was set up by two software engineers, but the information was added in a crowdsourced manner with anyone able to add to the map (Laituri & Kodrich 2008; Roche, et al. 2013). Google Earth also updated its imagery with images showing the damage from the storm (Kawasaki, et al. 2013). And, the newly formed GIS Corps sent volunteer GIS professionals to assist on-site with geospatial needs of responders.

Another revolutionary platform was introduced in 2008 in Kenya. The Ushahidi platform (now a downloadable tool CrowdMap) made a simple but effective online map of SMS reports of post-election violence across the country. By mapping violence almost as it was happening the Ushahidi project was able to warn people of areas to avoid and produce a documentation of the spread of violence that would be essential to implicating the instigators of the violence (Heinzelman & Waters 2010).

So, when Haiti was devastated by an earthquake in 2010, the volunteer crisis mapping community was beyond its nascent stages. Google Maps and Google Earth were popular and well known by 2010; mashups using Google Maps and other data (like Scipionus.com) were also a familiar concept. By incorporating online volunteer work and local user-generated data, Haiti was a turning point for the crisis mapping world. The Humanitarian OpenStreetMap team (HOT) and the Ushahidi Haiti projects were just two of many volunteer responses to the need for geospatial data. Still, the response to Haiti was not without its problems. Lack of integration with the ‘formal’ humanitarian sector inhibited crisis mapping data from its full impact, while lack of communication with the local population raised expectations beyond the on-the-ground capacity to meet them (Clemenzo 2011; Morrow, et al. 2011; Zook, et al. 2010).

In response to the lessons learned in Haiti, several shifts in the crisis mapping environment are visible. Most evident is the creation of the Standby Task Force (SBTF) in late 2010. Formed by several volunteers who used the Ushahidi platform in Haiti and other disasters, the SBTF took the first step in formalizing the previously ad hoc groups of volunteer crisis mappers. Soon after, the UN Office for the Coordination of Humanitarian Affairs (UN OCHA) sought out the SBTF to do a training session on Ushahidi deployment in an emergency situation (Meier 2011). This was a significant acknowledgement of the importance of the volunteer community by the leader of the ‘formal’ humanitarian actors.

In 2012, the creation of the Digital Humanitarian Network (DHN) brought together volunteer crisis mapping organizations and other volunteer and technical communities to form a single online platform where the need for volunteer assistance can be posted. Later that year UN OCHA reached out to volunteer organizations through the DHN to request assistance in the response to Typhoon Pablo which hit the Philippines on December 3. Within 12 hours two volunteer crisis mapping organizations, the Standby Task Force and Humanity Road, had produced the requested spatial dataset using three days’

worth of Twitter feed reporting typhoon damage (Meier 2012). This map was shared internally at UN OCHA, as well as with other humanitarian actors and the government of the Philippines.<sup>2</sup>

It is clear that the relationship between volunteer crisis mapping organizations and ‘formal’ humanitarian actors is still evolving. As the two continue to collaborate they will undoubtedly learn from each other and it is likely, given the trajectory thus far, that the partnerships will solidify and formalize. For this reason, it is essential that these new actors be more thoroughly investigated.

### **Who Are the Volunteers?**

As Flanagan and Metzger (2008) explain, the credibility of a source is dependent on two things: trustworthiness and expertise. Institutional connections to ‘formal’ actors within the field of humanitarian response indicates some acceptance of these volunteer crisis mappers’ credibility, but the identity of the volunteers themselves is still a crucial, and currently overlooked, element to their overall credibility. The online survey of crisis mapping volunteers, conducted by the author, addressed these questions by asking the volunteers about their professional backgrounds, their motivations, and their geographic experience (both their nationalities and the countries they have lived in).

#### *Professional Background*

By the nature of the fact that they are volunteers, volunteer crisis mappers are often assumed to be amateurs. Yet it is possible that the volunteers come from professions that share standards and protocols with crisis mapping. To test this the survey asked respondents if they worked in a field related to crisis mapping. The majority of survey respondents (86%) indicated that they worked in a field related to crisis mapping, 75% in a field related to “GIS/Mapping.”<sup>3</sup> With this professional experience it is likely that these respondents have the skills and standards to be considered ‘professional’ mappers, even while acting as volunteers. However, very few seem to have a professional connection to humanitarian work, with 4% of respondents in humanitarian fields, and 1% in international development and aid.

