Title

Communicating extreme event policy windows: discourses on Hurricane Sandy and policy change in Boston and New York City

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Abstract

The potential for extreme weather events to open windows for public policy changes or transitions has been studied from various theoretical and analytical perspectives. Following extreme weather events, the media (including popular press and journalism) contributes to critical moments, where a potential window opens to transform public understandings of issues and challenges in established extreme event discourses. This paper examines government engagement with the media to better understand conditions of the post-event policy window from the perspective of critical discourse moments. More specifically, the paper uses keyword analysis and critical discourse analysis to examine discursive constructions of the post-event policy window following Hurricane Sandy by two city governments– Boston and New York. We contrast the language of city government engagement with media about post-disaster policy responses and compare this with the language of proposed city policies on climate risk adaptation and mitigation strategies. The outcomes of this analysis illustrate differences between government engagement with media in the post-disaster window and their eventual climate policy responses. The results raise questions regarding the influence of the media on post-disaster policy responses and focus attention on the proximity of an extreme weather event as potentially affecting the type of policy response (either proactive or reactive) by a governing body.

Key Words: policy transitions, extreme events, discourse, policy window, media

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Introduction

Extreme weather event disasters result in responses that influence the future impacts from similar events (Tompkins 2005; O'Brien et al. 2010). If policy responses fail to integrate the immediate lessons from the direct aftermath of the event, they may limit the ability of governing bodies to transform public awareness about extreme weather events and diminish political will to promote resilience practices within formal responses (Simpson et al. 2019). Research on post-extreme event policy transitions largely utilizes policy science and hazards literature to examine case examples of post-event impacts. These studies typically look at a series of contextual variables regarding the size of the event and policy history associated with the event (e.g. number of past events, presence of policy entrepreneur – see Solecki et al. 2015 for recent general review). The policy window concept and the role of extreme weather and climate events generally have been presented within the context of a variety of hazards and risk management scenarios, including floods (Johnson et al. 2015; Meijerink 2005), heatwaves (Wolf et al. 2010), hurricanes (Solecki and Michaels 1994), earthquakes, and technological hazards (Alexander 2010). We propose that this framing does not fully characterize the government's role in public engagement during the post-disaster policy window. To more fully understand policy responses in the post event context, this paper will examine how city governments use media to engage the public about post-disaster policy transitions. Specifically, this paper compares the language of city government engagement with media about post-disaster policy responses, with the language of proposed city policies on climate risk adaptation and mitigation strategies.

The media, including all forms of the press and more informal modes such as blogposts, have been identified as playing an important role in the production and shaping of climate-change discourse and mediating the linkage between governments and the public (Boykoff 2007; Sisco et al. 2017). Most basically, the media is a forum in which the public learns about updates concerning response and recovery. Media influences the setting of public agendas and operates as a medium where public knowledge and understanding of climate risk are produced, reproduced and transformed (Carvalho 2010; Smith 2005). It is also within the post-disaster context where policy windows are hypothesized to open (Birkland 2006), making the media a critical vehicle for public engagement by city agencies to garner not only political support for policy transitions, but to also define the challenges cities directly face to justify such transitions (Pidgeon 2012). This paper builds on the importance of media in creating discourses around disaster (See Carvalho 2007; Dirkx and Gelders 2010), with a special focus on city engagement with media and policy responses in Boston and New York City following Hurricane Sandy. The paper is divided into three parts. First, we review the general literature on connections between extreme weather events, discourse and policy transitions. Then, we discuss the context of Hurricane Sandy impacts in the Northeast United States. This is followed by sections on methods, results and discussion. The qualitative methods used in the case studies rely primarily on keyword analysis and critical discourse analysis of media text and policy text to compare each city's characterizations of the post-disaster policy window following Hurricane Sandy.

2.0 Critical Discourse Moments and Post Disaster Policy Transitions

A rich literature exists regarding how extreme events can influence or motivate changes in public policy (Solecki et al. 2015; Kates et al. 2012; Birkmann and Teichman 2010; Pelling and Dill 2010; Solecki 1999). The concept of the policy window, or 'window of opportunity' is central to this research. Policy transitions occur most often when there is a clear need for change and well understood and achievable potential solutions. So-called 'policy entrepreneurs,' those positioned and

with sufficient interest, act to affect significant change in policy and are seen as critical to policy switches (Kingdon 1995).

The common assumption held within this public policy literature has been that policy changes need a large initiating event that produces wide scale and/or significant human and capital costs, such as extreme loss of life or property. The emergence of these conditions and processes, and ways in which they are debated and resolved collectively represent post-event discourses. Other research in this field has noted that a one-to-one correlation between disaster and greater attention to causes and policy should not be treated as a simple linear relationship (Sarewitz and Pielke 2001) and should emphasize the social construction of disaster (Wisner et al. 2012). Studies of extreme weather events as *critical discourse moments* shed light on the potential to transform public understandings of issues and challenge established discourses (Carvalho and Burgess 2005:1462).

Multiple studies have shown that extreme weather events bring increased attention to climate change issues such as sea-level rise and flooding in media and policy (Carvalho and Burgess 2005; Pidgeon 2012; Boykoff 2007). A combination of increased public attention and political will has the potential to lead to policy transitions that focus on climate change adaptation and mitigation (Rogers-Hayden et al. 2011). Studies examining these moments have tended to use media text as the main source of data (Carvalho 2007), relying primarily on critical discourse analysis (see Fairclough 2012) to examine the construction of media discourses through the study of language and its relationship to the particular social and political contexts of the extreme weather event (Carvalho and Burgess 2005).

