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SEPTEMBER 2020

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- Printers
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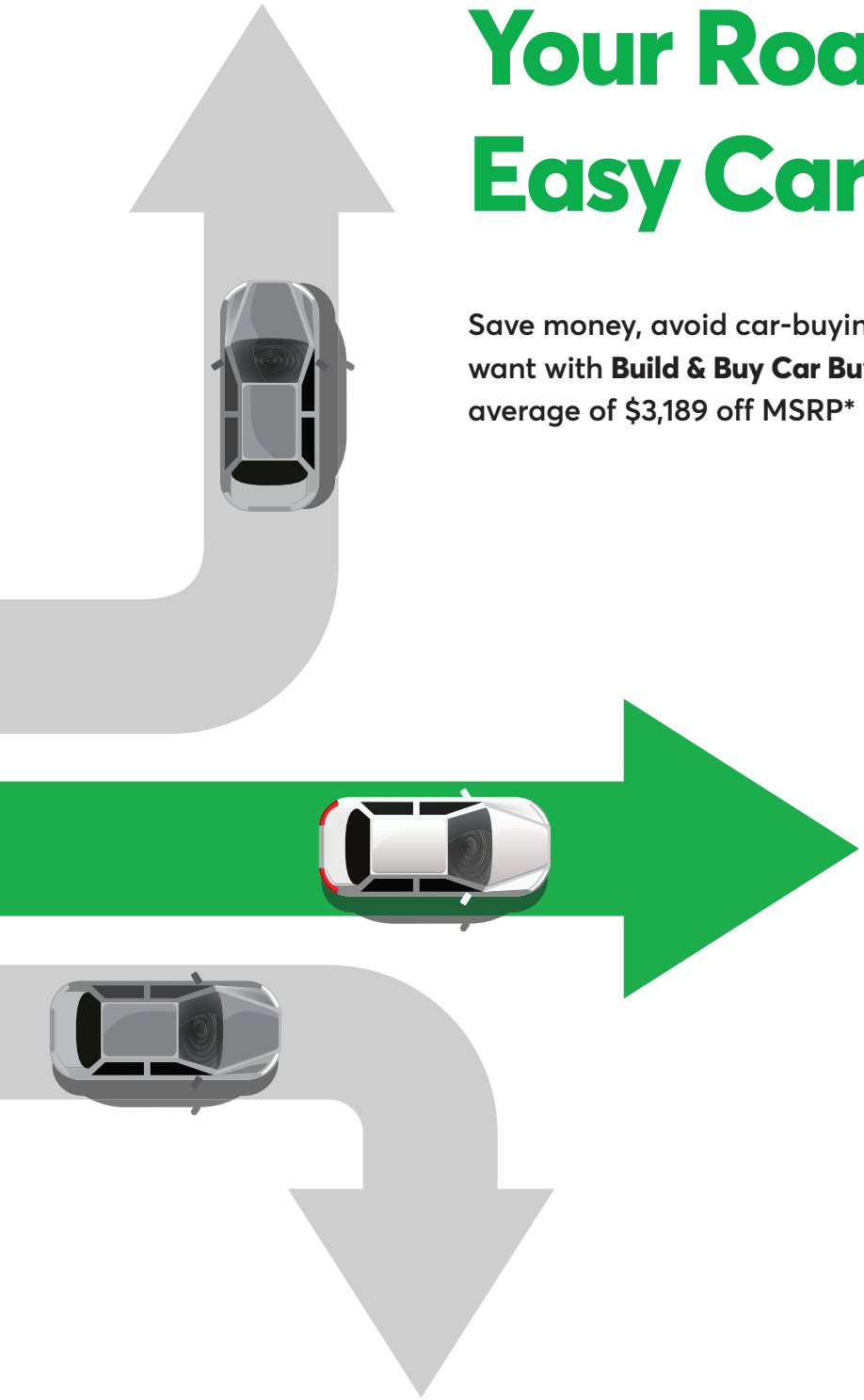

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CR

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We rate products using these symbols:
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Burdens of Proof

YOU SHOULD NEVER have to guess when it comes to your health—nor should you have to worry about dangerous products being for sale online or on store shelves before they've been adequately vetted.

The world of supplements is one especially prone to alluring promises. So when I found a suspect supplement in my 94-year-old father's medicine cabinet, I certainly could understand why he'd try it—given his aches and pains and the convincing marketing language claiming the product would make them go away. But these promises are too often more myth than reality, and that's why proper oversight is so important.

More than two-thirds of us take supplements on a regular basis. Many consumers assume that these have been tested and proved to be safe before we can buy them, but are then shocked to learn that the law doesn't require that. In fact, consumers might not even be notified when the government is actively probing a supplement safety issue. Instead, a deficient Food and Drug Administration database puts the burden—and the potential health risks—squarely on consumers' shoulders. Read our special investigation, "A Tattered Safety Net," on page 30, for full details.

For decades now, the FDA's role in monitoring and removing dangerous supplements from the marketplace has not kept pace with the flood of products promising quick fixes to either improve one's health or treat conditions. The agency urgently needs more resources to protect consumers.

Our mission at CR has always been to serve as a check on false advertising and to be a source of trusted information, and a central mandate has always been to have consumers and corporations on even footing. Supplements are one example of the current imbalance: A multibillion-dollar industry operates with insufficient oversight, and families bear the brunt when things go wrong. Consumers deserve a level playing field—and that starts with credible information and accountability in government and industry.

At CR, that's the fight we're fighting every day.

Marta Tellado

Marta L. Tellado,
President and CEO
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Keeping Health Info Private

WHAT'S AT STAKE

Contact tracing—which involves interviewing people who have a disease, notifying anyone with whom they've come into close contact, and referring the latter for tests—is a proven tool for containing the outbreak of infectious diseases.

To aid the effort during the COVID-19 pandemic, health officials have recruited tech firms to develop smartphone apps and other digital tools to trace and monitor the spread, and automatically alert people who have come into contact with confirmed cases.

But many Americans are reluctant to trust tech firms to protect their sensitive health information—understandably so, given years of data breaches and privacy scandals.

HOW CR HAS YOUR BACK

To address these concerns and thereby improve the effectiveness of contact tracing, CR advocates helped draft—and are urging legislators to pass—the Public Health Emergency Privacy Act. The bill would, among other things, ensure that data collected by contact-tracing apps and similar technology would be used only for public health purposes, and would explicitly prohibit using the data for commercial advertising, e-commerce, and efforts to affect access to employment and education. It would also give consumers control over their participation by mandating meaningful transparency and requiring opt-in consent.

CR is also supporting state-level efforts to pass similar laws in California and New York.

WHAT YOU CAN DO

Learn more about CR's work for digital rights at **CR.org/digital-lab**. To read CR's latest coverage of COVID-19, go to **CR.org/covid19**.

Raising the Bar for Car Safety

WHAT'S AT STAKE

In recent years more than 36,000 people were killed, and some 2.5 million injured, in U.S. auto crashes annually. Recent advances in safety technologies are effective at reducing crash and fatality risks—and automakers have committed to equipping most new vehicles with two of them, forward collision warning and automatic emergency braking, by September 2022.

But two other proven technologies—blind spot warning and pedestrian detection—have not received the same commitment. Some automakers sell them as part of add-on packages along with premium stereo systems and sunroofs. "Safety shouldn't be treated as a luxury item," says William Wallace, CR manager of safety policy.

HOW CR HAS YOUR BACK

In the past, CR has encouraged automakers to add safety systems as standard features by giving extra points in our ratings for doing so. More recently, we spotlighted the issue with an analysis of the 15 top-selling models in the U.S. Among other things, it showed that blind spot warning comes standard on the base-level trim of just three of those models and that buyers must pay an extra $16,735—60 percent over the base sticker price—for a Chevrolet Silverado 1500 equipped with pedestrian detection.

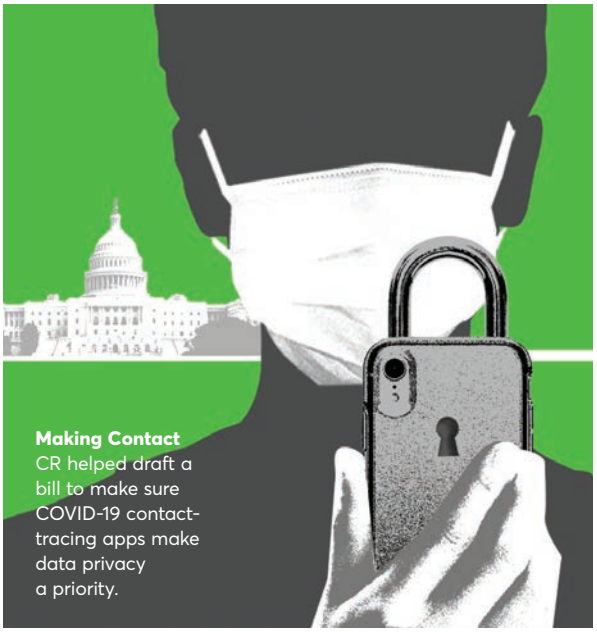
CR is also pushing Congress to pass a bill by U.S. Rep. Jan Schakowsky, D-Ill., that would require certain crash avoidance technologies to come standard on all new vehicles.

WHAT YOU CAN DO

Learn more about CR's work promoting auto safety and efficiency at **CR.org/auto0920**.

CR PROGRESS UPDATE

- CR endorsed a federal bill that, if passed, would help food processing plants protect workers from COVID-19 risks, provide grants to **help food banks and nonprofits** meet the growing need for food in their communities, and prevent food waste by helping surplus food reach families in need.
- A CR petition, at **CR.org/video0920**, demands that videoconferencing **companies do more to protect our online security** and privacy.
- New York Gov. Andrew Cuomo signed a CR-endorsed law **expanding protections against price gouging** on products that protect people from COVID-19.



Making Contact CR helped draft a bill to make sure COVID-19 contact-tracing apps make data privacy a priority.

Making Infant Sleep Safer

WHAT'S AT STAKE

After CR's 2019 investigation of infant inclined sleepers—which have been linked to at least 92 infant deaths—many retailers, including Amazon, Buy Buy Baby, Sears, and Walmart, pulled them from their shelves and online sites. Yet these dangerous products still circulate in the marketplace.

HOW CR HAS YOUR BACK

CR is advocating for a federal law banning infant inclined sleepers. We also support new rules proposed by the Consumer Product Safety Commission that would effectively prohibit them. Meanwhile, we called on Craigslist, Facebook Marketplace, and manufacturers Baby Delight, Chicco, Hiccapop, and Nuna to immediately commit to removing all inclined sleepers from sale.

WHAT YOU CAN DO

Go to **CR.org/sleepers0920** to urge the companies to put babies' safety first.

ILLUSTRATION BY JOHN RITTER

Our **"Sun Safety Guide"** in July offered up the best sunscreens from our testing, as well as expert advice for minimizing your risk for skin damage and skin cancer. Readers wrote in with questions and cautionary tales. To join the conversation, go to **CR.org/sunsafety0920**.

YOUR GREAT JULY article advised readers to keep an eye out for any changes in skin conditions and to moles in particular. I would like to add that even a tiny dot can be critical. I found a black dot, like the period at the end of this sentence, on my shin. I called my dermatologist and had a biopsy. It was melanoma, and it required some fairly deep Mohs surgery for removal. See your doctor. I was lucky, and so far I haven't had a reoccurrence.
–Jo Turpin, Washington, UT

WRITE

Go to CR.org/lettertoeditor to share your comments for publication.

AFTER A VERY GOOD article on sunscreen, I found the product offerings concerning because your ratings revealed that the majority of sunscreens tested did not provide the SPF rating as labeled. Worse, one of the recommended products, CVS Health Ultra Protection Sun Lotion SPF 70, tested at SPF 30 to 39–at best only 55 percent of the label claim. Most of the products tested at 49 percent or lower of the labeled SPF. The misleading labeling should be a call to action on the part of CR.
–Curtis Schroeder, Silver Spring, MD

EDITOR'S NOTE *We agree that you should be able to rely on the SPF claim on a sunscreen label. Still, CR considers a sunscreen to be protective if it had at least an SPF 30 in our tests, provided it also rated highly for UVA and actual SPF protection. That's the case with the CVS sunscreen, which tested between an SPF 30 and 39. The American Academy of Dermatology recommends using an SPF 30 or higher. SPF 30 blocks 97 percent of UVB rays, SPF 50 blocks 98 percent, and SPF 100 blocks 99 percent. But CR thinks the FDA should do more to help consumers trust that they're getting the protection they expect from the sunscreen they buy.*

IF I'M GOING TO BE outside in the sun where there are mosquitoes and ticks, can I use sunscreen and repellent? And if so, in which order should they be applied?
–James Baker, Spring Valley, CA

EDITOR'S NOTE *Yes, you can and should use both. Apply sunscreen first. Rub it in and let it absorb into your skin. Then apply repellent on top. You have to reapply sunscreen every 2 hours while you're in the sun, but one application of a bug spray that rates Excellent in our test for protection against mosquitoes and ticks should last you up to 8 hours.*

IN THE RATINGS of sunscreens: There is no mention of Walmart's Equate brand, even though through the years it has been a top performer.
–Brad Bigam, Wilmore, KY

AS A LONG-TERM CR subscriber, I noticed immediately that La Roche-Posay Melt-In Sunscreen Milk is no longer at the top of the ratings, a position it had held for several years. In fact, it's not even included among the sunscreens rated. Is there a reason for this?
–Brenner Fuller, Antrim, NH

EDITOR'S NOTE *The Equate (Walmart) and La Roche-Posay sunscreens that were at the top of our ratings in the last few years–Equate (Walmart) Ultra Lotion SPF 50 and La Roche-Posay Anthelios 60 Melt-In Milk Sunscreen–were reformulated, and the new formulations weren't ready in time to be included in our testing.*

PASSWORD TIPS

CR'S JULY 2020 report "Should You Use a Password Manager?" has no mention of the free password saving features that are built in to some browsers. What is CR's take on these?
–Alex Johnston, East Tawas, MI

ICONS: ELIAS STEIN

EDITOR'S NOTE *Password managers in internet browsers such as Apple's Safari, Google's Chrome, and Mozilla's Firefox can be a big help in wrangling your various log-ins—and they generate strong passwords for you. They're also all great at limiting targeted advertising, and they provide privacy settings that give consumers some say over how their data is controlled and processed. But they work only when you access accounts through that one browser. If you use another browser or a mobile app, you won't have access to those passwords.*

GRILL THRILLS

PAUL HOPE'S REVIEW of his favorite cooking methods and grills ("Grills: How Do I Love Thee? Let Me Count the Ways," July 2020) was terrific! His reasons for using each grill type and fuel really made sense. But CR's grill rating emphasis on even cooking never has been meaningful for me. I like uneven cooking grills, because no matter people's rare, medium, or well-done orders, I can put all their steaks on and take 'em off at the same time! Voilà!
–Chris McLaughlin, Cove, OR

THUMBS UP TO Paul's Grill Pick of the Weber Genesis Grill. I have a different model of the same grill that I purchased in 2003. I have replaced a few parts, but it still works just as well as when new.
–Maryam Lyon, Sidney, OH

THE CR REVIEW of grills omits the best line of grills I ever used: the Portable Kitchen brand. My PK360 combines features of all the charcoal grills you covered. Its air valves allow temperature control like a kamado, but it costs less and has a bigger cooking surface. Please include it in your next review.
–Burke Grandjean, Georgetown, TX

EDITOR'S NOTE *The Portable Kitchen grills do indeed have a loyal following, and our analysts say that the brand offers very long warranties for the category. We're considering this brand for future testing.*

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CAR TALK

ON YOUR JULY 2020 "Road Report" page, you stated that consumers will be paying $300 billion more in car ownership costs as a result of federal fuel-efficiency standards being rolled back. Because the high-efficiency requirements of previous years have been a major factor in increased vehicle prices, logic would seem to point to an actual reduction in costs for owners, or at least a reduction in price increases caused by the need to build ever-more-sophisticated engines to meet higher requirements. Apparently your assumptions for this calculation include paying higher prices for cars that get much lower fuel mileage.
–Joseph Crum, Abbeville, SC

EDITOR'S NOTE *The $300 billion figure comes from a detailed Consumer Reports analysis in conjunction with Synapse Energy Economics titled "The Un-SAFE Rule Update: Weakening Fuel Economy and Emissions Standards Cost Consumers Money in Every State." The analysis takes into account the reduction in upfront cost of technology for more fuel-efficient vehicles and the increased lifetime fuel costs of those vehicles from model year 2021 through 2035. You can read the report at* ***CR.org/CAFErollback.***

A DEHUMIDIFIER THAT AGES GRACEFULLY?

I've purchased four dehumidifiers (What We're Testing, July 2020) over the past 10 years, so my top concern is now reliability. What is a reasonable life expectancy for one of your recommended brands?
—Steve Pillsbury, Avon, CT

EDITOR'S NOTE *In our 2019 CR Members Survey on dehumidifiers purchased between 2009 and 2019, we found that owners of dehumidifiers expect them to last for a median of 10 years. However, only 2 percent of the dehumidifiers in our survey are that old. Of the brands we currently test, Keystone gets an Excellent predicted reliability rating, while Honeywell gets a Very Good rating.*

SUMMER READING

I SUSPECT I'M not the only person to observe that you neglected to mention one of the easiest objects to "Make Summer Reading a Breeze" (July 2020). It works on the go, on the couch, and when you're outside. It's not so good hands-free, although there's nothing better than having a parent read to you at bedtime. It never needs recharging, works no matter the signal strength, and is affordable and sometimes even free. The downside is that it is not at all waterproof. That's right, actual paper books. The original Project Gutenberg. Check one out today!
–Stephen Geis, Chicago

ILLUSTRATION BY JASON SCHNEIDER

What We're Testing in Our Labs ...

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

Cookware Sets for $110 or Less

WE TESTED: 13 nonstick sets
WE TEST FOR: Cooking evenness, how easily cooked eggs slide off a pan's nonstick surface without assistance, the durability of nonstick coating, and more.

ABOUT THE SCORES:
Median: 74
Range: 53-79

Best Overall & Dishwasher-Friendly (8 Pieces)
The Rock by Starfrit Nonstick
$110

79
OVERALL SCORE

Includes Cast-Iron Fry Pan (10 Pieces)
Pioneer Woman Classic Belly Ceramic
$100

77
OVERALL SCORE

Bargain Buy With Extras (15 Pieces)
AmazonBasics Non-Stick
LFFP16027
$52

76
OVERALL SCORE

Printers With Lower Ink Costs

WE TESTED: 129 all-in-one models
WE TEST FOR: Speed and quality of printing graphics and text, ink costs, and more.

ABOUT THE SCORES:
INKJET: Median: 54
Range: 42-69
LASER: Median: 73
Range: 58-81

Cost-Cutting B&W Laser
Canon ImageClass MF267dw
$250 (plus $40 per year for toner)

80
OVERALL SCORE

Inkjet With Low-Cost Ink
Canon Pixma G4210
$280 (plus $6 per year for ink)

67
OVERALL SCORE

Low-Priced, Speedy Inkjet
Brother MFC J491DW
$95 (plus $78 per year for ink)

62
OVERALL SCORE

Ask Our Experts

I'm sick of ink-guzzling printers. Help!

WHEN WE TEST, we combine the up-front price with the cost of ink or toner refills per year. We calculate the price of cartridges, data on how much consumers print, and typical ink consumption–and we find that the cheapest printers can be guilty of having the highest ink costs. So while the Canon Pixma G4210 inkjet (above) hits your wallet hard on Day One, it's a money-saver over time, using $6 worth of ink per year, vs. an $80 Epson WorkForce WF-2830 printer that can use over $300 in ink for the same time period. Also consider laser printers, which use low-cost toner instead of ink and are generally more reliable, based on our surveys of CR members.

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**.

Treadmills for $2,000 or Less

WE TESTED: 26 models
WE TEST FOR: Ergonomics, including belt size and handgrip design; sturdiness of construction; ease of using controls and display; and more.

ABOUT THE SCORES:
Median: 77
Range: 47-86

Best Folding & Biggest Belt
Sole F80
$1,500

86
OVERALL SCORE

Nice Price for Nonfolding
True M30
$2,000

81
OVERALL SCORE

Compact Folding for Less
LifeSpan Fitness TR1200i
$900

73
OVERALL SCORE

Portable Speakers for $100 or Less

WE TESTED: 21 wireless and Bluetooth models
WE TEST FOR: Sound quality; ease of use, including setup and controls; and versatility, which evaluates the presence of useful features.

ABOUT THE SCORES:
Median: 40
Range: 20-60

Very Versatile & Claimed 24 Hours of Battery Life
Sony SRS-XB31
$100

58
OVERALL SCORE

Good Sound & Groovy Price
JBL Flip 4
$75

57
OVERALL SCORE

Palm-Sized Portability
Bose SoundLink Micro
$80

47
OVERALL SCORE

Foam Mattresses for $800 or Less

WE TESTED: 32 models
WE TEST FOR: A model's support for petite, average, and large/tall side sleepers and back sleepers; durability; firmness; and more.

ABOUT THE SCORES:
Median: 72
Range: 60-81

Best All-Around & Very Firm
Sleep on Latex Pure Green Firm
$795

81
OVERALL SCORE

Medium-Firm & Sleeps Cool
Novaform Serafina Pearl Medium (Costco)
$800

78
OVERALL SCORE

A Bargain for Softie Lovers
AmazonBasics Memory Foam 10-Inch
$260

68
OVERALL SCORE

Gas Cooktops for $1,000 or Less

WE TESTED: 9 models
WE TEST FOR: How quickly a model can heat water to near-boiling on high; how well it can keep a low temperature, such as for melting chocolate; and more.

ABOUT THE SCORES:
Median: 66
Range: 37-92

Best Overall & WiFi-Enabled
Samsung NA30N6555TS, 30"
$1,000

92
OVERALL SCORE

Bargain Buy but Less Power
Ikea Framtid 602.887.01, 30"
$530

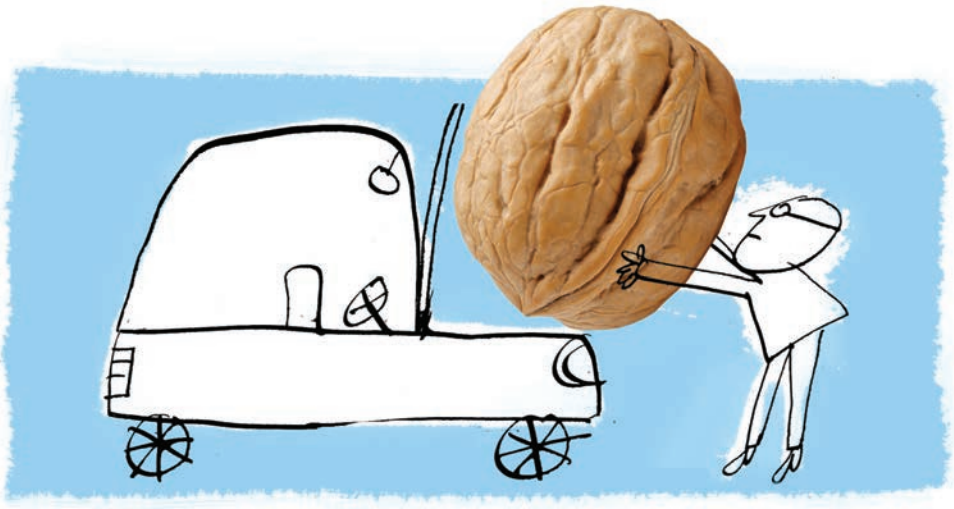
79
OVERALL SCORE

Hot Deal for More Space
Frigidaire Gallery FGGC3645QS, 36"
$780

70
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 those of another.*

COMING NEXT MONTH Washers, Dryers & More



I saw a sign for a 'walnut blasting' service at my auto shop. Which cars need that?

