HPI Health Policy Institute

ADA American Dental Association®

# Research Brief

# State-Level Costs of Removing Fluoride from Community Water Systems

**Authors:** Deesha Bhaumik, PhD; Rebecca Starkel Weninger, PhD

The Health Policy Institute (HPI) is a thought leader and trusted source for policy knowledge on critical issues affecting the U.S. dental care system. HPI strives to generate, synthesize, and disseminate innovative research for policy makers, oral health advocates, and dental care providers.

**Who We Are**

HPI's interdisciplinary team of health economists, statisticians, and analysts has extensive expertise in health systems policy research. HPI staff routinely collaborates with researchers in academia and policy think tanks.

**Contact Us**

Contact the Health Policy Institute for more information on products and services at **hpi@ada.org** or call 312.440.2928.

## Key Messages

- *Decades of scientific evidence show that community water fluoridation (CWF) is a safe and effective means of preventing tooth decay, especially among children. Despite continued recommendation of fluoridated water from health organizations, several states are considering banning CWF based on guidance from the federal government.*
- *The estimated five-year costs associated with removing fluoride from community water systems in the U.S. is $46 billion.*
- *Removing fluoride from community water systems – especially if combined with a ban on fluoride supplements – would not only deal a major blow to the nation's oral health, but would also entail major economic costs.*

## Introduction

Addressing chronic conditions and promoting preventive health are priorities under the current administration's Make America Healthy Again (MAHA) platform.[1,2] However, policies recently implemented under the MAHA program directly challenge established public health measures meant to promote oral health among the U.S. population. Most notably, fluoride is under threat of being removed from community water systems despite decades of scientific evidence supporting its safety and effectiveness in preventing tooth decay among those that consume it.[3,4]

Fluoride is a naturally occurring mineral found in water, soil, plants and some foods and is most known for its oral health benefits.[5] Fluoride strengthens teeth through remineralization of the tooth enamel, protecting against and even reversing tooth decay.[6] While fluoride is naturally occurring, it does not occur or is not accessible at the optimal level, 0.7 milligrams per liter, in every community water source.[7] Additionally, targeted in-office fluoride treatments and even basic oral hygiene products like fluoridated toothpaste may be

© 2025 American Dental Association All Rights Reserved.

inaccessible for vulnerable populations, particularly those that live in rural areas and lack dental benefits.[8,9,10]

Regular use of fluoridated toothpaste and targeted fluoride treatments at the dental office, while effective, are not enough to entirely avoid tooth decay. Daily consumption of fluoridated water is also essential.[11] Fluoridation of community water systems has been found to be an effective and safe solution for delivering optimal levels of fluoride to prevent tooth decay.

Fluoridation of community water systems – at the optimal safe level – has been in place since 1945.[11] In the United States, 63 percent of the population receives fluoridated water due to community water systems as of 2022.[12] Community water fluoridation (CWF) has reduced dental caries rates by 25 percent among adults and children who receive it.[13,14,15] A recent analysis in *Jama Health Forum* estimates that eliminating fluoride from U.S. public water systems would increase tooth decay among children by 7.5 percentage points and cost $9.8 billion dollars in five years due to increased tooth decay.[16]

CWF has long been established as the most efficient and cost-effective public health measure for minimizing the development of dental caries, especially for children and communities that have a higher caries risk.[17] Dental caries is the most common chronic childhood disease,[18] and CWF not only reduces the incidence of caries but also reduces the costs and complications of severe caries (e.g., abscess).[19]

Despite the well-established benefits to oral health, CWF is being challenged at the federal and state level. Excess ingestion of fluoride can cause dental fluorosis, the appearance of faint white lines or streaks on the teeth.[20] In addition, exposure to fluoride in amounts higher than 1.5mg/L of drinking water has been associated with, but not proven to cause, lower IQ scores.[21] In the United States, the Centers for Disease Control and Prevention recommends fluoride intake at a level of 0.7 mg/L as the concentration that maximizes fluoride's oral health benefits while minimizing potential harms.[22] Despite this recommendation, Utah and Florida voted to ban fluoride from community water systems,[23] with other states considering the same measure.[24] In addition, the U.S. Food and Drug Administration announced that prescription fluoride supplements will be pulled from the market effective October 2025.[25] According to a recent HPI poll, 57.4 percent of dentists prescribed fluoride supplements to children.[26] The ban on fluoride supplements will eliminate a tool that health care providers rely on to reduce the risk of tooth decay in patients. Without access to fluoride in any form, the number of caries and cost of dental treatment will increase for payers and patients.

