



One Health Fish Monitoring Citizen Science Project

– Total Mercury –

Introduction: Mercury is a naturally occurring element that is found in air, water and food. However, at high concentrations mercury is a major health concerns. Total mercury affects the nervous, digestive, and immune systems, as well as the lungs, kidneys, skin, and eyes. Fish absorb mercury through their gills as they swim and through their digestive tracts as they eat. They bioaccumulate mercury meaning that mercury builds up in larger fish as they eat smaller fish – who have eaten even smaller fish and other organisms.

About the data: ORCA Citizen Scientists catch fish and donate them to the One Health Fish Monitoring project. The fish are dissected by other citizen scientists who allocate 5 grams of fillet tissue for mercury analysis. That tissue is homogenized by ORCA scientists or citizen scientists and the homogenized samples are sent to an EPA certified commercial laboratory for total mercury analysis. Mercury data are reported as milligrams per kilogram of tissue (this can also be reported as parts per million or ppm).

Variables:

- Species of fish
- County where fish was caught
- Region of the lagoon where fish was caught
 - Northern (Volusia & Brevard)
 - Central (Indian River & St. Lucie)
 - Southern (Martin)
- Concentration of total mercury in fillet tissue

References:

<https://www.epa.gov/mercury/guidelines-eating-fish-contain-mercury>

<https://www.whoi.edu/oceanus/feature/how-does-toxic-mercury-get-into-fish/>

Examples of questions you could answer creatively with this dataset:

Level 1: In which county or region do fish have the highest concentration of total mercury?

Level 2: How do the fish species rank with respect to total mercury concentration?

Level 3: Within individual species, does their location impact total mercury?