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# Water Access in Schools Fast Facts

To provide you with the best science and to reduce review time, please find the following science-approved facts for use in your campaigns and materials. After each fact, you will find fast facts based on the science, which can be cut and pasted word-for-word without need for additional science review. Please note that any change in wording will result in the need to run your documents through science review before release.

## About Water Access in Schools

Access to free, clean water in public schools is generally regulated by school nutrition policies, state plumbing codes, and school facilities standards. Schools that participate in the National School Lunch Program and other federal child nutrition programs must also comply with minimum nutrition standards for drinking water availability during mealtimes. States can improve drinking water availability to ensure that all kids, no matter where they live, have access to free, clean drinking water in school.

## Health Benefits of Water

### FACT 1

Water plays an important role in maintaining a child's overall health. Drinking water supports children's muscles, joints, and tissues; improves their digestive system; and keeps their growing bodies hydrated.

#### Fast Facts:

- ▶ Drinking water benefits children's health.
- ▶ Drinking water supports children's muscles, joints, and tissues.
- ▶ Drinking water keeps kids' growing bodies hydrated.
- ▶ Drinking water helps children's muscles, joints, and tissues; improves their digestive system; and keeps their growing bodies hydrated.

#### Sources:

Centers for Disease Control and Prevention. Water & Nutrition. Updated October 2016. <https://www.cdc.gov/healthywater/drinking/nutrition/index.html>. Accessed October 31, 2018.

Jéquier E, Constant F. Water as an essential nutrient: the physiological basis of hydration. *Eur J Clin Nutr.* 2010; 64(2):115-23, doi: [10.1038/ejcn.2009.111](https://doi.org/10.1038/ejcn.2009.111).

### FACT 2

Adequate water intake can positively impact children's cognitive performance, particularly short-term memory. Drinking water can also improve children's visual attention and fine motor skills.

#### Fast Facts:

- ▶ Drinking water can help children learn better.
- ▶ Drinking water can improve children's short-term memory.
- ▶ Drinking water can improve children's fine motor skills and visual attention, which helps with learning activities such as reading.

**Sources:**

Masento NA, Golightly M, Field DT, Butler LT, van Reekum CM. Effects of hydration status on cognitive performance and mood. *Br J Nutr*. 2014; 111(10):1841-52, doi: [10.1017/S0007114513004455](https://doi.org/10.1017/S0007114513004455).

Booth P, Taylor B, Edmonds CJ. Water supplementation improves visual attention and fine motor skills in schoolchildren. *Education and Health*. 2012; 30:75-79.

**FACT 3**

Children who drink fluoridated water instead of sugary drinks have a reduced risk of dental caries.

**Fast Facts:**

- ▶ Replacing sugary drinks with water reduces the chance that kids will develop cavities.
- ▶ Children who drink water instead of sugary drinks are less likely to have cavities.
- ▶ Drinking water instead of sugary drinks reduces the risk that kids will develop cavities.
- ▶ Drinking water instead of sugary drinks benefits children's oral health.

**Source:**

Armfield JM, Spencer AJ, Roberts-Thomson KF, Plastow K. Water fluoridation and the association of sugar-sweetened beverage consumption and dental caries in Australian children. *Am J Public Health*. 2013; 103(3):494-500, doi: [10.2105/AJPH.2012.300889](https://doi.org/10.2105/AJPH.2012.300889).

**FACT 4**

Substituting sugary drinks with low or no calorie beverages, such as water, can prevent excess weight gain.

**Fast Facts:**

- ▶ Replacing sugary drinks with water can help people maintain a healthier weight.
- ▶ Drinking water can help people maintain a healthier weight.
- ▶ Eliminating sugary drinks can help people maintain a healthier weight.

**Source:**

Zheng M, Allman-Farinelli M, Heitmann BL, Rangan A. Substitution of sugar-sweetened beverages with other beverage alternatives: a review of long-term health outcomes. *J Acad Nutr Diet*. 2015; 115(5):767-79, doi: [10.1016/j.jand.2015.01.006](https://doi.org/10.1016/j.jand.2015.01.006).

