DAT-530 Final Project

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Background

The New Hampshire State government as approached VEB (Very Environmentally Based) Corporation to develop three visualizations solutions. The first visualization is a Microsoft PowerPoint presentation summarizing the state's storm activity to raise funds to help with the stand-by emergency resources and monetary reserve that could be allocated to the most starved parts of our state, when needed. Second is an interactive dashboard to show risk assessment, where to distribute stand-by emergency equipment and resources and to show storm damage assessment acknowledge to aid in media inquiries, during and after storms. Third, the State is asking for a pamphlet with storm safety information for the public to support the importance of preparation in event of severe weather happenings.

The data that was collected, for this project, is from the National Oceanic and Atmospheric Administration (NOAA) and their website (NOAA.com, n.d.). It contains up-to-date information as recent as December 2018. It contains plenty of data that can be analyzed to help with storm preparation for the future. Only past events can be studied, this cannot predict the future in weather. The past events can give the state and its population a snapshot of what "wicked" weather can do and the state as a collective can work together to be ready for a disaster.

The data includes an assessment of storm damage in New Hampshire. The information is reported by public servants who report directly to NOAA with their own visuals of what the storms have left behind. It is snapshot of what the member of the public sees as their truth. No

further analysis was done by any governmental agency to report the reliability of this information and its sources.

Audience Needs

The visualization's contracted in this report are for three different audiences: New Hampshire State Budget Office, New Hampshire Emergency Management Agency (NHEMA) and the residences of New Hampshire.

The state budget office staff has limited time. They would prefer this presentation be brief. They are open to the idea of finding funds for this project but need some persuasion on the importance of it. They would like to be shown when and where the storms are hitting, where the funds will be assigned to and the amount of funds needed for this project.

NHEMA's staff has mixed experience with computers and data analysis. Easy to read and manipulated charts and graphs will be used. They need dashboard graphics that can easily be changed to do research by: county, month/year, type of storm and more. A platform that is easy to learn would work best for the staff.

The public is a mix of education, political feelings, religion, age, social status and much more. The pamphlet will include an easy to read graph and key points and tips to read for a storm.

Explanation of Presentation Methods

In this report, the New Hampshire State Government will be presented with three visualizations to aid the state with future readiness of storms. A Microsoft PowerPoint

presentation is included to be shown to the state budget office to launch a search for funds to help aid the state with storms. The second item is an interactive dashboard for the NHEMA. This will help staff track storm damage and locate where to allocate equipment, staff and other resources to aid with future weather happenings. The state also asked for a pamphlet that can be distributed to the public. The pamphlet shows awareness and gives quick information on storms and how to prepare for future weather events.

The Microsoft PowerPoint presentation will be presented to the state budget office. It features quick reference visualizations and include only what is needed to persuade funds in the direction of this needed project. Focus will be on the immediacy and importance of this project for the safety of the state. The presentation will be given a time where a core group of officials can be present. A paper version handout will be used to aid in the demonstration. A Microsoft Presentation file will be distributed after the demonstration to attendees and other officials who cannot be present.

The interactive dashboard will be created with Microsoft Excel. The staff of the NHEMA elected the software for its ease of use and familiarity. Elements can be tailored to the need of the emergency management personnel. It included three charts to help to start with. If other dashboard elements or charts are needed, the dashboard can be altered to suit the seasons or each staff member. It can be high-tech for certain users or made simple for the ease of use of every member of the team.

The storm safety pamphlet includes a quick resource guide for everyone in the State of New Hampshire. It includes easy to follow information on storm statistics, shows how important it is

to be prepared for a storm emergency and where to find more information on how to be prepared. This pamphlet will be prepared as a Microsoft Word document. The visualization created for this report, VEB focused on winter weather readiness. If this project is accepted, a pamphlet for the summer months will be created. VEB's plan is; it would be easier to demonstrate the importance of storm preparation if there were two visualizations. With this material, residences can file the pamphlet and refer to it as needed depending on the time of the year. Winter storms differ from summer storms. Having two visualizations is a method to present the significance to the public.