The survey also asked respondents which tools they used for crisis mapping in an effort to determine the level of skill required for their crisis mapping work. 63% indicated having used ArcMap or Quantum GIS, two relatively specialized GIS software packages. They either already knew how to use these programs or were able to learn them well enough to complete the necessary task; in either case this indicates a certain level of technical skill. So, the results show a strong majority of respondents that are skilled and experienced in map making, but very few with a background in humanitarian work. However, it should be noted that the high response rate from the GIS Corps could explain the high levels of GIS professionals represented in the survey results.

#### *Motivation*

In humanitarian situations every decision to be made affects the lives of people in dire situations, and when these decisions are based on information assembled by volunteers the main concern is whether

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<sup>2</sup> Patrick Meier, email correspondence with author, May 21, 2013.

<sup>3</sup> All percentages are from a total of 81 responses although response rates vary by questions. For a full report of responses per question see the Appendix.

the volunteers understand the importance of maintaining high standards of data collection and analysis (Chandran 2013). A previous study of the motivations of volunteer crisis mappers (focused solely on the Standby Task Force) used the Volunteer Functions Inventory, developed by Clary and Snyder (2002), and found that volunteers were primarily motivated by interest and altruism (Hitchens 2012). This survey aimed for more specific intentions related directly to crisis mapping. Volunteers were asked about their motivation and given five options from which they could select one: “interest in a specific country or conflict,” “interest in gaining experience in humanitarian work,” “wanted more practice with particular skills,” “curiosity,” and “other” (where they could write in a response). Most responses indicated an interest in humanitarian work (37%) or the desire to practice particular skills (22%). Another 12% wrote in responses that about wanting to help others in the “other” category. These “other” responses combined with those interested in humanitarian work indicate a strong majority that put their humanitarian interest above mapmaking and skill development. It also expresses awareness that this work affects people, and is not merely an exercise or a trend.

The experience of being involved in a crisis response can also affect a volunteer’s understanding of their work. To assess this, the survey asked volunteers to assess the personal impact of their crisis-mapping experience. Respondents were asked, “Do you feel that your involvement in crisis-mapping has had any impact on the following: topics/places you follow in the news, reading, etc.; general interest in foreign affairs; your social networks; your career goals; other [write in],” and could choose as many answers as they needed. 54% of respondents indicated an impact in the topics and/or places they follow in the news. 48% indicated that their career goals were impacted. 33% noted a new interest in foreign affairs and 35% saw changes in their social networks. These results indicate learning beyond the hard skills used for crisis mapping; it is even possible that the crisis mapping experience is making volunteers more aware of humanitarian situations.

### *Geographic Experience*

Because of the international nature of humanitarian crises and the remote nature of most volunteer crisis mapping efforts it is critical to investigate the geographical experiences of crisis mapping volunteers – both their nationalities and their countries of residence. This information can speak directly to any geographic bias, a particular concern given the global digital divide. The most obvious example of a geographic bias is language, that used by volunteers and that in which data is presented (Goodchild 2007). For example, English speaking volunteers would have a hard time sorting tweets in Arabic. Beyond language, it is important to note whether volunteers can provide some sort of local knowledge since this is a common argument in support of VGI and other Web 2.0 tools that is rarely tested in practice (Zook, et al. 2010).

Both the ‘formal’ humanitarian sector and the greater international development sector have a Northern bias in terms of the nationalities of those employed and the countries that give the most financial contributions. And, in fact, an overwhelming majority of respondents are from (ie. their nationality) the global North; 84% of respondents are from countries high income countries in the global