**FACT 5**

Studies show that replacing caloric beverages with non-caloric ones, such as water, results in average weight losses of 2% to 2.5%.

**Fast Facts:**

- ▶ Drinking water instead of sugary drinks reduces the number of calories people consume.
- ▶ Drinking water instead of sugary drinks can help people achieve or maintain a healthy weight.

**Source:**

Tate DF, Turner-McGrievy G, Lyons E, et al. Replacing caloric beverages with water or diet beverages for weight loss in adults: main results of the Choose Healthy Options Consciously Everyday (CHOICE) randomized clinical trial. *Am J Clin Nutr*. 2012; 95(3):555-63, doi: [10.3945/ajcn.111.026278](https://doi.org/10.3945/ajcn.111.026278).

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## Current Water Consumption Trends

### FACT 6

In 2009–2012, a national survey of children ages 6-19 found that more than half (54.5%) of U.S. children and adolescents were inadequately hydrated. Inadequate hydration was more prevalent among boys, non-Hispanic black and younger children, compared to girls, non-Hispanic white and older children.

#### Fast Facts:

- ▶ Many children don't drink enough water.
- ▶ From 2009 to 2012, more than half of children in the U.S. didn't drink enough water.
- ▶ Younger children are less likely to drink enough water compared to older children.

#### Source:

Kenney EL, Long MW, Craddock AL, Gortmaker SL. Prevalence of inadequate hydration among U.S. children and disparities by gender and race/ethnicity: National Health and Nutrition Examination Survey, 2009–2012. *Am J Public Health*. 2015; 105(8): e113-8, doi: [10.2105/AJPH.2015.302572](https://doi.org/10.2105/AJPH.2015.302572).

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### FACT 7

In 2009–2012, the odds of inadequate hydration was 1.76 times higher among U.S. boys than girls and 1.34 times higher among non-Hispanic black children than non-Hispanic white children.

#### Fast Facts:

- ▶ Boys are less likely to drink enough water compared to girls.
- ▶ Girls are more likely to drink enough water compared to boys.
- ▶ Black children are less likely to drink enough water compared to white children.
- ▶ White children are more likely to drink enough water compared to black children.

#### Source:

Kenney EL, Long MW, Craddock AL, Gortmaker SL. Prevalence of inadequate hydration among U.S. children and disparities by gender and race/ethnicity: National Health and Nutrition Examination Survey, 2009–2012. *Am J Public Health*. 2015; 105(8): e113-8, doi: [10.2105/AJPH.2015.302572](https://doi.org/10.2105/AJPH.2015.302572).

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### FACT 8

Water intake needs vary based on gender, age, physical activity levels, and other factors. However, national recommendations advise boys ages 9 to 13 years to consume at least 2.4 liters (roughly 10 cups) of total water each day (including plain drinking water, other liquids, and any water in foods). Girls ages 9 to 13 years should consume at least 2.1 liters (roughly 9 cups) of total water each day. Yet, the majority of girls and boys in that age range fail to meet those recommendations. In 2005–2010, girls were 444 mL (roughly 2 cups) a day short, while boys were 663 mL (nearly 3 cups) a day short.

**Fast Facts:**

- ▶ Girls ages 9 to 13 should consume around 9 cups of water a day (from beverages and foods).
- ▶ National recommendations advise girls ages 9 to 13 to consume around 9 cups of water each day (from beverages and foods).
- ▶ The majority of girls ages 9 to 13 consume roughly 2 cups a day less than recommended amount of water (from beverages and foods).
- ▶ Boys ages 9 to 13 should consume around 10 cups of water a day (from beverages and foods).
- ▶ National recommendations advise boys ages 9 to 13 to consume around 10 cups of water each day (from beverages and foods).
- ▶ The majority of boys ages 9 to 13 consume roughly 3 cups a day less than the recommended amount of water (from beverages and foods).

**Sources:**

National Academies of Sciences, Engineering, and Medicine; Food and Nutrition Board. Dietary Reference Intakes: Water, Potassium, Sodium, Chloride, and Sulfate. Published February 2004. <http://www.nationalacademies.org/hmd/Reports/2004/Dietary-Reference-Intakes-Water-Potassium-Sodium-Chloride-and-Sulfate.aspx>. Accessed November 1, 2018.

