

# Disaster Readiness and Risk Reduction

## Quarter 1 – Module 6: Vulnerability in Disaster



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**Disaster Readiness and Risk Reduction  
Alternative Delivery Mode  
Quarter 1 – Module 6: Vulnerability in Disaster  
First Edition, 2020**

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**Senior High School**

# **Disaster Readiness and Risk Reduction**

## **Quarter 1 – Module 6: Vulnerability in Disaster**



# Introductory Message

For the facilitator:

Welcome to the Disaster Readiness and Risk Reduction 11/12 Alternative Delivery Mode (ADM) Module on Vulnerability in Disaster!

This module was collaboratively designed, developed, and reviewed by educators both from public and private institutions to assist you, the teacher or facilitator in helping the learners meet the standards set by the K to 12 Curriculum while overcoming their personal, social, and economic constraints in schooling.

This learning resource hopes to engage the learners into guided and independent learning activities at their own pace and time. Furthermore, this also aims to help learners acquire the needed 21st century skills while taking into consideration their needs and circumstances.

In addition to the material in the main text, you will also see this box in the body of the module:



## **Notes to the Teacher**

This contains helpful tips or strategies that will help you in guiding the learners.

As a facilitator, you are expected to orient the learners on how to use this module. You also need to keep track of the learners' progress while allowing them to manage their own learning. Furthermore, you are expected to encourage and assist the learners as they do the tasks included in the module.

For the learner:

Welcome to the Disaster Readiness and Risk Reduction 11/12 Alternative Delivery Mode (ADM) Module on Vulnerability in Disaster!

The hand is one of the most symbolized parts of the human body. It is often used to depict skill, action and purpose. Through our hands we may learn, create, and accomplish. Hence, the hand in this learning resource signifies that you as a learner is capable and empowered to successfully achieve the relevant competencies and skills at your own pace and time. Your academic success lies in your own hands!

This module was designed to provide you with fun and meaningful opportunities for guided and independent learning at your own pace and time. You will be enabled to process the contents of the learning resource while being an active learner.

This module has the following parts and corresponding icons:



### **What I Need to Know**

This will give you an idea of the skills or competencies you are expected to learn in the module.



### **What I Know**

This part includes an activity that aims to check what you already know about the lesson to take. If you get all the answers correct (100%), you may decide to skip this module.



### **What's In**

This is a brief drill or review to help you link the current lesson with the previous one.



### **What's New**

In this portion, the new lesson will be introduced to you in various ways such as a story, a song, a poem, a problem opener, an activity or a situation.



### **What is It**

This section provides a brief discussion of the lesson. This aims to help you discover and understand new concepts and skills.



### **What's More**

This comprises activities for independent practice to solidify your understanding and skills of the topic. You may check the answers to the exercises using the Answer Key at the end of the module.



### **What I Have Learned**

This includes questions or blank sentence/paragraph to be filled in to process what you learned from the lesson.



### **What I Can Do**

This section provides an activity which will help you transfer your new knowledge or skill into real life situations or concerns.



### **Assessment**

This is a task which aims to evaluate your level of mastery in achieving the learning competency.



### **Additional Activities**

In this portion, another activity will be given to you to enrich your knowledge or skill of the lesson learned. This also tends retention of learned concepts.



### **Answer Key**

This contains answers to all activities in the module.

At the end of this module you will also find:

### **References**

This is a list of all sources used in developing this module.

The following are some reminders in using this module:

1. Use the module with care. Do not put unnecessary mark/s on any part of the module. Use a separate sheet of paper in answering the exercises.
2. Don't forget to answer *What I Know* before moving on to the other activities included in the module.
3. Read the instruction carefully before doing each task.
4. Observe honesty and integrity in doing the tasks and checking your answers.
5. Finish the task at hand before proceeding to the next.
6. Return this module to your teacher/facilitator once you are through with it.

If you encounter any difficulty in answering the tasks in this module, do not hesitate to consult your teacher or facilitator. Always bear in mind that you are not alone.

We hope that through this material, you will experience meaningful learning and gain deep understanding of the relevant competencies. You can do it!



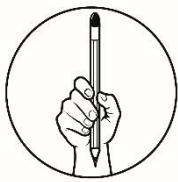
## **What I Need to Know**

In this module, the learner will be able to determine why there are sectors of the society that are more vulnerable and be able to explain the factors that made these sectors susceptible to risk and hazards. This will further teach the learner how to turn a very vulnerable sector to a less vulnerable one by managing or reducing exposure to hazard and risk. Aside from reducing exposure to hazard and risk, in this module the learner will be able to understand that adaptability to the disaster is also a major factor in lessening the vulnerability of the sector since disaster is hardly prevented.

The Module is intended to equip you with knowledge in certain sectors of society that are more vulnerable to disasters.

