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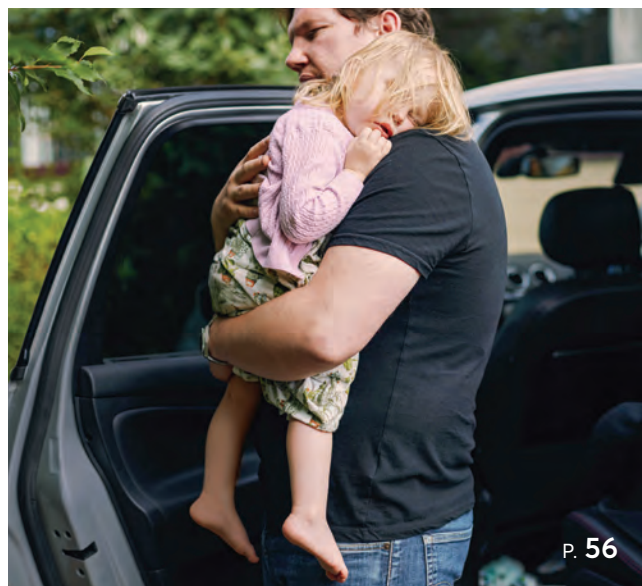
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ABOUT CONSUMER REPORTS

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

❌ POOR ✅ FAIR 🟡 GOOD
🟢 VERY GOOD 🟠 EXCELLENT

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From the President

Your Partner for Every Stage of Life

WHETHER YOU'RE a baby boomer, a Gen Xer, or a millennial, getting the most from your savings and building confidence in the promise of a long, healthy life is a goal we all share. It doesn't matter if retirement is a few years or a few decades away—the decisions you make now can have a dramatic impact on the quality of your life down the road. That's why, in this month's issue, we take a comprehensive look at the new realities that are shaping retirement planning, including the shifting landscape of pensions, annuities, and investment strategies. And we offer advice on what you can do to get ahead of the curve and take control of your future. Inside, you'll find tools to help plan your monthly retirement income and maximize your Social Security benefits, tips on avoiding hidden fees and common financial scams, and saving strategies for every age group. In addition, you'll be able to read up on how CR is working to make retirement easier for consumers everywhere by fighting financial elder abuse, increasing fiscal education, and pushing for stronger rules to safeguard your



savings from predatory reverse mortgages and financial advisers who aren't always serving your best interests.

And because peace of mind isn't only a question of long-term planning, we're offering solutions for overcoming short-term challenges, too, with guidance on the best child car seats to protect your growing family, a new report on avoiding infections in the hospital, and advice on confronting a surprising risk of heart surgery—so no matter where you are in life, you can make smarter choices with an eye on the future.

Marta Tellado

Marta L. Tellado,
President and CEO
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HEART OF THE MATTER



Reducing the rate of hospital infections happens when medical professionals apply brainpower and vigilance. We sent photojournalist **Ed Kashi** to capture some of those people at work in "Zero Tolerance," our article starting on page 32. This type of assignment inspires Kashi's passions. "I'm driven by the belief that photojournalists can have a positive impact on the world," he says. "The openness people allow to documentary photographers brings with it a tremendous responsibility." Kashi, who has won many distinguished photography awards, runs a nonprofit multimedia company, Talking Eyes Media, that focuses on social issues.



A New Look for a New Era

Released in the year of Consumer Reports' 80th anniversary, our November issue featured a redesigned logo and ratings for CR.org and the magazine. We were delighted by the thoughtful and overwhelmingly positive response we received.

EASY TO UNDERSTAND. Bright, colorful, and simple yet strong. I've been reading Consumer Reports for decades, so I'm familiar with your old reporting of ratings. But this system is more user-friendly.

—Judy Newberger

I LOVE LOVE LOVE the changes. They are intuitive and clear at first sight. No more going back to the symbols repeatedly to make sure I know what they mean. I'm very excited! I thank you for your very important work!

—Noëlle MacKenzie



WRITE

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

USING THE NEW colors and icons to rate products makes it easier to read while keeping the integrity of the ratings system. The new logo is crisp and clear. I share information with my husband and other family members based on what I read every month. Thank you for making changes that make the magazine more current without sacrificing quality.

—Kim Braley

A MAJOR STEP in enhancing the value of the rankings. The ratings scale is clear and provides a visual clue for immediate understanding. I like the change and the color scale.

—Luis Fresquez

I THINK IT gives the magazine an uplifting and refreshing look. It's easier to read and interpret, especially the ratings

scale. In the old format, I constantly had to check the legend to see which circles meant what. With this new format, it's imprinted in my mind after just reading the intro page. Plus, green is my favorite color, so the logo and theme are nice!

—Brian Hopkins

I THINK CR has taken a very positive approach based on people's likes and dislikes. CR has shown that it listens to those who regularly read the publication.

—Joyce Wooding

What Price a Cashless Society?

I ENJOYED YOUR November 2016 issue, mainly because I saw that my new Kia Sorento was rated close to the highest. Love it! However, I was

somewhat disappointed with the article "Cashing Out." We have a few places in town that will not accept debit or credit cards, nor the smartphone apps. They will accept cash or a check, and that is it. And they prefer cash, for which they do not have to take the time to ask for ID. If cash as a means of exchange is going to be done away with, I will lose one of my favorite restaurants.

—Don Dieu, Lubbock, Texas

YOUR ANALYSIS focused on the technical aspects but failed to identify the overwhelming danger a cashless society will bring, namely the loss of our fundamental freedom to own private property. A cashless society will bring a vast, worldwide infrastructure into every transaction, and privacy will utterly disappear. A person with \$50 in his or her pocket is free. In a cashless society, a person with \$50 in a smartphone app is a slave and a hostage to his or her WiFi carrier. Do we really want to eliminate the most reliable form of property there is?

—Glenn Diamond, Loveland, CO

YOU FAILED TO address the concept that in a cashless society, the government can also track your every purchase/move. Do we really want that? I don't need more intrusion from the government in my life.

—Ken Wight, Lincoln, CA

YOUR ARTICLE missed an important point that affects hundreds of thousands of consumers: Small-business owners who accept credit cards are consumers, too! The product we buy is merchant services from Visa and other credit card companies. Small brick-and-mortar stores typically pay 1.5 to 2.5 percent, but online merchants like me pay much more. With "rewards" cards, the cash-back bonus comes from the merchant, and we don't even know what fee

a given transaction incurred until we get the statement at the end of the month. Sure, some of these fees may get passed on to customers. But in the larger picture, a huge number of small-business owners, consultants, and others who are self-employed are being gouged with rates that continue to rise year after year, with no recourse.

—Ethan Winer,
New Milford, CT

YOUR ARTICLE raises some great points about technological advances in currency but misses the fact that cash is indeed still king. Two-thirds of purchases under \$10 and almost half of purchases between \$10 and \$25 are still made in cash, according to the San Francisco Federal Reserve. While it is cool to think about a radically different future, the reality is that millions of Americans will continue to use cash. Therefore, we need to be smarter about how we think about transactions and currency, and not pivot blindly to the idea of a “cashless society.” The first step is to modernize our currency by replacing the dollar note with

a dollar coin. Doing so would save taxpayers billions, help the environment (bills end up in landfills), and cut costs for small businesses and public-transit agencies (coins are easier to process and handle). I commend you for raising the issue of what the future of our currency should look like. Taking a simple step like switching to a coin from a low-currency note, as Canada, Europe, the United Kingdom, Japan, and other major economies have done, is the way to go.

—Aaron Klein, former deputy assistant secretary for economic policy of the Treasury Department

I HAVE SEEN the effects of numerous hurricanes and other natural disasters, and the resulting loss of electricity for days or weeks. I think it would be extremely unwise to trust a cash-free society as your article envisions. With the ever-increasing terrorist attacks on our soil, such electronic fund transfers and systems would be a natural target for terrorists and their ilk. When times are tough, cash talks, and a cash-on-hand reserve is essential for survival.

—Reg Scott, Plant City, FL

Going Private

MY ONLY ISSUE with “66 Ways to Protect Your Privacy Right Now” by Julia Angwin (November 2016), or at least with the headline, is that it seems to put the onus on the user only. The other way to protect your privacy is to hold accountable the organizations that are storing your personal data, especially if they don’t do enough to safeguard it. You can have the best password in the world, but if the entire database is broken into, then it really doesn’t matter.

—Tadd Barnes, via Facebook

SECURITY QUESTIONS are there to help the website owner restore your access should you forget your password. Security questions can also



Holiday Helpers at CR.org

Our interactive calendar showcases a recommended gift a day for everyone on your list. Go to CR.org/dailygift.

form a huge security hole should the answers get out (or if they are out there already). Give nonsense answers to security questions or skip them altogether, then take control of managing your own passwords, i.e., record them somewhere secure so you can recover them yourself.

—Michael Graham, via CR.org

TO MY MIND, the number one thing to do to protect your identity is to put a freeze on your credit report. It’s probably the most effective step you can take. Strange that the article had no mention of it.

—David Thomson, via CR.org

MS. ANGWIN decided not to use Gmail but doesn’t say what email service she does use. Does she have a recommendation?

—Janinne Paulson, via CR.org

EDITOR’S NOTE Angwin told us she uses an email service called Riseup (riseup.net), saying she loves its rock-solid encryption.

Families and Fuel

I WAS SURPRISED that the recommended vehicles in your November Road Report about the best family cars got a combined average of just 23 miles per gallon. I find it very disheartening that Detroit has made such poor progress overall with fuel efficiency over the past few decades, and more importantly that Consumer

Reports implicitly encourages that behavior by recommending such wasteful vehicles.

—Jay Ducharme, Westfield, MA

EDITOR’S NOTE For our family-car package, we analyzed several factors to determine the best solutions for different families’ needs. One of them was ample passenger space and cargo storage, which can reduce absolute fuel efficiency. But fuel economy is always a factor in our automobile ratings, and all of the highlighted models feature fuel economy that’s at least on a par with similar vehicles, based on our tests. Automakers have been making strides in improving fuel economy, with numerous technologies becoming widely available to bolster efficiency, such as start/stop, continuously variable transmissions, and lightweight materials. Consumer Reports has a long history of advocating for tougher fuel-economy standards to motivate the auto industry to achieve goals that are in everyone’s best interest. But change doesn’t happen overnight. And often a buyer may have other priorities. There are many efficient cars available, including the Toyota Prius, which achieved an amazing 52 mpg overall in our tests.

CLARIFICATION: Our November report “A Field Guide to Mobile Money” stated that there are no fees associated with electronic toll tags. Other than the toll itself, toll authorities might charge a small monthly account-maintenance fee for their tags, depending on location.

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Get Educated on Energy

DO YOU KNOW what you're paying for your electricity? If you said no, you have a lot of company. When Consumers Union, the policy and mobilization arm of Consumer Reports, surveyed Virginia residents on their electricity costs, 98 percent of customers had no idea how much they pay per kilowatt-hour (the standard unit of measure). And unfortunately, it's not unusual for large utility companies to try to take advantage of consumers' lack of knowledge.

Like most states, Virginia is now debating how to implement the Clean Power Plan, a national initiative to reduce pollution from power plants while expanding the use of clean, renewable energy. States have flexibility in how they achieve the goals, and if done right, the plan should lower electricity costs.

According to a recent study from the Georgia Institute of Technology, states could implement the Clean Power Plan in a way that would save the average household more than \$160 per year on

electricity bills by 2030 and \$1,868 over the next 15 years.

But Dominion Virginia Power, one of the largest utilities in the country, is lobbying hard to build expensive natural gas plants and a massive \$19 billion nuclear reactor. The problem: The utility company is ignoring more cost-effective solutions, such as expanding energy-efficiency plans and investing in affordable renewable-energy options, such as solar and wind power. The reactor and plants would result in big profits for the utility company, but residents would be left footing the bill for more expensive, dirtier energy.

CR opposes Dominion's spendthrift plan and has sent a team of advocates to educate and support residents in the Old Dominion State.

To learn how you can improve the efficiency of your home and to find programs offered by your state, check out the Database of State Incentives for Renewables & Efficiency at dsireusa.org. You can also go to our website, at CR.org, and search for "Energy Efficiency Guide," which will lead to instructions on how to reduce your carbon footprint and save money.

Improving Prepaid Cards

ALTHOUGH prepaid cards look and work much like debit cards, they don't require the user to have a bank account, making them very attractive to younger people and anyone who doesn't have an account. The downside is that in the event of fraud or a transaction error, prepaid cards haven't had the legal protections that come with debit cards. Until now.

The Consumer Financial Protection Bureau recently rolled out new rules for prepaid cards. The cards will now come with up-front fee disclosure, fraud protection, strong dispute-resolution rights, and free and easy access to account information.

For more than a decade, Consumer Reports has been pushing for rules like these, and their adoption marks a victory for the growing number of consumers who are turning to prepaid cards—an estimated one in four U.S. households relies on them.

See which of these products fared best in our ratings at CR.org/prepaidcardratings.

Protecting Your Privacy

FOR MOST OF US, internet service isn't a luxury anymore. It's almost as essential to our lives as running water. But that kind of dependency can be dangerous. That's in part because your broadband provider gains a unique, all-encompassing window on your behavior—your personal habits, health problems, political views, financial struggles, and more. Up till now, your broadband company has been able to use that access to profile you in ways that are highly intrusive, and even share your information or sell it to others.

This past October, after months of deliberation and comments from the public (including Consumers Union), the Federal Communications Commission approved the first-ever rules to protect the privacy of broadband consumers. Under these safeguards, your provider must get your consent before sharing your browsing data and other private information with advertisers and related third parties. It must also notify you about the types of information it collects, the entities it shares the info with, and how it uses anything it gathers.

We think these new rules are strong, fair, and very necessary.

Tom Wheeler, the FCC chairman under whom these rules were adopted, recently visited CR's headquarters in Yonkers, N.Y., to tour our labs and discuss the new protections guarding consumers' rights.

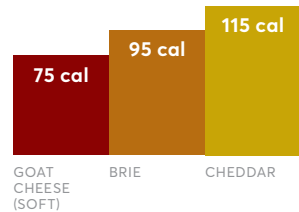
"The bottom line is that the information you share with your broadband provider is yours," Wheeler said. "With the FCC's new privacy protections, you will have the right to determine how it's used."

We couldn't agree more with his assessment, and we support the new solution.

Product Updates

The latest ratings from our labs

CHEESE IT! CALORIE COUNTS PER OUNCE



Get the Party Started!

You can enjoy your appetizers with no New Year's regrets if you choose from these 20 tantalizing treats.

by Rachel Meltzer Warren

Clockwise, from top:

SEAPAK BUTTERFLY SHRIMP

31 calories per piece



NUTRITION RATING

WHOLE FOODS MARKET SPINACH & CHEESE SPANAKOPITA

55 calories per piece



NUTRITION RATING

TRADER JOE'S CHICKEN GYOZA POTSTICKERS

29 calories per piece



NUTRITION RATING

SAFFRON ROAD CRISPY SAMOSAS WITH VEGETABLES

45 calories per piece



NUTRITION RATING

PHILLIPS SEAFOOD RESTAURANTS CRAB CAKE MINIS

32 calories per piece



NUTRITION RATING

Product Updates

BY THE TIME you're ringing in the new year, chances are you'll be a few pounds heavier than you were before the holidays—and some research shows that at least part of that extra weight sticks around long after the celebrations are over. Perpetual holiday parties are one factor at fault for people packing on the pounds, especially because they feature trays of tempting hors d'oeuvres—potstickers, spanakopita, samosas, meatballs.... (We'll stop here so that you don't put down the magazine and go whip up some snacks.)

That party staple—frozen appetizers—generally doesn't make anyone's list of good-for-you foods. Farm Rich frozen mozzarella sticks, for example, have 90 calories each, and TGI Fridays cheddar and bacon potato skins contain about 210 calories per 3-piece serving. And let's not even get into the sky-high sodium levels appetizers like these tend to have.

You can't control what's on offer when you're invited to someone else's bash, but when you're hosting, you now have more choices. That's because many brands have begun offering options that seem to be healthy—or at least healthier.

As the onslaught of holiday gatherings begins, we checked out whether these products are, in fact, more healthful and, second, whether they're tasty enough to serve to guests without any apologies or disclaimers.

Our expert tasters ate their way through 72 heat-and-eat hors d'oeuvres that our nutrition experts thought would most likely be on the



Clockwise, from top:

**WHOLE FOODS MARKET
ARTICHOKE, KALE &
SWISS CHARD BITES**
23 calories per piece

**BIBIGO ORGANIC
POTSTICKERS
VEGETABLE**
31 calories per piece

**SAFFRON ROAD
CRISPY SAMOSAS
WITH SAAG PANEER**
40 calories per piece

healthier side, and evaluated them all for nutrition, taste, and price. From that selection, we identified the top 20 appetizers that were both tasty and met or were slightly above our nutritional criteria for a healthy snack (≤ 200 calories, ≤ 5 grams fat, and ≤ 480 milligrams sodium per serving, which in most cases was more than one piece), and calculated a nutrition rating for each. To determine the best bites of the bunch, the panelists did a final blind tasting of those picks to assign flavor ratings, too.

The result? Twenty little bites to consider serving at your next shindig. More than half of them—13, in fact—clocked in at 50 or fewer calories per piece. (They ranged in size from 0.8 ounce to 4.9 ounces.) A reasonable party nosh of four to six pieces of

these healthier finger foods will mean ingesting no more than 300 calories. Choose carefully and you can have a dozen or so for fewer than 500 calories, which should suffice for dinner.

Eight especially stood out for scoring a “very good” on both flavor and nutrition. Serving Whole Foods Market Vegetable Potstickers, Trader Joe's Chicken Gyoza Potstickers, and Bibigo Organic Vegetable Potstickers with a lower-sodium soy sauce sprinkled with chopped scallions for a dip will add flavor and some sodium but hardly any calories. Also highly rated were Saffron Road Crispy Samosas (with Vegetables or Saag Paneer); Whole Foods Market Artichoke, Kale & Swiss Chard Bites; Trader Joe's Thai Joe's Lemongrass Chicken Stix; and SeaPak Butterfly Shrimp.

Party Pleasures









































You can eat healthier at any holiday bash by following these strategies.

➤ **Never go on an empty stomach.** Having a small snack that contains fiber and protein—like a handful of nuts—or even a piece of fruit before you go out to a party stabilizes your blood sugar and takes the edge off hunger.

➤ **Start munching on lighter fare first.** Hungry people who went to a buffet tended to eat the most of the foods they took first, according to research published in the *Annals of Internal Medicine*. Begin at the veggies tray.

➤ **Plan ahead.** Don't eat foods you don't really want just because they're right in front of you. Scan all of the offerings before you pick up a plate, then choose the few specialties that you don't get to enjoy every day.

➤ **Use a salad plate.** Make less look like more. Researchers at Cornell University have found that you can trick your brain into believing you're eating plentiful amounts simply by putting your healthy picks on a smaller plate.

| Product | Rating | | Nutrition Stats | | | | Price | | CR's Take |
|---|---|---|--------------------|-------------------|-----------------------------|-----------------------|-------------------------------------|-----------------------------------|---|
| | Taste | Nutrition | Calories per Piece | Fat per Piece (g) | Saturated Fat per Piece (g) | Sodium per Piece (mg) | Package Size (oz./Cost per Package) | Pieces per Package/Cost per Piece | |
| Phillips Seafood Restaurants Crab Cake Minis |  |  | 32 | 2 | <1 | 65 | 18/\$12.90 | 36/\$0.36 | Browned exterior with clean, fresh, sweet crabmeat combined with mild seasoning blend and breadcrumbs. Sweet and slightly tangy. |
| Whole Foods Market Spinach & Cheese Spanakopita |  |  | 55 | 3 | 1.3 | 130 | 12/\$5.00 | 12/\$0.42 | Tender, flaky, crispy phyllo exterior with browned butter, fresh spinach, and feta flavors with a hint of onion. Slight heat from black pepper. |
| Whole Foods Market Vegetable Potstickers |  |  | 50 | 1 | <1 | 83 | 8/\$3.00 | 8/\$0.38 | Browned, crisp bottom with soft filling that tastes mostly of bok choy, cabbage, celery, and green onion. |
| Trader Joe's Chicken Gyoza Potstickers |  |  | 29 | 1 | <1 | 79 | 16/\$3.00 | 21/\$0.14 | Potsticker with slightly browned bottom and moist filling of chicken, cabbage, onion, garlic, and ginger. |
| Bibigo Organic Potstickers Vegetable |  |  | 31 | 1 | 0.0 | 96 | 32/\$9.00 | 45/\$0.20 | Crispy exterior with soft, minced vegetable filling. Includes mushroom, cabbage, onion, and carrot. Notable fresh ginger flavor. |
| Saffron Road Crispy Samosas with Vegetables |  |  | 45 | 2 | <1 | 60 | 8.25/\$9.00 | 12/\$0.75 | Flaky, crispy phyllo exterior with potato and spinach filling seasoned with onion and coriander. Mild flavor overall. |
| Whole Foods Market Artichoke, Kale & Swiss Chard Bites |  |  | 23 | 2 | <1 | 63 | 5.4/\$4.50 | 9/\$0.50 | Artichoke, kale, and Parmesan cheese with slight onion and garlic flavors. Soft, slightly chewy interior. Very slightly bitter. |
| Saffron Road Crispy Samosas with Saag Paneer |  |  | 40 | 2 | <1 | 63 | 8.25/\$9.00 | 12/\$0.75 | Flaky, crispy phyllo exterior with mostly spinach and big Indian spice flavors. Tastes more of spice than spinach. |
| Thai Joe's (Trader Joe's) Lemongrass Chicken Stix |  |  | 50 | 2 | <1 | 100 | 8.8/\$3.30 | 10/\$0.33 | Crispy, tender exterior with moist, chewy filling with distinct lemongrass and mild chicken flavor. Ginger and floral notes, and some spicy heat. |
| SeaPak Butterfly Shrimp |  |  | 31 | 2 | <1 | 46 | 20/\$9.00 | 49/\$0.18 | Whole shrimp with attached tail that's heavily breaded. Breading has a browned flavor and is crunchy with slightly soft shrimp interior. Clean shrimp flavor. |
| Tyson any'tizers Popcorn Chicken |  |  | 43 | 2 | <1 | 150 | 25.5/\$7.50 | 27/\$0.28 | Crispy, crunchy exterior with tender chicken. Somewhat salty. Garlic and black pepper add spicy heat. |
| Trader Joe's Spinach & Kale Bites |  |  | 35 | 2 | 1.0 | 98 | 7.5/\$4.00 | 10/\$0.40 | Browned exterior. Fresh-tasting spinach with slight kale and mild cheese flavor. Onion, garlic, and black pepper flavors. |
| Whole Foods Market Potato & Pea Samosas |  |  | 75 | 3 | <1 | 160 | 7.5/\$2.70 | 8/\$0.34 | Browned, slightly tough pastry exterior. Indian spice flavors dominate; the potatoes and peas add little to overall flavor. Spicy heat lingers. |
| Pagoda Vegetable Egg Rolls |  |  | 140 | 4 | 1.0 | 460 | 12.27/\$3.00 | 4/\$0.75 | Large egg roll with crispy exterior with soft, minced vegetable filling that includes cabbage, onion, and carrot. Moist and flavorful with some spicy heat. |
| Trader Joe's Spanakopita |  |  | 53 | 3 | 1.0 | 140 | 12/\$4.00 | 12/\$0.33 | Flaky, crispy phyllo exterior with fresh-tasting spinach, feta, slight onion, and toasted browned flavors. |
| Trader Joe's Handcrafted Vegetable Samosas |  |  | 60 | 3 | 1.5 | 120 | 8.5/\$3.00 | 12/\$0.25 | Tender pastry filled with potato and vegetables with flavorful Indian spices. Notable coriander. |
| Cuisine Adventures Spanakopita |  |  | 75 | 5 | 1.5 | 135 | 48/\$14.80 | 48/\$0.31 | Flaky, crispy browned phyllo exterior with big, fresh spinach taste, mild feta, and a hint of nutmeg. |
| Nate's Meatless Meatballs Zesty Italian |  |  | 37 | 2 | 0.0 | 110 | 10.5/\$5.50 | 21/\$0.26 | Soft and tender meatless meatball that tastes like breadcrumbs, dehydrated Italian spice blend, onion, garlic, and browned flavor. |
| Trader Joe's Tofu Edamame Nuggets |  |  | 55 | 4 | <1 | 85 | 12.35/\$3.00 | 14/\$0.21 | Slightly browned breaded exterior; soft inside. Sweet with edamame pieces. Mild flavor overall. Carrot pieces had little flavor. |
| Aidells Chicken Meatballs Teriyaki & Pineapple |  |  | 47 | 3 | 1.0 | 140 | 46/\$13.40 | 60/\$0.22 | Chicken-flavored meatball that's moist and chewy but somewhat spongy. Sweet with caramelized and teriyaki flavors. Slight heat. |

HOW WE TEST: CR shoppers were asked to look for party foods that appeared to be healthy (based on a quick review of the ingredients and/or Nutrition Facts labels) primarily at

four major supermarkets that tend to carry a large selection of appetizers: Costco, Trader Joe's, Walmart, and Whole Foods. Our trained taste panelists screened

72 products to find the best-tasting. Then our nutrition experts selected the ones that met or were just slightly above our nutrition criteria for a healthy snack (≤200 calories,

≤5 grams fat, and ≤480 milligrams sodium per serving) and those products were tasted again. Serving sizes were variable—one to seven pieces.

Clothes Quarters

Compact washers and dryers solve tight-fit needs, but there are performance trade-offs.

by Kimberly Janeway

Dryer
BOSCH
800 SERIES
WTG86402UC
\$1,400

60

OVERALL
SCORE

Washer
BOSCH
800 SERIES
WAT28402UC
\$1,250

78

OVERALL
SCORE



THE LUXURY OF living laundromat-free isn't just for house dwellers: Small-footprint compact washers and dryers can fit into even the tiniest living space. And as baby boomers downsize and millennials move into small apartments, the compact market is gaining attention—and our readers have been telling us they're ready to learn more. "Not everyone lives in a big house," Diana commented pointedly on CR.org. "My laundry center is in a very small space," Tina told us, mentioning that our washer and dryer reviews "all seem to favor SUV-sized appliances." Our response to these Consumer Reports fans? We went out and bought 10 pairs of compact front-load washers and matching dryers. Our experts put the scaled-down machines through the same rigorous testing designed for full-sized models, which indeed seem to bulk up every year.