3.0 Hurricane Sandy

Hurricane Sandy caused catastrophic destruction in New York City and its wider Metropolitan Region in October 2012 (see Schmeltz et al. 2013; Rosenzweig and Solecki 2014; Binder et al. 2015). Urbanized coastal areas of the United States Northeast not directly hit by Sandy took heed that they could potentially face similar impacts with future storms. Hurricane Sandy was an extreme weather event whose effects built upon recent similar events including Tropical storm Irene (August 2011) and Tropical Storm Lee (September 2011) that impacted New York City and state, Boston, Massachusetts and New England.

Hurricane Sandy was one the most significant hurricanes to impact the United States. While the storm came ashore just north of Atlantic City, almost 800 miles to the west, its wide wind field caused waves on Lake Michigan in Chicago to crash onto lake shore roads. The storm caused 60 deaths in the New York Metropolitan Region (48 in New York State including NYC, and 12 in New Jersey) and approximately $60 billion in loss and damage with roughly equal amounts in New Jersey, the state of New York and New York City. The storm is described by some as a "superstorm" because as it approached the New Jersey shore, it weakened from a hurricane to a tropical storm, and then collided with a separate massive air mass coming from the west, creating an enormous Nor-Easter type storm defined by the interaction of warm moist tropical air and colder drier continental air.

Hurricane Sandy was not a major rain event, and the highest sustained winds on the coast were only 70-75 mph. The geographic extent and direct perpendicular strike in New York (as opposed to the glancing storm tracks often observed) meant that Sandy had significant tidal surge causing extensive coastal flooding. The strength of the storm and the baseline height of the sea level, which added to the magnitude of the flooding, was in part influenced by climate change although it is not possible to say that the storm itself was caused by climate change. The storm's effects were felt throughout the northeast seaboard of the United States (see Figure 1) but most intensely in the extended New York – New Jersey coastal region. The storm alerted risk and hazard managers throughout the Northeast US of the potential increasing threat of coastal flooding.

Policy responses in Boston and New York City resulted in different climate risk policy actions. For instance, Boston introduced *Imagine Boston 2030* in 2016 to work alongside *Climate Ready Boston*, which was the first new citywide plan since 1966 to increase equity in vulnerable areas (i.e., growing population, limited economic opportunities and increasing exposure to sea-level rise and flooding) (City of Boston 2016). Whereas in New York City, *OneNYC* was introduced in 2014 to replace *PlaNYC 2030*, a climate change policy introduced in 2007. *OneNYC* objectives include addressing income inequality framed by equity, sustainability, resiliency and growth.

4.0 Methods

In order to characterize each city government's post-disaster public engagement about policy transitions, this case study combines keyword analysis and critical discourse analysis to compare media coverage of Hurricane Sandy representing government positions and policy responses in Boston and New York City. Keyword analysis looks at the most or least frequently used words in one body of text (corpus) compared to another. Here, keyword analysis is used to compare the words that occurred most frequently in media and each city's policy. Keyword analysis is critical as it makes use of a common variable (word count) to compare the diverse and complex type of sources this research is using. This differs from other studies of climate change and media which have been carried out often relying on one or two types of the same source material. Critical discourse analysis (CDA) was employed to define and group the most frequent keywords into themes related to different aspects of climate risk, and resilience and adaptation planning, which then guided a more detailed analysis of a smaller sample of text to examine the keyword themes. Using CDA in this way allows this study to understand the structures of arguments, labelling of actors and identification of problems (Gabrielatos and Baker 2008). Combining keyword analysis and CDA uses quantitative and qualitative evidence to strengthen the interpretations of findings by linking statistically significant results with more qualitative interpretation of keyword frequency results (Baker et al. 2008). The combination of these analyses has been seldom used to explore the relationship between extreme weather events, media and public policy. These studies have commonly relied upon CDA, which is useful for uncovering how language is used to produce and reproduce knowledge (Wodak and Meyer 2008), but relies heavily on subjectivity to choose texts, which can potentially overlook content that contradicts or adds complexity to a study (Baker et al. 2008).

Collection of data was conducted using an online database of newspapers, periodicals, and multimedia sources including Nexis Uni. The search queries used were: Hurricane Sandy OR Superstorm Sandy AND Boston AND policy; Hurricane Sandy OR Superstorm Sandy AND Boston AND resilience policy; Hurricane Sandy OR Superstorm Sandy AND New York City AND policy; Hurricane Sandy OR Superstorm Sandy AND New York City AND resilience policy; Hurricane Sandy OR Superstorm Sandy AND New Boston AND climate policy; Hurricane Sandy OR Superstorm Sandy AND New York City AND climate policy.

In total, data collection comprised 13 different media sources, including national and international newspapers (*New York Times*, *Boston Globe*, *Wall street Journal*, *The Nation*, *Business Insider*, *The Guardian*), city government press releases about policy, local based media sources (Next City, CBS Boston, WGBH Boston's local NPR, DNA Info, BKLYNER), and online based news sources (Politico, Inside Climate news). The dates for the sources ranged from November 2012 to April 2019. Specifically, this study was looking for news sources focused on Massachusetts or New York, which was queried within Nexis Uni. While this search yielded 567 news articles, 110 articles were chosen out of the search results for this study based on if Hurricane Sandy was written about in relation to policy. Articles were separated based on actor representation and placed into separate folders to be used in ATLAS.ti. All news articles (n-110) were used to understand overall media discourse surrounding Hurricane Sandy and public policy. These articles were then separated by

each city they represented (Boston or New York City). Thirty-two articles were given particular attention because they focused both on Hurricane Sandy and climate change policies specifically. The total word count for selected news articles yielded 20,644 words.

