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Crowdsourcing Accountability in a Nigerian Election

Catie Snow Bailard
Steven Livingston

ABSTRACT. We explore the capacity for new information and communication technologies (ICTs) to facilitate crowdsourced elections monitoring. In broad terms, we are interested in digitally enabled collective action initiatives by nonstate actors, especially in places where the state is incapable of meeting the expectations of democratic governance. In the case at hand, we test for effects of crowdsourcing elections monitoring in the form of citizen-generated reports of failures, abuses, and successes through the Ushahidi open-source geographical information systems (GIS) platform in regard to the 2011 Nigerian elections. Controlling for a number of factors, we find that the number and nature of crowdmap reports generated by citizens is significantly correlated with increased voter turnout in the 2011 Nigerian presidential election as a result of providing officials with improved information about the functionality of local polling stations.

KEYWORDS. Africa, democracy, democratization, election-monitoring, elections, information and communication technology, mobile phones, monitorial citizenship, political information

The opportunities and constraints that political actors face have been transformed by digital technologies. In this analysis, we explore a case in which digital technology enabled political opportunities that would have been otherwise impossible, or at least impracticable. Specifically, we consider crowdsourced elections monitoring of the 2011 Nigerian national elections using information and communication technologies (ICTs). By leveraging nearly ubiquitous mobile phones and open-source geographical information systems (GIS), elections monitoring can now be performed by thousands of mobilized amateur election observers

who, individually, make incremental contributions that, collectively, create a vast pool of information about the election process. By leveraging the efficiencies found in small, incremental, digitally enabled contributions (an SMS text, phone call, e-mail, or tweet) to a public good (a more transparent election process), crowdsourced elections monitoring constitutes another important example of digitally enabled collective action.

The findings of this analysis highlight how ICTs are fundamentally changing the amount and type of information that can be generated to facilitate political processes—particularly in

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contexts where states lack the administrative capacity to provide for public goods. This has particularly important implications for the political opportunities and constraints faced by citizens and officials in developing and hybrid democracies. However, the results of our analysis also reveal that these ICT initiatives may precipitate political outcomes that do not always uniformly nor automatically favor democratic ends.

We begin with a consideration of classic collective action theory in light of the variable communication costs that new ICTs provide. We then turn to a consideration of literature that speaks to the importance of electoral integrity in democratic theory. This includes a consideration of a dilemma faced by leaders in democratizing and pseudo-democratic countries. On the one hand, “pseudo-democrats” are tempted to manipulate elections so as to ensure their own victory. On the other hand, they face potential consequences for thwarting electoral processes. This leads to what one analyst calls an “arms race” between pseudo-democrats and elections-monitoring initiatives. Crowdsourced elections monitoring can be understood as a part of that arms race.

This takes us to our analysis of a specific case of digitally enabled crowdsourced elections monitoring, the 2011 Nigerian elections. Here, we begin with a review of the key technologies found in this case and the civil society groups that leveraged that technology to monitor the elections. We then present the findings of our analysis in which we test for effects of citizen-generated reports of electoral failures, abuses, and successes through the open-source Ushahidi GIS platform on specific electoral outcomes. We conclude with a discussion of the larger political implications of the novel sort of information created by crowdsourced initiatives for the process and direction of democratization.

To the best of our knowledge, this is the first empirical test of political effects of a digitally enabled, citizen-based, elections-monitoring initiative. Controlling for a number of potentially confounding factors, we find that the number and nature of crowdmap reports generated by citizens is significantly correlated with increased turnout in the 2011 Nigerian

presidential election. We do not argue that this increased turnout is a result of crowdsourced reports increasing citizens’ motivation or desire to vote. Our data do not allow us to speak to individual citizen motivations. Instead, we show that crowdsourced reports provided operationally critical information about the functionality of the elections process to government election officials. Specifically, crowdsourced information led to the reallocation of resources to specific polling stations (those found to be in some way defective by information provided by crowdsourced information) in preparation for the presidential election.

In other words, the electoral deficiencies revealed by crowdsourced reports regarding the National Assembly (NASS) election provided actionable information to officials that enabled them to reallocate election resources in preparation for the presidential election, which took place one week later. This strengthened the functionality of those polling stations, thereby increasing the number of votes that could be successfully cast and counted—an argument that is supported by both quantitative and qualitative data brought to bear in this analysis. However, our results also reveal that the resultant higher turnout in the presidential election was of particular benefit to the incumbent candidate. This has important implications for how various actors may choose to utilize the information generated by new ICT. Accordingly, we conclude with a consideration of the significance of reduced communication costs provided by ICTs for crowdsourced collective action, citizenship, and democratic practices more generally.

COLLECTIVE ACTION REVISITED

According to a central tenet of collective action theory, full provision of public goods becomes increasingly problematic as groups become larger. Individual self-interest collides with collective interests in proportion to the size of the group (Olson, 1965). Free-riding, the central problem of collective action, leads to its core paradox: acting collectively requires both voluntary association and selective incentives or coercive organizations (Bimber, 2003; McCarthy

& Zald, 1977; Schattschneider, 1960). Yet the cost of creating and maintaining an organization is itself an impediment to collective action. As Olson (1965) notes, “These are the costs of communication among group members, the costs of any bargaining among them, and the *costs of creating, staffing, and maintaining any formal group organization* [emphasis in original]” (p. 47). The larger the number of members in the group “the greater the organization costs, and thus the higher the hurdle that must be jumped before any of the collective good at all can be obtained” (p. 48).

Recent scholarship has called these conclusions into question. With the proliferation of inexpensive ICTs, communication costs have, at least in some cases, become negligible (Bimber, 2003; Earl & Kimport, 2011; Lupia & Sin, 2003; Shirky, 2008). In other cases, the costs associated with collective action are reduced but not eliminated. Reduced information costs have allowed even modestly resourced groups to achieve a much higher level of political engagement than would have been expected previously (Bimber, 2003).

Information flows are more interactive, characterized by many-to-many, rather than one-to-many information patterns, as was the case with analog media content (Castells, 2009). Besides altering gatekeeping dynamics, this shifts the nature of collective action, reducing reliance on brittle planning (predetermined and time-sequenced coordinated actions) to more iterative or fluid actions that are coordinated in real time over networks (Rheingold, 2002). Planning is brittle because of its lack of adaptability to changing circumstances and unexpected exigencies, whereas digital coordination is fluid and adaptable to unforeseen events. Put another way, ubiquitous digital devices that connect large groups of people shift the weight of collective action away from organizations to organizing.

Furthermore, while much of the recent literature has focused on the diminished cost of communication and its impact on mobilizing protest actions, a second important effect of advanced information technology is found in information gathering. An overlapping array of technologies enables the collection of data from a wide variety of sources—everything from commercial

high-resolution remote sensing satellites and other geospatial data collection platforms, to web crawlers that map social relationships among groups and individuals on the World Wide Web, to incremental inputs from the “crowd” on a mass scale (Aday & Livingston, 2009; Benetech, 2013; PBS Newshour, 2013). This is usually referred to as crowdsourcing.

