WHO IS WATCHING YOU?

Apps. Digital Photos. GPS. Smart Speakers.
Easy & effective ways to take more control of your digital privacy.

TOP 10 RELIABLE USED CARS STARTING AT $12,000

BEST DIY HOME SECURITY SYSTEMS

6 WAYS TO BOOST YOUR RETIREMENT SAVINGS—EVEN IF YOU'RE STARTING LATE

REVIEWS & RATINGS
- Microwaves
- Printers
- Truck Tires
- Bottom-Freezer Fridges
- Range Rover Evoque

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*Between 7/1/18 and 9/30/18, the average savings off MSRP presented by TrueCar Certified Dealers participating in the Consumer Reports Build & Buy Car Buying Service, based on users who received in-stock price offers and who TrueCar identified as purchasing a new vehicle of the same make and model as one of the in-stock price offers from a Certified Dealer as of 10/31/18, was $3,016. Your actual savings may vary based on multiple factors, including the vehicle you select, region, dealer, and applicable vehicle-specific manufacturer incentives, which are subject to change. The MSRP is determined by the manufacturer, and may not reflect the price at which vehicles are generally sold in the dealer’s trade area as not all vehicles are sold at MSRP. Each dealer sets its own pricing.
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ABOUT CONSUMER REPORTS
Consumer Reports is an independent, nonprofit organization founded in 1936 that works side by side with consumers to create a safe, fair, and transparent marketplace. To achieve our mission, we test thousands of products and services in our labs each year and survey hundreds of thousands of consumers about their experiences with products and services. We pay for all the products we rate. We don’t accept paid advertising. In addition to our rigorous research, investigative journalism, and consumer advocacy, we work with other organizations, including media, consumer groups, research and testing consortiums, and philanthropic partners. We also license our content and data, as well as work with business partners to offer shopping and other consumer services, and may receive fees from these programs. We maintain a strict separation between our commercial operations and our testing and editorial operations. Our testing and editorial teams decide which products to test and review, our external business partners or other third parties do not dictate or control these decisions. Lastly, these partnerships and programs do not constitute CR’s endorsement of any products or services.

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

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GOOD
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From the President

Keeping Your Data Safe

WHEN YOU DOWNLOAD an app, share a digital photo, or set up a smart speaker in your home, your personal data is at risk of being exploited by tech and other companies. Most of us have no idea that we’re vulnerable to such intrusions—even if we spend hours reading long, dense “terms of service” agreements and privacy agreements. Consumer Reports is committed to helping you take back control of your personal data. This month, we’re sharing a variety of tips you can put to use immediately, such as managing your passwords, changing your smartphone settings, and stopping the routine sharing of your data that happens when you conduct a web search.

It’s also why we’ve created a new Digital Lab to advance and protect your rights in the digital age. In recent years, CR has exposed hidden risks in products, apps, and services. This new lab will expand on that work to make sure you have the tools you need to safely navigate the digital marketplace and make smart choices about products and services that are ever more complex. By bringing our trusted product testing, investigative journalism, and advocacy to bear on the digital world, we hope to hold corporate giants accountable for data security, privacy, and fair marketplace competition the same way we’ve always held industries accountable for safety and performance.

From the Equifax data breach to the exploitation of our private Facebook profiles in political campaigns, we understand that privacy violations and data abuse are a hidden threat of this connected world. With CR’s help, you’ll be armed with the information you need to engage with new technologies on your terms—without having to compromise your personal data.

Marta Tellado
President and CEO

The Consumer Reports Annual Meeting is nearly here. This year it will be held the evening of Oct. 16, 2019, in Washington, D.C. Please go to CR.org/annualmeeting for the time and exact location of this year’s event, and if you are a paid member of CR, please watch your email for an electronic ballot to vote on the current CR Board of Directors slate. If you haven’t provided your email address, you can do so by calling us at 800-333-0663 or by going to CR.org/myaccount.

CRM10_From_the_Prez_Masterhead [P] 4886469.indd 6
8/8/19 4:35 PM
Stopping Surprise Bills

**WHAT’S AT STAKE**

When you go to a hospital that’s in your health insurer’s network, you might assume that your care will be covered. Unfortunately, that’s not always the case: You can end up with a sizable surprise bill if an out-of-network doctor assists during surgery or is on duty in the emergency room, or when your sample is sent to an outside lab. You don’t control these things, but you can pay mightily for them. “It is fundamentally unfair to get hit with out-of-network bills when you’re treated at healthcare facilities covered by your insurance,” says Dena Mendelsohn, senior policy counsel at CR.

**HOW CR HAS YOUR BACK**

CR has been a leader in advocating for laws to protect patients from surprise medical bills. New York’s governor is soon expected to sign a CR-backed bill to make excessive emergency room charges subject to an independent dispute resolution process. We are pushing similar laws in California and at the federal level, where legislators in both parties say it’s time to stop this unfair practice. CR has endorsed the No Surprises Act, a bill in the U.S. House of Representatives to prevent surprise bills from out-of-network providers in emergency rooms and at in-network facilities. And we’ve endorsed similar legislation in the U.S. Senate.

**WHAT YOU CAN DO**

Learn how to avoid surprise medical bills at CR.org/medicalbills. And if you’ve been hit with one, tell us your story at CR.org/surprise1019.

Protecting Data Security

**WHAT’S AT STAKE**

We seem to hear about another theft of consumer data almost daily. The massive Equifax breach in 2017 is only the most notorious case. Capital One, Dunkin’, Microsoft, Quest Diagnostics, and the Federal Emergency Management Agency have acknowledged breaches or vulnerabilities in 2019 alone. All told, hundreds of millions of Americans have been exposed to the risk of identity theft in recent years.

Yet for all the headlines, laws pertaining to data breaches remain woefully out-of-date—and largely ineffective. That could begin to change with the passage in New York of the Stop Hacks and Improve Electronic Data Security (SHIELD) Act, which would raise standards for the handling of customer data and broaden requirements for consumer notification.

**HOW CR HAS YOUR BACK**

CR engaged in a yearlong effort to advance the SHIELD Act, working with Albany lawmakers and testifying in favor of the bill. It passed the legislature in June, and Gov. Andrew Cuomo is expected to sign it soon. But pushing for stronger laws is just one part of CR’s broader effort to expand digital security rights and protect consumer privacy. This summer we launched our Digital Lab to develop new ways to test and report on the security of digital products and services.

**WHAT YOU CAN DO**

See our cover story this month, starting on page 24, and to stay apprised, go to CR.org/dataprivacy.

Reinforcing Recall Alerts

**WHAT’S AT STAKE**

In 2016 IKEA announced a recall of millions of unstable dressers, including its Malm line, which had been tied to seven child tip-over deaths and at least 17 injuries. The recall came after months of pressure from CR and other groups. More than three years later, it has become clear that not enough has been done to get those dangerous dressers out of U.S. homes. Three more children have since been killed, and at least 127 more people injured, by IKEA dressers.

**HOW CR HAS YOUR BACK**

This June, on the third anniversary of that recall, CR and other consumer advocates joined parents who lost children to furniture tip-over incidents in front of IKEA’s New York City store. They called on the company to do more to alert parents about the risk and make it easier for customers to return the dressers or have them picked up at their homes.

In response to questions from CR’s reporter, IKEA released updated recall data for the first time in two years: The company has issued only 400,000 refunds, meaning an overwhelming portion of the recalled dressers—at least 15 million—are unaccounted for, with many probably remaining in people’s homes.

“When unsafe products are recalled, companies must do everything in their power to alert consumers and get these products out of homes,” says Meagen Bohne, CR’s associate director of campaigns. “They need to be proactive, transparent, and thorough in their efforts—and we must have government enforcement to hold them accountable.”

**WHAT YOU CAN DO**

If you have a recalled IKEA dresser, email secureit@ikea.com or call 866-856-4532 to have it picked up at your home for a refund or an exchange. And go to CR.org/sturdyact to support the Stop Tip-overs of Unstable, Risky Dressers on Youth (STURDY) Act, a bill that would require the Consumer Product Safety Commission to set a mandatory rule for dressers that is stronger than the industry’s current voluntary standard.
Our August 2019 article “Safety Systems That Could Save Your Life” examined crucial new car technologies. Readers raised important questions and shared their experiences. To join in, go to CR.org/safecar1019.

AS A DRIVER SAFETY instructor with 20 years’ experience, I have been tracking the introduction of safety-related systems in cars. Your article provides the first “real world” data I have seen about the positive impact advanced driver assistance systems (ADAS) are having on driver safety. I will for sure be including information from the article in future classes. There was one key point that I did not find: Adverse weather conditions (snow, ice, rain, etc.) can adversely affect their functioning. Every driver of a vehicle with ADAS needs to know this.

—Peter Eddy, Bainbridge Island, WA

EDITOR’S NOTE Many situations could cause a system to work improperly or not at all, including weather (yes, even rain). A good system will alert the driver when there is low confidence in the system’s performance. Because the systems might not always work, even on a perfect, sunny day (for reasons other than weather), we advise drivers to always be attentive.

As I’m looking at purchasing a new vehicle, your article couldn’t have been timed better. It’s very thorough and has provided me with the knowledge I need. Thank you.

—Lindsey Sparks, via CR.org

Your article should also alert consumers that the front windshield holds much of the technology to provide “eyesight” and that a small stone crack may develop into a lengthy line crack across the windshield, as it did on our 2016 Subaru. It is an expensive repair, even with insurance.

—William Atkins, Brush Prairie, WA

EDITOR’S NOTE You’re right that the costs of replacing new windshields are increasing because of the required sensor calibrations. It’s an issue we’re continuing to look into. Cracks, dirt, and debris on your windshield can cause problems—but that’s not the only trouble area. In many models, there are sensors all around the car. Damage to a bumper, fender, or side mirror could cause the sensors there to no longer work and add to the cost of the repair.

I read with great interest your story about driver assist crash-prevention systems. My car has lane assist and forward collision warning; both have been activated by shadows.

—Elizabeth Davenport, Noblesville, IN

EDITOR’S NOTE Shadows have presented a problem for certain early safety systems we’ve tested. The cameras for systems such as lane keeping assist are looking for contrast in lane lines and can be fooled by shadows. Our surveys and personal experiences show that some newer systems are better at avoiding this.

I laughed when I read that consumers turn off lane departure warning because it’s annoying. Keeping to your lane seems to have gone the way of polite driving practices, like leaving room for someone to merge. I can’t wait for self-driving cars.

—Nancy Azzolini, Wayne, NJ

I just read your helpful report “The Brave New World of Grocery Shopping” (August 2019), and although you covered many important criteria to consider when selecting a supermarket, I was hoping to see ratings on each supermarket’s use of plastic. With increased awareness of the perils of plastic pollution, active steps to reduce use of plastic is one of the key criteria many of us use to select a grocery store.

—Esther Berkowitz, Milwaukee

EDITOR’S NOTE That’s a great point. Some states (including California and New York) have passed laws limiting plastic bag use, and some municipalities restrict grocers from using plastic bags. Additionally, certain stores—highly rated Trader Joe’s, for instance—don’t provide an option for plastic bags at checkout. CR does still advise that shoppers use the thin plastic bags that grocers supply in the aisle for items susceptible to contamination, such as produce. We hope to cover more supermarket aspects in future articles.
as raw chicken, and not to reuse them. Wash reusable cloth bags frequently, using a hot water cycle.

HOW DOES ONE actually find items in the market, when there is never anybody around to ask? I often waste time combing the aisles, looking for something that isn’t where I think it should be. How about an app, where one could type in what is needed, and it would respond with which aisle it is in. What a time-saver!

—Scott Wood, Torrance, CA

EDITOR’S NOTE Some exist! Large retailers—Kroger, Target, and Walmart—have an item-finder feature on their apps so that consumers can locate products in their aisles.

I CAN ALWAYS tell when a “buy one, get one free” offer will be in next week’s grocery circular. It’s because the store has suddenly doubled the “regular price” on an everyday item ... but only for a few days. A “regular price” like that would make any shopper irregular.

—David Fone, Prescott Valley, AZ

THANK YOU for the review of 8K TVs (“Should You Buy an 8K TV?” CR Insights, August 2019). You discuss many relevant details but fail to mention the screen finish and reflections. I watch in a room with ambient light. Virtually all modern flat-screen TVs are glossy and have annoying reflections.

—Elliott Berger, Indianapolis

EDITOR’S NOTE In our labs we’ve seen most TVs move to a glossy finish. While there’s not much you can do about reflections, some TVs are more reflective than others. If you’re looking at displays in a store, wait for a dark part of the demo video to catch a reflection of the ceiling lights. That should give you an idea of what to expect.

—T. Alex Shimada-Brand, via Torrance, CA

THANK YOU for the excellent review of appliances. However, in 2016 the appliance manufacturer Haier purchased GE Appliances. You did not mention this.

—Bernard White, Dallas

EDITOR’S NOTE In our product surveys, we ask members whether the products they own have broken or stopped working as they should, and then use that data to make predictions about how new models from a given brand will hold up over time. Regardless of who manufactures a product, the real-world experiences of how it holds up will show up in our data.

THANK YOU for the excellent “Secrets to Credit Score Success” (August 2019). This article is especially important for younger people. Being a Realtor, I often see people unable to purchase a home because of low credit scores. I hope you again feature information on this. It needs to be seen by more people.

—Thomas P. Stanko, Jacksonville, FL

CORRECTION: In “The Electric Car Comes of Age” (September 2019, on page 56) the IRS provided incorrect information to our reporter. The article stated: “These tax credits are subtracted from the adjusted gross income on the tax return buyers prepare the following year, reducing the total income on which they must pay federal taxes.” The IRS has since provided the correct information: These electric-vehicle tax credits reduce a person’s federal income tax liability, not a person’s total adjusted gross income.
What We’re Testing in Our Labs ...

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

Countertop Microwaves Under $100

**WE TESTED:** 12 models  
**WE TEST FOR:** Speed and evenness of heating, defrosting evenness, noise while microwaving, and ease of use. We also measure a model’s usable capacity.

**ABOUT THE SCORES:**  
Median: 55  
Range: 46-67

<table>
<thead>
<tr>
<th>Model</th>
<th>Overall Score</th>
<th>Price</th>
<th>Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Speedy Heat &amp; Even Defrost</strong></td>
<td>67</td>
<td>$90</td>
<td>(12x21x16 inches)</td>
</tr>
<tr>
<td>Danby DMW11KNLBD</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Stainless Steel &amp; Quiet</strong></td>
<td>66</td>
<td>$80</td>
<td>(12x20x17 inches)</td>
</tr>
<tr>
<td>Magic Chef MCM1110ST</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Countertop Space Saver</strong></td>
<td>65</td>
<td>$70</td>
<td>(10x18x13 inches)</td>
</tr>
<tr>
<td>Avanti M07191TW</td>
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</tbody>
</table>

Bottom-Freezer Refrigerators

**WE TESTED:** 21 models  
**WE TEST FOR:** Thermostat control, temperature uniformity, energy efficiency, and ease of use. We also measure a model’s usable capacity.

**ABOUT THE SCORES:**  
Median: 73  
Range: 40-89

<table>
<thead>
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<th>Model</th>
<th>Overall Score</th>
<th>Price</th>
<th>Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Large Capacity</strong></td>
<td>89</td>
<td>$1,300</td>
<td></td>
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<tr>
<td>LG LDCS24223S</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td><strong>Cool Price</strong></td>
<td>85</td>
<td>$900</td>
<td></td>
</tr>
<tr>
<td>Kenmore 69313</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Cabinet Depth, With In-Door Water Dispenser</strong></td>
<td>73</td>
<td>$2,300</td>
<td></td>
</tr>
<tr>
<td>Fisher &amp; Paykel ActiveSmart RF170WDRUX5</td>
<td></td>
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</tbody>
</table>

Ask Our Experts

**Which has more freezer space: a top- or bottom-freezer fridge?**

While bottom-freezer refrigerators offer the convenience of keeping more fridge items at eye level, “they tend to have smaller freezers because of the space lost to organizer bins and sliding hardware,” says Jim Nanni, head of appliance testing for CR. In fact, some top-freezers offer about a cubic foot more freezer space than the biggest bottom-freezer fridges we’ve tested. Still, if you prefer the bottom-freezer style, the LG shown above has more usable freezer space than most we’ve tested, at 4.8 cubic feet. (The manufacturer’s claimed capacity is often larger than the actual usable capacity we measure.) All-Access and Digital members can look up our “usable capacity” measurements at CR.org/fridge1019.
Frying Pans Under $25

**WE TESTED:** 8 pans

**WE TEST FOR:** How evenly a pan browns pancakes on a gas range, how easily eggs slide off the pan’s surface, the durability of a nonstick coating, and more.

**ABOUT THE SCORES:**
Median: 59
Range: 54-75

---

**Best Value Overall**
10" Member’s Mark Nonstick (Sam’s Club) $15

**Evenly Browns Food**
10" Red Copper Nonstick $20

**Works on Induction Cooktops**
10" Copper Chef Nonstick $20

---

Black & White Laser Printers Under $100

**WE TESTED:** 9 models

**WE TEST FOR:** How fast a model can print text, and the quality; the appearance of black and white graphics; ease of use; and more.

**ABOUT THE SCORES:**
Median: 72
Range: 64-80

---

**Speedy Text & Best Graphics**
Samsung Xpress M2835DW $90

**Most Reliable**
Brother HL-L2315DW $90

**Petite & Very Reliable**
HP Laserjet Pro M15w $90

---

Truck Tires

**WE TESTED:** 53 tires

**WE TEST FOR:** Braking in dry, wet, and icy conditions; handling, including steering feel; ride comfort; noise; rolling resistance; tread life; and more.

**ABOUT THE SCORES:**
Median: 66
Range: 54-74

---

**Best All-Season Tire**
Continental CrossContact LX20 EcoPlus (size tested: 265/65R17) $153

**Excels on Snow and Ice**
Michelin Latitude X-Ice XI 2 (size tested: 265/70R17) $180

**Good Deal for All-Terrain**
Nexen Roadian AT Pro RA8 (size tested: 265/70R17) $123

---

Strollers

**WE TESTED:** 11 umbrella-style models; only some are safe for babies under 6 months

**WE TEST FOR:** Safety, ease of folding and braking, and how well a model maneuvers our multi-terrain test course.

**ABOUT THE SCORES:**
Median: 72
Range: 53-74

---

**Deal on Wheels**
Summer Infant 3D Lite (12 lb.) $80

**Super Lightweight**
Maclaren Mark II (7 lb.) $200

**Fully Reclining Seat**
Joovy Groove Ultralight (14 lb.) $140

---

For the latest ratings of these and other product categories, readers with a Digital or All-Access membership can go to CR.org.

**Note:** We rate different products according to different testing protocols; as a result, Overall Scores of one product category are not comparable with another.
How critical is it that I rotate my tires regularly?

This common maintenance task—which should typically be done every 5,000 to 8,000 miles—isn’t one you should ignore. It may seem minor, but remember: Tires are the only thing that comes between your two-ton vehicle and the road. Well-maintained tires will help you travel safely for tens of thousands of miles.

Without rotation, tires may not wear evenly. Front tires play a larger role in braking, and on front-wheel-drive vehicles they must claw for traction, which means they wear out more quickly. Plus, minute variations in suspension and alignment can introduce uneven wear patterns. All of this can impact your car’s ride and noise level, as well as the tire’s longevity.

“Spreading wear around all four tires ensures even tread depth and grip,” says Chris Jones, a certified mechanic and tire technician for CR. “A visit to the mechanic is also an opportunity for a pro to inspect your tires for damage and proper inflation.”

Your owner’s manual will have guidance on the rotation pattern (some are front-to-rear, others side-to-side) and frequency. Tire rotation can cost up to $60, but shop around: Some retailers may provide the service free of charge.

How can I keep my black clothing from fading?

