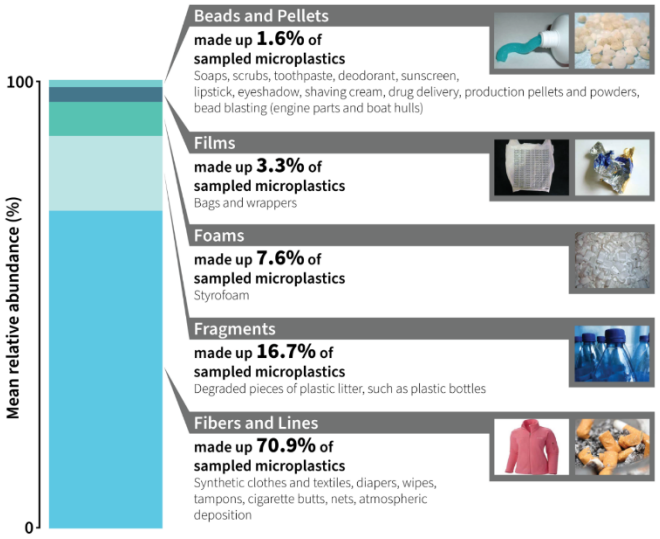
Microplastics in Great Lakes

Data Visualization Analysis Teacher Guide

Background

Microplastics are tiny plastic pieces that come from broken-down plastic items, microbeads in products, and synthetic clothing fibers. They are found everywhere, including water, air, and even inside animals and humans. Scientists are studying their potential health risks since they can carry harmful chemicals and affect ecosystems. The U.S. Geological Survey (USGS) is working to understand how microplastics spread and their impact on the environment.

The USGS and State University of New York Fredonia scientists sampled rivers flowing into the Great Lakes to find out which kinds of microplastics are most commonly found in rivers, and which rivers contain the most microplastics particles. This visualization was created from this data.



Observe

1. What do you notice about this visualization? Record 3 observations. Consider axes, title, type of visualization (line graph, bar chart, map, bubble chart, or other), time, etc.

- ***There is no title for the visualization***
- ***This is a stacked bar graph***
- ***There are five types of microplastics (beads, films, foams, fragments, and fibers)***
- ***The y-axis shows mean (average) relative abundance with a range from 0 – 100%***
- ***There are five different shades of blue green***
- ***Most of the microplastics are fibers***
- ***Beads make up the smallest amount of microplastics***

Analyze

1. List the variables in the visualization.

- ***The type of microplastic is the independent variable***
- ***The mean relative abundance is the dependent variable***

2. A relationship between variables exists when one influences the other. Do you notice a relationship between any of the variables in the visualization? If so, describe the relationship you observe.

   There isn't a relationship between the variables

Interpret

1. What trends or patterns do you notice in the data? In 1 -2 sentences, summarize the main takeaway of this visualization.

   Beads and pellets make up 1.6 %, films are 3.3%, foams are 7.6%, fragments are 16.7%, and fibers and fishing lines make up 70.9%. Fibers and lines make up the largest percentage while beads and pellets make up the smallest percentage of microplastics found in the rivers sampled.

2. If you had to explain this to an adult, what would you tell them in 2 – 3 sentences?

   The majority of microplastics are from fibers and lines, which come from synthetic clothing, diapers, tampons, wipes, cigarette butts, and nets.

Connect

1. How does this visualization connect to your world?

   Answers will vary. Consider the following:

   - ***Student use of health and beauty products including sunscreen, shaving cream, and cosmetics***
   - ***Student lifestyle and activities including fishing***
   - ***Littering in your community***
   - ***Student choice of clothing (synthetic materials shed microplastics when washed)***

2. How does this connect to what we are learning about in class right now?

   Answers will vary