

IT'S COLD & FLU SEASON

You're Sick as a Dog. Here's Help.

Hidden
Dangers in
Drugstore
Meds

What
to Do When
Symptoms
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Soothing
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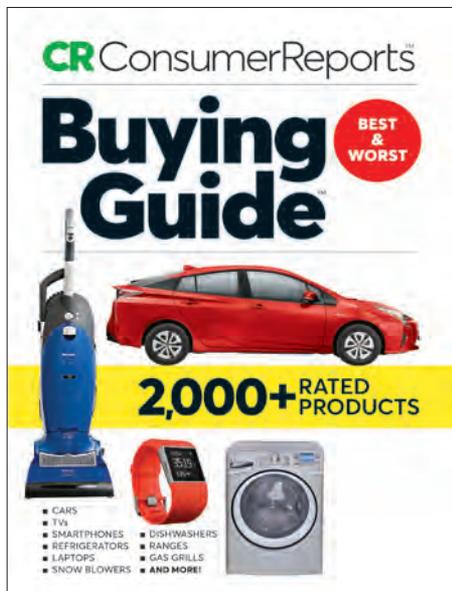
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by Region**

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SUBARU CROSSTREK

ABOUT CONSUMER REPORTS

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RATINGS Overall scores are based on a scale of 0 to 100. We rate products using these symbols:

🔴 POOR 🟡 FAIR 🟢 GOOD
🟢 VERY GOOD 🟢 EXCELLENT

Making Colds Less Costly



WHEN YOU CATCH a common cold, it turns out that the virus slowing you down could be different from the one causing your daughter's sniffles, your co-worker's cough, or your neighbor's congestion. That's because what we call the common cold is actually a catch-all term describing more than 200 viruses that can lead to similar symptoms. And as many different strains of cold and flu as there are, there may be just as many

popular treatments, from extra-strength medicines to herbal supplements to chicken soup—some of which work much more effectively than others.

In 2016, Americans shelled out an estimated \$5.8 billion to treat their cold and flu symptoms—a hefty price tag for such seemingly simple ailments. This month, we're helping you get the relief you need with advice on steps to take when symptoms arise, a buying guide to help you navigate the drugstore, and evidence on which home remedies really work. We'll break down the best active ingredients to tackle every symptom, so you no longer have to wonder whether it's dextromethorphan or phenylephrine—or is it fexofenadine?—that's right for you. Our secret shoppers have been navigating cold and flu aisles across the country to bring you the latest on how to get the best bang for your buck. CR is bringing all that and more to you this month, because while the cold may be common, knowledge you can trust isn't common enough.

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Removing Dangerous Furniture

WHAT'S AT STAKE

A 2-year-old boy from California died after an unsecured Ikea dresser fell on him. He was the eighth child reported to have died in a tip-over accident involving an Ikea dresser, and the first death since the company recalled 29 million dressers (including certain Malm models) for tip-over hazards in June 2016.

The tragedy raises renewed concerns about the effectiveness of the Ikea recall. The California boy's family was reportedly unaware of the cited danger. And Ikea's responses to requests for recall data suggest that the overwhelming majority of the dangerous dressers are still in homes.

HOW CR HAS YOUR BACK

In 2016, we urged Ikea to recall the dressers, pointing to previous deaths. We also called on the company to release its product-safety records in the interest of transparency.

With the latest report of a child fatality, we feel strongly that Ikea should invest more resources into publicizing the recall so that consumers can take action. The company should promote the dangers posed by the dressers with the same effort it put into marketing the product in the first place.

Ikea's competitors also need to take note. All dressers should be designed to remain upright when young children pull on them, push them, or step on open drawers—regardless of whether the bureau has been anchored to a wall. Currently, the industry has a voluntary safety standard for these types of products, and we believe that guideline should be strengthened without delay. If the furniture industry fails to strengthen the standard in key ways, Congress should require it to do so.

WHAT YOU CAN DO

If you own an Ikea dresser, call 866-856-4532 or go to ikea.com to see whether it has been recalled. We encourage people to immediately anchor the dresser to the wall with a free kit from Ikea, have Ikea anchor it for you (at no charge), or return it and get a refund.

Protecting Fraud Victims

WHAT'S AT STAKE

Millions of consumers were adversely affected by the Wells Fargo fraudulent-account scandal, where bank employees used personal information tied to existing accounts to open new ones without the consent of consumers. To make matters worse, the bank is now trying to enforce mandatory arbitration clauses within customer contracts that prevent victims from

seeking justice through the legal system.

To ensure that the defrauded aren't hurt by these anti-consumer policies, the California State Legislature passed a bill in September that eliminates the use of mandatory arbitration clauses in contracts that were fraudulently created by financial institutions.

HOW CR HAS YOUR BACK

Consumer Reports advocated for and helped push this bill over the finish line, even providing technical support on the law's language. Our take: Anyone wronged by Wells Fargo—or any other bad actor who attempts this kind of wrongdoing—should have to answer to its customers in a court of law. That's why we're also supporting the federal Justice for Victims of Fraud Act, sponsored by Sen. Sherrod Brown, D-Ohio, and Rep. Brad Sherman, D-Calif.

Building on the California victory, this new proposal would prevent Wells Fargo from applying its mandatory arbitration clause against all consumers, no matter what state they live in.

WHAT YOU CAN DO

Go to congress.gov to contact your lawmakers and urge them to support the Justice for Victims of Fraud Act. Because there is no place for industry protections in fraudulent contracts.

Controlling Drug Prices

WHAT'S AT STAKE

To battle skyrocketing pharmaceutical prices, California recently enacted the most comprehensive drug-price transparency law in the nation. The law, called SB 17, requires drugmakers to publicly report and justify planned price hikes to state agencies and insurers.

"Californians have a right to know why their medical costs are out of control, especially when pharmaceutical profits are soaring," said Gov. Jerry Brown. This measure is a step toward bringing truth "to a very important part of our lives, that is the cost of prescription drugs."

HOW CR HAS YOUR BACK

Consumer Reports was a strong supporter of the bill, and our advocates wrote letters, met with lawmakers, and helped mobilize activists—all in an attempt to shine light on the outrageous price hikes plaguing our healthcare system and consumers.

WHAT YOU CAN DO

As we seek to educate and encourage other states to adopt similar legislation, find out how you can lower your drug costs by reading our investigation, "Is There a Cure for High Drug Prices?" at CR.org/drugcosts0118 or in the August 2016 issue of the magazine.





In our November 2017 “**Eat Smarter, Eat Healthier**” cover story, we served up clarity about conflicting nutrition news concerning sugar, salt, fat, and gluten. Readers in turn shared a buffet of health tips and comments. To join the conversation, go to [CR.org/eatsmart0118](https://www.consumerreports.org/eatsmart0118).

THANK YOU VERY MUCH for the “Eat Smarter, Eat Healthier,” article. As a health and fitness coach, my focus is making sure people feel empowered to make smart choices. By having this information available, I can pass it along to others. Obesity in America is a serious concern, so thank you for doing your part to help people be healthy.
—April Payne, Pasco, WA

YOUR REPORT ON “Sugar: The Gateway to Weight Gain” left out one excellent natural sweetener, 100 percent pure maple syrup.



WRITE

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

It is excellent because it has a lower glycemic index than pure honey and much lower than table sugar. It also contains higher levels of beneficial nutrients, antioxidants, and phytochemicals than white table sugar. For example, we love to add some pure maple syrup to unsweetened yogurt.
—Stu Berg, Ithaca, NY

EDITOR'S NOTE Maple syrup does have some nutrients, but it still counts toward your added-sugars intake. A quarter cup supplies 62 percent of your daily riboflavin requirement, about 9 percent of calcium, 8 percent of zinc, and 5 percent of potassium. But it also has about 200 calories and 50 grams of sugars—more than in a 12-ounce can of cola, and you can get those nutrients from other foods. A drizzle on yogurt is fine, but like all added sugars, keeping it to a minimum is best.

I WAS VERY pleased to see much of the deception in our food industry addressed in your cover story. I only wish it also discussed grass-fed meats and dairy. A distinction should be made between factory-farm-raised meat and grass-fed meat. Saturated fat in these sources is not created equal.
—Marie Bartels, Bethany, CT

EDITOR'S NOTE We recommend choosing grass-fed meat and dairy products when possible. They are lower in total fat than those from grain-fed cattle, and the mix of fats they contain may be healthier. Grass-fed has a more healthful ratio of omega-6 polyunsaturated fatty acids to omega-3s. Too much omega-6 fats in your diet can cause inflammation, but omega-3s are anti-inflammatory. More of the saturated fat in grass-fed is

stearic acid, a type of fatty acid that doesn't raise blood cholesterol. Eating grass is also better for the cows: Grazing is a natural behavior, and cows that don't eat grain are less likely to suffer from gastrointestinal problems. These benefits come into play, however, only if the animals were 100 percent grass-fed. Look for products with seals such as American Grassfed or PCO Certified 100% GrassFed to ensure that the claim was verified.

YOU SUGGEST the consumption of fiber to “lower blood pressure and cholesterol,” but you fail to distinguish between soluble and nonsoluble fiber. Only the soluble form helps lower blood pressure and cholesterol levels. It also helps control diabetes.
—Martin Cowan, New Rochelle, NY

EDITOR'S NOTE The term “fiber” actually applies to a number of different substances that are categorized as soluble and insoluble. But rather than focusing on specific types, it's best to eat a variety of fiber-rich foods. Soluble fiber has been linked to lower cholesterol levels, but getting enough fiber in any form has been linked to lower blood pressure and a lower risk of heart disease overall. And though certain foods, such as oats, are higher in soluble fiber than others, most fiber-containing foods have a mix of soluble and insoluble types.

Getting Rid of Rodents

I READ WITH some amusement the story of rodents chewing through the wiring in a person's car (“Ask Our Experts,” November 2017) and suggestions on how to handle it. You forgot the oldest way to handle rodents: Get a cat. Think of it as going green with a fur coat and doing your bit to make a cat happy.
—Scott Campbell, Harvest, AL

REGARDING RODENTS chewing through cars' wiring—remember that your auto insurance should cover repairs. When rodents caused more than \$2,000 in damage to our Toyota Prius' wiring, our comprehensive coverage paid for all repairs, less our \$50 deductible.

—Kirk Miller, Richardson, TX

I LIVE IN a semi-rural area of Arizona, and it is common knowledge that a vehicle left outside will eventually have visitors from the order Rodentia. They will gnaw through any exposed wiring. Taping should work but can be expensive, and it's difficult to cover every wire. To thwart these animals, most people here will leave a bright light (white) under the front of the vehicle. The animals are mostly nocturnal and avoid light that can expose them to predators.

—Gordon Reiter, Sedona, AZ

Clearing the Air

IN THE NOVEMBER 2017 "Clearing the Air" article, it said to clean range hood filters at least every three months. Since I clean mine about every three years, I thought I'd better hop to it. As I was dutifully standing over the kitchen sink scrubbing them, my husband walked past and said what I was doing will really help the outside air to be cleaner since the fan sucks up air and is vented outside. So why is it important to clean these filters? By the way, they do look nicer!

—Diane Grant, Concord, CA

EDITOR'S NOTE Your chore did a lot more good than your husband may realize: If you don't clean your range hood filters, they can't perform their primary function—evacuating particulate matter from cooking—which means more of it will collect inside. And these particulates are major irritants, especially for allergy sufferers. Letting grease build up on range hood filters is also a fire hazard.



'OLED TVs
have unlimited
viewing
angles and
make the best
plasma
replacements.'

—The Editors

In Favor of Air Frying

IN "COUNTERTOP INTELLIGENCE" (November 2017), not mentioned, but a real advantage of air fryers, is that they greatly reduce the amount of minuscule oil droplets emitted as compared with traditional stovetop frying. We no longer fry on the stovetop to reduce grease buildup on walls and glass.

—Michael Carroll, New Orleans

EDITOR'S NOTE Indeed, an air fryer cuts down on oil splatter or even eliminates it entirely. These appliances don't use oil as the heating medium. Rather, very hot air circulates in the closed air-frying chamber for a process that's more like convection roasting than deep-frying. A kitchen that's not covered in oil droplets is just one more reason these appliances appeal.

Upgrading to 4K TV

I ENJOYED YOUR November 2017 article titled "Welcome to 'Wow!' TV." My curiosity arises in your ratings for a TV's viewing angle. What constitutes an Excellent score

from your testers? Our viewing room requires a wide viewing angle. Do any of the new sets come close to our 50-inch Panasonic plasma set? If you move off-center of these new sets, the picture begins to wash out. With our plasma, you can move almost to the side of the screen and keep a clear picture. I wish these new sets could overcome this limitation.

—Chuck O'Connor, Aiken, SC

EDITOR'S NOTE So you're a fan of plasma TVs! Join the club—many of us were sorry to see them go. As you note, a TV's picture can degrade as you move off-center, so having a wide viewing angle is important when your seats are scattered around the room. The only sets in our ratings with Excellent marks on this factor are OLEDs. They have unlimited viewing angles, meaning the clarity, color, and contrast all hold up no matter how far you move side to side or up and down. These TVs make the best plasma replacements, and they sit at the top of our ratings. Note that OLEDs are expensive, starting around \$2,000 for a 55-inch model—but at this time of year, you can often find a good deal. Stay tuned for more TV coverage in our February issue.

RETAILERS WILL BE happy to deliver your TV to you, but keep in mind that you are on your own when it's time to retire it. It is becoming very difficult to get rid of an old TV. In my locality they have a once-a-month service where you need to drive many miles and deliver the set, paying according to the weight of the unit, starting at \$30.

—Jay Lewis, Pittsburgh

EDITOR'S NOTE It's also worth researching recycling options. For a small fee, certain retailers can help. Best Buy, for example, charges \$15 to haul off your old TV when it delivers a replacement, and it offers, for a fee, some drop-off and pick-up recycling options. Some brands also have recycling programs:

LG, for example, lets you drop off or mail in an old TV when you buy a new LG set.

Driven to Distraction

IN ROAD TEST you push new safety features as necessary ... but then recommend a car with touch screens, which I think makes the car as unsafe as a drunk driver. You have pushed safety for years. How can you recommend a car that forces a driver to take his eyes off the road to perform simple tasks?

—Peter Smith, Burlington, VT

EDITOR'S NOTE When we evaluate cars at CR, distracting, complicated controls hurt vehicles' ratings and can prevent a recommendation. And some infotainment systems are more distracting than others. (For more on this, turn to page 48 for our article "Driving While Distracted.") But a well-designed screen can be better than, say, a smartphone or even a paper map, because anything that takes your mind or eyes off the road for a significant amount of time could be dangerous.

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What We're Testing in Our Labs ...

In our 60 labs, we continually review and rate products. Here, timely picks for this month.

Portable Generators

WE TESTED: 21 models
WE TEST FOR: Power delivery and quality, noise levels, ease of use, and hours of run time.

ABOUT THE SCORES:
Median: 65
Range: 41-79

Best Overall
Honda EU7000is
\$4,000



79
OVERALL SCORE

Great Power Delivery
Kohler PRO7.5E
\$1,400



73
OVERALL SCORE

Good Deal but Noisy
Generac GP5500 5939
\$700



67
OVERALL SCORE

Humidifiers

WE TESTED: 62 models
WE TEST FOR: Output, convenience, energy efficiency, noise, and how the unit works with hard water.

ABOUT THE SCORES:
Median: 74
Range: 26-91

Best for Small Rooms
CVS GUL540V1
\$30



91
OVERALL SCORE

Smartest Programmable
Air Innovations MH-701B
\$90



90
OVERALL SCORE

Best for Large Rooms
SPT SU-4010
\$75



86
OVERALL SCORE

Ask Our Experts

What's the best way to get the most accurate reading from my blood glucose meter?



START WITH CLEAN HANDS, but try to avoid using alcohol wipes, says CR's chief medical adviser Marvin M. Lipman, M.D. "That can diffuse the blood drop, and possibly make the reading artificially low." Instead, simply use soap and warm water, and dry thoroughly; the warm temperature helps the finger capillaries to dilate. Also, don't milk your fingertip for blood because that can dilute the blood drop with tissue fluid and may cause a low reading. To get enough blood for the strip, brace the tip of your finger against a stationary surface, then prick it with the lancet. For meter picks, see facing page.

ILLUSTRATION: SERGE BLOCH

For even more ratings of these and other product categories, online subscribers can go to [CR.org](https://www.consumerreports.org).

Smartwatches

WE TESTED: 12 models
WE TEST FOR: Ease of use and interaction, readability, scratch resistance, water resistance, heart-rate monitor accuracy, step-count accuracy, and more.

ABOUT THE SCORES:
Median: 86.5
Range: 80-95

Awesome for Android
Samsung Gear S3 Frontier
\$350

93
OVERALL SCORE



Apple of Your Eye
Apple Watch Series 3 (38mm)
\$400

91
OVERALL SCORE



Weekend Warrior Winner
Garmin Fenix 5 (not cellular)
\$600

85
OVERALL SCORE



Wireless Portable Headphones

WE TESTED: 56 models
WE TEST FOR: Sound quality, noise reduction (when relevant), and more. We also comment on fit.

ABOUT THE SCORES:
Noise-Canceling
Median: 72.5 Range: 68-87
Standard
Median: 63.5 Range: 21-76

Excellent Noise-Canceling
Bose QuietControl 30
\$300

87
OVERALL SCORE



Rockin' Price
Sol Republic Shadow Wireless
\$70

76
OVERALL SCORE



Truly Wireless Buds
JLab Audio Epic Air Earbuds
\$150

76
OVERALL SCORE



Blood Glucose Meters

WE TESTED: 25 models
WE TEST FOR: Accuracy, ability to provide repeatable data, ease of use, can store multiple strips, and more.

ABOUT THE SCORES:
Median: 79
Range: 32-93

Best Overall
FreeStyle Freedom
Lite \$20

93
OVERALL SCORE



Stores Multiple Strips
Accu-Chek Compact Plus
\$75

84
OVERALL SCORE



Low Annual Strip Cost
ReliOn Prime (Walmart)
\$16

75
OVERALL SCORE



Toasters

WE TESTED: 54 models
WE TEST FOR: Toasting of a single slice of bread from light tan to dark brown, clarity of controls, ease of use, ease of cleaning, and more.

ABOUT THE SCORES:
Median: 63
Range: 27-80

Best Overall
Krupps 2-Slice KH732D50
(8x12x7 inches)
\$60

80
OVERALL SCORE



Best for Bagels
Hamilton Beach Modern
Chrome 22791 2-slice
(8x11x7 inches)
\$30

70
OVERALL SCORE



Small Counter Solution
Black+Decker 2-Slice
Digital Display TR2350
(7x12x6 inches)
\$30

53
OVERALL SCORE



Note: Numeric ratings across product categories are not parallel and therefore should not be compared to each other.

COMING NEXT MONTH: Microwaves, Meat Thermometers & More



Almost every winter, I lose a tire to potholes. Is there anything I can do to ease the hassle and expense of this?

“Road hazard insurance—a warranty you can purchase with your tires that will repair or replace tires damaged on the road—is probably a smart idea,” says Gene Petersen, the tire program manager for CR. “Some retailers offer it for free (some don’t), so shop around, and be sure to ask if there are mileage or time limits,” Petersen says.

You can also consider getting run-flat tires, which can safely operate for about 50 miles even if punctured, thanks to thick, stiff sidewalls that can support the load of a car, even when they’re out of air. This can help drivers continue on to a service

station or final destination—thus saving the cost of being towed. But there are limited choices for replacing damaged or worn-out run-flat tires.

I see airport signs for TSA Precheck, Global Entry, and CLEAR. What are these?

“If you’re a frequent traveler, one or more of these services can be useful,” says William J. McGee, CR’s aviation adviser. But you probably don’t need all three.

TSA Precheck can reduce hassle at airport security. You won’t need to take off your shoes, and your laptop stays in its case. It costs \$85 for a five-year membership and can be used for domestic or international travel originating in the U.S. The TSA reports that in September 2017, 96 percent of Precheck passengers waited less than 5 minutes. U.S. citizens or

lawful permanent residents can apply online at tsa.gov/precheck and schedule a visit to an enrollment center.

For international travelers, a better option may be Global Entry, which includes Precheck but also provides expedited service through U.S. customs and immigration. It costs \$100 (just \$15 more than Precheck by itself) for a five-year period. U.S. citizens and lawful permanent residents can apply at cbp.gov.

CLEAR is a service that allows travelers to skip the TSA agent asking for IDs and boarding passes before you get to security. Instead, you stop at a kiosk that scans your fingers or eyes. The \$179 per year service is now available at 24 airports nationwide and is expanding. You can sign up at participating airports or start the process at clearme.com. But it lets you pass only the first line (which may not be very long), so it’s not a replacement for Precheck or Global Entry.

Before you sign up, check the benefits offered by your credit cards. Some American Express cards, for example, will issue a credit for the application cost of Precheck or Global Entry when you charge the fees to that card.

My family and I live in an old house. Should I be worried about lead paint?

If your house was built after 1978, you don’t need to lose sleep over thoughts of lead lurking on your walls because the heavy metal was no longer used as an ingredient in household paint after that year. But the Environmental Protection Agency estimates that about 87 percent of houses built prior to 1940 contain lead paint. And though the developing nervous systems of children are more susceptible to damage, you should also exercise caution around lead because it has been linked to heart problems in adults.

Lead in paint doesn’t pose a direct danger unless it’s deteriorating, or will be scraped or sanded. If you’re planning to hire a painting contractor, a 2008 EPA rule requires that they be certified in lead-safe work practices. Ask to see their accreditation and what steps they plan to take.

Plan to do it yourself? You can test for lead with an EPA-recognized lead-paint test kit, available at home centers. There are two on the market: 3M LeadCheck Swabs and ESCA Tech’s D-Lead. “Both are 95 percent accurate when used properly, according to the EPA,” says Michael Hansen, Ph.D., senior scientist at CR. For a video on how to test, go to CR.org/lead0118. You can also hire an EPA-certified professional: The agency keeps a list of approved pros at epa.gov/lead.



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.

CR Insights

In the Know

The Most Useful Things to Say to Alexa All Day Long

For Everyday Inquisitors
AMAZON ECHO PLUS
\$150



SPEAKING ALOUD IN YOUR HOME TO voice assistants, such as Amazon’s Alexa, Apple’s Siri, Microsoft’s Cortana, or Google Assistant, is quickly becoming the new normal.