Research has identified a wide variety of digitally enabled collective action initiatives. The objectives are determined by the intentions, perceived needs, and desires of the organizers of the initiative, not by the technology. Pierskalla and Hollenbach (2013), for example, have argued that the proliferation of digital technologies facilitates political violence by armed groups in Africa. Livingston (2013), on the other hand, argues that communities and underresourced police departments leverage the efficiencies of digital technology in their efforts to meet the challenge of often-violent crime. There are other, less dramatic examples. Farmers and fishermen leverage technology to strengthen their bargaining position in market exchanges. A simple text message listing the daily price fluctuations of commodities such as coffee empowers farmers in remote hamlets to negotiate with buyers (Aker & Mbiti, 2010). One program uses “Community Knowledge Workers” to inform remote, rural farming communities of market information and a variety of other topics, including advice on caring for their crops and animals, weather information, and treatment of pests and diseases (Grameen Foundation, 2013).

Protest actions serve as another example. A growing body of research on political collective action and technology has been devoted to social movements and protest actions, usually in the Global North (Bimber, 2003; Bennett & Segerberg, 2013; Earl & Kimport, 2011; Shirky, 2008). The focus here is on how poorly resourced, mostly informal groups and organizations have utilized the efficiencies of digital technologies, but especially social media, to organize large-scale protest actions. In research cited by Pierskalla and Hollenbach (2013), a question in the 2008 Afrobarometer public opinion survey about cell phone use and protest behavior reveals a positive and statistically significant effect; cell phone users are more

likely to participate in protest (Mattes, Bratton, Davids, & Africa, 2011). Recent scholarship has also broadened the focus to revolutionary change in the Arab world (Howard, 2010; Howard & Hussain, 2013). For example, on-the-ground research during the 2011 Egyptian protests found that “[c]ontrolling for other factors, social media use greatly increased the odds that a respondent attended protests on the first day” (Tufekci & Wilson, 2012, p. 1). These are just a few of the sorts of digitally enabled collective action initiatives that have been explored in recent years.

ELECTIONS AND THE PSEUDO-DEMOCRAT’S DILEMMA

We are interested in crowdsourced elections monitoring as an example of digitally enabled collective action. By relying on broadly available mobile telephones and open-source GIS, Nigerian community groups monitored Nigeria’s 2011 elections in near real time. This innovation has both normative and practical significance.

At a practical level, crowdsourced elections monitoring offered the possibility of strengthening what had been a chronically weak and ineffective elections process. The Independent National Electoral Commission (INEC) was established by the 1999 Constitution of the Federal Republic of Nigeria to organize elections and to ensure their transparency, efficiency, and integrity. Prior to 2011, however, it had fallen far short of meeting these goals. In 2003, international observers found serious irregularities in 11 of the 36 Federal states. As a consequence, almost all of the opposition parties refused to recognize the result (Human Rights Watch, 2004). The 2007 elections fared no better. The head of the European Union observer team, for instance, said that the handling of the polls had “fallen far short” of basic international standards, and that “the process cannot be considered to be credible” (Mahtani & Wallis, 2007).

The more common shortfalls in balloting procedures in both elections included:

- Inadequate supply of voting materials
- Delay and refusal to open polling stations in opposition strongholds
- Omission of names and/or pictures of candidates from ballot papers
- Theft of election materials, including ballot boxes/bags
- Ballot box stuffing
- Underage voting
- Use of intimidation and violence against opposition party members/agents and “noncooperating” electoral officers
- Lack of transparency in the collation, counting, and tabulation of results
- Lack of secrecy in voting process
- Concoction and falsification of results

In an attempt to rectify these shortfalls, a plethora of domestic groups monitor Nigeria’s elections. They include the Transition Monitoring Group (TMG), Electoral Reform Network (ERN), Center for Democracy and Development (CDD), Federation of Muslim Women’s Associations in Nigeria (FOMWAN), Justice Development and Peace Commission (JDPC), Media Monitoring Group (MMG), and the Nigeria Labor Congress (NLC). International monitors have included the Economic Community of West African States (ECOWAS), African Union (AU), National Democratic Institute (NDI), International Republican Institute (IRI), European Union (EU), and European Union Observer Mission (EOM) (Ibrahim & Garuba, 2010).

As numerous as these groups are, to varying degrees they all share significant operational limitations. First, Nigeria’s size and its lack of adequate infrastructure (transportation systems and reliable electricity) make it difficult for election monitors to reach distant polling stations. In 2011 there were approximately 120,000 polling stations across Nigeria, although exactly how many stations there were was contested. Covering all of the polling stations for the entire week of scheduled voting was practically impossible. The delays and shifting elections schedule added to the challenge. More important, observing preelection

processes (getting materials in place and registering voters) was difficult to observe across the entire country. The logistical impediments were too great. Furthermore, traditional monitoring organizations were poorly suited to offering systematic, *near real-time* assessments of problems emerging in the elections process. Issuing reports following the completion of an election offers an important means of judging its integrity, but it does little to correct elections processes in real time. Digitally enabled collective action—mobilizing citizens to engage in a collective purpose via various digital technologies—addresses some of the limitations experienced by conventional monitoring methods.

At a normative level, crowdsourced elections monitoring offers an important dimension to the democratic accountability literature. Nobel Laureate Amartya Sen has written about the positive instrumental effects associated with multiparty elections as a mechanism for correcting injurious policies. Where elections are missing or flawed, such policies go unchanged, regardless of their consequences (Sen, 1999a; Sen, 1999b).

Sen's influential work has inspired an enormous body of scholarship devoted to an examination of the instrumental value of democratic accountability (Halperin, Siegle, & Weinstein, 2005; Norris, 2012). One area of research concerns what Hyde has called the pseudo-democrat's dilemma.

States seeking international benefits are motivated to send externally credible signals that they possess certain characteristics when they perceive that doing so will increase their share of internationally allocated benefits, such as foreign aid, increased foreign investment, tourism, trade, membership in international organizations, and legitimacy and prestige. (Hyde, 2011, p. 3)

Increased democracy-contingent benefits include enhanced international prestige, a reduction in international isolation, foreign direct investment and development aid, preferential trade agreements, membership in

international organizations, and military ties and support (Gleditsch & Ward, 1999; Hyde, 2011).