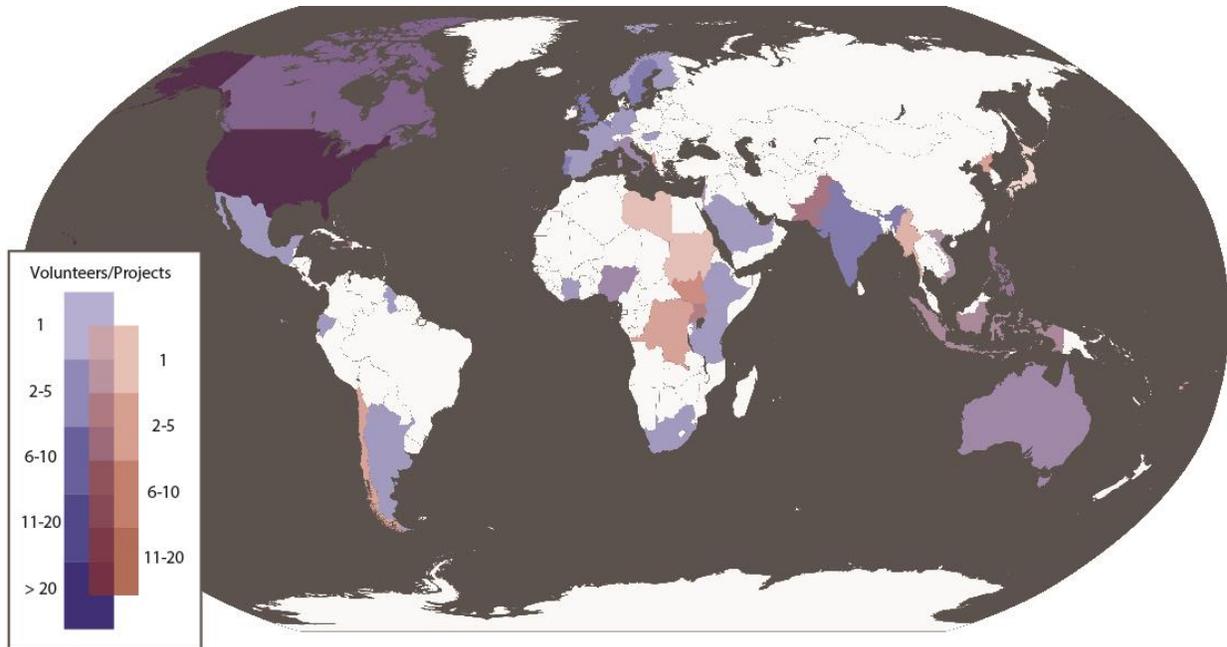
North<sup>4</sup>, with 54% just from the U.S. This is not a particularly surprising finding given that 2013 was the first time the International Conference on Crisis Mapping was held outside the U.S. and Europe (in Nairobi, Kenya) since its creation in 2009.

Still, nationality is just one measure of a person's geographical experience; a person can hold the nationality of one country while living in another, potentially possessing knowledge of both. So, the survey also asked respondents to list all the countries where they had spent time in over the past five years.<sup>5</sup> 27% of respondents live or have spent time in countries other than that of their nationality, while 69% of respondents live in the country of their nationality (4% did not respond to these questions). Matching geographic experience to the locations of crisis mapping projects, the picture is complete. 36% of respondents worked on projects in countries where they were from or had lived, while 43% worked on projects in places where they had no recent experience (with 7% overlapping both of these categories). 7% worked on global projects. Although there is not one single trend here, it is clear that a significant portion of volunteers choose to participate in countries where they have a personal stake or connection. Also, it is possible that some of the 43% who worked on projects where they seemed to have no connection have some experience in the location of their crisis mapping project outside of the five year window. As it is, local knowledge is present in about half the cases of crisis mapping represented in the survey results, a much greater proportion than first indicated by nationality alone. Figure 2 maps the results of the volunteers' geographic experience and the location of crisis mapping projects.

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<sup>4</sup> All volunteer nationalities: American, American Indian, Australian, Belgian, British, Canadian, Filipino, Finnish, German, Guatemalan, Guyanese, Indian, Israeli, Italian, Nigerian, Norwegian, Pakistani, Portuguese, Ugandan, Vietnamese.

<sup>5</sup> Five years was chosen to overlap with the timeframe of crisis mapping projects, most of which began after 2007 when the Ushahidi platform became available.



**Figure 2 Volunteers' Geographic Experience** – blue indicates either nationality or having been to a country, red indicates working on a crisis map in that country

In terms of their credibility, the volunteers surveyed displayed attributes that merit trust and evidence expertise. A majority come from mapping and GIS professions, indicating mapping expertise that they can bring to their crisis mapping projects. Additionally, many have used mapping tools that are relatively specialized and show either preexisting skills or a willingness to learn. Although they generally lack humanitarian experience, their motivations indicate a strong interest in the humanitarian sector and helping others. These motivations support the volunteers' trustworthiness by disproving their indifference to the issues at stake in crisis mapping. Finally, although there is a Western and American bias present in the survey respondents, there is still a geographic spread of volunteers' geographic experience. With this geographic experience the volunteers are able to contribute some sort of local knowledge in almost half of the cases of crisis mapping.

### The Volunteer Organizations

The volunteer organizations are critical in distinguishing between other crisis mapping projects and organized volunteer crisis mapping interventions. Unlike ad hoc responses or loose communities, the organizations manage volunteer recruitment and training, project selection and definition, and coordination with 'formal' humanitarian partners in the field. They also establish ethical codes and standards to guide the actions of the volunteers. The organizations effectively provide a second layer of credibility for their volunteers' work.