What did we find? If you have the space for full-sized machines, we'd advise going with the big guys. As a class, they work better overall and deliver more bang for the buck. Even if you don't generate enough laundry to make the most of their large capacities, you're unlikely to be wasting water and energy. That's because many new washers adjust the water level to the size of the load, and dryers (of all sizes) usually have moisture sensors that trigger the machine to stop when clothes are dry.

But if your space for a washer and dryer is limited and you're choosing between using compact machines at home and lugging bags to the laundromat—that's no choice at all.

Compacts do work—many quite well—but just like their full-sized counterparts, performance varies widely across models: Cleaning scores ranged from good to excellent. Drying times varied substantially, too, with ventless models taking longer than vented ones. As for looks, certain compacts are still basic white boxes that beg to be hidden in a closet, and others are now stylish and have larger



Compact Do's & Don'ts

You'll get the cleanest clothes and extend the life of your machines by following these best practices.

➤ **Don't overload.** It's tempting to stuff these machines so that you can do fewer loads. But laundry needs room to move around to get clean and dry. You can add items until the drum is full but not packed; the door should close easily.

➤ **Don't overdose.** Too much detergent can increase wash time and waste water as the machine adds rinse cycles to remove suds. And over time, soap residue can build up, creating funky odors and mold. Check the owner's manual for the right amount of HE detergent to use. We don't recommend detergent pods in households with kids younger than 6, but if you use them, know that just one Tide Pod, for example, per load is sufficient, according to the manufacturer.

➤ **Do check before you use bleach.** In all the compact washers tested, except for the Bosch, it's okay to use chlorine bleach. Bleach can damage the machine's internal rubber and plastic parts, according to a company spokesman. Askro recommends not using bleach as a way to minimize the use of chemicals.

➤ **Do keep the machines clean and dry.** Prevent mold and mildew by wiping door gaskets and detergent dispensers dry, leaving the dispensers and door ajar between uses to let the interiors dry out. Follow the manufacturer's advice, which might include running a cycle of hot water, with no laundry, each month.

door openings for easier access, along with faster wash cycles and specialty settings. The only across-the-board negatives we found are that compact washers vibrate noticeably more than their bigger brethren and that they're pricey (more on these points later).

As with laundry machines of any size, you'll want to pick your washer first because it's the more complicated device with the more important job. Before you do, though, look through the following considerations that are particular to this more petite breed of washers and dryers.

Convenience Will Cost You

You might imagine reduced size would translate into lower sticker prices. Not so here. Compacts run from \$1,760 to \$4,000 for a matching set, compared with, say, \$1,100 to \$3,600 for a full-sized front-loader and matching dryer. Blame basic economics. Compacts serve a relatively small market in the U.S. (100,000-plus compact washers sold last year vs. 2.1 million full-sized front-loaders), and manufacturers are betting that the consumers who don't have room for full-sized will pay handsomely for the privilege of an at-home option that fits their space.

Size Matters

The compacts tested are 24 inches wide. Height and depth vary: Height ranges between 33 and 34 inches and depth from 24 to 29 inches, making it an important variable because you'll need at least 6 inches behind the machines for water hookups and perhaps dryer venting. Usually, compacts within a brand are designed to fit together, so they can be stacked to save space or fit in a narrow closet, but you can't do that with models from different brands. Find out whether the parts needed to stack the pair you choose are included; if not, they'll cost from about \$30 to \$200. Measure the space you have to work with, check out the dimensions in our ratings, and ask about installation and stacking when shopping.

Venting Varies

Compact dryers are powered by electricity, not gas. Some are vented, like full-sized dryers, with a 4-inch duct that ushers the moist, hot air outdoors. But if your space doesn't allow for running ductwork to the exterior, you'll need a ventless (aka condensing) model. That type has a condenser that removes humid air from the drum rather than shunting it outside, so it takes much longer to dry your clothes. The condensation then flows through a hose that feeds into a sink or drain. Several also offer an optional reservoir that collects the water (and needs to be emptied by hand). Both types of dryers require a 240-volt connection. The Asko, Bosch, and Blomberg washers tested also need a 240-volt connection and can plug into the dryer, helpful if you have only one outlet. The other washers tested use a standard 120-volt outlet.

Long Cycle Times

With capacities of 2 to 2.7 cubic feet, compacts can hold about 10 full-sized bath towels—but forget about washing a king-size comforter. We test all washers using the normal-wash, heavy-soil setting, if available. See the wash times in our ratings to get a sense of the time needed to wash a load, and remember that if you want to save some time, certain washers allow you to dial back to the normal-soil setting. Ventless dryers and models lacking moisture sensors took the longest to dry laundry—almost 2 hours for a load of cotton towels, shirts, and jeans.

Dynamic Duos

Dryer
SAMSUNG
DV22K6800EW
\$1,000

70
OVERALL
SCORE



Washer
SAMSUNG
WW22K6800AW
\$900

69
OVERALL
SCORE



Dryer
ELECTROLUX
EIED200QSW
\$900

34
OVERALL
SCORE



Washer
ELECTROLUX
EIFLS20QSW
\$900

75
OVERALL
SCORE



Strong Vibrations

Here's a big caveat for many apartment dwellers: Minis shake. Some compact washers vibrate more than others, mostly at the beginning and end of the spin cycle as their tubs spin up to their maximum rpm to extract water from the laundry, but they all do it. The vibration creates an annoying and sometimes noisy distraction every time you do a load. Vibration tends to be worse on wood-framed floors than on concrete, which you'd find in a basement. But then, if you have a basement, you probably don't need compact laundry machines.

Our scores reflect vibration on a wood-framed floor. Lowering the spin speed didn't help, and stacking didn't change things much, although we saw some improvement with the stacked Miele set. We've tested anti-vibration pads and feet in the past and found that they didn't cut vibration noticeably. If you have wood-framed floors, you'll want to compare vibration scores in our ratings. And when the machines are installed, make sure the washer is dead level. Once you've done all that, you'll be able to kick back and wait for the laundry to get done in the comfort of your own home.



RECALLS

CRAFT PAINTS

Sargent Art is recalling about 2.8 million units of arts and crafts tempera and finger paints. The 13 types affected may contain bacteria that can

cause serious illness in people who are immunocompromised.

What to do Stop using the paint and contact Sargent Art at 800-827-8081 or go to sargentart.com and click the recall box for details and a refund.

LAWN MOWERS

Husqvarna is recalling about 235,000 walk-behind gas-powered lawn mowers (including Brute,

Craftsman, Husqvarna, Jonsered, Murray, Poulan Pro, and Yardworks mowers). The operator presence control bar can malfunction, so the engine and blades may not shut off properly.

What to do Stop using the mower and call Husqvarna at 877-257-6921 or go to husqvarna.com/us and click on the "Product Recall" link to find out whether your unit needs a free repair.

RICE AND SLOW COOKERS

About 175,000 3 Squares rice and slow cookers (some but not all of the Mini Tim3 Machin3 series) are being recalled because their improperly installed wiring can cause electrical shorting.

What to do Stop using the cooker; contact 3 Squares at 800-390-0249 or go to get3squares.com and click on "Rice Cooker Recall" to get a free replacement.

| | | Brand & Model | Price | Overall Score | Test Results | | | | | | | | Features & Specs | | | |
|------|------|--------------------------------------|---------|---------------|---------------------|-------------------|------------------|------------|-------|-----------|----------------------------|-------------------|-------------------------|--------------------|-----------------------|--------------------------|
| Rec. | Rank | | | | Washing Performance | Energy Efficiency | Water Efficiency | Gentleness | Noise | Vibration | Claimed Capacity (Cu. Ft.) | Cycle Time (Min.) | Dimensions (HxWxD, in.) | Auto Temp. Control | Auto Bleach Dispenser | Auto Detergent Dispenser |
| | | COMPACT WASHERS | | | | | | | | | | | | | | |
| | 1 | Bosch 800 Series WAT28402UC | \$1,250 | 78 | ⬆️ | ⬆️ | ⬆️ | ⬆️ | ⬆️ | ⬇️ | 2.2 | 60 | 34x24x26 | | | • |
| | 2 | Electrolux EIFLS20QSW | \$900 | 75 | ⬆️ | ⬆️ | ⬆️ | ⬇️ | ⬆️ | ⬇️ | 2.4 | 110 | 34x24x25 | • | • | • |
| | 3 | Kenmore 41912 | \$880 | 75 | ⬆️ | ⬆️ | ⬆️ | ⬇️ | ⬆️ | ⬇️ | 2.4 | 110 | 34x24x25 | • | • | • |
| | 4 | Miele W3048 | \$2,000 | 73 | ⬆️ | ⬆️ | ⬆️ | ⬆️ | ⬆️ | ⬇️ | 2.0 | 85 | 34x24x24 | • | • | • |
| | 5 | Samsung WW22K6800AW | \$900 | 69 | ⬆️ | ⬆️ | ⬆️ | ⬆️ | ⬆️ | 🔻 | 2.2 | 100 | 34x24x27 | • | • | • |
| | 6 | GE WCVH4800KWW | \$900 | 64 | ⬇️ | ⬆️ | ⬆️ | ⬆️ | ⬆️ | ⬇️ | 2.2 | 65 | 34x24x27 | • | • | • |
| | 7 | Asko XL Series W8844XLW ¹ | \$2,300 | 56 | ⬆️ | ⬆️ | ⬇️ | ⬇️ | ⬆️ | 🔻 | 2.7 | 145 | 34x24x28 | • | | • |
| | 8 | LG WM1377HW | \$900 | 53 | ⬇️ | ⬆️ | ⬆️ | ⬆️ | ⬇️ | ⬇️ | 2.3 | 75 | 34x24x27 | • | | • |
| | 9 | Asko W6424W | \$900 | 50 | ⬇️ | ⬆️ | ⬆️ | ⬆️ | ⬆️ | 🔻 | 2.0 | 75 | 34x24x25 | • | | • |
| | 10 | Blomberg WM9840OSX | \$1,200 | 45 | ⬇️ | ⬆️ | ⬆️ | ⬆️ | ⬆️ | 🔻 | 2.5 | 95 | 34x24x26 | • | • | • |

| | | Brand & Model | Price | Overall Score | Test Results | | | | Features & Specs | | | | |
|------|------|-----------------------------|---------|---------------|--------------------|-------------|-------|----------------------------|-------------------------|--------|-----------------|-----------------|-----------|
| Rec. | Rank | | | | Drying Performance | Convenience | Noise | Claimed Capacity (Cu. Ft.) | Dimensions (HxWxD, In.) | Vented | Moisture Sensor | Custom Programs | Stackable |
| | | COMPACT ELECTRIC DRYERS | | | | | | | | | | | |
| | 1 | Samsung DV22K6800EW | \$1,000 | 70 | ⬆️ | ⬆️ | ⬆️ | 4.0 | 34x24x26 | • | • | • | • |
| | 2 | GE DCVH480EKWW | \$900 | 68 | ⬆️ | ⬆️ | ⬆️ | 4.0 | 34x24x26 | • | • | | • |
| | 3 | Blomberg DV17542 | \$680 | 62 | ⬆️ | ⬇️ | ⬇️ | 3.7 | 33x24x23 | • | • | | • |
| | 4 | Bosch 800 Series WTG86402UC | \$1,400 | 60 | ⬆️ | ⬆️ | ⬆️ | 4.0 | 33x24x26 | | • | | • |
| | 5 | LG DLEC855W | \$900 | 59 | ⬆️ | ⬆️ | ⬇️ | 4.2 | 34x24x27 | | • | • | • |
| | 6 | Miele T8023C | \$1,500 | 49 | ⬇️ | ⬆️ | ⬇️ | 3.9 | 33x24x23 | | | | • |
| | 7 | Asko T884XL ¹ | \$1,700 | 45 | ⬆️ | ⬆️ | ⬇️ | 5.1 | 33x24x29 | • | | | • |
| | 8 | Asko T754W ² | \$1,050 | 43 | ⬆️ | ⬇️ | ⬇️ | 3.9 | 33x24x23 | • | | | • |
| | 9 | Electrolux EIED200QSW | \$900 | 34 | ⬇️ | ⬆️ | ⬇️ | 4.0 | 34x24x25 | | • | • | • |
| | 10 | Kenmore 81912 | \$880 | 34 | ⬇️ | ⬆️ | ⬇️ | 4.0 | 34x24x25 | | • | • | • |
| | 11 | Asko T754CW ² | \$1,400 | 34 | ⬇️ | ⬇️ | ⬇️ | 3.9 | 34x24x23 | | | | • |

HOW WE TEST WASHERS: The Overall Score is based primarily on washing ability, efficiency, and noise. The displayed score is out of a total of 100 points. Washing Performance reflects the degree of color change to stained swatches of fabric that were included in a 6-pound test load of mixed cotton items using the machine's most aggressive normal cycle. (We don't use special-cycle or option buttons.) The Energy Efficiency score is based on the energy needed to heat the water for 6-pound loads using a warm

wash and cold rinse. We include the energy to heat the water in a water heater, the electricity needed to run the washer, and the energy needed to dry the remaining moisture. Washers that extract more water in the spin cycle are scored higher. The Water Efficiency score denotes how much water it took to wash our 6-pound load. Models that earned lower scores for Gentleness are more likely to treat your clothes roughly, causing wear and tear. The Noise score reflects judgments by panelists during the fill, agitate, and spin cycles. Vibration scores reflect

usage on a suspended wooden floor. Claimed Capacity is the manufacturer's claimed tub volume. We record the actual Cycle Time, rounded to the nearest 5 minutes, to complete the most aggressive normal cycle with our 6-pound load. (We don't use special-cycle or option buttons.) Price is approximate retail. **HOW WE TEST DRYERS:** Overall Score is based primarily on Drying Performance, Convenience, and Noise. Drying Performance

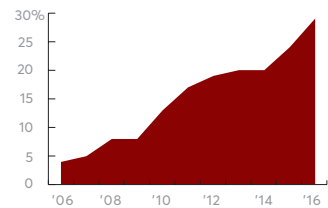
combines performance on three types of laundry loads of different sizes and fabric mixes. To judge Convenience, we evaluated controls and ergonomics, such as ease of loading and unloading, servicing the lint filter, whether the door could clear a tall basket, and whether the machine has a raised edge to contain spills. Noise was determined by a panel of judges who listened while machines dried a 6-pound load, judging sound quality and volume. Claimed Capacity is the manufacturer's claimed tub volume. Price is approximate retail.

¹ Asko XL Series washer matches Asko T884XL dryer. ² Asko W6424W washer can be stacked with Asko T754W vented dryer or Asko T754CW ventless dryer.

Insights

Notable news and smart solutions

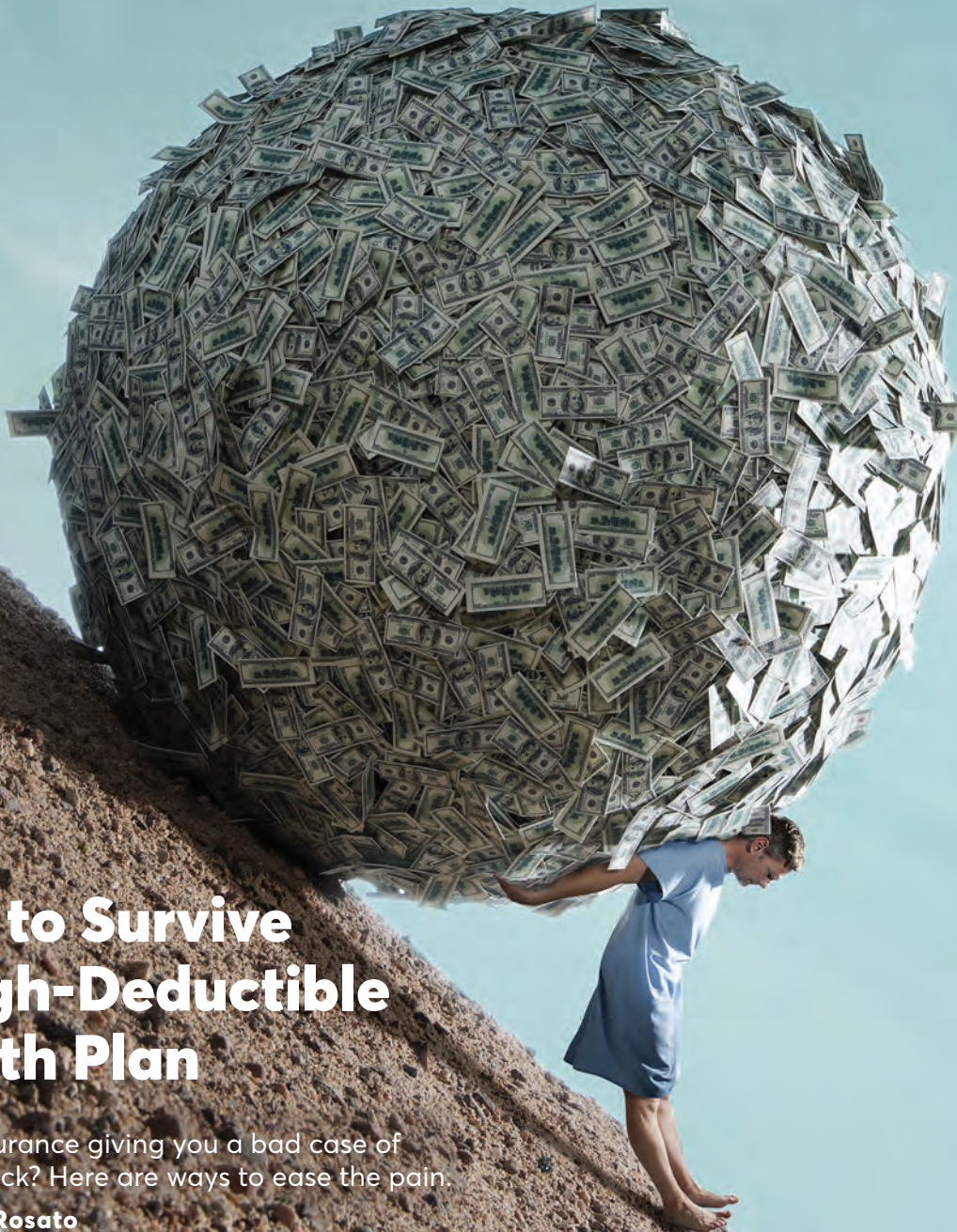
THE PERCENTAGE OF INSURED AMERICAN WORKERS WITH HIGH DEDUCTIBLES IS UP SHARPLY.*



How to Survive a High-Deductible Health Plan

Is your insurance giving you a bad case of sticker shock? Here are ways to ease the pain.

by Donna Rosato



*For health plans eligible for health savings accounts or health reimbursement accounts. Source: Kaiser Family Foundation.

BRACE YOURSELF: Within a few years, your only choice for health insurance through your employer may be a high-deductible health plan.

These plans have smaller monthly premiums, but there's a trade-off: You have to pay a lot more out-of-pocket before your insurance begins to cover a portion of your bills. Those up-front payments, or deductibles, as defined by the IRS, are a minimum of \$1,300 per year for individual insurance coverage and \$2,600 for a family. And that's only the minimum.

In reality, individuals are paying an average \$2,295 before insurance kicks in and families are ponying up \$4,364 on average, according to the Kaiser Family Foundation. That's a heavy financial burden for many of them.

A result: More people are skipping or postponing medical care because they can't afford to pay so much up front.

Faced with steep healthcare costs, many companies are embracing these plans because they push more of the cost onto workers. That's a big deal, because more than half of Americans get health insurance through their employer.

Within three years, almost 40 percent of companies that offer health insurance may make high-deductible plans the only choice, according to a survey by the consulting firm PwC. A quarter of all companies are already doing that. In 2012, it was just 13 percent.

High-deductible plans are also the norm on the Affordable Care Act (ACA) exchanges, where almost 14 million Americans are expected to get health insurance this year.

In 2016, two-thirds of people on the exchanges were enrolled in Silver Plans, which have relatively low premiums. But the average deductible for a Silver Plan this year is \$3,572 for an individual and \$7,474 for a family, according to the health insurance data website HealthPocket. Those are eye-popping numbers, but

individuals who earn less than \$29,700 and families that make less than \$60,750 may qualify for cost reductions on those deductibles.

The Downside of High Deductibles

Why are people who are shopping for insurance choosing high-deductible health plans? Sometimes it's because they like the idea of paying lower premiums, and they assume they will stay healthy enough so it will save them money, says Kim Buckey, vice president of client services at DirectPath, a benefits and compliance management firm. For others, there's no choice.

That was the situation two years ago for Monique Dow, a 46-year-old mother of two from Watsonville, Calif., who had a \$6,000 deductible with her family's health insurance plan, the only option offered by her husband's employer.

For months she put off surgery to remove what her doctor thought were benign fibroid tumors and a polyp in her uterus. When she eventually scheduled surgery after working out a payment plan with a hospital, the polyp was found to be cancerous, requiring a hysterectomy.

"I waited all that time, not knowing that I had this growing in me," Dow says. "If we had a lower deductible, I probably would have been treated a lot sooner."

Dow is cancer-free but requires frequent monitoring. Now she's weighing another insurance dilemma because her husband started a new job. A high-deductible plan is one choice, but it's an option they want to avoid, she says.

Are Consumers Really in Control?

High-deductible plans are part of a move to what's called consumer-directed healthcare. The idea is that if you're more on the hook financially for the medical choices you make, you'll take more control, for

example, by shopping around for less costly procedures and providers, and by not running to a doctor every time you come down with a cold.

Sharing the cost of your healthcare, the thinking goes, should drive down your overall medical bills.

Only that's not what's happening. Faced with daunting deductibles, many people like Dow are postponing the care they need and sometimes ending up sicker and with bigger bills down the road, a growing body of research is finding.

A 2015 survey by Families USA found that almost 30 percent of people with deductibles higher than \$1,500 for individual coverage avoided medical care—tests, treatment, follow-up care, and prescription drugs—because they couldn't afford the out-of-pocket costs.

That kind of cost-sharing encourages people to use fewer services, according to Gary Claxton, a vice president at

the Kaiser Family Foundation. "Some of that is appropriate," he says, "but it can lead to some really bad choices. When someone puts off care, they may end up needing more care and spending more later on."

How to Make the Best of an HDHP Plan

It's not that high-deductible plans are a poor choice for everyone. If you're healthy, you don't need to go to a doctor for more than routine screenings, and you have a savings cushion to cover your deductible, paying lower monthly premiums may be a reasonable option.

Still, Consumer Reports and other consumer advocates say that too many people have plans they can't afford or don't understand. (Read about CR's position on high-deductible plans, on page 20.)

For now, if you have a high-deductible plan or think you will soon, you'll have to be more involved in decisions about your healthcare. But there's a lot you can do to make the plan work better for you.

Consumer Reports consulted health-policy and insurance experts, talked with doctors, and conducted our own research to uncover the most cost-effective ways to use your high-deductible plan while getting the medical services you need.

Know what's free. Many routine health services intended to keep you well or catch problems early (including colonoscopies, mammograms, and vaccinations) are free in all insurance plans now.

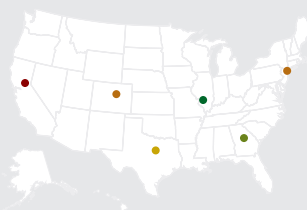
Yet only one in 10 people in high-deductible plans said they knew such screenings were free, and almost 20 percent said they avoided preventive tests because they thought they would cost them, according to a 2012 study published in the journal Health Affairs. So make sure you go to a doctor for the care you're entitled to get.

Comparison shop. High deductibles are supposed to nudge you to shop around for lower prices for nonemergency

**Almost
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medical care
because they
couldn't afford
out-of-pocket
costs.**

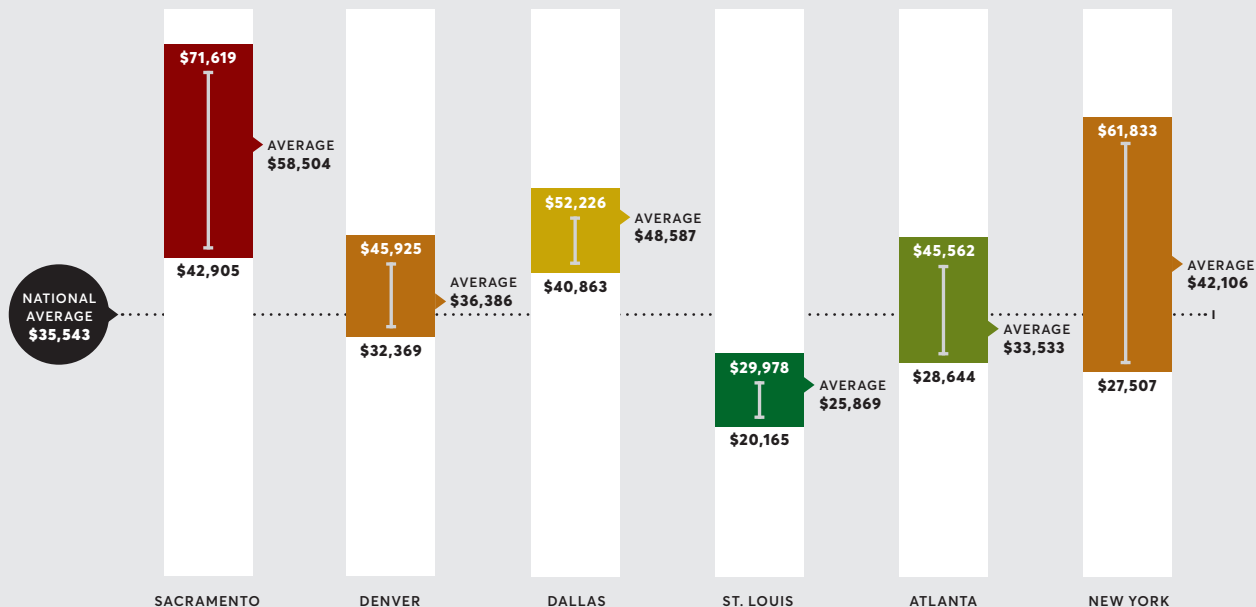
How much will that medical procedure cost you?

