

SPECIAL REPORT

# IS OUR WATER SAFE TO DRINK?

✓ **REVIEWS & RATINGS**

Refrigerators

Blenders

Vacuums

Bike Helmets

Carpet Cleaners

MAY 2021

# CR Consumer Reports®



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**What's in Your Drinking Water?**  
Learn how to test and treat your tap water for contaminants.

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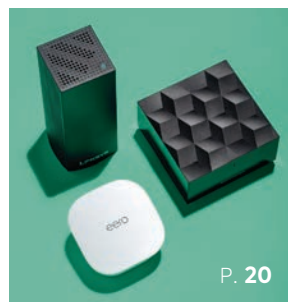
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has my unconditional  
support. I want people  
to know CR is right  
there with you.**

”

**—Sanford Waxer**

*President's Circle donor & Legacy Society member*

Sanford Waxer was in a terrible car accident. Being a loyal supporter, he understood that without CR's work to get seat belt laws passed, it could have been much worse. Sanford has decided to leave a gift to CR in his will so that we can continue our work protecting consumers for generations to come.

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# Trusting What's on Tap



WATER IS AN essential part of life—so vital to our existence that one of the objectives of recent space exploration, including the Perseverance rover on Mars, is to identify how life may have flourished when water was present.

We have tested bottled water over the years and alerted you to toxic chemicals we found, and now we are taking a closer look at the tap water in our

homes and in other places where we congregate. To better understand the current state of the health and safety of our nation's water, CR teamed up with the Guardian US news organization and with consumers to test drinking water across the U.S. The testing happens not just in CR labs but also in the communities where consumers live, including, in this case, 120 locations where people who committed to collecting water samples used our rigorous guidelines.

The results of our investigation are staggering. With arsenic, lead, and PFAS (per- and polyfluoroalkyl substances), known as “forever chemicals,” showing up in test samples across the country, the public needs to know what steps can be taken to ensure that we can enjoy safe drinking water in our homes.

We provide practical advice in “How Safe Is Our Drinking Water?” on page 34. But in addition to giving you answers, we also raise some fundamental questions. How can we fix this elemental necessity quickly so that every person in this country can rest assured that they have clean drinking water? To see how you can help make progress and have your voice heard, go to [CR.org/pfaspetition](https://www.consumerreports.org/pfaspetition).

*Marta Tellado*

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## Making Baby Food Safer

### WHAT'S AT STAKE

A U.S. House of Representatives report released in February confirmed what CR investigations have found: that many popular baby foods contain alarmingly large amounts of heavy metals, including arsenic, cadmium, and lead.

Young children are especially vulnerable to the toxicity of heavy metals, says James Dickerson, PhD, chief scientific officer at CR. The substances “have a disproportionately adverse effect on developing minds and bodies.” Effects can include lower IQ and an increased risk of certain cancers.

The House report also found that not enough is being done by baby food companies and the government to minimize heavy metal exposure and that parts of the manufacturing processes may be contributing to the problem.

### HOW CR HAS YOUR BACK

The House report was conducted in response to testing by CR and other organizations. Our 2018 analysis of 50 nationally distributed packaged foods made for babies and toddlers found concerning levels of heavy metals—and found that organic foods were as likely to contain them as conventional foods.

CR provided data and analysis to congressional staffers working on the new report. We’re calling on manufacturers and the Food and Drug Administration to take action, including establishing a goal of no measurable amounts of cadmium, inorganic arsenic, or lead in children’s food.

### WHAT YOU CAN DO

To learn more about the report’s findings and how to reduce your family’s exposure to heavy metals, go to [CR.org/heavymetal0521](https://CR.org/heavymetal0521).

## Encouraging Competition

### WHAT'S AT STAKE

Vigorous competition among companies is essential to a functioning marketplace. Without it, consumers get fewer choices, prices often rise, and innovation tends to lag.

In recent decades, however, the federal laws that once helped promote competition among businesses have been chipped away at by courts, haven’t been fully enforced, and were allowed to fall behind the evolving economy. The result: Unchecked anti-competitive mergers and conduct have enabled a massive consolidation of corporate power and a steady erosion of consumer rights and leverage. The unprecedented market dominance of Big Tech is just one very visible manifestation of these trends.

### HOW CR HAS YOUR BACK

CR worked closely with Capitol Hill policymakers to help shape the Competition and Antitrust Law Enforcement



### PROGRESS UPDATE

The same day in late January that a CR investigation into auto insurance pricing was published, the New Jersey Senate passed a CR-endorsed bill to stop insurers from using education, credit scores, and occupation to determine rates. CR was mobilizing members in New Jersey to contact their assembly members and urge them to support the bill. **Our petition urging Geico and Progressive to stop the practice** is now more than 40,000 signatures strong. And in February, another CR-endorsed bill was introduced in the U.S. House of Representatives that, if passed, would ban the practice nationwide.

Reform Act, introduced in February by Minnesota Sen. Amy Klobuchar. If passed, it would reinvigorate America’s antitrust laws by strengthening the government’s ability to stop anti-competitive mergers and the kind of “exclusionary conduct” that companies use to muscle out their competition, and giving more resources to the underfunded agencies charged with enforcing antitrust laws.

### WHAT YOU CAN DO

Go to [senate.gov](https://senate.gov) to ask your senators to support and co-sponsor the bill.

## Shrinking the Digital Divide

### WHAT'S AT STAKE

Comcast, the nation’s biggest internet service provider, recently drew criticism for plans to impose new fees on customers, including data caps that could have meant bigger bills for many users in more than a dozen predominantly Northeastern states and D.C.

The timing struck many as very unfair: Raising prices during the pandemic would hit cash-strapped families that depend on the internet for school, work, healthcare, and other essentials.

### HOW CR HAS YOUR BACK

CR advocates took to the media to urge the company to reverse course, and organized a petition drive that quickly garnered more than 70,000 signatures from fed-up consumers. Ultimately, after negotiations with the Pennsylvania attorney general, Comcast agreed to delay the caps and fees in the Northeast until 2022.

### WHAT YOU CAN DO

Comcast should scrap the plan in other regions. Help apply pressure by signing our petition at [CR.org/comcast0521](https://CR.org/comcast0521).





Our March cover story, “20 Ways to Sleep Better Tonight,” offered guidance on top-rated mattresses, cozy weighted blankets, and calming bedtime rituals. Readers ask a few more questions and share their own tips for sweet dreams. To add your voice, go to [CR.org/sleep0521](https://www.consumerreports.org/sleep0521).

CONCERNING THE RATINGS ON mattresses: I seem to recall that some years ago you rated the Original Mattress Company a top pick. Yet in the current magazine, there is no mention of this company. Why?  
—John Wagner, St. Cloud, FL

**EDITOR'S NOTE** In our current ratings, we have tested two models from the Original Mattress Factory: the Orthopedic Luxury Firm innerspring model, with an Overall Score of 70, and the Factory Serenity Latex foam model, with a score of 67. While

both of those are Very Good scores, our ratings in the March issue included only the innerspring and foam models with an Overall Score of 73 or higher.

HOW CAN I FIND OUT if a mattress will work on an adjustable base?  
—Charles Ehmke, via CR.org

**EDITOR'S NOTE** Our mattress ratings at CR.org indicate which beds are compatible with an adjustable frame under “features.” To filter for this option, you can click “More Filters” at the top of the ratings page, and check “Yes” under “Adjustable Base.” Then click “Apply.” But note that some manufacturers’ mattresses will be compatible only with their own adjustable bed frames.

I BOUGHT AN all-latex mattress online, and I am very pleased with it. Does CR include latex mattresses in its testing? They have a number of advantages over other mattress types.  
—Jerry Pinkard, via CR.org

**EDITOR'S NOTE** There are several all-latex or partial latex (often with a layer or two of latex foam) models in our ratings. Check out the Sleep on Latex Pure Green Firm mattress, made with natural latex foam and organic cotton and wool, and a CR Best Buy with an Excellent Overall Score in our tests. You can also filter for latex models in our mattress ratings on CR.org.

I APPRECIATE CR'S info on weighted blankets, as I am

interested in trying one. But I was hoping to find the size of the quilted squares, because that may affect whether the beads stay in place. I read a review of a blanket with large areas holding the beads, and they shifted, leaving only the fabric over the user in some areas. I believe dimensions of the areas holding the beads may be valuable in choosing a blanket.

—Leta Albright, Oswego, NY

**EDITOR'S NOTE** Though shifting beads within the squares did not significantly affect the feel of the blankets for our testers, the YnM weighted blanket has the smallest pockets of the five models we reviewed, at about 4.6x4.6 inches.

THANK YOU for including the waterbed in your CR timeline on sleep. Waterbeds were an industry disruptor that showed the bedding industry a new dimension in comfort and support.  
—Charles Hall, Bainbridge Island, WA (inventor who patented the waterbed in 1971)

OF PRIMARY CONCERN to some of us older readers is the availability of in-home setup and removal delivery service. The best mattress is of no use to us if we have to lug it in from the driveway, carry it upstairs, then dispose of the old mattress. Costco, for example, delivers only select mattresses and only to some ZIP codes.  
—Tim Keating, via CR.org

**EDITOR'S NOTE** Delivery services and fees do indeed vary widely, so it's smart to read the delivery and return policies while you shop.

IF YOU'RE BUYING new sheets, know that many pet rescues take old/unwanted bedding for the animals. Check it out where you live.  
—Ellen Reilly McCormick, via CR.org



WRITE

Go to [CR.org/lettertoeditor](https://www.consumerreports.org/lettertoeditor) to share your comments for publication.



## PRIVACY POINTERS

I HAVE BEEN in cybersecurity for over 30 years. Thank you for the article “Your Essential Guide to Online Safety” (February 2021). So many people have no idea how digitally vulnerable they are. Your article is a most welcome wake-up call. Your discussion on multifactor authentication (MFA) is spot on. I would like to add at the very minimum, users should have MFA for all their financial, health, and other applications where highly sensitive info is transmitted. Set it up with your financial institution so that every time you log on, it must text a code to your smartphone. You have a short window of time to input the code on the site. And, as an added benefit, if you suddenly see a code from your bank appear on your phone and you are not trying to log on to your account,

it may be an indication that someone else is trying to log in to your account; call your bank.

—*L. Barry Lyons IV, Germantown, MD*

YOUR ARTICLE about protecting a person’s personal identifiable information (PII) should have mentioned the legal way to use the physical address of a post office box instead of a person’s residential address. The U.S. Postal Service allows box customers to use the physical address of the post office to receive mail, instead of the P.O. Box number. For example, P.O. Box 59 can receive mail addressed to 500 Main St. #59, City, State. This is a safe way to protect a person’s residential address from being disclosed. The post office allows you to leave a signature on file for deliveries that require one. The customer agreement that authorizes street address deliveries can be found at [usps.com](https://usps.com).

—*Vic Glaze, Wheaton, IL*

RE: LOST GADGETS. In my iPad cover I have a business card offering a “reward for return.” I once left it on a plane. United Airlines called me 3 hours later, having found my card. They get 20 lost iPads a day, I’m told, most never claimed. On the opening screen photo put your phone number, for an honest person to return your device to you.

—*Byron Chong, Salinas, CA*

WHY IS THE ONUS on honest people to run from people who would do us harm? Why not turn the tables on these hackers and identity thieves and hold them accountable for their actions? All of us should press our government for strong laws and aggressive enforcement that will put these people behind bars.

—*Scott Wilson, Long Beach, CA*



## SELF-DRIVING SAFETY

I HOPE AUTOMAKERS listen to your advice regarding unresponsive drivers and driver assistance technology (“The Road to Self-Driving Cars,” February 2021). As someone living with arrhythmia, I have long hoped for an automatic pull-over feature, or at least one activated by an easy-to-reach button. Tachycardia can render me unconscious in seconds, not nearly enough time to safely stop the car.

—*Dean Sage, Miami*

YOUR REVIEW OF self-driving technology is interesting. The tests were conducted between June and September. The top half of North America spends half a year driving on deteriorating roads in snow, rain, and fog, and most of the time you can’t see the lines on the road. The technology depends on cameras and sensors that would be inoperable from dirt and grime. You can drive through a car wash, and your car is filthy before you get home! CR should test during winter months in real-life driving conditions.

—*Richard Raynor, Thunder Bay, Ontario*

**EDITOR’S NOTE** Roadway and environmental conditions are certainly an important aspect for operation of these features. Our testing has focused on the capabilities and limitations of the systems under optimal conditions in order to differentiate the performance of the automakers’ systems. We continue to look at ways to formally assess how factors such as time of day, weather, and the quality of road markings can impact these systems.



## BEDTIME TIPS FROM OUR READERS

No eating, no TV, no reading, no arguing.

—*Jorja Lieding Molnar, via Facebook*

Pile on the quilts and crack the bedroom window. [You’ll have] fresh air and adjustable weight with the layers.

—*Christina Larson, via Facebook*

I put my temp on 68° F at night all year long. Higher makes my head stuffed, lower is too cold.

—*Fran Cady, via Facebook*

I hate sheets that cling to nightwear! I love percale: The smooth, crisp surface is wonderful.

—*Barbara Hutchins Chism, via Facebook*

I have to eat a little snack or I’m staring at the ceiling all night debating [whether I should] get up to eat.

—*Sondy Lu, via Facebook*

Reading in bed helps put me to sleep.

—*Leslie Hope, via Facebook*

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# What We're Testing in Our Labs ...

*In our 63 labs, we continually review and rate products. Here, timely picks for this month.*

## French-Door Refrigerators

**WE TESTED:** 100 models  
**WE TEST FOR:** Thermostat control, temperature uniformity, energy efficiency, and more.

**ABOUT THE SCORES:**  
Median: 71  
Range: 37-84

**Best Door-in-Door Design**  
LG LRFDS3006S (34" wide)  
\$3,800

**83**  
OVERALL  
SCORE



**Narrower for a Nice Price**  
GE GNE21FSKSS (30" wide)  
\$1,585

**75**  
OVERALL  
SCORE



**Most Energy-Efficient**  
Whirlpool WRF532SMHZ  
(33" wide)  
\$2,220

**75**  
OVERALL  
SCORE



## Bike Helmets

**WE TESTED:** 43 adult models  
**WE TEST FOR:** The ability of a helmet to absorb the impact in a crash, ventilation, fit adjustments, ease of use, and more.

**ABOUT THE SCORES:**  
Median: 70  
Range: 37-85

**Great Ventilation & Value**  
Garneau Majestic  
\$60

**84**  
OVERALL  
SCORE



**Superior Fit**  
Smith Convoy MIPS  
\$75

**79**  
OVERALL  
SCORE



**Bargain Buy**  
Zefal Pro 24  
\$25

**71**  
OVERALL  
SCORE



## Ask Our Experts

### When should I replace an old bike helmet?



CR EXPERTS RECOMMEND replacing your bike helmet right away after a fall when it has been hit—even if there's no visible damage to it—or after five years of regular use. That's "out of an abundance of caution," says Rich Handel, project leader for CR's helmet testing. And a helmet can get dinged up in other ways, particularly if you tend to toss it in a car trunk, where it can roll around. The heat in a trunk (which can rise to 120° F in the summer) can also potentially degrade performance. Even ultraviolet rays from frequent sunny rides may cause damage over time. If the colors have faded, that could be a sign that the exterior may have been weakened by UV exposure, some experts say.

ILLUSTRATION: SERGE BLOCH

For the latest ratings of these and other product categories, readers with a Digital or All Access membership can go to [CR.org](https://www.consumerreports.org).

## Budget-Friendly Blenders

**WE TESTED:** 71 full-sized models  
**WE TEST FOR:** Smoothness and thickness of icy drinks, how well a model purées raw ingredients, clarity of controls, ease of cleaning, and more.

**ABOUT THE SCORES:**

Median: 68  
Range: 26-87

**Super for Smoothies**  
Instant Ace  
\$80

**77**  
OVERALL  
SCORE



**Reliable Brand for Less**  
Oster 800 Series  
BLSTKH-GMO-000  
\$50

**69**  
OVERALL  
SCORE



**Perfect for Puréeing**  
Amazon Basics 1200-Watt  
Multi-Speed MJ-BL1201W  
\$75

**68**  
OVERALL  
SCORE



## Fitness Trackers

**WE TESTED:** 16 models  
**WE TEST FOR:** Good ergonomics, ease of pairing, readability, accuracy of heart-rate monitor, and more.

**ABOUT THE SCORES:**

Median: 72  
Range: 35-85

**Accurate & Easy to Use**  
Garmin Forerunner 235  
\$170

**85**  
OVERALL  
SCORE



**Best Buy & Slim Touch Screen**  
Fitbit Charge 4  
\$130

**75**  
OVERALL  
SCORE



**Sporty & Solar-Charging**  
Casio G-Shock Move  
GBDH1000  
\$400

**74**  
OVERALL  
SCORE



## Replacement Windows

**WE TESTED:** 14 models  
**WE TEST FOR:** The ability to stop drafts from 25-mph to 50-mph winds at 0°F and 70°F, and how well a window keeps water out in heavy wind-driven rain.

**ABOUT THE SCORES:**

Median: 67  
Range: 54-91

**Best Overall Vinyl Buy**  
Pella 350 Series  
\$415

**91**  
OVERALL  
SCORE



**Great Composite Pick**  
Anderson A-Series  
\$500

**81**  
OVERALL  
SCORE



**Good-Value Vinyl Choice**  
Simonton Reflections 5500  
\$290

**73**  
OVERALL  
SCORE



## Induction Ranges

**WE TESTED:** 4 models  
**WE TEST FOR:** How quickly the range brings water to a near-boil, if it can keep tomato sauce at a simmer, and how evenly the oven bakes cookies and cakes.

**ABOUT THE SCORES:**

Median: 81  
Range: 73-84

**Excellent & Large Capacity**  
LG LSE4617ST  
\$3,700

**84**  
OVERALL  
SCORE



**Slide-In Model With Smart Features**  
Samsung NE58K9560WS  
\$2,430

**80**  
OVERALL  
SCORE



**Double-Oven Deal**  
KitchenAid KFID500ESS  
\$2,680

**73**  
OVERALL  
SCORE



**Note:** We rate different products according to different testing protocols; as a result, Overall Scores of one product category are not comparable with another.

**COMING NEXT MONTH** Exterior Paints & More



## I'm shopping for a new TV and keep hearing about 'Mini LEDs.' What are they?

This year's hot new technology is the use of "Mini LEDs"—or miniature light-emitting diodes—in an LCD TV, rather than larger standard-sized LEDs. TV manufacturers, such as LG, Samsung, and TCL, claim that using these smaller LEDs can improve an LCD screen's brightness, contrast, and black levels (essentially, how dark the darkest parts of images are). While we've tested only a few sets with this technology so far, we expect to see more over the next year.

Why might these Mini LEDs work better? On some high-end LCD TVs, standard-sized LEDs are arranged across the back panel and divided into a few dozen zones that can be separately illuminated or darkened—a feature called

"local dimming," says Claudio Ciacci, who heads CR's TV testing program. By shrinking the size of the LEDs, companies can pack more of them into the same area, allowing them to be divided into a thousand or more zones instead of dozens. That allows even more precise local dimming control, meaning dark images on your screen should look darker and you'll see fewer "halos" (the extra light that leaks through from LEDs when bright objects appear against a dark background). The ultimate effect should be a bright, clear viewing experience.

### Is it really so important to get vaccinated for COVID-19?

Yes. To achieve "herd immunity"—which is needed for our lives to really return to normal—experts estimate that 80 to 85 percent of Americans may need to be vaccinated against COVID-19. So getting vaccinated helps to protect not just you and

your family but also your whole community.

All the COVID-19 vaccines currently available in the U.S. meet the strict safety standards established by the FDA and have been shown to be highly effective at keeping you from getting COVID-19. (And even if you do contract the virus after being vaccinated, you're far less likely to get seriously ill.) Being vaccinated could even be required for certain jobs, and possibly for activities such as air travel (with exemptions, such as for health). Note, though, that once you get vaccinated, experts advise that you continue to take precautions such as social distancing and wearing a mask when out in public, which are important for reducing the spread of all variants of the coronavirus, says James Dickerson, PhD, CR's chief scientific officer. That's because even though vaccinated people are less likely to contract the virus, it's possible that they could still spread it to others. (To upgrade the safety of your mask, turn to page 16.)

### Can I use a liquid clog remover on a stopped-up toilet?

While many liquid or gel clog-removing products can work wonders on a clogged

sink or shower, most aren't necessarily designed for your toilet. This may be because the formulas are ineffective on toilet clogs, and/or contain highly corrosive chemicals, such as sodium hypochlorite, which can potentially cause plumbing problems or even damage toilet pipes. That damage would probably require professional repair or replacement.

If your plunger isn't getting the job done, try using an enzyme cleaner, such as Green Gobbler Drain Clog Dissolver. This type of cleaner employs a concentrated mixture of bacteria to break down organic matter without the use of sodium hydroxide or other chemicals that can harm your toilet or septic system. Or pour a good amount of toilet bowl cleaner directly into the bowl and let it sit for at least 30 minutes, says Mike De Silva, a plumber and the president of Plumbing Plus in Saway, Calif. Many regular toilet bowl cleaners contain hydrogen peroxide, which can help break down waste so that your toilet bowl can drain. You can also buy a plumbing snake (a flexible auger used to dislodge clogs), but De Silva warns that "if the clog is that bad, you may be better off calling a pro." For more clever cleaning tips for the bathroom and beyond, see "Cleaning Secrets for Every Room," on page 24.



We have more than 140 in-house experts who research, test, and compare. Submit your questions at [CR.org/askourexperts](https://www.consumerreports.org/askourexperts) ... and watch for the answers.

# CR Insights

## IN THE KNOW

### A SMART BUY FOR SELTZER LOVERS

AMERICANS DRANK MORE than 860 million gallons of bottled seltzer, sparkling, and mineral water in 2020, up more than 90 percent from 2015.\* But drinking a lot of store-bought bottles and cans adds to your monthly grocery bill—and to the world's waste stream.