Policy text was collected from 17 public documents and reports that pertained to climate change and, or resilience-based programs and guidelines produced by the city governments of Boston or New York City (Table 1). The total word count for the policy-based text yielded 859,640 words. Themes noted within text include carbon emissions, green development, climate resilience measures, and policy progress on city-wide level. Review of New York City and Boston climate change policies were undertaken to understand the types of strategies promoted, and problem framing. Overall, New York City represented a reactive stance to climate change versus Boston, where response was more proactive and focused on the long-term. However, these findings needed to be qualified through keyword analysis.

For both the policy based and newspaper-based text, word frequencies were produced through ATLAS.ti. During the word frequency processing, a stop word list was applied, removing common words such as "the", "a", "am" from the word count. Word counts were sorted from largest to smallest to sort out the most frequently used words between Boston and New York City for their policy and newspaper results. The top 15 words were qualitatively chosen from each city's newspaper and policy corpus based on the word count, and if it referenced any aspect of climate risk, resilience or infrastructure adaptation planning. Since the stop word list doesn't remove all common nouns and verbs, further efforts were made to remove these words from the top 15-word count.

The city media most frequent keyword counts were compared to the city policy most frequent keyword counts. Based on each comparison, 12 themes based on climate risk, resilience planning and infrastructure adaptation planning were created. Words were placed into these themes, which were used for three types of analyses. For each analysis, word count values were reclassified with a scale of 1 to 10 for each theme. Reclassification is important as it allows us to reassign a common value to dissimilar word count values between corpus comparisons. Each type of analysis produced some themes that were different from each other due to varying characteristics of city and text source word counts.

Several comparisons were made during analysis. First, we wanted to see how the language of policy compared to city government engagement with the media about Hurricane Sandy and climate change policy within each city. One set of comparisons was done for New York City, and a second set of comparisons was done for Boston. The rationale behind doing these sets of comparisons was to understand how each city compared in how they communicated the language of their climate change policies within the post-disaster context. This was guided in part by our initial review of each city's climate change policies, and in part trying to understand the critical role of media in garnering political support for policies, especially during times of disaster. Second, we wanted to understand how the climate change policy language of New York City and Boston differed to qualify our initial observations about each city's policy stance. Third, we compared how city engagement with the media post-Hurricane Sandy differed between Boston and New York City.

Each of the three comparisons utilized radar charts to understand and qualify where themes overlapped or were divided between comparison texts. Radar charts are useful for this type of analysis because we are comparing multiple word count values over common variables (word count themes). Each theme is given an axis, which is circularly arranged around a central point. The axes share a common scale, which was completed in the previous step by reclassifying the word count values into a scale of 1 to 10. Radar charts assist with the interpretation of results by being a descriptive tool for multidimensional data and displaying analyses in a simpler and more effective way for communication of results (Saary 2008). It allows this research to closely analyze the text to

identify and compare which values are emphasized, rare or absent (Bednarek and Caple 2014). In addition, when studying the language of multiple bodies of text, descriptive types of data representation such as radar charts allows this study to strengthen its interpretation of patterns within and between New York City and Boston through analyzing plurality of word usages. For instance, it helps this research identify attributes that contribute to the positionality of city governments regarding their communication of policy changes following an extreme weather event. For the following discussion of the radar charts, the themes were used to code media and policy content within ATLAS.ti to examine smaller bodies of text and choose exemplar statements representing identified themes.

5.0 **Results**

Table 2 summarizes the top 15 keywords from each city's media and policy corpus. The words are in order from largest to smallest word count. Climate risk words such as climate, sea-level rise and flood made up the top word counts for Boston media and policy text, and for New York City's media text. The top words for New York City's policy text were related to infrastructure adaptation planning, such as energy, and buildings, and reactive language such as "complete/completed". New York City's policy corpus stands out from the other word counts in the list due to this difference. The majority of the words in New York City's policy corpus pertain to subjects such as resilience and community, and other energy topics such as waste and emissions. Boston's policy corpus word count consists of words covering climate, flooding, equity, carbon emissions and design.

Table 3 summarizes the keyword themes from Boston and New York City media and policy corpus. There are 18 different themes that emerged from the three analyses. While themes between analyses for both cities did overlap, there were themes that did not overlap, hence why some themes only have keywords from one city. The table notes the definitions of each theme. These definitions emerged from qualitative analysis of how the words were generally used within the text. The themes appeared to refer to many different aspects of development, carbon emissions, climate resilience measures, sea-level rise and policy and program progress.