Whether the signals are sincere and accurate remains subject to what Hyde (2011) calls an arms race between elections-monitoring organizations and pseudo-democrats who attempt to conceal violations of the very norm they are claiming to substantiate:

Pseudo-democrats should devote effort to concealing election manipulation such that they are less likely to be caught. In addition, pro-democracy actors should push for increases in the quality of election observation, and international observers should attempt to detect and criticize an expanding range of tactics used to manipulate elections. (p. 158)

Pseudo-democrats sometimes go to great lengths to create the *appearance* of fair and free elections. Asmolov (2013) describes the extraordinary efforts by President Vladimir Putin to create the appearance of transparency and accountability in the 2012 presidential election. Approximately 80,000 CCTV cameras were installed in 91,000 of Russia's approximately 95,000 polling stations. Yet despite all of the expense and effort, according to Asmolov and other observers, the cameras offered only the appearance of transparency and accountability. "Even if people could see illegal activity occurring on their screen, there was little they could do about it. The system had not provided a mechanism for submission of complaints if something wrong were to occur. It also had no mechanism for recording the broadcasts" (p. 41).

Geography also plays a role in determining the effectiveness of traditional elections monitoring. Elections observers tend to focus on accessible and relatively safe urban areas, clearing the way for widespread fraud in rural areas. It is logistically impracticable for a sufficient number of elections observers, especially international observers, to be organized and deployed across large, often rural, and frequently dangerous countries.

In this analysis, we explore an elections-monitoring process that leverages the ubiquity of mobile phones and the availability of open-source geographical information system platforms. Rather than relying on formal organizational structures consisting of prominent or expert observers, crowdsourced monitoring relies on a massive number of amateur observers (i.e., citizens who volunteer to submit their own report via digital technology, such as SMS, to a centralized platform documenting their own experience at their local polling station). This means that, thanks to the communication efficiencies created by digital technology, crowdsourcing avoids some of the geographic and logistical impediments that can constrain traditional elections-monitoring efforts. It is worth noting that we do not argue that crowdsourced monitoring can or should replace traditional monitoring initiatives, but it can nevertheless serve as an important complement due to its capacity to surmount some of the barriers that tend to constrain traditional monitoring efforts.

We argue that the use of crowdsourcing technology in an electoral context is yet another outcome of the revolution in information technology and collective action. At a practical level, the development of harder to control or manipulate crowdsourced-monitoring platforms is likely to affect the “elections arms race” described by Hyde. As a consequence, one would expect the pseudo-democrat’s dilemma to deepen and become more complicated. At another level, to the degree crowdsourced elections monitoring can strengthen the integrity of multiparty elections, the sort of catastrophes that Sen (1999a, 1999b) describes in unaccountable political systems might be avoided.

More generally, as the case considered in this analysis demonstrates, the successful deployment of a crowdsourced elections-monitoring initiative can generate information about a specific political process—information that would otherwise be impossible to generate in nations and geographic spaces with limited organizational and administrative capacity. Instead of complex and costly organizations, this case demonstrates how digitally enabled collective action can be leveraged to achieve important

collective objectives, which provide both new opportunities and, potentially, constraints for the strengthening of democratic practices, such as fair and free elections, in these nations.

DIGITAL TECHNOLOGY IN AFRICA

The current information environment is characterized by growing abundance, scalability, and near-ubiquitous networking capacity (Castells, 2000), even in parts of the world that have come relatively late to the explosion in digital technology. Although the Internet, the object of much scholarly attention in the Global North, is important, the more germane source of change in the Global South has been mobile telephony. In mid-2010, there were over five billion mobile phone subscribers around the globe. Just two years later the total had reached six billion mobile phone subscriptions (BBC, 2012). Africa has seen a 20% rate of growth in mobile phone penetration rates for each of the past five years.¹ By late 2012, Africa’s 54 countries and 1.08 billion people had 821 million mobile subscribers, up 16.9% from the previous year to 76.4%. In 2013, 80% of the population of Africa will have a mobile phone subscription (Lomas, 2012). Nigeria has the highest number of mobile phone subscriptions in Africa—more than 93 million. This represents 16% of the continent’s total mobile subscriptions (BBC, 2011).

Although not specific to Africa, another important technology is found in privately owned and operated remote sensing satellites. They offer high-resolution photographs of objects on the ground as small as 32 centimeters in diameter. More important for the present study, they produce geographical reference data that situates features on the ground—both physical and abstract—according to highly accurate navigational references. One is able to determine with great accuracy where on the planet an item or occurrence is situated. Geographical information systems (GIS)—digital maps—are possible as a result of this sort of high-resolution satellite imagery data.

Remote sensing satellites and GIS create a digital platform for managing and visualizing inputs from people with mobile phones. Users of

smartphone map applications are familiar with the basic concept of GIS and geo-tagging in the use of digital pins on a map to specify key (however understood) locations. Additionally, the use of mobile phone texting is facilitated by a variety of software innovations. FrontlineSMS, an open-source software program that is used to collect and distribute information on standard mobile phones using text messages, facilitates inputs (geo-referenced notifications of whatever is germane to that particular mapping initiative) from hundreds or even thousands of users. FrontlineSMS allows users to connect a range of mobile devices to a computer to send and receive SMS text messages. Although it does not require an Internet connection, if Internet access is available FrontlineSMS can be connected to online SMS services and set up to feed incoming messages to other web or e-mail services. It has been used in a variety of circumstances, all characterized by the remoteness of the users, a lack of state services, and an otherwise isolated and scattered population.²

In the absence of mobile telephony, GIS, and services such as FrontlineSMS, the only alternative means of achieving the same level of transparency and accountability would be an elaborate and extraordinarily expensive bureaucracy of thousands of field workers and supervisory and administrative staff with extensive transportation and logistical support. In the case of elections monitoring, official monitors must be positioned at thousands of polling stations, and not just in urban areas. Of course, it is exactly this sort of capacity that is missing in administratively challenged states such as Nigeria. Rather than elaborate, expensive, and difficult-to-sustain bureaucracies, an alternative means of coordination, oversight, and collaboration is achieved by leveraging the latent capacities of massively distributed mobile telephony and open-source GIS.

CROWDSOURCING THROUGH USHAHIDI

Crowdsourcing refers to the mobilization of the general public—the crowd—to perform what are usually small, incremental tasks that,

taken together, accomplish significant goals. Crowdsourcing taps into the latent observational capabilities of those in the general public with an interest in a particular issue or undertaking, such as crime prevention and police accountability. The power of crowdsourced data collection using nearly ubiquitous mobile telephony is paired with the data management and visualization power of GIS to create digital maps. Whatever information a “crowd” wants to report and document, a digital map displays. In other words, crowdmapping is a way to store and visualize crowdsourced inputs—most often in the form of reports of specific occurrences or observations contributed by members of the crowd via their mobile telephones or computers—regarding whatever particular issue the crowdmap is created to document.

Ushahidi is one of the most commonly used and noteworthy examples of an open-source GIS crowdmapping platform. Ushahidi, which means “witness” or “testimony” in Swahili, is an open-source software platform made possible by mobile phones, GIS, and geographical positioning satellites (GPS). Founded by Kenyan technologists to track violent incidents following Kenya’s 2007 national elections, Ushahidi allows activists to leverage mobile telephony to crowdsource reports of the occurrence of important conditions or events, such as episodes of electoral violence. It has been used in a wide variety of circumstances, from monitoring wildfires in Russia in 2010 to tracking human needs in Haiti after the earthquake in 2010 (Meier, 2010; Meier, 2012). Ushahidi was also used to track anti-immigrant violence in South Africa in 2008 as well as violence in the Democratic Republic of Congo (Bailard, Baker, Hindman, Livingston, & Meier, 2012).

