

## INTRODUCTION

- CDC’s Community Water Fluoridation recommended level of fluoride is 0.7 mg/L<sup>1</sup>.
- FDA guidelines do not apply to bottled water containing only naturally occurring fluoride, thus, bottled water fluoride levels are often undisclosed/variable, making it difficult to determine fluoride intake from differing water sources.
- The Food and Nutrition Board finds insufficient data to derive RDAs, providing age/gender adjusted “adequate intakes (AI) for fluoride which range from .01 – 4.0 mg/day<sup>2</sup>.
- Community water fluoridation is a preventive strategy; concerns about neurodevelopmental effects and ethics regarding mass medication without consent, have led to a significant increase in bottled water consumption<sup>2</sup>.

## OBJECTIVE

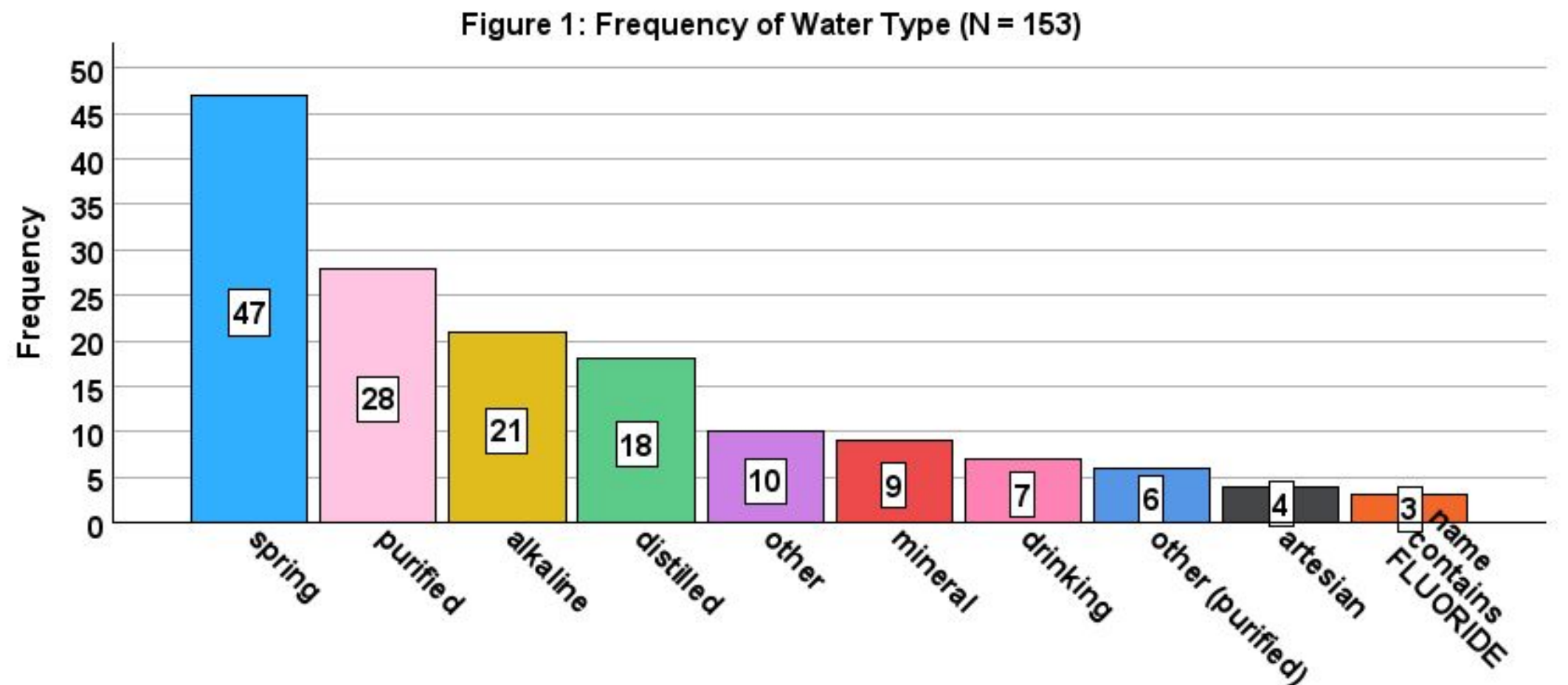
The objective of this project was to identify bottled water brands sold in the U.S, document specific fluoride concentrations, and create a comprehensive, accessible database for health professionals and consumers to estimate bottled water sources of fluoride.

