

## Comparing Graphs, Making Conclusions

Using data to make conclusions about Baltimore's water supply and road salt.

Reintroduce the guiding question, "How might snowy and icy roads affect Baltimore's water supply" before asking students to begin comparing their graphs.

### Discussion

**Key Idea:** The amount of salt people added into freshwater ecosystems depends upon population density and number of roadways.

Recall that we began with the question, "How might snowy and icy roads affect the Baltimore area's water supply?" We thought that road salt would make its way into streams during winter months, and that we'd find more salt in streams near roads during snowier weather. We graphed the actual datasets that Dr. Kaushal analyzed. Now it is time to start drawing conclusions by looking for patterns in the data.

**Question:** What patterns do you see?

**Answers:** Seasonal pattern (more salt in water in the winter) Location pattern (more salt in urban areas than suburban or forested areas).

**Question:** What conclusions can you make from these patterns?

**Answer:** Salt put on roadways to melt snow and ice enters area streams making the water salty. The areas with the highest population density and the most roads have streams with the highest salt content.

**Question:** What are some consequences of salt entering the water supply of Baltimore on living things?

**Answers:** At 226 mg/L freshwater animals and plants will begin to die, at 400 mg/L some frogs will die, and at 1,000 mg/L freshwater fish like rainbow trout will die. Organisms that eat small plants and animals will also be affected because the food they eat will no longer be available.

### Did you notice the increased levels of salt in the forested stream in the summer?

Dr. Kaushal thinks that salt levels increase in forested streams in the summer because there is less water in the stream causing the salt that is there to become more concentrated.

**Misconception Alert****Individual salt footprint is lower in high-density urban areas than low-density rural areas**

Someone who lives in a rural area will contribute more to stream salt levels than someone who lives in an urban area. In rural areas, large areas of roadway are treated with salt to allow few people to travel. On a per person basis more roads exist.

Although, cities have many more roads than rural areas, they have fewer roads on a per person basis.

Stated another way - If all the people in New York City (over 8 million) moved to rural areas many more roads would need to be constructed, meaning a lot more salt would need to be added to roadways.