


# Emergency Response to Hurricane Dorian: Emergent Volunteer Groups and Public-Private Partnerships

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## Abstract

The emergency response efforts in the immediate days and weeks following Hurricane Dorian provide valuable guidance for effective preparation for and response to future extreme events. We assess the experiences and lessons learnt from an emergent volunteer group that provided emergency response in the first 15 days following the landfall of Hurricane Dorian. Drawing from accounts of first responders that convened at the Odyssey Aviation airport in New Providence, the paper highlights the activities, outcomes, and enabling factors of the ad hoc group that supported a wide range of emergency response efforts. The group developed and managed an evacuation centre that processed over 6,000 evacuees from Abaco and Grand Bahama; collaborated to deliver food, shelter, and medical attention for evacuees; and found housing for displaced persons. They organized the marine response to the storm; coordinated international organizations; and facilitated landing first responders and initial medical teams into Abaco. They also provided coordination support for the Government of The Bahamas. We highlight the need to include public-private partnerships in national disaster management systems to significantly strengthen national capacities to address the rising risks of disasters.

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## Introduction

Hurricane Dorian made history as the strongest storm on record to affect The Bahamas with unprecedented wind speeds and a glacial pace of movement across Abaco and Grand Bahama. Communities in the path of this superstorm were devastated—over 30,000 people were directly affected,

thousands of people were displaced (Zegarra et al., 2020), and 74 deaths were officially attributed to the storm (<https://tinyurl.com/HurricaneDoriandeathto11>). Many people in The Bahamas believe that the actual death toll is much higher (Charles, 2020). The emergency response efforts in the

immediate days following the hurricane were largely uncoordinated as thousands of people were made homeless overnight. There was widespread confusion and limited information about support and resources that would be made available to residents of the affected islands (Russell, 2019a; Russell, 2019b).

The situation post-Hurricane Dorian in The Bahamas was dire, though unfortunately not uncommon. In the aftermath of extreme disasters, response mechanisms put in place by governments are often overwhelmed (Tierney & Trainor, 2004). Government agencies move slowly as bureaucratic systems that ensure compliance with regulations and policies are inherently inflexible. Furthermore, the public sector may not have sufficient capacity to quickly mobilize the human and material resources needed for effective relief.

Literature on emergency response recognizes the crucial roles played by emergent volunteer groups. Emergent volunteer groups are spontaneous and are comprised of self-organizing volunteers who are from the local community of an affected area. These groups have loosely defined structures and fluid membership and leadership (Quarantelli, 1984; Tierney & Trainor, 2004; Majchrzak, et al., 2007). Stallings and Quarantelli (1985) point out that such qualities give emergent groups flexibility, “an important characteristic in suddenly altered or high-demand environments ... They are not constrained from undertaking new tasks or moving in different directions by established procedures or rules” (p. 98). These qualities can give emergent groups the capacity to innovate and improvise their response activities in ways that the public sector cannot.

The *situational altruism* of citizens that typically follows a disaster event “produces a

massive response of human and material resources to cope effectively with disaster” (Dynes, 1994, p. 1). These volunteers can include pro-social citizens, church members, and representatives of local businesses and private enterprises. They bring with them knowledge of the community that can be used to bridge the gaps in the services provided by government agencies and formal relief organizations.

While volunteers may lack training in disaster response, they bring local knowledge and expertise that can complement the efforts and knowledge of experts. Local residents know, for instance, whom to contact and where to go for help (Majchrzak et al., 2007). Emergent groups of citizens also bring social capital; they have personal contacts and social networks of trust, mutual dependence, and cooperation. They can leverage these existing social connections to mobilize resources, funds, information, facilities, and human capacity (Twigg & Mosel, 2017; Kaltenbrunner & Renzl, 2019). The efforts of emergent groups “enhance resilience because they raise the probability that needed information and resources will become available through network ties” (Tierney & Trainor, 2004, p. 167).

Studies, such as Twigg and Mosel (2017), describe as “inevitable” the spontaneous emergence of volunteers who feel compelled to help. Lowe and Fothergill (2003) point out the positive psychological impact of working on the response. The efforts of emergent volunteers can benefit the response and also have a therapeutic effect on the volunteers themselves and on those who have been affected by disaster. Plans for preparing for and responding to a disaster should, therefore, include methods for incorporating and effectively harnessing the resources, energy, and efforts of these inevitable emergent volunteer groups.

