

Title: Drinking Water Contamination in Low Income Communities in Texas

In the wake of massive drinking water contamination in Flint, Michigan and Newark, New Jersey, there is an increasingly public and national conversation around water infrastructure upgrades. These upgrades are very costly, and many water utilities who need upgrades can't afford it. Most water utilities are public. Since water utilities are public their revenue is heavily tied to property values and revenues from services. As a result, regions with a larger population of poor people, often have poorer water infrastructure. As a result, the counties that need the water upgrades the most, do not have the funding to do so.

The purpose of this project is to use GIS to visually present the correlation between poverty and drinking water contamination in Texas. This project follows a recent increased visibility in the conversation around water infrastructure and is based in part on the methodology recently used by the National Resource Defense Council (NRDC).

The NRDC's recent report *What's in Your Water? Flint and Beyond (2016)* maps Lead and Copper drinking water violations across the United States between 2013-2015. The NRDC's report *Threats on Tap* maps the population of people served by water systems in violation of the SDWA between 2013-2015. The maps that I will create for this project include this information *and* compare violations to poverty.

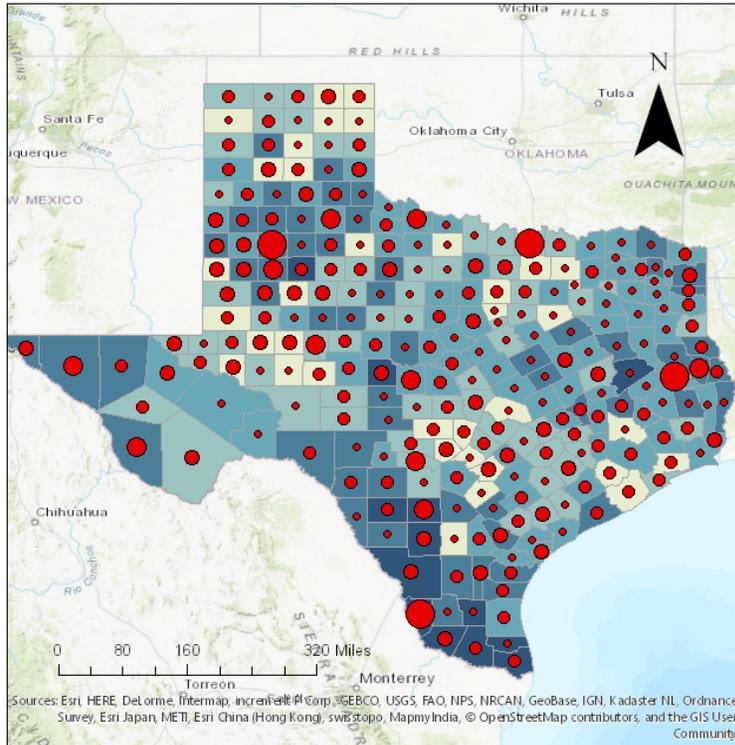
There are four maps that I will create:

- 1) A map of percent of the population in poverty and average drinking water treatment system violations per capita in each county
- 2) A map of poverty percentage and average violation per facility in each county
- 3) A map of poverty percentage and population size served by water systems with violations
- 4) A map of poverty percentage and total violations per facility in each county

All Texas data necessary to complete the project (Violations, TX County shp, Poverty, and Population) have been obtained.

The following map is one of four maps to be included in this term project. This map represents percent of the population in poverty in Texas and average drinking water treatment system violations per capita in each county.

The data on poverty percentage for each county was downloaded from the U.S. census Bureau. The Safe Drinking Water Information System (SDWIS) was used to find data on drinking water violations. The SDWIS site provided data on drinking water violations, the number of facilities, the number of people served by each system in each county.



Texas_County_violationpercap

CNTYAvg_ViolationPerCap

- ≤0.099041
- ≤0.238680
- ≤0.458494
- ≤0.764261
- ≤1.355781

Texas_County_poverty

AllinPovertyPercent

- ≤11.100000
- ≤15.200000
- ≤19.500000
- ≤25.500000
- ≤35.400000

Violations are drinking water violations of the Safe Drinking Water Rule between January 1st, 2014 and December 31st 2016. The facilities are only community served systems; there are no non-community (i.e. schools and factories) systems were included.

**It should be noted that these maps only include EPA reported violations.*

Methodology followed; NRDC:

Threats on Tap (2016, interactive): <https://www.nrdc.org/resources/threats-tap-widespread-violations-water-infrastructure>

What's in Your Water? (2016, report): <https://www.nrdc.org/sites/default/files/whats-in-your-water-flint-beyond-report.pdf>