The process of walnut blasting, which entails cleaning the intake manifold and valves of a car's engine with a high-pressure air blast of finely crushed walnut shells (a biodegradable abrasive), is meant to help clear out carbon buildup on older gasoline direct injection (GDI) engines, thus helping your car run better. GDI engines are designed to improve fuel economy by injecting fuel directly into the combustion chamber, but this configuration can cause the intake valves to get dirtier with built-up carbon deposits—formed when trace amounts of engine oil seep past valve seals as a part of normal engine operation and then bake onto the valves. Over time, these deposits can cause hesitation, poor drivability, or a check-engine light, says John Ibbotson, CR's chief mechanic.

The walnut method may be best known to owners of BMWs; that manufacturer offered it as a solution for certain models with GDI engines between 2006 and 2016, though GDI engines made around the same time period from other brands, such as Audi and Volkswagen, may benefit as well. The process can be pricey: One shop we spoke to said it would cost around $1,000. Ask your shop whether a chemical intake cleaning, which can cost less, could work instead.

LEARN

We have more than 140 in-house experts who research, test, and compare. Submit your questions at CR.org/askourexperts ... and watch for the answers.

How can I stay safe from the coronavirus at the dentist?

The Centers for Disease Control and Prevention advises that dentists treat patients only after assessing them for COVID-19 and after weighing the risks of delayed care against the risk of potential viral exposure. That's because dental care poses clear infection risks: Dentists and hygienists must work very close to your face and use tools that may spray droplets. "Dental staff will now be wearing additional personal protective equipment, such as face shields, gowns, and masks," says Chad Gehani, D.D.S., president of the American Dental Association.

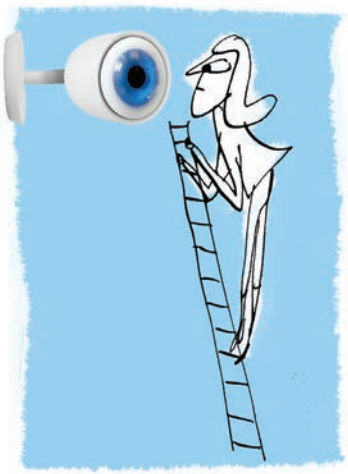
Your dental office may also want you to fill out a screening form (asking about recent travel, social interactions, and health history) and do a temperature check prior to an appointment. Some practices may have "virtual check-ins," where patients wait in their car, sign in for the appointment on their smartphone, and receive a text when it's time to enter the building. Inside, waiting-room chairs might be spaced at least 6 feet apart.

Because rules vary from state to state, call your dentist's office in advance to find out exactly what protocols it has in place. Note that regular checkups may be postponed: Crowns, fillings, or bridges, for instance, may take priority over a cleaning, Gehani says. In the meantime, keep brushing and flossing regularly at home.

How can I protect my home security cam from hackers?

News stories about home security cameras getting hacked have become all too common. One way such cameras are vulnerable to hacks is through a technique called credential stuffing. Hackers take usernames and passwords pilfered from data breaches (such as the Equifax data breach) and use them to try to access other accounts. These hackers are hoping that you've reused a password on multiple accounts—such as your home security camera account. Hackers' chances of success are decent: Fifty-two percent of nearly 30 million internet users have reused or modified passwords, according to a Virginia Tech analysis. And in a nationally representative CR survey on data privacy conducted in April 2019, 13 percent of respondents with online accounts said they used the same password on all accounts. That makes it a cinch for hackers to gain access.

To stay protected, keep your camera's firmware updated, says Maria Rerecich, who oversees CR's product testing, which includes data privacy and security concerns. (Look for an update button under the Settings menu in a camera's app.) Also, always create unique passwords and set up two-factor authentication when possible. Several major security cam brands, including Arlo, Google Nest, and Ring, offer this crucial extra protection.



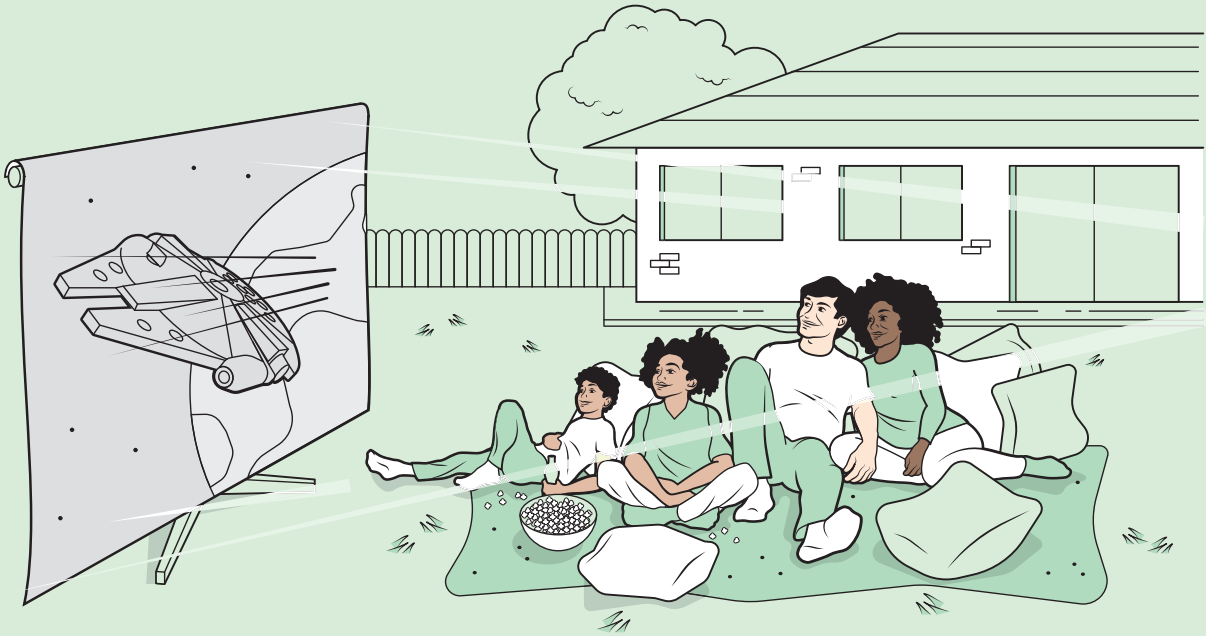
ILLUSTRATIONS BY SERGE BLOCH

CRInsights

GREAT VALUE

Aaxa S2 Pico Projector, 720p HD $280

- 4/5 PICTURE QUALITY
- 4/5 65" BRIGHTNESS
- 3/5 100" BRIGHTNESS



IN THE KNOW

BRING THE MOVIE THEATER TO YOU

DO YOU MISS viewing films on the big screen? Mini projectors, a relatively new breed of small, portable projectors, allow you to beam movies onto a wall inside your home—or at night outdoors using a sheet, screen, or other smooth, light surface. (You may need a USB or HDMI cable to connect a laptop or streaming player, such as an Apple TV or Roku, to the projector.)

In our testing—which included how well a mini tabletop projector displayed test patterns, as well as TV shows and movies at both 65- and 100-inch screen sizes—we found that many models offer decent brightness and picture quality. "Plus many of these small projectors can run on a rechargeable battery, which lets you take them almost anywhere," says Claudio Ciacci, the TV testing lead at CR.

A big differentiator in our tests was brightness, which can affect both image quality and how enjoyable the picture will be on a large screen. The LG, which excels at brightness and overall picture quality, topped our tests. Otherwise, the Aaxa model above, which isn't quite as bright but costs $170 less, offers the best overall value.

Keep in mind that all projectors benefit from a dark environment: The darker the room (or evening), the better the picture you'll see, especially with larger screen sizes. Also, the built-in sound quality wasn't great on any of the models we tested, but you can send audio to a Bluetooth speaker, a sound bar, or headphones from all four models shown here.

BEST PICTURE QUALITY

LG CineBeam PH550, 720p HD $450

- 4/5 PICTURE QUALITY
- 5/5 65" BRIGHTNESS
- 4/5 100" BRIGHTNESS

SUPER-PORTABLE

Miroir HD Pro Projector M220 720p $400

- 3/5 PICTURE QUALITY
- 5/5 65" BRIGHTNESS
- 4/5 100" BRIGHTNESS

BARGAIN BUY

Vankyo Leisure 430 (2020 Upgraded) 480p $120

- 3/5 PICTURE QUALITY
- 4/5 65" BRIGHTNESS
- 3/5 100" BRIGHTNESS

For more details and ratings, All-Access and Digital members can go to CR.org/projector0920.

FACE-OFF

A BETTER BREAD MAKER

AS STATES FIRST began issuing stay-at-home orders due to the pandemic, it wasn't just toilet paper that vanished from store shelves, but also bread-baking supplies, including flour and yeast. Not everyone has the knack for kneading a loaf from scratch, so many consumers have turned to bread makers: King Arthur Flour, for example, saw bread maker sales climb 800 percent in the last year.

"The promise of a bread maker is that there is no expertise required," says Tara Casaregola, who heads up our oven lab where hundreds of cakes and cookies are baked each year. "You can walk away from the process and come back 3 hours later to a finished loaf," she says. And today's bread makers are versatile, offering a range of settings from gluten-free to pizza dough.

To see which bread makers are easiest to use and turn out the best loaves, Casaregola tested three models (at right). She evaluated ease of setup and cleanup, noise level while kneading and baking, and how evenly a machine baked both basic white and whole-wheat bread. (At the time of our testing, bread flour was scarce at supermarkets, so all-purpose flour was used instead.)

The Zojirushi, which was a cinch to bake with and turned out small but nicely baked loaves in our tests, was the clear winner of the three. But many consumers may be happy enough with the lower-priced Breadman, which yielded golden loaves of white bread and medium-to-dark loaves of whole wheat in a similar amount of time as the other two models. You'll trade some convenience for money savings though: Casaregola warns that the control panel has a small display that isn't as informative or easy to use as the controls on its competitors.

GOOD BREAD FOR YOUR BUCK

Breadman Professional Bread Maker BK1050S $130

(shown at left)

- 2/5 CONTROLS
- 3/5 SETUP
- 3/5 NOISE

BEST OVERALL

Zojirushi Home Bakery Maestro BB-SSC10WZ $360

- 5/5 CONTROLS
- 5/5 SETUP
- 4/5 NOISE

LONGEST WARRANTY

Cuisinart Convection Bread Maker CBK-200 $450

- 3/5 CONTROLS
- 3/5 SETUP
- 2/5 NOISE

PHOTOS, BOTTOM LEFT TO RIGHT: TIME LIFE PICTURES/GETTY IMAGES, CONSUMER REPORTS, STAR TREK: THE NEXT GENERATION, CONSUMER REPORTS, GETTY IMAGES, CONSUMER REPORTS

CR Time Traveler HOT & COLD TEA

1773 Now known as the Boston Tea Party, 342 chests of tea are thrown from ships into Boston Harbor to protest a tax on tea.

1939 CR tests 40 brands of tea and finds that a Tetley tea is tops—but none we test are "an aid to vitality," nor sleep, as some ads promise.

1943 World War II halves the U.S. tea supply. We test tea substitutes from alfalfa to marigold petals. The best-tasting tea is made from maté, a South American herb.

1950 Our tea experts blind-taste 54 brands of loose tea and eight brands of bagged tea. The top grade of "Fine" is given to 23 brands.

1969 We test Crosse & Blackwell tea bags, with an insulating tag so that drinkers can squeeze a hot bag safely. "It really does insulate," we say.

WORSE — BETTER

HOW TO CLEAN PRACTICALLY ANYTHING...™

8 VINEGAR NO-NOS

It's not a clean-all cure-all. Don't use distilled white vinegar on these:

COUNTERTOPS
Vinegar's acid etches and dulls natural stone, such as limestone, marble, and granite. It can make counters lose their shine and deteriorate the finish on them. Instead, try a dish towel dipped in mild detergent or use a cleaner designed for natural stone.

KNIVES
Keep vinegar away from metals (including copper and aluminum). Not only can its corrosive action damage the finish on some knives but it also can dull a knife's edge, warns Nanni. Instead, use dish soap and warm water.

WASHING MACHINES
Vinegar is sometimes used as a fabric softener or to get rid of stains and odors in laundry, but it can damage (or even melt) the rubber seals and hoses in some washing machines, causing leaks. One expert we spoke with said front-loaders can be especially susceptible.

FLOORING
Many flooring manufacturers warn against using vinegar to clean your hardwood floors. Using it can even void the warranty in some cases. Diluted vinegar can dissolve the finish that protects the wood and leave it cloudy, dull, or scratched.

STAINLESS STEEL & SMALL APPLIANCES
"There are different grades of stainless steel on large and small appliances," says Jim Nanni, head of appliance testing for CR. "Some are less resistant to rusting, which can be spurred on by vinegar." On small appliances, also avoid any rubber parts that vinegar can corrode.

ELECTRONIC SCREENS
Never use vinegar on your computer, phone, tablet, or TV. "It can damage a screen's anti-glare properties and make a touch screen less responsive," says Antonette Asedillo, a tester at CR. Use a soft cloth dampened with water instead.

DISHWASHERS
You may have heard that running a dishwasher with a bowl of vinegar in it helps get rid of hard water film. But CR's testers tried it, and it didn't do a thing to remove hard water film. Specially formulated dishwasher cleaners from major brands, such as Affresh or Finish, can work better.

CLOTHES IRON
Using vinegar to clean the inside of your iron can permanently damage the appliance. Always consult the user manual for cleaning instructions. Some irons have a button you press to flush the steam-generation system clean.

SAY YES TO VINEGAR ON THESE

WINDOWS
Ammonia-based formulas, including some Windex products, can cause streaks or film on windows. For a cheap, streak-free alternative, mix up your own white vinegar and water solution.

COFFEE MAKERS, BLENDERS, AND TOASTERS
The plastic and glass surfaces on most small kitchen appliances, such as blenders, and the outside of toasters, are safe to clean with vinegar.

CARPETS
If you spill wine or juice on your carpet, vinegar can help. Mix 4 cups of water, a tablespoon of dish soap, and a quarter-cup of white vinegar, and let it sit on the stain for 5 minutes or so. A mix of one part white vinegar and one part water can help with pet stains.

HUMIDIFIERS
You can use vinegar to remove water scaling, then disinfect the unit with a bleach solution following the manufacturer's instructions.

1977 Though Lipton tea commands more than 50 percent of the U.S. market, it ranks low in our tests. Our tasters judge Salada and Tender Leaf teas best.

1989 Captain Jean-Luc Picard, played by Patrick Stewart, orders his signature drink, "Tea. Earl Grey. Hot," for the first time on "Star Trek: The Next Generation."

1992 We test the West Bend Iced Tea Maker, which works like a drip coffee maker, for loose or bagged tea. But we find that it makes weak tea.

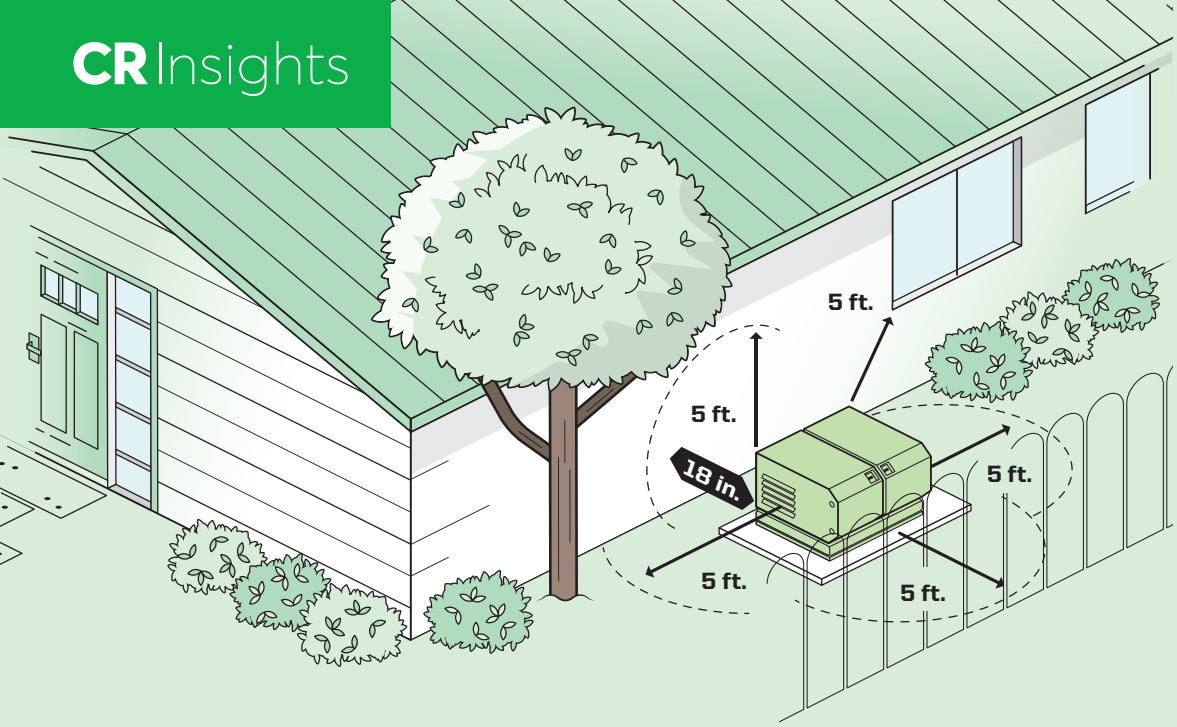
2004 Iced tea now represents 9 percent of total consumer dollars spent on cold beverages, according to the Tea Association of the USA.

SECURA ELECTRIC KETTLE SWK-1701DB $30

89 OVERALL SCORE

2020 The ultimate convenience for a hot cup of tea, the Secura, above, is the top electric kettle in CR's ratings. For more models, All-Access and Digital members can go to CR.org/kettle0920.

Love iced tea? Turn to page 17 to learn which labels indicate a healthier store-bought bottle.



DISTANCE FROM WINDOWS, DOORS, AND OPENINGS: Minimum 5 feet

CLEARANCE FROM HOUSE WALLS/ BUILDING: Minimum of roughly 18 inches

VERTICAL CLEARANCE: Minimum 5 feet

CLEARANCE FROM SHRUBS/TREES/ VEGETATION AND FENCES: Minimum 3 to 5 feet

Guidelines vary slightly by generator model; consult your manual and local building codes.

PRODUCT SPOTLIGHT

HOME STANDBY GENERATORS

WHEN A STORM HITS, home standby generators (sometimes referred to as whole home generators) are the gold standard in residential backup power. In the event of an outage, a standby generator kicks on automatically, with an output anywhere between 8,000 and 20,000 watts–that's enough to power everything in your house with ease. But they cost a pretty penny for that convenience: between about $2,000 and $4,000. All require professional installation–which can cost as much as the generator itself–and you'll need a permit from your town.

The majority of standby generators are fueled by either natural gas or propane. Natural gas versions can run indefinitely, because they connect right to your home's main gas pipe. Propane-powered versions typically connect to a home's propane storage tank; with a full 250-gallon tank of propane, most of the generators we've tested run anywhere from 5 to 15 days.

CR tests home standby generators by using them to power energy-hogging devices such as space heaters, well pumps, and large window air conditioners right up to their maximum claimed output. We note whether they deliver steady, constant power–even during surges in demand, like when an air conditioner or well pump kicks on. Use our ratings chart below to see which one might be right for you.

A more affordable option: a portable generator, which costs between $500 and $1,200 but can generally power only a handful of essential items. See our picks below.

		OVERALL SCORE	PRICE	POWER DELIVERY	POWER QUALITY	NOISE	EASE OF USE	CLAIMED OUTPUT (WATTS)
STANDBY GENERATORS Sized to power an entire house, standby models can typically run quietly for days or weeks without refueling. These models are powered by *natural gas (NG) or liquefied petroleum gas (LPG), such as propane.	SMALL HOME GENERATORS							
	$ **Champion** 100174 [1]	94	$2,350	Excellent	Excellent	Excellent	Excellent	NG 7,500/LPG 8,500*
	✓ **Winco** PSS8B [1]	92	$4,400	Excellent	Excellent	Fair	Excellent	NG 7,600/LPG 8,400
	✓ **Kohler** 8RESV	90	$2,400	Excellent	Excellent	Fair	Excellent	NG 7,000/LPG 8,000
	LARGE HOME GENERATORS							
	✓ **Champion** 100179 [1]	93	$3,000	Excellent	Excellent	Fair	Excellent	NG 11,000/LPG 12,500
	✓ **Cummins** RS13A [1]	91	$3,400	Excellent	Excellent	Fair	Excellent	NG 13,000/LPG 13,000
PORTABLE GENERATORS Portables have built-in outlets to directly connect suitable extension cords, or can connect to a home via a transfer switch. These tend to need 8 to 16 gallons of gas per day.	PORTABLE GENERATORS							
	✓ **Dewalt** PMC168000	77	$1,050	Excellent	Excellent	Poor	Good	8,000
	✓ **Generac** 7675	73	$1,000	Excellent	Good	Poor	Good	8,000
	Champion 100592	65	$750	Fair	Excellent	Poor	Good	6,250

[1] Price includes transfer switch.

For our full generator ratings, All-Access and Digital members can go to CR.org/generator0920.

POOR — EXCELLENT | RECOMMENDED | CR BEST BUY

FOOD IQ™

DECODING ICED TEA LABELS

Americans consume some 3 billion gallons of iced tea a year. When it comes in a bottle, though, it's hard to know whether you're getting a healthy refresher or a sugary sucker punch. Most adults should consume less than 50 grams of added sugars a day, and you'll find almost that amount in some single bottles. Knowing what a few labels and claims really mean can help you choose your bottle wisely.

TAD SWEET OR SLIGHTLY SWEET

These unregulated terms are open to the manufacturer's interpretation. In the teas we looked at, we saw anywhere from 5 to 25 grams of added sugar per bottle. For example, Gold Peak "slightly sweet" tea contains 24 grams of added sugars per bottle—almost half of the maximum amount most adults should consume in a day.

NO ARTIFICIAL SWEETENERS

The tea may still contain sugar, stevia, sugar alcohols like erythritol, or a combo. For example, Pure Leaf Honey Green Iced Tea carries this claim and has 25 grams of sugar per 18.5-ounce bottle (from sugar and honey), as well as Reb A (purified stevia extract). Stevia, a plant, is thought of as a "natural" (vs. artificial) sweetener—but getting the extract requires processing in a lab.