Wearing black never goes out of style—except if your clothes are faded and covered in fuzzies or detergent streaks. The more you wash black clothing, the more dye washes away, especially with black denim.

Before you toss your black garment in the washer, turn it inside out to shield it from the agitation or tumbling of your machine, which breaks down the fibers in fabrics and causes them to appear faded. Some detergent won’t dissolve well in very cold water, which can cause streaks. Use cool or warm water (generally above 60° F) to help detergents dissolve and keep the fibers from losing their color.

More of the same is expected for 2020, so you’re right to be cost-conscious when choosing a plan this fall, says Donna Rosato, senior money editor at CR.

Start with a careful comparison of plans. What plans cover and cost changes, probably more than you’d expect. Don’t assume last year’s election will still be the best fit—it could be a lot costlier this time around.

Another great way to keep costs in check is to fund a flexible spending account or health savings account. Those tax-free dollars you put away will make what you spend on care go that much further. And don’t forget to use the wide range of free preventive medical services available on most plans. Taking care of yourself now could prevent the need for more expensive care later, Rosato says.
In the Know

The Right Way to Sit Behind the Wheel

Tell the right time. Your hands should be placed at 9 and 3 o’clock, with a slight arm bend. This helps with control, and your arm is less likely to be injured by a deploying airbag.

It’s all in the wrist. You should be able to rest your wrist on the top steering wheel rim. Use steering wheel tilt and telescoping adjustments to accomplish this.

Fancy foot work. Your feet should easily reach the pedals, allowing you to brake fully and firmly.

Make room for a view. Adjust the seat height to optimize your view over the hood. If you can’t tell how close other cars are, you’re not up high enough.

Aim for the hip. The lap belt should be low on your lap so that it hugs your hip bones, which are stronger than the softer areas of your abdomen.

Get a head start. Line up the top of the head restraint with the top of your head, or at least the top of your ears. Leave no more than 4 inches between the back of your head and the head restraint.

Use your belt anchor. The seat belt should cross the center of your left collarbone. Newer cars have an upper adjustable belt anchor on the door pillar to help provide the best position.

Sit up straight and centered to keep your body in alignment with airbags. This posture also helps you better control the vehicle and remain alert.
How Likely Are You to Hit a Deer?

“FALL DRIVING MEANS more deer are active and more people are driving on darker roads due to the shorter daylight hours,” says Jen Stockburger, director of operations at the CR Auto Test Center. Deer are most active at dawn and between 6 p.m. and 9 p.m., so use your high beams, Stockburger says. If you’re about to hit a deer, don’t swerve—just brake. Swerving can cause you to lose control or crash into another car, both scenarios that could result in more injury than striking an animal. And don’t count on aftermarket deer whistles that attach to front bumpers to scare them off; deer reaction is too unpredictable. Though automatic emergency braking and forward collision warning can help, your seat belt is still the best defense for minimizing injury. Past research has found that more than half of people killed in animal-vehicle collisions weren’t wearing their seat belts. Also, be extra vigilant in high-risk states, such as West Virginia.

CR Time Traveler

1925 President Calvin Coolidge proclaims the first National Fire Prevention Week in the month of October.

1939 Each year, 200 people are burned to death using inflammable cleaning liquids in the home, CR reports. Our testing reveals three that are unsafe.

1944 We test a product called the Match King—a lighter that has a metal “match” and flint strip—and find that the flame often envelops the entire match, making it a fire hazard.

1951 Less than 2 percent of American homes have fire extinguishers. CR shows readers the types available, such as the hand-powered water model below, along with a guide for when and how to use them.
Face-Off

Peanut Butter Cups

The classic milk chocolate Reese’s peanut butter cup has been around since 1928. Today, Reese’s and other brands tout a ton of tempting new options, including dark chocolate and organic ingredients. But does that make them a healthier choice? Our nutritionists say that a dark chocolate cup, which is richer in antioxidants, is indeed better than a milk chocolate one, and organic can mean better ingredients—but you still need to check labels before biting in.

We compared three national brands of dark chocolate PB cups. While the calorie counts are all similar, Theo cups are much lower in sodium and sugar than the other two and use the highest-quality ingredients of the three, with the main ingredients being cocoa beans and roasted peanuts. Both Theo and Justin’s are organic, which means they cannot contain synthetic ingredients such as those found in Reese’s. But don’t forget that even the best of the bunch is still candy, says CR nutritionist Amy Keating.

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1968 We warn against 100 percent acrylic carpets, a large part of the market, due to the flammability risk. In testing, 10 out of 14 all-acrylic samples catch fire.

1964 Some fire extinguishers contain "carbon tetrachloride," producing poisonous gas when used on a fire. Our chemists say not to buy this type. (By 1970, the Food and Drug Administration bans carbon tetrachloride home-use products.)

1976 We ignite four fire types. None set off our heat-triggered sprinklers; only smoke detectors work.

1994 We test fire extinguishers outdoors on a remote section of CR property. A Buckeye model (below) is one of the best performers.

2019 Our labs have been recording response times of photoelectric, ionization, and dual smoke detectors to fires for well over a decade. Today’s top-rated dual model is below.

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Photos, bottom from left: Mansell/The LIFE PICTURE COLLECTION/GETTY IMAGES, CONSUMER REPORTS. Photo: John Walsh/CONSUMER REPORTS.
Product Spotlight

Tankless Water Heaters

Though storage tank water heaters are the most common type, tankless water heaters are gaining market share—with a reputation for running more efficiently, potentially saving you money over time. That’s appealing, given that heating water is the average U.S. home’s second-highest utility cost after heating and cooling the house itself.

Switching types is expensive when you factor in pro installation, but if your storage tank water heater is failing or you’re building a new home, a tankless water heater is worth a look.

We tested electric and gas whole-house models, including those from Bosch, Navien, Rheem, and Trutankless, to see how they compare with storage models. We did not find meaningful performance differences between the brands within a type—all were adequate—so our chart compares types rather than scoring models.

**Storage Tank**

Typically hold between 30 and 60 gallons

Typically hold 1.5 ft.*

Typically hold 5 ft.* or larger

**Tankless**

Heat the water as it passes through

Typically hold 1.5 ft.*

Typically hold 2 ft.*

*Size varies by model. Newer storage models have more insulation, so they may take up more space than old ones.

How They Work

These continuously heat water, so when you ask for hot water, it’s ready with no lag time. But that means you’re paying to heat water whether you need it or not.

These heat water only when you turn on the tap. Depending on your unit’s power and the temperature of your groundwater, you may need to wait for water to get hot.

Approximate Purchase & Installation Costs

- $570 (electric) or $600 (gas) for a 50-gallon tank; larger capacities cost more. Add $600 to $800 for pro installation, or more if your existing hookups are not compatible.
- $525 to $1,150
  
  Add $800 to $1,500 for pro installation. Plus, some models may require upgrades to your gas pipes or home electrical service.

Annual-Use Cost**

- $245 (gas) or $580 (electric)
- $195 (gas) or $535 (electric)

Testing Performance

Both gas and electric models easily delivered a steady supply of hot water that reached our target temperature of 120° F. Two electric models—a Bosch and a Rheem—did when the incoming water was 74° F, but not when it was 58° F.

Gas models hit our target water output temperature of 120° F. Two electric models—a Bosch and a Rheem—did when the incoming water was 74° F, but not when it was 58° F.

Annual-Use Cost**

- Based on an average price of $10.86 per 1,000 cubic feet of natural gas and an average electricity rate of $0.132 per kWh.

A Vacuum Leaf Blower

If you spend a lot of time piling and bagging leaves each fall, a vacuum leaf blower might seem like a tempting one-tool solution. With a built-in vacuum mode and snap-on leaf collection bags, these blowers can suck up leaves and shred them, with some that promise to reduce leaves into a twelfth or even a sixteenth of their original volume. That means fewer bags to put at the curb.

Though the electric plug-in Toro shown above keeps that mulching promise, our testing revealed that other vacuum blowers don’t quite. (We tested 13 models.) Some shredded leaves down to only a third or a quarter of the original volume and collected just a small quantity of leaves before the bag got full. “The vacuum on most leaf blowers isn’t designed to deal with huge piles of leaves,” explains Misha Kollontai, CR’s leaf blower tester. Also, we haven’t seen any vacuums on battery-powered models, which can be more convenient than gas or corded types.

However, the right vacuum blower could still save you time and effort if you have a small yard, or if you want to surgically suck up leaves from around bushes and flower beds. To see full ratings, All-Access and Digital members can go to CR.org/leaf1019.
MANY COMPANIES now offer “healthy” snack bars for kids. The distinctions from adult bars are that they are generally a bit smaller, can be heavy on the chocolate offerings, and may have drawings of dinosaurs on the packaging. But does that really make them a good choice for kids? Our nutrition experts evaluated the ingredients and nutritional information for 12 different kids’ snack bars. “When it comes to kids, calories aren’t the main concern,” says Amy Keating, R.D., a CR nutritionist. Instead, our testing and scoring weighed factors such as natural vs. added sugars; whole vs. refined grains; and isolated, processed sources of protein vs. protein from whole foods.

For example, some bars contained processed sources of fiber and protein, such as inulin, but fiber is best for you when it comes from minimally processed whole foods, such as oats or other grains. We also noted whether rice products were used, because CR research has shown that rice may contain worrying amounts of arsenic. Our two top-rated bars contained no rice, fewer added sugars, and no processed protein or fiber. Several others aren’t as healthful as the wrapper vibe might suggest. Below, our results for all 12 bars.
MAZDA VEHICLES
Mazda is recalling 9,430 of its 2019 Mazda3 sedans because the head restraint may not lock into place, which raises the risk of injury in a crash, according to the National Highway Traffic Safety Administration. Because of improper installation of the seat cover material for the driver and front-passenger seatbacks, the material may interfere with the head restraint lock-release button, causing the button to be stuck in the released position. In this condition, the restraint can be moved freely and can't lock into the vertical height adjustment at the desired position. If a crash were to occur, NHTSA says, the head restraint could become loose and injure occupants in a crash.

What to do: Owners may contact Mazda customer service at 800-222-5500. Dealers will install spacers at the bottom of the lock-release buttons on both front-seat head restraints, at no charge to owners. Mazda's number for this recall is 3819F.

SMOKE AND FIRE ALARMS
Universal Security Instruments is recalling about 180,000 battery-powered smoke and fire alarms because they can have a misaligned internal switch, causing the alarm to not activate properly, posing a risk of failure to alert to a fire. The alarms were sold online through specialty wholesalers and others from July 2015 to December 2016 for about $20.

What to do: Inspect the smoke alarm to determine whether it will activate appropriately. Press the test button, and if the alarm sounds, no further action is needed. Additional instructions are on the company's website, at universalsecurity.com. If the smoke alarm does not sound during the test, contact Universal Security for a replacement at 877-612-6955.

PORTER-CABLE PORTABLE TABLE SAWS
Porter-Cable is recalling about 258,000 10-inch table saws because the motor can overheat, creating a fire hazard. The saws were sold at Lowe's from June 2016 through September 2018 for $100 to $180.

What to do: Stop using the table saw. Contact Chang Type (the manufacturer) at 877-206-7151 or go to www.recallrtr.com/PCsaw for details and a refund.

FITZ AND FLOYD MUGS
Lifetime Brands is recalling about 150,000 Fitz and Floyd Nevaeh White mugs because the mugs can crack or break when used with or exposed to hot liquids, posing burn and laceration hazards. The mugs were sold at Bed Bath & Beyond stores and online at bedbathandbeyond.com from January 2013 through April 2019 for $8 to $10 for the mug alone and $30 for a four-piece dinnerware set.

What to do: Stop using the mug. Call Lifetime Brands at 888-561-2269 or go to fitzandfloyd.com for details and to get a free replacement mug.

GILLETTE VENUS RAZORS
Gillette is recalling about 87,000 Venus Simply3 disposable razors because a manufacturing problem resulted in misalignment of the blades, posing a higher risk of cuts during use. The razors were sold at stores nationwide from January 2019 through May 2019 for $6 to $10.

What to do: Stop using the razor. Contact Gillette at 800-362-1258 or go to gillettevenus.com for details and to get a postage-paid return label to return the razors and receive a voucher for a replacement.

DISNEY PLUSH TOYS
Disney is recalling about 80,000 Forky 11-inch plush toys because the "googly" plastic eyes on the toy can detach, posing a choking hazard to young children. The toys were sold at Disney Stores and Disney Theme Parks, online at shopdisney.com, and through the Disney Store on Amazon Marketplace from April 2019 through June 2019 for about $20.

What to do: Take the toy away from children and return it to any Disney Store, Walt Disney World, or Disneyland Resort store for a full refund. Call Disney at 866-537-7649 for details.

FISHER-PRICE INCLINED SLEEPER ACCESSORIES
Fisher-Price is recalling about 71,000 inclined sleeper accessories included with Ultra-Lite Day & Night Play Yards because infant fatalities have been reported while using other inclined sleep products. The American Academy of Pediatrics discourages the use of any inclined sleep product because they increase the risk of airway compression, suffocation, and death.

What to do: Stop using the inclined sleeper accessory, and call Fisher-Price at 800-432-5437 or go to service.mattel.com for details and to get a refund or voucher. You can continue to use the play yard part of the product without the inclined sleeper accessory. To learn about other inclined sleeper products that have been recalled, and to read about CR's investigation into the safety of inclined sleepers, go to CR.org/sleeper1019.

EVERBILT DOOR PULLS
Everbilt is recalling about 70,200 stainless steel door pulls because they have sharp edges on the back, posing a laceration hazard. The pulls were sold at Home Depot stores and online at homedepot.com from April 2018 through May 2019 for about $5.

What to do: Stop using the recalled door pulls, and return them to Home Depot for a full refund. Call Home Depot at 800-305-1726 or go to homedepot.com for details.
Product Update
The latest ratings from our labs

Best Home Security Systems

Today’s DIY security systems make protecting your home easier and more affordable than ever. Our latest ratings will help you turn your home sweet home into a home safe home.

by Daniel Wroclawski

How burglars respond to the presence of home security systems

- 50% Discontinue burglary
- 37% Sometimes retreat
- 13% Continue burglary

Source: 2012 survey, University of North Carolina at Charlotte department of criminal justice and criminology.

Silent Sentry
CR tester Bernie Deitrick uses an app to monitor a Ring home security system with an optional camera.

Ring Alarm Kit 5-Piece
$200

OVERALL SCORE
88

PHOTO: JOHN WALSH/CONSUMER REPORTS
CR.ORG
BURGLARY RATES in the U.S. are declining, but a home was still broken into every 23 seconds in 2017, according to the FBI. So it’s not surprising that property owners have long put up with the pricey multiyear contracts, extensive wiring, and ugly sensors that home security systems have traditionally required.

Today’s do-it-yourself security systems are changing all that: They’re sleek and wireless, and can be quickly installed—without tools—by just about anyone. (Stand-alone security cameras and video doorbells don’t provide the whole-house protection that do-it-yourself security systems do, but they can be added to the systems to enhance their capabilities.) DIY security systems are also less expensive than traditional systems because in most cases you can monitor them yourself, eliminating the cost of professional monitoring. “Keep in mind that any system that relies on wireless signals, as these do, is susceptible to being hacked,” says Justin Brookman, director of privacy and technology policy at CR. Even so, with more than 8 million of them installed in American homes, they’re catching on fast.

DIY vs. the Pros
“The biggest difference between DIY and traditional security systems is that most DIY systems allow you to self-monitor,” says Bernie Deitrick, CR’s test engineer for home security products. “That can save roughly $10 to $50 a month compared to professional monitoring, depending on the company and the services provided.”

With professional monitoring, a call center dispatcher alerts you and the police whenever an alarm is triggered. With self-monitoring, you’ll receive a notification on your phone, but it’s up to you to call the police.

“If you’ve done a good job of securely installing the door and window sensors, our tests suggest you should receive notifications almost immediately when an alarm

[CONT. ON PAGE 23]

Assembling a Basic System
The prices of basic home security kits could make you think you can protect your house for about the cost of taking the whole family out to a nice dinner. But that’s often not the case. “While basic kits might have enough sensors for a small home or apartment, many homes will require at least a few more door and window sensors or motion detectors for adequate coverage,” says Bernie Deitrick, who oversees CR’s home security testing.

For example, the basic kits CR recommends cost $70 to $450. But after adding the components required to secure even an average-sized U.S. home, the total would range from about $300 to more than $800. (With professional monitoring, the price goes up even more.)

Deitrick and his team have determined that a basic home security system should offer six key components: a base station, a keypad or touch-screen control panel, contact sensors for windows and doors, motion sensors, key fobs, and range extenders. Most of the kits we tested offer these basic components; many of the companies offer online tools to help you design the optimal system for your home.

1 BASE STATION
This acts as a bridge between the components and the internet, and usually includes a siren, backup batteries, and backup cellular connectivity in case of a power or internet outage. Best placed in a centrally located area, so it can receive wireless signals from every sensor.

2 KEYPAD OR TOUCH-SCREEN CONTROL PANEL
Typically mounted to a wall, the keypad has 10 numeric buttons to enter codes to arm and disarm the system, as well as control other smart home devices.

3 CONTACT SENSORS
Sensors attach to doors and windows to detect when they’re opened. Typically used only on ground-floor windows, they can also be placed on second-floor windows vulnerable to burglars.

4 MOTION SENSORS
These detect movement and can be more cost-effective than placing a sensor on every window and door in rooms that have several. Some are programmed so that pets won’t set them off.

5 KEY FOBS AND TAGS
These enable

6 RANGE EXTENDER
This allows the base station in larger homes to communicate with sensors in distant parts of the house.
HOW MUCH SECURITY DO YOU REALLY NEED?

DIY security systems come with an array of different components in a wide range of prices. But what do you really need to protect your home, and what can you skip? CR's experts help guide you in the right direction.

Assembling a Basic System

Deitrick and his team have determined that a basic home security system should offer six key components: a base station, a keypad or touch-screen control panel, contact sensors for windows and doors, motion sensors, key fobs, and range extenders. Most of the kits we tested offer these basic components; many of the companies offer online tools to help you design the optimal system for your home.

Adding Specialty Components

Homeowners can beef up basic DIY home security systems by adding a number of specialty components. These aren't required for protection, but adding them allows you to monitor for additional threats, such as fires, carbon monoxide, and leaks. Keep in mind that costs can quickly escalate: Adding just a security camera to monitor, say, your pool or garden can cost up to $400.

CR experts also caution consumers to be mindful of the threats to privacy that security cameras and video doorbells can pose. "There have been multiple highly publicized incidents of hackers gaining access to security cameras," says Justin Brookman, director of privacy and technology policy at CR. To decrease chances of such a privacy breach, the most secure systems let you use two-factor authentication when logging in to your account. (For more tips on protecting your privacy, see “Your Guide to Digital Privacy,” on page 24.)

Adding Specialty Components

- **Security Cameras and Video Doorbells**
  - $50 to $400
  - These enable you to visually check on the house when you're not there and also to provide recorded evidence in the event of a robbery. They can be motion-activated or continuously record on a loop.

- **Environmental Sensors**
  - $20 to $90
  - In addition to smoke, fire, and carbon monoxide detectors, these include alarm listeners that are activated by the sound of those detectors going off. Leak and freeze detectors are worthwhile additions to security systems in homes with pipes that might freeze in the winter.

- **Garage Door Tilt Sensors**
  - $30 to $45
  - A good idea if you're worried about burglars entering your home through the garage, the sensors are placed on the interior side of the door and alert you when it is opened.

- **Glass-Break Sensors**
  - $35 to $75
  - A burglar could foil a contact sensor by breaking the glass in a picture window or sliding glass door. These detect the sound of shattering glass and trigger an alarm before anyone can enter.

- **Sirens**
  - $30 to $60
  - Stand-alone sirens can be placed away from the base station to startle an intruder and alert others to possible danger. If you live in a large home, you might consider installing multiple sirens, or even a siren outside.

