

WEATHERING THE STORM: HURRICANE SANDY AND THE 2012 US FEDERAL ELECTION

Case Study, September 2024

Hyowon Park, Madeline Harty, Erik Asplund

EXECUTIVE SUMMARY

Extreme weather events are often described by meteorologists as the ‘fingerprint of climate change’. These climate-induced disasters are becoming more damaging and more frequent, at times occurring close to elections and impacting upon them. As climate-related natural hazards will continue to do so, states must consider protecting elections and building resilience.

This case study analyses preparedness, actions and results on the part of election officials and their election emergency policies in New Jersey and (as a secondary focus) New York, neighbouring states on the East Coast of the United States, as they faced an incoming hurricane within one week of a national election in 2012. We will first describe the historical patterns of hurricane seasons in the United States, provide background on the US election system with a focus on the two states and discuss previous hurricane impacts on US elections. Then, the case study will focus on Hurricane Sandy and the 2012 US federal election to cover key timelines in relation to campaigning, interagency cooperation, special voting arrangements, election day, voter turnout and reforms. Finally, we conclude with lessons learned for policymakers, practitioners and academics regarding the holding of elections and upholding electoral integrity during natural hazards.

Parts of this case study are supported by an interview with a New Jersey election official (who remains anonymous). The authors note that no interviews were conducted with New York election officials that would afford direct comparison of experiences. However, the case study ties in information from official reports and research from both jurisdictions for comparative analysis.

Extreme weather events are often described by meteorologists as the ‘fingerprint of climate change’.

INTRODUCTION

The United States of America has experienced several severe hurricanes this century including Hurricane Katrina in 2005, Hurricane Sandy in 2012, Hurricanes Harvey, Maria and Irma in 2017, Hurricane Michael in 2018 and Hurricane Ian in 2022. Hurricane activity in the North Atlantic Ocean has increased since the 1980s (Colbert 2022), and the Intergovernmental Panel on Climate Change's Sixth Assessment Report by Working Group II (IPCC 2022) found that extreme weather events are increasing in frequency and/or intensity due to climate change. In 2020 the North Atlantic experienced a record number of storms (Colorado State University n.d.), and with increased urbanization and residential settlements in coastal areas, over 60 million Americans were exposed to coastal flooding that year (Mansury, Ye and Yoon 2021).

The chances of hurricanes disrupting US elections are ever-present and will increase as hurricanes become more common and intense due to climate change.

Hurricane season in the USA—between June and November every year—usually coincides with election season; the chances of hurricanes disrupting US elections are ever-present and will increase as hurricanes become more common and intense due to climate change. So far during the 21st century, four elections have been majorly disrupted—by Hurricane Katrina in 2005, Hurricane Sandy in 2012, Hurricane Michael in 2018 and Hurricane Ian in 2022. Initiatives to protect the integrity of electoral processes are increasingly critical as democracies become vulnerable during times of climate change-related crisis (James, Clark and Asplund 2023). This paper will focus on the effects of Hurricane Sandy in New Jersey during the 2012 federal general election, and how electoral officials responded to ensure that the electorate was able to exercise their voting rights despite the ongoing disaster. Hurricane Sandy exemplifies the difficulties hurricanes bring to election operations as Sandy hit New Jersey just eight days before election day, making it the most disruptive hurricane in US electoral history.

This case study will firstly describe US electoral management and discuss hurricanes and their effects on elections in the country. Then, the present study will give a chronology and analysis of Hurricane Sandy's effects on the 2012 electoral process in the two states and how election officials responded. It will then conclude with what electoral reforms were introduced after the hurricane, followed by the main findings and lessons learned.

1. LEGAL AND INSTITUTIONAL BACKGROUND

The US presidential election process begins with the primary elections and caucuses in each state, usually during the spring of the general election year (every four years), which major political parties use to select their presidential nominees. Primaries, through a secret ballot, allow voters to select their nominees, while caucuses are private gatherings run by political parties held at the county, district or precinct level where voters select a particular candidate at the end of each meeting. Both primaries and caucuses can be 'open', 'closed', or a hybrid of the two. A closed primary or caucus means that

only voters registered with that party can take part and vote, while open ones allow people to vote for a candidate of any political party (USA.Gov 2024). For example, while New York holds closed primaries, New Jersey holds primaries that are open to unaffiliated voters but closed to affiliated voters (NCSL 2024b).

Two main political parties—the Democratic Party and Republican Party—dominate the political field at the different levels of government. Other parties are often termed ‘third parties’, and examples of these third parties in states such as New York and New Jersey include the Conservative Party, Green Party, Independence Party and the Libertarian Party (Vote Smart n.d.; League of Women Voters of the City of New York n.d.).

State and local government elections are typically held on the same date as the federal election, thus combining federal, state and local races onto a single ballot. The 2012 federal election elected the President, all members of the United States House of Representatives, and one-third of the United States Senate (Hall 2012).

The USA has a highly decentralized election administration system. At the federal level, there is no central electoral body that governs election administration, and the federal government plays a minor role in most elections. Rather, these roles are spread across various agencies and actors including the Department of Justice, Civil Rights Division, which enforces federal election laws such as the Voting Rights Act (1965), the National Voter Registration Act (1993) (DoJ n.d.) and the Help America Vote Act (HAVA 2002). The Election Assistance Commission (EAC) is an independent, bipartisan commission that cannot issue binding regulations. It is charged with, among others, developing guidance for state and local governments to help meet the requirements of the HAVA, and adopting voluntary voting system guidelines (Hall 2012).

Each state is responsible for certain aspects of the election, but it is at the local level where elections are administered. This means variation in election administration across and even within states; indeed, no two states administer elections the same way. During the 2012 elections, the USA comprised approximately 10,499 local electoral jurisdictions (Hall 2012; NCSL 2024a). A majority of voters, approximately 63 per cent, were required to cast their ballots on election day at one specified polling location, usually close to their place of residence. Special voting arrangements (SVAs) differed from state to state. In-person early voting—which allows voters to cast ballots days or weeks before election day—was available in 32 states and postal voting (also called mail-in voting) was available in all 50 states (Stein 2015).

Elections in New Jersey

Election administration in New Jersey is handled differently in each county. Overall, the New Jersey Division of Elections within the Department of State is responsible for overseeing elections with the Secretary of State as the chief election official. There are 21 counties in New Jersey, each of which has either

The USA has a highly decentralized election administration system.

two or three election offices. The elected county clerk prints all the ballots and mails them out to voters. For counties with a Board of Elections, made up by political party appointees, the board handles voting machines, registration, poll worker training, election certification, and all other responsibilities beyond those of the county clerk. For counties with a Superintendent of Elections, they handle voter registration and voting machines with the Board of Elections handling all other responsibilities (New Jersey Election Official 2024). Prior to Hurricane Sandy, New Jersey allowed for no-excuse absentee mail-in voting, but did not allow for early in-person voting (Stein 2015).

Elections in New York

The New York State Board of Elections is a bipartisan agency with responsibility for administering and enforcing New York state's election laws. The board is composed of political appointees nominated by the two major parties. According to New York state's election laws, the state board of elections is a state agency responsible for issuing instructions and promoting rules and regulations relating to the administration of the election process, election campaign practices, and campaign financing practices law (New York State Board of Elections n.d.). Within each county of the state and for the city of New York, there is a county board of elections responsible for administering elections, that is, 62 county boards of elections. It can be noted that prior to Hurricane Sandy, New York did not allow for in-person early voting or no-excuse absentee mail-in voting (Stein 2015).

Hurricanes are North Atlantic tropical storms with sustained winds that reach at least 74 miles per hour, or 119 kilometres per hour, using heat from warm waters to power churning winds.

2. HURRICANES IN THE USA

Hurricanes are North Atlantic tropical storms with sustained winds that reach at least 74 miles per hour, or 119 kilometres per hour, using heat from warm waters to power churning winds (Nordhaus 2013). The National Hurricane Center in the USA categorizes Atlantic hurricanes based on wind speed. A storm with winds stronger than 111 miles per hour, or 178 kilometres per hour, is considered a major hurricane, that is, a Category 3 or higher (Center for Climate and Energy Solutions n.d.a.). These categories, defined by the Saffir-Simpson Hurricane Wind Scale, are used to estimate potential property damage (Table 1). While hurricanes of all categories can produce deadly storm surges, rain-induced floods and tornadoes, this scale does not take them into account (National Hurricane Center n.d.). The Atlantic hurricane season is the period in a year from June through November when hurricanes usually form in the Atlantic Ocean (NOAA 2023).