UNSWEETENED

Although there's no regulated definition, these terms usually mean that no sweetener—any type of sugar or sugar substitute—is added.

NO SUGAR OR SUGAR-FREE OR ZERO SUGAR

By law, the product must have less than 0.5 gram of sugars per serving. Teas with these claims may still contain a sugar substitute, such as sucralose, so check the ingredients label.

PHOTO: ISTOCK

DIET

Diet drinks, per the Food and Drug Administration, should be lower in calories than comparable products. But they aren't unsweetened. Snapple Diet teas, for example, may contain sucralose or aspartame.

ANTIOXIDANT INFUSED

This unregulated claim is on all Bai Superteas. Unlike freshly brewed tea, not all of the antioxidants in this drink come from the tea itself. Bai Superteas claim 100 mg of polyphenols (antioxidant compounds) from tea and coffee fruit extract, as well as 13.5 mg of antioxidant vitamin C, which is mostly added. Some research suggests that bottled teas don't have as many polyphenols as freshly brewed tea.

FAIR TRADE CERTIFIED

Farmers who grow crops (like tea or sugar) used in the product must pay workers at least the local minimum wage, provide safe working conditions, and more. This claim is verified, but it may apply to just a single ingredient. For example, the label shown here means the tea used is certified—and it can appear even if the sugar is not.

RAINFOREST ALLIANCE CERTIFIED

This means that some or all of the tea is sourced from farms that have met standards promoting sustainability and protecting farmers, forests, wildlife, and local communities.

THE CASE FOR ...

REPAINTING YOUR INTERIOR

AFTER LOOKING at the same four walls all summer, you might have the urge to give your living areas a fresh, new look for fall. But the vast amount of colors to choose from can be daunting. Can't decide? At major paint manufacturers, experts spot trends and look to a number of industries, including fashion and automotive, for inspiration when selecting colors that they predict will be popular with consumers and become the "Colors of the Year."

Though the hot paint colors for 2020 were determined before the coronavirus pandemic, color experts we interviewed from four major brands say they still foresee these warm, tranquil shades being popular. "When we look back, we find that in times of uncertainty, people gravitate toward colors that are warmer and more grounded," says Andrea Magno, color marketing and development director at Benjamin Moore.

If you are ready to repaint, consider one of the four interior paint colors below—all from brands that make CR's recommended list.

Behr Marquee $45

89 OVERALL SCORE

Back to Nature S340-4

HGTV Home by Sherwin-Williams Showcase $39

87 OVERALL SCORE

Romance HGSW2067

Benjamin Moore Aura Paint $72

81 OVERALL SCORE

First Light 2102-70

PPG Timeless $36

80 OVERALL SCORE

Chinese Porcelain PPG1160-6

REPAIR OR REPLACE

WINTERIZE YOUR LAWN MOWER

BEFORE YOU PUT away your mower for the season, there are a few easy ways you can ensure it stays in tip-top shape for next spring and avoid costly repairs.

Leaving fuel in the gas tank all winter can wreak havoc on the engine (and can be a potential fire hazard if stored in your basement). Water from condensation can combine with ethanol in the gas, causing corrosion and other problems throughout the fuel system. That could lead to a professional carburetor cleaning, which can cost as much as $150. So if there's only a little gas left, run the tank dry. If you have a lot, use a turkey baster or siphon to remove fuel. (You can even add it to your car's tank.) Or, if you store your mower in an outdoor shed, you can fill the tank with gas and add stabilizer—or even better, use gas that has stabilizer already added. Run the mower for a few minutes so that it works its way through the carburetor.

If you have an electric mower, remove the battery before winter and store it inside your home to protect it from extreme temperatures, which can shorten the life span of battery cells and cause them to fail prematurely. Most batteries do best stored in a cool, dry area below 80° F.

Think your mower won't make it another season? Prices on lawn care tools tend to drop at the end of summer. For a gas model, consider Honda, which receives an Excellent rating for brand reliability for push and self-propelled mowers alike. Or check out Ego, which makes some of the top-rated battery models in our ratings and earns a Very Good rating for reliability.

All-Access and Digital members can go to CR.org/mower0920 to see our full ratings.

JEEP CHEROKEE SUVs

Fiat Chrysler Automobiles (FCA) is recalling 67,248 Jeep Cherokee SUVs from the 2014 through 2017 model years due to a faulty connection between the vehicle's transmission and the system that sends power to the front wheels, which could cause the SUV to lose power while in motion or fail to engage the Park function and roll away, potentially leading to a crash or injury.
What to do: FCA will notify owners, and dealers will provide a software update for the vehicles involved. Owners can also call customer service at 800-853-1403. The recall number is 20V343. FCA's number for this recall is W47.

EDWARDS MECHANICAL HEAT DETECTORS

Edwards is recalling about 85,000 mechanical heat detectors because they can fail to activate in reaction to rising temperatures, posing a risk of failure to alert consumers to a fire. The detectors were sold at Edwards distributors, electrical wholesalers, contractors, and fire safety professionals from January 1979 through May 2018 for $6 to $7 per unit.
What to do: Consumers who use the product in life-safety applications permitted by code (for example, in elevator shafts or in lieu of smoke detectors, manual pull stations, or sprinklers in particular settings) or in residential attics or residential garages should call Edwards Fire Safety at 800-505-5088 or go to edwardsfiresafety.com for details on a free replacement and installation of the heat detector.

STERNO HOME PATH LIGHTS

Sterno Home is recalling about 77,000 Hampton Bay, Patriot Lighting, and Paradise light kits with Sterno Home LED power supplies because the lights have a defective power supply: The plug blade can remain in the AC outlet when the LED power supply is pulled from the outlet, posing a risk of electric shock to the user. The lights were sold at Home Depot and other hardware stores and online from March 2017 through May 2020 for $50 to $100.
What to do: Stop using the lights and call 888-867-6095 or go to sternohome.com for details and to get a free replacement and installation instructions.

FIELD & STREAM SAFETY ROPES

Dick's Sporting Goods is recalling about 63,000 Field & Stream safety ropes because the ropes can fail when used in freezing conditions, posing fall and injury hazards. The ropes were sold at Dick's Sporting Goods and Field & Stream stores and online from June 2017 through March 2020 and at Sportsman's Warehouse stores from October 2019 through April 2020 for $20 to $80.
What to do: Stop using the rope and return it to any Dick's Sporting Goods or Field & Stream store if purchased there or to any Sportsman's Warehouse store if purchased there. Consumers with a receipt will get a full refund and consumers without a receipt will get a store credit of the purchase price. For details, call 877-846-9997 for Dick's Sporting Goods or Field & Stream purchases, or 800-286-3076 for Sportsman's Warehouse purchases.

RAINBOW SRX VACUUMS

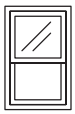
Rexair is recalling about 38,000 Rainbow SRX vacuums because the circuit board on the vacuum can spark, posing fire and burn hazards. The vacuums were sold at authorized Rainbow distributors from June 2019 through June 2020 for about $3,200.
What to do: Immediately unplug and stop using the vacuum. Contact an authorized Rainbow distributor for a free repair. Call Rexair at 833-940-2775 or go to rainbowsystem.com for details.

LOCHINVAR BOILERS

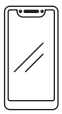
Lochinvar is recalling about 34,300 condensing residential boilers because the flue grommet can deteriorate and dislodge during use and allow the boiler to emit carbon monoxide, posing a risk of carbon monoxide poisoning. The boilers were sold at independent contractors, plumbers, and plumbing supply vendors and distributors from August 2016 through June 2020 for $8,000 to $25,000, including installation.
What to do: Immediately contact the installer or a qualified technician to schedule a free repair. If you continue to use the boiler while awaiting repair, you should have working carbon monoxide alarms outside of sleeping areas and on every level of your home. Contact Lochinvar at 833-232-9706 or go to waterheaterrecall.com for details.

SEPTEMBER IS THE BEST TIME TO BUY ...

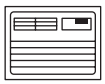
REPLACEMENT WINDOWS



SMARTPHONES

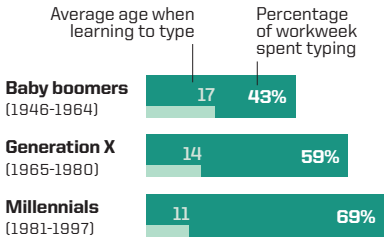


AIR CONDITIONERS



For more info, go to CR.org/buy0920.

Who types the most per week



Source: Typing.com survey of 980 full-time employees.

PRODUCT UPDATE

THE LATEST RATINGS FROM OUR LABS

1 **LOGITECH ERGO K860 KEYBOARD** $130

2 **MICROSOFT SCULPT MOUSE** $60

3 **MICROSOFT SCULPT KEYBOARD** $130

4 **KINESIS FREESTYLE2 KEYBOARD** $89

5 **ZLOT VERTICAL GAMING MOUSE** $30

1

3

Hands-on Help

2

Good ergonomic design in a keyboard or mouse can relieve strain on wrists, arms, and shoulders.

by Nicholas De Leon

4

5

THE CORONAVIRUS pandemic has many of us spending long, intimate hours with our desktop or laptop, and finding our equipment wanting. Whether you're working from home, shopping online, or videoconferencing, traditional keyboards and computer mice can become a strain—literally. Switching to an ergonomic keyboard and/or mouse may provide needed relief.

Keys to Success

Traditional computer keyboards weren't designed with a deep consideration of the intricacies of human anatomy. They can place your wrists in an awkward position, increasing pressure on the median nerve and other structures in and around the wrist, causing tendonitis and pain, says Carisa Harris-Adamson, Ph.D., director of the Ergonomics Program at the University of California, Berkeley.

"The ideal working posture is one in which as many of the body's joints as possible are in a neutral position," says Dana Keester, the human factors specialist on Consumer Reports' consumer experience and usability research team. So-called ergonomic keyboards are designed to encourage that by allowing your wrists to maintain a neutral position, thereby decreasing the pressure and muscle overuse that can lead to pain. They can also reduce injuries caused by improper hand and wrist placement.

While ergonomic keyboards have the standard QWERTY key configuration, many look very different from traditional models. Some have wavy contours, and others are split into halves. All incorporate at least some of the following features to help keep wrists in a neutral position.

Palm rests: When palm rests are the proper height (level with or slightly higher than the top of the keyboard) they reduce extension and keep your wrists in a neutral position. Adding a palm rest as a stand-alone accessory to your conventional keyboard is an easy way to reduce wrist strain without buying a new keyboard.

A split and/or splayed design: A split keyboard allows the left and right hands to optimally align with your wrists and shoulders, thereby reducing muscle tension all the way into the upper back. Keyboards that are fully split can separate into two pieces, allowing someone with very broad shoulders and someone with very narrow shoulders to position their hands in an ergonomically ideal way on the same keyboard. Arranging the keys in a splayed, inverted V formation cuts down on joint deviation, too.

Tenting: Raising, or tenting, the center of the keyboard limits forearm strain. In certain models, the angle is predetermined. In others, you can adjust it to fit your preferences.

Tilting: Traditional keyboards often slope upward, with the top rows higher than the bottom, which increases wrist extension. It's much better for the keys to be positioned on a decline, so your fingers extend down slightly to strike them. In the best-case scenario, the keyboard would come with adjustable legs to allow you to vary the pitch.

In general, Keester recommends choosing a model with as much adjustability as possible so that it can be configured to meet your personal requirements.

Prepare for a Learning Curve

Ergonomic keyboards aren't hard to use in the long run, but you may need some practice before you're typing with the ease and accuracy you're used to. "It's just like an athlete getting a new pair of shoes," Harris-Adamson says. "There's a break-in period." CR's Keester agrees. "Most take just a few days to master," she says. "In some cases, though, you may need a few weeks to get fully comfortable."

"At the end of the day, ergonomics is about making design work for people, so they're safer, healthier, and more productive," Keester says. "Buying an ergonomic keyboard is a small investment that can deliver real benefits."

Mighty Mice

Since the launch of the Apple Macintosh in 1984, the mouse has enabled consumers to navigate their computers with ease, skimming across the screen to manipulate text and select windows, menus, and icons. But using a computer mouse for extended periods can cause problems, ranging from mild pain to musculoskeletal disorders, such as de Quervain's tenosynovitis, a type of tendonitis in the wrist.

"You're gripping the mouse for long periods, using just one hand, and not moving your arm much," says Peter W. Johnson, Ph.D., a professor in the department of environmental and occupational health sciences at the University of Washington in Seattle. This lack of movement may be harmful, Johnson says, because it can interfere with blood flow to muscles and tendons of the hand and arm.

To reduce these potential problems, companies such as Adesso, Logitech, and Microsoft have developed ergonomic mice designed to place less stress on your wrists, forearms, and shoulders.

Certain models slope upward, like a joystick, placing your hand in a handshake position. (See the Adesso iMouse E1 and Logitech MX 910 Advanced, on page 26.) This helps reduce pronation, the orientation of your forearm when your palm faces downward.

Others use the familiar horizontal design but remain stationary on the mousepad, relying on a trackball maneuvered by the thumb to steer the cursor. (See the Logitech MX Ergo and M570, on page 27.) This can be helpful if moving the mouse

PHOTO: JOHN WALSH/CONSUMER REPORTS

causes pain in your wrist.

Others employ a hybrid approach. The Microsoft Sculpt, for example, is like a small ramp with enough horizontal DNA to feel familiar in your hand.

To help you choose the best option, we put eight widely sold models to the test. (See "How We Reviewed Keyboards and Mice," below). What did we learn? Well, for one, you don't need to spend a lot of money to get a good ergonomic mouse. You can purchase a $30 model that is just as ergonomically sound as one that costs $100. It might not have cutting-edge features, such as wireless connectivity, but it will reduce the strain on your muscles and tendons. (Most models are designed only for right-handed users. In the reviews starting on page 26, we've listed alternative options when available.) Here are points to consider when selecting a mouse.

TIP Before buying a keyboard, make sure it's compatible with your digital ecosystem. The keys for media controls (volume up, page back, etc.) and other convenience features may be specific to certain operating systems.

Horizontal, Vertical, or Hybrid?

Horizontal: This is the traditional mouse shape most people recognize. But that familiar design comes with ergonomic challenges.

"On a traditional, horizontal mouse, with the hand resting palm down on the device, the forearm is fully pronated," says CR's Keester. "Mice with a higher profile can also be problematic for people with smaller hands, often causing persistent extension in the wrist."

Neil Carlson, an ergonomics expert and industrial hygienist at the University of Minnesota, says people tend to repeatedly pivot their hand from the wrist when using horizontal mice, which may result in "discomfort across the top of their wrist and across the top of their hand," he says.

How do you make using a horizontal mouse more ergonomically sound? Be sure to position the mouse properly to limit stress on your body. "Place your hand on the desk palm up, with your shoulders relaxed and your

How We Reviewed Keyboards and Mice

CR'S CONSUMER experience and usability research team recently evaluated eight keyboards and eight computer mice that were claimed to be more ergonomic, meaning they're designed to place less stress on the hands, wrists, arms, and shoulders of users to help prevent the pain that can come from prolonged use.

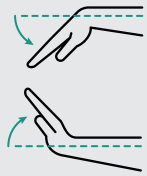
Both evaluations were led by CR's Dana Keester, who, as an associate human factors professional, specializes in the ways our bodies interact with the products we use. Keester used objective data in her evaluations of keyboards and mice: observations of the degree of **flexion, extension, and deviation of the wrist,** as well as **pronation and supination of the forearm** (shown at right), when using each product.

To evaluate keyboards, Keester observed and photographed a volunteer typing and recorded the arm, hand, and wrist postures. She also considered a subjective assessment of the force required to activate the keys. She used these observations to determine how well each keyboard might provide an ergonomic benefit to users and reduce the likelihood of developing musculoskeletal discomfort.

Keester also administered typing tests to the volunteer to measure speed, number of errors, and adjusted speed over time, to determine the degree of difficulty each keyboard presents to users learning to type on it.

To evaluate computer mice, Keester took photographs of herself using each model and used the photographs to observe and record her arm, hand, and wrist movements. To determine how easy or difficult it would be for a consumer to learn to use each mouse, Keester took three consecutive accuracy and efficiency tests, in which she moved the cursor to hit targets on the computer screen, with each model.

CR ergonomics expert Dana Keester



FLEXION AND EXTENSION

ULNAR DEVIATION

SUPINATION AND PRONATION OF THE FOREARM

ICONS: ELIAS STEIN

elbows close to your body," Carlson says. "The mouse should be right at the point where your fingertips are." Keester says placing a wrist rest behind the mouse will also help reduce stresses.

Vertical: By placing your hand in a handshake position, vertical mice help reduce muscle contraction and strain in the forearm, Johnson says. The vertical shape also reduces repetitive wrist motion by letting you move the mouse around your mousepad by pivoting your elbow instead of your wrist.

Hybrid: If you prefer the shape of a horizontal mouse but want to reduce wrist and forearm strain, consider trying a hybrid mouse, such as the Microsoft Sculpt or Logitech MX Ergo. It may feel more familiar in your hand than a vertical mouse, but it comes with some of the benefits of that design.

No matter which style of mouse you choose, remember that you can customize the sensitivity of the mouse's movements to find the range of motion most comfortable for you.

Certain models, such as the $30 Adesso iMouse M20B and the $100 Logitech MX 910 Advanced, have a physical button that allows you to cycle through various sensitivity settings. Windows and macOS also let you change the sensitivity of a mouse connected to your computer.

On a Windows computer, search for and open "change the mouse pointer display or speed."

On a Mac, go to System Preferences > Mouse.

Optical or Trackball?

Many mice today use an optical sensor, essentially a small camera embedded in the device, to guide a cursor across the computer screen. Over time, these sensors have gotten more and more precise, allowing for the pinpoint movements required in serious gaming.

Trackball mice use a small ball mounted on the device to guide the cursor. You steer the cursor by moving the ball with your thumb. Trackball mice lack the pinpoint accuracy required by gamers but can provide significant relief from discomfort caused by routinely piloting a mouse across the desktop.

"Using a trackball greatly reduces the need to move the hand, wrist, or arm to control the cursor," Keester says. "The mouse can be placed in a position that is comfortable—and not moved again."

One caveat: Trackball mice are not as intuitive to use as mice with optical sensors and may take a brief period of adjustment to master.

Wired or Wireless?

Higher-end models in this category often offer wireless connectivity, which means the mouse links to your computer via Bluetooth technology instead of a cable.

It may be nice to have one less wire running across your desk, but in the end it's really a question of preference and convenience: Whether a mouse is wired or wireless won't affect its ergonomics in any way. And while it's true that wireless mice free you from cords, remember that they're powered by batteries, which need to be periodically recharged or replaced.

START WITH THE RIGHT CHAIR

BEFORE YOU SPEND money on a new ergonomic keyboard or mouse, remember this: You might not get any benefit from it if you can't adjust the height of your chair. To achieve the 90- to 100-degree bend in the elbow that experts recommend, with the wrists neutral and in line with the shoulders, you have to position the keyboard at the proper height, which may require raising your chair or using a keyboard tray. Dana Keester, CR's human factors specialist, says that your feet also need to be flat on the floor or on a footrest, with thighs parallel to the ground and the chair supporting your back in a slightly reclined position. The computer monitor should be positioned so that you can read the top line of text without tilting your head back.

If your chair is not adjustable and you don't want to purchase a new one, try using a cushion or pillow to prop yourself up. Similarly, you can use a stack of books to create a low-cost footrest or monitor stand.

TIP In our evaluations, mice with a matte finish were generally more comfortable to the touch than those with a glossy finish. A glossy finish can make your palm and fingers feel sweaty and can pick up more fingerprints.

Keyboards

Consumer Reports tested eight keyboards that come with claims of being more comfortable. We evaluated them for how much of a learning curve there is in using them, how much flexibility they provide in conforming to your preferences, and how ergonomically sound they are.

KINESIS FREESTYLE2
$89

LEARNING CURVE
4/5

ERGONOMICS
4/5

ADJUSTABILITY
4/5

Available as wired or wireless. Compatible with Android, Chrome, iOS, Linux, Mac, and Windows.

The Kinesis Freestyle2 can be fully split apart, which means that each half of the keyboard can be positioned directly in line with the shoulders, reducing stress in the upper back, shoulders, and wrists. The keys include options for shortcuts and media controls. Kinesis lets you add palm rests, adjustable legs, and a number pad, but they must be purchased separately.

LOGITECH ERGO K860
$130

LEARNING CURVE
4/5

ERGONOMICS
4/5

ADJUSTABILITY
3/5

Wireless. Compatible with Mac and Windows.

This keyboard features a tented, split design, effectively reducing stress in the wrists. The model has a comfortable palm rest and adjustable front legs to vary the tilt angle, allowing the wrists to rest in a neutral position while typing. The keys include a number pad, shortcut and media control options, and programmable functions.

MICROSOFT SCULPT
$130

LEARNING CURVE
4/5

ERGONOMICS
4/5

ADJUSTABILITY
3/5

Wireless. Compatible with most Windows computers; limited features for Android devices and Mac.

The Sculpt features a tented, split design that reduces stress in the wrists. The model has a comfortable palm rest, a front riser that can be used to vary the tilt angle (allowing the wrists to rest in a neutral position while typing), and a separate number pad.

KINESIS ADVANTAGE2 QUIET LF
$360

LEARNING CURVE
2/5

ERGONOMICS
5/5

ADJUSTABILITY
2/5

Wired. Compatible with Android, Linux, Mac, and Windows.

In addition to a tented, split design, the Kinesis Advantage2 features two bowl-shaped wells that house the keys and reduce internal shoulder rotation and strain in the wrists. For broad-shouldered people, the wells might not line up with the shoulder joints, which is less beneficial. The palm rest and tenting also lower stress on the wrists. The keys include shortcut and media control options and programmable functions but no number pad.

LOGITECH MK550
$50

LEARNING CURVE
5/5

ERGONOMICS
3/5

ADJUSTABILITY
2/5

Wireless.
Compatible with Windows.

This model sports a contoured, wavelike design. But the palm rest provides only a small reduction in wrist stress. The keys are laid out with a slight curve (like a smile), which does not reduce muscle strain. The number pad and shortcut and media control options are included.

MICROSOFT COMFORT DESKTOP 5050
$60

LEARNING CURVE
4/5

ERGONOMICS
3/5

ADJUSTABILITY
1/5

Wireless.
Compatible with Android, Mac, and Windows.

The Microsoft Comfort provides little reduction in wrist extension in spite of its palm rest and contoured, wavelike keyboard. While it has a slight curve in the key layout, similar to the Logitech K350's, it does not help with wrist strain any more than it does in that model. The Comfort has a number pad, shortcut and media control options, and programmable functions.

ADESSO PCK-208B TRU-FORM MEDIA
$40

LEARNING CURVE
4/5

ERGONOMICS
2/5

ADJUSTABILITY
1/5

Wired.
Compatible with Windows.

Another keyboard with a tented, split design, the Adesso PCK-208B also provides a palm rest that slopes steeply away from the keys, but the feature provides no relief from wrist extension. The model has a number pad and shortcut and media control options.