It depends on where you live and who does it.

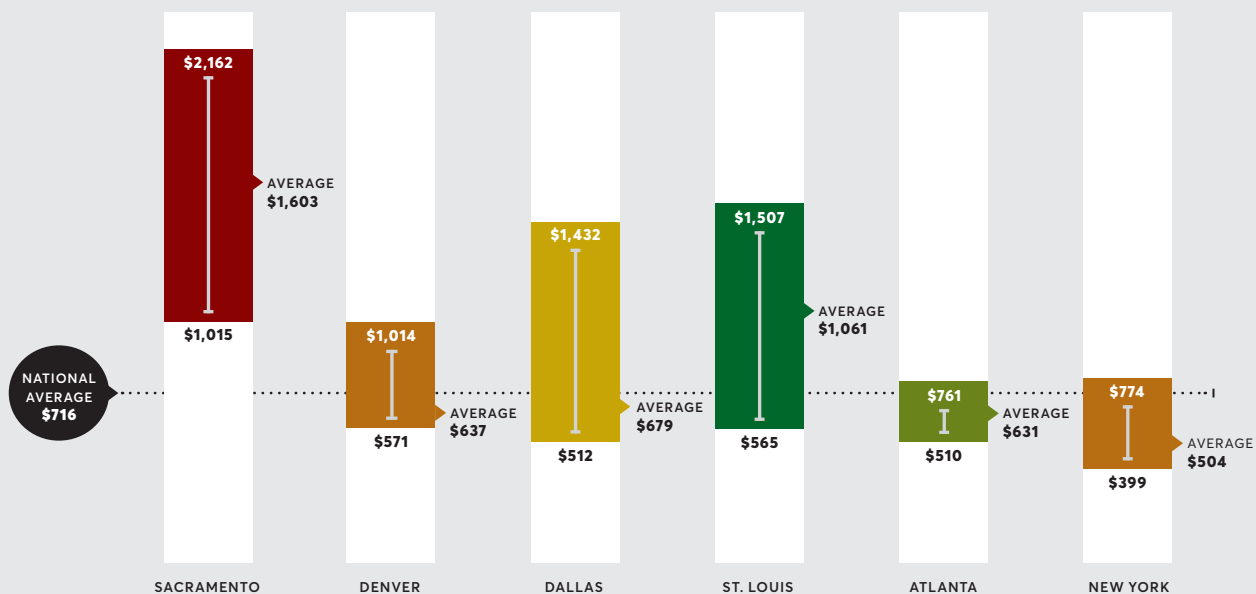


What you pay for medical procedures varies significantly from city to city and from provider to provider within a city. Here's how the cost of two common procedures stack up in six cities across the U.S.*

KNEE-REPLACEMENT SURGERY*



LOWER-BACK MRI*



care. But few people are doing that. Most health insurance sites provide information on where to find in-network services. And some offer cost-estimator tools that give the price you'll pay different providers for, say, an MRI or knee surgery. But a Consumer Reports' Health Ratings Center study of 21 insurance plans found that only 13 percent of people used the tools on their insurer's site, even though 75 percent said they were concerned about cost and the quality of service. One reason is that people simply aren't aware that those tools exist. (If your health insurance company doesn't offer one, call your insurer directly to ask for quotes.)

Spending the time to research costs can be worth it. Prices for medical treatments can vary considerably from provider to provider, even within the same city. In Kansas City, Mo., for example, the average price for bunion surgery is \$4,094, but it ranges from \$3,136 to \$8,150. For medication, one of the biggest out-of-pocket expenses for consumers, check GoodRx, a website where you can compare prices for thousands of prescription drugs at more than 70,000 pharmacies in the U.S. **But don't shop by price alone.** Among the insurance websites Consumer Reports evaluated, a majority scored well on price information. But users said that the sites were difficult to navigate and that they lacked information on the quality of services from sources, such as independent ratings of doctors and hospitals, and user reviews. (See our ratings of six national insurer websites, on page 20.)

"Prices vary a lot, but quality does, too," warns Orly Avitzur, M.D., a neurologist and medical director of Consumer Reports. When one of her patients, Amir Goen, 42, of Tarrytown, N.Y., needed an MRI recently, he found that the prices for the test in his area varied by hundreds

THE PAIN OF PAYMENTS

#HighDeductible is a hot topic on Twitter. Here are some recent Tweets from people feeling the pinch:



Benjamin Mazer
@BenMazer

When someone starts a sentence with, "I'm in one of those high-deductible plans," there is never anything positive to follow.

11:28 AM - 29 SEPT 2016



Celayne Jones
@CelayneJones

@saralyonsinc My private insurance more than doubled in cost and I have a very high deductible, rarely use the insurance.

10:52 PM - 9 OCT 2016



David Mendosa
@davidmendosa

High-deductible health insurance is not a good deal for a large proportion of people who have #diabetes.

10:47 AM - 23 SEPT 2016



Marcus Quiros
@MarcusQuiros

High-deductible health plans are like a tax on anyone with asthma & allergies. #healthcare #highdeductible #screwedeverymonth

1:03 PM - 18 SEPT 2016

of dollars. He consulted with Avitzur, who advised him to ask about the strength of the magnets used in the imaging. Goen discovered that the cheapest MRI didn't use the highest-strength magnet—but neither did the priciest one.

Interview your doctor. As Goen learned, doctors can be a valuable resource for patients trying to balance cost with quality of care. Researchers at Duke University analyzed recorded conversations from 1,800 doctor visits. Cost came up 30 percent of the time. And in almost half of those conversations, doctors offered ideas about how patients could find less expensive prescriptions, diagnostic tests, or other health services. You can also use online resources such as ConsumerHealthChoices.org, which Consumer Reports created as part of its partnership with the ABIM (American Board of Internal Medicine) Foundation's Choosing Wisely campaign. Those resources provide questions to ask your doctor about medical tests and treatments that are frequently overused. Many of them might waste your money and do more harm than good.

Get care on the calendar. Keep track of your spending against your annual deductible, which resets every year. If you expect you'll need an expensive procedure that will get you close to or over your deductible, schedule it early in the year if you can. That way, if you need more care later in the year, your insurance will kick in. And don't put off making doctor appointments. Make sure your physician has room in his or her schedule before January 1, when your deductible resets.

Leverage tax breaks. You can ease the pain of high out-of-pocket costs by putting money into a health savings account (HSA), which most people in IRS-designated high-deductible health plans are eligible for.

That's pretax money—up to \$3,400 annually for individuals and \$6,750 for families—that you can use to pay for qualified medical expenses, including your deductible. And if you don't use your HSA funds, they roll over and can grow tax-free, year after year.

Employers don't have to set up HSA accounts for their employees in high-deductible plans, but about 63 percent do. (You can also open an HSA on your own.) The account is portable, so the money is yours if you change jobs. To encourage the use of HSAs, about half of employers offer seed money. Some will deposit additional money into your HSA if you take advantage of preventive services like screenings and wellness visits. "Employers don't want workers to skimp on needed care," says Steve Wojcik, vice president of public policy at the National Business Group on Health.

Don't freak out. High-deductible insurance can be hugely expensive, but at least there's a limit to how deep you'll have to dig into your own pocket for health services. The Affordable Care Act mandates that almost all insurance plans cap out-of-pocket costs (not including premiums or out-of-network care). After you've hit the max, the insurer must pay 100 percent of in-network costs.

For 2017, all ACA plans have an out-of-pocket maximum of \$7,150 for individual coverage and \$14,300 for family plans. Employer plans can vary, but only 18 percent of those with out-of-pocket limits make you responsible for more than \$6,000 for an individual, according to the Kaiser Family Foundation. Remember that only in-network charges count against your out-of-pocket limits (or your deductible, for that matter). So stay in-network. That's good advice for all of us, whether we're in a high-deductible plan or not.

Continued on page 20 

WHAT IF YOUR health insurer gave you tools to find out which doctors take your insurance, the cost of tests and procedures, or information about the quality of care from a specific physician or hospital? This is critical information for consumers to have, especially those in high-deductible plans, who shoulder more of the cost of their care. Many insurers provide such tools on their websites, though few consumers are aware they exist. CR's Health Ratings Center recruited dozens of consumers to test out tools offered by national insurance companies. Most found that even the lower-scoring ones were useful. Here are ratings for some of the biggest U.S. insurers. For more information on these tools, including stand-alone sites such as Guroo and FAIR Health, go to [CR.org/health-cost-estimators](https://www.consumersunion.org/health-cost-estimators).

Support for this work was provided in part by the New York State Health Foundation.

| National Plan | Overall Score | Features | | | | | | | |
|-------------------------------|---------------|-------------|---------------|---------|---------------------|-----------------|-----------------------|------------------------|------------------------------|
| | | Ease of Use | Functionality | Content | Scope & Reliability | Price Estimates | Drug Cost Information | Shows Patient Outcomes | Shows Value (Cost & Quality) |
| Cigna | 84 | ↑ | ↑ | ↑ | ↑ | ↑ | ↑ | ↑ | ↑ |
| United Healthcare | 82 | ↑ | ↑ | ↑ | ↑ | ↑ | ↑ | ↑ | ↓ |
| Aetna | 77 | ↓ | ↑ | ↑ | ↑ | ↑ | ↑ | ↑ | ↓ |
| Anthem Blue Cross Blue Shield | 73 | ↑ | ↑ | ↑ | ↑ | ↑ | ↑ | ↓ | ↓ |
| Humana | 69 | ↑ | ↓ | ↑ | ↑ | ↑ | ↑ | ↓ | ↓ |
| Kaiser | 55 | ↓ | ↓ | ↑ | ↓ | ↓ | ↓ | ↑ | ↓ |

HOW WE TEST: The Overall Score is based on four components. Ease of Use includes the user-friendliness of the home page, search function, and results when looking for a provider or a service, as well as how understandable the information is on price, quality, and value. Functionality is how easy it is to compare providers by, for example, displaying results side by side and ranking results, and whether users can filter or sort search results. Content looks at what type of price, quality, and other information is given, including

whether it's specific to the insurer and patient's plan, and how it's displayed, as well as whether there is information on the provider's background, patient experience, and quality of care. Scope and Reliability reflect the reliability of price and quality data, including whether it shows costs for specific doctors and hospitals. In addition, we show ratings for the following features: Price Estimates, Drug Cost Information, Shows Patient Outcomes (whether it indicates how well patients fared after treatment, such as

complication rates), and Shows Value (whether it presents information on cost and quality in a user-friendly way, and whether it identifies high-value providers). Some insurers provide these tools only for people enrolled in preferred provider organizations, not health maintenance organizations. Consumer Reports licenses its patient-experience data to Cigna but has no financial relationship with Cigna, and Cigna played no role in developing the ratings criteria.



WHERE CONSUMER REPORTS STANDS ON HIGH-DEDUCTIBLE HEALTH PLANS

THERE'S NO ARGUMENT that high healthcare costs need to be reined in. But Consumer Reports doesn't think consumers should bear the brunt of that responsibility through insurance plans with enormous out-of-pocket costs. Instead, we believe that employers, the government, and medical-service providers—as well as consumers—must work together to lower the underlying costs of healthcare.

The idea behind high-deductible plans (or HDHPs) is that if consumers face the consequences of their health spending, they will spend their dollars more wisely.

Instead, those cost-sharing plans are causing considerable consumer harm, says Lynn Quincy, director of CR's Healthcare Value Hub. Almost all of the savings that they generate are due to people cutting back on healthcare services. They postpone

going to a doctor, don't fill prescriptions, or cut back on preventive care. Most troubling is that the sickest workers may cut back on care. What's more, several studies have found that consumers in HDHPs do no more price shopping for medical services than the average person. They also fail to use free preventive services.

To control spending and bring better value (not just lower costs) to our healthcare system, CR believes we need a different vision of what the consumer's role in healthcare should be. These are some strategies we suggest:

Focus on the root of the problem. Encourage healthcare providers, hospitals, drugmakers, and medical-device makers to address high healthcare costs. We need to cut unnecessary spending and reduce expenses, not just push the cost onto consumers.

Change plan designs. Make costs more predictable by using co-payments (a flat charge you pay each time you go to a healthcare provider) instead of coinsurance (which requires you to pay a percentage of the cost of a covered health service). Make more services not subject to a deductibles. And give consumers timely, accurate, and actionable information to help them make decisions and find high-value care.

Involve state regulators. They need to gather data to understand healthcare spending in their state, see where consumers are experiencing high costs, and determine which markets lack competition, which holds down prices.

Go to [ConsumersUnion.org/highhealthcosts](https://www.consumersunion.org/highhealthcosts) for more information.



I haven't used my treadmill in a year, but I want to start running again. Is there anything I need to do to it before I jump back on?

If it has been a while since your treadmill has seen any action, “the first thing you’ll need to do is to make room in your closet for all the clothes that have been draped on the handle,” jokes Peter Anzalone, our senior fitness equipment tester.

But seriously, a tuneup will be necessary. First, be sure the machine is unplugged so that you can do some deep dusting. Remove the motor cover in front, and vacuum out all debris. (The owner’s manual can help you locate the cover.)

Then check the walking belt to make sure it’s centered and

at the correct tension. That’s usually a simple matter of using the hex key that came with the treadmill to tighten or loosen the bolts at the back of the machine. The belt might also require lubrication. Consult the manual and use only lubricant recommended by the manufacturer: An unapproved one could void the warranty. Finally, before you start a new exercise program, it’s a good idea to talk to your doctor, especially if you’ve been inactive for a prolonged period.

I just got a new smartphone. How can I make sure the battery lasts a long time?

Many smartphones now have the ability to quick-charge, meaning they can recharge faster than other smartphones when they’re hooked up to a charger that provides more power. That

can be convenient when you’re in a rush. “But, if possible, don’t always charge even a fast-charging phone at a fast rate,” says Rich Fisco, Consumer Reports’ lead smartphone tester. “Ultrafast charging could cause undue battery stress, ultimately reducing the number of times the phone can be recharged,” he warns. “If you’re charging overnight, use a slower charger, which you should be able to get from your phone’s manufacturer or any other seller it authorizes.”

Fisco also advises never letting your battery run down to 0 percent. That can damage a battery’s cells and curtail its ability to hold a charge.

And never leave your phone in the car or on the beach on a very hot day. Temperatures higher than 95° F can cause permanent damage to the battery capacity.

Colon cancer runs in my family: Should I get a genetic test? I worry that’ll affect my insurance.

Under the Genetic Information Nondiscrimination Act, most people are protected against health insurance (and employment) discrimination on the basis of genetic information. That means that legally, your insurer can’t raise your rates or deny you coverage because of the results. And hereditary red flags are a good reason to get a genetic test, says Marvin M. Lipman, M.D., Consumer Reports’ chief medical adviser. If you have a parent who received a diagnosis of colon cancer before the age of 50 or if colon, endometrial, ovarian, or stomach cancer was found in two relatives on one side of your family, you’re a good candidate.

Everyone should consider colonoscopy or an alternative method of colorectal cancer screening at age 50 (sooner for those at high risk) and repeat at appropriate intervals. But those tests don’t address genetic propensity. About 3 to 5 percent of colon cancers stem from an inherited condition called Lynch syndrome, Lipman says, which also increases the risk of ovarian, liver, and stomach cancers. People who have the syndrome have up to an 80 percent higher risk of developing colon cancer than others. So if those cancers crop up in your family, a genetic test is a smart move. If you have Lynch syndrome, your doctor may ask you to start colonoscopies early and repeat them annually, so she can spot and remove potentially cancerous polyps.



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

The New Retirement

Everything you thought you knew about retirement has changed, but it's never too late to pivot to a new approach—or too early to start planning. These new rules, tools, and attitudes will help you live better in your later years.

by Tobie Stanger





Wayne Slater-Lunsford's parents enjoyed the classic, secure American retirement.

When his late father, a career Air Force officer, retired in 1963 at age 50, he and his wife settled in California, where they spent the rest of their lives supported by Social Security and a Veterans Administration pension. "They lived modestly but comfortably," Slater-Lunsford says. "They gardened together, and my father tinkered around the house."

The retirement that Slater-Lunsford, 65, is facing couldn't be more different. The Lancaster, Calif., aerospace technical writer never stayed long enough at a company to qualify for a generous pension, so at 40 he began contributing to his employer's 401(k) program. He was on track to retire at age 68, but three years ago Slater-Lunsford lost his job and couldn't find another. The breakup of his marriage further strained his finances, and a 2015 cancer diagnosis made finding well-paid employment even tougher. Slater-Lunsford declared bankruptcy, put his home up for sale, and today lives on about \$1,500 per month from Social Security, along with \$500 per month from the principal of his 401(k). "My future possibilities are limited," he says. "Had I had a clue and started saving early, I'd be in excellent financial shape today."

If there's any consolation for Slater-Lunsford, it's that his daughter, Jessica Callenback, 36, an airline technician, and son, Michael Slater, 29, an administrator for Los Angeles County, have been saving prodigiously since they started working. "We learned that you're on your own when it comes to saving for retirement. If you don't do it, no one else is going to do it for you," Callenback says.

New Retirement Realities

If you were young and working in the '60s, '70s, and early '80s, you probably thought your own retirement would be the traditional life-of-leisure kind—to the extent that you thought about it at all. In 1983, 56 percent of American workers—and 80 percent of those making \$20,000 or more—could expect an employer-provided pension, according to the Social Security Administration.

That was then. Just a quarter of Americans working

today—most of them union members—have the security of a pension, according to the U.S. Bureau of Labor Statistics. Over the past 30 years, pensions have been replaced by workplace-based savings plans like 401(k)s, which took much of the financial burden off the employer and shifted it to the employee. Many of us have spent years trying to figure out how to manage our 401(k) plans, making costly errors along the way, such as choosing high-fee investments or prematurely withdrawing money. "Managing your own 401(k) is like doing your own electrical wiring," says Teresa Ghilarducci, professor of economics at the New School for Social Research in New York City. "You know you're doing it wrong."

Now that the era of the gold-watch goodbye is clearly a thing of the past, a host of new forces are altering the traditional approach to retirement planning. Rising healthcare costs and historically low interest rates for fixed-income investments, for instance, may mean that many of us will have to dial back our lifestyle expectations. But other changes are more positive: Market innovations, such as target-date retirement funds and computer-based robo-advisers, are helping us make smarter, low-cost investment choices.

This altered landscape will have the greatest impact on younger workers, particularly millennials, born between 1982 and 2000. But even if you're just a few years away from retirement, there's still time to grasp the new realities, implement the strategies recommended here, and create a more secure retirement for yourself.

NEW REALITY

Your 401(k) Is Getting Better

But even if it still stinks, you have more power to fix it.

Over their working lives, the typical two-income couple will pay more than \$150,000 in fees on their 401(k) plans, according to Demos, a public-policy organization based in New York City. Other possible 401(k) pitfalls, such as confusing or duplicative investment options, high-cost actively managed funds, and poorly performing funds, can also drain savings.

But more and more, 401(k) investors aren't taking lousy plans lying down—some are even taking their employers to court. In the largest recent settlement against a single company, Lockheed Martin in 2015 agreed to pay \$62 million to as many as 181,000 current and former employees in a class action that claimed, among other things, that the defense contractor slashed their returns by charging excessive fees in its retirement plan. And a 2015 Supreme Court decision in a case against the utility Edison International set a precedent for requiring plan sponsors to act as

“fiduciaries”—meaning they are bound to act ethically and prudently with their clients’ money.

To avoid lawsuits—and to encourage employees to save—employers are improving their retirement plans by, among other things, offering target-date retirement funds. These typically low-fee mixes of index mutual funds, which reallocate over time based on your expected retirement date, are the low-cost, default options in 75 percent of 401(k) plans, according to a 2015 report by the Investment Company Institute and BrightScope.com, a website that analyzes 401(k) plans. That’s up from 32 percent in 2006. Investment fees also are dropping; the report notes that the average plan participant paid 58 cents on every \$100 invested in 2013, down from 65 cents in 2009.

What you can do Make sure you’re contributing at least enough to your 401(k) to get the full company match, and that you’re invested in the plan’s lowest-cost offerings among comparable choices. Log on to your account and check the expense ratios, or fund management costs. The lower the number, the less expensive the option is. If most of the funds have expense ratios of 0.5 or more, you have an expensive plan, especially if you work for a company with more than 100 employees, says Robert Hiltonsmith, a Demos policy analyst who has studied 401(k) fees.

Check BrightScope to compare your plan’s fund offerings and fees with other plans in your industry. Personal Capital (personalcapital.com), which combines computer-based robo-advice with human advice for a fee, also provides a free portfolio analysis for customers and noncustomers (you’ll need to register and link to your 401(k) plan).

NEW REALITY

Retirement Advice Is More Reliable

You could now save more money over the long haul.

If you’ve always thought that your financial adviser chose investments with your best interests in mind, you might have been making an expensive assumption. Until recently, stockbrokers, insurance agents, and certain other types of financial advisers were merely required to recommend retirement investments that were “suitable.” They were not, however, required to suggest suitable investments that were less expensive—those that would leave more money in your pocket and less in their own.

But last year the Department of Labor mandated that professionals who give retirement advice must uphold the fiduciary standard and make decisions in the best interests of the client. The DOL has estimated that eliminating “conflicted” advice could reduce costs to retirement savers by \$17 billion, or 1 percent of their assets, each year. (The new

4 Free Tools to Help Plan Your Retirement

These websites help you see where you stand and start strategizing for the future.

Get Your Social Security Benefits Estimate

Social Security Administration
SSA.GOV

WHAT IT DOES Provides an estimate of your individual benefit at ages 62, 70, and your full retirement age (from 66 to 67, depending on when you were born).

WHY YOU NEED IT Knowing your benefit amount can help you determine how much you still need to save on your own.

HOW TO USE IT Supply your (and your spouse’s, if you’re married) Social Security number.

Estimate Your Yearly Expenses in Retirement

California Teachers Association Projected Retirement Expense Calculator
CTAINVEST.ORG

WHAT IT DOES Estimates your expenses for every year of your retirement, based on a 3 percent inflation factor.

WHY YOU NEED IT To help you plan a savings strategy.

HOW TO USE IT Click on “Calculators” under Tools & Resources on the website home page. Have an estimate of your current spending handy.

Maximize Your Social Security Benefit

AARP Social Security Benefits Calculator
AARP.ORG

WHAT IT DOES Tells you what percentage of

your living expenses in retirement will be covered by Social Security income.

WHY YOU NEED IT Lets you compare the effect of different retirement and claiming scenarios.

HOW TO USE IT Search for “Social Security Benefits Calculator” on the AARP website. Provide your (and your spouse’s, if you’re married) current salary and monthly expenses.

Determine Your Monthly Retirement Income

T. Rowe Price Retirement Income Calculator
TROWEPRICE.COM

WHAT IT DOES Calculates how much money you will have available in retirement, per month and overall. You can change input—such as your age at retirement or savings rate—and compare the new and old results. This is most useful for those within five to 10 years of retirement.

WHY YOU NEED IT If it identifies a shortfall in your retirement income, you can work to save more, or plan to reduce future spending.

HOW TO USE IT Hover over “Retirement” toward the top of the home page, then choose “Retirement Planning” from the drop-down menu. Input your estimated monthly spending in retirement as well as total current savings and other information. (You’ll need to register to use this tool; T. Rowe Price says the information is not sold to any third parties.)

rule refers only to advice on retirement accounts.)

What you can do Some professionals—certified financial planners and registered investment advisers—have been acting as fiduciaries for years. By April 10, 2017, all retirement advisers must do so. Before then, it couldn't hurt to ask a prospective adviser—or your current one—for written confirmation that he or she will act as your fiduciary.

If you work with a broker, you could now be asked to pay a management fee to make up for the loss of sales commissions. If the requested fee is more than 1 percent of your assets, find another adviser or consider low-cost advice alternatives, such as a computer-based robo-adviser (see Generation X in "Generation Gaps," on page 28, for more information). Robo-adviser services (which are fiduciaries, according to the DOL rule) typically offer low-cost investment options for set fees.

NEW REALITY

If You Want a Pension, You'll Have to Pay for It

Annuities are an alternative to this fast-fading benefit.

The traditional pension may have gone the way of the VCR, but you can craft your own pension-style guaranteed cash flow by buying an annuity. These products, which are a type of insurance you usually buy from an agent, require you to invest a large sum up front in return for guaranteed payments for a set period or until you die.

David Blanchett, head of retirement research at the investment research company Morningstar, says a good choice for most people is a simple, immediate annuity, which starts paying income right after you invest. Another decent option, a deferred-income annuity (DIA), enables you to pay up front

Capital Improvement

401(k) savings plans are getting better and easier to use.

A large, three-dimensional sculpture of the letters '401K' in a vibrant blue color. The letters are positioned on a white, rectangular pedestal. The background is a solid, light green color. The lighting is soft, creating subtle shadows on the pedestal and the letters themselves.

and begin collecting payments years later. (DIAs that start paying out at age 80 or later are typically called longevity annuities.) All annuities require lump-sum payments, which might scare some people off. To get a lifetime monthly payment of \$493 (or \$5,916 annually) from a Jackson National Life Insurance immediate annuity, for instance, a 65-year-old man living in Illinois would have to pay \$100,000 up front. A 65-year-old woman from Illinois would get \$463, or \$5,556 annually, for the same investment.

Purchasing an annuity doesn't guarantee you'll come out ahead: Insurers count on a portion of their policyholders dying before they collect, Blanchett explains. "The value comes from the certainty of having income for life," he says.

What you can do Purchasing an annuity locks up your savings, so it's not wise to invest more than 40 percent of your assets in one, says Wade Pfau, Ph.D., a professor of retirement income at The American College of Financial Services. Indeed, the smaller your nest egg, the less you may want to devote to an annuity, he adds. If the 65-year-old Illinois man in the example above had a \$250,000 nest egg, for instance, investing \$100,000, or 40 percent, in an immediate annuity would leave just \$150,000 for other investments and emergency cash.