Built into smart speakers—like the Amazon Echo Plus (at left)—many users know these “ladies” can tell you a joke or say something sassy. But did you know that Alexa can also read your e-book aloud or order takeout? Say, “Alexa,” then use these key phrases and coordinating apps (known as “skills”) to find out just how useful she can be in a day:

7 a.m. After asking for the weather, say: “Alexa, inspire me.” When you enable the “inspire me” skill, you’ll hear a quote from figures such as Maya Angelou.

7:30 a.m. “What’s my commute like?”

8 a.m. If your calendar is linked, say:

“What meetings do I have today?”

NOON “What are your deals today?”

Want to act on one? Say, “Order that.”

3 p.m. “Add eggs to my grocery list.”

5 p.m. “I need a 15-minute chicken recipe.”

7:05 p.m. “Burned the chicken! Alexa, order a cheese pizza from Domino’s.”

9 p.m. “Set my alarm for 6 a.m.”

9:15 p.m. If you have smart lightbulbs, say, “Turn off the kitchen lights.”

9:30 p.m. “Read my Audible book.” (You can also ask Alexa to read your Kindle.)

10:00 p.m. “I need to relax.” Alexa will offer sleep-inducing sounds, such as a babbling brook.

For Screen Lovers
AMAZON ECHO SHOW
\$230



For Music Mavens
SONOS ONE WITH ALEXA
\$199



For Multitaskers
AMAZON ECHO SPOT
\$129



Cool Product
Feature of the Month

Intelligent High Beams

IF YOU HAVEN'T been in the market for a new car lately, you might not know that high-beam assistants are offered on many models, including those from Audi, BMW, Honda, Kia, Lexus, and Toyota. Smart headlights automatically switch the high beams on when your car is on a dark road, then instantly switch back to normal beams when they sense the headlights of an oncoming car or the taillights of a car in front of you. You won't have to frequently adjust the headlight controls. To watch our test-drive video of the Lexus RX in action, go to CR.org/lexusrx0118.

Guiding Light

Automatic illumination when you need it most is available on many models, including the 2018 Lexus RX.



PHOTOS, BOTTOM FROM LEFT: SPL/GETTY IMAGES; HULTON ARCHIVE/GETTY IMAGES

CR Time-Saver VACUUMS

1936 CR published a report on vacuums back when you bought them from door-to-door salesmen. **Hoover** (right) was one of the very first brands on the market.



1945 Vacuums were considered luxury items until after World War II, when they become more common.



1954 The **Wizard 830** canister vacuum gets a CR 'Best Buy' recommendation at \$69.95.



1974 The earliest version of the handheld vacuum cleaner, the **Mod4** system, is first introduced by **Black & Decker**.

1979 The first **DustBuster** hits the market.





HOW WE TEST Smartphones

EVERY PHONE IN our ratings undergoes a rigorous testing process that evaluates battery life, water resistance, camera quality, and more. Testers also give the phones a ride in a specialized tumbler (above) to reveal how much abuse they can handle before cracking. As the tumbler rotates, it drops the phone 2.5 feet onto a hard surface. Phones are examined after 50 drops. If they're still intact, they're subjected to 50 more. When we tested the all-glass Samsung Galaxy Note8, for example, the back cracked during the first 50 drops; the display broke between 50 and 100. In general, all-glass phones haven't fared as well in the tumbler as those with plastic or metal backs, says lead phone tester Richard Fisco. But there's an easy solution: "Even an inexpensive case dramatically reduces the chances that an all-glass phone will break if you drop it," Fisco says.

For our story on the latest smartphones, see page 24. To see a video of our tumbler in action, go to CR.org/phonetest0118.

PHOTOS, TOP RIGHT: JAMES WORRELL

Face-Off

Pick Your Pan: Big Bucks vs. Budget

SWISS DIAMOND
\$95
OVERALL SCORE **76**



GREENPAN PARIS
\$50
OVERALL SCORE **65**



9.5"	Size	10"
Aluminum	Material	Aluminum
⬆️	Cooking Evenness	⬇️
⬆️	Nonstick Food Release	⬆️
⬆️	Nonstick Durability	⬆️
⬆️	Ease of Cleaning	⬆️
⬆️	Handle Temperature	⬆️
⬆️	Handle Sturdiness	⬆️

1983 James Dyson creates the first bagless vacuum cleaner, called the **G-Force** (right).



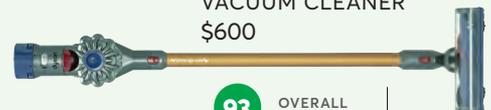
1989 Six years later, our testers still prefer models with bags—especially self-sealing ones for neat and tidy emptying.



2002 The **Roomba**, an autonomous vacuum sold by iRobot, is introduced, ushering in an era of hands-free models ... and YouTube videos of cats riding on them.

DYSON V8 ABSOLUTE VACUUM CLEANER
\$600

93 OVERALL SCORE



2017 Today, the **Dyson V8** is our highest-scoring stick vacuum, and a Kenmore is our top-scoring upright.

Product Spotlight

What's Hot in Heaters

ELECTRIC SPACE HEATERS are great for keeping your toes toasty or giving a drafty room a cozy glow. We test space heaters for features that matter most to consumers, starting with their ability to do two things well: heat a standard-sized room (like a family room) as well as a person—“spot heating”—in 15 minutes. “Our spot-heating test uses a mannequin wired with sensors,” says Chris Regan, who oversees the testing. “We want to know how your body will feel when you’re within 4.5 feet of the appliance.” For room heating, we gauge how quickly the heater works by taking the average temperature from various points of the whole room.

We also give products a fire-safety score, which includes checking to see whether the unit overheats; whether it presents a danger of igniting a piece of fabric, such as curtains; and whether it turns itself off (via sensor) if it overheats or gets knocked over. We do not

recommend purchasing a space heater with a poor fire-safety score. We also check to see how hot the surface gets so that you don’t burn your fingers.

Because it’s safest to keep space heaters on the floor, a remote control is handy to have in a model (as these four do), especially if the knobs and dials are low (less stooping and squinting at the settings). We also rate how quiet each model is. Take extra note of this score if you’ll be using the heater in a room where you watch TV or listen to music.

Our tests of more than 40 small and large models turned up several smart options, at a range of prices. The four here are great picks for both room and spot heating—and they include important safety and convenience features. Bear in mind that electricity is the most expensive way to heat, so these small units can leave you with a big utility bill unless they’re used wisely. For more models, online subscribers can go to CR.org/heaters0118.



✓ **DYSON AM09 SMALL SPACE HEATER**
\$450

85
OVERALL SCORE

The stylish Dyson earned an Excellent Overall Score, though it wasn’t the quietest model in our tests.

Ⓢ CR BEST BUY ✓ RECOMMENDED

Ⓢ **LIFESMART**
ZCHT1001US
LARGE SPACE HEATER
\$80



81
OVERALL SCORE

The lowest-priced of our top-rated large heaters, this model warms a room and a person equally well—and got impressive marks for safety and convenience.

Ⓢ **LASKO**
DESIGNER SERIES 6435
SMALL SPACE HEATER
\$45



78
OVERALL SCORE

This heater warms a room or a person quickly. Its overall fire-safety scores were very good, but it won’t automatically turn off if accidentally tipped over. The wide-based design makes it quite stable, however.

✓ **HONEYWELL**
HZ-980
LARGE SPACE HEATER
\$170



77
OVERALL SCORE

The quiet Honeywell impressed in both the room- and spot-heating tests. Its fire-safety performance was outstanding, plus it has a timer.

PHOTOS: BRENDAN WIXTED

SUPERMARKET SLEUTH

Who's Tops in Store-Prepared Foods



89 OVERALL SCORE



86 OVERALL SCORE



85 OVERALL SCORE



84 OVERALL SCORE



83 OVERALL SCORE



82 OVERALL SCORE

According to our Supermarkets Survey of 57,805 subscribers, these six chains got top marks for store-prepared foods. For full ratings of 62 stores, online subscribers can go to [CR.org/groceryratings0118](https://www.cro.org/groceryratings0118).



TROY-BILT ARCTIC STORM 30
\$1,500

91 OVERALL SCORE

CR Time-Saver SNOW BLOWER

Speed Up Your Snow Blowing

Our lab experts say you'll save yourself snow-removal time and effort by topping up the air in your tires to the manufacturer's recommended psi (look for the maximum psi on the side of the tire), because even a partially deflated tire can make turning difficult. In the market for a new blower? Make the chore go even faster with a model that has easy-turning capability, such as the Troy-Bilt Arctic Storm 30 (above). Online subscribers can go to [CR.org/snowblowers0118](https://www.cro.org/snowblowers0118) for full ratings.

Do More With ...

Your Oven



80 OVERALL SCORE

SAMSUNG NV51K777 OSG/AA

This WiFi-enabled Samsung, \$2,350, is two ovens in one: Using an included slide-in partition, you can create and control two distinct cooking zones with different temperatures. This allows a multitasking chef to bake a dinner entrée at the same time as, say, appetizers or dessert.

CR's take: The partition is easy to use and effectively creates two cavities—but you'll need to store the divider when it's not in use. Also, the oven has only one door, so you need to be mindful of temperature drops when you pull out a dish from just one of the zones.



74 OVERALL SCORE

JENN-AIR JJW3430DS

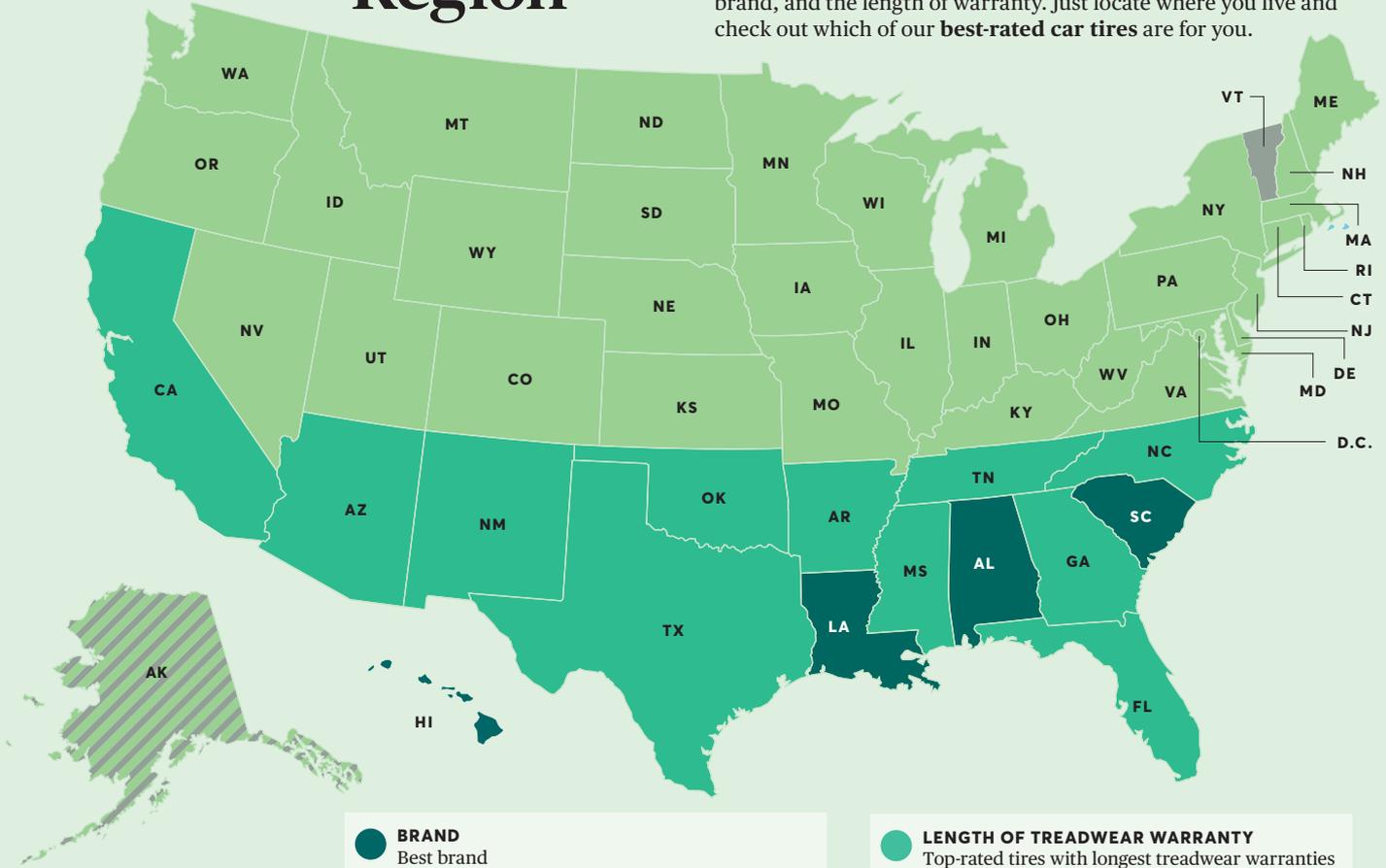
Priced higher than the Samsung, this oven, \$3,700, is also WiFi-enabled, with tabletlike touch-screen controls. But this model also has Jenn-Air's "Culinary Center," which shows you recipes and photos, and imparts cooking tips, like what color a medium-rare filet should look like.

CR's take: With smart tips and a nice interface, we think the Culinary Center is useful. The phone app can also check on food remotely with a temperature probe, but unless you make a lot of roasts, you probably won't use that feature much.

Map of the Month

Best Tires by Region

Our survey of 48,500 subscribers on **tire-retailer satisfaction** found that regional differences may drive what consumers value in a car tire. This map shows that the top tire-buying priorities in the U.S. by state are traction, all-weather grip, brand, and the length of warranty. Just locate where you live and check out which of our **best-rated car tires** are for you.



BRAND
Best brand

In our most recent tests, in 2016, Michelin topped our list of tire brands, based on performance.

ALL-WEATHER GRIP
Best all-season tires

Michelin Pilot Sport A/S 3+	78
Michelin Defender	70
Continental PureContact	70
Pirelli Cinturato P7 All Season Plus	70
Michelin Premier A/S	70

LENGTH OF TREADWEAR WARRANTY
Top-rated tires with longest treadwear warranties

Michelin Defender (90,000 miles)	70
Michelin Premier A/S (85,000 miles H-speed rated; 80,000 miles V-speed rated)	70
Pirelli P4 Four Season Plus (100,000 miles)	66

TRACTION
Best tires for snow traction

Michelin X-Ice XI3	70
Nokian Hakkapeliitta R2	70
Yokohama W.drive V905	70

25%

of CR subscribers who bought and replaced a laptop in the last three years still have their old one sitting around the house, unused.

If that's you and that old laptop still works—and you're ready to declutter—go to computerswithcauses.org to donate it. But first be sure to wipe your data using our guide, at CR.org/wipelaptop0118. If it's broken, check out Goodwill Industries International and Dell's joint technology recycling program, at dellreconnect.com.

WHAT 100 CALORIES LOOKS LIKE

Movie Munchies

"The movie-theater-sized packages of candy may seem like reasonable portions," says Amy Keating, R.D., a Consumer Reports dietitian. "But one box usually contains several hundred calories." And it's all too easy to keep dipping your hand into a box or tub of popcorn when you're engrossed in a film. Keating suggests limiting yourself to about 100 calories' worth of snacks by using our chart of popular concession stand goodies as a guide. For more 100-calorie comparisons, go to CR.org/moviecandy0118.



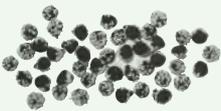
12 Haribo Gold-Bears



26 Reese's Pieces



5 Swedish Fish



46 Sno-Caps



2.4 Cups Popcorn*



4 Twizzlers



8 Milk Duds

*AMC popcorn, no butter.

PHOTOS: LEFT: JOHN WALSH

January Is THE BEST TIME TO BUY ...



Sound Bars

Prices tend to drop as Super Bowl Sunday draws near.



Televisions

Discounts are almost as good at the end of January as they are on Black Friday.



Treadmills

Fitness items—even big ones—get deep discounts this month.

For more info, go to CR.org/besttimetobuy0118.



RECALLS

DISHWASHERS



Expanding a previous recall, BSH Home Appliances is recalling about 408,000 Bosch, Gaggenau, Jenn-Air, and Thermador dishwashers. The power cord can overheat and catch fire. The dishwashers were sold in stores and online from January 2013 through May 2015 for \$850 to \$2,600.

What to do: Stop use and call BSH at 888-965-5813 to arrange for a free inspection and repair.

MUSICAL TOYS



Kids Preferred is recalling about 587,000 Carter's, Child of Mine, Guess How Much I Love You, and Just One You windup musical toys. The metal post and/or handle can detach, posing a choking hazard. The toys were sold in stores and online from January 2016 through August 2017 for \$11 to \$20.

What to do: Stop use immediately. Call Kids Preferred at 888-968-9268 or go to kidspreferred.com for a free replacement toy.

FIRE EXTINGUISHERS



Kidde is recalling about 37.8 million portable fire extinguishers that can become clogged or require excessive force to discharge and can fail to activate, including 134 models made between Jan. 1, 1973, and Aug. 15, 2017, and models previously recalled in March 2009 and February 2015. They were sold nationwide and online for \$12 to \$200. **What to do:** Call 855-271-0773 or go to kidde.com to request a free replacement.

KIDS' DISHES



Playtex is recalling about 3.6 million children's plates and bowls because the clear plastic layer on them can peel from the surface and pose a choking hazard to young children. The dishware was sold at stores nationwide and online at Amazon.com from October 2009 through August 2017 for about \$2.50 per item and \$15 for the set. **What to do:** Call Playtex at 888-220-2075 or go to playtexproducts.com for a full refund.

BMW VEHICLES



BMW is recalling about 740,561 vehicles because the positive crankcase ventilation (PCV) valve heater may short-circuit, increasing the risk of fire. Models include: 2007 5 Series wagon; 2007-2008 Z4 coupe; 2007-2011 X3 SAV; 2007-2011 X5 SAV; 2007-2011 3 Series sedan, wagon, coupe, and convertible; 2007-2011 5 Series sedan; 2007-2011 Z4 Roadster; and 2008-2011 1 Series coupe and convertible. **What to do:** Enter your VIN at bmwusa.com/recall.

RESISTANCE TUBES

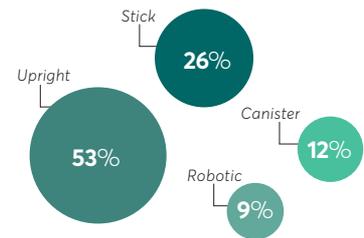


Dick's Sporting Goods is recalling about 207,500 Fitness Gear latex resistance tubes because they can break while you're using them and strike you. They were sold at Dick's Sporting Goods stores and website from September 2015 through August 2017 for \$15 to \$80. **What to do:** Stop using the tubes and return them to any Dick's store for a full refund if you have a receipt or for store credit without one.

Product Updates

The latest ratings from our labs

Which type of vacuum have you purchased since 2016?



Source: Consumer Reports 2017 Summer Survey.

Clean Sweep

Robotic vacuums offer a hassle-free way to keep your floors neat, but they won't be replacing conventional vacuums altogether anytime soon.

by Haniya Rae



IROBOT
ROOMBA 690
\$375

84

OVERALL
SCORE

BEHIND THE
SCENES AT
CR'S LABS

Our labs use cereal, rice, sand, and cat hair to test how much debris a robotic vacuum can pick up from carpeting.

IMAGINE RELAXING with a cup of coffee and the paper on a Saturday morning as your vacuum runs itself underneath the sofa and media console, gobbling up dust bunnies and fur balls before moving on to the kitchen, where it nabs crumbs from last night’s dinner. An hour later, it beeps to let you know it has completed its rounds. You triumphantly check one chore off your to-do list without having broken a sweat.

Robotic vacuums can make that fantasy a reality. They’re far from perfect (just ask our staffer whose robovac smeared a forgotten bagel topped with cream cheese and grape jelly into the carpeting throughout her house), but they perform well enough to be the fastest-growing floor-care category. Annual sales are forecast to rise from \$1.5 billion in 2016 to \$2.5 billion by the end of 2021, according to research by Future Market Insights.

Robotic vacuums are also gaining in popularity with CR subscribers: A recent survey shows that nearly 10 percent of the vacuums respondents purchased since 2016 are robotic—vs. just 1 percent of the models bought in 2010.

What Bots Do Best

Essentially the working end of an upright, robotic vacuums are outfitted with two or three wheels and a small motor that propels them around the house and suctions while brushes or rollers sweep debris into an internal dustbin no bigger than a quart of milk. Some have added features, such as WiFi connectivity, to allow you to operate the machines remotely and to increase their effectiveness.

Robotic vacuums depart from and return to a docking station that also acts as a battery charger. In our tests, which we conduct in a 12x16-foot space that simulates a furnished room, some vacuums stop cleaning at 14 minutes and others might run for nearly 2 hours.

A Dirty Look

How does the cleaning power of a robotic vac compare with that of a traditional model?

In our labs, we ran a top-rated upright and a top-rated robotic vacuum over separate squares of medium-pile carpet, each embedded with 100 grams of talc and sand.

The Miele Dynamic U1 Cat & Dog upright picked up more than half of the debris; the **Samsung Powerbot SR20H9051 Series** picked up less than 20 percent, proving that, for deep cleaning, the bot is no match for the traditional model. (Note: We use different protocols to test different types of vacuums, so the Overall Scores in this case aren’t comparable.)

Robotic



Samsung Powerbot SR20H9051 Series
\$1,000

91

Upright



Miele Dynamic U1 Cat & Dog
\$550

72

“Robotics are best for uncluttered rooms with bare floors or low-pile rugs,” says Susan Booth, CR’s lead vacuum test engineer. They generally use more power to navigate over thick carpet, Booth explains, which can accelerate the drain on the battery. “The thicker the pile, the more difficulty the robot has and the more battery power it uses—which means it may dock before it has cleaned the entire space,” she says. Some are smart enough to return to where they stopped and finish the job, but none are yet able to “see” whether they have missed a spot or, not surprisingly, climb stairs.

Making Your Bot Feel at Home

A robotic vacuum will dutifully clean floors without any assist from its owner, but some prep is still required. Before yours begins its work, you’ll need to secure any loose cords and pick up socks, PB&J sandwiches, or anything else that might get caught in the brush or roller. If you’d like the vacuum to skip an area of your home, such as a playroom, you can close the door to create a physical barrier or rope it off, virtually, with magnetic boundary strips provided by certain manufacturers.

You should also identify areas that the robot won’t be able to pass through. The devices’ exteriors are wrapped in a bumper, so they won’t damage furniture, but be mindful of any tippy décor. If the vac gently bumps against a table or shelf, will any lamps, vases, or stacks of magazines fall?