Platform/Media Selection

A Microsoft PowerPoint presentation summarizing the state's storm activity will be given in hopes to raise funds to help with the stand-by emergency resources and monetary reserve that could be allocated to the most starved parts of our state, when needed. This visualization will be presented to the state budget office.

The interactive dashboard to show risk assessment, where to distribute stand-by emergency equipment and resources and show storm damage assessment acknowledge to aid in media inquiries, during and after storms. Needs and comfort level has been assessed. VEB and the NHEMA staff has chosen to use Microsoft Excel for this dashboard. Excel has been selected for the visualization, everyday function and because it is easy-to-use by all staff members.

For the pamphlet draft, a Microsoft Word document will show the front and back sides of the medium. Graphic designers from VEB have used this program in the past to create similar

visualizations. The graphics and charts used in this pamphlet will be created in Excel and include company logos. The text and bullet points can be done easily in the program. A thick weight 24 lb. paper will be used with a bright white hue.

Plot/Visual Display Evaluation

Visualizations for state budget office's presentation will include a graphic of the counties where storms have it in the state year-round. A chart, showing how the money and aid will be allocated when granted funding, will be included in the presentation. Also, two bar charts will show what times of the year storms with the most damage will hit. These graphs will be divided into winter and summer weather patterns. These graphics will help show the audience where and when funds will be need. Funding information from neighboring state Vermont will be included to mirror the likeness of the location and storm damages.

The NHEMA staff would need information from storms in the past and how they performed. Statistics from storm damage from the surrounding areas and New Hampshire would be useful to predict the areas where storms are more likely to hit harder than other areas. The dashboard would need charts and visualizations that can be changed to personalize the "now needed" information that can be changed every time a user looks at the screen. An Excel dashboard is very adaptable, can be personalize and is easy to switch around the data to show the data being researched. Included in this dashboard will be a graphic showing where in the state, the worst storm damage has happened. This graphic will show where resources have been needed and should be focused on for future time ahead. Another graph is showing the types of

storms to expect during certain months and planning can be done accordingly. The third graph is a pie chart to show the percentage of storms during a selected month, staff can know in advance what kind of storms will happen in which months. For example, during the month of May, flash flooding and severe thunderstorms are expected.

The drafted pamphlet will include a simple graphic to sell the idea of storm readiness to everyone. It tells when to expect certain storms in the area. It will show how being prepared for a disaster is better than wondering what to do when there is a disaster happening. It will include steps for families and their livestock to follow when a disaster occurs. Included will be an index of the weather alerts heard on the radio, and what it means. A helpful link on making a survival kit for home or work and your car will be printed on it. A local phone number, mailing address and an email address are on the pamphlet to aid residence in understanding of this information.

Granularity and Sophistication Categorization

There will be three types of visualizations for this project given to three different audiences; the state budget office, the NHEMA and the public.

One will be a Microsoft PowerPoint presentation given to the state budget office. This presentation will include slides, graphs and charts showing where the budget will be spent, and which areas of the state will need it the most. Three charts will focus on what types of storms cause the most damage in New Hampshire, highlighting the two highest (winter and summer) storms. Also, two bar graphs will show which storms to expect and when. This visualization

will show where and when the budget will be spent within the state, the higher disaster areas will need more funds.

The NHEMA an interactive dashboard will be created with Microsoft Excel. The ease of this program will be the best for this audience of scattered knowledge of computer ability and familiarity. Visualizations to be added to this desktop would be storm tracking history, area risk assessment areas, where and when resources need to be allocated and how to respond to media inquiries about storm damage estimates regarding storm events.

The third visualization will be set-up for the public as a pamphlet. It will inform them about statistics of the weather events history and the damage they produced. Information on how to prepare and act for when weather disasters hit will be incorporated. The winter statistics visual is added as a bar graph and the readiness information can be in a loose patterned list with bullet points. The bullet points will have word economy and will give the information needed only so not to confuse the reader.

Formatting Guidelines

The planning phase of this project will include, knowing what data we are working with and what it is telling us. Some of the requirements of this project include:

- How to get the data to work for each visualization?
- Who will be reading the data?