The first radar chart (Figure 2), compares the media text representing the city Boston's position within the context of Hurricane Sandy and climate policy versus their climate change policy text following the storm. The media discourse is largely concentrated (scale of 10) around climate and the physical aspects of climate change such as sea/sea-level rise and flood/flooding. The second largest concentration of themes surround resilience, and community (scale 5 to 6). The climate change policy discourse following Sandy was largely concentrated across a broader set of themes. Scale ratings of 10 were exhibited among themes of access/public, and infrastructure/energy/barrier/transport. Climate was the second most dominant theme within the policy text (scale of 9). While subsequent dominant themes were flood/flooding, and residents/community/communication (scale of 8). The next significant theme (scale of 7) was resilience/resilient. There are several themes in which these two bodies of text overlap. They overlap between themes of flood/flooding, climate, design/plan, infrastructure/energy/barrier/transport, resident/community/communication, equity, resilience/resilient and public. However, each body of text addresses these themes to a different extent when compared between each other.

The second radar chart (Figure 3) focuses on New York City, using the same text comparison as in figure 2. New York City's engagement with the media had a dominant focus on themes of climate and sea/sea-level rise (score of 10). The second dominant theme was "sandy" (score of 8). NYC climate change policy following Hurricane Sandy, similar to Boston, covered a

wider range of themes, but these themes were mainly different. Dominant themes within policy (score of 10) were energy, complete/completed, and building/buildings. Second most dominant themes (score of 7 to 9) were initiative, plan, program and resiliency. The policy and media text overlapped significantly across several themes including plan, building, and resilience.

Comparison between New York City and Boston are displayed in Figure 4 and 5. Figure 4 compares the discourses of climate change policy between New York City and Boston. Each policy dominantly focused on different themes with small amount of overlap. New York City policy dominantly focused on themes of energy and completed (score of 10), with lesser but still dominant focus on buildings (score of 9), initiative (score of 7) and program (score of 6). Boston's climate change policy dominantly focused on resilience and community (score of 7), with the second most dominant focus on design (score of 7). Significant overlap between the city policies was observed for themes of community, and public. The largest difference in themes between the city policies was on equity, resilience, design, initiative, completed and energy.

Figure 5 compares media engagement between New York City and Boston. Both texts had significant overlap between each other, meaning the theme scores were high (score of 7 to 10) and there wasn't much difference between theme scores (less than 2 score difference). The highest scoring overlap (score of 10) was on themes of climate and sea-level rise. The second most significant overlap was on storm, community and resilience. Perhaps the biggest difference between scores was on themes of people, residents and Sandy.

6.0 Discussion

The results from this analysis reveal stark differences but also similarities between each city's media engagement with the public and their subsequent climate change policy responses post-disaster. Differences were expected as one city was directly affected (New York City), while the other city (Boston) experienced Hurricane Sandy through local media coverage, where impacts can be seen and to some degree experienced. It has been found that extreme weather events bring increased public media attention to climate change (Sisco et al. 2017), but in what ways did Hurricane Sandy bring formal attention to climate change for New York City and Boston?

The results of our examination address different aspects of the relationship between extreme weather events, media and policy transitions. Comparing the language of policy to government engagement with the media about Hurricane Sandy within each city helps understand the characterization of the post-disaster policy window. While Boston was minimally impacted by Hurricane Sandy compared to New York City, the imagery of destruction in New York City prompted serious inquiry about how the city could prepare for a similar situation. As evidenced by this study's content analysis in figure 2, the themes of climate and flooding significantly overlap between Boston's climate change policy and the government's engagement with the media. Immediately following Hurricane Sandy, *The Boston Globe* reported that

> During Hurricane Sandy, Boston was fortunate that Sandy missed high tide by five and a half hours, avoiding flooding that could have engulfed 6.6% of the city. The combination of high tides, extreme weathers, and development along the coast means that future flooding poses greater threats to infrastructure and commerce (Schworm et al. 2012).

This type of media attention is exemplary of *Climate Ready Boston* Policy's rationality behind preparing the city and its people for long-term flooding impacts from frequent storms. In the city of Boston's media communication announcement to promote the policy, *Luck Is Not a Policy We Can Count On: Boston Takes a Proactive Approach to Climate Adaptation*, it is stated that

After witnessing what happened in New York City during Hurricane Sandy, Boston city leaders were determined to get ahead of their potential problems. To do so, they convened a diverse coalition of residents and worked to craft a comprehensive plan to adapt to climate change (Averett 2017).

Hurricane Sandy brought attention to risk from climate change impacts in Boston. The overlapping of word themes shows language emphasizing climate and its physical hazards within both media communication and policy. However, media communication by the government was largely different from their climate change policies' overall language. The introduction of the *Climate Ready Boston* directive in February 2013 was a targeted policy change based on adapting people, neighborhoods, and cultural and economic assets to the future impacts of a changing climate. Climate preparedness dominates the narrative as evidenced by its word themes dominated by language of public/access, and building barriers and protecting infrastructure, energy and transportation systems. Language of resilience is also emphasized, specifically providing guidelines for city departments to include climate change impacts in their planning. The city of Boston's inclusion of rapidly changing climate scenarios into city planning is evident of their policies relying on being flexible and adaptive in order keep up with changing scientific research and environment shifts (Rosenzweig and Solecki 2014).

Divergent themes between government media communication and city climate change policy is also observed in New York City. Media discourse surrounding Hurricane Sandy focused strongly on themes of climate, sea-level rise and plans, which is expected as the city was directly impacted by the storm. This finding in many ways can be related to the cost of direct impacts, which incurred over $19 billion in damages (Colvin and Shapiro 2012), including water damaged infrastructure, and housing displaced communities across the boroughs of Brooklyn and Staten Island. As evidenced in communication by the *NYC Mayor's Office of Recovery and Resiliency*

After the storm had passed and the water had receded, a new reality emerged: New Yorkers must think differently about our relationship with a changing climate. Sandy also laid bare many pre- existing challenges in our communities and vividly highlighted our physical and social vulnerabilities to coastal storms and rising seas (NYC Mayor's Office of Recovery and Resiliency, 2019).