Like the volunteers, crisis mapping organizations are not a homogenous group. The distinction can be seen in the way they define their role as an organization and the role of their volunteers. The typology created here is built around the two case organizations, although elements of these types apply to other crisis mapping organizations as well. The GIS Corps emulates a professional, technically focused environment, treating volunteers like hired professionals. The Standby Task Force is transparent, flexible

and focused on humanitarianism; it aims to train anyone who wants to be a volunteer, regardless of skill.

*The Professional Volunteer Organization: The GIS Corps*

The GIS Corps functions like a volunteer technical community whose volunteers perform crisis mapping projects as well as other forms of technical assistance. It is affiliated with the Urban and Regional Information Systems Association (URISA), the main professional association of GIS professionals in the U.S. Founded in 2003, it predates most other crisis mapping groups, and was first envisioned as a space for professionals to “expand” the applications of their skills.<sup>6</sup> Today, the GIS Corps has almost 3,000 registered volunteers. They have activated over 400 of these volunteers to participate in 111 projects in 46 countries.<sup>7</sup> Some of these projects were done remotely, while others involved sending the volunteers into the field. In recent years remote volunteering has increased; now roughly 4 out of 5 projects are remote.<sup>8</sup> Not all of the projects involved a crisis or humanitarian situations, but all partner organizations (the organization contracting the volunteers) represent “underserved communities worldwide” (Organizing principles 2009). Typical volunteer tasks include building databases, performing spatial analysis, modeling, capacity building or teaching in related fields, app development and project evaluation.

The GIS Corps’ initial institutional connections focused on the geospatial data communities, as evidenced by their association with URISA. After sending some volunteers to work on the reconstruction in Indonesia after the tsunami in December 2004, the GIS Corps was approached by the United Nations Joint Logistics Centre for technical assistance. This was a turning point in terms of getting recognition and building relationships with major humanitarian institutions.<sup>9</sup> Later that year, GIS Corps deployed 30 volunteers to help with the response to Hurricane Katrina. Such a large and technical force of volunteers on the ground received significant attention from the media, providing a new source of volunteer recruitment. Since these two pivotal projects, the GIS Corps has worked with multiple UN bodies, NGOs such as the Red Cross and the Information Management & Mine Action Programme (iMMAP), and other volunteer crisis mapping organizations like CrisisCommons and HumaniNet (Our projects 2013).

Volunteers are managed in a process similar to the professional hiring process. New volunteers register on the GIS Corps website, where their interests and skills are logged into a database. From this database board members monitor volunteers and their participation in projects. When there is a new project, the board sends out an email with the job requirements to the volunteers. Sometimes, when the job requires a very specialized set of skills (like remote sensing analysis) the board will only send the description to the subset of volunteers who list those skills. Interested volunteers reply with their interest and are evaluated on the basis of their CV, references and an interview with a board member. When a project requires multiple volunteers, one is selected as the team leader.<sup>10</sup> In an effort to

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<sup>6</sup> Shoreh Elhami, interview with author, December 10, 2012.

<sup>7</sup> Count made in June 2013 from records on GIS Corps website.

<sup>8</sup> Shoreh Elhami.

<sup>9</sup> Ibid.

<sup>10</sup> Ibid.

maximize volunteer satisfaction, preference in allocating projects is given to volunteers who have not previously participated in a project because there are so many registered volunteers.<sup>11</sup>

The GIS Corps Code of Ethics is based on the URISA Code of Ethics, and therefore is aimed primarily at GIS practitioners. It focuses on good practices for data scientists such as making data accurate and accessible, documenting work, and being neutral (A GIS code 2003). The humanitarian context is only mentioned in the GIS Corps addendum which indicates for which goals and groups the GIS Corps can contribute work (GIS Corps Code 2009). On the one hand this ensures a high standard for data practices, one at least as high as the professional field. Yet, it does not address the particular concerns related to humanitarian data.

*The Volunteer Humanitarian Organization: The Standby Task Force*

The Standby Task Force (SBTF) illustrates a second type of volunteer crisis mapping organization that focuses on the humanitarian aspect of volunteering. It strives to be open to volunteers of any level of technical ability by offering training opportunities and tasks at many different skill levels. The aim of the SBTF was to create a maintained network of volunteers and a framework for managing them.<sup>12</sup> It was founded in 2010 by several veteran crisis mappers after they realized that there was enough sustained interest in crisis mapping to create a more permanent online community of willing volunteers (Meier 2011). As of December 2012, just two years old, the SBTF had over 900 registered volunteers.<sup>13</sup>

