

## Environmental Risk Ranking (Informal write-up)

### OBJECTIVES

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- Be able to conduct an opinion survey about an environmental issue.
- Be able to rank environmental problems in terms of risk and explain the reasoning for the ranking.

### KEY CONCEPTS & TERMS

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- ✓ Environmental risk
- ✓ Exposure
- ✓ Risk perception

**TIME REQUIRED:** 2 hours.

### INTRODUCTION

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**Environmental risk** refers to the potential to cause harm to human health and/or the environment. We constantly face environmental risk from the food we eat, the water we drink, the air we breathe, and the soil we touch. For a risk to occur, there must be **exposure** (the potential for a person to come into contact with a contaminant). Some risks are more significant than others and depend on a multitude of factors, including the toxicity and the amount of a contaminant, where we live, how old we are, our daily activities, and contributing factors (e.g., smoking, diet, alcohol). For example, indoor air quality can present a much higher risk, in part, because of the high exposure potential as we spend more time indoors.

A major factor in how and what environmental risks we manage depends on how we perceive risks. This factor—**risk perception**—is an individual or group assessment based on a feeling, belief, or judgment of the potential for an environmental factor or condition to cause harm. For example, most people perceive the risk from hazardous waste to be very high, but most environmental experts rank the risk to be relatively low. In contrast, most people rank the risk to groundwater—a major source of drinking water—from gasoline stored in underground storage tanks to be low, whereas many environmental experts rank this risk much higher. A major reason for this difference is a person's perception, which is based on education, ethnic background, familiarity, past experiences, and a variety of

socio-economic factors. Risk perception also is heavily influenced by how the media reports on a risk because the media can sensationalize risk such that it can skew one's perceptions.

## MATERIALS

No special materials needed for this lab. However, before engaging in any survey, contact your campus Institutional Review Board to determine any applicable requirements and/or approvals.

## TASK

In this lab, you are going to conduct some original research using a survey to gather data on people's perception of risk. Below is a list of environmental problems. Note that some appear to be similar, but are actually slightly different. This is one of the challenges of a survey—wording.

1. In your group, select 10 environmental problems from the list. You can list these risks using the suggested template (alternatively, your instructor may supply you with a template or ask you to devise your own). You will need at least 15 copies.

### Environmental Problems

Acid deposition	Food additives
Loss of biodiversity	Solid waste
Acid rain	Genetically modified foods
Air pollution	Stormwater runoff
Oil spills	*Global warming
Asbestos	Underground storage tanks
Ozone depletion	Ground-level ozone
*Climate change	West Nile Virus
Pesticides	Hazardous waste
Contaminated drinking water	Urban sprawl
Radon	Indoor air pollution
Drinking water quality	Litter
Smog	

\*These two terms refer to the same environmental problem. As an experiment, try using both terms to see if participants distinguish between the two.

2. Following the creation of the survey, randomly select at least 20 individuals to complete the survey. Unless otherwise instructed, go to a variety of locations and do not limit yourself to your building.
3. Ask each participant to rank the listed environmental problems based on their perception of the risk.
 

It is imperative that you avoid answering specific questions on any environmental problem. By answering questions, you will be influencing or educating the participant and thus, skewing your results.
4. After completing the surveys, return to the lab and tally the results. Use percentages and means to interpret your results. In your write-up, answer the following questions:
  - a. What was viewed as having the highest risk? Are there any discernible patterns (e.g., younger/older, students vs. faculty, source of news)?

- b. What was viewed as having the lowest risk? Are there any discernible patterns (e.g., younger/older, students vs. faculty, source of news)?
- c. What surprises resulted from the survey?
- d. How accurate are your results? (That is, are the results an accurate representation of the university population based on sample randomness, sample size, and time and location of sampling?)
- e. What could you do to improve the survey?
- f. If you were a public official for your town, based on the results of your survey, how would you respond to the following:
  - What environmental problems would you focus on and why?
  - Are there other considerations besides risk?
  - Explain these other considerations.
- g. How do these rankings compare with other rankings or surveys in your city, state, or country? Check the Internet for comparative risk surveys and reference your source.

**Environmental Risk Survey**

*Hello. We are conducting a survey for a lab project. Completion of the survey will take approximately four minutes. We will keep your answers confidential and you will not be identified as a respondent. We will only report the total data for our use in this class.*

Below is a list of environmental issues presented in alphabetical order. Please circle the number for each topic below that best shows your level of concern: 0 = no concern, 1 = low concern, 2 = medium concern, and 3 = high concern.

Environmental Issue	No	Low	Med	High
	0	1	2	3
	0	1	2	3
	0	1	2	3
	0	1	2	3
	0	1	2	3
	0	1	2	3
	0	1	2	3
	0	1	2	3
	0	1	2	3
	0	1	2	3
	0	1	2	3

Please complete the information below as it applies to you:

**Age:** \_\_\_ ≤18 \_\_\_ 19–21 \_\_\_ 22–29 \_\_\_ 30–39 \_\_\_ 40–64 \_\_\_ 65+

**Gender:** \_\_\_ Male \_\_\_ Female

**Status:** \_\_\_ Part-time Student \_\_\_ Full-time Student \_\_\_ Staff \_\_\_ Professor \_\_\_ Visitor

**Primary source of news:** Television \_\_\_ Radio \_\_\_ Internet \_\_\_  
 Newspaper \_\_\_ Other \_\_\_

*Thank you for your participation.*