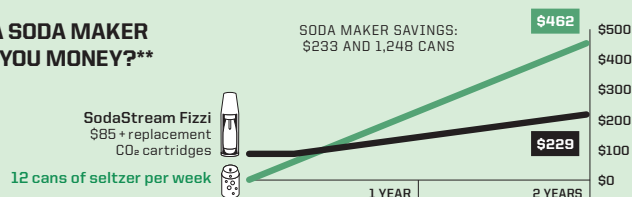
Enter the soda maker: a countertop appliance that helps you create your own bubbly at home and whose manufacturers claim will lower your seltzer bills and lessen your environmental impact. And it can—especially if you buy a low-cost soda maker, such as the \$85 SodaStream Fizzi model at right. Our cost comparison analysis (below) shows how much you might save by

switching from store-bought cans.

Do these machines churn out a good, fizzy seltzer? To find out, our testers made dozens of bottles of bubbly on four widely sold machines, evaluating each on its ease of use and consistency of fizz for every bottle made. (The One Touch, below, was a standout in both of these tests.)

We also measured the maximum gas pressure a machine can add to water, and how easy it is to open the cap of an extra-fizzy bottle without spilling. Our experts also looked at how much ice forms on the gas injection nozzle during operation—too much ice can interfere with carbonation, meaning you might not get a good fizz every time.

#### CAN A SODA MAKER SAVE YOU MONEY?\*



Go to [CR.org/seltzer0521](https://www.crisp.org/seltzer0521) for an interactive version of our cost comparison chart.

#### BEST BUDGET-FRIENDLY BUBBLY

**SodaStream Fizzi**  
\$85

4/5	EASE OF USE
4/5	CONSISTENCY
5/5	CAP
5/5	ICING



#### EASIEST SODA MAKER TO USE



**SodaStream Fizzi One Touch** \$130

5/5	EASE OF USE
5/5	CONSISTENCY
5/5	CAP
5/5	ICING

#### SLEEK BUT NOT AS CONSISTENT



**Aarke Premium Carbonator** \$250

4/5	EASE OF USE
3/5	CONSISTENCY
5/5	CAP
4/5	ICING

#### CAN FIZZ UP JUICE, TEA & MORE



**Drinkmate Carbonated Beverage Maker** \$87

4/5	EASE OF USE
3/5	CONSISTENCY
1/5	CAP
3/5	ICING

\*Source: Chicago-based market research firm IRI.

\*\*Cost assumptions: 12-ounce can of seltzer, 37 cents (based on national average pricing data from grocery price comparison company Basket); replacement CO<sub>2</sub> cartridges, \$22.50 for every 60 liters (cartridge prices vary from about \$15 in-store to more than \$30 for delivery).

## PRODUCT SPOTLIGHT

### HOW TO CHOOSE AN ELECTRIC BICYCLE

SALES OF ELECTRIC BIKES—also called e-bikes—were on the rise even before the pandemic left many consumers looking for a socially distanced way to get around outside. But shopping for an e-bike can be confusing: There are almost as many kinds of these motorized bicycles as there are pedal-powered ones, and prices range from just under \$500 to as much as \$7,000.

Most consumers looking for their first e-bike (whether it's for commuting or joy rides) should aim to spend about \$1,500. "That's the sweet spot right now," says Micah Toll, author of "The Ultimate Do It Yourself Ebike Guide" (Toll Publishing, 2013). "Manufacturers are making good-quality bikes but aren't using top-shelf components. It's a good balance for people who don't want to spend a fortune but also don't want the bike to fall apart after a year or two," he says. Our testers bought and tried the Electra Townie Go! 7D model, at right, for \$1,500 and found it to be a smooth, comfortable riding experience. (See more details of our review at [CR.org/ebike0521](https://www.consumerreports.org/ebike0521).)

At right, we group e-bikes by class—this is what determines the type of motorized "assistance" you'll get and how fast your e-bike can go.



**Electra Townie Go! 7D**  
Cruiser Style,  
Class 1  
\$1,500

#### E-BIKE CLASSIFICATIONS

##### CLASS 1

This group covers pedal-assist bikes, which power the motor when your foot applies pressure to the pedal. The electric part works only when the rider is pedaling, and the e-assist cuts off at speeds above 20 mph.

##### CLASS 2

Class 2 e-bikes have an electric motor that goes up to 20 mph, either with the rider pedaling (pedal assist) or with electric propulsion used alone via a throttle control, usually found on one of the handlebars.

##### CLASS 3

This group offers faster pedal assist speeds—up to 28 mph—and requires a speedometer. A few states class these e-bikes as motorized vehicles and require riders to have an operator's license to use one on public roads.

*No matter which e-bike class you choose, always wear a helmet. Turn to page 10 for our latest helmet ratings.*

PHOTOS, BOTTOM LEFT TO RIGHT: CONSUMER REPORTS; GE; CONSUMER REPORTS

## CR Time Traveler CLEANING PRODUCTS



**1939** CR tests floor waxes that promise to make flooring shine and finds that water-emulsion waxes (a mix of wax and water) are better and far easier to apply than pastes.

**1949** In our labs, we test rug-cleaning products on dirty rugs and find that regular household detergents work better than special rug cleaners.



**1957** Sales of canister vacuums far exceed those of uprights. But in our tests, uprights are superior in their cleaning ability.



**1963** GE releases its first self-cleaning oven—the P-7. This innovation is "our equivalent of putting a man on the moon," says a GE engineering manager at the time.



**1976** Dishwashers are still considered an extravagance. But CR advises that washing dishes [by hand] may use even more hot water and energy than a dishwasher.



## E-BIKE STYLES

### MOUNTAIN BIKES

With beefy frames and big tires, mountain e-bikes are built to handle trail terrain and ease the otherwise grueling uphill slog required in order to experience the thrill of downhill trail riding. E-bikes aren't permitted on some trails, though, so be sure to check state and local regulations.

### HYBRIDS AND CRUISERS

Hybrids offer a combination of road-bike efficiency with a more upright riding position. Cruisers offer a relaxed, comfortable upright seating position and often a softer ride due to bigger tires and cushier seats.

### PERFORMANCE ROAD BIKES

These usually have a lightweight frame, skinny tires, and drop-down handlebars that help the rider maintain an aerodynamic riding position. But the aggressive riding position can be uncomfortable for some riders.

### FOLDABLES

A good solution for commuters, folding e-bikes are easier to stow in a tight storage area or aboard a train or bus. For example, the Nakto Fashion folding e-bike, \$600, has small wheels and, when folded, is claimed to fit inside most car trunks.

## HOW HEALTHY IS IT?

## WHICH TORTILLAS ARE BETTER FOR YOU?

Soft tortillas are the traditional base for Mexican fajitas or burritos—but, depending on the type of flour or cornmeal used, these thin round flatbreads can vary widely in calories, sodium, and more. Amy Keating, RD, a CR nutritionist, checked out 40 tortillas from five big brands to discern the nutritional differences.

### FLOUR

You may prefer flour tortillas for their mild flavor and pillowy-soft texture. But they're the least healthy choice in the tortilla aisle: They are made from refined white flour, often contain additives, and can pack a lot of sodium—especially compared with corn tortillas.

### CORN

Offering a firm, chewy texture, corn tortillas come out ahead in a side-by-side nutrition competition with other types. Corn is a good-for-you whole grain, Keating explains, and corn tortillas typically contain less fat and simpler ingredients, and are very low in sodium.

### WHOLE-WHEAT

These tortillas have more fiber than white flour ones but have a similar mouthfeel. Still, they are similar to flour tortillas in sodium and processed ingredients. Choosing a smaller-sized whole-wheat (or flour) tortilla can keep sodium and calories in check.

#### Tia Rosa Flour Fajita (1 ounce)

Calories..... 100  
Saturated Fat..... 1 g  
Fiber..... <1 g  
Protein..... 2 g  
Sodium..... 240 mg

#### Mission Yellow Corn (1 ounce)

Calories..... 50  
Saturated Fat..... 0 g  
Fiber..... 1.5 g  
Protein..... 1 g  
Sodium..... 5 mg

#### La Banderita 100% Whole Wheat Fajita (1 ounce)

Calories..... 80  
Saturated Fat..... 1 g  
Fiber..... 3 g  
Protein..... 2 g  
Sodium..... 150 mg

**1980** We test a new cleaning product with a whirling pad: the Electrical Pot-Scrubber. But when faced with burnt-on lasagna in our labs, it "couldn't get cookware reasonably clean."



**2010** CR compares four popular lint roller-like solutions for lifting pet hair off upholstery—the winner is the Pledge Fabric Sweeper for Pet Hair, designed to grab and lift hair off fabric.



**2021** With Very Good performance ratings for about half the cost of top-rated Tide and Persil laundry detergents, the Kirkland product below is a CR Best Buy.



**1989** To test window cleaners, we apply a tobacco-smoke residue to glass, then try to remove it in 30 scrubs. Glass Plus and Savogran Dirtex do the best job.



**2017** CR reports that laundry detergent pods pose a lethal ingestion risk not only for children but also for adults with dementia. We recommend keeping them out of homes with children under age 6 and cognitively impaired adults.



**76** OVERALL SCORE

**\$ Kirkland Signature (Costco) Ultra Clean Liquid**  
\$0.11

## HEALTH UPDATE

## SAFER MASK STRATEGIES

WHEN WORN CORRECTLY, an N95 or a KN95 face mask has been shown to provide among the highest levels of protection against the coronavirus. For both, the “95” denotes the minimum percentage of particles (95 percent) that the

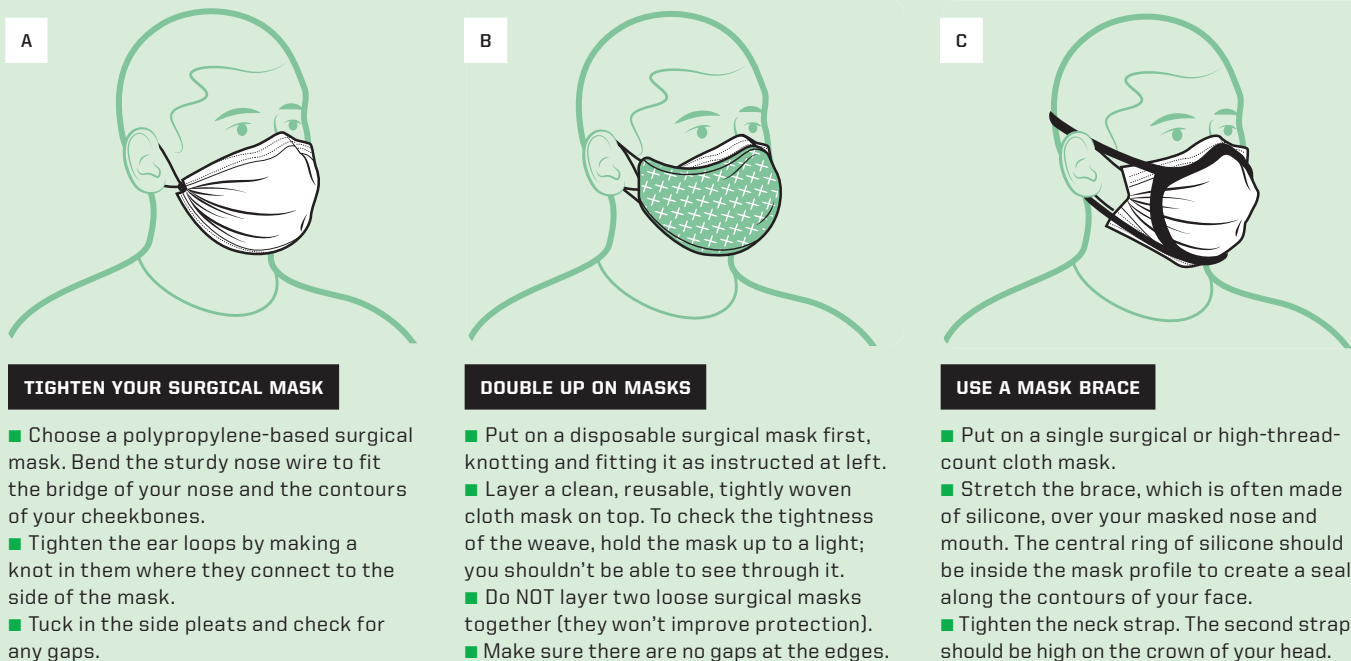
mask can block when the mask fits the wearer’s face very well. However, N95 masks may still be in short supply, and authentic KN95s can be hard to come by: A 2020 report found that up to 70 percent of KN95 masks imported from China don’t filter 95 percent of aerosol particles. It’s best to check the test results for KN95 brands (and KF94 mask brands from South Korea) at [cdc.gov/niosh/npptl](https://www.cdc.gov/niosh/npptl) before buying. The Centers for Disease Control and Prevention also has

a list of approved N95 suppliers.

A snug-fitting polypropylene-based surgical mask is your next best option. (Polypropylene is a material that effectively filters particles.) The trouble is, many standard surgical masks fit the wearer’s face loosely and can gap at the sides. For a surgical mask to keep you protected, you need a tight fit at the edges (see illustration A, below). Another way to amp up the protection offered by a surgical mask is to layer a cloth

mask over it (illustration B).

This gives you two types of protection at once, says CR’s chief scientific officer, James Dickerson, PhD. Though wearing two tightly woven cloth masks can add some protection, having a surgical mask as your inner layer is more effective. Another option: Try a mask “brace” to hold a mask in place (illustration C). A brace won’t add to your mask’s filtering ability, but it should create a tighter seal around it.



## TIGHTEN YOUR SURGICAL MASK

- Choose a polypropylene-based surgical mask. Bend the sturdy nose wire to fit the bridge of your nose and the contours of your cheekbones.
- Tighten the ear loops by making a knot in them where they connect to the side of the mask.
- Tuck in the side pleats and check for any gaps.

## DOUBLE UP ON MASKS

- Put on a disposable surgical mask first, knotting and fitting it as instructed at left.
- Layer a clean, reusable, tightly woven cloth mask on top. To check the tightness of the weave, hold the mask up to a light; you shouldn't be able to see through it.
- Do NOT layer two loose surgical masks together (they won't improve protection).
- Make sure there are no gaps at the edges.

## USE A MASK BRACE

- Put on a single surgical or high-thread-count cloth mask.
- Stretch the brace, which is often made of silicone, over your masked nose and mouth. The central ring of silicone should be inside the mask profile to create a seal along the contours of your face.
- Tighten the neck strap. The second strap should be high on the crown of your head.

## HOW TO CLEAN PRACTICALLY ANYTHING™

## DE-CRUD YOUR ROBOTIC VACUUM

## 1. Untangle the brush roll.

Many robotic vacuums come with their own comb or blade tool for removing hair, but we've found that those don't always get the job done. "A pair of scissors or a kitchen knife often works better," says CR vacuum

tester Alex Nasrallah, "especially for tightly wound hair." First, place the vacuum on its back on a flat surface. Remove the brush roll and gently pull the hair up so that the blade can get under and slice through. If hair is also wrapped around the side brushes, remove

the brushes—most pop off—to get hair out manually. If you find that a side brush is bent from use, gently straighten it.

## 2. Clear up the sensors.

Wipe any sensors (often found on the front, sides, or bottom of a robotic vacuum) with a dry

cloth to make sure that the vacuum's "eyes" aren't blinded by dust. If stubborn dirt remains, use a slightly damp cloth to remove it. For its vacuums, iRobot recommends using a lightly dampened piece of melamine foam (think Mr. Clean's Magic Eraser).

DO MORE WITH ...

## HOW TO UPCYCLE YOUR OLD FRIDGE

**BUYING A NEW** refrigerator? Rather than hauling your old model off to the dump, there are plenty of sustainable—and even ingenious—ways to give it a new lease on life.

**TURN IT INTO A ‘FREEDGE.’** These “community” refrigerators, set up in easy-to-access public spots across the U.S., are stocked with fresh food, produce, and frozen goods by community groups or individual volunteers. Anyone can take items from the fridge free of charge—thus the “freedge” moniker. Volunteers decorate the freedges, and even create custom wooden enclosures to help outdoor units weather the elements. The goal is to redistribute good food that would otherwise go to waste, and to help combat the growing problem of hunger in underserved communities.

This idea has been particularly helpful for those hit hard financially during the COVID-19 crisis: In a nationally representative 2020 CR survey, roughly 2 in 10 American grocery shoppers

reported getting food through free distribution during the pandemic, and half of those people also shared that they never sought free food distribution in the year leading up to the pandemic.

If you’re interested in starting a community fridge, go to [freedge.org](https://freedge.org) to learn how. On the site, you can also find contact information for any existing freedge operators in your area who may be able to use your old fridge.

### DONATE IT.

Local Habitat for Humanity organizations called ReStores accept gently used, working refrigerators. The nonprofit sells your donation at a fraction of the retail price and uses the proceeds to help build or improve homes in the U.S. and around the world. To find your local store, go to [habitat.org/restores](https://habitat.org/restores); many can even pick up your donations.

### RECYCLE IT.

According to Energy Star, the average refrigerator older than 10 years has more than 120 pounds of recyclable steel.

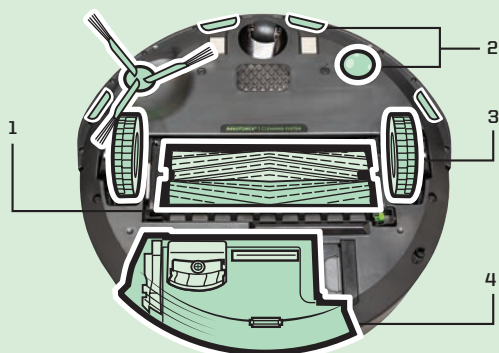


If you’re buying a new fridge, ask the retailer whether it will pick up and recycle your old fridge. Best Buy, for example, charges \$25 to haul away a refrigerator when a replacement product is delivered. Also check with your local electric utility company: Many have large appliance recycling programs for customers—sometimes offering cash or utility bill credits as incentives. You can find a list of Responsible Appliance Disposal partners at [epa.gov/rad/consumers](https://epa.gov/rad/consumers); most can pick up appliances from your home.



### Help for the Hungry

Uniquely decorated community “freedges” in New York City (at top) and Seattle are stocked with free food.



### 3. Check the wheels.

Most vacuums have wheels that can’t be easily removed (and some aren’t meant to be), but you can try using a knife to help dislodge any gunk that has built up around your vacuum’s wheel axles, Nasrallah says.

### 4. Freshen the filter and rinse out the dustbin.

The vacuum’s filters should be removed and cleaned about once every other week. Remove the filter and gently tap it over a trash bin to release any dust. If you suspect the filter has gotten wet (say, it rolled

over a spilled drink), it’s best to replace it. Use a slightly dampened melamine foam sponge on the outer body of the vacuum. You can also remove and rinse the dustbin with plain water; be sure to dry it completely before popping it back into place.

## FOOD IQ™

### DECODING FRUIT JUICE LABELS

You've heard it a thousand times: Eating a piece of fruit is better for you than fruit juice. But whole fruit doesn't always quench thirst. The key to enjoying fruit juice in a healthy way is to watch how much you sip (at most, a cup a day) and know what's in it. "Juice labels can be very misleading," says CR nutritionist Amy Keating. Here, what some common juice bottle lingo really means.

#### JUICE DRINK OR COCKTAIL

These terms are tip-offs that a product isn't 100 percent juice. Instead, the product is often a mix of juice, water, sweetener, and flavors. To avoid a mostly sugar-water mix, look for ones that contain at least 50 percent fruit juice (the percentage must be listed on the label) and no added sweeteners.

#### FROM CONCENTRATE

Fruit juice from concentrate is juice that has had most of its water removed and is then reconstituted by adding water back in. It can be sold as 100 percent fruit juice or used in cocktails.

#### DIET

Diet juice drinks or cocktails are low in calories because they're sweetened with sugar substitutes instead of sugar, and have a lower percentage of fruit juice. Some research suggests that consuming alternative sweeteners may be linked to increased risk of heart disease, type 2 diabetes, and obesity.

#### REDUCED SUGAR

The Food and Drug Administration allows this claim when a product has at least 25 percent less sugar than the brand's regular product. But the ingredients list will often reveal that a sugar substitute has been added to make up for the sugar reduction.

#### 100% JUICE

Per the FDA, this phrase means fruit juice that has not been diluted with water. Though sweeteners can be added, the majority of brands don't do it. Still, some do add colors, flavors, preservatives, and extra vitamins. If that's the case, you'll see the phrase "with added ingredients."

#### VITAMIN C CLAIMS

High percentages of vitamin C are a selling point for juice, but don't be swayed: Most people get plenty of C in their diets already. With the exception of orange and grapefruit juices, the vitamin C is probably added. That's not a problem, but keep in mind that juice drinks with vitamin C may also contain added sugars and/or no real fruit juice at all.

#### IMAGES OF FRUIT

Just because the bottle has a picture of fruit on it does not mean there's much fruit juice inside. The FDA allows manufacturers to use images to represent a drink's flavor. For example, SunnyD Orange Strawberry features images of oranges and strawberries but has just 5 percent fruit juice—and no strawberry juice. What does it contain? High fructose corn syrup, natural and artificial flavors, sucralose, and artificial color red 40.





## RECALLS

TO STAY INFORMED ABOUT RECALLS FOR YOUR VEHICLES, READERS WITH MEMBERSHIP CAN USE OUR FREE CAR RECALL TRACKER AT [CR.ORG/MORE](https://www.consumerreports.org/more).



### COOPER TIRES

Cooper Tire & Rubber Company is recalling a potential 430,298 tires from its Cooper, Hercules, Mastercraft, and Mickey Thompson brands because of concerns that the tires might develop sidewall bulges or separation from the sidewall that could lead to tire failure. The recall includes replacement tires sold through Les Schwab, Pep Boys, and Tire Kingdom. The affected models include certain Discoverer, Evolution, Courser, Deegan, Adventurer, Back Country, Multi-Mile Wild Country, and Big O models in 18- and 20-inch sizes that were manufactured from Feb. 1, 2018, through Dec. 1, 2019.