Though earlier versions of robotic vacuums used to take an occasional tumble down the stairs, most of today’s models come equipped with a so-called cliff sensor, so you can run them on upper floors without worrying about their demise.

Robotic vacuums use various navigation methods. Depending on the manufacturer and model, the bots may move in what looks like a random fashion or in patterns—usually gridlike—that kick in according to certain variables. “Our tests have

shown that the various approaches to navigation can be equally effective in terms of cleaning,” Booth says.

One thing to keep in mind: Robotic vacuums use a method such as a low-frequency radio signal or an infrared beam to find the docking station. If a vacuum loses contact with the dock by, say, moving through multiple rooms in a ranch home, it might go AWOL and end up in an open closet or stuck under a bed. Though our tests didn't reveal too many errors, our engineers did come to work one day to find a model missing. A search party later discovered that the vac had made its way into a lab down the hall.

Great for Touch-Ups

For all the convenience that robotic vacuums offer, our tests show that they can't match the power of—or clean as thoroughly as—a good old-fashioned vacuum. (See “A Dirty Look,” on page 19.)

Still, they can perform well enough to earn their place in a home. “Robotic vacuums can be a hassle-free way to maintain your floors daily, removing surface debris between the times you use a full-sized vac for deeper cleaning,” Booth explains. “They could also potentially lessen the amount of time you have to spend running your full-sized vac.” (iRobot, which makes the top-selling Roomba brand, says its robotic vacuums can save owners as much as 110 hours of cleaning a year, or about 2 hours each week.)

Uprights, which are powered by a cord or by a sizable battery, aren't always easy to maneuver around a dining table or underneath a bed, where robotic vacuums still have an advantage: The ones we've tested are about a foot in diameter and range from 3.3 to 5.5 inches tall, allowing them to scoot farther under furniture and reach spots that bulkier uprights can't.

Can a Robovac Spy on You?

Several robotic vacuums come with smartphone apps. These apps are

not necessary to operate the vacs, but they're useful for scheduling or remotely starting and stopping cleanings, checking a robot's progress, or viewing maps of the vacuum's path around your home to see whether it has missed any spots.

In July 2017 privacy advocates took notice when Reuters reported that iRobot CEO Colin Angle said that the mapping information its Roomba robotic vacuums collect might one day be sold to tech companies. Reuters subsequently updated the article, saying iRobot might share the data free of charge.

James Baussmann, the company's public relations manager for North America, told CR that iRobot won't be sending its data to third parties, at least for now: “iRobot believes that in the future, this information could provide even more value for our customers by enabling the smart home and the devices within it to work better, but always with their explicit consent.”

iRobot is not alone. Many robotic-vacuum manufacturers are now recording the paths of their appliances and uploading them to a server. You can then view that data via the company's app on your smartphone.

“Vacuum data isn't the most sensitive in the world,” says Justin Brookman, CR's director of consumer privacy and technology policy. “These maps may be rudimentary now, but it seems likely that they'll continue to improve over time in order to more efficiently clean your home. It would be nice if these companies made affirmative promises not to sell your information.”

If you're worried about the privacy of your data, don't use the app when you set up your device. Or if you're already using the machine, you can turn off the robotic vac's WiFi. The trade-off? You'll no longer receive cleaning data, such as maps of the vacuum's path, or be able to control the vac from your phone. For instructions on how to turn off the WiFi, go to CR.org/robovacwifi0118.

Vacuums That

Robotic

Set-it-and-forget-it appliances, these solo sweepers keep floors groomed and free of debris between deep cleanings with conventional vacuums.

Upright

Hard to beat for deep-cleaning carpeting, uprights come in bagged and bagless varieties with plenty of power and attachments for cleaning upholstery and other chores.

Stick

Mostly for quick jobs between conventional vacuum sessions, these lightweight vacs come in battery-powered and corded versions and are best for surface cleaning.

Will Sweep You Off Your Feet



\$ Ecovacs Deebot M88
\$450

86



Excellent on carpeting and bare floors, this model is also quiet and has the lowest profile of any model we've tested: At 3.3 inches tall, it can make its way under even low-slung furniture.

✓ iRobot Roomba 890
\$500

86



This midpriced vac automatically adapts to different floor surfaces for effective cleaning. Note: We had to remove cat hair from the rollers manually.

\$ Eufy RoboVac 11
\$250

81



Excellent on carpet, very good on bare floors, and low enough (3.5 inches) to navigate under most furniture. The run time is a relatively long 95 minutes, and the bot does a decent job sucking up pet hair.

Neato Botvac D3 Connected
\$400

76



A powerful and quiet vacuum that does an excellent job on bare floors and a very good job on carpeting, and didn't pull the fringe on our rugs. It has a short average run time of 15 minutes.

✓ Kenmore Elite Pet Friendly 31150
\$350

74

This bagged upright excels at removing embedded dirt from carpets and performs well on bare floors. Also great at trapping dust—key for allergy sufferers.



Kenmore Pet Friendly CrossOver 31220
\$250

71

Excellent on bare floors and pet hair, this bagless model is great at trapping dust and has impressive suction when cleaning with tools.



\$ Hoover WindTunnel Max UH30600
\$180

70

Lightweight and moderately priced, this bagged model performs impressively on bare floors and carpet and superbly at pet-hair pickup.



✓ Miele Dynamic U1 Jazz
\$500

69

It's pricey, but this bagged model is one of the quietest we tested. It excels at capturing dust and does a great job picking up pet hair.



✓ Bissell Air Ram 1984
\$200

91

This model excelled in our carpet, bare-floor, noise, and pet-hair tests. It runs for 47 minutes on a charge but does not convert to a hand vac.



\$ Dirt Devil Power Stick SD12530
\$80

88

This quiet model comes with a 26-foot cord, converts to a hand vac, and excels at cleaning carpet, bare floors, and pet hair.



✓ Dyson V6 Cord-Free
\$300

77

Cleans almost as well as (but costs \$200 less than) the Dyson V8 Animal, which has an Overall Score of 93. Run time for the V6 averages 13 minutes.



\$ Kenmore 10341
\$150

74

Excellent at cleaning pet hair, this quiet cordless model does a good job on carpet and is very good on bare floors. Run time is 16 minutes.



Note: We test and rate different types of vacuums according to different protocols, so Overall Scores are not comparable across categories.

➤ For more vacuum ratings, see page 22.

Ratings > **Connected Cleaning** The robotic vacuums we've tested come in a wide range of prices—but you can get Excellent overall performance for as little as \$250.

		Brand & Model	Overall Score	Price	Test Results					Features			
Recommended	Rank				Carpet	Bare floors	Ease of use	Navigation	Noise	Remote control	Cleaning pattern	Clearance (in.)	Run time (min.)
ROBOTIC VACUUMS													
✓	1	Samsung Powerbot SR20H9051 Series	91	\$1,000	↑	↑	↑	↑	↑	•	Grid	5.5	99
Ⓢ	2	Ecovacs Deebot M88	86	\$450	↑	↑	↑	↑	↑	•	Random	3.3	85
✓	3	iRobot Roomba 890	86	\$500	↑	↑	↓	↑	↑		Random	3.5	60
Ⓢ	4	iRobot Roomba 690	84	\$375	↑	↑	↓	↑	↑		Random	3.5	72
Ⓢ	5	Eufy RoboVac 11	81	\$250	↑	↑	↑	↑	↑	•	Random	3.5	95
	6	Neato Botvac D5 Connected	79	\$500	↑	↑	↑	↑	↑		Grid	4	14
	7	iRobot Roomba 980	79	\$900	↑	↑	↓	↑	↑		Grid	4	19
	8	Neato Botvac Connected DC02	78	\$700	↑	↑	↑	↑	↑		Grid	4	23
	9	Ecovacs Deebot D79	76	\$800	↑	↑	↓	↑	↑	•	Random	4	105
	10	Neato Botvac D3 Connected	76	\$400	↑	↑	↑	↑	↑		Grid	4	14
	11	Samsung Powerbot R9350	75	\$1,000	↓	↑	↑	↑	↑	•	Grid & Random	5.5	35
	12	Black+Decker HRV425BLP	74	\$400	↑	↑	↑	↑	↑		Random	4.5	71
	13	bObsweep PetHair	72	\$300	↑	↑	↑	↑	↑	•	Grid	4.8	86
	14	Bissell SmartClean 1605	69	\$300	↓	↑	↓	↑	↑		Grid & Random	3.5	51
	15	Neato Botvac 80	68	\$550	↑	↑	↓	↑	↑		Grid	4	15
	16	Miele Scout RX1 Red	62	\$600	↓	↑	↑	↑	↑	•	Grid	3.5	18
	17	Hoover Quest 800 BH70800	59	\$450	↓	↑	↓	↓	↑	•	Random	3.3	98
	18	Bissell SmartClean 1974	56	\$300	↓	↑	↑	↑	↑		Grid & Random	3.5	40
	19	Dyson 360 Eye	55	\$1,000	↓	↑	↓	↑	↑		Grid	4.5	28
	20	Hoover Quest 1000 BH71000	53	\$700	↓	↑	↑	↑	↑	•	Grid	4	13
	21	Hoover Quest 700 BH70700	46	\$350	↓	↑	↓	↑	↑	•	Grid & Random	3.5	85

HOW WE TEST: Robotic vacuums are tested in custom-built corrals that represent a bedroom and living room. Depending on the surface being cleaned—medium-pile carpets or bare laminate floors—a measured amount of cereal, sand, rice, or pet hair is scattered across the floor. After running a cleaning cycle, our test engineers judge how well the model picked up

the debris. For **Ease of use** we take into account bin capacity, ease of emptying the bin and cleaning the brush rolls and filter, and remote-control usability. In terms of **Navigation**, we observe how well it avoids obstacles, including power cords, clearance under furniture, surface transition, and maximum run

time, among other considerations. We also use a decibel meter to measure the average **Noise**, at ear level, over a 5-minute period as the vacuum is cleaning. In our tests of full-sized vacuums, we calculate **Overall Score** by assessing cleaning, **Tool airflow**, **Noise**, **Emissions** (how much dust the vacuum spews back into the air), and **Handling** (ease of pushing, pulling,

and carrying). In our cleaning test, we lift embedded talc and sand from medium-pile **Carpet** and suck up sand from **Bare floors**. For **Pet hair**, we measure how much embedded cat fur is removed from medium-pile carpet. To see full ratings of all vacuum categories, online subscribers can go to CR.org/vacuums.

Ratings ➤ **Pickup Artists** Whether you're looking for a bagged or bagless upright or a stick vacuum, you'll find the power and features you need among these top-rated models.



Rec.	Rank	Brand & Model	Overall Score	Price	Test Results							Features		
					Carpet	Bare floors	Tool airflow	Noise	Emissions	Handling	Pet hair	Weight (lb.)	Manual-pile adjust	Suction control
BAGGED UPRIGHT VACUUMS														
✓	1	Kenmore Elite Pet Friendly 31150	74	\$350	↑	↑	↑	↓	↑	↓	↑	21	•	•
✓	2	Miele Dynamic U1 Cat & Dog	72	\$550	↑	↑	↑	↑	↑	↓	↑	22		•
Ⓢ	3	Kenmore Pet Friendly 31140	71	\$200	↑	↑	↑	↓	↑	↓	↑	20	•	•
Ⓢ	4	Hoover WindTunnel Max UH30600	70	\$180	↑	↑	↑	↓	↑	↓	↑	17	•	
✓	5	Kirby Avalir	69	\$1,600	↑	↑	↑	↓	↑	↓	↑	23	•	•
✓	6	Miele Dynamic U1 Jazz	69	\$500	↑	↑	↓	↑	↑	↓	↑	22		•
✓	7	Hoover WindTunnel Anniversary U6485-900	67	\$230	↑	↑	↑	↓	↑	↓	↓	21	•	
✓	8	Sebo Felix Premium	66	\$600	↑	↑	↓	↓	↑	↑	↑	16	•	•
✓	9	Hoover WindTunnel T-Series Pet UH30310	65	\$150	↑	↑	↑	↓	↑	↑	↑	17	•	
✓	10	Hoover WindTunnel T-Series UH30300	65	\$140	↑	↑	↑	↓	↑	↑	↑	16	•	

BAGLESS UPRIGHT VACUUMS														
✓	1	Dyson Ball Multi Floor 2	71	\$400	↑	↑	↑	↓	↑	↑	↑	16		
✓	2	Dyson Ball Animal 2	71	\$500	↑	↑	↑	↓	↑	↑	↑	17		
✓	3	Kenmore Pet Friendly CrossOver 31220	71	\$250	↑	↑	↑	↓	↑	↓	↑	18		•
✓	4	Shark Navigator Powered Lift-Away NV586 (Target)	70	\$300	↑	↑	↑	↓	↑	↑	↑	16		•
Ⓢ	5	Hoover WindTunnel T-Series Rewind Bagless UH70120	69	\$130	↑	↑	↑	↓	↑	↑	↑	18	•	
✓	6	Shark Rotator Powered Lift-Away XL Capacity NV755	67	\$400	↑	↑	↑	↓	↑	↑	↑	18		•
✓	7	Kenmore Elite Pet Friendly CrossOver Ultra 31230	67	\$350	↑	↑	↑	↓	↑	↓	↑	18		•
Ⓢ	8	Hoover React QuickLift UH73301	66	\$200	↑	↑	↑	↓	↑	↓	↓	17		•
✓	9	Hoover React Professional Pet Plus UH73220	66	\$240	↑	↑	↑	↓	↑	↓	↓	19		•

Rec.	Rank	Brand & Model	Overall Score	Price	Test Results					Features		
					Carpet	Bare floors	Edges	Noise	Pet hair	Run time (min.)	Emissions	Weight (lb.)
STICK VACUUMS												
✓	1	Dyson V8 Absolute	93	\$600	↑	↑	↑	↑	↑	21	•	5.6
✓	2	Bissell Air Ram 1984 ⓘ	91	\$200	↑	↑	↑	↑	↑	47	•	7.9
✓	3	Shark Rocket Complete with DuoClean HV380	90	\$240	↑	↑	↑	↑	↑	Corded		9.6
Ⓢ	4	Dirt Devil Power Stick SD12530	88	\$80	↑	↑	↑	↑	↑	Corded		7.0
✓	5	Dyson V6 Cord-Free	77	\$300	↑	↑	↑	↓	↑	13		4.8
Ⓢ	6	Kenmore 10341	74	\$150	↓	↑	↑	↑	↑	16	•	5.6
✓	7	Dirt Devil Accucharge BD20035RED ⓘ	66	\$70	↓	↑	↑	↑	↓	21	•	6.0
✓	8	Kenmore 10340	65	\$100	↓	↓	↓	↑	↑	15	•	5.3

ⓘ Does not convert to hand vac.

Are You Ready for Your Upgrade?

The latest smartphones have screens as vivid as the best TVs, cameras that will make you a social media star, and sophisticated new security features. They'll even survive an unplanned dip in the bathtub. Welcome to the latest mobile marvels.

by Bree Fowler



Samsung Galaxy S8 and S8+



High-Tech Security Features

Fingerprint scanners are a convenient feature on many recent smartphones. For consumers, it's a lot faster to unlock the screen by touching a sensor than by typing in a string of numbers. The newest biometric controls could be even quicker to use.

You can unlock Samsung's Galaxy S8, S8+, and Note8 by scanning your face or iris, for instance, and the LG V30 includes both face and voice recognition.

But not all biometric features offer the same security. That's why Samsung allows users to authorize a money transfer with its Samsung Pay service using an iris or fingerprint scan (or, of course, a PIN) but not with facial recognition.

One potential risk with facial

recognition is that criminals could use a photograph to unlock your phone—though they'd need a very clear image of your face.

Apple says the new Face ID system in the iPhone X, released in November, makes the phone much harder to trick. The company says the system incorporates technology, including infrared imaging and advanced processing, to create a 3D mathematical model of your face.

Apple puts the odds of someone else being able to unlock your iPhone X at one in a million, making it safer than the company's Touch ID fingerprint system, which is absent from the iPhone X.

The jury is still out on such claims—and on a bigger question: whether consumers will like using the new biometric technologies.



Portrait Mode

Apple iPhone 8



Apple iPhone 8 Plus



People love to share photos on social media, as evidenced by the surge in active monthly Instagram users from 80 million in 2012 to 800 million today.

Phone makers are taking note: This year, several of them introduced a portrait mode that lets you take pictures with a clearly focused subject and a blurred background, creating an arty effect known as bokeh that is sure to win loads of likes, however you share your photos.

Samsung's Galaxy Note8, along with Apple's iPhone 7 Plus and 8 Plus, do this through the use of two lenses; Google's Pixel 2 phones (which we haven't tested yet) also have a portrait mode but use just one lens and lots of software magic to accomplish the effect.

Water Resistance

Dropping a phone in a puddle or—yikes!—a toilet used to be enough to destroy it. Today, most high-end phones offer some kind of water resistance. The Samsung Galaxy S8, S8+, and Note8, and all Apple iPhones since the 7, have proved their water-resistance claims in our testing. (We hadn't tested the iPhone X by press time. Look for results in next month's issue.)

Consumer Reports tests water resistance by lowering phones into a water-filled tube. A model passes if it survives a dunk as deep and as long as the manufacturer claims it can

without being damaged.

Typically, it's just a few feet of water for 30 minutes. But water has a habit of taking time to do its damage, so the phones are tested when they come out of the water and over the following 72 hours.

Remember that water-resistant doesn't mean "good for swimming," says Richard Fisco, Consumer Reports' head of smartphone testing. And liquid is not covered by most standard warranties. Buy one of these phones, though, and there's little need to fret if you accidentally drop it in a puddle.

Samsung Galaxy Note8



iPhone X Ratings

For complete test results on iPhone X, including battery life, camera quality, and more, go to CR.org/iphonex0118.



Wireless Charging

LG, Google, and others have been offering phones with wireless charging for a few years, but this convenience is getting more buzz now that it's available on Apple's iPhone 8, 8 Plus, and X. Other new phones with wireless charging include LG's G6 and V30, along with Samsung's Galaxy S8, S8+, and Note8.

The idea of juicing up your phone by dropping it on a pad on your desk (or one built into the table at a coffee shop) is enticing: Who doesn't want to be free of a tangle of cords?

But CR's Richard Fisco says it can take longer to charge a phone on a pad than with a cord. Phones with wireless charging also can't have solid metal backs, and a number of them have all-glass backs, which can make them more susceptible to cracking.

LG G6



OLED Screens

TVs with these screens have done great in Consumer Reports' testing, in part because they produce deep black levels and allow essentially unlimited viewing angles. On a phone, you get the same benefits, and OLEDs can bring a new level of vividness to videos, photos, and games.

You can find OLEDs on Samsung's Galaxy S8, S8+, and Note8 phones, along with the LG V30 and Google Pixel 2 phones. The X is the first Apple iPhone to have one.

OLED screens tend to cost more than the LCDs used on

most phones, and that can drive up the purchase price. Whether or not an OLED is worth the extra money largely depends on how you use the phone.

"If you watch a lot of videos and movies on your phone, an OLED could be an improvement," Fisco says.

There's really only one way to know how much you'll notice that improvement—or care about it. "Before buying a phone for its OLED screen, compare it to a traditional phone to see if you think it's a difference worth paying for," he advises.

Smartphones at the Head of the Class

Our labs offer highlights on popular recommended phones and advice on whether it's time to upgrade.

✔ **Samsung Galaxy S8 and S8+**
Starting at \$725 (Galaxy S8)
and \$825 (Galaxy S8+)

81

These phones hold the top two spots in our rankings for good reason. They have pretty much everything you could want, including some of the best-rated cameras of any smartphone for color quality, exposure, and sharpness; beautiful OLED screens that are bigger than those on many competing models by Apple and other companies; and wireless charging. But their glass exteriors, which help make that wireless charging (see more details on the facing page) possible, cracked during our tumble testing, so you might want to add a protective case—and be extra careful. **SHOULD I UPGRADE?** Only if you need the latest and greatest feature-filled phone out there. These phones are great, but so is the Galaxy S7, which is ranked just behind them and costs \$580.

✔ **Apple iPhone 8 and 8 Plus**
Starting at \$699 (iPhone 8)
and \$799 (iPhone 8 Plus)

80

These recent offerings from Apple are fast enough to support the most demanding apps, including games, and have cameras that are better and loaded with more features than previous iPhones. They're also the first iPhones that can charge wirelessly. These phones' glass backs make them a bit more fragile than their iPhone 7 predecessors. (Testing of Apple's new top phone, the iPhone X, wasn't completed at press time.) **SHOULD I UPGRADE?** Yes, if you're an Apple fan with an iPhone 6 or older who doesn't want to shell out the \$999 for the X. The 6 was great for its time, but newer iPhones represent a big step up in terms of speed, camera quality, and other extras. Or you can save about \$150 by picking up an iPhone 7, which is still among our highest-scoring phones, for about \$550.

✔ **LG G6**
Starting at \$590

80

The G6 gets very good marks for its battery life and durability. Testers also liked its dual camera. It doesn't give you the arty portrait effect that the dual cameras on other phones will, but it does let you take both close-up and wide-angle shots. It also has ultrathin bezels bordering the display, allowing for a bigger screen in a smaller package, and is a little less bulky than the Samsung Galaxy Note8 and S8+. **SHOULD I UPGRADE?** Yes, if you value water resistance, missing from the still-great G5 and earlier models, and a sleeker design. If you love LG's top tech and want an additional option, check out the LG V30 (not yet tested), which has a slightly larger display, a 6-inch OLED rather than the G6's 5.7-inch LCD.

✔ **Samsung Galaxy Note8**
Starting at \$930

80

Slightly more than a year after the Note7 was pulled off the market following a series of battery fires, the new Note8 is winning fans for its dual camera, great display quality, and battery life, among other features. This extra-large phone, or phablet, has a 6.3-inch screen (a hair bigger than that of Samsung's Galaxy S8+) and a stylus for taking quick notes or just doodling, which makes it similar to using an actual notepad. But the phone is heavy, weighing in at 6.7 ounces—the similar Galaxy S8+ is just 6.1 ounces—and its size makes it tough to shove in a pocket. **SHOULD I UPGRADE?** Yes, if the huge screen and the stylus in particular are important to you. If not, but you love everything else about the phone, consider the Galaxy S8 or S8+.

FOUR GREATS FOR UNDER \$350

These recommended and affordable phones deliver very good performance without the latest bells and whistles.

✔ **Apple iPhone SE**
Starting at \$349

74

This is Apple's lowest-priced option, but it's still a decent one, especially if you like smaller phones. Our testers say its camera did very well in terms of color quality, exposure level, and sharpness.