- What decision(s) need to be made by the audience after reading the data and the visualizations?
- Does the data and the visualization make sense (Yau, 2013)?

Remembering to answer these questions about the project are key to being successful in communicating the data to its intended audiences.

Knowing what the audience *needs* to get out from the data, should be kept in mind. The state budget office needs to be convinced to fund money into this project. The NHEMA needs to have an interactive dashboard to function as requested and should be able to make additions quickly. The pamphlet for the public needs to convey the importance of this in their personal lives and suggest steps to prepare for weather events.

Simple visuals, graphs and charts would work best. The data will be read easily and would need little or no explanation. The ease of reading the data, in hope, will get the audience interested in what the data is showing us.

The formatted colors will be the Office Themed layout for the graphics in Excel. Each color has enough difference between them that one could not be mistaken as another. The font to be mostly used is Calibri. It's an easy to read, non-sans serif font and can be seen up close and at a distance.

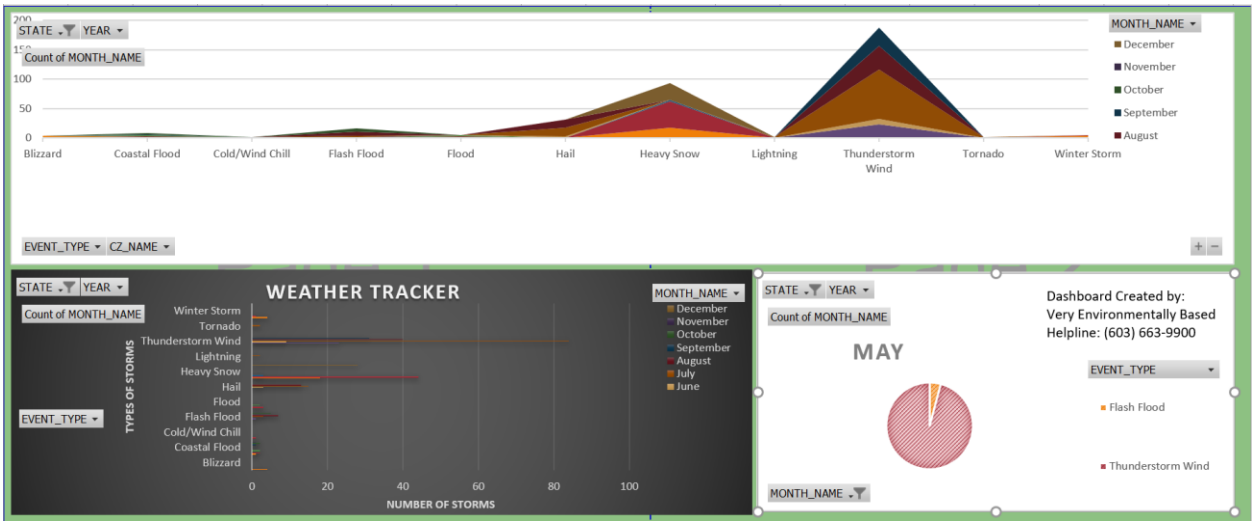
For the pamphlet a dark aqua blue/green will be used because it's close match to our logo and blues give the feeling of cold and winter. Blue is a cool color (Cardigan Empire, n.d.). Verdana font will be used. This font is easy to read and when it shown in color it is still readable because it has a thickness to it.

Feedback Method Evaluation

For each visualization there will be a feedback method included. For the Microsoft PowerPoint presentation there is a "Contact Us/Any Questions?" slide that includes VEB contact information, National Weather Service's website and the phone number for NOAA. For the dashboard there is a helpline number added in upper right-hand corner of the pie chart. On the last page/section of the pamphlet there is VEB contact information: address, phone number and email address for readers can contact the company as they feel comfortable.

Platform/Media Employed

1) For state budget office's Microsoft PowerPoint presentation please refer and download the attached presentation labeled: DAT 530 Final Project SBO – Gagnon.ppt.
2) A sample of the NHEMA dashboard is below, followed by a quick reference user guide.