FELLOWES MICROBAN SPLIT
$48

LEARNING CURVE
3/5

ERGONOMICS
2/5

ADJUSTABILITY
1/5

Wired.
Compatible with Windows.

Much like the Adesso, the Fellowes Microban Split tries to enhance the tented, split design with a palm rest that slopes steeply away from the keys. But the effort fails here, too. The model has a number pad and shortcut and media control options, and is claimed to have antimicrobial properties designed to help keep it clean.

WORSE — BETTER

Mice

Consumer Reports tested eight mice that come with claims of being more comfortable for users. We evaluated them for how ergonomically sound they are and how long it should take a new user to get comfortable with them.

VERTICAL

LOGITECH MX 910 ADVANCED

$100

ERGONOMICS 5/5

EFFICIENCY 5/5

ACCURACY 5/5

Wireless.
Compatible with iPad, Linux, Mac, and Windows.

This mouse places the forearm, wrist, and hand in a "handshake" position, greatly reducing forearm stress. When oriented properly, it also reduces wrist strain, but it requires slight wrist extension when the front is pointed directly forward. The model features six programmable buttons, a rechargeable battery, a four-way scroll wheel, and a DPI (dots per inch) button with a range of settings from 400 to 4000 to fine-tune the device's sensitivity. No left-handed option is available.

VERTICAL

ADESSO IMOUSE E1

$35

ERGONOMICS 5/5

EFFICIENCY 5/5

ACCURACY 5/5

Wired.
Compatible with Windows.

Like all vertical mice, the iMouse E1 is gripped in a handshake position, alleviating stress on the forearm. When properly oriented, it reduces wrist extension, too. The model features six programmable buttons, and two DPI settings (1000 and 1600). Its glossy finish picks up fingerprints easily and may make the palm and fingers feel sweaty. For a similarly priced left-handed option, check out the Adesso iMouse E9.

VERTICAL

ADESSO IMOUSE E3

$50

ERGONOMICS 5/5

EFFICIENCY 5/5

ACCURACY 5/5

Wired.
Compatible with Windows.

The iMouse E3 is grasped in a handshake position, greatly alleviating forearm stress and, when properly oriented, reducing wrist extension. Pointing the front directly forward, as users may intuitively do, requires slight wrist extension. It features six programmable buttons and three DPI settings (800, 1600, and 2400), and comes with three weights that gamers can use to tailor it to their style of play. For a similarly priced left-handed gaming mouse, check out the Adesso iMouse E7.

VERTICAL

ZLOT VERTICAL GAMING MOUSE

$30

ERGONOMICS 5/5

EFFICIENCY 5/5

ACCURACY 5/5

Wired.
Compatible with Linux and Windows; limited functionality for Mac.

The Zlot's vertical design minimizes forearm stress and wrist extension, as long as it is correctly oriented. As with other vertical mice, pointing the front directly forward, as some users may do, requires slight wrist extension. The model features 11 programmable buttons, five DPI settings, and a matte finish that feels comfortable under the fingers and palm. The mini joystick on top is handy for gamers but potentially annoying to others. No left-handed option is available.

HYBRID

MICROSOFT SCULPT

$60

ERGONOMICS
5/5

EFFICIENCY
5/5

ACCURACY
5/5

Wireless.
Compatible with Android, Mac, and Windows.

The unique shape and pronounced thumb rest of this mouse reduce forearm stress while preserving elements of the horizontal form. But the model does little to reduce wrist extension. It features five programmable buttons, a four-way scroll wheel, and a glossy finish that picks up fingerprints. It lacks DPI settings and a forward button for navigating the web, instead relying on a Windows Start button. No left-handed option is available.

HYBRID

LOGITECH MX ERGO

$100

ERGONOMICS
5/5

EFFICIENCY
3/5

ACCURACY
5/5

Wireless.
Compatible with iPad, Linux, Mac, and Windows.

With a trackball and a design that allows the user to adjust the orientation between 0 and 20 degrees, this mouse can effectively reduce stress in the wrist and forearm. It also requires less movement of the hand, wrist, and shoulder. It may take time to adjust to using the trackball. The model features six programmable buttons, a rechargeable battery, a four-way scroll wheel, and adjustable speed and precision settings. No left-handed option is available.

HORIZONTAL

ADESSO IMOUSE M20B

$30

ERGONOMICS
4/5

EFFICIENCY
5/5

ACCURACY
5/5

Wireless.
Compatible with Windows.

Aside from the scoops on the sides for resting fingers, the design is fairly typical. The horizontal orientation places stress on the forearm and wrist, making this model only slightly better than a regular mouse for anyone seeking relief from pain. It features six programmable buttons and three DPI settings (800, 1200, and 1600), but the low profile of the scroll wheel makes it less easy to locate and activate. No left-handed option is available.

HORIZONTAL

LOGITECH M570

$30

ERGONOMICS
4/5

EFFICIENCY
2/5

ACCURACY
4/5

Wireless.
Compatible with Chrome, Mac, and Windows.

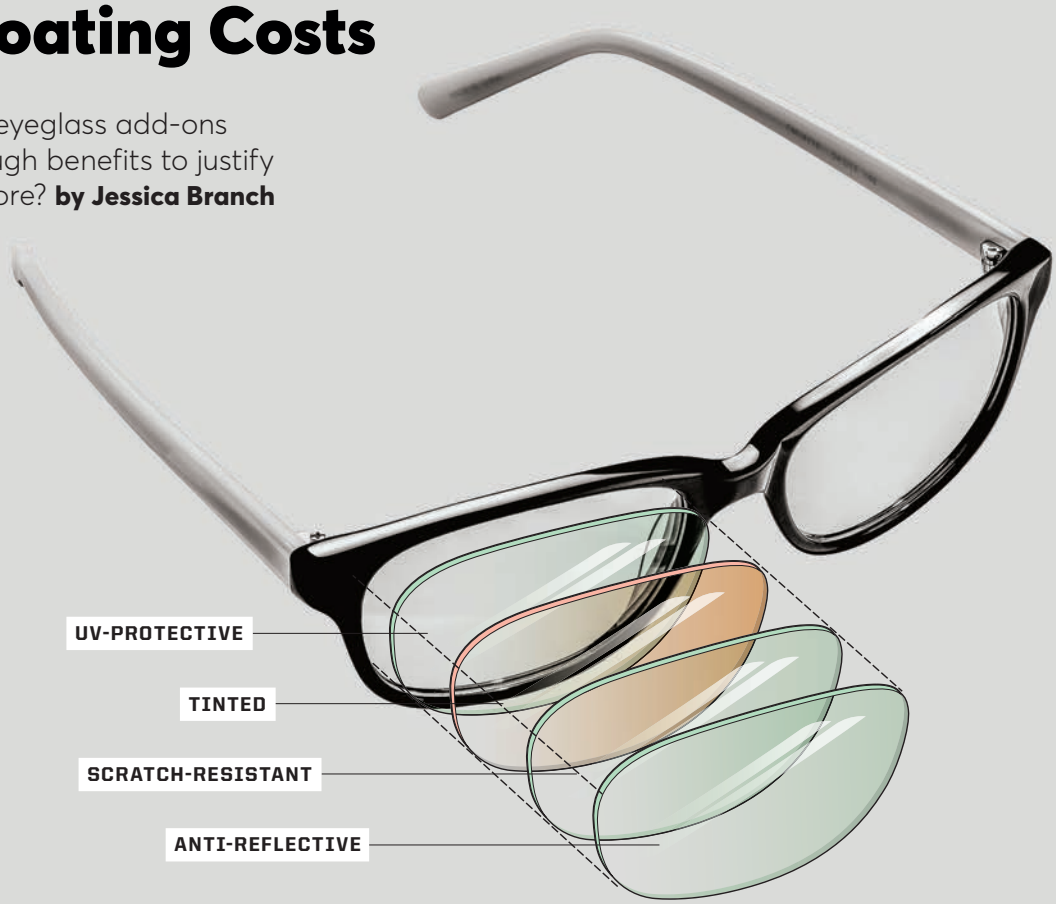
The horizontal orientation places some strain on the wrist, but the trackball reduces forearm stress. It also requires less movement of the hand, wrist, and shoulder. It may take a little time to adjust to using the trackball. The model features five programmable buttons and a scroll wheel that's a bit slow and sticky to operate. No left-handed option is available.

WORSE — BETTER

MONEY SAVER

A Clear-Eyed Look at Coating Costs

Do these eyeglass add-ons offer enough benefits to justify paying more? **by Jessica Branch**



WHEN YOU'RE EYEGLASS shopping, your eye doctor will probably advise you on lenses—whether, for instance, basic plastic CR-39 lenses will do or if costlier polycarbonate or high-index products are more appropriate. While you've probably considered frame styles, you may not have given thought to lens coatings. Some are cosmetic, but others "potentially improve your comfort and safety," says Andrew Iwach, M.D., a spokesperson for the American Academy of Ophthalmology (AAO).

To help you decide which coatings are right for you, we gathered advice from vision experts and reviewed cost data from The Vision Council's VisionWatch market research and from major eyeglass retailers.

Before You Buy

Your eye doctor may have suggestions, but when you're close to making a purchase you'll probably deal with a salesperson, says Michael Vitale, a master optician and senior technical director and lens division liaison for The Vision Council, a trade group.

Be aware that price may not be the best indicator of quality. With anti-reflective (AR) coatings, for instance, "some 'house brands' are pretty similar to the premium brands," Vitale says.

And make sure you're not paying extra for a coating that should be included; request an itemized list of items in your lens "bundle." Then ask whether your glasses come with a warranty, whether it covers coatings, and if so, for how long. "Virtually all coatings today are designed to last the life of the prescription," Vitale says (about 28 to 30 months, on average).

PHOTO: JAMIE CHUNG (GLASSES)

ILLUSTRATION BY RODRIGO DAMATI

4 COMMON COATINGS

SCRATCH-RESISTANT

This coating makes glasses less vulnerable to scratching if you drop them or clean them with an abrasive cloth. "Glasses wouldn't last a day without this," Vitale says. "Polycarbonate and high-index lenses are very soft."

WHO MIGHT CONSIDER IT: Everyone.

WHAT YOU'LL PAY: It's usually included in the cost of your glasses. More robust scratch protection may be included in upgraded packages.

WHAT TO KNOW: "Everything on the market now except your most basic standard plastic CR-39 lens is probably going to come with scratch-resistant coating already on it," Vitale says. "That's because CR-39 is already pretty scratch-resistant." (That type of lens makes up about 36 percent of the U.S. market.) To further help keep lenses scratch-free, store your glasses in a case, and clean them with a nonscratch microfiber cloth.

ANTI-REFLECTIVE

Typically applied on both sides of an eyeglass lens, AR coating, sometimes referred to as anti-glare, "reduces the amount of light reflected off the surfaces of spectacle lenses, and may enhance the contrast of certain scenes," says Scott E. Brodie, M.D., Ph.D., a professor of ophthalmology at NYU Langone Health. That means you're getting the maximum available light from your environment without visual interference from that light bouncing off your lenses.

But the term "anti-glare" is a bit of a misnomer, Brodie says. Glare (think of light reflecting off the sea) is better addressed with polarized lenses. (For more on that type of lens, see "Ask Our Experts" in CR's June 2020 issue.)

WHO MIGHT CONSIDER IT: Most people, especially those who often drive at night and those who read on computer screens. It's strongly recommended with polycarbonate or high-index lenses, which reflect more light than basic plastic or glass.

WHAT YOU'LL PAY: It's sometimes included. Otherwise, the average cost ranges from $26 to $86.

WHAT TO KNOW: AR may get a bad rap from consumers who remember it as prone to developing cracks called "crazing" or "spider webbing." But according to Vitale, those problems were almost fully resolved in the early 2000s. In the past, AR coatings also tended to attract dust and grime, but now most get an anti-static treatment that repels water and oil, which helps keep them cleaner.

UV-PROTECTIVE

Over time, exposure to the sun's ultraviolet rays can lead to vision problems such as cataracts and retinal damage. But many lenses have substantial UV protection built in. You can also sometimes buy an additional treatment to safeguard your eyes fully.

WHO MIGHT CONSIDER IT: Everyone, especially people who spend a lot of time in the sun.

WHAT YOU'LL PAY: Built-in UV protection—which some manufacturers claim is more than 99 percent effective—is often included, but ask. Added UV protection, when available, may be as little as $5. Also, polycarbonate lenses and many high-index lenses offer 100 percent protection, Vitale says. At Eyeglass Direct, these lenses may cost $10 to $57 more than basic ones. They can range from $19 to $157 more at Walmart.com.

WHAT TO KNOW: The AAO recommends wearing lenses that provide 100 percent protection from UVA and UVB rays. Lenses that offer this should be labeled 100 percent UV protection, or UV400.

TINTED

Dyes are applied to lenses to create tints. That cuts down on the visible light (though not necessarily UV rays) entering the eye. Colors range from pastel blue or pink to deeper shades typically used for sunglasses.

WHO MIGHT CONSIDER IT: People who just like the look. Tints may also help reduce discomfort in bright light, especially for anyone with light sensitivity or degenerative retinal disorders. In some cases, even pale tints may increase contrast, which can be helpful to pilots and others working in outside light, Brodie notes. Yellow-tinted lenses, known as "blue blockers," are sometimes marketed for their supposed ability to reduce exposure to the blue light emitted by smartphones and other electronic devices. The theory is that they might ease eye strain and sleep problems associated with using devices too close to bedtime.

WHAT YOU'LL PAY: Tints cost an average of $75. Blue-blockers costs $50 at Warby Parker and $29 at GlassesUSA.com, and they start at $8 at EyeBuyDirect.

WHAT TO KNOW: Tinted lenses are often touted as a "cure" for color blindness, Brodie says. The truth is that a tint may make some color contrasts more visible to people with partial color impairment, but it may actually make other contrasts harder to see. As for blue-blocking lenses, "there's probably no harm, though anything that limits the light reaching you can lessen your vision," Iwach says. "The benefits have not been proven." He has also seen an increase in interest in yellow-tinted lenses for night driving, but cautions that they can worsen vision, "since in low-light conditions you want to get the most light in that you can."

ICONS: ELIAS STEIN

A Tattered Safety Net

Consumers hope dietary supplements will keep them healthy, but they also believe they're protected from unsafe products. A CR SPECIAL INVESTIGATION, however, shows that the FDA's oversight of the industry is dangerously insufficient.

BY RYAN FELTON / ILLUSTRATIONS BY MIKE MCQUADE

IN AUGUST 2011, a Colorado woman was rushed to an emergency room in cardiac arrest a day after her husband injected her with a mineral salt called cesium chloride. For the better part of a year, the 61-year-old had been treating herself for a breast lump by taking a dietary supplement containing the compound as an alternative treatment for breast cancer, until a nutritionist recommended injecting a dose instead.

ER doctors were at first able to stabilize her condition, but after a week the woman was discharged to hospice in a "neurovegetative state," according to a case report in the Journal of Alternative and Complementary Medicine. She died three days later.

Her use of cesium chloride—a chemical compound purported to kill cancer cells—probably triggered abnormal heartbeats that stopped her heart, the report's authors concluded.

Seven years later—citing published accounts of 16 patients who had died, suffered cardiac arrest, or experienced other serious harm after using the products—the consumer advocacy group Public Citizen petitioned the Food and Drug Administration to ban all dietary supplements containing cesium chloride or other cesium salts.

In early February of this year, the FDA agreed to issue an advisory warning consumers about the risks of the supplements. And it has acknowledged that the substance is associated with significant safety risks.

But the agency denied Public Citizen's request to ban cesium chloride products. One key reason: Only a few adverse events related to those products show up in a little-known FDA database that the agency relies on to police the nation's $46 billion supplement industry.

That database, called CAERS—which is pronounced "cares" and stands for the Center for Food Safety and Applied Nutrition Adverse Event Reporting System—is meant to alert the agency to potentially dangerous supplements.

But the cesium chloride episode illustrates serious shortcomings in a warning system that doesn't adequately protect the public, a Consumer Reports investigation has found. As long ago as 2001, when the FDA handled adverse event reports linked to supplements in a precursor to CAERS, a report by the inspector general of the Department of Health and Human Services called the agency's system an "inadequate safety valve" to protect consumers.

Two decades later, that remains the case even with CAERS in place. That's according to CR's review of thousands of pages of FDA reports and records obtained through public records requests, and interviews with more than a dozen consumer advocates and experts on supplements.

Consumers overwhelmingly believe that supplements are safe or else they wouldn't be allowed on the market. And, because of concerns raised by COVID-19, they now may be more likely than ever to seek out supplements that promise to keep them healthy.

Michael Carome, M.D., director of health research at Public Citizen, says that the regulatory structure for dietary supplements is flawed. And he says that relying on reports submitted after a product is on the market into a database known to have issues "puts consumers at risk."

Dangers Go Unreported

CAERS is a collection of reports of harm linked to dietary supplements and other products. Reports are submitted through an online form or by mail or fax by consumers, healthcare practitioners, and manufacturers.

Doctors and consumers, who may have learned about the system from their healthcare provider or by searching online, submit the reports voluntarily. Manufacturers must submit them whenever they receive reports of people who report serious adverse events, including death or hospitalization, after taking one of their products. About three-quarters of the reports come from supplement makers, according to records obtained by CR.

The reports can't, on their own, establish a cause-and-effect link between an incident and a product. Rather, the agency periodically scours the database using algorithms to detect signals of potential safety problems.

But the system is plagued by problems, starting with under-reporting. Research suggests that only about 2 percent of adverse events possibly related to dietary supplements each year are ever reported to the CAERS database. As a result, it can take years for the FDA to build a case that a supplement is unsafe and, as with cesium chloride, to even consider getting it removed from the market.

Unlike with monitoring of prescription and over-the-counter drugs, the FDA doesn't have to alert the public when it investigates a potential problem with a supplement. In addition, though the FDA has recently tried to encourage consumers to submit more reports, CR found that report totals are down. And in only a few cases has CAERS clearly played a major role in the recall of dietary supplements.

The FDA acknowledges the challenges of using the database, a reality underscored in a February 2020 memo obtained by CR related to the agency's handling of cesium chloride supplements. In that memo, an FDA staffer not only pointed to the small number of reports linked to the compound—which wasn't surprising given the known problem of underreporting—but also said those reports often lacked crucial information about the people reporting problems, including their age, contact details, and relevant medical history.

That's in part because those details are optional. The FDA requires only that reports include the product name; the possible harm; the name of the person filing the complaint; and, when submitted by a manufacturer, the name of the patient and contact information for the person or company filing the complaint. (Names are not visible in the public database.)

After-the-Fact Oversight

Unlike pharmaceuticals, which must undergo extensive testing before they can be sold or prescribed, federal regulations generally don't require supplement makers to prove that their products are safe before going to market. Instead, the FDA's role in identifying and regulating potentially dangerous supplements generally comes after consumers have already purchased and taken them.

The agency does periodically inspect manufacturing facilities and, in a few cases, test products for possible adulterants. But even when it tests and finds problems, the results don't always lead to action. In June, for example, the FDA published a study on bitter orange weight loss supplements, revealing that about 10 percent of the samples it tested contained illegal stimulants. But as of mid-July, the agency had still failed to warn consumers about the risk.

Mainly, the FDA relies on CAERS—even with its known flaws—to detect potential problems. And the agency considers it a "useful tool," despite its limitations, says Nathan Arnold, an agency spokesperson. "These reports require careful review and interpretation, and conclusions should be made within the context of all available safety data about a product, with CAERS data being one piece," Arnold says. He adds that the agency also monitors products through information from manufacturers and healthcare providers and, when the agency finds unsafe or illegal products, it acts "based on public health priorities and available resources."

IT CAN TAKE YEARS FOR THE FDA TO BUILD A CASE THAT A SUPPLEMENT IS UNSAFE AND TO EVEN CONSIDER REMOVING IT FROM THE MARKET.

Andrea Wong, Ph.D., senior vice president of scientific and regulatory affairs at the Council for Responsible Nutrition, a trade association for the supplement industry, says CAERS works well. "We fully support the system that's in place," she says.

But some advocates say CAERS is flawed. "The FDA's adverse event reporting system may weed out a few dangerous supplements, but only after they've been on sale, sometimes for many years," says Chuck Bell, programs director in CR's advocacy division, which has pushed for years to reform dietary supplement regulation.

A System's Fatal Flaws

One example of the system's shortcomings concerns Hydroxycut, a weight loss supplement first popularized in the early 2000s.

In 2004, the FDA banned ephedra—the active ingredient in Hydroxycut—after it received thousands of adverse event reports linking it to heart attacks, strokes, deaths, and other adverse events. But rather than withdrawing Hydroxycut from the market, its manufacturer reformulated the product. Despite that reformulation, reports of liver damage continued.

Martin Robertson, a Maryland resident, claimed in a lawsuit that he developed liver failure in 2008 several months after he started using Hydroxycut. "As a direct and proximate result of using Hydroxycut Regular Rapid Release Caplets," the lawsuit says, Robertson "suffered severe mental and physical pain and suffering and has sustained permanent injuries and emotional distress."

Iovate, the maker of Hydroxycut, denied the claims in court. The case was eventually settled.

It took the FDA seven years to compile enough reports—23 in all, including one death—to determine that Hydroxycut was causing the liver injuries, to warn consumers to stop using it, and to get the manufacturer to recall the product line.

In a 2013 report, the Government Accountability Office (GAO), a government watchdog, pointed to Hydroxycut as an example of how difficult it is for the FDA to use CAERS to accumulate "enough evidence to discern a clear relationship" between a product and a reported health problem. "Most [reports] do not initiate or support such actions because it is difficult to establish causality between the product and the health problem

based on the limited information in an AER," the report said.

Another case from about a decade ago, with a supplement called OxyElite Pro, illustrates others flaws in the FDA's oversight. Made by USPlabs, the supplement illegally contained a stimulant called DMAA, an amphetamine derivative linked to high blood pressure and heart attacks.

The Department of Defense, in late 2011, ordered supplements containing DMAA to be removed from stores on military bases after it said the stimulant was a possible factor in the deaths of four soldiers. A subsequent analysis of the CAERS database, captured in a study by FDA staffers, showed that the agency had received several reports citing products containing DMAA the previous year.

Months later, in April 2012, the FDA issued warning letters to firms that manufactured supplements containing DMAA, which led some companies to remove the products from the marketplace. But USPlabs continued to sell its product, reformulating OxyElite Pro with a previously unused supplement ingredient called aegeline.

In the fall of 2013, the Hawaii Department of Public Health identified 21 cases involving adults who developed liver disease after taking OxyElite Pro and submitted reports about them to CAERS. After reviewing those cases plus an additional 12 involving consumers in other states, the FDA determined that OxyElite Pro likely contributed to liver injury. USPlabs agreed to recall the product, saying it was a precautionary measure.

Daniel Fabricant, Ph.D., who led the FDA supplements office at the time and is now CEO of the industry group Natural Products Association, says the agency responded in a timely way, evaluating the reports as they came in.

But a subsequent study by FDA staffers in the journal Public Health Reports highlighted a "significant lag" between the time an incident occurred and when it was reported, and said the value of the system "depends largely on the extent to which potential reporters employ the system."

