Ohio Storm Activity Analysis and Visualization Strategy

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Ohio Storm Activity & Background and Audience Analysis

Overview

The National Oceanic and Atmospheric Administration (NOAA) sponsors The National Centers for Environmental Information Storm Events database, which is a collection of records that documents several aspects of storm events in the United States. The records contain data from 1950 to 2019 and include information on storms and other significant weather phenomena that have caused loss of life, injuries, property damage and disruption to commerce (NOAA, 2019).

The resources necessary to restore order and health to an area cost state governments millions upon millions of dollars and such action requires allocating monetary reserves and emergency personnel and equipment planning. Such planning must include risk assessments, first responder dispatching, public affairs and media cooperation, damage estimates and restoration efforts. To assist in minimizing possible damage and loss, the public should also be well informed on safety precautions and necessary actions, if and when they find themselves in life-threatening circumstances.

Ohio State Budget Office

The Ohio state budget office has asked for a detailed presentation to be given regarding storm activity to assist them in emergency resource planning and for the procurement of a monetary reserve for areas most effected.

In order to effectively illustrate the requests of the state budget office, the presentation will need to include details of specific regions effected and their particular damages, measured in monetary value. By understanding the damage estimates, the budget office can better organize and implement a plan that is appropriate for the needs of the region. The office will need to understand the basis of the estimates, the amount, the specific assets that have been damaged and the location of the assets.

The office, as it is a body of state elected officials, includes various levels of education, age, differing languages and culture, but these variables will not have a deep effect on their ability to carry out their duties, as they have taken on the responsibility of their role to address the budgetary concerns for the state.

Ohio Emergency Management Agency (EMA)

The state's emergency management agency (EMA) has asked for an interactive dashboard that can be utilized to analyze storm data to accomplish risk assessments, resource allocation and public affairs and media interaction, as it relates to damage estimates. This dashboard will help the organization identify patterns within the data and determine vulnerabilities within their efforts.

To address the needs of the state's emergency management agency (EMA), the dashboard tool will need to include several layers of detail and comparative analytical options, as their role consists of orchestrating the procurement and distribution of many agents of assistance. By utilizing the dashboard, the agency will be able to established a detailed understanding of specific areas of concern and how to allocate resources and how to communicate the situation to

local authorities. The members will need to have a high level of familiarity with the dashboard

navigation tools and the relative nature and definition of the data values, as they relate to one

another.

General Public

The state has also requested an informative pamphlet to be created, in an effort to help

the public become more prepared for such events and to understand the dangers of such weather

activities.

To communicate the concerns and readiness tips to the general public, the informative

pamphlet must be concise and simple. The members must know the seasons of high risk, the

behaviors of particular storms, the effects and possible outcomes. They must also be aware of

safe and unsafe actions to take during such events to ensure they do not further endanger

themselves or their families, as well as life-saving actions in case they or someone else becomes

injured. Emergency response and state representative contact information must also be included

to expedite all efforts of assistance.

Objectives and Considerations

Due to the nature of these requests and the limitations of the Storm Events database,

external sources will need to be included in each presentation. Public affairs and media

interaction protocols and damage estimate variabilities vary from region to region and asset to

asset, while public precautionary actions are more generalized as personal readiness requirements.

These aspects will be discussed and answered by incorporating external sources. These outlined objectives will comprehensively address the concerns of the Ohio state governing members and the general public, with the ultimate goal of reducing risks, developing effective operational procedures and adequately budgeting damage reparations in the event of future storm activities.

Data Visualization Strategy

Implementation of Information Delivery Platforms

Ohio State Budget Office

PowerPoint effectively presents the information in a simple and organized fashion, of which is coupled with graphics and metrics that supplement the information being discussed. "PowerPoint allows you to use images, audio and video to have a greater visual impact. These visual and audio cues may also help a presenter be more improvisational and interactive with the audience" (Bell, n.d.). Conclusively, this tool will uncover the data and plausible actionable insights as it relates to planning and budgeting for storm events in Ohio.

The presentation aspects of PowerPoint, along with the storm activity data, will communicate which regions of the state require more funding for response and rehabilitation efforts. By presenting the information regarding emergency response planning and the procurement of a monetary reserve, the budget office will be empowered to address the details of the objectives with confidence and accuracy. By understanding the damage estimates, the

budget office can better organize and implement a plan that is appropriate for the needs of the region. The office will need to understand the basis of the estimates, the amount, the specific assets that have been damaged and the location of the assets, of which PowerPoint has the ability to deliver clearly and concisely.

Ohio Emergency Management Agency (EMA)

The Ohio Emergency Management Agency (EMA) will utilize an interactive dashboard to analyze storm damage data for the purposes of risk assessment, allocating stand-by emergency equipment/resources, and responding to media inquiries regarding damage estimates during and after weather events. To accomplish this, the Ohio EMA will have access to the Power BI Desktop platform, which will host the interactive dashboard. The dashboard will contain the respective dataset, with all the contained variables residing in the 'Field' tab.

Foundational visualizations will be established prior to organizational utilization to give the agency a basic idea of how the data variables interact with one another. The use of the data will then be theirs to analyze, manipulate and document. Features of the Power BI Desktop allows the users the ability to develop their own visuals, if they find that the prior established graphics doesn't not comprehensively address their concerns. The dashboard visualizations will display areas of both high and low risks for storm events based upon tracking history, as well as population concentrations throughout specific regions to assist with initial areas of concern for emergency responders.

Ohio general public

The general public will be issued an informative pamphlet to help them understand the dangers of various storm events, preparation suggestions, actions to take during an event, as well as the contact information for emergency response. Utilizing a pamphlet with clear and concise directions, as well as reasonable preparation suggestions, will allow the general public to not only be ready for a storm event, should it happen, but they will also be confident that during and after the event, they are safe and will be helped by their community members and their state representatives.

Visual Arrangements

The Ohio State Budget Office PowerPoint will begin with a review of the States' storm history to better understand areas of concern and in need of improvement. Then, areas that have been damaged by storm events more often than others, as well as areas that are at high risk, will be highlighted to ensure that the department understands the needs and characteristics of such regions, as well as the value of such damages. Based upon previous funding for such damages, the office will be able to determine an accurate and conservative amount that will be needed in order to establish a monetary reserve for future occurrences and as such they will be able to develop a plan of action for emergency response resources.

The Ohio Emergency Management Agency (EMA) interactive dashboard will include several visualizations that presents the agency with the overall idea of high and low risk areas,

accomplished by a colored-coded map, as well as areas that have high concentrations of citizens and assets, to which would be of interest to emergency responders. The concentrations would be illustrated using a bar chart or scatterplot, which effectively communicates distributions clearly.

The general public informative pamphlet will begin with the cover page communicating the purpose and the contents of the document, "Storm Safety and Emergency Contact Information". The initial page will include an overview of typical storm formations, their impact on the environment, personal property and life. The following page will present suggestions for preparation actions to take prior to a storm event, as well as actions to take during and after the event. Finally, the document will close with all relevant contact information for emergency response, state representatives, media and local community post-event meeting places.

References

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