Drewnowski A, Rehm CD, Constant F. Water and beverage consumption among children age 4–13y in the United States: analyses of 2005–2010. *Nutr J.* 2013; 12:85, doi: [10.1186/1475-2891-12-85](https://doi.org/10.1186/1475-2891-12-85).

**FACT 9**

A study of 10 schools in Boston found that that students who drank water from fountains drank an average of 2.4 ounces per lunch when drinking directly from the fountain (about the size of a condiment cup) versus 5.2 ounces with cups. Another study in New York City found that students increase their water-taking by triple in schools that have installed water jets with provision of cups or water bottles.

**Fast Facts:**

- ▶ Kids who have access to water jets / water fountains / bubblers as well as bottles or cups for water tend to drink more water than kids who drink directly from the water fountain.
- ▶ On average, kids drink about 2.4 ounces of water when they drink directly from a water fountain (about the size of a condiment cup). When they have access to water jets with cups and bottles, they can increase their water-taking by as much as triple.

**Source:**

Kenney EL, Gortmaker SL, Carter JE, Howe MC, Reiner JF, Craddock AL. Grab a Cup, Fill it Up! An intervention to promote the convenience of drinking water and increase student water consumption during school lunch. *Am J Public Health.* 2015; 105:1777-83. doi: [10.2105/AJPH.2015.302645](https://doi.org/10.2105/AJPH.2015.302645).

**FACT 10**

In 2005–2010, approximately one in six (17%) U.S. children and adolescents aged 1 to 19 did not drink tap water. Children who are from underserved backgrounds (racial/ethnic minorities and less education among the head of household) were least likely to drink tap water.

**Fast Facts:**

- ▶ From 2005 to 2010, approximately one in six children and teens in the U.S. did not drink tap water.
- ▶ Children from underserved backgrounds are less likely to drink tap water.

**Source:**

Patel AI, Shapiro DJ, Wang YC, Cabana MD. Sociodemographic characteristics and beverage intake of children who drink tap water. *Am J Prev Med.* 2013; 45(1):75-82, doi: [10.1016/j.amepre.2013.04.001](https://doi.org/10.1016/j.amepre.2013.04.001).

## Barriers to Water Access in Schools

**FACT 11**

Access to drinking water in schools varies by region and the socioeconomic characteristics of the students. A study of more than 1,000 youth aged 9 through 18 years from 47 states found that "widely available" access to drinking fountains and dispensers was least commonly reported by Hispanic youth and students attending schools in the West, and most commonly reported by Black youth and students attending schools in the Midwest.

**Fast Facts:**

- ▶ Access to drinking water in school varies by location and socioeconomic factors.
- ▶ Hispanic youth and students in the West are least likely to report having widely available access to water fountains and dispensers in school.
- ▶ Black youth and students in the Midwest are most likely to report having widely available access to water fountains and dispensers in school.

**Source:**

Onfurak SJ, Park S, Wilking C. Student-reported school drinking fountain availability by youth characteristics and state plumbing codes. *Prev Chronic Dis.* 2014; 11: E60, doi: [10.5888/pcd11.130314](https://doi.org/10.5888/pcd11.130314).

**FACT 12**

A study of 59 middle and high schools in Massachusetts found that more than half (54%) of schools did not have free water access in school cafeterias in 2012. Schools, on average, provided 1.5 water sources per 75 students, but roughly 20% of the water sources within each school were broken.

**Fast Facts:**

- ▶ In a study of middle and high schools in Massachusetts, more than half of schools did not provide free water access in the cafeteria in 2012.
- ▶ A study of middle and high schools in Massachusetts showed that schools provided an average of 1.5 water sources per 75 students.
- ▶ A study of middle and high schools in Massachusetts showed that roughly 20% of school water sources in each school were broken.

**Source:**

Kenney EL, Gortmaker SL, Cohen JF, Rimm EB, Cradock AL. Limited school drinking water access for youth. *J Adolesc Health.* 2016; 59(1):24-9, doi: [10.1016/j.jadohealth.2016.03.010](https://doi.org/10.1016/j.jadohealth.2016.03.010).