In the following section, we review the ReclaimNaija Ushahidi deployment for the 2011 Nigerian elections. The point of our analysis is to illustrate the capacity for new digital technology to facilitate elections monitoring as an example of digitally enabled collective action. Not only would the generation and collection of the same amount and range of information by such large, hierarchical institutions be exorbitantly expensive, in many countries,

such as Nigeria, these hierarchical institutions simply do not have the resources to even attempt to do so. This illustration of the ReclaimNaija deployment is followed by the results of our statistical analysis of the crowdmap reports generated by this deployment, which substantiate the meaningful and significant contribution that citizen-generated information can make to elections monitoring and, potentially, electoral integrity.

Reclaimnaija's Elections-Monitoring Crowdmap

ReclaimNaija used Ushahidi to enable ordinary citizens to contribute reports about their own experiences at their local stations to a centralized online platform, where this information was documented, aggregated, and then visually mapped in near real time. In addition to the Ushahidi GIS software, FrontlineSMS supported ReclaimNaija's efforts (Scialom, 2011). Figure 1 is a screenshot of the ReclaimNaija crowdmap Web page hosted on Ushahidi. Each dot (appearing red in the live map) is an aggregation of reported events or processes associated with the election. In an active Internet-based digital map one can click on a dot and zoom in to a new map specific to that smaller geographical scale with a corresponding disaggregation of the reports. One can also look at individual reports, news, pictures, and video according to

the system of delivery, as found at the top of the figure.

The most essential (and often most difficult) element of deploying a successful crowdmap is getting the word out to the relevant community of potential participants—in this case, Nigerian citizens. In order to be effective, it was imperative that citizens were aware of the existence of the crowdmap and that a reasonably large enough number of citizens were both sufficiently motivated and educated on how to submit their own reports to the crowdmap.³ In this case, it was the civil society organization Community Life Project (CLP) that successfully raised public awareness of the texting short code—the phone number used to submit a report. Awareness was raised in a number of creative ways.

In the months prior to the anticipated Nigerian state and national elections, CLP mobilized a broad array of Nigerian community, youth, neighborhood, and professional associations to help spread word of the ReclaimNaija Ushahidi deployment. In 1992, Ngozi Iwere, a Nigerian feminist and human rights activist, founded the Community Life Project (CLP). CLP focuses its efforts on improvement of governance and development in Nigeria (CLP [<http://communitylifeproject.org>]; Ojidoh, 2012). The ReclaimNaija Web site describes the coalition of civil society organizations this way:

FIGURE 1. Screenshot of ReclaimNaija Ushahidi Crowdmap.



The platform brings together a vast network of grassroots organizations across the country comprising mostly informal sector workers and trade-based-groups such as associations of mechanics, carpenters, vulcanisers, welders, okada riders and owners, market women and men, electricians, tailors, hairdressers, community development associations, activists, patriotic professionals, civil society and faith-based organizations. (ReclaimNaija, 2014)

This broad, multisector coalition was essential to the success of ReclaimNaija. In this sense, ReclaimNaija seems to represent the sort of loose-alliance hyperorganization that Bennett and Segerberg describe in their “logic of connective action” (2013, p. 11). Thus, community mobilization was backed by a broad array of groups and organizations that cut across professional and ethnic divisions to reach and engage citizens in a cause of common purpose—the sort of broad-based digitally leveraged community mobilization discussed in the new collective action literature (Bennett, 2004).

The campaign to get the word out about the Ushahidi crowdmap included placing stickers on the ubiquitous delivery and transportation motorcycles found wending their way about the otherwise impenetrable roads and alleyways of the urban core and massive slums of Lagos, Benin City, and other cities and towns. They also used wristbands similar to those found in the West used to show support for various causes, which in this case provided the text number to report evidence of elections fraud. Additionally, ReclaimNaija aired a number of radio jingles to raise awareness further.

In summary, the key to a successful crowdmap elections-monitoring deployment is community mobilization. In this sense, the outcome we describe in this case was not *caused* by digital technology; rather, technology offered particular opportunities. CLP and its partners took advantage of these opportunities by mobilizing a broad citizen movement intended to create information about the functioning of their local polling stations, with the hope that this effort and the information it yielded could serve to improve the integrity of the electoral process

in Nigeria. As the following analysis reveals, crowdsourcing did in fact yield actionable and useful information about the integrity of an electoral process, an outcome that would have otherwise been all but impossible to realize.

ANALYSIS

The Nigerian National Assembly (NASS) election was originally scheduled to take place on April 2. However, as the day progressed, it became evident (in part thanks to citizen-generated reports to ReclaimNaija’s Ushahidi platform) that ballot materials and election personnel had failed to arrive in time for the opening of the voting at many polling stations. In response to the rising violence and voices of protest, the Independent National Electoral Commission (INEC) announced that the NASS election would be rescheduled for April 4. On April 3, just a day before the rescheduled election, INEC announced that the election would be delayed yet again due to continuing logistical problems. These delays underscore the limited administrative capacity of the Nigerian state. The new date for the election was pushed to April 9. One week after the rescheduled NASS election, the presidential election took place on April 16. It is important to keep in mind the lagged election cycle, with the NASS elections preceding the presidential election by a week. The lag provided election officials with time to make the changes needed to improve the integrity of the presidential election. On April 18, the INEC announced that Goodluck Jonathon had won the April 16th presidential election with 59% of the popular vote.

During the course of these elections, the ReclaimNaija Ushahidi crowdmap received 27,178 citizen reports in total. The reports were specific to one of four types of electoral events: registration efforts, the NASS election, the presidential election, and the separate gubernatorial election. By far, the most reports sent in by citizens were generated in reference to the April 9th NASS elections, totaling 12,218 reports in all. This is not surprising considering the tumult that surrounded this phase of the elections. The

April 16th presidential election spurred the next greatest number of reports at 7,035. This is followed by the April 26th gubernatorial election, which generated 5,641 reports. The remaining 1,876 reports were specific to the registration periods.

Based on the content of the messages submitted by the citizens, the volunteer ReclaimNaija administrators processed, recorded, and archived each report in a central database. This information included the following: a transcript of the message found in the report; a classification of the type of information the report contained (using one or more predetermined categories assigned by the administrators as the reports came in); the geographic location of the event/observation that was reported; and, finally, an indication of which electoral phase the report was referencing. This is the structure of the data set that we received from the ReclaimNaija organization for the purpose of this analysis. The data are limited to the reports; no data were collected about the persons submitting the reports.