The organization is inclusive – anyone can sign up to be a volunteer, and anyone can join a project – and explicitly focused on aiding humanitarian activities. The first partner organization was UN OCHA, which had seen the successful use of the Ushahidi platform by SBTF volunteers in three previous cases (Haiti, Chile and Pakistan) and wanted the SBTF to participate in a training simulation for OCHA staff members. Since then, SBTF volunteers have participated in several projects with OCHA, USAID and the World Health Organization (WHO). Personal networks of the founders also help build linkages. For example, Patrick Meier, one of the founders, is professionally connected with Ushahidi, the Harvard Humanitarian Initiative, and the Qatar Foundation’s Computing Research Institute (QFCRI). The results of these connections are visible in SBTF collaborations with these other actors (Meier 2012).

The organizational model is intentionally open-source and transparent, with all materials available online, and all spaces open to any registered volunteer (Our model n.d.). The SBTF does not aim to select volunteers based on skill, rather it focuses on providing the structure for all volunteers to engage in humanitarian events in a productive manner. Anyone can sign up to be a volunteer and receive the “activation” emails that announce new projects. Registration consists of filling out an online form with contact information, skills and interests. Volunteers assess their own skills and have the option to do trainings with SBTF materials independently. Sometimes task team leaders will lead specific trainings (remotely), in particular for new volunteers. Similarly, the organization does not control who participates in what project, so there are some volunteers who come back often and do a lot, and there

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<sup>11</sup> Ibid.

<sup>12</sup> Anahi Ayala Iacucci, interview with author, December 7, 2012.

<sup>13</sup> Ibid.

are some who do minimal work and may join just for the community or out of curiosity. However, instead of worrying about how to cull these minimal contributors and create a force of highly committed and experienced volunteers, Meier is interested in how to take advantage of even the shortest, most fleeting attention spans of volunteers by breaking down tasks as much as possible (“microtasking”).<sup>14</sup>

Despite the broad spectrum of volunteers accepted into the SBTF, the importance and specificity of working in a humanitarian situation is stressed to all. Every volunteer must sign the Standby Task Force Code of Conduct. It is based on humanitarian principles and draws from multiple humanitarian organizations’ guidelines, including those of the Red Cross and the UN. In addition to concepts like neutrality and humanity, the SBTF Code addresses some specific applications given the work being done by volunteers. For example, it emphasizes the importance of empowering local actors and involving them whenever possible. Beyond the principle of “do no harm”, it elaborates that volunteers should not do anything that could potentially endanger people. This aim is echoed in a section on data quality that includes the warning against inciting panic, presumably with misrepresented or incorrect data (Code of conduct n.d.).

The differences in the way these two organizations conceptualize the role of their volunteers and the organization’s role in shaping the volunteers ultimately speak to two different foundations for credibility. The Standby Task Force emphasizes the humanitarian aspects of the work their volunteers do, and builds on the institutional connections made through projects and key leaders in the organization. Their transparency also acts as a means of establishing credibility because it makes all of their methods – from volunteer training to final products – open and available for scrutiny. Meanwhile, the GIS Corps focuses on the professional credentials of both itself as an organization with strong ties to the GIS professional world, and of the volunteers who are treated like professionals throughout their assignments.

Significantly, both groups have successfully made contacts and built working relationships with actors in the ‘formal’ humanitarian sector. They are both members of the Digital Humanitarian Network. So, despite their organizational and conceptual differences, these organizations share the same space institutionally as organized representatives of volunteer crisis mappers.

### **Conclusion**

Crisis mapping volunteers are not a homogeneous group and cannot be generalized as such. A significant proportion of volunteers surveyed have backgrounds that indicate a professional level of skills and standards. Many of the volunteers were also able to bring an element of local knowledge to their crisis mapping projects, and the majority of them indicate an interest and awareness of humanitarian issues. This is not to say that the concerns raised in the literature are unfounded, merely that they should be adjusted to account for different types of volunteers, with different professional and geographic experiences.