This text illustrates New York City acknowledging not only an open policy window but using this window to frame the city's challenges to rationalize their position on climate change policy in response to Hurricane Sandy (Rosenzweig and Solecki 2014). However, the dominant themes within media text are different than the language of New York City's actual climate policies. New York City's climate change policies illustrated dominant themes of energy, building, complete, resilience and initiative. As stated within *OneNYC*,

The City will upgrade private and public buildings to be more energy efficient and resilient to the impacts of climate change; adapt infrastructure like transportation, telecommunications, water, and energy to withstand severe weather events; and strengthen our coastal defenses against flooding and sea level rise. We will strengthen homes, businesses, community-based organizations, and public services to reduce the impacts of disruptive events and promote faster recovery (City of New York 2015).

While the media's language focused on the physical aspects of climate risk, policies were focused on themes of physical maintenance of buildings and energy reduction measures to improve resilience. Strong emphasis was present on many themes related to short-term reactionary measures, emphasizing ideas of completion and energy reduction related to buildings and development. While these themes can be attributed to the large-scale damage of Hurricane Sandy, it is also evidence of the consequences of local policymakers not acting on risks to the Northeast in the past and promoting policies guided by "rent seeking behavior" (Wagner et al. 2014). It also shows the policy implications of the failure to integrate immediate lessons from the aftermath of extreme weather events, which limits a city's ability to transform awareness of the event for the public and within future formal responses. For instance, New York had experienced at least two past significant flooding events – one in 1947 and another in 1960. While each event was associated with wide scale flooding and specific adjustments were made, including protecting a local airport from runway flooding, many flood control actions were not taken and the understanding of flood risk in coastal communities was largely minimal in advance of Hurricane Sandy. Some of the major flood protection strategies first proposed after the previous flood of record – Hurricane Donna in 1960 – were re-proposed following Hurricane Sandy.

When comparing New York City and Boston's climate policy, figure 4 shows they are quite opposite of each other despite some thematic overlap. Within this analysis, we wanted to strengthen our interpretations of initial observations about each city's policy stance. Once again, we are seeing New York City's climate policy focus on reactionary language such as completed, and infrastructure related language of energy and buildings. This contrasts with the dominant themes of Boston's climate policy which emphasize resilience, communities and design. We can contribute these differences to the proximity of the storm influencing how each city experienced Hurricane Sandy differently (direct versus indirect impacts). New York City's policy response supports many observations from disaster and policy literature about directly impacted areas, which have observed governments to return to or accelerate status quo policies that support development but make small efforts to address root causes of disaster following an extreme event (Pelling and Dill 2010).

New York City and Boston were most similar in terms of city engagement with local media about Hurricane Sandy and climate change policy. Figure 5 illustrates the extensive overlap of themes within the media text. Both texts heavily focus on climate and sea-level rise and have similar coverage of storm and community. As we examined the themes further by using coding, both cities had to answer to critiques of equity within their resiliency measures, which is possibly why they overlapped so much in the theme of community. As Rios notes in Boston

> The move toward resilient buildings at the Eastie waterfront is the result of private investment—unlike for Moakley Park, which will come from taxpayer dollars—and it causes some in East Boston to ask who the push for climate resilience is for: people who already live there, or those who have yet to come (Rios 2019).

The observations of media coverage critiquing Boston's resiliency plans are consistent in some respects with local media coverage of New York City's resilience plans. While *OneNYC* was meant to provide guidelines to diminish the influence of capital interests through anti-poverty goals, communities displaced by Hurricane Sandy held doubts if there was any fundamental change in the ways in which the city was approaching climate change and development projects in high-risk areas, as noted by Milman reporting on displaced city residents 5 years after Hurricane Sandy

A rezoning process has altered rules for buildings in vulnerable areas, such as the southern edge of Brooklyn, the east side of Staten Island and the East Village area of Manhattan. But no areas have been completely barred from development and hard decisions over the viability of increasingly soggy parts of the city have been largely deferred (Milman 2017).

Questions were also raised by the New York City Environmental Justice Alliance (NYCEJ) about areas of priority, specifically concerning coastal resiliency measures for Hunt's Point, an area that is home to a major food distribution center for the city and low-income communities, of which both are extremely vulnerable to flood-risk (Mock 2016). Distribution of funding to lower Manhattan and other areas severely impacted by Hurricane Sandy received priority, but protection measures for high-risk areas not impacted by Sandy were seen as needing higher priority.

The excerpts chosen for this discussion do not provide an entire representation of each city government's positionality on extreme weather events and policy change from our data and analysis. However, they represent the broader characterization of the post-disaster policy window found within our study. More specifically, they display the changing of government positions between media communication and policy. By studying the language within each city's post disaster policy window, our findings show that both cities are making attempts to transform their policies to build urban resilience to extreme weather events. A critical discourse moment can push for urban resilience, but in different ways depending on the proximity of the extreme weather event. During this moment, there are attempts to produce, reproduce or transform knowledge for the public and within government. It is evident from each city's engagement with the media, they are relying on similar types of scientific knowledge to frame urban resilience policies. These findings show that while their policies relied on different key concepts, both cities felt this was a moment to bring in scientific evidence to legitimize their responses to Hurricane Sandy, and to justify the challenging, but similar, position they viewed themselves in post-Hurricane Sandy.