Using the predetermined categories previously assigned by the Ushahidi administrators, we created composite measures representing specific types of election-related occurrences. These composite measures include reports of *what went well* (e.g., reports stating that things were going well at a local polling station), *general administrative information* (i.e., administrative information not related to a specific event/action/observation), *overt election manipulation* (e.g., bribery, vote-rigging, stuffing ballot boxes, etc.), *election-related administrative failures* (e.g., absence of INEC personnel/security, insufficient/missing voting materials, malfunctioning voting machines, etc.), *physical intimidation of voters* (e.g., thugs, violence, intimidation, etc.), and *progress reports* (i.e., progress, results, and/or status reports). Using these composite measures, we tested whether the total numbers of reports and/or the number of specific types of reports (which each represent specific types of electoral events/occurrences) predict meaningful electoral outcomes—specifically, successful casting of votes.⁴

We took several steps in an effort to control for potentially confounding factors. First, we aggregated the individual reports submitted to Ushahidi to the Nigerian state level. Thus, the 36 states and the federal district of Abuja serve as the level of analysis, with summary measures representing the various types of reports that were submitted in each state in regard to each of the specific electoral phases. Since the state level is the most granular level at which the majority of the data are available (see Appendix A for a list of all variables, their summary statistics, and their sources), this unit of analysis is necessary in order for our model to control for demographic characteristics (e.g., literacy, poverty, population size, and age) that are correlates of both electoral turnout and the propensity for individuals to submit reports to Ushahidi via mobile phones. Second, we employ 2007 turnout data to control for turnout levels in the most recent presidential election previous to 2011, providing a baseline for this analysis to compare electoral outcomes before and after a crowdsourced election-monitoring deployment. Third, and perhaps most important, we include a measure of the number of community leaders in each state who participated in nonpartisan, civic education forums provided by CLP and five additional partner organizations. These trained community leaders were responsible for getting the word out in their own communities about ReclaimNaija's Ushahidi crowdmap. Including a measure of the presence of these participants enables the analysis to control for the effect of having an active and robust local civic society in these states. This allows us to determine whether the crowdmap reports themselves have an independent effect on electoral outcomes.

To control for the penetration of ICT, we include measures of mobile phone ownership in each state. Because this determines the number of individuals who can actually submit reports to ReclaimNaija, it is also likely to be correlated with other behaviors that are relevant to the elections. Additionally, we include figures of the total population in each state that has access to a radio, one of Nigeria's most pervasive sources of news. Thus, radio access is correlated with the likelihood that individuals learned about the

Ushahidi platform (via radio jingles promoting public awareness of the program). Finally, we also control for election-related reports made by the traditional news media (which we will return to in greater detail shortly).

FINDINGS

Employing OLS-regression models and controlling for a number of potentially confounding factors, we find that the number and nature of crowdmap reports generated in each Nigerian state in reference to the controversial April 9th NASS election is significantly correlated with increased voting in the subsequent April 16th presidential election. In other words, whereas the reports generated by the NASS election had no measurable effect on voting in that same election, refocusing the analysis away from the effect of citizen-generated reports on the immediate election toward a longer-term perspective reveals a meaningful impact of these reports on the integrity and functionality of the presidential election one week later.

The aggregate number of reports generated by the NASS election is significantly correlated (.0004, $p \leq .02$) with increased voting, in terms of the number of votes that were successfully cast and then counted, across the states in the presidential election. Again, our point is not about voter motivations. They are assumed to be constant. Rather, our point is that motivated voters were presented with an opportunity to successfully realize their ambition to participate in the election owing to the repairs made to the voting process. The needed repairs were highlighted by crowdsourced reports during the NASS phase of the elections. Substantively, the mean number of 287 reports made during the NASS election in a state translates to an 11-percentage point increase in turnout in that state in the subsequent presidential election. This relationship is significant, even after controlling for the presence of a robust local civil society, ICT access, and the content of newspaper reports about the elections.

At the more granular level, reports of administrative failures (.0006, $p \leq .1$), overt electoral manipulation (.004, $p \leq .01$), and physical

intimidation of voters (.009, $p \leq .01$) generated during the April 9th NASS elections are strongly and significantly correlated with increased voter turnout in the subsequent presidential election on April 16. For example, the mean number ($N = 19$) of reports of overt vote manipulation during the NASS election increases voter turnout in the presidential election by 8 percentage points (see Table 1).

Thus, states in which citizens generated a greater number of reports detailing electoral failures and abuses during the April 9th NASS election witnessed an increase in voter turnout in the presidential election one week later. This suggests that election officials used crowdsourced reports to successfully reallocate resources and personnel during the week separating these two elections. So that—thanks to the shortcomings exposed by citizen-generated reports to the ReclaimNaija crowdmap during the NASS election—polling stations were functioning more effectively in time for the presidential election. This has interesting and important implications for the long-term and cumulative effects of using crowdmaps to promote electoral transparency.

The conclusion that reports documenting electoral failures in the NASS election provided information to election officials to better allocate resources in the week before the presidential election is supported by more qualitative data and by extemporaneous records kept at the time. Key figures in the Nigerian elections and by CLP/ReclaimNaija leadership corroborate our findings. The leadership of the CLP was in direct e-mail and telephone contact with Attahiru Muhammadu Jega, Chairman of the Independent Elections Commission, and his staff during this period. According to Chuks Ojidoh, deputy director of the Community Life Project/ReclaimNaija, crowdmapping and ReclaimNaija played an important role because “when the election was first scheduled we were getting a lot of reports that the materials had not arrived from all over the country” (C. Ojidoh, personal communication, December 6, 2012). Through crowdmapping, the executive director of CLP, Ngozi Iwere, said “Reclaim Naija let INEC know that the situation [the NASS elections] was a big problem and [that] they

TABLE 1. OLS Regressions of Crowdsourced Reports Regarding 2011 Nigerian NASS Election on Turnout in the Presidential Election