The extreme rainfall produced by hurricanes poses additional dangers. As warm air holds more moisture compared to cold air, the warm moist air in a tropical cyclone cools and condenses as the air rises, which produces a great amount of heavy rain. The heavy rainfall can travel inland long after an initial coastal storm, flooding infrastructure and forcing evacuations (NOAA 2020). Extreme rainfall also causes water tables to rise, and the saturated ground

Table 1. Saffir-Simpson Hurricane Wind Scale

Category 1	Category 2	Category 3 (Major)	Category 4 (Major)	Category 5 (Major)
74–95 miles per hour (mph)/ 119–153 kilometres (km)/h	96–110 mph/ 154–177 km/h	111–129 mph/ 178–208 km/h	130–156 mph/ 209–251 km/h	157 mph or higher/ 252 km/h or higher

Source: National Weather Service, 'Saffir-Simpson Hurricane Scale', (n.d.a), <<https://www.weather.gov/mfl/saffirsimpson#:~:text=The%20Saffir-Simpson%20Hurricane%20Wind,loss%20of%20life%20and%20damage>>, accessed 10 September 2024.

develops weak slope stability, resulting in greater potential for landslides (Center for Climate and Energy Solutions n.d.b; Geology Science 2023).

Hurricane activity in the Atlantic Ocean has increased significantly since 1995. Among weather-related disasters, landfalling tropical storms, such as hurricanes, are a leading cause of economic damage in the continental USA. This economic damage has increased since the middle of the 20th century (Klotzbach et al. 2018), and can be attributed to societal factors—namely population growth and urbanization in hazardous areas such as coastal areas (Bjarnadottir, Li and Stewart 2011). The changing pattern of residential settlements has increased the exposure of over 60 million Americans to the danger of coastal flooding (Mansury, Ye and Yoon 2021). For example, a study showed that the impacts of Hurricane Harvey—which made landfall on Texas and Louisiana in August 2017—were exacerbated by extensive residential development in flood-prone locations. Urbanization has increased the probability of extreme flood events several-fold especially in connection with changes in the climate (IPCC 2022; Zhang et al. 2018; van Oldenborgh et al. 2019).

Further, studies have shown that a warmer climate can increase a storm's likelihood of undergoing rapid intensification—that is, when a storm's wind speed increases by 35 miles per hour or more within 24 hours (Thompson 2024). Rapid intensification marks a massive burst of storm strength and can cause mass destruction. This was evident with Hurricane Beryl (June 2024), which unexpectedly progressed from a tropical storm to the strongest recorded hurricane in the Atlantic. Beryl's strength flattened the island of Carriacou in Grenada in 30 minutes. The ocean heat content had been extremely high when Beryl began, which fuelled rapid intensification (Tang 2024).

In August 2011, one year before Sandy made landfall in New Jersey, Hurricane Irene hit the USA's East Coast. More than 1,000 New Jersey homes are estimated to have been severely damaged; tens of thousands of people went without electricity for a week or more, and 44 people died as a direct

Studies have shown that a warmer climate can increase a storm's likelihood of undergoing rapid intensification—that is, when a storm's wind speed increases by 35 miles per hour or more within 24 hours.

Realization of this failure brought forth a broader, sustained discussion on the need for climate adaptation and the importance of resiliency efforts.

result of Irene (Bates 2016; NWS n.d.c). While retroactive repairs were made to infrastructure against future storm damage, New York failed to invest in disaster prevention measures and seemed unprepared for the extent of damage caused by Hurricane Sandy (Joseph 2013). Realization of this failure brought forth a broader, sustained discussion on the need for climate adaptation and the importance of resiliency efforts (Ladislaw, Sanok Kostro and Walton 2013). Table 2 demonstrates the high cost of cyclones in recent years.

Table 2. US tropical cyclones with damage over USD 30 billion, by year

Tropical cyclone	Year	Category	Costs in USD (adjusted based on the 2024 Consumer Price Index)
Andrew	1992	5	60.2 billion
Ivan	2004	3	34 billion
Katrina	2005	3	200 billion
Wilma	2005	3	30 billion
Ike	2008	2	43.2 billion
Sandy	2012	1	88.5 billion
Harvey	2017	4	160 billion
Irma	2017	4	64 billion
Maria	2017	4	115.2 billion
Florence	2018	1	30 billion
Michael	2018	5	31 billion
Ida	2021	4	84.6 billion
Ian	2022	4	118.5 billion

Source: Data from the National Oceanic and Atmospheric Administration's National Centers for Environmental Information in consultation with the National Hurricane Center (NOAA 2024).

Hurricanes and elections

Disasters and emergencies on or before election day can suppress voter participation, particularly among citizens with a history of infrequent voting; this is usually due to inaccessible voting locations, voters and polling staff being unable to access polling stations, voter displaced to distant locations, and polling stations that are damaged and/or inoperable (Stein 2015). While state codes do contain a broad contingency plan to overcome emergencies affecting individual precincts on election day, there is no controlling authority to determine what happens when multiple states need to reschedule a federal general election. Some states may allow for the postponement of an election

during a declared state of emergency, but few outline a detailed procedure to ensure voter enfranchisement (Green et al. 2013).

As hurricane season overlaps with the USA's typical election period, it will become more common for more intense hurricanes to impact elections. New Orleans and Louisiana suffered through two hurricanes in two months in 2005—Hurricane Katrina in August, which caused the protective levees surrounding the city to fail, flooding the city, and Hurricane Rita in September, which caused the recently patched levees to fail once again. New Orleans had originally scheduled its municipal elections for early February 2006, but due to almost two-thirds of its population having been displaced and with voting infrastructure destroyed, they were postponed to April 2006 (Brox 2009). Hurricane Michael impacted Florida, Georgia and the Carolinas in October 2018, weeks before the midterm elections in November. Along with vast voter displacement, the storm destroyed many polling stations. Election officials in all four states took steps to try to accommodate voters and mitigate voting disruptions such as extending registration deadlines or early voting hours (Slack 2018). In Florida, Executive Order 18-283 provided greater flexibility in election administration following Hurricane Michael. The order relaxed restrictions on early and postal voting, but it did not allocate emergency funding to maintain the original number of polling places. As a result, polling stations were consolidated, and only 65 of the 125 planned locations were open across the eight counties affected by the executive order (Morris and Miller 2023).

Most recently, Hurricane Ian affected the 2022 midterm elections as it landed six weeks prior to election day. The storm's impact resulted in cancelled campaign events and changes in messaging, as candidates pushed voters to prepare for the hurricane. A significant number of early voting sites and polling stations were damaged or rendered unusable by Hurricane Ian. The US Postal Service created alternative sites for displaced people to pick up their ballots for up to 10 days after the attempted delivery of mail-in ballots. In addition, the Governor of Florida extended the number of early voting days and early voting locations and allowed certain voters to receive mail-in ballots at alternative addresses. The Governor, a Republican, was accused of partisan manipulation for excluding Democrat-leaning counties from the executive order allowing counties to expand SVAs in these ways (State of Florida 2022; Towriss 2022; Oladipo 2022).

The order relaxed restrictions on early and postal voting, but it did not allocate emergency funding to maintain the original number of polling places.