✔ **Huawei Honor 8**
Starting at \$330

74

Testers liked this phone's display, and it has a decent 12-megapixel camera. But the phone's screen cracked during our durability testing, so handle with care.

✔ **Samsung Galaxy J7**
Starting at \$240

72

This phone offers a big, 5.5-inch screen; outstanding battery life of 29 hours in CR testing; and solid all-around performance. It's not one of the best phones in our ratings, but it's arguably one of the best deals.

✔ **Sony Xperia XA1**
Starting at \$300

71

This smartphone, which gets very good scores on most CR tests, has a decent display, respectable battery life, and a very good camera. Many consumers will appreciate its memory card slot for expanded storage.

Ratings > **Good Calls** You can't go wrong with any of our top-scoring smartphones. The biggest differences between many models show up in camera quality and battery life.

Recommended	Rank	Brand & Model	Overall Score	Price	Test Results							Features		
					Handset capabilities	Battery life	Camera: Rear image quality	Camera: Rear 1080p video quality	Camera: Selfie image quality	Texting	Ergonomics	Water-resistance test	Display diagonal size (in.)	Display resolution
✓	1	Samsung Galaxy S8	81	\$725	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	Pass	5.8	1440x2960
✓	2	Samsung Galaxy S8+	81	\$825	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	Pass	6.2	1440x2960
✓	3	Samsung Galaxy S7	80	\$580	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	Pass	5.1	1440x2560
✓	4	Apple iPhone 8 Plus	80	\$800	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	Pass	5.5	1080x1920
✓	5	Apple iPhone 8	80	\$700	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	Pass	4.7	750x1334
✓	6	Samsung Galaxy Note8	80	\$930	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	Pass	6.3	1440x2960
✓	7	LG G6	80	\$590	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	Pass	5.7	1440x2880
✓	8	Samsung Galaxy S7 Edge	79	\$670	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	Pass	5.5	1440x2560
✓	9	Samsung Galaxy S6	79	\$230	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	NA	5.1	1440x2560
✓	10	Apple iPhone 7 Plus	78	\$670	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	Pass	5.5	1080x1920
✓	11	Apple iPhone 7	78	\$550	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	Pass	4.7	750x1334
✓	12	LG G5	77	\$270	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	NA	5.3	1440x2560
✓	13	Apple iPhone 6s Plus	77	\$550	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	NA	5.5	1080x1920
✓	14	HTC U11	77	\$650	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	Pass	5.5	1440x2560
✓	15	Apple iPhone 6s	77	\$450	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	NA	4.7	750x1334
✓	16	Sony Xperia X Performance	76	\$450	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	NA	5	1080x1920
✓	17	Huawei Mate 9	76	\$500	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	NA	5.9	1080x1920
✓	18	OnePlus 5	75	\$640	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	NA	5.5	1080x1920
✓	19	Motorola Moto Z	75	\$625	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	NA	5.5	1440x2560
✓	20	Sony Xperia XZ Premium	75	\$700	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	NA	5.5	2160x3840
✓	21	Sony Xperia XZ	75	\$400	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	NA	5.2	1080x1920
✓	22	Sony Xperia X	75	\$280	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	NA	5	1080x1920
✓	23	Sony Xperia XZs	75	\$570	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	NA	5.2	1080x1920
✓	24	HTC U Ultra	75	\$500	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	NA	5.7	1440x2560
✓	25	Sony Xperia X Compact	74	\$350	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	NA	4.6	720x1280
✓	26	Huawei Honor 8	74	\$330	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	NA	5.2	1080x1920
✓	27	Apple iPhone SE	74	\$350	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	NA	4	640x1136
✓	28	Google Pixel XL	73	\$770	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	NA	5.5	1440x2560
✓	29	OnePlus 3T	73	\$440	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	NA	5.5	1080x1920
✓	30	Google Pixel	72	\$650	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	NA	5	1080x1920
✓	31	HTC 10	72	\$400	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	NA	5.2	1440x2560

Recommended	Rank	Brand & Model	Overall Score	Price	Test Results							Features		
					Handset capabilities	Battery life	Camera: Rear image quality	Camera: Rear 1080p video quality	Camera: Selfie image quality	Texting	Ergonomics	Water-resistance test	Display diagonal size (in.)	Display resolution
	32	Samsung Galaxy J7	72	\$240								NA	5.5	1080x1920
	33	BlackBerry Passport	71	\$200								NA	4.5	1440x1440
	34	Motorola Moto Z Play	71	\$410								NA	5.5	1080x1920
	35	Sony Xperia XA1	71	\$300								NA	5	720x1280
	36	Samsung J7 Prime	71	\$260								NA	5.5	1080x1920
	37	Sony Xperia XA1 Ultra	70	\$350								NA	6	1080x1920
	38	Huawei Honor 6X	70	\$250								NA	5.5	1080x1920
	39	Motorola Moto G5 Plus	69	\$300								NA	5.2	1080x1920
	40	LG X Power	69	\$270								NA	5.3	720x1280
	41	Motorola G4 Plus	69	\$200								NA	5.5	1080x1920
	42	Asus Zenfone 3 Zoom	69	\$300								NA	5.5	1080x1920
	43	Sony Xperia XA	68	\$200								NA	5	720x1280
	44	Motorola Moto G4	67	\$230								NA	5.5	1080x1920
	45	LG K10	65	\$150								NA	5.3	720x1280
	46	Samsung Galaxy J3	65	\$170								NA	5	720x1280
	47	Motorola Moto G4 Play	62	\$180								NA	5	720x1280
	48	Sony Xperia L1	62	\$200								NA	5.5	720x1280
	49	Motorola Moto E4	59	\$180								NA	5	720x1280
	50	Microsoft Lumia 640	57	\$130								NA	5	720x1280
	51	LG K7	46	\$150								NA	5	480x854

Online subscribers can go to CR.org/smartphones0118 for complete, up-to-date ratings.

HOW WE TEST: Overall Score is based mainly on ease of use, messaging, web browsing, display quality, voice quality, phoning, battery life, camera image and video quality, and portability. Handset capabilities include sensitivity testing, versatility, storage processor

performance, and cellular features. Battery life is tested under nominal cell-network signals, performing tasks that involve voice, data, display, and more. Camera: Rear image quality refers to still image quality using the rear-facing (main) camera.

Texting considers how easy the keyboard is to use when the user is sending SMS messages and emails. Ergonomics is a broad category that includes how easy it is to use the touch screen, buttons, and operating system, plus factors such as durability

and water resistance. Water-resistance test is done if the phone is rated for water and dust intrusion. We test the stated claim; results are pass/fail. Phones that don't make a water-resistance claim are not tested on this factor and receive an NA result.



How to Survive Cold & Flu Season

Consumers shelled out \$5.8 billion in 2016 to treat coughs and sore throats, congestion and stuffy noses, yet we remain confused about what works, what doesn't, and what may actually be dangerous. Here, your guide to the drugstore aisles, home remedies, and more.

by **Ginger Skinner**



Test Your Cold & Flu IQ

1. Cold weather increases your risk of developing a cold or the flu.

True False

2. Flu season usually peaks in February.

True False

3. Antibacterial soaps are a good way to prevent cold and flu germs from spreading.

True False

4. A person can spread a cold or the flu even before they show symptoms.

True False

5. You should always stay home from work if you have a cold.

True False

See answers
on page 32.



Consider this: More than 200 viruses cause the common cold, and hundreds of flu strains emerge each year.

And those germs are everywhere. A sick person's cough or sneeze has millions of viral particles. A cough can expel droplets at speeds of about 50 mph, a sneeze at more than 100 mph, sending them 6 feet or farther.

So it shouldn't be surprising that the average American adult catches two to three colds a year and up to 20 percent of us get the flu, according to the Centers for Disease Control and Prevention.

Yet there's still no cure for either—which means the best we can hope for is relief. And in that quest for something—anything—to ease our aches and fevers, coughs and stuffy noses, we're willing to shell out big bucks: \$5.8 billion in 2016, according to Mintel, a market research group.

But finding remedies that are safe and effective can be daunting. A Consumer

Reports survey of 744 adults across the U.S. who recently had a cough, a cold, or the flu found that many people thought there were simply too many options.

"We should be happy, I guess, that we have so many choices, but it can be overwhelming," says Pattie Sullivan, a cold sufferer from Pittsburgh. "Some say 'Severe,' some 'Cold and Flu,' and I don't necessarily know the difference."

Yet only 23 percent of those in our survey asked a pharmacist for help. (CR's advice: Don't be shy! Pharmacists can steer you to the safest products, factoring in your health and meds.)

Even some of CR's secret shoppers had a tough time navigating the cold and flu aisle.

We tasked 17 of them to explore pharmacies across the country. Though some stores, they reported, were organized by symptom, others seemed to have no organizing principle at all. Many shoppers searched in vain for single-ingredient remedies—those that target one symptom rather than a constellation and are recommended

because they're safer. Alternatives such as neti pots, which can ease symptoms without drugs, were often squirreled away on bottom shelves.

Shoppers also told us they were sometimes confused by words on labels, such as "suppressant" and "expectorant." "You are forced to sort those terms out, and that is before you would look at the active ingredients list, which has terms that I am not qualified to understand," one shopper said.

Seeing a doctor doesn't always simplify matters, either. Many people, for example, expect antibiotics—though these drugs work only on bacterial infections, and the cold and flu are viral.

"Dealing with the cold and flu shouldn't be so complicated," says Marvin M. Lipman, M.D., Consumer Reports' chief medical adviser. "A number of simple steps can help, many that don't require drugs at all," he says.

Our cold and flu survival guide identifies the home remedies that really work and, when drugs are worthwhile, which to try and which to skip.

Score Your Cold & Flu IQ

Take our quiz on page 31 and learn the correct answers below.

1. True

Flu viruses survive best when humidity is lowest, which usually means winter. And cold viruses may multiply more efficiently when temperatures in nasal cavities (in mice, anyway, according to one 2015 study) go below 98.6° F. Also, cold weather often forces us indoors—into climate-controlled, low-humidity buildings and close to potentially infected people.

2. True

Most flu cases usually appear in February, and the season often extends well into March, according to the Centers for Disease Control and Prevention. So if you haven't yet gotten your flu shot yet this year, it's not too late.

2. False

There's no evidence that antibacterial soaps work better than regular soap and water at

preventing a cold or the flu. And overuse of these soaps may contribute to the spread of antibiotic-resistant bacteria. For that reason, the Food and Drug Administration ordered manufacturers to stop using 19 antibacterial agents—including the most common one, triclosan—in all soaps by September 2017. But manufacturers are still allowed to sell products with antibacterial compounds not on that

list, such as chloroxylenol. Our experts say, to be safe, you're better off sticking with regular soap and water. For hand hygiene on the go, the CDC recommends sanitizers with at least 60 percent alcohol, such as Germ-X and Purell, which are not known to pose the same risk.

4. True

Most people are contagious for a day or so before their symptoms become apparent. The risk of spreading the disease tends to diminish along with the symptoms, though you can be contagious for more than a week. So it's important to practice scrupulous hygiene

during the whole cold and flu season, not just when you're around someone who looks or sounds sick.

5. False

Staying home with a cold is a good idea if possible, but it's not as important as it is for the flu. For one thing, colds are less likely to trigger serious complications, so they don't require as many precautions. For another, colds usually aren't as severe, making it easier for you to maintain a normal schedule. The flu, on the other hand, is both more dangerous and more debilitating, which makes staying home essential for you—and those around you.

How to Soothe Miserable Symptoms

There are a lot of cold and flu meds on the market. Some work pretty well; others, not so much. And most have side effects, even when taken short-term. That's why it's usually a good bet to start with home remedies, which often provide relief and tend to be safer than drugs.



Aches and Fever

OTC DRUGS

■ *Acetaminophen (Tylenol), ibuprofen (Advil), and naproxen (Aleve)*

HOW EFFECTIVE ARE THEY? All ease body aches and reduce fever.

WHAT ARE THE RISKS? Acetaminophen is safe when used as directed, but taking even a little more than the daily max

can harm the liver. The other drugs—nonsteroidal anti-inflammatories, or NSAIDs—can cause intestinal bleeding and increase the risk of heart attack and kidney damage.

WHAT THEY CAN INTERACT WITH

Acetaminophen plus alcohol can threaten the liver. NSAIDs increase the risk of bleeding when taken with a blood thinner such as warfarin (Coumadin) or clopidogrel (Plavix).

HOME REMEDIES

■ *A cool compress or sponge bath*

Either measure can help some if a temperature spikes and you don't have acetaminophen or other fever medication in your medicine cabinet. And note that it is okay to let a fever run its course if it stays under 101° F. That's because the high temperature is part of the body's efforts to kill off the offending germs.

Congestion

OTC DRUGS

- *Oxymetazoline nasal spray (Afrin, Dristan Mucinex Sinus-Max Nasal Spray, Vicks Sinex Severe Nasal Spray)*

- *Phenylephrine (Equate Congestion Suphedrine PE Nasal Decongestant, Sudafed PE Congestion)*

- *Pseudoephedrine (Sudafed 12 Hour)*

- *Camphor, eucalyptus, or menthol rubs (Mentholatum, Vicks VapoRub)*

HOW EFFECTIVE ARE THEY? The sprays work within minutes, faster than pills. Topicals can improve the flow of air through your nasal passages.

WHAT ARE THE RISKS? Topicals can irritate the skin. Sprays can worsen stuffiness if taken for longer than three days. Oral meds can raise blood pressure; cause insomnia, heartbeat abnormalities, tremors, anxiety, and hallucinations; and worsen glaucoma, thyroid disease, and symptoms of an enlarged prostate.

WHAT THEY CAN INTERACT WITH

Oral drugs combined with older antidepressants such as isocarboxazid (Marplan) and tranylcypromine (Parnate) make side effects much more likely, and they should not be taken together.

HOME REMEDIES

- *Chicken soup*

Modern science provides some backup for chicken soup's reputation for easing congestion, coughs, and sore throats. Research suggests that it may inhibit the buildup of neutrophils, white blood cells that trigger the body's inflammatory response and contribute to the aches and pains that accompany a cold and the flu. And the hot liquid and steam from any soup that's mostly broth may help more directly, by opening up swollen airways and thinning mucus.

- *Neti pots*

Nasal irrigation—a saltwater rinse for your nasal passages—eases congestion from allergies and could help when it stems from a cold or the flu, too. There are two main forms: One squeezes

saline into the nostrils from a squeeze bottle or bulb syringe. The other—a teapot-shaped device called a neti pot—uses gravity: Tilt your head sideways, then pour saline into the upper nostril; the liquid flows into one nasal cavity and out the other. To be safe, make sure you use distilled water or water that has been boiled, then cooled, and clean the device with distilled or boiled water after each use as well.

- *Steam inhalation*

Warm water vapor may help loosen mucus. Though it's unclear whether that translates into reduced congestion, many people swear by it. Showering may be safer than putting your head over a piping hot pot of water, which could scald.

- *Cool-mist humidifiers*

The FDA says these devices can help shrink swelling in nasal passages and allow easier breathing. And the humidity can make it more difficult for flu viruses to survive. Just make sure to keep the device clean.

Cough

OTC DRUGS

- *Dextromethorphan (Robitussin Long-Acting CoughGels, Vicks DayQuil Cough)*

- *Guaifenesin (Mucinex 12 Hour, Tab Tussin)*

- *Topical rubs, patches, and lozenges that contain camphor or menthol (Halls Menthol Cough Drops, Mentholatum, Vicks VapoRub)*

HOW EFFECTIVE ARE THEY? Guaifenesin, an expectorant, thins mucus, making coughs more productive.

Dextromethorphan, a suppressant, blocks the cough reflex. Vapors from topicals can feel soothing. But it's unclear whether any cough drug reduces episodes of coughing.

WHAT ARE THE RISKS? Topicals can trigger rashes and a burning sensation. Oral drugs can lead to nausea and make you sleepy. High doses of dextromethorphan can cause rapid heartbeat, loss of

coordination, and hallucinations.

WHAT THEY CAN INTERACT WITH

Cough suppressants can cause increased sedation when taken with narcotics, sleeping pills, some antihistamines, or alcohol.

HOME REMEDIES

- *Honey*

It tastes good and feels soothing, and a 2014 review suggests that it's better than a placebo at easing coughs. Add a teaspoon or two to a cup of tea or consume it straight off the spoon.

And don't worry: A little extra sugar when you're sick won't harm you. But one caution: Honey can contain the bacterium *Clostridium botulinum*, which in rare cases can damage muscles and nerves in babies. So don't give it to infants younger than a year old.

Runny Nose and Sneezing

OTC DRUGS

- *Antihistamines, such as cetirizine (Zyrtec), chlorpheniramine (Aller-Chlor), diphenhydramine (Benadryl Allergy), fexofenadine (Allegra), and loratadine (Alavert, Claritin)*

HOW EFFECTIVE ARE THEY? Very, when symptoms stem from allergies, but a 2015 review of 18 trials concluded that the drugs have little benefit when symptoms are from a cold.

WHAT ARE THE RISKS? Drowsiness, nausea, blurred vision, and difficulty urinating, and, with diphenhydramine, impaired coordination.

WHAT THEY CAN INTERACT WITH Taking chlorpheniramine or diphenhydramine with narcotics, sleeping pills, or alcohol makes sedation more likely. Taking cetirizine, fexofenadine, or loratadine with certain antifungals or antibiotics increases the risk of side effects.

Antacids with aluminum or magnesium, and grapefruit and certain other juices can make fexofenadine less effective.



HOME REMEDIES

Honestly, there's not much you can do besides stocking up on tissues. But note that a runny nose and sneezing help rid your body of germs. If you find yourself without a tissue in hand, sneeze into your elbow so that the germs don't end up across the room infecting an innocent bystander.

Sore Throat

OTC DRUGS

- Pain relievers such as acetaminophen (Tylenol), ibuprofen (Advil), and naproxen (Aleve)
- Benzocaine (Cepacol Extra Strength

Sore Throat Sugar Free, Chloraseptic Warming Sore Throat Lozenges)

- Dyclonine (*Sucrets Sore Throat Lozenges*)
- Menthol (*Halls Triple Action Soothing Drops, Vicks VapoDrops*)
- Phenol (*Chloraseptic Sore Throat Spray*)

HOW EFFECTIVE ARE THEY? Pain relievers help. Benzocaine, dyclonine, and phenol work as local anesthetics, and menthol provides a cooling sensation in your throat. Medicated lozenges may work longer than the sprays.

WHAT ARE THE RISKS? High doses of benzocaine and dyclonine might in rare cases cause lightheadedness, shortness of breath, fatigue, or rapid heart rate. For the risks of pain relievers, see OTC drugs for aches and fever.

WHAT THEY CAN INTERACT WITH None known for phenol or benzocaine lozenges. Menthol drops make bleeding more likely with warfarin. For pain relievers, see drugs for aches and fever.

HOME REMEDIES

- *Gargling with salt water*
It's inexpensive, safe, and time-tested. Dissolve ½ to 1 teaspoon of salt into an 8-ounce glass of warm water, gargle in the back of the throat, then spit. Repeat a few times a day.

Editor's Note: Most drugs listed throughout this report are also available as lower-cost generic or store brands. The listed drugs are examples and are often multisymptom products that contain several active ingredients.

The Truth About Supplements

Americans spent almost \$3 billion on vitamins, herbal remedies, and other supplements in their fight against colds and flu in 2016, according to the Nutrition Business Journal. But research that the products work is usually weak. And unlike drugs, the Food and Drug Administration doesn't require that supplements be proved safe and effective before they head to market, and you can't even be certain that they contain what their labels claim. Here's our take on several common ones:

Echinacea

WHAT THE RESEARCH SAYS A 2014 review of 24 trials hinted that echinacea teas or supplements might help prevent colds.

IS IT SAFE? Echinacea can trigger nausea and in some people worsen asthma.

CR'S TAKE *Any hot tea can help soothe cold and flu symptoms. But it's probably not worth regularly taking echinacea supplements on the off chance that they might help prevent colds.*

Garlic

WHAT THE RESEARCH SAYS Garlic extract supplements might help prevent colds, according to a 2014 review.

IS IT SAFE? Frequent high doses may increase the risk of bleeding when combined with warfarin (Coumadin) and make HIV drugs less effective.

CR'S TAKE *No harm eating garlic. But do you really want to regularly pop garlic pills, hoping they might ward off colds?*

Homeopathic Remedies

WHAT THE RESEARCH SAYS The theory behind these products—which usually bear the word “homeopathic” on their labels—is especially dubious. It involves taking a presumed active ingredient—such as *osilloccinum*, an extract of wild duck heart and liver—and diluting it to the point that it's imperceptible.

The Federal Trade Commission says that “homeopathic product claims are not based on modern scientific methods.” Yet the products are often sold in stores alongside FDA-approved drugs.

CR'S TAKE *Don't bother.*

Probiotics

WHAT THE RESEARCH SAYS “Good bacteria,” best known to help foster a healthy gut, may also help prevent respiratory tract infections, according to a 2015 analysis.

IS IT SAFE? The pills can sometimes cause bloating and gas and may lead to infections in people with seriously weakened immune systems.

CR'S TAKE *Consuming yogurt and other probiotic-rich foods is fine, but there's not enough evidence to justify taking probiotic pills to fight colds or flu.*

Vitamin C

WHAT THE RESEARCH SAYS People who take 200 mg of the vitamin every day might have slightly shorter colds than other people, according to a 2013 review of 29 trials. But loading up after symptoms appear doesn't seem to help at all.

IS IT SAFE? The pills make kidney stones more likely, and high doses can cause nausea and diarrhea. They may also interact with cancer drugs, blood thinners, and estrogen.

CR'S TAKE *A better bet: Regularly include vitamin C-rich foods, such as greens and citrus fruits, in your diet.*

Zinc

WHAT THE RESEARCH SAYS A 2015 analysis found that zinc lozenges and syrup reduced the length and severity of colds when started within 24 hours after symptoms start.

IS IT SAFE? Possible side effects include diarrhea, nausea, stomach cramps, and vomiting. Long-term use, especially in high doses, may cause copper deficiency, which can trigger anemia.

CR'S TAKE *The uncertain benefits aren't worth the potentially serious risks.*

Just Say 'No' to Antibiotics

Many people believe that antibiotics speed recovery from a cold and the flu—and doctors write almost 50 million prescriptions for these and related respiratory infections each year.

Bad idea. Why? Because antibiotics work only against bacterial infections—and colds

and flu are viral.

