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RUINED MY LIFE  
BY GOING  
TO COLLEGE.”**

**—JACKIE KROWEN, 32, PORTLAND, OREGON**

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**42 million people owe \$1.3 trillion in student debt.**  
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SAUL NEWTON, 28,  
MILWAUKEE

# LIVES ON HOLD

Every year, millions of students start college, eager to build a better future. What many get instead: crippling debt. Consumer Reports and Reveal from The Center for Investigative Reporting examine the forces behind this crisis. Plus, financial questions for parents to discuss with college-bound kids.

## Kitchen Makeovers Made Easy

Don't redo your kitchen until you read our savvy guide to help you select the best performing appliances and materials, no matter what your budget.

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Three in 10 Americans were hit with prescription medication price hikes within a single year. Learn strategies to lower your own bill and what can be done to improve the system.



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# The Long Shadow of Education Debt

**HIGHER EDUCATION** has always been seen as a dependable path to a more secure future—a sound investment that creates opportunity, lifts up communities, and pays dividends for generations to come. Today, however, the specter of debt casts a shadow over that conventional wisdom, threatening the promise of education for American families and imperiling our long-term economic prospects. Borrowers in the class of 2016 just graduated from college weighted down with record debt averaging about \$37,000 per student; some 42 million Americans now carry \$1.3 trillion in education debt collectively. It's a burden with a severe ripple effect: Consumer Reports has found that those saddled with debt frequently delay buying a home, put off saving for retirement, and are otherwise held back from planning for their future. Perhaps worst of all, 45 percent of the Americans with student-loan debt we surveyed reported that the higher education they pursued was not worth the costs it carried—a devastating statistic on both a personal and a societal level.

This month we're shedding light on how we got here by asking hard questions about what needs to be



**Marta L. Tellado,**  
**President and CEO**  
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done in the marketplace to restore the promise of post-high-school education for all families. In the following pages you'll find expert advice on how to avoid buyer's remorse, including guidance on federal and private financial aid, a breakdown of how to manage and diminish the impact of student debt, and responses to your most urgent concerns about how you or your family members can earn an education without sacrificing financial security down the road. As tuitions and financial aid terms continue to spiral out of control, we'll also be looking at how to bring sanity and responsibility back to the lending markets you depend on so that education can remain the path to opportunity it was always meant to be.

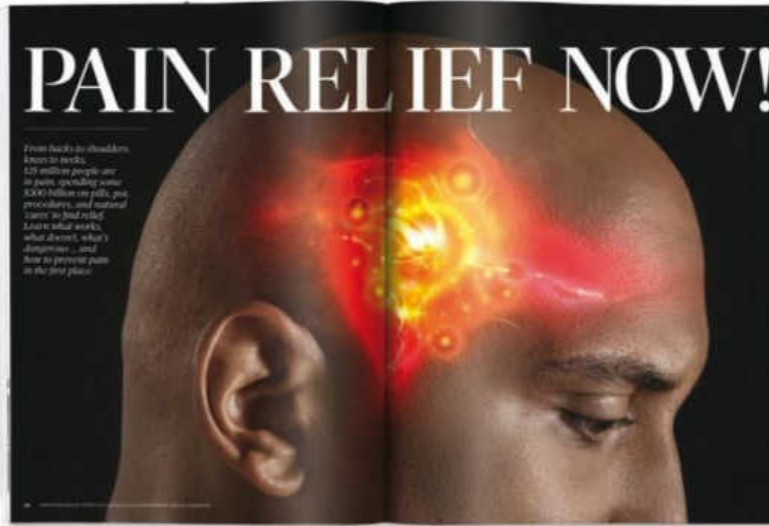
## ABOUT THE COVER



**The profiles of students** in our cover story, "Lives on Hold," starting on page 28, were taken by award-winning photographer Peter van Agtmael, who specializes in portraiture of people confronting difficult circumstances. He has been embedded with American troops in Iraq and Afghanistan, and has covered the Israel-Palestine conflict. Van Agtmael has a history degree from Yale University and considers his broader subject to be "the nature of American power and identity, as well as issues of race and class." His book, "Disco Night Sept 11" (Red Hook Editions, 2014), about post-9/11 America, was named a Book of the Year by Time magazine and Mother Jones. About our cover package, he says, "I was struck by the students' lack of bitterness, and their commitment to holding fast to their dreams and leading a successful life despite the constant burden of paying off the loans." Go to [ConsumerReports.org/studentdebt](https://ConsumerReports.org/studentdebt) for more of his photos of students.

## YOUR FEEDBACK

READERS' COMMENTS ABOUT OUR CONTENT, IN EMAIL AND SOCIAL MEDIA



### Sharing the Pain

*The comprehensive package of stories on “Pain Relief Now” in our June issue covered everything from the current state of analgesic options to how to prevent the most common pain problems altogether—and it must have really hit a nerve. Readers shared many experiences, insights, and opinions about pain and its solutions.*

I FOUND YOUR ARTICLE “Tell Me How Much It Hurts” very interesting. My wife has a chronic pain issue, and we have been to several different “pain management doctors.” She has been asked to rate her pain on a scale of 1 to 10 at each visit. When she said it was a 10, one assistant said that’s not possible because you would have to be dead. At another doctor’s office, the assistant said 10 wasn’t possible because you would be in an emergency room. Perhaps a new scale rating pain from 0 to 11 should be instituted (with 11 being dead/in the ER) until these assistants realize 10 is the worst pain possible.  
—Kenneth Kruschwitz, Jeffersonton, KY

YOUR RECENT ARTICLE on pain management starts with an anecdote about a woman who goes to a massage therapist who leaves her very sore and insists “Feels better, doesn’t it?” That story is way too common—and it’s not just the therapist who’s responsible. If you are getting a massage and something hurts more than just the discomfort of getting a knot rubbed out, *speak up!* If the therapist does something that makes you uncomfortable in any way, *speak up!* Massage therapists can do a lot of wonderful things, but they’re not mind readers. Any therapist who’s worth going to will stop when you ask them to, but you have to ask. It’s easy to feel like you’re not

in control in a massage therapy session, but you are. Good massage therapists want you to help them learn your needs and tolerances, so communicate everything you can—even down to choice of music and whether or not you want to chat. A great massage is a partnership!  
—Suzi Eberhard, Richardson, TX

THE PENDULUM HAS SWUNG too far the other way with pain medication in the news so much lately. It’s next to impossible to find a doctor who will prescribe strong pain medication when you really need it, even though you’ve proven in the past *not* to be an abuser of these medications! So we have to live in pain and pray for a miracle that never comes.  
—S.V. Owens, from *ConsumerReports.org*

### Better Veggie Burgers

I FOUND YOUR ARTICLE “Make Mine Meatless” (June 2016) and the recommendations in it for selecting and preparing veggie burgers to be very informative and a good indicator that they have worked their way into the mainstream menu. As the designated household griller and a meat eater, I cater to a mostly vegetarian household, and I was particularly impressed that Consumer Reports categorized products as either “meatlike” or “grain/veggie-based,” an important distinction. It does not occur to most of the meat-eating population, or apparently to some of the veggie-burger producers, that many non-meat eaters are not looking for a meatlike burger texture. Bravo to you for understanding this and qualifying product options accordingly.

I can confirm your recommendation that grilling veggie burgers frozen works best and also recommend brushing with a light

coating of olive oil prior to grilling, which allows them to crisp and brown to provide even more flavor and texture.

—David Crowther, Chandler, AZ

### What Price Marriage?

I APPRECIATE THE COMMON SENSE you brought to wedding costs (“Get More Wedding for Your Money,” June 2016), but I took a different approach with my daughters, both in their 20s. Years ago, I told them that I didn’t want to haggle over who would pay for what and how much this or that could cost. I told them I’d write each of them a check for \$25,000 to do with as she likes. If the wedding cost the couple more, it was on them. If it cost less, that would be money in the bank for whatever they’d like. What did daughter number one do? She had a civil ceremony with an officiant, a photographer, and the two of them. The couple skipped all the stress, pressure, and industry-manufactured expectations of a wedding, and they got to start their shared lives with something like \$24,500 in the bank. Smart kids.

—Gregory Martin, Centreville, VA

**f** It’s not the wedding that deserves the funds—it’s the anniversaries. Getting married is the easy part.

—Anthony Kooser, via Facebook

**f** Easiest way? Elope!

—Abraham Bob Jacoby, via Facebook

### Home Improvements

YOUR ARTICLE “Renovation Without Aggravation” (June 2016) contains good advice, such as insisting on 3D drawings. My wife and I renewed our kitchen in early 2015. We got 95 percent of what we wanted from a kitchen-and-bath specialist for a total cost of \$33,000. We could have saved at least \$2,000 and some grief if we had done two things better. So here’s our advice for your readers: First, have detailed conversations with many contractor candidates (this means start planning early). You learn a lot by asking questions of potential contractors. We used Angie’s List to solicit proposals from 21 contractors, had seven visit our home, and planned showroom visits with six of the seven. That was fine, but we got antsy and stopped the search after visiting the third contractor. In retrospect, we wish we had visited all six showrooms. Second, if you are using a fixed-price contract, make sure the contract specifies *every* significant item, and leave nothing to be decided. Design-build firms and architects give you more flexibility, but they can double your cost.

—Donald Champagne, from *ConsumerReports.org*





### Coffee Classic

AS A FAN of cold-brew coffee (“Cold Brew for Hot Days,” June 2016), I was surprised to see that you left out one of the cheapest and easiest methods of preparing it: the good old French press. At least several times a week I put my grinds and water in the French press and leave it in the fridge overnight. In the morning I just push down on the plunger and the coffee is ready to drink. Cleanup is easy too, no need for filters or multiple parts. A stainless steel French press eliminates the risk of a broken carafe.

—John Caddle, Stratham, NH

### The Road Ahead

JUST FINISHED the May 2016 edition’s article on self-driving cars (“The State of the Self-Driving Car”). Google, Stanford and Carnegie Mellon universities, and other entities are spending millions of dollars on technologies for autonomous vehicles. The goals for such a vehicle seem to be: It should have the ability to sense the environment and drive itself with little or no input from the driver; it should be able to steer, stop, brake, accelerate, change lanes, and park itself; it should be able to learn and make decisions on its own; it should be able to avoid collisions and keep in its lane. You mean, kinda like a horse?

—Jay Roberson, Candler, NC

SPEAKING AS A former U.S. Air Force pilot, I follow with great interest how aerospace engineers are tackling the problem of pilot attention in a more and more computerized cockpit. When I commanded an aircraft in the 1970s, things were very different. We had autopilots, but they broke often enough that we didn’t trust them. And we flew the aircraft. The aircraft didn’t fly us. The most dangerous time on the road will be when computerized

cars are only half-implemented. You think it’s bad now with people texting?

—Charlie Vono, Ogden, UT

YOUR ARTICLE ON autonomous cars was very informative. It cited the number of people killed each year in car crashes and that the probable cause was driver’s error. But no statistics count the number of accidents drivers avoid yearly. Considering the millions of cars on the highways every day, the number of fatal accidents is remarkably low. I have witnessed, in high-speed LA traffic, an accident happen and the reactions taken by the other drivers to avoid further carnage, and am amazed how they did avoid more accidents. The human brain has over a billion neurons and over a trillion potential pathways for information to flow through; computers can’t even come close. Driving is a ballet and is very interactive, and anticipating problems takes information from the past and future to make the correct action right now.