In that instance, a deferred annuity might be a better deal. Pfau's research has shown that a 65-year-old could cover all spending after age 85 by devoting 10 to 15 percent of current assets toward a DIA. So it could make sense for the Illinois man with the \$250,000 nest egg to spend 15 percent of his assets, or \$37,500, to ensure a lifetime income after he turns 85.

You can compare immediate annuity payouts free at ImmediateAnnuities.com. Don't just choose the insurer that pays out the most. Pick one that also is highly rated for financial strength to increase the chances it'll still be financially viable years from now. The Immediate Annuities reports include ratings by three rating agencies—A.M. Best, Moody's, and Standard & Poor's. We also recommend checking with Weiss Ratings (free for a 30-day, nonbinding trial; \$25 per month thereafter).

Avoid variable annuities. These complex products base their benefits in part on stock-market returns and can carry significant up-front costs and risks.

NEW REALITY

Don't Count on Packing Up and Moving On

You're probably staying put. And you might have a roommate—or two or three.

Though some new retirees still head to Arizona, Florida, and other classic retirement destinations, most of those leaving the workforce today are choosing to stay put: Eighty-seven

Avoid These Common—and Costly—Frauds

Financial scams targeting seniors put their retirement savings at risk.

Scams aimed at seniors can range from fraudsters who pedal bogus anti-aging products for less than \$30 to a fake "cash award" racket that empties a \$300,000 nest egg. In all, seniors lose an estimated \$3 billion a year to scams and other financial abuse. Here are some of the common swindles, according to experts:

Medicare Open-Enrollment Ploy

WHAT IT IS In the fall, a few weeks before Medicare Open Enrollment begins, individuals claiming to be from the Centers for Medicare and Medicaid Services (CMS) call seniors saying the agency is issuing new Medicare ID cards. But to receive the card, seniors must confirm their identity by volunteering their bank account information and often their Social Security number. The callers then use that information to debit the seniors' accounts and commit other forms of identity theft.

HOW TO PROTECT YOURSELF Never respond to a phone request to confirm your identity. Medicare will never call, email, or visit you to ask for your personal information.

Veterans' Pension Scam

WHAT IT IS Veterans over 65 are offered free seminars by financial advisers or financial-services companies to help them qualify for an enhanced pension with

Aid and Attendance, a benefit for low-income vets with disabilities. Seminar sponsors convince vets whose income or assets are above the threshold to restructure their finances so they'll qualify, typically by buying a costly annuity or creating an expensive trust that pays the sponsors a hefty fee.

HOW TO PROTECT YOURSELF For details about your eligibility for this benefit, go to the VA's online benefits portal (ebenefits.va.gov). For assistance completing and filing pension claims, use someone from the VA's list of accredited professionals at va.gov/ogc/apps/accreditation.

Pump and Dump Investment Schemes

WHAT IT IS Telemarketing stockbrokers call seniors to hard-sell a thinly traded stock, with the goal of creating a buying frenzy that will push the share price up. When the price climbs, the stockbrokers dump their shares at a profit and quit promoting the company, causing the price to quickly fall, wiping out the shareholder value.

HOW TO PROTECT YOURSELF Research any security through independent sources, such as Morningstar.com or finance.yahoo.com, before you buy. Also be extremely cautious about buying any foreign, or "offshore," investments: Once you've sent money abroad, tracing it can be difficult.

Continued on page 30 ➤

Generation Gaps

Who's ready for retirement—and who's not.
A look at Americans from their 20s through their 80s.

Millennials

Time Is on Their Side

WHO THEY ARE Born between 1982 and 2000, they constitute the largest segment of U.S. workers.

CHALLENGES College debt—\$1.3 trillion, owed by 42 million people—is particularly crippling for this group. Only 48 percent of millennials who make less than \$25,000 have access to retirement accounts, says a survey by Young Invincibles, an advocacy group based in Washington, D.C., that represents millennials. Young workers who are saving are surprisingly conservative investors: A recent survey by the Transamerica Center for Retirement Studies reports that 22 percent are putting their money mainly in bonds, money-market funds, and other low-risk, potentially low-growth investments.

ADVANTAGES When given the opportunity, millennials are good savers. The Transamerica survey shows that 72 percent of those with employer-sponsored retirement accounts are putting

away money, not far behind the 77 percent of older Gen Xers. They're also saving earlier—starting at a median age of 22. Once college debts are paid, this generation can direct some of those funds to retirement savings.

STRATEGIES

Save early and often. For a 25-year-old earning \$35,000, a monthly 10 percent after-tax contribution to a Roth 401(k) with a 3 percent employer match could grow to \$1,327,000 by age 70, assuming that her income rises 2 percent a year and her investments earn a 6 percent average annual return (below the historical average).

Roll over the right way. Don't cash out your 401(k) when you move to a new job. Ask your old employer to roll over the balance to your new company's plan. Keep in mind that there's no requirement that you roll over your money. If you've saved at least \$1,000 and the old 401(k) has better investment options and lower fees than the new one, you can keep your money in the old plan indefinitely.

Generation X

The Age of Anxiety

WHO THEY ARE Born between 1965 and 1981, Gen Xers came of age just as defined-benefit pensions were going away.

CHALLENGES With their children's educations to finance and mortgages to pay, Gen Xers may be the most anxious about their retirement prospects. The Transamerica survey found Gen Xers are less confident than baby boomers or millennials that Social Security will be around for them. They're also more likely to have borrowed against their retirement plan or taken early withdrawals.

ADVANTAGES With a decade or more to plan, Gen Xers still have time to ramp up savings.

STRATEGIES

Play catch-up. If you're 50 or over, take advantage of catch-up provisions that let you contribute up to \$24,000 to a 401(k), and \$6,500 to an IRA.

Go robo. Use a robo-adviser, which employs algorithms to choose, allocate, and rebalance investments. Robo-advisers

typically deal in low-cost index mutual funds and exchange-traded funds, and charge below the 1 percent a human adviser would charge a small saver. Investment companies like Vanguard and Schwab offer robo-adviser services, as do newer players such as Betterment, Ellevest, and Wealthfront. "Hybrid" services offer on-call human advisers for an additional fee.

Baby Boomers

The Vulnerable Years

WHO THEY ARE Born from 1946 to 1964, this generation is just beginning to retire in large numbers. On average, 10,000 of them sign up for Social Security each day.

CHALLENGES The Great Recession disproportionately affected people in their 50s and 60s, sending many into early retirement without sufficient nest eggs or pushing them to work longer than they'd planned to make up for lost savings. A recent survey by Consumer Reports

Are You on the Right Track?

If you're wondering (and who's not?) how much you should have saved for retirement by now in order to have the same lifestyle in retirement, this table should satisfy your curiosity. It's adapted from research by J.P. Morgan Asset Management and based on your current age and income level.

HOW MUCH YOU SHOULD HAVE SAVED BY NOW (IN THOUSANDS OF DOLLARS)

| Current income ► | | \$30K | \$50K | \$75K | \$100K | \$150K | \$200K | \$250K |
|------------------|----|-------|-------|---------|--------|---------|---------|---------|
| Current age ► | 35 | \$9 | \$40 | \$120 | \$190 | \$360 | \$560 | \$775 |
| | 45 | \$30 | \$90 | \$225 | \$340 | \$630 | \$960 | \$1,325 |
| | 55 | \$63 | \$165 | \$382.5 | \$570 | \$1,035 | \$1,580 | \$2,125 |
| | 65 | \$117 | \$280 | \$630 | \$940 | \$1,695 | \$2,540 | \$3,425 |

Source: J.P. Morgan Asset Management. **Assumptions:** Average annual preretirement investment return of 6.5 percent; postretirement investment return of 5 percent; retirement age of 65; 30 years in retirement; inflation rate of 2.25 percent; annual savings contribution of 5 percent; Social Security claiming age of 65, plus a spousal-benefit claiming age of 62, reduced by Medicare Part B premiums and various payroll taxes. These results represent a statistical confidence level of 80 percent; savings rates would have to be higher to reach a confidence level above 90 percent.

National Research Center found that 37 percent of retired CR subscribers left the workforce earlier than they expected; on the whole they were less satisfied in retirement than those who'd retired as planned, or later. Though many retirement experts recommend eliminating mortgages and other debt prior to retirement, a 2015 Pew Charitable Trusts report found that 47 percent of baby boomers were still paying off their homes, with a typical balance of \$90,000. And boomer debt has grown. Federal Reserve Bank of New York research shows the average 65-year-old holding 47 percent more mortgage debt in 2015 than in 2003.

ADVANTAGES Healthy boomers may still have a few years to work to build up their portfolios and reduce debt. Despite predictions that Social Security is doomed, boomers are likely to get their full, or nearly full, entitlements. Even without action by Congress, the Social Security Trust Fund says it will be able to pay retirees 100 percent of their benefits through 2033, and 75 percent of that until 2090.

STRATEGIES

Face facts. Engage a financial planner to figure out where you stand. Find one through the National Association of Personal Financial Advisors (napfa.org), Paladinregistry.com, or Garrett Planning Network (garrettplanningnetwork.com). Use BrokerCheck.com, sponsored by FINRA, the financial service industry's self-regulatory authority, to search for any disciplinary actions. The "Check a Credential" tool at Paladinregistry.com will help you determine if all those letters after an adviser's name are legitimate; it's in the drop-down menu under "Investor Tools."

Detox from debt. Focus first on your high-interest credit-card debt, then your mortgage. While there's a case for holding on to a mortgage for the tax

deduction—or for investing money from a low-interest home equity loan in potentially higher-return stocks—high debt could spell trouble if the market tanks or your income drops.

Make a spending plan. Use a low-cost credit counselor to help create spending and debt-reduction plans. In some cases, these pros can negotiate with creditors. Find help through the not-for-profit National Foundation for Credit Counseling (nfcc.org). The average monthly fee is about \$24.

Keep on keepin' on. You may very well have to work longer than you'd planned to forestall claiming Social Security and spending down your savings. Check out AARP's list of employers that have pledged to recruit across diverse age groups (type "Employer Pledge Program" into the search box on AARP.org's home page). Refresh your skills with online or classroom courses, recommends Brian Fetherstonhaugh, author of "The Long View: Career Strategies to Start Strong, Reach High, and Go Far" (Diversion Books, 2016). "Go to industry and alumni events," he says. "You'll want those contacts as you move forward."

Figure your health expenses. Fidelity Investments says a typical 65-year-old could need \$260,000 in today's dollars for unreimbursed health costs during their retirement years. To estimate what yours will be, go to AARP.org and type "Health Care Costs Calculator" into the website's search bar.

The Silent Generation

Making the Best of It

WHO THEY ARE Born before 1946, this group is for the most part well into retirement.

CHALLENGES An unprecedented

spell of near-zero interest rates has eroded the earning power of fixed-income securities. And recent tiny Social Security cost-of-living increases—for 2017, it's 0.3 percent—aren't keeping up with rising unreimbursed medical costs, the largest expense for most retirees, after housing. In our recent survey, a quarter of retired CR subscribers said their retirement expenses were higher in their first year of retirement than they'd planned for; 45 percent said their healthcare costs were higher than anticipated.

ADVANTAGES Weathering many years of financial ups and downs has given older Americans perspective. Compared with younger generations, more Americans age 70 and over have defined-benefit pension income.

STRATEGIES

Face facts. Engage a financial planner to figure out where you stand. To balance low, fixed-income returns, you'll need to own some equities for growth. A traditional rule of thumb is to subtract your age from 100 to arrive at the right allocation: 30 percent in stocks at age 70, 15 percent at age 85, and so on.

But Michael Kitces, a financial planner, and Wade Pfau, a professor of retirement income at the American College of Financial Services, recommend an alternative: gradually increasing your stock allocation in retirement—say, from 30 percent at age 70 to 40 percent at age 80, and so on. Their research shows you're less likely to run out of money this way. "Greater equity exposure in the later years of retirement actually helps, especially in those scenarios where returns in the early retirement years are poor," they write in a 2014 article in the Journal of Financial Planning. **"Bucket" your money.** Regardless of how much you have in retirement savings, you can help ensure that it lasts by using what financial planners call a

"bucket" strategy, in which you split your money into categories, or buckets. The first holds liquid assets, like money-market funds, earmarked for current spending. Keep a year's worth of expenses in that bucket, says Harold Evensky, the Coral Gables, Fla., financial planner who developed the concept. With that amount in safe investments, he explains, you can feel relatively secure during market downturns.

The second bucket includes a mix of stocks and bonds, the allocation of which depends on how much money you have as well as your guaranteed income from Social Security and other sources. "As a rough range, you might have 40 to 70 percent in stocks," Evensky says. As you spend from bucket one, you reload it with earnings from bucket two.

Some financial planners suggest having a third bucket for stocks and other taxable investments with the most growth potential. But however many buckets you have, the aim is the same, notes Paul Markowich, executive vice president at Firsttrust Financial Resources, a financial planning company in Philadelphia. "The goal is to have the buckets always flowing into each other, and to never deplete them," he says.

Protect yourself from scams.

To ensure that your savings aren't stolen by strangers or even people you know, monitor accounts regularly for fraud. Consider using EverSafe (subscriptions start at \$7.49); its software sends alert emails to you and anyone else you choose to warn of suspicious activity, such as unauthorized credit card charges or withdrawals. While the paperwork can be more cumbersome, designating two trusted people with power of attorney for your finances lets one keep tabs on the other.

No Place Like Home

Most people retiring today are staying put, rather than moving away.



percent of individuals 65 and older want to stay in their current location, according to a 2014 survey by AARP. They're influenced by, among other factors, the desire to be near family and communities in which they've been longtime members.

In another trend, many retirees—particularly single women—are sharing their homes, sometimes for company, sometimes to help pay the bills, and sometimes for both. Rika Mead, 70, of Highlands Ranch, Colo., started taking in boarders in 2014, after a friend asked her to rent rooms in her three-story house to some summer interns he was employing. Mead, a self-employed management consultant who retired five years ago from a long career in government, soon grew to appreciate not only the income boost but also the company. “I worried about being flexible enough to have other people in my living space,” she recalls. “But those

interns were so delightful that I got over it.”

What you can do If you'd like to try home-sharing, take advantage of new online roommate-matching services geared toward seniors and women, or a home-sharing clearinghouse such as the free National Shared Housing Resource Center (nationalsharedhousing.org).

If your home is larger than you need or you'd like to move from a multistory to a one-story home, downsize and invest the savings—or use it to enhance your lifestyle. The Center for Retirement Research at Boston College estimates that property taxes, insurance, maintenance, and utilities cost homeowners an average of about 3.25 percent of a home's value each year. If you were to downsize from, say, a \$250,000 home to a one that costs \$150,000, your annual maintenance and other expenses would go from \$8,125 to \$4,875, saving you \$3,250 a year.

NEW REALITY

Claiming Social Security Requires a Serious Strategy

Delaying when you collect can result in more income, but don't make the decision alone.

People born between 1943 and 1954 are eligible for their full retirement benefit at age 66. But it might be smart to wait until 70 to start collecting because your monthly benefit grows the longer you wait. Collecting at 70 guarantees the largest monthly payout—32 percent higher than what you'd collect at age 66.

More than a third of Americans claim Social Security benefits at 62, the earliest age to collect. Yet the monthly payout at age 70 is a whopping 76 percent higher than it is at 62.

There's a great temptation to claim benefits earlier if you don't expect to live long. But to guard against the possibility that you're wrong, it's better to preserve those higher payments for your later years, when healthcare costs rise and savings dwindle, says Alicia Munnell, director of Boston College's Center for Retirement Research.

Paul Markowich, executive vice president at Firsttrust Financial Resources in Philadelphia, agrees that having a higher, predictable income later in life is the safer route. He says he has found that in general, people who plan to retire at or after the full retirement age of 66—and who have a retirement nest egg north of \$100,000, are better off waiting to collect Social Security until age 70 and living on their savings in the meantime. That's because the guaranteed 32 percent return they get for waiting those four years is likely to be greater than what their own savings would generate.

The decision can be more nuanced for those who want to retire before age 66, Markowich notes. He gives the example of two clients: a married, retired couple, both 64, with a net worth—including their home—of slightly more than \$1 million. Using financial software, he determined that if they collected Social Security at age 66 and earned a reasonable 5 percent on their investments, they would have a net worth of \$1.85 million at age 95. If they waited until age 70 to collect, their net worth at 95 would be \$300,000 less because they would have had to spend down their invested assets to cover living expenses.

What you can do Before you file for benefits, make sure that you're making an informed claiming decision by first consulting a financial adviser and speaking with Social Security officers. MaximizeMySocialSecurity.com and SocialSecurityChoices.com are two websites that analyze the best way to take Social Security payments, which is particularly useful for couples. Each charges a \$40 fee for its service.



FIGHTING FOR MORE RETIREMENT SECURITY

CONSUMERS UNION (CU), the policy and mobilization arm of Consumer Reports, supports and advocates for initiatives to ensure that all Americans have the secure retirement they deserve. Learn more—and get involved—at ConsumersUnion.org.

➤ **Defend the Consumer Financial Protection Bureau (CFPB).** The CFPB has helped retirees by reining in predatory reverse-mortgage lenders, among other initiatives. Since opening in 2011, it has returned some \$11.7 billion to consumers wronged by the financial industry. The industry and some in Congress want to weaken the CFPB by advocating for more oversight of its activities. CU will fight to maintain the CFPB in its current, potent form.

➤ **Improve education on reverse mortgages.** These loans can be a lifeline for some, but the risk that borrowers will overextend makes them a last resort, CU maintains. To ensure consumers understand those risks, California recently improved its mandated reverse-mortgage education, provided by trained counselors. CU pushed for the change and advocates for similar reforms nationwide.

➤ **Help workers save for retirement.** Most Americans save for retirement through their workplace, but some 30 million Americans ages 18 to 64 don't have access to an employer-sponsored plan. California's new Secure Choice program will automatically enroll most workers without a 401(k) in a state-run retirement pool, at minimal cost to employers and taxpayers. Unless they opt out, participants will have payroll deductions invested in low-cost options overseen and managed by fiduciaries. Other states are expected to follow suit. CU supports providing workers with access to such accounts.

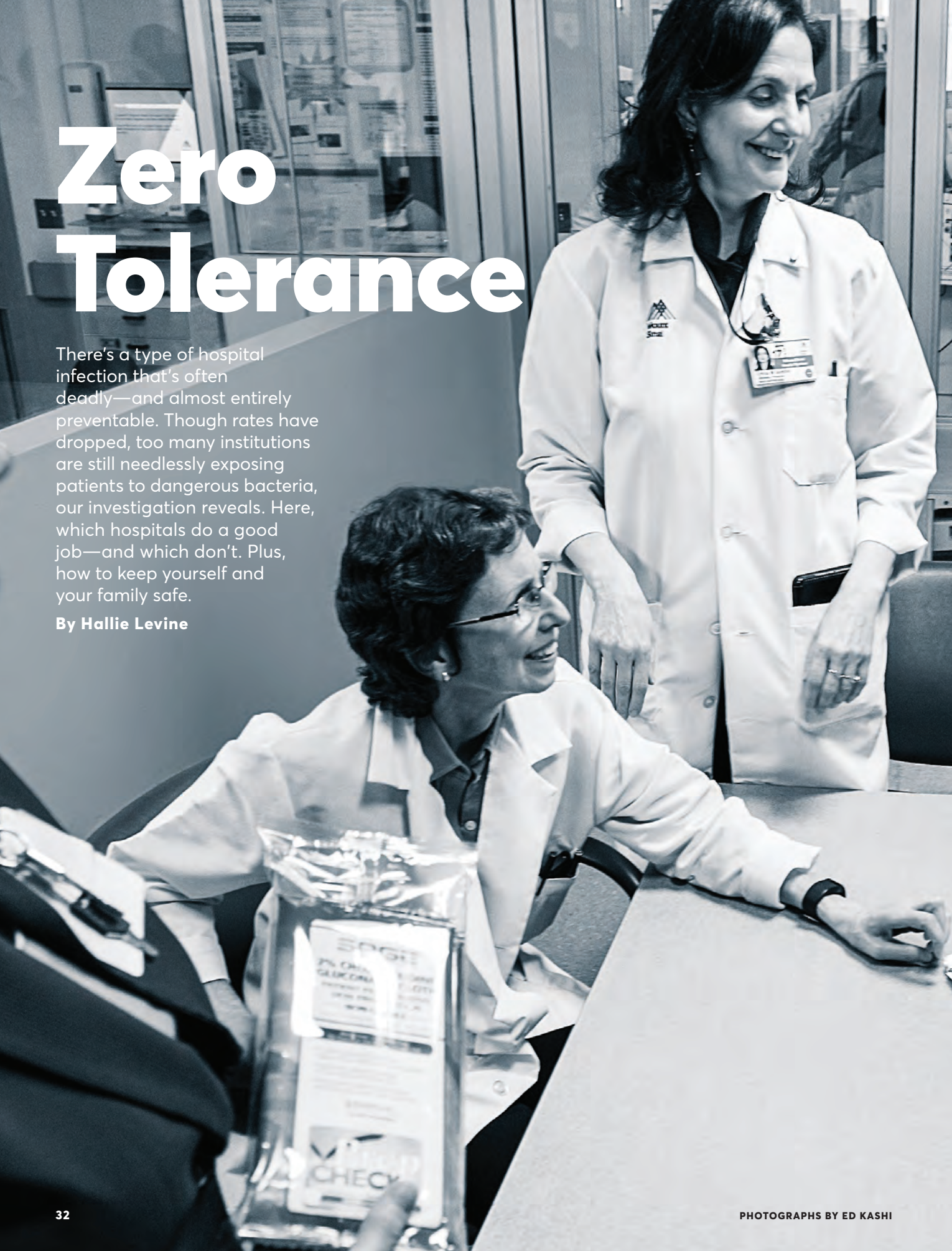
➤ **Fight financial elder abuse.** CU's End Robocalls campaign (EndRobocalls.org) urges telecom companies to provide free tools to screen or block unsolicited phone calls from telemarketers and scammers.

➤ **Support the fiduciary rule.** The Department of Labor's 2016 rule requiring retirement advisers to act in clients' best interests is arguably the most important investor protection in decades. CU opposes attempts by the financial services industry and some in Congress to roll back the regulation.

Zero Tolerance

There's a type of hospital infection that's often deadly—and almost entirely preventable. Though rates have dropped, too many institutions are still needlessly exposing patients to dangerous bacteria, our investigation reveals. Here, which hospitals do a good job—and which don't. Plus, how to keep yourself and your family safe.

By Hallie Levine





Hard Work Pays Off
Staff at Mount Sinai
St. Luke's-Roosevelt
Hospital in New York City
celebrates going almost
1,000 days without a single
central-line infection in
one of its ICUs.

By the time Jeanne Rowe, M.D., became chief medical officer of Shore Medical Center in 2012, the small hospital near Atlantic City, N.J., faced an alarming situation: Its intensive care units had reported 8 infections among its patients in the previous 12 months.

The infections were all traced back to central lines, the intravenous tubes used to supply medication, nutrients, and fluids to patients who need them most. But when not handled properly, central lines can also become host to bacteria, pumping germs straight into the bloodstream of the hospital's most vulnerable patients. Once there, the bacteria—including serious strains such as MRSA that aren't easily managed with antibiotics—can spread to the heart and other organs.

With that cluster of cases, Shore Medical Center then rated as one of the worst in the country at preventing

the infection, according to Consumer Reports' hospital ratings—a situation Rowe was well aware of.

And if the poor infection record wasn't fixed, it could cost the hospital more than its reputation. President Barack Obama had recently signed the Affordable Care Act, and among its provisions was one that lowered Medicare payments to hospitals that had too many of these infections.

Rowe, a physician who specializes in internal medicine, had a proven record for improving patient safety at several hospitals where she had worked in the Midwest. "We knew we had to do something about it," she says now.

Costly, Deadly—and Avoidable

About 650,000 people developed infections after being admitted to U.S. hospitals in 2011, and 75,000 died, based on the most recent data from the Centers for Disease Control and Prevention. That would make hospital-acquired infections the nation's eighth leading cause of death, just behind diabetes and just ahead of flu and pneumonia.

Central-line infections account for roughly 5 percent of all hospital-acquired infections, striking more than 27,000 people in 2015, research shows. And they're a particularly important subset, says Arjun Srinivasan, M.D., associate director for Healthcare Associated Infection Prevention Programs at the CDC.

For one, they are deadly—proving fatal in up to a quarter of cases, in part because people with the IVs are often already frail. They're costly, too, averaging \$46,000 to treat, more than any other hospital-acquired infection, according to a 2013 study in the *Journal of the American Medical Association*.

And they're almost entirely preventable.

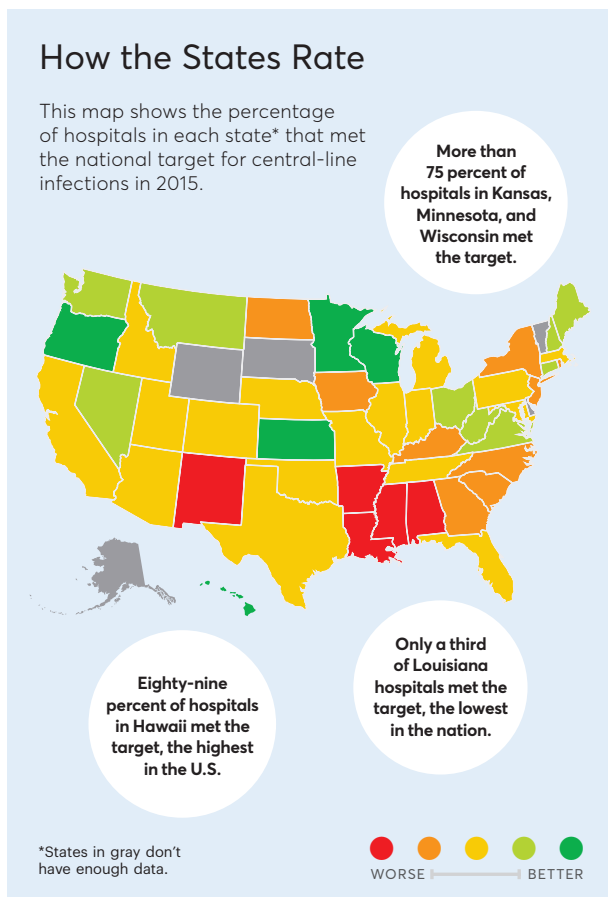
As far back as 2001, Peter Pronovost, M.D., now senior vice president for patient safety and quality at Johns Hopkins Medicine in Baltimore, developed a safety checklist similar to one used by pilots prior to takeoff. He showed that when ICU staff adhered to the protocol, central-line infections could be sharply reduced, even eliminated.