The data used for the NHEMA dashboard are listed in Appendix A

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User Guide for VEB Weather Dashboard

What am I looking at?

While looking at the VEB Weather Dashboard you will be looking at 3 visualizations for the State of New Hampshire. The visualization at the top shows which counties extreme weather has been reported in 2015 and/or 2016. The one in the bottom left corner shows the number of storms during the selected month and year. The bottom visualization, on the right, is a pie chart showing the percentages of storms that hit New Hampshire in certain months within a certain year.

How do I use it?

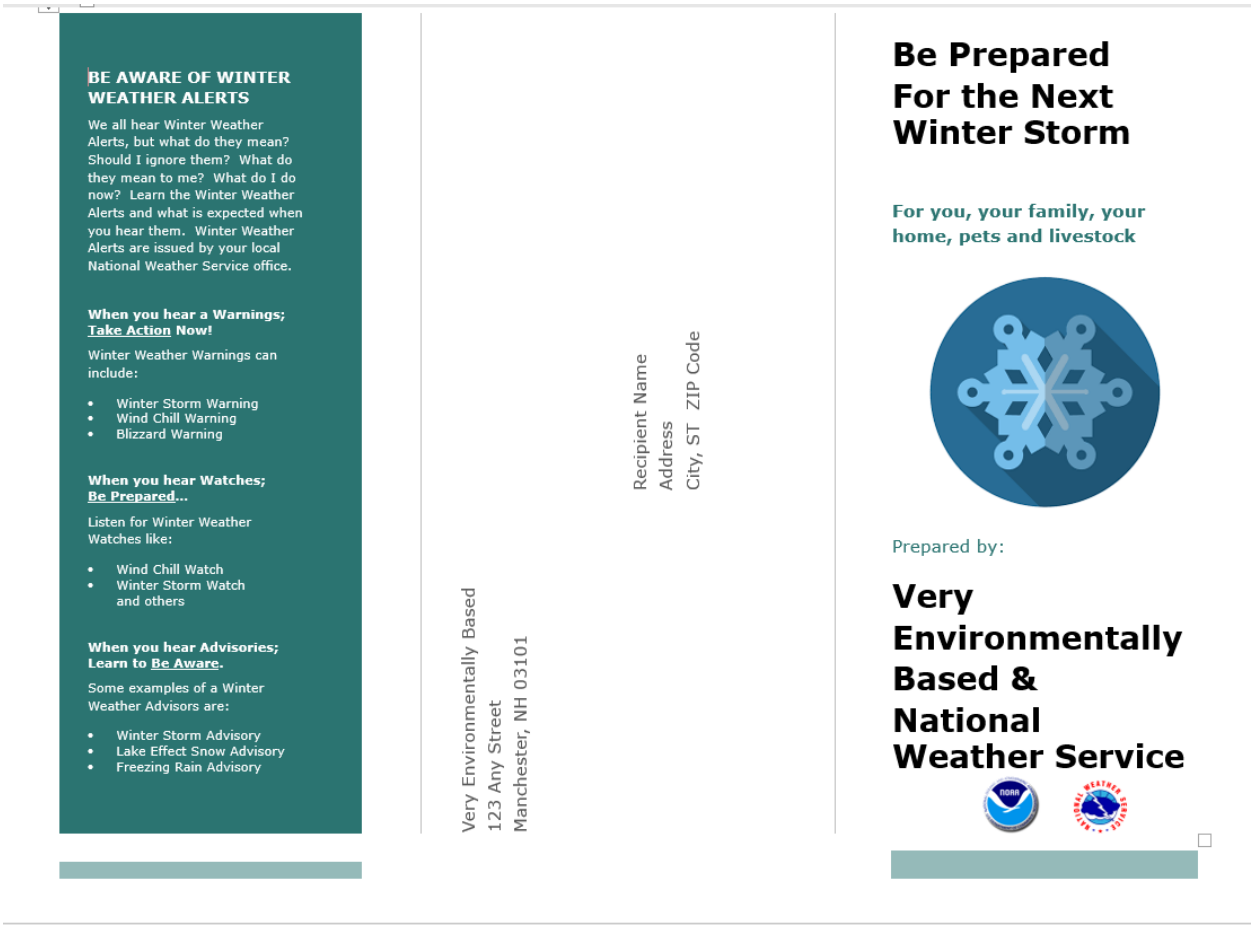
Each of the visualizations include grey field blocks where the user can select the item that wants to be studied. The user can pick which year, month, weather element or county (depending on the visual). There is a pop-up window where the user could select the elements. Check the elements needed or double click the <Select All> box to select all the elements in the pop-up window. The user can choose one, several or all elements in the window. This will make custom past weather event visualizations.