—Michael Bisnett, Oxnard, CA

### Windows and the World

For everyone who woke up one day to find that his or her computer had mysteriously “updated” its operating system to Windows 10: You’re not crazy, and you’re very far from alone. When Consumer Reports electronics editor Terry Sullivan posted about his experience with the unwanted upgrade on May 19—and explained how consumers could get back their old OS if they acted within 31 days—his words went viral, reaching more than 1.1 million Facebook users and scoring 6,000+ comments. Many readers were upset that Microsoft, after sending numerous emails urging consumers to opt in for the upgrade, eventually sent one telling them to opt out if they didn’t want it—which apparently few people read. And many reported problems like lost work time and erased data. One comment:

THANKS, TERRY, for the article. Yesterday Microsoft did the same thing to me ... I came back into the room to find my PC downloading Windows 10. I did not want Windows 10 ... and this felt like a devious way for Microsoft to get more business somehow. It cost me 4 hours of work time. I’m not a technical person so had to hire a computer tech to help me get back to 8.1 and correct a myriad of problems the 10 download created on my computer ... including throwing me off my network and Smart TV. The same thing happened to my boss ... the unauthorized download threw off her payroll system, which meant we received late checks.

—Donna Sommers, from ConsumerReports.org

 Go to [ConsumerReports.org/lettertoeditor](http://ConsumerReports.org/lettertoeditor) to share your comments for publication.

## WATCH OUR STORIES LEAP OFF THE PAGE

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### WHERE TO ‘BLIPP’

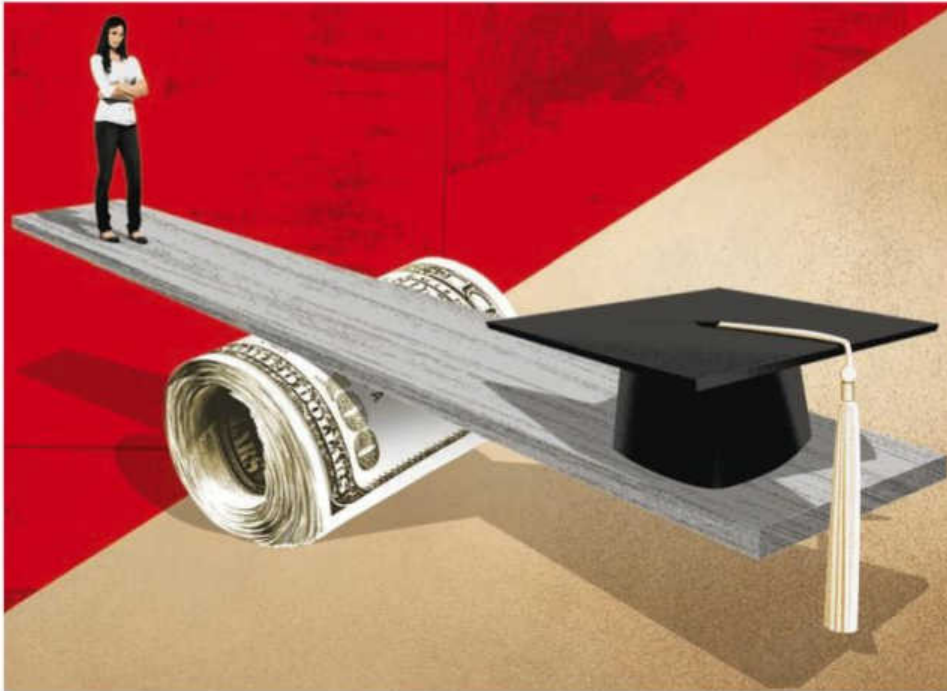
In this issue, you can blipp

Page 20 (or any other page in our story on bike helmets) to see our bike helmet Buying Guide and to watch one of our fitness-equipment experts explain how to fit a helmet correctly.

Page 40 (or any other page in our kitchen renovation story) to see our Buying Guides for dishwashers, refrigerators, ranges, and cabinets.

## BUILDING A BETTER WORLD, TOGETHER

JOIN WITH US TO MAKE A SAFER, HEALTHIER MARKETPLACE



### TACKLING STUDENT DEBT

AT CONSUMER REPORTS, we envision a day when every American can get an affordable college education and contribute to society unburdened by the pressure of excessive debt. As part of our mission to help build a fairer, safer, and healthier marketplace, we'll be tackling the problem of student debt—starting with this month's cover package, which begins on page 28—and working with you to find solutions.

Right now, borrowing money for higher education is increasingly difficult for people to avoid because of rising college costs and declining household incomes. About 42 million Americans owe \$1.3 trillion in education debt. Interest is often fixed at high rates, and student

debt, unlike other loans, can be difficult to refinance. And federal loans that are refinanced lose important consumer protections, such as flexible repayment plans. Compounding the problem is the fact that borrowers making repayments usually work with third-party loan servicers, which are not subject to consistent, industry-wide standards, leaving them little recourse if they're treated badly. It's a market without sufficient competition, transparency, or accountability.

To address this broken system, we'll focus our attention on making the financial aid process in this country easier to navigate as well as changing how student loans are serviced. That includes working closely with key government agencies to introduce reform and putting our investigative muscle behind articles that inform and protect. We want—and welcome—your feedback. Go to [ConsumerReports.org/studentdebt](http://ConsumerReports.org/studentdebt) to learn more.

### SOUND OFF ON CABLE COSTS

IN THE MAY ISSUE, we discussed our fight against the high cost of set-top cable boxes, which 99 percent of the country's 53 million pay-TV customers are forced to lease. A lack of competition has enabled cable companies to charge consumers whatever they please. The collective cost of those rental fees is \$20 billion each year.

The Federal Communications Commission is finalizing a plan that will open the market to competition, innovation, and more affordable options. But cable providers like Comcast and Verizon aren't giving up cable-box profits quietly.

The industry is pressuring Congress to help kill the FCC plan and recently handed the agency more than 100,000 signatures

of people opposed to reform. Help us beat Big Cable by signing our petition at [UnlocktheBox.com/ConsumerReports](http://UnlocktheBox.com/ConsumerReports), and tell the FCC that you're tired of paying big bucks for a box you don't want or didn't get to choose.

### END SURPRISE MEDICAL BILLS

WITH OUR GRASSROOTS organizers and our policy advocates, Consumer Reports has been working to close loopholes that result in patients being ambushed by big bills from out-of-network specialists and labs that contract with their in-network hospitals.

Our fight has sparked a national conversation largely driven by thousands of consumers who have shared their stories about surprise billing with us. Like Claudia Knafo from New York City, who was featured in a recent "NBC Nightly News" segment that discussed the \$100,000 bill she received following spine surgery that she was told would be covered by insurance. After hiring a lawyer, her insurer eventually dropped the charge.

Those stories are helping us move the needle to protect consumers. Florida's governor, Rick Scott (R), recently signed into law one of the nation's most comprehensive bills to ensure that consumers in emergency and nonemergency situations won't be responsible for out-of-network rates if they don't have an opportunity to be treated by a participating provider. We generated calls, email, and social-media outreach to lawmakers to help get the bill passed. Go to [EndSurpriseMedicalBills.org](http://EndSurpriseMedicalBills.org) to share your story.



# INSIGHTS



## COOL WITHOUT THE COW

Nut milks, such as almond, or soy milk serve as the base for many vegan ice creams.

## The Cold, Hard Truth

Do new vegan frozen desserts bring you ice cream delight without the dairy?

by *Trisha Calvo*

**NONDAIRY** frozen desserts aren't new—think of Tofutti Cuties. But almost 45 percent of consumers say they buy so-called vegan frozen treats more often today than they used to, according to the market research firm Mintel. And about 25 percent think they have fewer calories or less fat or sugar than ice cream.

For the first time, an iconic ice cream maker has taken a walk on the vegan side. Ben & Jerry's now has four nondairy flavors, including vegan versions of their popular ice creams Chunky Monkey

and Chocolate Fudge Brownie. All contain almond milk; coconut oil and pea protein add texture and replace some of the fat and protein in milk.

In a blind tasting, our testers judged the four flavors to be good in overall quality. P.B. & Cookies and Coffee Caramel Fudge were

the better of the four.

The vegan flavors of the ice creams were inferior to the originals. Chunky Monkey ice cream had genuine banana flavor and high-quality chocolate chunks, but the banana flavor in the vegan version tasted artificial and the chocolate was a bit chalky. And instead of being

creamy with fudgy brownie pieces, vegan Chocolate Fudge Brownie was gummy, and the brownie was slightly dry.

Nor do the vegan versions have a much improved nutritional profile. Nondairy Chunky Monkey has 260 calories, 14 grams of fat, and 8 grams of saturated fat per half-cup, only a bit better than the ice cream's 300 calories, 18 grams of fat, and 10 grams of saturated fat. Both have about 6 teaspoons of sugars. Plus there's 8 percent less calcium and half the protein in the nondairy dessert.

# Shedding Light on Solar Power

With the price of panels and installation falling and an extension of the federal tax credit, now is a good time to consider switching to solar  
*by Josh Garskof*

**UNDER A BRIGHT** June sky in 1979, at the height of the nation's energy crisis, President Jimmy Carter stood on the roof of the White House to dedicate solar panels installed there to heat water for the staff kitchen. That powerful gesture, which gave America a taste of its clean-energy future, was as symbolic as it was historic: At the time, converting a typical American house to solar power was extremely rare and cost roughly half as much as the house itself.

A lot has changed in the intervening 37 years: Solar costs have dropped so much that today it's possible to generate all or most of a home's electricity—for decades to come—for about the purchase price of a new economy car. Solar installations have increased dramatically. And President Obama has installed new panels on the White House roof.

There has probably never been a better time to switch to solar. Thirty-one states and the District of Columbia have regulations that are solar-friendly enough (and electricity rates high enough) to make residential solar financially attractive (see map, on facing page), and last December Congress extended through 2021 the generous federal tax credits on solar projects

that had been set to expire at the end of this year. Residential solar installations increased almost 60 percent between 2014 and 2015, and in 2015 America averaged one new residential solar installation about every 100 seconds.

Those who want to wait on the sidelines for further price reductions could be disappointed: The cost of solar panels has started to plateau and, while installation labor and other soft costs continue to fall, the phasing out of state tax incentives and utility rebates and grants has largely offset those savings. Adding an element of urgency to the equation are proposals in a number of states that would radically shrink the utility-bill savings of switching to solar power (see "How Utilities Are Fighting Back," on page 14). Because, generally speaking, existing solar customers haven't been subject to those changes, getting your deal done before new regulations are implemented could save you hundreds of dollars each year.