Taking antibiotics when they aren't needed not only unnecessarily exposes you to their side effects—diarrhea, nausea, and potentially serious allergic reactions—but also can breed antibiotic-resistant bacteria among the broader

population, undermining the effectiveness of the medications when they really are needed.

Doctors know that antibiotics don't help with a cold or the flu. And though efforts are afoot to reduce unnecessary use, many doctors still prescribe the drugs because patients

often ask—and because it's faster and easier to write a prescription than it is to explain why it isn't needed.

CR'S TAKE *If you have a cold or the flu, don't ask for antibiotics, and don't take them even if offered unless your doctor has specific reasons in your case.*

A Tower of Label Babble

"Nighttime." "Non-Drowsy." "Maximum." When you see those terms on over-the-counter drugs, you naturally assume they have a uniform meaning. Turns out, they don't.

The Food and Drug Administration says it has no set definition for these kinds of descriptions. That means drugmakers can improvise.

Some CR secret shoppers told us they found terms like these confusing. Barbara Young, Pharm.D., of the American Society of Health-System Pharmacists (ASHP), agrees: "These claims are basically advertising copy—meant to catch your eye."

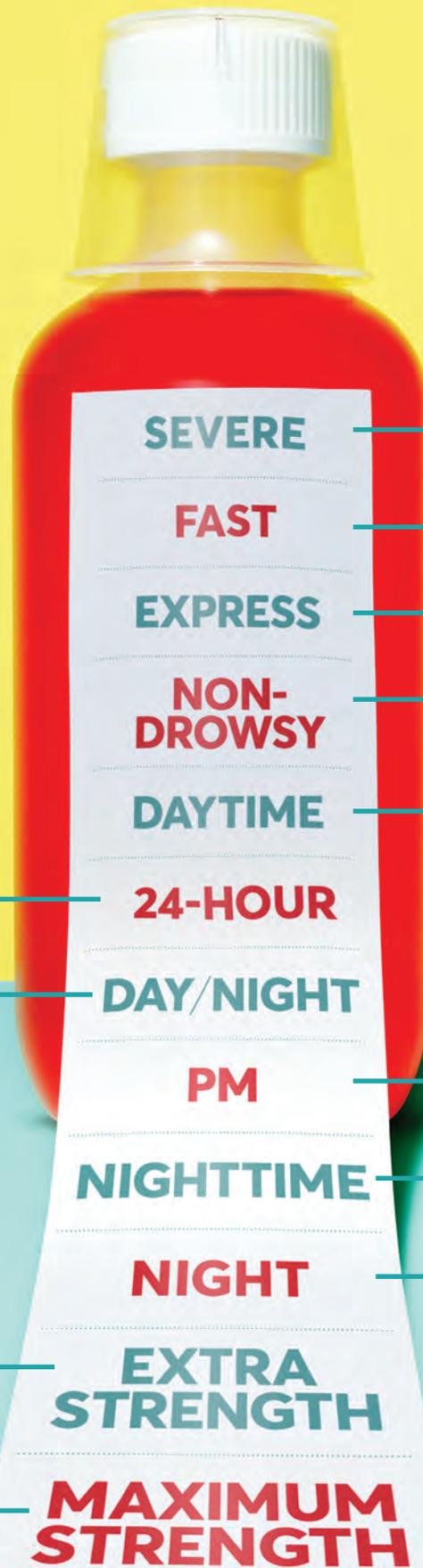
We took a look at a few common ones to see what they might mean.

Day/Night, 24-Hour

"Day/Night" often indicates a combo pack, a regular version for day and another with a sleep aid for night. "24 Hour" could mean that the product has double the dose: Sudafed 24 Hour, for example, has 240 mg of pseudoephedrine, a decongestant, and Sudafed 12 Hour has 120 mg.

Maximum, Extra Strength

This can mean that a drug has a higher dose of at least one listed drug—but not necessarily all its active ingredients. For example, Robitussin Maximum Strength Cough + Chest Congestion DM has twice as much guaifenesin as its regular version—but both versions have the same amount of dextromethorphan. And a higher dose isn't always needed—and often poses greater risks.



Severe

This suggests that a manufacturer added an ingredient—though which one varies. Vicks DayQuil Severe Cold & Flu, for example, contains the cough medicine guaifenesin, and the regular version does not. But with Vicks NyQuil Severe, the difference-maker is phenylephrine, a decongestant.

Express, Fast

It's hard to make sense of these terms. For example, Theraflu puts "ExpressMax" on all its products other than hot-drink powders. And Mucinex put "Fast-Max" on all its multi-symptom products, though nothing in the packaging explains how the products work faster. "These terms are used to market the product," says the ASHP's Young.

Non-Drowsy, Daytime

This can suggest that a product doesn't contain a sleep aid, as in the case of Contac Cold + Flu Day. But it can also mean that a product includes a stimulant, such as pseudoephedrine in Advil Cold & Sinus Non-Drowsy.

Night, Nighttime, PM

These terms often indicate that a product uses an antihistamine with drowsiness as a side effect. But different brands use different sleep aids: Alka-Seltzer Plus Maximum Strength Night Cold & Flu relies on doxylamine, and Tylenol PM opts for diphenhydramine.

A Day-by-Day Guide for Treating a Cold or the Flu

Your first step is figuring out whether you have the flu or a cold—which isn't as easy as it may seem because they often cause similar symptoms. Use this quick checklist to distinguish between the two.

Cold

ONSET Gradual, over a day or more.

FEVER Low or none.

SEVERITY Mild to moderate.

SYMPTOMS Sore or scratchy throat, then a runny or stuffed nose, sneezing, and finally a cough.

DAY 1

Don't call your doctor. There's no prescription drug proved to shorten the common cold. Antibiotics work against bacterial infections, not viral ones such as colds. And the antiviral drugs that can ease the flu don't work against the viruses that cause colds.

Keep it simple. An over-the-counter pain reliever, such as acetaminophen (Tylenol), ibuprofen (Advil), or naproxen (Aleve), can ease sore throats, but so can gargling with salt water. For details, see "How to Soothe Miserable Symptoms," on page 33.

Practice scrupulous hygiene. Though it's good to stay home if you can, that's not as important as it is for the flu. And you probably don't feel as terrible, because colds

usually come on gradually, with a sore throat. But do make sure that when you're out in public you practice extra-good hygiene: Avoid touching others, cough and sneeze into a tissue or your elbow, and regularly wash your hands.

DAYS 2-4

Don't try to "sweat it out." You might feel good enough to exercise, and maybe even think that working out hard will speed your recovery. Moderate activity probably won't hurt and might even help a little, but an exhausting workout is more likely to prolong symptoms, says Marvin M. Lipman, M.D., chief medical adviser for Consumer Reports.

Get ready for congestion, sneezing, and a runny nose. These symptoms often develop after a sore throat. When they do, consider

nondrug measures such as honey or a saltwater gargle for a sore throat, saline nasal sprays to ease congestion, and staying well-hydrated and consuming hot teas or soup to thin the mucus.

5+ DAYS

Consider calling a doctor if symptoms worsen or don't improve. You could be developing a bacterial infection on top of a viral one, which would require an antibiotic, or have another problem, such as allergies, bronchitis, or pneumonia.

DAY 1

Stay home. At this point, you're highly contagious, so you don't want to spread germs. And you probably feel like a truck hit you. So call work or school and say you're out of commission. The flu usually lasts a week and often two—though after a few days you can reconsider if symptoms ease.

Stock up. If you can, have someone bring flu-survival basics: tissues, easy-to-eat foods, and over-the-counter meds (see "How to Soothe Miserable Symptoms," on page 33)—and maybe even cook up some chicken soup.

Pamper yourself. Your body is yelling "Climb into bed!" Listen to it. Pushing yourself hard, especially early in the illness, can weaken you.

Ask your doctor about an antiviral drug, such as oseltamivir (Tamiflu) or zanamivir (Relenza), especially if you're 65 or older; younger than 5; pregnant or just had a baby; or have asthma, heart disease, or other chronic diseases.

Flu

ONSET Sudden, within a day and sometimes even hours.

FEVER High temps are common, often over 100° F.

SEVERITY More severe.

SYMPTOMS Chills, dry cough, fever, headache, severe muscle aches, stuffy nose, sore throat, extreme fatigue, weakness.

Antivirals can shorten the flu by about a day and reduce the risk of pneumonia and other complications—but only if started within 48 hours of the onset of symptoms. (Don't ask for antibiotics; they work only for bacterial infections—and the flu is viral.)

Rein in your fever. The flu often starts with a temp over 100° F. You can get it down with acetaminophen (Tylenol), ibuprofen (Advil), or naproxen (Aleve). These drugs can also ease the intense head and body aches that often emerge with the flu.

DAYS
2-4

Get fluids down, even if you don't have an appetite. Fever can make dehydration more likely. Consider alternating water with a salty liquid such as chicken or vegetable broth, and a sweet liquid like tea, juice, or iced fruit pop. "The mixture helps replace electrolytes—like sodium,

potassium, and glucose—and full hydration may help thin out thick mucus," says Patricia A. Stinchfield, a pediatric nurse practitioner and senior director of infection prevention and control at Children's Minnesota, a pediatric health system.

Monitor your temperature. "Fever in itself is not harmful," Stinchfield says, but in rare cases, sudden spikes can trigger seizures, especially in young children. And fever indicates that you're probably still contagious, too.

Watch for complications. The flu can get serious quickly. Call a healthcare provider if you have difficulty breathing or swallowing or if you experience disorientation, all of which can indicate pneumonia, bronchitis, or dehydration. Those most vulnerable: children, the elderly, and people with chronic conditions. Also contact a healthcare provider if your throat is so sore that drinking is painful or if you have difficulty urinating.

DAYS
5-6

Consider going back to work or school—if you're feeling stronger and have been fever-free for 24 hours.

Prepare for a lingering sore throat and cough. Though body aches and fever are probably gone by now, coughing and a sore throat often persist. Some good nondrug options: lozenges, honey, gargling with salt water, and lots of teas or soup.

7+
DAYS

Don't panic. The flu often lasts longer than a week. Just keep doing what you've been doing and you should get progressively better.

Call your doctor if you're not improving or if you have any of the warning signs of complications described at left. You could be developing pneumonia or sinusitis, or have another health problem.

Safety Alert: Teens & OTC Drug Abuse

An estimated one in 30 teens abuses dextromethorphan, or DXM, the most commonly used cough suppressant in the U.S. It is found in more than 100 products, including those from Robitussin, Theraflu, Triaminic, and Vicks.

In high doses, DXM can cause hallucinations and a sense of euphoria. It can also cause a range of serious side effects, including rapid heartbeat and sedation.

Many OTC drugs that contain DXM also contain antihistamines, decongestants, and other ingredients, and high doses of these combination products multiply the risk of harmful side effects. Abuse of the drug sends an estimated 6,000 teens to the ER each year and can be fatal.

If you have a teen, you may want to keep track of DXM-containing drugs in your home. Watch to see if he or she visits websites where people discuss using the drug. And look for signs of abuse, including confusion, physical impairment, nausea, vomiting, and slurred speech.

For more on this problem, go to [CR.org/dxmabuse0118](https://www.consumerreport.org/dxmabuse0118). And for advice on cold and flu drugs in children generally, go to [CR.org/kidsandcolds0118](https://www.consumerreport.org/kidsandcolds0118).
—Suzanne Livingston

Editor's Note: This special report and supporting materials were made possible by a grant from the state Attorney General Consumer and Prescriber Education Grant Program, which is funded by a multistate settlement of consumer fraud claims regarding the marketing of the prescription drug Neurontin (gabapentin).

Over-the-Counter Confusion: Solved

Here, three choices you'll confront in the drugstore aisle and what to do:

Multisymptom or Single-Ingredient Drugs?

Many cold and flu products take a scattershot approach. For example, Vicks NyQuil Severe Cold & Flu Relief packs acetaminophen for aches and fever, dextromethorphan for coughs, phenylephrine for congestion, and doxylamine to help you sleep.

CR'S TAKE *Stick to single-ingredient products as much as possible.*

Multisymptom ones may seem efficient, but the more drugs included, the greater the risk of side effects. For example, the sedating antihistamines such as diphenhydramine found in many combos make falls more likely in older adults, says Leigh Ann Mike, Pharm.D., at the University of Washington's School of Pharmacy. So try to find products that target each of your symptoms. Or better yet, try nondrug measures

first and meds only when they're needed. If you do opt for a combo, at least stick to one that treats the symptoms you actually have. "It just doesn't really make sense to expose your body to ingredients you don't need," Mike says. For help finding the right product, ask any drugstore pharmacist.

Brand Name or Store Brand?

The active ingredient in the brand-name and store-brand versions of the same

OTC drugs—the acetaminophen, for example, in Tylenol and the Walgreens version of the drug—is chemically identical. Those drugs are regulated in the same way, too, says Barbara Young, Pharm.D., of the American Society of Health-System Pharmacists. "The real difference is price," she says. And note that variation in color, flavor, or shape has no bearing on the drug's safety or intended effects.

CR'S TAKE *Save money and go store-brand or generic.*

For example, Sudafed PE Congestion and Wal-Phed PE, the store brand for Walgreens, both contain 10 mg of the decongestant phenylephrine. But 36 tablets of Sudafed cost \$13, and 36 tablets

of Wal-Phed cost less than \$6.

Tablets, Syrups, or Powders?

Liquids might hit your bloodstream a bit faster than tablets. But Young says, "For most OTC products the difference of a few minutes is not significant."

CR'S TAKE *Choose products that suit your personal preferences.* For example, for a sore throat, some people might prefer a warm drink version, and others might prefer just taking a pill. Or if you have trouble swallowing pills, a liquid may help make the medicine go down. If you go with liquids, make sure you use the measuring cup provided and follow dosage instructions.

The Dangers of Too Much Medication

Acetaminophen, familiar to most people as Tylenol, is in more than 600 drugs, including many OTC cold and flu remedies. Product packaging often says to check all your meds to see whether they also contain acetaminophen, but many people don't read drug labels carefully. As a result, it's easy to get too much. High doses cause about 59,000 emergency room visits each year, often for liver damage, which can be fatal. At right, we show what can happen even when you take the drug at recommended doses and schedules.

PRODUCT AND PURPOSE	ACETAMINOPHEN PER PILL	DOSE	TOTAL
 Tylenol Extra Strength To ease fever and head and body aches.	500 mg	6 pills (2 pills at 7 a.m., 1 p.m., and 7 p.m.)	3,000 mg
 Theraflu ExpressMax Daytime Severe Cold & Cough To control multiple cold and flu symptoms.	325 mg (plus dextromethorphan and phenylephrine)	8 pills (2 pills at 7 a.m., 11 a.m., 3 p.m., and 7 p.m.)	2,600 mg
 NyQuil Cold & Flu Nighttime Relief To control multiple cold and flu symptoms and promote sleep.	325 mg (plus dextromethorphan and doxylamine)	2 pills (at 11 p.m.)	650 mg
Maximum daily dose recommended by CR: 3,250 mg Daily dose linked to liver damage: more than 4,000 mg Potentially fatal daily dose: more than 7,500 mg			6,250 mg

PHOTOS: JAMES WORRELL



Why Your Excuses for Skipping the Flu Shot Stink

Since 2010, the flu has resulted in 140,000 to 710,000 hospitalizations each year and contributed to between 12,000 and 56,000 deaths, according to estimates from the Centers for Disease Control and Prevention. That's why the CDC urges everyone 6 months and older to get vaccinated. But in a recent CR survey of 744 adults who had a cough, a cold, or the flu in the previous 12 months, only 48 percent said they get the flu shot. Here, rebuttals to three common excuses, plus advice on the right shot for you:

EXCUSE NO. 1 The Vaccine Doesn't Work. In a typical year, the shot cuts your risk of getting the flu by 40 to 60 percent.

And if you get the flu anyway, your symptoms will be milder and "you're less likely to have complications, less likely to be admitted to the hospital, and less likely to die," says William Schaffner, M.D., medical director of the National Foundation for Infectious Diseases.

EXCUSE NO. 2 It Can Cause the Flu.

Almost all flu vaccines use an inactivated virus that can't trigger the flu. But because the vaccine doesn't eliminate your chance of getting the flu, only reduces it, some people who develop the flu after getting the shot wrongly blame the vaccine. Note that FluMist, a nasal spray vaccine that uses a weakened live virus, can cause mild flulike symptoms but not a full-blown infection. In any case, the CDC isn't recommending FluMist because it's not expected to work well against this season's viral strains.

EXCUSE NO. 3 There's Harmful Mercury in Flu Vaccines.

A mercury-containing preservative called thimerosal is in certain vaccines. But it's only a trace amount. And the kind of mercury—ethylmercury—is eliminated by the body more quickly than is methylmercury, the form in some seafood. Moreover, numerous studies have discredited the idea that thimerosal is linked to autism. In any case, there are many thimerosal-free options for people of any age.

Which Vaccine Should You Have?

TEENS AND ADULTS should consider a quadrivalent vaccine, which protects against four flu strains.

PEOPLE 50 AND OLDER have another option: Flublok Quadrivalent, which has triple the dose of other quadrivalents.

THOSE 65 AND OLDER have two more choices: Fluzone High-Dose and Fluvad. Both protect against only three strains, but Fluzone has four times the dose and Fluvad adds an ingredient to boost the immune system's response.

—Rachel Peachman



Back to Nature
Multigrain
Flax Seeded
Flatbread

SERVING SIZE:
3 CRACKERS

Nabisco Triscuit
Reduced Fat

SERVING SIZE:
6 CRACKERS

Dare Breton
Multigrain

SERVING SIZE:
4 CRACKERS

Nabisco Triscuit
Thin Crisps
Original

SERVING SIZE:
15 CRACKERS

Crazy About Crackers

During the holidays, these party staples will be passed around more than usual. Many have recently undergone a makeover. We crunched the crackers—and the nutrition numbers—to tell you what's healthy and tasty, too.

By Julia Calderone



Trader Joe's
Some Enchanted
Cracker
Multigrain

SERVING SIZE:
4 CRACKERS

Mary's Gone
Crackers
Super Seed
Chia & Hemp

SERVING SIZE:
12 CRACKERS

Crunchmaster
Original
Multi-Seed

SERVING SIZE:
15 CRACKERS

Glutino Gluten
Free Original

SERVING SIZE:
8 CRACKERS

Nabisco Ritz
Crackers,
Whole Wheat

SERVING SIZE:
5 CRACKERS

W

HETHER they're dressed up on a party platter, served with soup, or eaten straight out of the

box, crackers are a perennial favorite. Ninety-two percent of consumers said they bought them in the previous six months, according to a survey from the market research firm Mintel. Versatility is part of their appeal, but 65 percent of those polled also think crackers make for an easy, healthy snack, and 56 percent think they're healthier than chips or pretzels.

Little wonder that manufacturers are working to muscle more cracker choices onto retail shelves. Uncommon ingredients such as chickpeas, hemp seeds, millet, teff, and triticale are touted on packaging. Flowery phrases—such as “Barley and flax explode with good-for-you-nutrients”—abound. But are these new crackers any healthier than the old favorites?

It depends on the cracker, CR found after its recent tests of 20 products. “A serving of healthier crackers could actually amount to one of the three to four servings of whole grains you should have in a day,” says Ellen Klosz, a member of CR's food-testing team.

“Some crackers supply more fiber than chips or pretzels, so they may also be a more filling snack.”

But you have to read the labels carefully. “A cracker's name or claims may make you think it contains 100 percent whole grains when it doesn't,” Klosz warns. “And even whole-grain crackers can have as much sodium—or more—as chips, or contain added sugars.”

Snack Cracker Do's and Don'ts

Of course, nutritional advantages don't matter much if the cracker tastes like cardboard. Our testing found several flavorful choices. But keep these pointers in mind:

Go for whole grain. Brown rice, farro, teff, and whole wheat are just a few of the whole grains you'll find in this new group of crackers, along with amaranth and quinoa—which are technically seeds but count as grains. These healthy carbs provide a variety of phytonutrients and fiber, which have been linked to a lower risk of cardiovascular disease, colorectal cancer, and stroke, and may also help to reduce the risk of type 2 diabetes.

Refined white flour, on the other hand, is stripped of these valuable

nutrients in the refining process.

Ideally, you should pick a cracker that contains only whole grains or at least has a whole grain as the first ingredient, Klosz says. For example, swap four Carr's Table Water Crackers (made with refined white flour) for four Reduced Fat Triscuits (made with 100 percent whole-grain wheat), our top-rated cracker, and the fiber count goes from less than 1 gram to about 3 grams and the calorie count stays about the same (60 vs. 73).

Always check the ingredients list to see just how “whole grain” a cracker really is. For instance, the whole-grain Ritz crackers we tested had “whole wheat” stamped in big type on the front of the package, but a closer look revealed the words “baked with” right above. White flour is actually the first ingredient, and five Ritz crackers have less than 1 gram of fiber—about the same amount as in the original Ritz. Watch out for “multigrain” crackers, too. They aren't always 100 percent whole grain or even have whole grains first on the ingredients list.

Monitor portion size. If you stick to the recommended serving sizes, crackers aren't going to do a ton of diet damage, says Amy Keating, R.D.,

Are the 'Reduced' Versions All They're Cracked Up to Be?

Three classic crackers come in two variations of the original—lower fat and lower sodium. But do you have to sacrifice flavor to get the nutritional benefits? Our trained sensory panelists did a blind taste test of the three varieties of Ritz, Triscuits, and Wheat Thins, and we analyzed the nutrition. Here, we recommend the best pick from each brand.

TRISCUIT REDUCED FAT

- Tastes similar to the original.
- Only slightly lower in calories and fat than the original, but with an extra gram of fiber.
- Though you save 100 mg of sodium with Hint of Salt Triscuits, the reduced-fat version is the top-rated cracker in our tests.

RITZ HINT OF SALT

- Same buttery flavor with the same crisp, flaky texture as the original.
- About a third less sodium than the original (30 mg vs. 105 mg per serving).
- Reduced-fat Ritz has more sodium than the original and is noticeably drier and less tender and flaky.

WHEAT THINS HINT OF SALT

- Flavor and texture are very similar to the original.
- Big sodium savings: 55 mg per serving vs. 200 mg in the other two versions.
- Reduced-fat Wheat Thins also tastes similar to the original, but sodium savings make Hint of Salt the better pick.

a Consumer Reports dietitian. Among the products we tested, the calories ranged from 5 to 40 in just one cracker. If bigger portions make you feel more satisfied, choose a thin or small cracker. For example, you could have 15 Crunchmaster Original Multi-Seed Crackers for just 140 calories and 110 mg of sodium, just a small amount more than what's in three Back to Nature Multi-grain Flax Seeded Flatbread Crackers.

