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MARCH 2020

# CR Consumer Reports®

++  
**WARNING**  
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What you need to know to  
protect yourself and why  
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**NEW MESH ROUTERS TO  
END YOUR WIFI WOES**



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**The Menace  
in Your Lettuce**  
Learn how to keep getting the health benefits of leafy greens while taking precautions against bad bacteria.

P. 24

## PRODUCTS RATED IN THIS ISSUE



**REFRIGERATORS**  
P. 10



**ROBOTIC VACUUMS**  
P. 10



**AIR PURIFIERS**  
P. 13



**STAIN REMOVERS**  
P. 17



**MERCEDES-BENZ GLS**  
P. 59



## 24 Leafy Greens Safety Guide

Salad greens are one of the most common culprits in E. coli outbreaks—and triple-washing is not a guarantee of protection. Our investigation identifies the core causes of the problems, and we offer ways to help you stay safe.



## 38 Clause for Concern

Denying consumers the right to sue is now rampant among companies. These forced arbitration clauses deprive consumers of options and compromise the quality of products. Here's what to watch for—and how to fight back.



## 46 End Your WiFi Woes

Slow connections can be maddening. Our experts help you bring your WiFi up to speed and determine whether one of the new mesh options is best for your home.

### RATINGS



## Contents

### Bumper Cars

Damage to a car's front safety sensors can cause steep repair costs.



P. 54

### IN EVERY ISSUE

#### 6 From the President: Suspicious of Your Salad?

CR is working hard to improve food safety inspections for leafy green production.

#### 7 Building a Better World, Together

We're fighting against robocalls, fake online reviews, and digital privacy threats.

#### 8 Your Feedback

Readers' comments about our recent content.

#### 18 Recalls

#### 62 Index

#### 63 Selling It

Goofs and gaffes.

### ROAD REPORT

#### 53 Ahead of the Curve

Auto ratings, news, and advice.

#### 54 The Hidden Cost of Safety Features

Advanced safety systems are making cars safer—but there's a downside: higher repair costs.

#### 59 Road Test

We rate the Mercedes-Benz GLS, Nissan Versa, Subaru Legacy, and Toyota Supra.

**RATINGS**

### DEPARTMENTS & COLUMNS

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

Affordable French-door refrigerators, microwaves, car batteries, and more.

**RATINGS**

#### 12 Ask Our Experts

How to combat mold and odors in your front-loading washing machine, smart ways to spot phishing scams, and the truth about raw diets for dogs.

#### 13 CR Insights

Stain removers that really work, well-made eyeglasses for less, and how to pick a healthy alterna-pasta. Plus: Is the Molekule air purifier worth \$800?

**RATINGS**



### PRODUCT UPDATE

#### 19 6 Surprising Reasons to Buy a New Dishwasher

New models offer big savings and more convenience than ever before.

**RATINGS**

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**RATINGS** Overall Scores are based on a scale of 0 to 100.

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🔴 POOR   🔴 FAIR   🟡 GOOD  
🟢 VERY GOOD   🟢 EXCELLENT



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# Suspicious of Your Salad?



CHOOSING A DIET rich in leafy green vegetables should be a benefit—not a liability—to your health. Fresh greens famously deliver a much-needed boost of vitamins, minerals, and fiber. But lately, I've been second-guessing my trips to the produce aisle. Just last fall, a series of outbreaks of dangerous E. coli bacteria linked to romaine lettuce led to

serious illness across the country, leaving us to wonder whether eating leafy salad greens is a smart choice after all.

In spite of recurring outbreaks, government regulators have sometimes failed to give consumers the information they need to stay safe quickly enough. Despite reported illnesses in the summer of 2019, for example, the Food and Drug Administration waited until after the outbreak ended before making an announcement. Amid these lapses of oversight, CR has stepped in to help keep consumers informed and safe—as we did following the outbreaks in 2018, when we warned consumers to avoid all romaine, before U.S. regulators made the call. But consumers deserve a government that stands up for their health, which is why CR is pushing for additional rules that will empower the FDA to more quickly track and identify the sources of contamination.

This month, we're offering you some strategies for how to make healthy and safe choices, without giving up on greens. We won't be able to solve these problems overnight, but we can certainly do better than the status quo. You can count on CR to keep you informed while we push for the changes to keep you safe and confident about what's in your salad bowl.

**Marta L. Tellado,**  
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## Guarding Your Online Privacy

### WHAT'S AT STAKE

When you shop or pay bills online, your personal information should always be kept safe by companies. But despite years of privacy scandals and data breaches, Congress has failed to pass a remedy, and the U.S. still lacks a comprehensive federal law ensuring adequate online privacy.

### HOW CR HAS YOUR BACK

CR's advocates in Washington are working with lawmakers to craft several bills that could make a real difference.

Foremost among them is the Consumer Online Privacy Rights Act, or COPRA, which would greatly expand individual rights when it comes to how all sorts of personal data is collected, shared, and used. It would require companies to collect as little information as possible about consumers, require explicit consent when sharing sensitive data with third parties, and make companies responsible for correcting or deleting inaccurate information.

"Consumers want strong privacy protections," the sponsor of the bill, Sen. Maria Cantwell, D-Wash., told CR. "They're very concerned about personal information being leaked and sold and trafficked."

The bill, says Justin Brookman, CR's director of privacy and technology policy, goes after companies that build secret profiles about what we do online and off. "This bill is an important step toward treating privacy as a fundamental right for all Americans."

### WHAT YOU CAN DO

Contact your lawmakers at [congress.gov](http://congress.gov) and ask them to co-sponsor COPRA.

And learn more about CR's efforts to advance digital rights through our new initiative, the Digital Lab, at [lab.cr.org](http://lab.cr.org).

## Putting a Stop to Robocalls

### WHAT'S AT STAKE

The problem of robocalls has reached epidemic proportions, causing frustration and even rage among consumers.

Americans were targets of some 58.5 billion robocalls in 2019, according to telecom services firm YouMail—about 178 per person. And robocalls aren't just irritating; they can visit financial ruin on people who fall prey to scams.

But Congress is finally cracking down on the problem. In December, both chambers of Congress had overwhelmingly

passed a bill that will usher in effective new consumer protections against robocalls, and President Donald Trump signed it into law Dec. 30.

### HOW CR HAS YOUR BACK

CR has been at the forefront of the fight against robocalls. The magazine's May 2019 cover story, "Mad About Robocalls?" noted that, according to a nationally representative CR survey, 70 percent of Americans had stopped answering their phones when they don't recognize the number. For years, CR pushed regulators and phone companies to implement technology to stop "spoofed" robocalls at no charge to consumers, and fought during the legislative process to keep the newly passed bill strong.

### WHAT YOU CAN DO

Learn more on how to protect yourself from unwanted calls at [CR.org/robocalls0320](http://CR.org/robocalls0320).

## Stamping Out Fake Reviews

### WHAT'S AT STAKE

As consumers have grown reliant on online information to guide their decision making, peer reviews have gained immense power in shaping the marketplace. That can be a good thing—but it has also led to the growth of so-called astroturfing, the fraudulent practice of companies posting or paying for fake online reviews that flatter their own products and denigrate those of competitors. (The term is a play on the "grassroots" quality of genuine consumer reviews.) An investigation by the Federal Trade Commission revealed that the skin care brand Sunday Riley had, from 2015 to 2017, been pushing employees to write reviews of its products.

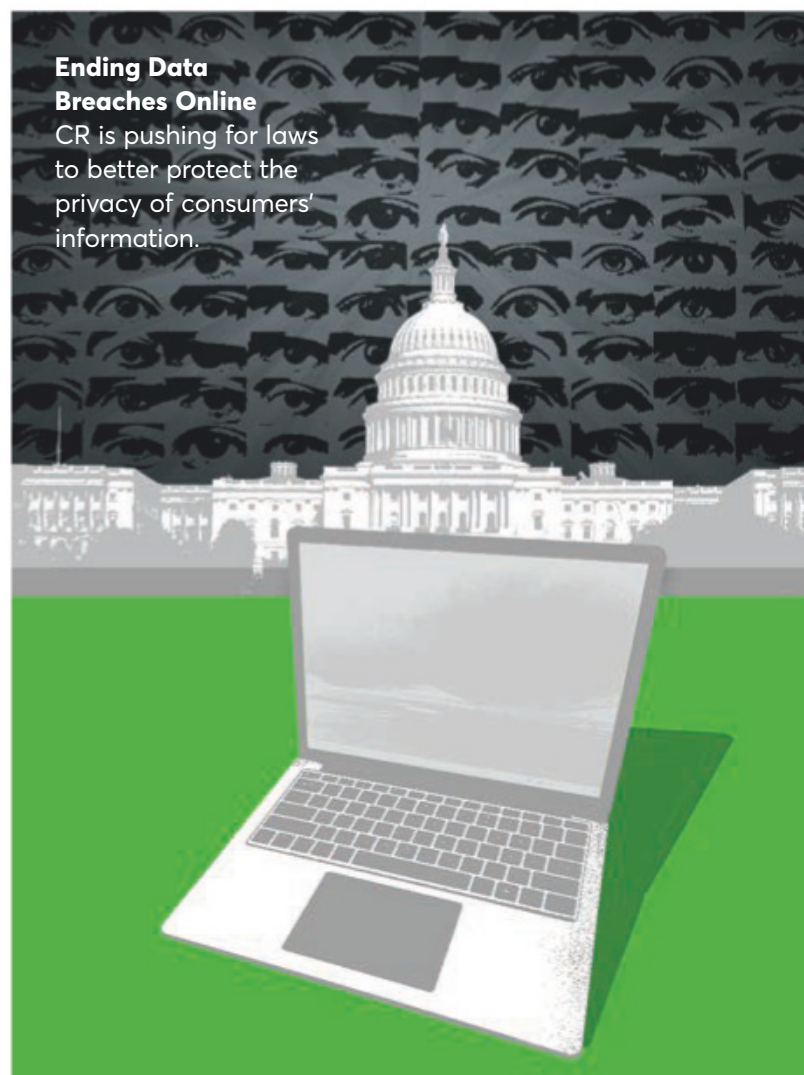
Unfortunately, instead of sending a strong message to deter future astroturfing across industries, the FTC is giving the company little more than a slap on the wrist. It proposed a settlement in which Sunday Riley agreed to halt the illegal practice but admitted no wrongdoing and suffered no financial penalty.

### HOW CR HAS YOUR BACK

CR submitted an official comment to the proposed settlement. Among other things, it outlines the shortcomings and recommends revisions that would discourage astroturfing. It also points out how a lack of intervention from government regulators has allowed lawbreakers to pollute the market, and offers concrete suggestions for FTC action that will protect consumers and crack down on fake reviews.

### WHAT YOU CAN DO

Learn more about CR's work to hold companies accountable for what they do online at [CR.org/dataprivacy](http://CR.org/dataprivacy).



### Ending Data Breaches Online

CR is pushing for laws to better protect the privacy of consumers' information.





Our January 2020 article **“The Shocking Rise of Rx Drug Prices”** investigated why prescription drug prices in the U.S. keep going up and how to save money. Here, readers speak up about their own high-cost experiences and solutions. To add your voice, go to [CR.org/rx0320](https://www.consumerreports.org/rx0320).

YOUR ARTICLE on Rx drug prices should anger everyone. How can we accept that people in a wealthy country such as ours can't afford life-saving medications? And while much anger is directed at drug companies, pharmacy benefit managers, and insurance companies, the real anger should be directed at Congress. It has the power to pass legislation to end this situation. But its interests lie in keeping profits high for all those in the drug chain in order to keep those entities donating millions of

dollars to members of Congress. And the worst part is that we, the American people, allow this to happen. Until we vote in legislators who care more about the interests of the American people than their own personal interests, nothing will change.  
—David Eudowe, Glastonbury, CT

I WAS SURPRISED that your advice for lowering drug costs didn't include the most obvious: Vote. Make drug costs and commitments to lower them a requirement for whomever you vote for (regardless of party affiliation). Analyze the donations made to each and every congressional member. Non-incumbents should be made to document the funds they get from Big Pharma (and

the rest of the supply chain). Put people in office (or take them out) based on their commitments to regulating an out-of-control healthcare industry.  
—Constance Bevitt, Silver Spring, MD


I AM AMAZED at the lack of attention paid to the role of TV drug advertising in the cost of prescription drugs. I can't watch TV without seeing an ad for an expensive drug. Drug companies must pay millions for this incessant direct-to-consumer advertising (not allowed in virtually every other country in the world). This must be a huge factor in the exorbitant cost of newer drugs.  
—Christopher Balkany, Saint Cloud, MN

YOUR STORY MENTIONED that many identical drugs in Canada were much cheaper but did not mention why. Assuming that the Canadian drugs are legitimate and equal to “ours,” how come they are so much cheaper? What is stopping us from copying Canada's prescription system?  
—John Arnold, Modesto, CA

**EDITOR'S NOTE** According to a September 2019 U.S. House Ways and Means report on this subject, Canada uses a system of “reference” pricing—taking an average of what a handful of other countries pay—in order to set the price of medications that the government will cover. Also, the Canadian system may cover fewer medications compared with the U.S. and doesn't use rebates to the same extent, all of which may help to lower prices for consumers.

YOUR ARTICLE brought me back to the summer when I couldn't afford my teenage son's EpiPen because it had unexpectedly gone up in price. So we decided to stick with our near-expired EpiPen. My son had never needed to use it, so we thought waiting for the price to go down was a low-risk option. But that same summer he had a severe anaphylactic reaction when I wasn't home. He decided not to use the EpiPen because its expiration date had passed. (Though the expiration date had been extended, we hadn't labeled the package accordingly.) Instead, my son called 911. Paramedics injected him with several medications. Thank God he was okay!  
—TJ Ramirez, Jackson Heights, NY

YOUR ARTICLE explaining the high cost of drugs in the U.S. was both informative and timely. As a physician who has practiced dermatology, I'm struck by how

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

WRITE



ridiculously easy it is to prescribe an expensive biologic (Enbrel, Humira, Cosentyx, and Taltz, to name a few) for severe psoriasis if the patient has commercial insurance—and how ridiculously hard and expensive it often is to prescribe a generic cream. Big drug companies with billions in sales of biologics should take some of those profits and make generic drugs affordable.  
 —Owen Reynolds, M.D., Haverhill, MA

AS A FAMILY PHYSICIAN, I have some suggestions.

1. Eliminate direct-to-consumer advertising of prescription drugs, which would lower cost.
2. Make the current scheme of PBM rebates (kickbacks) illegal.
3. Change the legislation that ties the hands of government in negotiating prices.
4. Explore having a “most favored nation” approach to pricing in the U.S. If a medication is sold in Europe, etc., for a lower price, then that should be the ceiling for

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pricing in the U.S. We need a level playing field with other developed countries.  
 —Wayne True, La Mesa, CA

 **STAIN-PROOF YOUR ROOF**

YOUR ARTICLE on roofing (“Raise Your Roof IQ,” January 2020) did not mention the mildew staining that can happen with modern three-tab shingles. New roofs can develop ugly dark streaks within a couple of years. This can be prevented. A pure zinc strip installed just under the ridge, or copper-infused granules made into the shingles, can prevent such stains for 10 years or more. We chose the zinc strip, and it has kept our roof stain-free.  
 —Scott Gifford, Medford, NJ

**EDITOR’S NOTE** Using *algae-resistant shingles, which are made with copper and ceramic granules, is an effective strategy for preventing this type of staining. Such shingles are typically designated with an “AR” in their product name, and they do cost more.*

 **CLARIFYING CR’S VEHICLE SCORES**

I’VE BEEN MUSING about CR’s auto reviews (“Why It Pays to Wait,” January 2020) and am a bit befuddled. Wasn’t it last year the Subaru Ascent scored a 96 or so? Now it’s the “worst” of the Subaru brand. Help me understand.  
 —Dan Koser, Escondido, CA



**BETTER WAYS TO CLEAN YOUR HANDS**

Your Ask Our Experts question “Is hand sanitizer just as good as washing with soap and water?” (January 2020) reminded me of another beef I have with handwashing. Have you ever wondered why public restroom push doors open into the restroom? You do your due diligence scrubbing at the sink. Then dry off and grab the filthy door handle with your nice clean hands!  
 —David Nyffenegger, Raleigh, NC

I often see teachers giving a student a squirt of hand sanitizer after lunch when a student in the class has a food allergy. But alas, this does not work! Soap and water, not hand sanitizer, will effectively remove allergens from a person’s hands.  
 —Valerie Mates, Ann Arbor, MI

**EDITOR’S NOTE** A model’s Overall Score is a composite of not just CR’s predicted reliability score (which our January story focused on) but also our road-test score, owner satisfaction score, standard safety features, and crash-test results. You’re correct that the Ascent’s Overall Score was previously a 96, but CR conducts a new auto survey each year, and the ratings and scores are changed based on the latest survey results. The Ascent now has a predicted reliability score of 45, which is average for a new car but much lower than its previous score of 94. To reflect that reliability slip, the Ascent’s Overall Score is now 82—which is still excellent for its class—and it’s therefore still a CR recommended SUV.

 **SUCCESSFUL COMPLAINTS**

RE: “HOW TO COMPLAIN WELL and Get Results” (January 2020). After discovering that my new Lenovo laptop’s RAM was inadequate, the company recommended incorrect upgrade specifications. Doubly aggravated, I emailed the CEO. The next day, a rep called and promised to send the proper upgrade, free of charge. I was astonished by this immediate response and further amazed to receive two 16-gigabyte RAMs, which octupled the laptop’s original power.  
 —Shirley Glade, North Manchester, IN

AN OLD-FASHIONED OPTION when all else fails: Write a letter. If you address it to the CEO, you will almost always get a response. I have used this method, mostly successfully.  
 —David Perl, Berkeley Heights, NJ

# 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 \$1,250 and Under

**WE TESTED:** 13 models  
**WE TEST FOR:** Thermostat control, temperature uniformity, energy efficiency, and ease of use. We also measure a model's usable capacity.

**ABOUT THE SCORES:**  
Median: 70  
Range: 43-79

**Nice Price & Narrow Fit**  
LG LFCS22520S  
(68Hx30Wx33D)  
\$1,100

**79**  
OVERALL SCORE



**In-Door Water Dispenser**  
Kenmore 73035  
(70Hx36Wx34D)  
\$1,200

**79**  
OVERALL SCORE



**Large Usable Capacity**  
Samsung RF261BEAER  
(69Hx36Wx35D)  
\$1,250

**73**  
OVERALL SCORE



## Robotic Vacuums

**WE TESTED:** 31 models  
**WE TEST FOR:** How well a vacuum picks up sand from bare floors, cereal from carpets, and more. We also test for digital security and digital privacy.

**ABOUT THE SCORES:**  
Median: 80  
Range: 51-88

**Perfect Picker-Upper**  
Eufy 11S (no WiFi)  
\$220

**88**  
OVERALL SCORE



**Excellent Carpet Cleaner**  
iRobot Roomba e5  
\$330

**85**  
OVERALL SCORE



**WiFi for Less**  
Ecovacs Deebot 500  
\$190

**80**  
OVERALL SCORE



Ask Our Experts

**I've heard that robotic vacuums store and share data about me. Is this true?**



SOME SMART WIFI-ENABLED vacuums collect more than just dust—they record your home's floor plan and your vacuuming habits, sending the data back to the manufacturer. In general, you need to consent to this data collection when you first connect your vacuum, though you may be able to opt out of some data sharing by changing settings in your phone app, says Cody Feng, who assesses data security and privacy on each connected vacuum CR tests. (That assessment is factored into a model's Overall Score.) If you decide not to connect your vacuum, it will still clean. But you'll lose conveniences such as voice control, and seeing a map of where it cleaned that day.

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](http://CR.org).

## Stainless Steel Cookware Sets

**WE TESTED:** 12 sets

**WE TEST FOR:** How well frying pans sauté food and how evenly they brown it, how well the pot simmers tomato sauce, ease of cleaning the set, and more.

**ABOUT THE SCORES:**

Median: 57  
Range: 40-73

### Top Pots

Made in Cookware  
The Starter Kit (5 pieces)  
\$275



**73**  
OVERALL  
SCORE

### Swell for Small Kitchens

Calphalon Premier  
Space Saving 8 (8 pieces)  
\$400



**70**  
OVERALL  
SCORE

### Hot Deal

Rachael Ray Create Delicious  
(8 pieces plus two utensils)  
\$150



**66**  
OVERALL  
SCORE

## Home/Studio Style Headphones

**WE TESTED:** 55 models

**WE TEST FOR:** Sound quality, including reproducing fine sonic detail; noise-canceling capability; and more.

**ABOUT THE SCORES:**

**REGULAR**  
Median: 66. Range: 40-91  
**NOISE-CANCELING**  
Median: 70. Range: 42-87

### Best Overall (Corded)

Grado Prestige SR325e  
\$295



**91**  
OVERALL  
SCORE

### A Winner for Wireless

Bose Noise Cancelling  
Headphones 700  
\$400



**87**  
OVERALL  
SCORE

### Great-Value Wireless

Sennheiser HD 4.40BT  
\$80



**66**  
OVERALL  
SCORE

## Over-the-Range Microwaves

**WE TESTED:** 56 models

**WE TEST FOR:** Heating and defrosting evenness, speed of heating, usable capacity in cubic feet, microwaving noise, and more.

**ABOUT THE SCORES:**

Median: 65  
Range: 46-86

### Superior Heating

Whirlpool WMH53521H  
\$470



**86**  
OVERALL  
SCORE

### Most Zap for Your Buck

GE JVM3160RFSS  
\$250



**79**  
OVERALL  
SCORE

### Has a Convection Mode

Frigidaire Professional  
FPBM3077RF  
\$595



**77**  
OVERALL  
SCORE

## Car Batteries

**WE TESTED:** 13 Group 65 models

**WE TEST FOR:** Battery life (how it endures repeated charge-and-discharge cycles); how long it runs a car if the charging system fails; and more.

**ABOUT THE SCORES:**

Median: 85  
Range: 57-91

### Best Overall

Super Start Platinum  
AGM 65PLT  
\$190



**91**  
OVERALL  
SCORE

### Good for Cold Climates

DieHard Gold 50865 (North)  
\$140



**89**  
OVERALL  
SCORE

### Excellent Value

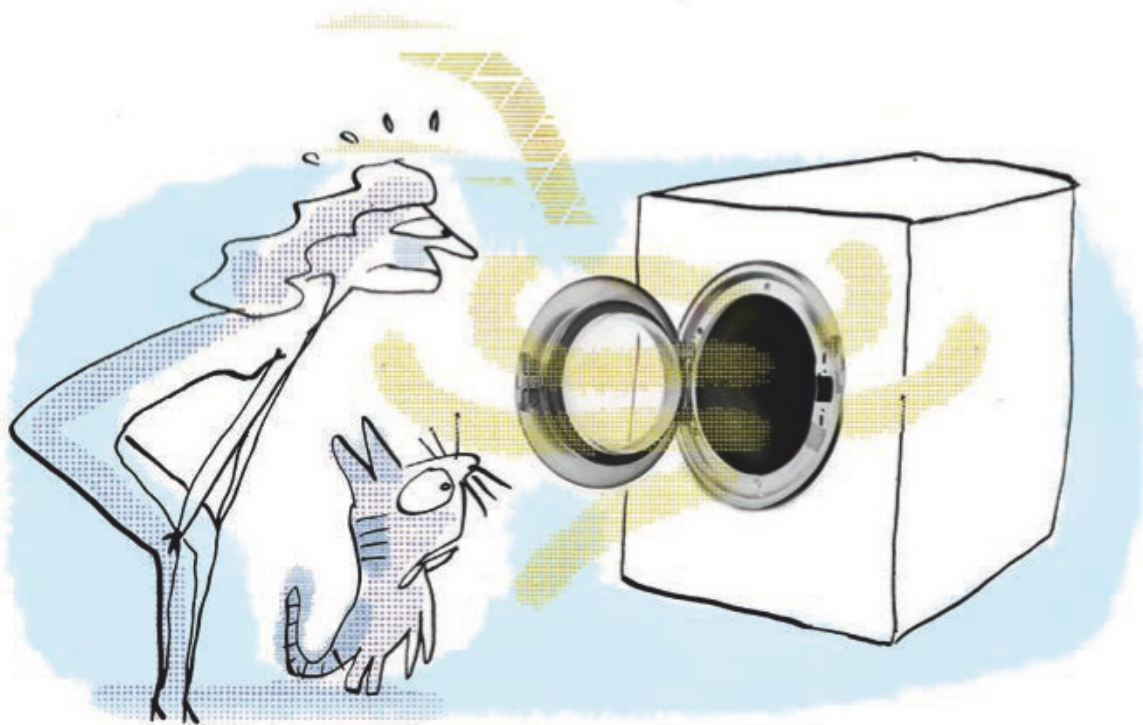
EverStart Maxx-65S (South)  
\$95



**80**  
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 Smartwatches & More



## My front-load washing machine smells funky. What can I do?

You're not alone; other CR members with front-loaders have told us the same. Electrolux, LG, and Whirlpool have each settled recent class-action lawsuits involving allegations of odors and mold in front-loaders, though the companies deny wrongdoing. (See "Clause for Concern," on page 38, to learn more about these suits.)

The odor may be a result of residue buildup, and it could be that the rubber gasket around the opening of front-loading washers doesn't dry out properly, says Rich Handel, who tests washing machines at CR.

To help prevent conditions that lead to moisture and residue buildup, clean your washer's drum. You can do that by either running your machine's tub-clean

feature—many newer models have one—or simply doing an empty load on the hottest setting with a cup of bleach. Between loads, clean the dispensers, leaving them open to dry, and keep the washer door ajar (but never leave the door open with young kids around, because they can trap themselves inside). After the last load of the day, dry the inside of the door and the rubber gasket with a towel and carefully clean away residue.

GE now has a line of front-load washers called UltraFresh that were designed to drain and dry better. We're testing these machines and will share our performance results in an upcoming issue. And watch for more coverage on moldy washers in the May 2020 issue.

### How can I tell whether an email is a phishing scam?

Phishing scams—emails that often impersonate companies or people you know to trick you into giving up information or downloading malware—can surge around seasonal holiday

times and major sporting events, says CR's senior tech editor, Bree Fowler. As the annual NCAA March Madness tournament begins, for example, basketball fans who are eager to fill out a bracket with friends (as some 40 million Americans do) should be on guard.

Be wary of emails asking you to click on a link to a tournament-themed website that isn't well-known—especially if it prompts you to confirm your identity by logging in to Gmail, or Facebook or another social media site. That could be a sign that it's a scam. Before you click on any link, hover your mouse over it to reveal the full address, which can expose signs of fraud. (An ".ru" at the end, for example, means the site was created in Russia.) Misspellings are another tipoff to a fake website. If the email seems to be from a retailer or company you know, open a new window in your browser, search for the retailer's web address, and compare before clicking.