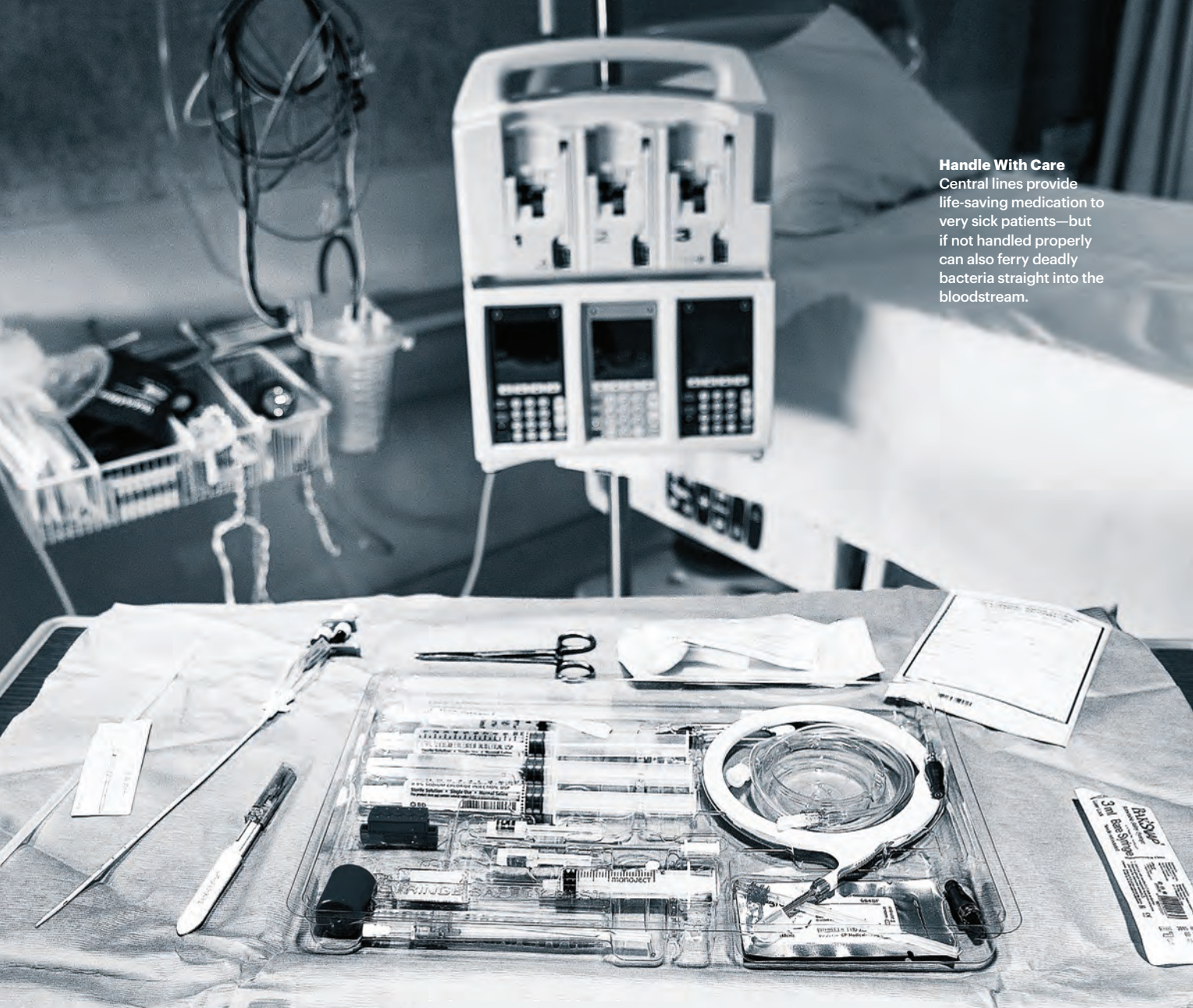
Defeating a Deadly Infection

When she arrived at Shore Medical Center, Rowe doubled down on making Pronovost's checklist a priority.

Posters of men and women in Uncle Sam pose—right arm out, finger pointed—with the words "I Want You to Wash Your Hands" were hung all around the hospital. Extra soap and alcohol gel dispensers were placed in and around patient rooms. Nurses began swabbing every patient's skin with chlorhexidine, a powerful antiseptic, before inserting central lines, then again when the dressing needed changing.

Fewer central lines mean fewer chances for infection, so physicians reviewed every day which patients really needed the IVs. A secret team was deputized to roam the hospital and report staff who didn't wash their hands





Handle With Care
Central lines provide life-saving medication to very sick patients—but if not handled properly can also ferry deadly bacteria straight into the bloodstream.

before seeing patients. “People behave much better when they think someone is watching,” says Valerie DeJoseph, director of quality at the hospital.

Soon, the extra effort paid off. In Consumer Reports’ most recent ratings of about 2,000 hospitals nationwide, Shore Medical Center earned top marks, going 21 months without reporting a single central-line infection. (To see how Shore and all other rated hospitals performed, go to CR.org/central-line-infections.)

Still Too Many Infections

Pronovost’s protocols, combined with the threat of reduced federal funding and more public accountability, seem to have helped not just Shore Medical Center but many hospitals.

Though other hospital infections have stayed steady or declined only slightly in recent years, those linked to central

lines were cut in half between 2008 and 2014, according to the CDC (see the graph on page 40). “It’s one of the nation’s greatest patient-safety success stories ever,” says Srinivasan.

Consumer Reports’ analysis found improvement all around the country, in large urban hospitals such as Ochsner Medical Center in New Orleans and Johns Hopkins Bayview Medical Center in Baltimore, as well as smaller suburban or rural ones like Wuesthoff Medical Center in Rockledge, Fla., and Mercy Medical Center in Merced, Calif.

And yet the problem isn’t solved, says Doris Peter, Ph.D., director of Consumer Reports’ Health Ratings Center. “Hospitals are moving in the right direction, but progress is slowing and too many hospitals have not adequately addressed the problem over the past five years.”

That’s true even among the nation’s prominent teaching hospitals, such as Dartmouth-Hitchcock Medical Center in



Success Story

Jeanne Rowe, M.D., (middle) helped turn New Jersey's Shore Medical Center into one of the best in the country at preventing central-line infections, in part by appointing safety captains like Jocelyn Sampson (right).

Lebanon, N.H., and Ronald Reagan UCLA Medical Center in Los Angeles, both of which appear on our list of low-scoring teaching hospitals (see the charts on pages 38 and 39). “That’s counterintuitive,” Peter says. “They are supposed to be places that represent the best in our healthcare system.”

Administrators at these hospitals say they are responding. “We identified a problem with our infection rate two years ago and immediately took corrective action,” says George Blike, M.D., chief quality and safety officer at Dartmouth. As a result, he says, the hospital’s most recent data—not yet published by the government and thus not reflected in our ratings—show that infection rates are dropping.

And though hospital administrators say they use versions of the Pronovost checklist, they also say their hospitals face special challenges. For example, Ronald Reagan UCLA says its high infection rates were due in part to “the complexity

of the medical cases and the severity of illness that we treat.”

But the CDC actually does try to adjust for those factors. In addition, Consumer Reports’ analysis found no clear evidence that hospitals with more Medicaid patients—an indication that they treat sicker or underserved populations—perform worse than hospitals with fewer Medicaid patients.

In addition, there are examples around the country of hospitals that serve similar underserved populations but perform very differently against these infections. For example, Maimonides Medical Center in Brooklyn, N.Y., appears on our list of teaching hospitals with few central-line infections, while nearby SUNY Downstate Medical Center University Hospital has higher-than-expected rates of those infections.

SUNY Downstate is responding by trying to encourage a

Continued on page 40 ➤

15 Tips for Preventing Infections and Staying Safe in the Hospital

Many hospitals have cut the risk of central-line infections among their patients, but too many have not. And sometimes bad things happen even in good hospitals. “That’s why you need to be alert, whenever and wherever you enter a hospital,” says Lisa McGiffert, director of Consumer Reports’ Safe Patient Project. Here are key steps to take:

1 Check up on your hospital.

When possible, research your hospital ahead of time and see how it compares with others in your area on infections, mortality, and other measures of patient safety. To compare hospitals in your area, go to CR.org/hospital-ratings.

2 Have a friend or family member with you. That person can act as your advocate, ask questions, and keep notes. A Consumer Reports survey of 1,200 recently hospitalized people found that those who had a companion were 16 percent more likely to say that they had been treated respectfully by medical personnel. The most important times to have a companion are on nights, weekends, and holidays, when staff is reduced, and when shifts change.

3 Keep a record. Keep a pad and pen nearby so that you can note what doctors and nurses say, which drugs you get, and questions you have. If you spot something worrisome, such as a drug you don’t recognize, take a note or snap a picture on your phone. You can also use your phone to record thoughts or conversations with staff. Though some may object, “explain that you are

recording so you remember later,” McGiffert says.

4 Insist on clean hands. Ask everyone who enters your room whether they’ve washed their hands with soap and water. Alcohol-based hand sanitizer is not enough to destroy certain bacteria, such as the dangerous C. diff. Don’t hesitate to say: “I’m sorry, but I didn’t see you wash your hands. Would you mind doing it again?”

5 Keep it clean. Bring bleach wipes for bed rails, doorknobs, the phone, and the TV remote, all of which can harbor bacteria. And if your room looks dirty, ask that it be cleaned.

6 Cover wounds. Some hospitals examine incisions daily for infection, but opening the bandage exposes the area to bacteria. Newer techniques—sealing the surgical site with skin glue (instead of staples, which can harbor bacteria) and waterproof dressings that stay on for one to three weeks without opening—reduce chances of infection.

7 Inquire whether IVs and catheters are still needed. Ask every day whether central lines, urinary catheters, or other tubes can be removed. The longer they’re left in place, the greater the infection risk.

8 Ask about antibiotics. For many surgeries, you should get an antibiotic 60 minutes before the operation. But research suggests that the type of antibiotic used or the timing of when it’s administered is wrong in up to half of cases.

9 Postpone surgery if you have an infection. That increases your risk of developing a new infection and worsening an existing one.

So if you have any other type of infection—say, an abscessed tooth—then the surgery should be postponed, if possible, until it’s completely resolved.

10 Say no to razors. Removing hair from the surgical site is often necessary, but doing that with a regular razor can cause nicks that provide an opening for bacteria. The nurse should use an electric trimmer instead.

11 Question the need for heartburn drugs. Some patients enter the hospital taking heartburn drugs such as lansoprazole (Prevacid) or omeprazole (Prilosec) or are prescribed one after they’re admitted. But these drugs increase the risk of intestinal infections and pneumonia, so consider stopping them before admission and, once there, ask whether you really need one.

12 Test for MRSA. Ask your surgeon to screen you for MRSA, a potentially deadly bacteria that’s resistant to antibiotics, either before you enter or on admission, so that you can address the problem and hospital staff can take extra steps to protect you and others.

13 Watch for diarrhea. Get tested for C. diff if you have three loose stools within 24 hours. If you test positive, expect extra precautions.

14 Quit smoking, even temporarily. You won’t be allowed to smoke in the hospital anyway, and stopping as long as possible beforehand cuts the risk of infection.

15 Wash up the night before. Ask about taking precautions before entering the hospital, such as bathing with special soap or using antiseptic wipes.



THE PRONOVOST PRINCIPLES

Peter Pronovost, M.D., developed his checklist to prevent central-line infections more than 15 years ago, but it’s still the gold standard. If a family member needs a central line, make sure hospital staff follows this protocol when placing or handling one of the IVs:

- Thoroughly wash hands with soap and water or alcohol-based hand rub.
- Wear protective clothing when inserting the line, including mask, cap, gown, and gloves; the patient should be covered with a sterile sheet.
- Disinfect the patient’s skin with the antiseptic chlorhexidine.
- Avoid placing the IV in the groin.
- Check every day whether the catheter can be removed.

In addition, the insertion site should be covered with sterile gauze or chlorhexidine dressings, and caregivers should wash their hands before touching the patient or the line and scrub the access port before each use.

THE CHART ON THIS PAGE shows the highest-scoring U.S. teaching hospitals at preventing central-line infections between

2011 and 2015. The facing page shows the lowest-scoring teaching hospitals against those infections. Hospitals are

listed alphabetically. To see how hospitals in your area perform, go to [CR.org/central-line-infections](https://www.cr.org/central-line-infections).

| Hospital Name | City, State | 2011 | 2012 | 2013 | 2014 | 2015 |
|---|-------------------|------|------|------|------|------|
| HIGHEST-SCORING TEACHING HOSPITALS | | | | | | |
| Advocate Lutheran General Hospital | Park Ridge, IL | ⬆ | ⬆ | ⬆ | ⬆ | ⬆ |
| Froedtert Memorial Lutheran Hospital | Milwaukee, WI | ⬆ | ⬆ | ⬆ | ⬆ | ⬆ |
| Hahnemann University Hospital | Philadelphia, PA | ⬇ | ⬆ | ⬆ | ⬆ | ⬆ |
| HonorHealth Scottsdale Osborn Medical Center | Scottsdale, AZ | ⬆ | ⬆ | ⬇ | ⬆ | ⬆ |
| Long Island Jewish Medical Center | New Hyde Park, NY | ⬆ | ⬆ | ⬆ | ⬆ | ⬆ |
| Maimonides Medical Center | Brooklyn, NY | ⬆ | ⬆ | ⬆ | ⬆ | ⬆ |
| Medical Center Health System | Odessa, TX | ⬇ | ⬆ | ⬆ | ⬆ | ⬆ |
| MedStar Franklin Square Medical Center | Baltimore, MD | ⬇ | ⬆ | ⬆ | ⬆ | ⬆ |
| Memorial Hospital of Rhode Island | Pawtucket, RI | ⬆ | ⬆ | ⬆ | ⬇ | ⬇ |
| Methodist Healthcare Memphis Hospitals | Memphis, TN | ⬇ | ⬆ | ⬆ | ⬆ | ⬆ |
| Mount Auburn Hospital | Cambridge, MA | ⬇ | ⬆ | ⬆ | ⬆ | ⬆ |
| Mount Sinai St. Luke's - Roosevelt | New York, NY | ⬇ | ⬇ | ⬆ | ⬆ | ⬆ |
| North Shore University Hospital | Manhasset, NY | ⬇ | ⬇ | ⬆ | ⬆ | ⬆ |
| Ochsner Medical Center | New Orleans, LA | ⬇ | ⬆ | ⬆ | ⬆ | ⬆ |
| OhioHealth Grant Medical Center | Columbus, OH | ⬆ | ⬆ | ⬆ | ⬆ | ⬆ |
| OhioHealth Riverside Methodist Hospital | Columbus, OH | ⬆ | ⬆ | ⬆ | ⬆ | ⬆ |
| Saint Barnabas Medical Center | Livingston, NJ | ⬇ | ⬆ | ⬆ | ⬆ | ⬆ |
| San Francisco General Hospital and Trauma Center | San Francisco, CA | ⬆ | ⬆ | ⬆ | ⬆ | ⬆ |
| Sentara Norfolk General Hospital | Norfolk, VA | ⬆ | ⬆ | ⬇ | ⬆ | ⬆ |
| St. Joseph Mercy Ann Arbor | Ypsilanti, MI | ⬇ | ⬆ | ⬆ | ⬆ | ⬇ |
| St. Luke's University Hospital - Bethlehem Campus | Bethlehem, PA | ⬆ | ⬆ | ⬆ | ⬆ | ⬆ |
| Staten Island University Hospital | Staten Island, NY | ⬇ | ⬆ | ⬆ | ⬆ | ⬆ |
| The University of Toledo Medical Center | Toledo, OH | ⬆ | ⬆ | ⬆ | ⬆ | ⬆ |
| UC Irvine Medical Center | Orange, CA | ⬇ | ⬆ | ⬆ | ⬆ | ⬆ |
| UMass Memorial Medical Center | Worcester, MA | ⬆ | ⬆ | ⬆ | ⬆ | ⬆ |
| University of Chicago Medical Center | Chicago, IL | ⬆ | ⬆ | ⬆ | ⬆ | ⬆ |
| University of Missouri Hospitals and Clinics | Columbia, MO | ⬆ | ⬆ | ⬆ | ⬆ | ⬆ |
| University of Tennessee Medical Center | Knoxville, TN | ⬆ | ⬆ | ⬆ | ⬆ | ⬆ |
| University of Texas Southwestern Medical Center | Dallas, TX | ⬆ | ⬆ | ⬇ | ⬆ | ⬆ |
| University of Washington Medical Center | Seattle, WA | ⬆ | ⬆ | ⬆ | ⬆ | ⬆ |
| Upstate University Hospital | Syracuse, NY | ⬆ | ⬆ | ⬆ | ⬆ | ⬆ |
| West Virginia University Hospitals | Morgantown, WV | ⬆ | ⬆ | ⬆ | ⬆ | ⬆ |

GUIDE TO THE RATINGS: These charts show the highest- and lowest-performing U.S. teaching hospitals at preventing central-line infections in intensive care units from Jan. 1, 2011, to Dec. 31, 2015, the most recent federal data that's publicly available. We give more weight to the most recent data. The ratings do not show improvement hospitals may have

made after Jan. 1, 2016.

The data come from information that hospitals provide to the Centers for Disease Control and Prevention, which uses the average central-line infection rate in U.S. hospitals from 2006 to 2008 as a baseline to gauge hospital performance over time.

Hospitals with our lowest rating ⬇ are more than two times worse than

the historic average.

Those with our second-lowest rating ⬇ are up to two times worse than the historic average.

Those with our middle rating ⬇ are between the historic average and 50 percent better than it.

Those that get our second-highest rating ⬆ are at least 50 percent better than the historic average.

Hospitals that earn our highest rating ⬆ report zero infections.

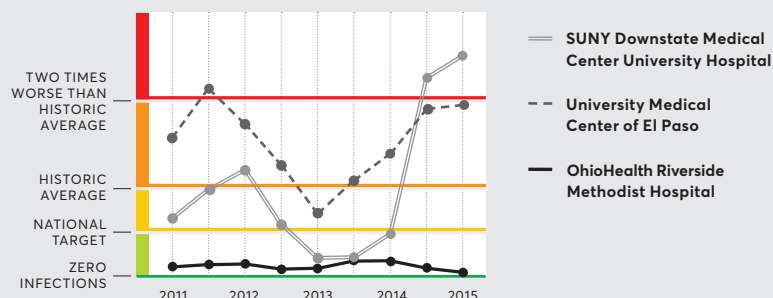
For details, go to [CR.org/howweratehospitals](https://www.cr.org/howweratehospitals).

Note that central-line infections are just one measure of a hospital's performance. For more on how hospitals in your area perform on other measures of patient safety, go to [CR.org/hospital-ratings](https://www.cr.org/hospital-ratings).

| Hospital Name | City, State | 2011 | 2012 | 2013 | 2014 | 2015 |
|---|-------------------|------|------|------|------|------|
| LOWEST-SCORING TEACHING HOSPITALS | | | | | | |
| Atlanta Medical Center | Atlanta, GA | ↓ | ↓ | ↑ | ↓ | ↓ |
| Banner - University Medical Center Tucson | Tucson, AZ | ↓ | ↓ | ↓ | ↓ | ↓ |
| Brooklyn Hospital Center | Brooklyn, NY | ↑ | ↓ | ↓ | ↓ | ↓ |
| Community Regional Medical Center | Fresno, CA | ↓ | ↓ | ↓ | ↓ | ↓ |
| Cooper University Health Care | Camden, NJ | ↓ | ↑ | ↑ | ↓ | ↓ |
| Dartmouth-Hitchcock Medical Center | Lebanon, NH | ↓ | ↓ | ↑ | ↓ | ↓ |
| Emory University Hospital Midtown | Atlanta, GA | ↓ | ↓ | ↓ | ↓ | ↓ |
| Eskenazi Health | Indianapolis, IN | ↓ | ↓ | ↓ | ↓ | ↓ |
| George Washington University Hospital | Washington, DC | ↓ | ↓ | ↓ | ↓ | ↓ |
| Grady Memorial Hospital | Atlanta, GA | ↓ | ↓ | ↓ | ↓ | ↓ |
| Holy Cross Hospital | Silver Spring, MD | ↓ | ↓ | ↓ | ↓ | ↓ |
| Howard University Hospital | Washington, DC | ↑ | ↓ | ↓ | ↓ | ↓ |
| Hurley Medical Center | Flint, MI | ↑ | ↓ | ↓ | ↓ | ↓ |
| Indiana University Health University Hospital | Indianapolis, IN | ↑ | ↓ | ↓ | ↓ | ↓ |
| Interim LSU Public Hospital | New Orleans, LA | ↑ | ↓ | ↓ | ↓ | ↓ |
| Long Beach Memorial Medical Center | Long Beach, CA | ↓ | ↓ | ↓ | ↓ | ↓ |
| MacNeal Hospital | Berwyn, IL | ↑ | ↓ | ↑ | ↓ | ↓ |
| Maine Medical Center | Portland, ME | ↓ | ↓ | ↓ | ↓ | ↓ |
| Maricopa Integrated Health System | Phoenix, AZ | ↓ | ↓ | ↓ | ↓ | ↓ |
| Nebraska Medicine - Nebraska Medical Center | Omaha, NE | ↓ | ↓ | ↓ | ↓ | ↓ |
| Palmetto Health Richland | Columbia, SC | ↓ | ↓ | ↓ | ↓ | ↓ |
| Robert Wood Johnson University Hospital | New Brunswick, NJ | ↑ | ↓ | ↓ | ↓ | ↓ |
| Ronald Reagan UCLA Medical Center | Los Angeles, CA | ↓ | ↓ | ↓ | ↓ | ↓ |
| SUNY Downstate Medical Center University Hospital | Brooklyn, NY | ↓ | ↓ | ↑ | ↑ | ↓ |
| Truman Medical Center - Hospital Hill | Kansas City, MO | ↑ | ↓ | ↓ | ↓ | ↓ |
| Tulane Medical Center | New Orleans, LA | ↓ | ↓ | ↓ | ↓ | ↓ |
| UC San Diego Health | San Diego, CA | ↑ | ↓ | ↓ | ↓ | ↓ |
| UF Health Jacksonville | Jacksonville, FL | ↓ | ↓ | ↓ | ↓ | ↓ |
| University Hospital | Newark, NJ | ↓ | ↓ | ↓ | ↓ | ↓ |
| University Medical Center of El Paso | El Paso, TX | ↓ | ↓ | ↓ | ↓ | ↓ |
| University of Iowa Hospitals and Clinics | Iowa City, IA | ↓ | ↓ | ↓ | ↓ | ↓ |

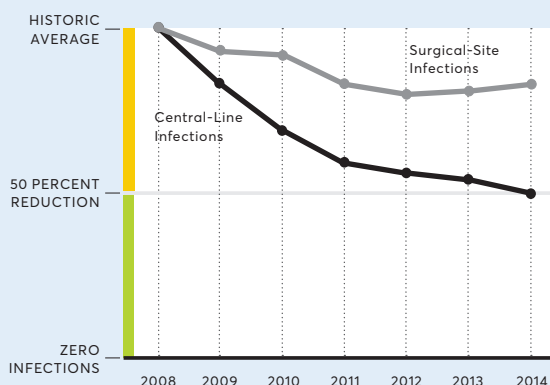
A Tale of 3 Hospitals

In the fight against central-line infections, OhioHealth Riverside Methodist Hospital, in Columbus, stands out, by having close to zero infections each year between 2011 and 2015. SUNY Downstate Medical Center University Hospital in Brooklyn, N.Y., and the University Medical Center of El Paso, Texas, on the other hand, are trending in the wrong direction, showing rising central-line infection rates in recent years.



Hospital Infections Over Time

Shown below are infection rates between 2008 and 2014 for two hospital-acquired infections: those linked to central lines and those tied to surgery. Though progress against central-line infections has slowed since 2011, hospitals are still doing a better job against those infections than they are against surgical-site infections.



Source: Centers for Disease Control and Prevention.

“culture of safety” among all team members, says Michael Augenbraun, M.D., director, division of infectious diseases at SUNY Downstate Medical Center.

The Path to Zero

Central-line infections were once seen as inevitable when dealing with patients in intensive-care units. “We thought we could maybe cut them by 10 percent,” says Srinivasan, at the CDC.

But in 2004, Pronovost, at Johns Hopkins, put his checklist to

the test at more than 100 Michigan ICUs. “Within three months, rates were cut in half,” he says, and by 18 months it was down by almost 70 percent. “If hospitals are meticulous about following the checklist, most infections can be avoided,” he says.

But that requires buy-in from everyone—from senior administrators and physicians to cleaning staff and nurses.

Maureen Jewell, R.N., director of quality management and performance improvement at Saint Francis Hospital in Wilmington, Del., says it was important to make this everyone’s problem to solve. “We spent much of our time empowering nurses to speak up if hospital staff weren’t following the checklist carefully,” she recalls. “We had to make it clear that when it came to these infections, the physicians weren’t calling the shots—they were.” Like Shore Medical Center in New Jersey, Saint Francis Hospital improved from one of the lowest-performing hospitals in 2011 to one of the highest-rated ones.

Even some large hospitals in urban areas have improved. One that stands out: Mount Sinai St. Luke’s-Roosevelt Hospital, in New York City. On the day we visited in October 2016, the whiteboard outside one of its ICUs proclaimed it had gone 969 days without a single central-line infection.

To keep that streak alive, the hospital staff is constantly reassessing how it’s doing. For example, a monthly staff meeting recently revealed that some nurses weren’t using a new, more effective antiseptic dressing because it wasn’t included in the prepackaged kits used to insert a central line, says Emilia Mia Sordillo, M.D., the physician in charge of infection prevention at the hospital. By the end of the week, “all the kits had the right antiseptic dressing,” she says.

Rowe, the medical director at Shore Medical Center, says preventing the infections is not costly or all that complicated. It just takes training and patience and commitment to doing the little things right “every single day, every single patient.”