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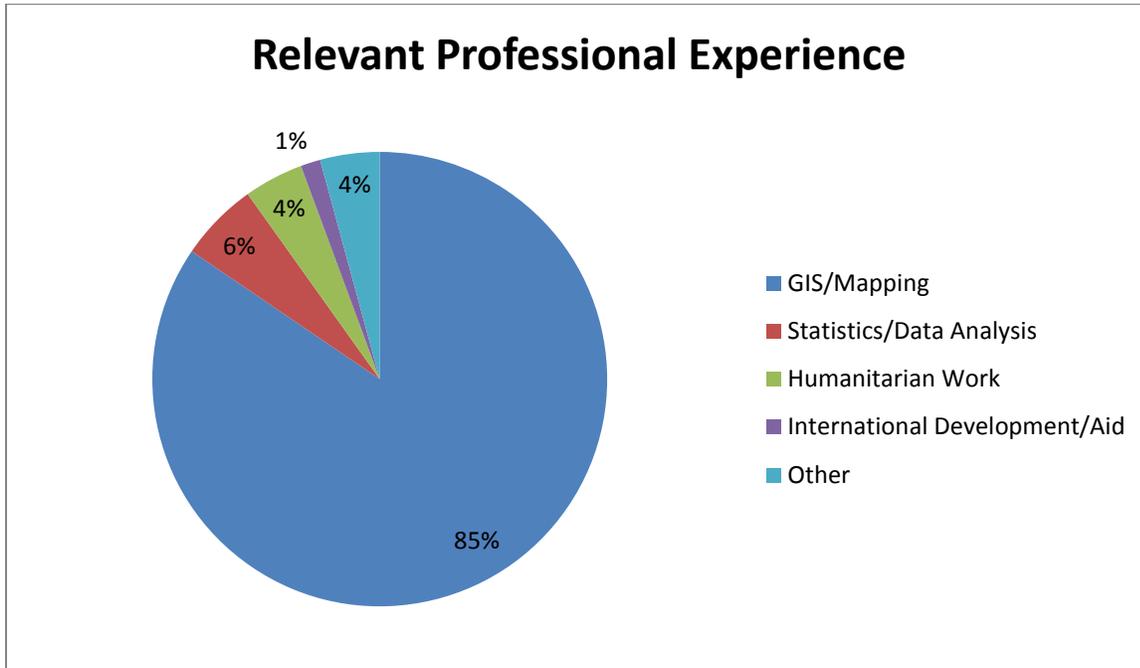
<sup>14</sup> Patrick Meier.

Similarly, volunteer organizations are not all structured in the same way. The GIS Corps still acts like a group of technical consultants and does not distinguish humanitarian work from other volunteer technical assistance. It manages volunteers in ways very similar to a professional organization and guides their behavior with professional, GIS-oriented codes of conduct. For each project the GIS Corps selects the most qualified individuals to assist. Meanwhile, the Standby Task Force makes all activities open to all volunteers but makes sure they all understand the importance of their work as humanitarians. This makes their mission and code of conduct more compatible with actors in the 'formal' humanitarian sector, but does less to emphasize the concerns particular to standards of mapping and data usage. Nevertheless, both organizations have been able to ensure their volunteers' credibility enough to build working relationships with key actors in the 'formal' humanitarian sector.