Though going solar has never been easier or more affordable, the process is not without its potential pitfalls. For instance, most homeowners who switch to solar power are pocketing

## LET THE SUNSHINE IN

*A look at how today's residential solar systems generate enough power to meet all or most of a household's electricity needs*

### THE GRID

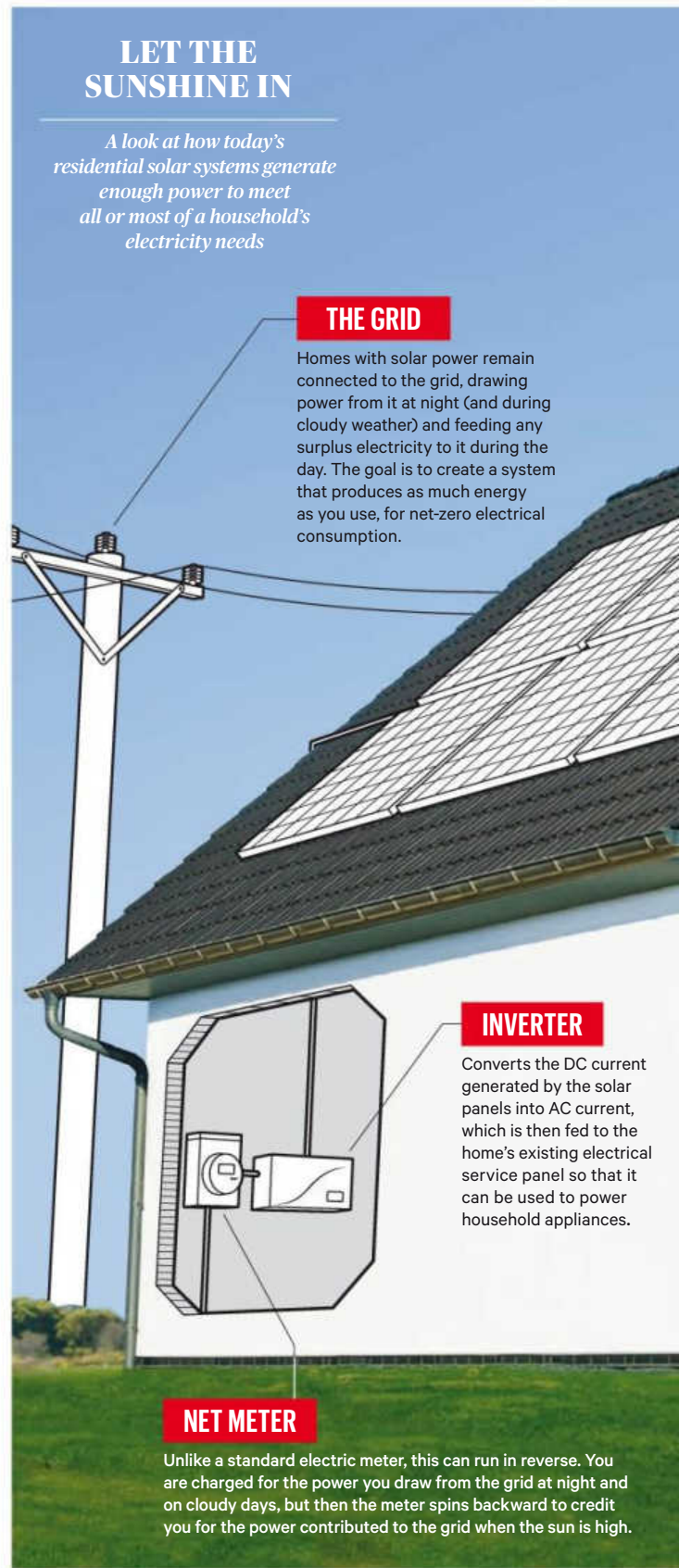
Homes with solar power remain connected to the grid, drawing power from it at night (and during cloudy weather) and feeding any surplus electricity to it during the day. The goal is to create a system that produces as much energy as you use, for net-zero electrical consumption.

### INVERTER

Converts the DC current generated by the solar panels into AC current, which is then fed to the home's existing electrical service panel so that it can be used to power household appliances.

### NET METER

Unlike a standard electric meter, this can run in reverse. You are charged for the power you draw from the grid at night and on cloudy days, but then the meter spins backward to credit you for the power contributed to the grid when the sun is high.









just a fraction of what they could be saving because they choose to lease their panels rather than to buy them (see “Sunny Money: The Real Cost of Leasing vs. Buying,” on the facing page).

This package will walk you through smart steps of going solar from start to finish, to help you steer clear of common mistakes and increase the chances that your solar future will be a bright one.

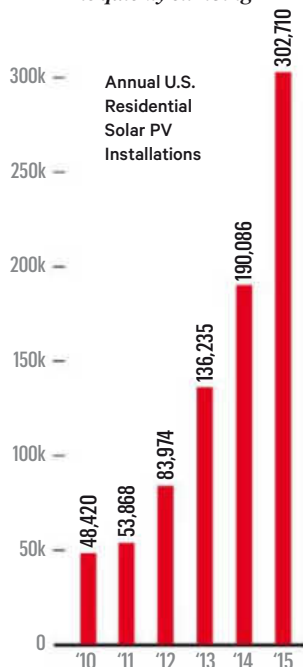
### What Makes Solar Sense

Determining whether solar is a smart move involves more than checking out how much sun your roof gets each day. You also need to consider the cost of electricity in your area and any local tax incentives. The “instant estimate” tool ([energysage.com/solar/calculator](http://energysage.com/solar/calculator)) at the EnergySage website uses aerial photos of your



## A BRIGHT IDEA CATCHES ON

*Just 1 percent of U.S. homes generate solar power, but the number of solar installations is quickly climbing*



house to analyze your roof and taps into databases to predict whether solar would save you money—and about how much. The site, which received funding from the Department of Energy, also provides installation quotes from local installers. Other steps you’ll need to take:

- **Choose an installer.** Whether you find installers through EnergySage or through referrals from friends and neighbors, always check references, ask to see current job sites, and find out how long the company has been in business (a long tenure suggests both experience and the likelihood that the installer will be around in the years to come to stand behind its work). Look for companies that employ installers certified by the North American Board of Certified Energy Practitioners (NABCEP).
- **Understand your incentive options.** Uncle Sam will give you a 30 percent credit for the cost of a solar system installed through 2019, scaling down to 26 percent and then 22 percent through 2021. Along with the federal tax credit, you may be eligible for low-interest financing and state and local subsidies for solar costs that can total hundreds of dollars per year (unless you’re leasing, in which case all incentives and tax credits go to the solar company).

A reputable solar installer will

# 30%

**Amount of the tax credit the government is giving to people who install solar panels on their homes through 2019.**

know about local incentives and how much they can save you.

- **Reconnoiter your roof.**

Solar panels can go on any type of roof—from Spanish tile to standing-seam metal, and from wood shakes to asphalt three-tab shingles. Just make sure your installer has experience with whatever roofing you have and will warranty the roof after the job is done (your original roofing warranty will probably be voided by penetrations required for the job). If your roof is likely to need replacing before the warranty of the solar panels ends, plan on spending a couple of thousand dollars at that time to have the panels removed, stored during the project, and reinstalled. If your roof has only five or so years left, consider replacing it before the panels are installed.

- **Weigh the warranties.** Solar panel failures are extremely

rare, says Joshua Pearce, an engineering professor and solar expert at the Michigan Tech Open Sustainability Technology Lab, who generates 100 percent of his electrical needs on his garage roof. Panel warranties typically range from 10 to 12 years for product defects, which is plenty of time for a rare faulty panel to reveal itself. Pay more attention to the panels’ solar-performance warranty, which guarantees a certain power output for a 20- to 30-year term. (A longer warranty term is better, as is a higher guaranteed output.) “The panel really shouldn’t lose more than ¼ percent to ½ percent in power output per year,” Pearce says.

Even more important is the inverter warranty. Some companies will use a single “string” inverter, generally warranted for 5 to 15 years. Others use “micro” inverters, with one attached to each panel, which are generally warranted for 25 years but are more costly up front. “Just compare the costs after factoring in \$1,000 to \$3,000 to replace the string inverter, and go with the more affordable one,” Pearce suggests.

- **Know “watts” important.** Sales reps may boast about “smart” systems, for example, to convince you that their proposal is better than the other guys’. “Ignore the pitch; just go for the lowest cost per watt you can get,” Pearce says.

# SUNNY MONEY: THE REAL COST OF LEASING VS. BUYING

*Buying solar panels requires an investment and more decision-making than leasing, but over the long term the benefits of owning your system are hard to beat*

## BEST WAYS TO PAY FOR YOUR PANELS

### Cash

Buying your solar electric system outright is best. It usually costs \$15,000 to \$20,000 after tax credits and can reduce your electricity bill by 70 to 100 percent, depending on the size and orientation of your roof and local regulations. Most systems pay for themselves in five to seven years.

### Home Equity Loan

If you need to finance your solar panel purchase, the most cost-effective way to do it is to use a home equity loan or a home equity line of credit. Because your house serves as collateral, these options have low interest rates (currently about 3

to 5 percent). The interest you pay is tax deductible. Equity loans range from 5 to 20 years and usually have fixed interest rates. Equity lines last 10 years and have variable rates (so the interest may increase).

### Solar Loan

There are unsecured and secured solar loans. With an unsecured loan, your house doesn't act as collateral and the interest isn't tax deductible. Many solar installers work with lenders that offer solar loans, but you'll probably find better rates by directly checking with banks, and credit unions. Watch out for high origination fees. Fannie Mae also offers consumers financing for solar system installations through its HomeStyle Energy Mortgage Program when they buy a new house or refinance.

## WHY LEASING IS NOT A BRIGHT IDEA

The steep up-front costs for a residential solar system can make a leasing company's sales pitch sound pretty appealing: Pay little or nothing and save hundreds of dollars per year on average. (The premise is that you save because the combination of your lease payment and your electric bill is less than what you currently pay for power.) Leasing can also look seductively simple compared with buying: There's no need to shop separately for an installer and financing; you just sign on the dotted line. So it's not surprising that 72 percent of the people who installed

residential solar systems in 2014 did so through leasing or another type of third-party arrangement. But the reality is not quite so sunny.

### Your Savings Will Be Modest

People who lease their solar systems save far less than those who buy them outright or with a loan (they also miss out on federal tax benefits and any local incentives). Many leases contain an escalator clause that can further reduce savings by increasing payments 3 percent per year. So if you're paying 12 cents per kilowatt-hour in year one, with a 3 percent escalator, you'll be paying 18.2 cents in year 15. That means that if the cost of energy doesn't rise as quickly as the contracted lease payments increase,

your savings could evaporate.

### You Lose Control of Your Roof

Leasing companies want to maximize their profit, so there's a chance you could wind up with more panels than you want and that they could be installed in highly visible places without any regard to appearance—such as facing the street. To avoid that, check the final system design and placement before signing the lease. It could be different from the initial mock-up.

### Leases Can Scare Off Home Buyers

If you put your house on the market before the lease is up (usually 20 years), you will either have to buy out the lease or the person purchasing your home will have to assume it—which some are reluctant to do.

That's what happened to Andrew and Nora Barber, who had to buy out the lease on the solar system on their Clovis, Calif., home after two prospective buyers were frightened away by it. "I offered the solar company \$16,000, which was the total of all the payments for the remainder of the contract," Andrew says. "But \$21,000 was the buyout price in the contract, and the company wouldn't budge."

Some solar leasing companies may offer to relocate their systems from one house to another.

That could cost \$500 for an initial audit and another \$500 to transfer the panels, if the leasing company determines it can be done. You would also need approval from your utility and local landmarks commission or the condo or homeowner's association, if applicable. Plus the new house must be able to accommodate the system.

And remember: At the end of the lease, the solar company could remove the system—and your savings along with it.