And never download an attachment from a sender you don't know (it might be malware) or type confidential info into a form attached to an email. The sender can potentially track what

you enter. If payments are involved, it's a good idea to directly call or text the person to confirm the amount and method. If you suspect you've encountered a fraudulent site or email, you can report it at [ftc.gov/complaint](https://www.ftc.gov/complaint).

### Do raw food diets keep dogs healthier longer?

Raw food diets—which may contain raw organ meat, unpasteurized milk, or uncooked eggs—are controversial, and many vets and public health agencies warn against them. While some experts believe that dogs and cats won't get sick from these raw diets because animals are biologically equipped to consume raw meats, other experts say these diets are not nutritionally balanced and, beyond that, can be a source of harmful bacteria that can cause foodborne illness to pets and their people. Animals can easily transfer the bacteria to humans by, say, licking their faces after eating. James E. Rogers, Ph.D., CR's director of food safety research and testing, also warns owners to use extra caution when preparing raw food for a pet: "You can easily get sick if you touch your mouth after being in contact with contaminated food, surfaces, or utensils."



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



# CR Insights

**IN THE KNOW**

## CAN YOU REALLY CLEAR THE AIR?



**Molekule Air**  
\$800

**20** OVERALL SCORE

YOU'VE PROBABLY SEEN online ads for the Molekule Air: a sleek air purifier that claims to destroy harmful molds, viruses, bacteria, and gaseous chemicals lurking in your home's air—for a hefty \$800. To see whether it's worth your money, we ran it through all the same tests we give other air purifiers.

First, we put the Molekule in a sealed chamber injected with particles as small as 0.1 micron and up to 1 micron—a range that includes dust mite allergens, cat allergens, smog, smoke, and atmospheric dust. A particle

counter measured the change in air-particle concentration for 15 minutes at the highest speed and again at a lower speed.

The Molekule almost flunked our test, with a Fair rating for smoke and dust removal at high speed and a Poor—the lowest score possible—at low speed. It's the second-lowest-scoring air purifier of the 50 we tested. Based on our lab's calculated rate at which it can process air, the Molekule can handle only about 100 square feet—not the 600 it claims—and was noisy.

CR tests only for particle

reduction, but the Molekule also touts photoelectrochemical oxidation (PECO) technology to oxidize and break down gaseous pollutants. "Theoretically, PECO could work," says James Dickerson, CR's chief scientific officer. "But our tests show that the Molekule Air is not proficient at catching large airborne particles."

We shared our methodology and findings with Molekule. The company responded that CR did a very limited assessment of the product and did not evaluate its full capabilities.

### 3 BETTER MODELS FROM OUR TESTS



✓ **Blueair Blue Pure 211+** \$300

**85** OVERALL SCORE



✓ **Alen BreatheSmart Classic** \$650

**72** OVERALL SCORE



✓ **Honeywell 50250** \$200

**69** OVERALL SCORE

ILLUSTRATIONS: RODRIGO DAMATI

DO MORE WITH ...

## SELF-CLEANING OVENS

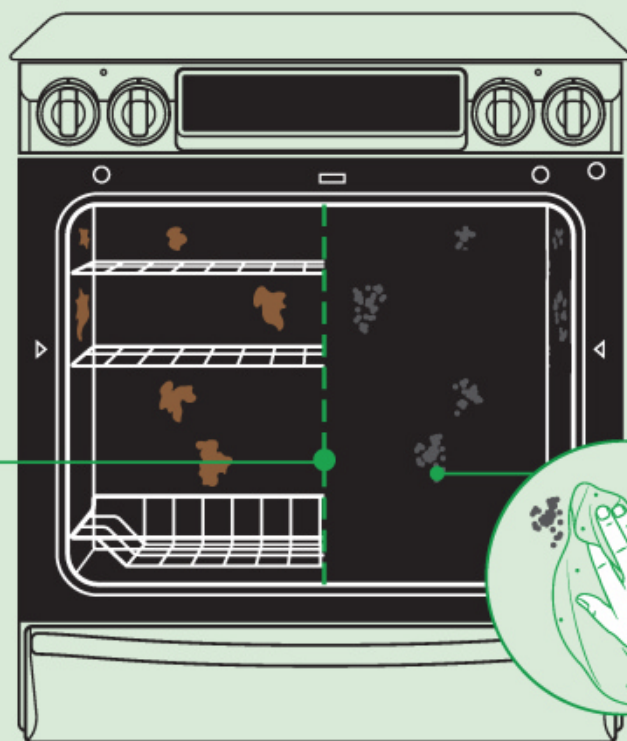
Remove racks



3- to 5-hour cycle



Oven will heat up to 850° F



A CLEAN WINNER

✓ **Samsung NE58F9710WS** (electric) \$1,800

⬆ SELF-CLEANING

**81** OVERALL SCORE

After oven cools down: Wipe out ash

MANY NEW RANGES have a self-cleaning feature that promises to de-crud itself by cranking the heat—as high as 850° F—to burn off any caked-on food debris or grease residue. In the best models, it turns to ash that you can then easily wipe away.

Tara Casaregola, who runs CR's range lab, applies a mix of eggs, cheese, cherry pie filling, lard, tomato purée, and tapioca in the oven cavity and on the inner door of the self-cleaning models we buy. Then she bakes

the mess at 425° F for an hour.

Most models at the top of our ratings, such as the smoothtop Samsung above, score Very Good or Excellent in our test. But some lower-scoring ranges receive a Poor rating for self-cleaning because they use a different, shorter self-clean process that uses low oven temperatures, Casaregola says. This process is dubbed AquaLift on Whirlpool brand ranges and Lo Temp Clean on Kenmore ones. In our tests

of these, soil loosened and wiped off the oven floor but still clung to the other surfaces. When shopping, look for high-temperature self-clean cycles, which are the most effective.

Want to try your range's self-clean function? Turn on your vent hood and crack open windows, Casaregola advises: The process of burning grime can be pungent. "And keep in mind that the range will be out of commission for 3 to 5 hours during the cycle."

MARCH IS THE BEST TIME TO BUY ...

DIGITAL CAMERAS



VACUUMS



STRING TRIMMERS



For more info, go to [CR.org/buy0320](http://CR.org/buy0320).

PHOTOS, BOTTOM: CONSUMER REPORTS

## CR Time Traveler CAR REPAIRS



**1940** Our experts study the mechanical specifications of more than 60 cars, noting that metal and grillwork has increased in size and cost on many models, making the engine harder for owners and mechanics to access.



**1952** CR introduces a Service Accessibility Rating that reflects how easy it is to inspect a car's battery, brake fluid level, and more. Of V8 cars we rate, a Mercury (below) is best.



**1954** With the help of 24 mechanics, we test 15 brands of mechanics' hand cleaners and soaps. Though all do an acceptable job, our testers find emulsion cleaners to be slightly superior to other types.

**1961** As more imported cars roll into the U.S., we test them. A 1961 Volkswagen is the only CR Best Buy for its "well-behaved mechanism, excellent finish, and high resale value."





**CR MONEY SAVER**

# THE BEST EYEGLASSES FOR YOUR MONEY

DESPITE A RISE in online options, 93 percent of eyeglass purchases are made in a walk-in store, according to CR's 2019 questionnaire of more than 58,000 members.\*

But consumers who shop online and pay out of pocket spend significantly less than in-store out-of-pocket buyers do: a median of \$91 online vs. \$234 in-store. Of the 34

retailers in our ratings, the least expensive retail prices were at zennioptical.com and eyebuydirect.com. Members also rated the prices they paid at Costco Optical and Warby Parker as Excellent—and deemed the products at those two retailers higher quality compared with other inexpensive retailers. The most expensive retailers,

on the other hand, included LensCrafters, MyEyeDr., Pearle Vision, private eye doctors, and independent eyeglass retailers.

To help you find the best store for your budget, our chart shows the eyeglass stores (both online and walk-in) with the highest overall satisfaction scores, along with their price and quality ratings.



**OVERALL SATISFACTION**

\*All respondents made their purchases in the previous 24 months and bought frames and lenses from the same retailer. (Note: Sears Optical stores will close in February 2020.)



To see our survey results for all 34 retailers, Digital and All-Access members can go to [CR.org/glasses0320](http://CR.org/glasses0320).



**1987** Using CR's Annual Questionnaire, we chart the repair and expense histories of 252 cars. The '81-'83 Cadillac Eldorado, for example, costs owners at least 35 percent more than the average car model.



**2018** In a CR member survey of car repair shops, Jiffy Lube performs 91 percent of vehicle repairs correctly the first time.

**2020** We investigate high repair prices on vehicles with advanced driver assistance systems. See page 54.

**1977** In CR's report on subcompacts, the Toyota Corolla is tops for predicted repair incidence. We also note that the front seat is comfy for short drivers, but the backseat is cramped.



**1999** In CR's labs, we use our "hydraulic basher" to deliver low-mph impacts to bumpers. A Ford original-to-manufacturer bumper has only minor cosmetic damage, while a replacement imitation one shatters.



**JIFFY LUBE** **81** OVERALL SCORE

## FOOD IQ™

### NOODLE KNOWLEDGE

Pasta is a long-standing staple of the American diet: Thomas Jefferson brought a pasta maker back from France to the fledgling U.S. in 1789, according to the National Pasta Association. But recent years have seen an explosion of pasta options beyond the traditional noodles made from refined wheat flour. Industry experts say that the “alternative” pasta market in the U.S. has grown from an estimated \$75 to \$100 million in 2010 to more than \$250 million in 2018. That’s because consumers in search of lower carbs, more plant protein, or no gluten have been increasingly turning to pasta created from whole wheat, legumes, or buckwheat (soba, as it’s known in Japan). All four options shown here, including traditional, pack around 200 calories and little fat per standard 2-ounce serving.\* But they can differ in the vitamins, fiber, carbohydrates, and protein they supply—as well as how they taste. This breakdown can help you decide which pasta works best for you.

TRADITIONAL	SOBA
<b>CARBOHYDRATES</b> 43 g	<b>CARBOHYDRATES</b> 42 g
<b>FIBER</b> 2 g	<b>FIBER</b> 6 g
<b>PROTEIN</b> 7 g	<b>PROTEIN</b> 8 g
<b>VITAMINS</b> Some brands may be enriched with B vitamins and iron—nutrients that are lost in the processing of the flour.	<b>VITAMINS</b> Some B vitamins, including folate, and magnesium.

WHOLE-WHEAT	LEGUME OR BEAN
<b>CARBOHYDRATES</b> 42 g	<b>CARBOHYDRATES</b> 32-36 g
<b>FIBER</b> 5 g	<b>FIBER</b> 3-15 g
<b>PROTEIN</b> 8 g	<b>PROTEIN</b> 11-15 g
<b>VITAMINS</b> Some B vitamins, including folate, and magnesium.	<b>VITAMINS</b> B vitamins, especially folate, and magnesium.

#### TRADITIONAL

Made from semolina, a refined flour derived from a hard wheat called durum wheat that has more protein than some other types of flour. Despite its refined flour, traditional pasta has a low glycemic index that’s similar to that of whole-wheat and legume pastas. So it won’t spike blood sugar levels, especially if it’s cooked al dente (also recommended for best taste and texture).

**CR TIP** Our tests show only minor differences in taste among the brands of traditional pasta, so buy whichever one you prefer—or the one that happens to be on sale.

#### WHOLE-WHEAT

Like traditional pasta, whole-wheat pasta is made from durum wheat flour, but from the whole kernel—endosperm, germ, and bran—and so contains more nutrients. Though some can be a bit gritty, the best whole-wheat pastas have a mild or nutty flavor, and chewy, springy texture.

**CR TIP** Look for “whole wheat semolina” or “whole wheat durum flour” on the box. To get used to its nuttier flavor, try a 50-50 mix of whole wheat and traditional. Most pair nicely with olive oil or pesto-based toppings. Try Barilla Whole Grain Penne or De Cecco 100% Whole Wheat Penne Rigate, our taste testers advise.

#### LEGUME OR BEAN

Depending on the brand, these can be made from just legume flour—from beans such as chickpeas, black beans, or lentils—or with a combination of legumes and other flours. These pastas can offer more fiber than other types.

**CR TIP** Our tests show that the base ingredient makes a difference in flavor, with mild-tasting red lentil pasta coming closest to regular pasta—and so it adapts well to red sauce. (Try Ancient Harvest POW Red Lentil Rotini, our testers say.) Black bean pasta’s heartier taste works better with strong, spicy flavors. Chickpea pasta goes well with peas, olive oil, and Parmesan.

#### SOBA

Popular in Japanese cuisine, these noodles are traditionally 100 percent buckwheat flour—which, despite its name, isn’t a form of wheat but is a type of grain—and so, like legume pastas, are gluten-free. But check labels, because we found that some brands are actually a mix of flours.

**CR TIP** Offering similar nutrients to whole-wheat pasta, soba noodles typically have a firm, chewy texture and a nutty, earthy flavor. Hot or cold, they are well-suited to Asian-inspired dishes. Try them with chunks of tofu and scallions in a sesame oil/rice vinegar dressing, or in a soup.

\*Nutrition counts are based on 2 ounces of dry pasta (which translates to about a cup of cooked, depending on the shape).





**BEST FOR  
\$40 OR LESS**

**INDOOR TV  
ANTENNAS**

As consumers try to trim their cable TV bills, antennas are making a comeback. Our tests of 10 indoor HDTV antennas in urban and suburban homes found that most were able to receive dozens of free over-the-air channels. The exact number of channels you'll get depends on location, but these budget-friendly picks can give you lots of stations for little money.

**Mohu ReLeaf** \$40  
(shown above)



**1byone Digital Amplified Indoor HD** \$28



**Naxa NAA-308** \$15



Percentage of stations received is the total number of stations that a particular antenna was able to receive by all the testers, divided by the total number of stations that were available at the location where each of the testers lived.

**HOW TO CLEAN  
PRACTICALLY  
ANYTHING...®**

## FABRIC STAINS

SPRAY-ON STAIN REMOVERS, which are a staple of many home laundry rooms, are typically made with ingredients such as surfactants, enzymes, and polymers—also often found in your everyday laundry detergent bottle. So what's the difference between the two? "Prewash stain removers are concentrated and designed to go directly on the stains," says CR chemist Rico de Paz. "Detergents are made to mix with lots of water to clean, which dilutes their stain-removing power. But if you dab a detergent onto the stain

before washing and let it sit, that alone can remove stains."

To find out which method works best to pretreat stains, we compared the performance of six popular prewash spray-on stain removers from Shout, Spray 'n Wash, and OxiClean with two of our top-performing laundry detergents from Tide and Persil (shown below). We spritzed and dabbed each one onto a variety of tough stains, including grass and chocolate. Before washing, we let the pretreated fabric sit for an equal amount of time (5 minutes in one test, overnight in another).

Only one spray-on stain remover from our tests got rid of stains better than the laundry detergents: OxiClean Max Force. (Others, such as Shout Triple-Acting Spray, were very good and cost less but did not perform well enough to be recommended.) But de Paz notes that the Tide and Persil detergents came close enough to the cleaning power of the OxiClean Max Force spray that you could use them to pretreat stains and wash laundry while paying less per ounce. Still, you may prefer the, uh, on-the-spot convenience of using the spray.

### PRETREATING



✓ **OxiClean Max Force Spray** \$0.36

OVERALL SCORE	<b>86</b>
BLOOD	⬆️
BODY OIL	⬆️
CHOCOLATE	⬆️
COFFEE	⬇️
DIRT	⬆️
GRASS	⬆️
SALAD DRESSING	⬆️



✓ **Shout Triple-Acting Spray** \$0.11

OVERALL SCORE	<b>77</b>
BLOOD	⬆️
BODY OIL	⬆️
CHOCOLATE	⬇️
COFFEE	⬇️
DIRT	⬆️
GRASS	⬆️
SALAD DRESSING	⬆️

### WASHING



✓ **Tide Plus Ultra Stain Release** \$0.21

OVERALL SCORE	<b>84</b>
BLOOD	⬆️
BODY OIL	⬆️
CHOCOLATE	⬆️
COFFEE	⬇️
DIRT	⬆️
GRASS	⬆️
SALAD DRESSING	⬆️



✓ **Persil ProClean Stain Fighter** \$0.22

OVERALL SCORE	<b>84</b>
BLOOD	⬆️
BODY OIL	⬆️
CHOCOLATE	⬆️
COFFEE	⬇️
DIRT	⬆️
GRASS	⬆️
SALAD DRESSING	⬆️

Prices listed above are comparative: per ounce for stain removers and per load for detergents.

**Note:** We rate detergents and spray-on stain removers according to different test protocols. Detergent ratings reflect performance when used in a washing machine as a general detergent; spray-on stain remover ratings reflect performance of pretreating a variety of specific stains.



## RECALLS

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



HILLSDALE  
CHADWICK  
AND BAILEY  
FIVE-DRAWER  
CHEST

### HILLSDALE FURNITURE CHESTS

Hillsdale Furniture is recalling about 31,000 Chadwick and Bailey five-drawer chests because they are unstable and can tip over if not anchored to the wall, posing serious tip-over and entrapment hazards that can result in death or injuries to children. The chests do not comply with the performance requirements of the U.S. voluntary industry standard. The chests were sold at Bob's Discount Furniture and other retailers nationwide from August 2010 through August 2019 for about \$280.

**What to do:** Stop using the chest if it is not properly anchored to the wall, and put it in an area that children cannot access. Contact Bob's Discount Furniture at 800-569-1284 or Hillsdale Furniture at 800-368-0999 to receive a free repair or refund. Remedy options include a free self-install repair kit, free in-home installation of the repair kit, or free pickup of the chest. You can also read CR's investigative reporting on dresser tip-over hazards and our lab's exclusive testing of 17 dressers at [CR.org/dressers0320](http://CR.org/dressers0320).

### MAZDA3 VEHICLES

Mazda is recalling more than 35,000 Mazda3 sedans and hatchbacks from the 2019 and 2020 model years because their automatic emergency braking (AEB) systems may unexpectedly and inadvertently engage while

driving, which could cause a rear-end collision from a following vehicle. Drivers may hear a warning alarm sound and notice a warning message displayed on the instrument cluster behind the steering wheel when this defect occurs. A spokesperson for Mazda told CR that there have been no "accidents resulting in death or injury nor any fires related to this recall." However, in a search of the National Highway Traffic Safety Administration's complaint database, CR found evidence of one injury and one crash related to sudden and unintended braking in 2019 Mazda3 vehicles.

**What to do:** Mazda will notify owners of affected vehicles by first-class mail no later than Feb. 17, 2020, but owners can check to see whether their vehicle has an open recall by entering their car's 17-digit vehicle identification number (VIN) at [nhtsa.gov/recalls](http://nhtsa.gov/recalls). You can also call Mazda customer service at 800-222-5500. Mazda says that it plans to reprogram the software that controls the AEB system, and dealers will perform this service free of charge.

### SKYLIGHT POWER ADAPTERS

Skylight is recalling about 65,000 Series I power adapters for Skylight digital photo frames because the power adapter casing can break when plugged into an electrical outlet, exposing its metal prongs and posing an electrical shock hazard. The adapters were sold

### LANDMARK SETTLEMENT IN TIP-OVER DEATH

In January 2020, Ikea agreed to pay \$46 million to the family of Jozef Dudek, a 2-year-old boy who died in May 2017 in Buena Park, Calif., after a three-drawer Ikea Malm dresser, recalled the year before, tipped over onto him and killed him. The family's lawyers believe the settlement is the largest for the wrongful death of a child in U.S. history and that the large payout was because Ikea "did not conduct its recall effectively." The furniture maker announced the recall of 29 million of its dressers, including the one involved in Jozef's death, in June 2016, but the family never heard about the recall despite being members of the Ikea Family loyalty program when they bought the dresser in 2008. Ikea had their contact information and their purchase history, and yet the couple never received a warning letter or email alerting them. "The settlement sends a powerful message to all companies to make sure recalls successfully reach people," says William Wallace, manager of home and safety policy for CR.

As part of the settlement announcement, Jozef's parents, Craig and Joleen Dudek, said they will donate \$1 million to be split between CR and two other consumer groups—Kids In Danger and the Consumer Federation of America—to continue efforts to prevent deaths and injuries from furniture tip-overs.

online at [skylightframe.com](http://skylightframe.com) and [amazon.com](http://amazon.com), and in Von Maur stores from April 2018 through March 2019 for about \$160 with the digital photo frame.

**What to do:** Stop using the adapter and call Skylight at 888-359-4389 or go to [skylightframe.com](http://skylightframe.com) for disposal instructions and info to get a free replacement.

### B&B ACQUISITION ESSENTIAL OILS

B&B Acquisition is recalling about 62,700 Airome Wintergreen Essential Oil and Deep Soothe Essential Oil 100 Percent Pure & Natural Therapeutic Grade Essential Oils because they contain methyl salicylate, which must be in child-resistant packaging as required by the Poison Prevention Packaging Act (PPPA). The oils' packaging is not child-resistant, posing a poisoning risk if the oils are swallowed by young children. The oils were sold at home specialty stores and gift shops and online at [amazon.com](http://amazon.com) from December 2016 through July 2019 for \$12 to \$20.

**What to do:** Store the product out of the reach of children. Call B&B Acquisition at 800-262-2305 or go to [airome.candlewarmers.com](http://airome.candlewarmers.com) for info to get a free child-resistant cap.

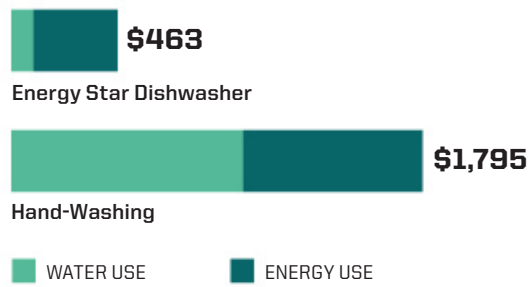
### TOYSMITH MAGIC WANDS

Toysmith is recalling about 58,000 Light-Up Magic Wands because the battery cover can detach and expose the button-cell batteries, posing choking and ingestion hazards to young children. The wands were sold at Carter's stores and toy, grocery, hobby, and gift retailers from June 2018 through October 2019 for about \$5.

**What to do:** Stop using the wand and return it to where you bought it for a refund. Call Toysmith at 800-356-0474 for details.



The cost of hand-washing vs. using an energy-efficient dishwasher\*



\*Over 12 years. Source: Energy Star.

# PRODUCT UPDATE

THE LATEST RATINGS FROM OUR LABS

## 6 Surprising Reasons to Buy a New Dishwasher

The latest models cost less to run and offer more time-saving features and conveniences than those sold less than a decade ago.

by Perry Santanachote

BOSCH 300  
DLX SERIES  
SHS863WD5N  
\$770

84 OVERALL SCORE

INSIDE  
CR'S LABS

CR testers use a baked-on mixture of sticky foods to test a dishwasher's scrubbing power.



**EVEN IF YOU** don't need a new dishwasher, you might find yourself shopping for one after learning how much these kitchen workhorses have evolved over the past decade or so. For starters, today's dishwashers are less expensive to run than older models. They can also come equipped with features, such as targeted water jets and internet connectivity, that make them even more convenient. Consider the following dishwasher advancements to help you to determine whether it's time for an upgrade.

### **1. They Cost Less to Run**

Dishwashers made before 1994 were water guzzlers, using more than 10 gallons per load. Those sold today require 5 gallons or less. In fact, the latest models use about 15 percent less electricity and 20 percent less water than those that were sold as recently as 2013, when the newest federal efficiency standards went into effect.

The trade-off for this efficiency is that cycle times are longer: While older models could clean a load in about an hour, new dishwashers can take up to 3 hours to complete a cycle. Many newer models offer shorter cycles for less intensive cleaning. "A Quick Wash cycle may be all you need when, say, washing appetizer plates to be used as dessert plates during the same meal," says test engineer Larry Ciufu, who oversees Consumer Reports' dishwasher tests.

### **2. They're Quieter**

Older dishwashers tended to be noisy, which could make having conversations or watching TV tricky in homes with open floor plans. That's not a problem today. "New dishwashers are usually quieter than those made even five years ago," Ciufu says. Some current models are so quiet that manufacturers have installed lights that illuminate the floor in front of the machine while it's running to keep owners from mistakenly opening it midwash.

Note that one of the ways manufacturers have hushed their machines is by replacing noisy food grinders with filters, which need to be cleaned from time to time for best results.

### **3. They Have More Muscle**

New high-end models may have special cleaning zones with targeted jets of water to scour baked-on foods. These can reduce the need to soak and scrub casserole dishes, lasagna pans, and other hard-to-clean messes by hand. "Targeted spray jets can improve cleaning," Ciufu says, explaining that they blast away baked-on food better than the Normal cycle alone in CR's tests. To take full advantage of this feature, you'll need to make sure that you load soiled pots and pans in the proper place on the rack.

### **4. They Have New Drying Tech**

The No. 1 consumer complaint about dishwashers is that they leave dishes wet, so manufacturers have been developing new ways to get loads good and dry. For instance, the door of certain machines now automatically opens a few inches at the end of the cycle. This allows water vapor to travel from the hot, wet environment of the dishwasher to the cooler, drier air of the kitchen, which helps to remove moisture from the dishes.

The newest technology, currently available on very few models, uses a mineral-based drying agent to absorb moisture during the drying cycle, which the manufacturer claims will improve performance.

"Many of today's machines rely on a rinse aid to support drying," Ciufu says. "People who don't use an aid when the operating manual calls for one won't get the best drying performance from their dishwasher."

### **5. They Can Be Connected**

The latest generation of machines can connect wirelessly to the internet

and allow you to use a smartphone app to check on a wash cycle's progress. You can also download software updates to enhance a machine's performance, or special cleaning cycles not already programmed into the machine. Certain dishwashers will alert your phone when the rinse aid is low or it's time to buy detergent.

Some of these high-tech bells and whistles can be quite useful. For example, there are connected models that notify their owners when they detect malfunctions or leaks. They can also run diagnostics and report a problem, even indicating which hardware is broken, so the repair service brings the right parts.

### **6. They Save Even More Time**

Today's dishwashers can do more and save more time than many models made just a decade ago.

While you need to scrape large pieces of food off plates before loading, prerinsing is no longer required and can even reduce a dishwasher's cleaning effectiveness. Most machines sold over the past six or seven years have a soil sensor that determines how much water and how long a cycle are needed to get the dishes clean. "Prerinsing tricks the dishwasher into thinking the dishes are cleaner than they are," Ciufu says. "This causes it to cut the cycle short, which may leave your dishes dirty." In addition to saving time, you'll use less water by skipping the prerinse.