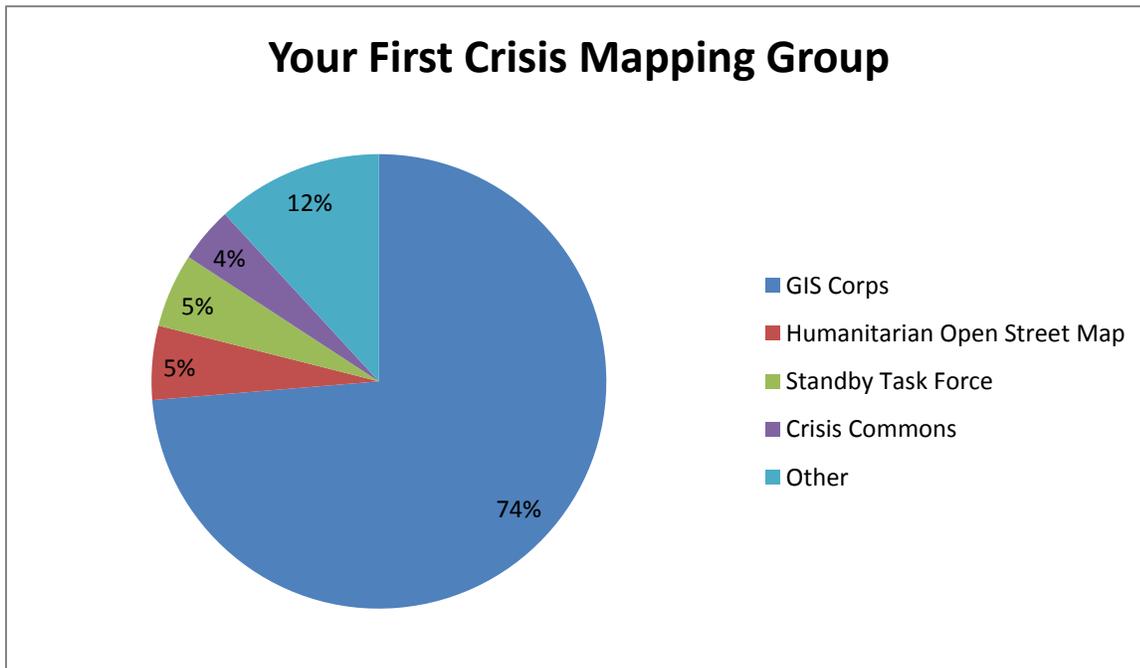
#### *Future Areas of Research*

The volunteers and their organizations are both in the process of evolving as they grow and build stronger linkages with the 'formal' humanitarian sector. While the movement is still in its nascent stages several areas of research could provide insight into the institutional evolution of the both the humanitarian and volunteer crisis mapping sectors. A study of how information provided by volunteer efforts is integrated by 'formal' actors could show the impact of this growing partnership. While a longitudinal analysis of crisis mapping volunteers might illustrate the kinds of knowledge and experience gained from participating in multiple crisis mapping projects; perhaps soon these volunteers will be the true experts. Meanwhile, in depth research could expand on the theories of local knowledge and geographic experience posited in this study. Are volunteers with relevant geographic experience actually able to contribute a specialized set of knowledge? How does the role of local knowledge differ in the context of a crisis and/or a remote response? Finally, it is possible that the very ideas of expertise and amateurship will shift as volunteer organizations develop and the 'formal' sector becomes more accustomed to working with volunteers.

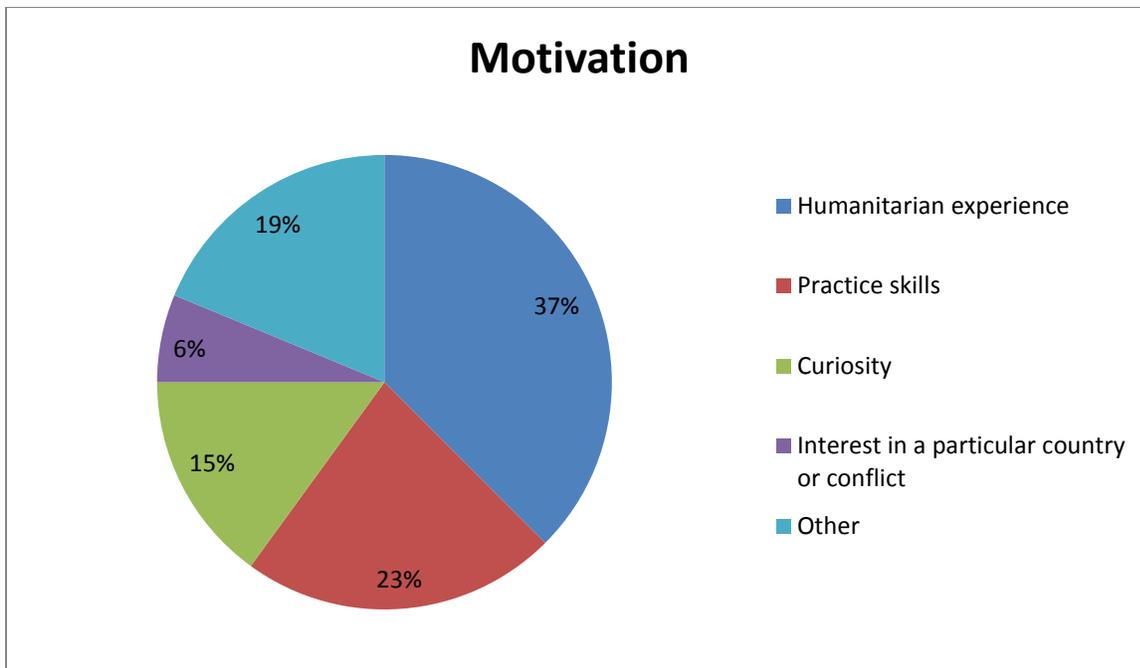
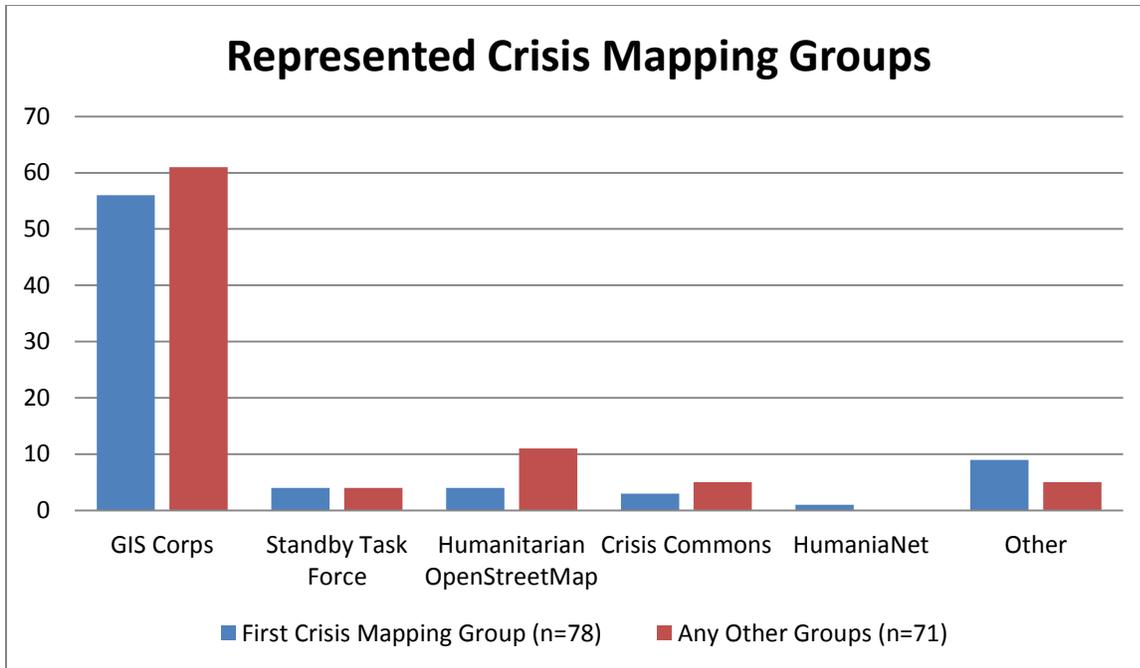
Appendix