7.0 **Conclusion**
This paper used keyword analysis and critical discourse analysis to examine government engagement with media to characterize the post-event policy window in two settings: Boston and New York City. Analysis focused on the presence and character of a post-disaster policy window following the storm. The results show several findings. First, both cities were similar in the language they used to communicate with the media about post-Hurricane Sandy impacts and policy implications. Second, the language of each city's policy responses was different from the language they used in media engagement post-Hurricane Sandy. And eventually, each city's policy responses post-Hurricane Sandy was different from each other.

Whereas Boston approached climate adaptation and mitigation through a forward-looking preventative framework focused on community resilience, New York City's approach emphasized ways to build back and maintain the city's existing infrastructure, prioritizing continued investment and growth over the needs of displaced or increasingly vulnerable communities. Yet, our findings also show that New York City and Boston significantly overlap in how they communicate aspects of current and projected climate risk such as sea-level rise and flooding, suggesting that city engagement with the media post-Hurricane Sandy relied heavily on scientific knowledge to provide legitimacy to their claims of not only what kinds of impacts Hurricane Sandy made, but what to anticipate with future extreme weather events. By acknowledging the need to prepare for changing patterns in extreme weather events, the governments' engagement with the media and eventual policy response illustrate that both cities recognize that they can be transformational in their

thinking about urban resilience. This observation supports findings from other studies that while a government may be reflective of their actions respective to environmental shocks, and "assimilate" aspects of resilience into formal responses, they may also still view established approaches to policy as being sufficient to deal with extreme weather events (Simpson et al. 2019: 5).

The findings from this paper contribute to research on the media's role in bringing public attention to climate change, specifically focusing on government engagement with media to discursively construct post-event policy windows. We used this framework to compare the two cities' responses that were directly and indirectly affected by the same extreme weather event using both media and policies as our sources of data for comparison. Our approach differs from previous studies that typically used only media text for similar types of analysis. And while previous studies have stressed the media as influencing policymaking, the current findings show there is little connection between how each city engaged with the media and its influence on policy response. However, we contend that the media is important for understanding the post-event policy window, as government relies on this medium to communicate during times of post disaster and garner political support for urban resilience policy and programs.

In summary, the findings present a complex picture of the relationship between media engagement and policy outcomes. The divergent sets of policies Boston and New York City pursued owes more evidence to the proximity of Hurricane Sandy playing an influence on the type of policy outcome than media coverage itself. As many disaster studies have shown and this study supports, places directly impacted by an event tend to be reactionary and revert back to status quo policy as opposed to being transformational (New York City). However, this study also shows those indirectly impacted by the same event might tend to be long term or transformational in their approach to policy (Boston), since financial priorities are not so much focused on disaster recovery and response.

Studying the discursive construction of the post-event policy window pushes for further inquiry into the extent of media influence on policy response. Fundamental questions remain as to whether and how the reactive policies differ or are similar from proactive policies. Key differences could include whether the responses involve structural, managerial or operational changes, the type and conditions of governance shifts, and equity implications. And more generally, which type of response, either reactive or proactive, is associated more with the potential for transformative policy shifts.

This study only shows one part of the discursive construction of the post-event policy window. We focused on formal responses and formal engagement with media. Additional studies are needed that incorporate diverse sets of text (both formal and informal) to explore characterizations of the post-event policy window. Potential directions for future research are to incorporate analyses that expand to different groups of actors such as communities and non-governmental organizations within the post-event policy window to examine their positionality with respect to extreme events and policy changes, and the discursive devices they use to communicate their positions through media. Employing diverse sets of methods to study post-event discourses and the influence of positionality on these discourses would allow for even more nuanced understandings of the post-event policy window.

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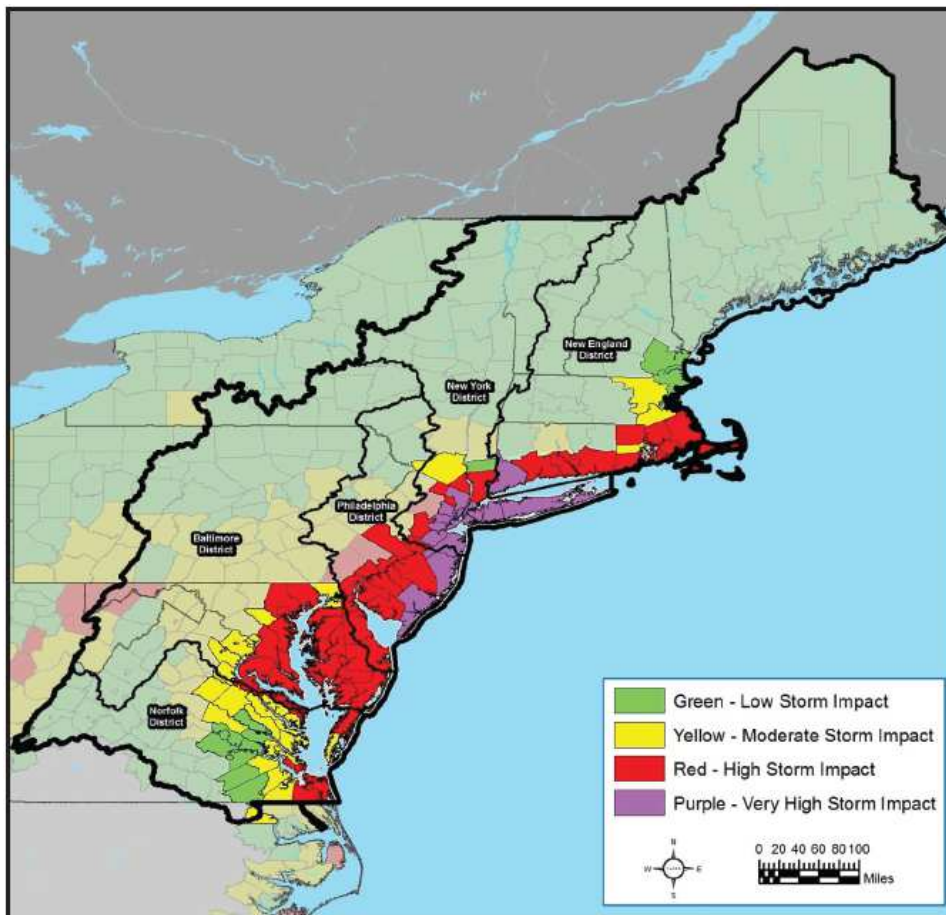