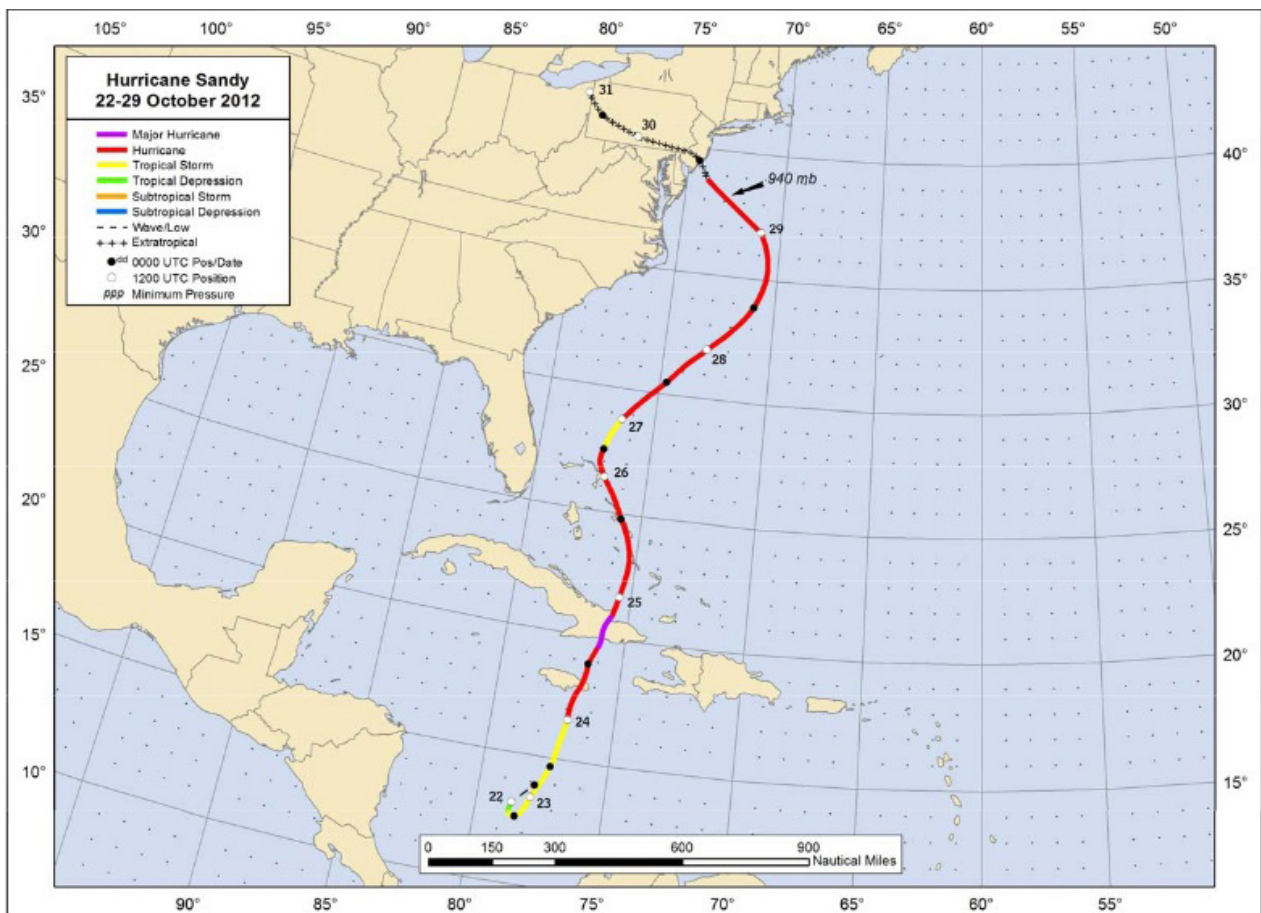
3. HURRICANE SANDY

Hurricane Sandy was named the 18th tropical storm of 2012 on 22 October. On 23 October, it developed into a Category 1, making landfall in the Caribbean and impacting Jamaica, Cuba and the Bahamas. As Sandy approached the Gulf of Mexico, unusually warm waters for that time of the year strengthened the hurricane and caused it to grow (Devanandham and Ramirez-Marquez 2016). Before making landfall in the East Coast of the USA, Hurricane Sandy

morphed into a hybrid-type storm, and as the cooler air from the North American continent approached the still-warm tropical storm, it transformed into an extratropical cyclone (for the track of the hurricane see Figure 1). This caused the US Government to issue both hurricane and blizzard warnings for the same storm (Halverson and Rabenhorst 2013). On 28 October, one day before Sandy made landfall in the USA, President Obama issued emergency declarations for New York, New Jersey, Connecticut, Washington, Delaware, Maryland, Massachusetts and Rhode Island.

How much climate change played a role in the impact of Sandy on the Eastern Seaboard has been subject to debate. However, new research published in 2021 found that approximately USD 8 billion of Hurricane Sandy's excess flooding damage can be attributed to climate-mediated anthropogenic sea-level rise, affecting between 40,000 and 131,000 additional people (Strauss et al. 2021).

Figure 1. The track of Hurricane Sandy



Source: National Weather Service, 'Hurricane Sandy', [n.d.b], <<https://www.weather.gov/okx/HurricaneSandy5Year>>, accessed 23 September 2024.

General impact

On 29 October 2012, Sandy made landfall at Atlantic City, New Jersey. The highest gusts occurred along the Jersey Shore and over New York City. Around 20 million people in 24 states were said to have experienced direct impacts. This included power outages for almost 8.6 million clients across 17 states, with 570,000 buildings damaged or destroyed, and over 130 deaths (Halverson and Rabenhorst 2013). The affected 24 states sustained physical and financial damage from the storm, and the impact of Sandy highlighted vulnerabilities of healthcare, telecommunications, transport, water, wastewater and other critical infrastructure. For example, Sandy caused New York to shut down all six of the subway tunnels connecting Brooklyn to Manhattan; two tunnels—from Queens to Manhattan and from Long Island City to Greenpoint—were flooded. In all, the shutdown of various transport systems impacted about 8.6 million daily public transit commuters (Haraguchi and Kim 2016).

Prior to Hurricane Sandy, New Jersey election officials were aware of potential natural hazard impact on elections but planned for issues that might face singular towns or specific areas. The catastrophic levels of Hurricane Sandy's impact were not expected or planned for.

On 29 October 2012, Sandy made landfall at Atlantic City, New Jersey. The highest gusts occurred along the Jersey Shore and over New York City.

4. EMERGENCY RESPONSE BY FEDERAL AND STATE AGENCIES

Federal, state and territorial agencies build their command and coordination structures to support the local command and coordination structures during an emergency. President Obama's emergency declarations for six states allowed them to request federal aid and make additional preparations before Sandy made landfall. After that point, the President issued major emergency declarations allowing New Jersey and New York to access a wide range of federal assistance programmes for individuals and public infrastructure (Jackson 2012; FEMA 2024).

After the storm had passed, a coordinated federal, state, tribal nation and local response team worked to restore power, public transportation and other critical infrastructure. At the peak of the response, approximately 17,000 federal personnel were involved, with the federal government providing more than USD 2.4 billion in relief through the Federal Emergency Management Agency (FEMA), the Department of Transportation, the Department of Health and Human Services, among other agencies (US Senate 2012). For example, New York City's Fire Department was at full stretch as it moved to respond to hundreds of different emergencies that began to surface after the passing of Sandy—working together with the New York City Police Department and the New York National Guard, among others (Giles 2017).

5. 2012 FEDERAL ELECTION

The federal election was scheduled to occur eight days after Hurricane Sandy made landfall. This set into motion a tight timeline for election officials, giving them one week to ensure that voters in affected states would be able to vote.

Election officials were facing power outages, flooding and destroyed polling stations (Brennan 2012).

States have different emergency powers and processes, resulting in different administrative arrangements and outcomes during election emergencies (Table 3).

Table 3. State powers, Governors' roles and statutes for New Jersey and New York

State powers, Governors' roles and statutes	New Jersey	New York
State powers relating to election emergencies	State can relocate polling places.	State can delay/reschedule the election.
Governor role in election emergencies	Governor can suspend statutes and regulations created by administrative agencies and can issue orders.	Governor can suspend rules or regulations and can issue orders.
Election emergency statutes	N.J. Stat. § 19:8-3.1: Polling places must be accessible to those with disabilities unless an emergency causes such a polling place to be unavailable.	Primaries can be postponed under the Emergency Primary Election Rescheduling Act of 2001.* NY ELEC § 3-108: If an emergency causes less than 25 per cent of registered voters to vote during an election, then there will be a second day of voting not more than 20 days after the original date. NY Elec § 7-120: If voting machines malfunction or break down, the local board of elections must provide emergency paper ballots. NY Elec § 16-100: The state court is vested with the power to determine questions of law and fact on the New York election code.

*This act was passed after the 11 September 2001 terrorist attacks in New York to reschedule the 2001 primary election.

Source: Created by authors with information from 'Election Emergencies', updated 16 September 2024, <<https://www.ncsl.org/elections-and-campaigns/election-emergencies#tables>>, accessed 10 September 2024.

When the hurricane reached the New Jersey coast, officials assessed storm damage and over the following days learned that more than 25 per cent of polling places were destroyed.

In New Jersey, election officials began collaborating with neighbouring states to exchange information on how to best prepare for Sandy's landfall. When the hurricane reached the New Jersey coast, officials assessed storm damage and over the following days learned that more than 25 per cent of polling places were destroyed. Five days prior to the election, the Lieutenant Governor¹ began issuing six directives to increase SVAs for New Jerseyans who were desperate to maintain their democratic rights (for detail of the chronology see Figure 2 and '8. Special voting arrangements', below). As one citizen in the north of the state put it, 'I've lost my home and everything I own, please don't let me lose my

¹ The Lieutenant Governor position in New Jersey was created through a constitutional amendment in 2006 to have a successor to the Governor position and serve as a department head (New Jersey Legislature 2020).

Figure 2. Timeline of Hurricane Sandy and the US federal general election in New Jersey



*ACLU: American Civil Liberties Union

Source: Authors, interview data (New Jersey Election Official 2024).

right to vote' (New Jersey Election Official 2024). These adaptations included an extended deadline to apply for mail-in ballots; increased election office hours and access to provisional ballots; and a relaxing of laws that limit ballot assistance rendered per poll worker, and of the requirements on poll worker addresses and polling site locations. Many voters used newly allowed fax and email options to vote remotely on election day.