Be smart about toppings. "What you put on crackers can really push you over your calorie, fat, or sodium limit," Keating says. Half an ounce of Brie cheese, for example, has 50 calories, 4 grams of fat, and 90 mg of sodium. Instead, opt for healthier dips and toppings. (See "Can You Top This?" at right.) The best crackers for this are those that are firm and won't snap under pressure, such as Crunchmaster Original Multi-Seed Crackers, Trader Joe's Some Enchanted Crackers Multigrain, and Triscuits.

Count the sodium and sugars. Crackers tend to have less sodium than chips and pretzels, but they can still contribute more than you'd think. The sodium count per serving of the crackers in our tests ranged from 90 to 280 mg; sugars ranged from 0 to 6 grams.

Go easy on rice products. Gluten-free diets have made rice products popular, but rice can be a source of arsenic, a carcinogen that's especially risky for young children. CR testing conducted in 2012 and 2014 found measurable levels of the heavy metal in almost all the rice products we looked at. There are crackers made with other gluten-free ingredients that have negligible levels of arsenic, such as amaranth, buckwheat, corn, and millet. Gluten-free Dare Breton White Bean With Salt & Pepper Crackers are made with navy beans and tapioca flour instead of rice flour. Also consider whether you need gluten-free at all; less than 7 percent of the population does. Barley, bulgur, and farro, which contain gluten, also have very little arsenic, CR tests found.

FOOD STYLING, PREVIOUS SPREAD: ALI NARDI. PHOTOS, THIS SPREAD: JAMES WORRELL

Can You Top This?

A third of consumers say they pay more attention to what's on top of their cracker than to the cracker itself, according to the market research firm Mintel. Cheese is the most popular topping, but even an ounce of cheddar can contain 115 calories and about 5 grams of saturated fat. Instead, try these healthier toppings, which are perfect for party hors d'oeuvres but are also an easy, filling, and tasty everyday snack. We used 18-calorie Reduced Fat Triscuits, the highest-scoring cracker in our tests, as the base, and each cracker-topping combo here has just 30 to 50 calories.



Spread on 1 teaspoon of hummus. **Top with** grated carrots, sliced sugar snap peas, or any vegetable you like.



Spread on 2 teaspoons of mashed avocado. **Top with** 1 teaspoon of diced mango and a sprinkling of slivered scallions.



Spread on 1 tablespoon of low-fat Greek yogurt. **Top with** 1 slice of cucumber, a few slivers of smoked salmon, plus a sprinkle of fresh dill.



Spread on 1 teaspoon of smashed black beans. **Top with** 1 teaspoon of salsa, 1/2 teaspoons of shredded Monterey Jack cheese, and chopped cilantro.



Spread on 1 teaspoon of part-skim ricotta cheese. **Top with** 1 teaspoon of jarred olive tapenade and snipped basil leaves.



Spread on 1 teaspoon of goat cheese. **Top with** a few sprigs of watercress or baby arugula and 1 tablespoon of diced pear.



Spread on 1 teaspoon of low-fat cream cheese mixed with minced fresh rosemary, thyme, or mint. **Top with** half a cherry tomato.



Spread on 1 teaspoon of light mayo mixed with a pinch of curry powder. **Top with** 1 slice of hard-boiled egg and chopped celery.

Ratings > **Cracker Confidential** A healthier cracker should be mostly whole grains with at least 3 grams of fiber and no more than 140 mg of sodium per serving.



Recommended	Rank	Product	Overall Score	Rating		Nutrition								Pricing		Flavor & Texture Description	
				↑	↓	Nutrition	Taste	Crackers per serving	Calories	Fat (g)	Saturated fat (g)	Protein (g)	Carbohydrates (g)	Fiber (g)	Sugars (g)		Sodium (mg)
Ⓢ	1	Nabisco Triscuit Reduced Fat Crackers	68	↑	↑	6	110	2.5	0	3	21	4	0	150	7.5	\$3.00	Crispy, crunchy whole-wheat squares with a somewhat coarse texture. Simple flavors of toasted wheat and salt.
✓	2	Back to Nature Multigrain Flax Seeded Flatbread Crackers	67	↓	↑	3	120	4.5	0	2	18	2	2	90	5.5	\$3.80	Large and very crunchy with plentiful seeds. Slightly sweet and salty, with a nutty flavor and hints of onion and herbs.
✓	3	Crunchmaster Original Multi-Seed Crackers	66	↓	↑	15	140	5	0.5	3	20	2	0	110	4.5	\$2.80	Crunchy brown-rice cracker with a toasted and sesame flavor. Moderately salty.
✓	4	Nabisco Triscuit Thin Crisps Original Crackers	65	↑	↑	15	130	4.5	0	3	21	4	0	170	7.1	\$3.50	Crispy, crunchy toasted whole-wheat triangles with moderate salt.
Ⓢ	5	Trader Joe's Some Enchanted Cracker Multigrain	64	↓	↑	4	140	6	0.5	3	19	2	2	200	10	\$2.50	Large multigrain cracker with visible seeds. Crispy, slightly flaky texture. Salty, sweet, and buttery notes, with a taste of poppy and sesame seeds.
Ⓢ	6	Dare Breton Multigrain Crackers	61	↓	↑	4	90	4	1.5	2	11	1	1	115	8.8	\$4.00	Large multigrain cracker with visible grains and seeds. Crispy, tender, and flaky. Slightly salty, with a toasted-grain flavor and hint of sesame.
	7	Blue Diamond Artisan Nut-Thins Multi-Seeds Cracker Snacks	60	↓	↑	13	130	3.5	0	3	22	2	0	135	4.25	\$3.80	Slightly hard and crunchy brown-rice/almond crackers with seedy, nutty, and toasted-flavor notes.
	8	Vea World Crisps Andean Quinoa & Spices Crackers	60	↓	↑	18	130	4	0	2	23	2	2	180	5	\$3.50	Small, thin, multigrain crackers that are crispy and crunchy, with visible grains. Garlicky and nutty flavors. Some spicy heat and moderate salt. Better for snacking than topping.
	9	Kii Naturals Organic Artisan Crisps, Raisin, Rosemary & Pumpkin Seed	58	↓	↑	5	80	2	0.3	3	13	1	6	110	5	\$7.00	Thin, slightly hard and crunchy multigrain toasts with visible herbs, seeds, and raisins. Slightly salty. Dried rosemary seasoning can be overpowering. Raisins add chewy sweetness.
	10	365 Everyday Value (Whole Foods) Woven Wheats Baked Crackers	58	↑	↓	8	110	1	0	3	24	3	0	170	7	\$2.80	Crunchy woven whole-wheat squares, with lightly toasted and salty notes. On the dry side, with a somewhat coarse texture and bland taste.
	11	Way Better Snacks Sprouted Barley Crackers, Salt & Cracked Pepper	58	↑	↓	14	110	4.5	0	3	15	4	0	110	5	\$4.20	Puffed multigrain crackers with visible seeds and a slightly tough texture. Black pepper adds heat.

PHOTOS: REBEKAH NEMETHY



Recommended	Rank	Product	Overall Score	Rating		Nutrition								Pricing		Flavor & Texture Description	
				Nutrition	Taste	Crackers per serving	Calories	Fat (g)	Saturated fat (g)	Protein (g)	Carbohydrates (g)	Fiber (g)	Sugars (g)	Sodium (mg)	Package size (oz.)		Average price per package
	12	Ak-Mak Sesame Cracker	57			5	110	2	0	5	19	3	1	220	4.15	\$2.00	Large whole-wheat crackers that are crunchy, dry, and thin. Slightly salty, with toasted whole-wheat and sesame-seed flavors.
	13	Dare Breton White Bean With Salt & Pepper Crackers	56			4	80	3.5	1.5	2	10	2	0.5	95	4.2	\$3.50	Large, crisp crackers made with navy beans and tapioca flour. Tender and flaky. Beany, slightly toasted, sweet flavor. Has salt and lots of pepper.
	14	Carr's Whole Wheat Crackers	53			2	80	3.5	1.5	1	11	1	3	105	7	\$4.00	Somewhat thick whole-wheat crackers that are tender and slightly crumbly. Toasted-wheat flavor dominates, but also sweet and cookielike.
	15	Nabisco Ritz Crackers Whole Wheat	53			5	70	2.5	0.5	1	10	<1	2	120	12.9	\$3.00	Made with toasted white and whole-wheat flours. Crispy and notably tender and flaky. Buttery flavor with a hint of sweetness and some salt.
	16	Van's Lots of Everything Whole-Grain Crackers	53			30	140	4.5	0.5	2	21	2	3	180	5	\$4.00	Small, crispy crackers with onion, garlic, and very slight caraway flavors. Quite salty. Tender and thin; probably not sturdy enough to top.
	17	Kashi Red Sea Salt Snack Thins	52			16	130	4.5	0.5	3	21	3	0	200	4.25	\$4.20	Crispy small crackers with visible seeds. Multigrain taste with slight bean and onion notes. Quite salty, and black pepper adds a little heat. Tender and thin; may break when topped or dipped.
	18	Mary's Gone Crackers Super Seed Chia & Hemp Crackers	48			12	150	7	1	3	17	3	0	230	5.5	\$4.50	Slightly hard, crunchy crackers made mostly of seeds. Hint of thyme with a little salt. Has a distinct toasted—almost burnt—flavor.
	19	Nabisco Good Thins The Chickpea One Garlic & Herb	42			22	140	5	1	2	20	1	3	200	5.75	\$3.00	Small crackers with visible herbs and spices. Crispy and tender. Salty with hints of garlic and lots of dehydrated basil and parsley flavors.
	20	Glutino Gluten Free Crackers Original	39			8	140	4.5	2	0	23	<1	0.5	280	4.4	\$3.50	Crispy, crunchy, white-rice flour crackers. Dry and a little chalky. Mild-tasting, with a slight egg flavor. Better for topping than for snacking.

HOW WE TEST: CR's nutrition and food-testing team rated crackers for nutrition and taste. The **Overall Score** is a combination of the two.

The **Nutrition** score is based on energy density (calories per gram), total fat, saturated fat, fiber, sugars, sodium,

and other nutrients. Extra weighting is given for influential nutrients, either positive or negative, respective to the cracker. **Taste** ratings are based on

the results of a blind tasting by a trained sensory panel.



USING
FACETIME

MAKING MUSIC
SELECTIONS

TEXTING

READING
EMAIL

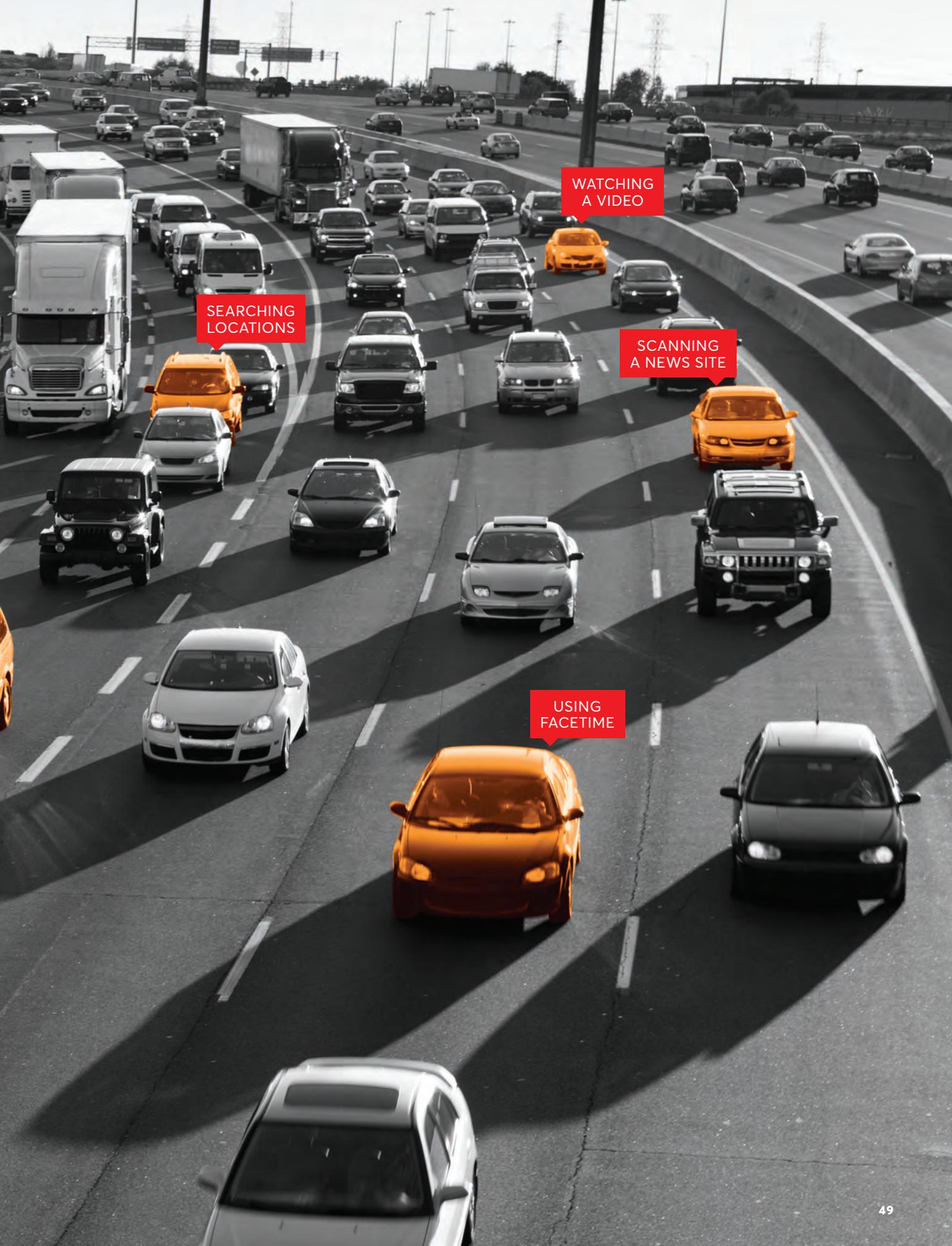
TEXTING

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Driving While Distracted

Car-crash fatalities are on the rise, and many experts say that drivers distracted by smartphones and other technology remain a problem. Is the answer enforced restrictions, increased vigilance by drivers, or more accountability by tech companies? Or all three? Whatever the solution, the time for action is now.

by **Greg Gardner**



WATCHING
A VIDEO

SEARCHING
LOCATIONS

SCANNING
A NEWS SITE

USING
FACETIME

Five-year-old Moriah Modisette died one Christmas Eve after a distracted driver plowed into the back of her family's car on a Texas highway, according to police reports.

Garrett Wilhelm, 20 at the time, was accused of video chatting on his smartphone when traffic ahead of him slowed. The police say he didn't notice and slammed into the Modisettes' car at full speed. The force of the collision caused the car to spin, coming to rest facing the wrong direction in traffic.

The little girl was airlifted to a hospital, where she was pronounced dead, says the police report of the 2014 incident. Her older sister, Isabella, 8, who was sitting next to her in the backseat, survived, as did her mother, Bethany, who was in the front passenger seat of the Toyota Camry. Moriah's father, James, in the driver's seat, was knocked unconscious and spared seeing the events that led to his daughter's death.

Wilhelm has a manslaughter charge pending against him because of the crash, in which his Toyota 4Runner landed in the highway median. A police officer found the video call

still running on Wilhelm's iPhone.

The Modisettes didn't want to be interviewed for this article, but Greg Love, a lawyer for the family, spoke with CR. "Bethany and Moriah's older sister, Isabella, were conscious and perceived everything that happened inside that car," he said. Love also pointed out that at the time of the accident, there was no state ban in Texas on texting while driving. In May 2017 the first statewide distracted-driving law in the state was passed, and it took effect in September. It prohibits all texting and "electronic messaging" while driving.

Dangerous Choices

The latest statistics show that America's traffic deaths are rising. There are many reasons, including the fact that we're driving more miles. But some experts say that the marriage of automobiles and smartphones (with their growing menu of apps) is contributing to the danger, even for pedestrians and cyclists. Despite a decade of new laws and enforcement, and a flurry of public-safety campaigns, surveys have found that drivers still make the dangerous choice to text and drive or use their smartphones in other distracting ways.

Indeed, a nationally representative survey by Consumer Reports in October 2017 found that 41 percent of drivers with smartphones said they had used their hands to text while driving, and 8 percent admitted to watching a video on their phone while driving.

The Modisettes sued Apple, accusing the company of being at fault because it hadn't sufficiently warned people not to use its FaceTime app while driving. (The app allows video-to-video communication with another person also on an Apple smart device.) A judge threw out the case in May, ruling that the user of a smartphone is responsible for unsafe behavior, not the manufacturer. The case is on appeal.

Traffic fatalities on U.S. roads in 2016 increased to 37,461, according to the National Highway Traffic Safety Administration (NHTSA). That's a 5.6 percent increase over 2015, after an 8.4 percent increase in 2014.

In 2016, 3,450 people were killed because of distracted driving, a 2.2 percent decline from 2015. Still, the number of distraction-related fatalities reported in 2016 was higher than in 2011. According to NHTSA, fatal distracted-driving crashes specifically involving cell-phone use increased to 14 percent (442) in 2015 from 12 percent (354) in 2011. And the percentage of distracted-driving-related crashes

resulting in injuries that were linked to cell phones increased to 8 percent (21,000) in 2015 from 6 percent (15,000) in 2011. (A breakdown from NHTSA for 2016 isn't available yet.) Even these numbers don't fully reflect the potential scope of danger, safety advocates and the police say, because of the limits of law enforcement and the lack of adequate evidence proving that smartphone use or other distractions were the root cause of some crashes.

Distracted driving has also involved in-car infotainment systems and lower-tech driver activity, such as adjusting a radio or temperature control, talking to a passenger, or taking eyes off the road for any reason.

The automotive and tech industries are using technology designed to



Moriah Modiset was killed at age 5 when her family's vehicle was struck by a 20-year-old driver who the police say was using the FaceTime app while at the wheel.

mitigate distracted-driving dangers. Many new vehicles have advanced safety features (often optional) such as automatic emergency braking and lane-keeping assist, which are recognized for their potential to help protect drivers and passengers.

Major smartphone manufacturers, wireless providers, and smaller tech companies have created various apps and services to prevent teens and adults from using smartphones while driving. But at the moment, the adoption and use of them rely largely on users choosing to opt in.

And until cars become fully autonomous, dangers will persist from those who choose to use smartphones while driving or become distracted by onboard infotainment systems.

Can Car Safety Features Help?

New high-tech safety features are helping drivers who have lapses in attention. These features warn them or intervene to head off potentially dangerous situations. Here are four that have demonstrated in CR's road-test evaluations that they have the ability to help drivers avoid a potential crash, according to Shawn Sinclair, a CR automotive engineer specializing in advanced safety systems. Respondents in CR's recent Advanced Auto Safety Systems survey also report that the systems have helped them.

Forward-Collision Warning (FCW)

It provides a visual, audible, and/or tactile alert to warn drivers of an impending collision with a car. Data from the Insurance Institute for Highway Safety (IIHS) show that FCW is associated with a 27 percent reduction in rear-end crashes for vehicles with the feature. And 68 percent of the owners in CR's survey said they were very satisfied with FCW in their vehicles.

Automatic Emergency Braking (AEB)

If the system senses a potential collision and the driver

doesn't react in time, it engages the brakes. IIHS data show that AEB and FCW are associated with a 50 percent reduction in rear-end collisions for vehicles with the two features. In CR's survey, 69 percent of owners said they were very satisfied with AEB in their vehicles.

Lane-Departure Warning (LDW)

The system warns drivers when their vehicle crosses lane markings and the turn signal isn't engaged. IIHS research has found that if all U.S. passenger vehicles had been equipped with an

LDW system, nearly 85,000 crashes and more than 55,000 injuries would have been prevented in 2015. Seventy percent of surveyed owners said they were very satisfied with their LDW system.

Lane-Keeping Assist (LKA)

It provides some steering and/or braking to correct a vehicle if it starts to drift out of a lane. IIHS research hasn't yet provided data on its potential benefits. But 70 percent of surveyed owners said they were very satisfied with the LKA system in their vehicle.



“Unfortunately, in the short term, we actually could see greater risks because we will have a mix of autonomous, semi-autonomous, and manually driven cars,” says Deborah Hersman, president and CEO of the National Safety Council. “The transition is going to be a little bit of a messy middle.”

The Rise of Connected Cars

General Motors first introduced its OnStar in-car connectivity in 1996. And the company claims it became the first automaker to introduce 4G LTE wireless across its entire retail platform in 2014. Since then, Chevrolet has sold nearly 2.5 million 4G OnStar LTE-connected vehicles.

These cellular connections power onboard WiFi hot spots that can be used by up to seven digital devices in a single vehicle.

Carmakers are adding high-speed internet connections and designing more sophisticated interfaces to serve customer demand for constant connectivity. But they’re also working closely with Silicon Valley to integrate smartphones more deeply into the driving experience. Almost every automaker is now building Apple CarPlay and Android Auto support into new vehicles. These systems serve up a simplified smartphone-style interface on a dashboard screen, giving drivers the apps, controls, and voice assistants they’re already familiar with.

Automakers say they’re doing their best to balance the desire for technology with safe design. A Ford spokeswoman said in an email response to questions that it has “prioritized voice recognition as the interface for smartphone control while driving,” because research “indicates that helping drivers keep their hands on the wheel and eyes on the road is the most important factor in minimizing distractions.”

A Toyota spokesman said in an email that customers want the

How Distracted Are We?

In our national survey of 622 licensed drivers who own a smartphone, 52 percent admitted to engaging in distracting activities while driving.*

What are the distractions?

- 41% use hands to send a text.
- 37% use hands to play music on a smartphone.
- 20% use hands to access a web browser or to compose, send, or read email.
- 8% watch videos on their phone while driving.

Who’s the most distracted?

Men are more likely than women to engage in distracting behavior; more than twice as many men watched a video. Millennials (18 to 36) and Gen Xers (37 to 52) were more likely than baby boomers to engage in distracting behavior.

When is texting acceptable?

- 61% say only if they have a hands-free, voice-activated option.
- 34% say if it’s an emergency.
- 24% say never.

Should texting be prohibited?

- 88% say they favor states having restrictions on texting while driving.
Of those:
- 83% support a “total ban on texting while driving.”
- 66% support a “requirement that all drivers use a message that automatically responds to incoming calls or texts.”
- 36% support a “ban on texting while driving only for novice drivers.”
- 30% support a “ban on incoming texts or calls if a smartphone is present in a moving car.”