A 2014 article in the New England Journal of Medicine by Pieter Cohen, M.D., an assistant professor of medicine at Harvard Medical School who has studied supplements extensively, was more blunt: "The FDA's delayed response—with its life-threatening consequences—is attributable to our woefully inadequate system for monitoring supplement safety."

Too Little Data

After the ephedra ban, in 2006 Congress tried to improve the adverse reporting system for supplements by mandating that companies submit reports they receive. But the law required that they submit only "serious" ones, such as those resulting in death, hospitalization, or a "life-threatening experience." And the only way the FDA can verify that companies submit those reports is by auditing their reports during site inspections, something that happens infrequently.

Of equal concern were reporting rates for adverse events estimated to be around 2 percent, according to a 2017 study in Annals of Pharmacotherapy written by FDA staffers.

In late 2016, the FDA again tried to encourage the submission of more reports, this time by making it possible not just for people to submit them but also for consumers, academics, and others to examine the database itself. The agency hoped that increased access would translate into more people submitting reports.

But since CAERS went public, the FDA has actually received fewer adverse event reports associated with supplements, from 5,355 in 2016 to 2,899 in 2018, the agency confirmed. Arnold, the FDA spokesperson, says, "The FDA cannot speculate why data may be fluctuating, but regardless, CAERS continues to be a useful tool for its intended purposes."

Harvard's Cohen says the agency isn't doing enough to follow up. "Year after year there has been no substantial enforcement action by the FDA to remove dangerous supplements from the marketplace based on adverse event reports," he says. "Rational consumers and their physicians could reasonably conclude that it is fruitless to submit more reports to an agency that is not following up on the reports."

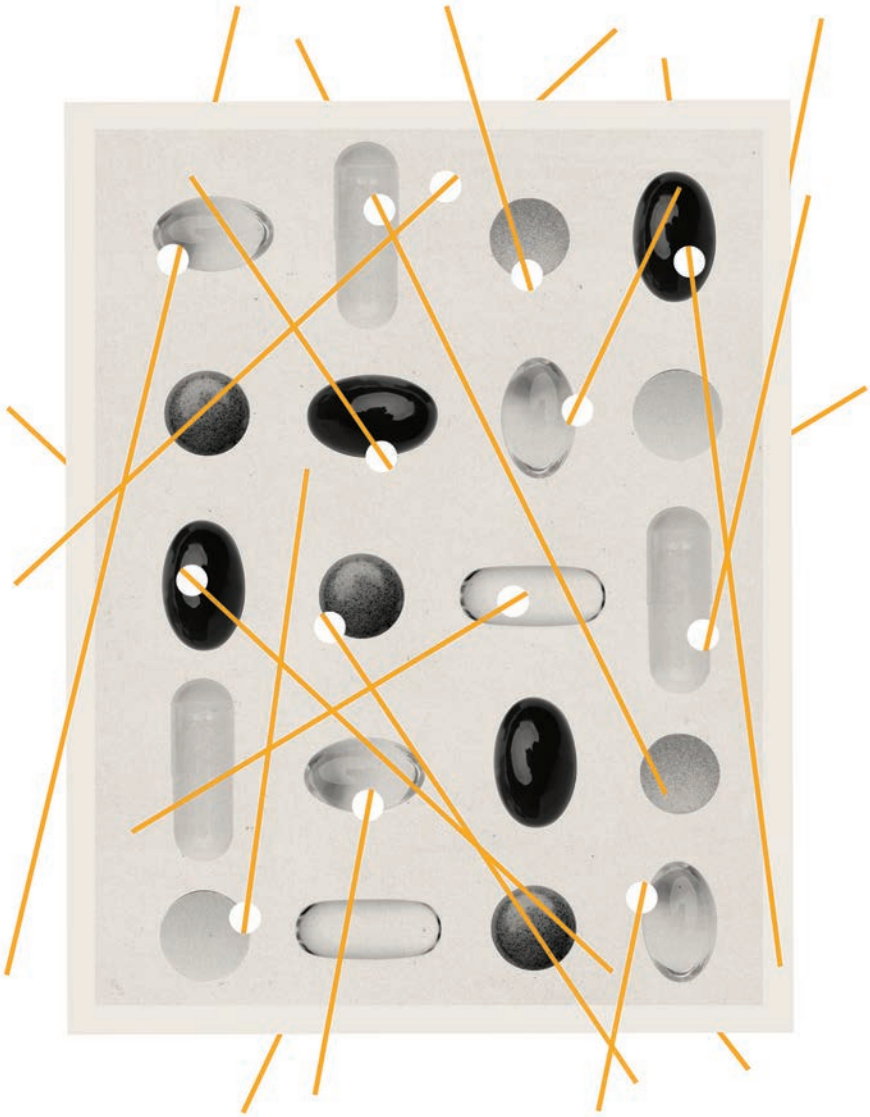
The Burden of Proof

An examination of the current publicly available database by CR suggests that it still offers little use to consumers, a critique leveled in the inspector general's report from two decades ago.

For example, a consumer reviewing the database today might note that a product called Super Beta Prostate is one of the most frequently cited supplements in CAERS, with 1,090 reports, according to a CR review. (It's hard to know for certain which supplement has the most reports in CAERS because products with the same or similar ingredients are sometimes listed under different names.)

Marketed as an aid for men with urinary frequency problems, Super Beta Prostate contains an ingredient called beta-sitosterol, a substance derived from plants that is sometimes used to lower cholesterol levels but that studies suggest may also help improve urine flow in men with an enlarged prostate. The maker of the product, New Vitality, says that the company has sold 15 million bottles of Super Beta Prostate and a similar supplement, Super Beta Prostate Advanced, since the products were first introduced.

Among the medical research on beta-sitosterol published to date, CR found no convincing evidence that the ingredient or Super Beta Prostate is unsafe. CR even conducted some



limited testing of the supplement to see whether it was adulterated with prescription drugs, such as tamsulosin (Flomax) and sildenafil (Viagra), which are sometimes used to treat an enlarged prostate. A drug in a supplement could interact dangerously with other medications. And sildenafil, in particular, has previously been found in some supplements. CR's tests didn't find those specific adulterants.

Still, an examination of FDA records on Super Beta Prostate, obtained by CR through a Freedom of Information Act request, offers insight into how the FDA seeks to determine whether there's a causal relationship between a product and adverse events.

In 2016, records show, FDA staffers mined CAERS and detected a signal potentially tying Super Beta Prostate to reports of hematuria, or blood in urine, prompting the agency to investigate. But as is often the case with those reports, the data was incomplete. For example, only about a third of the Super Beta Prostate reports identify the consumer's age, according to CR's analysis.

And documents obtained by CR suggest that the FDA wasn't even able to posit a theory as to why the product might cause blood in urine—if it did at all—even though it had several hundred reports on file to review. "We have no theory to explain why the effect (if it exists) is so specific to the genitourinary tract," an FDA investigator said in a document.

One possible reason is that blood in the urine is relatively common among men with enlarged prostates, according to experts and New Vitality itself.

In addition, the company offered several other possible explanations for why its product has many reports in the CAERS database. For example, New Vitality relies heavily on direct marketing, it says, a business model that makes it easy for consumers to pass along potential adverse events they may experience to customer-service representatives. And the company has a policy of submitting to CAERS all adverse event reports it receives, not just those considered serious.

Moreover, New Vitality says that the rate of adverse events reported for its product is low compared with the volume of product it sells and that, after conducting an investigation, the FDA didn't conclude that the product posed a safety risk. The company told CR that Super Beta Prostate has an "unblemished safety record."

Behind Closed Doors

In October 2016, records obtained by CR suggest that the FDA's investigation of Super Beta Prostate ended with the agency taking no enforcement action. But contrary to how the FDA handles prescription drugs, it never alerted the public about the adverse event reports or its investigation. (When asked by CR, an FDA spokesperson declined to comment about the agency's effort with Super Beta Prostate.)

By law the FDA has to conduct routine screenings of FAERS, the drug counterpart to CAERS, then publicize

any "potential signal of a serious risk" associated with a drug. After the agency evaluates signals from that database, it determines whether the drug is associated with the risk and, if so, what regulatory action is required—then publishes an update of the findings on its website.

But with supplements, the FDA isn't required to publicize the results of its investigation or to even tell the public it conducted one. The FDA didn't answer CR's question about why it doesn't use the same approach for CAERS as it does with FAERS.

Wong, at the Council for Responsible Nutrition, says the system works well because the FDA would notify consumers if CAERS revealed a risky supplement. "FDA's already analyzed the information, and based on their scientific expertise has determined that information is relevant for consumers to be aware of," she says.

But the reports in CAERS are public and could also be reviewed by academics, researchers, and consumers. So if there are emerging reports about potential hazards, consumers would want to know that as quickly as possible, says CR's Bell.

Publicizing the investigation of a signal found in CAERS—especially one that ends with the agency finding no regulatory action is necessary—could also reassure consumers about the safety of a product, he says.

Urgently Needed Fixes

Independent experts and consumer advocates have suggested several ways to improve the system.

Peter Lurie, a former FDA official and president of the Center for Science in the Public Interest, a consumer watchdog in Washington, D.C., suggests the FDA should amend the 2006 law to require supplement makers to submit reports of incidents it receives about all events, not just ones deemed serious.

"It's always good to have more data, right?" he says. "If it is in the hands of the company to make a determination if something is serious, there's always the incentive to underreport."

Another suggestion is for the FDA to better coordinate with other groups that receive reports of adverse events linked to supplements. For example, between 2008 and 2010, poison control centers received an estimated 1,000 more reports of events related to those products than the FDA had received, according to the 2013 GAO study.

3 Safety Questions You Should Ask

MORE THAN TWO-THIRDS of Americans regularly take at least one supplement, according to a 2019 CR nationally representative survey of 2,006 adults. Most assume that those supplements are safe, and about half believe that the Food and Drug Administration tests the products.

It doesn't. Unlike prescription and over-the-counter drugs, the FDA doesn't require supplement makers to prove that their products are safe or effective before they're sold.

Instead, the FDA largely relies on the good faith of manufacturers that the products do what they claim, don't cause harm, and have what's on their labels. In some cases, the agency also spot-checks specific products when red flags are raised by medical research or by reports of adverse events submitted by consumers or others.

"That means it's largely up to consumers to do their own homework," says Chuck Bell, who has led CR's advocacy on supplements for 20 years. "They have to

The GAO pointed out that the FDA could benefit from such a move. The FDA considered a plan to obtain the data but said it couldn't afford it in the end. Consumer advocates and researchers have continued to suggest that the FDA explore the option.

Experts and advocates also say the FDA should create a mandatory registry of supplements that includes the name of the product and contact information for the company before they can be sold. Recent cases underscore the problems of not having such a registry, including an August 2019 outbreak of dangerously low blood sugar levels that hospitalized 17 men who took a sexual enhancement supplement called V8. Almost a year after the outbreak, the FDA still won't even say whether it knows who made the product. Had V8 been registered in such a database, that could have helped the agency more quickly track down who was behind it. The FDA says it supports the creation of a registry.

THE FDA IS NOT REQUIRED TO PUBLICIZE RESULTS OF INVESTIGATIONS INTO DIETARY SUPPLEMENTS OR TO EVEN TELL THE PUBLIC IT DID ONE.

CR's Bell adds that an even better fix would be requiring supplement makers, like drug companies, to prove that their products are safe and effective before they are sold. "It would be far preferable to require safety testing and FDA approval up front," he says. "The current system, in effect, benefits the supplement companies far more than it benefits consumers."

For more on CR's work on the FDA's oversight of the dietary supplement industry, go to **CR.org/supplementwatch0920**.

Next Month: *See Part Two about supplements scams.*

ask, do the supplements work, are they safe, do they even have what they claim?"

Here are some tips on how to answer those questions.

DOES IT WORK?

Though manufacturers don't have to prove that their products are effective, many dietary supplements have been studied fairly extensively, and there are some good sources.

Start with CR's own Guide to Natural Cures **(CR.org/naturalcures0920)**, which summarizes what's known about more than a dozen popular supplements and other natural remedies.

Or check out resources from the National Institutes of Health: the MedlinePlus guide to herbs and supplements (medlineplus.gov/druginfo/herb_All.html) and Dietary Supplement Fact Sheets (ods.od.nih.gov/factsheets/list-all).

Of course, also check with a trusted healthcare provider. And, Bell says, keep an eye out for hype: If a product's claim seems too good to be true—"cures cancer," "prevents heart attacks"—it probably is.

IS IT SAFE?

Many of the same sources that address the effectiveness of supplements also include information about their safety. And there are good reasons to investigate safety issues. For one thing, just because a product is natural doesn't mean it's safe. In fact, many drugs are developed from plants. But while medications must come in standardized doses and forms, supplements sometimes don't.

In addition, supplements can interact with medication or pose risks to people with underlying health problems. So when you talk with your healthcare provider about whether a supplement works, also ask whether it is safe, especially for you.

The FDA's CAERS database includes reports of adverse events linked to supplements. But searching it is difficult, and the results are hard to interpret. Instead, use the CAERS database (safetyreporting.hhs.gov) to report possible harm caused by a supplement.

WHAT'S IN IT?

Not all supplements actually have all the ingredients they claim to have. Last year, CVS began ensuring that every supplement it sells has undergone third-party testing: 7 percent failed.

Some research suggests that herbal or botanical supplements may be more likely than vitamin or mineral supplements to be contaminated or to not contain what they claim. For example, of 16 echinacea and 13 turmeric products that CR recently tested, more than a third had elevated levels of lead or bacteria, or low levels of active compounds.

Though the FDA doesn't routinely test supplements, some independent groups do. That includes the U.S. Pharmacopeia (USP), a nonprofit that sets the most widely accepted standards; NSF International, another nonprofit; and two for-profit companies: ConsumerLabs.com and UL. For more information, go to **CR.org/supplements0920.**

HOW TO SAVE UP TO $1,000 A YEAR ON YOUR CELL PHONE PLAN

by Jake Swearingen

IF YOU'RE LOOKING for a cell service provider that offers great customer support and significant savings, your best bet could very well be a company you've never heard of.

Every year CR surveys members about their satisfaction with cell phone plans, and their answers consistently point to the same paradox: Although most CR members use AT&T, Verizon, or the recently merged T-Mobile and Sprint, those companies (with the exception of T-Mobile) tend to

fall near the bottom of our survey ratings. The providers known as mobile virtual network operators (MVNOs)—including Consumer Cellular, Google Fi, and Ting—receive much higher marks, surpassing even widely used prepaid plans. (See chart on page 44.)

"MVNOs purchase minutes and data in bulk at discounted rates from telecom giants such as AT&T and Verizon, and then sell them to consumers at significantly reduced prices," says Henry Parra, who oversees smartphone testing at Consumer Reports. "They don't incur the costs of infrastructure construction and maintenance, which is why they can charge so much less than the large providers do."

How much less? In 2016, when I first learned of MVNOs, I was paying AT&T $108 per month for cell phone service. When I switched to Project Fi (now known as Google Fi), I paid $20 per month for unlimited talk and text, and $10 for each gigabyte of data I used. (The company charges these same rates today.) Just like that, my cell phone bill dropped by about $1,000 per year. As a bonus, the monthly charges became as clear as water. I no longer had to wade through line after line on my statement searching out hidden fees or call customer service for an explanation of unrecognizable charges.

Sound too good to be true? It's not, as long as you're willing to accept compromises. For example, when a major wireless provider, such as AT&T or Verizon, experiences heavy data use that creates network congestion, it may slow service for customers of an MVNO that uses its network before it slows service for its own customers. The roaming options for MVNOs may be more limited, too. And while major carriers typically offer a wide selection of phones, including the latest, most widely sold models, you may find a less robust lineup for sale at an MVNO. Also, very few MVNOs have walk-in locations that you can head to for in-person tech support.

Interested in switching to an MVNO? Here's how to find the best one for you.

ILLUSTRATIONS BY JOSEPH CARRINGTON

STEP 1

DETERMINE HOW MUCH DATA YOU NEED

UNLIKE MOST PLANS offered by larger wireless carriers, MVNOs such as Google Fi and Ting charge only for the data you use, at prices ranging from about $10 to $15 per gigabyte. If you use your phone mostly for calls and texts, you probably don't need more than 1GB or 2GB of data each month. But if you monitor your Facebook news feed throughout the day and stream a lot of music and video to your phone, you may need closer to 5GB. (MVNO savings diminish for high-usage family plans with multiple lines using, say, 5GB each.)

Knowing your data usage will help you choose the best MVNO plan for you. To find out how much data you use, you can log in to your account on your cell service's website or consult your phone using the following steps. Note that directions may vary slightly by model and service provider.

On an Android phone: Go to Settings > Network & Internet > Data Usage.

On an iPhone: Go to Settings > Cellular. Then scroll down to Cellular Data to see the total. To determine how many months are included in that total, keep scrolling to the bottom of the menu and look for the date of the last reset.

STEP 2

DO A LITTLE PHONE FACT-FINDING

IF YOU WANT TO use the phone you have now with a new cell service provider, you first may need to unlock it from your old carrier's network. That's not too hard to do (and does not compromise your phone's security), but it requires some effort because the process varies from phone to phone and carrier to carrier.

For detailed instructions, contact your current cell service provider or go to **CR.org/unlock0920**. According to industry standards, a carrier will generally unlock a phone for you after the applicable service contract has expired and you have paid in full for the device (or have paid an early termination fee).

Before using the phone you own, you also have to confirm that it's compatible with the MVNO network you're considering. To do this, some MVNOs ask you to enter your phone's IMEI (international mobile equipment identity) number into a search tool on their website. Here's how to find your phone's IMEI number. **On an iPhone:** Go to Settings > General > About. Then scroll down to find the IMEI number near the bottom of the page. **On an Android phone:** Dial *#06#. (This will work for Apple phones, too, but not those on the Verizon network.)

If your current phone is not compatible with the MVNO network you choose and you need to purchase a new one, remember that not all MVNOs offer financing plans. But don't let that be a deal breaker: Some offer discounts on new models, and there are high-quality midpriced ($500 or less) smartphones on the market today, including the 17 models in the ratings chart on page 45.

STEP 3

CHOOSE A PLAN THAT SUITS YOUR HABITS

START BY REVIEWING the cell phone service provider ratings chart on page 44. If you're satisfied with the reception and coverage your current network provides, look for an MVNO that runs on the same network. (You'll find them listed under "Host Networks.") Websites such as BestMVNO.com and WhistleOut have useful tools to help you find the plan that best fits your needs, and we've provided some suggestions here, based on various usage scenarios.

Data Hogs

If you or your family uses 15 gigabytes or more of data per month, the unlimited plans offered by the major carriers can be hard to beat. But Visible, a prepaid wireless service owned and operated by Verizon, still might be a better bet. Visible offers unlimited data for a flat fee of $40 per month for a single line or as little as $25 per line per month if you squeeze four people onto the plan.

Bargain Hunters

Don't use your phone for much more than talk and text? Mint Mobile offers an introductory rate of $15 per month for unlimited talk and text and 3 gigabytes of data on a single line if you prepay for three months. After the three-month period, you can lock in the $15-per-month price if you prepay for a year's worth of service. It operates on the T-Mobile network.

All-or-Nothing Types

Some people don't need a big data plan until their usage jumps during a holiday, a summer vacation, or another special event. If that's you, top-rated Consumer Cellular offers a $25-per-month plan with unlimited talk and text and 500 megabytes of data. You can increase the data as needed, then pare back again. Another highly rated provider, Ting, allows you to choose a plan as cheap as $15 per month for 100 minutes of talk, 100 texts, and 100 megabytes of data, and scale up if necessary.

Globe-Trotters

If, under nonpandemic circumstances, you spend lots of time on the road, the Google Fi Unlimited Plan is hard to beat. For $70 per month you get unlimited data and texting, and you can use both internationally with no extra fees. The 20-cents-per-minute rate for calls to foreign countries is nice, too. You can get even cheaper rates if you use Google Fi's WiFi phone service, though the rate varies by country.

SWAP THE SIM CARD.
Once you've chosen a new provider, you will receive a SIM (subscriber identity module) card, either by mail or in-store pickup. You connect your phone to the new carrier by removing the old SIM card from the phone and replacing it with the new one. (The process is simple and takes only a few minutes.) Once the new SIM card is in place, follow the instructions from the provider to activate your existing phone number for a seamless transition to the new service.

HOW TO SAVE WITHOUT SWITCHING PROVIDERS

Though you'll probably save less than you would by switching cell plan providers, you can still trim your monthly bill by following these simple steps.

CHOOSE A NEW PLAN
Carriers regularly update their offerings. Go to your cell service provider's website to compare current plans and find out whether one of them might be a better, less expensive fit.

GO AUTOMATIC
All the major players offer discounts of $5 to $10 per month (or more, depending on the number of phone lines) if you enroll in automated payments and paperless billing. It's a simple way to potentially save $100 or more per year.

REVIEW THE FEES
You could be paying for things you don't want or need. For instance, the $10 per month you were happy to pay to insure your phone when it was new might not make sense when it's more than 2 years old.

BANK ON FREEBIES
Major carriers have expanded their unlimited plans to include free trials and subscriptions. AT&T offers HBO Max, Sprint offers Amazon Prime, T-Mobile offers Netflix and Gogo in-flight WiFi service, and Verizon offers Apple Music and Disney+. If you can take advantage of this perk, even for a limited time, it can save you $10 to $15 per month.

Ratings > **Cell Phone Service Providers** The companies atop this list may be less familiar to you, but they earn higher marks for value and customer support than giants such as AT&T, Sprint, and Verizon.

Provider	Reader Survey Results						Host Networks
	Overall satisfaction score	Value	Customer support	Data	Reception	Telemarketing call frequency	
Consumer Cellular	89	⌃⌃	⌃⌃	⌃	I	I	AT&T and T-Mobile
Ting	87	⌃⌃	⌃⌃	⌃	I	I	Sprint, T-Mobile, and Verizon
Google Fi	86	⌃⌃	⌃	⌃	I	⌃	Sprint, T-Mobile, and U.S. Cellular
Republic Wireless	85	⌃⌃	—	I	⌃	I	Sprint and T-Mobile
Mint Mobile	85	⌃⌃	—	⌃	I	I	T-Mobile
Total Wireless	85	⌃⌃	—	⌃	I	I	Verizon
Spectrum Mobile	84	⌃	⌄	⌃	I	I	Verizon
TracFone	84	⌃	⌄⌄	I	I	⌃⌃	AT&T, Sprint, T-Mobile, and Verizon
MetroPCS	83	⌃	I	⌃	I	I	T-Mobile
Cricket	83	⌃	I	⌃	I	I	AT&T
Page Plus Cellular	83	⌃	—	—	I	I	Verizon
Straight Talk	82	⌃	⌄⌄	I	I	I	AT&T, Sprint, T-Mobile, and Verizon
Credo Mobile	81	I	⌃	I	I	I	Verizon
T-Mobile	81	⌃	⌃	⌃	I	I	
Cellcom	80	I	—	—	⌄	⌄	Verizon
Boost Mobile	80	⌃	—	I	I	I	T-Mobile
Net10	77	I	—	—	I	⌃⌃	AT&T, Sprint, T-Mobile, and Verizon
U.S. Cellular	77	⌄	⌃	I	I	⌄	
GreatCall (Jitterbug)	75	⌄	I	⌄	I	⌃⌃	Verizon
Verizon Wireless	73	⌄⌄	⌄	I	I	⌄	
Sprint	70	⌄⌄	⌄	⌄	⌄⌄	⌄	
AT&T	69	⌄⌄	⌄⌄	⌄	⌄⌄	⌄	

HOW WE SURVEY: The ratings are based on CR's 2019 Fall Survey of 103,435 CR members in the U.S. **Overall satisfaction score** represents respondents' general views on their current cell phone service. Differences of fewer than 4 points are not meaningful. **Value, Customer support,** and **Data** reflect average scores on a scale from Very Poor to Excellent. **Reception** reflects the percentage of respondents who report having adequate cell phone reception inside and outside their home. **Telemarketing call frequency** reflects the proportion of members who report that they did not receive a single phone call from a telemarketer in the seven days prior to taking the survey. Ratings are based on the experiences of CR members, who might not be representative of the general U.S. population. A dash (—) indicates insufficient sample size to provide a rating.