Newer dishwashers may also hold more than older ones: Machines with an adjustable top rack and adjustable tines can accommodate extra-large pots, tall pitchers, and other items that traditionally wouldn't fit. Other tweaks include a third rack designed to clean cutlery better and protect it from scratches and dings, and racks that hold delicate stemware firmly—but gently—in place, so you no longer need to hand-wash it.



## THE RIGHT WAY TO LOAD AND UNLOAD YOUR DISHWASHER

Even the best dishwasher can't get the job done if it's not loaded properly. Overfilling the machine and placing platters and cutlery in the wrong spots are common mistakes that can leave grime on your place settings at the end of a cycle. It's a good idea to check the owner's manual for any special loading instructions, but the following tips should help most dishwashers to deliver the best results possible.



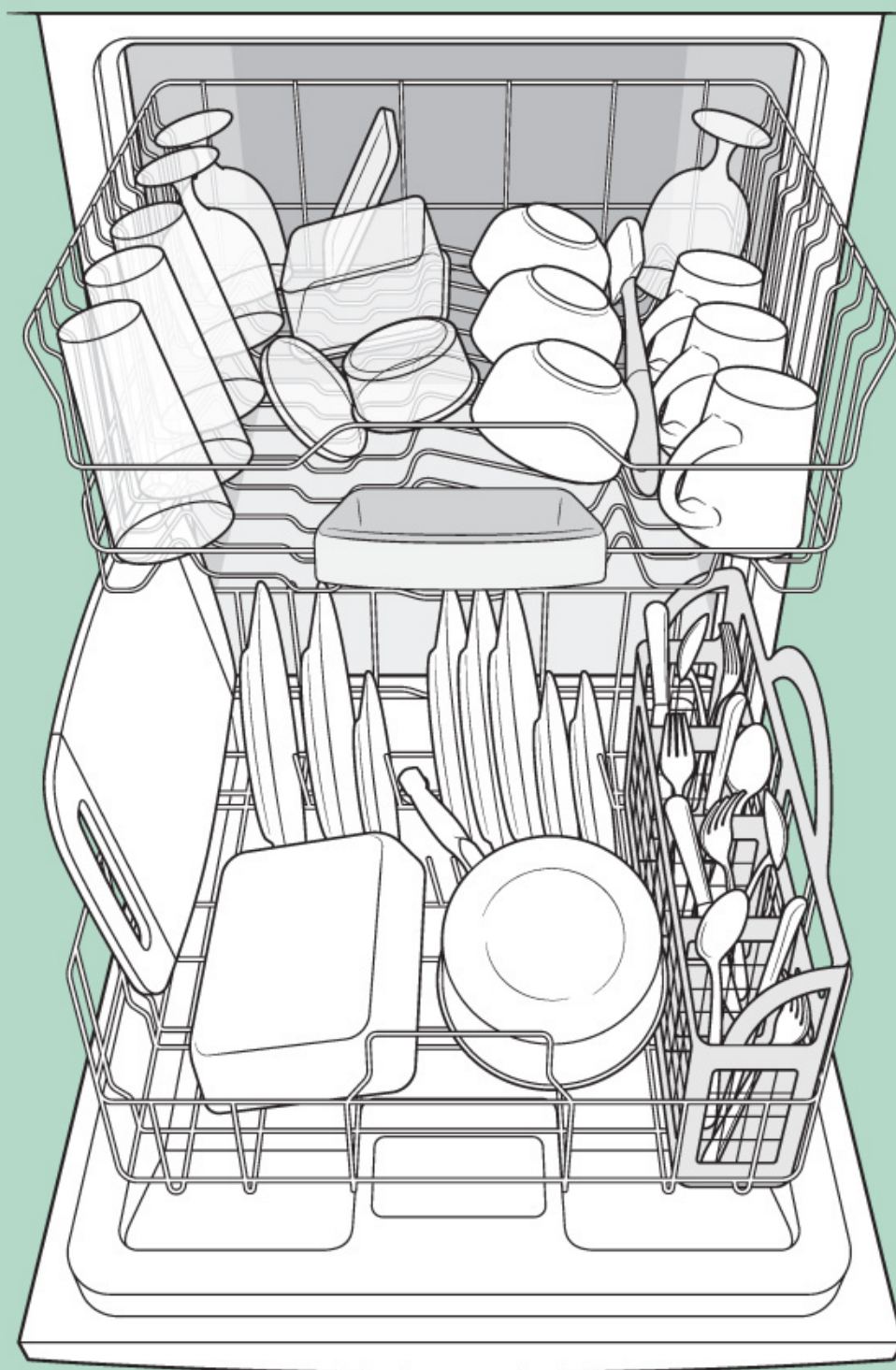
### UPPER RACK

Cups, glasses, and small bowls should be placed in the top rack. Avoid overcrowding, which increases the risk of breakage and prevents the flow of water and detergent. Dishwasher-safe plastics also belong on the top rack, away from any heating element.



### LOWER RACK

Plates, serving bowls, and other large items go in the bottom rack. Platters, dishwasher-safe cutting boards, and other oversized pieces should be placed toward the sides and back, so they don't block water spray or the soap dispenser door. Place items with baked-on food facedown and toward the spray arm.



### KEEP THESE OUT

Brass, bronze, wood, and china with gold leaf should all be hand-washed to avoid discoloration or damage. (Aluminum and stainless steel can usually go in the dishwasher.)

### CUTLERY CARE

Forks and spoons should be placed in the basket with handles down; knife handles go up. Mix spoons, forks, and knives to keep them from nesting.

### UNLOADING TIP

Pull out and empty the bottom rack first. Moving the top rack first can cause water that might have collected on concave surfaces, such as the bottom of a mug, to drip onto dishes below. (Use a rinse aid to prevent spotting and enhance drying.)

**Ratings** > **The Dish on Dishwashers** You don't need to pay a premium price for top-notch performance, but more expensive models usually come with added conveniences, such as WiFi.

Brand + Model	Overall Score	Price	Survey Results		Test Results				Features							
			Predicted reliability	Owner satisfaction	Washing	Drying	Energy use	Noise	Cycle time (min.)	Ample flatware slots	Adjustable upper rack	Adjustable tines	Displays remaining time	Interior material	Self-cleaning filter	WiFi
<b>\$499 AND UNDER</b>																
\$ Bosch Ascenta SHE3AR72UC Similar to Bosch Ascenta SHX3AR75UC	88	\$450	↑↑	↑↑	↑↑	↑	↑↑	↑	95	•	•	•		Stainless steel and plastic		
\$ Ikea Renlig IUD7070DS [288921]	82	\$380	↑↑	↓	↑↑	↑↑	↑↑	↓	115	•				Plastic		
\$ Whirlpool WDF520PADM Similar to Whirlpool WDF540PADM	81	\$400	↑	↓	↑↑	↑↑	↑↑	↓	115	•				Plastic		
Kenmore 13473	73	\$450	↓	↓	↑↑	↑↑	↑↑	↓	160		•		•	Plastic		
Whirlpool WDT730PAHZ	72	\$450	↑	↓	↑	↑	↑↑	↑	140	•	•	•	•	Stainless steel and plastic		
Whirlpool WDF330PAHS	70	\$485	↑	↓	↑	↓	↑↑	↓	110					Plastic		
Maytag MDB4949SHZ	70	\$480	↓	↓	↑	↑↑	↑	↑	155	•				Stainless steel	•	
GE GDF510PSMSS Similar to GE GDP615HSMSS	69	\$340	↓	↓	↑	↓	↑↑	↓	155	•	•		•	Stainless steel and plastic		
Ikea Lagan [00385804]	66	\$270	↑↑	↓	↑	↑	↑↑	↓	160					Plastic		
Whirlpool WDF130PAHW	65	\$280	↑	↓	↑	↑	↑↑	↓	160					Plastic		
Frigidaire FFCD2413US	63	\$300	↓	↓	↑	↑	↑	↓	145					Plastic	•	
<b>\$500 TO \$999</b>																
\$ Bosch Ascenta SHX3AR75UC	88	\$630	↑↑	↑↑	↑↑	↑	↑↑	↑	95	•	•	•		Stainless steel and plastic		
✓ Bosch 300 DLX Series SHS863WD5N	84	\$770	↑↑	↑↑	↑	↑↑	↑↑	↑	150	•	•	•	•	Stainless steel		
✓ Bosch 100 Series SHXM4AY55N	83	\$675	↑↑	↑↑	↑	↑↑	↑↑	↑	150	•	•	•	•	Stainless steel and plastic		
✓ KitchenAid KDTM354DSS	82	\$700	↓	↑	↑↑	↑↑	↑↑	↑	125	•	•	•		Stainless steel	•	
✓ Miele Classic Plus G4977VISF Similar to Miele Classic Plus G4977SCVISF	81	\$965	↑↑	↑↑	↑	↑	↑↑	↑	150	•	•	•		Stainless steel		
✓ Bosch 300 Series SHEM63W55N	81	\$765	↑↑	↑↑	↑↑	↑	↑↑	↑	155	•	•	•	•	Stainless steel		
\$ Whirlpool WDF540PADM	81	\$565	↑	↓	↑↑	↑↑	↑↑	↓	115	•				Plastic		
Kenmore 14573	79	\$600	↓	↓	↑↑	↑↑	↑↑	↑	145		•		•	Stainless steel		
Kenmore 14543	79	\$580	↓	↓	↑↑	↑↑	↑↑	↑	145		•		•	Stainless steel		
Bosch 800 Series SHPM78W55N	79	\$900	↑↑	↑↑	↑↑	↑	↑↑	↑	160	•	•	•	•	Stainless steel		
Kenmore 14523	77	\$650	↓	↓	↑↑	↑	↑↑	↑	150		•	•	•	Stainless steel		
Kenmore Elite 14793	76	\$900	↓	↓	↑↑	↓	↑↑	↑	145	•	•	•	•	Stainless steel		
Kenmore Elite 14753	75	\$750	↓	↓	↑↑	↓	↑↑	↑	145	•	•	•	•	Stainless steel		
Bosch 500 Series SHPM65W55N	75	\$800	↑↑	↑↑	↑↑	↓	↑↑	↑	160	•	•	•	•	Stainless steel		
Café CDT805P2NS1 Similar to Café CDT845P2NS1	75	\$920	↓	↓	↑↑	↓	↑↑	↑	155	•	•	•		Stainless steel		
Kenmore 13223	74	\$890	↓	↓	↑↑	↑↑	↑↑	↓	160		•		•	Stainless steel		
Thor Kitchen HDW2401SS	73	\$810	—	—	↑↑	↓	↑↑	↑	130	•	•	•	•	Stainless steel		
KitchenAid KDPE234GPS	73	\$650	↓	↑	↑	↓	↑↑	↑	135	•	•	•		Stainless steel		



# WHAT IS AVAXHOME?

# AVAXHOME-

the biggest Internet portal,  
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brand new books, trending movies,  
fresh magazines, hot games,  
recent software, latest music releases.

Unlimited satisfaction one low price

Cheap constant access to piping hot media

Protect your downloadings from Big brother

Safer, than torrent-trackers

18 years of seamless operation and our users' satisfaction

All languages

Brand new content

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**AVXLIVE** **ICU**

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Brand + Model	Overall Score	Price	Survey Results		Test Results				Features						
			Predicted reliability	Owner satisfaction	Washing	Drying	Energy use	Noise	Cycle time (min.)	Ample flatware slots	Adjustable upper rack	Adjustable tines	Displays remaining time	Interior material	Self-cleaning filter

**\$500 TO \$999** *Continued*

KitchenAid KDTE304GPS	73	\$985	↓	↑	↑	↓	↑	↑	135	●	●	●	●	Stainless steel		
Kucht K6502D	73	\$745	—	—	↑	↓	↑	↑	140	●	●	●	●	Stainless steel		
Ikea Vaskad [50422663]	72	\$850	↑	↓	↑	↑	↑	↑	145	●	●	●	●	Stainless steel		
Ikea Spolad [80422355]	72	\$750	↑	↓	↑	↑	↑	↑	145	●	●	●	●	Stainless steel		
Ikea Renlig IUD7555DS [90292264]	71	\$550	↑	↓	↑	↓	↑	↑	160	●	●	●	●	Stainless steel		
LG LDT7808BM	71	\$900	↓	↓	↑	↑	↑	↑	145	●	●	●	●	Stainless steel	●	
LG LDF5678ST Similar to LG LDT7808BM	71	\$600	↓	↓	↑	↑	↑	↑	145	●	●	●	●	Stainless steel	●	
Whirlpool WDT970SAHZ	70	\$580	↑	↓	↑	↑	↑	↑	145	●	●	●	●	Stainless steel		
Bosch SHPM65ZC5N	70	\$550	↑	↑	↑	↑	↑	↑	170	●	●	●	●	Stainless steel		
Samsung DW80K7050US	69	\$650	↓	↓	↑	↑	↑	↑	130	●	●	●	●	Stainless steel		
GE GDP615HSMSS	69	\$640	↓	↓	↑	↓	↑	↓	155	●	●	●	●	Stainless steel and plastic		
GE Profile PDT715SYNFS	69	\$700	↓	↓	↑	↓	↑	↓	155	●	●	●	●	Stainless steel and plastic		
Kenmore Elite 14673	67	\$600	↓	↓	↑	↓	↑	↑	135	●	●	●	●	Stainless steel	●	
Samsung DW80R9950US	66	\$750	↓	↓	↑	↑	↑	↑	130	●	●	●	●	Stainless steel	●	
LG LSDT9908ST	65	\$900	↓	↓	↑	↓	↑	↑	130	●	●	●	●	Stainless steel		
LG LDP6797ST	64	\$650	↓	↓	↑	↓	↑	↑	130	●	●	●	●	Stainless steel		
GE GDT655SSJSS	64	\$825	↓	↓	↑	↓	↑	↑	155	●	●	●	●	Stainless steel		
GE GDT695SSJSS	64	\$915	↓	↓	↑	↓	↑	↑	155	●	●	●	●	Stainless steel		
KitchenAid KDPE334GPS	63	\$750	↓	↑	↑	↓	↑	↑	160	●	●	●	●	Stainless steel		

**\$1,000 AND UP**

✓ Thermador DWHD660WFP	83	\$1,800	↑	↑	↑	↑	↑	↑	155	●	●	●	●	Stainless steel		●
✓ Bosch Benchmark SHX89PW55N	83	\$1,640	↑	↑	↑	↑	↑	↑	155	●	●	●	●	Stainless steel		
✓ Bosch Benchmark SHX88PZ55N	82	\$1,600	↑	↑	↑	↑	↑	↑	150	●	●	●	●	Stainless steel		●
✓ Bosch 800 Series SHPM78ZO5N Similar to Bosch Benchmark SHX88PZ55N	82	\$1,000	↑	↑	↑	↑	↑	↑	150	●	●	●	●	Stainless steel		●
✓ Miele Classic Plus G4977SCVISF	81	\$1,200	↑	↑	↑	↑	↑	↑	150	●	●	●	●	Stainless steel		

> All-Access and Digital members can find the latest, complete ratings at [CR.org/dishwashers](https://www.consumerreports.org/dishwashers).

**HOW WE TEST:** **Washing** is assessed by running the normal cycle to clean a full load of dishes with baked-on food. **Drying** judges how thoroughly a model dries plastic items, the most stubborn in any load. **Energy use** is based on the electricity required to run

the machine and heat the water. **Noise** is judged during fill, wash, and drain. **Cycle time** is based on cleaning a full load with the high-temperature option selected (if available). **Overall Score** combines test results with survey data for predicted reliability and owner

satisfaction. **Predicted reliability** estimates the likelihood that newly purchased models from a given brand will develop problems or break within the first five years. **Owner satisfaction** reflects the proportion of CR members who are extremely likely to recommend

the dishwasher they bought. In cases where we have insufficient survey data to provide a brand-level rating, indicated by a gray dash (—), we assume the model has average reliability and satisfaction.



**The Risks of Romaine**

Between 2006 and 2019, romaine and other leafy greens were responsible for at least 46 multistate E. coli outbreaks.

This page: romaine; facing page: butter lettuce.



# LEAFY GREENS SAFETY GUIDE

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In an age of rampant romaine contamination, can our salads be saved?  
We explain what's at the root of the problem, what critical changes  
are needed, and what will—and won't—protect you in the meantime.

**BY KEVIN LORIA** PHOTOGRAPHS BY SAM KAPLAN

# W

**WHEN CAROLYN GRAHAM** ordered a garden salad at a pizza restaurant near her hometown of Loomis, Calif., on a weekday night in April 2018, she felt good about what she thought was a healthy choice.

But by the weekend, she had stomach cramps and diarrhea, which grew more severe with each passing hour. By 11 p.m. that Saturday, the diarrhea had turned bloody, and it continued all night long. Around 6 a.m. Sunday, she and her husband, Kenneth, headed to the emergency room. Doctors gave her fluids, oxygen, and an antibiotic, but Graham's symptoms didn't abate.

It took doctors three days of testing and analyzing results to determine that Graham had been infected with *E. coli* O157:H7, a dangerous strain of the bacteria that produce a substance called Shiga toxin. Graham, who was 72 and had been in excellent health, had developed a form of kidney failure called hemolytic uremic syndrome—a side effect that occurs in 5 to 10 percent of people who contract O157:H7.

Doctors put Graham on dialysis to help her kidneys function properly again, but she was going in and out of consciousness during her 14-day hospital stay. Her husband, one of her daughters, and a granddaughter stayed by her bedside until she was fully conscious and able to recognize the people around her. Then, her husband says, “she had to relearn how to talk, how to walk,” a rehab process that took about two months before she was back to normal.

The culprit in Graham's ordeal? The romaine lettuce in that seemingly innocuous garden salad. That spring, the Centers for Disease Control and Prevention and the Food and Drug Administration sent out multiple national alerts, eventually telling people not to eat romaine from the Yuma, Ariz., area. Graham, it turned out, was one of 240 people across 37 states in the U.S. that spring who government officials say became sick from tainted romaine. It was the largest national *E. coli* O157:H7 outbreak in more than 20 years: Almost half of those affected were hospitalized,

and five people from four states died. Then, right before Thanksgiving that same year, supermarkets and restaurants pulled romaine from their shelves and menus after federal officials announced yet another *E. coli* outbreak.

## The Return of Outbreaks

Just as consumers thought perhaps the 2018 *E. coli* outbreaks were a distant traumatic memory, romaine-related illnesses returned. In outbreaks starting in October 2019 and continuing into December, 133 people were sickened. This was despite steps taken over the past two years by farmers and the FDA to identify the sources of the outbreaks.

Consumer Reports is actively advocating for improved inspection and farming practices to better protect the lettuce food supply. At CR, we are also surveying Americans about their habits and working to debunk myths, including the perception that “triple washed” packaged lettuce is always safe—when, in fact, the washing process doesn't remove all harmful bacteria.

“It's astonishing how frequently the lettuce-consuming public has been exposed to bacteria like *E. coli* over the years,” says Bill Marler, a food safety lawyer in Seattle who negotiated a settlement for Graham. “I have dozens of clients [over the years] whose lives have been completely upended,” he says. “They've needed kidney transplants and had hundreds of thousands of dollars in medical expenses because they chose to eat a presumably healthy food.”

In fact, between 2006 and 2019, romaine and other leafy greens, such as spinach and bags of spring mix, have been involved in at least 46 multistate *E. coli* outbreaks, according to the CDC. Some research shows that greens cause more cases of food poisoning than any other food, including beef.

The constant drumbeat of romaine-related *E. coli* outbreaks has made Americans very worried about



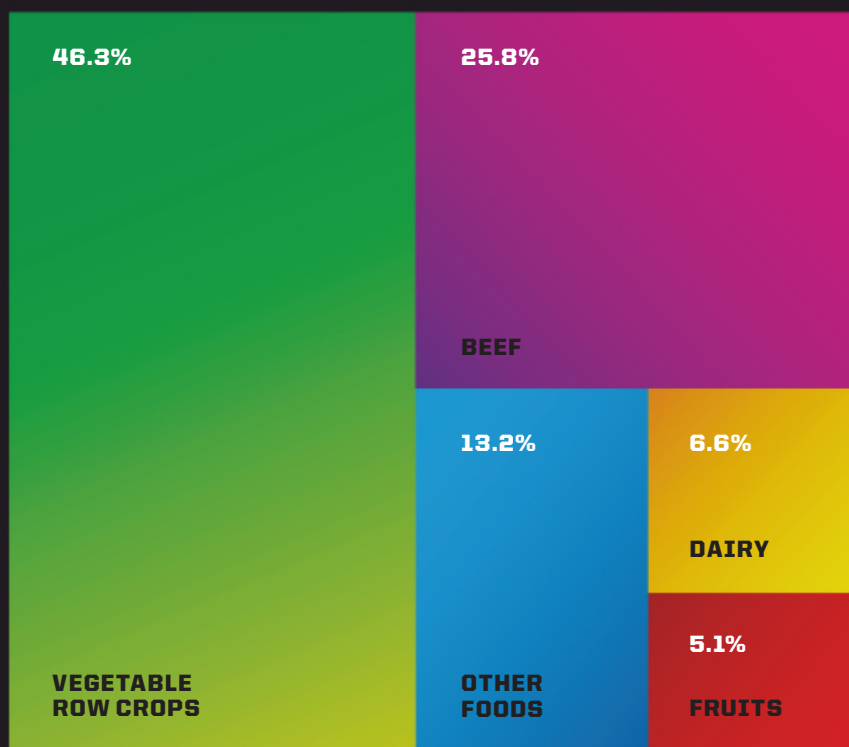
# How Risky Are Greens vs. Other Foods?

One in 6 Americans is sickened every year by something they ate, according to estimates by the Centers for Disease Control and Prevention. In 2019, officials from the CDC, Food and Drug Administration, and Department of Agriculture released a report that identified various foods involved in outbreaks in 2017 (the most recent year with available data) involving four major types of foodborne bacteria—E. coli O157, campylobacter, listeria, and salmonella. As the charts

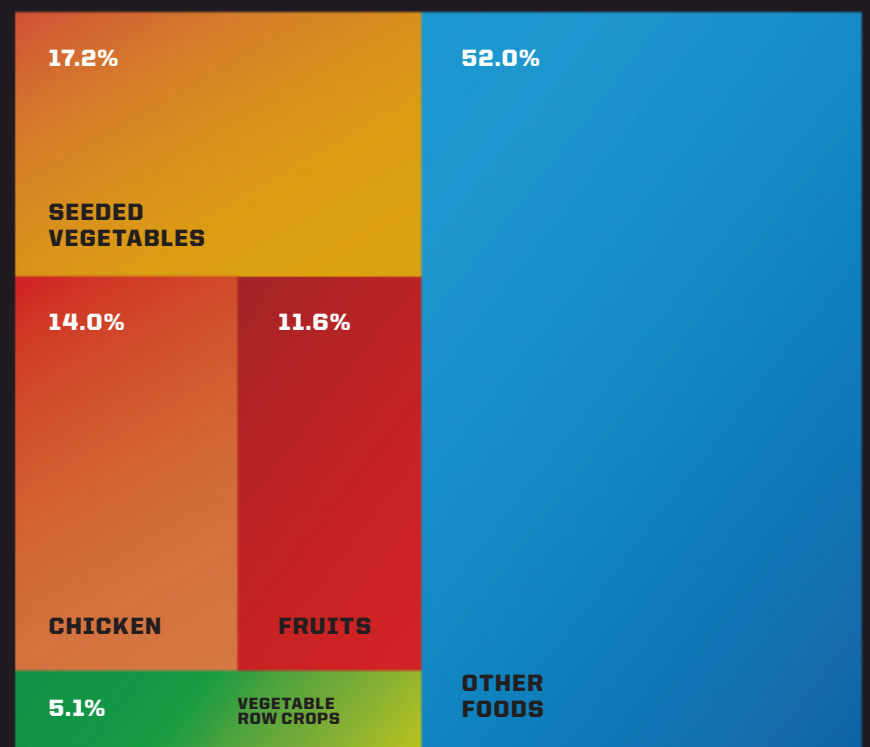
below show, vegetables grown in rows (in green) were the primary offender for illnesses due to E. coli O157—and leafy greens were responsible for the vast majority of those outbreaks.

Chicken was responsible for the most campylobacter infections, dairy products for the most listeria infections, and seeded vegetables for the most salmonella infections. But leafy greens still show up at a significant percentage of illnesses caused by these three other bacteria as well.