In this brief, we estimate the state fiscal impact of removing fluoride from community water systems across all 50 states and the District of Columbia. We also review the experiences of three communities that removed fluoride from their water systems, two of which decided to reimplement it after seeing the impact on the rate of dental caries, especially among young children, and related costs.

## Estimating the Cost Burden to States if Community Water Fluoridation Ends

We estimate the increased dental care costs that would result from the removal of fluoride in community water systems in 50 states and the District of Columbia. To determine the population affected by bans on water fluoridation, we calculated the number of residents served by community water systems with fluoridated water for each state. A 2024 study has recently estimated that removing fluoride from U.S. public water systems would cost $9.8 billion in five years due to increased tooth decay and associated

treatments for children ages 0-19.[16] The costs include in-office treatment for caries, abscesses, tooth extractions, and fluorosis (for children residing in communities with fluoride levels above the optimal limit) as well as the cost of water fluoridation to community water systems.

As of 2022, 62.6 percent of the U.S. population receives fluoridated water due to community water systems.

Nationally, we estimate that the total five-year increase in dental care costs due to removing fluoride from community water systems is $45.9 billion dollars: $9.8 billion for children, $27.9 billion for working-age adults, and $8.2 billion for seniors. The three states with the highest total costs are California ($4.8 billion), Texas ($4.4 billion), and Florida ($3.4 billion). Table 1 outlines each state and costs by age group.

Our results show that the elimination of fluoride from community water systems would significantly increase the associated dental care costs due to increases in caries.

In addition to our analysis, we summarize three cases where communities made the decision to remove fluoride from their public water systems. Two of these areas recently reinstated fluoride due to adverse dental outcomes and associated costs.

## Spotlight: Calgary

Calgary, Alberta, the fifth largest metropolitan area in Canada, voted to ban CWF in 2011 based on city residents' increasing distrust of established scientific rationales for water fluoridation as well as the belief that adding fluoride to community water systems was too costly.[27,28] The result was poorer oral health outcomes among Calgary residents.

From 2011 and 2018, the number of children receiving IV antibiotics for dental infections within one hospital system increased by 700%.[29] Further, caries-related dental treatment requiring general anesthesia for children ages 0-11 nearly doubled in non-fluoridated areas in Alberta compared to fluoridated areas,[30] with the rate increasing from 17 to 32 per 10,000 children. Another study compared school-aged children in post-CWF cessation Calgary to Edmonton, a similarly sized city with CWF and found that there were 12 percent more children with dental caries in their primary teeth in Calgary compared to Edmonton.[31]

In 2021, Calgary decided to restore fluoride into the city's water supply due negative oral health outcomes and the related health care costs that resulted from its removal. Full restoration of fluoride in Calgary is expected in 2025.[32]

## Spotlight: Windsor

The city of Windsor in Ontario, Canada voted to remove fluoride out of its water systems in 2013.[33] Opponents of CWF argued that the decades-old public health measure violated residents' health autonomy and that fluoride had unknown health risks unrelated to oral health.[34] Five years after the ban was implemented, an oral health report found that the percentage of children with tooth decay and/or requiring urgent care for untreated oral health issues increased by 51 percent.[35] The percentage of children with urgent dental needs was double in Windsor-Essex County compared to the rest of Ontario. Average total costs for emergency dental visits were estimated at $508,259 per year. Due to these outcomes, Windsor decided to reintroduce fluoride back into the water systems in 2022.[36]

## Spotlight: Juneau

Alaska's capital city, Juneau, voted to carry out the cessation of CWF in 2007.[37,38] While the intention behind the decision was to address public concerns about fluoride safety, the cost of treating dental disease in the community significantly increased over time.