KEEPING PATIENTS SAFE: WHAT NEEDS TO HAPPEN

CONSUMER REPORTS first focused on hospital infections in 2003, when we urged states to pass laws requiring that hospitals publicly report those events. Once hospitals began doing that, we started rating them on infections, hoping “it would nudge hospitals toward solutions,” says Lisa McGiffert, director of Consumer Reports’ Safe Patient Project. That has helped, but more needs

to be done. CR believes that the federal government should require hospitals to:

- Immediately report infection outbreaks or infection-control breaches to patients, healthcare providers, state and federal agencies, and the public.
- Undergo inspections that check not only for infections but also whether they have instituted comprehensive infection-control

programs involving everyone from the cleaning staff to the CEO.

- Provide a system for patients to report when infections occur, to improve tracking of those events.

Do you have a story about hospital infections that you’d like to share?

Go to [CR.org/share-your-hospital-infection-story](https://www.consumerreports.org/share-your-hospital-infection-story).

An Essential Heart-Surgery Device Has a Rare But Deadly Side Effect

Hospitals and federal officials are scrambling to manage a newly discovered infection risk in open chest surgeries. What patients need to know to protect themselves.

by Jeneen Interlandi

THREE MONTHS after his heart bypass surgery at Greenville Memorial Hospital in South Carolina, 74-year-old Henry Weinacker found himself back in a hospital exam room with a bad fever. He'd been recovering steadily enough until then, his wife Lori thought. He kept saying his chest hurt, but she figured that was to be expected given that the operation had involved cracking his sternum.

It wasn't until nurses checked his surgical wound that Lori realized something was terribly wrong: The wound had burst open and was oozing pus, she said.

Tests revealed that Henry was infected with non-tuberculosis mycobacteria (NTM), a microbe that's harmless in healthy people but can be deadly in those with weakened immune systems. NTM is common in soil and water; but it's so rarely found in hospitals that one nurse told Lori she had never seen it in a chest wound before.

The news got worse from there: Doctors said Henry was too sick to withstand the treatment for NTM (several powerful drugs taken multiple times each day for six months or longer), and that not much else could be done for him. "We had to put him on hospice," she told Consumer Reports.

He died on June 22, 2014, three weeks after the infection was discovered. In the months that followed, officials at Greenville Memorial confirmed that 14 additional patients had been diagnosed with the same rare infection and that three others had also died. An investigation conducted by the hospital and the South Carolina Public Health Department traced the offending bacteria to a piece of medical equipment well-known among surgeons but one most patients have never heard of: a heater-cooler device, or HCD.

Heater-coolers are essential surgical devices that regulate a patient's body temperature during surgery; they're used in hundreds of thousands of surgeries each year, including heart bypass, heart-valve replacement, and other heart and lung operations. But owing to a basic design flaw, the machines can harbor—and then spray—deadly bacteria through their exhaust vents, across operating rooms, and into patients' open cavities.

The investigation at Greenville stopped short of saying that its heater-cooler devices were responsible for the outbreak of NTM infections, in part because the bacteria was found in

other places throughout the hospital. But attorneys for the victims say that the link is clear. "Yes, the bacteria is a common environmental contaminant," says Blake Smith, the lawyer who settled Lori Weinacker's wrongful death suit against Greenville Memorial Hospital in 2015. "But only the heater-cooler device is capable of aerosolizing that bacteria and spraying it directly into the chest cavity during surgery."

In the two years since Henry's death, that argument has been bolstered by a string of similar incidents (in Iowa, Pennsylvania, and elsewhere) and by an acknowledgement from the Food and Drug Administration and the Centers for Disease Control and Prevention that heater-cooler devices pose a small but potentially serious risk to patients. From Jan. 1, 2010, to Feb. 29, 2016, the FDA received 180 incident reports related to heater-cooler devices around the world. The reports include 16 U.S. hospitals across 10 states, where



at least 45 patients were infected and at least nine died.

So far, the vast majority of those incidents have involved a specific brand of heater-cooler: the Stöckert 3T, manufactured by the European company LivaNova, formerly known as Sorin. But at least three other companies' devices have also been linked to bacterial contamination worldwide, and both the FDA and CDC have acknowledged that the concern goes beyond any one brand. "A wet machine with a big fan can result in these organisms," says Michael Bell, M.D., deputy director of the CDC's Division of Healthcare Quality Promotion. "We need a better way of managing machines like this or a better design that doesn't have that problem."

So hospitals are scrambling to manage a problem that pits an essential surgical device against a deadly bacterial infection, federal agencies are struggling to raise awareness of the issue, and experts are divided over when—or even whether—patients should be notified of the newly discovered risk.

Catherine Chang, M.D., chief medical officer for Greenville Memorial Hospital, said her facility stopped using the Stöckert 3T device in June 2014 and has adopted a "wide range" of additional precautions, going "above and beyond CDC recommendations," to better protect patients.

Since 2015, the FDA and CDC have each issued advisories urging hospitals to take steps to prevent their heater-coolers from spraying bacteria across the operating room, and to be on the lookout for NTM infections in patients who have had valve replacement or bypass surgery. So far, the CDC says, those warnings have yet to catch on among doctors and hospitals. "Despite 12 months of communication on this issue, awareness remains much lower than it should be," says Joseph Perz, Dr.P.H., an infection control expert with the CDC.

In October, the agency issued a third, more urgent advisory calling on hospitals that use the Stöckert 3T device to develop a system for alerting patients and healthcare providers in the event of an outbreak. Critics say that advice doesn't go far enough, in part because it should extend to all hospitals using any brand of heater-cooler.

A Difficult Diagnosis

Heater-cooler devices, which look like freestanding portable air conditioners and have been in use since the 1960s, contain tanks of water that circulate through narrow tubes. The machines were considered safe because although the water isn't sterile, it also doesn't come into direct contact with the patient. But in 2015, researchers discovered that bacteria from the water can seep into other parts of the machine and multiply there, and that if that bacteria reaches the exhaust fan, it can be sprayed through the air during surgery.

So far, the numbers suggest that the risk of any given HCD being contaminated or infecting patients is very small. But NTM infection is inherently difficult to diagnose, and several experts have said that the confirmed cases probably

represent just a fraction of the actual infections. "We know there are infections out there that are going undiagnosed," says Michael Edmond, M.D., a hospital epidemiologist at the University of Iowa Hospitals and Clinics in Iowa City, where heater-cooler contamination has been detected.

Part of the problem is the bacteria itself. Some strains of NTM grow so slowly that it can take as long as four years for symptoms to emerge, making it unlikely that a doctor will link those symptoms to the surgery. What's more, the infection is so rare, and the tests used to diagnose it so cumbersome, that most doctors never bother to look for it in the first place.

A Growing Problem

Since the Greenville outbreak, several more NTM-infection clusters have been potentially linked to HCDs. In Pennsylvania, two hospitals have publicly reported NTM outbreaks that could be linked to their heater-cooler devices, and at least 14 probable patient infections have been identified. In Iowa, two hospitals reported a total of three possible heater-cooler-related NTM infections.

And at the University of Washington Medical Center in Seattle, five patients were sickened and two of them died after being infected with another type of bacteria, legionella. Like NTM, legionella is common in the environment but rare and potentially deadly in hospitals. As with Greenville Medical, the Washington hospital acknowledged that its HCDs had been found contaminated with the offending bacteria but stopped short of saying that the device was responsible for the infection or deaths.

In other cases, the link is more certain. The CDC compared the bacteria found in heater-cooler devices in Pennsylvania and Iowa with the bacteria found in patients at those hospitals and found that all samples had the same genetic fingerprint. The agency concluded that those heater-coolers (all of them Stöckert 3T) were contaminated by the same source of water, most likely at the factory.

The same day the CDC issued its October advisory, LivaNova released a statement to its customers acknowledging the concerns raised. The company told Consumer Reports that it is "working closely" with stakeholders to resolve the problem while pointing out that heater-coolers are not easily replaced: "Without these devices, hospitals would be unable to perform many of the hundreds of thousands of heart surgeries needed by patients each year."

A Question of Transparency

In early June, the FDA convened a two-day meeting to discuss the HCD problem and to come up with recommendations for how to handle it. Several panel members argued that alerting all patients who underwent surgeries using an HCD might incite needless panic, or worse, scare very sick patients off of surgeries that could save their lives.

Concerns over cost were also raised: Richard Hopkins, M.D., a cardiac surgeon at Children's Mercy Academic Medical Center in Kansas City, Mo., said, "I'm a little loath to make a recommendation that's going to cost a hospital \$1.5 million based on one case."

But not everyone agreed. Jonathan Zenilman, M.D., chief of the division of infectious diseases at Johns Hopkins Bayview Medical Center in Baltimore, suggested that even "one case" of NTM infection could qualify as an outbreak and could trigger a wide alert. And Laurence Givner, M.D., a pediatric infectious disease specialist at Wake Forest University in Winston-Salem, N.C., argued that all patients who have surgery with an HCD should be warned of the risk.

Ultimately, the panel recommended that providers be notified first and that patient notifications be limited. "If a facility discovers one patient infection, the panel does not recommend notifying all patients," the meeting summary states. The panel was "more receptive" to the idea of notifying all patients after two infections but suggested that if a hospital could determine exactly which patients had been in an operating room with a contaminated HCD, then only those patients should be notified.

Lisa McGiffert, director of Consumer Reports' Safe Patient Project, says that's not enough. "The CDC and FDA should call more forcefully on hospitals to inform all patients of the risk associated with heater-coolers before surgery," she says. "Without that awareness, patients don't know what symptoms to watch out for, or if and when to get tested for this rare infection."

Bell says that although both agencies can issue guidelines, neither the FDA nor the CDC has the power to compel hospitals to notify patients. "Those powers live at the state level," he says. "So any mandate really has to come from individual hospitals working with state health departments."

Hospitals and device-makers are required to report incidents to the FDA, but not to notify patients. And Lawrence Muscarella, Ph.D., a medical-device expert, says there is an alarming gap between what's reported to the agency and what's shared with patients. "There are infection clusters in the FDA database that have not been publicly acknowledged," he says. "And we have no idea whether those hospitals are taking any steps to inform patients or address the problem." (Hospitals are not named in the FDA database.)

Attacking the Problem

Some hospitals are responding aggressively. In January 2015, when the University of Iowa Medical Center detected NTM in a patient who had heart-valve replacement surgery, the hospital convened an emergency response team made up of experts from every relevant department—including infection control, lab testing, surgery, and cardiology.

Within two weeks, the team had sent samples from all

of the hospital's HCDs out for testing and had developed a "workaround" that involved drilling holes through its operating room walls so that the devices could be kept away from patients but still be used in surgeries. "It was a busy couple of weeks," says Daniel Diekema, M.D., director of the hospital's division of infectious diseases.

The hospital used billing codes and surgical logs to develop a list of all patients who had been exposed to a heater-cooler device, going back five years to account for the long lag time of some NTM infections. It identified 1,500 patients. "We decided to notify all of them," Edmond says. "We even notified the patients where the device wasn't used but was running on standby during their surgery."

They also created an alert in their electronic medical record system that pops up for any patient who develops symptoms of NTM infection after bypass surgery. The alert advises clinicians to order NTM tests and an infectious disease consult.

Those steps go well beyond what the CDC and FDA have recommended—including that hospitals follow strict HCD cleaning protocols, that they direct the device's exhaust fan away from the operating table, and that, should any heater-coolers test positive for bacterial contamination, they look back through lab records to check for cases of NTM.

But Edmond says the federal guidelines fall short of what's needed. "You're not going to find many NTM cases by just passively looking back through lab records," he says. "You have to be more proactive than that."

Last fall, the Mayo Clinic was in the midst of its own heater-cooler incident. One patient had tested positive for NTM, and several heater-cooler devices were subsequently found to be contaminated. Soon after the CDC's advisory, the hospital decided to warn every patient who had been exposed to the contaminated devices. It sent out 17,000 letters.

Symptoms and Safety Precautions

Consumer Reports suggests that patients undergoing heart or lung surgery ask their physicians whether the device will be used for their operations, and if so, whether it has been tested for contamination or implicated in any outbreaks.

If you've already had heart surgery, you and your doctor should be on the lookout for signs of infection, including irritation around the surgical incision, and unexplained fevers, night sweats, muscle aches, or weight loss, which can emerge as long as four years after surgery.

Lori Weinacker says she wishes she had known about the risks. "I assumed for open-heart surgery, everything is going to be clean, spotless, sterile," she says. "And they didn't tell us, and they didn't tell anyone else, that there's a slight chance that this is not the case."



A version of this report ran on [CR.org](https://www.consumerreports.org) on Oct. 13, 2016.

An aerial photograph of a tropical coastline. The water is a vibrant turquoise, showing the intricate patterns of coral reefs and sandy patches. A small white boat with a canopy is visible in the middle ground. In the distance, a green island with a white shoreline is visible under a blue sky with scattered clouds. The overall scene is serene and beautiful.

10 Ways **Drones** Are Changing Your World

From delivering burritos to college students to shuttling emergency medical supplies to people in need, these aircraft are destined to have a major impact on our lives. Here's what they can do.

by **Tom Foster**



Picture-Perfect View
With this image captured by a drone, journalists in Japan chronicled coral bleaching's impact on that nation's largest reef.

Drones have been a hot topic in the news for some time.

Depending on what you've read, they're devastatingly effective weapons of war, the next big threat to personal privacy, a revolutionary leap in video technology, or hazardous toys capable of chopping your fingers off.

To be fair, there's a measure of truth to all those statements. But you might be surprised to learn that drones will soon affect our everyday lives in a host of useful ways. People are already using them to deliver fast food to hungry teens in Virginia, improve the productivity of Midwestern farms, and even protect rhinos and elephants in Africa from poachers.

In the next year, almost 2.3 million of the unmanned aircraft will be sold, according to market analysis firm Skylogic Research. And the vast majority will be the multirotor models embraced by apple farmers, wedding photographers, and search-and-rescue workers.

"This is one of the few technologies that could revolutionize the way the world appears," says Mark Blanks, who oversees the test site at Virginia Tech University where air-traffic-control concerns related to drones are being studied.

Before we launch a few million more aircraft into our collective airspace, though, many concerns need to be resolved. Last summer the Federal Aviation Administration unveiled the first set of regulations governing the commercial use of drones, generally confining them to daylight flights below 400 feet and within the pilot's field of vision. Experts believe there's lots of work to be done, however, to balance the technology's incredible potential against the public's right to safety. "Right now, it's a jumbled mess of competing policy visions, clashing local laws, and citizens' privacy concerns," says Skylogic CEO Colin Snow.

But, even though the regulations, social norms, and tech standards are still in flux, researchers and pioneering companies are developing innovative ways to use these flying robots right now.

Package Delivery

In an interview with CBS's "60 Minutes," Amazon CEO Jeff Bezos said about 86 percent of the orders the online retailer ships weigh less than 5 pounds. That's lightweight enough to be delivered by drone. Amazon is now testing autonomous aircraft that can drop a book or a pair of shoes

at your home within 30 minutes of receiving an order.

So it's not difficult to imagine a day when you no longer have to rush out to the store in your pajamas for a quart of milk. In fact, Dominos has already begun to test drones for pizza deliveries in New Zealand. And Walmart is examining ways to deploy drones *inside* its warehouses to photograph and catalog inventory. The retail giant has offered few details on its plans, but if it used drones for transporting goods, too, it would be a game-changer: 70 percent of the U.S. population reportedly lives within 5 miles of a Walmart store.

Google's research facility, known as Google X, launched a test program of its own in 2012. In one trial, the company has been delivering Chipotle meals to students and faculty at Virginia Tech University. But rather than receiving a burrito in front of, say, a dorm, customers must place their orders at a local kiosk, then wait a few minutes while a drone approaches and lowers their food into a field with a rope.

So much for convenience. The point, says Blanks of Virginia Tech, is safely mastering the logistics. "Package delivery is one of the harder challenges to overcome," he explains. "It involves operating over people, controlling multiple aircraft at once, and handling spikes in demand at certain times of day." But if Blank's researchers can create an effective air-traffic-control system, we could be looking at much more than a cure for the late-night munchies. Cutting down on the number of delivery vehicles on the ground could reduce the strain on the nation's streets, highways, and bridges, too.

Bottom line. Don't expect Amazon to roll out mass drone deliveries for at least three years.

Agriculture

In recent years, farmers have discovered that drones are very useful for monitoring the health of their fields. "It would cost me a couple hundred dollars an hour for a plane or helicopter," says fourth-generation grain and apple



Epic Bride
Nothing captures a major life moment like an aerial snapshot from a drone.

farmer Jeff VanderWerff. “With my [DJI] Phantom 3 drone, a device I paid \$1,200 for, I can fly it every day.”

When he gets a commercial license, he plans to put the craft to use on the family’s 1,800-acre Michigan grain farm. Aerial imagery from a drone equipped with an NDVI (normalized difference vegetation index) camera could help him accurately estimate the yield of a crop in July, rather than waiting until harvest in October. With special software he could analyze that imagery, spotting crops beset by diseases, weeds, and flooding while there’s still time to save them. And he could then use the drone to efficiently apply fertilizers and pesticides.

At the moment, he has to use a giant crop sprayer to treat the entire field. “With drone technology,” he says, “I’m going to determine exactly where the problem exists and apply pesticide to that area alone. Rather than 80 acres, I might treat just 15.” That means fewer pesticides on the food, lower fuel use and emissions, and more healthy plants at harvest time.

Bottom line. Drone use on farms will become more significant when FAA rules permit certain flights beyond the pilot’s field of vision.

Photos and Videos

“If you want a moment to look epic,” Parker Gyokeres says, “hire a drone.” As a photographer in the Air Force, he once built a drone from scratch, outfitting it with a GoPro camera, because he could not persuade anyone to take him up in a helicopter. Today he owns a fleet of autonomous aircraft in New York that he uses to shoot projects as varied as BMW commercials, corporate events, and weddings (including the nuptials of U.S. Rep. Sean Patrick Maloney, D-N.Y.).

The soaring panoramas captured by drones are compelling enough to have made their way into movies such as “Captain America: Civil War,” “Spectre,” and “The Wolf of Wall Street,” as well as CNN’s coverage of the earthquakes in Italy and Ecuador a year ago. Real estate agents and travel hot spots are embracing the technology, too, to promote their scenic offerings. And now that drones can be programmed to follow their owners, they’re even more likely to turn up in the air above cyclists, skiers, surfers, hikers, and kayakers.

Bottom line. Images from drones are appearing right now on TV, movie screens, YouTube, and Instagram feeds.



A Growing Trend

Farmers are using drones to monitor the health of their crops, pinpointing the parts of their fields that need more water, fertilizer, or pesticides.

Want a Drone of Your Own?

Here are a few things to consider

You might need to alert the FAA.

By federal law, you must register any drone weighing more than 0.55 pounds. The fee is \$5. Once you've registered it, you're okay to fly it for three years.

Drones are increasingly easy to fly.

Brands such as DJI, Yuneec, and now GoPro offer models that can take off and land on their own; Yuneec's Typhoon H and DJI's new Mavic Pro even have software and sensors that help you avoid crashing into things, like, say, trees.

Some drones even follow you around—like pets.

The more advanced models from DJI and Yuneec have autopilot modes that can track you as you walk through a field or ride a bike. And that frees you up to star in your own videos.

You don't get to fly them wherever you want.

They're not allowed near airports. The same goes for military bases, sporting events, and national parks. And Washington, D.C., is completely off-limits.

Don't tread on your neighbors' privacy.

To date, no federal laws specifically address the

use of drone cameras, but at least 12 states have passed some form of legislation to curtail acts of voyeurism. In Mississippi, for example, using a drone for peeping Tom activities can result in a felony charge and up to five years in prison.

Don't skimp on the camera.

Any drone you purchase should shoot at least 1080p video. Before you make your final pick, try to take the model out for a test drive, because certain drone cameras struggle in transitions between light and shade. DJI's Mavic Pro and GoPro's Karma drone (when purchased with the company's new Hero5 Black action cam) both have 12-megapixel cameras capable of recording 4K video.

Consider portability. The Mavic Pro, Karma, and other new recreational drones can be folded up and stowed in a backpack. The Vantage Robotics Snap Drone—which has shields over its rotors for added safety—comes apart and folds to roughly the thickness of a laptop.

—Michael Frank



DJI Mavic Pro

This new model folds up to fit in a backpack.

Humanitarian Aid

Some 1.3 billion to 2.1 billion people on the planet don't have access to essential medicines, the World Health Organization says, often because they live in hard-to-reach places. To address that concern, California drone maker Zipline signed a deal with the government of Rwanda last February to shuttle supplies to remote areas on demand.

With "Zip" drones, which cover a roughly 50-mile radius, a health center in Rwanda can send a text message to order blood for a patient with severe malaria-related anemia and it shows up via parachute within 40 minutes.

"We are already delivering more than 40 percent of the transfusions for the entire country," says Zipline founder Keller Rinaudo. "These are cases where, if bad roads or lack of supply prevents deliveries, people die."

Similar efforts involving organizations such as UNICEF and Doctors Without Borders and the companies Matternet and Vayu are already underway in Malawi, Madagascar, and Papua New Guinea. Even certain remote locales in the U.S. will soon benefit from such services. Last August, the Obama administration announced that it would partner with private-sector firms to begin testing the idea on Maryland's Smith Island, Washington's San Juan Islands, and Nevada's Pyramid Lake Tribal Health Clinic.

Bottom line. Drones are now delivering medical supplies in countries beset by malaria, tuberculosis, and AIDS.

First Responders

In February 2015, the Michigan State Police received FAA approval to fly a SkyRanger quadcopter made by Canada's Aeryon Labs for public safety efforts. A week later, troopers used it to investigate a suspicious fire in Jenison. According to Aeryon CEO David Kroetsch, the craft can also be used to conduct search-and-rescue operations, gather aerial intelligence for SWAT teams, and even map accident scenes. That last task usually involves an officer on foot measuring the crash site and sketching the details on graph paper—a system ripe for inaccuracy, given the time constraints. With a drone and a laptop, he can instead stitch together a series of geotagged photos and even film fly-throughs to determine what drivers might have seen in the moments before impact. "That's evidence-grade data," Kroetsch says, "and it can be done in 15 minutes." By completing the mapping quickly, officers can reduce the length of lane closures on busy highways, potentially sparing hundreds of thousands of dollars in tolls for a state, he says.

Better yet, aerial footage provided by drones keeps early responders out of harm's way. In a SWAT scenario, for example, a camera-equipped craft with a powerful 30x zoom lens can give officers a close-up look at a compound where hostages are being held—while they remain 1,000 feet away. And, likewise, a fireman can fly a drone

Eye in the Sky

Because they can capture crisp video and reach out-of-the-way places—like the top of this Trenton, N.J., water tower—drones are effective tools for safety inspections.



with thermal-imaging and video-streaming capability over a four-alarm blaze and determine, in real time, where to direct his colleagues and where to help them avoid trouble.

Of course, drones with zoom lenses also raise the specter of unwanted surveillance. In a 2012 Monmouth University telephone poll, fewer than one in four Americans endorsed the idea of having the aircraft patrol the nation's highways, doling out speeding tickets. That's why the Michigan State Police have taken a cautious approach, even meeting with the American Civil Liberties Union to review policies, says Sgt. Matt Rogers, a member of the force's aviation unit. "The last thing I want to do is create case law," he says. "If using a drone furthers an investigation, we require a search warrant."

Bottom line. Drones will become a vital tool for police officers and firefighters in the next five to 10 years.

Safety Inspections

Drones are exceedingly effective at finding structural flaws, not only because they can quickly and efficiently take high-resolution images and laser scans but also because they can get up close in treacherous spaces, such as the underside of



Rotor Intelligence

Drones can also help SWAT team members safely gather valuable info.

an offshore drilling rig or the top of a cell tower.

Boeing's drone-making subsidiary Insitu is working with BNSF Railway to test rail-inspection possibilities in New Mexico. "If there was a lot of rain overnight," says Jon Damush, the company's vice president and general manager, "we could send an unmanned sentry out before the first train of the day and see if there was a washout."

With a waiver to the flight rules that prevent drones from flying beyond the pilot's view, the technology could one day be deployed to spot-check roads, bridges, pipelines, dams, and other public works. That could allow for better use of limited tax dollars. "Even with the same amount of funding, with better information workers can be deployed to the places where they're most needed," says Thomas Haun of PrecisionHawk, which offers drones and data services to energy companies, utilities, and construction firms. In the U.S., a country with a D+ infrastructure rating (according to the American Society of Civil Engineers), that's no small thing.

Bottom line. Inspection crews are already putting drones to use, and the scope of those efforts will increase as regulations get sorted out.

Insurance

"Let's say a hailstorm rolls through Texas and damages 2,000 roofs in its wake," says Dan Burton, founder of DroneBase, an Uber-like service that connects businesses with independent drone pilots. "We could go take some pictures and then say, 'Based on the damage to this roof, there's a 98 percent chance you will pay a claim. On this other one, it's 80 percent.'"

With that in mind, most of the major insurance companies are now experimenting with drones, some by hiring outside contractors, others by sending out aircraft of their own. If you're a claims adjuster, it saves you time and money, and reduces the risks of climbing ladders and walking on damaged roofs. But if you're the customer, that might not translate to lower insurance premiums.

"I doubt the savings will be passed on to consumers," says Skylogic Research's Snow. But those reductions in inspection time could lead to quicker settlements, and the detailed documentation in the aerial photos feasibly could aid with disputed claims.

Bottom line. This application could be widespread very soon.

More Access

Facebook hopes its Aquila drone and others like it will provide internet to people worldwide.



Internet Access

Well over half the planet's population—some 4 billion people—currently has no internet access. A full 1.6 billion live in areas too remote for mobile broadband. That means no Facebook, of course, but also no email, no world news, no information and instruction from YouTube, and no access to online commerce. And without a huge investment in satellites and cell towers, that's mighty difficult to change.

Google has floated a plan to fix the problem by relaying internet signals via a network of giant, high-altitude balloons, but the company is also reportedly looking into drones as a solution. Facebook is headed that way, too.