In this paper, we assess the experiences of an emergent volunteer group that played a significant role in the emergency response to Hurricane Dorian. We identify their key actions and outcomes, as well as the characteristics of the group that enabled their efforts. We discuss the need to more formally incorporate lived experiences and lessons learned into the portfolios of disaster management. We also argue that public-private partnerships are needed to bolster and complement government efforts.

## **Methodology**

In this study, we focus on the experiences of a group of volunteers in New Providence who spontaneously organized resources and efforts to support the emergency response to the impact of Hurricane Dorian in The Bahamas. The self-named Core Group comprised private citizens and representatives of the private sector who collaborated closely with each other, with a fluctuating corps of local volunteers. One day after Hurricane Dorian made landfall in Abaco, all residents of New Providence who wanted to help with relief efforts were invited to a meeting that was publicly advertised over social media and through personal connections in the community. The Core Group of spontaneous, self-deployed citizens emerged from the meeting and quickly set to work, assuming all roles they had the capacity to fill.

The Core Group collaborated with government agencies and with local and international non-governmental organizations (NGOs) that are dedicated to disaster response. This collaboration provided Core Group members with a unique and comprehensive perspective on the disaster and its aftermath. As detailed in Table 1, the Core Group was organized into teams that focused on different aspects of the response, with each team having one or more

leaders. For this study, we focus on the emergency response phase: the two-week period following the passage of Hurricane Dorian (September 2–15, 2019).

Our findings are based on a number of data sources, provided directly by the Core Group, who advocate for the dissemination of their unique and powerful experiences. One of the authors of the paper is a member of the Core Group and a founder of the formal organization (Bahamas Strong Alliance) that emerged from the self-organizing cadre of citizens. A second author is on the board of that organization.

First, we draw from the final report of the Core Group that documented their actions and experiences as first-hand participants in a major event (Bahamas Strong Alliance, 2020). To build the report, team leaders used their own contemporaneous notes and calendar entries and referred to the official minutes of meetings they had attended. Several team leaders coordinated actions across teams, with multiple governmental agencies, and with NGOs engaged in the response. Compiling the initial drafts of their reports and reading the recollections of others helped to stimulate their memories of events. Two members of the Core Group took on the task of finalizing the final report. They interviewed other team leaders to heighten clarity, aid recollection, and confirm factual details from written accounts.

Second, we assessed the written communications between Core Group members during the response phase. For communication, volunteers relied heavily on WhatsApp, a freeware, cross-platform messaging and voice over Internet protocol service. During the first days after Hurricane Dorian made landfall, when the situation was at its most dynamic and uncertain, volunteers created as many as 16 separate robust WhatsApp groups that shared hundreds of

messages per day. Threads consist of text and voice messages as well as photos and images. Threads include messages sent out by those experiencing the storm in real time that had been forwarded widely to share news and report on current needs. Messages sent during the full fury of the response to Hurricane Dorian document, in detail, the ongoing impact and helped to recreate events. The date and time stamps that accompany WhatsApp messages have helped to verify actions and outcomes.

Third, we assessed the extensive collection of photographs that were taken by members of the Core Group and the international media. These images captured the disaster areas and the work of responders, providing visual documentation of the setting and the actions taken. These photographs also helped to verify actions and outcomes of the Core Group.

Finally, public reporting and messages shared over social media helped to fill in information gaps in the accounts of the Core Group. Hurricane Dorian was a major event and was extensively covered, both during and after the storm, in the print and broadcast media. The user-generated content provided over social media such as Facebook and Twitter gave a chronological list of communications that occurred during and after the storm. Electronic versions of newspaper articles and videos of news broadcasts were collected and closely examined for relevant data and dates.

## **Results**

### ***Key Actions and Outcomes of the Core Group***

The actions taken by the Core Group were widespread and filled critical gaps in the actions taken for the emergency response by the government and non-governmental

organizations and during a time of high pressure and extreme uncertainty. Table 1 details the teams, actions, and outcomes of the Core Group over the September 2-15, 2019 period.