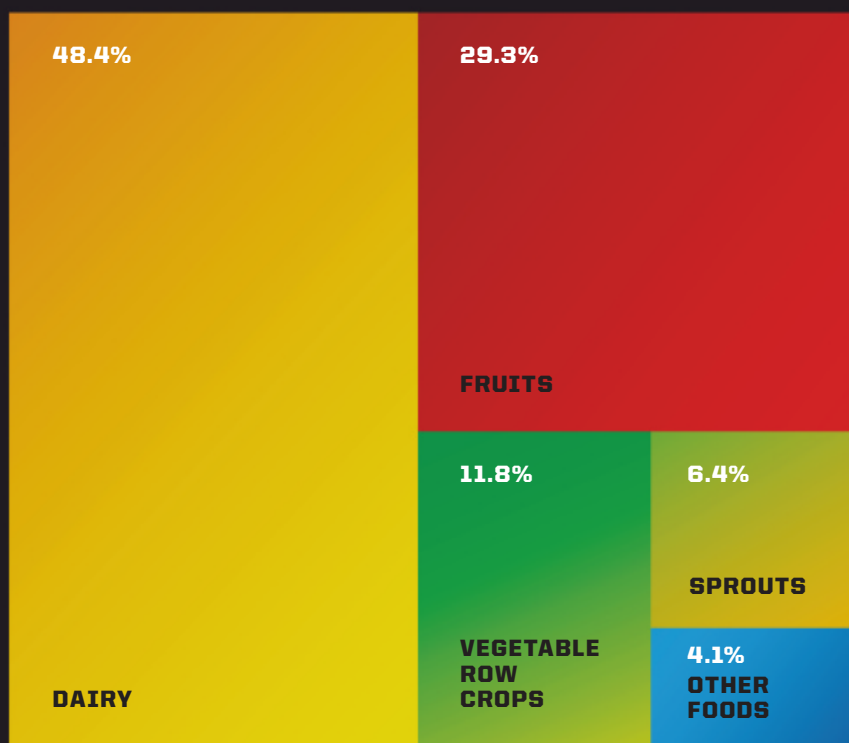
E. COLI O157



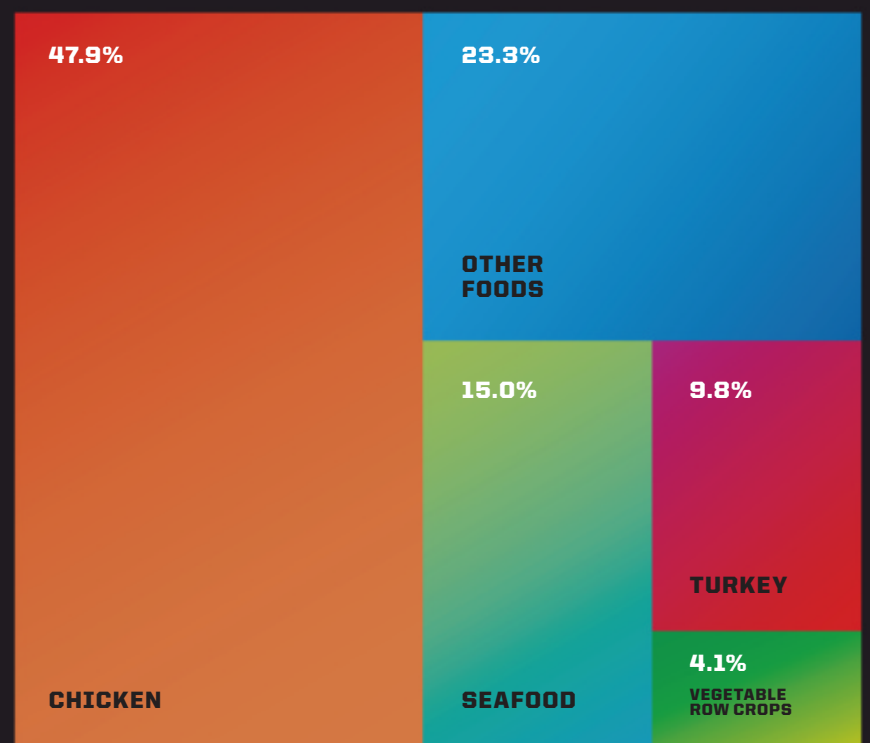
SALMONELLA



LISTERIA MONOCYTOGENES



CAMPYLOBACTER



eating lettuce. In a 2019 nationally representative Consumer Reports survey of 1,003 Americans, 52 percent admitted being concerned about getting sick from leafy greens—more than those who are worried about poisonings from beef, chicken, or eggs. Sales of romaine, which was until recently the most popular lettuce in the U.S., are down in the wake of the 2018 outbreaks, dropping about \$98 million to \$465 million from their \$563 million peak in 2017, according to data from market research firm Nielsen. (Iceberg has regained the No. 1 spot.) Meanwhile, lettuce growers and the FDA have been trying to figure out where—from farm to fork—the potentially deadly bacteria are finding their way into and onto lettuce leaves.

Frank Yiannas, deputy commissioner for food policy and response at the FDA and the agency's top food official, told CR: "FDA has been working tirelessly to prevent these [outbreaks]. But we're going to work harder. It's a high priority for the agency and a high priority for me personally."

In the meantime, for those who want to continue to get the health benefits of leafy greens, there are safety guidelines that can help to mitigate the risk. (See "The Safest Ways to Eat Salad," on page 37.)

## Salad Under Siege

How did leafy greens—nutrient-packed foods recommended by doctors and nutritionists alike—become so risky? And why is romaine linked to so many of these outbreaks?

It comes down to the modern way we grow, harvest, and package our salad greens. "There are many opportunities along the continuum—from seed all the way to a consumer's plate—for greens to become contaminated," says Ben Chapman, Ph.D., a professor and food safety extension specialist at North Carolina State University in Raleigh.

Part of the reason greens in particular are so problematic is the

sheer volume we're consuming. The leafy greens industry ships about 130 million servings per day all year long—enough to supply a daily salad fix to nearly 40 percent of Americans. And almost a quarter of the greens being consumed are romaine lettuce.

Perhaps most important: Salad greens are almost always eaten raw, unlike burgers, eggs, flour, and many other foods that can be contaminated with pathogens but are usually cooked enough to kill any bacteria. "You can destroy E. coli and other bacteria with enough heat, but few people are going to cook their lettuce," says James

"Leafy greens are potentially risky, perhaps one of the riskiest foods."

JAMES E. ROGERS, PH.D.,  
CR'S DIRECTOR OF  
FOOD SAFETY RESEARCH  
AND TESTING

E. Rogers, Ph.D., director of food safety research and testing at Consumer Reports.

"A food that doesn't have a final consumer 'kill step' presents some extra challenges [for] food safety," says Matthew Wise, Ph.D., deputy chief of the CDC's outbreak response and prevention branch. "That's probably the main driver" among a number of factors that can cause an outbreak, he says.

"We face a real dilemma with leafy greens, especially romaine lettuce," says Rogers. "They're packed with nutrients, so we don't want to

discourage people from eating them. But we can't ignore the fact that leafy greens are potentially risky, perhaps one of the riskiest foods."

But, he says, we need answers on what's happening with greens sooner rather than later. "More needs to be done to determine the exact sources of contamination with dangerous bacteria," he says. "Once that's done, the FDA must set strict requirements for growers and processors, which will help prevent people from getting sick."

While the odds that you'll get sick from eating any single salad are low, Rogers says, they're real. "When you hear about 100 or 200 people contracting a foodborne illness, it may not sound like that many, but for every case of food poisoning that's reported, there are many, many more cases that never get reported." In fact, according to the CDC, for every reported case of E. coli O157:H7 infection, there are probably 26 that have gone undocumented.

## From Farm to Table

So how do bacteria get into the greens in the first place? To answer that, it helps to understand the critical water needs of greens and how they are sometimes grown near livestock—both of which can open a pathway to contamination. John Boelts, a farmer in Yuma, owns one of the 60-plus farms that cover a stretch of land from Yuma and the surrounding area to California's Imperial Valley. That's where the vast majority of leafy greens on the market in the U.S. and Canada are harvested in winter. The Yuma growing season begins with the planting of seeds in August in the hot, arid desert. Over the next few months, the dusty brown fields become filled with rows of emerald green heads of romaine, iceberg lettuce, vegetables, and fruits. Harvesting begins in late October.

Lettuce grows best when daytime temperatures are moderate and nights

[ CONTINUED ON PAGE 32 ]





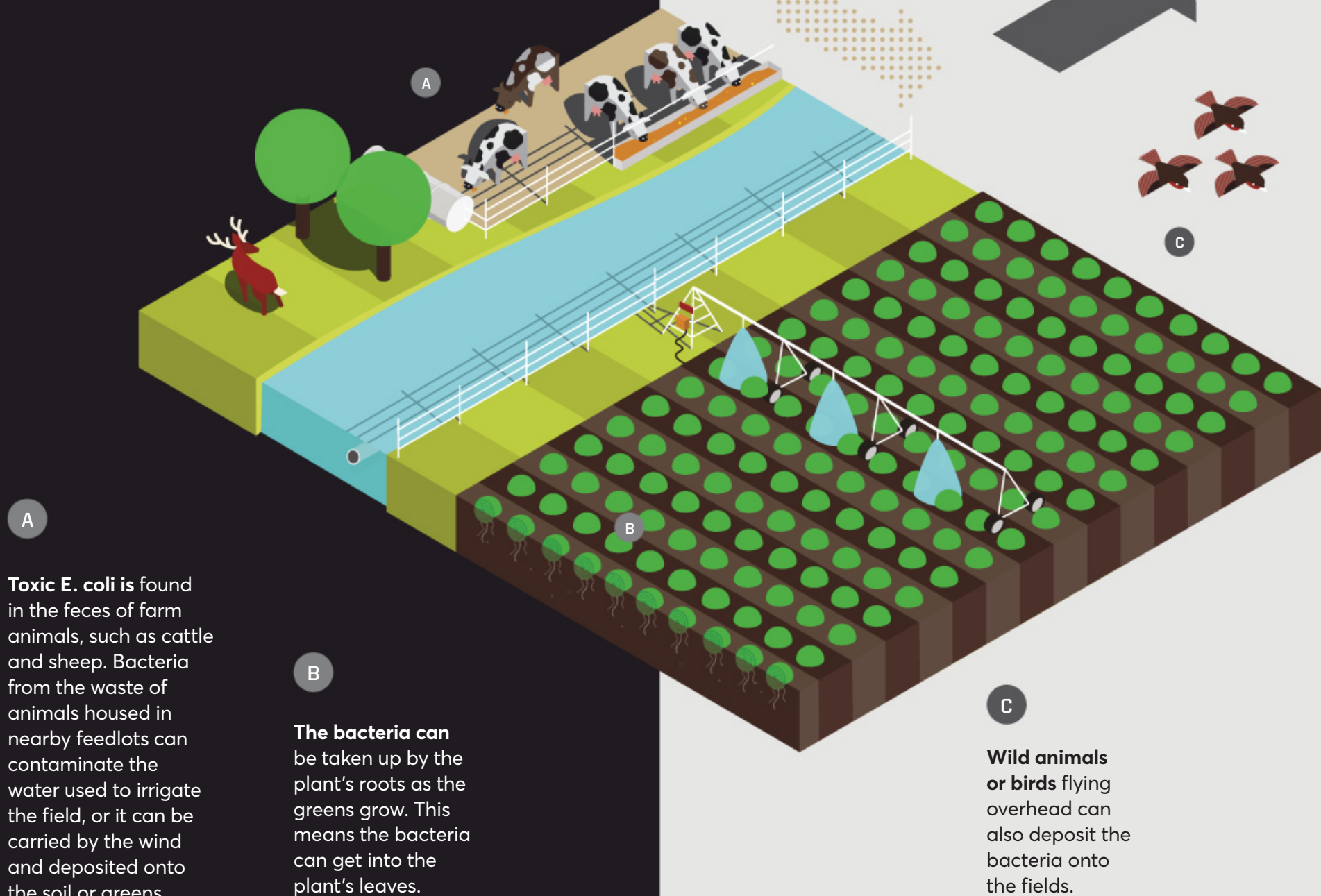
**Suspect Spinach?**  
A "triple washed" label on a package in no way guarantees that the greens are bacteria-free.

# How Greens Become Contaminated

Harmful bacteria can migrate to the leaves at many points during the growing and production cycle.

# 1.

## As Greens Grow



A

**Toxic E. coli** is found in the feces of farm animals, such as cattle and sheep. Bacteria from the waste of animals housed in nearby feedlots can contaminate the water used to irrigate the field, or it can be carried by the wind and deposited onto the soil or greens.

B

**The bacteria can** be taken up by the plant's roots as the greens grow. This means the bacteria can get into the plant's leaves.

C

**Wild animals or birds** flying overhead can also deposit the bacteria onto the fields.



# 2.

## When They're Harvested



A

**Farming equipment that** travels over contaminated soil may carry bacteria into the field.

B

**Bacteria may be** transferred to the greens by workers' hands or gloves, by contaminated harvesting equipment (such as knives), or in storage bins.

C

**Harvesting greens involves** cutting them, and the cut ends of lettuce secrete nutrients and liquids that can support the growth of bacteria. This can also happen if leaves are bruised or damaged.



# 3.

## At the Processing Plant

A

**Greens from many** fields and farms are mixed together during processing, meaning that one bacteria-containing batch—or even a few leaves—can end up contaminating many packages of lettuce or greens.

B

**Factory workers who** don't wash their hands, and equipment that hasn't been properly sanitized, present threats. Greens may be washed in a sanitizing solution, but if water is recycled, it increases the chances of cross-contamination.

C

**Greens may be** cut or chopped, which provides an opportunity for bacteria to enter the leaves.  
—Trisha Calvo

[ CONTINUED FROM PAGE 28 ]

are cool, so as the weather in the Yuma region warms up, lettuce production shifts to California, moving in seasonal increments throughout the Southern Coast, Central Coast, Salinas Valley, and parts of the Central Valley. Although the soil and environment differ in all these regions (including Yuma), one thing they have in common is that they don't get much rain—and greens need a lot of water to grow (as much as 36 inches per acre), so all those lettuce fields require irrigation. At farms around Yuma, such as Boelts', water is channeled from the nearby Colorado River through a system of irrigation canals.

Once the greens grow to maturity, they're harvested, mostly by hand, Boelts says. Growers take samples of the greens to check for harmful bacteria (but they don't check every leaf, which is why the bacteria sometimes slip through). Some greens are packed right in the field, to be immediately cooled and shipped to stores. Greens that are destined to be bagged or sold in plastic containers—65 percent of Americans buy packaged greens, according to market research firm Mintel—are taken from the field to processing plants, where tons of lettuce from multiple farms are mixed together. (Romaine is produced to the tune of 1.5 million tons per year.) There, the lettuce is usually washed in water that contains chlorine or another sanitizer, then rinsed, dried, packaged, and shipped to supermarkets and restaurants across the country.

## Contamination From Cattle

What any lettuce farmer will tell you is that he or she fears the animals that live around lettuce fields. That's because *E. coli* O157:H7 and other strains of illness-causing bacteria live in the guts of cattle and other animals, including sheep, deer, wild boar, and even birds. Although the *E. coli* bacteria don't usually make the animals sick, when

they defecate they deposit dangerous bacteria into the soil and water around them. That contaminated soil could later end up mixed with dirt tracked by equipment, people, or animals onto a field full of leafy greens, or rain could wash the bacteria into one of the open irrigation canals that are so important for lettuce-growing regions.

This route to food poisoning has been known about for longer than a decade: In 2006, in an *E. coli* O157:H7 outbreak linked to spinach, federal officials said that a possible source was waste from feral pigs that got into growing fields.

Because animals can contaminate their valuable crops, farmers put a lot of effort into keeping them away. "We pay people to stand by fields and scare birds off," Boelts says. "We surround fields with 8-foot-tall fences, prohibiting animals from being on our farm. We're doing everything science says we should," he says.

But contamination still occurs, and experts and research say it's because fields of leafy greens are sometimes located next door to large cattle farms known as concentrated animal feeding operations (CAFOs).

"It's because of the proximity of cattle feedlots to fresh produce fields," says Keith Warriner, Ph.D., a professor in the department of food science at the University of Guelph in Ontario who has studied foodborne illness linked to produce. "In the Salinas Valley, you'll see cattle roaming the hills." (Romaine from the Salinas region was linked to the outbreaks in fall 2018 and fall 2019.) "With every outbreak, there's a cow somewhere," says attorney Marler, who has tracked food-poisoning incidents linked to greens for almost 20 years.

It has also been suspected that bacteria mix with the soil and become part of the dust, which can be carried by the wind from a CAFO and deposited onto the greens as they grow in the field. But experts and investigators from the FDA and CDC have focused

on contaminated irrigation water as the most likely vector. "*E. coli*-tainted manure can run off down hills and into rivers, contaminating water sources," Warriner says.

An FDA investigation to identify the source of the contamination in the spring 2018 outbreak that sickened Carolyn Graham never reached a firm conclusion. But investigators strongly suspect an irrigation canal that reportedly provided water to the 36 romaine fields involved in the outbreak. They found the *E. coli* outbreak strain in three samples taken from the canal, which is next to a CAFO that houses more than 100,000 cows.

The source of the Thanksgiving 2018 outbreak is also still a mystery, but the FDA did find the strain of *E. coli* that made people sick in sediment from a water reservoir on one of the California farms that grew contaminated lettuce. It's possible that droppings from wild animals tainted the water, but there is also a CAFO near the lettuce farm.

"These findings suggest that to solve the lettuce problem, we really have to solve the cow problem," says Michael Hansen, Ph.D., senior scientist at Consumer Reports. "Yet even though nearby CAFOs were thought to be the source of the bacteria that caused the outbreaks, under the law the FDA wasn't allowed to access those feedlots, and that dead-ended the investigation."

## The Riddle of Romaine

The science doesn't clearly show that any leafy green is more or less risky than another, but some researchers suspect that romaine may be particularly vulnerable to contamination because its leaves are so delicate.

"It can get damaged easily, which makes it easier for the bacteria to get into it," Warriner says. In fact, when the romaine involved in the Yuma outbreak was growing in the fields, the weather turned cold and windy,



# The Health Benefits of Leafy Greens

Given the concerns about contamination, you may be tempted to cut greens out of your diet. But that would be a shame. Nutritionists agree that the benefits are substantial; research shows that they're linked to a reduced risk of heart disease, certain cancers,

macular degeneration, and type 2 diabetes. They may also help to keep memory sharp as a person ages. Most greens have a healthy nutritional profile, but each kind also has its individual superpowers, which is why it's good to eat a variety. —*Jessica Branch*



## Arugula

Arugula is rich in vitamin K, which helps to prevent osteoporosis and inflammatory disease. Like other cruciferous veggies (i.e., broccoli and brussels sprouts), it has glucosinolates, which may protect against certain cancers. It's tasty in salads or sautéed.



## Butter (aka Boston or Bibb)

This family of mild-flavored head lettuce with soft, loose leaves doesn't have quite the nutrient profile of certain darker greens, but 2 cups supplies 85 percent of your daily vitamin K need, along with some iron and vitamin A.



## Collards

This cooking green is rich in calcium, fiber, folate, and the antioxidant carotenoids beta carotene and lutein. Sautéing in olive oil, garlic, and a little smoked salt adds flavor and keeps it healthier than the traditional ham hock or bacon preparation.



## Iceberg

Though it ranks toward the bottom of the greens list nutritionally, it still provides some potassium, vitamin C, and folate.



## Kale

Turn to kale for vitamins C and K, lutein and zeaxanthin (which may help to protect against age-related macular degeneration and possibly cataracts), and cancer-fighting glucosinolates. Use baby and mature kale in salads; the latter can also be cooked in soup or pasta.



## Red or Green Leaf

Both are rich in vitamins A and K; green leaf is higher in vitamin C. Red leaf lettuce gets its color from the flavonoid antioxidant anthocyanin, which may help to lower levels of LDL (bad) cholesterol.



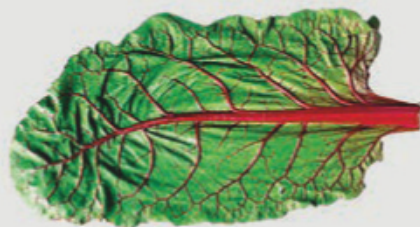
## Romaine

Beta carotene, which your body converts to vitamin A, and folate are its standout nutrients. It's best in salads or on sandwiches that need crunch, and can also stand up to a quick grilling.



## Spinach

This green supplies a hefty dose of vitamin K, potassium, and folate. If you eat it cooked, it will also supply iron and calcium. The oxalic acid it contains reduces absorption of these minerals from raw spinach, but cooking breaks down oxalic acid.



## Swiss Chard

A cooked cup of this strongly flavored green gives you all the vitamin K that you need per day, plus vitamins A and C and antioxidant carotenoids and flavonoids. Toss into egg dishes or soups, or sauté with garlic and top with sesame seeds or lemon juice.

possibly injuring the leaves. Although other greens have been involved in outbreaks, Warriner says, “some, like kale and spinach, are tougher, and they’re high in natural antimicrobial compounds called thiocyanates. These greens were irrigated with the same water as the romaine involved in the Yuma Valley outbreak of 2018, but they weren’t affected.” Also, while other greens are susceptible for these same reasons, they aren’t produced in the same quantity, so they’re less likely to cause a major outbreak.

Then there’s the math: We simply eat a lot more romaine than other dark leafy greens. “Romaine lettuce remains beloved in the U.S.,” says Kara Nielsen, a food trend expert in Oakland, Calif. Despite drop-offs in sales, it’s the second most popular salad green. And it’s everywhere: Romaine serves as the base for Caesar salads and is often in sandwiches, wraps, and burritos. And it’s challenging to find a package of mixed greens that doesn’t contain romaine.

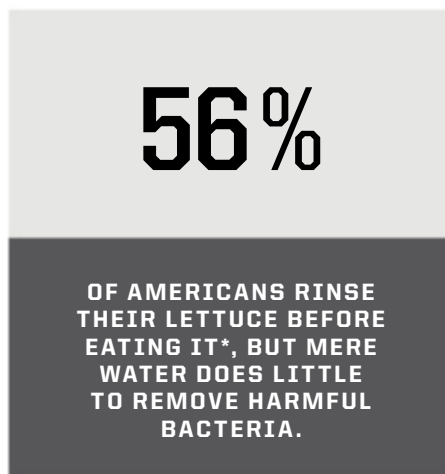
## Problematic Packaging

Certain labels proclaim that the greens have been triple-washed. Will that protect you from getting sick? Not necessarily.

When bacteria such as *E. coli* come into contact with any type of lettuce, they’re almost impossible to wash off completely, according to the CDC and other researchers. That’s in part because disease-causing bacteria can get inside the leaves of the greens as they’re growing, when contaminated water taken up by the roots is dispersed throughout the plant. What’s more, surface bacteria can adhere stubbornly in the wrinkles and grooves in the leaves. “The purpose of washing greens—in the field or at a processing facility—is simply to remove dirt and grit, not bacteria,” says CR’s Rogers. According to CR’s own recent lettuce tests (see “Findings From CR’s Lettuce

Testing,” on page 36), washed and bagged lettuce isn’t any cleaner, bacteria-wise, than whole heads of lettuce. Furthermore, packages with “triple washed” (or a similar claim) on the label contained amounts of bacteria similar to those in packages that direct people to “wash before eating.”

Although the washing process for packaged greens can remove up to 99 percent of bacteria as it’s removing dirt and grit, food safety expert Chapman says even the small amount that remains may make you sick. “Shiga-toxin-producing *E. coli* has a very low infectious dose—as little as 10 microscopic



cells are all it takes, according to some estimates,” says Rogers.

And greens destined for packaging carry unique risks: “A bag or box of greens often contains leaves from many different farms that have been mixed together at the processing plant,” says CR’s Hansen. And because the leaves may be cut or shredded, the bacteria have more entry points. “So if there is even a small amount of bacteria-carrying lettuce in the batch, from just one farm, it can contaminate many, many packages of greens,” he says. In fact, in the 2006 spinach outbreak, the tainted greens were eventually traced to one small section of just one grower’s field. In addition, cut or damaged leaves

secrete juices that feed bacteria, if they are present, and the juices can collect in the packages.

## A Need for More Inspections

The challenge, then, is figuring out which steps will decrease the risk of contracting food poisoning, says Rogers. He says making salads safer will require close attention by growers and regulators at every step of leafy green production. “Unless something changes in the way greens are grown and processed, outbreaks will continue to happen,” he says.

People within the industry are making ongoing efforts to improve the situation. “We are doing everything we can as an industry,” says Scott Horsfall, CEO of the California Leafy Greens Marketing Agreement. “It’s a very important and efficient system for the most part, but we are very focused on eliminating the illnesses that do occur.” Upwards of 97 percent of leafy greens growers in Arizona and California now follow the standards set by the LGMA, which include mandatory inspections to ensure that they’re following standards—though the results of these audits are not public.

LGMA standards put in place by the Arizona and California LGMA after 2018 require that if water is going to be used for irrigation in the 21 days before harvest, it needs to be tested at least once and treated if bacteria are found. The minimum buffer zone between CAFOs and fields of leafy greens was tripled, from 400 feet to 1,200 feet, based on research indicating that *E. coli* could travel 600 feet, and fields in California must be at least a mile from larger CAFOs.

Some growers, like Boelts, say they’ve gone even further, ensuring that no irrigation water touches edible portions of any plant and not planting within 2 miles of animal farms. But even these additional safeguards might not be





# How to Shop the Lettuce Labels

**In reviewing labels** on packaged greens, we found a variety of claims. But not all of them are as good as they sound. "The government requires that labels be truthful and not misleading, but it doesn't have regulated definitions for many of the claims," says Charlotte Vallaeys, senior policy analyst in food safety and nutrition at CR. Here's a primer on the claims we came across most frequently.

## Regulated Claims

**Country of origin:** Perishable produce, including greens, must be labeled with the country where it was grown.

**USDA Organic:** To carry this label, greens must have been produced on a certified farm that follows defined organic procedures, such as not using synthetic fertilizers or most synthetic pesticides.

**Nutrition Facts Label:** The FDA doesn't require nutrition labeling on greens unless the packaging makes a claim about nutrients. So if your spinach is stamped with "good source of potassium," it must carry a complete Nutrition Facts Label.

**Excellent Source Of/High In:** A serving of the food must contain at least 20 percent of the daily requirement of that nutrient.

**Good Source Of:** One serving must have between 10 and 19 percent of the daily dose of the named nutrient.

**Fresh:** According to the FDA, this term "means that the food is in its raw state and has not been frozen or subjected to any form of thermal processing or any other form of preservation." However, the term doesn't address when the greens were harvested, and those that were washed in a mild chlorine solution can be labeled fresh.

## Unregulated Claims

**Washed/Triple-Washed/Ready to Eat:** The Food and Drug Administration doesn't require greens to be washed, but most, even unpackaged ones, get a rinse. A washing claim may mean that greens aren't gritty but doesn't ensure that they're bacteria-free.

**Pesticide-Free:** There's a lot of potential for ambiguity with this claim: Does it mean that no pesticides were used in the production of the greens or that there is no pesticide residue remaining on greens that were produced with the use of the chemicals? There's no real way

to know. If you want greens grown without harmful pesticides, opt for those labeled USDA Organic.

**Date harvested and/or region where grown:** The FDA suggests that growers of romaine lettuce label their product with this information so that the lettuce can be more easily traced in the case of an outbreak. But this is voluntary and doesn't apply to all leafy greens.

**Hydroponically Grown/Hydroponic:** Generally speaking, this means that the greens are grown in a greenhouse using a nutrient solution instead of soil, but no federal government agency regulates the term.

**Non-GMO:** This claim may be true, but it's not all that meaningful. There are no genetically modified greens (including lettuce, spinach, and kale) on the market, so no green is GMO.

**No Preservatives/Free From Artificial Ingredients:** Most fresh produce doesn't have preservatives or artificial ingredients, so the claim may be true, but it doesn't set the labeled product apart from other ones. —J.B.

sufficient, according to experts such as Warriner at the University of Guelph.

The FDA, the leafy greens industry, and researchers at the University of Arizona Cooperative Extension are conducting a multiyear study to better understand all the ways that produce may become contaminated. “We’re collecting thousands of samples over the course of a few years—soil samples, water samples, air samples, animal footprints—to see if it can further inform what we know about how contamination might occur, and we’re hopeful that it will,” says the FDA’s Yiannas.

But we may never get to a place where lettuce is considered a low-risk food. Producers have already made most of the changes that we know would improve food safety, so the next steps are going to be harder to uncover, according to Channah Rock, Ph.D., one researcher on the project. “There’s no such thing as zero risk,” she says.

## Getting to the Root Source

“We know it’s a complicated problem,” says CR’s Rogers. “But this system is broken, and there are things that could be done that aren’t being done.”