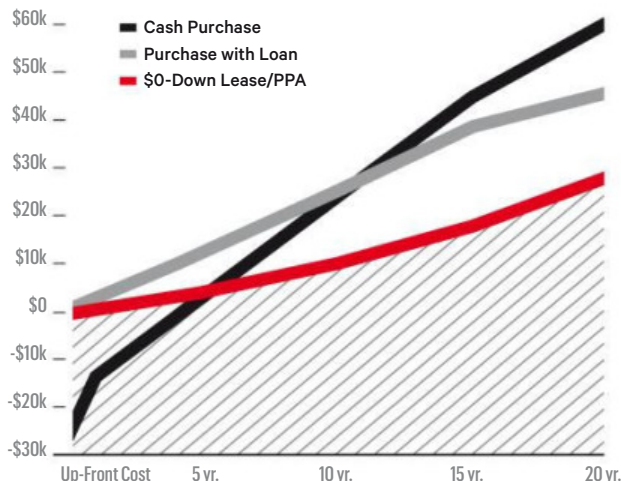
### Service Plans Don't Serve You

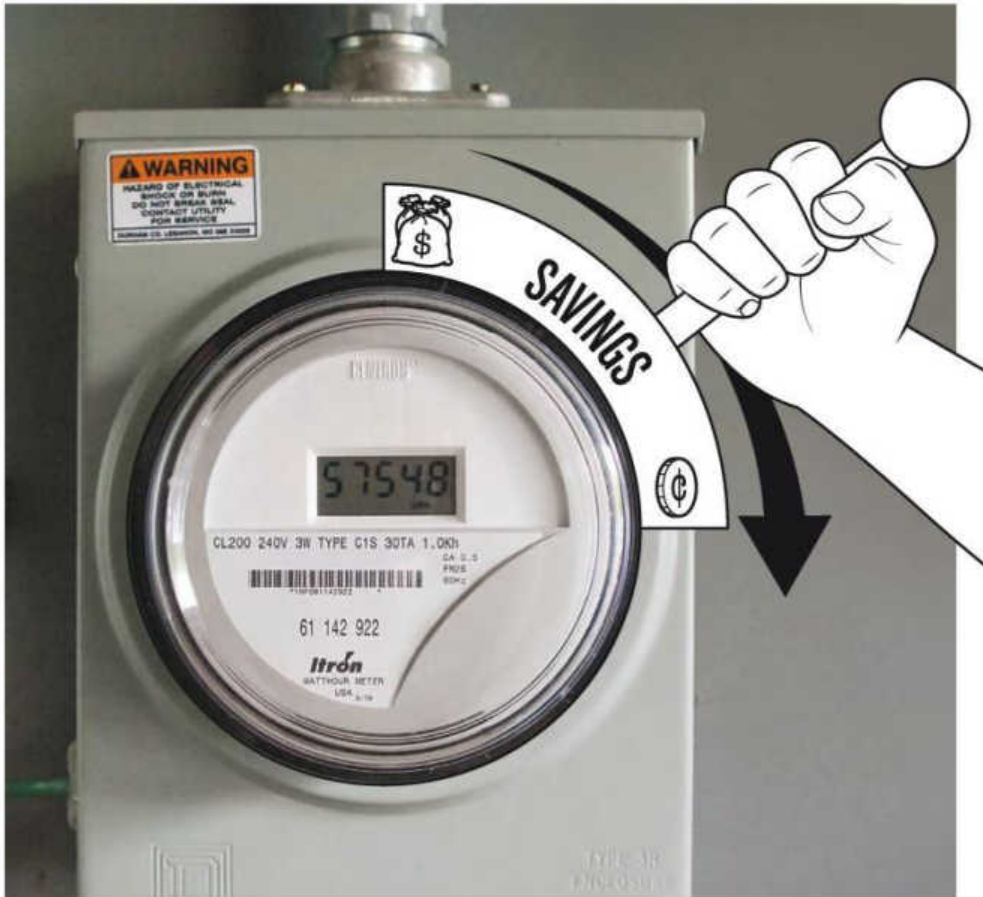
Though leasing companies tout their service plans, maintenance is a red herring. "Generally, there's really no scenario where the maintenance plan is going to kick in," Michigan Tech's Pearce says. Equipment problems aren't covered by the maintenance plan, they're covered by the warranty. And if a storm destroys your panels, the damage may be covered by your homeowners insurance.

That's why—whether you buy or lease—it's essential that you inform your insurer. (Roof-mounted solar is generally added as part of a standard homeowners policy at no additional cost; ground-mounted solar may require an insurance rider.)

## A LOOK AT WHAT YOU LOSE BY LEASING

*A comparison of how much a residential solar system could save a New Jersey homeowner, depending on whether it was bought up front, bought with a loan, or leased*





## HOW UTILITIES ARE FIGHTING BACK

*Now that Americans are starting to see serious savings from solar, many traditional electricity suppliers are working furiously to retain their profit margins*

In February the leasing giant SolarCity closed its operations in Nevada, laying off more than 550 employees there. A couple of months earlier, the Nevada Public Utilities Commission, which regulates the state's energy market, voted to cut by 2 cents per kilowatt-hour the credit that homeowners get for the solar-generated electricity their systems contribute to the grid, with more reductions to follow. "That works out to an average of \$11,000 in lost savings for every solar customer over their 25-year lease," says SolarCity CEO Lyndon Rive. "Worst of all, regulators applied

the change retroactively to the 17,000 existing solar customers in the state."

The Nevada decision is the most extreme outcome yet of a battle being waged by utilities against the growing solar industry nationwide. In Arizona, one utility has applied demand-charge rates for solar customers. It's an added fee that can't be offset by the credits solar customers earn for the excess power they generate and send to the grid. Other Arizona utilities are proposing demand charges.

California regulators recently imposed a \$75 to \$150 one-time

connection charge for solar customers, as well as other new policies and fees that will cut into the savings of California homeowners who install solar.

An additional 30 states are considering proposals by utilities to increase fixed charges for all residential customers. Those fees would be charged to every household before the meter even starts running and are in addition to per-kilowatt-hour charges.

Utilities argue that because transmission costs—for line maintenance, tree trimming, and emergency crews, for instance—have traditionally been

paid by the kilowatt-hour, solar customers aren't contributing their fair share, even though they continue to use the lines (primarily at night). What's more, in order to accommodate solar customers, utilities say they must invest in new technologies that allow them to, for example, scale production up and down based on whether it's a sunny or cloudy day.

"We need to make sure the grid can sustain the two-way flow of electricity as increasing numbers of solar customers come online," says Jeff Ostermayer, of the Edison Electric Institute, a trade association representing every investor-owned electric company in the U.S. Without changes such as fixed charges for distribution and transmission, paying lower prices for surplus electricity generated by homes with solar panels, or assessing monthly demand charges to solar customers, "everyone else subsidizes the solar customer," he says.

But research shows that solar customers have a positive impact on utility finances because they reduce electricity demand and, therefore, the tremendous expense of adding capacity, says Sara Baldwin Auck, regulatory program director at the Interstate Renewable Energy Council. "The vast majority of cost-benefit studies show a net benefit from solar," she says. "The independent studies show either no effect, a minor one, or a positive benefit to utility finances."

A February 2016 study commissioned by Consumers Union, the advocacy arm of Consumer Reports, echoed those findings and added that cost-benefit analyses done by utilities should be viewed with skepticism. The report, by research and consulting firm Synapse Energy Economics, also showed that raising fixed charges creates other problems—such as disproportionately affecting low-income households and those that use very little electricity. It also said that because higher fixed fees reduce the incentive to conserve



energy (not only through solar projects but also efficiency upgrades of any kind), they can drive up electrical usage, requiring new power plants and other expensive infrastructure upgrades that raise electricity rates for everyone.

“Solar penetration would have to reach more than 15 percent of the market before utilities would need to make investments to alter the grid,” says Joshua Pearce, a solar expert

California recently imposed fees that will

# cut the savings

of homeowners who install solar.

at the Michigan Tech Open Sustainability Technology Lab. But only about 1 percent of American homes currently generate any solar power—which is over 40 times the number it was just a decade ago.

Fighting to make residential solar power less viable for consumers is actually a huge tactical mistake for the utilities to make, Pearce says. “We’re just a few years away from affordable batteries, which—along with a backup generator—will allow existing and new solar customers to disconnect from the grid entirely.” Which means that some day soon, consumers could defect from the grid en masse. The far smarter move for utilities would be to embrace solar, he says. Sacramento Municipal Utility District, for example, helps its customers decide whether solar would work for them by offering an online calculator that estimates the size of the rooftop solar system needed, the possible savings, and installation costs.

## HIGH-TECH: HERE AND ON THE HORIZON

*A few ways that technology is making, or will soon make, solar power easier to use and more efficient—both on your home and on the go*

**For the Shingle Set**  
Love the idea of going solar but hate the look of those shiny black boxes on the roof? New solar cells designed to look and perform like shingles and roof tiles offer aesthetes who want to go solar a welcome alternative. Instead of solar panels, Dow Powerhouse Solar System 2.0 shingles are installed along with asphalt shingles on your roof. The company says that a typical system size ranges from 2 to 4 kilowatts. CertainTeed’s Apollo II solar shingles (above right) come in all-black shingle and tile styles and take the place of roofing in the areas they are installed. Both brands qualify for the federal tax credit, along with other

state and local rebates and incentives. A third product: Solarmass Energy Group’s Ergosun tiles (below) are installed the same way as traditional concrete or terra-cotta tiles. They’re available in other countries, and the company hopes to enter the U.S. market in the near future.

**Full Transparency**  
Ubiquitous Energy, an MIT startup, has developed ClearView Power technology, a fully transparent solar cell that could soon be placed over the screens of computers, smartphones, e-readers, and tablets to provide solar power without adding bulk or affecting readability. The company plans one day to be able to



### SOLAR SHINGLES

Apollo II solar shingles, from CertainTeed, function as roofing and solar-power generators.

power entire buildings by installing windows made of the transparent solar cell technology.

### More Powerful Panels

Most rooftop solar panels are made from crystalline silicon cells, which typically convert only 16 to 21 percent of the sunlight to which they’re exposed into energy. One possible

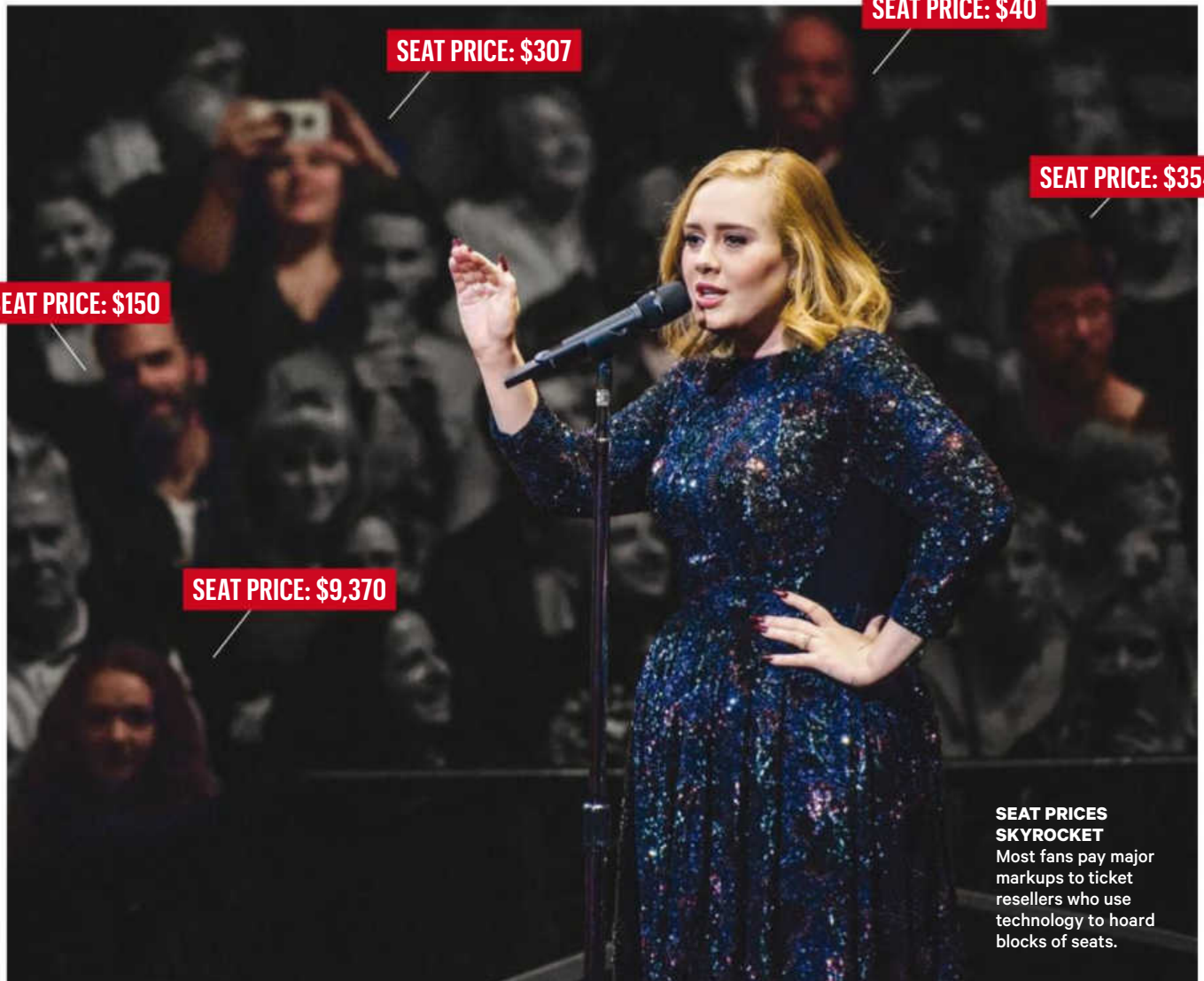
alternative to improve efficiency is perovskite solar cells. But because the saltlike crystalline structure of perovskites tends to break down in humidity, researchers are seeking to stack them on top of silicon solar cells to improve overall panel efficiency. But don’t hold your breath—marketable products might be at least five years away.