- **Panic Buttons and Pendants**
  - $20 to $40
  - Panic buttons alert a monitoring service that you need help. They're usually wireless, allowing you to place them in any room. Panic pendants work in similar fashion but are worn by the user.
DIY SYSTEMS THAT WILL ALARM YOU

Most home security systems do a good job of detecting a break-in. The differences are in the details. Here, six of our top-rated models and what sets them apart.

**User-Friendly Favorite**

**NEST SECURE ALARM SYSTEM STARTER PACK HS000ES $350**

PROS: Nest Secure packs performance and convenience into a pleasingly minimalist design. It responds to voice commands and comes with two tags to arm and disarm without using a code.

CONS: Security or smart home add-ons are limited and can be expensive. Optional professional monitoring costs a comparably pricey $29 per month ($19 per month with a three-year contract).

**Bargain Basics**

**RING ALARM KIT 5-PIECE $200**

PROS: Easy to set up and use, the kit and optional monitoring ($10 per month or $100 per year) are cheaper than most we tested. (Additional contact and motion sensors cost $20 and $30, respectively.) It doubles as a smart home hub.

CONS: Video quality of the add-on camera could be better. Extra security features, such as smoke detectors and water sensors, are somewhat limited.

**Flexible Monitoring**

**ABODE ESSENTIALS STARTER KIT $250**

PROS: Abode offers an array of add-on security features (including an outdoor siren) and integrates with Amazon, Google Nest, and other smart home products. On-demand monitoring for as few as three days is available for those who want the service only on occasion.

CONS: The starter kit comes with a rather bare-bones group of components compared with most DIY security systems.

**Performance for a Price**

**FRONTPROTEK SAFE HOME EVERYDAY $70 (WITH REQUIRED 3-YEAR CONTRACT)**

PROS: Easy to set up and use, this system has more components than most and connects to a wide variety of security and smart home products, such as lightbulbs. (The hardware design for this kit has changed since we tested this system, but we expect it to perform the same.)

CONS: When you factor in the mandatory monitoring ($35 to $50 per month), this is one of the most expensive DIY systems.

**Great Video and Value**

**SIMPLISAFE THE ESSENTIALS SS3-01 $270**

PROS: SimpliSafe is easy to set up, and add-ons are typically cheaper than most. (Water-leak sensors cost $20, compared with $35 from Ring.) Its add-on video camera is one of the best.

CONS: It lacks certain features common to other systems, such as adjustable motion-sensor sensitivity, and requires professional monitoring ($15 to $35 per month).

**Smart Home Standout**

**SAMSUNG SMARTTHINGS ADT HOME SECURITY STARTER KIT F-ADT-STR-KT-1 $400**

PROS: The Samsung system is easy to use, doubles as a smart home hub and connects to a wider variety of devices—such as window blinds and water shutoff valves—than the other systems we tested.

CONS: Setup can be complicated, the system does not support security cameras, and additional contact and motion sensors are pricey, at $30 and $40, respectively.
### Ratings  
**Hearth Monitors** Our home security system ratings factor in performance, monitoring options, and available components.

<table>
<thead>
<tr>
<th>Recommended Rank</th>
<th>Brand &amp; Model</th>
<th>Overall Score</th>
<th>Price</th>
<th>Test Results</th>
<th>Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Nest Secure Alarm System Starter Pack H1500ES</td>
<td>89</td>
<td>$300</td>
<td>Opt.</td>
<td>Base station with keypad, motion sensor, and siren, 2 contact sensors with motion sensing, 2 RF tags, with paid monitoring</td>
</tr>
<tr>
<td>2</td>
<td>Ring Alarm Kit 5-Piece</td>
<td>88</td>
<td>$200</td>
<td>Opt.</td>
<td>Base station, keypad, motion sensor, contact sensor, range extender, with paid monitoring</td>
</tr>
<tr>
<td>3</td>
<td>Abode Essentials Starter Kit</td>
<td>86</td>
<td>$250</td>
<td>Opt.</td>
<td>Base station, motion sensor, 1 door sensor, 1 key fob, with paid monitoring</td>
</tr>
<tr>
<td>4</td>
<td>Frontpoint Safe Home Everyday</td>
<td>85</td>
<td>$70</td>
<td>Req.</td>
<td>Base station, keypad, 2 motion sensors, 3 contact sensors, yard sign, requires fee</td>
</tr>
<tr>
<td>5</td>
<td>SimpliSafe The Essentials SS3-01</td>
<td>83</td>
<td>$270</td>
<td>Req.</td>
<td>Base station, keypad, 3 contact sensors, 1 motion sensor with pet mode, yes</td>
</tr>
<tr>
<td>6</td>
<td>Samsung SmartThings ADT Home Security Starter Kit F-ADT-STR-KT-1</td>
<td>78</td>
<td>$400</td>
<td>Opt.</td>
<td>Security hub with touch screen and siren, pet-ready motion sensor, 2 contact sensors, with paid monitoring</td>
</tr>
<tr>
<td>7</td>
<td>Scout DIY Home Security Small Pack SC-MID-SKT-02</td>
<td>70</td>
<td>$300</td>
<td>Opt.</td>
<td>Base station, door sensor, 2 contact sensors, motion sensor, 2 key tags, RFID sticker, requires fee</td>
</tr>
<tr>
<td>8</td>
<td>Honeywell Home Smart Home Security Starter Kit RCH55530WF1008/W</td>
<td>59</td>
<td>$450</td>
<td>None</td>
<td>Base station with camera, 2 contact sensors, key fob only, no</td>
</tr>
<tr>
<td>9</td>
<td>iSmartAlarm Preferred Home Security Package ISA3</td>
<td>52</td>
<td>$200</td>
<td>None</td>
<td>Base station, motion sensor, 2 contact sensors, 2 key fobs, no</td>
</tr>
<tr>
<td>10</td>
<td>Ooma Smart Home Security Starter Pack</td>
<td>57</td>
<td>$180</td>
<td>None</td>
<td>Base station with VoIP, 2 contact sensors, motion sensor, no</td>
</tr>
</tbody>
</table>

1. Professional monitoring can be required (Req.) or optional (Opt.), or not available. If it requires a 3-year contract for professional monitoring, starting at $35 per month. The system can also be purchased for $350 with a 1-year contract for professional monitoring, starting at $35 per month. It may require a month-to-month plan for professional monitoring, starting at $15 per month.

**HOW WE TEST:** Our Security essentials test assesses whether a kit contains the basic devices necessary to monitor a home. For Security add-ons and Smart home add-ons, we evaluate each system’s capacity for extra features, such as the ability to integrate smoke alarms and lighting. Our experts judge each system for Ease of setup and Ease of use. The Motion detection test is an evaluation of the systems’ motion sensors to ensure that they detect the presence of people of different heights at varying distances and walking speeds. For Video quality, we evaluate the cameras in good light, low light, and zero light (to test night vision), using a unique scene designed by CR engineers to expose weak spots in cameras. (“NA” means security cameras are not available for the system.) Overall Score is based on the performance of the product and an evaluation of available features.

[ CONT. FROM PAGE 20 ]

is triggered,” Deitrick says. Still, some homeowners—such as those who travel frequently or have spotty cell-phone reception—may find that professional monitoring provides peace of mind that’s worth the added price.

Professional monitoring can be offered on a short-term or month-to-month basis or on a contract of a year or more. Long-term contracts generally lock in a price; short-term or month-to-month monitoring allows you to cancel without penalty, but the company could raise prices at any time.

**Cut Through the Confusion**

For all their convenience, DIY security systems can be a challenge to shop for: Each brand offers a slightly different combination of components you can expand on. Manufacturers may also add functionality or change the systems’ configurations and names over time. All of that makes it tough to do an apples-to-apples comparison.

Our expert advice on which components you’ll need and how much you’ll have to spend, the pros and cons of our recommended models, and our ratings and detailed evaluations of 10 widely sold systems will help you find the best one for your home.
Your Guide to Digital Privacy
Welcome to the age of ordinary objects that stealthily spy on us—from inside our cars, our homes, and our offices. That smartphone game you play in a waiting room, the mobile app that gives you a weather forecast, the photo you share with online friends—all have the ability to reveal intimate details about your life. Our increasingly digital world has created mountains of data, and there are precious few laws to safeguard the information. But that doesn't mean you can't protect yourself. According to one of three nationally representative Consumer Reports surveys that guided this special report, 60 percent of Americans now bar mobile apps from accessing the camera, GPS data, and contact list on their phones. And half protect their online accounts with two-factor authentication.* In the pages ahead, we'll provide you with more ways to protect your personal data and we’ll answer key privacy questions about technologies from smart speakers to fitness trackers. Here’s how to take charge of your digital domain.

*Source: June 2019 Consumer Reports nationally representative survey of 1004 U.S. adults. These questions were answered by those for whom each method was applicable.
When it comes to protecting your online and mobile accounts, many security experts recommend a password manager. Software supplied by services such as Dashlane and LastPass, or built into popular web browsers, can help you generate and deploy strong passwords across all your devices.

But password managers aren't for everyone. Setting them up requires some technical savvy, not to mention a modest investment of time and occasionally money. Chester Wisniewski, a principal research scientist at the cybersecurity firm Sophos, says one old-fashioned alternative can be almost as good: Writing down well-crafted passwords on paper, then hiding them away in a safe place at home. The pen-and-paper method works particularly well for people like Wisniewski's parents, who need only a limited number of passwords, for sites such as Amazon, Gmail, and Facebook.

"The important thing is to never use the same password twice," Wisniewski says. "They should also be long and complex." Use a lengthy, random string of lowercase letters, uppercase letters, numbers, and characters such as @, #, and $. Keep the notebook in a place where visitors won’t see it. And be careful not to lose it. Otherwise, you’re looking at a future filled with “forgot my password” requests.

Security experts say this is a wise move, but what’s most important is having strong, unique passwords for each account.

Facebook says it uses facial recognition to spot fake accounts and to help people tag friends in photos, but never to target users with ads. No matter how it’s used, the technology itself can seem intrusive, and Facebook announced a new setting in late 2017 to let people turn it off. Nearly 18 months later, a CR investigation showed that not all users had received the promised Face Recognition setting. (Our finding was cited by the Federal Trade Commission in announcing its $5 billion settlement with Facebook this summer.) To turn the feature off on all devices via your desktop, click the arrow at the top right of any Facebook page and choose Settings > Face Recognition > Edit > No. Don’t have that setting? This works: Go to Settings > Timeline and Tagging > Who sees tag suggestions...? > No one.

*Source: June 2019 Consumer Reports survey. This question was answered by those for whom this method was applicable.
THE DEEP CLEAN

How to Search and Destroy Your Old Accounts

People have been accumulating online accounts since the days when AOL recruited members using CD-ROMs. Unfortunately, not everyone remembers to delete the accounts they no longer use. And the data in these accounts can expose you to identity theft, phishing scams, and other security threats. “Understanding what’s out there about you on the internet is very important,” says Micah Hoffman, principal investigator at the cybersecurity firm Spotlight Infosec. “Companies may still be collecting your personal info. And when there’s a data breach, attackers can use your log-in credentials to try to sign in to other accounts.” So how do you conduct a Marie Kondo-style purge? Use these tools and tips to flush out the ghosts of internet past. Then look online for instructions on how to delete them.

EMAIL
Search your email accounts (new and old) for phrases such as “welcome to,” “new account,” “password,” and “confirm your email” to surface the messages you received when you signed up for services. It might be wise to hold on to old email accounts a bit longer, too, in case you need to reset an account password before the purge is complete.

SEARCH ENGINES
Type your favorite usernames into Bing, DuckDuckGo, and Google to locate profile pages and public posts from your old accounts. The results will vary by search engine. Try hunting for your name and former email addresses, too.

SAVED LOG-INS
If you’ve allowed your web browser to save usernames and passwords, you can review the archived list to find old accounts. Instructions vary by browser. In Chrome, the most widely used option, click on the three dots in the upper right corner and go to Settings > Passwords.

GOOGLE AND FACEBOOK LOG-INS
Any app, website, or game you logged in to using Facebook or Google will be listed on those sites. On Facebook, click the triangle in the top right of any page and go to Settings > Apps & Websites. On a Google page (such as Google Search, Gmail, or Calendar), click the grid icon near the top right and go to Account > Security > Signing in with Google.

SPECIALIZED SEARCH TOOLS
Go to the website Have I Been Pwned to see whether any of your email addresses or passwords have been exposed in a data breach at a service where you have an account. (In addition to reminding you of forgotten accounts, any hits should prompt you to change your password.) Next, go to KnowEm or Namecheck.com. Sites such as these help entrepreneurs head off trademark problems by revealing whether a potential username has been claimed on a popular platform. That’s a great way to learn where your own username appears, too.
SNEAKY GADGET

Smart Speakers That Listen When They Shouldn’t

If you own a smart speaker, you should be mindful about the internet-connected microphone that lives inside it, according to David Choffnes, Ph.D., an associate professor of computer science at Northeastern University in Boston. How does he know? Well, he and Daniel Dubois, Ph.D., are conducting a privacy study on smart speakers in consultation with CR, and they have some interesting early results.

The team started with the leading brand, setting up four identical Amazon Echo speakers, each programmed to respond to a different wake word: Alexa, Amazon, Computer, or Echo. Then they exposed the devices to lots of conversation by playing three audiobooks and nine episodes of the super-talky turn-of-the-millennium TV show “Gilmore Girls.”

The results? During the “Gilmore Girls” marathon, the speakers started recording snippets of dialogue 10 times without hearing the correct wake word. During the audiobook test, the team recorded 63 false positives in 21 hours. Some of the false positives sounded a lot like an official wake word. (See examples at right.) Others? Not so much.

There was some good news: When a speaker was fooled into responding to a false wake word, it stopped recording within seconds, Choffnes reports. We called Amazon for an explanation. “In rare cases,” a spokeswoman said, “Echo devices will wake up due to a word in background conversation sounding like Alexa or one of the other available wake words.” The company continues to work hard to improve the speakers’ performance, she said.

Here are bits of dialogue that appeared to trigger the speakers in Choffnes’ lab:

MISTAKEN FOR ALEXA
I need medical assistance • It’s actually • I like [plus any word that begins with “S”] • A later [plus another word]

MISTAKEN FOR AMAZON
This is on • It was • There were none • As soon as • Last night • There was also • Eyes were wide

MISTAKEN FOR COMPUTER
Confident • Kiro

MISTAKEN FOR ECHO
Marco • Echoing • That’s also

We also asked CR staffers and members of our Facebook groups for examples of accidental wake words:

MISTAKEN FOR ALEXA
Election • I like some

MISTAKEN FOR ECHO
Petco • Pickles

MISTAKEN FOR GOOGLE
Good girl • Goofball

MISTAKEN FOR SIRI
Seriously • Hey, sir

DO YOU WATCH WHAT YOU SAY AROUND YOUR SMART SPEAKER?*
69% SAY NO.

WHY NOT?
32% OF THOSE RESPONDENTS say they don’t worry because the speaker listens only if you use a wake-up word.

*Source: May 2019 Consumer Reports nationally representative phone survey of 1,006 U.S. adults. These questions were answered by owners of smart speakers.
When you sign up for an app or a web account, it’s very tempting to use those log-in tools provided by Facebook and Google that enroll you with a single click. But you’re better off creating your own username and password. “That way, you don’t have to give Facebook or Google yet another way to monitor what you do online,” says Justin Brookman, director of consumer privacy and technology policy at CR. Be sure the password you create is strong, Brookman adds. (Don’t use Password123, and don’t recycle one from another account.)

One argument for counting on the tech giants for your log-ins is their world-class security expertise. But “there’s no such thing as perfect security,” says Casey Oppenheim, founder of the security firm Disconnect. Early this year, for example, Facebook discovered that the passwords of hundreds of millions of users had been stored unencrypted on its servers.

**ENCRYPTED EMAIL**

**PROTONMAIL**

Free email services, such as Gmail and Yahoo Mail, may scan your communications for anything from ad targeting to integrating mail with other apps. If that turns you off, consider shifting to ProtonMail. The service offers end-to-end encryption, which makes the contents off-limits to anyone but you and the recipient. Better yet, ProtonMail doesn’t collect data on its users. In fact, you don’t need to provide any personal info to register for an account. Drawbacks? The encryption hinders inbox searches. The 500-megabyte storage limit for the free service is low. And if you forget your password, you’re in trouble: ProtonMail is so hands-off, it can’t help you reaccess your emails.

**PRESSING QUESTION**

**What’s the Best Way to Sign In?**

When you sign up for an app or a web account, it’s very tempting to use those log-in tools provided by Facebook and Google that enroll you with a single click. But you’re better off creating your own username and password.

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**DO YOU USE FACEBOOK OR GOOGLE TO SIGN IN TO OTHER ACCOUNTS?**

Americans who have accounts on those platforms are almost evenly split on the question. Privacy and security experts say it’s better to create individual log-ins for each account you create.

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**30-SECOND FIX**

**HOW TO DELETE ALEXA RECORDINGS**

Amazon, Apple, and Google have at times had humans review bits of dialogue recorded by their smart speakers to improve their voice computing technology. To delete select recordings and place limits on the use of such data, you have to dip into the settings on the device’s mobile app. But Amazon recently made things slightly easier with two new voice commands: “Alexa, delete what I just said” and “Alexa, delete everything I said today.” Before you can use the feature, you have to activate it.

**ON THE ALEXA APP:**

Tap the three bars in the upper left and choose Settings > Alexa Privacy > Review Voice History > and flip the toggle switch to enable deletion by voice.
Is Public WiFi Still Dangerous?

You’ve probably read the advice countless times (we’ve given it ourselves): Don’t use the WiFi in coffee shops, airports, and other public places, especially for sensitive activities, such as checking a bank balance. But are those worries outdated? These days most websites use encryption to protect information as it travels back and forth between your device and the web. Whenever you check email, shop on Amazon, or read an article on the Consumer Reports website, you see a little lock symbol and “HTTPS” in the address bar of your browser, indicating that encryption is at work scrambling the data in transit. Even if hackers intercept, say, an email, they will be hard-pressed to decipher what it says.

Does that make WiFi a danger-free zone? Not quite, says Gary Davis, chief consumer security evangelist for the antivirus software maker McAfee. “Things are much safer now,” he explains, “but that doesn’t mean all the threats have gone away.”

First, PDFs—of medical records, bank statements, and so on—are transmitted in an unscrambled format. Second, there’s no way to see whether most mobile apps employ HTTPS. And, finally, encryption isn’t always deployed correctly. One study conducted by researchers in Europe concluded that the security of a significant number of websites had been severely harmed by cryptographic weaknesses.

How to stay safe? Many tech-savvy folks connect to the internet using a secure VPN (virtual private network) app. But you also might try using a cellular connection, because cellular signals are less likely than WiFi to get hacked. That’s easy to do on a phone—just don’t join the public WiFi network. If you’re using a laptop or tablet, you can set up your phone as a WiFi hotspot—although access to that feature depends on your cellular plan.

This will burn through some data. It might also leave you with a slow connection. Or you could just use the WiFi and stay off sensitive sites. “Will I log on to my bank account on the Starbucks WiFi?” asks Chester Wisniewski of the cybersecurity firm Sophos. “No. But will I log on to Twitter? Sure.”

The apps on your smartphone don’t need to know where you are at all times, especially when you’re not looking for a traffic report, weather forecast, or dining hotspot. Here’s how to limit access to your phone’s GPS data. (Apps may still use WiFi signals and other clues to infer your location, but the data is typically less precise.) While you’re at it, you can use these settings to control access to your contacts and photo library, too.

**ON AN IPHONE:** Go to **Settings > Privacy > Location Services.** Then toggle the control off to stop GPS data from being transmitted. Or tap on each app individually to control which ones get access “always,” “never,” or “while you’re using” the app.