'I've lost my home and everything I own, please don't let me lose my right to vote.'

6. CAMPAIGNING

Sandy made landfall on 29 October 2012 during the final stretch of the campaigning period for the presidential candidates. Both Democrat incumbent President Barack Obama, who was running for his second term, and Republican candidate Mitt Romney changed their campaigning plans. For example, as seen in Table 4, after the hurricane hit Romney turned a rally in Dayton, Ohio, into a 'storm relief event' before cancelling his campaign events for 30 October. However, by 31 October, Romney joined his running mate in Florida to continue campaigning (Sullivan 2012). Obama spent two days following the arrival of Sandy visiting the destruction in affected states (30 and 31 October) before resuming his campaign trail on 1 November to visit Midwestern and Western swing states (Jennings 2012).

Table 4. Changes to campaigning and voter channels due to Hurricane Sandy

29 October Monday	30 October Tuesday	31 October Wednesday	1 November Thursday	5 November Monday	6 November Tuesday
Sandy makes landfall. Obama cancels his campaigning events and Romney turns a Dayton rally into a storm relief event.	Romney cancels campaign events. US President authorizes emergency declaration for New Hampshire, and major disaster declarations for New York and New Jersey. Obama visits storm-affected states.	Romney returns to campaigning in Florida with his running mate.	Obama returns to campaigning. NJ Lieutenant Governor begins issuing six directives increasing SVAs.	Governors Christie (NJ) and Cuomo (NY) announce expansion of SVAs for their respective states.	Election day.

Source: Created by the authors.

Some political pundits and commentators speculated that the hurricane's effect on early voting turnout could disadvantage President Obama and that television advertisements would be rendered useless, considering widespread deficits in access to electricity (Bruni 2012). Conversely, others suspected that Sandy could help Obama's campaign as he would receive more widespread coverage, making him appear more presidential, a fear Romney alluded to in an interview seven months after the election (Roth 2013). However, the post-hurricane analysis showed that neither candidate received significantly more, or more positive, news coverage due to Sandy (Sides 2013).

7. INTERAGENCY COLLABORATION

Prior to Hurricane Sandy there was some interagency collaboration in New Jersey but it did not amount to extensive emergency planning. The eye-opening events of 2012 served to change this. Days before Hurricane Sandy landed, New Jersey election officials reached out to the State Board of Public Utilities to share the list of every polling place in the state so that those places could get in the queue for power outage assistance. Since hospitals and water treatment facilities would come first, election officials wanted to flag the importance of getting polling sites up and running should the storm cut the power. Soon after Sandy landed, state election officials started conference calls with counties to assess the storm damage. Thereafter, election officials were having multiple calls per day with the New Jersey Regional Operations Information Center (within state police headquarters), which serves as a centre for emergency services coordination.

One New Jersey election official noted that regular Continuity of Operations Planning (COOP) is useful as 'you don't want to meet somebody for the first time on the day of an emergency' (New Jersey Election Official 2024). Since Hurricane Sandy, New Jersey election officials have learned to be more regularly in contact with FEMA, the Board of Public Utilities and the New Jersey Regional Operations Information Center, and conducted their first tabletop exercise with many entities in 2019 (New Jersey Election Official 2024).

One New Jersey election official noted that regular Continuity of Operations Planning (COOP) is useful as 'you don't want to meet somebody for the first time on the day of an emergency.'

8. SPECIAL VOTING ARRANGEMENTS

Special voting arrangements 'allow voters to exercise their right to vote by alternative means to casting their ballots in-person, on election day, in the default polling station in the voter's constituency' (Barrat et al. 2023). These include early voting, postal voting, proxy voting, mobile ballot box voting, and remote electronic voting. SVAs can go by different names depending on the country, and multiple SVAs can be applied to a scenario at once. For example, 'absentee voting' can refer to all SVAs in a given country, whereas some countries use 'absentee voting' to refer solely to postal voting. SVAs may often represent a departure from conventional voting methods in a certain environment, which can bring into question the integrity and legitimacy of the vote via changed voting procedures—with the trade-off that they can solve certain voting issues that arise (Barrat et al. 2023). The State of Emergency

Requiring boards of elections to inform voters on voting locations by posting information, using reverse 9-1-1 (emergency number) calls and making radio announcements.

issued in New York by Governor Cuomo on 26 October (Executive Order No. 47) and New Jersey by Governor Christie on 27 October (Executive Order No. 104) gave additional powers for aid in voting during emergencies (Lawyers' Committee for Civil Rights Under Law 2013).

In New Jersey, the introduction of SVAs began on 1 November where the Lieutenant Governor Kim Guadagno (who also serves as the Secretary of State and chief election official) began issuing six directives with her extended powers granted from the State of Emergency.² As the election was scheduled for 6 November, the SVAs were deployed in a tight timeline. These included (New Jersey Election Official 2024; Lawyers' Committee for Civil Rights Under Law 2013):

1. *1 November*: Extending the deadline to apply for mail-in ballots from 30 October to 2 November; requiring all election offices stay open from 08:30 to 16:30 Friday, Saturday, Sunday and Monday leading up to election day; suspending the requirement that a person could only assist 10 people with ballots; modifying that an individual designated by the state or county office could assist in delivering an unlimited number of mail-in ballots to displaced voters; waiving the requirement that poll workers had to live in the county they worked in; allowing polling places to be moved more than 1,000 feet out of precinct boundary line.
2. *3 November*: Applying the existing law of fax/email voting for military and overseas voters to those displaced by Hurricane Sandy while also extending the deadline to apply for fax/email voting to 17:00 on election day, though votes still had to be received by 20:00 on election day; extending the deadline for election boards to receive mail-in ballots up until 19 November as long as they were postmarked by 5 November.
3. *3 November*: Requiring boards of elections to inform voters on voting locations by posting information, using reverse 9-1-1 (emergency number) calls and making radio announcements.
4. *3 November*: Allowing displaced voters to vote with a provisional ballot at any polling site across the state for president, vice president and statewide offices and ballot questions.
5. *6 November*: Requiring county clerks to process mail-in ballot applications that were received through fax/email by 17:00 on 6 November together with ballots received by 9 November at 20:00.
6. *9 November*: Extending county election certification deadlines until 21 November along with extending the timelines for court-ordered recounts and voting machine impoundment, and extending federal and state election certification.

² For further illustration of election administration challenges and solutions in New Jersey following Hurricane Sandy, see 'Storming for the Vote: Hurricane Sandy and the Election' (League of Women Voters of New Jersey 2014).

In New York, Governor Andrew Cuomo signed Executive Order No. 62 on 5 November to facilitate voting for New Yorkers affected by Hurricane Sandy (State of New York 2012). This Executive Order was a temporary suspension of provisions relating to the election law. The Order allowed any voter registered in a federally declared disaster county to vote on a provisional ballot³ at any poll site in New York, including first responders and emergency workers if they lived in one of the federally declared disaster counties and were involved in the recovery efforts. Furthermore, every county board of elections in New York state was mandated to send provisional ballots to the county board of elections where the voter was registered, to ensure that the vote was counted in the correct place (State of New York 2012; Pillifant and Paybarah 2012). However, the Governor did not authorize online voting as it was not secure (Morley 2018).

The Order allowed any voter registered in a federally declared disaster county to vote on a provisional ballot at any poll site in New York.

9. ELECTION DAY

As election day approached, election officials were scrambling to relocate polling places and to devise ways to allow displaced residents to vote without a specific plan in place (Kaplan 2013). Many previously designated polling stations were damaged, destroyed, flooded, cut off by roads needing repairs or did not have electric power restored by election day. In New York and New Jersey, more than 250 polling stations were moved (Fischer and Coleman 2012; Cooper 2012) as a result. Others, such as schools, transformed into shelters for displaced people. One of the major challenges election officials in New York faced was to identify the number of kilowatts and the voltage to deploy the correct type of generators for each polling station to restore power (Green et al. 2013). Some election boards also struggled to find power or get assurances from the utilities that power would be restored by election day (Cooper 2012).

The night before election day more than 100 polling places in New York state had been changed, including about 60 in the city. In the Rockaways and the Throgs Neck section of the Bronx, the city was setting up polling places in tents powered by generators and outfitted with portable heaters. New York City's Board of Elections had also arranged shuttle buses which would run every 15 minutes to transport voters to and from polling stations in three areas hit particularly hard by the storm—namely, the Rockaways, Coney Island and Staten Island (Halbfinger et al. 2012a). However, Douglas Kellner, co-chairman of the State Board of Elections in New York, said that few voters seemed to be using these shuttle buses on election day (Taylor 2012).