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WORSE — BETTER

Ratings > **Midpriced Smartphones** The smartphone market has expanded to include many options priced at $500 or less. Several models perform well enough to earn a CR Best Buy recommendation.

Brand + Model	Overall Score	Price	Survey Results		Test Results												Features					
			Predicted reliability	Owner satisfaction	Camera: Rear image quality	Camera: Rear 1080p video quality	Camera: Selfie image quality	Battery and charging	Display	Durability	Performance	Sound	Ease of use	Calling	Battery life (hr.)	Water-resistance test	Available from AT&T	Available from Sprint	Available from T-Mobile	Available from Verizon	Available unlocked	Display diagonal size (in.)
SMARTPHONES $500 AND UNDER																						
($) **OnePlus** 7T	79	$500	Excellent	Excellent	Very good	Very good	Good	Very good	Excellent	Excellent	Excellent	Very good	Excellent	Very good	27.5	NA			●		●	6.5
($) **Samsung** Galaxy A50	73	$350	Excellent	Excellent	Good	Good	Good	Very good	Very good	Poor	Very good	Very good	Very good	Very good	34	NA					●	6.4
($) **Motorola** One Zoom	71	$350	Very good	Good	Good	Poor	Good	Very good	Excellent	Excellent	Excellent	Very good	Very good	Good	29	NA					●	6.4
($) **LG** V40 ThinQ	70	$400	Good	Poor	Very good	Very good	Good	Good	Excellent	Good	Very good	Excellent	Excellent	Very good	25.5	Pass	●	●	●	●	●	6.4
($) **LG** V35 ThinQ	69	$280	Good	Poor	Very good	Very good	Very good	Good	Excellent	Very good	Very good	Good	Excellent	Very good	27	Pass	●				●	6
($) **Apple** iPhone SE 2020	68	$400	Excellent	Excellent	Good	Very good	Good	Poor	Very good	Very good	Excellent	Very good	Very good	Good	25.5	Pass	●	●	●	●	●	4.7
Nokia 9 PureView	67	$500	Very good	Very poor	Good	Poor	Good	Poor	Excellent	Very good	Excellent	Very good	Very good	Very good	19.5	Pass					●	6
Motorola Moto Z4	67	$400	Very good	Good	Good	Poor	Good	Very good	Very good	Good	Very good	Very good	Very good	Good	28.5	NA					●	6.4
Motorola Moto G Stylus	65	$300	Very good	Good	Good	Good	Poor	Very good	Very good	Very good	Excellent	Excellent	Very good	Very good	33	NA				●	●	6.4
Nokia 6.1	65	$160	Very good	Very poor	Good	Good	Very good	Good	Very good	Very good	Very good	Very good	Very good	Very good	24.5	NA					●	5.5
Motorola Moto G7	65	$280	Very good	Good	Good	Poor	Good	Good	Very good	Excellent	Very good	Very good	Very good	Very good	21.5	NA			●	●	●	6.2
Sony Xperia 10 Plus	64	$330	Good	Poor	Good	Good	Good	Good	Very good	Very good	Very good	Very good	Very good	Good	22	NA					●	6.5
Sony Xperia 10	64	$300	Good	Poor	Good	Good	Good	Good	Very good	Very good	Very good	Very good	Very good	Good	24.5	NA					●	6
Nokia 6.2	63	$250	Very good	Very poor	Good	Good	Poor	Good	Very good	Very good	Very good	Very good	Very good	Good	26	NA					●	6.3
BlackBerry Key2	62	$450	Excellent	Good	Good	Poor	Very poor	Very good	Very good	Excellent	Very good	Very good	Very good	Good	29	NA					●	4.5
TCL 10L	58	$250	—	—	Good	Good	Good	Good	Very good	Good	Very good	Good	Very good	Very good	31	NA					●	6.5
Nokia 3.1	50	$100	Very good	Very poor	Good	Poor	Very poor	Good	Good	Excellent	Good	Very good	Very good	Good	28	NA					●	5.2

> All-Access and Digital members can find the latest, complete ratings at CR.org/smartphones. When you're ready to buy, find the best price by clicking the green "Shop" button on a model's dedicated page to see comparative pricing among online retailers.

HOW WE TEST: Overall Score combines test results with survey data for predicted reliability and owner satisfaction. **Predicted reliability** is based on estimated brand problem rates for newly purchased smartphones within the first two years of ownership. **Owner satisfaction** is based on the proportion of members extremely likely to recommend their phone brand to friends and family. A dash (—) indicates insufficient sample size to provide a rating. Those brands get a category average rating for reliability and satisfaction. **Rear image quality** is based on objective and subjective judgments of test images produced by the main camera, including evaluation of resolution, dynamic range, color accuracy, and visual noise. **Rear 1080p video quality** is based on the judgments of trained panelists who view recorded video images shot at the highest-quality setting available (1080p maximum) under various lighting conditions. **Battery and charging** reflects performance under nominal cell network signals, including battery consumption during tasks that involve voice, data, and display. It also factors in charge time, fast-charging performance, and wireless charging capability. **Display** rates color, clarity, off-angle viewing, and touch responsiveness. The **Water-resistance test** evaluates manufacturer claims. Results are pass-fail. Phones without water-resistance claims are marked "NA."

6 Cool Fridge Features You'll Love

START SHOPPING FOR a new refrigerator and you may quickly find yourself scanning a long menu of features and extras. On any appliance retailer's site you'll be confronted with a range of options, from the practical (open-door alarms, spillproof shelves, fingerprint-proof finishes) to the high-tech (coffee brewed right on the door, WiFi-enabled touch screens with dozens of apps, interior cameras that let you check what's on the shelves when you're away from home).

Of course, the fancier the features, the more expensive the fridge. Our refrigerator testing team sorted for those both popular for convenience and essential for peak performance. In our ratings charts on the following pages you'll find models with the features that top our lab tests. (Some fridge styles don't come with certain features, so you won't see models shown in those categories.) Your budget will help guide you through the maze, and you'll have many choices at a variety of prices.

For a deep dive into our 300-plus tested models, All-Access or Digital members can go to CR.org/refrigerators. And when you're ready to buy, you can find the best prices by clicking on the "Shop" button.

SAMSUNG RF28N9780SR
$3,330

67 OVERALL SCORE

Precise Temperature Controls

For your food to stay fresh for as long as possible, the refrigerator temperature should hover right around 37°F. In the freezer, 0°F will keep foods thoroughly frozen.

Armed with this information, you'd set your refrigerator to those temperatures, right?

But the temperature controls on many refrigerators allow you to choose only from a range of numbers—say, from 1 to 5. And even when models do have digital controls that allow you to set a specific temperature, our tests have found that the settings aren't always accurate; some fridges and freezers run cold and some run warm.

The temperature-measuring equipment we use in our lab is extremely precise, down to a fraction of a degree. As a result, we can tell you exactly where to set your refrigerator temperature to achieve optimal freshness, and which refrigerators in our tests stand out for superb thermostat control. (All-Access and Digital members can refer to the Features & Specs tab in the ratings at **CR.org** to find out how to adjust each model to get 37° F in the center of the fresh-food section and 0° F in the center of the freezer.)

Some models—like the LG LMXS28626S French-door—also allow you to decide how cold your fridge is in certain areas. For example, you can set a drawer to be cooler than the rest of the fridge to store meat, fish, and cold cuts better.

You'll also find some "convertible" models that allow you to switch a section from fridge to freezer—or vice versa—as needed. Some Samsung top-freezer models can become all-fridge instead of freezer/fridge, for example, and there are four-door fridges that allow you to convert one of the two freezer cavities to extra fridge space.

No More Icy Veggies The Samsung RT18M6215SG, $650, keeps temperatures steady.

	Overall Score	Price	Predicted reliability	Owner satisfaction	Thermostat control	Temperature uniformity	Energy efficiency	Noise	Ease of use
TOP-FREEZER REFRIGERATORS									
✓ **Frigidaire** Gallery FGTR2037TF	81	$950	⏫	⏬	⏫	⏫	⏫	I	⏬
✓ **LG** LTCS24223S	81	$950	⏫	⬆	⬆	I	⏫	⏫	⬇
✓ **Samsung** RT18M6215SG	78	$650	⬆	I	⬆	⬆	⬆	⬆	I
BOTTOM-FREEZER REFRIGERATORS									
✓ **Amana** ABB2224BRM	82	$1,425	⬆	I	⏫	⏫	⏫	I	⬇
✓ **GE** GDE25ESKSS	81	$1,000	⬆	⬇	⏫	⏫	⬆	⬆	I
FRENCH-DOOR REFRIGERATORS									
$ **LG** LFC22770ST	83	$1,620	I	⬆	⏫	⏫	⏫	⏫	I
✓ **LG** LFCS22520S	79	$1,000	I	⬆	⏫	⏫	I	⏫	I
LG LMXS28626S	78	$1,900	I	⬆	⏫	⏫	I	⬆	⬆
Samsung RF23M8070SR	69	$2,000	⬇	I	⏫	⏫	I	⏫	⏫
SIDE-BY-SIDE REFRIGERATORS									
✓ **GE** Profile PSE25KSHSS	76	$2,000	I	⏬	⏫	⬆	⬆	I	⏫
$ **LG** LSXS26326S	75	$1,200	I	I	⏫	⬆	⬆	⬆	⏫
✓ **Whirlpool** WRS321SDHZ	66	$1,000	I	⬇	⬆	⬆	I	I	I

⏬ ⬇ I ⬆ ⏫ POOR — EXCELLENT | ✓ RECOMMENDED $ CR BEST BUY

Door-in-Door Storage

A door-in-door is a panel on an exterior door that pops open with the press of a button. The design allows you to reach for often-used items without having to open the main door. They're most often found on French-door refrigerators, which have two upper doors in the fresh-food section and a pull-out freezer below, and tend to come with more bells and whistles than other fridge styles. The outer panel can be a little smaller or the same size and material as the door, so it's "hidden" from the outside. A few models have a clear window on the door so that you can see what's inside. Both styles are handy for anyone who likes to loiter in front of an open fridge deciding between, say, a strawberry yogurt and string cheese, or maybe a Heineken and a Pabst Blue Ribbon.

"Reaching for frequently used foods in the door-in-door compartment means you avoid exposing the rest of the fridge to outside air, which can cause the compressor to run longer, potentially offering small energy savings," says Larry Ciufo, a member of Consumer Reports' refrigerator testing team. "The configuration may decrease overall interior storage space slightly, and refrigerators with this feature are usually $50 to $300 more than basic models."

CR first tested door-in-door refrigerators in 2012, and since then more manufacturers have jumped on the bandwagon, offering their own versions. Although it remains a niche feature—nowhere near as popular as a through-the-door ice and water dispenser, for example—CR members seem to like it. In our 2018 Refrigerators Survey, 94 percent of those who bought a door-in-door model said they regularly used the feature to store food or drinks, and 78 percent said the feature influenced their purchase decision.

FRENCH-DOOR MODELS

LG LRFDS3006S
$3,420
84 OVERALL SCORE

LG LRFVS3006S
$3,000
81 OVERALL SCORE

SIDE-BY-SIDE MODELS

LG LSXS26366S
$1,400
78 OVERALL SCORE

LG LSXC22396S
$2,070
74 OVERALL SCORE

Kenmore Elite 51863
$2,200
74 OVERALL SCORE

Snack-Attack-Friendly Door-in-door styles like the LG LRFDS3006S, $3,420, let you find your favorite drinks and foods fast.

THE SECOND-FRIDGE SOLUTION

IF YOU'VE TRIED to buy a freezer recently, you may have found that many models are out of stock. "We saw significant panic buying of freezers during the first few months of the pandemic," says Nish Suvarnakar, Consumer Reports' senior market analyst for refrigerators and freezers. "Retailers weren't able to replenish their stock with new models until the middle of the summer."

Even as we went to press, when we searched for freezers at national, regional, and online-only retailers, we found that most models were listed as out of stock or on order. But this shortage provides another option: purchasing a second refrigerator instead. Top-freezer models cost about the same as a full-sized freezer and are typically smaller and more affordable than other styles. That makes them a smart choice for a second fridge assigned to the garage or basement.

The freezer compartments of the biggest top-freezer fridges in our ratings have about the same space as a small chest freezer, or about 6 cubic feet. And as a bonus, you get plenty of extra cold storage. Here are the best top-freezers with large freezer compartments from our ratings, arranged in order of most to least freezer capacity.

Whirlpool WRT511SZDM
$984-$989
69 OVERALL SCORE
FREEZER USABLE CAPACITY (CU. FT.) 6

Insignia NS-RTM21SS7
$774
64 OVERALL SCORE
FREEZER USABLE CAPACITY (CU. FT.) 5.5

Maytag MRT311FFFM
$854-$919
77 OVERALL SCORE
FREEZER USABLE CAPACITY (CU. FT.) 5.9

Frigidaire FFTR2021TS
$799-$1,252
74 OVERALL SCORE
FREEZER USABLE CAPACITY (CU. FT.) 4.9

For Shoppers Who Like to Stock Up
A roomy fridge like the GE GSS23HSHSS, $1,650, can fit your whole weekly haul.

Ample Capacity

How much interior food storage space do you need? Most manufacturers recommend 19 to 22 cubic feet for a family of four. But if you do a big weekly shopping trip or buy in bulk, as many people are doing during this pandemic, you may need up to 30 to 33 cubic feet. If this sounds like you, don't worry: You'll see plenty of oversized options for sale, particularly at higher prices, and you won't have to remodel your kitchen to fit them.

"The trend of making refrigerators taller and deeper–to increase capacity while still maintaining a common width–started a few years ago," says Nish Suvarnakar, Consumer Reports' senior market analyst for refrigerators and freezers.

But be aware that most refrigerators fall short of the manufacturer's claims for capacity, some by as much as 32 percent, according to our measurements of the hundreds of refrigerators we test. We measure the actual storage space in a fridge, accounting for space taken up by shelves and more, while manufacturers treat the refrigerators like an empty box.

You'll also want to take a careful look at the interior storage features, because while a spacious model might fit all of your food, a well-organized interior will make it easier to see what you have.

Look for split shelves that adjust to different heights independently, as well as door shelves or bins that move up or down to fit taller items. But if your door has deep storage shelves meant for eggs, milk, or butter, be aware that those items are better off on internal shelves, where cooler temperatures will keep them fresher longer. Some higher-end models, like the GE Profile PSS28KSHSS side-by-side, even have so-called elevator shelves that crank up and down without needing to be unloaded. You may also find shelf snuggers–sliding partitions that can secure bottles and jars on a door shelf–as well as full-extension shelves or drawers that offer easier access to items at the back of a deep fridge.

The models in the ratings below offer impressive capacity for their size. All-Access and Digital members can zero in on the column for usable capacity in the Features & Specs section of our refrigerator ratings at **CR.org** for more options.

	Overall Score	Price	Predicted reliability	Owner satisfaction	Thermostat control	Temperature uniformity	Energy efficiency	Noise	Ease of use
TOP-FREEZER REFRIGERATORS									
✓ **Frigidaire** Gallery FGTR2037TF	81	$950	⏫	⏬	⏫	⏫	⏫	I	⏬
✓ **Samsung** RT18M6215SG	78	$650	⬆	I	⬆	⬆	⬆	⬆	I
$ **Whirlpool** WRT518SZFM	73	$580	⏫	⬇	⬆	⬆	⏫	⬇	⏬
BOTTOM-FREEZER REFRIGERATORS									
✓ **GE** GDE25ESKSS	81	$1,000	⬆	⬇	⏫	⏫	⬆	⬆	I
GE GDE21ESKSS	78	$1,075	⬆	⬇	⏫	⏫	I	⬆	I
Whirlpool WRB322DMBM	75	$1,440	I	I	⏫	⏫	I	I	⬇
FRENCH-DOOR REFRIGERATORS									
$ **LG** LFC22770ST	83	$1,620	I	⬆	⏫	⏫	⏫	⏫	I
✓ **LG** LFCS22520S	79	$1,000	I	⬆	⏫	⏫	I	⏫	I
Samsung RF28N9780SR	67	$3,330	⬇	I	⏫	⏫	⬆	⏫	⬆
SIDE-BY-SIDE REFRIGERATORS									
✓ **GE** Profile PSS28KSHSS	79	$2,150	I	⏬	⏫	⬆	⬆	⏫	⏫
$ **LG** LSXS26326S	75	$1,200	I	I	⏫	⬆	⬆	⬆	⏫
✓ **GE** GSS23HSHSS	71	$1,650	I	⏬	⏫	⬆	⬆	I	⬆

⏬ ⬇ I ⬆ ⏫ POOR EXCELLENT | ✓ RECOMMENDED $ CR BEST BUY

Impressive Energy Efficiency

Home appliances in general have become much more efficient over the years, and refrigerators in particular have seen meaningful efficiency gains. That's important because appliance usage has a big impact on your energy bill, and that gets baked into your fixed expenses for years to come.

"Federal standards are constantly updated to ensure that refrigerators of certain sizes use ever-lower amounts of energy," says Larry Ciufo, a CR tester. "And manufacturers introduce new technologies to meet the standards."

Of the more than 300 models in Consumer Reports' refrigerator ratings, annual energy costs range from $38 to over $190 on some built-in models. (Energy costs are based on a national average of 12.9 cents per kilowatt-hour at the time of testing.)

So which are the most energy-efficient? "Top-freezers and conventional bottom-freezers tend to cost less to run compared with side-by-side and French-door fridges," Ciufo says. "Side-by-side models have a tall, thin freezer with a lot of external surface area that gets warm. And French-door bottom-freezers usually have energy-hungry add-ons, like an icemaker and an anti-sweat heater that prevents condensation from forming on the door gasket."

Of course, you may see lower annual energy costs on other styles of refrigerators depending on their size. And the manufacturer makes a difference.

All of this can make it tricky to find a refrigerator that will cut down on your electric bill. The Energy Star rating from the Environmental Protection Agency and the Department of Energy is a good place to start when shopping; it means that a product is in or near the top 25 percent of the market. But efficiency varies by model (i.e., an unlabeled top-freezer might be more efficient than an Energy Star-certified French-door model).

For an apples-to-apples efficiency comparison, look at the EnergyGuide labels of the refrigerators you're considering, and compare the annual operating costs and the kilowatt-hours used per year. Or if you're curious about the energy efficiency of the fridge you already own, look up the model on the manufacturer's website, where you should find a downloadable EnergyGuide label available along with manuals and other documentation.

At CR, we give all of the refrigerators we test a score for energy efficiency and list their estimated annual energy cost, so you can tell which ones will protect the environment and your bottom line. See below for models with top energy-efficiency scores.

	Overall Score	Price	Predicted reliability	Owner satisfaction	Thermostat control	Temperature uniformity	Energy efficiency	Noise	Ease of use
TOP-FREEZER REFRIGERATORS									
✓ **Frigidaire Gallery** FGTR2037TF	81	$950	⌃⌃	⌄⌄	⌃⌃	⌃⌃	⌃⌃	I	⌄⌄
✓ **Blomberg** BRFT1522SS	79	$1,320	–	–	⌃⌃	⌃	⌃	⌃	⌄
$ **Whirlpool** WRT518SZFM	73	$580	⌃⌃	⌄	⌃	⌃	⌃⌃	⌄	⌄⌄
BOTTOM-FREEZER REFRIGERATORS									
✓ **Amana** ABB2224BRM	82	$1,425	⌃	I	⌃⌃	⌃⌃	⌃⌃	I	⌄
✓ **GE** GDE25ESKSS	81	$1,000	⌃	⌄	⌃⌃	⌃⌃	⌃	⌃	I
KitchenAid KRBR102ESS	77	$1,920	⌃	I	⌃⌃	⌃⌃	I	I	⌄
FRENCH-DOOR REFRIGERATORS									
✓ **LG** LRFDS3006S	84	$3,420	I	⌃	⌃⌃	⌃⌃	⌃	⌃⌃	⌃⌃
$ **LG** LFC22770ST	83	$1,620	I	⌃	⌃⌃	⌃⌃	⌃⌃	⌃⌃	I
✓ **GE** GNE25JSKSS	77	$1,500	I	I	⌃⌃	⌃⌃	⌃	⌃	I
SIDE-BY-SIDE REFRIGERATORS									
✓ **GE** Profile PSS28KSHSS	79	$2,150	I	⌄⌄	⌃⌃	⌃	⌃	⌃⌃	⌃⌃
$ **LG** LSXS26366S	78	$1,400	I	I	⌃⌃	⌃	⌃	⌃⌃	⌃⌃
✓ **GE** GSS23HSHSS	71	$1,650	I	⌄⌄	⌃⌃	⌃	⌃	I	⌃

⌄⌄ ⌄ I ⌃ ⌃⌃ POOR — EXCELLENT | ✓ RECOMMENDED | $ CR BEST BUY

Through-the-Door Ice and Water Dispenser

Buyers are thirsty for this convenience and have a wide selection. According to Gap Intelligence, a research firm, 66 percent of the refrigerator models at the national retailers they track offer this feature.

Filling your glass with ice or water at the touch of a button has an undeniable appeal. But there are some caveats. Refrigerators with door dispensers come with added costs, starting with the purchase price. Models with this feature typically cost about $100 to $400 more than comparable fridges without it. Annual operating costs tend to be higher because of the extra electricity needed to power the unit. It might not be more than an additional $20 or so each year, but over the life of the appliance that adds up. And you'll be on the hook for replacement water filters, which can cost up to $60. Most manufacturers recommend changing them twice a year.

And then you may find yourself facing costly repair expenses. CR's 2018-2019 surveys covering nearly 103,000 refrigerators purchased new by our members between 2009 and 2019 indicated that issues with ice and water dispensers and icemakers were the most commonly reported fridge-related problems. Fifteen percent of refrigerators manufactured with dispensers had a malfunctioning dispenser, 15 percent of all refrigerators we analyzed struggled to make ice, and 7 percent experienced excessive ice buildup.

You'll also sacrifice food storage space, because the housings for the icemaker and water filter are inside the freezer or fresh-food section, respectively.

