**Unit 1 Student Instructions**

**Map Your Hazards!   
Combining Natural Hazards with Societal Issues**

**Unit 1: Hazards, vulnerability and risk**

**Week 1**

**Learning Goal for Unit 1:** Students will identify and apply credible geologic and social science data sets to identify hazards and vulnerable groups and structures, and assess risks associated with selected natural hazards.

This worksheet provides a guide to Unit 1 of the Map Your Hazards! module. Please note that the instructor will break the class into groups of four students for this entire module. You will work with the same group for all activities.

**Part A**

1. **Homework announced:** E-surveys Pro.com survey (Open ended question at the end of the questionnaire: *I completed this questionnaire for*...). Timeline: week 1 to complete. **Due date: Friday of week 1.**

**Notes:**

* First, take the online Natural Hazards Survey yourself (instructor will provide the link).
* Second, distribute the online Natural Hazards Survey to at least five people within your local social network (e.g., friends, family, sports teams, etc). You must have at least four completed surveys to earn full credit. However, you are encouraged to get as many results as possible to increase the robustness of the results. **Please ensure that the people you send the survey to live within your city or city suburbs.**

1. **Pre-module quiz:** to be completed in class (Moodle questionnaire) on Day 1.
2. **Lecture 1 Introduction to Natural Hazards, Risk & Vulnerability**

**Part B**

1. **Video “The Storm” (Frontline).**

Notes:

* Please watch the video documentary closely. A quiz accompanying the video will be distributed in class before the video begins. You may use the hard copy for taking notes. The answers to the questions need to be submitted at the beginning of the following class period in hard copy. This will count as 4 bonus points for the entire module.

**Part C**

1. **Map analysis activity**

**Notes:**

* Overview of US Hazards Maps (ppt)
* This activity includes an overview of types of maps as well as a practice exercise where each group will evaluate one map based on a given rubric for map analysis.

1. **Survey coding and data input demonstration (instructor)**

**Notes:**

* *Homework*: Each group will be expected to input their survey data in the excel spreadsheet. After being shown in class (instructor demonstration), the excel spreadsheet will be available in Moodle for student download. **Due date: Day 1 of Week 2** (Monday or Tuesday respectively) via Moodle submission (one submission per group containing the name of the team in the file title).

**Unit 2: Perception of hazards, vulnerability and risk**

**Week 2**

**Learning Goals :**

* Students will identify and apply credible geologic and social science data sets to identify local hazards and vulnerable groups and structures, and assess risk for their community.
* Students will identify potential stakeholders and assess the importance of communication and interaction among these groups to make recommendations on how to define and develop prepared communities.

Objectives:

O1: To identify potential natural hazards in South Carolina.

O2: To discuss the impacts of these natural hazards on local vulnerable groups and structures.

O3: To identify potential stakeholders who would have an interest in or benefit from their assessments of hazards and vulnerabilities*.*

O4: To make a general list of recommendations for preparedness, resource allocation and city planning to promote building a better prepared and more resilient community and;

O5: To choose a specific stakeholder to communicate their findings and recommendations in a hypothetical situation *(potential forms can be a speech, written report, poster or PowerPoint presentation).*

**Necessary Materials:** One large size map (22X36) per group (provided by instructor); color pencils, a set of maps and links to maps available in Moodle in electronic format (cell phones are allowed for this activity for academic research purposes only).

The instructor will provide a rubric to be followed when designing your own natural hazards maps. The rubric will also include instruction for the accompanying narrative. Please pay close attention to detail. This activity will count as your project (10% of your grade).

**Part A**

**Credible data interpretation (survey analysis) PPT can be used for reference.**

Each student group is expected to have the finalized excel spreadsheet available.

Students will answer a series of questions and participate in class discussions. Access the following link to the Risk Assessment Code Matrix will allow students to develop comments and compare to the social survey data:<http://www.bia.gov/cs/groups/xnifc/documents/text/idc-017618.pdf>

In groups, students will be testing research questions as they analyze the social survey results (E.g. **Question 1a** – Research question from Group 1: Longer residence time in the region results in a more accurate knowledge and level of risk perception. Students should identify this as a research question and categorize as a knowledge and/or risk perception question.)

**Part B**

**South Carolina Risk Map (group activity)**

**B.1.** **Natural Hazards**

As a group,students will identify and locate areas within the map of South Carolina that are susceptible to hazards. You must include a minimum of the top three natural hazards in your mapping area. Your instructor will hand out rubric for map assessment.

* Locate regions within the map that are susceptible to hazards.
  + Identify the top three hazards in South Carolina.
  + Mark the natural hazards in different symbols/colors on the large map and use appropriate symbols for each hazard (For example: -hurricanes, -volcanoes, -tornadoes, red dot-earthquakes, etc.;

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**B.2. Vulnerabilities**

1. Locate the following *structural vulnerabilities* on your map (you are welcome to include additional vulnerabilities):
   * Major transportation routes
   * Major bridges
   * Hospitals
   * Retirement homes
   * Schools
2. Locate the following *social vulnerabilities* (SC maps including social variables created in ESRI Community Analyst will be provided by instructor and available for download in Moodle; use your cell phones for access if computers are not available). If possible, access the Environmental Protection Agency's EJScreen (Environmental Justice Screening and Mapping Tool) at <http://ejscreen.epa.gov/mapper/>.

**Instructions:**

* To find a map for your location, you can enter a zip code, city, or county.
* Then click on "Map Data" and select "Map Supplementary Demographics" (We suggest using '2008-2012 ACS' for more recent population estimates);
* Click on a category and variable that you would like to examine — e.g. to examine populations in your area that are vulnerable to poverty, select the category "Income/Poverty" and then select the variable "Pct Population Below Poverty Level" to get a visual (you can also select the colors) of the percentage of population at risk - be sure to click on "Add to Map".

**B.3. Assess risk:**

Now that you have access to structural and social vulnerabilities examine hazard and vulnerability data to determine levels or risk. Risk (in this context) is where a natural hazard overlaps with a vulnerable system (e.g., homes, schools, populations, bridges). You should decide based on variables such as amount of people in such locations, resources locations, etc., to interpret the level of risk. For example, a hospital in a flood plain might be interpreted as at very high risk to flooding; whereas, a cabin only inhabited during summer months in a flood plain might be interpreted as a lower risk since there are less people and resources affected. A flood plain with no resources would not be designated as “no risk.”

* Determine areas of:
  + Very high risk (maroon)
  + High risk (red)
  + Moderate risk (orange)
  + Low risk (yellow)
  + Set boundaries (polygons) for areas of high risk.
  + Include a key

**B.4. Map Reasoning**

Explain reasoning for risk level assignment. Organize the sources of information utilized to compile your map into a References section.

**Unit 3 Translating the message**

**Project oral presentation**

The project presentation will include the resulting map and a 5 minutes overview of the information contained in the map (including References section) as well as several recommendations as listed below:

* identify potential stakeholders (e.g. individuals, social groups, scientists, community planners, emergency managers, decision makers, etc.) who would have an interest in or benefit from their assessments of hazards and vulnerabilities;
* make a general list of recommendations for preparedness, resource allocation and city planning to promote building a better prepared and more resilient community;
* choose a specific stakeholder to communicate their findings and recommendations in a hypothetical situation *(potential forms can be a speech, written report, poster or PowerPoint presentation).*

A map grading rubric (InTeGrate) will be made available for assessment purposes.