More than a decade later, a study that compared the oral health of Medicaid-enrolled children ages 0-18 in the pre-cessation and post-cessation periods found that removing CWF led to statistically significant increases in the number of dental caries procedures and associated treatment costs.[33,39] Specifically, the post-CWF cessation group had increased caries-related treatment costs per patient that ranged from 28 percent to 111 percent after adjusting for inflation. In addition, the increase in number of procedures and costs post-CWF cessation was more pronounced for children age 7 and younger.

The city of Juneau does not currently have plans to reimplement CWF as of the time of this publication.[40]

## A Critical Time for the Future

Community water fluoridation is facing a great threat.[41] Opponents of fluoridation argue that CWF violates consumer autonomy and that fluoride consumption has causative links to lower IQs in children.[21] The argument that fluoridation should strictly be a consumer's choice does not account for the reality that not everyone has access to in-office fluoride treatments and the scientific literacy to understand the medical effects of fluoride.

CWF is not the first government-led intervention of its kind meant to improve public health through equal access. In 1924, iodine was added to table salt after an endemic iodine deficiency led to an increased prevalence of goiters (an enlargement of the thyroid gland) in certain regions of the U.S.[42,43] In 1933, vitamin D was added to milk to address rickets, a childhood disease that causes weakened bones due to vitamin D or calcium deficiency.[43,44] These measures, like CWF, proved to be safe and effective ways to improve health outcomes for all populations.

The removal of fluoride from community water sources coupled with a fluoride supplement ban would leave all communities, but especially rural and low-income communities, vulnerable to tooth decay and its associated complications. Currently, fluoride supplements must be prescribed by a dentist or physician and would likely pose out-of-pocket costs for patients.[45] Fluoride varnishes are only covered for adults on Medicaid in less than half of the U.S. states.[8] Only those with access to dental care and the financial means to afford fluoride supplements, which are currently under threat of being banned by the current administration,[25] would be able to mitigate the harm of CWF bans.

*Fluoride water and supplement bans would leave all communities, but especially rural and low-income communities, vulnerable to tooth decay and its associated complications.*

The ongoing reconciliation package, known as the One Big Beautiful Bill Act, is putting budgetary pressure on states' Medicaid funding. Adult Medicaid dental benefits in particular are at risk of being dropped from state programs.[2,46] CWF bans along with reduced or removed adult Medicaid dental benefits would trigger an expensive oral health crisis. Removing fluoride will lead to higher rates of caries, and low-income populations will be left without benefits to get their caries treated, leading to delayed care that will require more expensive emergency treatments at the state's expense. Untreated periodontal disease is associated with higher emergency room visits for pregnant individuals and those with coronary heart disease and diabetes.[2] Severe caries pose their own financial hardship to individuals and states.

*Community water fluoridation bans alongside reduced or eliminated Medicaid dental benefits would trigger an expensive oral health crisis.*

**Table 1:** Estimated 5-Year Increase in Dental Care Costs due to the Removal of Fluoride in Community Water Systems

| | Percent of State with Fluoride Exposure Due to Community Water Systems | Children (Ages 0-19) | Adults (Ages 20-64) | Seniors (Ages 65+) | Total 5-Year Cost |
|---|---|---|---|---|---|
| Alabama | 68.0% | $164,097,965 | $452,856,094 | $140,795,964 | $757,750,024 |
| Alaska | 31.4% | $11,590,641 | $31,569,882 | $7,319,318 | $50,479,841 |
| Arizona | 55.5% | $189,260,034 | $533,056,440 | $177,287,513 | $899,603,987 |
| Arkansas | 82.5% | $123,477,897 | $326,104,142 | $101,387,657 | $550,969,696 |
| California | 55.5% | $1,017,106,293 | $2,968,377,824 | $779,337,514 | $4,764,821,631 |
| Colorado | 71.3% | $187,634,728 | $581,133,442 | $149,046,859 | $917,815,029 |
| Connecticut | 68.8% | $108,753,914 | $334,202,188 | $105,409,390 | $548,365,492 |
| Delaware | 56.2% | $25,491,977 | $73,777,756 | $27,015,708 | $126,285,440 |
| District of Columbia | 99.3% | $27,665,686 | $100,776,806 | $19,799,127 | $148,241,620 |
| Florida | 68.2% | $632,853,927 | $1,987,662,419 | $746,258,103 | $3,366,774,449 |
| Georgia | 80.8% | $436,386,652 | $1,195,482,326 | $302,922,791 | $1,934,791,768 |
| Hawaii | 8.2% | $5,097,709 | $15,357,000 | $5,553,699 | $26,008,409 |
| Idaho | 23.5% | $23,749,722 | $58,400,940 | $17,711,072 | $99,861,734 |
| Illinois | 89.1% | $522,941,442 | $1,508,886,601 | $438,681,377 | $2,470,509,421 |
| Indiana | 68.2% | $230,796,280 | $612,462,501 | $178,983,452 | $1,022,242,233 |
| Iowa | 74.7% | $117,444,163 | $307,371,868 | $99,545,500 | $524,361,531 |
| Kansas | 62.0% | $92,390,984 | $235,213,513 | $70,995,313 | $398,599,809 |
| Kentucky | 89.7% | $193,011,784 | $534,511,163 | $161,210,171 | $888,733,119 |
| Louisiana | 33.9% | $76,970,994 | $203,710,870 | $59,849,575 | $340,531,440 |
| Maine | 39.9% | $21,611,609 | $72,573,986 | $28,393,804 | $122,579,399 |
| Maryland | 70.8% | $205,685,452 | $589,405,444 | $167,342,836 | $962,433,732 |