Although members of the LGMA test and now treat surface water that touches edible parts of plants at least once in the 21 days before each harvest, according to the organization’s standards, CR thinks more testing is needed. “The FDA needs to implement the stricter water testing rules that were laid out in the Food Safety Modernization Act,” says CR’s Hansen. Those rules, which require more testing of more water samples, were supposed to take effect in 2018, but they have yet to be implemented and are now pushed out to at least 2022. “The delay is unacceptable,” he says.

And under the FSMA, the FDA is supposed to issue a list of high-risk

foods—defined as those that are often involved in food-poisoning outbreaks or produced in a way that makes them more likely to contain dangerous bacteria—but has not yet done so. “The FDA should immediately develop this list and put leafy greens on it,” Rogers says. “By law, once a food is deemed ‘high risk,’ the FDA has more authority to require record-keeping and compel recalls,” he says. “That will go a long way toward preventing and controlling foodborne illness.”

CR experts also say that Congress should pass legislation recently proposed by Sen. Kirsten Gillibrand, D-N.Y., and Rep. Rosa L. DeLauro, D-Conn., that aims to strengthen the FDA’s ability to pinpoint the origin of foodborne-illness outbreaks in greens and other produce. The legislation, if passed, would do this by giving the FDA the power to inspect CAFOs to

## FINDINGS FROM CR’S LETTUCE TESTING



In spring 2019, CR’s food safety scientists tested 283 samples of bagged and whole heads of six types of leafy greens, including romaine, spinach, and kale, plus mixes of greens. While we didn’t find the dangerous *E. coli* O157:H7 implicated in recent romaine lettuce outbreaks, we did find that certain samples contained coliform bacteria. “This type of bacteria doesn’t make people sick, but it’s a sign that feces may have come into contact with the lettuce, and when we see it, it’s considered

a harbinger of possible contamination with harmful bacteria,” says James E. Rogers, Ph.D., director of food safety research and testing at Consumer Reports. There was no difference in bacteria levels between whole head and packaged greens; packaged greens that were labeled “triple washed” had bacteria levels similar to those in packages marked “unwashed.”

More worrisome: We also found *Listeria monocytogenes*—dangerous bacteria found

in the environment—in six of the samples: two bagged and four loose heads. CR immediately informed the FDA, the CDC, and the companies. One of the samples had a strain genetically linked to at least two cases of listeriosis (the illness caused by listeria) reported to the CDC. Listeriosis is rare, but it kills about 20 percent of those affected, compared with less than 1 percent for *E. coli*, campylobacter, and salmonella. For more on our testing, go to [CR.org/listeria0320](https://www.consumerreports.org/listeria0320). —T.C.



# The Safest Ways to Eat Salad

look for the bacteria that could be infecting the lettuce—something it's not legally able to do right now.

Being able to trace the origin of the dangerous bacteria is key to halting foodborne outbreaks, says CR's Rogers. After the 2018 outbreaks, the FDA requested that romaine lettuce producers voluntarily list the region of origin on their packages—and many did. The theory is that if lettuce is labeled and an outbreak occurs, retailers will know exactly what to pull from store shelves and consumers will be able to check labels before buying or eating greens. This kind of labeling is a step in the right direction and should be made mandatory, Rogers says, but “it relies on the shopper knowing first that there's been an outbreak, and then remembering which part of the U.S. is involved, and then checking the label for information. That's a lot to ask of consumers.”

People also need to be alerted to food-poisoning outbreaks and recalls more quickly, Rogers says. When the FDA knew of a possible outbreak of *E. coli* linked to romaine in September 2019, the agency waited six weeks after beginning its investigation before revealing to the public that there was a problem. “I think it's immoral not to tell the public about contamination as soon as it's known,” says food safety attorney Marler. “It undermines the public health agencies' credibility.”

Why the delay? The FDA says that by the time they were made aware of the outbreak, the lettuce was past its expiration date and was no longer on store shelves, so it believed there would be no new illnesses. But, says CR's Hansen, “Given the continuing problems with romaine, and the seriousness of O157:H7, the FDA should have made an announcement sooner and let consumers decide for themselves if they wanted to continue to eat romaine.”

**Even though leafy greens** appear to make more people sick than many other foods do, some experts point out that the overall chances of them causing food poisoning are still extremely low. “There's generally a high level of safety around these food items, so we don't want consumers to view these outbreaks as a reason not to eat fresh fruits and vegetables,” says Matthew Wise at the Centers for Disease Control and Prevention.

But the fact is, consumers are increasingly wary. Carolyn Graham's experience has put her off greens. “I'm now afraid to eat salads,” she says. And many Americans agree. In CR's poll, 25 percent of those who were aware of the 2018 outbreaks said they eat lettuce less often now than before. CR's experts offer these steps to improve the safety of the greens you eat until the industry can make greens less risky.

■ **Cook your greens until wilted.**

This will kill harmful bacteria, but it's a solution only for sturdier greens, such as spinach, kale, collards, and Swiss chard. It's especially important for people who are more likely to be seriously affected by food poisoning: the elderly, young children, pregnant women, and those with compromised immune systems. “These people may want to consider not eating raw leafy greens at all,” says James E. Rogers, CR's director of food safety research.

■ **Consider buying whole head lettuce.** Even though the data show that whole heads of lettuce not labeled “washed” don't necessarily have lower bacteria levels than packaged greens, their inner leaves aren't exposed to as many sources of contamination and are not handled as much as greens that are bagged, which further reduces the opportunities for contamination.

■ **Keep packaged lettuce cold and eat it soon.** “As you would with meat and poultry, don't let bagged lettuce stay out of the fridge for too long, because bacteria multiply at room temperature,” Rogers says. In addition, the longer lettuce sits

in bags or containers, the more opportunity bacteria have to grow, so buy packages with expiration dates as far in the future as possible and don't buy more than you can eat in a few days. If even a few leaves look damaged, slimy, or bruised, don't eat any of the greens in that package.

■ **Consider buying hydroponic or greenhouse-grown greens.** These are less likely to be contaminated by bacteria from animal droppings in soil or water, although they're not risk-free. Their cleanliness depends on the source of the water used and whether proper food safety practices are followed by people who handle the greens, Rogers says.

■ **Soak your greens in vinegar.**

Microbiologist Carl Custer, who spent his career at the Department of Agriculture's Food Safety and Inspection Service, says research shows that soaking greens in vinegar or a vinegar-water solution will reduce bacteria levels but won't kill all bacteria. Still, he advises dousing your greens with white vinegar and letting them sit for 10 minutes, then rinsing. Your greens may be a little vinegary-tasting, but most salad dressings contain vinegar anyway. Salad rinses are often designed to clean greens of dirt or chemicals, not bacteria, and are unlikely to kill harmful bacteria.

■ **Stay informed.** The Food and Drug Administration and the Department of Agriculture (which regulates meat, poultry, eggs, and some seafood) post outbreak information on Twitter; you can follow them at @FDAfood and @USDAFoodSafety. On both agency websites, you can also sign up for email alerts.

■ **Report any suspected food poisoning.** If you think you got sick from food, contact your local health department and ask to speak with the environmental health specialist or sanitarian. You can also contact the FDA or USDA directly. For more information, go to [CR.org/foodpoisoning0320](https://www.crisisresponse.org/foodpoisoning0320).

**CLAUSE**

**FOR**

**CONCERN**

More and more companies are taking away a consumer's right to sue, and most of us don't even know we've "agreed" to forced arbitration when we buy a product from them. Critics say these clauses deprive consumers of important options if a product is faulty or harmful. Find out how to fight back.

**BY SCOTT MEDINTZ** ■ ILLUSTRATIONS BY BEN SHMULEVITCH



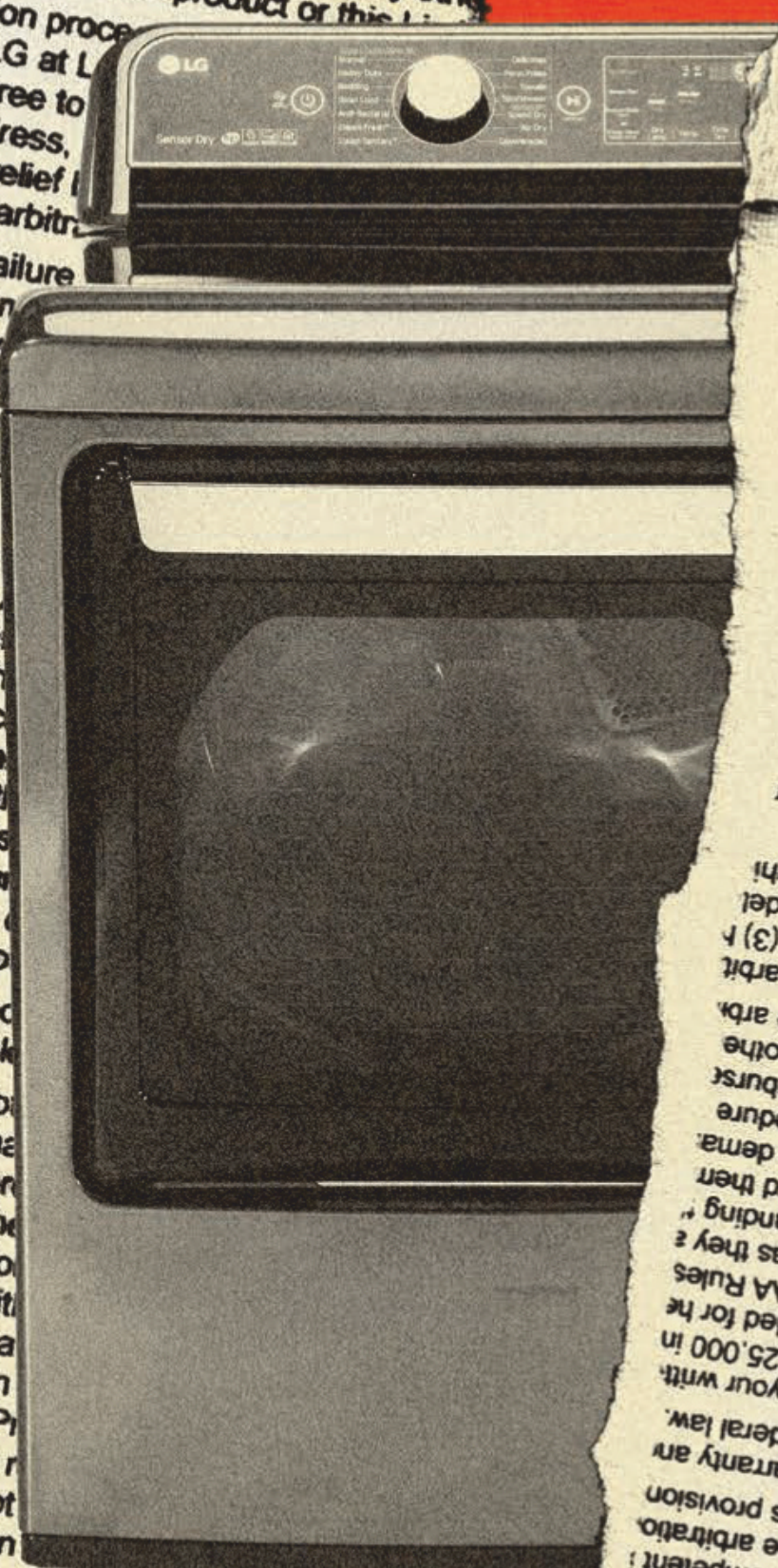
YOU AND LG ARISING OUT OF OR RELATING IN ANY WAY  
PRODUCT SHALL BE RESOLVED EXCLUSIVELY THROUGH BINDING  
GENERAL JURISDICTION. BINDING ARBITRATION MEANS  
RIGHT TO A JURY TRIAL AND TO BRING OR PARTICIPATE

of this section, references to "LG" mean LG Electronics U.S.A., Inc.,  
officers, directors, employees, agents, beneficiaries, predecessors in  
to "dispute" or "claim" shall include any dispute, claim or controversy  
statute, regulation, ordinance, fraud, misrepresentation or any other  
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you intend to commence an arbitration procedure  
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wood Cliffs 07632. You and LG agree to  
notice must provide your name, address,  
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**Class Action Waiver.** Upon failure  
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AAA Rules. Except as otherwise pr  
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to a telephonic arbitration.

**The Fine Print**  
Language  
requiring  
arbitration can  
be buried deep  
in a product  
manual or  
warranty, or  
in a website's  
terms and  
conditions.





**In July 2018, Ronald Gorny** woke up in his Chicago home and noticed a few small insects scurrying on his new upholstered headboard.

Gorny pulled back the sheets to find dozens more bugs, all seemingly engorged with blood, according to a class-action lawsuit his lawyers filed against Wayfair, the online housewares company that sold him the headboard. A photo he snapped shows his finger stretching the headboard's fabric to reveal a shiny, dark creature about the size of a pencil tip and what appear to be stains on the surrounding fabric.

An exterminator later confirmed that the insects were *Cimex lectularius*, commonly known as bed bugs, the complaint alleges, and seemed to be coming from inside the headboard.

Gorny was not the first Wayfair customer to say bedding products had arrived infested with bed bugs. His lawyers, pointing to comments on the website Pissed Consumer, claim a “myriad” of other customers had also complained to the company. One Brooklyn woman even received an apologetic email from Wayfair CEO Niraj Shah in September 2016, almost two years before Gorny's purchase.

Did Wayfair, as Gorny's lawyers argue, knowingly sell products infested with bed bugs? Did it investigate the complaints or try to correct the problem? Gorny's class-action lawsuit might have shed light on those questions—but the answers may never be known: At Wayfair's request, a judge halted the suit in June 2019 and sent Gorny's individual complaint to a closed-door, virtually unappealable proceeding known as arbitration.

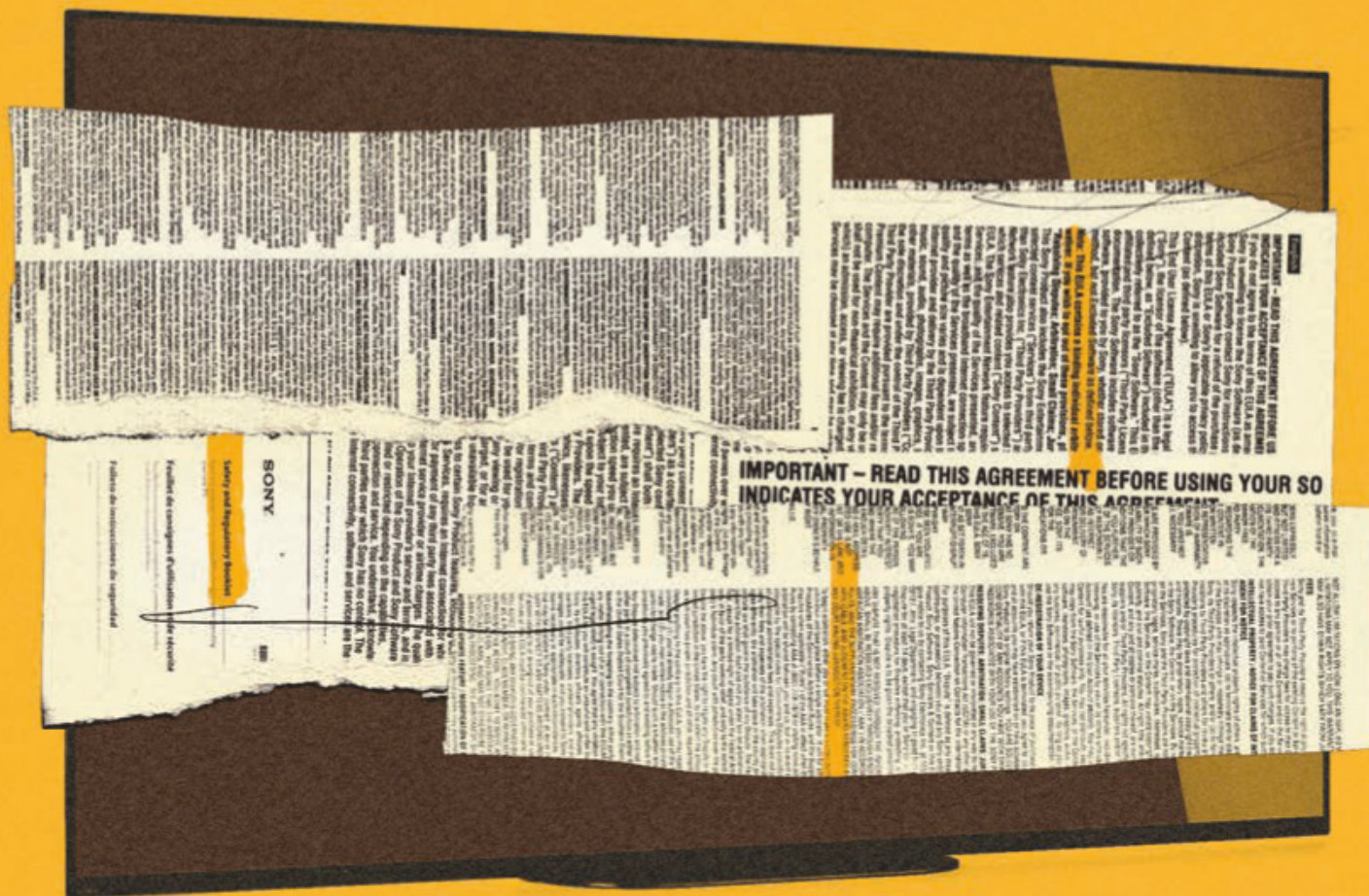
Gorny, it turns out, had unknowingly signed on to this process by simply using wayfair.com, each page of which contains a link to its “terms of use.” There, about two-thirds of the way through 4,600 words of legalese, is what the judge called the relevant provision: “Any dispute between you and Wayfair ... will be settled by binding arbitration.”

Citing pending legal matters, both a Wayfair spokesperson and a lawyer for Gorny declined to comment.

Whether you realize it or not, chances are you too have agreed to arbitration on dozens of occasions, forfeiting your right to take problems—even serious ones—with a product or service to court. Arbitration clauses like the one binding Gorny have spread rapidly through the consumer landscape in recent decades, first in the financial and telecom industries and more recently—as new Consumer Reports research shows—into the realm of consumer products.

The implications of this quiet invasion are enormous. For starters, individuals are far less likely to prevail





when their grievances are heard in arbitration vs. court, research shows.

More pernicious: Because arbitration proceedings are private, and because arbitration clauses almost always forbid plaintiffs from joining together, companies can use arbitration to preemptively crush consumer challenges to their practices, no matter how predatory, discriminatory, unsafe—and even illegal—they may be.

## Triggering the Avalanche

Mandatory arbitration was established on a national level in 1925 by the Federal Arbitration Act, largely as an efficient way for businesses to resolve conflicts with other businesses. Since the 1980s, however, courts have greatly expanded the ability of businesses to force arbitration in consumer and employment disputes, and a string of Supreme Court cases over the past decade have busted

wide the arbitration floodgates. In the landmark 2011 decision *AT&T Mobility v. Concepcion*, for example, the court knocked down a California law that had tried to prevent arbitration clauses from restricting class-action lawsuits.

With that series of green lights, corporate attorneys started slipping arbitration language into more consumer transactions, from buying an Amtrak ticket to sending a package by UPS. A 2019 study in the *UC Davis Law Review Online* found that 81 of the 100 largest U.S. companies now use arbitration in their dealings with consumers.

Though arbitration clauses are common in financial and telecom services, they now also increasingly go into force when you simply buy a consumer product such as a dishwasher or TV. To get a sense of how often, CR looked at the top-selling brands in the 10 product categories receiving the

## Change the Channel

A proposed law now before the Senate would ban forced arbitration on TVs, as well as on other products and services.

most traffic on our website, plus two types of products designed for safety: bike helmets and child car seats.

The results were striking. Of the 117 brand/category combinations we examined, 71—more than half—incorporate arbitration clauses. When looking at only the most popular product categories, just over two-thirds had arbitration clauses.

And those figures probably understate arbitration's reach. Manufacturers have invoked contractual language built into related transactions. Apple, for example, does not attach arbitration clauses to its iPhone sales but has forced arbitration onto its customers by invoking clauses that AT&T Mobility has in its mobile contracts.

Studies have shown that most consumers have no idea that they've agreed to arbitration. And the incursion of arbitration into the realm of products in particular may be under the radar. Though financial services customers expect to sign user agreements, "you don't think of a washing machine as coming with a contract," says Lauren Saunders, associate director of the National Consumer Law Center.

To be clear, you don't have to sign anything—or even click "I agree" on a website—to be bound by arbitration. The clause can appear on product packaging or be buried deep in the warranties, user manuals, or—as with Gorny's headboard—a website's "terms of use." Placing the clauses there, says Myriam Gilles, a law professor at the Benjamin N. Cardozo School of Law, is "intended to obscure the immensity of the rights being forfeited."

Multiple courts have now ruled that even contracts one party did not see or have any choice but to sign are enforceable—decisions even some conservatives see as going too far. "The law has so evolved ... that the sky's the limit in how many arbitration clauses corporations are going to be able to ensnare consumers in," says Vanderbilt University law professor Brian Fitzpatrick, who is a former clerk to Justice Antonin Scalia, author of the *Concepcion* decision.

## Missing Safeguards

Companies tend to justify mandatory arbitration by claiming that it actually benefits consumers. "Arbitration is a fairer, faster, and cheaper way ... to resolve disputes without ever having to set foot in a courtroom," says Harold Kim, the president of the U.S. Chamber Institute for Legal Reform.

The relatively informal proceedings of arbitration can indeed be faster and cheaper than going to court—but fairness is another matter.

Many of the safeguards built into the court system—the right to conduct "discovery" to establish basic facts, for example—are missing from arbitration. (It's unlikely that in arbitration Gorny's lawyers could demand all of Wayfair's records of bed bug-related consumer complaints, as they could in a lawsuit.)

In addition, arbitrators aren't obligated to follow legal precedent, and your right to appeal their decisions is extremely limited. Moreover, companies that arbitrate frequently are good at choosing arbitrators who tend to agree with their position, research shows. Plus, says CR senior policy counsel George Slover, "arbitrators have a built-in incentive to heed the interest of the company in hopes of repeat business."

But the debate over the fairness of arbitration goes even deeper. For one thing, because arbitration is conducted in private and its outcome is typically kept under wraps, the underlying problem may be kept hidden.

That was the case with financial giant Wells Fargo, which between 2009 and 2016 notoriously opened some 3.5 million bogus bank and credit card accounts in the names of real customers. Beginning in 2013, customers tried to sue Wells Fargo, but because of arbitration clauses buried in the bank's fine print, they were forced into confidential settlements. As a result, the bank's practices remained hidden until press reports surfaced, leading to a government investigation and, ultimately, a huge financial settlement for harmed consumers.

A related problem has to do with how arbitration often prevents plaintiffs from jointly litigating grievances, a development that could lead to the end of class-action lawsuits. "It is not an overstatement to say that if the *Concepcion* decision is not overruled by the Supreme Court or overturned by Congress, then class-action lawsuits could be all but dead

in a decade or less," wrote Vanderbilt professor Fitzpatrick in his book "The Conservative Case for Class Actions" (University of Chicago Press, 2019).

In some cases, consumers can still bring cases in small claims courts. But without class actions, they have little power to hold corporations accountable for wrongdoing. After all, the potential financial recovery of an individual claim rarely merits the time, energy, and cost of pursuing it. As a result, many consumer advocates believe arbitration is little more than a get-out-of-jail-free card for companies. "The only objective of forced, predispute, class-banning arbitration clauses" is to deter small-dollar claims, says professor Gilles of Cardozo law school.

That plan seems to be paying off. An estimated 825 million consumer arbitration agreements were in force in 2018. Yet only about 7,000 arbitration cases are actually heard each year, according to a 2019 study by researchers at the University of California Davis School of Law.

## The Case of Moldy Washers

Why do individual cases matter if they are often small? Because one function of civil lawsuits is deterrence—the idea that the risk of a sizeable judgment from many small lawsuits combined into one prevents companies from doing questionable things to increase profits, and pushes them to quickly fix problems when they arise. "The lion's share of academic studies has found that ... class-action lawsuits deter misconduct," says Vanderbilt professor Fitzpatrick. "Deterrence is reason enough to keep class actions."

Take the case of front-loading washing machines. They became popular in the mid-1990s because of their impressive performance and energy efficiency. But owners soon began complaining of mold buildup, foul smells, and ruined



# Brands That Use Arbitration Agreements

WAS MANDATORY  
ARBITRATION  
LANGUAGE FOUND?

YES  
NO

To find companies that use mandatory arbitration in their interactions with consumers, we looked at the top-selling brands in the 10 most popular product categories that CR rates, plus two safety-related products. We searched for arbitration language in as many relevant documents as we could find, including the terms of service (or “terms and conditions” or “terms of use”), warranties, legal and privacy policies, and user agreements and manuals. We also searched each company’s website and contacted many companies directly, though most did not respond. Note that the list is not definitive: Companies marked as not using arbitration agreements may have one we did not find, those with arbitration agreements may not apply them to all of their products or interactions with customers, and we did not consider company-branded financial products such as credit cards. What to make of the results? We suggest using them as a tiebreaker: For two products comparable in price and quality, err on the side of caution and choose the one that does not appear to require arbitration when resolving disputes.

## MATTRESSES

NOVAFORM  
SEALY  
SERTA  
SIMMONS BEAUTYREST\*  
SLEEP NUMBER  
STEARNS & FOSTER  
TEMPUR-PEDIC  
KING KOIL  
KINGSDOWN  
SPRING AIR

## HEADPHONES

BOSE\*  
JBL  
SONY\*  
APPLE  
BEATS BY DR. DRE  
JAM  
JAYBIRD  
JLAB AUDIO  
JVC  
SKULLCANDY

## VACUUMS

BISSELL  
BLACK+DECKER  
IROBOT (ROOMBA)\*  
KENMORE  
MIELE  
SAMSUNG  
DIRT DEVIL  
DYSON  
HOOVER  
SHARK

## WASHING MACHINES

AMANA  
ELECTROLUX  
FRIGIDAIRE  
GE  
KENMORE  
LG\*  
MAYTAG  
SAMSUNG  
WHIRLPOOL  
SPEED QUEEN

## MICROWAVES

AMANA  
FRIGIDAIRE  
GE  
KENMORE  
KITCHENAID  
LG\*  
MAYTAG  
SAMSUNG  
WHIRLPOOL  
MAGIC CHEF

## LAPTOPS

ACER  
ALIENWARE  
DELL  
MICROSOFT  
SAMSUNG  
APPLE  
ASUS  
HP  
LENOVO  
MSI

## PRINTERS

EPSON\*  
KODAK  
LEXMARK  
POLAROID  
BROTHER  
CANON  
FUJIFILM  
HP

## BIKE HELMETS

SPECIALIZED  
BELL  
BERN  
BONTRAGER  
C-PREME (RASKULLZ)  
GIRO  
LOUIS GARNEAU  
NUTCASE  
SCHWINN  
SCOTT

## SMARTPHONES

BLU  
GOOGLE (PIXEL PHONES)\*  
LG\*  
MOTOROLA\*  
NOKIA  
SAMSUNG\*  
ZTE  
ALCATEL  
APPLE  
ONEPLUS

## TELEVISIONS

ELEMENT\*  
HISENSE  
INSIGNIA (BEST BUY)  
LG\*  
ONN (WALMART)  
PHILIPS\*  
SAMSUNG  
SONY\*  
VIZIO\*  
TCL

## REFRIGERATORS

AMANA  
FRIGIDAIRE  
GE  
KENMORE  
KITCHENAID  
LG\*  
MAYTAG  
SAMSUNG  
WHIRLPOOL  
BOSCH

## CHILD CAR SEATS

DOREL (MAXI-COSI, SAFETY 1ST, COSCO, TINY LOVE, BEBE CONFORT, INFANTI, QUINNY)  
GRACO  
BABY TREND  
BRITAX  
COMBI  
GOODBABY (EVENFLO)  
NUNA  
PEG PEREGO  
UPPABABY

\* Has a clause that allows you to opt out of mandatory arbitration within a specified period of time and sometimes using specified language.