**ON AN ANDROID PHONE:** Go to **Settings > Google > Location and flip the toggle switch or scroll down to App-Level Permissions.**
You’re sitting in the kitchen with your spouse, chatting about island getaways, and minutes later an ad for a Bahamas cruise pops up on Facebook.

If such incidents have you convinced your phone is listening to you, you’re not alone. (See statistic below.) But, surprise: Security experts say you’re not entirely correct. You’re right to think the technology industry is keeping close tabs on you—just not with your phone’s mic.

Researchers led by Northeastern University associate professor David Choffnes, Ph.D., analyzed more than 17,000 widely used apps on the Android operating system and didn’t find a single instance where an app activated a phone’s microphone and leaked audio data without permission.

Wandera, a mobile security company, performed a similar study, focusing on high-profile apps such as Amazon, Chrome, Facebook, Instagram, and YouTube. And, just like Choffnes’ team, it found no evidence of secret recordings. The researchers weren’t surprised.

Choffnes says the speech-to-text translation required to mine that audio data is relatively poor in quality. “It’s just not an effective way to spy on people, compared to the extensive web and mobile app tracking ecosystem put in place by the major tech platforms, advertisers, and data brokers.”

So what’s really going on? People underestimate just how much data companies such as Google collect through methods having nothing to do with microphones, says Clay Miller, chief technology officer for the mobile security firm SyncDog. The sites you visit; the products you buy or simply read about; the places you live, work, and travel; and other personal details can help marketers decide precisely which ads to show you—especially when they can compare the data with the information on tens of millions of other people. At times, the process can seem like magic.

Not that apps don’t do some dodgy things. For instance, the Northeastern study found about 9,000 apps with the potential to take and transmit screenshots of the app in use on a person’s phone—potentially recording information as it’s being entered and sharing it with third parties.

For what it’s worth, mobile apps often suck up GPS and contact list data, too. To reduce such privacy intrusions, take a moment to read the permissions before installing an app, review those permissions on your phone every now and then (see the facing page), and avoid using Facebook and Google log-in features (page 29).

**THINK YOUR PHONE SECRETY LISTENS?**

43% SAY YES.

But security experts who study the question say no. Your phone does snap on you—just not with its microphone.

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**A TALE OF TWO PHONES**

**ANDROID VS. APPLE**

Smartphones collect all sorts of info about us—even when we’re not using them. In 2018, Douglas C. Schmidt, a computer science professor at Vanderbilt University in Nashville, Tenn., set out to see how often Android phones and iPhones quietly send data back to the servers of their respective mother ships (Google and Apple). The results may surprise you.

In a typical day, Google’s servers requested info from an Android phone 90.3 times per hour. Apple’s servers? A less frequent 17.9 times per hour. Charted below is the volume of data relayed by each phone in that 24-hour stretch, including the approximate amounts used for location tracking and interaction with ad servers.
THE RIGHT TO REMAIN PRIVATE

Where Federal Law Lets You Down

“There are shockingly few legal privacy protections in the United States,” says Maureen Mahoney, a policy analyst at Consumer Reports. No federal law provides the kind of broad consumer rights granted in 2018 by the European Union’s General Data Protection Regulation. However, scandals involving Facebook, Google, and other tech giants are helping to raise interest in such legislation. For instance, 63 percent of Facebook users say the company shouldn’t be allowed to collect data on them when they’re not using Facebook, according to a January 2019 CR nationally representative survey of more than 2,000 U.S. adults. “We still have a long way to go nationally,” Mahoney says. “But a number of state legislatures have stepped up and passed privacy laws of their own.” (See details, below.) For now, the following national laws provide some protections for consumers.

Federal Trade Commission Act
This law prohibits “unfair or deceptive” business practices. That means companies are prohibited from making misleading statements about how they handle your data. However, as long as they adhere to the terms in their privacy policies and user agreements, which can be vague and filled with jargon, the companies are mostly free to collect and use information as they see fit. It wasn’t the voluminous data gathering or the way information was shared that led to Facebook’s recent $5 billion settlement with the FTC. It was the misleading statements the company made about the control that consumers had over that personal information.

Health Insurance Portability and Accountability Act
HIPAA limits what healthcare providers can do with your medical data, preventing doctors, insurance companies, and billing firms from disclosing that info without permission. But it does not necessarily protect info collected by a smartwatch, reproductive health app, or direct-to-consumer genetic testing service. Unless the info ends up in a healthcare provider’s files, it has the same limited protections as other data about you.

Children’s Online Privacy Protection Act
COPPA requires companies to get verifiable parental consent before collecting info from children younger than 13. Firms must also explain how the data might be used, properly secure the information, and provide parents with the means to delete it. Yet once consent is granted, such data is fair game, albeit generally off-limits to third parties. The problem is, digital toys and apps are often useless without a quick sign-off. Additionally, YouTube has been accused of violating COPPA. Despite its many child-oriented videos, YouTube says in its terms of service that the site is intended for teens and adults.

THESE STATES ARE PRESSING AHEAD WITH LAWS THAT COULD BECOME MODELS FOR NATIONAL LEGISLATION

CALIFORNIA
The California Consumer Privacy Act is on track to become the country’s most sweeping privacy law when it takes effect Jan. 1. The law gives consumers the right to access, delete, and opt out of the sale of personal data.

ILLINOIS
The Biometric Information Privacy Act, passed in 2008, governs companies that collect and use fingerprints and facial recognition data. Amazon, Facebook, Google, and Six Flags have all been sued over alleged violations. Texas and Washington have similar laws, minus the individual’s right to sue.

MAINE
The Act to Protect the Privacy of Online Customer Information, signed into law this year, places new restrictions on the state’s internet service providers. They generally can’t use or sell residents’ personal information unless the customer opts in. And they can’t charge people more for refusing.

OREGON
HB 2395 mandates “reasonable security features” for most products that connect to the web. That can include supplying unique passwords or requiring users to create one—practices that could help prevent malicious strangers from hijacking baby monitors and home security cameras.

VERMONT
Act 171 of 2018 is the country’s only law to specifically regulate data brokers, those companies that stealthily collect and monetize people’s personal information. The firms are required to register with the state and provide annual updates on their business practices.
YOUR GUIDE TO DIGITAL PRIVACY
intended for teens and adults.

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Children younger than 13. Firms
Before collecting info from
COPPA requires companies to
Protection Act
As other data about you.
In a healthcare provider's files, it
Service. Unless the info ends up
To-consumer genetic testing
Info collected by a smartwatch,
It does not necessarily protect
Doctors, insurance companies,
Medical data, preventing
Providers can do with your
HIPAA limits what healthcare
And Accountability Act

EXPLAINING
PRIVACY TIPS
THAT NEED MORE
EXPLAINING
We love tips and tricks for
Protecting your privacy—
There are many on these pages. But some widely
Repeated techniques
don’t do as much as you
Might think.

SECRET PASSWORDS CAN BE HARD TO REMEMBER. That's why many
People try tactics such as
Taking a familiar word and
Replacing the "A's" with "@'s" and
"E's" with "3's." But these
days criminals have software
capable of beating those kinds of ploys. The best passwords
Are long, random strings
Of letters, numbers, and
Special characters.

FAKE SOCIAL MEDIA NAMES
A clever online pseudonym may
Protect you from the prying
Eyes of friends, family, and
Some data collectors, but it
Won't throw companies such as
Google off your trail. They use
digital breadcrumbs—email
Addresses, phone numbers,
WiFi network locations, and ID
Numbers tied to your devices—
to keep track of who you are
And what you're doing online.

INCognito MODE
The incognito or private mode
On your web browser can hide
Your online behavior from other
People who use your computer.
It may also stop companies from
Storing trackers such as
Cookies on your laptop. But it
Won’t necessarily conceal your
Identity, location, or activity
From your internet service
Provider or a website you visit.

PRESSING QUESTION
Should I Use a Workplace-Provided Fitbit?

We asked Dena B. Mendelsohn, senior
Policy counsel at Consumer Reports.
Here’s what she says:
Some people may find company-
Sponsored fitness trackers to be a helpful
Way to pursue their fitness goals.
But keep in mind that the information
Collected by trackers, as well as
Health-related tech products, such as
At-home blood pressure monitors, smart
Scales, and health apps, is not automatically
Protected by U.S. privacy laws, even if the
device is used for medical reasons. (See
"Where Federal Law Lets You Down," on the facing page.)

The data on a fitness tracker does not
Qualify as health information. If I track
My weight in an app, that’s not health
Information. To be protected by the Health
Insurance Portability and Accountability Act, the information must be created,
Transmitted, or maintained by a HIPAA-
covered entity, such as a healthcare
Provider, an insurer, or a data clearinghouse
Responsible for billing.

Before giving up any health data in a
Wellness program, ask who will see the
Information and whether it might be
Shared with others. If your company’s
Program is run by an insurance provider,
HIPAA may apply. But if the program is
Run by a third-party company that’s not
HIPAA-covered, it may not.

It can get pretty confusing. For instance,
If Aetna gives me a tracker and I use it, the
data generated is generally not HIPAA-
Protected until the information goes back to
Aetna and is included in Aetna’s records on
Me. Then it does fall under HIPAA.

In short, there’s no clear way for the
Average person to know what protections
Apply and when. That’s why Consumer
Reports wants to see a law passed that
Takes away the guesswork.

30-SECOND FIX
ENABLE TWO-FACTOR AUTHENTICATION

WHAT BEST DESCRIBES YOUR USE OF 2FA?* 39% SAY “WHAT'S THAT?”—YET THIS COMMON SETTING IS CRUCIAL FOR ONLINE SECURITY, ACCORDING TO EXPERTS.

Security experts say everyone
Should use multifactor
Authentication, when it’s offered,
to protect important online
Accounts. The goal is to block
Hackers from gaining access,
even if they’ve acquired your
Password. Once you turn on
A company’s 2FA setting, you’ll
Need to provide info in addition
to the password any time you
Try to access the account from
An unverified location or device.
Typically, the company will send
You a verification code by text or
Via an app. Without the second
Identifier, hackers armed with
A stolen password get blocked.
Setting up 2FA is usually easy.

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even if they’ve acquired your
Password. Once you turn on
A company’s 2FA setting, you’ll
Need to provide info in addition
to the password any time you
Try to access the account from
An unverified location or device.
Typically, the company will send
You a verification code by text or
Via an app. Without the second
Identifier, hackers armed with
A stolen password get blocked.
Setting up 2FA is usually easy.

AS AN EXAMPLE, FOR YOUR GOOGLE ACCOUNT,
go to your Gmail inbox or any other
Google page. Then click the
grid icon in the top right
And go to Account (you
May need to sign in first) > Security >
2-Step Verification > Get Started.

*Source: May 2019 CR survey. This question was answered by those who have at least one online or email account.
When you take a snapshot with a digital camera, including the one on your smartphone, the device captures data about where, when, and how the image was recorded.

And when you share that picture with someone else, that information, called Exif data, typically goes along for the ride. That’s how mobile apps and storage services, such as Google Photos and iCloud Photos, know how to sort your Springsteen summer tour pictures by place and date.

Facebook, Instagram, Twitter, and other sites hide the data from the public, but they reserve the right to use it themselves to enhance their services.

“People should be aware that when they upload a photo, there is more to it than just the pixels they see,” says University of California, Berkeley, computer science professor Hany Farid, a leading researcher on digital forensics.

Imagine, for instance, what a private investigator, savvy thief, or stalker could learn about your weekly routine simply by using the Exif data in your photo archives.

Most smartphones don’t have built-in tools for removing the data, but free apps for Android and Apple phones can help you do it.

“If you are really worried, just take a screenshot of the photo and share that instead,” says Bobby Richter, who oversees privacy and security testing at CR. “Screenshots typically don’t include the same sensitive metadata as photos from a camera.”

For some people, though, the only bit of Exif data that feels too personal is the info on where the photo was taken. “That’s a pretty serious privacy issue,” Farid says. “You know where [those in the picture] are at a given time of day.”

If you want to keep that location information out of your images, simply revoke the camera app’s access to the GPS function on your device.

In iOS, go to Settings > Privacy > Location Services > Camera > Never.

Instructions for Android devices vary by model, but typically you need to open Settings > Lock Screen & Security > Location > App-Level Permissions and switch the toggle off for Camera. On certain Android devices, camera apps have their own GPS setting.

To strip out the location data from photos stored on your computer, do the following.

In Windows, right-click on the image file, then Properties > Remove Properties and Personal Information.

In MacOS, open the photo in Preview, then Tools > Show Inspector > Remove Location Info.

Reporting by Bree Fowler, Thomas Germain, Ian McClure, Chris Raymond, and Allen St. John
THE DEEP CLEAN

Wipe Data From Your Car Before Selling It

These days, vehicles collect and store all kinds of personal data—everything from the songs on your playlist to the locations you frequent to how firmly you apply the brakes. And if you’re not careful, the data can travel on to your car’s next owner. “That’s why it’s important to know your car,” says CR auto analyst Mel Yu, who offers these tips for seeking and destroying the data. For more detailed instructions, consult the owner’s manual for your particular vehicle.

UNPAIR ALL BLUETOOTH DEVICES
By deleting the connection to your smartphone, you protect info routinely shared for contacting friends, listening to music, and using GPS directions.

RESET THE GARAGE-DOOR OPENER
If you use a universal application, such as HomeLink, for example, you don’t want it to be sharing codes that grant access to your home. To erase them, press and hold the two outer HomeLink control buttons until the red light flashes.

RESET TELEMATICS SERVICES
Blue Link, FordPass, and OnStar can all send data from a car to the cloud, even if you don’t have a current subscription, Yu says. Look for an SOS or call button on the rearview mirror or overhead console. Press it and you will be connected to a live operator, who can help you change the account owner information.

LOG OUT OF CLOUD ACCOUNTS
Exclusive to certain automakers, they store driver data, including preset radio stations, favorite temperature settings, navigation destinations, and driving history.

REMOVE TRACKING DEVICES
Auto dealers, banks, and insurance companies may attach such devices to vehicles when setting up financing and coverage deals. If buyers don’t read the fine print, they might not realize they’re there. Once the car is paid off, check with your lender or dealer about disabling them.

When it comes to helping people protect their private lives from snoopy corporations and hackers alike, nothing beats a team of engineers, data experts, journalists, and advocates assigned to work on the problem full-time.
That’s what CR has been creating over the past few years, and in 2019, we’re taking a big step forward with a new project funded in part by a $6 million investment from Craig Newmark Philanthropies: The Digital Lab will develop new ways to empower consumers by testing and reporting on everything from online platforms such as Amazon and Google to connected thermostats to cars that collect data on their drivers.
“Their digital testing has already shown how products and services we use every day can expose us to many new and potential harms,” says Marta L. Tellado, CR’s CEO and president. “Consumer Reports’ new Digital Lab will reveal precisely how and where our rights are undermined by the unchecked influence of technology. Armed with that knowledge, consumers can make more secure choices that protect our privacy and hold these digital giants to account.” Stay tuned.
WILL YOU HAVE ENOUGH MONEY TO RETIRE?

THE FALLOUT FROM THE GREAT RECESSION—INTERRUPTED INCOME AND MOUNTING DEBT—IS RESHAPING WHAT IT MEANS TO SAVE FOR RETIREMENT, AFFECTING FAMILY DECISIONS AT EVERY LIFE STAGE. LEARN HOW YOU CAN GET BACK ON YOUR FINANCIAL FEET EVEN IF YOU'RE GETTING A LATE START.

BY PENELOPE WANG

29% OF BOOMERS, GEN XERS, AND MILLENNIALS COMBINED SAY THAT THEY'RE IN WORSE FINANCIAL SHAPE THAN THEIR PARENTS WERE AT THE SAME AGE.
46% of boomers are highly confident that social security benefits will be there for them when they retire.

19% of gen xers are highly confident that social security benefits will be there for them when they retire.

26% of boomers spend 50% or more of their monthly income repaying debt.

32% of gen xers spend 50% or more of their monthly income repaying debt.

20% of millennials spend 50% or more of their monthly income repaying debt.

when today’s baby boomers were in that age range, 75 percent owned homes. And fewer Gen Xers have a retirement plan: just 66.9 percent in 2016 vs. 71.5 percent of baby boomers when they were 40 to 51 years old.

Granted, Americans of all ages were hurt by the recession. Nearly 60 percent of workers ages 18 and older say that even now they haven’t fully recovered, and 8 percent say they may never recover, according to a recent survey by the nonprofit Transamerica Center for Retirement Studies. Still, those furthest away from retirement—millennials and Gen Xers—seem to have found it the most debilitating. Almost 25 percent of them say they haven’t begun to recover or think they may never recover from the recession vs. 19 percent of baby boomers.

Even those who have regained their footing have lost valuable time. Twelve years ago, Mark Schneider, 53, and his wife, June, 48, of Parker, Colo., never thought they would fall so far behind in reaching their goals. The parents of two children, now 14 and 16, they were working in what seemed to be secure jobs, Mark at an investment firm and June at a telecom company. “We were flush,” she says. “We used my income for savings and travel, and we ate out a lot.”

But in 2008, as the stock market tanked and investment firms cut staff, Mark lost his job. It was two years before he landed a new position, at an insurance company, and it paid far less than he was earning before. The couple couldn’t keep up with their living expenses, including June’s student loan payments and mounting credit card debt. They declared bankruptcy in 2011 and sold their house. “We survived,” June says. “But I never want to go through that again.”

After renting for several years, the Schniders were able to purchase a smaller house last year—1,500 square feet vs. the 3,000-square-foot house they used to own. They’re making improvements, including finishing the basement. Further bolstering their
BOOMERS HELPING THEIR GROWN CHILDREN
WHAT’S HEALTHY, WHAT’S NOT

For many parents, it’s second nature to want to make financial sacrifices to support their children, even after they’ve become adults. More than 7 out of 10 parents say they put their children’s interests ahead of their own, according to a 2018 Merrill Lynch Age Wave study. These parents are spending twice as much on adult children (those between the ages of 18 and 34) as they’re contributing to their own retirement accounts, adding up to $500 billion and $250 billion, respectively.

There’s no question that some financial support for adult children may be necessary given today’s hefty student loan burdens and the lack of affordable housing in many areas. But often this funding is based on unrealistic expectations, says Manisha Thakor, vice president of financial wellbeing at Brighton Jones, a wealth management firm in Seattle. “The standard of living that many kids think they should have—and that parents think their kids should have—is far beyond the incomes the kids coming out of school can afford,” Thakor says.

There’s another reason too much generosity isn’t a good long-term strategy. For baby boomers, who have limited time left to build their savings, this kind of gifting may have serious repercussions for their own nonworking years, causing them to run short of money. The burden of their support may fall on their kids, who may end up providing financial help and long-term care, says Mari Adam, a certified financial planner in Boca Raton, Fla.

To avoid this situation, boomers should set ground rules for giving, Adam advises. Sit down with your children and draw up a timetable for their financial independence. If your over-21 child lives at home, require that she contribute toward rent or groceries. If she doesn’t have an income yet, request help in the form of household chores and other responsibilities—for example, ferrying grandma to the doctor. Otherwise, limit your support to gifts that provide long-term value. Here are three other ways to help:

CONTRIBUTE TO YOUR CHILD’S ROTH IRA. If he’s earning an income but doesn’t have an employer-sponsored retirement plan, consider helping to fund a Roth IRA, says Karen Van Voorhis, a certified financial planner in Norwell, Mass. With a Roth, contributions are made after-tax, and earnings growth and withdrawals after age 59½ are tax-free. A single person earning less than $122,000 can put away as much as $6,000 in a Roth IRA in 2019.

TEACH MONEY SKILLS. Helping your grown child learn to manage his own finances will have the biggest long-term impact. But he may be more receptive if the lesson comes from someone else, Thakor says. Ask a friend with money expertise to sit down with him over coffee. Or offer to pay for a session with a financial adviser.