**Table 1:** Estimated 5-Year Increase in Dental Care Costs due to the Removal of Fluoride in Community Water Systems (continued)

| | Percent of State with Fluoride Exposure Due to Community Water Systems | Children (Ages 0-19) | Adults (Ages 20-64) | Seniors (Ages 65+) | Total 5-Year Cost |
|---|---|---|---|---|---|
| Massachusetts | 52.7% | $156,828,364 | $506,785,492 | $151,405,378 | $815,019,234 |
| Michigan | 67.0% | $304,771,059 | $887,553,583 | $286,965,790 | $1,479,290,431 |
| Minnesota | 77.6% | $214,751,011 | $582,581,656 | $176,097,377 | $973,430,045 |
| Mississippi | 40.4% | $59,095,653 | $154,391,414 | $46,686,396 | $260,173,462 |
| Missouri | 66.2% | $193,612,798 | $535,831,274 | $167,538,791 | $896,982,863 |
| Montana | 23.1% | $11,558,687 | $33,601,349 | $11,892,697 | $57,052,733 |
| Nebraska | 67.3% | $68,955,639 | $170,233,240 | $50,984,099 | $290,172,978 |
| Nevada | 69.3% | $100,383,770 | $297,649,853 | $85,626,959 | $483,660,583 |
| New Hampshire | 28.5% | $15,701,373 | $53,944,711 | $18,313,181 | $87,959,265 |
| New Jersey | 14.4% | $61,369,823 | $179,226,017 | $52,628,834 | $293,224,674 |
| New Mexico | 65.8% | $64,744,683 | $179,225,524 | $61,634,355 | $305,604,562 |
| New York | 62.5% | $539,802,807 | $1,665,142,786 | $507,292,336 | $2,712,237,929 |
| North Carolina | 66.8% | $333,864,817 | $955,263,780 | $281,914,105 | $1,571,042,702 |
| North Dakota | 90.4% | $35,928,171 | $91,600,261 | $26,844,411 | $154,372,843 |
| Ohio | 77.7% | $427,643,928 | $1,199,930,983 | $382,717,745 | $2,010,292,657 |
| Oklahoma | 57.6% | $118,011,044 | $302,412,936 | $86,529,990 | $506,953,970 |
| Oregon | 22.3% | $40,137,817 | $126,870,780 | $41,356,497 | $208,365,093 |
| Pennsylvania | 40.3% | $231,048,764 | $686,804,733 | $233,290,348 | $1,151,143,845 |
| Rhode Island | 74.9% | $34,506,837 | $111,863,507 | $35,280,124 | $181,650,469 |
| South Carolina | 69.7% | $169,416,425 | $481,044,368 | $159,277,119 | $809,737,911 |
| South Dakota | 80.4% | $37,463,908 | $92,325,190 | $30,113,796 | $159,902,894 |
| Tennessee | 80.2% | $265,426,775 | $757,188,553 | $221,306,076 | $1,243,921,405 |
| Texas | 67.1% | $1,069,150,543 | $2,721,596,334 | $621,574,994 | $4,412,321,871 |
| Utah | 42.5% | $85,026,697 | $188,901,369 | $39,198,077 | $313,126,144 |
| Vermont | 34.6% | $8,952,822 | $29,535,740 | $11,006,176 | $49,494,737 |
| Virginia | 77.8% | $313,465,148 | $912,086,664 | $258,946,508 | $1,484,498,320 |
| Washington | 55.2% | $193,465,191 | $587,658,275 | $164,289,971 | $945,413,438 |
| West Virginia | 71.3% | $54,069,373 | $163,725,345 | $61,114,509 | $278,909,227 |
| Wisconsin | 61.0% | $164,637,345 | $474,140,855 | $153,028,820 | $791,807,020 |
| Wyoming | 43.8% | $12,188,876 | $32,869,141 | $10,856,186 | $55,914,203 |
| **United States** | 62.6% | $9,800,000,000 | $27,884,878,919 | $8,220,558,391 | $45,905,437,310 |