—Ed Perratore



### DOUBLE-DUTY TILES

Ergosun tiles can be mixed in with concrete or terra-cotta tiles for a seamless look.


**SEAT PRICES  
SKYROCKET**

Most fans pay major markups to ticket resellers who use technology to hoard blocks of seats.

## Why You Can't See Your Favorite Show

Hoping to score affordable seats to a concert, play, or sporting event? Good luck. Unscrupulous brokers are sending prices through the roof. Here, how not to get fleeced. *by Tod Marks*

**WHEN TICKETS** for Adele's 2016 North American tour went on sale on the morning of Dec. 17, most of the tens of millions of fans who logged onto the Ticketmaster website to snag a seat probably suspected they were facing long odds.

What they may not have known was why. They weren't just competing with one

another: They were also facing a more formidable foe in the form of ticket brokers and unscrupulous speculators who would grab up most of the 300,000 or so available seats that *Billboard* reported sold out in less than an hour. After that, fans could purchase tickets only from brokers and other scalpers (those who resell tickets for

a profit) on the resale market—at astronomical markups.

At the Palace of Auburn Hills in Michigan, for instance, tickets for a September show had a face value of \$40 to \$150. On the resale market, prices ranged from \$307 to \$9,370—the latter for a seat close enough to shake Adele's hand.

Of course, not all events

have the white-hot appeal of an Adele concert, the Broadway musical "Hamilton," or the Super Bowl. But consumers often face frustration trying to get reasonably priced seats even for less hyped concerts and shows because only 46 percent of all tickets are ever made available to the general public, according to a recent investigation of

New York's ticketing industry by State Attorney General Eric Schneiderman.

The investigation, whose findings experts say are indicative of ticketing practices nationwide, revealed that 54 percent of tickets are reserved for the artists, production companies, venues, promoters, radio stations, and presale customers such as fan club members or people who carry a particular credit card. Schneiderman's probe found that when the remaining tickets are finally released to the general public, profiteering can be rampant.

Using software called "bots" (short for "web robot") and inside information from industry contacts, some brokers quickly vacuum up tickets from primary sellers such as Ticketmaster, then add in a huge markup and quickly list them on resale platforms including StubHub and TicketsNow. At a U2 concert referenced in the Schneiderman report, a single broker scooped up 1,012 tickets to a Madison Square Garden show in a minute (despite the four-ticket limit), and sold them for more than triple face value.

Bots enable resellers to buy tickets in bulk by automatically completing online forms faster than a human can do by hand, submitting multiple entries at lightning speed, and bypassing authentication codes on websites intended to deter such software.

There is no federal law prohibiting the use of bots, but 13 states have outlawed them and federal legislation to ban their use is pending in Congress. Though reselling tickets was once largely illegal, most states relaxed or eliminated their anti-scalping laws within the last decade or so for assorted reasons. Among them: the rise of internet ticket sales, the inability to enforce resale regulations, and the chance to collect taxes on sales.

John Breyault, vice president for public policy, telecommunications and fraud with the

National Consumers League, says "legitimizing the resale market has been a win for consumers" because it has reduced the incidence of fraud. He acknowledges, though, that it hasn't necessarily helped in terms of lower ticket prices. The best hope for consumers outraged when they see a ticket selling for many times its face value, he says, is a thriving legal resale market and federal anti-bot legislation with teeth.

Though scalpers hid in the shadows when reselling tickets was illegal, today they could be anybody—an individual with some spare tickets, a small-time speculator looking to make a windfall, or a professional ticket broker. Although not long ago there were limits placed on ticket markups, resellers are now largely free to sell tickets at whatever prices consumers might pay—which can be quite a lot. The average markup on

tickets offered for sale on the secondary market was 49 percent above face value, though the margins sometimes exceeded 1,000 percent, the New York probe found.

New York State lawmakers in May renewed the current ticket-selling law, which expires annually; new pending legislation would stiffen civil penalties and impose criminal ones for bot usage. Meanwhile, there are two ticketing bills

## FEE FRENZY

*When you buy an event ticket, the cost of the seat is only the beginning. Added charges—some baffling—can make the price soar. Here's a look at some of them.*

Consumers have long complained about ticket fees that are seemingly out-of-proportion to the cost of the seat itself. In February, Ticketmaster settled a long-standing class-action lawsuit, filed in California Superior Court, alleging that the company's fees were deceptive, misleading, and a profit center. As part of the settlement, the company announced in May that it would provide discount codes and free tickets to customers who made an online purchase between Oct. 21, 1999, and Feb. 27, 2013. Though Ticketmaster did not admit wrongdoing, the company agreed to be more transparent on its website about various fees and its cut. Ticketmaster, which sells the vast majority of tickets in America, claims on its website that most of the fees are decided by the artists and venues. The "service" charge on tickets, however, is set by Ticketmaster and its clients, and they share the fee.

At right is a rundown of common Ticketmaster fees, which can vary widely depending on the event and location of your seat.

## HOW TICKET FEES ADD UP

We priced the cost of a floor-level seat at a Guns N' Roses concert this summer at Arrowhead Stadium in Kansas City, Mo.

**\$250.00**

### FACE PRICE

Also known as the base price, it's set by the team, act, and/or venue. In general, Ticketmaster remits the face value to the client, minus expenses.

**\$23.00**

### SERVICE FEE

Service fees help Ticketmaster turn a profit. Even if you buy a fan-to-fan resale ticket from Ticketmaster Verified Tickets, it's also subject to a fee (shared by Ticketmaster and the client) based on the sale price of the ticket. For a Selena Gomez concert at Chicago's United Center, the fee was 17 percent, or \$84.66 for a \$498 seat.

**\$4.25**

### ORDER PROCESSING FEE

The fee varies and is shared by Ticketmaster and its client. You can avoid it by buying tickets at a retail outlet or box office.

**\$4.00**

### FACILITY CHARGE

This fee is set by the venue, which receives 100 percent of it.

**\$19.50**

### DELIVERY

Electronic ticket delivery is usually free. Standard delivery for paper tickets typically ranges from no charge to around \$4.50 and can take up to 14 days. Next-day delivery can cost \$25. The \$19.50 fee at left is for second-day delivery. You can pick up your tickets at the box office or will-call free of charge.

**\$300.75**

### TOTAL

In this example, the fees add up to 20 percent of the face value of the ticket.



under consideration in the U.S. House of Representatives, which would prohibit the use of bots and give the Federal Trade Commission enforcement authority. With significant reform unlikely to happen soon, how do you avoid getting gouged the next time you want to go to a ball game or take in a show?

**Shop at the Source**

The ideal way to get a good seat at a fair price is through

the venue box office or the official ticket seller, which, for 80 percent of all live-event seating, is Ticketmaster. These strategies will better your chances with both:

- **Take advantage of presales.** Presales allow select consumers (such as members of a fan club or people who carry a certain credit card) to buy tickets—usually by using a special password on the ticket sales website—before they’re offered

to the general public. You can also get passwords and alerts to presales free of charge at ticketcrusader.com or by paying a small fee at presale-passwordinfo.com. Watch for credit card promotions, too. American Express, Visa Signature, and MasterCard offer some cardholders first dibs, preferred seats and unique access, and discounts to various events.

- **Create an account with Ticketmaster.** You can register to receive information on upcoming events and ticket sales for your favorite performers, teams, and shows. It can also save you precious minutes when a sale starts by freeing you from having to enter login and payment information, during which time bots and more savvy fans can swoop in and grab your seats. Ticketmaster also has a free iPhone and Android app that provides notification about every presale and breaking news about added shows.

- **Consider visiting the box office.** Tickets purchased at the box office may come with fewer fees, such as processing and delivery charges.

- **Shop familiar websites.** Go only to established online sources such as the venue’s official website. Be aware of look-alike sites that fraudsters create to sell bogus tickets.

- **Buy fewer seats.** The more tickets you want, the lower your chances of success—especially if you’re buying for a large group and want to sit together. Consider sitting apart from your companions: The odds of landing a great solo seat are often better.

**Buying from a Reseller**

- **Stick to the major players.** In addition to StubHub and TicketsNow, established resellers include Razorgator, Vivid Seats, and ScoreBig, which all offer money-back guarantees in the unlikely event a ticket is a counterfeit. (Fake tickets are a potentially bigger problem if you buy from individuals on

**49%**

The average markup above face value on tickets offered for sale on the secondary market, according to the New York State attorney general’s probe.

sites such as eBay or Craigslist.) You can shop on individual websites or use SeatGeek, a search engine that scours dozens of resale sites. When shopping, you should also:

- **Compare prices at different venues.** When Bruce Springsteen played in the New York metropolitan area, seats on the resale market were far cheaper at the Prudential Center in Newark, N.J., than at either Madison Square Garden or Barclays Center in Brooklyn, said Will Flaherty, SeatGeek’s vice president of growth marketing. When Beyoncé was on tour, the cheapest ticket to see her at Citi Field in Queens, N.Y., was \$140, and that was for a lousy seat. Compare that with the cost of seeing Queen Bey at Heinz Field in Pittsburgh a week earlier, where tickets on the resale market could be had for as little as \$28; \$140 bought a seat close to the stage, Flaherty said.

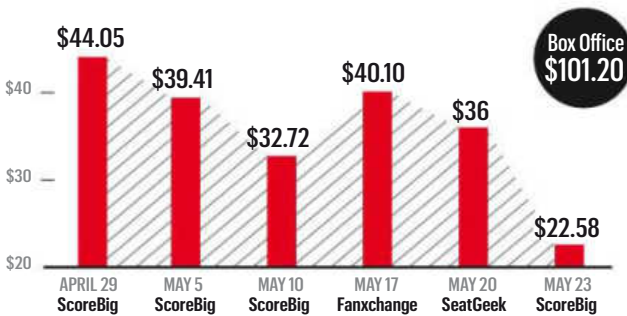
- **Remember that it’s all in the timing.** SeatGeek’s Flaherty said that no matter the event, a better deal is likely to emerge the longer you delay your purchase (see “Patience Pays Off,” at left). Optimally, the time to act is within 48 hours of showtime, according to SeatGeek’s statistics. “Tickets are perishable goods,” Flaherty explained. “On the resale market, the price typically decreases the closer you get to the event, though you might lose some flexibility, like the ability to get five seats together.”