	Model 1: Aggregate Number of Reports ¹	Model 2: Reports of Administrative Failures ²	Model 3: Reports of Overt Manipulation ³	Model 4: Reports of Physical Intimidation ⁴
Ushahidi Reports (See column title for type.)	.0004 (<i>SD</i> = .0002) (<i>p</i> ≤ .02**)	.0006 (<i>SD</i> = .0003) (<i>p</i> ≤ .09*)	.004 (<i>SD</i> = .001) (<i>p</i> ≤ .01***)	.009 (<i>SD</i> = .002) (<i>p</i> ≤ .01***)
Newspaper Reports (See column title for type.)	-.0002 (.0002) (<i>p</i> ≤ .37)	-.002 (.0004) (<i>p</i> ≤ .51)	-.0006 (.003) (<i>p</i> ≤ .84)	-.0008 (.0008) (<i>p</i> ≤ .92)
2007 Presidential Turnout (mean = .66, <i>SD</i> = .26)	.05 (<i>SD</i> = .18) (<i>p</i> ≤ .77)	.12 (<i>SD</i> = .19) (<i>p</i> ≤ .54)	-.03 (<i>SD</i> = .16) (<i>p</i> ≤ .99)	.04 (<i>SD</i> = .14) (<i>p</i> ≤ .8)
Poverty Rate (mean = .69, <i>SD</i> = .11)	.002 (<i>SD</i> = .002) (<i>p</i> ≤ .5)	.001 (<i>SD</i> = .002) (<i>p</i> ≤ .65)	.001 (<i>SD</i> = .002) (<i>p</i> ≤ .56)	.0009 (<i>SD</i> = .002) (<i>p</i> ≤ .65)
Literacy (mean = .67, <i>SD</i> = .16)	.39 (<i>SD</i> = .21) (<i>p</i> ≤ .07*)	.32 (<i>SD</i> = .21) (<i>p</i> ≤ .14)	.24 (<i>SD</i> = .19) (<i>p</i> ≤ .31)	.28 (<i>SD</i> = .18) (<i>p</i> ≤ .14)
Radio Users (mean = .83, <i>SD</i> = .10)	-.53 (<i>SD</i> = .27) (<i>p</i> ≤ .06*)	-.47 (<i>SD</i> = .28) (<i>p</i> ≤ .12)	-.36 (<i>SD</i> = .26) (<i>p</i> ≤ .18)	-.36 (<i>SD</i> = .24) (<i>p</i> ≤ .15)
Mobile Phone Users (mean = .67, <i>SD</i> = .18)	-.05 (<i>SD</i> = .22) (<i>p</i> ≤ .85)	-.14 (<i>SD</i> = .23) (<i>p</i> ≤ .55)	-.02 (<i>SD</i> = .2) (<i>p</i> ≤ .9)	-.13 (<i>SD</i> = .21) (<i>p</i> ≤ .56)
State Population (mean = 3,945,676, <i>SD</i> = 2,375,643)	-3.4 × 10 ⁸ (<i>SD</i> = 1.4 × 10 ⁸) (<i>p</i> ≤ .02**)	-3.4 × 10 ⁸ (<i>SD</i> = 1.7 × 10 ⁸) (<i>p</i> ≤ .06*)	-1.8 × 10 ⁸ (<i>SD</i> = 9.9 × 10 ⁹) (<i>p</i> ≤ .07*)	-2.0 × 10 ⁸ (<i>SD</i> = 9.5 × 10 ⁹) (<i>p</i> ≤ .05**)
Participants in Civic Training (mean = 648, <i>SD</i> = 312)	.00002 (<i>SD</i> = .0001) (<i>p</i> ≤ .83)	.00005 (<i>SD</i> = .0001) (<i>p</i> ≤ .67)	-.00003 (<i>SD</i> = .0001) (<i>p</i> ≤ .75)	-.00003 (<i>SD</i> = .0001) (<i>p</i> ≤ .64)
Intercept	.93 (.42)	1.03 (.44)	.97 (.36)	1.1 (.38)
Number of Observations	37	37	37	37
<i>R</i> -squared (adj.):	.29	.21	.46	.43

Note: Dependent variable is voter turnout in the presidential election (mean = .53, *SD* = .15).

Note: For brevity's sake, the results of the Age Dummies were not reported here (i.e., percent of population aged 30 to 44 years, 45 to 64 years, and 65 and above). However, the results of the full regression including these coefficients are available. Please e-mail the authors.

Note: Multiple iterations of this regression were run omitting various control variables to test the robustness of the model, as well as regression omitting the two outliers in terms of numbers of reports (i.e., Kaduna and Lagos). In each regression, the effects remained commensurate both in significance and substantive value. For the results of these regressions, please e-mail the authors.

¹Mean number of aggregate Ushahidi reports = 287, standard deviation = 244. Mean number of aggregate newspaper reports = 212, standard deviation = 168.

²Mean number of Ushahidi reports of administrative failures = 120, standard deviation = 123. Mean number of newspaper reports of administrative failures = 9, standard deviation = 10.

³Mean number of Ushahidi reports of overt manipulation = 19, standard deviation = 22. Mean number of newspaper reports of overt manipulation = 11, standard deviation = 8.

⁴Mean number of Ushahidi reports of physical intimidation = 9, standard deviation = 11. Mean number of newspaper reports of physical intimidation = 35, standard deviation = 33.

Note: **p* ≤ .1. ***p* ≤ .05. ****p* ≤ .01.

needed to reschedule” (N. Iwere, personal communication, December 6, 2012). When she was asked if ReclaimNaija crowdsourced reports, in her view, had an effect on the presidential elections held a week later, Iwere said, “We took the trouble of analyzing for INEC the places where—incident-by-incident—they had more vote snatching, where there was more violence. We helped them analyze that in between the elections” (N. Iwere, personal communication, December 6, 2012). One obvious concern is that claims such as these are self-serving. Yet an INEC spokesperson publically acknowledged that ReclaimNaija had conducted an analysis that helped INEC make required corrections before the presidential elections. “We knew that INEC was listening to us. The incidents INEC mentioned in its statements to newspapers were those ReclaimNaija had told them about in the reports” (N. Iwere, personal communication, December 6, 2012).

INEC’s reliance on ReclaimNaija reports is also substantiated by contemporaneous e-mail traffic between ReclaimNaija and INEC personnel. For example, in response to ReclaimNaija incident reports, Dr. Mohammed J. Kuna, Technical Adviser to the INEC, replied, “Thanks a lot Ngozi [Iwere]. Action already taken on issues.”⁵ On February 1, 2011, in the lead-up to the election when registration was a major concern, Iwere sent an e-mail to Kuna stating, “Attached is a collection of those reports that we believe to require intervention by INEC, especially the ones that have to do with failure to capture fingerprints and clear photos as well as extortion of money, underage voting and political interference. Thank you for promising to look into these complaints from citizens.” Kuna’s reply came almost immediately. “Thank you very much for your messages. I have compiled, send the REC [records] and then call them to follow-up.”⁶ The extent to which INEC came to rely on ReclaimNaija’s crowdsourced information is also evident in an INEC press release that listed ReclaimNaija as the only means by which citizens could report elections difficulties via text message.

The success of these efforts is also evident in the data utilized in this analysis. Specifically, the number of reports of administrative failures

dropped dramatically between the NASS and presidential elections—from an average of 120 reports across the states to an average of less than 23. Additionally, the number of reports of “what went well” at local polling stations increased from an average of 7 across the states in reference to the NASS elections up to an average of 17 reports in the presidential election (A two-tailed *t*-test confirms both these differentials are significant at the .01-level.).

It would seem that Ushahidi reports of various electoral failures and abuses in the April 9th NASS election increased voter turnout in the subsequent April 16th presidential election, confirming that crowdsourced information enabled election officials to improve the functionality and integrity of polling stations in preparation for the coming election. This conclusion is supported both by quantitative and qualitative data. Moreover, this relationship is significant even after controlling for the presence of a robust local civil society, access to ICT, key demographic factors, and traditional media coverage of the elections.