**Source:** 2022 data from Water Fluoridation Reporting System (WFRS), managed by the CDC. Health Policy Institute analysis of Medical Expenditure Panel Survey (MEPS) data and previous research on cost of removing fluoride for children ages 0-19.[16] **Notes**: The column "Percent of State with Fluoride Exposure Due to Community Water Systems" includes the percent of each state with fluoridated water divided by that state's population.

## Data & Methods

We calculated the percentage of each state's population that receives fluoridated water through community water systems. We used 2022 reported fluoridation data from the Water Fluoridation Reporting System (WFRS), managed by the CDC[47] and state total populations as of 2022 from the U.S. Census Bureau.[48] Not all people who are served by community water systems receive fluoridated water, therefore we used WFRS' state-estimates 'Persons Served by CWS Receiving Fluoridated Water' and divided it by each state's total population. Our results do not capture individuals who receive fluoridated water through other sources such as private well water. Our results show that as of 2022, 62.6 percent of the U.S receives fluoridated water through a community water system.

We based our estimation of the costs of removing fluoride from community water systems on a recently published cost-effectiveness analysis of ceasing fluoridation in public water systems for children ages 0-19 in the Unites States by authors Choi and Simon.[16] They estimated that removing fluoride will result in an increase of $9.8 billion among children which encompasses costs for dental examinations; treatment for caries, abscesses, tooth extractions, and fluorosis (for the children that are residing in communities with fluoride levels above the optimal limit); and the cost of water fluoridation. We used their cost estimate and calculated the per-capita costs for this age group receiving fluoridated water to be $190.

We analyzed 2022 data from Medical Expenditure Panel Survey (MEPS) to calculate the dental expenditure ratio between children and adults.[49] The MEPS is a large-scale survey of individuals and families drawn from a nationally representative sample and is the most complete source of data on the cost and use of health care and health insurance. Restricting our analysis to individuals that visited a dentist in the last year, we calculated average dental expenditures for children (ages 0-19) and adults (ages 20 and older) for all payers. Due to data limitations, we did not calculate average dental expenditures for seniors (age 65 and older) separately. In 2022, for people that visited a dentist at least once in that year, adult and senior spending for all payers (private and public) was 20 percent higher than child spending. Using this ratio, we calculated the cost of removing fluoride as $229 per capita for adults and seniors residing in fluoridated areas. Our final costs consisted of multiplying the per capita cost with the fluoridated population by state.

This Research Brief was published by the American Dental Association's Health Policy Institute.

410 N. Michigan Ave
Ste. 3300
Chicago, Illinois 60611

312.440.2928
hpi@ada.org

For more information on products and services, please visit our website, www.ada.org/hpi.

## References

[1] Kessler BH, Rosato RJ. Make America Healthy Again: what it could mean for oral health. *JADA*. 2025;156(4):265-267.

[2] Bhaumik D, Hedges I, Zaborowski M, Vujicic M. What happens if the adult Medicaid dental benefit goes away? American Dental Association. Health Policy Institute Research Brief. March 2025. Available from: https://www.ada.org/-/media/project/ada-organization/ada/adaorg/files/resources/research/hpi/what_happens_if_adult_Medicaid_dental_goes_away.pdf. Accessed July 2, 2025.