**PATIENCE PAYS OFF**

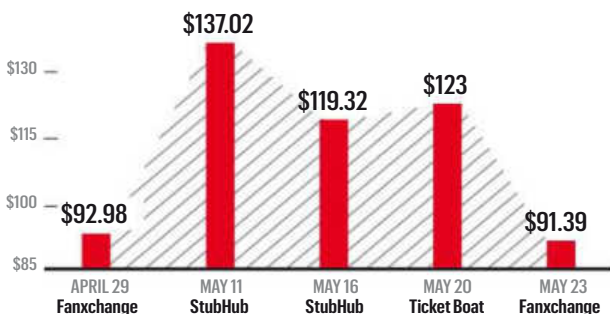
One way to nab an affordable seat on the resale market is to buy as late as you can

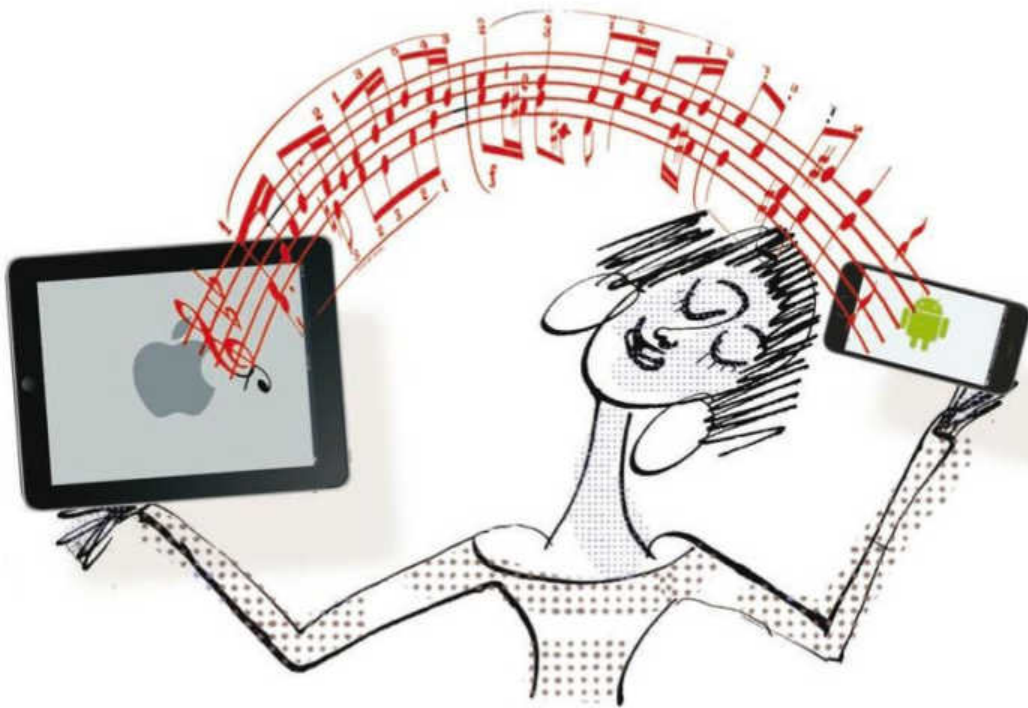
To see how prices change as an event nears, we shopped for the best-priced tickets to two events on May 23: a Los Angeles Dodgers-Cincinnati Reds baseball game and a Beyoncé concert in Minneapolis. For the ball game we started at the box office, then tracked prices on the secondary market. For the concert we looked only on resale sites because the box office was sold out. We shopped for one seat, in the same general location, using seatgeek.com. Prices include all fees except for delivery.

**DODGERS vs. REDS at DODGER STADIUM**



**BEYONCÉ at TCF BANK STADIUM**





## ASK OUR EXPERTS

## I want to switch to an Android smartphone. Will I be able to play my iTunes songs on it?

**PLAYING MUSIC** from iTunes on Apple devices is a cinch. Sync your iPhone, iPod, and iPad to your computer, and any songs you've downloaded will appear on all of those gadgets. You can also subscribe to iTunes Match (\$24.99 annually), which lets you download or stream your music from Apple's iCloud server to up to 10 devices.

But for the 65 percent of Americans who use Android phones, accessing iTunes takes a little bit more effort.

First, download Google's

Music app to your phone from Google Play (unless it's already installed), says our electronics editor, Mike Gikas. Next, download Google Play Music Manager to the computer that holds your iTunes music (it can be either a Mac or PC). And last, upload your iTunes library from your computer to Google Music, which will let you store up to 50,000 songs in the cloud, free. You can now download or stream your iTunes library to your Android phone.

After that, any music downloaded to your computer—from iTunes, Amazon, or anywhere else—will appear in your cloud-based Google Music account.

"That means when you buy a song on iTunes, it automatically becomes available on your Android smartphone," Gikas says. "And when you create a new playlist in iTunes, it also appears on your Google Music account."

## How do I keep my white clothes white and my black clothes black?

**TO KEEP YOUR WHITES** bright, wash them separately from dark or heavily soiled clothes, says our textiles expert, Pat Slaven. Use a detergent with a bleaching agent (our top pick from our tests is Tide HE Plus Bleach Alternative) or add a mild oxidizing agent (such as OxiClean) rather than chlorine bleach. Be sure to use the amount of detergent recommended on the package for your load size. Too much can leave a sudsy residue in clothes; too little won't get the job done. Detergent works best in water that's at least 60° F. (Choose the warm-wash setting if you're not sure of the cold-water temperature.) Slaven also recommends drying whites in direct sunlight. "The sun is a mild bleaching agent," she says, "and it's free."

To keep black clothes looking like new, wash them infrequently (to minimize dye loss) and on a short cycle. Turn the clothing inside out before washing to keep fibers from breaking

down, which can make clothes look faded. Use cool water and one of our top-rated detergents for cool-water washing—Persil ProClean Power-Liquid 2 in 1 or Tide Plus Ultra Stain Release. Hang the garments indoors to dry.

## I just noticed powdered peanut butter in the supermarket. Why would anyone want PB to be powdered?

**BECAUSE WHEN** reconstituted with water, it provides a peanut butter fix with less fat and fewer calories than the real thing. A tablespoon has about 25 calories, 1 gram of fat, 3 to 4 grams of protein, and 1 gram of fiber. Regular peanut butter has the same protein and fiber counts but 96 calories and 8 grams of fat per tablespoon.

But don't expect the creamy texture and flavor you get from regular peanut butter, says Ellen Kloss, test program leader for food at Consumer Reports. "Only one of the three brands we tested—Jif Peanut Powder—had some roasted peanut flavor. The others were bitter or had a raw peanut flavor."

Given that a lot of the fat in regular peanut butter is heart-healthy monounsaturated, we suggest sticking with it for your PB&J unless you eat a lot of it and want to cut calories. You might try powdered PB, though, in smoothies, stirred into oatmeal, or when baking to add protein and peanut flavor.



## LEARN

We have more than 140 in-house experts who research, test, and compare—so you don't have to! Send your questions to [ConsumerReports.org/askourexperts](http://ConsumerReports.org/askourexperts)... and watch this space for the answers.

# PRODUCT UPDATES

## A Head Start on Safety

More head injuries occur in biking than in any other sport—and bike helmets can save your life. Our tests this year reveal the best helmets, including those made with a technology aimed at protecting riders from concussions. *by Allen St. John*

### How to Wear It Well

A helmet can't protect you if it's loose. Find one that fits your head shape as closely as possible, then follow these steps to make sure it stays on snugly.

The front edge should be no more than 1 inch or so above your eyebrows.

Push the helmet side to side and front to back, and twist. It should move so little that the skin at your temples wrinkles.

The chin strap is tight enough if you can feel the top of the helmet press down on the top of your head when your jaw is halfway open.



**TOP-RATED**  
**Scott Arx Plus**  
\$125  
RATING 87

Straps should meet just below and forward of the ears.

Grab the back of the helmet and pull toward the front. If it slips over your eyes, shorten the back straps.

Push up firmly on the front edge of the helmet. If it moves backward, shorten the front straps and tighten the chin strap.



Scan any page in this section using the Blippar app to see our bike helmet buying guide and to watch a video on the correct way to fit a bike helmet (see page 7 for details).

PHOTOGRAPH BY LUCAS ZAREBINSKI

PROP STYLING: WENDY SCHLEAH FOR HALLEY RESOURCES



**IF YOU'RE RIDING** your bike in the suburbs of Washington, D.C., with your head unprotected, don't be surprised if you hear a voice bellowing at you from a passing car: "Get a helmet!" It could be Consumer Product Safety Commission Chairman Elliot Kaye's 6-year-old son, who has taken it upon himself to be a sometime cycling safety advocate. "I applaud him loudly for it," Kaye laughs. "Once we're out of earshot."

Both generations of the Kaye family understand an often overlooked reality: Head injuries are a serious problem in cycling. For all of the news about traumatic brain injuries (TBIs) among football players, there were 286,978 bike-related head injuries treated in U.S. emergency rooms between 2007 and 2011—more than from any other sport—according to a 2016 study published in *BMC Emergency Medicine*.

That means a bicycle helmet is one of the smartest purchases you can make. According to a study by the Insurance Institute for Highway Safety, 60 percent of people who died in a bike accident in 2014 were not wearing a helmet. Almost half of the 1,189 cycling accidents in people ages 5 to 18 in one Minnesota county involved a head injury, according to a study by Ruchi Kaushik and colleagues at the Mayo Clinic Children's Center. Of the 11 kids who were hurt the worst, including two deaths, 10 of them were helmetless. And a helmet can mean the difference between injury and disaster. When researchers at the University of Arizona in Tucson analyzed the records of more than 6,200 people nationwide who had a TBI as the result of a bike accident, they found that wearing a helmet cuts the risk of severe injury by 58 percent.

Those numbers should be convincing enough to erase any doubt about the benefits of helmets. Still, no one knows whether or by how much they reduce concussion risk. "You wear a helmet to protect yourself from head injuries that can kill you," says Robert Cantu, M.D., Clinical Professor of Neurology and Neurosurgery at Boston University Medical School. Those include skull fractures and bleeding inside the skull or the brain. Scientists know how much force it takes to crack a skull, so they've been able to design a test that determines a helmet's ability to prevent that. But concussions aren't completely understood, and not all TBIs are perceivable on a CT scan or an MRI, which makes devising a test to measure the force it takes to cause one difficult.

However, it seems likely that helmets help somewhat because in a crash the materials they are made of blunt impact and disperse energy; that may keep the brain from jostling too much inside the skull, which is the cause of concussions. And after going for decades with few safety-related changes, helmet manufacturers are beginning to innovate with concussion prevention in mind. Questions remain, but our tests this year suggest that, at least in the lab, there may be some added benefit to a technology called Multi-directional Impact Protection System, or MIPS. (See "An Extra Layer of Protection?" at right.)

No helmet offers complete protection in every accident. But helmets are comfortable, you don't have to spend a lot of money to get a good one, and it could save your life. That's why you should wear a helmet every time you ride—or risk getting heckled by a precocious 6-year-old.