**What to do:** Check your tires: The company warns that some tires may exhibit a bulge on the sidewall and advises that "driving at high speeds may cause this condition to occur and should be avoided until the tires have been inspected and replaced." Owners may contact Cooper Tire

at 800-854-6288. Cooper Tire's number for this recall is 178.

### EDSAL SHELVING UNITS

Edsal is recalling about 2.2 million Muscle Rack Heavy Duty Steel shelving units because they can fail to support the 800-pound weight load as stated on the packaging, posing risk of injury. The shelving was sold online from January 2015 through September 2020 for \$80 to \$90.

**What to do:** Stop using the shelving and contact Edsal at 833-232-5287 for details and to receive a full refund.

### EXCEDRIN PRODUCTS

GSK Consumer Health is recalling about 433,600 Excedrin Migraine caplets, Excedrin Migraine gels, Excedrin Extra Strength caplets, Excedrin PM Headache caplets, and Excedrin Tension Headache caplets because some of the bottles may have a hole in the bottom. If there is a hole,

children could access and swallow the contents, posing a risk of poisoning. These products contain aspirin and acetaminophen, which must be in child-resistant packaging as required by the Poison Prevention Packaging Act. The products were sold at pharmacies, department stores, grocery stores, and online from March 2018 through September 2020 for \$7 to \$18.

**What to do:** Store the bottle out of sight and reach of children, and inspect the bottom of it for a hole. If there is a hole, call GSK Consumer Relations at 800-468-7746 or go to [excedrin.com](https://www.excedrin.com) to get a prepaid return shipping label and a full refund. Bottles without a hole may be kept and used as directed.

### CLOUD ISLAND INFANT ROMPERS

Target is recalling about 299,000 Cloud Island infant rompers because the snaps can break or detach from the rompers, posing choking, laceration, and pinching hazards to children. The rompers were sold at Target stores and online at [target.com](https://www.target.com), [express.google.com](https://www.express.google.com), and [shipt.com](https://www.shipt.com) from July 2019 through October 2020 for about \$10 for a single romper and \$11 for a 2-pack romper set.

**What to do:** Stop using the romper and return it to any Target store for a full refund. If you bought the romper on [target.com](https://www.target.com),

call 800-440-0680 or go to [target.com](https://www.target.com) for a prepaid return label.

### HAMPTON BAY CEILING FANS

King of Fans is recalling about 182,000 Hampton Bay 54-inch Mara Indoor/Outdoor ceiling fans because the blades can detach from the fan while in use. The fans were sold at Home Depot stores and at [homedepot.com](https://www.homedepot.com) from April 2020 through October 2020 for about \$150.

**What to do:** Stop using the fan, and inspect it using the instructions at [kingoffans.com/mararecall.htm](https://www.kingoffans.com/mararecall.htm). If you see blade movement, or uneven gaps between the blades and fan body, or movement of the clip during inspection, contact King of Fans at 866-443-1291 for a free replacement ceiling fan.

### CAT & JACK INFANT-TODDLER SWIMSUITS

Target is recalling about 181,000 Cat & Jack Infant-Toddler One-Piece Rashguard swimsuits because the snaps can break or detach from the suits, posing choking and laceration hazards to children. The suits were sold at Target stores and online at [target.com](https://www.target.com) from December 2019 through October 2020 for about \$15.

**What to do:** Return the swimsuit to any Target for a full refund. If you bought it on [target.com](https://www.target.com), call 800-440-0680 or go to [target.com](https://www.target.com) to get a prepaid return label.

MAY  
IS THE  
BEST TIME  
TO BUY ...

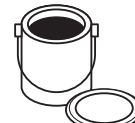
### GRILLS



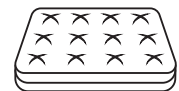
### STROLLERS



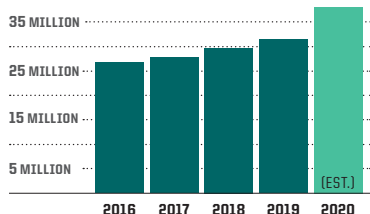
### EXTERIOR PAINTS



### AIR MATTRESSES



WiFi boom: Number of modems, routers, and gateways sold\*



Source: Consumer Technology Association.

# PRODUCT UPDATE

THE LATEST RATINGS FROM OUR LABS

## Better WiFi for Way Less

A lower-cost mesh router can help you fix the spotty coverage in your home.

by **Nicholas De Leon**

**LINKSYS**  
**VELOP AC3600**  
(3-Pack)  
\$200

**59** OVERALL SCORE

✓ **EERO HOME**  
**WIFI 2ND GEN.**  
(3-Pack)  
\$200

**71** OVERALL SCORE

💰 **NETGEAR**  
**NIGHTHAWK**  
**AX1800** (2-Pack)  
\$200

**80** OVERALL SCORE

\*Number of units sold to consumers and internet service providers; the 2020 figure is estimated.

**I**n the last five years, mesh routers have dramatically improved the quality of life in many American homes, helping WiFi-hungry families quickly and effectively eliminate the slowdowns and dead spots in their WiFi networks.

What's the secret?

Unlike a traditional router, a mesh router uses multiple devices—a hub and often two satellite units—that work together wirelessly to blanket your dwelling in WiFi coverage, relaying the signal from your internet service provider (ISP) deep into every corner of the space.

In a larger house (3,000 to 5,000 square feet) or one with a rambling layout, that multipart design is a significant advantage. It allows you to move the satellites around, pushing the signal farther into a spare bedroom or outside to the deck, while also steering it away from potential roadblocks such as doors, walls, plumbing, and appliances.

Until very recently, however, you had to have deep pockets to afford this WiFi cure. We're talking \$300 to \$500 for a good mesh router system.

Happily, in the last 12 months a new generation of lower-cost options has made this fix more affordable. At the moment, 11 of the 19 models in our ratings range from \$150 to \$250.

But are those models any good?

The answer is a resounding yes. Most do a great job spreading fast, stable WiFi throughout your home. Here's a look at what our tests have found.

### **Do the Lower-Cost Options Give the Same Performance?**

As our testing data shows, wall-to-wall coverage can be yours for less. You'll find very comparable performance (speed-wise and coverage-wise) between budget-friendly mesh routers and their pricier siblings.



### **3 SIGNS YOU NEED A NEW ROUTER**

Here are a few good reasons to spring for a more up-to-date model—mesh or otherwise.

**1** The model you own is ill-equipped to handle all your devices. For most people, a WiFi 5 router should work just fine. For others, a WiFi 6 model can better manage traffic jams created by multiple smartphones, laptops, and smart home devices. If everyone in the house enjoys gaming or streaming Netflix in 4K, it might be time for a WiFi 6 router.

**2** The model you own puts your data at risk. If your current router has been discontinued by its manufacturer, it may be ineligible for security updates. This exposes all the personal info flowing in and out of your network to the threat of hackers and other bad actors. To check on the model's status, do an online search for the manufacturer's "end of life" list.

**3** The model you use has a high rental fee. If you're giving your internet service provider \$10 a month or more, you can buy a new model that pays for itself within two years. As part of the bargain, you'll also get more control over your router's privacy and security settings.

For example, the \$400 Netgear Orbi AX4200 at the top of our ratings chart on page 23 scored a 5 out of 5 for throughput speed (the rate at which internet data is communicated) at the near, midrange, and far distances we use to simulate the environment in a typical home. But so did the \$230 Netgear Nighthawk AX1800 that sits in the No. 2 spot.

In fact, many of the \$200 models actually outperform pricier rivals in our throughput tests.

### **Do You Get the Same Features?**

Given the high-end price, you might expect to find far more features on a \$500 mesh router, but that's not necessarily the case. The \$200 options are just as likely to offer simple setup and management via a mobile app that you download to your phone or tablet, parental controls that can help you limit access, and automatic firmware updates, which protect you and your data by ensuring that you always have the latest security patches in place.

At times, a pricier model will offer more Ethernet and USB ports, letting you connect additional devices—printers, external hard drives, etc.—to your router via a cable. This lets you share those devices with other family members on the network and gives, say, your game console a slightly stronger and faster WiFi signal than a wireless connection provides. The \$345 Asus AX6100 RT-AX92U, for example, has eight Ethernet ports and two USB ports.

But if you shop around, you'll find lower-priced models with two to three Ethernet ports. Want enough for a fleet of game consoles? The \$150 TP-Link Deco Whole Home has six.

### **Do You Get the Latest Tech?**

If you go shopping for any router this year, you'll almost certainly hear about WiFi 6 and WiFi 6E, hotly



marketed tech upgrades unveiled not long ago by the Wi-Fi Alliance.

Routers that support Wi-Fi 6 are designed to better manage the growing army of internet-connected devices in the average home. Think laptops, tablets, smartphones, smart speakers, and all that other gear now vying for your Wi-Fi signal.

Wi-Fi 6E was created for high-density environments such as apartment buildings, where neighbors' devices can interfere with your signal.

If you live in a high-tech home—one flush with state-of-the-art gadgets like the iPhone 12 and PlayStation 5, both designed for Wi-Fi 6—you may want to consider springing for a router with that technology. At the moment, only three of the lower-cost mesh routers in our ratings support Wi-Fi 6 (also known

as 802.11ax). The rest use the older Wi-Fi 5 standard (802.11ac) from 2014.

For most users, Wi-Fi 5 should prove more than adequate for years to come. And you can always take advantage of the “prioritization” feature included on most mesh routers—regardless of price—which lets you choose which devices get first dibs on the Wi-Fi signal. Using the mobile app, simply adjust the settings so that nothing slows Mom’s laptop connection.

### Is There a Cheaper Option?

In certain scenarios, a \$30 Wi-Fi range extender might be all you need to address a trouble spot in your house. Let’s say you have a Wi-Fi dead zone in your home office. To fix it, you simply plug the extender into a power outlet midway between your router and the

office, and the Wi-Fi signal gets pushed deeper into your home.

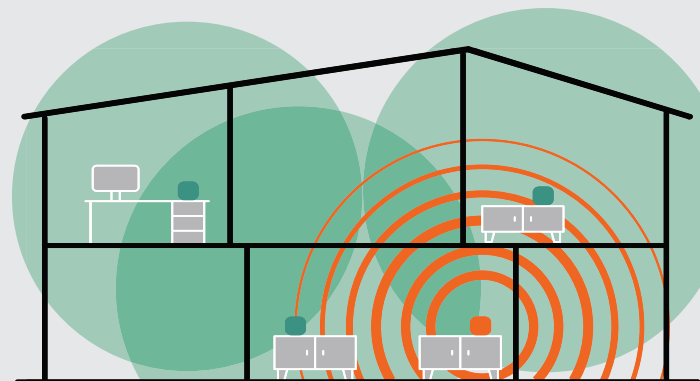
Just keep in mind that this is not a perfect solution: An extender’s effectiveness is limited by a number of factors, including the speed of the internet connection coming into your home, the distance from your router, and the Wi-Fi demands of your family. You’re also likely to notice a significant drop-off in signal speed in the “extended” zone—as much as 50 percent, according to our tests.

That slowdown might not be an issue if you’re just hoping to read email on the back deck, but it won’t cut it if you’re trying to get everyone on the second floor a strong signal for streaming movies or joining Zoom meetings. In that case, you’re better off with a mesh router.

## REGULAR ROUTER VS. MESH ROUTER: WHAT’S THE DIFFERENCE?

**IT ALL COMES** down to precision and price. A traditional router can be cost-effective, but a mesh router gives you more control over where the Wi-Fi signal goes. **COST:** The traditional routers we’ve tested fall between \$60 and \$400. (For ratings, Digital and All Access members can go to [CR.org/wireless-routers](https://www.consumerreports.org/wireless-routers).) The mesh routers in our ratings (on the facing page) range from \$150 to almost \$500.

**COVERAGE:** In a large house, or in a house with thick walls or obstacles that create Wi-Fi dead spots, the hub-plus-satellites setup of a mesh router can help extend the signal and point it where it’s needed. **LOGISTICS:** The farther the signal gets from a traditional router, the more it degrades. If possible, place the device in the center of your home (you may need a long Ethernet cable to move it). Ideally,



● MESH ROUTER


● TRADITIONAL ROUTER

the hub of a mesh router should also go in the center of your home, between its

two satellites, says Richard Fisco, who oversees electronics testing for CR. That

way the signal has to make only one hop (to each satellite) to be relayed.

**Ratings** ➤ **Broader Connection** A good mesh router uses teamwork—a hub and satellite units working in tandem—to relay the WiFi signal into the deepest corners of your home.

Brand + Model			Overall Score		Price	Test Results						Features						
<div></div>						Data security	Data privacy	Throughput, near	Throughput, midrange	Throughput, far	Versatility	Ease of setup	Supports WPS	Parental controls	Prioritization	WiFi standard	Number of LAN ports	Number of USB ports
MESH WIFI																		
✓	Netgear	Orbi AX4200 (2-Pack)	85		\$400	⬆	⬇	⬆	⬆	⬆	⬇	⬆			•	6	5	0
💰	Netgear	Nighthawk AX1800 (3-Pack)	82		\$230	⬆	⬇	⬆	⬆	⬆	⬆	⬆		•	•	6	4	0
💰	Netgear	Nighthawk AX1800 (2-Pack)	80		\$200	⬆	⬇	⬆	⬆	⬆	⬆	⬆		•	•	6	1	0
💰	TP-Link	Deco Whole Home (3-Pack)	76		\$150	⬆	⬇	⬆	⬆	⬆	⬆	⬆	•	•	•	5	6	0
✓	Eero	Pro Tri-band Mesh Network (3-Pack)	76		\$400	⬆	⬇	⬆	⬆	⬆	⬆	⬆		•	•	5	5	0
✓	TP-Link	Deco X60 AX3000 (3-Pack)	73		\$330	⬆	⬇	⬆	⬆	⬆	⬇	⬆				6	2	0
💰	Netgear	Orbi AC1200 (3-Pack)	73		\$180	⬆	⬇	⬆	⬆	⬆	⬆	⬆		•	•	5	1	0
💰	Eero	Home Wifi (2nd Gen.) (3-Pack)	71		\$200	⬆	⬇	⬆	⬆	⬆	⬇	⬆		•		5	2	0
	Linksys	Velop AC6600 (3-Pack)	69		\$200	⬆	⬆	⬆	⬆	⬆	⬆	⬆	•	•	•	5	2	0
	Gryphon	Guardian AC1200 (3-Pack)	69		\$240	⬇	⬇	⬆	⬆	⬆	⬆	⬆		•	•	5	3	0
	Arris	Surfboard Max Plus AX7800 (W130) (2-Pack)	65		\$485	⬇	⬇	⬆	⬆	⬆	⬇	⬆		•		6	3	0
	Google	Nest Wifi (3-Pack)	63		\$350	⬆	⬆	⬆	⬇	⬆	⬇	⬆				5	2	0
	Google	Wifi AC1200 Dual-Band Whole Home (3-Pack)	63		\$200	⬆	⬆	⬇	⬇	⬆	⬇	⬆		•	•	5	5	0
	Asus	ZenWiFi AX Whole Mesh System (2-Pack)	62		\$400	⬆	⬇	⬇	⬇	⬆	⬆	⬆		•	•	6	6	1
	Asus	AX6100 RT-AX92U (2-Pack)	60		\$345	⬆	⬇	⬇	⬇	⬆	⬆	⬆		•	•	6	8	2
	Linksys	Velop AC3600 (3-Pack)	59		\$200	⬆	⬆	⬆	⬇	⬆	⬇	⬆		•	•	5	2	0
	Linksys	Velop AC3900 (3-Pack)	58		\$230	⬇	⬇	⬇	⬇	⬆	⬇	⬆	•	•	•	5	2	0
	Asus	ZenWiFi AX1800 XD4 (3-Pack)	58		\$250	⬆	⬇	⬇	⬇	⬆	⬆	⬆			•	5	3	0
	Ubiquiti Networks	Amplifi (AC1750) (3-Pack)	56		\$350	⬇	⬇	⬆	⬇	⬆	⬇	⬆				5	4	1

**HOW WE TEST:** The **Overall Score** is based on the performance of a device's data security protections, signal speeds, versatility, and ease of setup. **Data security** evaluates how well the device and its service provider protect personal info via

authentication, encryption, software updates, and resistance to known exploits. **Data privacy** is a measure of how the device and its service provider collect, share, and use data, and how much control the user has over the flow of that data.

**Throughput** scores are based on signal speeds at near (8 feet from router), midrange (30 feet away), and far (an average of the results at 45 and 100 feet away) distances. **Versatility** scores are based on the number of LAN and USB ports,

parental control options, and quality of tech support. **Ease of setup** is based on the availability of status LEDs, guest network options, and WiFi-protected setup, and the simplicity of the mobile app or web browser-based activation process.

# CLEANING SECRETS FOR EVERY ROOM

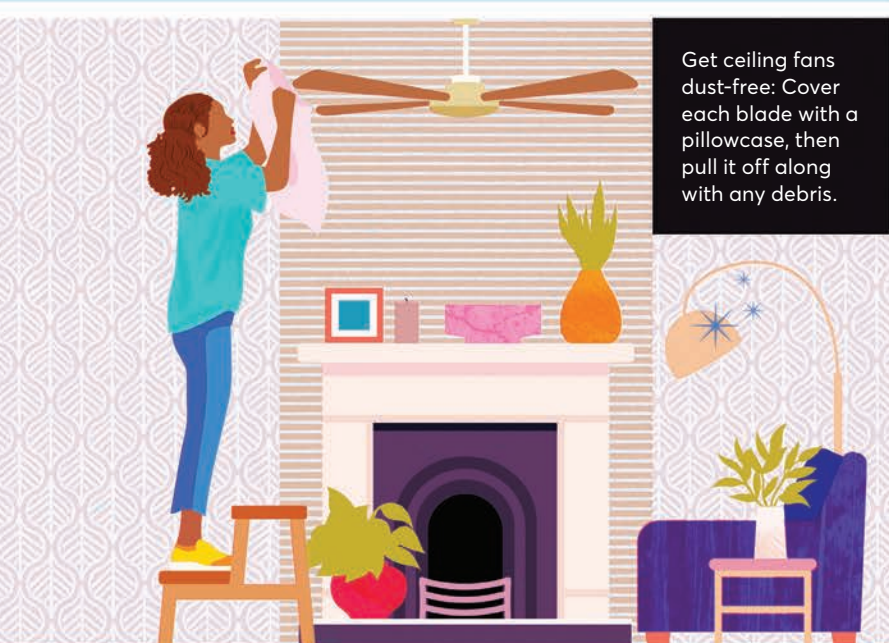
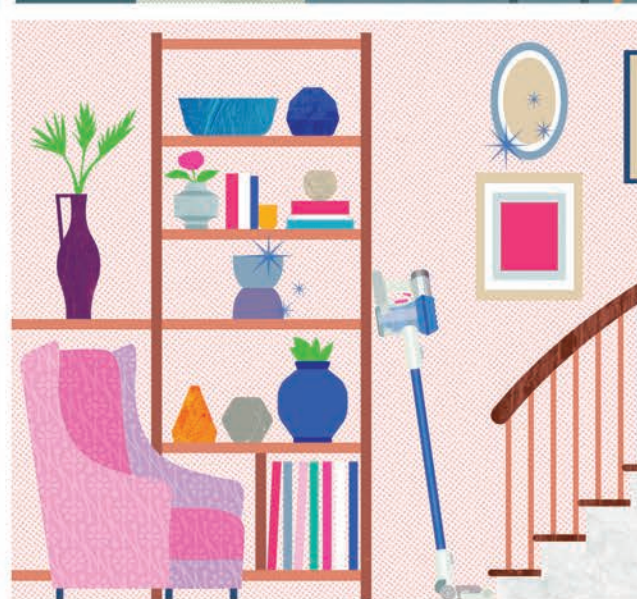
Our homes, appliances, and gadgets are getting A LOT of extra use because of the pandemic. Here, easy tricks to remove grit, grime, and germs in a safe, healthy way.

BY MARY H.J. FARRELL

WITH ADDITIONAL REPORTING BY JAMISON PFEIFER

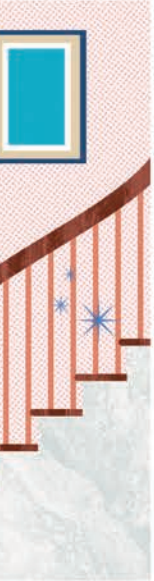
ILLUSTRATIONS BY MITCH BLUNT

Clear out crumbs in the keyboard: Turn it upside down and give it a good shake, or slip the sticky end of a Post-it between the keys.



Get ceiling fans dust-free: Cover each blade with a pillowcase, then pull it off along with any debris.

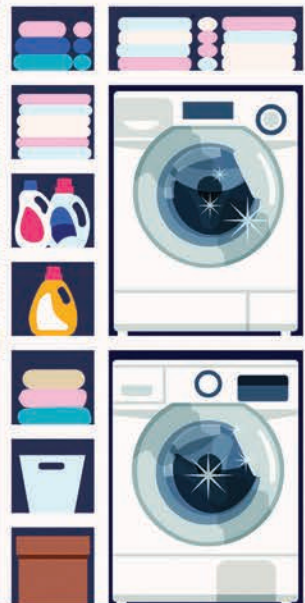




Make mildew disappear: Spray a bleach solution on shower doors and leave it for 30 minutes.



Keep your fridge humming: Wipe away food bits in the door gasket with a sponge to maintain a seal and keep cold air in.





More than a year into the pandemic, you may be a little weary of housecleaning chores. Some items—hello, stovetop!—are getting grubbier faster because we’re using them so much during the extended at-home stay. And many of us are scrubbing and disinfecting daily in an effort to keep COVID-19 at bay.