[3] Baumgaertner Nunn E. Kennedy calls for states to ban fluoridated drinking water. *The New York Times*. April 7, 2025. Available from: https://www.nytimes.com/2025/04/07/health/rfk-jr-maha-tour.html. Accessed July 1, 2025.

[4] Schoenbaum H, Stobbe M. RFK Jr. will tell CDC to stop recommending fluoride in drinking water. PBS News. April 8, 2025. Available from: https://www.pbs.org/newshour/health/rfk-jr-will-tell-cdc-to-stop-recommending-fluoride-in-drinking-water. Accessed July 1, 2025.

[5] National Institutes of Health. Fluoride. Office of Dietary Supplements. Fact sheet. April 11, 2025. Available from: https://ods.od.nih.gov/factsheets/Fluoride-HealthProfessional/. Accessed July 1, 2025.

[6] Centers for Disease Control and Prevention. About fluoride. May 15, 2024. Available from: https://www.cdc.gov/oral-health/prevention/about-fluoride.html. Accessed July 1, 2025.

[7] U.S. Department of Health and Human Services Federal Panel on Community Water Fluoridation. U.S. Public Health Service recommendation for fluoride concentration in drinking water for the prevention of dental caries. *Public Health Rep*. 2015;130(4):318–331.

[8] CareQuest Institute for Oral Health. Medicaid adult dental coverage tracker. 2024. Available from: https://www.carequest.org/Medicaid-Adult-Dental-Coverage-Checker. Accessed July 1, 2025.

[9] Samuel Goldblum J, Shaddox C. America's unspoken hygiene crisis. The Century Foundation. July 16, 2021. Available from: https://tcf.org/content/commentary/americas-unspoken-hygiene-crisis/. Accessed July 1, 2025.

[10] Provision Promise. Food stamps (SNAP) don't cover hygiene supplies. Available from: https://provisionpromise.org/blogs/promise/food-stamps-don-t-cover-hygiene-supplies. Accessed July 1, 2025.

[11] American Dental Association. Fluoridation facts. National Fluoridation Advisory Committee. 2018. Available from: https://americanfluoridationsociety.org/wp-content/uploads/2021/11/Fluoridation_Facts-2018.pdf. Accessed July 9, 2025.

[12] National Institute of Dental and Craniofacial Research. Community water fluoridation. February 2025. Available from: https://www.nidcr.nih.gov/health-info/fluoride/community-water-fluoridation. Accessed July 2, 2025.

[13] Griffin SO, Regnier E, Griffin PM, Huntley VN. Effectiveness of fluoride in preventing caries in adults. *J Dent Res*. 2007;86(5):410–414.

[14] Iheozor-Ejiofor Z, Worthington HV, Walsh T, et al. Water fluoridation for the prevention of dental caries. *Cochrane Database of Syst Rev*. 2015;(6): CD010856.

[15] Michaud J, Kates J, Ndugga N. Water fluoridation in the U.S.: the federal role in policy and practice. KFF. December 13, 2024. Available from: https://www.kff.org/other/issue-brief/water-fluoridation-in-the-u-s-the-federal-role-in-policy-and-practice. Accessed July 1, 2025.

[16] Choi SE, Simon L. Projected outcomes of removing fluoride from US public water systems. *JAMA Health Forum*. 2025;6(5): e251166.

[17] O'Connell JM, Rockell J, Ouellet J, Tomar SL, Maas W. Costs and savings associated with community water fluoridation in the United States. *Health Aff*. 2016.35(12):2224–2232.

[18] U.S. Department of Health and Human Services. Dental caries (tooth decay). National Institute of Dental and Craniofacial Research. November 2022. Available from: https://www.nidcr.nih.gov/research/data-statistics/dental-caries. Accessed July 1, 2025.

[19] U.S. Department of Health and Human Services. 2020 Surgeon General's report oral health in America: advances and challenges. National Institute of Dental and Craniofacial Research. 2021. Available from:

https://www.nidcr.nih.gov/sites/default/files/2021-12/Oral-Health-in-America-Advances-and-Challenges.pdf. Accessed July 1, 2025.