## An Extra Layer of Protection?

*A new helmet technology helps to reduce rotational force*

**Bike helmets** are currently tested for their ability to protect against severe head injury. But major helmet makers are offering increasingly more helmets equipped with Multi-directional Impact Protection System (MIPS). This thin, low-friction liner inside the helmet allows the outer shell to slide a few millimeters across the skull on impact, reducing rotational force and the amount of energy transferred to the head.

In addition to our standard tests, we compared the rotational impact performance of MIPS and non-MIPS versions of two helmets, the Bell Draft and Specialized Chamonix. The MIPS helmets reduced rotational force up to 43 percent compared with the same brand's non-MIPS version.

There's enough science to say that rotational force is a prime factor in concussion, but the Consumer Product Safety Commission warns against assuming too strong a connection between a helmet's ability to absorb energy in a lab test and its ability to prevent a concussion in a real-world crash.

"What impact threshold would trigger a concussion?" says Elliot Kaye, Consumer Product Safety Commission chairman. "I think we could adopt a test method to better collect information, but we can't definitively correlate what that information means in terms of injury prevention or risk reduction."

That said, both versions of the Bell Draft are recommended in our Ratings. The MIPS helmets in our comparison are priced at \$20 to \$25 more than the non-MIPS versions. Even if the extra benefit isn't definitive, a MIPS helmet might be worth the extra cost.

## Sports-Related Head Injuries Seen in Emergency Rooms



Source: *BMC Emergency Medicine* (2016) 16:5.

## PRODUCT UPDATES

### ADULT HELMETS



**Cannondale Quick** \$40  
RATING 84



**Bell Gage MIPS** \$195  
RATING 83



**Bell Draft** \$40  
RATING 82



**Bell Draft MIPS** \$60  
RATING 80



**Bontrager Circuit** \$80  
RATING 79



**Cannondale Teramo** \$130  
RATING 79

### YOUTH HELMETS



**Bontrager Solstice Youth** \$40  
RATING 82



**Bell Sidetrack MIPS** \$60  
RATING 78



**Uvex Quatro Junior** \$60  
RATING 72

## ANATOMY OF A BIKE CRASH

*Think of a bike crash as a chain of events transferring energy. Here are the details of the physics and biomechanics that occur in a fraction of a second.*

**THE BIKE** stops suddenly because it hits a solid object, such as a car, or more gradually in a sliding fall. The first milliseconds of the crash are important because some of the energy is dissipated when the frame or wheel crumples, or by the friction of the slide.

**THE RIDER** is still in motion, even though the bike has stopped. The rider might take a dive over the handlebars or simply tumble sideways to the ground. An unprotected human skull can withstand modest impacts—for example, if you fell while running and

hit your head on soft ground or a tree. But the force involved in a bicycle accident is much greater. Many factors affect the outcome of a fall. But in general, depending on the rider's height, in a free fall from a bike the head could hit at anywhere from 9½ to 13.4 mph. The

CPSC helmet test simulates impact speeds of 10.7 and 13.9 mph. **THE HELMET** goes through several changes on impact that can save your life. The smooth, thin outer shell helps prevent minor punctures from sharp objects and allows your head

PROP STYLING: WENDY SCHLEAH FOR HALLEY RESOURCES



Scan any page in this section using the Blippar app to see our bike helmet buying guide and to watch a video on the correct way to fit a bike helmet (see page 7 for details).

PHOTOGRAPH BY LUCAS ZAREBINSKI

## New & Improved

We previously rated the Cannondale Teramo as a Don't Buy: Safety Risk because the buckle on the chin strap broke during our testing. Cannondale has changed the buckle, and the helmet now passes our chin-strap test. It also performed well overall and is new to our recommended list. If you own a Cannondale Teramo with the old buckle design, we recommend that you not use it. If you are buying a new Cannondale Teramo, be sure that it has the new buckle design. Go to [ConsumerReports.org/cannondale](http://ConsumerReports.org/cannondale) for more information, including images of the old and new buckles.



## Have Helmet Will Travel

Put a lid on it, even if you're just tooling around town

**THERE ARE** a growing number of city bike-share programs across the country, but it appears that renters are less likely to wear a helmet than people who ride their own bikes. For example, a study in Washington, D.C., measured helmet use at only 26 percent for bike-share riders, compared with 70 percent for riders on their own bicycles. Studies in other large cities showed similarly low helmet-use rates. One probable

reason: It can be a pain to cart around a helmet.

Bearing that in mind, Seattle, which has a mandatory helmet law, took a straightforward approach. There's a locked bin of helmets next to each bike-share station. Members can put in a code and access the helmets free; others who buy a one- or three-day pass can rent a helmet for \$2. The modest loss rate of about 2 percent suggests that this could be a feasible long-term solution.

Another solution could be a truly portable helmet. We tested the Overade Plixii folding helmet, which is designed to fit into a shoulder bag. Our testers gave it mixed reviews. The helmet easily passed our impact tests with a Very Good rating, but its fit adjustments and ventilation were judged to be Poor. It is portable, though, so it might be a good option for people who use their city's bike share and don't ride long distances.

to glide as it moves, which reduces the wrenching of your head and neck. The dense expanded polystyrene foam core compresses or breaks, spreading the force over a wider area. That lengthens the time it takes for your head to come to a complete stop,

usually dissipating enough energy to prevent a skull fracture or damage to a major blood vessel, which can crush the brain as the sealed skull fills with blood. **THE BRAIN** is suspended in a bath of cerebrospinal fluid, and when the acceleration of the

head comes to a stop, it may continue to move. Even if the helmet did its job and prevented a skull fracture, the rider may still suffer a concussion. If the impact is largely linear—right between the eyes or across the head from one ear to the other—the brain

sloshes back and forth inside the skull until the energy dissipates. If the impact is off-center, rotational forces come into play. The brain no longer simply moves back and forth—it also rotates inside the skull, increasing the chance of damage to the delicate tissues.

**THE BRAIN CELLS** may twist, stretch, or rupture, causing chemical changes that prevent them from transmitting information the way they are meant to. This metabolic crisis going on within a cell—as head-injury specialist Robert Cantu, M.D.,

describes what happens at a granular level inside the brain during a concussion—results in confusion, memory problems, trouble concentrating and other cognitive deficits. Those are the signs that doctors check for during a neurological exam.



## PRODUCT UPDATES

### The Future of Protection



Giro Revel MIPS

## Ratings: The Best in Bike Helmets

Scores in context: Overall scores are based on the results of our impact test, ventilation, weight, features, ease of use, and fit adjustments.

CR Best Buy  Recommended

● Excellent ● Very Good ○ Good ● Fair ● Poor

Rec.	Rank	BRAND & MODEL	PRICE	SCORE	TEST RESULTS				SPECS	
					Impact Absorption	Ventilation	Fit Adjustments	Ease of Use	Weight (Lb.)	Available Sizes

### A. ADULT

<input checked="" type="checkbox"/>	1	Scott Arx Plus	\$125	87	●	●	●	●	0.6	S, M, L
<input checked="" type="checkbox"/>	2	Cannondale Quick	\$40	84	●	●	●	●	0.6	S-M, L-XL
<input checked="" type="checkbox"/>	3	Bell Gage MIPS	\$195	83	●	○	●	●	0.6	S, M, L
<input checked="" type="checkbox"/>	4	Bell Draft	\$40	82	●	●	●	●	0.6	Universal
<input checked="" type="checkbox"/>	5	Bell Draft MIPS	\$60	80	●	●	●	●	0.7	Universal
<input checked="" type="checkbox"/>	6	Bontrager Circuit	\$80	79	●	●	○	●	0.6	S, M, L
<input checked="" type="checkbox"/>	7	Cannondale Teramo	\$130	79	●	○	●	●	0.6	S-M, L-XL
<input checked="" type="checkbox"/>	8	Smith Forefront	\$220	79	●	○	●	●	0.7	S, M, L
<input checked="" type="checkbox"/>	9	Giro Revel MIPS	\$65	78	●	●	●	●	0.7	Universal
<input checked="" type="checkbox"/>	10	Lazer Cyclone	\$50	76	●	○	●	●	0.7	M, L
<input checked="" type="checkbox"/>	11	Schwinn Intercept	\$22	75	●	●	●	●	0.6	Universal
<input checked="" type="checkbox"/>	12	Bell Piston	\$40	75	●	●	●	●	0.6	Universal
<input checked="" type="checkbox"/>	13	Schwinn Merge	\$20	74	●	●	○	●	0.6	Universal
<input checked="" type="checkbox"/>	14	Giro Revel	\$45	73	●	○	●	●	0.6	Universal
<input checked="" type="checkbox"/>	15	Garneau Amber	\$35	72	●	○	●	●	0.6	Universal
	16	Poc Trabec	\$150	69	●	○	○	●	0.7	XS-S, M-L, XL-XXL
	17	Giant Ally	\$70	65	●	●	●	●	0.7	Universal
	18	Bontrager Starvos	\$70	62	●	●	○	●	0.6	S, M, L, XL
	19	Specialized Chamonix	\$50	57	●	●	●	●	0.7	Universal
	20	Specialized Chamonix MIPS	\$75	56	●	●	●	●	0.7	Universal
	21	Garneau Sharp	\$95	43	●	●	○	●	0.6	S, M, L
	22	Nutcase Street Sport	\$70	42	●	●	●	●	1.1	S, M, L
	23	Kali City Helmet	\$125	35	●	●	●	●	0.9	S-M, L-XL
	25	Bern Allston	\$90	33	●	●	●	●	0.8	S-M, L-XL, XXL-XXXL
	25	Overade Plixi	\$100	25	●	●	●	●	1.0	S-M

### B. YOUTH

<input checked="" type="checkbox"/>	1	Bontrager Solstice Youth	\$40	82	●	○	●	●	0.5	Universal
<input checked="" type="checkbox"/>	2	Bell Sidetrack MIPS	\$60	78	●	●	●	●	0.7	Universal
<input checked="" type="checkbox"/>	3	Uvex Quatro Junior	\$60	72	●	●	●	●	0.6	Universal
	4	Specialized Flash	\$40	50	●	●	●	●	0.6	Universal
	5	Bell Zipper	\$35	42	●	●	●	●	0.6	Universal
	6	Garneau Baby Boomer	\$30	37	●	●	●	●	0.6	S/M
	7	Razor V-17 Youth	\$20	37	●	●	●	●	1.0	Universal
	8	Bell Disney Frozen Tiara	\$25	35	●	●	●	●	0.9	Universal
	9	Raskull Mohawk	\$25	31	●	●	●	●	0.7	3+, 5+
	10	Wipeout Dry Erase	25	28	●	●	●	●	1.0	8+, 5+, 3+

How we test. We put helmets through a brutal pounding in our labs using an apparatus that drops them at about 14 mph onto a flat anvil to measure how well they absorb impact. We use an electronic sensor inside a dummy metal head to detect how much force would be transmitted to a rider's head in an accident. Because you can strike your head in different places in a fall, we hit each helmet at the front, crown, back, and sides. We also check each helmet's ability to pass a test that evaluates the strength and holding power of the chin strap.



Most bicycle helmets on the market have a liner made of the same material: expanded polystyrene (EPS), a close cousin of the Styrofoam used in coffee cups and picnic coolers. EPS is light, stable under a wide variety of conditions, durable, and partially puncture-resistant when covered by a thin plastic skin called the shell. Helmets made of EPS have had little trouble passing the Consumer Product Safety Commission helmet test (upon which the impact portion of the Consumer Reports test is based).

But what about the future? One innovation scheduled to hit the market in 2018 is the Angular Impact Mitigation system, which uses a lightweight aluminum honeycomb suspended in the structure of the helmet that, its developer claims, works like the crumple zones in a car to absorb the rotational impacts that can cause concussion.