Who should do the restricting?

- 100% support restrictions.
- 94% say the driver.
- 50% say the government.

*Consumer Reports conducted a nationally representative phone survey to assess distracted-driver behavior and opinions about texting while driving.

company to “evolve and keep up with the latest” technology. He added that Toyota considers driver distraction during product development: “As part of our basic design processes, Toyota considers how all the systems we integrate into our vehicles will be used in the driving environment, with the goals of helping to optimize interactions with the driver while avoiding distractions.”

At GM, as each infotainment feature is developed, engineers test and measure driver attention using a simulator, says Mike Hichme, the company’s executive director of user experience. “We measure their eye movements,” he explains. “They can’t have glances of longer than 2 seconds away from the road for any one task.”

If the test shows that a driver is confused by touch-screen controls or voice commands, the function is locked out after a certain period. Streaming video, game apps, web browsing, and social media messaging are prohibited on the touch screen, Hichme says.

The Human Toll

In September 2016, Mitchel Kiefer, an 18-year-old freshman at Michigan State University, died on a highway after an inattentive driver slammed into his car when traffic slowed. According to the police reports, the force of the collision pushed Kiefer’s vehicle across a median and into oncoming traffic. His was the only fatality in the multivehicle wreck.

Twenty-one-year-old Kelley Renee Lange of Kalamazoo eventually pleaded guilty to a moving violation, receiving probation, community service, and a fine. According to an Ingham County assistant prosecutor, information from the event data recorder, or black box, in Lange’s 2004 Pontiac Grand Prix indicated she was traveling at 81 mph with the accelerator depressed at impact. The prosecutor says the data suggested Lange may have been distracted. But

The Most and Least Distracting Infotainment Systems

Based on CR's hands-on testing, the systems below have been ranked as the most, moderately, or least distracting for drivers. Some of the reasons for each ranking are included.

Most Distracting Systems

Models & Availability	CR's Take
Acura All; optional on ILX	Pros: Has large text, phones pair easily. Cons: Frustrating dual-screen setup, convoluted display logic, and finicky voice-command system.
Cadillac (Cue only) All; optional on ATS	Pros: Has good voice commands. Cons: Has a confusing interface, a sluggish response, and overly sensitive touch buttons.
Lexus NX, RX, GS, LS, LC (optional on IS, RC, ES)	Pros: Has good steering-wheel shortcuts. Cons: The mouselike controller is fussy, and it's a challenge to move the cursor through onscreen choices, especially when driving.
Mercedes-Benz All	Pros: Has easy-to-choose functions. Cons: It lacks knobs and buttons, which would be easier to use. Touchpad controls on the newest versions (in C, E, S, GLC, GLE, GLS models) are too sensitive.
Tesla Model S, Model X	Pros: The system works well, with clear graphics and capable internet radio music search. Cons: Touch screen controls everything but can be distracting. There are no volume or tuning knobs, which CR prefers.
Volvo XC60, XC90, S90, V90	Pros: Has a large, easy-to-read screen. Cons: Touch screen can be difficult to operate; commands require familiarity with the system. There's lots of small text, and smartphone integration is buggy.

Moderately Distracting Systems

Audi All	Pros: Has a central controller, buttons, and handwriting recognition, plus well-designed steering-wheel controls and lots of features. Cons: It's complex to learn though intuitive once mastered.
BMW All	Pros: Has an easy-to-read screen with large text, quick input responses, and an effective controller knob. Cons: Takes time to master; optional touchpad isn't very helpful.
Honda Optional on all except Accord, Clarity	Pros: None. Cons: Onscreen buttons and menus aren't intuitive, poor voice-command quality, and confusing dual-screen setup. High-trim systems lack volume and tuning knobs.
Infiniti Q50	Pros: Dual screens make it easy to see lots of information. Cons: Slow startup; complicated menu and control structure. Many tasks require multiple screen taps.
Mazda All	Pros: Has an easy-to-read screen and text. Cons: Even simple functions require multiple steps, touch screen works only when vehicle is stopped, poor voice recognition.
Mini All	Pros: Voice commands process quickly but require preset commands. Con: Requires a learning curve.

Least Distracting Systems

that still offer high-level capability

FCA (Uconnect 8.4-inch screen) Optional on all Chrysler, Dodge, Jeep, and Ram models except the Grand Caravan, Renegade, and Wrangler	Pros: Uses simple logic and good old-fashioned knobs and buttons. Has big onscreen text and icons. Cons: The screen is highly reflective, highlighting fingerprints and smudges. Must use touch screen for functions such as heated seats and steering-wheel controls.
Ford/Lincoln (Ford Sync3 only) Standard on all Lincoln models	Pros: Has large, well-labeled icons, quick responses, natural voice commands, and large volume and tuning knobs. Cons: The screen is a long reach for shorter drivers in some models.
GM (except Cadillac)	Pros: Has large text, traditional knobs and buttons, and comprehensive steering-wheel controls. Cons: Swiping motions are difficult to do while driving, smaller-screen version is more difficult to use.
Hyundai/Kia/Genesis All	Pros: Has traditional knobs and buttons, plus a touch screen with a logical system structure. Cons: Too many steps required to scroll through phone contacts, small screens in base models aren't user-friendly.
Nissan Standard on select models	Pros: Has simple knobs and buttons, good text size, quick navigation-route processing. Cons: Cumbersome phone pairing and setup.
Subaru All	Pros: Has easy-to-understand menus. Cons: Some onscreen buttons are small and crammed together, has few steering-wheel controls, and glossy screen is difficult to read in direct sunlight.
Toyota All	Pros: Has a logical screen structure. Cons: Touch-screen buttons are packed tightly together, voice-command system is lackluster, and users have to install a smartphone app to use additional functions.
Volkswagen All	Pros: Has seamless phone pairing and handy knobs and buttons for basic functions. Cons: Navigation graphics and voice commands aren't the most refined, and the touch screen can be tricky to use.

because there was no evidence of her texting or using her phone at the time of the incident, prosecutors didn't have probable cause to secure a search warrant for her phone. It's unclear why she failed to slow down. Her lawyer didn't respond to requests for an interview.

It can be difficult to assess the true impact of driver distraction. Black-box data can provide clues, but it's rare for a witness or law-enforcement officer to directly see what's going on inside a vehicle. Even when there's evidence of distraction, it's not always documented. In a 2017 report, "Undercounted Is Underinvested: How Incomplete Crash Reports Impact Efforts to Save Lives," the National Safety Council found that many state



A 21-year-old woman drove her car into **18-year-old Mitchel Kiefer's** car, killing him at the scene. His family has established a foundation to fight driver distraction.

crash-report forms don't have a field or code for many forms of distraction.

Kiefer's parents, Steve and Paula, his two sisters, and his brother decided to establish the Mitchel Kiefer Foundation, which is dedicated to battling driver distraction. The family works to get out the message that no one should text and drive or look away from the road for too long.

"What I've always said to the kids is that you can let a tragic event in your life basically destroy your life or you can use it to repurpose your life," Steve Kiefer says in a video. "We've all agreed we're going to try and use it to repurpose our lives and make something good of it, and hopefully save some other lives."

Kiefer speaks to groups about his

Safety Through Technology?



Apple's iOS 11

This latest operating system includes a Do Not Disturb While Driving mode (DND) that can block notification of incoming calls and texts when your iPhone senses driving motion or is connected to a car via Bluetooth. (It doesn't block functions that work through Apple's CarPlay system, such as music and navigation.) The DND feature can automatically send a text reply that says you're driving and will reply later. Phone calls are allowed if the iPhone is connected via Bluetooth.

Samsung

The phone maker offers a version of an Android distracted-driving app, called In-Traffic Reply. It allows users to set automatic replies to incoming calls or text messages. The app senses car motion using the phone's GPS. Samsung says users can choose a default reply or a "fun, animated response," or create a message.

AT&T DriveMode

This free app is activated when your car reaches 15 mph. It blocks text alerts, which can tempt you to check your phone, and it can send automatic text replies. Parents can

program the app to notify them when it has been turned off.

Sprint Drive First

This Android app, only for Sprint customers, routes incoming calls to voicemail and silences email and text alerts when a vehicle reaches 10 mph. Exit and 911 emergency buttons on the home screen of a locked device allow users to override the app.

Verizon's Driving Mode

This feature, which can be turned on from Verizon's Android messaging app, blocks texts and can send automated messages.

CellControl DriveID

Users (mostly parents) pay a one-time activation fee (\$39.95) and a monthly fee (starting at \$7.95) for a device that attaches to the windshield and works with an app to block drivers from sending or receiving text messages. It can also block email and smartphone cameras. Consumer Reports tried the system and liked its easy installation. We also liked that multiple devices can be paired and that passenger smartphones can be excluded. Driving behavior—such as acceleration,

son and the dangers of distraction. It helps that he's a senior vice president at General Motors, which lends credibility to the foundation's mission.

High-Tech Solutions

Some in the telecommunications industry have been addressing the issue of driver distraction. A range of small tech companies offer apps that can block text messages, email, social media sites, and even phone calls while drivers are underway.

Joe Breaux, chief technology officer of CellControl, which offers a combination of hardware and software that can block and monitor smartphone use inside a car, says his company follows the development guidelines of major smartphone

manufacturers. "In many ways, they're partners, but what they're providing is different from what we're providing," he explains. "They are providing connectivity. The last thing they want to do is limit the use of their products or services."

Major wireless providers such as AT&T, Sprint, and Verizon also offer apps that can block text messages. This type of technology is often aimed at parents of teen drivers and employers.

Smartphone manufacturers are also using technology to address the problem. Samsung has an app called In-Traffic Reply that sends preset responses to messages received while the user is in motion. Apple's new iOS 11 system, introduced last fall, includes an optional Do Not Disturb While

braking, and speed—can also be monitored.

Drive Safe Mode

This app allows parents to track their teens' in-car phone usage. To use the service, create an account, download the app for Android or iPhone, and sync the phone to be tracked. According to the company, parents can get an immediate notification if their teen is texting; on Facebook, Snapchat, or Twitter; or using any other mobile app while the car is in motion.

Drivemode

This Android-based app can read text

messages aloud. It also integrates some of your favorite apps and functions, such as those for programming music and navigation, and creates an interface with your smartphone that the company says is less distracting.

Live2Txt

This Android-based app can block incoming text messages and calls while it's turned on. Like similar services, users can set up an automated reply to incoming text messages or phone calls. A parent receives a text message whenever the app is turned on or off as a way to monitor its use.

According to the product website, getlive2txt.com, a police veteran came up with the app idea. It costs \$1.99 to download.

Drivesafe.ly

This app is designed to read incoming text messages and email aloud for drivers so they keep their eyes on the road. The product website says users can hear messages without touching their phone. Some automaker infotainment systems also offer the same built-in technology.

How to Protect Yourself

Jennifer Stockburger, director of operations at CR's Auto Test Center, offers these tips.

How to Protect Yourself From Yourself

These common-sense habits should become as automatic as putting on your seat belt:

- Once in your car, put your phone out of sight and out of reach so you're not tempted to use it.
- If you need to use a navigation app, use a dash mount so you don't have to take your hands off the steering wheel.
- Take advantage of the in-car system if you have one. Most new cars offer voice commands for paired phones as well as Android Auto and Apple CarPlay interfaces that resemble your phone's screen.
- Drop the earbuds. Some drivers use them to answer calls in cars that lack Bluetooth or for listening to music. That's not safe.
- If you must answer phone calls, invest in an aftermarket Bluetooth system. You can stay hands-free and keep your ears open. There are many options on Amazon.

How to Protect Yourself From Others

Watch for erratic or inappropriate driving, and give those cars a wide berth. That includes:

- A car that's veering from edge to edge inside a lane.
- A car that's missing traffic cues, such as failing to accelerate when a light turns green, slows and speeds up in lane without logic, or rides the brakes.
- A driver whose head is facing down toward his lap or the seat.

Driving feature that mutes incoming phone calls and text messages. There's an option to automatically send a message that you're driving and will respond later.

But none of this technology can stop a driver who doesn't want to use it. "All these systems are voluntary," says David Greenfield, founder of the Center for Internet and Technology Addiction in West Hartford, Conn., and an assistant professor of clinical psychiatry at the University of Connecticut School of Medicine. "Ultimately, if it's voluntary it's not going to be useful. I want the phone completely disabled. I don't trust myself to not use it, and nobody else should either."

Greenfield stresses that smartphones

can be habit-forming. "The addictive nature of the phone does not stop when we enter the vehicle," he says. "The more complex cars have become, the greater the distraction becomes."

In July 2017 Gov. Andrew Cuomo of New York directed his Traffic Safety Committee to examine the viability of the "textalyzer," technology that can determine whether a cell phone was used right before a crash.

In 2012 NHTSA started rolling out its recommended guidelines aimed at reducing driver distraction. The first phase offered guidelines for automakers to design infotainment systems that minimize distraction, such as limiting the time a driver has to look away from the road.

The next phase, introduced in

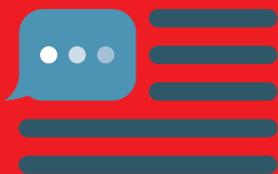
2016, encouraged smartphone manufacturers to design features such as pairing and driver mode that can link phones to a vehicle's infotainment system. NHTSA's next phase is to address voice-activated controls and potential ways to reduce cognitive distraction, when a driver's mind is distracted from focusing on the road.

Some people hope that fully autonomous vehicles will solve the problem one day. But 3,400 people dying every year from distracted driving is too high a price to wait for better technology.

Who's Responsible?

Several product liability lawsuits aimed at Apple have resulted in rulings that the company wasn't to

Is There a Law for That?



Many states have texting bans and other laws to combat distracted driving.

Text messaging:

Forty-seven states, Washington, D.C., Puerto Rico, Guam, and the U.S. Virgin Islands ban texting behind the wheel, according to the Governors Highway Safety Association. Of the three states without a complete driver ban, two prohibit texting by inexperienced drivers. Montana is the only state without any ban on the books, the GHSA reports.

Handheld cell-

phone use: Fifteen states, Washington, D.C., Puerto Rico, Guam, and the U.S. Virgin Islands ban

handheld mobile phone use while driving. No state bans all cell-phone use for all drivers, but 38 states and Washington, D.C., ban cell-phone use by inexperienced drivers, and 20 states and D.C. prohibit it for school bus drivers, according to a GHSA analysis.

Does enforcement make a difference?

The police conducted high-visibility enforcement campaigns in Syracuse, N.Y., and Hartford, Conn., in 2010 and 2011. These efforts were paid for, in part, by the National Highway Traffic Safety Administration. The

police in Syracuse used roving patrols to spot offenders, and Hartford police used a spotter technique with two patrol cars working together. The percentage of drivers observed to be texting or dialing in Hartford fell to 1.1 percent from 3.9 percent in a little more than a year. Drivers cited for texting tended to commit other violations, such as drifting across lanes or weaving, as a result of their distraction.

But the final report concluded that motorists were willing to continue texting while driving even while agreeing

in surveys that the police should enforce texting restrictions.

"The laws have been successful in getting some drivers to put down their phones or switch to hands-free, but we haven't been able to find a corresponding effect in reduced crashes," said Russ Rader, a spokesman for the Insurance Institute for Highway Safety.

An unintended consequence, says David Strayer, a University of Utah professor who studies distracted driving, is that "instead of holding the phone, drivers now place it in their lap or on a seat where it can't be seen."

blame for unsafe driver behavior. At least two focused on Apple's patent for technology that can "lock out" or prevent the operation of smartphone functions while the user is driving. In one complaint, the family of three crash victims claimed that Apple's failure to develop the lockout idea was proof the company ignored the dangers of distracted driving and was liable.

According to that lawsuit, Ashley Kubiak was heading down a Texas highway in a Dodge Ram pickup as she allegedly checked messages on her iPhone. She rear-ended a 2008 Chevrolet Tahoe, forcing it across the lane, where it was struck by a Ford F-250 pickup traveling in the opposite direction. The lawsuit said the accident killed the Tahoe driver and a passenger, and left a young child paralyzed. The court papers went on to say that Kubiak was convicted of criminally negligent homicide.

In August, U.S. District Judge Robert W. Schroeder III dismissed the case. The decisive passage from his ruling read: "When a driver negligently operates her vehicle because she is engaging in compulsive or addictive behaviors such as eating food, drinking alcohol, or smoking tobacco, it is the driver's negligence in engaging in those activities that causes any resulting injuries, not the cook's, distiller's, or tobacconist's supposed negligence in making their products so enticing."

In another case, Julio Ceja of Costa Mesa, Calif., filed a class-action complaint in California. Like the Texas case, it focused on Apple's failure to install a lockout device. When asked about the case, an Apple spokesman told CR: "We discourage anyone from allowing their iPhone to distract them by typing, reading, or interacting with the display while driving."

Facing the Human Factor

Hands-free phone operation is often touted by policymakers and others as the best available solution.

Protections We Want for You

Driver distraction takes more than 3,400 lives a year on U.S. roads—and requires urgent action. The National Highway Traffic Safety Administration began rolling out driver-distraction guidelines in 2012. Consumer Reports believes industry and government should implement and build on these guidelines. Here's what that means:

Automakers should ...

- Not include features that encourage drivers to take their eyes off the road for any significant amount of time.
- Design built-in systems that disable distracting content from infotainment systems when a vehicle is in motion.
- Ensure that "pairing" capabilities are easy to use.
- Implement effective driver monitoring to warn drivers when they're not paying attention.
- Make safety features that mitigate crashes standard in every new car.

Tech companies should ...

- Incorporate easy-to-use pairing capabilities and driver mode, a simplified interface, into devices.
- Disable normal use of a phone while a vehicle is in motion.

Policymakers should ...

- Update and finalize existing guidelines based on the most recent research and technology, and set new guidelines to address "cognitive" distraction (when a driver's mind is distracted from driving).
- Warn the public when apps pose special distraction risks.
- Put in place strong standards to accelerate the adoption of proven active safety features, which could save lives in all crashes.

Voice-activated infotainment, navigation, and other features are also widely available in later model vehicles.

Joel Feldman, a Philadelphia attorney whose 21-year-old daughter Casey was killed by a distracted driver in 2009, says he prefers that no one should use a phone while driving. "But if I could snap my fingers today and compel that the only thing we could do with a phone in a car is talk hands-free, I'd take it in a second," he told CR. "I think about the people in these companies. Do they really want their children to use these products in this way?"

Still, David Strayer, a professor of cognition and neural science at the University of Utah, has researched hands-free systems and found they can be as dangerous as handheld smartphones because the brain can still be distracted from driving. He also says that some infotainment systems are more distracting than others, and supports clear regulatory guidelines.

"Texting and social media access are migrating to the car," Strayer says. "In some cases, in-vehicle systems are locking out social media for drivers and in others it is not. It's all over the map."

New laws, stepped-up enforcement, safety campaigns, and special apps might be making a gradual difference. But many safety advocates, including David Friedman of Consumers Union, the policy and mobilization division of Consumer Reports, think that progress has been mixed.

"Everyone needs to shift into a higher gear on the issue of driver distraction," Friedman says. "The Transportation Department should finalize distraction guidelines for devices such as smartphones, and the tech industry should support the DOT's efforts. Automakers and the government should accelerate the rollout of effective driver-monitoring systems of other technologies that can help ensure that drivers pay attention to the road."

Road Test

We conduct more than 50 tests on each vehicle at our 327-acre Auto Test Center. For complete road tests, go to CR.org/cars.



A Brawny Bargain

The **Honda Civic Si** delivers driving excitement, fuel economy, and practicality at a modest price.

THINK OF THE Si as the Civic that pounded a Red Bull. It's the choice for shoppers who crave an engaged driving experience but don't want to break the budget or sacrifice fuel economy.

Available as a sedan or coupe, the Si is a sporty offshoot of its more mainstream sibling, with a beefed-up powertrain and reinforced suspension.

The handling shines, with limited body roll and good grip when driven through sharp turns. The ride is stiff and edgy but not overly punishing.

The Si's heart is a 205-hp

turbo four-cylinder, similar to the engine used in the Civic EX-T trim. But Honda squeezed out 31 more horsepower through aggressive turbo tuning.

While its acceleration isn't quicker than the EX-T's, the Si feels more responsive. Fuel economy is also better, at 34 mpg overall. The Si comes only with a six-speed manual transmission, with crisp action and short throws.

Getting into this low-slung car is a challenge. Once inside, drivers will find that the seat hugs them just right but lacks lumbar adjustment.

The controls are similar to those found in the mainstream Civic models—with the same frustrations, including an infotainment system that has a convoluted menu structure and slow-responding touch screen, which make it fussy to use.

Unfortunately, forward-collision warning and automatic emergency braking aren't available on the Si.

SPORTY CARS

Honda Civic Si

OVERALL SCORE **66**

ROAD-TEST SCORE **74**

HIGHS

Handling, braking, fuel economy, value

LOWS

Ride, controls, access, no advanced safety features offered

POWERTRAIN

205-hp, 1.5-liter four-cylinder turbocharged engine; 6-speed manual transmission; front-wheel drive

FUEL

34 mpg on premium gas

PRICE AS TESTED

\$24,775



A Pretender, Not a Contender

The edgy-looking **Toyota C-HR** suffers from some glaring faults, but it gets points for standard advanced safety features and good fuel economy.

TOYOTA BLURS THE line between the hatchback and subcompact SUV with its C-HR, but it fails to deliver the best qualities drivers expect from either class.

Concessions to the car's edgy styling are dismal visibility and unusual—and awkward—high-mounted rear-door handles that are out of reach for small children. The C-HR doesn't offer all-wheel drive, an option on many other small SUVs.

The engine and transmission are unobtrusive in everyday driving, but try to merge on a highway or climb a hill and the C-HR responds with an

unpleasant whine and sluggish acceleration. It's among the slowest vehicles in CR's ratings, taking more than 11 seconds to reach 60 mph from rest. At least it gets a good 29 mpg overall.

Handling is quite nimble, making the C-HR enjoyable when taking a corner. The taut ride is fine, but the wind noise at highway speeds is obnoxious.

The cabin makes a good impression. The controls are easy to use, and there are premium touches such as an electronic parking brake and automatic high beams. But the backup camera display in the rearview mirror seems like an afterthought.

There's good legroom and headroom up front, but the XLE's driver's seat lacks adjustable back support. The rear seat is relatively roomy, but it feels a bit claustrophobic because of the small windows. The C-HR's Overall Score gets a boost from its standard advanced safety systems.