After going through this module, you are expected to:

1. explain why some sectors are more vulnerable to disaster than others;
2. describe how different sectors find ways on how to lessen vulnerability of the community;
3. discuss how population density and capacity to mitigate and rehabilitate could affect the level of vulnerability of the different sectors;
4. deliver possible solutions in making the different sectors of the community to become less vulnerable;
5. recognize the importance of knowing one's capacity and population density in community mitigation and rehabilitation.



## **What I Know**

**Choose the letter of the best answer. Write the chosen letter on a separate sheet of paper.**

1. It refers to a serious disruption of the functioning community and losses in human life, material, economic and environmental.
  - a. disaster
  - b. disaster risk
  - c. hazard
  - d. vulnerability
  
2. What situation has the CAPACITY to bring damages to lives, properties and the environment?
  - a. element risk
  - b. hazard
  - c. risk
  - d. vulnerability
  
3. You currently live in a condominium. There is a super typhoon and the power went off due to damaged electric posts, but they have a generator, so the power supply is immediately restored. All of the following are the reasons why you are less vulnerable than other people living in city EXCEPT \_\_\_\_\_.
  - a. human activities affect the intensity of the typhoon
  - b. availability of services during times of natural disaster
  - c. ability to anticipate, respond, and adapt to current situation
  - d. presence of facilities that can be used to respond immediately when needed
  
4. Factors affecting vulnerability are the following EXCEPT \_\_\_\_\_.
  - a. building codes and policies
  - b. population density
  - c. occurrence of natural hazards
  - d. location of the community

5. On what situation will you consider a major earthquake as a non-disastrous one?
  - a. when it happens in a faraway country
  - b. when it happens to less than 1000 people
  - c. when it happens to less than 10,000 people
  - d. when it happens in an area without any people
6. Which of the following concepts DOES NOT fall under vulnerability?
  - a. exposure
  - b. susceptibility
  - c. lack of coping capacities
  - d. absence of adaptive capacities
7. All the following can increase the level of vulnerability EXCEPT \_\_\_\_\_.
  - a. very populated areas/community
  - b. insufficient fund for relief operations
  - c. inadequate facilities for immediate disaster response
  - d. community provides accessible services and facilities for response
8. Philippines is now less vulnerable to typhoon because \_\_\_\_\_.
  - a. our country is not heavily populated
  - b. local Government Units cannot provide adequate evacuation centers
  - c. our country has sufficient budget to augment the loses in livelihood
  - d. our government already acquired technology that can predict super typhoon
9. Increased human population can sometimes result to \_\_\_\_\_.
  - a. lowered risk
  - b. less exposure
  - c. decreased hazard
  - d. increased vulnerability
10. During the initial stage of a typhoon that causes disaster, almost all surface means of transportation within the community are disrupted by broken bridges, roads, and streets that are rendered impassable by landslides or floods. The restricted mobility of vehicles makes rescue

and other emergency operations doubly difficult. What is this impact/effect of disaster?

- a. economic impact
  - b. social and political impact
  - c. damage to critical facilities
  - d. disruption of transportation
11. What could be the possible reason why urban region is more vulnerable to COVID-19 than the rural region?
- a. Urban region has more population than rural region.
  - b. Rural region has more population than urban region.
  - c. Rural region has higher population density than urban region.
  - d. Urban region has higher population density than rural region.
12. Why is it that Japan is less vulnerable to COVID-19 pandemic than other Asian countries?
- a. They have more population.
  - b. They have less population density.
  - c. They have the capacity to do mass testing.
  - d. They can provide sufficient numbers of PPE.
13. NCR has very high population density making it more vulnerable to any hazard like what happened during the lockdown where all members of the family have no choice but to stay in a very small living space. To lessen the population density of NCR, the government proposed the \_\_\_\_\_.
- a. Libreng Hatid Probinsya
  - b. Gulayan sa Bakuran Program
  - c. Balik Probinsya, Bagong Pag-aso Program
  - d. Responsible Parenthood and Reproductive Health Act
14. Population density means\_\_\_\_\_.
- a. number of households in an area in relation to the size of an area
  - b. number of individuals living in an area in relation to the size of an area
  - c. number of individuals inhabiting in a particular space at the same time
  - d. number of households inhabiting in a particular space at the same time

15. The following factors can affect the level of vulnerability EXCEPT \_\_\_\_.
- capabilities of the authorities
  - human population
  - human population density
  - level of awareness of the community

## Lesson 1

# Sectors of Society's Vulnerability to Disaster

This lesson explains why some sectors are more vulnerable to exposure to hazard and most likely to suffer greater disaster impact than others. It will also be discussed how different sectors find ways on how to lessen vulnerability of the community and how it adapts after the disaster.