# How Consumers Have Fought for Safer Products

**One of the** main concerns about mandatory arbitration is that it often prevents consumers from joining together to fight back against companies that have misled or harmed them. That restriction on class-action lawsuits not only can limit consumers' ability to receive damages from companies but also removes a powerful motivation for industry to change unfair practices or fix harmful products. Here's a look at recent examples of lawsuits—and marketplace changes—that might not have happened if consumers had been forced to arbitrate. Unless otherwise noted, the companies that settled the following cases did so without admitting wrongdoing.

## Dannon Yogurt Health Claims 2009



■ The company settles a class-action lawsuit accusing it of overstating the health benefits of several probiotic yogurts, including claims that they prevent colds or the flu.

**POTENTIAL PAYOUT**  
\$35 million to affected consumers.

**MARKETPLACE CHANGE**  
Dannon agreed to change labeling and marketing of the products. And the class action is followed by an additional \$21 million settlement with the Federal Trade Commission.

## Bank of America Overdraft Fees 2011



■ This bank plus 17 others settle dozens of class-action lawsuits accusing them of "resequencing" checking account transactions in a way that generated exorbitant overdraft fees.

**POTENTIAL PAYOUT**  
About \$1 billion to affected consumers.

**MARKETPLACE CHANGE**  
Many banks agreed to change their practices.

laundry. It turned out that the rubber gaskets around the doors trapped moisture, among other problems. Class actions involving millions of washers followed, and by 2017 Bosch, Electrolux, LG, and others settled. Whirlpool, for example, agreed to give owners at least \$50 or a 20 percent rebate on a new machine, and up to \$500 for repair or replacement.

Arguably, even more important were changes to the marketplace motivated by the class actions. Though the problem hasn't been eradicated, several problematic washers have been taken off the market or redesigned to be less susceptible to mold. Many now come with self-cleaning cycles.

But here's the catch: Those companies now impose arbitration provisions. The clause added by

Whirlpool, for example, says it "applies to any and all claims, disputes, or controversies of any nature whatsoever that You may raise against Whirlpool and/or its Affiliated Entities."

So what would happen if the mold problem emerged today? For one thing, it would be hard to find a lawyer. Jonathan Selbin, lead counsel in the Whirlpool and LG suits, says it's "highly unlikely" he would sign on to cases with such a broadly written clause in place. In fact, before taking new cases he now always asks whether an arbitration clause is in effect. "It's become a threshold inquiry right up there with whether the problem is real," he says. And without a lawyer consumers rarely prevail: Just 6 percent of people who represent themselves in arbitration win, research shows.

## How to Protect Yourself

Arbitration, in some cases, can be a good option for consumers, provided they understand the trade-offs and can deliberately choose arbitration over the court system after a dispute arises, says CR's Slover. What advocates object to is requiring consumers to agree to arbitration before buying a product or service, and long before a dispute has arisen.

The federal Forced Arbitration Injustice Repeal (FAIR) Act, passed by the House in September 2019 and now in the Senate, would ban predispute forced arbitration, including provisions that prevent people from joining class actions. In the meantime, is there anything you can do? It's not always easy, but here are some steps to try:

➤ **Check to see whether companies use arbitration.** Though this information



## Volkswagen 'Diesel-Gate'

2016



■ The German automaker admits to programming some of its diesel engines to cheat emission tests.

### POTENTIAL PAYOUT

\$14.7 billion to affected consumers. Owners can have their cars repaired or bought back at prescandal values, and receive a cash payment of \$5,000 to \$10,000.

### MARKETPLACE CHANGE

The settlement includes almost \$5 billion for environmental mitigation and promotion of zero-emission vehicles.

## Wells Fargo Auto Insurance Policies

2019



■ The San Francisco-based financial giant settles a lawsuit claiming it forced customers to pay for car insurance they didn't need and without their knowledge. The scheme pushed about 274,000 customers into delinquency and resulted in almost 25,000 wrongful vehicle repossessions, according to the complaint.

### POTENTIAL PAYOUT

\$432.4 million to affected consumers.

### MARKETPLACE CHANGE

The bank agrees to stop the practice.

## Wyndham Hotels Resort Fees

ONGOING



■ The hotel company (and its sister resort company) reaches a preliminary settlement in a class-action case accusing it of improperly charging so-called resort fees that were not adequately disclosed before customers purchased rooms.

### POTENTIAL PAYOUT

\$5.9 million to affected consumers.

### MARKETPLACE CHANGE

Wyndham says it will more clearly disclose fees.

## Yahoo Data Breach

ONGOING



■ The web services provider agrees to settle several class actions alleging that it failed to protect user info and delayed notifying victims after cyber attacks affected about 3.5 billion user accounts, thought to be the largest data breach ever.

### POTENTIAL PAYOUT

If the settlement is approved, \$118 million will go to affected consumers, including up to \$25,000 in out-of-pocket losses for each victim.

### MARKETPLACE CHANGE

Yahoo says it will improve its cyber security practices and hire an independent third party to monitor their effectiveness.

is often buried, CR has done the hard work for you for some popular products (see the chart on page 43). In other cases, look for arbitration language on your own. The clauses often lurk in links at the bottom of a company's website under headings such as "terms of use" or "legal terms and conditions." Search for "arbitration" and "dispute" using the "find" function. Also check the user agreements that most of us agree to when we purchase a product online or otherwise interact with a company's digital offerings.

Don't let down your guard when shopping offline, either. Companies put arbitration clauses in owner's manuals and warranty materials, and on the product packaging itself.

➤ **Try to choose products from companies that don't use arbitration.**

If you're choosing between two products similar in quality and price, use arbitration as a tiebreaker. For example, Evenflo and Graco both offer top-rated convertible child car seats for about \$100—but Graco's come with a mandatory arbitration clause. (The company did not respond when asked why it has that provision while most other car-seat makers that we looked at don't.)

➤ **Opt out when you can.** Some companies allow consumers to opt out of arbitration, such as the mattress maker Simmons Beautyrest. But act fast and read the instructions carefully. Companies often require you to take the step within 30 days of purchase and to use specific language.

➤ **Complain.** Use social media to contact the CEO, customer service,

and other consumers. In a handful of cases, doing so prompted companies to reverse course on arbitration. For example, in 2014 food giant General Mills dropped arbitration requirements that the company said applied even to people who simply downloaded coupons, after a wave of consumer outrage and media coverage. "We've listened," the company wrote in a blog post in April of that year. "And we're changing our legal terms back."

➤ **Negotiate using the legal leverage you have.** If you have a dispute and find you're bound by an arbitration clause, know that many companies try to settle disputes informally before beginning arbitration or defending small claims cases in court. In fact, some companies may make an offer before you begin legal action.





BRICK AND OTHER BUILDING MATERIALS CAN DISRUPT A WIFI SIGNAL.

# END YOUR

HAVE BUFFERING VIDEOS AND DEAD ZONES GOT YOU DOWN? HERE'S HOW TO BOOST INTERNET



METAL KITCHEN APPLIANCES ARE DIFFICULT FOR WIFI TO PENETRATE.





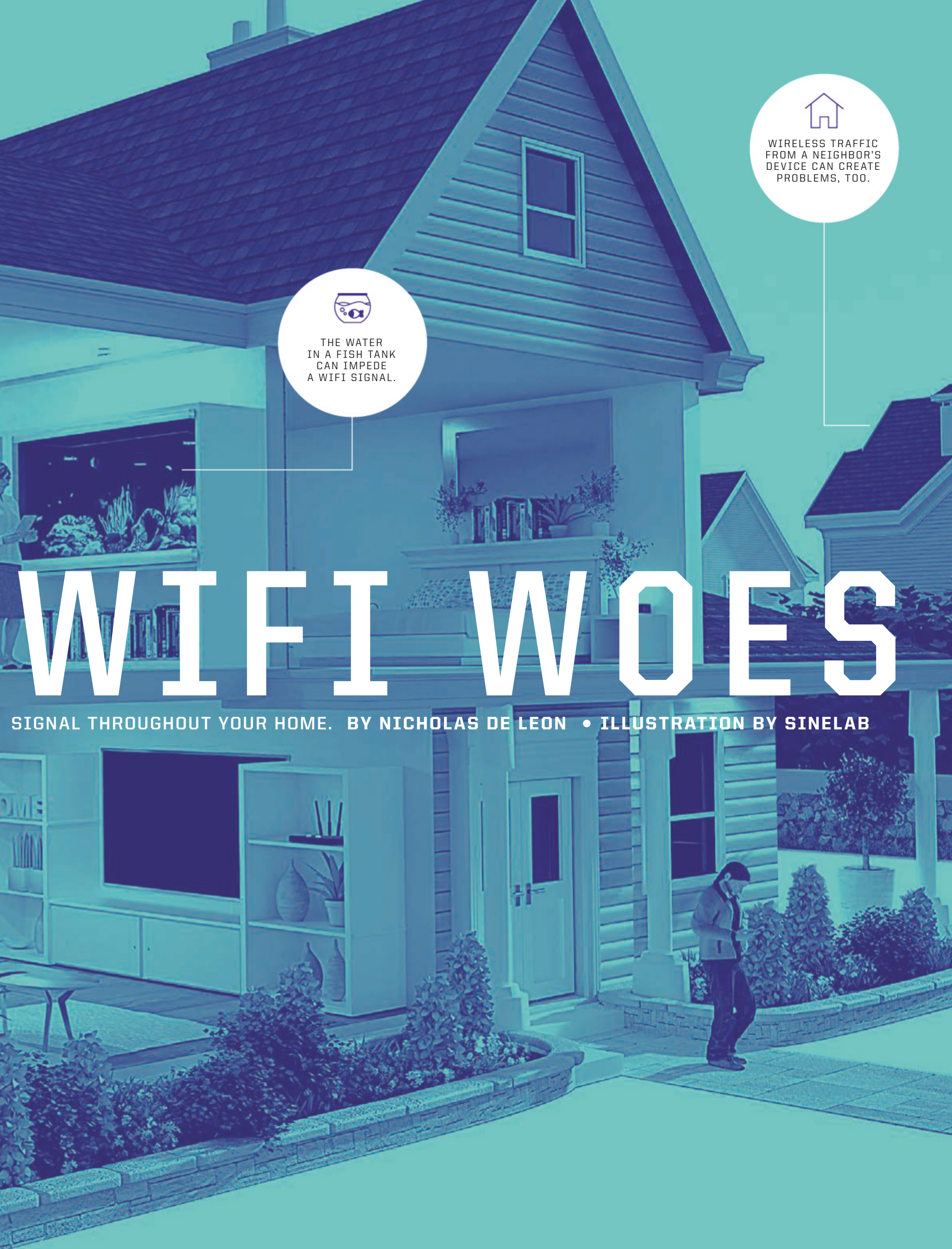
WIRELESS TRAFFIC FROM A NEIGHBOR'S DEVICE CAN CREATE PROBLEMS, TOO.



THE WATER IN A FISH TANK CAN IMPEDE A WIFI SIGNAL.

# WIFI WOES

SIGNAL THROUGHOUT YOUR HOME. BY NICHOLAS DE LEON • ILLUSTRATION BY SINELAB





# F

Few gadgets in your home can make you quite as frustrated or bewildered as a router with a crummy WiFi signal. Without a fast and reliable internet connection, you find yourself huffing as you wait for websites to load on your laptop, fidgeting as YouTube videos freeze on your tablet, and staring in despair at email inboxes and social media feeds as they struggle to refresh on your smartphone. As for streaming the latest edition of “WrestleMania” on your smart TV? Forget about it. To add to your angst, you may not know how to troubleshoot those problems—beyond calling a tech-savvy relative and pleading for help.

Sick of all the waiting? Let our experts bring you up to speed on solutions.

## How does my router work?

Understanding the basics of what your wireless router does will go a long way toward helping you fix some hiccups. “Think of a router as an electronic traffic cop,” says Richard Fisco, who oversees electronics testing for Consumer Reports. Once it’s hooked up to the modem provided by your internet service provider (ISP), a router directs the internet connection throughout your home, making it wirelessly available to devices like your laptop, smart speaker, and smart TV.

Your router serves as a link between the outside world and all of your personal and financial data. The tax return you filed electronically? It

travels through your router. Those credit card numbers you share online with Amazon? They exit through the router, too.

That’s why a router has to be a security guard in addition to being efficient and convenient. A good one receives routine firmware updates from the manufacturer to combat potential threats from hackers and other ne’er-do-wells.

## Is my router a slowpoke?

If your WiFi connection is noticeably sluggish, you may be tempted to write off your current router as a dud. But don’t be too hasty—there may be other factors at play.

First, take a look at a bill from your ISP to see what level of broadband you’re paying for. You’ll need a connection of at least 25 megabits per second to stream Netflix video for 4K TV, for example. If you’re not paying for that, or if you don’t have access to that kind of speed where you live, a brand-new router won’t help you.

You can easily run a speed test using a service like fast.com to see what you’re really getting. You may want to run this test a few times. First, run it with your laptop plugged into your router to check your speed in the best-case scenario. You can then move around with your laptop to different areas of your home to see how fast WiFi is at different locations.

Next, you’ll want to assess the placement of your router. They tend to do best when set up in the center of a home, allowing the signal to reach out in every direction. A router tucked away in a corner may not have the range to travel to the other side of the house, or from the second floor to the basement, because the signal degrades the farther it gets from the source.

If your router is in a suboptimal spot (the basement, for example), try moving it. One way is to buy a long Ethernet cable (keep it under 300 feet),

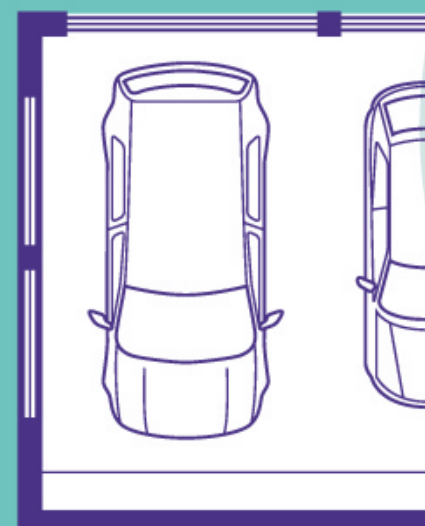
## FIVE COMMON WIFI ROADBLOCKS & HOW TO FIX THEM

“WiFi is electromagnetic radiation, just like light,” says Bhaskar Krishnamachari, a professor of electrical and computer engineering and computer science at the University of Southern California. “There are objects that block it and others that let it through.” Here are some common obstacles to think about as you place routers and use connected devices. In this diagram, we’ve arranged a three-piece mesh router network to help eliminate potential dead spots in a multilevel home.

- MESH HUB
- MESH SATELLITE

### THE SETUP

For the best results, place the hub in the center of your home (1) and between the satellites (2 and 3), says Richard Fisco, who oversees electronics testing for CR. Note that satellite 3 sits on the kitchen counter away from the refrigerator (4). The WiFi signal from both the hub and satellites can also reach up and down to other floor levels, eliminating potential dead zones.







## THE WALLS

Thicker walls tend to absorb more of a WiFi signal than thinner walls, Krishnamachari says. While you can't easily change how thick your walls are, simply repositioning a mesh satellite closer to a room's entrance may help boost the signal.



## THE FRIDGE

A refrigerator and other appliances that contain a lot of metal can cause trouble, too. WiFi signals may bounce off them instead of passing through to the other side. Metal plumbing and rebar in your walls create similar problems.



## THE NEIGHBORS

If you live in an apartment building or a heavily populated neighborhood, you might be susceptible to wireless congestion created by nearby devices running on the 2.4GHz frequency band. Try changing your router and devices to the 5GHz frequency band, which has many more channels. If your router doesn't support 5GHz, select another channel in the device's settings.



## THE MICROWAVE

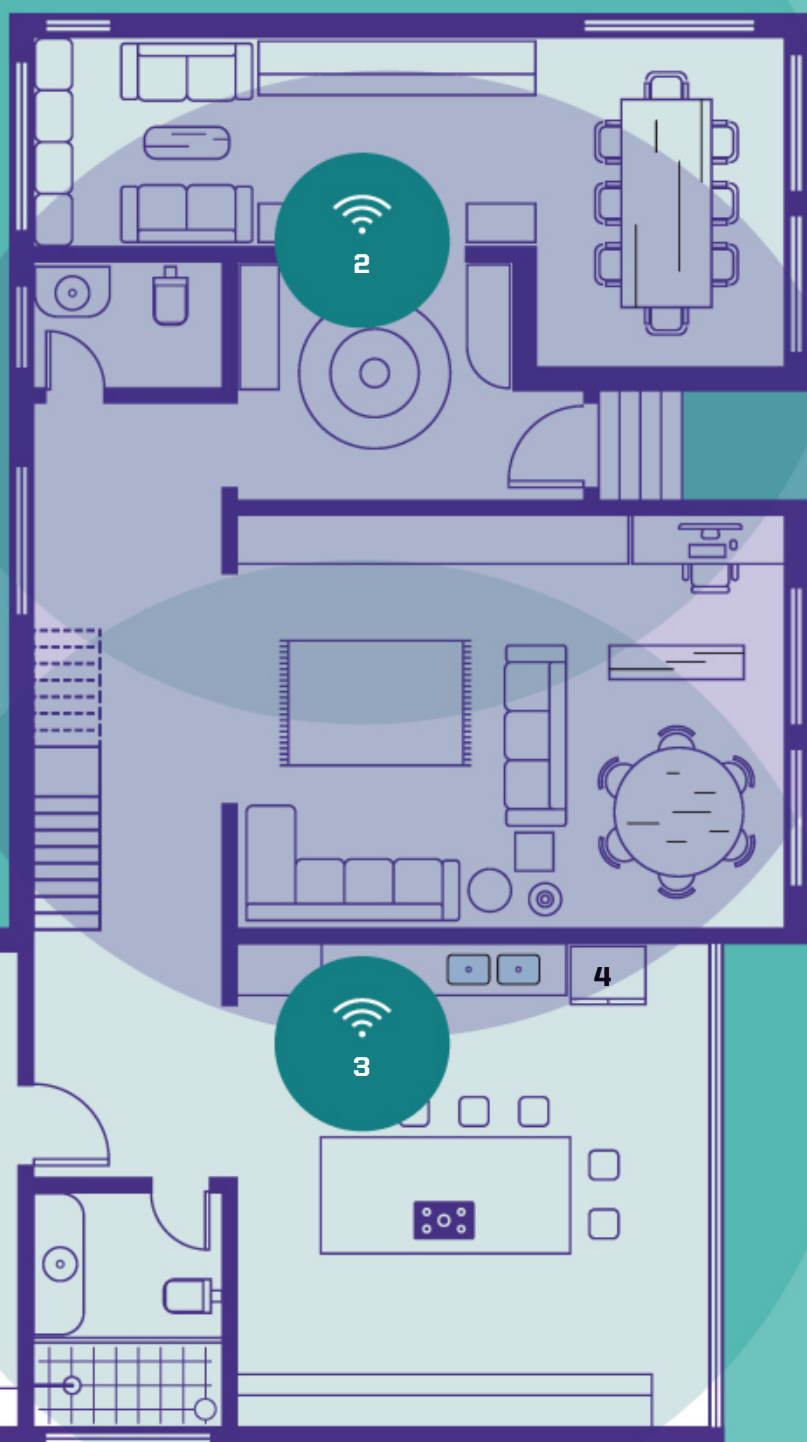
Microwave ovens also operate in the 2.4GHz frequency band, Krishnamachari points out. That can cause interference, he says, if, for example, you decide to make a second bag of popcorn while streaming a Netflix movie. To avoid the interruption on movie night, try switching your laptop or smart TV to the 5GHz band.



## THE FISH TANK

Water absorbs radiation, Krishnamachari says. So your WiFi signal is likely to get hung up near pools, tubs, and, yes, that 100-gallon fish tank you installed.

### FIRST FLOOR



### SECOND FLOOR



plug it into the modem and the router, and move the router yourself. Or you can ask your ISP to help you relocate the modem, though the company may charge you depending on the labor involved. If you're planning to change providers, Fisco says, you may be able to get the job done free, so ask while you're negotiating the switch.

If your router is already in a central location, the slow connection might be due to obstacles in the house that can impede a WiFi signal. (See "5 Common WiFi Roadblocks & How to Fix Them," on page 48.) You can try moving the router around a room to address such problems.

If those tweaks don't help, it may be time to find a model better suited to your needs, especially if you've been using a single-unit router in a multi-story home.

### Which router is best for me?

These days, you'll find two types of wireless routers: traditional models and mesh network models. You're probably familiar with the former. They're single-unit devices that plug into a modem. They can be plenty fast, supporting even the data-hungry activities of families with dozens of internet-connected devices. But they don't always have the range to effectively blanket a whole home in WiFi, especially if you have a large or obstacle-laden layout.

Mesh routers are typically packaged in a set with multiple units—a hub and one or more satellites—that work together to spread WiFi into the far-flung corners of a home. If you place the hub, which plugs into your modem, near the center of your dwelling, you can shift around the satellites, which help relay the WiFi signal, until you find a configuration that helps you eliminate any dead spots.

So why doesn't everyone simply choose a mesh router? They're pricey, for one thing. The top-rated models

in our ratings cost \$400 to \$500. By contrast, our top-rated single-unit model sells for \$200, followed by one that goes for about \$160. There's also an argument to be made for simplicity. With a mesh system, you have several devices strewn about your home vs. just one with a traditional router. If you don't actually need mesh routers, there's no reason to invest in them.

### What does "WiFi 6" mean?

Once you start shopping for a router, you're likely to hear a lot of buzz about WiFi 6, a new technology standard

that promises faster speeds, a longer range, and better support for the ever-expanding fleet of connected devices in modern homes.

Also known as 802.11ax, WiFi 6 replaces the WiFi 5 standard formerly known as 802.11ac, which debuted in 2013, and WiFi 4 (802.11n), which dates back to 2009. The consortium that sets these standards announced a WiFi 6 certification program in September 2019, and a number of routers that support the standard are now available, including three models in our ratings.

But only a few internet-connected devices are currently WiFi 6-compatible. (The latest Apple iPhone and Samsung Galaxy Note smartphones are examples.) WiFi 4 and 5 devices can connect to a WiFi 6-compatible router, but they get none of the technology's speed benefits. So our experts say it's fine to hold off on making the leap if you can save money on a slightly older model. "If you still have a WiFi 4 router but your smartphone, TV, and laptop all support WiFi 5, get a WiFi 5 router instead," Fisco says. That will set you up for a good five years.

### Why buy when I can rent?

Many consumers simply accept the model provided by their ISP. But internet companies usually charge a \$10 to \$12 monthly rental fee for the privilege, which can eclipse the price of a new router within two years.

In addition to providing potential savings, buying your own router gives you far more say in the operation and security of your home WiFi network. Using a simple mobile app, you can set up your router to receive automatic firmware updates. If you have a large family or frequent house guests, our experts suggest a model that offers robust settings that let you establish parental controls and a guest network to wall folks off from certain websites and private information.

## CR PICKS FOR EVERY HOME

GREAT VALUE FOR BIG HOUSES

TP-Link Deco Whole Home (3-pack) \$180

74

OVERALL SCORE



STRONG FOR MEDIUM SPACES

Asus AC2900 \$160

86

OVERALL SCORE



ALL YOU NEED FOR A SMALL HOME

TP-Link Archer C7 AC1750 \$70


70

OVERALL SCORE





**Ratings** > **WiFi Wizards** The routers that ace our testing get points for data security, data privacy policies, signal speeds (near, midrange, and far), and the simplicity of the setup process.