So how can you have your ice water and avoid costly repairs, too? Use the dispenser regularly to help prevent ice buildup, and turn it off if you'll be away from home for several days. Maintenance is key, too. If you have hard water and don't have a whole-house water softening system in place, mineral buildup could cause problems. You can sponge off any white film that builds up with a mixture of equal parts water and white vinegar. If it won't come off, you may have to follow the manufacturer's instructions to remove the tray and soak it in the mixture.

LG LSXS26326S $1,200

	Overall Score	Price	Predicted reliability	Owner satisfaction	Thermostat control	Temperature uniformity	Energy efficiency	Noise	Ease of use
BOTTOM-FREEZER REFRIGERATOR									
Fisher & Paykel Active-Smart RF170WDRUX5	73	$2,600	^	I	^	^^	I	^	I
FRENCH-DOOR REFRIGERATORS									
✓ **LG** LRFXC2406S	86	$2,500	I	^	^^	^^	I	^^	^^
✓ **LG** LRFDS3006S	84	$2,700	I	^	^^	^^	^	^^	^^
KitchenAid KRFC704FBS	75	$4,600	v	I	^^	^	I	^^	^^
SIDE-BY-SIDE REFRIGERATORS									
✓ **GE** Profile PSS28KSHSS	79	$2,150	I	vv	^^	^	^	^^	^^
$ **LG** LSXS26366S	78	$1,400	I	I	^^	^	^	^^	^^
✓ **GE** Profile PSE25KSHSS	76	$2,000	I	vv	^^	^	^	I	^^
$ **LG** LSXS26326S	75	$1,200	I	I	^^	^	^	^	^^
✓ **GE** GSS23HSHSS	71	$1,650	I	vv	^^	^	^	I	^
Whirlpool WRS586FIEM	71	$1,635	I	v	^	I	^^	^	^
✓ **Whirlpool** WRS321SDHZ	66	$1,000	I	v	^	^	I	I	I
✓ **Amana** AS12175GRS	65	$1,000	I	v	^	^	I	I	I

Freshness Optimization

Your refrigerator's main job is to keep your food fresh for as long as possible. The average American throws away almost a pound of spoiled or uneaten food every day, according to a 2018 study from the Department of Agriculture. So it's worth knowing how well your future fridge is equipped to maintain freshness.

Manufacturers make a range of claims about freshness. They're difficult to substantiate because both the quality of foods and their ideal storage conditions vary. But our tests have confirmed that the fridges that are best at preserving food are those that maintain a steady temperature and humidity. And one innovation—dual-evaporator cooling—does more than any other to create optimal climate conditions.

Most refrigerators use a single evaporator, or cooling coil, in the freezer section, alongside a circulating fan. When a cooler temperature is needed in the refrigerator section, additional air is diverted into the fridge from the freezer section through a damper positioned between the two compartments.

Single evaporators come with two big trade-offs. First, the evaporator removes moisture from the air inside the freezer to maintain the low temperature that will keep food frozen. When that cold, dry freezer air is pumped into the fresh-food section, it lowers humidity levels there, which can dry out foods faster, making them taste less fresh. Second, odors can migrate between the freezer and fridge sections, causing your ice cubes to taste like fragrant fridge foods.

Dual evaporators create two distinct climates, one for the freezer and one for the fridge. Some models, like the LG LRFXC2406S French-door, also feature air filters, which help eliminate bacteria and mold spores inside. A few have vacuum-sealed crisper drawers to hold moisture inside, keeping food fresher longer.

	Overall Score	Price	Predicted reliability	Owner satisfaction	Thermostat control	Temperature uniformity	Energy efficiency	Noise	Ease of use
TOP-FREEZER REFRIGERATORS									
✔ **Samsung** RT21M6213SG	78	$890	^	I	^	I	^^	^	I
✔ **Samsung** RT21M6215SG	78	$1,080	^	I	^	I	^^	^	I
✔ **Samsung** RT18M6215SG	78	$650	^	I	^	^	^	^	I
FRENCH-DOOR REFRIGERATORS									
✔ **LG** LRFXC2406S	86	$2,500	I	^	^^	^^	I	^^	^^
Samsung RF20HFENBSR	67	$1,390	v	I	^^	^^	I	^	^
Blomberg BRFD2230SS	62	$3,105	-	-	^	I	I	^	^
SIDE-BY-SIDE REFRIGERATORS									
✔ **GE** Profile PSS28KSHSS	79	$2,150	I	vv	^^	^	^	^^	^^
Whirlpool WRS586FIEM	71	$1,635	I	v	^	I	^^	^	^
Whirlpool WRS588FIHZ	71	$1,360	I	v	^	I	^	^	^

HOW WE TEST: 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 refrigerator they bought. In cases where we have insufficient survey data to provide a brand-level rating, indicated by a gray dash (-), we give the model average reliability and satisfaction scores. **Thermostat control** assesses the ability to reach and maintain a set temperature despite changes in room temperature. **Temperature uniformity** is the ability to mitigate warm and cold spots in the fridge and freezer compartments. **Energy efficiency** indicates energy consumption based on usable storage space and the national average electricity cost. **Noise** reflects quietness of operation based on noise-meter readings and a panel of listeners. **Ease of use** assesses layout and features. **Price** is approximate retail.

vv v I ^ ^^ POOR EXCELLENT ✔ RECOMMENDED $ CR BEST BUY

NEWS & EXPERT ADVICE TO KEEP YOU AHEAD OF THE CURVE™

ROAD REPORT

TIP FROM OUR TEST TRACK

Adjusting Lane Departure Alert

Lane departure warning (LDW) safety systems reduce fatal crashes, but many CR members report that the audible LDW alert is so annoying that they deactivate it. To give drivers a choice other than turning off the LDW alert, some newer models let you adjust the sensitivity or make it a steering wheel or seat vibration. The settings are usually found under "safety systems" or "driver assistance" in the car's infotainment menus.

AHEAD OF THE CURVE

Making Self-Driving Tech Safer

Even if self-driving vehicles were the only cars on the road, they might prevent just about one-third of crashes, according to a recent Insurance Institute for Highway Safety (IIHS) study. The problem: They're being developed to drive like people, **prioritizing speed and comfort above safety.** "Self-driving cars have a lot of long-term potential, but automakers have made safety promises they can't keep," says CR manager of safety policy William Wallace. "**Stronger safety standards are critical** to keep these vehicles from putting people in harm's way."

THE VITAL STATISTIC

61%

Percentage of 2020 vehicle models on which automatic emergency braking (AEB) with pedestrian detection is standard, up from 38% of 2019 models. CR awards Overall Score bonus points to cars that have this feature standard across all trims.

Source: Consumer Reports analysis.

RECALLS

Chrysler Pacifica

Chrysler is recalling 22,449 Pacifica plug-in hybrid minivans from model years 2017 through 2020 for fire risk, likely due to a corroded auxiliary battery connection. **WHAT TO DO:** Take the vehicle to a dealer for inspection. If corrosion is observed, the dealer will provide a loaner vehicle free of charge until the problem can be remedied. In the meantime, Chrysler says to park outdoors, away from other autos, and to keep the floor of the second row free from any moisture.

ASK OUR EXPERTS

Is buying a used rental car a bad idea?

Used rental cars can come with high mileage and may have been subjected to hard driving conditions. But they can also be priced below what you'd pay at a conventional dealership and are often only a year or two old, which means you might be able to buy a newer model with safety features that you couldn't otherwise afford. Some rental car companies offer a limited warranty on the used cars they sell and a grace period to return the car, during which time you can have it inspected by a mechanic (as you should with any used car purchase). "Make sure that any used auto you're thinking of buying has no open recalls," says Jen Stockburger, director of operations at CR's Auto Test Center.

ILLUSTRATIONS BY MATTHEW HOLLISTER

Screen Stars

We reveal which in-car infotainment systems CR members love—and hate. If you're stuck with one that's not a good fit for you, we can steer you in a better direction.

by Keith Barry

IF YOU'RE SHOPPING for a car, you probably care about how comfortable and reliable it is, if it's safe and efficient, and whether it's fun to drive. But what about the infotainment system? That's the interface and software that show up on your car's center screen–and it's playing an increasingly important role in modern vehicles.

The infotainment system runs all of the communication and entertainment functions of a car, from phone calls and navigation to music and podcasts. The decisions each manufacturer has made about user experience, hardware design, and smartphone connectivity can mean the difference between falling in love with your new ride and having a frustrating relationship with it.

Almost all new vehicles sold in the U.S. this year (98.8 percent) will have a digital display screen, according to the market research firm IHS Markit. But how well and easily the systems operate can be vastly different depending on the car and model year. Most new cars this year will also be equipped with Apple CarPlay and Android Auto compatibility (76 percent and 69 percent, respectively), allowing drivers to merge their smartphone's features with their vehicle's built-in screen.

We surveyed more than 73,000 of our CR members about how satisfied they are with their car's infotainment system, including whether they found it distracting to use and whether they preferred to use Android Auto or Apple CarPlay instead of the factory-installed system.

ILLUSTRATION BY BEN SCMULEVITCH

GENESIS G70

Members told us that CarPlay compatibility could make up for a lousy system's deficits and that wireless connectivity wasn't as convenient as it might seem. We also learned that the built-in systems of some of the most widely sold and reliable vehicles—including certain Honda and Toyota models—were among the most frustrating to use. The same was true for certain respected luxury brands. In fact, Acura had the lowest satisfaction marks in the survey, and Lexus and Mercedes-Benz weren't far behind.

"Cars from luxury brands and those with the latest technology are often the most difficult to use," says Jake Fisher, senior director of auto testing for Consumer Reports.

By contrast, the systems in certain less expensive vehicles, including those made by Fiat Chrysler Automobiles (FCA), Ford, and General Motors, earned some of the highest marks in our survey. Fisher says that's largely because they're simple to understand and operate.

Our survey sheds light on how well some car owners are interacting with today's increasingly advanced vehicles and demonstrates just how integral smartphones have become to the driving experience. It also shows that consumers need to be careful when shopping for a vehicle, because some automakers whose cars routinely top our reliability and owner satisfaction surveys haven't been as successful designing user-friendly infotainment systems.

If you're in the market for a vehicle, the advice on these pages can help you find a system that works for you. And if a car you're interested in has an infotainment system with a low

satisfaction rating—or if you already own one—we have advice on how you can get more out of it and make it easier to use.

Test-Driving the Tech

There are almost as many infotainment systems as there are brands of cars, and each has its own pros, cons, and idiosyncrasies. For example, Ford and Chrysler screens display shortcuts to frequently used tasks. Certain Honda, Acura, and Infiniti models split their infotainment features across multiple screens in the center console. Although IHS Markit says a vast majority of vehicles with displays—97 percent—rely on touch screens, Mazda uses a rotary controller instead.

Regardless of the differences, the best systems have one thing in common, says Kelly Funkhouser, program manager for vehicle interface testing at Consumer Reports: They're designed to minimize distraction. "Hard buttons or controllers with a bad menu structure can be as distracting as a touch screen with a bad interface," she says. "What's most important is that drivers can use the system quickly without taking their eyes off the road."

Sometimes cars with the most satisfying infotainment systems can become distracting when those systems are combined with other basic vehicle controls. Tesla's infotainment system, for example, got top marks from drivers. But our experts say that the controls on the Tesla Model 3 are more complicated than they need to be. That's mostly because the company put important vehicle controls—such as steering wheel and mirror adjustments—on the same screen as the infotainment system.

"In most cars, it's intuitive to feel around for those controls without taking your eyes off the road," Funkhouser says. "But on the Model 3, these simple tasks must be done through multiple steps on the touch screen."

Distraction as a Deal Breaker

Lexus is another case in point. The automaker uses two similar systems throughout its model lineup with different controllers, and both systems received some of the lowest ratings from our members. The Remote Touch system uses a mouselike controller and the Remote Touchpad system uses a trackpad, like on a laptop. Although Lexus says upcoming models will have touch screens, most of the current models don't. Survey respondents complained that making selections with these controllers required a great deal of hand-eye precision, which was especially challenging on bumpy roads. In addition, CR's testers say these systems require users to navigate through layers of menus to do even simple tasks, such as changing audio inputs.

Although many Lexus vehicles are at the top of CR's reliability and owner satisfaction ratings, their distracting infotainment systems can be deal breakers for some buyers.

Nancy Tutini of Maryland drives a 2018 Lexus LS with Remote Touchpad. She finds it frustrating and distracting. "Simplicity should be the goal!" she said in the comments section of the survey. "Who thought this was an upgrade?"

In a written statement, a Lexus spokesman told CR that the automaker was working to improve its existing and future systems. "We want to give our customers both choices for remote touch interfacing," he said, "and we will continuously improve towards a better [user experience] and seamless technology."

Jake Fisher at CR says that top-rated systems from FCA, Ford, Genesis, and GM tend to have big icons and simple controls that people can easily touch and understand. They might not look flashy, but they don't require additional effort to master.

When a Phone Has the Edge

Android Auto and Apple CarPlay let users mirror familiar apps from their

SATISFACTION SCALE: BUILT-IN SYSTEMS VS. A CELL PHONE

SATISFACTION **LOWER** WITH APPLE CARPLAY OR ANDROID AUTO

SATISFACTION **HIGHER** WITH APPLE CARPLAY OR ANDROID AUTO

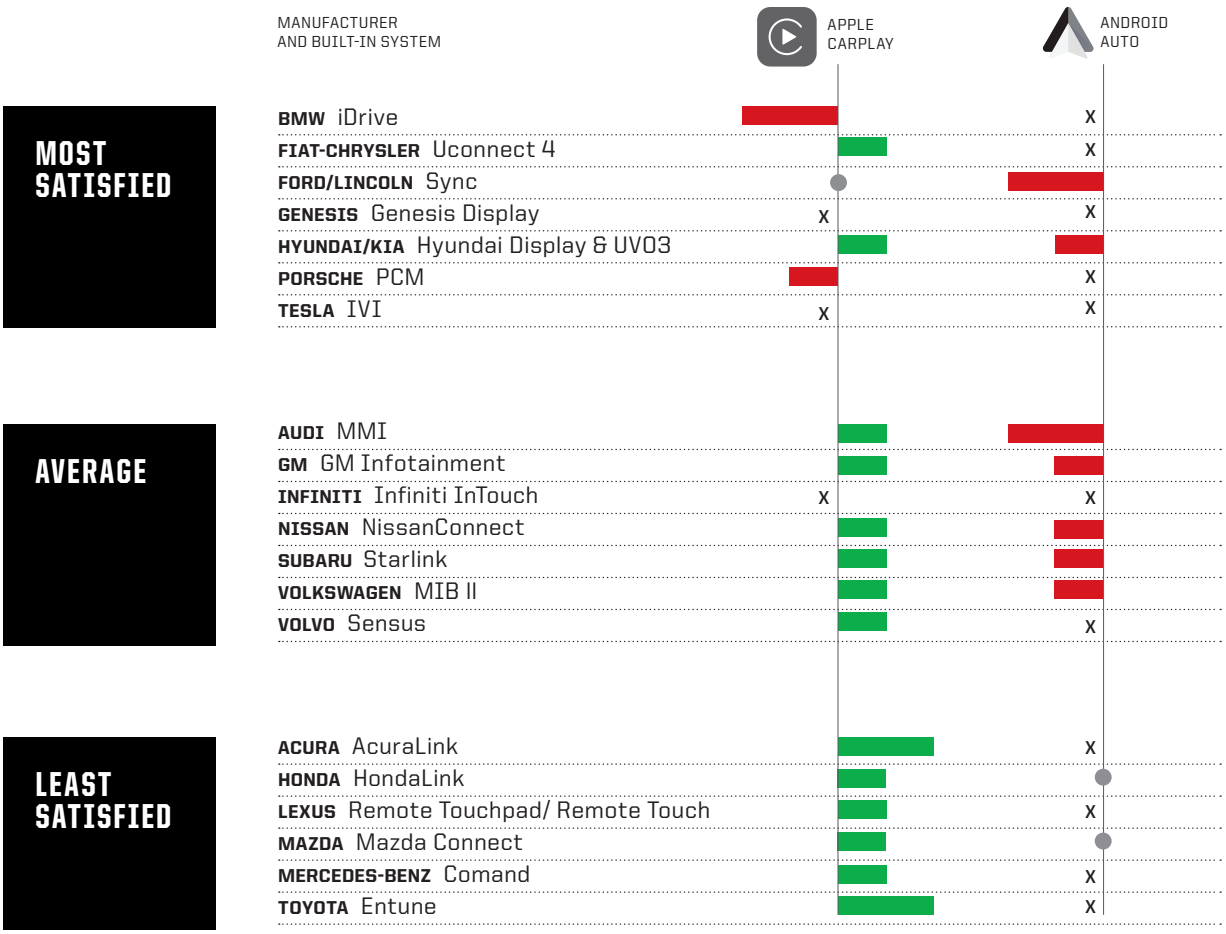
1%-10%

greater than 10%

SATISFACTION **EQUAL**

X Apple CarPlay or Android Auto wasn't available or we didn't have a sufficient sample.

WE ASKED MORE than 73,000 CR members how satisfied they were with their car's built-in infotainment system and with Android Auto or Apple CarPlay, which can put a phone's features and apps on a car's built-in screen. The chart shows that CarPlay users reported higher satisfaction than with some built-in systems used without the smartphone interface. At the same time, survey respondents preferred the best built-in systems alone to either smartphone-based setup. Google made changes to Android Auto after our survey was completed. We're looking forward to spending more time with the updated software. We arranged the survey results into three categories—most satisfied, average, and least satisfied—and put them in alphabetical order within their categories.



Satisfaction for each system is a composite of the percentage of respondents who said they were "very satisfied" with how it handled phone calls, navigation, text, and media. It wasn't calculated for systems with insufficient responses.

phone on their car's screen. The smartphone-based systems can add navigation and voice recognition to a basic infotainment system. And their user interfaces—similar to those of a smartphone—are a good way to get around the limitations of a confusing built-in system from an automaker.

For example, user satisfaction with Toyota's low-rated Entune system was higher for drivers who plugged in their phone and started using Apple CarPlay instead. (Android Auto wasn't widely available on new Toyota vehicles until after our survey was completed.) Gary Goldberg of Maryland, who drives a 2020 Toyota Corolla, said that Entune was "clunky and superfluous" and that he used CarPlay "whenever possible."

If the vehicle you want to buy or already own doesn't have Android Auto or Apple CarPlay, it might be possible to get a software update. Ford, Hyundai, Mazda, and Toyota have offered programs to retrofit certain older touch screens with CarPlay compatibility, though you should check with a dealership to find out whether the upgrade will work for your particular vehicle or whether any other software updates are available. A Toyota spokesman told CR that the company was working to update certain older infotainment systems even though they won't be eligible for an Android Auto or Apple CarPlay upgrade.

If your car isn't compatible with one of these systems, Fisher says, it might be easier to get a sturdy smartphone mount and connect your phone over Bluetooth for phone and audio than to rely on a subpar built-in system.

The Used-Car Disadvantage

If a vehicle has undergone a major redesign, even one model year can make a big difference in how easy the infotainment system is to use. Funkhouser says this can be a big concern for used-car shoppers.

Consider the tale of two Subarus. If you bought a 2018 Forester, you'd get a version of Subaru's Starlink infotainment system that isn't compatible with Android Auto or Apple CarPlay and can't be upgraded to add compatibility. If you bought a Forester from the 2019 model year or later, you'd get a redesigned vehicle with an updated version of Starlink. The differences are stark. "I just don't use the Starlink system because it's confusing, and the manual doesn't help at all," said Jackie Williamson, a survey respondent in Washington who drives a 2018 Forester. "I just quit outright because I felt it wasn't worth a migraine."

But John Howell of Nevada praised the Starlink in his 2019 Forester. "The system is responsive, intuitive, and easy to use while driving," he said.

Ultimately, Funkhouser says, it's up to drivers to find a system that works for them, which is why it's so important to try it out as part of the test drive. "Even if a brand gets a good score," she says, "we still recommend trying out a system in person."

Most Distracting Built-In Systems

THE BEST INFOTAINMENT systems are designed to keep a driver's attention on the task of driving, says Kelly Funkhouser, CR's program manager for vehicle interface testing.

When we asked over 73,000 CR members how distracting they found their car's infotainment system, they told us which ones take their eyes—and minds—off the road.

Two Lexus systems that our survey shows were among the most distracting require drivers to use a mouselike controller or touchpad to make selections. It might seem high-tech, but these input methods are finicky and require precise hand-eye coordination, which can distract drivers, our testers found.

Certain Acura, Honda, and Infiniti models split their infotainment displays across two screens, which our members and testers agreed could be distracting.

"It's not always clear where information is located," Funkhouser says. "Sometimes you think a menu item or setting will be located on one screen, but then it turns up somewhere else."

ACURA
AcuraLink II
Frequently used tasks are often hidden deep in touch-screen menus.

HONDA
HondaLink
Can't operate controls by feel; responds slowly to inputs.

INFINITI
Infiniti InTouch
Menus are cluttered on touch screen, with too many layers.

LEXUS
Remote Touchpad/ Remote Touch
Touchpad/mouse controllers are hard to use, diverting driver's attention from the road.

TOYOTA
Entune
Responds slowly to inputs; voice commands are often misunderstood.

BUILT-IN OR PHONE: WHO DOES IT BEST?

ANDROID AUTO AND Apple CarPlay allow your smartphone to serve as your car's infotainment system, displaying the same apps you probably already use on your phone, such as Waze for navigation and Spotify for music. And they take advantage of your phone's virtual assistant, either Apple's Siri or Google Assistant, for voice commands. The features also optimize the interface for in-car use, resizing icons so that they're easier for drivers to see and touch, and disabling some distracting features, such as on-screen keyboards.

Because smartphones are connected to the internet, Android Auto and Apple CarPlay feature up-to-date map and traffic data. By comparison, built-in systems often require subscriptions or expensive software updates to get similar real-time data.