## What's In

**Direction:** Compare and Contrast the images below and answer the questions that follow.

### Part I.



**Image 1**



**Image 2**

1. List down 3 differences between the 2 images presented.

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2. Which image shows higher vulnerability of transmissible infectious diseases?

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3. Give explanation why the identified differences makes it vulnerable and not vulnerable to infectious diseases.

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## Part II.



Image 1



Image 2

1. Which image shows higher level of vulnerability during typhoon?

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2. List 3 possible reasons why the chosen image in item 1 question has a higher level of vulnerability on the given scenario.

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3. Which image portrays better capabilities to response during times of disaster? Explain why.

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#### ***Notes to the Teacher***

There are several possible answers. Consider answers that are relevant to the questions and could have been a possible answer but not included in the answer key.



### **What's New**

**Direction:** Recall the exits and entrances of your previous school. Answer the following questions based on your observation.

1. Are there exits allotted for emergency escape plan? How many?

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2. Are those exits passable and void of blocking hazards?

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3. Are the gates working and can be easily opened in case of emergency?

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4. Are these exits known to the students?

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5. Are the number of exits sufficient so that all the students can get out in time during emergency?

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6. Do you practice emergency escape thru drills? Are there designated areas for the students to go to so that the teachers will be able to check if there are missing students?

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7. Do you think your school is highly capable of making sure of the safety of their learners? Explain why.

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8. What do you think are the possible factors considered by the DRRM coordinator of your school in preparing your school in times of emergency?

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## **What is It**

Level of vulnerability of an area or community can be assessed base on different factors. These factors can affect one another or can lead to other factors.

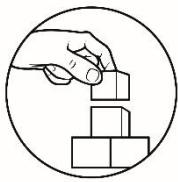
### **Factors affecting vulnerability of one's community:**

#### **1. Population density near a hazard event.**

- Population differs from population density.
- Population refers to the number of individuals inhabiting in a particular space at the same time. If people are well distributed, there is lesser effect of disaster.
- Population density refers to the number of individuals living in an area in relation to the size of an area. If population density is high, it means that the number of individuals is high but the space is very small. In that case, if fire broke in that area, there is little space for the population to escape quickly and easily. So, crowded communities have higher vulnerability to hazards.
- The primary consideration is not the population size but the population density.

#### **2. Capacity and efficiency to reduce Disaster Risk.**

- Community that is less vulnerable has the capacity to reduce disaster risk because;
  1. It can provide accessibility and availability of services and facilities during and after disaster.
  2. It has the ability to anticipate, adapt, and respond to possible disaster.
- Is it appropriate to say that The Philippines is less vulnerable to typhoon? Nowadays, our country has advanced technology to predict super typhoon and several municipalities already provided evacuation centers to provide temporary housing for victims when disaster occur.



## What's More

**Direction:** Identify what factor affects the vulnerability to disaster with the following situations given. Write **P** if it is due to population density and write **C** if it is due to sector's capacity and efficiency to reduce disaster risk. Write your answer on a separate sheet of paper.

1. Tondo community during the total lockdown due to COVID-19 pandemic wherein the families are forced to stay inside their houses that are too small for the number of family members.
2. Use of drones to disinfect the community in Pasig City to prevent the spread of the COVIDD-19 virus.
3. Insufficient number of rubber boats during super typhoon Yolanda in Malabon City wherein large number of residents were stranded on the top of their roof.
4. Too many casualties during super typhoon Milenyo in Los Baños due to excessive kaingin practices and illegal settlers in Mt. Makiling.
5. The Philippines and Japan are both prone to earthquakes but the latter one is less vulnerable.



## What I Have Learned

**Direction:** Read the questions below and answer carefully.

1. After answering the questions in "What's new", what are the possible problems that you were able to identify?

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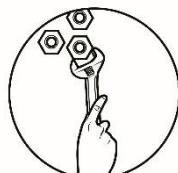
2. If you will be assigned as a Student DRRM coordinator, what possible solutions to the problem can you suggest?

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3. What possible activities can you suggest to increase the awareness of the learners on how to lessen the vulnerability of your previous school?
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## What I Can Do

**Direction:** Read the given situation then answer the questions that follow. Write your answer on a separate sheet of paper.

You are the barangay captain of Brgy. Canlubang. Your response team is deployed, and you have your radio with you. Reports are streaming-in for assistance and relief goods. Mobile patrols are having a difficult time going around due to lack of accessible barangay roads. At the same time, the barangay is heavily populated so there was a shortage of response vehicles to assist the victims and deliver relief goods to the evacuation area.



1. What do you think are the possible problems being faced by Barangay Canlubang? Give three (3) possible problems.

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2. In this kind of situation, what do you think is the liability of the local officials? National government?

