**Final Project**

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**Background and Audience Analysis**

1. Background

I am working as a data scientist for the state of Maine government. My assignment is to use data collected in 2015-2016 by the National Centers for Environmental Information to create three different types of visualizations.

* PowerPoint presentation for the State Budget Office to help establish need-based monetary reserves and allocation of emergency resources.
* Interactive dashboard for the State’s Emergency Management Agency that can be used in analyses of storm damage, risk assessment, emergency equipment and resource allocation for public relations communications about damage estimates during and after weather events.
* Informational pamphlet for the general public that engages and communicates when, the importance of, and how to be prepared for different types of severe weather events in Maine.

The provided data should be sufficient for creating the PowerPoint and Interactive dashboard; however, it does not contain general weather event safety information. I will need to utilize other sources for informational content beyond statistics to make the pamphlet.

Any time you make a prediction, there will always be uncertainty. Statistics, analyses, and the data presented in these visualizations reflect severe weather events of 2015-2016. Data from a few years ago will impact the accuracy of predictions for the fiscal year, July 1, 2022 - June 30, 2023. According to *Data Points*, predictions about the weather are educated guesses that will always have “uncertainty attached to it” (Yau, 2013).

1. Audience Needs

Overall messages will differ for each of the three target audiences. The priority of the State Budget Office is the general cost and allocation of resources while the Emergency Management Agency is going to need the most granular details to aid in their responsibility to respond to inquiries. People in these audiences will have similar education, background knowledge, and familiarity with severe weather event terminology. Members of the general public are a different story. During the months of January, June, July, August, and December, the population in Maine includes a significant number of tourists. Tourists come from all around the world during these months to visit for various reasons or work at a local business. Anyone can be a member of the general public, so their communications need to be easily understandable and suitable for people with little to no background and experience with severe weather in Maine.

1. Presentation Methods

Presentation methods for our audiences cater to strengths and provide information that is important to them. The content of the PowerPoint will be of a high analysis level and allow members of the State Budget Office to understand the key take away points in the context of supporting data. A presentation gives the presenter the opportunity to share their insights and office members a chance to discuss the material. Creating an Interactive dashboard for the Emergency Management Agency will give agency members the freedom to look at data from different angles. Having a continually updating display will also equip agency members with the tools to answer future queries. Pamphlets are a great way for members of the public to reference general safety information and precautions because power and internet outages are part of life in Maine. Information on these handouts need to be engaging and easy to understand because the general public has people from all walks of life.

**Data Visualization Strategy**

State Budget Office

*Delivery Method*

I plan to use Power BI to create visuals for the State Budget Office’s PowerPoint presentation. To make the presentation, I will use Microsoft PowerPoint. PowerPoint presentations are great for showing big picture visualizations and their key points. The State Budget Office audience is primarily interested in data that will help with the allocation of funds throughout the state on a need-based system. Due to their preexisting knowledge and expertise, a PowerPoint presentation will allow for the presentation of high-level content and lay the foundation for engaging discussions among experts.

*Types of visual displays*

PowerPoint presentations tend to be shown on a big screen. Two types of visuals that should be included are maps and accompanying matrices. The Matrices will contain supporting information about sustained damages and impacts of severe weather. Text on the presentation should be kept short and not be a verbatim replica of what the presenter is saying. Important visuals should also have their own slide so that way the data can speak for itself. In that situation, the presenter becomes a narrator to help showcase the data’s story.

State’s Emergency Management Agency (EMA)

*Delivery Method*

The state’s emergency management agency will need to have access to the most current information to continually provide current information to people and organizations throughout the state of Maine. The weather in Maine changes quickly. Having access to a live, interactive dashboard will be important before, during, and after severe weather events. I will use Power BI to create an interactive dashboard for the State’s Emergency Management Agency. Interactive dashboards keep the focus on the data. An interactive dashboard by Power BI will allow users to view, filter, and visualize granular data in many ways. Agency members will also be familiar with all the severe weather terms and related statistic numbers, so an explanation about those values will not be needed. Creating interactive dashboards for the Emergency Management Agency will enable agency members to easily access current, relevant information.

*Types of visual displays*

I plan to have different pages in the dashboard so that agency members can efficiently look through different types of data about severe weather events. The scope and granularity of information will vary on each page. Information needed varies for risk assessment, allocating stand-by emergency equipment and resources, and responding to media inquiries. There are a lot of different kinds of statistics about severe weather events. A page that focuses on the most impacted areas will help with identifying areas in Maine. Analyzing the different types of events and their occurrences will help the agency determine if there is a seasonal aspect for resource allocation. A nation-wide page will allow the agency to view Maine’s weather in a larger context. It will be useful to view the data from different angles.

Public

*Delivery Method: Pamphlet*

I choose to make a pamphlet due to Maine’s demographic and internet accessibility. Even though it seemed like everyone needed to be able to access the internet throughout the pandemic for various reasons, that ability proved to be unreliable during severe weather. Cell phone coverage during severe weather is continually unreliable. Maine has the oldest population demographic in the nation. As a result, many residents are not comfortable with using technology. Before, during, and after an emergency, it is important that members of the public have access to pertinent safety information. To help with distribution of these pamphlets, I will partner with local community centers and gathering places to make these pamphlets publicly accessible. Additionally, the government should work with the towns and post office to ensure that a copy is sent to every Maine resident after the water gets turned on for summer residents in the spring and shut off in the fall. Members of this audience are not expected to have any preexisting knowledge and experience with severe weather in Maine.