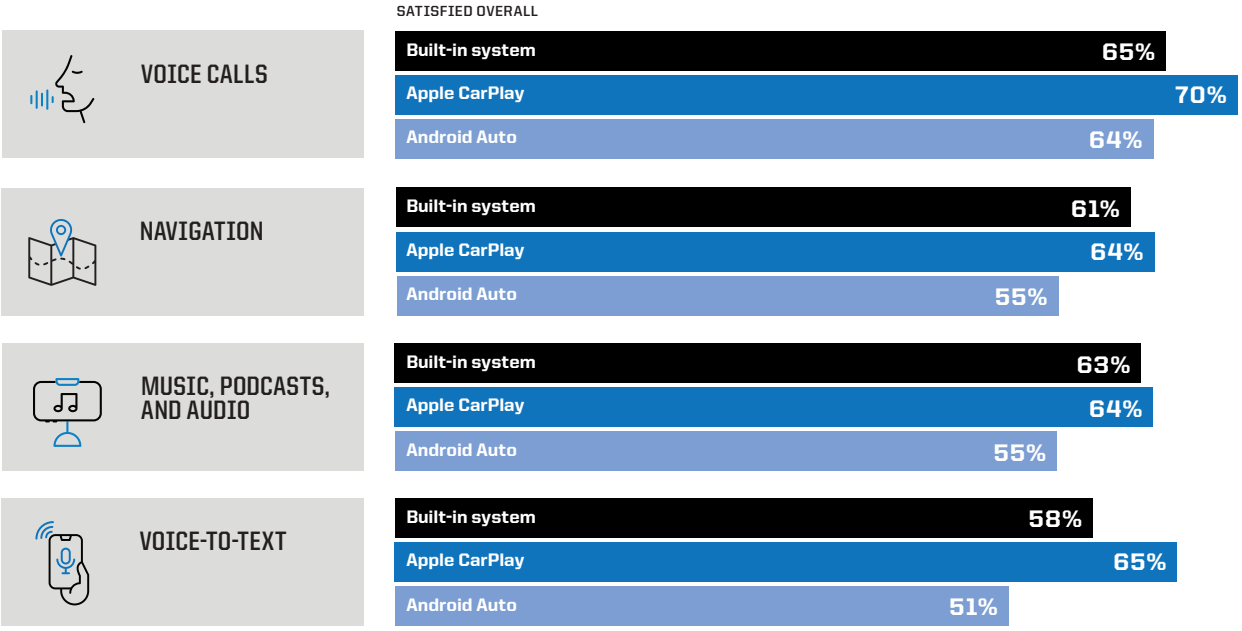
We asked over 73,000 CR members about their level of satisfaction with their factory built-in systems and with Apple CarPlay and Android Auto, if they used them. Our members said—and CR's infotainment experts agreed—that using CarPlay is a great way to make a bad system less distracting and easier to use. For example, when Toyota drivers used CarPlay instead of the built-in Entune system, their satisfaction increased by 12 percent. The low-ranked Mercedes-Benz Comand and Volvo Sensus systems also benefited.

"Being able to use familiar apps that are optimized can save drivers from distraction," says Kelly Funkhouser, CR's program manager for vehicle interface testing.

In our survey, we didn't see the same increase in satisfaction with Android Auto. Funkhouser says this is probably because fewer vehicles were compatible with Android at the time of the survey. Also, our survey was conducted while Google was making upgrades to the software. "The now-updated software always puts important apps front and center instead of burying them in menus," she says.

We also found that owners of BMWs who use wireless CarPlay connections were a lot less satisfied. That's probably because of its spotty WiFi-based connection, says Jake Fisher, senior director of auto testing at CR. "We also observed it won't always connect on startup," he says. "Although it's convenient to use WiFi and leave your phone in your pocket, it's not as certain as a wired connection." BMW didn't respond to CR's requests for comment.

We asked CR members about their satisfaction with how well the built-in systems, Android Auto, and Apple CarPlay performed certain functions, including making calls, giving directions, reading and composing text messages by voice, and playing audio. The chart below indicates the percentage of members overall who reported that they were satisfied with how well each function worked.



COMMON COMPLAINTS AND HOW TO FIX THEM

HERE, OUR EXPERTS offer tips on how to fix some of the most common problems CR members shared with us about their infotainment systems.

MY CAR DOESN'T HAVE ANDROID AUTO OR APPLE CARPLAY.

Your options are limited. A few manufacturers, including Ford, Hyundai, and Mazda, offer software upgrades for certain vehicles as far back as the 2014 model year, but most don't. Installing an aftermarket system that replaces the factory-installed setup can be complex and costly, and your steering wheel controls and backup camera might not work afterward. We recommend buying a good smartphone mount instead. Install it securely where you can see and reach it easily, and connect your phone via Bluetooth so you can easily make calls and access navigation and music. Many will wirelessly charge your phone, too.

THE VOICE RECOGNITION IN MY CAR ISN'T AS GOOD AS ON MY PHONE.

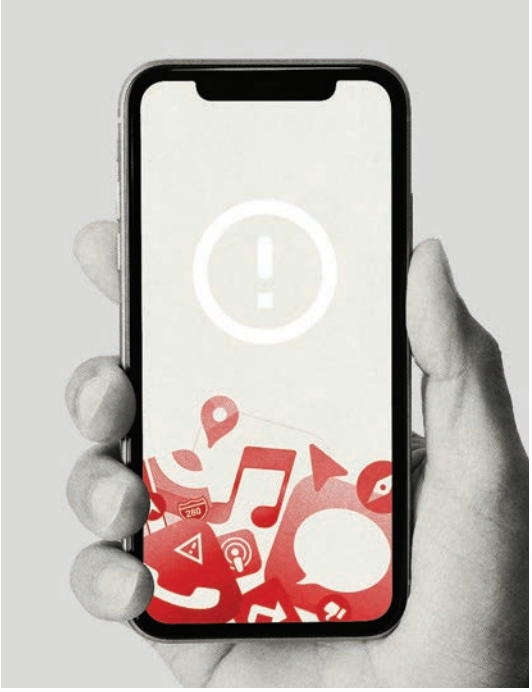
Many newer cars allow you to bypass the car's voice recognition and use Amazon Alexa, Apple Siri, or Google Assistant. Even without Android Auto and Apple CarPlay, many 2011 and newer vehicles let you press and hold the voice recognition button on the steering wheel to use Google Assistant or Siri through a Bluetooth-connected phone, though your car's infotainment system may need a software update for this. Check your owner's manual or call your dealer to find out more.

MY VEHICLE DOESN'T RECOGNIZE MY PHONE.

Make sure it's plugged into the correct USB port (often the one outlined with a white square); other ports might work only for charging. Also, older phones, such as the iPhone 4, might not work with certain vehicles. Most automakers post a list of compatible phones online.

ANDROID AUTO OR APPLE CARPLAY STOPPED WORKING.

Use a fresh cable. Older, worn-out cables may still charge your phone but may no longer be able to transfer data from your phone to your car. Charge-only cables won't work, either. A growing number of vehicles have added ports using the newer USB-C standard in addition to traditional USB-A ports, so get the right cable for the job.



ANDROID AUTO OR APPLE CARPLAY IS SLOW AND BUGGY.

Check the settings on your phone to make sure it remains connected to your car even when the phone's screen turns off. Then check your phone and vehicle to make sure they're running the latest software; manufacturers often send out updates that fix bugs and errors. Updating the software on your car could be as simple as a download or as complex as a trip to the dealership. You can also unpair and restart your phone, then start a fresh connection to see whether that helps.

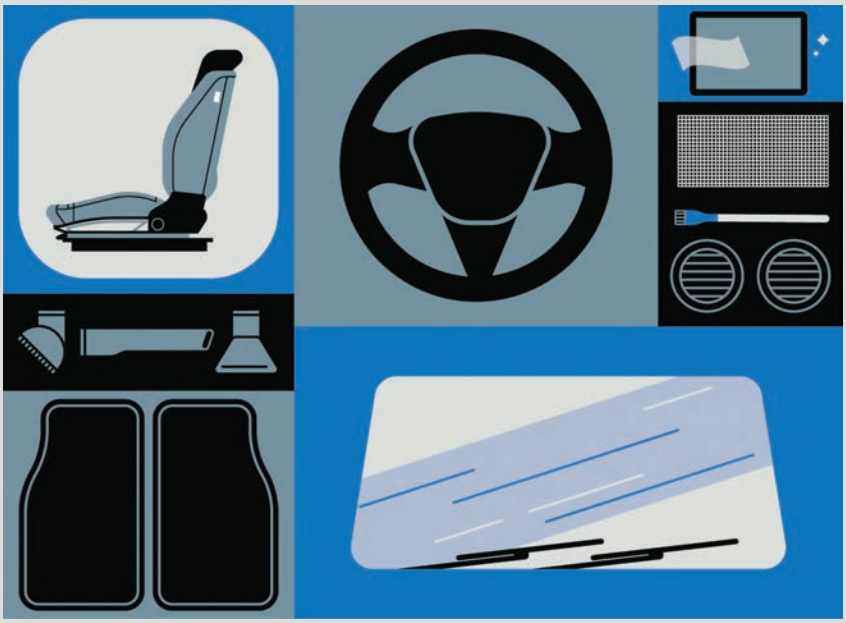
MY CAR HAS WIRELESS CHARGING, BUT IT DOESN'T WORK.

Wireless charging zones often have a power button that needs to be turned on. Also try removing your phone's case, because certain cases can block a charge from reaching a phone. If it still doesn't work, try rebooting your phone.

MY WIRELESS CONNECTION DOESN'T WORK.

A growing number of new vehicles offer wireless Apple CarPlay, and a few have wireless Android Auto. These connect to a vehicle over WiFi, not Bluetooth. Our testers found that these systems don't always stay connected as reliably as a wired connection. If you still have problems, try disabling wireless connectivity in your car's settings, or tell your phone to forget your car's WiFi network and just plug in instead.

How to Clean Your Car's Interior



YOUR CAR HAS PROBABLY been sitting unused more than usual over the past several months, but that hasn't stopped dust and dirt from accumulating inside. Even if your car wash has been open during the pandemic, you may not have wanted someone to detail—or deep clean—the interior of your vehicle. Besides, the job can cost $100 or more and require you to drop off and pick up your car. But you can easily do it on your own.

Keeping your car clean also keeps odors from developing and can help its resale value, too. A deep clean just before selling it won't do the trick; it'll be too late to lift all of the stains and dirt that have sunk in over the years. CR's team of experts at our Auto Test Center share the following tips for keeping the inside of your car fresh and clean using supplies you probably already have at home.

CARPET & SEATS

Crumbs, spills, and dirt can start to smell if not regularly cleaned.
WHAT TO DO: Vacuum the carpeting and cloth upholstery using the right attachment for the job. An upholstery tool's short bristles can agitate dirt out of cloth; a crevice tool can reach under and in between seats and into corners. A steam cleaner lifts stains from carpeting and upholstery, but soap and water on a soft cloth works, too.
AND NOT DO: Don't soak seats; damp cushions encourage mold and can create a musty smell.

LEATHER & VINYL

Leather and vinyl are treated with a protective coating that requires gentle cleaning.
WHAT TO DO: Clean seats with a soft cloth and a small amount of dish soap or saddle soap and water. Follow with leather conditioner to keep the leather from drying out.
AND NOT DO: Never use products containing bleach or hydrogen peroxide. And avoid commercial detailing sprays that leave the dashboard surface looking wet or glossy, because that can create glare.

HARD SURFACES

Solutions containing at least 70 percent alcohol are safe to use on most hard interior surfaces of a vehicle. They're also effective against the coronavirus, according to the Centers for Disease Control and Prevention.
WHAT TO DO: Dampen a small, clean paintbrush or soft toothbrush to use on vents, seams, and cup holders. Then apply alcohol to a microfiber cloth to gently clean other hard surfaces.
AND NOT DO: Don't use paper towels, which can leave a trail of lint behind.

WINDSHIELD

The inside of the windshield and other windows can become dirty from outside air pollution and interior vapors that leave a residue and might impede visibility.
WHAT TO DO: Wash these surfaces with a soft cloth (preferably chamois) and a glass cleaner containing alcohol. Use two cloths to avoid streaks. Apply the product with one and wipe the glass clean with the other.
AND NOT DO: To avoid getting cleaner on your upholstery, always remember to spray the cloth and not the glass.

TOUCH SCREENS

Infotainment screens have become more prominent, which means so are the dust and fingerprints they collect. These screens require different cleaning products than you'd use for glass.
WHAT TO DO: Dampen a microfiber cloth with isopropyl alcohol, then gently rub the screen clean.
AND NOT DO: Never use an ammonia-based glass or window cleaner, which might damage a screen's anti-glare and anti-fingerprint coatings.

ILLUSTRATION BY MATTHEW HOLLISTER

ROAD TEST

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

COMPACT SUVs

Buick Encore GX

Rough & Rumbly on City Streets

63

OVERALL SCORE

ROAD-TEST SCORE 67

HIGHS Strong midrange acceleration, fuel economy, braking, infotainment

LOWS Engine noise and vibration, rear seat

POWERTRAIN 155-hp, 1.3-liter turbocharged 3-cylinder engine; 9-speed automatic transmission; all-wheel drive

FUEL 26 mpg on regular fuel

PRICE
$25,095-$31,495 base price range
$33,145 as tested

THE ENCORE GX is a new entry in the niche category of tiny, easy-to-park SUVs that have a few luxury touches. But while the GX may look sleek and polished, its unrefined powertrain makes it less pleasant to drive than even some nonluxury models, such as the Subaru Crosstrek and Nissan Rogue Sport. And it's no better than the older Buick Encore, which is based on a different platform.

When equipped with optional all-wheel drive, the Encore GX is powered by a 1.3-liter three-cylinder turbo engine. Together with a nine-speed automatic transmission, this pint-sized powerplant is surprisingly sprightly at highway speeds, which makes it a good choice for exploring outside the city.

But at city driving speeds, the engine sounds rough—almost like a piece of lawn equipment—and at low revs it sends unpleasant vibrations through the entire car. This major shortcoming is enough to overshadow the Encore GX's many bright spots, such as its easy-to-use infotainment system, airy interior, straightforward controls, competent handling, and standard FCW and AEB.

The Encore GX is responsive when driving on curvy roads, and although we felt some body lean when we pushed it toward its handling limits, it remained secure during our emergency maneuver test. The suspension is fine on smooth roads, but the driver and passengers can feel the bumps on bad pavement.

Multiple testers said that the front seats were short on support and that the rear seats were cramped. They also complained that the SUV's thick pillars hampered visibility.

ELECTRIC VEHICLES

Tesla Model Y

Quick & Agile, With Confusing Controls

IN TEST

WE LIKE Power delivery, seat comfort, handling, supercharging network

WE DON'T LIKE Ride, controls, no real blind spot warning, "beta" technology

POWERTRAIN 384 hp combined from two electric motors; 1-speed direct drive; all-wheel drive

RANGE 316 miles (EPA)

PRICE
$52,990-$60,990 base price range
$61,190 purchase price

WE RECENTLY PURCHASED the much anticipated Tesla Model Y and are putting it through our usual evaluation process. Given the strong consumer interest in this vehicle, we wanted to share our first impressions before our formal testing is complete.

The Y shares components with the Model 3 sedan and delivers a similar driving experience. While the longer driving range model is the first available, versions with a smaller battery—and a lower cost—arrive in 2021.

Like all Teslas, the Y's immediate acceleration comes in a smooth, silent surge of power. With quick steering and a low center of gravity, the Y handles like a sports car. But the stiff and choppy ride makes passengers feel every road imperfection. The front seats are supportive and comfortable on long trips, and the rear seat is roomy and well-contoured, a real improvement over the 3.

But the Y's controls require too much driver attention. Almost all functions (including steering-wheel adjustments and vent airflow) are operated through a 15-inch touch screen, which can befuddle a driver. Also, the BSW alert is on the center screen, not near the side-view mirrors as you might expect, which means drivers must look away from the mirrors when changing lanes to check for warnings.

The latest high-tech feature in Tesla's $8,000 Full Self-Driving package (which doesn't make the car self-driving) is the ability to stop automatically for red lights and stop signs. This feature worked erratically for us, and like other parts of the package, isn't completely developed. Note that Tesla reliability has been inconsistent, especially with new introductions.

PHOTOS: JOHN POWERS/CONSUMER REPORTS

Safety Term Glossary: AEB automatic emergency braking; **BSW** blind spot warning; **FCW** forward collision warning; **LDW** lane departure warning; **LKA** lane keeping assistance; **RCTW** rear cross traffic warning.

Ratings > **Bite-Sized SUVs** The best ones blend efficiency, premium conveniences and comfort features, and a city-friendly size that makes them easy to drive and park.

Make + Model	Overall Score	Survey Results		Road-Test Results												Advanced Safety				
		Predicted reliability	Owner satisfaction	Road-test score	Overall MPG/2020 EPA range, miles	Seat comfort, front/rear	Usability	Noise	Ride	Fit + finish	Routine handling	Avoidance-maneuver speed, mph	Acceleration, 0-60 mph, sec.	Dry braking, 60-0 mph, ft.	Suitcases + duffels/ cargo volume, cu. ft.	FCW	AEB, city	AEB, pedestrian	AEB, highway	BSW
SUVs $25,000-$35,000																				
✓ **Subaru Forester** 2.5L	84	I	⌃⌃	90	28	⌃ / ⌃⌃	⌃⌃	I	⌃	⌃	⌃	53.0	9.2	130	36.5	S	S	S	S	O
✓ **Mazda CX-5** 2.5L	84	⌃⌃	⌃	80	24	⌃ / ⌃	⌃	⌃	⌃	⌃	⌃	54.0	8.6	133	30.5	S	S	S	S	S
✓ **Honda CR-V** 1.5T	77	I	⌃	82	28	⌃ / ⌃⌃	⌃	⌃	I	⌃	⌃	52.0	8.2	137	36.0	S	S	S	S	O
✓ **Kia Sportage** 2.4L	75	I	I	78	23	⌃ / ⌃	⌃⌃	I	I	I	⌃	52.5	9.6	128	29.5	S	S	S	S	O
✓ **Toyota RAV4** 2.5L	72	I	I	72	27	⌃ / ⌃	⌃	⌄	I	I	⌃	54.0	8.3	131	30.5	S	S	S	S	O
✓ **Buick Encore** 1.4T	71	⌃	⌄	69	23	⌃ / I	⌃	⌃	⌃	⌃	I	55.0	11.0	127	26.0	O	–	–	–	O
Mini Cooper Countryman 2.0T	69	⌄	⌃	82	25	⌃⌃ / ⌃	I	I	I	⌃	⌃⌃	53.0	8.3	120	23.5	S	S	S	–	–
Ford EcoSport 2.0L	68	⌃⌃	⌄	61	24	I / I	⌃⌃	⌄	I	I	⌃	54.0	10.7	132	22.5	–	–	–	–	O
Hyundai Tucson 2.4L	67	I	⌄	75	22	⌃ / ⌃	⌃⌃	⌃	I	I	⌃	52.5	9.6	130	29.5	S	S	O	S	O
Buick Encore GX 1.3T	63	I	I	67	26	I / I	⌃	I	I	⌃	⌃	54.5	9.4	126	23.0	S	S	S	–	O
Ford Escape 1.5T	62	⌄	⌃	73	26	I / ⌃	⌃⌃	I	I	I	⌃	53.0	8.9	128	30.5	S	S	S	S	S
Mazda CX-30 2.5L	61	I	I	64	27	⌃ / I	I	I	I	⌃	⌃	54.0	8.7	133	21.5	S	S	S	S	O
Chevrolet Trax 1.4T	53	I	⌄⌄	55	25	I / I	I	I	⌄	I	I	54.0	10.8	130	26.0	O	–	–	–	O
Jeep Compass 2.4L	51	I	⌄⌄	56	24	I / I	⌃	I	I	I	I	53.5	9.8	137	27.5	O	O	–	O	O
ELECTRIC VEHICLES $35,000-$55,000																				
✓ **Hyundai Kona Electric**	83	⌃⌃	⌃⌃	76	258	⌃ / I	I	⌃	I	I	⌃	53.5	6.6	135	1+1	S	S	O	S	S
✓ **Kia Niro EV**	81	⌃	⌃⌃	81	239	⌃ / I	⌃	⌃	I	I	⌃	52.5	6.8	135	2+2	S	S	S	S	S
✓ **Tesla Model 3**	80	I	⌃⌃	82	330	⌃⌃ / ⌄	⌄⌄	I	⌄	⌃	⌃⌃	55.0	5.3	133	2+2	S	S	S	S	–
✓ **BMW i3 REx**	71	⌃	⌃	70	200	⌃ / I	I	⌃⌃	⌃	⌃	⌃	55.0	7.5	131	1+1	O	O	O	O	–
✓ **Chevrolet Bolt**	70	I	⌃	76	259	⌄ / I	⌃	⌃⌃	I	I	⌃	53.0	6.8	138	2+0	O	O	O	–	O
Nissan Leaf Plus	68	I	I	73	215	⌃ / I	⌃	⌃	I	I	I	52.5	7.0	139	3+0	S	S	S	S	S
ELECTRIC VEHICLES OVER $55,000																				
✓ **Tesla Model S**	83	I	⌃⌃	97	373	⌃ / I	⌄	⌃⌃	⌃	⌃	⌃⌃	54.0	5.1	129	4+3	S	S	S	S	–
✓ **Audi E-Tron**	81	⌃	⌃⌃	84	204	⌃⌃ / ⌃⌃	I	⌃⌃	⌃⌃	⌃⌃	⌃	49.5	6.3	131	28.0	S	S	S	S	S
Jaguar I-Pace	61	⌄	⌃⌃	76	234	⌃ / ⌃	⌄	⌃⌃	I	⌃⌃	⌃⌃	52.0	4.3	136	25.5	S	S	S	O	O
Tesla Model X	57	⌄⌄	⌃⌃	77	328	⌃⌃ / I	⌄	⌃	I	⌃⌃	⌃	53.5	4.9	127	2+2	S	S	S	S	–

> All-Access and Digital members can find the latest, complete ratings at CR.org/cars. When you're ready to buy, configure the vehicle and find the best price in your area by clicking the green "View Pricing Information" button on the model's dedicated page.

HOW WE TEST: Recommended models did well in our **Overall Score,** which factors in **Road-Test Results, Predicted reliability, Owner satisfaction,** and **Advanced Safety,** which includes crash-test results and the availability of crash-prevention features, such as forward collision warning, automatic emergency braking, pedestrian detection, and blind spot warning. A dash (–) means no such safety system is offered; O means it's available but not as standard equipment; S means it's standard on all trims. We deduct points if a model's gear selector lacks fail-safes.

⌄⌄ ⌄ I ⌃ ⌃⌃ WORSE — BETTER | ✓ RECOMMENDED

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Bathroom Humor

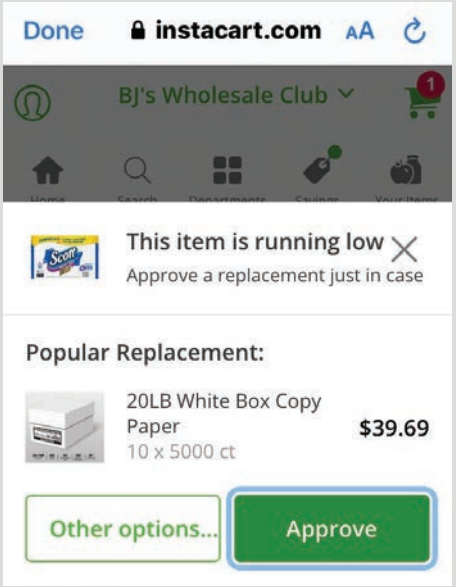
These offers may be best for those ready to boldly go where no one has gone before

Floor No. 1 or Floor No. 2?
On second thought, we'll take the stairs.
Submitted by James Royle, San Diego

Show & Tell
In this case, we'd prefer that everyone just tell.
Submitted by Anne Stone, Greenback, TN

show us, and other shoppers, how you use it.

Cheat Sheet
We like our toilet paper on a roll, not in a ream.
Submitted by Debbie Weaver, via email



Go Big or Go Home
For those who like their bathrooms to be stadium-sized.
Submitted by Larry Leisenring, San Clemente, CA

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