Well, step away from the spray cleaner, at least for a bit. “There is no evidence that cleaning more frequently prevents you from getting COVID-19,” says James H. Dickerson, PhD, chief scientific officer of Consumer Reports.

Earlier in the pandemic, some studies did suggest that the coronavirus could live on hard surfaces for days, even weeks. But most experts now agree that contact with a doorknob an infected person has touched presents no significant risk.

As Emanuel Goldman, PhD, a microbiologist at Rutgers University, says, “The reason there was a big push about transmission on surfaces was due to experiments in highly controlled environments not related to the real world.” In addition, it’s

unlikely the form of coronavirus found on surfaces in most studies—viral RNA—is infectious, he says, calling it “the corpse of the virus.” Transmission generally occurs, we now know, through close contact with an infected person or via small airborne particles.

If someone at home has COVID-19, some extra steps are prudent—the daily use of a product like Lysol, Clorox, or Lanza, or a solution of one-third cup of bleach in a gallon of room-temperature water to clean high-touch objects such as light switches in a shared bathroom. (See a list of coronavirus-killing disinfectants at [cfpub.epa.gov/giwiz/disinfectants/index.cfm](https://cfpub.epa.gov/giwiz/disinfectants/index.cfm).)

Pay attention to disinfectant do’s and don’ts. When using these products, always ventilate the area and wear

rubber or disposable gloves, and put on eye goggles to prevent disinfectant from splashing into your eyes. And to ensure proper disinfection, leave the bleach and water solution on surfaces for at least a minute before wiping (and other disinfectants for the recommended period of time).

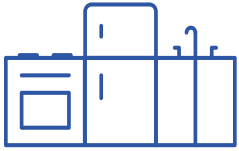
There are other timing considerations. It’s best to clean, then disinfect shortly after a household member is diagnosed with COVID-19, says Jason Marshall, ScD, director of the Toxics Use Reduction Institute’s Cleaning Lab at UMass Lowell, adding that waiting 24 hours will “allow most of the airborne virus to settle out.”

You’ll also want to ventilate your home, have the ill person use a separate bedroom and bathroom if possible, social distance or wear a mask when you’re near each other, and wash your hands well and often. (That last step is one of the best ways to prevent any number of infectious illnesses from spreading, because soap and water can eradicate many common pathogens.)

COVID-19 aside, there’s still the matter of other germs, like those from raw meat drips on a kitchen countertop or your dog’s occasional accident on the floor, as well as the seemingly endless household dirt and dust we’re all dealing with.

This guide offers a bounty of expert strategies to help you quick-clean the items you’re using the most and handle bigger messes and germs the right way—without overdoing it.

You may even find that the results are a mood-booster, which has been difficult to come by during the challenges of the past year. “What really helps mental well-being is a sense of productivity and doing meaningful things,” says Craig Sawchuk, PhD, a psychologist who’s co-chair of the division of integrated behavioral health at the Mayo Clinic. “Cleaning, for some people, really lands on both spots.”



## CAST OUT KITCHEN GRIME

### THE CHALLENGE

Kitchens are among a home's germiest spots, says Donald Schaffner, PhD, a Rutgers University professor of food microbiology. And with many of us eating our three squares at home day in and day out, food-prep grunge builds up fast on appliances and counters.

### TOP TOOLS

Sponge, baking soda, soft cloth, disinfectant cleanser, dish soap, abrasive cleaner (either gel or spray), glass cleaner or stainless steel polish.

### DIRT-BUSTERS

Remove smudges from appliance exteriors with a cleaning and polishing product made for stainless steel (if you have that finish) or just a damp cloth for other materials.

Wipe off food and grease from gas stovetops with a scrub pad and hot, soapy water after meal prep. The same should help inside the oven. There, cover tough stains with a wet cloth, let it sit a bit, and then hit them with the scrub pad and soapy water again.

For badly stained burner covers and grates, leave them overnight in a sealable plastic bag with one-fourth cup of ammonia so

you can easily wipe them clean the next day. (Ventilate when using ammonia.)

Really need a deep clean? While some ovens have lower-temperature self-cleaning modes, high-temperature self-cleaning is the most effective, says Tara Casaregola, who oversees CR's range tests.

To keep odors and gunk in your fridge at bay, go over plastic surfaces regularly with a sponge dipped in a cup of baking soda mixed with a quart of water. (An open box of baking soda in the fridge helps odor-proof further.) Wipe the door gasket with a damp sponge or cloth to maintain a good seal and keep the cold air in.

Smelly dishwasher? Pull out any food bits you see at the bottom, and rinse the filter as needed. (See page 28 for more information.) You can also remove the spray arms and poke

out any food that's stuck in the holes with a toothpick.

Put condensation to work for microwave cleaning. Pop a bowl of water mixed with a quarter-cup of lemon juice inside and run the unit on high for a minute, then wipe. If caked-on food won't budge, scrape it off with an old credit card. (But avoid the window.) This works in ovens, too.

For food particles and grease residue on sinks, check with the manufacturer for abrasive cleaners that won't scratch, advises Brian Sansoni, senior vice president at the American Cleaning Institute. "In general, liquid, spray, and gel cleansers are less abrasive than powders," he says.

With countertops, "care isn't one-size-fits-all," says John Galeotafiore, director of product testing at CR. So follow the manufacturer's advice for cleaning yours. For instance, an

GET IT  
CLEAN

## YOUR COFFEE MAKER

### STEP 1

After every use, wash the carafe and brew basket of your electric drip coffee maker with dish soap and water, then rinse well and dry.

### STEP 2

Wipe away coffee stains on the appliance with a damp sponge. To remove burned-on bits from the hot plate, let it cool, then shake a bit of baking soda on a damp sponge and wipe.

### STEP 3

To get rid of the minerals and dried coffee oil in tanks and tubes that can affect the taste of your joe, occasionally run a mixture of water and white vinegar through the machine. (Check your owner's manual for the ratio.) Then run water through the coffee maker a couple of times.



end-of-day sweep with a damp cloth may be all you need for quartz, while a soft cloth or sponge dipped in dish liquid and water works for granite, laminate, and butcher block.

In general, skip scrubber sponges on counters, Dickerson says. "It can score them, leaving crevices and cracks where bacteria can get in and reside," he says.

## GERM WARFARE

If someone at home has COVID-19, going over high-touch areas like countertops and fridge handles with a soapy sponge will wash away virus particles, Goldman says, but you can also use a coronavirus-killing disinfectant. Otherwise, attend to areas where high levels of microbes are common: sponges and sink drains.

"When there's moisture and food, bacteria can multiply," Schaffner says. So at least weekly, use a scrub brush to clear the sink drain of food particles and grime, then spray it with a household disinfectant. Throw dirty sponges in the dishwasher with a drying cycle, or microwave for a minute with a bit of water in a dish. The Department of Agriculture found these to be the best methods for killing food-borne bacteria.

Clean, then disinfect surfaces and items that have come into contact with raw meat or eggs, says Marshall (think countertops, handles, sinks). Cleaning away visible dirt first with soap and water will enhance disinfectant effectiveness. Mop up food spills in the fridge right away. You may also want to swab the inner surfaces regularly with soap and water or a disinfectant. And give grubby shelves and bins a warm water and soap bath in the sink, says Larry Ciuffo, CR's test engineer for refrigerators.



GET IT  
CLEAN

## YOUR GARBAGE DISPOSAL

### STEP 1

Take a preventive step: To keep grease from clogging the sink drain and impeding grinding, always run the tap and the disposal before you add waste. (If you're grinding greasy foods, use hot water.) Keep the disposal running until all waste has been flushed away.

### STEP 2

To break up any grease clogs that do occur, grind a few ice cubes in the disposal.

### STEP 3

Is the disposal smelling a little funky? To deodorize it, fill your sink halfway with water, pour in a half-cup of baking soda, pull out the sink stopper, and turn on the disposal.



## KEEP FILTERS DEBRIS-FREE

### THE CHALLENGE

Filters may be all too easy to overlook, but dirty ones can affect a device's performance. With vacuums, for instance, especially bagless models, a blocked filter may reduce suction or spew dust back into the air.

### TOP TOOLS

Vacuum, running water, dish soap, new filters as needed.

### DIRT-BUSTERS

For air conditioners, air purifiers, dehumidifiers, and vacuums, you can usually hand-wash filters with water and mild soap, letting them dry fully before reinserting.

Wash window air conditioner filters monthly during times of heavy use. Replace disposable HVAC system filters every one to three months. (Washable filters have performed poorly in CR tests.) For air purifiers, follow the owner's manual; filter replacement intervals vary widely. Wash your dehumidifier filter a few times a month when humidity is high, and buy a new one if you spot mildew or mold. Follow your

owner's manual for vacuum filters, because the advice varies depending on the model.

For water filters and refrigerator filters, which help remove lead and other contaminants from household water, check your owner's manual for washing and replacement schedules.

Give your manual-clean dishwasher filter (found in most modern models) a weekly sniff test, and if it's unpleasant, rinse the filter in your sink.

If you have an over-the-range microwave, periodically remove the mesh filter from the underside of the appliance, soak it in soap and water, rinse and let dry thoroughly, then pop it back in. Cooking a lot? Do this at least monthly to get rid of the grease from the range below.



## MAKE BUSY BATHROOMS SPARKLE

### THE CHALLENGE

Soap scum and mildew in and around the tub and shower, and persistent stains in the toilet.

### TOP TOOLS

Bathroom cleaner (this usually contains nonchlorine bleach), clean sponge, disinfectant or bleach, powder cleanser, old toothbrush, toilet brush.

### DIRT-BUSTERS

Crack a window or run an exhaust fan during and after showers, and wipe down tile walls and porcelain afterward to help prevent the moisture buildup that can lead to mildew. But if you've already got mildew or soap scum, spray on a solution of one part bleach to four parts water, let it sit for 30 minutes, wipe with a sponge,

and finish with a water rinse. For hard-to-clean areas like shower door tracks, an old toothbrush can work magic. Dampen the bristles and brush away muck. Dipped in diluted bleach, that toothbrush can also do wonders on discolored grout.

For the toilet, brush the bowl weekly with a disinfectant cleanser to help remove minor stains and reddish-brown hard-water deposits. For hard-water spots that persist, a calcium, lime, and rust remover such as CLR should leave the bowl sparkling. Clean with it monthly to help prevent stains from reappearing.

### GERM WARFARE

Wiping bathroom surfaces with a soapy sponge should eliminate most germs. But if

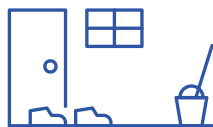
someone at home has been diagnosed with COVID-19, it's wise to clean and disinfect the bathroom and other shared surfaces, Allen says.

For large surfaces, use a non-alcohol disinfectant, one that's bleach- or hydrogen-based. Alcohol-based products are useful for disinfecting small objects but may dry before they can reach full effectiveness on large surfaces, notes Gregory Schrank, MD, an infectious disease specialist at the University of Maryland School of Medicine. For toilets, "the handle is the main part to focus on, but consider less obvious areas, like around the toilet seat and the lid, that might get touched a lot, too," ACI's Sansoni says.

### GERM WARFARE

HEPA filters for air purifiers can capture respiratory particles that carry most airborne viruses—including the coronavirus—and bacteria. Joseph Allen, DSc, an associate professor of exposure assessment science at the Harvard T.H. Chan School of Public Health, recommends placing a portable purifier in the bedroom of a household member with COVID-19.

But take care changing the filter and cleaning the device. Wear gloves and a mask, and take the entire machine outside. Clean and wipe the exterior with a disinfectant. Then remove the filter and dispose of it in a sealed bag. If your air purifier has a fabric prefilter—an additional way to trap particles—wash it.



## TACKLE HIGH-TRAFFIC FLOORS

### THE CHALLENGE

All that household dirt and dust we're generating these days typically ends up on floors and carpets, as well as on hard-to-reach ceiling fans.

### TOP TOOLS

Vacuum, pillowcase or ceiling fan duster, dust rags, carpet cleaner, steam mop.

### DIRT-BUSTERS

Do household dusting first (including ceiling fans), Sansoni says, so that dust and dirt don't fall on a freshly vacuumed

floor. And make sure that vacuuming devices are working well by regularly emptying their bins and cleaning filters as recommended.

What to use: For bare floors, a stick vac may be all you need, says Frank Rizzi, who conducts Consumer Reports' vacuum tests. For carpets, CR's tests have found that uprights are best because the weight of the device sits atop the brush head, pushing it down into the pile so it sucks up more debris.

Got stains? A carpet

cleaner (hardware stores rent them) can remove the grime even the best vacuums can't get at. Steam mops are ideal for deep-cleaning laminate, tile, and vinyl floors, but they can damage wood. With wood, different stains call for different solutions. For instance, scuff marks on wood floors sealed with urethane or polyurethane may give way if rubbed with a tennis ball or clean eraser.

As for those dusty ceiling fan blades, simply slip a pillowcase over one blade at a

time, and then pull it and the dust right off. Wipe blades and housing with a damp cloth and an all-purpose cleaner. Dry everything thoroughly; damp blades attract dust.

## GERM WARFARE

If germs are a concern (say, someone has vomited on the

floor or carpeting), it's best to look at the manufacturer's advice on disinfectant use before dabbing some on the area.

That said, a diluted solution of bleach and water is generally safe for laminate or vinyl, according to Bill Carroll, PhD, an adjunct professor of chemistry at

Indiana University. A disinfectant product with quaternary ammonium (such as Lysol) should be safe for wood floors, but test it in an inconspicuous spot first. Wipe the area with a damp cloth afterward, and dry thoroughly. Otherwise, the disinfectant may leave a residue behind.



## FRESHEN YOUR WASHER AND DRYER

### THE CHALLENGE

Wrangling soap scum and the moisture that can lead to mold growth along with the unpleasant smell that often occurs with front-loading washers. For dryers, it's curbing lint, which can be a fire hazard, slow drying, and hike utility bills.

### TOP TOOLS

Bleach, cotton ball, rubbing alcohol, duct lint brush.

### DIRT-BUSTERS

To make your washer less mold-friendly, move washed clothing to the dryer right away, and leave the door and detergent dispenser slightly ajar between loads, as long as kids and pets can't get to it.

Use the right type and amount of detergent to minimize residue like soap scum. Some are too sudsy for high-efficiency washers like front-loaders, so choose those labeled "HE" or for "all washers."

And while it may seem odd to wash a washing machine, run the tub-clean or sanitize cycle—or simply a hot-water cycle with a washer cleaner containing bleach—regularly (some brands say monthly or every 50 loads) to help keep it odor-free and performing well.

For the dryer, clean the lint filter after every load. To reduce the risk of a fire caused by lint buildup, periodically

GET IT  
CLEAN

## YOUR EXERCISE EQUIPMENT



### STEP 1

After every workout, go over your machine's surface with a damp, soft cloth and mild soapy water. Don't pour liquid cleaners on it; that may damage the electronics inside. Clean hand weights the same way, then wipe them dry.

### STEP 2

Sharing workout equipment with others in your household? Clean the handles and other high-touch surfaces with a disinfectant wipe between uses.

### STEP 3

To reduce dust buildup from around the motors of treadmills and other mechanical items, occasionally unplug the machine, remove the motor cover (your owner's manual can help you find it), and vacuum the visible debris.

remove lint from the duct in the back of the appliance. If you have access to the dryer vent outside your home, check it while you're drying a load. You should feel air coming out. If you don't, you may need to disconnect the duct from the dryer and clean it out (or you can call a professional to clean it for you).

If your dryer has moisture sensors, which shut the appliance off when clothes are dry, keep them working well by cleaning them with a cotton ball dampened with rubbing alcohol every few months, or anytime the auto-dry cycle seems to be malfunctioning.

## GERM WARFARE

If a household member has COVID-19 or another infectious illness, washing their laundry in the hottest water it can withstand should kill most pathogens. If someone has had diarrhea, add regular bleach (not color-safe) if it's appropriate for the clothes, Schaffner says.



## Cleaning After COVID-19

**YOU MAY THINK** it's essential to disinfect your home from top to bottom if someone there recently recovered from COVID-19. But experts suggest a moderate approach. "The virus doesn't survive, either in the air or on surfaces, for a long period of time," says Bill Carroll, PhD, a chemist at Indiana University. Cleaning

surfaces with just soap and water may be enough, he says, but you may want to ensure you've eradicated lingering germs with the following steps. "You're just adding an extra layer of safety with these," he adds. **AIR THINGS OUT.** "By far the most common route of exposure for this virus is through

inhaling droplets or aerosols [tiny droplets] in the air," Carroll says. So leave the windows in the bathroom and bedroom the ill person has been using open for 12 hours.

**CLEAN AND DISINFECT.** Put on disposable gloves and clean surfaces like bathroom counters with soap and water. Then wipe with a coronavirus-killing disinfectant. **LAUNDRY "SICK ROOM" ITEMS.** Wearing disposable gloves, collect bedding, clothes, and towels the ill person has used, and wash them at the hottest setting following manufacturer instructions. (You can wash them with items from other household members.)  
—Hallie Levine



## SANITIZE YOUR TECH TOOLS

### THE CHALLENGE

You want to clean items like keyboards, remotes, TVs, and phones without damaging them.

### TOP TOOLS

Alcohol, alcohol wipes, cotton balls, disinfectant wipes, microfiber cloths, soap, soft cotton cloths, toothpicks or an old toothbrush.

### DIRT-BUSTERS

Swab your keyboard and mouse with a mix of water and a bit of alcohol. To get rid of crumbs between keys, if you don't have

a handheld vacuum handy, try a small brush or the sticky end of a Post-it. Turning the keyboard upside down and giving it a shake also helps.

For a remote, remove the batteries, turn it upside down, and tap it against your palm to remove dust and dirt in the keys. (A dry toothbrush or wooden toothpick helps dislodge stubborn debris.) Spray a soft cloth with a water and alcohol solution, wipe the remote, then clean around the keys with a cotton ball dampened with the water/alcohol mix. Dry with

another soft cloth.

TV screen need a dusting? John Walsh, who cleans more than 250 televisions each year in CR's labs, recommends wiping it gently in a circular motion with a soft, anti-static microfiber cloth. Never use glass cleaner, which can damage today's OLED and LCD models.

With smartphones, James Dickerson, PhD, CR's chief scientific officer, washes his case and screen protector (after removing them, natch) in a sink with soap and water. For the phone itself, go over hard,

nonporous surfaces like the display and keyboard with an isopropyl alcohol or other disinfecting wipe.

### GERM WARFARE

Electronic devices don't need regular disinfecting (and you're already sanitizing smartphones with the wipes mentioned above). But if someone at home has COVID-19 or another infectious illness, you might consider disinfecting commonly used electronics, "especially if that person is not able to remain isolated," says Gregory Schrank, MD, an infectious disease specialist at the University of Maryland School of Medicine. There's no need to disinfect your smartphone when you return home after going out, unless someone who is sick handled it, experts say.

**Ratings** ➤ **Clean Sweep** These vacuums, carpet cleaners, steam mops, and laundry detergents from our tests make cleaning a winning game every time.