ALTERNATIVE EXPLANATIONS?

What about alternative explanations? One alternative explanation might involve the possibility that the 27,000 reports sent in by volunteer citizen observers simply reflected other forces that were happening on the ground in the presidential election. Yet because the bulk of the reports were generated at least one week *before* the presidential election took place, this seems unlikely.

Secondly, it seems implausible that the NASS crowdmap reports were reflections of lingering state-specific forces that increased successful voting in the presidential election one week later. If these reports were simply reflecting the presence of lingering state-specific forces, more reports of administrative failures, overt manipulation, and the physical intimidation of voters would logically be associated with decreased turnout—not increased turnout, as is found in this analysis. Moreover, if these reports were simply reflecting forces that contributed to better-functioning polls, these reports should have also been correlated with increased turnout

in the earlier NASS election, which was not the case. Finally, if this were the case, more reports of “what went well” at local polling stations during the NASS election should be correlated with increased turnout in the presidential election. However, turnout in the presidential election is not correlated with reports of “what went well” in the NASS election ($p \leq .38$).

Another important alternative explanation might be found in a more traditional source: traditional news coverage of the elections process. Rather than ReclaimNaija, our effects might be attributable to newspapers and other traditional Nigerian news media. How can we be sure that the crowdsourced reports via Ushahidi provided election officials with information that is distinct from that which they received through traditional media coverage of the elections?

To control for this, we conducted a content analysis of all election-related articles published in six daily national Nigerian newspapers beginning one week before the cancelled NASS elections (March 26, 2011), through the rescheduled NASS election, and then up until the day after the presidential election (April 16). This three-week period of newspaper coverage constitutes the same time frame when government and INEC officials would have been able to utilize the information contained in these newspaper articles to learn about how the polling stations were faring in the various states and reallocate election resources accordingly.

To locate these reports, we used the search term *election* to search the LexisNexis database, which has up-to-date archives for six Nigerian daily national newspapers: *Daily Champion*, *Daily Independent*, *Daily Trust*, *Leadership*, *This Day*, and *Vanguard*. The *Vanguard* newspaper has the highest print circulation of any newspaper in Nigeria. *This Day* is in the top 5 in terms of print circulation, and the *Daily Trust* is in the top 10 (Naij, 2012). These newspapers are also among the most visited online—*Vanguard* once again leads Nigerian newspapers in terms of online readership, with *This Day* and *Leadership* also in the top 10 (Answers Africa, 2013). Accordingly, these newspapers represent prominent, credible, and visible traditional news outlets in Nigeria, which serve as an important source for election-related information for

citizens, elites, and officials alike. A total of 1,855 stories about the election were published in these newspapers during this period, which includes reports, editorials, opinion pieces, letters to the editor, and interviews.

In order to control for information provided by the traditional media about how the polling stations were functioning in the various states, we constructed multiple measures of the content of newspaper coverage using the qualitative content analysis software QDA Miner. The first measure represents the total number of specific state mentions in the newspaper coverage, which mirrors our Ushahidi measure of aggregate number of crowdmap reports made from each of the states. Turning to the more granular measures, we also created measures of newspaper mentions of the same types of incidents in each state that mirror the composite categories of Ushahidi reports used in our analysis. Specifically, using the types of incidents that constitute our composite measures of Ushahidi reports as a blueprint, we also created composite measures of the same types of incidents reported in the newspapers. These include newspaper reports of *administrative failures* (i.e., missing materials, machines not working, missing officials, etc.), *overt vote manipulation* (i.e., bribery, vote-buying, fraud, etc.), and *physical intimidation* of voters (i.e., intimidation, attacks, killings, etc.).⁷ Next, we calculated the number of these types of incidents reported in the newspapers that co-occurred with specific state mentions. Controlling for the content of traditional news media in Nigeria, there is no evidence to suggest that it served as an alternative source of information used by INEC to address deficiencies in the electoral process (see Table 1).

FURTHER ANALYSIS AND AN IMPORTANT CAVEAT

The 2011 Nigerian elections and the efforts of ReclaimNaija provide an important example of how digital collective action has the capacity to improve democratic practices—a finding that has particularly meaningful implications for countries whose formal organizations and government institutions tend to lack the

TABLE 2. OLS Regression of Turnout on 2011 Vote Share of PDP Presidential Candidate

	Coefficient	Standard Deviation	Significance
Voter Turnout (mean = .53, <i>SD</i> = .15)	.56	.19	$p \leq .01^{***}$
2007 PDP Presidential Vote Share (mean = .68, <i>SD</i> = .24)	.28	.11	$p \leq .02^{**}$
Poverty Rate (mean = .69, <i>SD</i> = .11)	.002	.002	$p \leq .35$
Literacy (mean = .67, <i>SD</i> = .16)	.75	.22	$p \leq .02^{**}$
Radio Users (mean = .83, <i>SD</i> = .10)	-.13	.31	$p \leq .67$
Mobile Phone Users (mean = .67, <i>SD</i> = .18)	.37	.2	$p \leq .08^*$
State Population (mean = 3,945,676, <i>SD</i> = 2,375,643)	-2×10^8	1.2×10^8	$p \leq .09^*$
Intercept	-.82	.54	$p \leq .14$
Number of observations: 37			
<i>F</i> -squared (adj.): .75			

Note: Dependent variable is PDP candidate's vote share in the presidential election (mean = .62, *SD* = .29).

Note: For brevity's sake, the results of the Age Dummies were not reported here (i.e., percent of population aged 30 to 44 years, 45 to 64 years, and 65 and above). However, the results of the full regression including these coefficients are available. Please e-mail the authors.

Note: * $p \leq .1$. ** $p \leq .05$. *** $p \leq .01$.

resources (and even motivation) to otherwise accomplish such a feat. However, before concluding, further analysis reveals an important caveat: crowdsourced reports highlighting electoral failures may not have uniformly enhanced the number of votes that were successfully cast and counted in the presidential election. Instead, an additional regression reveals that higher turnout rates significantly benefited the incumbent PDP candidate, Goodluck Jonathan (who as vice president assumed office following the death of President Umaru Musa Yar'Adua in 2010), in terms of vote share (.55, $p \leq .01$). (See Table 2). This suggests that, although the crowdsourced reports provided information that enabled officials to improve the functionality of polling stations (and although the INEC officials are avowedly nonpartisan), it may be the case that incumbents disproportionately benefited from the information generated by citizen-generated reports in terms of informing officials' decisions about which electoral resources to reallocate and where in preparation for the presidential election.