**FACT 13**

Despite the existence of state and federal laws to promote school water availability, nearly a quarter (24.7%) of California schools did not offer free water to students during lunch in 2012–2013. Adolescents in schools that provided free water during lunch consumed significantly more water than adolescents who reported that free water was not available.

**Fast Facts:**

- ▶ Students drink more water when schools provide water during lunch at no charge.
- ▶ Providing free water during lunch at school can help kids drink more water.
- ▶ Nearly a quarter of California schools did not offer free water for students during lunch in the 2012-2013 school year.

**Source:**

Bogart LM, Babey SH, Patel AI, Want P, Schuster MA. Lunchtime school water availability and water consumption among California adolescents. *J Adolesc Health*. 2016; 58(1):98-103, doi: [10.1016/j.jadohealth.2015.09.007](https://doi.org/10.1016/j.jadohealth.2015.09.007).

**FACT 14**

A study of 240 California public schools found that secondary schools had lower fountain-to-student ratios than elementary schools, rural schools were more likely to offer non-fountain water sources than urban schools, and newer schools were more likely to regularly maintain water sources than older schools.

**Fast Facts:**

- ▶ Newer schools are more likely to maintain drinking fountains and other water sources compared to older schools.
- ▶ Rural schools are more likely to offer water to students from sources other than water fountains, such as dispensers or pitchers, compared to urban schools.
- ▶ Middle and high schools tend to have fewer water fountains per student compared to elementary schools.

**Source:**

Patel AI, Hecht K, Hampton KE, Grumbach JM, Braff-Guajardo E, Brindis CD. Tapping into water: key considerations for achieving excellence in school drinking water access. *Am J Public Health*. 2014; 104(7):1314-9, doi: [10.2105/AJPH.2013.301797](https://doi.org/10.2105/AJPH.2013.301797).

**FACT 15**

In 2014, less than half (45.8%) of schools in the U.S. conduct periodic tests of drinking water outlets for lead and about a quarter (25.6%) of schools required staff training on drinking water quality. Schools in towns were less likely than rural schools to conduct periodic inspections that test drinking water outlets for lead.

**Fast Facts:**

- ▶ About half of U.S. schools do not conduct periodic tests for lead in drinking water.
- ▶ About a quarter of U.S. schools require staff to be trained on drinking water quality.
- ▶ Rural schools test water quality, safety and lead levels more frequently than schools in towns.
- ▶ Schools in towns are less likely than rural schools to test water quality, safety and lead levels less frequently.

**Source:**

Cradock AL, Everett Jones S, Merlo C. Examining differences in the implementation of school water-quality practices and water-access policies by school demographic characteristics. *Prev Med Rep.* 2019; 14:100823. doi: [10.1016/j.pmedr.2019.100823](https://doi.org/10.1016/j.pmedr.2019.100823).

**FACT 16**

In 2014, 74.1% of public and private schools in the U.S. permitted students to have a water bottle with them during the school day in all school locations. In fewer schools (34.6%) students can purchase bottled water from vending machines or school stores.

**Fast Facts:**

- ▶ Most U.S. schools—just shy of 75%—allow students to have a water bottle with them on campus during the school day.
- ▶ About one-third of schools sell water to students in vending machines or school stores.

**Source:**

Cradock AL, Everett Jones S, Merlo C. Examining differences in the implementation of school water-quality practices and water-access policies by school demographic characteristics. *Prev Med Rep.* 2019; 14:100823. doi: [10.1016/j.pmedr.2019.100823](https://doi.org/10.1016/j.pmedr.2019.100823).

**FACT 17**

A Harvard and University of California study found that of the 25 states that had school drinking water lead testing programs or policies in 2018, only 13 states provided funding for water testing and only five states provided funds for both water testing and treatment/remediation. Five states (MI, NV, NY, OH, D.C.) did not provide funding for either testing or treatment, and two states did not provide specifics on the availability of funding.