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3. Suggest three (3) possible solutions based on your identified possible problems.

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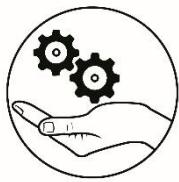
## Assessment

**Choose the letter of the best answer. Write your answer on a separate sheet of paper.**

1. Increased human population can sometimes result to \_\_\_\_.
  - a. lowered Risk
  - b. less exposure
  - c. decreased hazard
  - d. increased vulnerability
2. During the initial stage of a typhoon that causes a disaster, almost all surface means of transportation within the community are disrupted by broken bridges, roads, and streets that are rendered impassable by landslides or floods. The restricted mobility of vehicles makes rescue and other emergency operations doubly difficult. What is this impact/ effect of disaster?
  - a. economic impact
  - b. social and political impact
  - c. damage to critical facilities
  - d. disruption of transportation
3. What could be the possible reason why urban region is more vulnerable to Covid-19 than the rural region?
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  - b. Rural region has more population than urban region.
  - c. Urban region has higher population density than rural region.
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  - a. Libreng Hatid Probinsya
  - b. Gulayan sa Bakuran Program
  - c. Balik Probinsya, Bagong Pag-aso Program
  - d. Responsible Parenthood and Reproductive Health Act

6. Which of the following concepts DOES NOT fall under vulnerability?
- absence of adaptive capacities
  - exposure
  - lack of coping capacities
  - susceptibility
7. All of the following can increase the level of vulnerability EXCEPT \_\_\_\_.
- very populated areas/community
  - insufficient fund for relief operations
  - inadequate facilities for immediate disaster response
  - community provides accessible services and facilities for response
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  - number of individuals inhabiting in a particular space at the same time
  - number of households inhabiting in a particular space at the same time
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- human population
  - human population density
  - level of awareness of the community
  - capability and efficiency of the authorities
11. It refers to a serious disruption of the functioning community and losses in human life, material, economic and environmental.
- disaster
  - disaster risk
  - hazard
  - vulnerability
12. What situation has the CAPACITY to bring damages to lives, properties, and the environment?
- element at risk
  - hazard
  - risk
  - vulnerability

13. You currently live in a condominium. There is a super typhoon and the power went off due to damaged electric posts, but they have a generator so the power supply is immediately restored. All of the following are the reasons why you are less vulnerable than other people living in city EXCEPT \_\_\_\_\_.
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  - b. availability of services during times of natural disaster
  - c. ability to anticipate, respond, and adapt to current situation
  - d. presence of facilities that can be used to respond immediately when needed
14. Factors affecting vulnerability are the following EXCEPT \_\_\_\_\_.  
a. population density  
b. location of the community  
c. building codes and policies  
d. occurrence of natural hazards
15. On what situation will you consider a major earthquake as a non-disastrous one?  
a. when it happens in a far away country  
b. when it happens to less than 1,000 people  
c. when it happens to less than 10,000 people  
d. when it happens in an area without any people

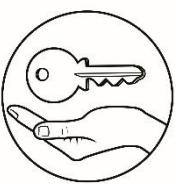


## ***Additional Activities***

Draw the floor plan of your house and make an emergency escape plan. How will you plan for the escape of all your family members with limited exit points? Make sure that your escape plan is feasible and will prevent stampede.

The rubrics below will be the basis of your score.

CATEGORY	5	3	2	1	SCORE
RELEVANCE	All graphics are related to the topic and make it easier to understand	All graphics are related to the topic and most make it easier to understand	All graphics relate to the topic	Graphics do not relate to the topic	
ORIGINALITY	With exceptional degree of student creativity in their work.	One or two of the graphics reflects creativity of the students	Graphics made based on the designs of others	No graphics made by the student are included	
REQUIRED ELEMENTS	Includes required elements as well as additional information	All required elements are included	All but 1 are included	Several required elements are missing	
ATTRACTIVENESS	The escape plan is exceptionally attractive in terms of design, layout and neatness	The escape plan is attractive in terms of design, layout and neatness	The escape plan is acceptably attractive though it may be a bit messy	The escape plan is distractingly messy or very poorly designed	



## ***Answer Key***

What I Know		What's More		Assessment	
1.	A	1.	P	1.	D
2.	B	2.	C	2.	D
3.	C	3.	C	3.	C
4.	D	4.	P	4.	C
5.	A	5.	C	5.	A
6.	B	6.	B	6.	B
7.	D	7.	D	7.	D
8.	D	8.	B	8.	B
9.	B	9.	A	9.	B
10.	A	10.	A	10.	D
11.	A	11.	A	11.	A
12.	B	12.	B	12.	C
13.	A	13.	A	13.	C
14.	C	14.	C	14.	C
15.	D	15.	D	15.	B

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