*Types of Visual Displays*

My tri-fold pamphlet contains informational text and visualizations about the top five most common types of severe weather events in Maine. The visualizations are simple, and their message is easily discernable in a small space. The front cover has a photo, question, and quote about severe weather. Inside the pamphlet, we have a section dedicated to understanding the general format of how weather is presented and categorized in Maine. After this general information, the top five most common severe weather events are grouped by the months of the year they are most likely to occur. Each type of severe weather contains a short, description. The Be Prepared section of the brochure contains a checklist of year-round supplies and needs to consider. Visuals for the pamphlet vary from clip art to data visualizations and are determined by context.

C. Visual elements, granularity, sophistication and audiences

The general public is going to need visuals that are easy to understand and have little to no granularity. Clip art and bar charts are two examples of appropriate visualizations. Specific visual cues like length, direction, and hue will be beneficial in the brochure. Cues like position, volume, and saturation are more complex, and would be more suitable for the State’s Emergency Management Agency and Budget Office. Due to the nature of print media, I would also want to avoid using saturation because saturation of a color varies from printer to printer. All visuals should stick to summary and single statement functions.

Visuals for the State’s Emergency Management Agency need to be sophisticated and contain a high amount of granularity. Details are important to this well-educated audience and can make or break decisions. The State’s Emergency Management Agency’s responsibilities go beyond business operations, so they need to have access to advanced data visualizations, that allow “the autonomous or semi-autonomous examination of data or content to discover deeper insights, make predictions, or generate recommendations” (Knight, 2017). A dashboard will offer a dynamic data environment where Agency workers will be able to interact with data in real time, simultaneously view multiple different visualizations, and facilitate understanding big data.

The PowerPoint visualizations for the State budget office will have less granularity and sophistication than the Emergency Management Agency, but more than the brochure for the general public. All slides will need to abide by state logo and branding guidelines. The goal of the State Budget office is to: establish a monetary reserve and allocate stand-by emergency resources in areas where they are most needed. As a result of this goal, members of this audience need to know granular details only for the locations with the most damage and how that relates to the big picture shown in the data. This can be accomplished through bullet points to illustrate the big picture, followed by static, appropriate graphs and charts. Text on the slides should be limited and describe overall points, while verbal material presented should contain more details about the data, process, and findings.

D. Formatting guidelines

Print media and presentations need to follow marketing and branding requirements. The state of Maine does not have official branding requirements for the font and its size. All logos will need to meet the State’s requirements. Marketing and branding requirements are maintained online.

On brochures, their logo must be centered and “appear immediately after the text with a minimum of ¼-inch of white space separating the text from the logo,” and “all branding must be approved by the Department’s Communications Office prior to printing” (Lambrew, 2020). White space needs to be an element for communications with this audience for a couple of reasons: it helps to establish visual differentiation in the content and makes the brochure more approachable. Using a consistent visual hierarchy is important. Headers for each different type of information should be bold and a larger size than the body text. There should also be a little bit of white space that separates all types of information in each section. Margins must also be uniform throughout the brochure.

The analytic audience of the State’s Emergency Management Agency will need a combination of graphs and plots. All figures will need to be correctly and clearly labeled. Appropriate foot notes will need to be added to cite sources and note nuances. Select an appropriate theme for the dashboard’s look and feel. Background colors and designs should not take away from the data.

The State budget office’s PowerPoint will need a combination of visuals and text for each major point. A summary slide at the end with bullet points of key take-aways will also be beneficial. There should only be one clear content focus for each slide. Titles of the focus for each slide should be prominently displayed at the top. Backgrounds, fonts, and images should not be distracting. Unused space on a slide will add focus and weight to the slide’s message.

E. Feedback methods, comprehension or technical problems.

The brochure will have an official state help line listed above the state logo that people can call if they have any questions and feedback. There will also be an email listed for convenience and to offer members of the public some flexibility. Challenges for this audience will include cellular coverage as well as internet access. It may also be a little difficult for some of the older population to accomplish tasks associated with being prepared for severe weather.

Members of the State’s Emergency Management Agency will have access to the State’s IT department. My contact information is listed at the end of the user guide just in case they have questions about the dashboard or need to make modifications to it. Some questions are more appropriate for follow up from the State’s own IT department. If I get any of those questions, I will redirect the inquirer. I would also encourage the Emergency Management Agency to conduct a training session about it and use the dashboard during meetings to aid understanding and discussions.

There will be a short resource sharing and discussion time at the end of the State Budget Office Presentation. Contact information for the Emergency Management Agency and a link to the National Centers for Environmental Information Storm Events Database will be included, just in case members of the State Budget Office need to obtain more granular details about an area of interest. Interdepartmental communications can be challenging without a standard system in place. If there is currently no communication system in place, I would advise the State Budget Office to set one up before the presentation. At the end, People will be able to discuss the information presented, and ask the presenter questions about the data.

**Resources**

Knight, M. (2017, February 14). *Demystifying Advanced Data Visualization*. DATAVERSITY. https://www.dataversity.net/demystifying-advanced-data-visualization/

Lambrew, J. (2020, December 16). Office of the Commissioner Branding and Publication Standards for DHHS. State of Maine Department of Health and Human Services. https://www.maine.gov/dhhs/sites/maine.gov.dhhs/files/inline-files/Branding%20and%20Publication%20Standards%20%20%20DHHS-33-07.pdf

Yau, N. (2013). *Data points: Visualization that means something*. ProQuest Ebook Central [https://ebookcentral-proquest-com.ezproxy.snhu.edu](https://ebookcentral-proquest-com.ezproxy.snhu.edu/)