**Fast Facts:**

- ▶ Only half of U.S. states have programs in place to test for lead levels in the water kids drink at school.
- ▶ Only 13 states provide the funding schools need to test lead levels in the water kids drink while on campus.
- ▶ Only five states (MI, NV, NY, OH, D.C.) provide the funding schools need to test and fix lead levels in the water kids drink while on campus..

**Source:**

Cradock AL, Hecht CA, Poole MK, Vollmer LY, Flax CN, Barrett JL. State approaches to testing school drinking water for lead in the United States. Boston, MA: Prevention Research Center on Nutrition and Physical Activity at the Harvard T.H. Chan School of Public Health; 2019. Available at <https://www.hsph.harvard.edu/prc/projects/school-research/early-adopters>.

## Promoting Effective Water Access in Schools

**FACT 18**

A national survey found that 96% of individuals aged 17 and older supported required access to water throughout the day in schools.

**Fast Facts:**

- ▶ The vast majority of those surveyed believe that it should be required to provide students with access to water throughout the school day.
- ▶ Requiring access to water for students throughout the school day has broad support.

**Source:**

Long MW, Gortmaker SL, Patel AI, Onufrak SJ, Wilking CL, Cradock AL. Public perception of quality and support for required access to drinking water in schools and parks. *Am J Health Promot.* 2018; 32(1):72-74, doi: [10.1177/0890117116671253](https://doi.org/10.1177/0890117116671253).

**FACT 19**

In a study of schools in Massachusetts, the estimated ten-year cost per school for providing water during mealtimes to students, including dispenser units, installation, water testing, water cups, and labor ranged from \$12,544 to \$27,922\*, depending on water delivery options, and assuming average school enrollment.

**Fast Facts:**

- ▶ According to a study of schools in Massachusetts, providing water during school meals costs schools between \$12,500 and \$28,000\* over a decade.
- ▶ According to a study of schools in Massachusetts, schools spend between \$12,500 and \$28,000\* over the course of a decade to provide water during mealtimes.
- ▶ Water can be provided during school meals for as little as around \$12,500\* per decade, according to a study of schools in Massachusetts.

\*Costs are estimated based on 2010 dollars.

**Source:**

Cradock AL, Wilking CL, Olliges SA, Gortmaker SL. Getting back on tap: the policy context and cost of ensuring access to low-cost drinking water in Massachusetts schools. *Am J Prev Med.* 2012; 43(3 Suppl 2): S95-101, doi: [10.1016/j.amepre.2012.05.016](https://doi.org/10.1016/j.amepre.2012.05.016).

**FACT 20**

A study of 20 afterschool programs in Boston, MA found that programs that implemented a low-cost program to promote water as the beverage of choice served 3.6 more ounces of water on average per child per day during snack and served 60.9 fewer beverage calories per day, compared to afterschool programs that did not implement the intervention.

**Fast Facts:**

- ▶ Afterschool programs that promote water as the beverage of choice are more likely to serve more water and fewer calories from beverages.
- ▶ In a study of afterschool programs in Massachusetts, programs that promoted water as the beverage of choice served almost 4 more ounces of water per child per day.
- ▶ In a study of afterschool programs in Massachusetts, programs that promoted water as the beverage of choice served 60 fewer calories from beverages per day.

**Source:**

Giles CM, Kenney EL, Gortmaker SL, Lee RM, Thayer JC, Mont-Ferguson H, Cradock AL. Increasing water availability during afterschool snack: evidence, strategies, and partnerships from a group randomized trial. *Am J Prev Med.* 2012; 43(3 Suppl 2): S136-42, doi: [10.1016/j.amepre.2012.05.013](https://doi.org/10.1016/j.amepre.2012.05.013).



**FACT 21**

When water jets (i.e., drinking water dispensers) were installed in the cafeterias of nine New York City public schools, students nearly tripled their water taking at lunchtime. These results persisted the following school year, even with no promotional campaign.

**Fast Facts:**

- ▶ When schools install drinking water dispensers in the cafeteria, students are more likely to take more water.
- ▶ Students are more likely to choose more water when drinking water dispensers are available in the cafeteria.
- ▶ Providing water dispensers in school cafeterias can create a long-term increase in the amount of water students select.
- ▶ In a study of New York City public schools, students nearly tripled the amount of water they took after water dispensers were installed in the cafeteria, and they continued to choose water the following school year.