In the latter company's vision, a series of lightweight drones with the wingspan of a Boeing 737 will cruise high above normal airspace delivering connectivity to people within a 60-mile radius. Powered by batteries and solar energy, they will remain aloft for three months at a time. The company can't say when the project will be operational—"significant advancements in science and technology will be needed," a spokesperson says—but last June a full-scale prototype made a successful test flight of more than 90 minutes over southern Arizona.

Bottom line. It could be five to 10 more years before the program takes flight.

Hurricane and Tornado Forecasting

In the future, when a severe tropical storm approaches Florida, as Hurricane Matthew did last October, autonomous aircraft developed by defense contractor Raytheon Missile Systems could fly right up to the maelstrom to take measurements for the National Oceanic and Atmospheric Administration (NOAA).

Originally created for anti-submarine warfare, the small, fixed-wing crafts known as Coyotes launch from the bottom of hurricane hunter planes, which often fly in the upper reaches of a storm, often more than 10,000 feet in the air. The Coyotes can, by contrast, maneuver around at

500 feet—right at the dangerous boundaries of the storm, where the most dramatic atmospheric changes occur.

"Instead of a camera to find bad guys," says John Hobday, head of business development for unmanned air systems at Raytheon, "the Coyotes carry atmospheric sensors to measure things like air pressure, temperature, wind direction, and humidity." The changes they detect govern how a storm moves and what kind of damage it might do.

"For NOAA, that is the info they have to deliver accurately to authorities in Miami, New Orleans, or Charleston," Hobday says. "They need to be able to say with a high degree of accuracy, 'This is the big one. You need to worry about it now.'"

For tornadoes, the margin for error is even narrower, explains Brian Argrow. A professor of aerospace engineering at the University of Colorado Boulder, he has been conducting research with drones for more than 15 years. "Right now, the average warning time for a tornado is 14 minutes," he says. "Drones enable us to get data that's going to protect property and save lives." But because tornadoes travel on land, beneath airspace governed by the FAA, it will take some time to iron out the necessary safety guidelines.

Bottom line. This is happening in limited scope now.

Wildlife Conservation

In recent years, scientists at the Woods Hole Oceanographic Institution in Massachusetts have used drones to monitor the health of humpback whales off the coast of Cape Cod, even capturing from their blowholes breath samples flush with DNA that can be analyzed for wildlife studies. The U.S. Geological Survey has also dispatched them to observe sandhill cranes in Colorado. But to date, the tech's most profound contribution to wildlife protection might be unfolding in Africa, where drones are policing vast tracts of land to catch poachers hunting rhinos and elephants. The horns and tusks of those animals can fetch hundreds of thousands of dollars from Asian crime syndicates.

Instead of having park rangers go out after dark to try to catch the heavily armed bandits, drone pilots patrol the targeted areas with their aircraft, collecting data used to predict the poachers' movements. "We look at the patterns of how the animals move because that dictates how poachers move," says Bowling Green State University professor Thomas Snitch, who is working to refine the approach. "We keep track of water sources because the animals have to get water every day."

That information is then cross-referenced with factors such as the weather and time of the month—because, for instance, well-lit full-moon nights are particularly dangerous. **Bottom line.** Wildlife protection programs involving drones have been evolving since 2011.

Aid by Air
In Madagascar drones deliver medical supplies to people in remote villages.



Road Report

Ratings from our test track plus expert car advice

AVERAGE PREDICTED
TREAD LIFE BY TIRE TYPE
BASED ON CR TESTS (MILES)

34,000

UHP SUMMER

49,000

UHP ALL-SEASON

69,000

REGULAR ALL-SEASON

Reinventing the Wheel

Ultra-high-performance tires can handle the extra horsepower of sports cars, but they're pricier and don't last as long as regular all-season tires. Here's what you need to know before you roll off the lot with them.

by Mike Monticello

From top:

UHP ALL-SEASON:
MICHELIN PILOT
SPORT A/S 3+
\$152

78

OVERALL
SCORE

PERFORMANCE
WINTER/SNOW:
YOKOHAMA
W.DRIVE V905
\$180

70

OVERALL
SCORE

UHP SUMMER:
MICHELIN
PILOT SUPER
SPORT
\$167

82

OVERALL
SCORE

WHO WOULDN'T want a new car with a little added boost? That's why automakers create performance versions of many popular models. They usually share the body style of the base model but come equipped with upgrades such as a more powerful engine, more powerful brakes, a sport-tuned suspension, and ultra-high-performance (UHP) tires.

Now about those tires ... Like the rest of the enhancements in those sporty models, UHP tires really can improve the performance of a vehicle. They enhance a car's grip and cornering capability, and better dissipate heat—a tire's worst enemy. But they also come with a trade-off: They tend to wear out faster than regular all-season tires usually found on family cars.

UHP tires can not only wear out faster but also be pricier to replace than regular all-season tires. The 18-inch UHP models we tested ranged from \$79 to \$225; regular all-season tires were \$64 to \$121 in the 16-inch size we tested.

UHP tires have been around for decades but were traditionally found on high-end sports cars. Now more and more manufacturers are offering them on performance-tuned versions of mainstream vehicles, such as the Buick Regal GS, Chrysler 300S, and Ford Fiesta ST. Even the Chevrolet Impala and Lincoln MKZ come in versions that can be outfitted with UHP tires. They now represent about 5 percent of the new-car market.

If you're considering a performance version of a new car, it's important to check the specs or ask the dealer whether the sporty new ride comes with UHP tires to avoid any surprises. Better yet, check the tires yourself. (See "How to Read the Writing on Your Tire Walls," on page 54.)

If you already own a car that's designed to use UHP tires, you shouldn't try to switch to lower-speed-rated tires when it comes time to buy replacements.

Gene Petersen, Consumer Reports' tires program manager, says: "UHP tires optimize handling and grip on dry and wet roads, allowing the vehicle to safely reach ever-increasing performance limits. UHP tires are designed to handle the increased speeds, torque, and g-forces that the extra horsepower, enhanced brakes, and sports-tuned suspension produce."

Putting lower-performing tires on a high-performance car is like forcing a sprinter to run in clogs: You'll definitely slow him down—and you might break one of his ankles.

So stick with UHP tires if your car is already equipped with them. But that doesn't mean you need to replace them with the same brand and model. In fact, you might find longer-wearing or better-performing tires in our ratings, which can help guide you to the best UHP tires for your car.

Built for Speed, Not Longevity

We fitted UHP tires to eight 2015 Ford Mustangs and logged 16,000 miles per tire over public roads in Texas for our treadwear test. Despite rotating the tires

and checking inflation and alignment every 1,000 miles, we found that the UHP tires wore out relatively quickly.

UHP tires come in summer, winter, and all-season variants. As you might expect, UHP summer tires are optimized for warm weather and are designed to provide the ultimate performance in dry and wet stopping as well as in cornering. But they lose grip as temperatures drop, and they deliver a harsher, noisier ride than regular all-season tires. In our treadwear tests, UHP summers lasted, on average, about 34,000 miles, with some projected to wear out in just 25,000 miles.

UHP all-seasons have slightly less grip than UHP summer tires in warm weather, but they offer decent traction in a wide range of weather conditions. UHP all-seasons averaged about 49,000 miles in our treadwear tests. In comparison, regular all-season tires averaged 69,000 miles, with some lasting for 90,000 to 100,000 miles.

Performance winter/snow UHPs provide better grip than all-season tires in snowy and icy conditions, but they have less grip on dry or wet roadways. They're identified by a mountain and snowflake symbol on the sidewall, and come in the larger sizes required by performance-oriented cars.

Tread Carefully

Keep these points in mind when deciding whether UHP tires are right for you.

➤ **Tire road-hazard insurance.** Tire insurance might be worth considering, especially if you drive on bad roads. Whether it's included or an added cost, know what protection it offers. Does it cover replacement? Will it pay for work done anywhere or only where you bought the tires?

➤ **Wheel risk.** Keep in mind that the short sidewall height of UHP tires can make expensive alloy wheels susceptible to damage from a harsh impact and scraping against curbs. Wheel insurance can usually be purchased from car-insurance companies.

➤ **Replacement when traveling.** UHP tires aren't as common as regular all-season tires and often come in odd or staggered-width sizes (smaller in the front, larger in the rear). So you run the risk of a roadside shop not stocking the size you need—a real inconvenience on a road trip.



LEARN

Complete tire ratings and a buying guide can be found at [CR.org/tires](https://www.consumerreports.org/tires).

| | | Brand & Model | Price | Overall Score | Test Results | | | | | | | | |
|-------------------------------|------|--|-------|---------------|----------------------|--------------|-------------|--------------|--------------|---------|------|--------------------|--------------------|
| Recommended | Rank | | | | Three-Season Driving | | | | | Comfort | | Rolling Resistance | Tread Life (Miles) |
| | | | | | Dry Braking | Dry Handling | Wet Braking | Wet Handling | Hydroplaning | Noise | Ride | | |
| ULTRA-HIGH-PERFORMANCE SUMMER | | | | | | | | | | | | | |
| ✓ | 1 | Michelin Pilot Super Sport | \$167 | 82 | ⬆️ | ⬆️ | ⬆️ | ⬆️ | ⬆️ | ⬆️ | ⬇️ | ⬇️ | 40,000 |
| ✓ | 2 | Goodyear Eagle F1 Asymmetric 3 | \$177 | 80 | ⬆️ | ⬆️ | ⬆️ | ⬆️ | ⬆️ | ⬆️ | ⬇️ | ⬇️ | 35,000 |
| ✓ | 3 | Nokian zLine | \$129 | 80 | ⬆️ | ⬆️ | ⬆️ | ⬆️ | ⬆️ | ⬆️ | ⬇️ | ⬇️ | 35,000 |
| ✓ | 4 | Yokohama ADVAN Sport V105 | \$225 | 78 | ⬆️ | ⬆️ | ⬆️ | ⬆️ | ⬆️ | ⬆️ | ⬇️ | ⬇️ | 35,000 |
| ✓ | 5 | Pirelli P Zero | \$114 | 78 | ⬆️ | ⬆️ | ⬆️ | ⬆️ | ⬆️ | ⬇️ | ⬇️ | ⬇️ | 35,000 |
| | 6 | Kumho ECSTA PS91 | \$137 | 76 | ⬆️ | ⬆️ | ⬆️ | ⬆️ | ⬆️ | ⬆️ | ⬇️ | ⬇️ | 25,000 |
| | 7 | Bridgestone Potenza S-04 Pole Position | \$150 | 76 | ⬆️ | ⬆️ | ⬆️ | ⬆️ | ⬆️ | ⬇️ | ⬇️ | ⬇️ | 30,000 |
| | 8 | Vredestein Ultrac Vorti | \$154 | 76 | ⬆️ | ⬆️ | ⬆️ | ⬆️ | ⬆️ | ⬆️ | ⬇️ | ⬇️ | 40,000 |
| | 9 | Hankook Ventus V12 evo2 | \$121 | 76 | ⬆️ | ⬆️ | ⬆️ | ⬆️ | ⬆️ | ⬇️ | ⬇️ | ⬇️ | 35,000 |
| | 10 | Nexen N Fera SU1 | \$110 | 76 | ⬆️ | ⬆️ | ⬆️ | ⬆️ | ⬆️ | ⬆️ | ⬇️ | ⬇️ | 35,000 |
| | 11 | Toyo Proxes T1 Sport | \$128 | 74 | ⬆️ | ⬆️ | ⬆️ | ⬆️ | ⬆️ | ⬆️ | ⬇️ | ⬇️ | 25,000 |
| | 12 | Firestone Firehawk Indy 500 | \$86 | 74 | ⬆️ | ⬆️ | ⬆️ | ⬆️ | ⬆️ | ⬇️ | ⬇️ | ⬇️ | 40,000 |
| | 13 | Bridgestone Potenza RE760 Sport | \$128 | 72 | ⬆️ | ⬆️ | ⬇️ | ⬆️ | ⬆️ | ⬆️ | ⬇️ | ⬇️ | 40,000 |
| | 14 | Sumitomo HTR ZIII | \$103 | 70 | ⬆️ | ⬆️ | ⬇️ | ⬆️ | ⬆️ | ⬆️ | ⬇️ | ⬇️ | 35,000 |
| | 15 | BFGoodrich g-Force Sport COMP-2 | \$116 | 70 | ⬆️ | ⬆️ | ⬆️ | ⬆️ | ⬆️ | ⬇️ | ⬇️ | ⬇️ | 35,000 |

How to Read the Writing on Your Tire Walls

ALL TIRES HAVE sidewall markings that tell you things like how big they are and how much weight they can carry.

To find out whether you have a UHP tire, look at the tire size and speed rating (see tire sample). UHPs may have a ZR speed rating and/or a W or Y marking to the far right.

Here's what the other markings mean:

> **Size.** On the example tire, 225 is the cross-section width in millimeters; 40 is the ratio of sidewall height to its width (40 percent); R indicates radial-ply construction; and 18 is the wheel rim's diameter in inches.

> **Load index.** Shorthand for the weight each tire can carry safely. A 92 load index translates to 1,389 pounds per tire, typical for this popular car tire. When replacing tires, make sure to match or increase the original rating.

> **Speed rating.** A letter next to the load index denotes the tire's maximum speed

when carrying the load defined by the load index—not how fast you should drive! UHP tires are rated ZR (149+ mph), W (168 mph), and Y (186 mph). Regular all-seasons are usually rated S (112 mph) or T (118 mph). Climbing up the scale are H (130 mph) and V (149 mph), and winter/snow tires may carry the letter Q (99 mph) or higher.

> **Treadwear grade.** This number is an index to compare treadwear between tires. A grade of 300 denotes a tire that will wear three times better than a tire graded 100.

But there's no direct correlation between the grades and a specific mileage.

> **Traction and temperature grades.** They denote a tire's wet-stopping ability and temperature resistance. For traction, AA is best, C is worst. For temperature resistance, grades range from A (best) to C. > **DOT code.** On the tire below, M6 refers to the plant code, and 2316 refers to the week and year the tire was made. The numbers are used to identify the tire in the event of a recall.

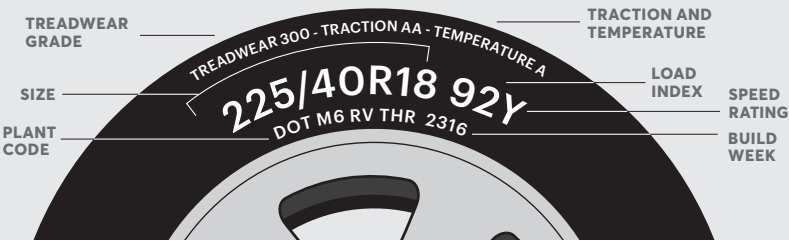


ILLUSTRATION: CHRIS PHILPOT

| | | Brand & Model | Price | Overall Score | Test Results | | | | | | | | | | | |
|-----------------------------------|------|--|-------|---------------|----------------------|--------------|-------------|--------------|--------------|---------------|-------------|---------|------|--------------------|--------------------|--|
| Recommended | Rank | | | | Three-Season Driving | | | | | Winter | | Comfort | | Rolling Resistance | Tread Life (Miles) | |
| | | | | | Dry Braking | Dry Handling | Wet Braking | Wet Handling | Hydroplaning | Snow Traction | Ice Braking | Noise | Ride | | | |
| ULTRA-HIGH-PERFORMANCE ALL-SEASON | | | | | | | | | | | | | | | | |
| ✔ | 1 | Michelin Pilot Sport A/S 3+ | \$152 | 78 | ⬆ | ⬆ | ⬆ | ⬆ | ⬆ | ⬇ | ⬇ | ⬆ | ⬇ | ⬇ | 55,000 | |
| ✔ | 2 | Pirelli P Zero All Season Plus | \$126 | 76 | ⬆ | ⬆ | ⬆ | ⬆ | ⬆ | ⬇ | ⬇ | ⬆ | ⬇ | ⬇ | 50,000 | |
| ✔ | 3 | Continental ExtremeContact DWS06 | \$141 | 76 | ⬆ | ⬆ | ⬆ | ⬆ | ⬆ | ⬇ | ⬇ | ⬆ | ⬇ | ⬇ | 45,000 | |
| ✔ | 4 | BFGoodrich g-Force COMP-2 A/S | \$116 | 74 | ⬆ | ⬆ | ⬆ | ⬆ | ⬆ | ⬆ | ⬆ | ⬇ | ⬇ | ⬇ | 60,000 | |
| | 5 | Goodyear Eagle Sport All-Season | \$144 | 72 | ⬆ | ⬆ | ⬇ | ⬇ | ⬆ | ⬇ | ⬇ | ⬆ | ⬇ | ⬇ | 70,000 | |
| | 6 | Yokohama ADVAN Sport A/S | \$118 | 72 | ⬆ | ⬆ | ⬆ | ⬆ | ⬆ | ⬇ | ⬇ | ⬆ | ⬇ | ⬇ | 60,000 | |
| | 7 | Goodyear Eagle F1 Asymmetric All-Season | \$147 | 72 | ⬆ | ⬆ | ⬆ | ⬆ | ⬆ | ⬇ | ⬇ | ⬇ | ⬇ | ⬇ | 50,000 | |
| | 8 | Hankook Ventus S1 noble 2 | \$128 | 72 | ⬆ | ⬆ | ⬇ | ⬆ | ⬆ | ⬇ | ⬇ | ⬆ | ⬇ | ⬆ | 45,000 | |
| | 9 | Dunlop Signature HP | \$122 | 72 | ⬆ | ⬆ | ⬆ | ⬆ | ⬆ | ⬇ | ⬇ | ⬇ | ⬇ | ⬇ | 40,000 | |
| | 10 | General G-MAX AS-03 | \$111 | 70 | ⬆ | ⬆ | ⬇ | ⬆ | ⬆ | ⬇ | ⬇ | ⬇ | ⬇ | ⬇ | 50,000 | |
| | 11 | Falken Azenis FK450 A/S | \$129 | 68 | ⬆ | ⬆ | ⬆ | ⬆ | ⬆ | ⬇ | ⬇ | ⬆ | ⬇ | ⬇ | 40,000 | |
| | 12 | Kumho ECSTA 4X II | \$131 | 68 | ⬆ | ⬆ | ⬆ | ⬆ | ⬆ | ⬇ | ⬇ | ⬇ | ⬇ | ⬇ | 40,000 | |
| | 13 | Cooper Zeon RS3-G1 | \$140 | 68 | ⬆ | ⬆ | ⬆ | ⬆ | ⬆ | ⬇ | ⬇ | ⬆ | ⬇ | ⬇ | 35,000 | |
| | 14 | Bridgestone Potenza RE970 AS Pole Position | \$144 | 68 | ⬆ | ⬆ | ⬆ | ⬆ | ⬆ | ⬇ | ⬇ | ⬆ | ⬇ | ⬇ | 45,000 | |
| | 15 | Laufenn S Fit AS | \$84 | 68 | ⬆ | ⬆ | ⬇ | ⬇ | ⬆ | ⬇ | ⬇ | ⬆ | ⬇ | ⬇ | 60,000 | |
| | 16 | Nitto Motivo | \$112 | 66 | ⬆ | ⬆ | ⬇ | ⬇ | ⬆ | ⬇ | ⬇ | ⬆ | ⬇ | ⬇ | 50,000 | |
| | 17 | Fuzion UHP Sport A/S | \$79 | 64 | ⬆ | ⬆ | ⬇ | ⬇ | ⬆ | ⬇ | ⬇ | ⬆ | ⬇ | ⬇ | 55,000 | |
| | 18 | Toyo Proxes 4 Plus | \$127 | 62 | ⬆ | ⬆ | ⬇ | ⬇ | ⬆ | ⬇ | ⬇ | ⬆ | ⬇ | ⬇ | 50,000 | |
| | 19 | Sumitomo HTR A/S PO2 | \$90 | 60 | ⬆ | ⬆ | ⬇ | ⬇ | ⬆ | ⬇ | ⬇ | ⬆ | ⬇ | ⬇ | 30,000 | |
| | 20 | Sumitomo HTR Enhance L/X [W] | \$121 | 60 | ⬆ | ⬆ | ⬇ | ⬇ | ⬆ | ⬇ | ⬇ | ⬆ | ⬇ | ⬇ | 55,000 | |
| | 21 | GT Radial Champiro UHP AS | \$92 | 58 | ⬆ | ⬇ | ⬇ | ⬇ | ⬆ | ⬇ | ⬇ | ⬇ | ⬇ | ⬇ | 40,000 | |
| PERFORMANCE WINTER/SNOW | | | | | | | | | | | | | | | | |
| ✔ | 1 | Yokohama W.drive V905 | \$180 | 70 | ⬇ | ⬇ | ⬇ | ⬆ | ⬆ | ⬆ | ⬆ | ⬇ | ⬇ | ⬇ | NA | |
| ✔ | 2 | Michelin Pilot Alpin PA4 | \$200 | 66 | ⬇ | ⬇ | ⬇ | ⬆ | ⬆ | ⬆ | ⬆ | ⬇ | ⬇ | ⬇ | NA | |
| | 3 | Bridgestone Blizzak LM-32 | \$190 | 62 | ⬇ | ⬇ | ⬇ | ⬇ | ⬆ | ⬆ | ⬆ | ⬇ | ⬇ | ⬇ | NA | |
| | 4 | Hankook Winter i*cept evo2 | \$156 | 62 | ⬇ | ⬇ | ⬇ | ⬇ | ⬆ | ⬆ | ⬆ | ⬆ | ⬇ | ⬇ | NA | |
| | 5 | Falken Espia EZP II | \$109 | 50 | ⬇ | ⬇ | ⬇ | ⬇ | ⬇ | ⬆ | ⬆ | ⬇ | ⬇ | ⬇ | NA | |

HOW WE TEST: The Overall Score for UHP summer tires is based on 12 tests, with results for dry and wet braking and handling, and hydroplaning resistance emphasized. Braking tests were performed from 60 mph. Dry Handling includes cornering grip, avoidance-maneuver performance, and a subjective steering-feel evaluation. Wet Handling includes cornering grip

and handling on our wet circuit. Hydroplaning denotes a tire's ability to resist skimming along the surface of standing water. Ride Comfort and Noise are evaluated subjectively on rough and smooth roads. Rolling Resistance, as measured on a dynamometer, is a factor that affects fuel economy. Tread Life indicates wear potential based on our 16,000-mile driving test. UHP

summer tires weren't tested for snow or ice capability. UHP all-season tires were tested with the same parameters as the summer tires, plus snow traction and ice braking. Braking tests were performed from 10 mph on ice without antilock brakes. Snow Traction was determined by measuring the distance required to accelerate from 5-20 mph on moderately packed

snow. Performance winter/snow tires were tested similarly to UHP all-season tires, with an emphasis on Snow Traction and Ice Braking. The score excludes tread life because they are designed for specialized seasonal use. We used two almost identical 2013 Scion FR-S's in our UHP track testing, in size 225/40R18. Recommended models are high-scoring tires in each category.

The Safest Car Seat for Your Child

Our crash tests reveal the benefit of moving children to a convertible seat sooner than previously recommended.

by Michelle Naranjo

ASIDE FROM THE car itself, your child's car seat is the primary protection in a crash. So it's important to pick the safest seat for every stage of his or her development.

Consumer Reports recommends that children move through three types of car seats as they grow. Babies should ride in a detachable, rear-facing-only infant seat that

snaps in and out of a base that's anchored to the vehicle.

After that, they should move to a convertible seat that's first installed facing the rear, then switched to forward-facing as the child gets older.

And last, kids should transition to a booster seat, which raises them up to allow the car's seat belts to fit safely.

Conventional wisdom has been that parents should keep children in an infant seat until they have outgrown it based on height or weight. But our crash-test results, combined with the fact that many babies will outgrow their infant seat by height rather than weight, refine that transition point.

Consumer Reports now advises parents to move their children from infant seats to rear-facing convertible seats by their first birthday to prevent potential head injuries.

All of the child seats marketed in the U.S. must meet federal safety standards. Our crash testing determines whether a seat provides an additional margin of safety beyond the government standard.

We evaluate car seats by testing them on a seat cushion that better represents the dimensions and firmness of the seats in current vehicles rather than the flatter, softer "test bench" equipment required



LEARN

For a buying guide and a video on all that you need to know about car seats, go to [CR.org/carseats](https://www.consumerreports.org/carseats).

by the government. We also test at a higher crash speed (35 mph) and with the addition of a simulated front seatback surface that resembles the environment of a real vehicle. Government tests are done at 30 mph and don't include a simulated seatback.

Our rear-facing crash-test results showed that a dummy representing a 12-month-old child was protected from striking its head against the simulated front seatback in 24 of 25 convertible models. In contrast, when using the same-sized dummy in infant seats, 16 of the 30 seats allowed head contact. Research shows that when a child suffers a serious injury in a crash, it's frequently because of head contact with an interior component, such as the front seatback.

Once your child does transition to a convertible seat, Consumer Reports and the American Academy of Pediatrics recommend keeping them rear-facing until he or she is at least 2 years old or has reached the maximum weight or height limit for a rear-facing convertible seat. Why? Because real-world crash data show there's a reduced rate of head and spine injuries when children ride facing the rear.

Not only is it best to keep your child rear-facing until at least age 2, it's now the law in some states. Since 2015, California, New Jersey, Oklahoma, and Pennsylvania have passed laws requiring children to sit rear-facing until that age. Failure to comply can result in a fine.

Child-seat manufacturers are also getting onboard. Evenflo seats and some Dorel products will begin to be labeled with the recommendation that children be 2 years old before facing forward. Britax has also begun labeling some of its forward-facing seats with a minimum recommended age of 2.

It's easy to assume that making the transition from an infant seat to a convertible is the right time to also switch to a forward-facing position. But a change in seat type shouldn't mean

A New Advance in Car-Seat Safety

CAR SEATS for children have improved significantly since they were first designed in the early 1960s, and that progress is continuing. One advancement, which is more commonly available in Europe, is the "load leg." It gives an infant car seat additional support by extending a rod from the seat's base to the vehicle's floor.

Load legs, also known as foot props, provide additional stabilization by limiting the seat's forward motion during a crash. That helps reduce the transfer of crash energy to your child in the event of a collision.

In our recently updated infant-seat ratings, the four that have the load-leg feature are rated Best for crash protection. Specifically, our crash results demonstrate a 46 percent decrease in head-injury risk in seats with the load leg compared with seats without it.