While state and county officials were working to ensure that voting went as smoothly as possible, they faced many challenges. For example, with their

³ Known as affidavit ballots in New York, provisional ballots are used when a voter is registered and eligible to vote, but election workers at the polling station do not have their information. Once election officials have verified eligibility, the affidavit/provisional ballot is counted like a regular ballot (Tirella 2016). But see below for operational difficulties experienced with this channel in 2012.

servers down, election boards were unable to update their websites for the public. A telephone hotline was set up by the New York City Board of Elections to help voters find their polling stations, but the hotline became out of service due to loss of power (Cooper 2012). In New Jersey, Governor Chris Christie's directive on allowing voters to submit their ballots electronically placed the burden on county clerks who lacked both the manpower and technology to transmit and receive the ballots (Green et al. 2013; Kaplan 2012). Certain counties were unable to accept requests due to their email inboxes becoming full, or fax machines running out of paper or toner, for example (Morley 2018).

There was no time to train poll workers on how to interpret the Order, and not all poll workers were informed of it, leading to delays and confusion at polling stations.

As Executive Order No. 62 was signed by Governor Andrew Cuomo only 13 hours before polling stations were planned to open, New York was not adequately prepared. There was no time to train poll workers on how to interpret the Order, and not all poll workers were informed of it, leading to delays and confusion at polling stations. For example, the city had only 250 printed provisional ballots per district and was not able to order more in time. As a result, many polling stations ran out of provisional ballots that would have allowed voters to cast a ballot outside their precincts (Taylor 2012; Green et al. 2013). Furthermore, some displaced residents seeking to use provisional ballots to vote away from home throughout New York faced the issue of election officials declining to accept them (Halbfinger et al. 2012b).

In 2010, the New York City Board of Elections had switched from voting machines with mechanical levers to new ballot scanning machines. The election in 2012 was the first presidential election in which the new scanning machine was used, and during polling many election workers were confused as to how they worked. Further, some machines even became jammed with ballots (Taylor 2012). Some posited that the issues present on election day overlaid others, given the reform had not been tested under non-emergency circumstances. For example, during a New York City Council meeting in December 2012, Speaker Christine C. Quinn argued that 'poorly trained poll workers and chaotic polling place procedures have been recurring issues, election after election' and called for new reforms to improve the city's voting system (New York City Council 2012).

In New Jersey, because of the vast amount of email voting (and for most users, for the first time), election officials could not keep up with input. One clerk's overloaded email address crashed and officials declared some ballots would not be processed in time (Tangel 2012).

10. TURNOUT AND RESULTS

While an isolated natural phenomenon does not necessarily pose a threat to public safety, disaster does occur when a natural hazard intersects with social vulnerabilities. Experience has shown that the poor and disadvantaged suffer the most when a natural hazard strikes, due to inadequate infrastructure and housing, and lack of general economic resources (Nordhaus 2013; Mansury,

Ye and Yoon 2021). Before the election and after Hurricane Sandy had passed, some worried that Sandy would suppress voter turnout—electorates most affected by the hurricane might be more focused on finding shelter and getting power than voting, for example (Ghose 2012).

There are different methods of calculating voter turnout in the USA using different denominators. Turnout can be calculated using the total number of citizens eligible to vote or by using the total number registered. In this case study, the voting age population who are citizens is used to calculate the voter turnout. According to the US Census Bureau, New York had a voter turnout of 58.7 per cent, and New Jersey had a turnout of 61.9 per cent (US Census Bureau 2013). In comparison, during the last federal general election held in 2008, New York had a voter turnout of 58.8 per cent, and New Jersey 64.1 per cent.

Concerns that Hurricane Sandy would suppress overall voter turnout, therefore, did not eventuate. Although voter turnout in 2012 was lower than in 2008, it was only by a marginal decrease in both New York and New Jersey (Table 5).

Before the election and after Hurricane Sandy had passed, some worried that Sandy would suppress voter turnout.

Table 5. Voter turnout (%) in New Jersey, New York and nationwide: 2008, 2010 and 2012

Voter turnout (% eligible population)	New Jersey	New York	Nationwide
2008 federal general election	64.1	58.8	63.6
2010 midterm election	41.7	43.6	45.5
2012 federal general election	61.9	58.7	61.8

Source: Table constructed by authors using data from US Census Bureau.

A study by Debbage et al. (2014) investigated the voter turnout in 2012 (using registered voter turnout rates) in Connecticut and New Jersey, and it found that Sandy may have disrupted voting activities specifically at the finer municipal level in New Jersey. For example, of the municipalities with the 10 largest decreases in voter turnout in 2012 compared to 2008, nine were located on the coast in areas vulnerable to storm surges. There were exceptions found in Atlantic City and Middletown Township as they had voter turnout increases, and this may have been due to the two counties being the most successful at implementing the new voting policies to help those displaced. Generally, however, smaller decreases in voter turnout occurred further inland. The study's correlation analysis found significant relationships between voter turnout change and the storm surge, vulnerability and socio-economic variables—one such being the Latino population. In New Jersey,

In New Jersey, the influence of storm surge on voter turnout change became more negative as the proportion of Latinos increased.

the influence of storm surge on voter turnout change became more negative as the proportion of Latinos increased. These populations may have been disproportionately affected by Sandy because the new voting policies and changes in polling stations may have been more difficult to understand for non-native English speakers (Debbage et al. 2014).

Due to various levels of government being responsible for paying the administration costs of elections, it is difficult to determine the exact costs in 'normal' circumstances. This complication increases during a disaster with overlapping assistance and stakeholders involved. Although not the focus of this paper, it can be mentioned that a study on the effects of Hurricane Michael on voting behaviour in the 2018 Florida general election shows hurricanes can have a negative effect on voter turnout. The study also shows that early in-person voting 'was the most effective method to vote for those who experienced the most damaging effects of the storm' and that this voting channel 'minimizes the costs of voting in the event of natural disasters' (Zelin and Smith 2023).

11. REFORMS

In the wake of Hurricane Sandy, a Task Force on Emergency Preparedness for Elections was established in January 2013 by the National Association of Secretaries of State (NASS). This task force would aim to assist state election administrators as they faced risks to electoral processes such as hurricanes, floods or wildfires. Based upon the real-world logistical challenges that election administrations had to tackle due to Sandy's lingering effects, as well as emergency experiences in other areas of the USA, members created a list of issues for examination. These included: states' laws authorizing the postponement of an election in an emergency; election contingency plans and alternative election procedures for emergencies; voting by individuals responding to or impacted by an emergency; involvement of election officials in state emergency preparedness planning; and federal government assistance in emergencies impacting an election.

Through the task force, state contingency plans were designed to guide local election officials during emergency situations. These could include communication plans and procedures for informing voters of changes in polling stations, for example, and evacuation procedures (NASS 2017). Since then, the EAC has also weighed in, publishing additional contingency planning guidelines recommending that all state election authorities conduct contingency planning (Darnolf 2018).

While Hurricane Sandy greatly impacted election administrations across the Eastern Seaboard, the cyber-attacks on the 2016 federal election prompted election reform efforts to consider elections as critical infrastructure. Elections were so designated in 2017 (United States Election Assistance Commission

2022), and since then further reforms such as active tabletop exercises and increased interagency collaboration have begun.

12. CONCLUSION AND LESSONS LEARNED

As tropical storms will continue to make landfall around the globe, it is important that policymakers, practitioners and academics can learn from the experiences of New Jersey and New York in organizing elections under emergency and crisis conditions. We suggest that four lessons may be of use for election stakeholders—in both lower and higher income countries—where hurricanes represent a risk to electoral integrity.

1. *Preparatory interagency collaboration.* New Jersey's county-level Board of Elections did show that (a) existing partnerships with advocacy groups and (b) the ability to quickly work with the Board of Public Utilities and New Jersey Regional Operations Information Center helped to deliver effective and inclusive voting arrangements. Strengthening interagency collaboration prior to emergencies can ensure smoother collaboration in times of crisis by utilizing existing networks.
2. *Careful expansion of special voting arrangements.* Careful consideration is necessary prior to expanding SVAs to ensure voters have opportunity to vote. While SVAs were expanded in New York and New Jersey, some failed because of lack of voter education, limited clerk training or last-minute implementation. Some of the most effective SVAs implemented during Hurricane Sandy were a modification of existing ones. For example, New Jersey expanded eligibility for existing SVA on email voting. However, the enormous surge in email votes overwhelmed election workers and technological capacities, offering reflections for a more careful expansion in the future. Further, SVA expansion can become politicized. For instance, after Hurricane Ian struck Florida in 2022, the Governor did expand SVAs in several counties (State of Florida 2022) but was criticized for excluding Democrat-leaning counties. In a time of increasing climate emergencies and political polarization, considering SVA expansion in advance of crisis—and legislating, perhaps, to prevent ad hoc decisions from being politicized—will help to better promote democratic resilience. In addition, crises can be used as a learning opportunity to reflect on the adequacy of reforms.
3. *Training election officials in disaster preparedness and response.* Hurricane Sandy demonstrated that election officials residing in states that are prone to hurricanes and other natural hazards can invest in peer-to-peer exchange and in training programmes on emergencies and crisis. Manuals, checklists, contingency plans for emergencies, and standardized training materials detailing responsibilities and procedures directly relevant to the tasks of poll workers (voter registration, regular voting, SVAs, counting and tabulation) should be regularly updated. Updates should be based

on electoral reforms and needs assessments and made accessible to all election officials in advance of elections.