While relationships with highly resourced actors were critical, so too were the broader social networks of all volunteers who were part of the Core Group. Local volunteers were able to communicate with family and friends in the northern Bahamas, who could offer accurate situation reports of the area's immediate conditions and needs. Local volunteers also served as intermediaries, relaying to responders the critical information of those who still awaited rescue. Establishing and maintaining these chains of communication that drew on pre-existing relationships greatly supported the response. The flow of information improved situational awareness during an uncertain time and was used to coordinate efforts.

Prior relationships with government officials also allowed the Core Group to act quickly and effectively. Government officials, including those from the Office of the Prime Minister, Bahamas Customs and Excise Department, Royal Bahamas Defence Force, and Royal Bahamas Police Force were contacted early in the process to establish procedures and lines of communication and also to request assistance where needed. Relationships with officials at the United States Embassy in Nassau were drawn upon to establish communications and allow for relief efforts to be coordinated with the Core Group. Relationships with the Bahamas Civil Aviation Authority allowed for a portion of the emergency aircraft registration process to be delegated to the Core Group. This collaboration streamlined the process and significantly reduced wait times for aircraft, expanding much-needed emergency relief efforts such as delivery of supplies and evacuation of residents.

### ***Flexibility and Innovation***

The Core Group leaders/members were committed to a flexible and adaptable approach to managing its operations from the onset, a critical factor in the group's capacity to respond to changing needs. The ability to rapidly pivot in a dynamic environment and identify and make use of appropriate technology are crucial enablers for effective humanitarian disaster response (Jermittiparsert & Pithuk, 2019). Here we identify some of the flexible and adaptable approaches taken by the Core Group.

The initial modality of conducting centralized meetings with team leaders to make decisions was quickly found to be ineffective and impractical. Within a few days, centralized meetings of the wider team were replaced with virtual communication using WhatsApp. WhatsApp groups were formed for each of the teams, with multi-sector coordinators added to multiple groups to ensure that information was disseminated quickly across teams. The popularity of WhatsApp in The Bahamas made it an appropriate choice for information sharing within the Core Group; most members already had access to the app and were familiar with how to use its many features. Further, it could be easily implemented to facilitate virtual communication with no learning curve.

The marine response team that took responsibility for sea evacuations and delivery of supplies initially convened in New Providence but quickly relocated to North Eleuthera. The shift was made to capitalize on the strategic location and proximity of the Spanish Wells community to Abaco. Relocating the marine response also allowed responders to take advantage of the marine heritage and resources of Spanish Wells, further leveraging the material and social assets of the Core Group.

Lastly, the system used to document evacuees was quickly upgraded. Volunteers documented the arrival of those evacuated to North Eleuthera via marine rescue. To expedite the early wave of the evacuation, the first vessels out of Abaco had quick, handwritten, paper manifests of passengers. The manifests were intended for NEMA to help track survivors, but it was never clear whether the paper manifests made it to their ultimate destination. There were many opportunities to lose loose sheets of paper and no system for handling or accounting for them. It quickly became clear to volunteers that this precarious system was inadequate to the task and did not effectively support the important effort to track those evacuated and accounted for.

To upgrade this system, volunteers put in place electronic systems of record-keeping using no-cost, shared, cloud-based applications. Digital records made it possible for volunteers in separate locations to contribute to one common database, which helped smooth the process for identifying who had been accounted for, who had been evacuated, and who should still be considered lost. The Core Group was cognizant of the privacy and security concerns with digital records. Those who worked with the documents and who registered evacuees signed non-disclosure agreements, and any access individual volunteers had to the shared document was terminated at the end of the evacuation.

### ***Leadership and Experience***

One of the ways that the Core Group was able to rapidly organize and provide effective support was due to prior experience in disaster relief efforts. Mahmud et al. (2020) find that effective leadership in disaster recovery stems from strong preparedness, effective skills in crisis communication, and the capacity to rapidly overcome disruptions

in communications—all improved by having prior related experience. Strong leadership by those who “possess innovative insight and entrepreneurial skills” are identified as key components of effective disaster

management (Sawalha, 2020, p. 475).