Brand + Model	Overall Score	Price	Survey Results	Test Results							Features							
			Predicted reliability Owner satisfaction	Carpet	Bare floors	Hose suction	Clean emissions	Handling	Pet hair	Noise	Weight (lb.)	Cord length (ft.)	Manual-pile adjust	Accepts tools	Suction control	Retractable cord	Full-bag/bin indicator	High efficiency particulate air (HEPA) filter

**BAGLESS UPRIGHT VACUUMS**

✔ <b>Shark</b> Navigator Powered Lift-Away NV586 (Target)	77	\$300	⬆	⬆	⬆	⬆	⬆	⬆	⬆	⬆	⬆	16	26		●	●		●	●
💰 <b>Kenmore</b> Pet Friendly Cross-Over DU3017	75	\$180	⬆	⬆	⬆	⬆	⬆	⬆	⬆	⬆	⬆	17	25		●	●		●	●
✔ <b>Dyson</b> Ball Animal 2	74	\$450	⬆	⬆	⬆	⬆	⬆	⬆	⬆	⬆	⬆	17	30		●			●	●

**BAGGED UPRIGHT VACUUMS**

💰 <b>Kenmore</b> Elite Pet Friendly 31150	77	\$350	⬆	⬆	⬆	⬆	⬆	⬆	⬆	⬆	⬆	21	35	●	●	●		●	●
💰 <b>Kenmore</b> Pet Friendly 31140	74	\$280	⬆	⬆	⬆	⬆	⬆	⬆	⬆	⬆	⬆	20	29	●	●	●		●	●
💰 <b>Hoover</b> WindTunnel Max UH30600	71	\$180	⬆	⬇	⬆	⬆	⬆	⬆	⬆	⬆	⬆	17	29	●	●			●	

**BAGLESS CANISTER VACUUMS**

✔ <b>Miele</b> Blizzard CX1 Cat & Dog	76	\$900	⬆	⬆	⬆	⬆	⬆	⬆	⬆	⬆	⬆	15	21	●	●	●	●	●	●
💰 <b>Kenmore</b> 22614	72	\$390	⬆	⬆	⬆	⬆	⬆	⬆	⬆	⬆	⬆	23	24	●	●	●	●	●	●
✔ <b>Rainbow</b> SRX Cleaning System	70	\$1,300	⬆	⬆	⬆	⬆	⬆	⬆	⬆	⬆	⬆	36	24		●	●			●

**BAGGED CANISTER VACUUMS**

✔ <b>Miele</b> Complete C3 Marin	84	\$1,100	⬆	⬆	⬆	⬆	⬆	⬆	⬆	⬆	⬆	23	24	●	●	●	●	●	●
✔ <b>Miele</b> Complete C3 Alize	77	\$700	⬆	⬆	⬆	⬆	⬆	⬆	⬆	⬆	⬆	17	24		●	●	●	●	●
💰 <b>Kenmore</b> Pop-N-Go BC4026	76	\$280	⬆	⬆	⬆	⬆	⬆	⬆	⬆	⬆	⬆	22	26	●	●	●	●	●	●

Brand + Model	Overall Score	Price	Survey Results	Test Results						Features				
			Predicted reliability Owner satisfaction	Carpet	Bare floors	Edges	Noise	Pet hair	Clean emissions	Run time (min.)	Charge time (hr.)	Weight (lb.)	Battery type	Brush on/off

**CORDED STICK VACUUMS**

✔ <b>Shark</b> APEX UpLight Lift-Away DuoClean LZ601	97	\$275	⬆	⬆	⬆	⬆	⬆	⬆	⬆	⬆	NA	NA	11		Corded model		
✔ <b>Bissell</b> Pet Hair Eraser Slim 2897 (Walmart)	85	\$150	⬆	⬆	⬆	⬆	⬆	⬆	⬆	⬆	NA	NA	9.3		Corded model		●
💰 <b>Dirt Devil</b> Power Stick SD12530	85	\$100	⬆	⬇	⬆	⬆	⬆	⬆	⬆	⬆	NA	NA	7.2		Corded model		

**CORDESS STICK VACUUMS**

<b>Tineco</b> Pure One S11	95	\$350	—	—	⬆	⬆	⬆	⬆	⬆	⬆	22	4	5.8		21.6 volt lithium ion		
<b>Tineco</b> Pure One S11 Tango EX	94	\$470	—	—	⬆	⬆	⬆	⬆	⬆	⬆	17	4	5.8		21.6 volt lithium ion		
<b>Dyson</b> V11 Outsize	90	\$800	⬇	⬆	⬆	⬆	⬆	⬆	⬆	⬆	40	5	7.9		25.2 volt lithium ion		

Brand + Model	Overall Score	Price	Test Results				Features							
			Cleaning	Dryness	Convenience	Noise	Calculated coverage area (sq. ft.)	Hose length (in.)	Weight, full (lb.)	Weight, empty (lb.)	Weight, solution tank (lb.)	Hose	Separate tanks	Carrying handle

#### FULL-SIZED CARPET CLEANERS

✓ Bissell ProHeat 2X Lift-Off Pet 15651	71	\$300	➤	➤	➤	➤	15	61	30	24	6	●	●	●
💰 Hoover PowerDash Pet FH50700	69	\$100	➤	➤	➤	➤	8	NA	17	12	5		●	
✓ Bissell TurboBrush PowerClean 2987	69	\$130	⚠	➤	➤	➤	8	NA	18	12	6		●	

Brand + Model	Overall Score	Price	Test Results			Features								
			Cleaning	Steam rate	Convenience	Cord length (ft.)	Weight (lb.)	Reservoir capacity (fl. oz.)	Warranty	Time to heat (sec.)	Steam levels	Ready light or indicator	Empty light or indicator	Unit must be pumped in use

#### STEAM MOPS

✓ Bissell PowerFresh Slim 2075A	79	\$150	➤	➤	⚠	25	7	12	2 years	30	2	●		
💰 Bissell PowerFresh Deluxe 1806	77	\$90	➤	⚠	➤	25	7	15	2 years	30	2	●		
Shark Genius Steam Pocket S5003D	73	\$120	➤	➤	⚠	23	7	10	1 year	30	3			

Brand + Product	Overall Score	Price Per Load	Test Results										Features	
			Body oil	Dirt	Salad dressing	Coffee	Chocolate	Grass	Blood	Pretreat	Hard water	For sensitive skin	Measuring cup	

#### LIQUID LAUNDRY DETERGENTS

✓ Tide Plus Ultra Stain Release	84	28¢	➤	➤	➤	⚠	➤	➤	➤	➤	➤		Clear	
✓ Persil ProClean Stain Fighter	84	21¢	➤	➤	➤	⚠	➤	➤	➤	➤	⚠		Solid	
💰 Kirkland Signature (Costco) Ultra Clean Liquid	76	11¢	➤	➤	➤	⚠	➤	⚠	➤	➤	➤		Clear	

**HOW WE TEST: VACUUMS:** The **Overall Score** includes information on **predicted reliability** and **owner satisfaction** from our member survey. (Dashes indicate insufficient data to provide a rating.) Full-sized vacuums (uprights and canisters) undergo our toughest tests. We sprinkle talc and sand on a medium-pile carpet for **carpet cleaning** and spread sand on a linoleum floor for our **bare floors** test. For **pet hair**, we stomp pet fur into a carpet. We measure **noise**, and how well the vacuum contains what it sweeps up for the **emissions** score. For stick vacuums, we concentrate

on surface debris, such as cereal and rice. For cordless stick vacs, we also measure each model's **battery run time**.

**STEAM MOPS:** The **Overall Score** is based on tests for **cleaning** (we apply ketchup, mustard, and jam to ceramic tiles, let them dry and take 10 back-and-forth passes with a steam mop, then use photo-imaging to compare before and after), **steam rate** (the amount of steam a unit produces per minute), and **convenience** (how easy the mop is to use and maneuver).

**CARPET CLEANERS:** The **Overall Score** is based on results from four tests. For **cleaning**, we use carpet soiled with red Georgia clay. We run a cleaner over the carpet for four wet and four dry cycles, then repeat on two more swatches to see how well a model cleans. **Dryness** indicates how much solution is left behind. **Convenience** measures machine weight, cord length, coverage area, and ease of tank filling and emptying. **Noise** is how loud the machine is during operation.

**LAUNDRY DETERGENT:** The **Overall Score** is based on how well a detergent removes common stains. For **cleaning**, we use fabric swatches saturated with **body oil, dirt, salad dressing, coffee, chocolate, grass, and blood**. Using each detergent, we wash the swatches, then let them air-dry. We use a colorimeter to see how much stain remains. For **pretreat**, we apply detergent to a stain and let it sit for 5 minutes before washing. **Hard water** is how well a detergent cleans in very hard water.



# HOW SAFE IS OUR DRINKING WATER?

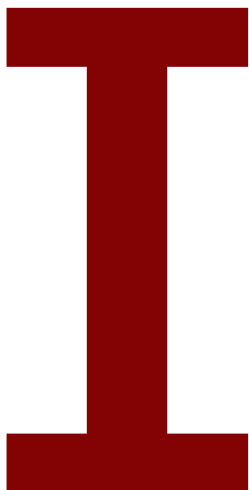
118 of 120

water samples taken across the U.S. had  
concerning levels of PFAS, arsenic, or lead



CR investigated the nation's tap water. Here's what the results  
mean for you. Plus, how to test and treat your own water.

by Ryan Felton, with additional reporting from Lisa Gill  
of Consumer Reports and Lewis Kendall for the Guardian



**IN CONNECTICUT, A CONDO** had lead in its drinking water at levels more than double what the federal government deems acceptable. At a church in North Carolina, the water was contaminated with extremely high levels of potentially toxic PFAS chemicals. The water flowing into a Texas home had both—and concerning amounts of arsenic, too.

All three were among locations that had water tested as part of a nine-month investigation by Consumer Reports and the Guardian US news organization into the nation's drinking water.

Since the passage of the Clean Water Act in 1972, access to safe water for all Americans has been a stated U.S. government goal. Yet millions of people continue to face serious water quality problems because of contamination, deteriorating infrastructure, and inadequate treatment at water plants.

CR and the Guardian selected 120 people from around the U.S., out of a pool of more than 6,000 volunteers, to test for arsenic, lead, PFAS (per- and polyfluoroalkyl substances), and other contaminants. The samples came from water systems that together service more than 19 million people.

The study has some limitations: The quality of the water at one location on a single day doesn't necessarily reflect

the quality of the water supplied by an entire system or at other times. But the ambitious undertaking, with community water systems chosen by CR's statisticians from a representative mix of systems across the country, provides a unique view into some of the most significant challenges in America's ongoing drinking water crisis.

The challenges don't stem from a technology problem. Filtration systems can cleanse water of contaminants. Yet they are not being used uniformly by community water systems.

Indeed, almost every sample tested had measurable levels of PFAS, a group of compounds found in hundreds of household products. These chemicals are linked to learning delays in children, cancer, and other health problems. More than 35 percent exceeded a safety threshold that CR scientists and other health experts believe should be the maximum.

Yet many consumers have never heard of PFAS.

Hung Ng, a resident of Florida, N.Y., says he has long used home water filters, in part to remove lead. But the 69-year-old says he didn't know anything about PFAS until he had his water tested as part of this investigation, which found comparatively high levels of the

chemicals in his water.

"Now I've got to find something to filter out the PFAS," Ng says.

CR's tests revealed other problems as well. About 8 percent of samples had levels of arsenic—which gets into drinking water through natural deposits or industrial or agricultural pollution—above CR's recommended maximum for drinking water. And almost every sample had measurable amounts of lead, a heavy metal that leaches from corroding water lines and home plumbing fixtures. It is unsafe at any level.

In response to CR's findings, Environmental Protection Agency spokesperson Andrea Drinkard says that 93 percent of the population supplied by community water systems gets water that meets "all health-based standards all of the time" and that the agency has set standards for more than 90 contaminants. That includes arsenic and lead but does not include PFAS.

America's water crisis, while widespread, affects some communities more than others, according to an analysis of more than 140,000 public water systems published by the Guardian in February. It found that access to clean drinking water is highly unequal in the U.S., with water systems that service poorer and rural counties far more likely

**Jim Vaughn, Pittsboro, N.C.**

"It's that little feeling of helplessness. Is there something that the town will do about it? Or will we let it ride?"

TOTAL PFAS LEVEL

**80.2** PPT

CR'S RECOMMENDED  
MAXIMUM: 10 PPT

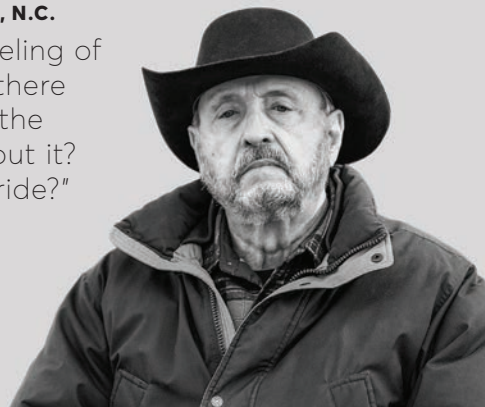


PHOTO: JEREMY M. LANGE/THE GUARDIAN

to have violations than those that provide water to wealthier or urban ones. Water systems in counties with large Latino populations were particularly likely to have violations, the Guardian found.

# PFAS

## The 'Forever Chemical' Problem

The PFAS results from CR's tests are particularly troubling.

Manufacturers use PFAS to make stain-resistant fabrics and carpets, water-repellent clothing, nonstick cookware, and hundreds of other common products. The compounds can seep into water from factories, landfills, and other sources. And because they don't easily break down in the environment, they're often called "forever chemicals."

Investigation into the health effects of PFAS exposure is ongoing, but some of the strongest evidence about their potential risks comes from research of about 69,000 people in and around Parkersburg, W.Va. The research—part of a settlement between DuPont, which makes some PFAS, and residents of the community—was depicted in the 2019 movie "Dark Waters."

It found a "probable link" between exposure to a type of PFAS and six health problems: high cholesterol, ulcerative colitis, thyroid disease, pregnancy-induced hypertension, and testicular and kidney cancers. Research has also linked some PFAS to learning delays in children.

Most Americans have trace amounts of PFAS in their blood, according to research by the Centers for Disease Control and Prevention. And at least 2,337 communities in 49 states have drinking water known to be contaminated with PFAS, according to a January analysis by the Environmental Working Group (EWG), an advocacy organization.

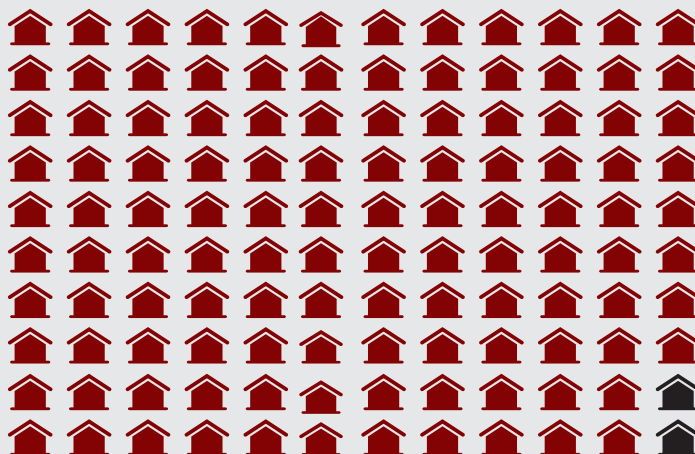
## HOW CONSUMERS UNITED TO TEST AMERICA'S TAP WATER

CONSUMER REPORTS teamed up with our members and readers of the Guardian US to investigate the nation's drinking water. From a pool of more than 6,000 potential volunteers, CR statisticians winnowed the group to 120 people representing a cross section of the country and the water systems that service it. That included 12 samples from each of the Environmental Protection Agency's 10 jurisdictional regions. Testers were chosen to provide a mix of urban and rural locations, as well as small and large water systems. We were particularly interested in PFAS, chemicals notorious for both their health risks and their perseverance in the environment. Each participant received test kits for PFAS, as well as for arsenic, lead, and other contaminants, plus a video showing how to

collect the samples. That included gathering samples of water before it went through any filter or treatment system that participants might have in their homes. When tests were complete, we sent volunteers advice tailored to their results. We can't draw conclusions about any specific water system, because only one sample came from each, but together the results provide powerful insights into problems faced by the nation as a whole. "While much of CR's testing is done in our labs with our scientists, projects like these need real people," says James Dickerson, PhD, CR's chief scientific officer. "We are grateful to the readers who helped and shared their stories with us." If you would like to help on future projects, go to [CR.org/participatoryresearch](https://CR.org/participatoryresearch).

## 120 Locations Tested Across the U.S.

Drinking water from **118 of the 120** locations tested across the U.S. had levels of PFAS or arsenic above CR's recommended maximum, or detectable amounts of lead.



CR's tests results confirm the ubiquity of the chemicals: We found PFAS in 117 of the 120 samples we tested, from locations across the country.

Despite mounting evidence of widespread contamination and health risks, the EPA has still not set an enforceable legal limit for PFAS in drinking water. Instead, it has established only voluntary limits, which apply to just two of the better-studied forever chemicals—PFOA, or perfluorooctanoic acid, and PFOS, or perfluorooctanesulfonic acid—at 70 parts per trillion combined. (For context, 1 ppt is the equivalent of one grain of sand in an Olympic-sized swimming pool, according to some estimates.)

Many public health experts think those levels are far too high. Harvard environmental health professor Philippe Grandjean, PhD, has suggested that the limit should be just 1 ppt for PFOA and PFOS, citing his 2013 research—partly funded by the EPA—showing decreased vaccine response in children exposed to the chemicals. The EWG supports that threshold for total PFAS, pointing to Grandjean's work as well as other research linking PFAS to health problems in rodents.

CR's chief scientific officer, James Dickerson, PhD, agrees that when it comes to PFAS, “the lower the better.” CR's scientists say the maximum allowed amount should be 5 ppt for a single PFAS chemical and 10 ppt for two or more. That is in line with standards for bottled water that an industry group, the International Bottled Water Association, has its members adhere to.

Among the 120 samples CR tested, more than a third had PFAS levels above 10 ppt, and more than a quarter exceeded 5 ppt for a single PFAS chemical.

Two samples had PFAS levels above the federal advisory level of 70 ppt, with the highest amount—80.2 ppt—coming from a sample that Jim Vaughn, a 76-year-old retired electrical

equipment salesman, collected at his church in Pittsboro, N.C.

Vaughn wasn't particularly surprised, he says. Places such as Pittsboro—a community of about 6,700 on the fringes of North Carolina's Research Triangle, which is anchored by three universities and filled with industry and high-tech business—are used to getting “dumped on,” he says.

“It's that little feeling of helplessness. Is there something that the town will do about it? Or will we let it ride?”

Indeed, residents of Pittsboro have reason to worry, beyond the results of CR's tests. In 2007, an EPA study found PFAS contamination in the Cape Fear River Basin, a major source of drinking water for the eastern half of North Carolina. Some of the highest levels came from the Haw River in the basin's north end—where Pittsboro gets its water.

Ongoing research out of Duke University, in nearby Durham, has also raised concerns. It found that levels of PFAS in a study of 49 Pittsboro residents' blood are two to four times higher than that of the general U.S. population. Heather Stapleton, PhD, the project's lead investigator, says Vaughn's test results align with her team's findings.

Stapleton's team found a striking similarity between the levels of PFAS in the blood of Pittsboro residents and residents of the cities of Wilmington and Fayetteville, downstream from Pittsboro, raising concerns that the drinking water in those communities could be contaminated with PFAS, too, she says.

“If you think about the number of communities that could be impacted, it's close to a million people, or 10 percent of North Carolina's population,” she says.

Chris Kennedy, town manager for Pittsboro, says the town was not a source of PFAS but that it was “diligently working towards removing PFAS from our potable water supply.” He adds that the town is installing filters at the water treatment plant to remove at least 90 percent of

PFAS by the end of 2021 and is taking steps “to reduce contamination into the Haw River, which will provide the best results long term.”

# ARSENIC

## A Toxin in the Water

More than 1,200 miles away from Pittsboro, Sandy and Scott Phillips sat around their kitchen table in Texas on a weekday in February reflecting on the test results for their water samples.

Last year, looking to downsize, they built the custom home of their dreams in a new development in Round Rock, 20 miles north of Austin. Sandy Phillips especially enjoyed picking out everything from the floors to the kitchen cabinets.

“We paid a little extra for the white cabinets because I just love the clean look,” she says.

What the couple didn't get to pick was their tap water supplier. Soon after moving in, they began to notice the water had an unusual odor, prompting them to invest thousands in a water softening and reverse osmosis water filtration system.

Not long after, the couple got their water tested as part of CR's project, taking samples from water before it was filtered. The results were concerning: high not just in PFAS (32.8 ppt) but also in arsenic, at 3.3 parts per billion. “We get this gorgeous house,” Sandy Phillips says, “and then the water is terrible.”

Bill Brown, general manager of the Jonah Water Special Utility District, the couple's water supplier, says it “has complied with all federal and state minimum contaminant level standards for arsenic and lead for many years.” He says that while CR's results conflicted with its records, the water district will investigate. He did not comment on the PFAS found in the Phillipses' water.

# CONTAMINANTS IN OUR WATER

## PFAS

**WHAT ARE THEY?** Per- and polyfluoroalkyl substances are a group of nearly 5,000 compounds with bonds so tight that they are almost indestructible, earning them a reputation as “forever chemicals.” Used to make products stain-, grease-, and water-resistant, PFAS can get into water during manufacturing or when products degrade in landfills. Risks include high cholesterol, some cancers, and learning delays in children.

### WHERE DO THEY COME FROM?



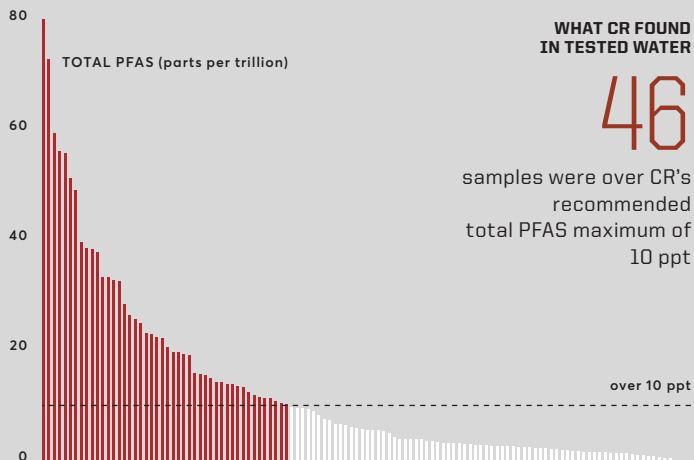
STAIN-RESISTANT  
FABRIC



NONSTICK  
PANS



FAST-FOOD  
PACKAGING



## ARSENIC

**WHAT IS IT?** A toxic heavy metal naturally found in the ground, arsenic is also used in pressure-treated lumber and in several other industrial processes. In agriculture, it is used to kill insects on cotton and other crops. Smelting copper and burning coal create arsenic as a byproduct. It can enter water through natural deposits or industrial or agricultural pollution. It has been linked to cancer, as well as lowered IQ in children.

### WHERE DOES IT COME FROM?



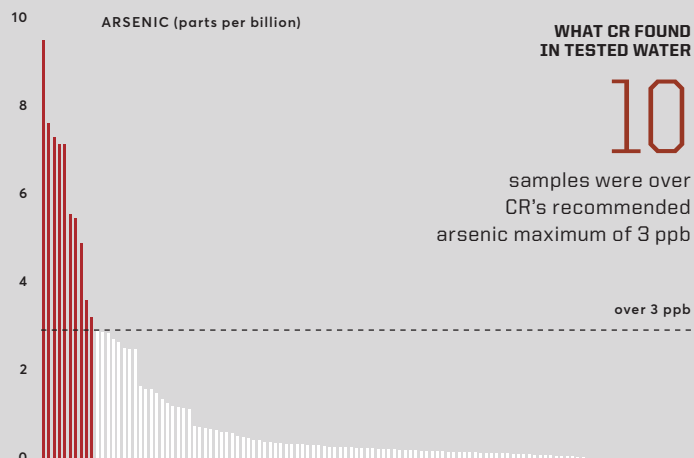
NATURAL  
MINERALS



FACTORY  
WASTE



AGRICULTURAL  
RESIDUE



## LEAD

**WHAT IS IT?** Another heavy metal, lead was once found in many products, including water pipes. In 1986, the federal government banned new lead service lines, which bring water into people's homes. But it can still enter drinking water through the millions of lead pipes that remain in the ground or in people's homes. It has been tied to reduced IQ and slowed growth in children, high blood pressure, and reproductive problems.