## METHODS

- An online search strategy included using AI (e.g. Chatgpt, Claude AI) Google, Certificates of Analysis (CoA) or Consumer Confidence Reports (CCR), FDA, online databases, manufacturers’ websites, grocery store/DoorDash sites were searched using key words (e.g. bottled water, spring/artesian/distilled/alkaline).
- Brand name, water classification fluoride concentration and labeling claims (e.g. added fluoride) were entered into an Excel template.

## RESULTS

A total of 207 waters were found, 153 (74%) of which self-identified in the name as a type of water (Fig. 1). QR code for complete list.



Fluoride concentration was obtained from 27 (13%) brands, ranging from .05 – 1.0 mg, (mean = 0.29 ± .266). Two waters exceeded the recommended fluoride concentration of 0.7 mg (Figure 2.)

Figure 2: Rank Ordered by Fluoride Content

name	fluoride.concentration	water.type
Arrowhead mountain spring water	1.00	spring
Crystal Geyser Alpine spring water (Olanca, California)	.78	spring
Crazy water mineral water	.50	mineral
Crazy water natural still mineral alkaline water	.50	mineral
Liquid Death	.50	.
Ice mountain drinking water with fluoride	.43	name contains FLUORIDE
Crystal Geyser Alpine mineral Water	.34	mineral
Crystal Geyser Alpine Spring water (Mount Shasta, California)	.27	spring
Fiji Water	.24	.
Crystal Geyser Alpine spring water (South Carolina)	.21	spring
Poland Spring	.21	.
Topo Chico Mineral water	.20	mineral
Just Water	.19	.
Absopure spring water	.18	spring
LIFEWTR pH Balanced purified drinking water	.18	.
Deer Park	.15	.
Zephyrhills spring water	.15	spring
Crystal Geyser Alpine spring water (New Hampshire)	.13	spring
CFORCE natural artesian water	.12	artesian
Crystal Geyser Alpine spring water (Arkansas)	.11	spring
Morning fresh farms purified water	.10	.
Ten Alkaline Electrolyte Spring Water	.10	other (purified)
Ten spring water	.10	.
Zen Wtr Vapor distilled alkaline water	.10	alkaline
Crystal Geyser Alpine spring Water (Tennessee)	.06	spring
Crystal Geyser Alpine spring water (NY)	.05	spring

45 (22%) brands were classified as “nondetectable” – the manufacturer reported fluoride testing and found zero or so low that it was deemed nondetectable. 135 (65%) did not provide any indication/information of fluoride content or testing.

## DISCUSSION/CONCLUSION

- Fluoride content varied widely (0.0 to 1.0 mg) across the 207 bottled waters. Type of water—spring, mineral, artesian, alkaline—may greatly influence naturally occurring fluoride levels primarily attributable to geologic factors.
- Two common brands, (Arrowhead 100% Mountain Spring Water and Crystal Geyser Alpine Spring Water) exceeded the recommended .70 mg. concentration.
- Using highly fluoridated water to mix formula may lead to intake exceeding recommended amounts for infants (Halo Effect<sup>3</sup>).
- Limitations include reliance of data from multiple sources, as manufacturers are not required to disclose water quality test results/information on the label. State mandated regulations also affect product labelling.

## CONCLUSION

- These results demonstrate the variability across bottled waters, and non-standardized labelling.
- The growth in demand for bottled water may inadvertently increase consumer exposure to microplastics, thus, further studies in these areas are warranted.

## REFERENCES

1. U.S. Department of Health and Human Services Federal Panel on Community Water Fluoridation. (2015). U.S. Public Health Service recommendation for fluoride concentration in drinking water for the prevention of dental caries. Public Health Reports, 130(4), 318-331. <https://doi.org/10.1177/003335491513000408>.
2. Office of Dietary Supplements - Fluoride. (n.d.). Ods.od.nih.gov. <https://ods.od.nih.gov/factsheets/Fluoride-HealthProfessional/#h2>
3. Berg J, Gerweck C, Hujuel PP, et al. Evidence-based clinical recommendations regarding fluoride intake from reconstituted infant formula and enamel fluorosis. J Am Dent Assoc 2011;142(1):79-87.