**Source:**

Elbel B, Mijanovich T, Abrams C, Cantor J, Dunn L, Nonas C, Cappola K, Onufrak S, Park S. A water availability intervention in New York City public schools: influence on youths' water and milk behaviors. *Am J Public Health*. 2015; 105(2):365-72, doi: [10.2105/AJPH.2014.302221](https://doi.org/10.2105/AJPH.2014.302221).

**FACT 22**

A study of more than one million children in New York City public elementary and middle schools found that attending a school with water jets (i.e., drinking water dispensers) was associated with a significant decline in the likelihood of being overweight for boys (0.9 percentage point reduction) and girls (0.6 percentage point reduction).

**Fast Facts:**

- ▶ Students who go to schools that have drinking water dispensers may be more likely to be at a healthy weight.
- ▶ Installing drinking water dispensers in schools was associated with a decline in the likelihood of being overweight.

**Source:**

Schwartz AE, Leardo M, Aneja S, Elbel B. Effect of a school-based water intervention on child body mass index and obesity. *JAMA Pediatr*. 2016; 170(3):220-6, doi: [10.1001/jamapediatrics.2015.3778](https://doi.org/10.1001/jamapediatrics.2015.3778).

**FACT 23**

A review of state policies for drinking water access in schools that were adopted and/or in effect as of June 2017 found that state plumbing codes and school building construction requirements for drinking fountains in school buildings typically require a set ratio of fountains to students (e.g., 1 per 100 students), but are rarely otherwise tailored to the unique needs of the students in school buildings. The review recommended that policies for school drinking fountains address several factors, including adequate access during peak cafeteria usage times and fountain access in areas commonly used beyond the regular school day.

**Fast Facts:**

- ▶ State plumbing codes and school building construction requirements for drinking fountains typically require a certain ratio of fountains to students but are rarely customized to the needs of students.
- ▶ State plumbing codes and school building construction requirements for drinking fountains often do not take students' needs into account.
- ▶ Policies for school drinking water fountains should ensure adequate access in the cafeteria during busy times and access to fountains in areas commonly used outside of normal school hours.

**Source:**

Wilking CL; Public Health Advocacy Institute. Developing State Policy Recommendations for Safe Drinking Water Procurement in Child Care Centers and Schools. Published December 2017. [https://www.phaionline.org/wp-content/uploads/2018/01/Key-Findings-revised-1\\_9.pdf](https://www.phaionline.org/wp-content/uploads/2018/01/Key-Findings-revised-1_9.pdf). Accessed November 13, 2018.

**FACT 24**

Installing water jets on school lunch lines in all U.S. K-8 school buildings with viable plumbing is projected to reach 29.6 million children, cost \$4.25 per child, prevent nearly 180,000 cases of childhood obesity by 2025, and save \$0.31 in health care cost per dollar invested.

**Fast Facts:**

- ▶ If all U.S. elementary and middle schools installed water jets / water fountains / bubblers in school lunch lines, nearly 30 million kids would have the opportunity to drink more water.
- ▶ It is estimated to cost \$4.25 per child for all U.S. elementary and middle schools to install water jets / water fountains / bubblers in school lunch lines.
- ▶ Installing water jets / water fountains / bubblers in school lunch lines could prevent nearly 180,000 cases of childhood obesity by 2025 and save \$0.31 in health care costs for every dollar invested.

**Source:**

Kenney EL, Craddock AL, Long MW, Barrett JL, Giles CM, Ward ZJ, et al. Cost-effectiveness of water promotion strategies in schools for preventing childhood obesity and increasing water intake. *Obesity*. 2019; 27: 2037-2045. doi: [10.1002/oby.22615](https://doi.org/10.1002/oby.22615).

## Other Resources

[National Drinking Water Alliance](#)

[NOPREN Drinking Water Working Group](#)

[State briefs: State approaches to testing school drinking water for lead in the United States](#)