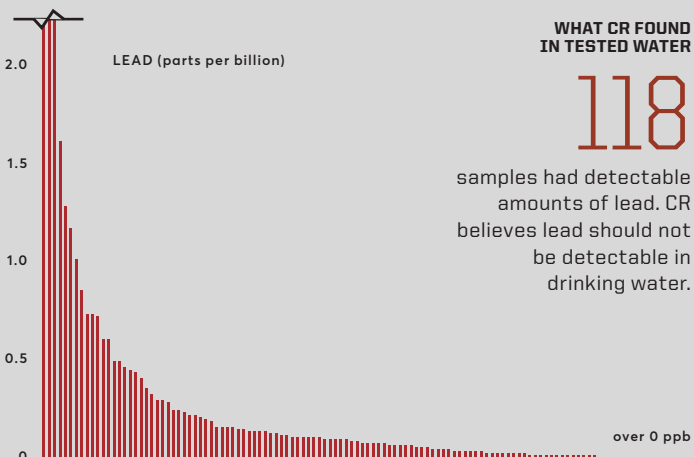
### WHERE DOES IT COME FROM?



SERVICE  
LINES



HOME  
PLUMBING



## HOW TO TEST AND TREAT YOUR DRINKING WATER

# DOES YOUR WATER COME FROM ...



... A PRIVATE WELL?



... A MUNICIPAL WATER SYSTEM?



### TEST YOUR WATER FOR LEAD.

Ask your utility if it offers free lead tests. Healthy Babies Bright Futures ([hbbf.org/lead-drinking-water](http://hbbf.org/lead-drinking-water)) offers low-cost ones.



### HAVE A COPY OF YOUR WATER REPORT?

Many cities publish a consumer confidence report (CCR), typically with info about arsenic and lead but not PFAS, each year by July 1.



### TRY TO GET A COPY OF YOUR CCR.

Rent? Ask your landlord or contact your utility. If it serves more than 100,000 people, check its website or [epa.gov/ccr](http://epa.gov/ccr) to find the CCR.

NO

YES

NO

YES



### CHECK YOUR REPORT.

Did it include information about PFAS?

NO

YES

DID NOT GET A CCR

GOT A CCR



### TEST YOUR WATER.

Find a certified lab at [epa.gov/dwlabcert](http://epa.gov/dwlabcert). Two mail-in kits that performed well in recent CR tests: SimpleLab, \$129 for municipal, \$149 for well, and \$289 for PFAS; and WaterCheck, \$169, \$180, and \$425.



## WATER REPORT RED FLAGS

Your CCR or private lab report will show contaminant levels found in your water. The CCR is only required to show federally regulated contaminants, which do not include PFAS, and a private lab report will list only contaminants you tested for. See at right to interpret either report for arsenic, lead, and PFAS. For other contaminants, go to [epa.gov](http://epa.gov); scroll down and click "Drinking Water," then "Drinking water regulations." To see lower levels recommended by the nonprofit Environmental Working Group, go to [ewg.org/tapwater/ewg-standards.php](http://ewg.org/tapwater/ewg-standards.php).

### MAXIMUM CONTAMINANT LEVEL (MCL)

The highest level of contaminant allowed by the EPA. If the value in the "Your Water" column in a CCR is above the MCL, the system is in violation.

### CR'S MAXIMUM

The maximum that CR scientists believe should be in tap water.

#### ARSENIC

10 PPB

3 PPB

#### LEAD

15 PPB. Your CCR will show an average based on a limited sample of homes in your community, so you may want to test for lead even if it says none was found.

NOT DETECTED, particularly if you're pregnant or you have young children.

#### PFAS

NOT FEDERALLY REGULATED, so no MCL and not in many CCRs. EPA advises limit of 70 PPT for two PFAS (PFOA and PFOS) combined.

5 PPT for any one PFAS chemical and 10 PPT for two or more.

In the early 2000s, the EPA considered a drinking water limit for arsenic of 3 ppb, before settling on 10 ppb as an amount that balances the costs for water system operators while reducing health risks. CR scientists have long said the EPA should set a limit of 3 ppb or lower, in line with what other health experts and environmental advocacy groups, such as the Natural Resources Defense Council (NRDC), have called for.

Almost every sample CR tested had measurable levels of arsenic, including 10—or about 8 percent—with levels between 3 and 10 ppb. Previous tests from CR and others have shown elevated levels in juices and baby foods.

Hundreds of water systems have exceeded the EPA's 10-ppb limit. And though research indicates that the percentage of systems violating the rule has dropped over time, a 2017 NRDC study found that more than 500 systems provided water with excessive arsenic to 1.8 million people in the U.S. in 2015.

Research suggests that exposure to even low levels of arsenic can pose health risks over the long term. A 2014 study in the journal *Environmental Health* found an association between water with arsenic of 5 ppb or greater and a 5- to 6-point IQ reduction in children.

Two states—New Hampshire and New Jersey—have lowered their arsenic limit to 5 ppb, citing warnings from studies. The EPA itself even sets its “maximum contaminant level goal”—the level below which there is no known or expected risk to health—at zero for arsenic.

## LEAD

### No Safe Amount

The Phillipses, in Texas, were especially fortunate to have installed a filtration system because the results of their unfiltered tap test showed high levels of

**Sandy Phillips,  
Round Rock, Texas**

“We get this gorgeous house, and then the water is terrible.”

ARSENIC LEVEL

**3.3** PPB

CR'S RECOMMENDED  
MAXIMUM: 3 PPB



not only arsenic but also lead, at 5.8 ppb. (CR's follow-up tests of the couple's filtered water showed trace amounts of lead and levels of arsenic and PFAS well within CR's recommended limits.)

The risks of lead, and problems with how water utilities test for it, became a national concern when news of the water crisis in Flint, Mich., exploded in 2015. Scientists and the EPA agree that there's no safe exposure level of lead. But taking into consideration the feasibility of achieving lower levels, the EPA says utilities have to take significant steps to lower lead levels—including replacing lead service lines—only when 10 percent of samples from homes in their service areas exceed 15 ppb.

Consumer advocates say those EPA regulations are problematic—a reality underscored by the testing results of



**CONCERNED ABOUT LEAD,  
ESPECIALLY IF YOU  
ARE PREGNANT OR HAVE  
YOUNG CHILDREN?**



**FIND THE  
RIGHT FILTER**

See page 42 for advice.

YES



**DID IT SHOW A  
CONCERNING LEVEL OF  
ANY CONTAMINANT?**

NO



**CONGRATULATIONS!**

You don't need to take any further action.

## FIND THE RIGHT WATER FILTER

Ensure that any filter you purchase meets standards set by NSF International and the American National Standards Institute for the specific contaminants you're concerned about. Look for a code such as NSF/ANSI 53, followed by the manufacturer's claim for the product's contaminant reduction. And when replacing filters, make sure you use one recommended by the manufacturer. For more on water filters, including other types (such as faucet-mounted and countertop) and which models work on chlorine, volatile organic compounds, and organisms such as giardia, go to [CR.org/waterfilters0521](https://www.consumerreports.org/waterfilters0521). —Perry Santanachote

### PITCHERS

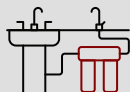


Often the cheapest and simplest option for lead.

#### PASSED CR'S TESTS FOR LEAD

<b>BRITA MONTEREY OB 50</b> \$40	<b>CLEARLY FILTERED COMIN</b> 16JU025114 \$85
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### UNDERSINK FILTERS



Good options if you want to filter lots of water and have multiple contaminants, especially lead and PFAS. Some can filter arsenic.

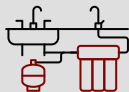
#### PASSED CR'S TESTS FOR LEAD

<b>AQUA-PURE BY CUNO AP-DWS1000</b> \$300	<b>CULLIGAN US-EZ-4</b> \$85	<b>EVERPURE H-1200 EV9282-00</b> \$450	<b>WHIRLPOOL ULTRAEASE WHAMBS5</b> \$110
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#### PASSED CR'S TESTS FOR PFAS AND LEAD

<b>AQUASANA AQ-5200</b> \$100	<b>BRONDELL CORAL UC100 SINGLE-STAGE</b> \$100	<b>BRONDELL CORAL UC300 THREE-STAGE</b> \$150	<b>MULTIPURE MP750</b> \$430
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### REVERSE OSMOSIS



Can filter lead, PFAS, and arsenic, and are often the best option if you have high levels of all three. They generally cost more than other filters, and also require plumbing work and professional annual maintenance. For reverse osmosis filters previously tested by CR, go to [CR.org/waterfilters0521](https://www.consumerreports.org/waterfilters0521).

water being piped into a condo owned by Stephen and Robin Newberg in New Britain, Conn.

Lead typically works its way into drinking water through lead pipes that feed people's homes or in the home's plumbing itself. That underscores the need for more robust residential water testing, including samples from far more homes than currently required, experts say.

While New Britain's annual water quality report for customers indicates that its average lead level is 6 ppb, the Newbergs' results showed a concentration of 31.2 ppb, more than double the EPA's action level of 15 ppb.

Stephen Newberg, a former postal worker, says he drinks filtered water and his wife drinks bottled water, so he's not personally worried. But the 66-year-old sits on the board of his condo, and he's concerned about the possibility of the heavy metal being in his neighbors' water. He plans to raise the issue at an upcoming meeting. The results caught him and his wife off guard: "The lead really did surprise us," he says.

Ramon Esponda, New Britain's deputy director of public works, says that the city complies with the EPA's lead regulations, based on its 2020 tests, which found an average lead level of 2 ppb. Esponda says that results of a single sample may be thrown off by new fixtures, recent plumbing work, or other factors.

The installation of new lead service lines—pipes that connect a water main in a street to individual buildings—was banned in 1986. But an estimated 3 million to 6 million homes and businesses nationwide still get water through older lines that contain lead, according to EPA estimates. An untold number of homes have plumbing fixtures made of the heavy metal. Exposure can especially pose risks in children, such as reduced IQ and behavioral problems.

The Newbergs' results were the only ones in CR's tests to be above the EPA action level. But almost every sample had measurable levels of lead, and health

experts emphasize that no amount of lead is safe.

Erik Olson, senior strategic director of health and food at the NRDC, says the Newbergs' results illustrate several problems with how the EPA regulates lead. One is that water systems typically test for lead only once every three years, and larger systems can get waivers to test every nine years. Another is that the sample sizes are generally small.

"Even in a large city, they may only test 50 homes," Olson says. Systems are supposed to test homes that have lead service lines or plumbing and fixtures, but that requirement is often skirted, too, he says. "There's very little oversight, and they may not be testing the highest-risk homes."

CR's Dickerson agrees that the EPA needs to require municipalities to take many more samples from taps inside homes, to better protect consumers.

The EPA, in the waning days of the Trump administration, finalized changes to the lead regulation that would require testing in elementary schools and established new rules regarding the steps water systems must take when lead is detected.

But the NRDC, the NAACP, and other groups recently sued the EPA, saying those steps didn't go far enough, and urged the Biden administration to improve on them. In particular, the NRDC says, the revised rule would leave lead service lines in place for decades.

EPA spokesperson Drinkard, citing the pending litigation, says the agency has no additional information to share.

## THE FIX

People seeking cleaner drinking water do have some options for reducing their exposure to dangerous contaminants. (See "How to Test and Treat Your Drinking Water," on page 40.) But consumer advocates say that fixing the

problem shouldn't be up to consumers.

"Americans shouldn't have to navigate bureaucracy and be forced to make significant investments in order to access clean tap water," says Brian Ronholm, CR's director of food policy. "The implementation of strong standards would ensure everyone has access to clean water, regardless of income levels."

Legislation passed last year by the House of Representatives would have authorized \$22.5 billion to replace lead service lines across the U.S., according to the NRDC, but the bill died in the Senate. The NRDC called for the Biden administration and Congress to enact legislation requiring the expeditious removal and replacement of lead lines. "The only way to really solve the lead problem is to remove lead from the system," Olson says.

Congress is also focusing on PFAS. In January, a congressional task force urged the Biden administration to take immediate steps to address PFAS contamination by, among other things, directing the EPA to phase out any uses for the chemicals deemed "non-essential," to finalize a standard for PFOA and PFOS, and to accelerate cleanup.

Rep. Debbie Dingell, D-Mich., a member of the task force, responded to

the findings from CR's tests, saying they show that "we do not have any time to waste as we battle these toxic chemicals." She renewed her call for PFAS to be banned and designated as hazardous. "Congress must pass my PFAS Action Act and take other concrete action to protect our drinking water, our environment, and our public health," Dingell says.

CR agrees that a standard must be set as soon as possible. "The burden shouldn't be on consumers to monitor contaminants in drinking water," Ronholm says.

Pittsboro's Jim Vaughn says that while government and industry debate, residents of his town are left with unsafe water. "The town that has the polluters in it, they're getting their water from upstream, so what's their impetus" to fix the problem, he says. "The ones downstream have no power over the ones upstream to force them to do that. I just don't think it's fair."

To support federal action on clean water, go to [CR.org/pfaspetition](https://CR.org/pfaspetition).

**Online bonus:** Read one man's journey to find the PFAS in his home—and even in his cat. Go to [CR.org/pfastest0521](https://CR.org/pfastest0521). **Editor's Note:** Reporting in North Carolina for the Guardian was supported by the Water Foundation.







# A LUSH LAWN WITHOUT PESTICIDES

The truth about the chemicals that keep your lawn green, and how to create a healthy oasis without them.

BY CATHERINE ROBERTS

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**SHORTLY AFTER LYDIA CHAMBERS** had her first child, in 1995, her family moved to a new home in Ohio. “It was this neighborhood with perfect lawns,” recalls Chambers, now 60. In her previous home, when a swath of dandelions appeared shortly after she and her husband moved in, she spent two weeks pulling them out by hand.

In their Ohio home, however, she had no time to take care of the yard. So she hired a service to come and treat it. At the time, she didn’t realize that the chemicals the service used might be dangerous. “Even though I kind of sensed it ... I didn’t know,” she says.

In her professional life as a hydrogeologist, Chambers was beginning to learn about how long-term, low-dose exposures to dangerous chemicals could lead to cancer and other chronic diseases. This made her increasingly suspicious of the pesticides her landscaping company applied. By 2005, her family had moved to New

ILLUSTRATIONS BY ROSS MACDONALD

Jersey and her elementary school-aged kids were playing in the yard constantly. As she did more research, she learned a particularly disturbing fact: One common weed killer, 2,4-dichlorophenoxyacetic acid (2,4-D), was also an ingredient in Agent Orange, a chemical used during the Vietnam War.

“I guess if anything flipped a switch, it was that,” she says. Chambers and her husband finally committed to taking care of their yard with no synthetic pesticides, herbicides, or fertilizers—even if that meant it sprouted a few weeds. “I was proud that I had a few weeds in my grass,” she says. “It was a symbol I was doing the right thing.”

For many Americans, however, a pristine lawn is the goal, and weed-free grass is big business. American consumers spend about \$35 billion per year on lawn and garden products, according to market research firm Mintel. Professional lawn-care services and consumers going the DIY route choose from a variety of pesticides and fertilizers, many with familiar brand names, such as Roundup and Scotts.

The sense of unease that Chambers felt about pesticides is grounded in evidence: A growing body of research has linked many of them, even at low levels, to potential health problems such as cardiovascular disease, says Consumer Reports senior scientist Michael Hansen, PhD, an expert in environmental health.

Also, while synthetic lawn-care products may be helpful to your yard in the short term, they can harm beneficial organisms in soil and won’t lead to a healthy ecosystem in the long run. “You wonder,” asks Jay Feldman, executive director of Beyond Pesticides, a nonprofit that advocates for transitioning away from synthetic pesticides, “why are we still using these things?”

Part of the problem is that even when consumers look for alternatives to traditional lawn chemicals, navigating the marketplace can be tricky. Unlike with food, there’s no legal definition

of “organic” when it comes to lawn products, so it’s hard to assess the safety of a product that advertises itself as “organic,” “natural,” or “environmentally friendly.”

Still, it’s possible for consumers to move away from conventional lawn care. It just requires a bit of strategy, a few new habits, and some fresh ideas about what your yard should look like.

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## HEALTH HARMS OF LAWN CARE

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**ON ONE HAND**, it’s a minority of lawn owners who hire lawn-care companies or add fertilizers or pesticides to their lawns. In a February 2021 CR nationally representative survey of 1,772 lawn owners, 51 percent said they don’t use any pesticides or fertilizers on their lawns. And according to Peter Groffman, PhD, a professor at the Advanced Science Research Center at the City University of New York’s Graduate Center, who studies ecosystem ecology, “the biggest group of homeowners are what we call passive land managers—they just mow.”

Still, many American homeowners strive for a perfectly uniform, bright green lawn. And according to research by Paul Robbins, PhD, professor and dean at the Nelson Institute for Environmental Studies at the University of Wisconsin-Madison, many do this in spite of misgivings about the sometimes mysterious chemical inputs involved.

Lawn chemicals pose short- and long-term risks to health, and children are particularly vulnerable. Kids can accidentally ingest pesticides if they get their hands on them. Although acute poisonings are relatively rare, poison control centers still logged around 34,000 cases regarding pesticide exposure among children 5 and younger in 2019, according to the American Association of Poison Control Centers.

The long-term risks of chronic

exposure to chemicals on our lawns are much harder to quantify than acute poisonings, but plenty of research has been conducted into how it may affect health. One thing we know: Lawn chemicals don’t just stay on the lawn. Research has demonstrated that pesticides can be tracked inside on shoes and clothes, where they then settle into the dust on floors and other surfaces. There, children, especially young ones who crawl around on the ground and explore the world by putting things in their mouths, are more likely to get these substances into their system.

The prenatal period and early childhood are also times when people are more vulnerable to the risks of these repeated tiny exposures, which may have long-term effects, says Sheela Sathyanarayana, MD, a pediatrician and an environmental epidemiologist at the University of Washington and the Seattle Children’s Research Institute.

Still, the specific health effects of cumulative exposure to individual pesticides are difficult to tease out, in part because pesticides are designed to be toxic to living organisms. Scientists don’t typically expose people to them on purpose to find out what happens, as they do with medications. The evidence we do have—based on observational studies and experiments in animals and in cells—is open to interpretation.

Take, for example, the herbicides 2,4-D and glyphosate (the active ingredient in Roundup). They were the two most common active ingredients found in home and garden pesticides used in 2012, the last year for which data on national pesticide usage was available from the Environmental Protection Agency. The International Agency for Research on Cancer, a part of the World Health Organization that investigates the causes of cancer in humans, classifies 2,4-D as a possible carcinogen and glyphosate as a probable carcinogen.

Still, the science isn’t perfectly clear. The IARC’s classifications of carcinogens

only indicate the strength of the evidence showing a given substance's link to cancer. But chemicals in the same category could pose very different levels of real-world risk. Bayer, glyphosate's manufacturer, told CR that the IARC's analyses of carcinogens "do not reflect real-world exposure," meaning the agency doesn't say whether the amount of a substance you would typically be exposed to is enough to be dangerous.

The EPA has ruled that there isn't good enough evidence to say whether 2,4-D causes cancer in humans—and that glyphosate probably doesn't. The EPA also says that although 2,4-D was indeed an ingredient in Agent Orange, it was a different component, known as dioxin, that was found to cause cancer. And Lindsay Thompson, executive director of the Industry Task Force II on 2,4-D

Research Data, told CR that regulators have "consistently found 2,4-D not to have adverse human health impacts" when used as directed on the label.

A variety of studies, particularly among agricultural communities exposed to pesticides through their work or by proximity to farms, have linked these and other common lawn chemicals to an increased risk of other health problems, too. These include neurological issues, respiratory irritation, asthma, and liver and kidney damage. One 2015 study even suggests that both 2,4-D and glyphosate could be contributing to the development of antibiotic-resistant bacteria.

What's more, several common lawn pesticides are suspected endocrine disruptors, meaning they might interfere with the body's hormones.

This is thought to occur at very low doses during certain vulnerable phases of life, such as the prenatal period and early childhood. Endocrine disruption may contribute to a range of issues, including diabetes and reproductive and developmental problems.

Still, industry groups maintain that the EPA's approval of existing lawn pesticides means the chemicals should be safe to use as directed on the label. Responsible Industry for a Sound Environment, an association representing pesticide and fertilizer industry players, says the EPA reviews hundreds of studies to arrive at its approval of a pesticide. And Andrew Bray, vice president of government relations for the National Association of Landscape Professionals, says, "We look at EPA as the experts."

[ CONTINUED ON PAGE 50 ]

## DO ECO-FRIENDLY LAWN HELPERS ACTUALLY WORK?

If you're shooting for an environmentally friendly lawn and garden, you need a holistic approach, not just chemicals (see "How to Rehab Your Yard," on page 48). Here's a guide to various alternatives to conventional lawn products.



### FERTILIZERS

Fertilizers generally release nitrogen, phosphorus, and potassium. Organic types may contain plant or animal material, such as bone meal or manure. These must be broken down by soil bacteria and fungi, so they may work slowly but can improve soil health. As with conventional products, too much organic fertilizer can contribute to water pollution, so test your soil to find out which nutrients it needs. And in general, look for

products with a seal from the Organic Materials Review Institute (OMRI); "organic" alone doesn't mean much.

**ALSO TRY: Leaving grass clippings on your lawn**, which adds plenty of nutrients. Allow clover to flourish in your grass to provide nitrogen to the soil.

### INSECTICIDES

These can include pyrethrin, neem oil, spinosad, and insecticidal soaps. While these do work, some may harm

beneficial insects such as bees. They carry some risks of skin or eye irritation, so as with conventional products, you should carefully follow all directions on the label.

**ALSO TRY: Welcoming natural enemies of pests, such as assassin bugs and spiders.**

Mowing grass higher and planting a variety of native plants will benefit natural enemies, says Shaku Nair, PhD, of the Arizona Pest Management Center.

### HERBICIDES

Common types include botanical oils, acetic acid, special soaps, and corn gluten meal. Generally, these don't eliminate weeds as completely as Roundup. Weeds could regrow, and acetic acid can be corrosive.