Brand & Model	Overall Score	Price	Test Results							Features					
			Data security	Data privacy	Throughput, near	Throughput, midrange	Throughput, far	Versatility	Ease of setup	Supports WPS	Parental controls	WiFi 6	Gigabit Ethernet	Number of LAN ports	Number of USB ports
<b>WIRELESS ROUTERS</b>															
 <b>Synology</b> RT2600ac	91	\$200	↑	↑	↑	↑	↑	↑	↑	↑	•	•	•	4	2
<b>TP-Link</b> Archer C3150 V2	87	\$160	↑	↓	↑	↑	↑	↑	↑	↑	•	•	•	4	2
<b>Netgear</b> Nighthawk X10 (AD7200)	86	\$395	↓	↓	↑	↑	↑	↑	↑	↑	•	•	•	6	2
<b>Asus</b> AC2900 (RT-AC86U)	86	\$160	↓	↓	↑	↑	↑	↑	↑	↑	•	•	•	4	2
<b>Netgear</b> Nighthawk AC1900 (R7000)	79	\$150	↑	↓	↑	↑	↑	↑	↑	↑	•	•	•	4	2
<b>TP-Link</b> Archer AC5400	79	\$235	↓	↓	↑	↑	↑	↑	↑	↑	•	•	•	4	2
<b>Asus</b> AX6000 (RT-AX88U)	78	\$290	↓	↓	↑	↑	↑	↑	↑	↑	•	•	•	8	2
<b>Netgear</b> Nighthawk X6S (AC4000)	78	\$300	↑	↓	↑	↑	↑	↑	↑	↑	•	•	•	4	2
<b>Asus</b> AC3100 (RT-AC88U)	77	\$225	↓	↓	↑	↑	↑	↑	↑	↑	•	•	•	8	2
<b>Linksys</b> AC3200 (WRT3200ACM)	76	\$250	↓	↑	↑	↑	↑	↓	↑	↑	•	•	•	4	2
<b>Google and Asus</b> OnHub AC1900	74	\$120	↑	↑	↑	↑	↑	↑	↓	↑	•	•	•	1	1
<b>Netgear</b> Nighthawk X6 (AC3200)	73	\$200	↓	↓	↑	↑	↑	↓	↑	↑	•	•	•	4	2
<b>TP-Link</b> Archer C1900	72	\$105	↓	↓	↑	↑	↑	↑	↑	↑	•	•	•	4	2
<b>TP-Link</b> Archer C7 AC1750	70	\$70	↓	↓	↑	↑	↑	↓	↑	↑	•	•	•	4	2
<b>Linksys</b> AC1900 (WRT1900AC)	69	\$210	↓	↑	↑	↑	↑	↓	↑	↑	•	•	•	4	2
<b>Asus</b> Blue Cave (AC2600)	67	\$180	↓	↓	↑	↓	↑	↑	↑	↑	•	•	•	4	1
<b>Linksys</b> WRT32X AC3200 Dual-band Gaming	67	\$300	↓	↑	↑	↑	↑	↓	↓	↓	•	•	•	4	2
<b>Asus</b> AC1900 (RT-AC68U)	66	\$180	↓	↓	↑	↑	↑	↓	↑	↑	•	•	•	4	2
<b>Netgear</b> AC1750 (R6400)	66	\$130	↑	↓	↑	↑	↑	↓	↑	↑	•	•	•	4	1
<b>Netgear</b> Nighthawk AX8 (RAX80)	65	\$340	↓	↓	↓	↑	↑	↑	↑	↑	•	•	•	5	2
<b>Razer</b> Sila (AC3000)	64	\$230	↓	↓	↑	↑	↑	↓	↑	↑	•	•	•	3	2
<b>Netgear</b> AC1600 (R6260)	64	\$80	↓	↓	↓	↑	↑	↓	↑	↑	•	•	•	4	1
<b>Linksys</b> AC1900 (EA6900)	64	\$70	↓	↑	↑	↑	↑	↓	↑	↑	•	•	•	4	2
<b>Linksys</b> Max-Stream AC2200	59	\$140	↓	↑	↑	↓	↓	↓	↑	↑	•	•	•	4	1
<b>Linksys</b> AC1200 (EA6350)	57	\$80	↑	↑	↑	↓	↓	↓	↑	↓	•	•	•	4	1
<b>Linksys</b> AC1000 (EA5800)	43	\$40	↑	↑	↓	↓	↓	↓	↓	↑	•	•	•	4	1
<b>Netgear</b> AC1200 (R6120)	33	\$55	↓	↓	↓	↓	↓	↓	↓	↑	•	•	•	4	1
<b>Netgear</b> AC1000 (R6080)	32	\$45	↓	↓	↓	↓	↓	↓	↓	↑	•	•	•	4	0

Brand & Model	Overall Score	Price	Test Results								Features					
			Data security	Data privacy	Throughput, near	Throughput, midrange	Throughput, far	Versatility	Ease of setup	Supports WPS	Parental controls	WiFi 6	Gigabit Ethernet	Number of LAN ports	Number of USB ports	
																
<b>MESH WIFI</b>																
✓ <b>Netgear</b> Orbi AC3000 (3-pack)	83	\$400	↓	↓	↑↑	↑↑	↑↑	↑	↑↑	•	•	•	4	1		
✓ <b>Eero</b> Pro Tri-band Mesh Network (3-pack)	74	\$500	↑	↓	↑	↑↑	↑	↑	↑↑	•	•	•	5	0		
Ⓢ <b>TP-Link</b> Deco Whole Home (3-pack)	74	\$180	↑	↓	↑↑	↑	↑↑	↑	↑↑	•	•	•	6	0		
Ⓢ <b>Netgear</b> Orbi AC2200 Tri-band (3-pack)	70	\$300	↓	↓	↑	↑	↑	↑	↑↑	•	•	•	11	0		
✓ <b>Linksys</b> Velop AC6600 (3-pack)	70	\$480	↑	↑	↑	↑	↑↑	↑	↑	•	•	•	2	0		
Ⓢ <b>Eero</b> Home WiFi (2nd Gen) (3-pack)	70	\$250	↑	↓	↑	↑	↑↑	↓	↑↑	•	•	•	2	0		
<b>Google</b> Wifi AC1200 Dual-Band Whole Home (3-pack)	64	\$260	↑	↑↑	↓	↓	↑	↓	↑	•	•	•	5	0		
<b>Linksys</b> Velop AC3600 (3-pack)	59	\$220	↓	↑	↑	↓	↑	↓	↑↑	•	•	•	2	0		
<b>Linksys</b> Velop AC3900 (3-pack)	59	\$300	↓	↑	↓	↓	↑	↓	↑↑	•	•	•	2	0		
<b>Ubiquiti</b> Networks Amplifi (AC1750) (3-pack)	57	\$340	↓	↓	↑	↓	↑	↓	↑	•	•	•	4	1		
<b>Arris</b> Surfboard mAX Plus AX7800 (W130) (2-pack)	55	\$500	↓	↓	↓	↑	↑↑	↓	↑	•	•	•	3	0		

**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.

## WHAT'S THE DEAL WITH WIFI EXTENDERS?

You may have seen ads online touting tiny devices that manufacturers promise will expand the reach of your WiFi network for \$25 or less. Known as WiFi range extenders, these devices can push signals from a router deeper into your home in an effort to eliminate dead spots in a far-flung bedroom or office. The catch? You

might notice a significant drop in throughput speeds in the "extended" network, says Kannan Athreya, an associate professor of computer science and engineering at Ohio State University. That's in part because an extender relies on the same frequency band as the router itself. "So now the data that originally would have come directly

from the access point to your connected device is going through an intermediate step," he says. By contrast, mesh routers use two different frequency bands. The bottom line? An extender may work well for you, but a mesh router is more likely to smoothly stream 4K video to multiple TVs at once.





STAY AHEAD  
OF THE CURVE  
WITH CR AUTO  
RATINGS, NEWS  
& ADVICE™

# ROAD REPORT

## DASHBOARD DECODER

What Does  
This Icon  
Mean?

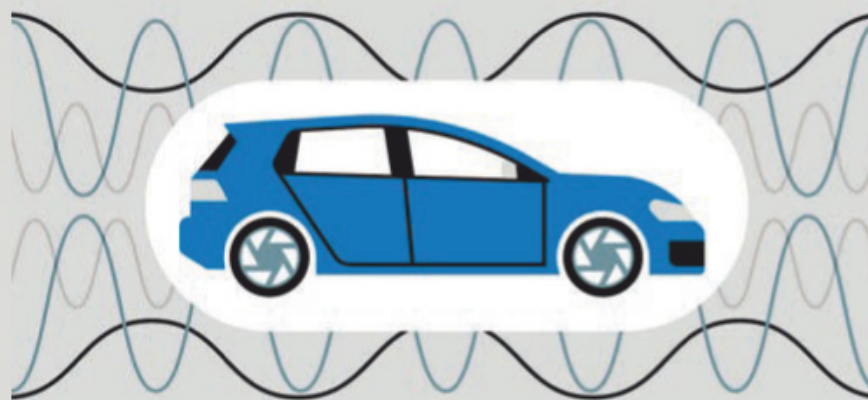


- ❑ COFFEE SHOP AHEAD
- ❑ TAKE A BREAK
- ❑ YOU LEFT YOUR COFFEE ON TOP OF THE CAR
- ❑ CUP HOLDER WARMER ON

The symbol means you should take a break because your steering pattern and road position suggest that you're not alert. In our experience, this type of attention monitoring system doesn't work very well. We prefer those that actively monitor the driver's head and eyes with a driver-facing camera.

## ASK OUR EXPERTS

Can you recommend an affordable car with a quiet ride?



Road noise is annoying, and studies have even suggested that the sustained drone can lead to driver fatigue and reduced awareness. For those who prefer a purr to a roar, here are the quietest recommended vehicles in four low- to midpriced categories.

### Volkswagen Golf

PRICE RANGE: \$23,195-\$37,295

NOISE OVERALL SCORE **79**

### Toyota Camry

PRICE RANGE: \$24,295-\$35,000

NOISE OVERALL SCORE **84**

### Mazda CX-5

PRICE RANGE: \$25,090-\$37,055

NOISE OVERALL SCORE **84**

### Kia Telluride

PRICE RANGE: \$31,690-\$43,490

NOISE OVERALL SCORE **92**

## THE VITAL STATISTIC

# 85%

Percentage of CR members who are very satisfied with their car's rear cross traffic warning (RCTW) system—the highest satisfaction rating of any safety system. RCTW detects approaching vehicles when backing up.

Source: CR's 2018 ADAS Survey.

## RECALL



## Subaru Vehicles

Subaru is recalling more than 250,000 Crosstrek, Forester, and Ascent SUVs, and Impreza hatchbacks and sedans. A faulty valve can separate, possibly causing a sudden loss of power that could lead to a crash. Affected vehicles are from model years 2017 to 2019.

**What to do:** Dealers will replace the faulty valve and/or replace any damaged parts—including the entire engine—at no charge. Owners can call Subaru customer service at 844-373-6614.

## TIP FROM THE TEST TRACK

### Cell-Phone Mounts

Phone mounts help keep your cell phone visible and secure, and within easy reach while driving. These are among the favorites of the models evaluated by CR.



#### MPOW 033 (\$9.99)

This basic, inexpensive mount easily attaches to your windshield with a suction cup and comes with a stabilizer bracket designed to reduce vibration (make sure windshield mounts are legal in your state).

#### MPOW M4.1 (\$39.99)

With a suction cup that attaches to the windshield

or the dashboard, the MPow M4.1 also charges phones equipped with Qi wireless charging capability.

#### BEAM ELECTRONICS AIR VENT MOUNT (\$14.99)

It secures to a vent, blocking little or none of the view. This type of mount may not attach to vertical vents and will block airflow from the vent it's attached to.

# The Hidden Cost of Safety Features

## HOW DOES ADVANCED SAFETY TECH AFFECT CAR REPAIRS?

Consumer Reports set out to find average prices for minor collision repairs that have become pricier as shops contend with repairing and recalibrating advanced driver assistance system (ADAS) parts. We asked RepairPal, an independent group that tracks repairs, to run the figures. Additional costs vary by model, but it's clear that ADAS equipment can make some of these repairs more expensive. But studies have also shown that some ADAS features can reduce crashes and collision-claim costs.



### FRONT BUMPER

**\$700-\$1,800**  
BASIC BUMPER REPAIR

**+\$500-\$1,900**  
SENSOR AND CAMERA  
REPLACEMENT(S)

**+\$250-\$600**  
RECALIBRATION

Front bumpers can hold sensors and cameras that help make automatic emergency braking (AEB) and other ADAS features work. Experts recommend recalibrating sensors and cameras after minor collisions, even if the ADAS equipment doesn't need to be replaced. Recalibration costs vary by model and the features involved. Vehicles with AEB and forward collision warning (FCW) had 50 percent fewer rear-end collisions, according to a study from the Insurance Institute for Highway Safety.

### HEADLIGHTS AND TAILLIGHTS

**\$200-\$500**  
HALOGEN ASSEMBLIES

**\$750-\$1,500**  
LED ASSEMBLIES

**+\$100-\$250**  
RECALIBRATION

LED headlights and taillights are available on more mass-market cars these days, adding expense when they're damaged and need to be replaced. LED headlights provide a brighter and wider beam pattern, but they don't necessarily help you see farther down the road, CR's tests have found. "LED headlamp assemblies vary wildly in cost," says Jill Trotta, vice president of RepairPal's automotive group. "Some European assemblies can cost as much as \$3,000 to \$5,000." Only headlight assemblies (not taillights) need to be recalibrated.



**AFTER THE WINDSHIELD** cracked on Ted Hine's 2017 Subaru Forester, he was shocked when a dealership quoted \$1,400 for a replacement. Safelite AutoGlass, a national auto glass repair and replacement chain, was cheaper but still surprisingly high at \$910. Hine recalled paying \$150 as recently as five years ago for a similar repair on his previous car, and a mobile

technician did the job right in his driveway.

"I'm 74 years old and retired, on a limited fixed income," Hine said. "I can't afford \$900-plus for a windshield every time a truck randomly throws a rock at me."

Hine's Subaru has EyeSight, a suite of advanced driver assistance systems (ADAS) that includes forward collision warning

[ CONTINUED ON PAGE 56 ]



### SIDE MIRROR REPLACEMENT

**\$300-\$500**  
STANDARD MIRRORS

**\$1,000-\$2,500**  
MIRRORS WITH ADAS

**+\$250 and up**  
RECALIBRATION

Side mirrors can house blind spot warning (BSW) indicator lights, but they can be more complex, with camera and video display capabilities. Vehicles with blind spot detection systems had 23 percent fewer lane-change crashes with injuries, according to the IIHS-Highway Loss Data Institute (HLDI) study.\*

### WINDSHIELD REPLACEMENT

**\$300-\$500**  
REGULAR  
WINDSHIELD

**\$700-\$1,500**  
ADAS-CAPABLE  
WINDSHIELD

**+\$800-\$1,900**  
SENSOR AND CAMERA  
REPLACEMENT(S)

**+\$250**  
RECALIBRATION

Cameras and radar sensors that help AEB and lane departure warning (LDW) work are often mounted inside the windshield. Depending on the type of damage, windshield repair or replacement can involve sensor and camera replacement and/or recalibration. Vehicles with LDW had 21 percent fewer single-vehicle, sideswipe, and head-on crashes with injuries, according to the IIHS-HLDI study.\*

### REAR BUMPER

**\$700-\$1,800**  
BASIC BUMPER  
REPAIR

**+\$1,000-\$2,500**  
SENSOR AND CAMERA  
REPLACEMENT(S)

**+\$250 and up**  
RECALIBRATION

Cameras and sensors for rear AEB, cross traffic assist, and parking assist live behind the rear bumper and can be damaged in a collision. Vehicles with rear AEB [when combined with rearview cameras and parking sensors] had 78 percent fewer backup crashes, according to the IIHS-HLDI study.\* "Any basic body technician can do a bumper repair," Trotta says. "Now, there's so much tech built into the bumper it takes advanced technicians and calibration to fix it."

Figures are based on average repair costs for typical cars that consumers might own, plus some higher-end outliers, according to RepairPal, an independent group that tracks repair costs. The figures don't reflect repair costs for some ultra high-end vehicles or for more serious crashes requiring more extensive body work. The pricing is for car, SUV, and light-duty truck repair costs, including parts and labor. RepairPal is a CR partner. \*Source: IIHS-HLDI's "Real-world benefits of crash avoidance technologies," June, 2019.

[ CONTINUED FROM PAGE 55 ]

(FCW), automatic emergency braking (AEB), lane departure warning (LDW) and adaptive cruise control (ACC).

EyeSight's components include a pair of cameras mounted inside the windshield that help ACC and other convenience and advanced safety systems, such as AEB, calculate the distance from the car to objects ahead. A windshield replacement for Hine's Subaru now requires glass that's more complex to manufacture, so that the cameras can see clearly. The cameras must also be recalibrated by technicians using expensive equipment.

EyeSight is available on most new Subarus. The manufacturer isn't the only one with this type of system. Most new cars and trucks for sale are now available with various ADAS features.

The upside is that motor vehicles are becoming much safer. For example, rear-end collision rates in vehicles with both FCW and AEB were 46 percent lower than those without these systems, according to a recent study by the University of Michigan Transportation Research Institute. The study showed that lane departure crashes fell 21 percent for cars with LDW and lane keeping assistance (LKA), and that having a backup camera and other systems, including reverse AEB with rear cross traffic alert, reduced backup collisions by 81 percent, among other safety findings.

The downside is that repairs cost more when ADAS components are damaged or even jarred slightly in minor collisions. That's because the sensors integral to ADAS usually live in peripheral, easy-to-damage areas—inside bumpers and windshields, and in side mirrors. So a minor collision or a cracked windshield can become a major expense.

Consumer Reports believes that all cars should come standard with AEB, pedestrian detection, FCW, and BSW. CR experts say that with fewer crashes over time because of the

wider adoption of collision avoidance systems, drivers should save money, even if collision repair bills are higher.

“Yes, crashes happen, and with ADAS onboard, they could cost more to repair today,” says Jake Fisher, CR's director of auto testing. “But the equation should eventually work out in the driver's favor because as we reduce on-the-road mishaps, we'll save on repairs in the future. We value proven safety systems because they dramatically reduce minor and more serious crashes.”

CR and other car experts stress that ADAS features must be repaired correctly or safety systems can become disabled or function improperly and cause dangerous errors.

“Most forward-facing cameras used for ADAS are mounted to the glass in or around the rearview mirror, and those cameras don't know where they are in relation to the glass,” says Jon Cardi, a senior vice president at Safelite AutoGlass. “A minute movement at the windshield could translate to a big error several hundred feet ahead at highway speeds.”

Not all collision repair shops are qualified to fix ADAS-equipped vehicles, and information about how to repair these vehicles isn't always available, creating uncertainty for insurers and repair shops.

“We should think differently about what constitutes a fender bender,” said Joe Schneider, a KPMG adviser to insurance companies. “Stuff that people wouldn't have even filed a claim for in years past [now] has a technological component that affects the safety and operability of the vehicle.”

“Repair costs have been going up in recent years as vehicles become more expensive to repair, so that can be expected to put pressure on insurance premiums,” said Bob Passmore, assistant vice president of auto claims with the American Property Casualty Insurance Association (APCIA). “The hope is that the technology will reduce the number of

crashes in the longer term, offsetting for the increase in repair costs.”

Technology has been evolving at a faster rate than some repair shops can keep up with in terms of new equipment and training, says Jeff Evanson, COO of Smart Express, a company that provides van-based mobile calibration units to collision repair shops. “As these systems become more complicated, you're never going to be able to use a shade-tree mechanic to fix them,” he says.

### **Safety Tech Goes Mainstream**

The development of ADAS represents one of the biggest steps forward in safety technology since the introduction of airbags in the 1970s and the requirement in 2012 that all vehicles have electronic stability control.

ADAS can flash warnings when a collision seems imminent, stop a car if the driver fails to respond, alert the driver when the vehicle is swerving out of its lane, steer the vehicle back into its lane, alert the driver to vehicles in blind spots, keep a driver from backing into objects, and maintain a safe following distance using adaptive cruise control. The systems operate by using an array of sensors feeding information about speed and distance into the vehicle's computer system, which then informs its braking, steering, and engine control modules.

“Vehicles with ADAS features are less likely to crash,” said Matt Moore, senior vice president of the Highway Loss Data Institute (HLDI), a nonprofit that researches vehicle insurance losses and is part of the Insurance Institute for Highway Safety (IIHS). “Not only do they prevent claims for vehicle damage, some are also associated with reducing the frequency of bodily injury liability claims.”

ADAS technology has trickled down in the last two years from luxury cars into more affordable models. According to AAA, more than



90 percent of new vehicles in 2018 had at least one ADAS feature. But not all high-tech features are safety-critical. And CR's Fisher says that consumers can try to mitigate future repair costs by being more selective about options when buying a new car.

"There's equipment that will save you from getting into a collision," he says. "But other items, like LED lights

and low-profile tires that cost a lot to repair but don't do much for safety, could be avoided."

### **Collisions Get Complicated**

ADAS repairs can be placed broadly into three categories: body, glass, and maintenance.

Windshield chips and cracks can be repaired with resin to prevent

spider-webbing. But resin shouldn't be used in areas that house cameras. To work optimally, ADAS requires greater glass clarity for the cameras. Today's windshields also might contain wiper de-icers and rain sensors, potentially adding to the repair cost. As with other ADAS-related collision repairs, windshield replacement now involves sensor recalibration.

## **5 Questions to Ask**

If you're in the market for a car with advanced driver assistance systems (ADAS), be sure to spend your money on features that can offer real safety benefits. And if you need a repair, it may not be obvious which shops are qualified to fix these complex systems. Here are some key questions to consider.

### **Should I be wary of buying a luxury vehicle just off-lease?**

Yes. Older model-year luxury vehicles had ADAS features first and might be snapped up off-lease by cost-conscious luxury seekers. But the vehicles could be more than a few years out of warranty, and you could be looking at expensive repairs for ADAS-related equipment that breaks down and for other repairs in general.

### **Should I get an extended warranty to cover high-tech safety gear?**

Insurers and other companies offer extended bumper-to-bumper warranties that would pay for the breakdown of ADAS equipment and other items in your car, beyond the regular warranty period. In the

event of a crash, damaged ADAS equipment would be covered as part of regular collision insurance, minus any deductible. Collision coverage is generally required when leasing or if you're still paying off a vehicle loan. If you own the vehicle outright and opt out of collision coverage, you could be stuck with expensive collision repair bills.

### **How can I tell if a shop has the equipment to repair these systems?**

Ask your dealership if it can handle the repair or if it can recommend a qualified repair shop. Not all dealerships have the tools necessary to recalibrate ADAS sensors and cameras, but a factory-backed service department can usually point you in the right direction. You also can look online for manufacturer-recommended

collision repair shops. Some manufacturer websites have a list of certified collision centers, although you might have to dig around for it. If you go with an independent repair shop, research online reviews and ask the shop which certifications it has, and if it can make the necessary repairs and calibrations.

### **How do the benefits of advanced driver assistance systems compare with the repair costs?**

If you're shopping for a car, we strongly recommend a vehicle with automatic emergency braking (AEB) with pedestrian detection, forward collision warning (FCW), and blind spot warning (BSW). These systems have been shown to substantially reduce

rear-end crashes. CR gives extra points if AEB and FCW come standard on all trims of a tested model. Seriously consider whether you should pay extra for high-tech convenience features, such as LED headlights, that might add to repair costs but not necessarily improve safety.

### **Should I ask for factory parts?**

If your car is under warranty, you should ask for manufacturer parts because some manufacturers could void your warranty if certain aftermarket parts are used. If your car is out of warranty, aftermarket or used parts can save you money and should provide the same level of safety. CR believes that to keep repairs more affordable, car manufacturers and their associated dealers shouldn't have a monopoly on parts or repair services.

According to the Auto Care Association, shops report that the most common repairs are for bumpers, fenders, and doors. Bumpers—which usually consist of a hard frame with a plastic cover—can house a host of sensors that can be damaged or misaligned in a low-speed collision.

In the past, minor bumper damage could be repaired by filling scratches and gouges, then spot-painting. But body-filler compound and fresh paint could impair vehicle sensors, so some bumper repairs now require the more costly option of replacing the cover.

“Years ago, there might be a little nick on it that you would never file a claim for,” says Schneider, the insurance company adviser. “Now, that same nick could require recalibration of a camera or sensor.”

Damage to headlight and taillight assemblies and side mirrors can be similarly expensive. Side mirrors often contain cameras and other electronic parts, such as flashing warning lights.

“Ten years ago, our average repair ticket was about \$1,600,” said Tim Cook, owner of “A” Auto Body Shop in the Richmond, Va., area, which is qualified to work on ADAS-equipped cars. “Now, it’s over \$4,000. We’re seeing more and more cars declared total losses because of the cost of repairing them.”

Then there are other expensive parts now more common on new vehicles, including large-diameter wheels with low-profile tires that can be more easily damaged by potholes. LED headlights and taillights are becoming more common on cars as consumer demand rises, and repairing them can run into the multiple thousands of dollars for some luxury SUVs.

Some vehicles also require sensor calibrations as a part of wheel alignments so that adaptive cruise control sensors can work properly.

We asked several automakers about the extra costs related to collision damage in ADAS-equipped vehicles.

“WE’RE SEEING  
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TIM COOK, OWNER OF “A” AUTO BODY  
SHOP IN THE RICHMOND, VA., AREA.

They all stressed the importance of increasing safety via new technology.

Dominick Infante, director of communications for Subaru of America, said it was difficult to estimate how much its EyeSight features add to the cost of otherwise typical collision work, given the multiple variables involved in each crash, including the severity and location of the collision, as well as the specific ADAS features involved. He stressed that Subaru’s goal was to reduce crashes. Along that line, he said, “Consumers should expect and demand any repair facility working on their Subaru to have all necessary ADAS calibrations completed before picking up the vehicle.”

“Any deviation from Original Equipment Subaru Parts, and the system may not operate as intended,” he added.

David Friedman, vice president of advocacy at Consumer Reports, who was a senior official at the National Highway Traffic Safety Administration, says automakers should work harder to make safety sensors more durable in crashes

and less expensive to repair. “Now that these critical safety systems have gone mainstream,” he says, “automakers have an extra responsibility to make sure consumers can afford to both buy and repair them—especially when they’re in relatively minor crashes.”

### Repair Shops in Transition

Finding the right collision repair shop is key for consumers because there are serious safety implications if a sensor isn’t recalibrated correctly.

Safelite AutoGlass did testing using AEB sensors that were intentionally misaligned and found that vehicles collided with targets they were supposed to avoid.

“It’s in everyone’s best interest to see that such recalibration is done, and done properly,” says Passmore, the assistant vice president at APCIA.

CR experts stress the importance of following manufacturer guidelines with ADAS repairs. But they say some shops aren’t able to meet this standard yet.

The National Institute for Automotive Service Excellence, an organization that certifies technicians, told CR it’s developing a credential for repair technicians working on ADAS features so that they’ll be competent at diagnosing, repairing, and calibrating equipment. But the first credentialed tests won’t be ready until 2021, the group said.

The cost of ADAS repair and maintenance could decline over time as more vehicles have them as standard equipment and as more repair shops have the necessary skills and equipment, says Fisher, CR’s director of auto testing.

But he and other auto-safety experts say it would be a mistake for consumers to avoid these critical features because of concerns about repair costs. “The real savings will come from the crashes you didn’t have in the first place,” he says.





## ROAD TEST

WE CONDUCT 50+ TESTS ON EACH VEHICLE AT OUR 327-ACRE AUTO TEST CENTER. FOR COMPLETE ROAD TESTS, ALL-ACCESS MEMBERS CAN GO TO [CR.ORG/CARS](https://www.cars.com).



LUXURY LARGE SUVs

## Mercedes-Benz GLS

Comfort & Luxury for the Whole Family

71

OVERALL SCORE

ROAD-TEST SCORE 86

**HIGHS** Powertrain, ride, quietness, seat comfort, fit and finish

**LOWS** Controls, predicted reliability

**POWERTRAIN** 362-hp, 3.0-liter 6-cylinder turbocharged engine; 9-speed automatic transmission; all-wheel drive

**FUEL** 20 mpg on premium fuel

**PRICE** \$75,200-\$97,800 base price range \$89,030 as tested

IN THE RAREFIED air of posh three-row SUVs, the redesigned GLS stands out as a top player, offering loads of performance, comfort, and opulence for the money. But convoluted controls hurt its road-test score, and below-average predicted reliability drags down its Overall Score.