In order for this feature to become commonplace, car floors will need to be designed with it in mind. The owner's manual for the Chrysler Pacifica with Stow 'n Go folding middle-row chairs specifically prohibits using a load leg because the hatches for storing the vehicle seats may not support the additional crash forces. Check your owner's manual for load-leg compatibility.

Seats with a load leg also tend to be more expensive than other models. More affordable seats are still safe when used and installed correctly, but load-leg seats can offer an additional layer of safety.

a change in orientation. Convertible seats can be installed in both rear- and forward-facing configurations. This will probably be the seat your child sits in for the longest period of time.

You might think that your kid looks uncomfortable riding rear-facing, but research has found that children are just as comfortable, if not more so, riding that way as those who face forward. Children are much more flexible than adults, so even though their folded legs might look awkward, it probably doesn't feel that way to them.

Getting the Right Fit

Your child seat should fit not only your child but also your car. If you can't test-fit a seat before purchasing it, make sure you can return or exchange the seat if it doesn't work out.

Here are some tips to help you install a child seat in your vehicle:

- Carefully read the manuals for both the car and the seat.
- Check the recline angle of rear-facing seats. That's critical, especially for newborns. An overly upright seat may allow an infant's head to fall forward, obstructing his or her breathing. Look for rear-facing seats with a built-in level indicator to help you get the seat properly reclined.
- Child seats can be installed using your vehicle's seat belts, but it's often easier to get a secure fit using LATCH, a standardized system of anchors built into most vehicles since September 2002.
- To secure a forward-facing child car seat, always attach and tighten the top tether, whether the seat is installed with the LATCH system or a seat belt.
- You might have to remove the vehicle's head restraint to allow a forward-facing seat to fit properly against the vehicle's seatback.
- Make sure that the harness is tight enough; you shouldn't be able to pinch any fabric at your child's shoulder.
- Go to safekids.org to find out where and when you can have your seat installation checked free.

| | Brand & Model | Price | Overall Score | Test Results | | | | | |
|---------------------------------------|----------------------------|-------|---------------|------------------|-------------|----------------|-----------|---------------|--------------|
| Recommended | | | | Crash Protection | Ease of Use | Fit-to-Vehicle | | | |
| | | | | | | Rear LATCH | Rear Belt | Forward LATCH | Forward Belt |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| Convertible Seats (New Test Protocol) | | | | | | | | | |
| ✓ | Chicco NextFit | \$300 | 82 | Best | ⬆️ | ⬆️ | ⬆️ | ⬆️ | ⬆️ |
| ✓ | Britax Marathon ClickTight | \$265 | 81 | Better | ⬆️ | ⬆️ | ⬆️ | ⬆️ | ⬆️ |

is to install) using both LATCH and seat-belt installation. Boosters are rated for crash protection and their potential to provide a proper belt fit.

| | Brand & Model | Price | Overall Score | Test Results | | |
|-------------------------------|------------------------------|-------|---------------|---|---|-------------|
| Recommended | | | | Crash Protection/ Belt-Fit High Back | Crash Protection/ Belt-Fit Backless | Ease of Use |
| HIGHBACK-TO-BACKLESS BOOSTERS | | | | | | |
| 💰 | Evenflo Big Kid Amp Highback | \$40 | 72 | ⬆️ | ⬆️ | ⬆️ |
| 💰 | Evenflo Big Kid Sport | \$30 | 72 | ⬆️ | ⬆️ | ⬆️ |
| ✓ | Evenflo Big Kid DLX | \$60 | 69 | ⬆️ | ⬇️ | ⬆️ |
| ✓ | Evenflo Big Kid LX | \$60 | 69 | ⬆️ | ⬇️ | ⬆️ |
| HIGHBACK BOOSTERS | | | | | | |
| 💰 | Cyberx Solution X-Fix Plus | \$170 | 65 | ⬆️ | NA | ⬆️ |

to provide an additional margin of safety. Boosters went through our traditional crash tests. CR Best Buys are notable values.

Road Test

We conduct more than 50 tests on each vehicle at our 327-acre Auto Test Center.



Too Much Rock 'n' Roll

Measured against refined competitors, the underdeveloped and overpriced **Buick Envision** misses its mark.

THIS CHINESE-BUILT compact luxury SUV lacks the virtues buyers have come to expect in a Buick. Its soft suspension results in bobbing and rocking at the first sign of rolling pavement, and the Envision feels uncoordinated through corners in spite of its small size. Body roll, vague steering, and a mushy brake pedal muck up the driving experience, though the car acquitted itself quite well in our avoidance maneuver test. Engine and road noise are nicely hushed, but the

elevated wind noise at highway speeds is tiring.

Power is no problem with the turbo engine, hitting 60 mph in a competitive 7.9 seconds, but the six-speed automatic occasionally gives bumpy shifts. Fuel economy of 21 mpg is not a standout.

The inviting-looking cabin is full of hits and misses: Big doors and chair-height seats make access easy, but the standard four-way lumbar doesn't make up for uneven cushion support in the front. Low dash vents freeze your elbows yet leave the cabin stuffy. The rear seat moves fore/aft and reclines, but the optional panoramic sunroof limits headroom. And though the infotainment touch screen is a cinch to use, the flush buttons for climate control and seat heaters are not.

Forward-collision warning isn't available with the base engine, and automatic emergency braking is optional, but only on the top trim.

All told, what's good about this Buick isn't enough to make up for what's not.

LUXURY COMPACT SUVs

Buick Envision

OVERALL SCORE **66**

ROAD-TEST SCORE **67**

HIGHS

Simple controls, easy access

LOWS

Lacks agility, unsettled ride, spongy brake pedal, wind noise, low dash vents, price

POWERTRAIN

252-hp, 2.0-liter 4-cylinder turbocharged engine; 6-speed automatic transmission; all-wheel drive

FUEL

21 mpg

PRICE AS TESTED

\$45,380



Fast and Flawed

More showboat than functional, the electric **Tesla Model X** has plenty of high-tech gimmicks but forgets about the 'U' in SUV.

THE MODEL X's rear doors rise like wings to reveal two "floating" rear seats. This fully electric luxury SUV also has a jet-fighter-like canopy windshield and power front doors, and can park itself.

But beyond the brag-worthy magic, the all-wheel-drive Model X 90D largely disappoints. The rear doors are prone to pausing and stopping. The second-row seats can't be folded, limiting cargo-carrying ability. The big windshield is neat but not tinted enough to offset the brightness of a sunny day, and wind noise is excessive.

Despite its 5,400-pound weight, the X has warp-speed thrust, hitting 60 mph in just 4.9 seconds. Driven sedately, our test car's 90-kWh battery provided about 230 miles of range. The agile Tesla corners more like a sports sedan than an SUV, but its ride is too firm and choppy for a \$110,000 car.

The interior is striking in its minimalism. Most vehicle functions are controlled via the giant, responsive touch screen, but you need to take your eyes off the road to use it.

Front seats are roomy and plush; the third-row seats are better suited to kids.

Tesla's semi-autonomous driving package is available on the X, and Consumer Reports believes that stronger steps should be taken to ensure that these systems are safe. (See the bottom of page 60 for more.)

In spite of its virtues, the Model X's complexity, compromised functionality, and dismal first-year reliability suggest that it's a car for early adopters eager to one-up their peers.

LUXURY MIDSIZED SUVs

Tesla Model X

OVERALL SCORE **59**

ROAD-TEST SCORE **77**

HIGHS

Acceleration, handling, front-seat comfort, fit and finish, energy consumption, low running costs

LOWS

Fussy doors, ride, wind noise, rear seats don't fold, rear visibility, controls, reliability

POWERTRAIN

463-hp electric motors, 1-speed direct drive, all-wheel drive

TESTED RANGE

230 miles.

Average cost for a full charge: less than \$12. Time to full charge on Tesla home connector: 9 hours.

PRICE AS TESTED

\$110,700

| | | Make & Model | Price | Overall Score | Survey Results | | Safety | Road-Test Results | | | | | | | | | |
|-------------|------|---|-----------|---------------|-----------------------|--------------------|------------------------|-------------------|-----------------|------------------------------|----------------------------|-------------------------------|------------------|------------|--------------------------|----------|--|
| Recommended | Rank | | As Tested | | Predicted Reliability | Owner Satisfaction | Front-Crash Prevention | Road-Test Score | Overall MPG | Acceleration, 0-60 MPH, Sec. | Dry Braking, 60-0 MPH, Ft. | Avoidance Maneuver Speed, MPH | Routine Handling | Ride/Noise | Seat Comfort, Front/Rear | Controls | Luggage, Suitcases + Duffels/ Cargo Volume, Cu. Ft. |
| | | MIDSIZE 3-ROW SUVs | | | | | | | | | | | | | | | |
| ✓ | 1 | Audi Q7 Premium Plus | \$68,695 | 94 | ⬆ | ⬆ | Std./⬆ | 96 | 20 | 6.7 | 127 | 50.0 | ⬆ | ⬆/⬆ | ⬆/⬆ | ⬇ | 35.5 |
| ✓ | 2 | Kia Sorento EX (V6) | \$37,915 | 82 | ⬆ | ⬆ | Opt. | 84 | 21 | 7.4 | 131 | 49.5 | ⬆ | ⬆/⬆ | ⬆/⬆ | ⬆ | 37.5 |
| ✓ | 3 | Hyundai Santa Fe SE (V6) | \$36,290 | 78 | ⬆ | ⬇ | Opt. | 81 | 20 | 7.6 | 133 | 51.0 | ⬇ | ⬆/⬆ | ⬆/⬆ | ⬆ | 40.5 |
| ✓ | 4 | BMW X5 xDrive35i | \$70,050 | 75 | ⬇ | ⬆ | Opt. | 84 | 21 | 7.4 | 137 | 52.0 | ⬆ | ⬆/⬆ | ⬆/⬆ | ⬇ | 34.5 |
| ✓ | 5 | Honda Pilot EX-L | \$39,585 | 75 | ⬇ | ⬆ | Opt. | 80 | 20 | 7.5 | 136 | 49.5 | ⬇ | ⬆/⬆ | ⬆/⬆ | ⬇ | 48.0 |
| ✓ | 6 | Mazda CX-9 Touring | \$40,470 | 74 | ⬇* | ⬆* | Opt. | 80 | 22 | 7.9 | 139 | 50.0 | ⬆ | ⬆/⬆ | ⬆/⬆ | ⬇ | 34.0 |
| ✓ | 7 | Acura MDX Tech | \$51,410 | 74 | ⬇ | ⬇ | Std./⬆ | 79 | 21 | 6.8 | 135 | 52.0 | ⬇ | ⬆/⬆ | ⬆/⬆ | ⬇ | 34.0 |
| | 8 | Infiniti QX60 (3.5L) | \$51,920 | 65 | ⬇ | ⬇ | Opt. | 79 | 19 | 8.3 | 137 | 47.0 | ⬇ | ⬆/⬆ | ⬆/⬇ | ⬆ | 39.0 |
| | 9 | Volvo XC90 T6 Momentum ⚠ | \$56,805 | 65 | ⬇ | ⬆ | Std./⬆ | 84 | 20 | 7.7 | 126 | 52.5 | ⬇ | ⬇/⬆ | ⬆/⬆ | ⬇ | 35.0 |
| | 10 | Tesla Model X 90D ⚠ | \$110,700 | 59 | ⬇ | ⬆ | Std./⬆ | 77 | 92 [†] | 4.9 | 127 | 53.5 | ⬆ | ⬇/⬆ | ⬆/⬇ | ⬇ | 2+2 |
| | 11 | Land Rover Range Rover Sport HSE (3.0L) | \$74,040 | 59 | ⬇* | ⬆* | Std./⬆ | 74 | 18 | 6.5 | 137 | 49.5 | ⬆ | ⬇/⬆ | ⬆/⬆ | ⬇ | 31.5 |
| | | LUXURY COMPACT SUVs | | | | | | | | | | | | | | | |
| ✓ | 1 | Mercedes-Benz GLC300 ⚠ | \$49,105 | 83 | ⬆ | ⬆ | Std./⬆ | 81 | 22 | 6.8 | 132 | 50.0 | ⬆ | ⬆/⬆ | ⬆/⬆ | ⬇ | 28.0 |
| ✓ | 2 | Lexus NX 200t | \$43,284 | 76 | ⬆ | ⬇ | Opt. | 74 | 24 | 7.5 | 132 | 49.5 | ⬆ | ⬇/⬆ | ⬆/⬆ | ⬇ | 28.5 |
| ✓ | 3 | BMW X3 xDrive28i | \$44,595 | 76 | ⬇ | ⬇ | Opt. | 82 | 23 | 7.3 | 130 | 53.0 | ⬆ | ⬇/⬆ | ⬆/⬆ | ⬇ | 33.0 |
| ✓ | 4 | Audi Q5 Premium Plus (2.0T) | \$43,675 | 75 | ⬆ | ⬆ | Opt. | 78 | 21 | 7.9 | 130 | 52.0 | ⬆ | ⬇/⬆ | ⬆/⬆ | ⬇ | 32.0 |
| ✓ | 5 | Acura RDX | \$38,990 | 72 | ⬆ | ⬇ | Opt. | 75 | 22 | 6.6 | 132 | 51.0 | ⬇ | ⬇/⬆ | ⬆/⬆ | ⬇ | 31.5 |
| ✓ | 6 | Volvo XC60 T6 | \$42,245 | 72 | ⬇ | ⬇ | Std./⬆ | 74 | 20 | 7.4 | 132 | 52.5 | ⬆ | ⬇/⬆ | ⬆/⬇ | ⬇ | 32.5 |
| | 7 | Cadillac XT5 Luxury | \$51,025 | 68 | ⬇* | ⬆* | Opt. | 76 | 20 | 7.1 | 132 | 53.5 | ⬆ | ⬇/⬆ | ⬆/⬆ | ⬇ | 33.0 |
| | 8 | Buick Envision Premium | \$45,380 | 66 | ⬇* | ⬆* | Opt. | 67 | 21 | 7.9 | 128 | 55.0 | ⬇ | ⬇/⬇ | ⬇/⬆ | ⬆ | 32.5 |
| | 9 | Lincoln MKC Reserve | \$46,485 | 55 | ⬇ | ⬇ | Opt. | 72 | 19 | 7.8 | 125 | 54.0 | ⬇ | ⬇/⬆ | ⬆/⬇ | ⬇ | 30.5 |

SCORES IN CONTEXT: Recommended models did well in our Overall Score, which factors in Road-Test results, Predicted Reliability, Owner Satisfaction, crash-test results, and

availability of Front-Crash Prevention features, such as forward-collision warning and automatic emergency braking at city or highway speeds.

For these systems, NA means no such system is offered; Opt. means it's available on some versions but not necessarily the one we tested; and models with standard systems

are rated from to based on how many of these features are standard. For full ratings, go to [CR.org/cars](https://www.consumerreports.org/cars).

[†] Miles-per-gallon equivalent (MPGe). *Based on limited data.

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New Gaffes for the New Year

Time marches on, but mangled messages are eternal



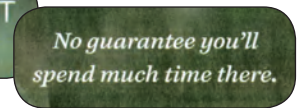
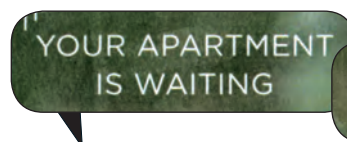
Bigamist on Campus

Hey, good-looking—you're only supposed to put a ring on it once.
Submitted by Rich Grabowski of Edgewater, Md.



Maximum Security

Guess you'll have peace of mind whenever you're mailing a very tiny criminal.
Submitted by Catherine McBride of Louisville, Ky.



Limited-Time Offer?

After this reminder, who could blame the residents for spending their remaining days drinking on the terrace?
Submitted by David Panner of Parrish, Fla.



No Gender Bias Here

When is a man really a tamale? This restaurant will serve them both!
Submitted by Joan Warren of Lisle, Ontario



Be on the lookout for goofs and glitches like these. Share them with us—by email at SellingIt@cro.consumer.org; by mail to Selling It, Consumer Reports, 101 Truman Ave., Yonkers, NY 10703; or by social media using the hashtag #CRSellingIt—and we might publish yours. Please include key information, such as the publication's name and date.

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Canada Extra

Autos **32a**
 Compact Washers **32b**
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EVERY MONTH, Canada Extra provides Canadian pricing and availability information about products tested for that issue. The ratings in this section are based on this month's reports, but they narrow your choices to the products that are sold in Canada.

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

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

In most cases, the prices we list here are the approximate retail in Canadian dollars; manufacturers' list prices are indicated by an asterisk (*). Check marks identify CR Best Buys or recommended

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

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cu.consumer.org and tell us what you think. We can't reply to every email message or implement every suggestion, but with your help we'll try to keep growing to serve your needs.

CR Best Buy Products

with this icon offer the best combination of performance and price. All are recommended.

Recommended Models

with this designation perform well and stand out for reasons we note.

Autos

All of the tested vehicles are available in Canada. **Report and Ratings, pages 59-60**

| Make & Model | Price Range | Acceleration (Sec.) | | | | Fuel Economy (Liters per 100 km) | | |
|--------------------|---------------------|---------------------|------------|-------------|------------|----------------------------------|-----------------|---------|
| | | 0-50 km/h | 0-100 km/h | 80-100 km/h | 500 Meters | City Driving | Highway Driving | Overall |
| LUXURY COMPACT SUV | | | | | | | | |
| Buick Envision | \$39,995–\$49,565 | 3.0 | 8.3 | 3.6 | 18.4 | 17.0 | 7.5 | 11.1 |
| MIDSIZE 3-ROW SUV | | | | | | | | |
| Tesla Model X | \$114,600–\$181,550 | 2.3 | 5.1 | 1.8 | 15.4 | 2.6 | 2.5 | 2.6 |

BUICK ENVISION
 PRICE AS TESTED
 \$45,380 (U.S.)

66

OVERALL
 SCORE



Compact Washers

Nine of the tested compact washers are available.

Report and Ratings, pages 12-15

| | | Brand & Model | Price | Overall Score |
|------------------------|------|------------------------------------|---------|---------------|
| Recommended | Rank | | | |
| COMPACT WASHERS | | | | |
| | 1 | Bosch 800 Series WAT28402UC | \$2,050 | 78 |
| | 2 | Electrolux EIFLS20QSW | \$1,100 | 75 |
| | 4 | Miele W3048 | \$2,650 | 73 |
| | 5 | Samsung WW22K6800AW | \$1,100 | 69 |
| | 6 | GE WCVH4800KWW | \$1,100 | 64 |
| | 7 | Asko XL Series W8844XLW | NA | 56 |
| | 8 | LG WM1377HW | \$950 | 53 |
| | 9 | Asko W6424W | NA | 50 |
| | 10 | Blomberg WM98400SX | \$1,940 | 45 |

Washer

BOSCH 800 SERIES
WAT28402UC
\$2,050

78
OVERALL
SCORE



Washer

ELECTROLUX
EIFLS20QSW
\$1,100

75
OVERALL
SCORE



Washer

SAMSUNG
WW22K6800AW
\$1,100

69
OVERALL
SCORE



Washer

GE
WCVH4800KWW
\$1,100

64
OVERALL
SCORE



Compact Dryers

Ten of the tested compact dryers are available.

Report and Ratings, pages 12-15

| | | Brand & Model | Price | Overall Score |
|-----------------------|------|------------------------------------|---------|---------------|
| Recommended | Rank | | | |
| COMPACT DRYERS | | | | |
| | 1 | Samsung DV22K6800EW | \$1,100 | 70 |
| | 2 | GE PCVH480EKWW | \$1,100 | 68 |
| | 3 | Blomberg DV17542 | NA | 62 |
| | 4 | Bosch 800 Series WTG86402UC | \$2,050 | 60 |
| | 5 | LG DLEC855W | \$950 | 59 |
| | 6 | Miele T8023C | \$2,000 | 49 |
| | 7 | Asko T884XL | NA | 45 |
| | 8 | Asko T754W | NA | 43 |
| | 9 | Electrolux EIED2CAQSW | \$900 | 34 |
| | 11 | Asko T754CW | NA | 34 |

Dryer

SAMSUNG
DV22K6800EW
\$1,100

70
OVERALL
SCORE



Dryer

GE
PCVH480EKWW
\$1,100

68
OVERALL
SCORE





RECALLS

2010-2016 Mazda models

On certain vehicles, insufficient anti-corrosion treatment of the outer tube of the rear liftgate stay may cause the tube to corrode and break off.

MODELS 183,808 2010-2013 Mazda3, 2012-2016 Mazda5, 2013-2016 Mazda CX-5, and 2016 CX-3 vehicles.

WHAT TO DO Have the dealer replace both rear-door stays.

2012-2016 Ford and Lincoln models

On certain vehicles, the pawl spring tab in the side door latch could break, which usually will prevent the door from latching. In certain situations where the door is able to be closed, the door may be partially latched and could unlatch while driving.

MODELS 233,034 2012-2015 Ford Focus, 2013-2015 C-Max and Escape, 2014-2016 Transit, and 2015 Mustang; and 2015 Lincoln MKC vehicles.

WHAT TO DO Have the dealer replace all four door latches with a more robust part.

NOTE A door that is partially latched can cause the courtesy light to remain on, set a door ajar message in the instrument cluster, and sound a door ajar chime to alert the driver that there is a door latch problem.

2013-2015 Ford and Lincoln models

On certain vehicles, the fuel pump electric module may be damaged due to high electrical current loads. That could cause the fuel pump to stop operating and lead to the engine stalling or failing to start.

MODELS 7,353 2013-2015 Ford Flex and Taurus, and Lincoln MKS and MKT vehicles.

WHAT TO DO Have the dealer inspect and, if required, replace the fuel pump electric module.

NOTE Failure of the fuel pump electric module would cause the malfunction indicator light to illuminate.

2014-2015 Land Rover and Range Rover models

On certain vehicles, the

2015 FORD MUSTANG



transmission wire harness connections may have been improperly crimped, which could cause an unexpected shift to neutral and result in a loss of motive power.

MODELS 1,558 2014-2015 Range Rover Evoque and 2015

Land Rover Discovery Sport vehicles.

WHAT TO DO Have the dealer inspect the transmission serial number and, if required, update vehicle software to initiate "limp home mode" where the condition is detected.

2016 CHEVROLET SPARK EV





RECALLS

2014 JEEP CHEROKEE



2014-2016 Jeep, Ram, Chrysler, and Fiat models

On certain vehicles equipped with an automatic transmission, the transmission wire harness may have improper crimps that could cause an unexpected shift to neutral, resulting in a loss of motive power.

MODELS 35,361 2014-2015 Jeep Cherokee; 2015 Chrysler 200, Jeep Renegade, and RAM Promaster City; and 2016 Fiat 500X vehicles.

WHAT TO DO Have the dealer update the software of the transmission control module (TCM) and replace the transaxle wire harness as necessary.

2014-2017 Buick, Chevrolet, GMC, and Cadillac models

On certain vehicles, the

sensing and diagnostic module (SDM), which controls airbag and pretensioner deployment, contains a software defect that may prevent the deployment of frontal airbags and pretensioners in certain circumstances.

MODELS 362,263 2014-2016 Buick LaCrosse and 2014-2017 Encore; 2014-2016 Chevrolet Spark EV, 2014-2017 Corvette, 2014-2017 Silverado, 2015-2016 Tahoe, 2015-2017 Suburban, and 2014-2017 Trax; 2014-2017 GMC Sierra, 2015-2016 Yukon, and 2015-2017 Yukon XL; and 2015-2016 Cadillac Escalade and Escalade ESV vehicles.

WHAT TO DO Have the dealer reflash the SDM with new software. In vehicles with any previous deployment events recorded in the SDM, the dealers will replace the existing SDM with a new SDM

containing the latest software.

NOTE This recall affects 2014-2017 model year Sierra LD/Silverado LD models and 2015-2016 model year Sierra HD/Silverado HD model vehicles.

2015 Acura TLX models

On certain vehicles, the transmission wire harness connections may have been improperly crimped, which could cause an unexpected shift to neutral, resulting in a loss of motive power.

MODELS 1,498 vehicles.

WHAT TO DO Have the dealer update vehicle software to eliminate the potential for an unexpected loss of motive power due to this problem.

2015 Mitsubishi RVR models

On certain vehicles equipped with a continuously variable transmission (CVT), the clamp(s) on the transmission fluid hoses may not have been properly closed during the assembly process, which could cause a hose to disconnect from the transmission fitting, leading to a transmission fluid leak and a loss of motive power.

MODELS 4,917 vehicles.

WHAT TO DO Have the dealer inspect and close any open transmission fluid hose clamps.

2015-2017 Nissan models

Certain vehicles equipped with

Intelligent Cruise Control may have ABS actuators that have been manufactured out of specification, resulting in a brake fluid leak. That would cause the ABS warning light to illuminate, and, if ignored, possibly an electrical short in the actuator circuit and a fire.

MODELS 10,819 2015-2016 Murano Hybrid, 2015-2017 Murano, and 2016-2017 Maxima vehicles.

WHAT TO DO Have the dealer inspect the ABS actuator and replace as necessary.

2017 Audi Q7 models

Certain vehicles may fail to conform to Canada Motor Vehicle Safety Standard (CMVSS) 207—Anchorage of Seats. The third-row seat may move forward if subject to high loading, such as in a frontal collision, and may not adequately restrain an occupant.

MODELS 3,018 vehicles.

WHAT TO DO Have the dealer install an additional support bracket.

2017 Ford Escape models

The power-operated windows on certain vehicles may exceed the requirements of the Canada Motor Vehicle Safety Standard for remote actuation closing force, which could increase the risk of injury.

MODELS 5,157 vehicles.

WHAT TO DO Have the dealer update the power-window operating software.

Contact Info

How to reach manufacturers in Canada.

Asko

800-898-1879
askousa.com

Blomberg

800-459-9848
blombergappliances.us

Bosch

866-442-6986
boschappliances.com

Electrolux

800-896-9756
electroluxca.com

GE

888-261-2088 (appliances)
geappliances.ca

LG

888-542-2623
lg.ca

Miele

800-643-5381
miele.ca

Samsung

800-726-7864
samsung.ca