THE NEVER-EMPTY NEST
GIVING FINANCIAL HELP TO YOUR GROWN CHILDREN SHOULDN’T MEAN ACTING LIKE AN ATM. GIVE THEM THE TOOLS TO BUILD AN INDEPENDENT LIFE.
finances, they rebuilt their credit and accumulated enough savings for an emergency fund to cover a year’s worth of expenses, and June paid down her student loans. “It’s great that we’re back on track,” she says, “but we’re only back to where we started.” And they have fewer years to save for their kids’ college education—and their own retirement.

The Rocky Road to Recovery
For many people, just getting back to where they started is a tough challenge. Median wage growth averaged just 0.3 percent a year between 2007 and 2018, according to the Economic Policy Institute. And yet other essential costs have skyrocketed. Average family healthcare premiums, for example, have climbed 55 percent since 2008, rising twice as fast as workers’ wages.

Then’s the recession’s most enduring legacy—debt—which has also had a disproportionate impact on Gen Xers. One out of 3 Gen X households is spending at least half its income on debt, a higher percentage than baby boomers or millennials are spending, according to a 2017 nationally representative survey by Consumer Reports. And a recent study by Experian found that Gen Xers have the highest average total debt of all the generations—$138,916—nearly 50 percent more than the national average.

That burden of debt compounds an already precarious retirement. Gen Xers have skimpier retirement benefits than previous generations. Only 18 percent expect to receive a traditional defined benefit pension compared with 30 percent of boomers, according to the Transamerica survey.

“Gen X is going to be the first generation to rely mainly on 401(k) and IRA savings for retirement,” says Craig Copeland, senior research associate at EBRI. “Whether they can accumulate sufficient assets, as well as manage them for income in retirement, will be a test case going forward.”

What’s more, for those hit hardest by the recession, the very idea of trying to start saving may seem so daunting that they lapse into inaction. “It’s not surprising that many Gen Xers are paralyzed,” says Derek Tuk, a certified financial planner in Boulder, Colo., and a Gen Xer himself.

The statistics bear him out. Only 31 percent of Gen Xers have figured out how much they need to save for retirement, according to the EBRI survey. And that figure is lower than for boomers and millennials. With retirement just around the bend, only 56 percent of Gen Xers say they’re doing a good job preparing for it financially, EBRI data show. Among Gen X households with retirement plans, the median account holds just $60,000. That compares with $115,000 for boomers and $15,900 for millennials.

Retooling Your Retirement
Despite the challenges, it’s not too late to achieve a comfortable retirement. “Gen X is at an age where—if they focus—they have time to catch up,” says Catherine Collinson, CEO and president of the Transamerica Center. For boomers and millennials as well, the key is to follow a disciplined savings and planning strategy, as we’ll explain.

1. SCRUTINIZE YOUR FINANCES. No matter how scary or depressing it seems, you have to face the financial facts of your life head-on. Get a handle on how much you bring home every month after taxes and deductions, and then how much you spend each month. You can do this relatively easily with online tools such as Mint (free) or YNAB ($84 a year), which can help you monitor your transactions. Your bank or credit card website may also track these numbers for you.

2. CUT THE WASTE. The previous step may lead you to discover fat in your spending, such as paying for overlapping streaming services or making auto-renew payments for a service you no longer need. “I noticed there were Netflix charges month after month,” says Guy Richie, 52, a Realtor in Brentwood, Tenn. “They weren’t

![Small Changes, Big Gains](image-url)

**SMALL CHANGES, BIG GAINS**
Someone starting with a $100,000 balance and saving 7% of her salary in a 401(k) plan can greatly increase her nest egg by raising her contribution by just 2% each year. Adding catch-up contributions starting at age 50 can also boost retirement wealth.

**Notes:** For workers, the maximum 401(k) contribution is $19,000 in 2019; those 50 or older can make an additional catch-up contribution of $6,000. Assumes 7% average annual returns, 2% annual inflation, and wage increases.
significant—$8 to $12—so I didn't spot them before, but it turns out my wife had signed up for a subscription but didn't even realize she still had it.”

3. DEAL WITH DEBT. If you have credit card debt at a high interest rate, say, 17 or 18 percent, make it a priority to pay that balance down as soon as you can. Mounting credit card debt can be a financial disaster at any age, but once you've reached midlife, it can wreck your retirement. “This is a Gen Xer's kryptonite,” says Mari Adam, a certified financial planner in Boca Raton, Fla. “High-rate credit card debt is toxic.”

The most effective strategy is to target the highest-rate debt first, which will result in a quicker reduction of the balance. But if you need a psychological kick-start, pay off smaller balances first. That “convinces people they’re making progress,” explains Ryan Marshall, a Gen Xer who’s a certified financial planner in Wyckoff, N.J.

4. TAKE A HARD LOOK AT BIG-TICKET ITEMS.
To free up significant amounts of cash, you might need to focus on your biggest budget items, which are typically cars, vacations, and housing. For many families, opting for a staycation or postponing a new-car purchase is relatively doable.

It’s tougher to cut back on housing because home prices in many areas are rising. But downsizing may be a practical option, especially if you’re willing to change neighborhoods. “It used to be mainly retirees who left for lower-cost areas,” Marshall says, “but I’m seeing more people in their 50s considering this move.”

5. TREAT RETIREMENT SAVINGS AS SACRED.
For Gen Xers and baby boomers with employer-sponsored retirement plans, it’s crucial to take full advantage of the opportunity to save in tax-deferred accounts and get any matching contributions. (If you don't have a company retirement program or you’re self employed, opt for an IRA or a solo 401(k) plan instead.) If you’re over 50 and you have the cash to spare, sticking away more with catch-up contributions (available to those in that age bracket) is also a great idea.

Many Gen Xers make the mistake of tapping their retirement accounts prematurely. More than 30 percent have taken a loan, an early withdrawal, or a hardship withdrawal from a 401(k) or IRA, according to the Transamerica survey. Sometimes emergency withdrawals are unavoidable, but if you can, try to find another way. When Mari Berryman, a 44-year-old social worker in Los Angeles, wanted to save for a down payment as well as college costs and retirement, the divorced mother of four took part-time jobs in addition to her full-time job at a kidney dialysis center. “I’m trying hard not to touch my 401(k), so I pretend like it’s not there,” says Berryman, who expects to reach her down-payment goal in early 2020.

6. STAY EMPLOYABLE. One of the most effective ways to improve your financial security is to work longer, says Geoff Sanzenbacher, associate director of research at the Boston College Center for Retirement Research (CRR). The average annual growth rate of workers 55 years old and older is projected to be 1.8 percent this year, more than three times the rate of growth for the overall labor force, according to the Bureau of Labor Statistics. Someone earning an average wage who starts saving at age 45 would need to put away 27 percent of his salary annually to retire comfortably at age 65, according to CRR’s research. Aim to retire at age 70 and he would need to save just 10 percent.

But the harsh reality is that many older workers get pushed out of their jobs. A recent AARP survey of 3,900 adults ages 45 and older found that 61 percent reported they had experienced or witnessed age discrimination in the workplace. To stay employable, take advantage of training opportunities offered by your employer or develop new skills outside your workplace, says Kerry Hannon, author of “Great Jobs for Everyone 50+: Finding Work That Keeps You Happy and Healthy ... and Pays the Bills” (Wiley, 2017). Or start planning to make a transition to a second career, a process that could take three to five years, or find a part-time job.

—Additional reporting by Tobie Stanger
New plant-based patties are showing up in restaurants and in meats may be coming soon. Are they safe? Healthy? Tasty? And
New plant-based patties are showing up in restaurants and in grocery stores, and lab-grown meats may be coming soon. Are they safe? Healthy? Tasty? And will they save the environment?

IMPOSSIBLE BURGER

SPECIAL REPORT

BY RACHEL RABKIN PEACHMAN

PHOTOGRAPHS BY SAM KAPLAN

A MAKEOVER
grocery stores, and lab-grown will they save the environment?
A writer walks into a burger joint with a mission: to sample the burger options—whether made from plants or animals.

Why? The offerings have recently become more plentiful, interesting, and confusing now that companies—in particular Beyond Meat and Impossible Foods—have started selling high-tech plant-based patties.

Designed to have the look and feel of meat, these new-generation veggie burgers are targeted to people looking to reduce their beef consumption and swap in, they hope, nutritious meatlike meals that take less toll on the environment than factory farming, don’t harm animals, and still taste good.

Also on the horizon—but not yet on the menu—are lab-grown meats and fish. These are foods made by taking cells from animals and multiplying them in a bioreactor rather than raising animals on farms to slaughter.

In other words, “meat” as we know it is getting a makeover. And to fully understand the new offerings, I had to see, smell, feel, and, of course, taste them myself.

So a few colleagues and I headed to a Bareburger, a chain that specializes in organic and vegetarian food, and ordered a beef burger and three plant-based ones: a Beyond patty, an Impossible patty, and a bean-and-veggie patty.

I found the Beyond and Impossible burgers to be surprisingly meatlike. (For a professional take from CR’s taste testers, as well as a nutritional analysis, see the facing page.)

But even meatier was the discussion about how these alternatives might impact the marketplace, our health, the environment, and the future of food. Are the new options harbingers of a food revolution that will feed the world without animal cruelty or environmental harm? Or will they unleash unforeseen health risks and disruptions to our ecosystem? Or something in between?

Finding answers to those and other questions isn’t easy, partly because there’s not yet much research on some of the products. CR’s food safety experts, in fact, caution that some companies may be moving faster than the research warrants.

Still, people are intrigued. Though plant-based “meat” accounts for less than 1 percent of retail meat sales, the market for the products grew 13 percent last year, with 15 million U.S. households purchasing them at least once, according to the Good Food Institute, an organization that promotes plant- and cell-based foods.

Other evidence of growing consumer interest: Impossible Foods says popular demand led to temporary shortages of its burgers in restaurants over the summer. And Beyond Meat’s initial public offering last May was wildly successful, with its stock trading above its initial price when we went to press.

Perhaps seeing the opportunities, Tyson, a major producer of chicken, beef, and pork, says it plans to launch its own plant-based nuggets and “blended” burgers, made with plant proteins and meat. The company has also invested in lab-grown-meat companies, such as Memphis Meats and Future Meat Technologies.

But many consumers are unclear on what these foods are. And 40 percent of Americans don’t think that food produced in a lab to look and taste like meat should even be called meat, according to a recent nationally representative CR survey of 1,018 adults. Also, more people think “lab-grown” or “synthetic” better describes the meat than the terms the industry favors: “cultured” or “clean.”

To clear up the confusion, we talked to nutritionists, agriculture experts, and company scientists cooking up these creations.

**WHAT IS IT?**

The Beyond Burger is an all-plant, gluten-free patty with protein from peas, mung beans, and rice, plus beet and pomegranate to provide meatlike redness. It gets fat from canola and coconut oils, plus cocoa butter; those last two ingredients also give the product its marbled look, the company says. The burger, made by Beyond Meat, has no genetically modified organisms (see page 46 for more on GMOs). The company also makes other plant-based “meats,” such as a sausage and “crumbles” (think ground beef).

**IS IT HEALTHIER THAN BEEF?**

Not necessarily. It does have zero dietary cholesterol—though that has less effect on the cholesterol levels in your blood than does saturated fat. And on that more important measure, as well as for total fat and calories, a Beyond Burger and a typical 80 percent lean beef burger are similar.

The Beyond Burger has much more sodium, too. Plus, “while its starting materials may be plants, the main ingredients are all highly processed concentrates, oils, and flavors,” says Amy Keating, R.D., a CR nutritionist and taste tester. Research links such foods to obesity and heart disease. “If you want the health benefits of plants, eat them as whole foods with their nutrients and fiber naturally present.”

**IS IT BETTER FOR THE ENVIRONMENT?**

Probably, but how much is debatable. Replacing meat raised in feedlots with plant-based foods is a win for the environment, says Charlotte Vallaeys, senior food policy analyst at CR. That’s in part because cows release methane, a greenhouse gas. And industrial beef production creates runoff that contaminates water. Feedlot farming also tends to sicken cows, contributing to the overuse of antibiotics, which breeds superbugs and undermines the effectiveness of those medications.

An analysis commissioned by Beyond Meat concluded that one of its burgers generates 90 percent fewer greenhouse gases and requires 46 percent less nonrenewable energy than a comparable feedlot-raised beef burger. “Those are reliable estimates,” says Nicole Tichenor Blackstone, Ph.D., at Tufts Friedman School of Nutrition Science and Policy, who has conducted similar research but was not involved in this analysis.

But “switching to grass-fed animals can also be beneficial,” Vallaeys says. One farm that raises such animals, White Oaks Pastures, in Bluffton, Ga., commissioned the same kind of analysis as Beyond Meat. It concluded that White Oaks’ methods may have a net positive effect on the climate by taking carbon out of the atmosphere and putting it back into the soil. But note that these analyses involve controversial assumptions and require additional study.

**WHERE CAN YOU BUY IT?**

Restaurants and grocery stores.

**HOW MUCH DOES IT COST?**

Two ¼-pound patties at the grocery store costs about $6 to $7, or $12 to $14 a pound, compared with about $4 a pound for regular ground beef and $6 for organic. Restaurant prices vary by location and toppings.
Analyst at CR. That’s in part because cows release methane, a greenhouse gas. And industrial beef production creates runoff that contaminates water. Feedlot farming also tends to sicken cows, contributing to the overuse of antibiotics, which breeds superbugs and undermines the effectiveness of those medications.

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<table>
<thead>
<tr>
<th>INGREDIENTS</th>
<th>Ground Beef, 80% Lean 1 patty (113 g)</th>
<th>Amy’s Organic California Veggie Burger, Light in Sodium 1 patty (71 g)</th>
<th>Beyond Burger 1 patty (113 g)</th>
<th>Impossible Burger 1 patty (113 g)</th>
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</thead>
<tbody>
<tr>
<td><strong>INGREDIENTS</strong></td>
<td>Beef</td>
<td>13, all organic, including mushrooms, bulgur wheat, onions, celery, carrots, oats, walnuts, wheat gluten, potatoes, high oleic safflower and/or sunflower oil, sea salt, and garlic</td>
<td>At least 17, including pea, mung bean, and rice proteins, canola and coconut oils, cocoa butter, methylcellulose; potato starch, pomegranate powder; and beef juice extract</td>
<td>At least 20, including soy and potato proteins, coconut and sunflower oils, methylcellulose, yeast extract, cultured dextrine, food starch modified, and soy leghemoglobin</td>
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<td><strong>CALORIES</strong></td>
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<td>240</td>
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<tr>
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<td><strong>USDA ORGANIC</strong></td>
<td>Can be</td>
<td>Yes</td>
<td>No</td>
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</tbody>
</table>

Sources: Nutrients for 80% lean ground beef, cooked and broiled (plain, unsalted), from USDA National Nutrient Database for Standard Reference, 2018. All other values from Nutrition Facts panel on package or company’s website.
WHAT IS IT?
This all-plant, gluten-free burger gets its protein from soy and its fat from a mix of coconut and sunflower oils. But what makes the burger unique, and controversial, is something called soy leghemoglobin.

The compound, which comes from the root of soybean plants, is chemically similar to the heme iron found in meat. Putting it in a veggie burger gives the patty some of the taste, texture, and juicy, bloody look of beef.

Why controversial? For one, though humans have eaten soy for centuries, we haven’t eaten soy leghemoglobin before. And CR’s scientists advise caution when introducing anything new into the food supply.

Further, manufacturing the compound to scale requires some fancy genetic lab work. Company scientists insert soy leghemoglobin genes into a genetically engineered yeast called Pichia pastoris, then let it ferment. The process produces large quantities of the compound, along with dozens of other proteins.

To document the safety of this new protein, Impossible Foods points to research showing similarities between soy leghemoglobin and other substances humans have long consumed. In addition, company scientists fed it to rats for 28 days and compared them with other rats on a normal diet. “All the studies we did indicated that there was no risk of allergenicity or toxicity,” says Sue Klapholz, M.D., vice president of nutrition and health at Impossible Foods.

But thanks to the oddities of the U.S. food safety system, it’s up to the company, not the Food and Drug Administration, to prove the compound’s safety. Though the FDA did review research provided by Impossible Foods—and said it had no questions about the company’s assessment—the FDA has not conducted any independent tests to confirm the compound’s safety, nor does it have to.

Still, some experts have concerns. Dana Perls, of Friends of the Earth, an environmental organization, says that rats fed soy leghemoglobin in the company’s safety study developed changes in their blood chemistries that could indicate kidney or other health problems—issues that require follow-up.

What’s more, “there are still no long-term studies of soy leghemoglobin in humans,” says Michael Hansen, Ph.D., a senior scientist at CR. He notes that the process of making it yields at least 45 other proteins as byproducts, which we also consume, and which also need further evaluation. “Is it possible that soy leghemoglobin is safe? Sure,” Hansen says. “Do we know that for sure? No. We just don’t have enough data either way yet.”

IS IT HEALTHIER THAN BEEF?
Not so much. The Impossible Burger’s nutrition profile is fairly close to the Beyond Burger’s: zero dietary cholesterol but not much lower than ground beef in fat and saturated fat. Plus, it has more sodium than beef. And, like the Beyond Burger, the Impossible patty is “ultra processed,” says Fabrice DeClerck, Ph.D., science director of the EAT Foundation, a nonprofit that focuses on environmental sustainability. Last, some research suggests that heme iron may contribute to the increased risk of colon cancer and other health problems that have been associated with red meat. And it’s still unknown whether the heme iron from soy leghemoglobin may pose that same risk.

IS IT BETTER FOR THE ENVIRONMENT?
Yes, more or less to the same extent as the Beyond Burger, according to a study commissioned by Impossible Foods. The analysis found that an Impossible Burger generates 89 percent less in greenhouse gases and uses 87 percent less water than a beef burger. Blackstone, the independent expert from Tufts, says that the research is solid.

But DeClerck worries that relying on high-tech foods could contribute to other problems. “Most of our foods—about 60 percent—come from soy, rice, maize, and wheat, and we’re just perpetuating monocultures,” he says. “I’d rather see a low-density grazing system with grass-fed beef than to have that land converted into soybeans.”

WHERE CAN YOU BUY IT?
At Bareburger, Burger King, White Castle, Qdoba, and other restaurants. The company has also debuted its sausage at Little Caesars pizza restaurants. As we went to press, Impossible Foods said it expects to introduce its products in grocery stores this fall. The delay had been getting approval from the FDA for the use of soy leghemoglobin as a color additive, which the agency just granted this past summer.

HOW MUCH DOES IT COST?
It can cost $1.99 for an Impossible Slider at White Castle, $5.59 for an Impossible Whopper at Burger King, and about $14 at Bareburger. At press time, the company had not yet set a price for its products in grocery stores.
WHAT IS IT?
The short answer: It’s meat tissue grown from animal cells isolated and multiplied in a lab. Several companies, including Just, Memphis Meats, and Mosa Meat, are trying this, mainly with chicken and beef. Others, including Finless Foods and Wild Type, are working on lab-grown fish.

Though each company has its own technology, they all follow the same general steps, says Kate Krueger, Ph.D., research director of New Harvest, a New York-based research institute focused on cellular agriculture. Start with a prime specimen, then collect cells by biopsying the animal (alive or after slaughter) or by extracting stem cells from its blood or an embryo. Next, let the cells proliferate in a solution of nutrients, hormones, and growth agents in a sterile bioreactor. If all goes right, voila, you’ve got meat tissue—or at least something like it.

Proponents foresee it as revolutionary, eliminating the need for feedlots and slaughter. “Theoretically, from a single chicken you can generate cells to make chicken meat to feed the world,” says Vitor Espirito Santo, Ph.D., director of cellular agriculture at Just.

But for now, the companies have yet to bring a single meat product to market (and may not for a while; see below). And what they have manufactured in the lab, and shown in limited demonstrations, is more akin to ground meat—or “unstructured” meat—than, say, a chicken breast or beef steak.