**ALSO TRY: Hand weeding.** Pulling weeds might seem like a drag, but it is free and effective, especially if you do it in the spring when weeds are young.

# HOW TO REHAB YOUR YARD

## WATER WISELY

Watering grass infrequently can help encourage deeper roots and help your lawn resist drought. Water only in the early morning. Watering at night can promote fungal growth. Add a rain barrel to catch water that drains from your gutter; use the water for future irrigation.

## SHRINK YOUR LAWN

Add flower beds, vegetable gardens, or, to discourage ticks, a wood chip barrier between grass and wooded areas. If you have patches of grass that wear down because of foot traffic, replace them with a footpath.

## PLANT NATIVE PLANTS

Native plants are ideally adapted to the weather conditions and local pests of your area, so they'll require less water and maintenance. Plus, they'll attract birds and beneficial bugs.

## TEST YOUR SOIL

Before you add fertilizer or anything else to your soil, you need to know which nutrients it needs. You can send some soil to your local cooperative extension service, where they can test it for a small fee.

**READY TO RETHINK YOUR YARD?** Try these easy strategies to improve the health of your lawn and make it safer for your family and the environment. Keep in mind that the needs of lawns vary widely, depending on climate, sun exposure, the types of soil and grass you have, and more. A cooperative extension service can provide plenty of advice more tailored to your land. (You can find services in your state at [npic.orst.edu/mlr.html](http://npic.orst.edu/mlr.html).) But these tips are a good start.

### COMPOST

If you have space, create a compost pile or bin in your yard to recycle table scraps and garden waste. To boost your soil's health, spread  $\frac{1}{4}$  inch of compost over the top of your grass a couple of times a year.

### EMBRACE DIVERSITY

Treat some weeds as welcome. Flowering weeds feed bees and other pollinators, and clover fertilizes your lawn (see "Do Eco-Friendly Lawn Helpers Actually Work?" on page 47). Young dandelion leaves can even be added to salads.

### MOW RIGHT

Cut your grass to 3 to 4 inches and keep mower blades sharp. Taller grass is healthier, and its shade is inhospitable to weeds. Use the mower's mulching mode, which will cut the grass into fine clippings and deposit them back into the soil, says Dave Trezza, who oversees CR's lawn mower testing.

### SEED NEW GRASS

A resilient lawn contains more than one kind of grass. Adding seed, especially to bare spots, can help it grow densely. Ask your local extension about drought- and pest-resistant grass varieties.

## THE LIMITS OF REGULATION

**IT CAN BE HARD** for consumers to know what to make of all this, especially when studies come to contrasting conclusions. After all, if these chemicals posed a real danger, why would they still be on store shelves?

In fact, David Dorman, PhD, a professor of toxicology at NC State College of Veterinary Medicine in Raleigh, N.C., says many dangerous products have been banned in the U.S., including DDT. Modern pesticides, he says, are “so much safer than what was used even 40, 50 years ago. So progress has been made.”

In theory, the EPA’s approach to regulating pesticides is precautionary—it requires manufacturers to demonstrate a chemical’s safety before bringing it to market. But many consumer advocates, including CR’s Hansen, say the EPA’s testing requirements are outdated and don’t reflect the latest in toxicological science. That allows some significant harms of pesticides to go undetected.

The problem, says Laura Vandenberg, PhD, associate professor of environmental health sciences at the University of Massachusetts Amherst, is that a clearer understanding of some of the most serious potential effects—such as cancer—may take decades to emerge. In that time, millions of people will have already been exposed unnecessarily, she says.

The EPA told CR that it is in the process of incorporating endocrine disruption into its standard tests for pesticide safety, and that it is implementing a set of new evaluation methods designed to reduce the need for animal testing. The agency says its risk assessment “ensures that when a pesticide is used according to the label, people and the environment are adequately protected.”

## ENVIRONMENTAL IMPACT

**LAWN CHEMICALS** don’t just stay on your lawn or end up in your household dust. They can also sink deep into the soil, float off into the air, and be carried off by stormwater, ultimately causing harm to a range of organisms they were never meant to target.

A major component in conventional lawn care, fertilizer, is a key source of water pollution. The excess nutrients get washed out by rain into local waterways or sink into groundwater.

Once the nitrogen and phosphorus from fertilizer reach a lake or pond, they can prompt an overgrowth of algae, which eat up the oxygen in the water. That can cause fish to die en masse and sometimes makes water toxic.

Synthetic fertilizers and pesticides may also gradually degrade the health of your soil by diminishing beneficial microbes and fungi. Healthy soil, along with being great for your grass, can help keep carbon out of the atmosphere, an important bulwark against climate change, says soil scientist Asmeret Berhe, PhD, professor of soil biogeochemistry at the University of California, Merced.

## WHAT’S A CONSUMER TO DO?

**IF YOU’RE CONCERNED** about the potential health and environmental effects of synthetic lawn chemicals, you might think the answer is choosing organic chemicals instead, or employing a green lawn-care service. But that can be harder than it sounds.

For agriculture, the federal government enforces regulations for food producers that would like to label their food as organic. But no federal

laws exist for “organic” lawn-care products or service providers.

Before you hire a provider advertising organic lawn care, ask plenty of questions, says Michele Bakacs, associate professor and county agent with the Rutgers Cooperative Extension in New Jersey. “If the first thing the landscaper talks to you about is the type of product that they’re using, well, that may be a little bit of a warning sign,” she says. Instead, look for a provider that offers a soil test and talks to you about improving the health of your soil, putting the right plant in the right place for your yard and using several types of turfgrass. These are signs of a provider interested in the unique ecology of your yard.

Although uncertainty remains about the extent of the harms of lawn products, reducing risks to people and the environment is easy: Avoid using synthetic lawn chemicals. There are other ways to achieve the same goals that are better for your lawn and for your family (see “How to Rehab Your Yard,” on page 48).

It can take a bit of a mindset shift, says Joseph R. Heckman, PhD, an extension specialist and professor of soil science at Rutgers University in New Brunswick, N.J. “If you want to have an organic lawn, you have to have a little bit of tolerance for something less than perfect,” he says.

Over the years, the practice of pesticide-free yard care has evolved for Lydia Chambers and her husband. They still live in New Jersey, and Chambers now considers herself an environmental activist. Their latest effort: converting much of their 3-acre property from lawn into meadow. Soon, in place of acres of trimmed turf, they’ll have a spread of native wildflowers and grasses. The meadow will encourage a more diverse ecology in her lawn, she says—and there’s a bonus: “It will be way easier than handling more flower beds.”



NEWS & EXPERT  
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AHEAD OF  
THE CURVE™

# ROAD REPORT

## AHEAD OF THE CURVE

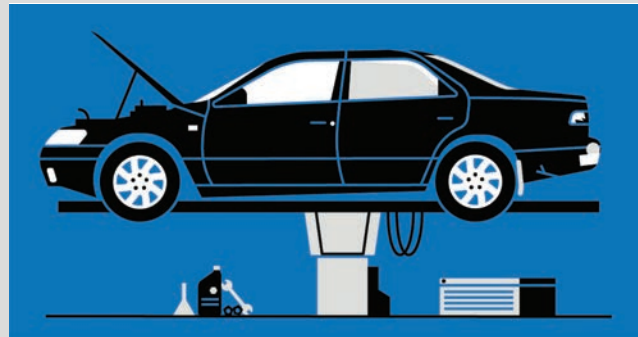
### Advances in Windshield Tech

Head-up displays project information such as the speed limit and vehicle speed onto the windshield, letting drivers keep their eyes on the road more of the time. Mercedes-Benz uses augmented reality in some of its displays to help drivers navigate.

**WHAT'S COMING:** Augmented reality head-up displays will soon project additional data, such as underpass clearance, and bold icons that will make cyclists and pedestrians far easier to see. "Head-up displays can improve safety by providing drivers with vital information without having to take their eyes off the road," says Kelly Funkhouser, who leads CR's vehicle interface testing. "This technology will put even more information right in front of drivers' eyes."

## ASK OUR EXPERTS

When does it cost more to repair an old car than buy a new one?



Almost never. Nobody wants to pay for expensive repairs, but it's **usually cheaper to keep your old car** going than to buy a new one. Most major repairs won't set you back as much as a few months of new-car payments or come close to the depreciation that can knock 30 percent off a new car's value in less than a year. But while it may be cheaper, **driving an old clunker isn't always a smart choice.** A new car will be safer, more enjoyable to drive, and more fuel-efficient.

## THE VITAL STATISTIC

# 73%

Percentage of Americans who agree that the government should continue to raise automobile fuel-efficiency standards.

**Source:** July/August 2020 CR nationally representative survey of 3,879 U.S. adults about fuel economy.

## RECALL



### Tesla

Tesla is recalling more than 134,000 model year 2012-2018 Model S sedans and 2016-2018 Model X SUVs that have Nvidia Tegra 3 processors. The flash memory chip in the Media Control Unit of affected cars can wear out, causing the center display touch screen to malfunction. This may prevent drivers from being able to view the backup camera display or access the defrost/defog switches.

**WHAT TO DO:** Tesla will replace the faulty component at no charge and reimburse owners who already paid to have it replaced. For more information, owners can call Tesla customer service at 877-798-3752.

## FIRST DRIVE

### Polestar 2



Polestar 2 is an electric car from Polestar, a new brand launched by Volvo and its parent company. We appreciate its quick acceleration and agile handling, but its 233-mile range is not great given the price and today's standards. We dislike its finicky infotainment system, choppy ride, baffling controls, snug interior, poor visibility, and

drab fit and finish. For now, it's available to test-drive in only a handful of cities. Service and repair options are also limited. **CR'S TAKE:** You can spend thousands less on an EV with more range, a nicer interior, and easier-to-use controls.

**Price range:** \$59,900-\$70,100  
**Destination charge:** \$1,300  
**Price as driven:** \$62,400

# What Makes a Car Really Comfortable

Use our new Comfort Score to find your most relaxing, well-appointed ride for the money, based on our exclusive expert testing and evaluations.

by Benjamin Preston



# W

HEN IT COMES to buying a car, we believe consumers should find a vehicle that's safe and performs well. But Consumer Reports also evaluates

aspects of vehicle comfort—ride, noise, the front and rear seats, driving position, and access. We've rolled these evaluations into a new Comfort Score that you can use when shopping for a car. "A brief test drive will tell you whether a car is quick or fun to

drive," says Gabe Shenhar, associate director of CR's Auto Test Center. "But it takes a lot of time to really appreciate comfort."

Comfort for us is also a question of safety. We find that a comfortable, fatigue-free driver is more relaxed and likely to pay better attention to driving than someone who is aching because of an unsupportive seat or irritated by a stiff ride and road noise.

What follows are the categories we individually assess that become part of our Comfort Score—with extra weight given to the first two. Scoring

in each category is determined by a jury of testers who drive each car in their daily lives for thousands of combined miles. Our testers also come in all heights and sizes, ensuring we take into account a range of perspectives.

**1 RIDE** Our testers assess how well a car absorbs road bumps. A lot of engineering and expense can go into creating forgiving suspensions that help glide you down the road, but in some cases you also might sacrifice handling, Shenhar says. "Sedans generally ride better than SUVs



**5 ACCESS**

**4 DRIVING POSITION**

**3 FRONT- AND REAR-SEAT COMFORT**

because SUVs need firmer suspensions to keep their taller bodies stable and under control,” he says.

**2 NOISE** Irritating engine, wind, or road noise can drive even the most patient car owner completely batty, especially on long trips. CR’s testers used to assess noise by measuring decibel levels inside cars, but we switched to a jury evaluation because not all noise is equal: Softer sounds, such as tire hum, can grate on nerves more than some louder noises.

**3 FRONT- AND REAR-SEAT COMFORT** Our testers judge front- and rear-

seat comfort and also take into account how well the seats provide continuous thigh and lower-back support on long drives—something that’s more difficult to assess during a traditional test drive.

**4 DRIVING POSITION** With each car, our testers determine the range of available seat adjustments. We also measure shoulder space, headroom, and legroom, and how easy it is to reach vehicle controls. “Sometimes driving position is about the space around you,” Shenhar says. “You don’t want to feel hemmed in.”

**5 ACCESS** How easy it is to get in and out of your car can make or break an ownership experience. As CR’s testers spend time with each vehicle, like an ordinary consumer would—running errands and living their lives—they take note of door width, doorsill height, footwell access, head clearance, and seat height when getting in and out of the vehicle. “If you drive locally, and get in and out of the car several times a day, it can be inconvenient if you have to duck down or climb up to access your seat,” Shenhar says.

## 5 COMFORT SUPERSTARS

**AS PART OF** our extensive autos program, CR determines each tested model's ability to coddle. We believe you and your passengers have the right to a smooth and relatively quiet experience. To home in on our comfort champs in various price ranges, our data analysts took the test results for ride, noise, seat comfort, and other variables and spun them into a new, specialized CR Comfort Score. Here we highlight five of the highest-scoring models on a 100-point scale in several vehicle types—sedans and two- and three-row SUVs. All of the vehicles in this feature are CR recommended. We left out pricey ultra-luxury cars—many costing in the six-figure range—because we expect them to already be really comfortable.



MIDSIZE SEDAN  
**SUBARU LEGACY**  
Under \$35,000

**THE LEGACY OWES** its smooth ride to a suspension system that soaks up road imperfections with the grace of luxury cars that cost three times as much, keeping passengers unaware of most bumps. To its credit, the Legacy uses new technology to add to its comfort while staying in a lower price range. The optional turbocharged engine, for example, delivers a lot of power, and it runs quieter than the base trim's nonturbo version. The Legacy's quiet cabin is big enough to comfortably accommodate a variety of body types. The Premium trim we tested came with two-way lumbar support seat adjustment, which we feel is essential. CR recommends the Limited trim, which has more supportive seats than the base model and also has a power front-passenger seat. EyeSight, the standard suite of active safety features, includes adaptive cruise control, which can reduce stress in stop-and-go traffic by adjusting speed to maintain a safe following distance.

**80**

COMFORT  
SCORE

- ▲ FRONT-SEAT COMFORT
- ▲ REAR-SEAT COMFORT
- ▲ RIDE
- ▲ NOISE

**84**

OVERALL  
SCORE

- ▲ DRIVING POSITION
- ▲ FRONT ACCESS
- ▲ REAR ACCESS



SMALL SUV  
**SUBARU FORESTER**  
Under \$35,000

**THE FORESTER LAVISHES** you with comfort from the first time you open its large doors and effortlessly slide into its easy-to-access hip-height seats. Once inside, the elevated driving position gives you a commanding view of the road. We found the Forester to be one of the most comfortable SUVs toward the lower end of the price scale, with its great elbow room, endless hat space, and—on most models—a driver's seat with adjustable lumbar support. The optional dual-zone climate control helps the driver and front passenger dial in their preferred temperatures for personal comfort. The interior can be preconditioned by remote start using Subaru's Starlink app, a nice treat on hot or cold days, although the feature is subject to a monthly service fee. Drivers also have great visibility, among the best to be found anywhere, thanks to slim roof pillars and large side windows. So no neck strain when backing out.

**80**

COMFORT  
SCORE

- ▲ FRONT-SEAT COMFORT
- ▲ REAR-SEAT COMFORT
- ▲ RIDE
- 1 NOISE

**89**

OVERALL  
SCORE

- ▲ DRIVING POSITION
- ▲ FRONT ACCESS
- ▲ REAR ACCESS





LARGE SEDAN

## CHRYSLER 300

\$35,000-\$55,000

**FLYING UNDER MOST** people's radar, the Chrysler 300 has remained nearly unchanged over the last decade. That includes Chrysler's steadfast commitment to plushness, which seems to be the main point of this now-classic sedan. The 300 exudes a modern, good-handling version of 1970s-style comfort, offering a smooth ride and lush seats. As part of this attitude, the 300 has a quiet, luxurious interior, plus a large back seat and a roomy trunk. The driver and front-passenger seats come with power lumbar support adjustment. The best combination is the smooth V6 and slick-shifting eight-speed automatic transmission, which delivers better fuel economy than the V8 and is available with all-wheel drive. Plus, the 18-inch wheels provide a smoother ride than the 20-inch versions. Chrysler's Uconnect infotainment system is extremely user-friendly, adding to the de-stressing atmosphere inside the cabin.

**82** COMFORT SCORE

**78** OVERALL SCORE

- ▲ FRONT-SEAT COMFORT
- ▲ REAR-SEAT COMFORT
- ▲ RIDE
- ▲ NOISE
- ▲ DRIVING POSITION
- ▲ FRONT ACCESS
- ▲ REAR ACCESS



MIDSIZE 2-ROW SUV

## LEXUS RX

\$35,000-\$55,000

**THE RX DELIVERS** a driving experience that accentuates comfort, tranquility, and luxury. Its soft suspension does a great job absorbing bumps, creating a smooth, relaxed ride. The silky, nonturbo V6 engine provides lots of power without strain. The efficient hybrid version can glide along silently in electric-only mode, typically up to 25 mph. The plush seats are wide and supportive, and can be readily tailored with the power lumbar support. More expensive trims get height-adjustable lumbar support that takes it to the next level. The second row is roomy, with a flat floor that offers adequate space for even the center passenger's legs, and the seatbacks recline. Big doors allow easy access front and rear. The infotainment system's touchpad controller is one of the few downsides; the best strategy is to avoid it by using voice command and steering wheel controls when possible.

**85** COMFORT SCORE

**80** OVERALL SCORE

- ▲ FRONT-SEAT COMFORT
- ▲ REAR-SEAT COMFORT
- ▲ RIDE
- ▲ NOISE
- ▲ DRIVING POSITION
- ▲ FRONT ACCESS
- ▲ REAR ACCESS



MIDSIZE 3-ROW SUV

## KIA TELLURIDE

\$35,000-\$55,000

**THE WELL-BALANCED TELLURIDE** offers a mountain of features for the money, making it a worthy alternative to vehicles costing thousands more. There's a lot to like about this acclaimed SUV, and it especially shines in the comfort department. Wide, welcoming seats and a comfortable ride, combined with a roomy, quiet cabin and smooth power delivery, allow the big Kia SUV to punch above its weight. The front seats come with power adjustments and can accommodate a variety of body types. The third-row seats are best suited for children, but a novel one-button control moves second-row seats out of the way to give access. The three-zone climate control system, as well as an easy-to-use infotainment touch screen, leather upholstery, and heated and cooled front seats on the EX version, contribute to an all-around tranquil experience.

**84** COMFORT SCORE

**97** OVERALL SCORE

- ▲ FRONT-SEAT COMFORT
- ▲ REAR-SEAT COMFORT
- ▲ RIDE
- ▲ NOISE
- ▲ DRIVING POSITION
- ▲ FRONT ACCESS
- ▲ REAR ACCESS





## How to Judge Comfort on Just a Short Test Drive

**A TEST DRIVE** doesn't last long, but it's your first opportunity to make sure the car is one you'll like and can live with.

Here are a few things to consider as you evaluate overall comfort.

**SEAT COMFORT** Make sure there's adequate lumbar and bolster support (which will help stabilize you during cornering) that neither feels tight nor digs into your back. Are the cushions too soft? They might seem plush at first but may not provide adequate support

on longer drives. We like seats with multiple adjustments—two- or four-way lumbar support, an adjustable bottom cushion, and adjustable bolsters. Rear seats should be supportive and provide adequate headroom and space for a rear passenger's feet to fit under the front seat.

**DRIVING POSITION** A good driving position keeps fatigue to a minimum. Look for a car with a tilt-adjustable, telescoping steering column. We believe this feature is

key for helping drivers of various sizes find the best position for arm comfort. Neither the center console nor the door should intrude into the driver's leg space, and the left footrest should be at a good angle and distance.

**RIDE COMFORT** Make sure the ride is smooth and comfortable by taking the car on a potholed road to feel whether the suspension adequately soaks up road imperfections. Low-profile tires may look nice, but they can make for a rougher

ride on a bumpy road. A stiff suspension can get irritating after a while and lead to driver fatigue.

**NOISE** Make sure that you're satisfied with the level of engine, wind, and road noise, and keep in mind that a short 10-minute test drive is different from a long trip or commute. Some cars make more engine noise than others, and cars with convertible tops and specialty tires, such as knobby off-road tires, can make more wind and road noise.

## EXTRA FEATURES THAT SPOIL YOU

Finding the most comfortable car for you starts with picking the right model, then equipping it with the features that will pamper you and your passengers. Based on our experience, these are the features worth considering for your next car.



### LUMBAR SUPPORT CONTROLS

Seats with power-adjustable lumbar support can help the driver and front passenger adjust to the needs of their lower back. Two-way lumbar adjusts the cushion in and out, and four-way versions add up and down options. This makes long-distance driving easier, reducing fatigue. For the ultimate experience, consider massaging seats, if available.



### HEATED AND COOLED SEATS

These can make a big difference on truly hot and cold days, activating much quicker than traditional heat and air conditioning. In extreme cold, heated seats can quickly warm up your behind. And a heated steering wheel is a treat that once you experience it you'll have trouble going without. In hot weather, cooled seats can keep your legs from sticking to the seat.



### HEATED AND RECLINING REAR SEATS

Luxury items once reserved for front-seat passengers are now making their way to the rear seat. Reclining rear seats can be found in a lot of SUV models, and heated rear seats are becoming more common, too. (See far right for info on rear climate zones.)



### MEMORY SETTINGS

Different drivers like their mirror, seat position, and other settings saved to specific configurations. The memory feature makes it possible for each driver in a family to get their preferred settings at the touch of a button. With all the different adjustments, this can save a lot of time. Many models can identify the driver by key fob and automatically adjust the settings.



### CLIMATE ZONES

A dual-zone system lets the driver and front passenger set their own temperature, adjusting for personal preferences and sun exposure. In some models, even rear-seat passengers get their own climate controls. At minimum, a rear vent is important for airflow. We've found that these systems can really help to take some stress out of family travel.