Figure 1. Areas Impacted by Hurricane Sandy with Highlighted Counties Included in NACCS Study Area (FEMA MOTF 2013)

	New York City	Boston
Policy	• New York City's Roadmap to 80 x 50 • OneNYC • plaNYC	• Climate Ready Boston 2013 • Climate Resilient Design and Standards and Guidelines • Climate Ready Boston 2016 • The BluePrint: A preview of the principals and framework for Boston's resilience strategy • Resilient Boston: An Equitable and Connected City
Reports	• OneNYC Progress Report 2017 • OneNYC Progress Report 2018 • One City Built to Last Technical Working Group Report • Coney Island Creek Resiliency Study	• Carbon Free Boston Social Equity Report 2019 • Coastal Resilience Solutions for East Boston and Charlestown • Greenovate Boston 2014 Climate Action Plan Update

Table 1. Policy corpus for New York City and Boston

New York City		Boston	
Media Corpus	Policy Corpus	Media Corpus	Policy Corpus
climate	energy	climate	climate
sea/sea-level-rise	completed/complete	sea/sea-level-rise	flood
sandy	buildings/building	flood/flooding	energy
storm	initiative	storm	design
hurricane	community	resilience	public
plan	program	sandy	equity
people	resiliency	residents	barrier
resiliency	plan	water	community/communities
water	construction	coastal	resilience/resilient
adaptation	waste	infrastructure	protection
housing	emissions	plan	development
local	housing	hurricane	transportation
planning	neighborhood	people	carbon
residents	public	public	access
buildings	water	community	income

Table 2. Top 15 keywords from media and policy corpus for New York City and Boston

Themes	Definition	Boston Keywords	New York City Keywords
Climate	Used within corpus to refer to physical aspects of climate risk or a changing climate	Climate, climate change,	Climate, climate change
Resilience	Mainly used to refer to strategies that promote resilience, or resilience-based measures that include housing and community	Resilient, resilience	Resilient, resilience, resiliency, housing, construction, local, community
Infrastructure	Refers to systems such as transportation or services such as energy that a city relies on to function	Infrastructure, barrier, transportation, energy,	

Planning	Mainly refers to any aspect of urban development that requires sketching out activities	Design, plan	Design, plan
Community	Mainly referred to within text to mean local collections of households or residents	Residents, community, communities	
Energy	Used within text to mainly refer to processes that require energy usage such as waste disposal and consumption of energy from fossil fuels producing CO2 emissions		Emissions, waste
Sea/sea-level rise	Terminology was mainly used within text to refer to sea level rise hazard.	Sea, sea-level rise	Sea, sea-level rise
Program	Mainly used within text to refer to a set of activities that build climate preparedness for municipality or community		program
Initiative	Used within text mainly to refer to a new plan to increase resilience of the city		initiative
Public	Used within text to mainly refer to public access to resources such as transportation and health services or for protecting public from hazard	Public, access, protection	
Equity	Used within text to mainly refer to expanding access for city residents to affordable housing, and addressing environmental justice issues such as reducing resident exposure to environmental conditions that negatively impact health	Equity, income, health	
Storm	Refers to extreme weather events that was not only hurricane sandy but about future storms, and storm surge	Storm	Storm
Flooding	Refers to impacts from flooding, flood protection, and designation of flood zones	Flood, flooding, water	
Complete	Referred to mainly within text as milestones reached within climate resiliency plans		Complete , completed
Building	Mainly defined as infrastructure being built or retrofitting		Building, buildings

	buildings to become more energy efficient		
Hurricane	Referred to mainly Hurricane Sandy or commentary about hurricanes becoming a regular occurrence	Hurricane	Hurricane
Housing	Used within txt to refer to affordable housing	Housing	Housing
Water	Referred mainly to descriptions of water from flooding and storms	water	water
People	Referred mostly to population being exposed to water hazards or people not being able to afford to relocate or repair homes from Hurricane Sandy	people	people