IS IT HEALTHIER THAN BEEF?
Santo, at Just, says that because lab-grown meat will be real meat, it will have a similar nutritional profile, too. But because it is not yet on the market or available for independent analysis (we asked), that’s still not certain.

A potential benefit of lab-grown meat is that it may be less prone to contamination with E. coli, salmonella, or other bacteria, says Steve Myrick, vice president of operations at Memphis Meats. “Because our meat is produced in a controlled production environment and doesn’t involve animal slaughter, we expect to greatly reduce the risk of harmful bacterial contamination that can lead to foodborne illnesses.”

But Hansen, at CR, points out that bacterial contamination can occur in labs, too. And antibiotics are often needed to curb bacteria in cultured cell products from drug companies.

IS IT BETTER FOR THE ENVIRONMENT?
Probably, according to an analysis commissioned by Just similar to those for Beyond Meat and Impossible Foods. But what lab-grown meat production will look like in full swing is still unknown, so its real energy requirements remain unclear.

WHERE CAN YOU BUY IT?
Nowhere, yet. Josh Tetrick, CEO of Just, hopes the company will debut lab-grown chicken nuggets in Asia, which is often used now, because it’s costly and undermines the products’ appeal to people concerned about animal welfare. But Krueger predicts it will be four to six years before “ground” meats are available and a decade or more before we see cuts like steaks.

HOW MUCH WILL IT COST?
That depends on how effectively companies can scale up. Memphis Meats’ first serving of lab-grown chicken, in 2017, cost tens of thousands of dollars. But it can now make that same serving for less than $100. Just says it can also make chicken nuggets for less than $100, and the “cost will continue to fall as we plan for our restaurant debut.”

create crops tolerant to herbicides, such as glyphosate, the chemical in Roundup. Most corn, canola, and soybeans (including those used in the Impossible Burger) grown in the U.S. are genetically engineered to withstand doses of that or other herbicides. Since GMO crops were first marketed in the 1990s, the use of toxic pesticides has increased sharply. That has fueled the emergence of superweeds resistant to the chemicals, requiring farmers to use ever stronger doses that pose risks to human health and the environment. Whether consuming GMO ingredients in foods poses direct risks to people who eat them is still unclear, though no big red flags have been raised. Still, CR’s Michael Hansen has concerns. “GMOs have not been around long enough for us to know their long-term health risks or environmental impact,” he says. “If you want to avoid GMOs, choose organic or look for the Non-GMO Project Verified food label.”
natural sources had average levels of the chemicals that were similar to those cured with synthetic ones. And it didn’t matter what type of meat it was—chicken, ham, roast beef, turkey, or salami.

Nitrates and nitrites aren’t the only problem with deli meats, either. Some contain coloring agents that may pose health risks. They’re also often loaded with sodium. To top it off, cold cuts are prone to contamination with Listeria monocytogenes, a potentially deadly type of bacteria.

That’s why CR looked not only at nitrate and nitrite levels but also at sodium, listeria, and a compound called 4-MEI, a potentially harmful byproduct of some caramel colors.

Here’s what we found—and what you need to know about deli meat to stay safe and healthy.

Regularly eating even small amounts of cold cuts increases your risk of cancer and heart disease. And choosing ‘uncured’ products won’t help. Here’s what you need to know.

WHEN YOU’RE LOOKING for a healthy deli sandwich, you probably choose lean turkey over fatty salami. And if you’re like close to half the deli-meat eaters in a recent nationally representative CR survey of 1,000 people, you’d probably go for the meat labeled “no nitrates or nitrites added.”

But while turkey is among the leanest deli meats, in the big picture it may not be healthier than other types. That’s because all cold cuts are processed meats, like bacon and hot dogs. Regularly eating them—even in amounts less than what you probably put in a sandwich—clearly increases the risk of cancer. They’ve also been linked to heart disease, stroke, and type 2 diabetes. And though avoiding nitrates and nitrites is a good idea—they’re probable carcinogens, according to the World Health Organization—choosing “no nitrite” (also labeled uncured) meats isn’t better.

Why not? “Thanks to the topsy-turvy world of government food labeling rules, ‘no nitrates’ doesn’t mean no nitrites,” says Charlotte Vallaey, senior food and nutrition policy analyst at CR. Instead, it means that the nitrates and nitrites used to “cure”—or preserve and flavor—meat come from celery or other natural sources, not synthetic ones, such as sodium nitrate or nitrite.

To further confuse matters, “their chemical composition is absolutely the same, and so are the health effects,” says Joseph Sebranek, Ph.D., Morrison Endowed Chair in meat science at Iowa State University.

But don’t “uncured” cold cuts at least have lower amounts of those compounds? Nope, according to CR’s recent tests of 31 deli meats. Products cured with nitrates and nitrites from natural sources had average levels of the chemicals that were similar to those cured with synthetic ones. And it didn’t matter what type of meat it was—chicken, ham, roast beef, turkey, or salami.

Nitrates and nitrites aren’t the only problem with deli meats, either. Some contain coloring agents that may pose health risks. They’re also often loaded with sodium. To top it off, cold cuts are prone to contamination with Listeria monocytogenes, a potentially deadly type of bacteria.

That’s why CR looked not only at nitrate and nitrite levels but also at sodium, listeria, and a compound called 4-MEI, a potentially harmful byproduct of some caramel colors.

Here’s what we found—and what you need to know about deli meat to stay safe and healthy.
The Risks of Nitrites

Nitrates and nitrites prevent bacterial growth and give deli meat its distinctive color and flavor. But there’s a downside. Nitrates convert to nitrites, and when nitrites interact with protein, that creates compounds called nitrosamines—which may cause cancer.

The North American Meat Institute (NAMI), an industry group, says that most nitrites in our diets come from vegetables. “But there’s little protein in vegetables, so their nitrites don’t easily convert to nitrosamines,” says Michael Hansen, Ph.D., a senior scientist at CR. “It may also be that antioxidants or other compounds in vegetables prevent nitrites from becoming nitrosamines.”

Synthetic nitrites have been used since the 1920s to speed up the curing process. But when health concerns about them surfaced in the 1960s, some manufacturers began processing meat without any nitrites.

“These were gray, didn’t hold flavor, and were susceptible to bacterial spoilage,” Sebranek says. To alert consumers to those products, which are now rare, the Department of Agriculture required that they be labeled “uncured.”

Then, in the 1990s, companies developed new ways to cure meats with celery or other natural nitrate/nitrite sources. But the USDA decided that because the source of the compounds differed, meats made with them must be labeled “uncured” and “no nitrites or nitrites added,” Sebranek says, “even though everyone in the meat industry realizes it’s not technically correct.”

Though uncured meats must also be labeled with a statement that clarifies that they have nitrates and nitrites from natural sources, that language is usually buried in fine print and doesn’t explain that those compounds are chemically identical to synthetic ones.

Many meat processors believe that all deli meat should be labeled “cured,” no matter which curing process is used, according to NAMI.

CR and the Center for Science in the Public Interest are asking the USDA to update its labeling rules. “‘Uncured’ and ‘natural nitrates/nitrites’ makes people think these meats are healthier, but they aren’t,” says CR’s Vallaey.

The USDA told CR that it is evaluating the effectiveness of vegetable-based curing agents and what would be required to change the current rules.

What CR’s Tests Found

CR focused on nitrates and nitrites, but we also looked at 4-MEI, listeria, and sodium.

Nitrates and nitrites: We tested 31 packaged deli meats—name brands and store brands—including chicken, ham, roast beef, salami, and turkey. (See “CR’s Deli Meat Test Results,” on page 52.)

All samples had levels below the federal government’s thresholds for deli meats: 500 micrograms per gram for nitrate and 200 micrograms for nitrite. But our tests also showed how confusing the labels can be. There were 10 “cured” meats in our tests and 21 “uncured.” On average, the nitrate and nitrite levels were essentially the same.

4-MEI: We tested 12 packaged deli meats with caramel color in the ingredients list for 4-MEI—a byproduct of some caramel colors used in deli meat, colas, and other foods. Animal studies suggest that 4-MEI increases cancer risk, and in California any food that exposes consumers to more than 29 micrograms per day must carry a cancer warning label.

None of the meats we tested had more than that amount of 4-MEI in a 3-ounce serving. But some had high levels, up to 21 micrograms. “So some deli meats could add a significant amount of 4-MEI to your diet, especially if you eat a lot of them or get the compound from other sources,” says Sana Mujahid, Ph.D., manager of food safety testing at CR.

Listeria monocytogenes: Cold cuts are known to be a risky food for listeria, and meats sliced at deli counters are more likely to be contaminated than packaged ones. CR tested 133 samples of sliced meat purchased in New York City delis. Two of them contained the bacteria—one with a strain involved in an outbreak of illnesses linked to deli meat and cheese that put eight people in the hospital (one person died). CR notified the NYC Department of Health and Mental Hygiene of our findings, and it addressed the issues.

Listeriosis, the illness caused by listeria, is rare but serious: More than 90 percent of people who get it are hospitalized, and 1 in 5 dies. The very old or young, and people with compromised immune systems, are more vulnerable. So are pregnant women, because the illness can cause miscarriage and stillbirth. The Centers for Disease Control and Prevention says that people in those high-risk groups should avoid deli meat entirely.

Sodium: CR nutritionists reviewed the sodium in 124 packaged deli meats from a variety of brands and compared it with the sodium in similarly sized portions of fresh meats, such as grilled chicken. On average, deli meats had 8 to 11 times the sodium content (see “CR’s Deli Meat Test Results,” on page 52).

Too much sodium raises the risk of...
What Deli Meat Labels Really Mean

**Uncured**
These meats are almost always cured, but the curing agents are nitrates or nitrites derived from natural sources such as celery, not synthetic ones, such as sodium nitrite.

**Organic**
The meat must come from animals given organic feed and raised without antibiotics or added hormones. They may contain natural curing agents, but not synthetic ones, such as sodium nitrite. Caramel colorings that contain 4-MEI can’t be used.

**Reduced Sodium or Lower in Sodium**
These terms don’t mean low sodium—which is defined as 140 mg or less per serving. Rather, they mean that a food has at least 25 percent less sodium than a serving of a comparable product. The lowest sodium count in the meats in our tests was 150 mg, but many had far more.

**Natural**
Meat with this term is supposed to be “minimally processed.” But the Department of Agriculture’s definition of that term doesn’t clarify whether that includes the curing process. That omission allows manufacturers to use “natural” on deli meat labels—even though it is processed.

**Healthy**
Meats with this claim have to be low in fat and saturated fat, and have no more than 480 mg sodium per serving. But the claim doesn’t take the other health risks of processed meat into consideration.

**No Added Hormones**
This is a helpful term for deli meats made from beef, but it’s misleading for those made with poultry and pork. That’s because cattle can be raised with added hormones, but poultry and pork cannot. So even poultry or pork products without a “no hormones” label don’t have added hormones.
high blood pressure and heart disease. Experts advise keeping it under 2,300 mg a day. Cold cuts, and other cured meats, are the fourth-largest contributors of sodium in the U.S. diet, according to the CDC. “Cutting back on deli meat is an effective way to cut back on sodium,” says CR nutritionist Amy Keating, R.D.

The Toll on Public Health
Processed meats can also contain other harmful substances. These include heterocyclic amines and polycyclic aromatic hydrocarbons, chemicals formed in meat cooked at high temperatures. And research suggests that too much of the iron found in beef and pork may enhance the conversion of nitrites to nitrosamines.

It’s the combined effect of those and other factors that makes processed meat such a health hazard, says Fang Fang Zhang, M.D., associate professor at the Friedman School of Nutrition Science and Policy at Tufts University. Her research found that more than 14,500 new colorectal and other cancer cases in the U.S. annually could stem from processed meat. Other studies suggest a link between the meat and bladder and breast cancer. The World Health Organization, in fact, calls processed meat a known human carcinogen.

It may also be responsible for almost 58,000 deaths from heart disease, stroke, and type 2 diabetes each year, according to a 2017 analysis in JAMA.

Most Americans consume more than enough processed meat to pose risks. It doesn’t take much: Harvard researchers found that increasing processed red meat intake by just half a serving a day (½ ounce deli meat, ½ hot dog, or 1 slice bacon) raised the risk of dying over the next eight years by 13 percent. According to a 2019 study in the Journal of the Academy of Nutrition and Dietetics, on average we eat about 6½ ounces of processed meat each week, with deli meat as the top source. CR’s recent survey found that almost half of Americans eat deli meat at least once a week. Among those with children under 12, 57 percent said their kids eat deli meat at least weekly.

Must You Give Up Deli Meat?
No, but you should sharply limit how much you eat. “There is no known safe level of processed meat,” Zhang says.

Keating, at CR, suggests that “when it comes to your lunch, think outside the box.” Try sandwiches made with tomatoes and mozzarella, roasted or fresh vegetables with avocado or hummus, or nut butters with apples, berries, or bananas instead of jam. Egg salad, canned salmon, or light tuna can also be good options.

When you do opt for meat, choose fresh meat. Stick with small amounts—about 3 ounces—of cooked turkey, chicken, or lean cuts of beef.

—Additional reporting by Maggie Veatch and Nicole Wetsman
ROAD REPORT

AHEAD OF THE CURVE

Defeating Drowsy Driving

The National Highway Traffic Safety Administration estimates that drowsiness is a factor in about 2.5 percent of automobile crashes. But a 2018 study by the AAA Foundation for Highway Safety concluded that it could contribute to about 9 percent of accidents. Almost every major automaker offers some kind of driver monitoring system to detect fatigue or inattention, but we think Cadillac’s Super Cruise hands-free driver assistance feature is the best system available today. Though the company says it’s not designed to detect drowsy driving, the system uses a camera to make sure a driver’s eyes are open and looking at the road ahead. It would be even better if the camera were always on, not just while the vehicle’s driver assistance feature is engaged.

ASK OUR EXPERTS

My car makes a sloshing sound turning corners. What could it be?

The most common cause is a clogged drain trapping water in the heating and cooling system. The water, formed by condensation, usually empties onto the ground. But a clogged drain can cause it to back up, leading to the sloshing sound and even dampness on the passenger-side floor. The fix is typically quick and easy but best handled by a mechanic. Most vehicles have several drain holes, including in the doors, trunk, and sunroof. When these become blocked, water can collect and cause damage, including corrosion. If the drains are clear, the cause could be the engine cooling system, which should be checked by a professional.

RECALL

Honda & Acura

Honda is recalling 1.6 million Honda and Acura vehicles in the final phase of its Takata airbag recall. The airbags, which were installed in 41.6 million vehicles from 19 manufacturers, are being replaced because faulty inflators can spray sharp metal fragments when the airbag deploys, causing injury or death. What to do: Honda will replace the airbag inflators at no cost and provide a free loaner car while the work is being done. For information, go to hondaairbaginfo.com or call 888-234-2138.

THE VITAL STATISTIC

23.2 MILLION

Number of Volkswagen Beetles produced between 1945 and 2019, before the last model rolled off the assembly line in mid-July. CR first evaluated the Bug in 1951, noting that the $1,280 model cruised nicely but lacked power—and a gas gauge.

Source: Volkswagen of America.

DASHBOARD DECODER

What Does This Icon Mean?

□ NO WHITE SHOES AFTER LABOR DAY
□ BRAKE SHOE NEEDS ATTENTION
□ YOUR SHOE MAY BE STUCK UNDER THE FLOOR MAT
□ DEPRESS BRAKE TO START CAR

Joking aside, this symbol appears in cars with a push-button ignition. It’s meant to remind drivers that they need to press the brake pedal to start the car, then shift into whichever gear they want.

ILLUSTRATIONS BY MATTHEW HOLLISTER
What’s So Great About Used Cars?

Shopping smart can get you a safer, more fuel-efficient vehicle than the one you may be driving now. We steer you to top choices.

by Jeff S. Bartlett

Many consumers still see a used-car purchase as a compromise. But buying a lightly used vehicle with modern conveniences, onboard entertainment, and the latest safety features can be a smart move if you know what to look for. And the average price of a 3-year-old used car is a little less than half what it would cost new, according to the latest sales data from Kelley Blue Book. Many vehicles coming off leases and returning to dealerships as used cars tend to be in good shape and have low mileage, says Mel Yu, a CR auto analyst.

Buying used might make even more sense now because many 2016 models are equipped with the advanced safety features that Consumer Reports says all models should come with: forward collision warning (FCW), automatic emergency braking (AEB), pedestrian detection, and blind spot warning (BSW).

Leased vehicles now make up nearly one-third of new-car sales. That means more than 4 million of them will become available for purchase as used cars this year, according to the National Automobile Dealers Association. And there should be a substantial supply of these desirable used cars for years to come, says Patrick Manzi, a senior economist for the association. Ride-share drivers, such as those who work for Uber and Lyft, are taking advantage of the influx of quality, well-equipped used cars, says Anil Goyal, executive vice president of operations at Black Book, an automotive pricing data company. Consumers benefit by being able to hire ride-share drivers who are using these almost-new cars featuring advanced safety features.

Despite all of these selling points, some shoppers favor new cars to avoid the risks associated with secondhand vehicles. Concerns about reliability are understandable, because used cars are often out of warranty and may have been driven for tens of thousands of miles. Each one also has a unique maintenance and repair history. But our annual surveys routinely find that many cars are quite reliable even after a few years of service.

And there are ways to mitigate the risks. One way to feel more confident about buying secondhand is to get a certified pre-owned (CPO) vehicle. These typically combine a detailed vehicle inspection with reconditioning by the dealership, and they’re sold with a warranty. A CPO car does cost more, but it can reduce stress for used-car buyers.

No matter where you buy, be sure to go to nhtsa.gov/recalls to see if the car has any open recalls, so that you can have the work done if necessary.

Beware of Pitfalls

Regardless of model or age, every used car has had an individual road experience and requires a close look to avoid expensive surprises. Here are steps you can take to better protect yourself:

Check the vehicle history report. Carfax, AutoCheck, and similar services can tip you off to a potential problem or questionable history. But CR has found that vehicle reports might not capture all incidents, especially those that are recent.

Look for hidden signs of crash damage. Paint that doesn’t match or uneven spacing between body panels indicates previous bodywork.

Check for flood damage. Inspect difficult-to-clean places for mud and debris, such as gaps between panels in the trunk and under the hood. Check the seat-mounting screws for rust.

Push the buttons. Try out all of the car’s features and functions. This can reveal some common problems, such as air conditioning that doesn’t blow cold or a window that doesn’t work properly.

Tires. Check older tires for uneven wear. That can indicate a lack of maintenance or a suspension problem.

Second opinion. Always pay a mechanic you trust for a bumper-to-bumper inspection before you buy.
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Road Report Used Cars Top Picks

CR’S PICKS FOR THE BEST USED CARS

TO ARRIVE AT THESE recommendations, we analyzed our road-test scores for 2016 models from when they were new to compile a list of high-scoring vehicles. We reviewed our exclusive reliability and satisfaction survey data from CR members to find out which of these cars were standouts as used vehicles. (Our Annual Auto Survey covers almost half a million vehicles of various models and years.)

Based on that data, we’ve highlighted 10 used cars drawn from several popular categories and price ranges. These models are noteworthy for both their scores and prices. Prices for each model represent the retail range, from a bare-bones base version to a well-equipped top-trim version. The most common are priced in the middle of the range.

We’ve also provided alternatives in each category. These models shined in our tests, too, and CR members reported them to be reliable used cars.

Many advanced safety systems that are now standard on several vehicles were only optional in 2016, so make sure the car you’re considering is equipped with the safety features you want.

Smart Bargains

2016 KIA SOUL

CR’S TAKE: Why settle for a boring small car when you can choose something with personality? The spirited Soul shines as a used-car value, thanks to its low initial cost and steep depreciation. You can upgrade with comfort and convenience features commonly associated with upscale models, such as a heated rear seat. Passenger space is generous for a car of this size.