[20] American Dental Association. Fluorosis. Available from: https://www.mouthhealthy.org/all-topics-a-z/fluorosis. Accessed July 9, 2025.

[21] National Toxicology Program. Fluoride exposure: neurodevelopment and cognition. U.S. Department of Health and Human Services. April 23, 2025. Available from: https://ntp.niehs.nih.gov/research/assessments/noncancer/completed/fluoride. Accessed July 9, 2025.

[22] Centers for Disease and Prevention. Community water fluoridation recommendations. May 15, 2024. Available from: https://www.cdc.gov/fluoridation/about/community-water-fluoridation-recommendations.html. Accessed July 1, 2025.

[23] Anderson O. Florida second state to ban community water fluoridation. *ADA News*. May 15, 2025. Available from: https://adanews.ada.org/ada-news/2025/may/florida-second-state-to-ban-community-water-fluoridation/. Accessed July 1, 2025.

[24] Neysa Alund N. Two states have now passed fluoride bans. These other ones introduced bills. USA Today. May 16, 2025. Available from: https://www.usatoday.com/story/news/nation/2025/05/16/fluoride-bans-states-florida-utah/83667361007/. Accessed July 7, 2025.

[25] U.S. Food & Drug Administration. FDA begins action to remove ingestible fluoride prescription drug products for children from the market. May 13, 2025. Available from: https://www.fda.gov/news-events/press-announcements/fda-begins-action-remove-ingestible-fluoride-prescription-drug-products-children-market. Accessed July 2, 2025.

[26] American Dental Association. Insights from Q2 2025: Fluoride supplement prescriptions. Economic Outlook and Emerging Issues in Dentistry. July 2025. Available from: https://www.ada.org/-/media/project/ada-organization/ada/ada-org/files/resources/research/hpi/emerging_issues_q22025_fluoride.pdf. Accessed July 10, 2025.

[27] Kaur G, Summers J, Ketchum J. Calgary removed fluoride from its water supply. A decade later, it's adding it back. NPR. December 13, 2024. Available from: https://www.npr.org/2024/12/13/nx-s1-5224138/calgary-removed-fluoride-from-its-water-supply-a-decade-later-its-adding-it-back. Accessed July 2, 2025.

[28] O'Neill B, Kapoor T, McLaren L. Politics, science, and termination: a case study of water fluoridation policy in Calgary in 2011. *Rev Policy Res*. 2018;36(1):99-120.

[29] Williamson DeStefano A. Why Calgary reversed its decision on fluoride after 10 years. DentistryIQ. December 6, 2024. Available from: https://www.dentistryiq.com/dentistry/research-and-news/article/55248093/why-calgary-reversed-its-decision-on-fluoride-after-10-years. Accessed July 2, 2025.

[30] Yazdanbakhsh E, Bohloui B, Patterson S, Amin M. Community water fluoride cessation and rate of caries-related pediatric dental treatments under general anesthesia in Alberta, Canada. *Can J Public Health*. 2024;115(2):305-314.

[31] McLaren L, Patterson SK, Faris P, et al. Fluoridation cessation and children's dental caries: A 7-year follow-up evaluation of Grade 2 schoolchildren in Calgary and Edmonton, Canada. *Community Dent Oral Epidemiol*. 2021;50(5):391-403.

[32] Lovett S. This city took fluoride out of the water. Now it's putting it back in. *The Times*. December 6, 2024. Available from: https://www.thetimes.com/us/news-today/article/this-city-took-flouride-out-of-the-water-now-its-putting-it-back-in-6gsgk63hf. Accessed July 2, 2025.

[33] American Dental Association. Community water fluoridation prevents painful dental disease. Denying public health measures to Americans is disgraceful. Press release. March 28, 2025. Available from: https://www.ada.org/about/press-releases/community-water-fluoridation-prevents-painful-dental-disease. Accessed July 2, 2025.

[34] Schmidt D. Windsor votes to remove fluoride from drinking water. *Windsor Star*. January 28, 2013. Available from: https://windsorstar.com/news/local-news/windsor-votes-to-remove-fluoride-from-drinking-water. Accessed July 7, 2025.