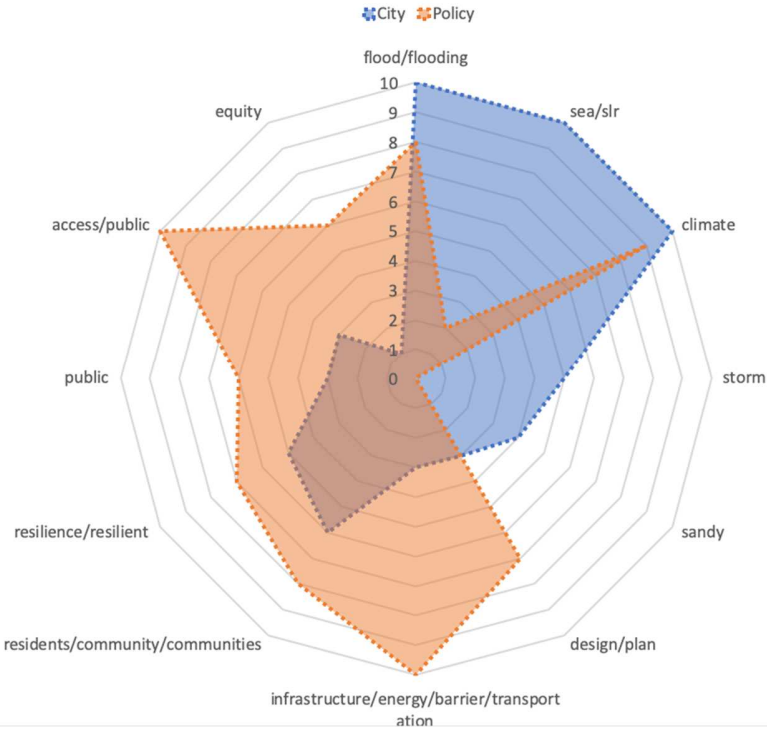Table 3. Keyword themes for Boston and New York City

Figure 2. Comparing keyword themes between Boston city government engagement with media versus their climate policies
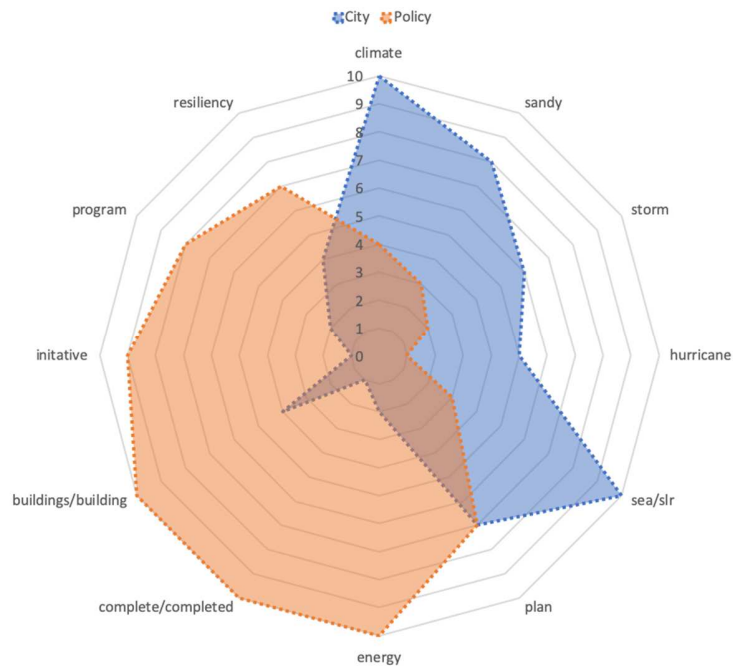

Figure 3. Comparing keyword themes between New York City government engagement with media versus their climate policies
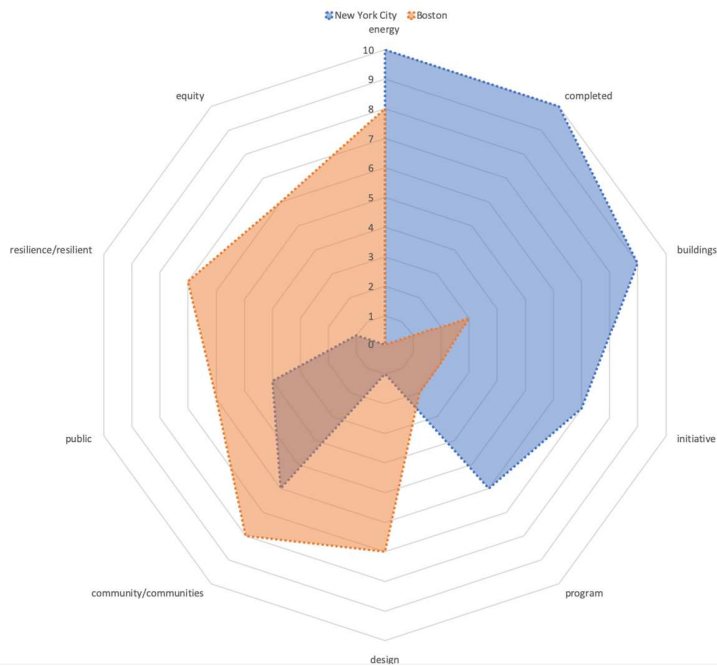
Figure 4. Comparison of keyword themes between Boston and New York City climate policies

Figure 5. Comparison of keyword themes between Boston and New York city government engagement with media