COMPACT HATCHBACKS

Toyota C-HR

OVERALL SCORE **72**

ROAD-TEST SCORE **64**

HIGHS

Fuel economy, controls, standard advanced safety features

LOWS

Slow acceleration, wind noise, rear visibility, rear access, unsupportive driver's seat

POWERTRAIN

144-hp, 2.0-liter four-cylinder engine; continuously variable transmission; front-wheel drive

FUEL

29 mpg on regular gas

PRICE AS TESTED

\$23,892



Class-Topping Crossover

The rugged yet plush-riding Subaru Crosstrek will satisfy weekday commuters and weekend adventurers.

DON'T BE FOOLED by the modest styling changes—inside and out—from the outgoing Crosstrek. This redesigned version rides on an all-new platform, bringing a quieter cabin, a smoother ride, and improved fuel mileage, all of which help it stay atop our subcompact SUV standings.

The Crosstrek's supple and controlled ride stands head and shoulders above its competition. Handling is responsive, though the SUV isn't as frisky to drive as the Mazda CX-3. The Crosstrek can easily tackle a muddy trail

or rough dirt road thanks to its ample ground clearance and standard all-wheel drive.

The engine is a 152-hp four-cylinder that has just enough juice for most situations—the same can be said for its rivals—but it can feel strained and gruff when pushed. The Crosstrek's 29 mpg overall is commendable for an all-wheel-drive vehicle.

The front seats could use more support for long drives, and lumbar adjustment isn't available. The rear seat provides decent comfort and space for the class. There's also a handy amount of cargo room.

The touch-screen infotainment system is relatively easy to navigate and is compatible with Android Auto and Apple CarPlay. But if you want automatic climate control and a push-button start, you'll spend close to \$30,000.

Automatic emergency braking and forward-collision warning are optional only and not available on the base 2.0i.

SUBCOMPACT SUVs	
Subaru Crosstrek	
OVERALL SCORE	80
ROAD-TEST SCORE	87
HIGHS	Ride, braking, controls, fuel economy
LOWS	Acceleration, engine noise, driver's seat is short on lumbar support
POWERTRAIN	152-hp, 2.0-liter four-cylinder engine; continuously variable transmission; all-wheel drive
FUEL	29 mpg on regular gas
PRICE AS TESTED	\$25,905



Mini Footprint and Max Appeal

Plenty of panache and standard advanced safety features make the Nissan Rogue Sport a standout among subcompact SUVs.

"ROGUE JUNIOR" WOULD be a more apt name for this new subcompact SUV from Nissan. It looks like a shrunken version of the regular Rogue, but it isn't any sportier to drive. It's slower than its big brother and didn't prove to be much nimbler.

Even so, the Rogue Sport comes across as more mature and substantial than most subcompact SUVs, with a pleasant, composed ride and a quiet cabin for the class. We also applaud Nissan for making automatic emergency braking and forward-collision warning standard equipment for all

trims on the 2018 model.

The Rogue Sport's four-cylinder engine and well-tuned continuously variable transmission get the job done, but it could use more zip when merging onto highways. Even with its poke power, fuel mileage is unimpressive, at just 26 mpg overall. The engine sound remains palatable, except when drivers really tromp on the throttle.

Cabin access is a snap because of the wide door openings. Even midtrim Rogue Sports provide a power seat and adjustable lumbar support, but the seats are rather basic, with a squishy cushion that loses support on longer drives. The low rear seat lacks thigh support.

The plentiful storage bins, readily accessible charging ports, and simple, well-placed controls make the Rogue Sport easy to live with. But you can interact with paired phones only using voice controls, which can be tedious.

SUBCOMPACT SUVs	
Nissan Rogue Sport	
OVERALL SCORE	70
ROAD-TEST SCORE	72
HIGHS	Access, controls, standard advanced safety features for 2018
LOWS	Weak acceleration, rear-seat comfort, rear visibility
POWERTRAIN	141-hp, 2.0-liter four-cylinder engine; continuously variable transmission; all-wheel drive
FUEL	26 mpg on regular gas
PRICE AS TESTED	\$25,655

Ratings > **Compact Cool** Who says small cars and SUVs have to be bland? The latest tested models prove that good things do indeed come in small packages.



Recommendations	Make & Model	Overall Score	Price	Survey Results		Safety	Road-Test Results												
				Predicted reliability	Owner satisfaction		Front-crash prevention	Road-test score	Overall mpg	Acceleration 0-60 mph, sec.	Dry braking 60-0 mph, ft.	Acceleration quarter-mile, sec.	Avoidance maneuver speed, MPH	Routine handling	Ride	Noise	Seat comfort front/rear	Driving position-Sporty cars	Controls
SUBCOMPACT SUVs																			
✓	Subaru Crosstrek Premium	80	\$25,905	↓	↑	Opt.	87	29	10.2	125	17.8	54.5	↑	↑	↑	↓/↑	↑	27.5	
✓	Nissan Rogue Sport SV	70	\$25,655	↓	↑	Std./↑	72	26	10.3	134	17.9	52.5	↑	↑	↑	↑/↓	↑	24.5	
✓	Honda HR-V LX	67	\$22,045	↑	↓	NA	66	29	10.5	132	18.1	55.0	↑	↓	↓	↓/↑	↑	32.0	
✓	Mazda CX-3 Touring	65	\$25,800	↑	↓	Std./↑	64	28	9.6	135	17.4	53.5	↑	↓	↓	↓/↓	↓	18.0	
	Chevrolet Trax LT	56	\$25,560	↑	↓	Opt.	55	25	10.8	130	18.2	54.0	↓	↓	↓	↓/↓	↓	26.0	
	Jeep Renegade Latitude	44	\$27,525	↓	↓	Opt.	56	24	9.9	130	17.6	51.5	↓	↓	↓	↓/↓	↑	30.5	
	Fiat 500X Easy	35	\$26,600	↓	↓	Opt.	50	23	9.8	130	17.6	52.5	↓	↓	↓	↓/↓	↑	19.5	
COMPACT HATCHBACKS/WAGONS																			
✓	Mazda3 Sport (manual)	77	\$24,040	↑	↑	Std./↑	73	32	8.2	133	16.6	54.0	↑	↓	↓	↑/↓	↓	2+2	
✓	Kia Soul Plus	74	\$24,115	↑	↑	Opt.	74	26	8.8	127	16.9	53.5	↑	↓	↓	↑/↑	↑	1+1	
✓	Toyota C-HR XLE	72	\$23,892	↑	↑	Std./↑	64	29	11.2	131	18.6	52.5	↑	↓	↓	↓/↑	↑	2+0	
✓	Toyota Corolla iM	71	\$19,995	↑	↓	Std./↑	64	31	10.0	133	17.8	52.5	↑	↓	↓	↑/↓	↑	1+3	
	Volkswagen Golf SE (1.8T)	63	\$25,315	↓	↑	Opt.	82	28	8.7	130	16.7	54.0	↑	↑	↑	↑/↑	↑	2+1	
	Mini Clubman Base (1.5T)	54	\$31,550	↓	↑	Opt.	67	28	10.5	129	17.9	56.5	↑	↓	↓	↑/↓	↓	1+2	
	Fiat 500L	30	\$24,595	↓	↓	NA	50	27	9.5	132	17.4	51.5	↑	↓	↓	↓/↑	↓	2+2	
SPORTY CARS																			
✓	Subaru BRZ Premium	82	\$27,117	↑	↑	NA	79	30	7.2	126	15.6	56.0	↑	↓	↓	↑	↑	1+2	
✓	Toyota 86	81	\$25,025	↑	↑	NA	78	30	7.2	126	15.5	56.5	↑	↓	↓	↑	↑	1+2	
	Honda Civic Si	66	\$24,775	↓	↑	Opt.	74	34	7.3	131	15.4	55.5	↑	↓	↓	↑	↓	3+1	
	Volkswagen GTI Autobahn	65	\$31,730	↓	↑	Opt.	82	29	6.6	132	15.2	55.0	↑	↓	↑	↑	↑	2+1	
	Subaru WRX Premium	65	\$29,742	↓	↑	Opt.	75	26	6.0	120	14.5	59.0	↑	↓	↓	↑	↑	2+2	
	Mini Cooper S	63	\$29,945	↓	↑	Opt.	81	30	7.2	130	15.5	56.0	↑	↓	↓	↑	↑	1+1	
	Ford Focus ST	50	\$28,270	↓	↓	NA	74	26	6.6	122	15.1	53.0	↑	↓	↓	↓	↑	2+1	
	Ford Fiesta ST	48	\$24,985	↓	↓	NA	74	29	7.3	118	15.6	57.0	↑	↓	↓	↓	↓	1+2	
	Fiat 500 Abarth	45	\$26,050	↓	↓	NA	66	28	8.0	125	16.1	55.5	↑	↓	↓	↓	↓	0+3	

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

front-crash prevention features, such as forward-collision warning and automatic emergency braking at city or highway speeds. For these systems, NA means no such system is offered;

Opt. means it's available on some versions but not necessarily on the one we tested; and models with standard systems are rated from ↓ to ↑ based on how many of these features are standard. We now deduct points from

the Overall Score if a vehicle's shifter is confusing, lacks fail-safes, or is difficult to operate. Online subscribers can go to CR.org/cars for complete, up-to-date ratings.

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Riddles on the Road

These signs will make you do a double take

A Concrete Plan

Thank goodness you don't need to bring your driveway to them.

Submitted by Ted Rishel of Long Beach, Miss.



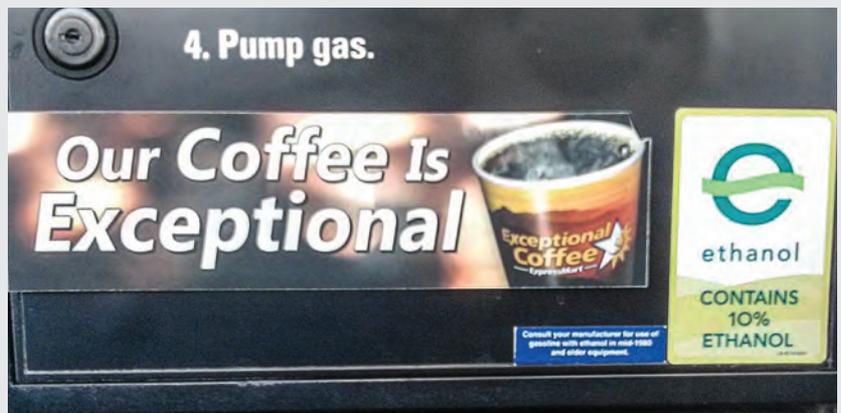
Mixed Signals

So should you stay or should you go?

Submitted by Ed Strauss of Maryland, Del.

Honey, I Shrank the Car

Is this reserved for Stuart Little, perhaps?
Submitted by Pat & Dallas Christiansen of Tsawwassen, British Columbia



Start Your Engines

This coffee may be stronger than you bargained for.

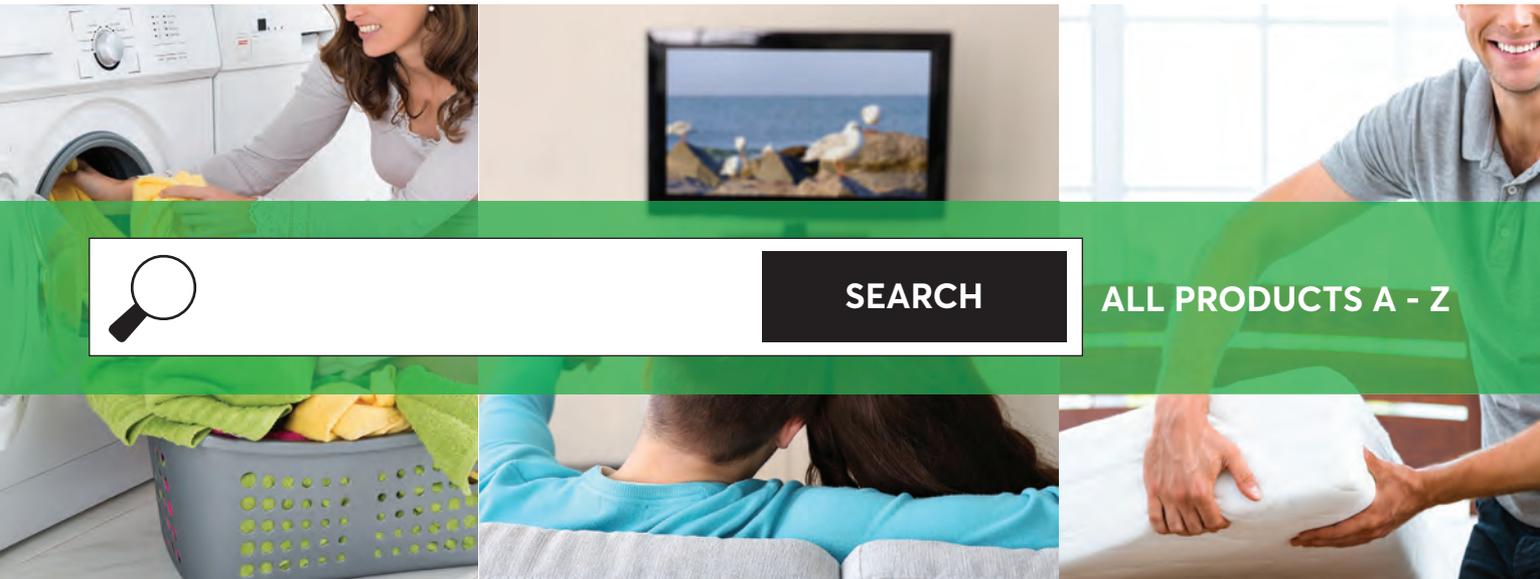
Submitted by Neil Osterweil of Manchester, N.Y.



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Smartphones **32a**
 Robovacs **32b**
 Recalls **32b**
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 Contact Info **32d**

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You can use this section in either of two ways: Start with the main report, read about the products that interest you, and turn to this section to find whether they're sold—and for what price—in Canada.

Or start here, find products sold in Canada whose price and overall score appear promising, and read more about them in the main report and full ratings chart; page numbers appear with each Canadian report. (For some products, the Canadian model designation differs slightly from the one used in the U.S.)

In most cases, the prices we list here are the approximate retail in Canadian dollars; manufacturers' list prices are indicated by an asterisk (*). The symbols shown at right

identify CR Best Buys or recommended products in the U.S. ratings. "NA" in a chart means that information wasn't available from the manufacturer. We include, in the Contact Info list on page 32d, the manufacturer's web address in Canada so that you can go online to get information on a model you can't find in the stores. (Many products that aren't available in Canadian stores can be bought online.)

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- CR Best Buy**
Recommended models that offer the best combination of performance and price.
- Recommended**
Models that perform well and stand out for reasons we note.

Smartphones

Twenty-nine of the tested smartphones are available, including 23 of the recommended models. **Report and ratings, pages 24-29**

Rec.	Rank	Brand & Model	Overall Score	Price
✓	1	Samsung Galaxy S8	81	\$1,035
✓	2	Samsung Galaxy S8+	81	\$1,115
✓	3	Samsung Galaxy S7	80	\$780
✓	4	Apple iPhone 8 Plus	80	\$1,060
✓	5	Apple iPhone 8	80	\$930
✓	6	Samsung Galaxy Note8	80	\$1,300
✓	7	LG G6	80	\$1,000
✓	8	Samsung Galaxy S7 Edge	79	\$930
✓	9	Samsung Galaxy S6	79	\$675
✓	10	Apple iPhone 7 Plus	78	\$900
✓	11	Apple iPhone 7	78	\$740
✓	12	LG G5	77	\$750
✓	13	Apple iPhone 6s Plus	77	\$740
✓	14	HTC U11	77	\$900
✓	15	Apple iPhone 6s	77	\$600

Rec.	Rank	Brand & Model	Overall Score	Price
✓	16	Sony Xperia X Performance	76	\$700
✓	18	OnePlus 5	75	\$650
✓	20	Sony Xperia XZ Premium	75	\$830
✓	24	HTC U Ultra	75	\$700
✓	27	Apple iPhone SE	74	\$410
✓	28	Google Pixel XL	73	\$1,050
✓	30	Google Pixel	72	\$900
✓	35	Sony Xperia XA1	71	\$320
	37	Sony Xperia XA1 Ultra	70	\$350
	39	Motorola Moto G5 Plus	69	\$400
	41	Motorola G4 Plus	69	\$240
	42	Asus Zenfone 3 Zoom	69	\$480
	43	Sony Xperia XA	68	\$350
	46	Samsung Galaxy J3	65	\$225
>	Online subscribers can go to CR.org/smartphones0118 for complete, up-to-date ratings.			

Robovacs

Eighteen of the tested robovacs are available, including 4 of the recommended models. **Report and ratings, pages 18-23**



		Brand & Model	Overall Score	Price
Rec.	Rank			
Ⓢ	2	Ecovacs Deebot M88	86	\$570
✓	3	iRobot Roomba 890	86	\$700
Ⓢ	4	iRobot Roomba 690	84	\$500
Ⓢ	5	Eufy RoboVac 11	81	\$300
	7	Neato Botvac D5 Connected	79	\$750
	8	iRobot Roomba 980	79	\$1,000
	10	Ecovacs Deebot D79	76	\$800
	11	Neato Botvac D3 Connected	76	\$600
	13	Black+Decker HRV425BLP	74	\$360



RECALLS

2005-2010 TOYOTA SIENNA

On certain vehicles, the transmission may be shifted out of Park without first depressing the brake pedal. Have the dealer replace the shift lock solenoid.
Affected: 23,508 vehicles.
What to do: Have the dealer replace the shift lock solenoid.

2006-2010 BMW X3

On certain vehicles, the front passenger-seat occupant detection mat can fatigue over time, potentially deactivating the passenger airbag.
Affected: 12,894 vehicles.
What to do: Have the dealer replace the occupant detection mat.

2009-2011 BMW MODELS

On certain vehicles equipped with the N52 6-cylinder engine,

an electrical short could occur in the engine intake heated blow-by heater. The surrounding plastics could overheat and melt, potentially causing a fire.
Affected: 17,814 2009-2010 X3 and X5; 2009-2011 1 Series, 3 Series, and Z4; and 2010-2011 5 Series vehicles.
What to do: Have the dealer replace the blow-by heater.

2010-2013 KIA SOUL

On certain vehicles equipped with heated cloth seats, the wiring for the seat heater mats could become damaged and could melt a hole in the lower portion of the seat base or backrest, which could result in injury to the seat occupant.
Affected: 43,551 vehicles.
What to do: Have the dealer attach a patch on the seat cushion and seatback heater bridge side and adjust the

Rec.	Rank	Brand & Model	Overall Score	Price
	14	bObsweep PetHair	72	\$300
	15	Bissell SmartClean 1605C	69	\$300
	16	Neato Botvac 80	68	\$700
	17	Miele Scout RX1 Red	62	\$800
	18	Hoover Quest 800 BH70800	59	\$650
	19	Bissell SmartClean 1974	56	\$300
	20	Dyson 360 Eye	55	\$1,300
	21	Hoover Quest 1000 BH71000	53	\$850
	22	Hoover Quest 700 BH70700	46	\$500

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positioning. If there are traces of burning or melting during the inspection, the dealer will replace the heater with a new one and adjust the bridge wire side positioning.

2011-2014 DODGE AND JEEP MODELS

On certain vehicles, a brake booster shield may have been incorrectly installed as part of recall P14/2014-112.

Affected: 42,034 2011-2014 Dodge Durango and Jeep

Grand Cherokee vehicles.

What to do: Have the dealer inspect the installation of the brake booster shield and perform repairs as necessary.

2012-2018 MERCEDES-BENZ MODELS

On certain vehicles, electrostatic discharge, combined with a broken clock spring and insufficient grounding of the steering components, could lead to an inadvertent deployment of the driver's frontal airbag.

Affected: 76,728 2012-2018 B-Class, C-Class, CLA-Class, E-Class, GLA-Class, GLC-Class, and GLK-Class vehicles.

What to do: Have the dealer add sufficient grounding to the steering components. Note: A broken clock spring would result in a driver airbag warning message appearing in the instrument cluster, as well as a red airbag warning lamp illuminating.

2013-2016 AUDI MODELS

On certain vehicles, the contacts within the electrical connector of the auxiliary heater could corrode, increasing the risk of a fire.

Affected: 36,824 2013-2016 A4, A5, AllRoad, and Q5 vehicles.

What to do: Have the dealer replace the auxiliary heater and update vehicle software as necessary.

Autos

All of the tested vehicles are available in Canada. **Report and ratings, pages 58-60**

Make & Model	Price Range	Acceleration (sec.)				Fuel Economy (liters per 100 km)		
		0-50 km/h	0-100 km/h	80-100 km/h	500 Meters	City Driving	Highway Driving	Overall
SUBCOMPACT SUVs								
Subaru Crosstrek	\$23,695 - \$33,195	4.2	10.7	4.3	20.4	11.5	6.1	8.1
Nissan Qashqai (Rogue Sport)	\$19,998 - \$29,498	4.0	10.9	4.3	20.5	12.5	7.0	9.1
COMPACT HATCHBACK								
Toyota C-HR	\$24,690 - \$26,290	5.0	11.8	4.9	21.3	12.1	5.6	8.1
SPORTY CAR								
Honda Civic Si	\$28,590 - \$28,990	3.0	7.7	2.9	17.6	10.3	5.0	7.0

SUBARU CROSSTREK
PRICE AS TESTED
\$25,905 (U.S.)

80
OVERALL
SCORE



NISSAN QASHQAI (ROGUE SPORT)
PRICE AS TESTED
\$25,655 (U.S.)

70
OVERALL
SCORE



TOYOTA C-HR
PRICE AS TESTED
\$23,892 (U.S.)

72
OVERALL
SCORE



HONDA CIVIC SI
PRICE AS TESTED
\$24,775 (U.S.)

66
OVERALL
SCORE



Contact Info

How to reach manufacturers in Canada.

Apple
apple.com/ca

Asus
asus.com/ca-en

Bissell
bissell.com/vacuums/robotic-vacuums

Black+Decker
blackanddecker.com

bObsweep
bobsweep.com

Dyson
dysoncanada.ca

Ecovacs
ecovacs.com/ca

Eufy
eufylife.com

Google
store.google.com/ca

Hoover
hoover.ca/products/category/robot-vacuums

HTC
htc.com/ca

iRobot
irobot.com

LG
lg.com/ca_en

Miele
miele.ca/en

Motorola
motorola.ca

Neato
neatorobotics.com

OnePlus
oneplus.net/ca_en

Samsung
samsung.ca

Sony
sonymobile.com/ca-en