Some of the key members of the Core Group had previously coordinated hurricane relief efforts and were aware of the systems and

**Table 1**  
*Core Group Teams, Actions, and Outcomes*

Core Group Team	Actions and Outcomes
Air Response Coordination and Logistics	Supported air rescue, evacuation, and reconnaissance. Coordinated the efforts of a large group of volunteer pilots and aircraft owners. Supported transport of emergency first responders and initial medical team to Abaco.
Coordination with the Government of The Bahamas	Helped coordinate air traffic control and flight authorizations for air space, serving as the intermediary between the National Emergency Management Agency (NEMA) and individual pilots seeking authorization. Organized airlift for government officials.  Coordinated with the Office of the Prime Minister, NEMA, Bahamasair, and other ministries.
Coordination with local and international NGOs	Convened NGO cluster meetings to share information across sectors and identify opportunities for partnership.  Organized airlift for NGO representatives.
Evacuee Registration Centre	Created an evacuation centre in New Providence that received approximately 6,800 displaced persons from Grand Bahama and Abaco.  Developed and maintained collaborative systems to register evacuees, reunite them with friends and family, and provide medical care, food, care packages, temporary accommodations, and transportation.  Created an evacuee reception centre in North Eleuthera to receive and document evacuees and provide medical care and transportation.
Marine Response Coordination and Logistics	Coordinated the efforts of a large group of volunteer boat operators for sea evacuations from Marsh Harbour and the Abaco Cays.
Medical Response	Delivered emergency medical personnel to Abaco to assist with triage and treating patients that had suffered traumatic injuries during the storm.  Delivered donated medical supplies to Grand Bahama. Developed a medical centre to serve the Evacuee Registration Centre.
Relief Supplies Warehousing and Logistics	Coordinated the receipt, storage, and delivery of more than 400,000 pounds of relief supplies donated from abroad and collected locally.
Temporary Housing Assistance	Arranged for private, temporary housing for 900 evacuees in the absence of friends, family, or official shelters.

infrastructure that would be needed, albeit on a much larger scale. This allowed for effective early organization and logistics to support the Core Group. Such efforts included the foresight of running additional telephone lines to Odyssey Aviation, the purchase of cell phones to be used for communication with the broader public, and the creation of spreadsheets to track supplies and recovery efforts.

Strong leadership was also an enabler of success. Early in the process, the Core Group recognized the need to effectively draw on the expertise of the wide range of volunteers. Teams were organized to focus on various aspects of emergency relief, and volunteers were assigned where their skills could be best leveraged.

By September 3, 2019, teams and team leaders had been identified, providing a framework to harness the outpouring of support from the general public and also allowing for the identification of whether new teams would need to be formed to handle emerging issues. Team leaders also gained expertise on disaster response from regular, critical guidance that was provided by Global Support and Development (<https://gsd.ngo/>), an international NGO that was also based at Odyssey Aviation. Global Support and Development shared information and suggestions on ways to improve the Core Group's efforts, bolstering the group's effectiveness.

## **Discussion**

The experience of emergency response for Hurricane Dorian demonstrated the need to coordinate relief efforts and bridge gaps in service provided by responding agencies. As an emergent volunteer group, the Core Group brought together a wide range of volunteers that tackled many aspects of the emergency response efforts and filled gaps in the

government response. If, as scholars such as Twigg and Mosel (2017) suggest, the arrival of volunteers after a disaster is inevitable, then emergency management teams should harness their efforts and energy.

Some authors posit that the emergence of such volunteers or groups can be read as a failure of the system and an inherent criticism of government or of institutional management of the crisis (Stallings & Quarantelli, 1985). However, we contend that volunteers and volunteer groups provided critical support needed to address the unprecedented damage caused to The Bahamas by Hurricane Dorian. During large-scale emergencies, in particular, the development of emergent citizen groups is less a criticism of established organizations and more an indication that disaster demands have exceeded existing government capacities (Stallings & Quarantelli, 1985; Ferguson et al., 2018; Schmidt, 2019).

Following extreme disasters across the world, local citizen groups have played critical roles in augmenting official government responses (Schmidt, 2019). Indeed, several authors argue that there must be increased collaboration between local government, emergency services, citizens, and the private sector in order to effectively address mounting challenges due to the increased frequency and intensity of disasters as a result climate change (Gimenez et al., 2018; Waldman et al., 2018).

While government agencies in The Bahamas provided relief to many that were affected by Hurricane Dorian, the few official reports of government action indicate that the capacities of many agencies were overwhelmed, due the magnitude of destruction and impacts (Inter-American Development Bank et al., 2020). These reports lend support to the notion that the work of the Core Group was a necessary complement to the limits of what state actors

could realistically accomplish in the midst of a formidable and unpredictable crisis.