**Ratings** ➤ **Comfort Champs** We highlight the CR-recommended cars and SUVs that do well in the comfort factors we evaluate, such as ride quality, noise, and seat comfort.

Make + Model	Comfort Score	Survey Results		Comfort Factors								Overall Score	Active Safety Features				
		Predicted reliability	Owner satisfaction	Ride	Noise	Driving position	Front-seat comfort	Rear-seat comfort	Front access	Rear access		FCW	AEB pedestrian	AEB highway	BSW		
SEDANS UNDER \$35,000																	
Subaru Legacy 2.5L	80	⬇️	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	84	S	S	S	0		
Honda Accord 1.5T	77	⬇️	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	84	S	S	S	0		
Toyota Camry 2.5L	75	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	88	S	S	S	0		
Subaru Impreza 2.0L	73	⬇️	⬇️	⬆️	⬆️	⬆️	⬇️	⬆️	⬆️	⬆️	75	0	0	0	0		
Kia K5 1.6T	72	⬇️	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	73	S	S	S	0		
SEDANS \$35,000–\$55,000																	
Chrysler 300 3.6L	82	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	78	0	–	0	0		
Lexus ES 3.5L	80	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	⬇️	⬆️	⬇️	82	S	S	S	0		
Toyota Avalon 2.5H	80	⬇️	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	88	S	S	S	S		
Dodge Charger 5.7L	79	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	⬇️	79	0	–	0	0		
Mercedes-Benz C-Class 2.0T	79	⬆️	⬇️	⬆️	⬆️	⬆️	⬆️	⬇️	⬆️	⬇️	83	S	S	S	S		
SUVs UNDER \$35,000																	
Subaru Forester 2.5L	80	⬆️	⬆️	⬆️	⬇️	⬆️	⬆️	⬆️	⬆️	⬆️	89	S	S	S	0		
Honda CR-V 1.5T	77	⬆️	⬇️	⬇️	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	82	S	S	S	0		
Subaru Crosstrek 2.0L	73	⬆️	⬆️	⬆️	⬆️	⬆️	⬇️	⬆️	⬆️	⬆️	84	0	0	0	0		
Chevrolet Equinox 1.5T	72	⬇️	⬇️	⬆️	⬆️	⬇️	⬆️	⬆️	⬆️	⬆️	74	S	S	–	0		
Mazda CX-5 2.5L	72	⬆️	⬆️	⬆️	⬆️	⬇️	⬆️	⬆️	⬆️	⬆️	83	S	S	S	S		
2-ROW SUVs \$35,000–\$55,000																	
Lexus RX 3.5L	85	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	80	S	S	S	S		
Subaru Outback 2.4T	82	⬇️	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	86	S	S	S	0		
Mercedes-Benz GLC 2.0T	80	⬇️	⬇️	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	75	S	S	S	S		
Audi Q5 2.0T	78	⬇️	⬇️	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	78	S	S	0	S		
Ford Edge 2.0T	78	⬆️	⬇️	⬆️	⬆️	⬇️	⬆️	⬆️	⬆️	⬆️	83	S	S	S	S		
3-ROW SUVs \$35,000–\$55,000																	
Kia Telluride 3.8L	84	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	97	S	S	S	S		
Buick Enclave 3.6L	82	⬇️	⬇️	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	76	0	0	0	0		
Hyundai Palisade 3.8L	82	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	85	S	S	S	0		
Honda Pilot 3.5L	81	⬇️	⬇️	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	72	S	S	S	0		
Toyota Highlander 3.5L	80	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	84	S	S	S	0		

**HOW WE TEST:** Comfort Score is a composite of our comfort-oriented testing results, based on a 100-point scale. Recommended models got a high Overall Score, which

factors in road-test results, **predicted reliability**, **owner satisfaction**, and **active safety features**, including crash-test results and availability of features such as

forward collision warning (FCW), automatic emergency braking (AEB), pedestrian detection, and blind spot warning (BSW). A dash (–) means no such safety system

is offered; 0 means it's available but not as standard equipment; S means it's standard on all trims. We dock points from vehicles without rollover protection.



## First Drive: Ford F-150 Hybrid Pickup



THE POPULAR FORD F-150 pickup has long been known as the best-selling vehicle in America. A 2021 redesign that includes updated interior and exterior styling, improved ride and handling, and the first-ever F-150 hybrid option suggests that Ford is serious about hanging on to that designation.

The new PowerBoost 4WD hybrid powertrain (starting at \$49,995) impressed us with its mostly smooth transitions between electric motor and gas engine, and a combined 430 hp that feels like it has a nearly bottomless pit of power. (It gets a 24-mpg combined EPA rating, but we'll report our own fuel-economy findings when our testing is complete.) The F-150 turns into corners with slightly more precision than before, and the ride is a bit less stiff than in previous model years.

Below we spotlight five standout innovations on the 2021 Ford F-150.

### TOWING TECHNOLOGY

The \$880 Tow Technology package comes with several useful features. **Pro Trailer Backup Assist** steers the F-150 as the driver rotates a dashboard knob to indicate the direction the trailer should go while viewing its backward motion on a screen. **Trailer Reverse Guidance** provides multiple camera views of the trailer behind you, a big help when backing into tricky spots. **Smart Trailer Tow Connector** warns if any trailer lights aren't working properly.

### MOBILE GENERATOR

The F-150 hybrid comes with dual 120-volt 20-amp outlets in the bed that allow the truck to be used as a mobile generator producing 2.4 kW. Ford claims that it's capable of providing enough juice to run a couple of saws and an air compressor for 85 hours on a full tank of gas. An optional 7.2-kW system, which includes a 240-volt outlet, could easily run a heater and your fridge. It might even provide enough electricity to run your whole house in the event of a power outage.

### COMPUTER SHELF

Ford not only improved the design and quality of the interior over last year's model but also added some pretty cool innovations. The one that stands out the most to us is the available **Interior Work Surface**, a \$165 option. When in Park, the traditional gear selector can be folded down, allowing the center console armrest to unfold to create a large, flat work surface between the front seats. It makes a great perch for typing on a laptop, doing paperwork, or eating lunch.

### ADVANCED DRIVER ASSISTANCE SYSTEMS

Unlike its competitors the Chevrolet Silverado 1500 and Ram 1500, every F-150 comes standard with forward collision warning and automatic emergency braking with pedestrian detection. (Pedestrian detection addresses the unique risks of large trucks, which have compromised forward visibility.) The XLT and higher trims bring blind spot warning, rear cross traffic warning, rear automatic braking, and lane keeping assistance.

### TECHNICAL TAILGATE

Every F-150 now comes with built-in clamp pockets on the tailgate to hold materials in place when sawing. Side-mounted cleats can be used to secure tie-downs to hold extra-long items in place when driving with the tailgate down. (They make handy bottle openers, too.) An available **Tailgate Work Surface** includes an integrated 48-inch ruler and niches to prop up a cell phone, hold a cup, and store pencils. Mid-level Lariat and higher trims are available with a power-operated tailgate.



## ROAD TEST

EXCLUSIVE RATINGS & REVIEWS  
BASED ON TESTING AT CR'S  
327-ACRE AUTO TEST CENTER



### SMALL SEDANS

## Hyundai Elantra

More Mature, but  
Still Not a Standout

75

OVERALL  
SCORE

### ROAD-TEST SCORE 76

**HIGHS** Fuel economy, secure handling, braking, controls

**LOWS** Engine noise, ride, access

**POWERTRAIN** 147-hp, 2.0-liter 4-cylinder engine; continuously variable transmission; front-wheel drive

**FUEL** 33 mpg on regular

**PRICE**  
\$19,650-\$28,100 base price range  
\$23,000 as tested

**THE LATEST ELANTRA** is a more grown-up version of the model it replaces, with a new sleek and easy-to-use infotainment system, a well-tuned transmission, and excellent fuel economy. Even so, our testers thought the cabin noise and ride quality could be improved.

The four-cylinder engine, though boisterous when pushed, gets off the line smoothly and delivers enough power to be considered brisk by compact car standards. The continuously variable transmission (CVT) is a real champ, doing such a good job mimicking traditional automatic shifts that most drivers won't realize it's there. It rarely exhibits the common CVT trait of disproportionately high engine revs.

At 33 mpg overall, the Elantra's fuel economy is among the best in the class. Its ride is quite firm though

not harsh, which can make the car feel jiggly.

As with most sedans, the Elantra sits low to the ground, so getting in and out can be a chore. Once in, the driver has decent space, though we found that the seat cushion loses support on longer trips, which can cause leg fatigue. The uplevel Limited trim comes with a power seat that includes adjustable lumbar support, a feature that can improve lower back comfort.

The optional digital instrument panel is easy to use, as is the new 8-inch infotainment touch screen, which has large, simple-to-decipher icons. It also features standard wireless Android Auto and Apple CarPlay.

An impressive roster of active safety and driver assistance features comes standard, including FCW, AEB with pedestrian detection, BSW, and RCTW.



### LUXURY SMALL SEDANS

## Lexus IS

Light Makeover  
Offers Little  
Improvement

70

OVERALL  
SCORE

### ROAD-TEST SCORE 69

**HIGHS** Acceleration, braking, fit and finish

**LOWS** Controls, tight quarters, driving position, fuel economy, limited seat adjustments

**POWERTRAIN** 260-hp, 3.5-liter V6 engine; 6-speed automatic transmission; all-wheel drive

**FUEL** 22 mpg on premium

**PRICE**  
\$39,000-\$44,900 base price range  
\$45,345 as tested

**THIS SMALL UPDATE** to the IS300 delivers only modest improvement for this luxury sports sedan. Once again, it's no match for the Audi A4 and BMW 3 Series in terms of driving experience, interior room, and fuel economy.

It's still very quick and powerful, however. Rear-wheel-drive versions come with a 241-hp, turbocharged four-cylinder engine, and the all-wheel-drive models—such as our test car—have a V6 that produces 260 hp. The nonturbo V6 and six-speed automatic pairing might seem old-school, but the IS has a refreshingly linear, meaty power delivery and a smooth, cultivated engine note. It's one of the quickest cars in the class but also one of the thirstiest, at 22 mpg overall.

Handling is responsive but not all that sporty, which is surprising considering this

vehicle's genre. Pick up the pace and the IS feels nose-heavy, and its steering lacks the tactile feedback that makes a well-tuned sports sedan a joy on curvy roads. The suspension provides a veneer of isolation on smoother pavement, but it loses composure and becomes jittery on bumpier surfaces.

The well-finished cabin is fairly quiet but not hushed like you might expect from Lexus. The interior is tight—front and rear—and the center tunnel on AWD versions intrudes into the driver's right leg space.

The infotainment system relies on an overly sensitive, unintuitive touchpad that's difficult to use while driving. But at least the IS now has a touch screen, so you can bypass the pad for many tasks.

FCW, AEB with pedestrian and daytime bicycle detection, BSW, and RCTW all come standard on the IS.



MIDSIZE SUVs

## Kia Sorento

Higher Tech, but  
Less Refinement

**77**  
OVERALL  
SCORE

**THE REDESIGNED SORENTO** has more tech than before, but it's not as well-rounded as the previous generation. Though quicker and more fuel-efficient, it has regressed in terms of ride comfort and overall refinement compared with the outgoing model. As such, it remains stuck in the middle of the pack of midsize three-row SUVs that have approachable prices.

The Sorento's standard 191-hp, four-cylinder engine is neither energetic nor quiet. But our nearly \$39,000 midlevel EX trim has a turbocharged four-cylinder with lots of oomph. With that engine, our SUV returned an impressive 25 mpg overall. The EX comes mated to a dual-clutch automatic transmission that transmits vibrations when creeping along in stop-and-go traffic, but it shifts smoothly and quickly at speed.

The Sorento's ride is stiff

**ROAD-TEST SCORE 83**

**HIGHS** Controls, acceleration for the turbo four-cylinder

**LOWS** Ride, turbo engine's dual-clutch transmission

**POWERTRAIN** 281-hp, 2.5-liter turbocharged 4-cylinder engine; 8-speed dual-clutch automatic transmission; all-wheel drive

**FUEL** 25 mpg on regular

**PRICE**  
\$29,390–\$42,590 base price range  
\$38,725 as tested

and jumpy, with bumps transmitted into the cabin over rough pavement. The suspension does a good job controlling body roll through corners, but the steering is light and rather dull.

The new Sorento is also available as a front-wheel-drive hybrid. We rented one from Kia and found it enjoyable, aside from an initial acceleration lag when starting from a stop.

All versions of the Sorento have wide and supportive front seats, suiting many body types. EX and higher trims get comfy second-row captain's chairs, but this feature essentially makes the Sorento a four-seat SUV because the third-row is too cramped for adults.

Standard active safety features include FCW and AEB with pedestrian detection. BSW and RCTW come standard on all but the base LX trim.



MINIVANS

## Toyota Sienna

Sensible SUV  
Alternative

**77**  
OVERALL  
SCORE

**ROAD-TEST SCORE 80**

**HIGHS** Fuel economy, ride, interior room and versatility, controls

**LOWS** Long stopping distances, engine noise

**POWERTRAIN** 245-hp, 2.5-liter 4-cylinder hybrid engine; continuously variable transmission; front-wheel drive

**FUEL** 36 mpg on regular

**PRICE**  
\$34,460–\$50,460 base price range  
\$43,570 as tested

**THE ALL-NEW SIENNA** minivan is one of the most sensible vehicles on the market. It seats up to eight passengers, rides comfortably, and is available with all-wheel drive. It's also extremely efficient, but the driving experience is unlikely to raise anyone's pulse.

Exclusively sold as a hybrid, the Sienna's fuel economy at 36 mpg overall easily bests all other minivans. It can glide on electric power at very low speeds. But when quick acceleration is needed, the gas engine gets loud and lacks the effortless power of V6s found in rival minivans.

The suspension delivers a comfortable ride, shrugging off bumps and broken pavement. Handling is relatively responsive and secure, but it suffers from light steering and noticeable body roll. Stopping distances were long, an unsettling trait we've noticed

in some hybrids, and the brake pedal had a grabby feel when we first drove the Sienna. Toyota issued a technical service bulletin to address this last problem, and the pedal feel in our Sienna markedly improved after a service visit.

Wide front seats with plenty of adjustments should fit most body types, and the raised center console leaves ample space for the driver's knee.

The optional second-row captain's chairs provide flexibility between passenger comfort and cargo capacity; they tilt and slide forward in accordion fashion. The easy-to-use infotainment touch screen comes standard with Android Auto and Apple CarPlay. Other family-friendly touches include seven USB ports and second-row sunshades on our XLE trim.

FCW, AEB with pedestrian detection, BSW, and RCTW come standard.

**Ratings** ➤ **Variety Pack** A compact car, an updated sports sedan, an SUV that offers improvements and drawbacks, and one of the most sensible vehicles on the market.

Make + Model			Overall Score		Survey Results		Road-Test Results												Active Safety Features			
			Predicted reliability	Owner satisfaction	Road-test score	Overall mpg	Seat comfort, front/rear	Usability	Noise	Ride	Fit + finish	Routine handling	Avoidance-maneuver speed, mph	Acceleration 0-60 mph, sec.	Dry braking 60-0 mph, ft.	Suitcases + duffels/ Cargo volume, cu. ft.	FCW	AEB, pedestrian	AEB, highway	BSW		
SEDANS UNDER \$25,000																						
✓	Nissan Sentra 2.0L	🌿 77	⬇️	⬇️	81	32	⬇️ / ⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	55.5	8.5	129	3+2	S	S	S	S		
✓	Toyota Corolla 1.8L	77	⬆️	⬆️	68	33	⬇️ / ⬆️	⬆️	⬇️	⬆️	⬇️	⬆️	53.0	10.4	134	3+1	S	S	S	0		
✓	Subaru Impreza 2.0L	🌿 75	⬇️	⬇️	85	30	⬇️ / ⬆️	⬆️	⬆️	⬆️	⬇️	⬆️	56.0	9.5	124	2+2	0	0	0	0		
✓	Mazda3 2.5L	75	⬆️	⬆️	75	30	⬆️ / ⬇️	⬇️	⬆️	⬆️	⬆️	⬆️	54.0	7.7	125	3+1	S	S	S	0		
✓	Hyundai Elantra 2.0L	🌿 75	⬇️	⬇️	76	33	⬇️ / ⬆️	⬆️	⬇️	⬇️	⬇️	⬆️	55.5	7.9	128	2+3	S	S	S	S		
✓	Honda Civic 1.5T	🌿 74	⬇️	⬆️	75	31	⬇️ / ⬆️	⬇️	⬇️	⬆️	⬇️	⬆️	54.5	7.1	129	3+1	S	S	S	—		
	Volkswagen Jetta 1.4T	🌿 50	⬇️	⬇️	78	34	⬆️ / ⬆️	⬆️	⬆️	⬆️	⬇️	⬆️	52.0	9.0	135	3+2	0	—	0	0		
SEDANS \$35,000-\$45,000																						
✓	Audi A4 2.0T	87	⬆️	⬇️	88	27	⬆️ / ⬇️	⬇️	⬆️	⬆️	⬆️	⬆️	53.5	6.3	135	2+2	S	S	0	0		
✓	BMW 330i 2.0T	83	⬆️	⬇️	86	29	⬆️ / ⬇️	⬇️	⬆️	⬇️	⬆️	⬆️	54.0	6.4	129	2+2	S	S	0	0		
✓	Mercedes-Benz C300 2.0T	83	⬆️	⬇️	85	26	⬆️ / ⬇️	⬇️	⬆️	⬆️	⬆️	⬆️	55.5	6.8	136	2+1	S	S	S	S		
✓	Lexus IS300 3.5L	70	⬇️	⬇️	69	22	⬆️ / ⬇️	⬇️	⬆️	⬇️	⬆️	⬆️	55.0	6.1	129	1+3	S	S	S	S		
	Cadillac CT4 2.0T	65	⬇️	⬆️	78	25	⬆️ / ⬇️	⬆️	⬆️	⬇️	⬆️	⬆️	55.0	7.4	129	2+1	S	S	0	0		
	Acura TLX 2.0T	56	⬇️	⬇️	67	23	⬆️ / ⬇️	⬇️	⬇️	⬆️	⬆️	⬆️	54.0	6.5	136	2+2	S	S	S	0		
3-ROW SUVs \$35,000-\$45,000																						
✓	Kia Telluride 3.8L	97	⬆️	⬆️	97	21	⬆️ / ⬆️	⬆️	⬆️	⬆️	⬆️	⬇️	53.5	7.2	127	47.5	S	S	S	S		
✓	Hyundai Palisade 3.8L	85	⬆️	⬆️	88	21	⬆️ / ⬆️	⬆️	⬆️	⬆️	⬆️	⬇️	52.5	7.1	132	47.5	S	S	S	0		
✓	Toyota Highlander 3.5L	84	⬆️	⬆️	86	22	⬆️ / ⬆️	⬆️	⬆️	⬆️	⬆️	⬇️	50.0	7.3	132	41.0	S	S	S	0		
✓	Mazda CX-9 2.5T	80	⬆️	⬆️	79	22	⬆️ / ⬆️	⬇️	⬆️	⬆️	⬆️	⬆️	50.0	7.9	139	34.0	S	S	S	S		
✓	Kia Sorento 2.5T	77	⬇️	⬆️	83	25	⬆️ / ⬆️	⬆️	⬆️	⬇️	⬆️	⬆️	52.5	6.5	133	39.5	S	S	S	0		
✓	Honda Pilot 3.5L	72	⬇️	⬇️	80	20	⬆️ / ⬆️	⬇️	⬆️	⬆️	⬆️	⬇️	49.5	7.5	136	48.0	S	S	S	0		
	Subaru Ascent 2.4T	60	⬇️	⬆️	93	22	⬆️ / ⬆️	⬆️	⬆️	⬆️	⬆️	⬇️	52.0	8.0	129	40.5	S	S	S	0		
MINIVANS																						
✓	Toyota Sienna 2.5H	🌿 77	⬇️	⬆️	80	36	⬆️ / ⬆️	⬆️	⬆️	⬆️	⬇️	⬇️	50.0	8.2	148	48.0	S	S	S	S		
	Honda Odyssey 3.5L	68	⬇️	⬇️	85	22	⬆️ / ⬆️	⬆️	⬆️	⬆️	⬆️	⬇️	50.0	8.1	136	71.5	S	S	S	0		
	Chrysler Pacifica 3.6L	68	⬇️	⬆️	85	21	⬆️ / ⬆️	⬆️	⬆️	⬆️	⬆️	⬇️	51.0	8.0	136	66.0	S	S	S	S		
>	Digital and All Access members can find the latest, complete ratings at <a href="https://www.cars.com">CR.org/cars</a> . When you're ready to buy, configure the vehicle and find the best price in your area by clicking the green "View Pricing Information" button on the model's dedicated page.																					

**HOW WE TEST:** Recommended models did well in our **Overall Score**, which factors in **road-test results**, **predicted reliability**, **owner satisfaction**, and

**advanced safety**, which includes crash-test results and the availability of crash-prevention features, such as forward collision warning, automatic

emergency braking, pedestrian detection, and blind spot warning. — means no such safety system is offered; 0 means that it's optional on at least some trim levels;

S means that the feature is standard on all trims. We deduct points if a model's gear selector lacks fail-safes to prevent the vehicle from rolling away.

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# Clean Up Your Act, Please

These products and pitches are kind of a mess

## This Deal Sucks

"Free" just doesn't mean what it used to.  
Submitted by Steve Hilkemeyer, seen in Collinsville, IL



## Don't Spread This on Toast

Ignore the label:  
This recalled hand sanitizer definitely isn't edible.  
Submitted by Amy Ho, CO



## What's That Smell?

Sometimes the "New & Improved Scent!" is actually the same old one.  
Submitted by S. Neil Owen, Yellville, AR



## When a Bird Bath Just Isn't Enough

Here's a product that will never fly.  
Submitted by Dale Gleason, Chillicothe, OH



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