[35] Roy M, D'Souza R. Oral Health Report: 2018 Update. Windsor-Essex County Health Unit. April 2018. Available from: https://www.wechu.org/sites/default/files/edit-resource/em-oral-health-report-2018/comm-e-e-psi-data-oral-health-report-2018-update-accessible-521822018-id-36792.pdf. Accessed July 2, 2025.

[36] CBC News. Windsor to put fluoride back into the water after council vote. December 14, 2018. Available from: https://www.cbc.ca/news/canada/windsor/windsor-council-water-fluoride-1.4947723. Accessed July 2, 2025.

[37] Newsome M. As bans spread, fluoride in drinking water divides communities across the US. KFF Health News. April 12, 2024. Available from: https://kffhealthnews.org/news/article/fluoride-drinking-water-local-bans/. Accessed July 2, 2025.

[38] Jardin M. What happened when Juneau took fluoride out of the drinking water? University of Alaska Anchorage. February 5, 2019. Available from: https://www.uaa.alaska.edu/news/archive/2019/02/happened-juneau-took-fluoride-drinking-water.cshtml. Accessed July 2, 2025.

[39] Meyer J, Margaritis V, Mendelsohn A. Consequences of community water fluoridation cessation for Medicaid-eligible children and adolescents in Juneau, Alaska. *BMC Oral Health*. 2018;18:215.

[40] Larson C. How going fluoride-free has impacted one Alaskan city. NPR. February 16, 2025. Available from: https://www.npr.org/2025/02/16/nx-s1-5232176/how-going-flouride-free-has-impacted-one-alaskan-city. Accessed July 7, 2025.

[41] Anderson O. RFK Jr. to tell CDC to change fluoride guidelines. ADA News. April 9, 2025. Available from: https://adanews.ada.org/ada-news/2025/april/rfk-jr-to-tell-cdc-to-change-fluoride-guidelines/. Accessed July 2, 2025.

[42] Leung AM, Braverman LE, Pearce EN. History of U.S. iodine fortification and supplementation. *Nutrients*. 2012;4(11):1740-1746.

[43] Committee on Use of Dietary Reference Intakes in Nutrition Labeling. "Overview of Food Fortification in the United States and Canada." In *Dietary Reference Intakes: Guiding Principles for Nutrition Labeling and Fortification*. 2003. Washington (DC): National Academies Press. Available from: https://www.ncbi.nlm.nih.gov/books/NBK208880/. Accessed July 2, 2025.

[44] Mayo Clinic. Rickets. April 25, 2025. Available from: https://www.mayoclinic.org/diseases-conditions/rickets/symptoms-causes/syc-20351943. Accessed July 2, 2025.

[45] American Dental Association. Fluoride: topical and systemic supplements. June 14, 2023. Available from: https://www.ada.org/resources/ada-library/oral-health-topics/fluoride-topical-and-systemic-supplements. Accessed July 2, 2025.

[46] Congress.gov. H.R.1 - One Big Beautiful Bill Act. 119th Congress. Available from: https://www.congress.gov/bill/119th-congress/house-bill/1/all-actions. Accessed July 2, 2025.

[47] Centers for Disease Control and Prevention. 2022 water fluoridation statistics. June 6, 2024. Available from: https://www.cdc.gov/fluoridation/php/statistics/2022-water-fluoridation-statistics.html. Accessed July 1, 2025.

[48] U.S. Census Bureau. Exploring Age Groups in the 2020 Census. May 25, 2023. Available from: https://www.census.gov/data/tables/2020/demo/age-and-sex/exploring-age-groups-in-2020-census.html. Accessed July 2, 2025.

[49] Medical Expenditure Panel Survey. Agency for Healthcare Research and Quality. April 14, 2023. Available from: https://meps.ahrq.gov/data_stats/download_data_files.jsp. Accessed July 2, 2025.

## Suggested Citation

Bhaumik D, Starkel Weninger R. State-level costs of removing fluoride from community water systems. American Dental Association. Health Policy Institute. Research brief. July 2025. Available from: https://www.ada.org/-/media/project/ada-organization/ada/ada-org/files/resources/research/hpi/costs_removing_fluoride_community_water_systems.pdf.