

Money Down the Drain: Shorter Showers

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Background Information

The EPA estimates that the standard shower head uses 2.5 gallons of water per minute (GPM). My showerhead, the Waterpik VSA-653E EcoFlow Low-Flow Shower Head, has a flow-rate of 1.8 GPM, saving money and water while offering a spa-like experience.



Impact Statement

By taking shorter showers, I can reduce my water footprint by nearly **38** gallons a week, which will reduce greenhouse gas (GHG) emissions, save my family money, and can motivate others to reduce their water footprint.



Calculations

Before carrying out this experiment, my shower duration per week was as shown:

8 minutes: 1x a week ~ uses 14.4 gallons of water.

9 minutes: 2x a week ~ uses 16.2 gallons of water.

10 minutes: 3x a week ~ uses 18 gallons of water.

11 minutes: 1x a week ~ uses 19.8 gallons of water.

(1 time per week my shower is 8 mins)(14.4 gallons)
+ (2 times per week my shower is 9 mins)(16.2 gallons)
+ (3 times per week my shower is 10 mins)(18 gallons)
+ (1 time per week my shower is 11 mins)(19.8 gallons)
= (1 x 14.4) + (2 x 16.2) + (3 x 18) + (1 x 19.8) = I used **120.6** gallons of water each week.

If I reduced my shower time by **3 minutes** every day, then the total water conserved would be:
(7 showers x **5.4** gallons) = **37.8** gallons per week saved.

And, the new total gallons of water used per week would be:
= (7 showers a week) - (3 minutes reduced) = **82.8** gallons of water.

Reducing my shower by only 3 minutes will save me 5.4 gallons every time for a total of 37.8 gallons saved each week.

After doing these calculations, I decided to make some adjustments to my shower time. I recorded my shower duration for a week with behavioral adjustments:

5 minutes: 1x a week ~ uses 9 gallons of water.

6 minutes: 2x a week ~ uses 10.8 gallons of water.

7 minutes: 3x a week ~ uses 12.6 gallons of water.

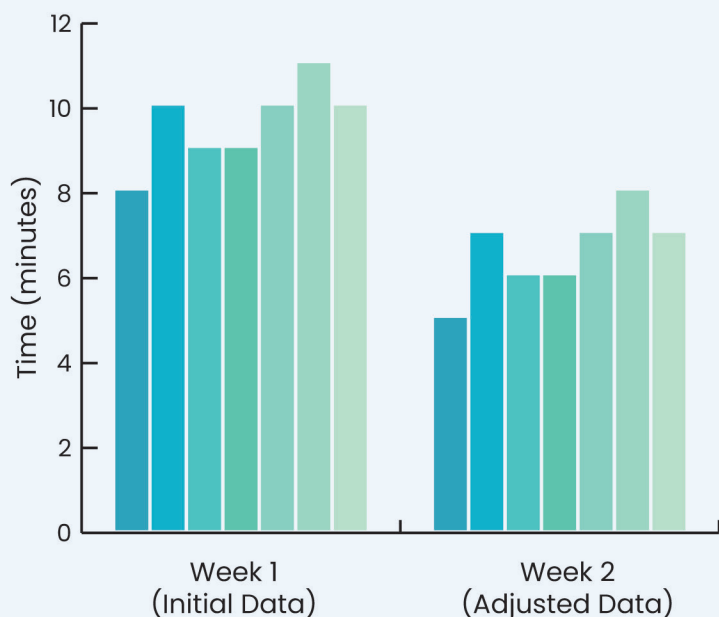
8 minutes: 1x a week ~ uses 14.4 gallons of water.

Weekly Totals

Total gallons of water used per week = (1 x 9) + (2 x 10.8) + (3 x 12.6) + (1 x 14.4) = **82.8** gallons of water per week.

I decreased my total gallons of water used per week by **37.8** gallons! This means...

(37.8 gallons)(52 weeks in the year) = **1,965.6** gallons of water saved every year.



Initial Data:

Day 1 - 8 minutes

Day 2 - 10 minutes

Day 3 - 9 minutes

Day 4 - 9 minutes

Day 5 - 10 minutes

Day 6 - 11 minutes

Day 7 - 10 minutes

Symmetrical Measures

Mean: 9.57142857

Standard deviation: 0.9759

Skewed Measures

Minimum: 8

Quartile 1 (Q1): 9

Median: 10

Quartile 3 (Q3): 10

Maximum: 11

Interquartile Range (IQR): 1

Data (After Behavior Adjustments):

Day 1 - 5 minutes

Day 2 - 7 minutes

Day 3 - 6 minutes

Day 4 - 6 minutes

Day 5 - 7 minutes

Day 6 - 8 minutes

Day 7 - 7 minutes

Symmetrical Measures

Mean: 6.57142857

Standard deviation: 0.9759

Skewed Measures

Minimum: 5

Quartile 1 (Q1): 6

Median: 7

Quartile 3 (Q3): 7

Maximum: 8

Interquartile Range (IQR): 1



Annual Totals

If my entire family reduced their showers by **3** minutes, each saving **37.8** gallons every week, in total, we could save **(1,965.6** gallons x **4** people) = **7,862.4** gallons of water every year.

So... Why Does This Matter?

"Heating 1 gallon of water produces, on average, **0.18 lbs** of CO₂. A five-minute shower creates **2.25 lbs** of CO₂ and a ten-minute shower **4.5 lbs** of CO₂" (Kumar).

Shower time has a huge impact on the environment. But how much water can we actually save if we all took shorter showers? "If the **300+ million people** in the United States reduced each shower by a mere one minute, we would save around **170 billion** gallons of water each year" (Kamprad).

There is no infinite supply of water: "Many of the world's freshwater sources are being drained faster than they are being replenished" (Smedley).

How does taking shorter showers help our environment? Well, to put it simply, "Each gallon truly does add up, and the less water we use per shower, the more water we keep naturally circulating in the environment." (Kamprad). We can protect our planet and conserve our freshwater supply by taking shorter showers.



Sources:

<https://thecoguide.org/have-you-tried-five-minute-shower-challenge#:~:text=Heating%201%20gallon%20of%20water,shower%204.5%20lbs%20of%20CO2>

<https://impactful.ninja/long-showers-environmental-impact/>

<https://www.bbc.com/future/article/20170412-is-the-world-running-out-of-fresh-water>



What Else Can Taking Shorter Showers Do?

Taking shorter showers can save a lot of money. Looking at my family's waterbill, saving **7,862.4 gallons of water** will save us **\$96.20** every year. One tree is planted for every dollar, which means with \$96.20 dollars, **96 trees** could be planted. According to the Arbor Day Foundation, a mature tree will absorb about **48 pounds of CO₂** (carbon dioxide) from the atmosphere over the course of a year. By taking shorter showers and saving 7,862.4 gallons of water, my family could remove about **4,608 pounds of CO₂** from the atmosphere every year.

You can do it too.