Where can I get more training?

Contact your supervisor or VEB for more information on customizing and operating this Weather Dashboard.

Very Environmentally Based
123 Any St.
Manchester, NH 03101
(603) 663-9900
WeatherPrep@VEB.org

3) The public pamphlet is attached as a Microsoft Word Document. Please download: DAT 530 Final Project Winter Safety Pamphlet – Gagnon or you can refer to the screen shots below.



BE AWARE OF WINTER WEATHER ALERTS

We all hear Winter Weather Alerts, but what do they mean? Should I ignore them? What do they mean to me? What do I do now? Learn the Winter Weather Alerts and what is expected when you hear them. Winter Weather Alerts are issued by your local National Weather Service office.

When you hear a Warnings; Take Action Now!

Winter Weather Warnings can include:

- Winter Storm Warning
- Wind Chill Warning
- Blizzard Warning

When you hear Watches; Be Prepared...

Listen for Winter Weather Watches like:

- Wind Chill Watch
- Winter Storm Watch and others

When you hear Advisories; Learn to Be Aware.

Some examples of a Winter Weather Advisors are:

- Winter Storm Advisory
- Lake Effect Snow Advisory
- Freezing Rain Advisory

Very Environmentally Based
123 Any Street
Manchester, NH 03101

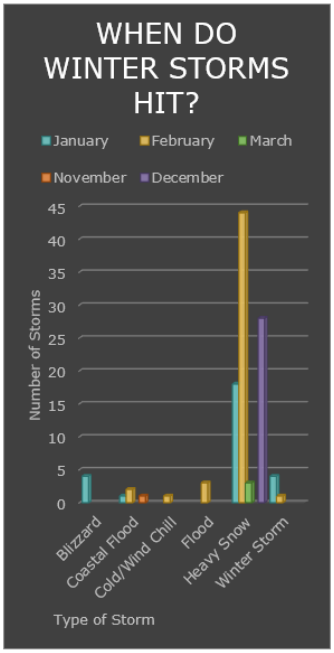
Recipient Name
Address
City, ST ZIP Code

Be Prepared For the Next Winter Storm

For you, your family, your home, pets and livestock

Prepared by:

Very Environmentally Based & National Weather Service



Know Your Weather

Above is Data from NOAA (National Oceanic and Atmospheric Administration) for 2015 and 2016.

KNOW WHAT TO DO BEFORE A WINTER STORM HITS

Be prepared for a storm hits. Follow these steps before the winter months:

At Home and Work...

Loss of heat is the biggest concern along with power, supplies and telephone service. Have a **Home & Work Winter Storm Survival Kit*** available for storms lasting longer than a day.

In your Car, Truck or SUV...

Before setting out in a storm call 511 for the latest weather and traffic. Slow Down! Make sure your vehicle is fully winterized BEFORE the Winter months and carry a **Car Winter Survival Kit***.

For your Pets and Livestock...

Remember to bring animals inside and make sure there is extra food & water available. Dehydration kills most animals in a winter storm. Also make sure their shelter can keep them warm.

*See https://www.weather.gov/oun/safety-winter-safetykit for kit contents

During the Storm

Find Shelter, melt snow for drinking, exercise to keep yourself warm and stay inside (if you can).

After the Storm

Keep in touch with your local news, check on your neighbors, follow road danger signs and avoid flooded areas.

For more information on steps during and after the storm visit: https://www.weather.gov/media/owlie/WinterSafety-OnePager-2-27-19.pdf

Special Thanks to:

NOAA and the National Weather Service

Contact Us

Very Environmentally Based
123 Any St.
Manchester, NH 03101
(603) 663-9900

Website

WeatherPrep@VEB.org

(National Weather Service, n.d.)