The GLS is essentially an elongated version of the mid-sized GLE SUV with an incredibly roomy cabin and a third-row seat that's actually usable for teens and adults. Front- and middle-row seats also provide first-class comfort, and the cabin is wrapped in top-notch leather, chrome, and wood.

A standard air suspension system endows the GLS with excellent ride quality, keeping passengers blissfully unaware of most road imperfections. There's little body lean when taking corners, and the steering responds promptly

to inputs, which makes the big GLS feel smaller than it is. The engine and transmission combine to deliver effortless power without any hesitation. The 48-volt mild-hybrid system makes the stop/start function work smoothly, too. We got 20 mpg overall, not bad for a 5,500-pound SUV.

But the controls could be a deal-breaker. Many functions are buried in a digital version of a customer-service phone tree. Plus, it's too easy to inadvertently change a display or audio choice by brushing against the touch-sensitive controls on the center console and steering wheel.

Advanced safety features, including forward collision warning (FCW), automatic emergency braking (AEB), and blind spot warning (BSW), are standard. The optional active driving assistance system keeps the GLS centered in its lane.

SUBCOMPACT CARS

## Nissan Versa

No Frills, No Thrills

58

OVERALL SCORE

ROAD-TEST SCORE 61

**HIGHS** Controls, fuel economy, standard advanced safety features

**LOWS** Ride, engine noise, seat comfort

**POWERTRAIN** 122-hp, 1.6-liter 4-cylinder engine; continuously variable transmission; front-wheel drive

**FUEL** 32 mpg on regular fuel

**PRICE** \$14,730-\$18,240 base price range \$18,980 as tested

THE AFFORDABLE VERSA sedan has been totally redesigned for 2020 (the hatchback version has been discontinued). We're happy that the new Versa comes with standard advanced safety features, but the brittle ride, vague steering, and uneven interior quality are disappointing even for a budget car.

The new Versa has more horsepower, but it gets winded climbing a hill or merging into traffic. Ask the engine to work hard and it protests with a metallic buzz that permeates the cabin. At least acceleration feels linear, thanks to a well-tuned continuously variable transmission. But the Versa's small size doesn't give any benefit to fuel economy. We got just 32 mpg overall, which is the same as the much larger Toyota Camry.

The car is easy to maneuver and park, but its suspension

does a lousy job insulating occupants against bumps and potholes. Factor in a basic driver's seat that's short on back support, and a cramped rear seat, and traveling in the Versa can be a punishment. At least handling is secure, even when pushed to its limits.

At first glance, the interior looks inviting. The climate and audio controls are straightforward, and the optional soft-touch dashboard trim is an unexpected premium detail. But the plastic that looks like carbon fiber is a sporty flourish that's out of place in a basic sedan, and it detracts from the interior's appearance.

A big selling point is the standard FCW and AEB, a rarity at this price. Buyers will have to upgrade to the SV trim to get BSW, which also adds Android Auto and Apple CarPlay compatibility, bigger wheels, and a nicer interior.



MIDSIZED CARS

## Subaru Legacy

Even More of a Good Thing

87

OVERALL SCORE

**SUBARU LOYALISTS WILL** be pleased that the redesigned Legacy doesn't stray far from the previous model, and that a host of improvements help it top our mid-sized sedan ratings. The car is sensible, comfortable, quiet, and easy to live with in almost every way, plus it comes with all-wheel drive, a unique standard feature in the class.

One of the first things you'll notice while driving the Legacy is what you don't feel—bumps in the road. Its suspension soaks up potholes with an uncanny fluidity that's better than some luxury sedans costing three times as much. The cabin remains hushed, too, though the boisterous base four-cylinder engine can feel a bit strained when climbing hills.

The Legacy's driving position accommodates many body types, with plenty of headroom, cushy armrests, and

ROAD-TEST SCORE 89

**HIGHS** Ride, transmission, trunk space, standard all-wheel drive

**LOWS** Some controls require multiple steps

**POWERTRAIN** 182-hp, 2.5-liter 4-cylinder engine; continuously variable transmission; all-wheel drive

**FUEL** 28 mpg on regular fuel

**PRICE** \$22,745-\$34,895 base price range \$27,609 as tested

a well-designed center console with a cutout for right knee space. Slim roof pillars and generous side windows allow excellent outward views. Other high points include a roomy rear seat and a large trunk.

If you're looking for a peppy personality, the standard engine may not be for you. The Honda Accord and Toyota Camry are about 1 second quicker from 0 to 60 mph. The Legacy's 28-mpg overall fuel economy is good for an AWD sedan, but that's a few mpg behind those same front-wheel-drive rivals.

Subaru has taken a turn for the worse with its infotainment system, which requires multiple steps for drivers and passengers to perform some common tasks.

FCW, AEB with pedestrian detection, and lane departure warning (LDW) all come standard. But it costs extra to get BSW.



SPORTS CARS

## Toyota Supra

A Ride to Remember

80

OVERALL SCORE

**AFTER NEARLY A** two-decade absence, the famed Supra has been reborn. It's a joint effort between BMW and Toyota, and the Supra shares the bulk of its mechanical hardware with the BMW Z4 convertible we tested in 2019. But Toyota's unique suspension tuning makes the Supra deliver a much more rewarding driving experience than its German cousin.

Under the hood is a turbocharged BMW engine that delivers robust power on demand, perfectly orchestrated by the slick, quick-shifting automatic.

The two-seat coupe instills so much confidence that drivers will want to push it toward its limits, as we often did around our test track. The handling is intoxicating, backed by super-responsive steering. The ride is stiff, as expected in a high-performance sports car, but

ROAD-TEST SCORE 91

**HIGHS** Acceleration, transmission, handling, braking

**LOWS** Access, visibility, ride, noise

**POWERTRAIN** 335-hp, 3.0-liter 6-cylinder turbocharged engine; 8-speed automatic transmission; rear-wheel drive

**FUEL** 27 mpg on premium fuel

**PRICE** \$49,990-\$55,250 base price range \$56,115 as tested

it's more livable than the Z4.

Drivers need to be limber to climb into the narrow, low-slung cockpit. The sense of confinement is heightened by the short glass all around, which also makes for terrible side and rear visibility.

Sure, there's abundant road noise, but it's overshadowed by the car's magnificent mechanical symphony with a hearty engine roar and an exhaust bark that comes with each shift, especially when driving in Sport mode.

We're happy to report that the Supra comes with FCW, AEB with pedestrian detection, and LDW. It's unfortunate that BSW and rear cross traffic warning (RCTW) are extra-cost options.

While the tight cabin, stiff ride, and limited visibility are inherent to nearly all sports cars, they can almost be overlooked because the Supra is so thrilling to drive.



**Ratings** > **Narrow Divide** Our tests reveal that the fuel economy of the newest midsize cars sometimes approaches the mpg of smaller, less comfortable subcompacts.

Make + Model	Overall Score	Price	Survey Results		Safety	Road-Test Results										
			As tested	Predicted reliability		Owner satisfaction	Crash prevention	Road-test score	Overall mpg	Acceleration 0-60 mph, sec.	Dry braking 60-0 mph, ft.	Avoidance-maneuver speed, mph	Routine handling	Ride	Noise	Seat comfort front/rear
<b>SUBCOMPACT CARS</b>																
✓ Honda Fit EX	71	\$19,025	↑	↓	Opt.	67	33	10.0	132	55.0	↑	↓	↓	↑ / ↑	↑	2+2
✓ Toyota Yaris LE	65	\$17,570	↑	↓	Std. ↓	60	35	10.3	139	55.0	↑	↓	↓	↓ / ↓	↓	3+0
Hyundai Accent SEL	63	\$18,435	↓	↓	Opt.	64	33	9.9	128	57.5	↑	↓	↓	↓ / ↓	↑	2+3
Kia Rio S	59	\$17,220	↓	↓	Opt.	61	33	9.6	131	54.5	↑	↓	↓	↓ / ↓	↑	2+3
Nissan Versa SV	58	\$18,980	↓	↓	Std. ↑	61	32	9.6	130	52.5	↑	↓	↓	↓ / ↓	↑	3+1
<b>MIDSIZE CARS</b>																
✓ Subaru Legacy Premium (4-cyl.)	87	\$27,609	↑	↑	Std. ↑	89	28	8.9	131	54.5	↑	↑	↑	↑ / ↑	↑	4+1
✓ Toyota Camry LE (4-cyl.)	84	\$26,364	↑	↑	Std. ↑	86	32	8.0	126	53.5	↑	↑	↑	↑ / ↑	↑	3+1
✓ Nissan Altima 2.5 SV	84	\$29,330	↑	↓	Std. ↑	81	31	7.6	131	53.5	↓	↓	↑	↑ / ↑	↑	4+0
✓ Honda Accord EX (1.5T)	82	\$28,345	↓	↑	Std. ↑	89	31	7.7	135	54.5	↑	↑	↑	↑ / ↑	↑	4+1
✓ Kia Optima LX (2.4L)	82	\$25,860	↓	↓	Std. ↑	86	28	8.0	130	51.5	↑	↑	↑	↑ / ↑	↑	3+2
✓ Mazda6 Touring (2.5L)	80	\$26,590	↑	↑	Std. ↑	79	28	9.2	133	54.0	↑	↑	↑	↑ / ↑	↑	3+2
✓ Ford Fusion SE (1.5T)	72	\$27,720	↓	↑	Std. ↑	81	24	9.2	125	52.5	↑	↑	↑	↓ / ↑	↑	3+2
<b>SPORTS CARS</b>																
✓ Porsche 718 Boxster 2.0T	88	\$69,790	↑	↑	Opt.	95	26	4.4	108	59.0	↑	↓	↓	↑ / NA	↓	1+2
✓ BMW M240i	87	\$50,400	↓	↑	Std. ↑	98	25	5.2	115	58.5	↑	↓	↑	↑ / ↓	↑	2+0
✓ Toyota Supra Premium	80	\$56,115	↓	↑	Std. ↑	91	27	4.6	115	56.0	↑	↓	↓	↑ / NA	↓	1+1
✓ Audi TT 2.0T	78	\$50,600	↑	↑	NA	84	26	6.3	113	58.0	↑	↓	↓	↑ / ↓	↓	1+2
✓ BMW Z4 sDrive30i	76	\$59,195	↓	↑	Std. ↑	86	29	6.1	111	56.0	↑	↓	↓	↑ / NA	↓	1+2
✓ Ford Mustang GT Premium (V8)	72	\$43,295	↓	↑	Opt.	84	19	4.9	121	54.5	↑	↓	↓	↑ / ↓	↑	2+1
<b>LUXURY LARGE SUVs</b>																
✓ Toyota Land Cruiser	74	\$84,820	↑	↑	Std. ↑	68	14	7.3	140	46.0	↓	↑	↑	↑ / ↑	↑	43.0
Lincoln Aviator Reserve (3.0T)	72	\$64,920	↓	↑	Std. ↑	82	19	6.2	138	52.0	↑	↑	↑	↑ / ↑	↓	49.0
Mercedes-Benz GLS450	71	\$89,030	↓	↑	Std. ↑	86	20	6.4	133	50.5	↓	↑	↑	↑ / ↑	↓	42.5
BMW X7 xDrive40i	70	\$84,095	↓	↑	Std. ↑	94	22	6.5	136	52.5	↑	↑	↑	↑ / ↑	↓	26.0
Infiniti QX80 Luxe	67	\$63,395	↓	↓	Std. ↑	68	15	6.9	139	48.0	↓	↑	↑	↑ / ↑	↑	49.5
Lincoln Navigator Select	65	\$86,480	↓	↑	Std. ↑	65	16	6.2	144	47.0	↓	↑	↑	↓ / ↑	↓	56.0
Land Rover Range Rover HSE (3.0L)	54	\$88,545	↓	↓	Std. ↑	78	17	6.7	137	48.5	↓	↑	↑	↑ / ↑	↓	34.5
Cadillac Escalade Premium	41	\$87,360	↓	↓	Opt.	61	16	6.1	142	45.0	↓	↓	↑	↑ / ↑	↓	48.0

**HOW WE TEST:** Recommended models did well in our Overall Score, which factors in Road-Test Results, Predicted reliability, Owner satisfaction, and Safety, which includes crash-test

results and the availability of crash prevention features, such as forward collision warning and automatic emergency braking, pedestrian detection, and blind spot warning.

NA means no such safety system is offered; Opt. means it's available but not as standard equipment. We also rate models from ↓ to ↑ based on how many advanced safety features come

standard. We deduct points if a model's gear selector lacks fail-safes. Digital or All-Access members can go to [CR.org/cars](https://www.cars.com) for complete ratings.

## Index

THIS INDEX LISTS ALL THE ARTICLES PUBLISHED IN THE MAGAZINE OVER THE PAST 12 MONTHS (INCLUDING THIS ISSUE). FOR INDEXES COVERING THE PAST FIVE YEARS, GO TO [CR.ORG/5YEARINDEX](http://CR.ORG/5YEARINDEX).

## A

Air conditioners	
ratings	
central	Jun 19, 21
window/portable	Jun 19, 23
time line	Jun 19, 14
window	Jun 19, 19
Air fryers	Sep 19, 42
Air purifiers	Mar 20, 13
Air travel	Feb 20, 42
time line	Feb 20, 14
Airfare savings	Sep 19, 16
Almond milk	Nov 19, 32
Antibiotics in food	Feb 20, 16
Ants, getting rid of in home	Jun 19, 14
Appliances	
coffee brewing	Nov 19, 29
ratings	Nov 19, 26; Nov 19, 30
countertop	Sep 19, 36
energy efficiency	Jun 19, 7
ratings	
countertop	Sep 19, 45
reliability	Aug 19, 28
reliability	Aug 19, 24
Arbitration	Mar 20, 38
Arsenic in bottled water	Jul 19, 19

### AUTOMOBILE RATINGS

Audi A6	Dec 19, 59
Audi A8	May 19, 59
Audi E-Tron	Nov 19, 63
Audi Q3	Jan 20, 61
BMW 3 Series	Aug 19, 63
BMW X7	Jul 19, 64
BMW Z4	Aug 19, 64
Cadillac XT4	May 19, 59
Cadillac XT6	Nov 19, 63
Chevrolet Blazer	Jun 19, 60
Ford Edge	May 19, 60
Ford Escape	Feb 20, 59
Ford Explorer	Dec 19, 59
Ford Ranger	Jul 19, 63
Honda Passport	Jun 19, 60
Hyundai Kona Electric	Sep 19, 63
Hyundai Palisade	Dec 19, 60
Jaguar I-Pace	Jul 19, 63
Jeep Gladiator	Oct 19, 64
Kia Niro EV	Oct 19, 63
Kia Soul	Aug 19, 64
Kia Telluride	Jul 19, 64
Lexus UX	Jun 19, 59
Lincoln Aviator	Jan 20, 61
Lincoln Corsair	Feb 20, 59
Mazda3	Aug 19, 63
Mercedes-Benz A-Class	Nov 19, 64
Mercedes-Benz CLA	Feb 20, 60
Mercedes-Benz GLE	Sep 19, 64
Mercedes-Benz GLS	Mar 20, 59
Nissan Leaf Plus	Dec 19, 60
Nissan Versa	Mar 20, 59
Range Rover Evoque	Oct 19, 64
Subaru Crosstrek Hybrid	Oct 19, 63
Subaru Legacy	Mar 20, 60
Subaru Outback	Feb 20, 60
Toyota Corolla	Sep 19, 63
Toyota RAV4	May 19, 60
Hybrid	Sep 19, 64
Toyota Supra	Mar 20, 60
Volkswagen Arteon	Nov 19, 64
Volvo S60	Jun 19, 59

### AUTOMOBILES & AUTO EQUIPMENT

Automotive safety	May 19, 52
Best & worst lists	Apr 19, 20
Brand Report Card	Apr 19, 18
Car washes	Apr 19, 36
Child car seats	Feb 20, 20
ratings	Feb 20, 23
Coming in 2019	Apr 19, 28
Electric vehicles	Sep 19, 54; Dec 19, 7
fees	Feb 20, 14
Fire prevention	Jan 20, 16
Infotainment systems	Jun 19, 34
ratings	Jun 19, 41
Insurance	Nov 19, 48

ratings	Nov 19, 54
Key fob features	Jul 19, 62
Potential deal breakers	Nov 19, 56
Profiles, 2019	Apr 19, 48
Ratings, 2019	Apr 19, 38
Reliability	Apr 19, 86; Jan 20, 50
ratings	Apr 19, 88; Jan 20, 55
Repair time line	Mar 20, 14
Roadsters	
Fiat 124 Spider vs.	
Mazda MX-5 Miata	Aug 19, 15
Safety systems	
repair costs	Mar 20, 54
survey findings	Aug 19, 56
for teen drivers	Sep 19, 15
for women	Feb 20, 52
Seat belts	May 19, 55
Selling tips	Apr 19, 30
SUVs	
Honda CR-V vs. Toyota RAV4	Jun 19, 13
vs. pickup trucks	Apr 19, 32
Tires	Dec 19, 52
ratings	Dec 19, 56
time line	Jan 20, 14
Top Picks for 2019	Apr 19, 13
Truck underride guards	Jul 19, 7
Used cars	Apr 19, 82; Oct 19, 54
hidden risks and recalls	Jun 19, 52
ratings	Oct 19, 59

## B-D

Blenders	Aug 19, 19
ratings	Aug 19, 20
vacuum	May 19, 13
Botanicals	Dec 19, 26
Bottled water	Nov 19, 36
arsenic in	Jul 19, 19
Breakfast time line	Sep 19, 14
Cable TV	Sep 19, 24
fee transparency	Jan 20, 7
Cameras	Nov 19, 13
Cannabidiol (CBD)	May 19, 44
Car washes	Apr 19, 36
Cleaning tips	
flat-screen TVs	Feb 20, 18
grills	Sep 19, 14
laundry stains	Mar 20, 17
windows	May 19, 14
Coconut milk	Nov 19, 32
Coffee	Nov 19, 24
coffee makers	Nov 19, 29
ratings	Nov 19, 26; Nov 19, 30
cold brew	Jul 19, 13; Nov 19, 27
health benefits	Nov 19, 28
complaining effectively	Jan 20, 24
Computers	
all-in-one desktop ratings	Dec 19, 25
laptops	Dec 19, 18
ratings	Dec 19, 23
cookware, stackable	Aug 19, 17
credit freezes	Feb 20, 7
credit scores	Aug 19, 36
how to improve	Aug 19, 40
Data privacy	Oct 19, 24; Mar 20, 7
children's	Dec 19, 7
Data protection	Aug 19, 7
Data security	Sep 19, 7; Oct 19, 7
Debt	Oct 19, 36
Decking	Aug 19, 17
Deer collisions	Oct 19, 14
Deli meat	Oct 19, 48
Dishwashers	Mar 20, 19
ratings	Mar 20, 22
Drug prices	Jun 19, 7; Jan 20, 7; Jan 20, 38
lowering	Aug 19, 7
Dutch ovens	Sep 19, 13

## E-G

Echinacea supplements	Dec 19, 36
Electric kettles	Feb 20, 15
Energy bars for kids	Oct 19, 17
Energy efficiency, appliances	Jun 19, 7

Eyeglasses	Mar 20, 15
Fast-food chains' antibiotic use	Feb 20, 16
Fees	
cable TV	Jan 20, 7
hotels	Jan 20, 7
utilities	Aug 19, 7
"What the Fee?!" campaign	Jul 19, 28
Fire safety time line	Oct 19, 14
Food	
bread labeling	Jul 19, 16
breakfast time line	Sep 19, 14
heavy metals in	
fruit juice	May 19, 7
holiday treats	Dec 19, 16
meat labeling	Dec 19, 7
nutrition labeling	Jan 20, 17
processed	Jan 20, 32
Food, antibiotics in	Feb 20, 16
Food processors	Sep 19, 44
Furniture	
tipping hazards	May 19, 7; Sep 19, 7
Generators	
ratings	Dec 19, 41
safety	Dec 19, 38
Gifts for \$50 and under	Dec 19, 13
Glasses	Mar 20, 15
Granola	Aug 19, 14
Grills	Jul 19, 22
buying at Home Depot vs. Lowe's	Jul 19, 24
ratings	Jul 19, 25
Grocery shopping	Aug 19, 46
delivery services	
ratings	Aug 19, 51
survey	Aug 19, 50

## H-K

Headphones, noise-canceling	Nov 19, 14
Health information privacy	Jul 19, 7
Hearing aids	Jun 19, 42
ratings	Jun 19, 50
Home insurance	Sep 19, 48
ratings	Sep 19, 52
Home security systems	Oct 19, 19
ratings	Oct 19, 23
Hot car death prevention	Nov 19, 7
Ice cream	
healthier	May 19, 32
ratings	May 19, 37
time line	May 19, 14
Inclined infant sleepers	Feb 20, 7
Insect repellents	Jul 19, 54
ratings	Jul 19, 60
Insurance	
auto	Nov 19, 48
ratings	Nov 19, 54
home	Sep 19, 48
ratings	Sep 19, 52
Kettles, electric	Feb 20, 15

## L-P

Laptops	Dec 19, 18
ratings	Dec 19, 23
Lawn mowers and tractors	Jul 19, 40
ratings	Jul 19, 44
reliability	Jul 19, 42
Luggage	Feb 20, 49
lifetime warranties	Feb 20, 47
ratings	Feb 20, 50
shipping services	Feb 20, 45
Marijuana	May 19, 50
Mattresses	Feb 20, 24
ratings	Feb 20, 36
shopping for online	Feb 20, 26
Meat, deli	Oct 19, 48
Meat substitutes	Oct 19, 42
Medical billing	
surprise bills	Oct 19, 7
Melanoma	Jul 19, 14
Mosquito repellents	Jul 19, 54
Multi-cookers	Sep 19, 38
Net neutrality	Jul 19, 7

Noise-canceling headphones	Nov 19, 14
Oat milk	Nov 19, 32
Ovens, self-cleaning	Mar 20, 14
Pain relief	Jun 19, 24
Pasta	Mar 20, 16
Patio tiles	Sep 19, 16
Peanut butter cups	Oct 19, 15
Pedestrian safety	Apr 19, 8
Pest control time line	Jul 19, 14
Pillows	Feb 20, 36
ratings	Feb 20, 37
Plant milks	Nov 19, 32
ratings	Nov 19, 34
Predatory lending	Feb 20, 7
Printers	
reliability	Jun 19, 15
Pyramid schemes	May 19, 7

## R-S

Radon detection	Feb 20, 16
Ranges	Nov 19, 16
Recall failings	Dec 19, 42
Refrigerator water filters	Sep 19, 17
Retail memberships	Dec 19, 17
Retirement savings	Jun 19, 7; Oct 19, 36
Robocalls	May 19, 22; Sep 19, 7;
Nov 19, 7; Jan 20, 7	
Roofing	Jan 20, 19
ratings	Jan 20, 23
Routers	Mar 20, 46
ratings	Mar 20, 51
Safety standards	Nov 19, 7
Samsung Galaxy Fold	Feb 20, 17
Security systems, home	Oct 19, 19
Sleep aids	Feb 20, 34
Slow cookers	Sep 19, 41
Smart speakers	Aug 19, 42
privacy	Oct 19, 28
Smartphones	
5G service	Aug 19, 16
affordable models	Jan 20, 13
car infotainment features	Jun 19, 34
Soy milk	Nov 19, 32
Steam mops	Jul 19, 15
Stuffing	Nov 19, 15
Sunscreens	Jul 19, 46
labeling	Jul 19, 50
ratings	Jul 19, 51
Supermarkets	Aug 19, 46
delivery service survey	Aug 19, 50
ratings	Aug 19, 52
time line	Aug 19, 14
Supplements	Dec 19, 26

## T-W

Tankless water heaters	Oct 19, 16
Televisions	
8K	Aug 19, 13
antennas	Sep 19, 32
ratings	Nov 19, 21
shopping for	Nov 19, 18
Thanksgiving time line	Nov 19, 14
Tick protection	Jul 19, 54
Timeshares	Feb 20, 24
Toaster ovens	Sep 19, 40
Toothpaste ingredients	Jun 19, 16
Trail mix	Jun 19, 17
Treadmills	Feb 20, 13
Turmeric supplements	Dec 19, 36
TV streaming	Sep 19, 28
device ratings	May 19, 43; Sep 19, 35
free	May 19, 38
Vacuum blenders	May 19, 13
Vacuums	Sep 19, 19
Waffle irons	Jan 20, 14
Water, bottled	Nov 19, 36
arsenic in	Jul 19, 19
Water filter pitcher ratings	Nov 19, 47
Water heaters, tankless	Oct 19, 16
Windows	May 19, 18
ratings	May 19, 21



# These Home-Sale Signs Are Fixer-Uppers

After reading these silly signs, you may want to extend your house search

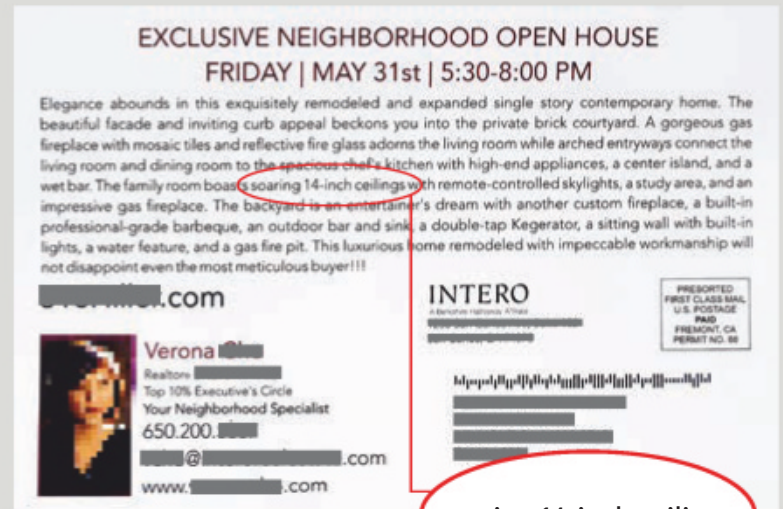
## A Cheesy Sales Pitch

Proof perhaps that there's no such thing as a free lunch. Submitted by Karen Jury, via email



## Coming Up Short

Buyers more than a foot tall need not apply. Submitted by Allan Hirsch, Belmont, CA



soaring 14-inch ceilings

## Lawn Story

Could be great for those who hate to mow. Submitted by Kaye McSpadden, via email



## A Charming One-Bathroom?

Forget about getting a kitchen, too. Submitted by Ken O'Gorman, Flemington, NJ



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