4. *Ensuring inclusion of marginalized groups.* While Hurricane Sandy may not have affected the aggregate voter turnout in New Jersey and New York, it may have had an adverse impact on already vulnerable populations. Unless electoral management bodies implement proper communication and improved infrastructure for the whole electorate, socio-economic disparities will continue to suppress voter turnout under crisis conditions. Nonetheless, the New Jersey county-level Board of Elections did show that information sharing through existing partnerships held practical benefits for inclusion; continuing programmes with marginalized groups before and during disasters will only strengthen democratic engagement and integrity.

As illustrated, in 2012 conditions varied across New York and New Jersey as regards pre-existing electoral administration issues, interagency collaboration, election administrators' comprehension of emergencies, inclusion of marginalized groups, and other factors—as did SVA expansion once the storm was underway. In all cases, resilience in times of crisis is served by prior crisis planning (and since 2017, assisted by elections designated as part of critical infrastructure) and having the proper contacts already in place, both between agencies and with civil society.

With hurricanes becoming more intense due to climate change and considering the unfortunate coinciding of US elections with hurricane season, it is not surprising to find elections can be negatively impacted. In the years since Hurricane Sandy the USA has seen Hurricane Michael disrupt the 2018 midterm elections in several states and Hurricane Ian disrupt the 2022 midterm elections in Florida, the Carolinas and Virginia. Looking ahead, climate change will almost inevitably act as a risk multiplier in US elections.

Organizing an election during the immediate aftermath of a hurricane is challenging, therefore regulation and contingency plans need to be adopted by the growing number of countries prone to experiencing extreme weather events. Beyond local-level reforms, taking a greater step by designating electoral processes as part of critical infrastructure can significantly enhance resilience and functionality, particularly during emergencies or crises. This can help governments secure resources, funding and technical support to ensure the integrity and continuity of elections, even in challenging situations such as disasters, pandemics or cyberattacks.

REFERENCES

- Barrat, J., Ellis, A., Orr, G., Vashchanka, V. and Wolf, P., *Special Voting Arrangements: The International IDEA Handbook* (Stockholm: International IDEA, 2023), <<https://doi.org/10.31752/idea.2023.84>>
- Bates, D. C., *Superstorm Sandy: The Inevitable Destruction and Reconstruction of the Jersey Shore* (New Brunswick: Rutgers University Press, 2016)

- Bjarnadottir, S., Li, Y. and Stewart, M. G., 'Social vulnerability index for coastal communities at risk to hurricane hazard and a changing climate', *Natural Hazards*, 59/2 (2011), pp. 1055–75, <<https://doi.org/10.1007/s11069-011-9817-5>>
- Brennan, A., 'Sandy leaves election officials scrambling', CNN, 1 November 2012, <<https://www.cnn.com/2012/10/31/politics/sandy-voting-election-day/index.html>>, accessed 10 September 2024
- Brox, B., 'Elections and voting in post-Katrina New Orleans', *Southern Studies: An Interdisciplinary Journal of the South*, 16/2 (2009), pp. 1–23
- Bruni, F., 'Sandy the soothsayer', *New York Times*, 29 October 2012, <<https://www.nytimes.com/2012/10/30/opinion/bruni-sandy-the-soothsayer.html>>, accessed 10 September 2024
- Center for Climate and Energy Solutions, 'Hurricanes and Climate Change', [n.d.a], <<https://www.c2es.org/content/hurricanes-and-climate-change>>, accessed 10 September 2024
- , 'Extreme Precipitation and Climate Change', [n.d.b], <<https://www.c2es.org/content/extreme-precipitation-and-climate-change>>, accessed 10 September 2024
- Colbert, A., 'A Force of Nature: Hurricanes in a Changing Climate', NASA, 1 June 2022, <<https://science.nasa.gov/earth/climate-change/a-force-of-nature-hurricanes-in-a-changing-climate>>, accessed 10 September 2024
- Colorado State University, Department of Atmospheric Science, 'North Atlantic Ocean Historical Tropical Cyclone Statistics', [n.d.], <<https://tropical.atmos.colostate.edu/Realtime/index.php?arch&loc=northatlantic>>, accessed 10 September 2024
- Cooper, M., 'Disruption from storm may be felt at the polls', *New York Times*, 2 November 2012, <<https://www.nytimes.com/2012/11/03/us/politics/hurricane-sandy-threatens-to-disrupt-voting-on-election-day.html>>, accessed 10 September 2024
- Darnolf, S., 'Safeguarding our elections: Enhanced electoral integrity planning', *SAIS Review of International Affairs*, 38/1 (2018), pp. 39–51, <<https://doi.org/10.1353/sais.2018.0004>>
- Debbage, N., Gonsalves, N., Knox, J. A. and Shepherd, J. M., 'Superstorm Sandy and voter vulnerability in the 2012 US presidential election: A case study of New Jersey and Connecticut', *Environmental Hazards*, 13/3 (2014), pp. 181–99, <<http://dx.doi.org/10.1080/17477891.2014.891500>>
- Devanandham, H. and Ramirez-Marquez, J. E., 'On the impacts of power outages during Hurricane Sandy—a resilience-based analysis', *The Journal of the International Council on Systems Engineering*, 19/1 (2016), pp. 59–75, <<https://doi.org/10.1002/sys.21338>>
- Federal Emergency Management Agency (FEMA), 'How a Disaster Gets Declared', last updated 22 July 2024, <<https://www.fema.gov/disaster/how-declared>>, accessed 10 September 2024
- Fischer, E. A. and Coleman, K. J., 'Hurricane Sandy and the 2012 Election: Fact Sheet', Congressional Research Service, 6 November 2012, <https://www.eac.gov/sites/default/files/document_library/files/CRS-on-Hurricane-Sandy.pdf>, accessed 10 September 2024
- Geology Science, 'Slope Stability and Landslides', 23 April 2023, <<https://geologyscience.com/geology-branches/engineering-geology/slope-stability-and-landslides>>, accessed 10 September 2024

- Ghose, T., 'Hurricane Sandy may affect election outcome', NBC News, 5 November 2012, <<https://www.nbcnews.com/id/wbna49692665>>, accessed 10 September 2024
- Giles, D. W., 'A Cascade of Emergencies (B): Responding to Superstorm Sandy in New York City', 2017, <<https://case.hks.harvard.edu/a-cascade-of-emergencies-a-responding-to-superstorm-sandy-in-new-york-city>>, accessed 22 September 2024
- Green, R., Lippolis, E., Reulbach, S. and McCoy, A., 'Election Delays in 2012', William and Mary Law School Faculty Publications 1709, May 2013, <<https://scholarship.law.wm.edu/facpubs/1709>>, accessed 10 September 2024
- Halbfinger, D. M., Kaplan, T. and Ruderman, W., 'Officials rush to find ways for the storm-tossed to vote', *New York Times*, 5 November 2012a, <<https://www.nytimes.com/2012/11/06/nyregion/after-hurricane-sandy-efforts-to-help-the-displaced-vote.html>>, accessed 10 September 2024
- Halbfinger, D. M., Ruderman, W. and Kilgannon, C. 'Displaced by hurricane, but returning home, briefly, to vote', *New York Times*, 6 November 2012b, <<https://www.nytimes.com/2012/11/07/nyregion/long-lines-at-polling-places-as-displaced-residents-find-ways-to-vote.html>>, accessed 10 September 2024
- Hall, T. E., *Primer on the U.S. Election System* (Washington, DC: International Foundation for Electoral Systems, 2012), <https://www.ifes.org/sites/default/files/migrate/english_primer_0.pdf>, accessed 10 September 2024
- Halverson, J. B. and Rabenhorst, T., 'Hurricane Sandy: The science and impacts of a superstorm', *Weatherwise*, 66/2 (2013), pp. 14–23, <<http://dx.doi.org/10.1080/00431672.2013.762838>>
- Haraguchi, M. and Kim, S., 'Critical infrastructure interdependence in New York City during Hurricane Sandy', *International Journal of Disaster Resilience in the Built Environment*, 7/2 (2016), pp. 133–43, <<http://dx.doi.org/10.1108/IJDRBE-03-2015-0015>>
- Intergovernmental Panel on Climate Change (IPCC), *Climate Change 2022: Impacts, Adaptation and Vulnerability* (Cambridge: Cambridge University Press), <<https://doi.org/10.1017/9781009325844>>
- Jackson, D., 'Obama declares disaster areas in New York, New Jersey', USA Today, 30 October 2012, <<https://www.usatoday.com/story/theoval/2012/10/30/obama-sandy-disaster-new-jersey-new-york/1668025>>, accessed 10 September 2024
- James, T. S., Clark, A. and Asplund, E., *Elections during Emergencies and Crises: Lessons for Electoral Integrity from the Covid-19 Pandemic* (Stockholm: International IDEA, 2023), <<https://doi.org/10.31752/idea.2023.24>>
- Jennings, N., 'Obama to resume campaign schedule Thursday', *Washington Post*, 31 October 2012, <<https://www.washingtonpost.com/news/post-politics/wp/2012/10/31/obama-to-resume-campaign-schedule-thursday/>>, accessed 10 September 2024
- Joseph, M., *Fluid New York: Cosmopolitan Urbanism and the Green Imagination* (Durham, NC: Duke University Press, 2013), <<https://doi.org/10.1515/9780822378884>>
- Kaplan, T., 'Using Hurricane Sandy as lesson for future elections', *New York Times*, 12 November 2013, <<https://www.nytimes.com/2013/11/13/nyregion/lessons-from-hurricane-sandy-being-applied-to-election-planning.html>>, accessed 10 September 2024
- Klotzbach, P. J., Bowen, S. G., Pielke Jr., R. and Bell, M., 'Continental U.S. hurricane landfall frequency and associated damage: Observations and future risks', *Bulletin*