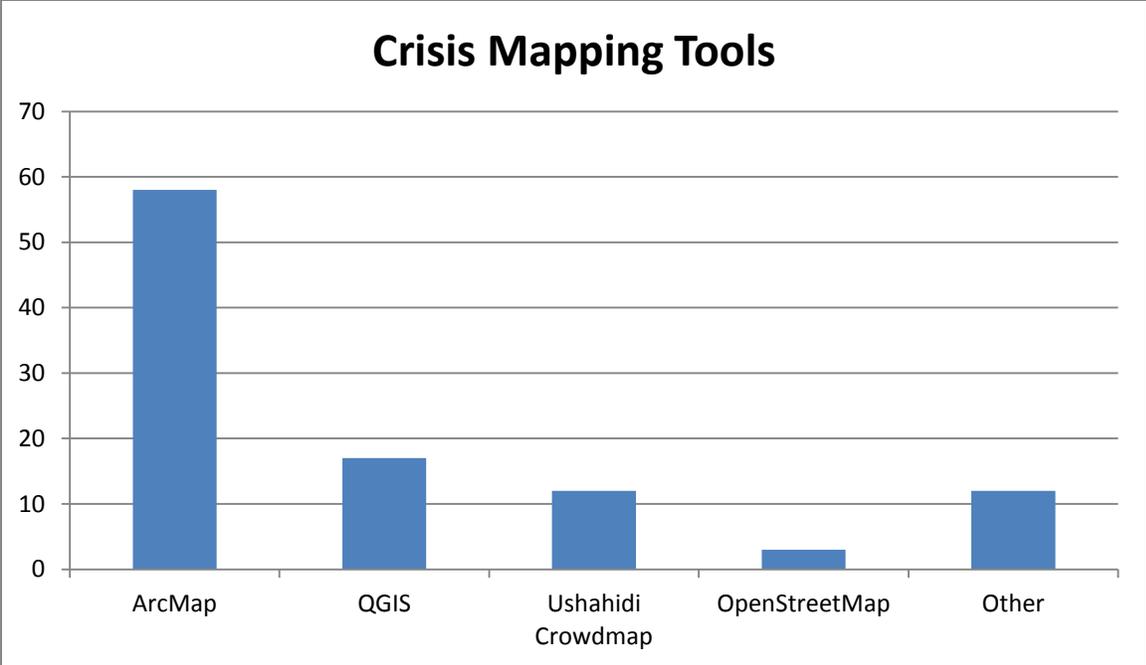
N = 78



N = 78



N=79



N=68

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