Since Hurricane Dorian, newly formed NGOs that were part of the emergent volunteer group have developed in The Bahamas, focusing on different aspects of disaster management. Bahamas Strong Alliance (<https://www.bahamasstrong.org/>) focuses on strengthening preparedness and response and developing national disaster resilience. IDEA Relief (<https://www.idearelief.org/>) continues the efforts of the marine response realm and ferries people and supplies between Eleuthera, Marsh Harbour, and the Abaco cays to support ongoing recovery efforts. These organizations are also compiling a national inventory of resources at ports and harbours to aid in future preparedness. Bahamas Disaster Housing Assistance (<https://www.bahamasstrong.org/partners>) continues to offer support to the many individuals who were left homeless by Hurricane Dorian. The group finds long-term housing, assists with job searches for displaced adults, and helps families with school-aged children to transition to new schools. The formalization of emergent volunteer groups into focused NGOs allows for continuity in the services that were provided post-Hurricane Dorian and provides a structure into which future volunteers can feed.

The response to Hurricane Dorian demonstrated the value of the private sector and NGOs as partners in mobilizing goods, services, equipment, expertise, and personnel. These groups can make fast decisions regarding the redirection of their resources and can take quick action without the administrative burdens and bureaucratic requirements of the public sector. However, to ensure that the value and experience of these groups is used to improve future disaster response, NGOs and private sector

partners need to become part of the formal national disaster management system. Research in disaster management and community resilience recognizes the value of collaboration between the public sector, the private sector, and NGOs (Simo & Bies, 2007; Chen et al., 2013; Busch & Givens, 2013). There is growing appreciation of the value of public-private partnerships (that is, partnerships between the government, private sector, and NGOs in building community resilience and that disaster management requires the participation of all segments of society (Busch & Givens, 2013).

Disaster management is increasingly recognized as requiring the participation of all segments of society. In its own assessments of disaster management, the United Nations advocates for formation of public-private partnerships to prevent and respond to disasters (International Strategy for Disaster Reduction, 2005, p. 11). The United Nation's position demonstrates a rising tide of sentiment that the risk of increasingly frequent and destructive annual hurricanes requires new modes of community preparedness and new degrees of citizen participation.

Official public-private partnerships that are strategically aligned can provide dedicated supplemental support to governments and help coordinate varying capacities and strengths of the public sector, the private sector, and NGOs. To be successful and sustainable, public-private partnerships require clear agreement regarding responsibilities and expectations on both sides (Busch & Givens, 2013). Partnerships must be interdependent; each partner must have some influence on the other (Gabler et al., 2017); communication needs to be bilateral and two-way (Cooper, 2015; Gabler et al., 2017); and information must be shared rather than controlled.



The experience of Hurricane Dorian and the activities and outcomes of the Core Group show that the Bahamian national disaster management system would be improved by incorporating public-private partnerships. Developing such partnerships and determining areas of responsibility and modalities of cooperation in advance of future extreme events has significant potential to decrease the effects of disasters and provide more rapid and effective relief to affected communities. In an era of climate change, as hurricanes are expected to become more intense and increase the risk of extensive damages (Intergovernmental Panel on Climate Change, 2018), it is critical to capitalize on all resources that are available to contribute towards more effective disaster management policies and practices.

The newly-formed Ministry of Disaster Preparedness, Management and Reconstruction was developed as a result of Hurricane Dorian and is tasked with coordinating the national response for disasters and maintaining relations with NEMA and with Family Island Committees and administrators (Lewis, 2020). As the

country develops new modalities to address the rising risks of natural disasters, incorporating public-private partnerships that can bolster expertise, resources, and capacities is crucial.

## **Conclusion**

This paper shows that national disaster recovery and management in The Bahamas would be improved by developing and implementing interdependent public-private partnerships where areas of responsibility and modalities of cooperation are clearly identified. The experiences, activities, and outputs of the emergent volunteer group, the Core Group, highlight the resources, expertise, and energy that citizen volunteers and representatives of the private sector can bring to emergency response. As risks of disaster rise, it is critical that lessons from the Hurricane Dorian experience are used to harness and coordinate all available resources and contribute towards more effective disaster management.

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