BEST VERSION TO GET: The midlevel trim (Plus) is nicely equipped and comes with the bigger, 2.0-liter engine. But the top trim (Exclaim) can be found with optional FCW.

OTHERS TO CONSIDER: Honda Fit, Subaru Impreza

2016 CHEVROLET EQUINOX

CR’S TAKE: The Equinox is a “tweener” that competes with midsized SUVs but is priced like a small one. CR considers it a smart used-car value backed by much better than average reliability. The Equinox shrugs off bumps and ruts, and its handling is responsive.

BEST VERSION TO GET: Choose a V6-powered Equinox with at least an LT trim for power amenities and available BSW. Step up to the pricier LTZ trim for more comfort features, plus the available Driver Confidence Package II with FCW and lane departure warning (LDW).

OTHERS TO CONSIDER: Kia Sorento, GMC Terrain
CR’S TAKE: The price of the sleek Mazda6 undercuts the more popular Honda Accord and Toyota Camry in the used-car market, plus our testers think it’s more fun to drive. Its fuel economy is class-leading at 32 mpg, better than many compact sedans. Despite being smaller than its key rivals, the Mazda6 cabin is roomy and comfortably fits a wide range of test drivers.

BEST VERSION TO GET: The midlevel Touring has desirable features, like a power driver’s seat, BSW, and rear cross traffic alert. Models with the Touring Technology Package get FCW and heated seats.

OTHERS TO CONSIDER: Toyota Camry, Subaru Legacy

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OTHERS TO CONSIDER: Toyota Camry, Subaru Legacy

CR’S TAKE: The ES is comfortable, quiet, and efficient. The smooth, strong V6 engine returns a good 25 mpg overall, and the impressive hybrid version got 36 mpg in our tests. A used ES is a rewarding upgrade from a plain family sedan, bringing panache and luxury for the money. Plus, a full suite of safety gear is available.

BEST VERSION TO GET: We recommend the hybrid ES 300h with the Premium and Luxury packages, plus optional BSW. If you can, avoid models with the distracting mouselike controller that operates the infotainment screen.

OTHERS TO CONSIDER: Toyota Avalon, Hyundai Azera

CR’S TAKE: The X3 combines SUV utility with luxury-car appointments and a sporty demeanor. Our testers found it to be functional and entertaining to drive. The steady ride, agile handling, responsive powertrain, and quiet cabin create a premium feel. The firm, supportive front seats position the driver high and upright, which makes for good visibility.

BEST VERSION TO GET: Stick with the punchy 28i but look for one with the Premium package and rearview camera. Snow-belt drivers will appreciate the features in the Cold Weather package.

OTHERS TO CONSIDER: Audi Q3, Lexus NX 200t, Audi Q5
Road Report Used Cars Top Picks

**Under $30,000**

**2016 TOYOTA TUNDRA**

**CR'S TAKE:** The Tundra is a capable workhorse with standout reliability based on our survey. That combination makes it shine as a used vehicle. The truck is available in numerous body configurations, with three cab sizes and two bed lengths.

**BEST VERSION TO GET:** The 4.6-liter V8 engine is good for basic chores, but demanding drivers will want a version with a 5.7-liter and a tow package. Skip the SR5 trim and start shopping at the Limited and above for creature comforts, trailer-brake controls, a 38-gallon fuel tank, and optional BSW.

**ANOTHER TO CONSIDER:** Ford F-150

**2016 MAZDA MX-5 MIATA**

**CR'S TAKE:** The MX-5 Miata's sparkling combination of nimble handling, fuel efficiency, and solid reliability have made it a fun favorite at our test track. And owners agree, rating it high for satisfaction. It's light and playful, with quick acceleration and cat-like reflexes. Plus, the manual top is a cinch to use.

**BEST VERSION TO GET:** The Club trim delivers a bang for the used-car buck, and its upgraded suspension and tires boost the car's agility. For comfort, choose the Grand Touring trim. It rides better, and it has heated leather seats and BSW.

**OTHERS TO CONSIDER:** Scion FR-S, Subaru BRZ

**2016 INFINITI Q70**

**CR'S TAKE:** The Q70 is a sporty luxury sedan that's engaging to drive, with agile handling and quick steering. The base V6 engine delivers excellent performance. The interior is nicely detailed with padded surfaces, rich-looking wood, and tasteful stitching. The Q70 offers a premium experience that really stands out at this price.

**BEST VERSION TO GET:** Go for models with the V6 engine and the optional FCW and BSW. Consider AWD if you have to drive in snow. Avoid the Sport package because it stiffens the ride.

**ANOTHER TO CONSIDER:** Mercedes-Benz E350

**2016 TOYOTA HIGHLANDER**

**CR'S TAKE:** The Highlander is a midsized SUV that is perennially top-rated by our testers and members, and it excels in comfort and family-friendliness. The driver's seat is roomy and supportive. The foldaway third row adds kid-toting versatility.

**BEST VERSION TO GET:** The popular XLE trim level offers many desirable features, including standard leather upholstery, a moonroof, and a power tailgate. But stretch to the Limited, if you can, to get advanced safety features, such as FCW and BSW. The pricier hybrid adds a 25 percent increase in fuel economy.

**OTHERS TO CONSIDER:** Hyundai Santa Fe, Kia Sorento

**Specialty**

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**ANOTHER TO CONSIDER:** Ford F-150
### Ratings

**Used Car Top Picks**

Our special Overall Score gives you the tools to find the vehicle that meets your needs and budget the best.

<table>
<thead>
<tr>
<th>Make &amp; model</th>
<th>Overall Score</th>
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<th>Survey Results</th>
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<td>$13,250–$19,850</td>
<td>🟢</td>
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<tr>
<td>Volkswagen Passat (1.8T)</td>
<td>66</td>
<td>$11,650–$18,075</td>
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</tr>
<tr>
<td>Nissan Altima (4-cyl)</td>
<td>61</td>
<td>$13,300–$17,275</td>
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<td>🟢</td>
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<tr>
<td>Chrysler 200 (4-cyl)</td>
<td>60</td>
<td>$12,975–$18,575</td>
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<td>🟢</td>
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<tr>
<td>Volkswagen Malibu (1.5T)</td>
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<td>$14,850–$16,650</td>
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<tr>
<td>Chrysler 200 (4-cyl)</td>
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<td>$12,975–$18,575</td>
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<tr>
<th>Make &amp; model</th>
<th>Overall Score</th>
<th>Price Range</th>
<th>Survey Results</th>
<th>Test Results</th>
<th>Overall mpg</th>
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<tr>
<td><strong>CARS: LARGE</strong></td>
<td></td>
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<tr>
<td>Kia Cadenza</td>
<td>83</td>
<td>$16,625–$18,400</td>
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<tr>
<td>Toyota Avalon (V6)</td>
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<td>$17,525–$21,950</td>
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<td>Hyundai Azera</td>
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<td>$16,200–$18,375</td>
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<td>Nissan Maxima</td>
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<td>$17,950–$21,300</td>
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<tr>
<td>Ford Taurus (3.5L)</td>
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<td>$14,675–$22,850</td>
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<tr>
<td>Dodge Charger (V6)</td>
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<td>$18,025–$22,850</td>
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<tr>
<td>Buick LaCrosse (V6)</td>
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<td>$15,325–$23,325</td>
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<td>76</td>
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</table>

1. Miles-per-gallon equivalent (MPGe). 2. Miles per gallon while running on gas engine.
### Ratings 
#### Used Car Top Picks Continued

**CARS: LARGE Continued**

<table>
<thead>
<tr>
<th>Make &amp; model</th>
<th>Overall Score</th>
<th>Price Range</th>
<th>Survey Results</th>
<th>Test Results</th>
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<tbody>
<tr>
<td>Chrysler 300 (V8)</td>
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<td>$17,625–$22,600</td>
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<tr>
<td>Chevrolet S5</td>
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<td>$33,300–$36,750</td>
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<td>Chevrolet Impala (V6)</td>
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<td>$11,575–$18,675</td>
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**CARS: LUXURY ENTRY-LEVEL**

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<td>Lexus CT 200h</td>
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<td>$18,450–$20,000</td>
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<tr>
<td>Acura ILX</td>
<td>61</td>
<td>$16,550–$18,500</td>
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<tr>
<td>Volkswagen CC (2.0T)</td>
<td>57</td>
<td>$13,900–$19,325</td>
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<tr>
<td>Mercedes-Benz CLA250</td>
<td>54</td>
<td>$20,300–$25,375</td>
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<td>Audi A3 (1.8T)</td>
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<td>Buick Verano (2.4L)</td>
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<td>$11,650–$15,600</td>
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**CARS: LUXURY COMPACT**

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<th>Price Range</th>
<th>Survey Results</th>
<th>Test Results</th>
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<tbody>
<tr>
<td>Audi A4 (2.0T, Quattro)</td>
<td>73</td>
<td>$18,150–$21,225</td>
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<tr>
<td>Buick Regal (2.0T)</td>
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<td>$13,475–$20,675</td>
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<tr>
<td>Volvo S60 T5 Drive-E</td>
<td>70</td>
<td>$15,350–$25,500</td>
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<tr>
<td>Mercedes-Benz C300 (4MATIC)</td>
<td>68</td>
<td>$19,775–$45,300</td>
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<tr>
<td>BMW 328i</td>
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<td>$17,750–$26,475</td>
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<td>Infiniti Q50 (3.0L, AWD)</td>
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<td>$18,450–$30,625</td>
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<tr>
<td>Lexus IS 300 (AWD)</td>
<td>52</td>
<td>$20,775–$28,400</td>
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<tr>
<td>Acura TLX (2.4L)</td>
<td>48</td>
<td>$18,325–$22,750</td>
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<tr>
<td>Cadillac ATS (2.0T)</td>
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<td>$16,750–$38,650</td>
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**CARS: LUXURY MIDSIZED**

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<th>Survey Results</th>
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<td>Lexus ES 350</td>
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<td>$23,075–$25,025</td>
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<tr>
<td>Lexus ES 300h</td>
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<tr>
<td>Mercedes-Benz E350</td>
<td>77</td>
<td>$23,825–$56,475</td>
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<tr>
<td>Infiniti Q70 (V6)</td>
<td>73</td>
<td>$22,475–$29,025</td>
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<tr>
<td>Infiniti Q70 Hybrid</td>
<td>69</td>
<td>$22,375–$25,975</td>
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<tr>
<td>Acura RLX Tech (V6, AWD)</td>
<td>64</td>
<td>$21,325–$26,400</td>
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<tr>
<td>Hyundai Genesis (V6, AWD)</td>
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<td>$22,075–$25,175</td>
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<tr>
<td>Audi A6 (3.0T, Quattro)</td>
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<td>Lexus GS 350</td>
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<td>$23,225–$46,400</td>
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<td>Cadillac CT6 (3.6L, AWD)</td>
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<td>BMW M53i</td>
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<td>$21,950–$31,350</td>
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<tr>
<td>Cadillac XTS</td>
<td>57</td>
<td>$18,650–$28,875</td>
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**CARS: LUXURY MIDSIZED Continued**

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<tr>
<th>Make &amp; model</th>
<th>Overall Score</th>
<th>Price Range</th>
<th>Survey Results</th>
<th>Test Results</th>
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<tbody>
<tr>
<td>Lincoln MKZ (2.0T)</td>
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<td>Lincoln MKZ Hybrid</td>
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<td>$18,350–$20,475</td>
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<td>Lincoln MKS (3.7L)</td>
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<tr>
<td>Jaguar XF (V6)</td>
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<td>$20,100–$34,025</td>
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<tr>
<td>Cadillac CTS (3.6L, AWD)</td>
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<td>$19,550–$31,500</td>
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<tr>
<td>Maserati Ghibli S Q4</td>
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<td>$27,175–$32,525</td>
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**CARS: ULTRA LUXURY**

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<th>Test Results</th>
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<td>Lexus LS 460L</td>
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<td>Audi A8 L</td>
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<td>BMW 750i xDrive</td>
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<tr>
<td>Tesla Model S P85D</td>
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<td>$38,800–$80,350</td>
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<tr>
<td>Porsche Panamera</td>
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<td>$47,925–$107,725</td>
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<tr>
<td>Mercedes-Benz S550 (4MATIC)</td>
<td>61</td>
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<tr>
<td>Jaguar XJL (V6)</td>
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<td>$32,150–$66,800</td>
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**SPORTS/SPORTY CARS (UNDER $30,000)**

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<th>Test Results</th>
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<tr>
<td>Mazda MX-5 Miata</td>
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<td>$16,950–$19,275</td>
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<td>Scion FR-S</td>
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<td>$18,575–$22,100</td>
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<tr>
<td>Subaru BRZ</td>
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<td>$16,825–$20,875</td>
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<tr>
<td>Hyundai Veloster</td>
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<td>$13,400–$15,500</td>
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<tr>
<td>Nissan 370Z (coupe)</td>
<td>60</td>
<td>$20,525–$29,700</td>
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<tr>
<td>Buick Cascada</td>
<td>55</td>
<td>$18,075–$18,775</td>
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<tr>
<td>Volkswagen GTI</td>
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<td>$17,075–$19,300</td>
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<tr>
<td>Mini Cooper S</td>
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<tr>
<td>Subaru WRX</td>
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<td>$19,700–$29,125</td>
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<tr>
<td>Ford Mustang (2.3L)</td>
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<tr>
<td>Ford Focus ST</td>
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<tr>
<td>Ford Fiesta ST</td>
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<td>$15,050–$16,400</td>
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<tr>
<td>Fiat 500 Abarth</td>
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**SPORTS/SPORTY CARS ($30,000 AND UP)**

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<th>Survey Results</th>
<th>Test Results</th>
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<td>Porsche 911 Carrera S</td>
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<td>$64,225–$137,125</td>
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<td>Chevrolet Camaro (V8)</td>
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<td>$26,825–$30,875</td>
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<td>Audi TT Coupe (2.0T)</td>
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<tr>
<td>Make &amp; model</td>
<td>Overall Score</td>
<td>Price Range</td>
<td>Survey Results</td>
<td>Test Results</td>
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<tr>
<td>SPORTS/SPORTY CARS ($30,000 AND UP)</td>
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<tr>
<td>BMW M335i</td>
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<tr>
<td>Porsche Boxster 2.7</td>
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<td>$37,325–$63,675</td>
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<tr>
<td>Chevrolet Corvette Stingray</td>
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<td>Dodge Challenger (V8)</td>
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<tr>
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<td>WAGONS (ALL-WHEEL DRIVE)</td>
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<tr>
<td>Subaru Outback (4-cyl.)</td>
<td>72</td>
<td>$18,150–$22,625</td>
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<tr>
<td>Ford Edge</td>
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<td>$16,775–$26,000</td>
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<tr>
<td>MINIVANS</td>
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<td>Honda Odyssey</td>
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<td>Toyota Sienna</td>
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<td>Kia Sedona EX</td>
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<td>Ford Transit Connect (2.5L)</td>
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<tr>
<td>Nissan Quest</td>
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<td>$14,175–$22,275</td>
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<tr>
<td>Chrysler Town &amp; Country</td>
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<tr>
<td>Dodge Grand Caravan</td>
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<td>$15,025–$16,050</td>
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<td>SUVS: SUBCOMPACTS</td>
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<tr>
<td>Subaru Crosstrek</td>
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<tr>
<td>Honda HR-V</td>
<td>61</td>
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<tr>
<td>Mazda CX-3</td>
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<td>$14,175–$17,800</td>
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<td>37</td>
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<td>Jeep Renegade (2.4L)</td>
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<td>$13,550–$17,600</td>
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<tr>
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<td>$11,350–$15,875</td>
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<td>SUVS: COMPACT</td>
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<td>Subaru Forester (2.5L)</td>
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<td>SUVS: LARGE</td>
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### Ratings > Used Car Top Picks Continued

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<td>Chevrolet Tahoe</td>
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<tr>
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<td>14</td>
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| **SUVs: LUXURY ENTRY-LEVEL** |
| Audi Q3              | 66            | $19,725-$22,800 , 2016 model | $1  | 77  | 22          |
| Mini Cooper S        | 61            | $14,425-$24,525 , 2016 model | $1  | 68  | 26          |
| Buick Encore         | 58            | $13,575-$17,775 , 2016 model | $1  | 69  | 23          |
| BMW X1 xDrive28i    | 45            | $21,575-$23,000 , 2016 model | $1  | 74  | 26          |
| Mercedes-Benz GLA250 | 45            | $20,075-$33,725 , 2016 model | $1  | 70  | 26          |

| **SUVs: LUXURY COMPACT** |
| Lexus NX 200t        | 75            | $24,150-$27,075 , 2016 model | $1  | 74  | 24          |
| Lexus NX 300h        | 73            | $28,425-$30,125 , 2016 model | $1  | 71  | 29          |
| BMW X3 xDrive28i    | 73            | $21,475-$26,500 , 2016 model | $1  | 82  | 23          |
| Audi Q5 (2.0T)      | 71            | $20,550-$36,700 , 2016 model | $1  | 78  | 21          |
| Porsche Macan S     | 71            | $38,500-$50,325 , 2016 model | $1  | 84  | 19          |
| Acura RDX           | 67            | $21,400-$26,525 , 2016 model | $1  | 75  | 22          |
| Lincoln MKC         | 63            | $17,800-$25,675 , 2016 model | $1  | 72  | 19          |
| Buick Envision      | 59            | $21,625-$22,625 , 2016 model | $1  | 67  | 21          |
| Volvo XC60          | 52            | $18,125-$29,875 , 2016 model | $1  | 71  | 17          |
| Cadillac SRX        | 48            | $18,975-$26,275 , 2016 model | $1  | 67  | 18          |
| Mercedes-Benz GLC300 | 47           | $26,675-$28,050 , 2016 model | $1  | 81  | 22          |
| Land Rover Discovery Sport | 38 | $22,600-$29,375 , 2016 model | $1  | 58  | 21          |

| **SUVs: LUXURY MIDSIZED** |
| Lexus GX 460         | 72            | $33,625-$35,850 , 2016 model | $1  | 70  | 17          |
| BMW X5 xDrive35i    | 70            | $28,150-$35,900 , 2016 model | $1  | 84  | 21          |
| Lexus RX 450h        | 69            | $32,825-$37,400 , 2016 model | $1  | 80  | 29          |
| Lexus RX 350         | 67            | $30,700-$33,650 , 2016 model | $1  | 77  | 22          |

### HOW WE TEST
CR Recommended vehicles did well in the Overall Score within their category. **Overall Score** combines performance in our road tests, results from CR reliability and satisfaction surveys, the availability of key advanced safety systems, and available results from government and insurance industry crash tests. **Price Range** shows retail prices for a 2016 model in average condition. **Survey Results** come from CR member reliability and satisfaction surveys. **Overall reliability** is based on problems reported by members during a 12-month period. **Owner satisfaction** is based on the percentage of CR members who said they’d buy the same car again. When there were not enough responses for a model, we estimated reliability and satisfaction based on results from the brand or for similar models. **Test score** represents CR findings when the vehicle was new. We buy and test about 50 vehicles each year. We assess fuel economy by combining results from a city and highway circuit. **Energy consumption** is expressed as an MPGe equivalent (MPGe). Energy consumption for plug-in hybrids is listed in electric and gas modes.