The pivot charts used for the three visualizations are listed in Appendix A.

References

Cardigan Empire, (n.d.), *Best and worst colors for winter, seasonal color analysis*, Retrieved from http://cardiganempire.com/2017/03/best-worst-colors-for-winter-seasonal-color-analysis.html

National Weather Service. (n.d.). *Winter safety one-pager (printer friendly)*. Retrieved from https://www.weather.gov/media/owlie/WinterSafety-OnePager-2-27-19.pdf

NOAA.com, (n.d.), *Storm events database*¸ Retrieved from https://www.ncdc.noaa.gov/stormevents/

Yau, N. (2013, March 1). *Data points: Visualization that means something*. Retrieved from https://www.goodreads.com/book/show/16234981-data-points

Appendix A

STATE	NEW HAMPSHIRE												
YEAR	(All)												
Count of MONTH_NAME	Column Labels												
Storm Types	January	February	March	April	May	June	July	August	September	October	November	December	Grand Total
Blizzard	4												4
Coastal Flood	1	2		2					1	2	1		9
Cold/Wind Chill		1											1
Flash Flood					1		3	7		5			16
Flood		3		2									5
Hail						3	15	13					31
Heavy Snow	18	44	3									28	93
Lightning							2						2
Thunderstorm Wind					23	9	84	40	31				187
Tornado							2						2
Winter Storm	4	1											5
Grand Total	27	51	3	4	24	12	106	60	32	7	1	28	355

The collapsed pivot chart used to create the NHEMA dashboard on top representing the counties and the same chart is used in the PowerPoint presentation.

STATE	NEW HAMPSHIRE					
Count of MONTH_NAME	**Column Labels**					
Row Labels	**January**	**February**	**March**	**November**	**December**	**Grand Total**
Blizzard	4					4
Coastal Flood	1	2		1		4
Cold/Wind Chill		1				1
Flood		3				3
Heavy Snow	18	44	3		28	93
Winter Storm	4	1				5
Grand Total	**27**	**51**	**3**	**1**	**28**	**110**

Pivot chart used to create the PowerPoint presentation and pamphlet graphic – winter weather.

STATE	NEW HAMPSHIRE							
Count of MONTH_NAME	**Column Labels**							
Row Labels	**April**	**May**	**June**	**July**	**August**	**September**	**October**	**Grand Total**
Coastal Flood	2					1	2	5
Flash Flood		1		3	7		5	16
Flood	2							2
Hail			3	15	13			31
Lightning				2				2
Thunderstorm Wind		23	9	84	40	31		187
Tornado				2				2
Grand Total	**4**	**24**	**12**	**106**	**60**	**32**	**7**	**245**

Pivot chart used to create the PowerPoint presentation – summer weather

Count of MONTH_NAME	**Column Labels**												
Row Labels	**January**	**February**	**March**	**April**	**May**	**June**	**July**	**August**	**September**	**October**	**November**	**December**	**Grand Total**
Blizzard	4												4
Coastal Flood	1	2		2					1	2	1		9
Cold/Wind Chill		1											1
Flash Flood					1		3	7		5			16
Flood		3		2									5
Hail						3	15	13					31
Heavy Snow	18	44	3									28	93
Lightning							2						2
Thunderstorm Wind					23	9	84	40	31				187
Tornado							2						2
Winter Storm	4	1											5
Grand Total	**27**	**51**	**3**	**4**	**24**	**12**	**106**	**60**	**32**	**7**	**1**	**28**	**355**

The pivot chart used to create the bar graph on the NHEMA dashboard - lower left-hand corner

STATE	NEW HAMPSHIRE	
YEAR	(All)	
Count of MONTH_NAME	**Column Labels**	
Row Labels	**May**	**Grand Total**
Flash Flood	1	1
Thunderstorm Wind	23	23
Grand Total	**24**	**24**

The selected month of May pivot chart used to create the pie chart for the NHEMA dashboard