of the American Meteorological Society, 99/7 (2018), pp. 1359–76, <<http://dx.doi.org/10.1175/BAMS-D-17-0184.1>>

Ladislav, S., Sanok Kostro, S. and Walton, M., 'Hurricane Sandy: Evaluating the response one year later', Center for Strategic and International Studies, 4 November 2013, <<https://www.csis.org/analysis/hurricane-sandy-evaluating-response-one-year-later>>, accessed 10 September 2024

Lawyers' Committee for Civil Rights Under Law, *Expecting the Unexpected: Election Planning For Emergencies* (Washington, DC: Election Protection, 2013), <<https://lawyerscommittee.org/wp-content/uploads/2015/07/Emergency-Planning-Report-10-29-13.pdf>>, accessed 10 September 2024

League of Women Voters of the City of New York, 'New York State Political Parties 2019–2022' [n.d.], <https://my.lwv.org/sites/default/files/190911_lwvnyc_political_parties_2019-2022.pdf>, accessed 10 September 2024

League of Women Voters of New Jersey, 'Video: Storming for the Vote: Hurricane Sandy and the Election', September 2014, <<https://vimeo.com/109842560>>, accessed 22 September 2024

Mansury, Y., Ye, X. and Yoon, D. K., 'Structural path analysis of extreme weather events: An application to Hurricane Katrina and Superstorm Sandy', *Applied Geography*, 136 (2021), pp. 1–14, <<https://doi.org/10.1016/j.apgeog.2021.102561>>

Morley, M. T., 'Election emergencies: Voting in the wake of natural disasters and terrorist attacks', *Emory Law Journal*, 67/3 (2018), pp. 545–617, <<https://scholarlycommons.law.emory.edu/cgi/viewcontent.cgi?article=1059&context=elj>>, accessed 10 September 2024

Morris, K. and Miller, K., 'Authority after the tempest: Hurricane Michael and the 2018 elections', *The Journal of Politics*, volume 85, No. 2, April 2023, <<https://journals.uchicago.edu/doi/10.1086/722772>>

National Association of Secretaries of State (NASS), 'State Laws and Practices for the Emergency Management of Elections' Summary Paper of NASS Report of the Task Force on Emergency Preparedness for Elections, April 2017, <<https://www.nass.org/sites/default/files/Election%20Cybersecurity/report-NASS-emergency-preparedness-elections-apr2017.pdf>>, accessed 10 September 2024

National Conference of State Legislatures (NCSL), 'Election Administration at State and Local Levels' updated 22 December 2023a, <<https://www.ncsl.org/elections-and-campaigns/election-administration-at-state-and-local-levels>>, accessed 10 September 2024

—, 'State Primary Election Types' [updated 6 February 2024b, <<https://www.ncsl.org/elections-and-campaigns/state-primary-election-types>>, accessed 10 September 2024

National Hurricane Center, 'Saffir-Simpson Hurricane Wind Scale', [n.d.], <<https://www.nhc.noaa.gov/aboutsshws.php>>, accessed 10 September 2024

National Weather Service, 'Saffir-Simpson Hurricane Scale' [n.d.a], <https://www.weather.gov/hgx/tropical_scale>, accessed 10 September 2024

—, 'Hurricane Sandy', [n.d.b], <<https://www.weather.gov/okx/HurricaneSandy5Year>>, accessed 23 September 2024

—, 'Hurricane Irene: 10 Years Later', [n.d.c], <https://www.weather.gov/gyx/Irene_Anniversary>, accessed 23 September 2024

- New Jersey Legislature, 'NJ State Constitution', November 2020, <<https://www.njleg.state.nj.us/constitution>>, accessed 22 September 2024
- New Jersey Election Official, author's interview, Stockholm, April 2024
- New York City Council, 'City Council reviews problems with Board of Elections', 5 December 2012, <<https://council.nyc.gov/press/2012/12/05/629>>, accessed 10 September 2024
- New York State Board of Elections, 'About the New York State Board of Elections', [n.d], <<https://elections.ny.gov/about-new-york-state-board-elections>>, accessed 22 September 2024
- National Oceanic and Atmospheric Administration (NOAA), 'Hurricanes', updated 1 May 2020, <<https://www.noaa.gov/education/resource-collections/weather-atmosphere/hurricanes>>, accessed 10 September 2024
- , Atlantic Oceanographic and Meteorological Laboratory, 'Hurricanes: Frequently Asked Questions', updated 1 June 2023, <<https://www.aoml.noaa.gov/hrd-faq>>, accessed 10 September 2024
- , National Centers for Environmental Information, 'Costliest U.S. Tropical Cyclones', updated 8 August 2024, <<https://www.ncei.noaa.gov/access/billions/dcmi.pdf>>, accessed 10 September 2024
- Nordhaus, W., 'Intensification of hurricanes', in W. Nordhaus (ed.), *The Climate Casino: Risk, Uncertainty, and Economics for a Warming World* (New Haven: Yale University Press, 2013), pp. 116–21, <<https://doi.org/10.2307/j.ctt5vkrpp.14>>
- Oladipo, G., 'Anger as DeSantis eases voting rules in Republican areas hit by hurricane', *The Guardian*, 14 October 2022, <<https://www.theguardian.com/us-news/2022/oct/14/ron-desantis-florida-hurricane-ian-voting-rules>>, accessed 10 September 2024
- Pillifant, R. and Paybarah, A., 'Cuomo allows for affidavit voting anywhere', *Politico*, 5 November 2012, <<https://www.politico.com/states/new-york/albany/story/2012/11/cuomo-allows-for-affidavit-voting-anywhere-006065>>, accessed 10 September 2024
- Roth, Z., 'Romney: Hurricane Sandy helped Obama', *NBC News*, 7 June 2013, <<https://www.nbcnews.com/news/world/romney-hurricane-sandy-helped-obama-flna6c10240905>>, accessed 22 September 2024
- Sides, J., 'Hurricane Sandy was huge – but not for the 2012 presidential election', *Washington Post*, 29 October 2013, <<https://www.washingtonpost.com/news/monkey-cage/wp/2013/10/29/hurricane-sandy-was-huge-but-not-for-the-2012-presidential-election>>, accessed 10 September 2024
- Slack, D., 'Midterms: Hurricanes leave election officials scrambling to put up polls as tight races hang in the balance', *Aberdeen News*, 19 October 2018, <<https://www.aberdeennews.com/story/news/2018/10/19/midterms-hurricanes-leave-election-officials-scrambling-to-put-up-polls-as-tight-races-hang-in-the-balance/48938083>>, accessed 10 September 2024
- State of Florida, 'Executive Order Number 22-234' (Emergency Management/Elections – Hurricane Ian), 12 October 2022, <<https://www.flgov.com/wp-content/uploads/2022/10/EO-22-234.pdf>>, accessed 10 September 2024
- State of New York, 'Executive Order No. 62: Temporary Suspension of Provisions Relating to the Election Law', 5 November 2012, <<https://casetext.com/regulation/new-york-codes-rules-and-regulations/title-9-executive-department/subtitle-a-governors-office/chapter-i-executive-orders/part-8-executive-orders-andrew-m>>