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**SUVs: LUXURY MIDSIZED Continued**

<table>
<thead>
<tr>
<th>Make &amp; model</th>
<th>Overall Score</th>
<th>Price Range</th>
<th>Survey Results</th>
<th>Test Results</th>
<th>Overall mpg</th>
</tr>
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<tbody>
<tr>
<td>Mercedes-Benz GLE350</td>
<td>67</td>
<td>$26,175-$27,500 , 2016 model</td>
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<tr>
<td>Lincoln MKX (2.7T)</td>
<td>58</td>
<td>$52,125-$57,700 , 2016 model</td>
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<td>18</td>
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<tr>
<td>Tesla Model X 90D</td>
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<tr>
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<tr>
<td>Land Rover Range Rover Sport (3.0L)</td>
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<tr>
<td>Infiniti QX60</td>
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<td>Acura MDX</td>
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<tr>
<td>Porsche Cayenne (V6)</td>
<td>47</td>
<td>$35,850-$37,600 , 2016 model</td>
<td>$1</td>
<td>78</td>
<td>19</td>
</tr>
</tbody>
</table>

| **SUYS: LUXURY LARGE** |
| Toyota Land Cruiser  | 70            | $57,800-$59,000 , 2016 model | $1  | 68  | 14          |
| Buick Enclave       | 60            | $19,125-$26,100 , 2016 model | $1  | 77  | 15          |
| Lincoln Navigator   | 56            | $33,300-$41,000 , 2016 model | $1  | 72  | 15          |
| Land Rover Range Rover (3.0L) | 50 | $45,475-$107,425 , 2016 model | $1  | 80  | 17          |
| Infiniti QX80        | 46            | $35,800-$43,425 , 2016 model | $1  | 68  | 15          |
| Cadillac Escalade   | 38            | $41,500-$53,175 , 2016 model | $1  | 61  | 16          |

**COMPACT PICKUP TRUCKS**

<table>
<thead>
<tr>
<th>Make &amp; model</th>
<th>Overall Score</th>
<th>Price Range</th>
<th>Survey Results</th>
<th>Test Results</th>
<th>Overall mpg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chevrolet Colorado (V6)</td>
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<td>18</td>
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<tr>
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<tr>
<td>Toyota Tacoma (V6)</td>
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**FULL-SIZED PICKUP TRUCKS**

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<th>Survey Results</th>
<th>Test Results</th>
<th>Overall mpg</th>
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<tbody>
<tr>
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<td>15</td>
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<tr>
<td>Ford F-150 XLT (2.7T, V6)</td>
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<td>$18,850-$40,050 , 2016 model</td>
<td>$1</td>
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<td>17</td>
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<tr>
<td>Chevrolet Silverado 1500 (5.3L, V8)</td>
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<td>$18,550-$35,425 , 2016 model</td>
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<td>76</td>
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<tr>
<td>GMC Sierra 1500 (5.3L, V8)</td>
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<td>$17,950-$37,600 , 2016 model</td>
<td>$1</td>
<td>76</td>
<td>16</td>
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<tr>
<td>Ram 1500 Big Horn (V8)</td>
<td>46</td>
<td>$17,700-$32,525 , 2016 model</td>
<td>$1</td>
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</tbody>
</table>
has much of the appeal that makes the conventional version CR’s top-rated subcompact SUV. But its short electric-only range, loud engine, and reduced cargo room are major shortcomings.

The ride is comfortable and controlled, and handling is responsive. Subaru’s standard full-time all-wheel-drive system is also appealing. It has simple controls, easy-to-read gauges, and a user-friendly touch-screen infotainment system. Android Auto and Apple CarPlay are included. Standard power seats, covered in leather, are comfortable, but they lack lumbar adjustments.

We like that automatic emergency braking (AEB), forward collision warning (FCW), and blind spot warning (BSW) are standard. But this plug-in hybrid can run on battery power for only 17 miles, and even then it’s a challenge to drive solely on electric power. Any moderate pressure on the accelerator and the gas engine kicks in.

We got 33 mpg overall in regular hybrid mode, but that’s just 4 mpg better than the conventional Crosstrek. The engine drones when pushed and the electric drive’s whining becomes annoying.

The hybrid battery takes up significant cargo space. Overall, we think the Hybrid isn’t worth the nearly $8,000 added cost over a comparable non-hybrid Crosstrek. Even with tax credits and incentives, the Hybrid’s short electric-only range and other compromises diminish its appeal.

THE NİRO EV is a versatile all-electric hatchback that boasts an impressive EPA-estimated 239-mile range, and it’s one of the most livable EVs currently for sale. It has a more forgiving ride, a roomier interior, and easier-to-use controls than the Tesla Model 3. And the Kia feels more refined and substantial than the Chevrolet Bolt and Nissan Leaf, two of its competitors.

The Niro EV isn’t just a pragmatic choice; there are true driving benefits, too. It’s quick to accelerate, agile in corners, and just a pleasure to drive. Android Auto, Apple CarPlay, and advanced safety systems such as FCW, AEB, and BSW, come standard.

The EX Premium trim is costly but adds desirable extras, such as leather seats, a sunroof, and heated and cooled front seats. Buyers in chilly climates can also add a heat pump that will help keep the cabin warm without quickly draining the battery, and a battery-heating system to speed up cold-weather charging.

The car does have a few weak spots. It takes 10 hours to charge from a 240-volt charger, and its nonstandard gear selector can make it difficult to tell which gear the car is in. The Kia is initially available only in select states, although the company plans to make it available nationwide. The Niro’s most direct competitor is the Hyundai Kona Electric. They share a similar powertrain, but the Kona has a lower starting price, slightly more range, and less interior space. Both of them, along with the electric Kia Soul, are prime examples of the rapid advancement of EVs.
Jeep Gladiator
Truckloads of Personality

The iconic Wrangler into a pickup truck, using a longer wheelbase and adding a 5-foot bed. But where the Wrangler fails as a family SUV, the Gladiator succeeds as a competitive small truck that offers some fun twists.

The distinction here is that the Gladiator competes in a class dominated by lackluster competitors, and it also has a couple of key advantages. It uses a rear suspension derived from its corporate cousin, the impressive Ram 1500. That gives the truck a better ride than the Wrangler and rivals such as the Ford Ranger and Toyota Tacoma. Yet even with an improved ride, the Gladiator still retains Jeep-caliber off-road skills.

Inside, the cabin is relatively large for the class. Drivers can sit upright, as in a chair, rather than low to the floor as drivers have to in General Motors and Toyota compact trucks. But the Gladiator’s flat seats quickly lose support and lack power adjustments.

The V6 engine provides strong power and works well with a smooth eight-speed automatic transmission. The steering is light and imprecise, which compromises handling.

The biggest weakness? There’s so much wind noise at highway speeds that the truck is best used only for around-town driving.

The Gladiator is uniquely appealing, with its removable top and doors, rugged design, and good towing capacity. But its shortcomings and price should give shoppers pause, as will the fact that they’ll have to pay extra for key advanced safety features.

THE GLADIATOR TRANSFORMS
the iconic Wrangler into a pickup truck, using a longer wheelbase and adding a 5-foot bed. But where the Wrangler fails as a family SUV, the Gladiator succeeds as a competitive small truck that offers some fun twists.

Range Rover Evoque
Fashion Over Functionality

DON’T BE SUCKED in by the Evoque’s attractive styling, flashy interior, and Land Rover brand cachet. This overpriced luxury SUV has a disappointing drivetrain, a rough and bumpy ride, and confounding controls.

The frustration starts as soon as you hit the gas pedal, with a delay when accelerating from a standstill followed by an abrupt burst of power when the turbo engine finally kicks in. The automatic stop/start system also is slow to re-engage, making things worse. These characteristics make it particularly tricky to pull out into fast-moving traffic from a stop. The Evoque is neither quick nor efficient. It takes 8.3 seconds to go from 0 to 60 mph, and it manages just 20 mpg overall.

Its handling agility, however, is a plus, with limited body lean and quick steering. But the overly stiff ride makes for pronounced jolts in the cabin on any road that isn’t perfectly smooth.

The dual-screen infotainment system is sleek-looking, but it’s complicated and difficult to use. Android Auto and Apple CarPlay are standard.

The SUV has superb interior fit and finish, with numerous padded and stitched surfaces and lots of glossy black trim. The front seats are comfortable, with good support and plenty of adjustments, but tall passengers might find the rear seat snug. The thick roof pillars and short window glass make it more difficult to see out of the back.

FCW and AEB with pedestrian detection come standard, but BSW is optional.
Ratings > SUVs, Trucks, and Electric Vehicles

The categories below are choices that should appeal to many people shopping for small and luxury SUVs, petite pickups, and affordable electric vehicles.

<table>
<thead>
<tr>
<th>Make &amp; Model</th>
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<th>Price</th>
<th>Survey Results</th>
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<td><strong>SUBCOMPACT SUVs</strong></td>
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<td>Subaru Crosstrek Premium</td>
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<td>$25,905</td>
<td>Opt.</td>
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<td><strong>LUXURY COMPACT SUVs</strong></td>
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<td>Infiniti QX50 Essential</td>
<td>65</td>
<td>$51,380</td>
<td>Std.</td>
<td>77 22 7.2 129 55.5</td>
<td>30.5</td>
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<td>Mercedes-Benz GLC300</td>
<td>58</td>
<td>$49,105</td>
<td>Std.</td>
<td>81 22 6.8 132 50.0</td>
<td>28.0</td>
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<tr>
<td>Alfa Romeo Stelvio Ti</td>
<td>58</td>
<td>$52,040</td>
<td>Opt.</td>
<td>74 24 7.0 132 52.5</td>
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<tr>
<td>Cadillac XT4 Premium Luxury</td>
<td>57</td>
<td>$49,430</td>
<td>Std.</td>
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<tr>
<td>Jaguar E-Pace S</td>
<td>43</td>
<td>$48,070</td>
<td>Std.</td>
<td>69 21 7.9 129 54.0</td>
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<td>Land Rover Range Rover Evoque SE</td>
<td>41</td>
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<td>25.0</td>
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<td>Land Rover Discovery Sport HSE</td>
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<td><strong>COMPACT PICKUP TRUCKS</strong></td>
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<td>Honda Ridgeline RTL</td>
<td>74</td>
<td>$36,480</td>
<td>Opt.</td>
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<tr>
<td>Ford Ranger XLT</td>
<td>58</td>
<td>$40,355</td>
<td>Std.</td>
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<tr>
<td>Chevrolet Colorado LT (V6)</td>
<td>49</td>
<td>$34,300</td>
<td>Opt.</td>
<td>61 18 7.5 132 48.5</td>
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<tr>
<td>Jeep Gladiator Sport</td>
<td>45</td>
<td>$46,405</td>
<td>Opt.</td>
<td>52 18 7.8 135 49.5</td>
<td>–</td>
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<tr>
<td>Toyota Tacoma SRS (V6)</td>
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<td>$34,364</td>
<td>Std.</td>
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<tr>
<td><strong>COMPACT ELECTRIC VEHICLES</strong></td>
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<tr>
<td>Kia Niro EV EX Premium</td>
<td>79</td>
<td>$47,270</td>
<td>Std.</td>
<td>81 112 6.8 135 52.5</td>
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<tr>
<td>Hyundai Kona Electric Limited</td>
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<td>Std.</td>
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<td>Nissan Leaf SL</td>
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<td>$38,115</td>
<td>Std.</td>
<td>62 112 8.0 141 53.5</td>
<td>3+0</td>
</tr>
</tbody>
</table>

**How We Test:** Recommended models did well in our Overall Score, which factors in Road-Test Results, Predicted reliability, Owner satisfaction, and Safety, which includes crash-test results and the availability of crash prevention features, such as forward collision warning and automatic emergency braking, pedestrian detection, and blind spot warning. NA means no such safety system is offered. Opt. means it’s available but not as standard equipment. We also rate many advanced safety features come standard. We deduct points if a model’s gear selector lacks fail-safes. Digital or All-Access members can go to CR.org/cars for complete ratings.

CR.org 85

OCTOBER 2019

WORSE        BETTER        RECOMMENDED
Scared Silly
These selling tactics are frighteningly funny

Power Tools for Ghouls?
Don’t invite us to these festivities.
Submitted by Alan Dubin, Los Alamitos, CA

Watch Your Step
Sure, you can walk in ... but will you walk out?
Submitted by Peter Sartorius, Muskegon, MI

Family Feud
We’ll stick to carving pumpkins, thanks.
Submitted by Terrence Doeberl, Somersworth, NH

Pricey Plots
You might rack up a big bill depending on how long you plan to stay dead.
Submitted by Larry Boody, via email
WATCH HOST JACK RICO AND CR EXPERTS ON THE AWARD-WINNING TV SHOW

Consumer 101

Season 2 Starts This Fall

SATURDAY MORNINGS ON NBC
IN SPANISH ON TELEMUNDO

CHECK YOUR LOCAL LISTINGS FOR TIMES, OR WATCH IT ON DEMAND
CR.ORG/CONSUMER101
On certain vehicles, long-term exposure to high absolute humidity and temperature, combined with high temperature cycling, may eventually degrade the propellant contained in the airbag, causing the airbag to deploy with more force than normal.

**Note:** This is a new recall campaign that includes vehicles that had an airbag inflator replaced under a previous recall or had a replacement airbag installed. The previous recall provided an interim (short-term) repair. Interim repair parts must be replaced with the final repair parts provided in this recall.


**What to do:** Owners will be notified by mail and instructed to take their vehicle to a dealer to replace the driver and/or passenger front-airbag inflator.

**Note:** The Canadian climate results in the propellant degrading slowly. This recall is being conducted as a precaution to address future risk. It is expected that all airbag inflators will be replaced before their function would be affected.
Canada Extra

RECALLS

2007-2012
BMW 3 SERIES

On certain 3 Series and M3 vehicles, the positive battery cable connection to the fuse box may fail and cause a loss of electrical power. As a result, the engine could turn off and various electrical systems may not work, including the lights.

Affected: 2,294 vehicles.

What to do: BMW will notify owners by mail and instruct them to take their vehicle to a dealer to replace the positive battery cable connector with an updated version.

Note: This is an expansion of recall 2013-048.

2012-2019
VOLKSWAGEN MODELS

Certain vehicles were built with headlights that may allow horizontal adjustment, contrary to Canadian regulations.


What to do: The company will notify owners by mail and instruct them to inspect the headlights. A blocking cap will be installed on the horizontal adjusters if necessary.

2014-2017 CADILLAC, CHEVROLET, AND GMC MODELS

On certain vehicles, a decrease in output from the vacuum pump could cause a reduction in power brake assist, resulting in a hard brake pedal and an increase in effort to stop the vehicle.


What to do: The company will notify owners by mail. The corrective actions for this recall are under development. Owners will be sent a second notice to let them know when a final repair will be available.

Note: This problem would cause an error message to display on the instrument panel and a warning chime to sound. The airbag indicator light would also display “passenger airbag off.”


What to do: The company will notify owners by mail and instruct them to take their vehicle to a dealer to install a new connector for the passenger occupant detection system. The wiring will also be rerouted under the seat.

2016-2018
ACURA ILX

On certain cars, the right axle half-shaft could detach and cause a loss of power to the drive wheels. Additionally, if the parking brake is not applied, the car could roll away.

Affected: 8,363 vehicles.

What to do: The company will notify owners by mail and instruct them to take their car to a dealer to inspect the right driveshaft. If the driveshaft is not fully engaged to the half-shaft, the driveshaft and half-shaft will be replaced.
2017-2019 CHRYSLER PACIFICA

On certain vehicles equipped with an engine stop/start system, a loose battery connection could cause an intermittent loss of power steering assist and/or a loss of engine power. **Affected:** 8,294 vehicles. **What to do:** The company will notify owners by mail and instruct them to take their vehicle to a dealer to inspect and clean the battery ground connection.

2017-2019 NISSAN TITAN

On certain trucks, the alternator wiring harness may have been damaged during assembly and may cause a short circuit. Ultimately, this may result in an engine stall, and in rare cases, the short circuit may result in an engine compartment fire. **Affected:** 10,389 vehicles. **What to do:** Nissan will notify owners by mail and instruct them to take their truck to a dealer to inspect the alternator wiring harness. The harness will be repositioned or replaced if necessary.

2018-2019 AUDI MODELS

On certain vehicles, the cover trim for the wheel arches may become loose and cause the trim to detach while driving. **Affected:** 22,222 Q5 and SQ5 vehicles. **What to do:** The company will notify owners by mail and instruct them to take their vehicle to a dealer to secure each wheel arch trim with an additional screw and nut.

2018-2019 MAZDA MODELS

On certain vehicles, a software error in the powertrain control module (PCM) could cause the valve clearance adjuster to not work properly. This could result in internal engine damage or, in the worst case, the engine may stall while driving, without the ability to restart it. The malfunction indicator light (MIL) may also turn on in the instrument cluster. **Affected:** 42,662 2018-2019 CX-5 and Mazda6, and 2019 Mazda3 vehicles. **What to do:** Mazda will notify owners by mail and instruct them to take their vehicle to a dealer to update the PCM software.

2019 HONDA CR-V

On certain vehicles, the wiring for the steering wheel-mounted airbag could be damaged by sharp metal edges that may be present on the steering wheel core. This could disconnect the airbag, while turning on the airbag (SRS) warning light. This problem could also cause the airbag to deploy suddenly without a crash. **Affected:** 17,951 vehicles. **What to do:** Honda will notify owners by mail and instruct them to take their vehicle to a dealer to replace the steering wheel wiring and install a protective cover over the steering wheel core.

2019 MAZDA3

The material on the driver and front-passenger seatbacks may not be installed correctly, interfering with the release button for the head restraint and possibly causing it to be stuck in the “release” position. In a crash, this could allow the head restraint to detach. **Affected:** 2,945 vehicles. **What to do:** Mazda will notify owners by mail and instruct them to take their vehicle to a dealer to install a plastic spacer at the bottom of the head restraint lock-release button.

2019-2020 RAM 1500

An internal error in the occupant restraint controller (ORC) could cause the airbag system to turn off, and the airbags would not deploy in a crash. **Note:** This problem would cause the airbag warning light to stay on in the instrument cluster. **Affected:** 38,890 vehicles. **What to do:** The company will notify owners by mail and instruct them to take their vehicle to a dealer to inspect the occupant restraint controller. If fault codes are found, the ORC will be replaced. If no fault codes are present, the ORC software will be updated.
Canada Extra

Autos

All of the tested vehicles are available in Canada. Report and ratings, pages 63-65

<table>
<thead>
<tr>
<th>Make &amp; Model</th>
<th>Price Range</th>
<th>Acceleration (sec.)</th>
<th>Fuel Economy (liters per 100 km)</th>
</tr>
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<tbody>
<tr>
<td></td>
<td></td>
<td>0-50 km/h</td>
<td>0-100 km/h</td>
</tr>
<tr>
<td>COMPACT SUV</td>
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<td></td>
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<tr>
<td>Subaru Crosstrek</td>
<td>Not yet on sale in Canada</td>
<td>3.6</td>
<td>9.6</td>
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<tr>
<td>Hybrid</td>
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<tr>
<td>LUXURY COMPACT SUV</td>
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</tr>
<tr>
<td>Land Rover Range</td>
<td>$47,950–$62,500</td>
<td>3.4</td>
<td>8.8</td>
</tr>
<tr>
<td>Rover Evoque</td>
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<td></td>
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</tr>
<tr>
<td>COMPACT PICKUP TRUCK</td>
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</tr>
<tr>
<td>Jeep Gladiator</td>
<td>$46,995–$55,590</td>
<td>3.0</td>
<td>8.3</td>
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<td>COMPACT ELECTRIC CAR</td>
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<tr>
<td>Kia Niro EV</td>
<td>$44,995–$53,995</td>
<td>3.1</td>
<td>7.1</td>
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</tbody>
</table>

**SUBARU CROSSTREK HYBRID**
Price as Tested
$36,685 (U.S.)

**OVERALL SCORE**: 84

**KIA NIRO EV**
Price as Tested
$47,270 (U.S.)

**OVERALL SCORE**: 79

**JEEP GLADIATOR**
Price as Tested
$46,405 (U.S.)

**OVERALL SCORE**: 45

**LAND ROVER RANGE ROVER EVOQUE**
Price as Tested
$56,997 (U.S.)

**OVERALL SCORE**: 41

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