Thus, while this analysis demonstrates the potential opportunities created by citizen-

generated information, it also reveals that citizen-generated information is potentially limited by two conditions. First, such an effort requires strong and motivated civil society organizations to lay the groundwork for a successful crowdsourced deployment. Second, there must be officials who are willing and able to use the information generated by citizens toward political ends. It seems likely that the preferences and incentives belonging to these power-holders will shape how this information is used and toward what specific ends. Thus, the information produced by such an effort will provide political opportunities, yet it will by no means guarantee that those who embrace those opportunities will necessarily do so toward fully democratic outcomes.

DISCUSSION AND CONCLUSION

The shortcomings exposed by citizen-generated (i.e., crowdsourced) reports during the NASS election provided actionable information to government and electoral commission officials to ensure that polling stations were

functioning more efficiently (and transparently) by the time the presidential election took place one week later. These findings offer the first empirical demonstration of political effects of a specific crowdmap deployment in an election, giving weight to the argument that crowdsourced information can, indeed, improve transparency and possibly even electoral integrity, depending on who is in the position to utilize that information and toward what end they decide to use it. However, our findings also suggest that the greatest payoff of a crowdmap deployment may not be immediate. Instead, it may be the case that the effects of crowdmaps are more cumulative and long-term in nature. Thus, analyses that only attempt to test the immediate effects of deployments may be neglecting to conceptualize and test the full range of potential effects generated by digitally enabled crowdsourcing.

Our findings help clarify the capacity of digital technology to facilitate collective action initiatives that deepen and complicate the pseudo-democrat's dilemma. Moreover, to the degree that crowdsourced elections monitoring strengthens the integrity of multiparty elections, the potential for various government oversights, failures, and catastrophes that are common to unaccountable governments, as described by Sen (1999a, 1999b), may also be avoided or, at least, mitigated.

Digital technologies fundamentally change information environments and, by doing so, alter the opportunities and constraints that the political actors face. This case demonstrates the capacity for digital technology to enable opportunities for crowdsourced information-gathering and collective action that would otherwise not be likely to occur. It is true that a tool without an actor sits idle, but it is also true that actors without tools cannot hope to achieve the same goals. In this case, crowdsourced reports provided information to officials that went beyond what traditional media, local civic societies, and government agencies were equipped to provide. Thus, the reduced communication costs provided by digital networks have altered the toolset of governance and citizenship in potentially profound ways. However, it is not necessarily the case that these altered tool sets

will automatically and uniformly precipitate pro-democratic outcomes. This, we believe, is evident in Community Life Project's mobilization of a broad coalition of civil society groups around the ReclaimNaija elections-monitoring initiative.

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NOTES

1. Most Africans use prepaid SIM cards. This creates some ambiguity as to what these numbers mean. For example, one can have a mobile phone subscription without having a mobile phone; or one can have multiple mobile phones and multiple subscriptions; or one can have a subscription without any minutes, and therefore effectively be without a phone.

2. One example of this is found in the use of mobile phones for agricultural extension services. See Grameen Foundation (2012).

3. A core assertion of the new collective action literature is that the threshold motivational level required for individual contributions to a collective action is, on the whole, minimal. In the case of crowdsourced information over mobile platforms, the necessary threshold is a willingness to send a text message.

4. Categories used to make the composite Ushahidi variables are as follows. *Administrative Failures*: Late arrival of INEC officials; Late arrival of Security Personnel; Late arrival of voting materials; Voters' Names Missing; Candidates' Names Missing on Ballot Paper; Wrong Names on Register; Absence of INEC Officials; Absence of Security Personnel; No Voting Materials; No Voting; No Party Logo on Ballot; Multiple Voting; Low Turnout; Not Following INEC Guidelines. *Physical Intimidation*: Intimidation; Harassment; Thugs; Disruption; Violence. *Vote Manipulation*: Bribery; Vote Buying; Misconduct by Security Personnel; Misconduct by INEC Officials; Irregularities; Snatching Ballot Boxes; Stuffing Ballot Boxes; Vote Rigging; Diversion of Election Materials; Disenfranchisement of Voters. *Results Reports*: Status Reports; Progress Reports; Results Reports. *General*

Administrative Information: Naija Voices (this is a catch-all category assigned by ReclaimNaija personnel). *What Went Well:* What Went Well (this is a catch-all category assigned by ReclaimNaija personnel).

5. Email on December 3, 2011 between INEC and Reclaim Naija inspected by authors. Copy upon request and approval of correspondents.

6. Email on February 1, 2011 between INEC and Reclaim Naija inspected by authors. Copy upon request and approval of correspondents.

7. We calculated and tested each of these newspaper measures at both the article and paragraph level. The results of each set of measures are commensurate. However, for the purpose of brevity, we include only the paragraph-level measures (with a two-paragraph window), which provide more nuance.

The types of occurrences reported in the newspapers that were used to build the composite newspaper measures are as follows: *Vote Manipulation:* Bribery, Fraud, Diversion, Irregularities, Snatch ballots, Stuff ballot boxes, Disenfranchise, Vote rigging, Buying Votes. *Administrative Failures:* Late Arrival INEC officials, Missing INEC officials, Machine Problems, Wrong Names, Missing Names, Missing Security Officials, Late Arrival of Security Officials, Missing Logos, Late Arrival Materials, Missing Materials, Not following INEC guidelines. *Physical Intimidation:* Violence, Attack, Abduct, Harassment, Intimidate, Kill, Thugs, Bomb.

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APPENDIX A. VARIABLE DESCRIPTIONS AND SOURCES

Variable	Description	Source
Poverty	0–1 range, percentage of population living in poverty in each state.	National Bureau of Statistics (2014). Nigeria statistical data portal. Retrieved from http://nigeria.prognoz.com
Literacy	0–1 range, percentage of adults that are literate in each state.	
Age	0–1 range, percentage of population in each state that is between the ages of 30 and 44, 45 and 64, and above the age of 65. (Baseline is percentage of population aged 29 years and less.)	
State Population	Discrete range, population in each of the Nigerian states.	Information Nigeria (2009). The Nigerian states by population. Retrieved from http://www.informationng.com/2009/04/nigerian-states-by-population.html
Radio Owners	0–1 range, percentage of population in each state that owns and/or has access to a radio.	National Bureau of Statistics (2011). 2011 annual socio-economic report: Access to ICT. Retrieved from http://bit.ly/WX5kE1
Mobile Owners	0–1 range, percentage of population in each state that owns and/or has access to a mobile phone.	
Presidential and NASS Vote Turnout	0–1 range, percentage of registered voters in each state that voted in presidential election.	2007: Data provided directly by INEC and can be attained by e-mailing the authors. 2011: Data is provided by INEC and available online at http://nigeriaelections.org/presidential.ph
Participants in Civic Education Forums	Discrete variable, number of individuals and local leaders in each state that partook in civic training provided by ReclaimNaija and affiliated organizations (minimum = 179, maximum = 1385).	Data provided directly by ReclaimNaija and can be attained by e-mailing the authors.

Note: The data used in this analysis is publicly available through the JITP Dataverse of the Harvard Dataverse Network.