[-cuomo/section-862-executive-order-no-62-temporary-suspension-of-provisions-relating-to-the-election-law>](#), accessed 10 September 2024

- Stein, R. M., 'Election administration during natural disasters and emergencies: Hurricane Sandy and the 2012 election', *Election Law Journal: Rules, Politics and Policy*, 14/1 (2015) pp. 66–67, <<https://doi.org/10.1089/elj.2014.0271>>
- Strauss, B. H., Orton, P. M., Bittermann, K. et al., 'Economic damages from Hurricane Sandy attributable to sea level rise caused by anthropogenic climate change', *Nature Communications*, 12/2720 (2021), <<https://doi.org/10.1038/s41467-021-22838-1>>
- Sullivan, A., 'Hurricane Sandy blows U.S. election off course', Reuters, 28 October 2012, <<https://www.reuters.com/article/world/hurricane-sandy-blows-u-s-election-off-course-idUSDEE89R085>>, accessed 10 September 2024
- Tang, B., 'Hurricane Beryl's rapid intensification, Category 5 winds so early in a season were alarming: Here's why more tropical storms are exploding in strength', *The Conversation*, 2 July 2024, <<https://theconversation.com/hurricane-beryls-rapid-intensification-category-5-winds-so-early-in-a-season-were-alarming-heres-why-more-tropical-storms-are-exploding-in-strength-233780>>, accessed 10 September 2024
- Tangel, A., 'N.J. county overwhelmed by emailed and faxed ballots', *Los Angeles Times*, 6 November 2012, <<https://www.latimes.com/politics/la-xpm-2012-nov-06-la-pn-new-jersey-election-email-ballots-20121106-story.html>>, accessed 10 September 2024
- Taylor, K., 'Chaos at city's polls amid new voting machines and last-minute rules', *New York Times*, 6 November 2012, <<https://www.nytimes.com/2012/11/07/nyregion/chaos-at-new-york-city-polls-amid-new-rules-and-voting-machines.html>>, accessed 10 September 2024
- Thompson, A., 'Why Hurricane Beryl's unprecedented intensification is an "omen" for the rest of the season', *Scientific American*, updated 2 July 2024, <<https://www.scientificamerican.com/article/why-hurricane-beryl-underwent-unprecedented-rapid-intensification>>, accessed 10 September 2024
- Tirella, T., 'What is affidavit voting? Do I have to show my ID? Polling woes leave New Yorkers asking questions', PIX11, 8 November 2016, <<https://pix11.com/news/what-is-affidavit-voting-do-i-have-to-show-my-id-polling-woes-leave-new-yorkers-asking-questions>>, accessed 10 September 2024
- Towriss, D., 'How hurricanes threaten U.S. elections and why more flexible voting is needed', *International IDEA*, 3 November 2022, <<https://www.idea.int/blog/how-hurricanes-threaten-us-elections-and-why-more-flexible-voting-needed>>, accessed 10 September 2024
- United States Census Bureau, 'Voting and Registration in the Election of November 2012', Report No. P20-568, May 2013, <<https://www.census.gov/data/tables/2012/demo/voting-and-registration/p20-568.html>>, accessed 10 September 2024
- United States Department of Justice (DoJ), 'The National Voter Registration Act of 1993 (NVRA)', [n.d.], <<https://www.justice.gov/crt/national-voter-registration-act-1993-nvra>>, accessed 22 September 2024
- , 'Statutes Enforced By The Voting Section', [n.d.], <<https://www.justice.gov/crt/statutes-enforced-voting-section>>, accessed 22 September 2024

- United States Election Assistance Commission, 'Elections – Critical Infrastructure', 11 March 2022, <<https://www.eac.gov/election-officials/elections-critical-infrastructure>>, accessed 22 September 2022
- United States Senate, 'Hurricane Sandy: Response and Recovery Progress and Challenges', Hearing 112-861, 5 December 2012, <<https://www.govinfo.gov/content/pkg/CHRG-112shrg80812/html/CHRG-112shrg80812.htm>>, accessed 10 September 2024
- USA.Gov, 'Presidential primaries and caucuses', last updated 22 August 2024, <<https://www.usa.gov/primaries-caucuses>>, accessed 10 September 2024
- van Oldenborgh, G. J., van der Wiel, K., Philip, S., Kew, S., Sebastian, A., Otto, F., Haustein, K., Singh, R., Arrighi, J. and Vecchi, G., 'Rapid attribution of the extreme rainfall in Texas from Tropical Storm Imelda', *World Weather Attribution*, 27 September 2019, <<https://www.worldweatherattribution.org/rapid-attribution-of-the-extreme-rainfall-in-texas-from-tropical-storm-imelda>>, accessed 10 September 2024
- Vote Smart, 'New Jersey Political Parties', [n.d.], <<https://justfacts.votesmart.org/political-parties/NJ>>, accessed 28 August 2024
- Zelin, W. A., and Smith, D. A., 'Weather to vote: How natural disasters shape turnout decisions', *Political Research Quarterly*, 76/2 (2023), pp. 553–64, <<https://doi.org/10.1177/10659129221093386>>
- Zhang, W., Villarini, G., Vecchi, G. A. and Smith, J. A., 'Urbanization exacerbated the rainfall and flooding caused by Hurricane Harvey in Houston', *Nature*, 563/7731 (2018), pp. 384–88, <<https://doi.org/10.1038/s41586-018-0676-z>>

ABOUT THE AUTHORS

Hyowon Park is an independent consultant. She previously served as a research assistant with the Electoral Processes and Democracy Assessment units, International IDEA.

Madeline Harty is an independent consultant. Her work includes contributions to International IDEA's 'Impact of Natural Hazards on Elections' project, the Global Election Monitor, Building Resources in Democracy Governance and Elections (BRIDGE) and other training on electoral administration.

Erik Asplund is a Senior Programme Officer in the Electoral Processes Programme, International IDEA. His research covers elections during emergencies and crisis, and training and professional development in electoral administration.

Contributors

Sarah Birch, Professor of Political Science and Director of Research, Department of Political Economy, Kings College London.

Ferran Martinez i Coma, PhD, Senior Lecturer, School of Government and International Relations at Griffith University, Queensland.

ABOUT INTERNATIONAL IDEA

The International Institute for Democracy and Electoral Assistance (International IDEA) is an intergovernmental organization with 35 Member States founded in 1995, with a mandate to support sustainable democracy worldwide.

What we do

We develop policy-friendly research related to elections, parliaments, constitutions, digitalization, climate change, inclusion and political representation, all under the umbrella of the UN Sustainable Development Goals. We assess the performance of democracies around the world through our unique Global State of Democracy Indices and Democracy Tracker.

We provide capacity development and expert advice to democratic actors including governments, parliaments, election officials and civil society. We develop tools and publish databases, books and primers in several languages on topics ranging from voter turnout to gender quotas.

We bring states and non-state actors together for dialogues and lesson sharing. We stand up and speak out to promote and protect democracy worldwide.

Where we work

Our headquarters is in Stockholm, and we have regional and country offices in Africa, Asia and the Pacific, Europe, and Latin America and the Caribbean. International IDEA is a Permanent Observer to the United Nations and is accredited to European Union institutions.

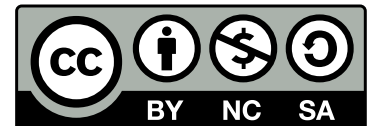
Our publications and databases

We have a catalogue with more than 1,000 publications and over 25 databases on our website. Most of our publications can be downloaded free of charge.

<http://www.idea.int>

© 2024 International Institute for Democracy and Electoral Assistance

International IDEA publications are independent of specific national or political interests. Views expressed in this publication do not necessarily represent the views of International IDEA, its Board or its Council members.



The electronic version of this publication is available under a Creative Commons Attribution-NonCommercial-ShareAlike 4.0 (CC BY-NC-SA 4.0) licence. You are free to copy, distribute and transmit the publication as well as to remix and adapt it, provided it is only for non-commercial purposes, that you appropriately attribute the publication, and that you distribute it under an identical licence. For more information visit the Creative Commons website: <http://creativecommons.org/licenses/by-nc-sa/4.0>.

This case study is part of a project on natural hazards and elections, edited by Erik Asplund (International IDEA), Sarah Birch (Kings College London) and Ferran Martinez i Coma (Griffith University).

Design and layout: International IDEA

DOI: <https://doi.org/10.31752/idea.2024.87>

ISBN: 978-91-7671-840-7 (PDF)



International IDEA
Strömsborg
SE-103 34 Stockholm
SWEDEN
+46 8 698 37 00
info@idea.int
www.idea.int