The miniaturization of electronics could also play a role in the helmet of the future. The appropriately named Livall Bling is jam-packed with gadgets, from the fanciful (Bluetooth speakers and wireless turn signals) to the more practical (integrated LED lights and a G-force sensor that can be programmed to use your smartphone to call your designated emergency contact in case of a crash).



Scan any page in this section using the Blippar app to see our bike helmet buying guide and to watch a video on the correct way to fit a bike helmet (see page 7 for details).

**BUG OFF?**  
The permethrin-treated L.L.Bean crew shirt (center) worked better than similarly treated shirts from ExOfficio (left and right).



## Will These Shirts Protect You From Zika?

With fears on the rise, we put treated clothing to the test  
*by Jeneen Interlandi*

**PUBLIC HEALTH EXPERTS** are increasingly concerned about the Zika virus. To combat that threat, the Centers for Disease Control and Prevention (CDC) recommends a full array of anti-mosquito measures, especially for people living in or traveling to parts of South America or the Caribbean, including Puerto Rico.

Those steps include applying effective insect repellents, with ingredients such as deet or picaridin, to skin and clothing.

But another option recommended by the CDC is to wear clothing that has been treated with the insecticide permethrin.

Those clothes—including shirts, pants, and hats—are made by several manufacturers, notably Burlington and Insect Shield, and are sold by brands such as ExOfficio and L.L.Bean. Sales have surged in recent months as health officials struggle to protect vulnerable populations from Zika-carrying mosquitoes. It's especially

worrisome for women who are or may become pregnant, because Zika has been linked to serious birth defects.

We tested three shirts—two from Ex-Officio and one from L.L.Bean—and found that although they can help protect against mosquitoes, some worked better than others and none were foolproof. Plus, none of the treated shirts we tested were as effective against bites as an ordinary shirt sprayed with deet. And it's worth noting: The shirts don't eliminate the need for using repellent on your skin or untreated clothing. In fact, the manufacturers stress the importance of wearing the clothing along with a topical repellent.

Here, what you need to know about permethrin-treated clothing and how to best protect yourself from mosquito bites:

### How does permethrin work?

Permethrin is a synthetic version of a chemical produced by chrysanthemums. It's often called a repellent, but it works more like an insecticide. That is, it doesn't stop bites primarily by preventing mosquitoes from landing on you (like deet and picaridin do) but by incapacitating or killing the insects after they land and—hopefully—before they bite.

In addition, wearing the shirts may create a protective buffer by reducing the number of nearby mosquitoes, says Ulrich R. Bernier, Ph.D., a Department of Agriculture chemist and leading researcher on permethrin-treated clothing.

Permethrin is also used as a spray around homes and in public spaces, as a cream to treat animals, and as a lotion to treat lice and scabies on humans. The U.S.

## DO-IT-YOURSELF PROTECTION

**You can buy permethrin spray designed for clothing and apply it to garments yourself. We didn't test that approach, but the EPA says clothes treated that way can offer protection similar to that of factory-treated permethrin clothing as long as you follow the instructions.**

Another option is to spray clothing with repellent. In our tests, shirts sprayed with deet prevented bites better than did permethrin-treated clothing, though you will need to reapply after you wash the clothes. The CDC says that any repellent that works well on skin should work as long when applied to clothing.

Here's how to apply properly, whether you are using permethrin or a repellent such as deet, picaridin, or oil of lemon eucalyptus.

### 1. Spray before you wear.

That's essential if you use permethrin. And though it's okay to apply other repellents when you are already wearing the clothes, you will probably do a better job if you spray while they are on a hanger. Then let the clothing dry outdoors before wearing it.

### 2. Choose the right clothing.

Look for tightly woven fabrics; it's more difficult for mosquitoes to bite through them.

### 3. Test first.

Repellents can harm fabric, so try spraying them on a small area first. Repel Lemon Eucalyptus was easiest on fabrics in our tests.

### 4. Wash carefully.

Clothes treated with repellents should be washed at the end of the day. And permethrin-treated clothing should be washed separately so that the chemical doesn't get onto other clothing.

military has used permethrin-treated uniforms since the early 1990s. Deet sprayed on clothes was an option, but soldiers found reapplying it cumbersome. So the USDA figured out how to bind permethrin to fabrics. Civilian clothing made using the technology has been available since 2003.

### Is permethrin safe?

The Environmental Protection Agency classifies it as a probable human carcinogen if you consume it, and one study linked it to Parkinson's disease. But the EPA says the amount allowed in clothing is too low to pose risks to humans, including pregnant women. Research also shows that the permethrin in factory-treated clothing doesn't leach much onto skin, and our tests of permethrin-treated fabric suggest that to be true, too.

### How did we test the shirts?

We tested L.L.Bean's permethrin-treated crew shirt (\$80, 100 percent polyester); and two similar Ex-Officio shirts, the Bugs-Away Breez'r (\$85, 100 percent nylon) and the Talisman (\$85, 60 percent cotton/40 percent polyester). All three are treated with 0.52 percent permethrin, the industry standard. The manufacturers claim the permethrin lasts for 70 washes. We tested them new and after 25 washes.

As controls, we also tested untreated shirts (made of materials similar to the ones in the permethrin-treated shirts) and an untreated shirt sprayed with Ben's 30% Deet Tick & Insect Wilderness Formula, a top-rated product in our Ratings.

Four volunteers put their shirt-sleeve-covered arms into two separate cages

## REPELLENTS THAT WORK

*These top three products warded off mosquitoes and ticks for at least 7 hours and are safe, even for pregnant women.*



RATING  
**96**

### SAWYER PICARIDIN

Contains a synthetic compound resembling a chemical in the black pepper plant.



RATING  
**93**

### BEN'S 30% DEET TICK & INSECT WILDERNESS FORMULA

Our top deet repellent.



RATING  
**87**

### REPEL LEMON EUCALYPTUS

Less likely than other top repellents to harm fabric.



## PRODUCT UPDATES

filled with lab-raised, disease-free mosquitoes. One cage had about 200 *Aedes* variety (aggressive daytime biters that can carry Zika); the other had 200 *Culex* mosquitoes (a calmer, night-biting species known to transmit West Nile).

The sleeves were pulled tightly against the skin. That does make it easier for mosquitoes to bite through before they're incapacitated but was necessary to control for variability in the looseness of fabric on any given arm. Arms were kept in the cages for 5 minutes or until they received at least two bites. Lab workers counted the number of mosquitoes that landed on each arm, the number that were incapacitated or killed, and the number that bit.

### Did the shirts work?

The permethrin-treated products did kill or incapacitate many of the mosquitoes that landed—but in some cases that didn't happen quickly enough to prevent bites.

Notably, all four volunteers wearing ExOfficio shirts—both new and washed 25 times—had to remove their arms from the cage before the 5 minutes were up because they got at least two bites from both *Aedes* and *Culex* mosquitoes.

By contrast, volunteers didn't get any bites when wearing the new L.L.Bean shirt. After 25 washes, none were bitten by the *Culex* mosquitoes, either—though three of the four volunteers wearing the washed L.L.Bean shirt did receive bites from the *Aedes* mosquitoes.

The deet-sprayed shirt prevented all mosquitoes from landing and thus prevented all bites. The untreated control shirts did not prevent bites or landings.

Burlington, the company behind the technology used on the L.L.Bean shirt, told Consumer Reports that our “data was not consistent with military, laboratory, and civilian field testing.” And Haynes S. Griffin, CEO of Insect Shield, told us that we should have relied on a “knock down” test, which checks whether mosquitoes are incapacitated or killed when exposed to permethrin-treated clothing placed in an enclosed space.

But our experts thought that the cage test gave a better indication of whether

the shirts prevented bites, and it also provided information on the number of mosquitoes that were knocked down.

### Is there an extra benefit to killing or knocking down mosquitoes?

Yes, according to Bernier at the USDA. A U.S. military study he points to indicates that bites decreased dramatically “within the immediate area where subjects wore permethrin-treated uniforms for 9 hours.” We did not test to confirm that effect, but the results of that and other research suggests that if you wear the clothing while, say, sitting on your deck, the shirts could over time reduce the number of bites you get by killing or immobilizing mosquitoes right around you. But that benefit could be reduced if you change locations—for example, by walking off your deck into the backyard or if you are on a hike.

### If you wear permethrin-treated clothing, do you still need a repellent?

Yes. The CDC and the manufacturers emphasize that it's essential to apply an effective repellent on exposed skin, including your hands and face. (But don't spray repellent under clothing; that increases the risk of irritation and other side effects.) And if only your shirt is treated, you also need to apply repellent to your pants or skirt and your hat.

The top repellents in our Ratings are Sawyer Picaridin (20 percent), Ben's 30% Deet Tick & Insect Wilderness Formula, and Repel Lemon Eucalyptus (30 percent). All three warded off *Aedes* and *Culex* mosquitoes for at least 7 hours, and are considered safe by the EPA, even for pregnant women, when used properly.

Even with repellent, you should take other steps to prevent bites. That means wearing socks and closed-toed shoes, tucking pants into socks and shirts into pants, avoiding tight clothes (they're easier for mosquitoes to bite through), and avoiding dark colors and perfumes, which attract mosquitoes.



LEARN

Go to [ConsumerReports.org/cro/insect-repellent](https://www.ConsumerReports.org/cro/insect-repellent) for more on how we test repellents, plus what works best against Zika.

## RECALLS

*Act now if you own one of these potentially hazardous products*

### ELECTRIC WATER KETTLES



Walmart is recalling about 1.2 million Rival electric water kettles because the heating element can rupture, posing burn and shock

hazards. The kettles were sold for about \$14 in stores and online from March 2011 through October 2015.

**What to do** Stop using the kettle and return it to any Walmart store for a full refund. For more details call Walmart at 800-925-6278 or go to [walmart.com](https://www.walmart.com).

### VOLTAGE DETECTORS



About 1.2 million Southwire voltage detectors are being recalled because they can give a false “no voltage” reading when used to test live wires for electric current, posing a risk of shock, electrocution, and burns. The detectors were sold at Lowe's and other stores nationwide and online from June 2013 through February 2016 for about \$15.

**What to do** Stop using the detector and call Southwire at 855-798-6657 for instructions on returning it for a free replacement.

### LOPPER SHEARS



Fiskars is issuing a second recall of

32-inch lopper shears after reports of additional injuries. About 277,000 pairs of shears are being recalled because the handles can break, posing a risk of laceration. They were sold at Home Depot stores and online from May 2011 through June 2014 for about \$40. There have been 33 reports of incidents, some requiring stitches.

**What to do** Stop using the shears and call Fiskars at 855-544-0151 or go to [www2.fiskars.com](https://www2.fiskars.com) and click on Product Notifications (under the Support tab) for a free replacement.

# Lives on Hold

Millions of Americans who went to college seeking a better future now face crushing debt from student loans—while the industry makes a handsome profit. How a broken system landed so many in this mess.





***“I feel I kind of ruined  
my life by going to college;  
I can’t plan for  
an actual future.”***

**—JACKIE KROWEN, 32, PORTLAND, OREGON  
\$152,000, STUDENT DEBT**

# A

Almost every American knows an adult burdened by a student loan. Fewer know that growing alongside 42 million indebted students is a formidable private industry that has been enriched by those very loans.

A generation ago, the federal government opened its student loan bank to profit-making corporations. Private-equity companies and Wall Street banks seized on the flow of federal loan dollars, peddling loans students sometimes could not afford and then collecting fees from the government to hound students when they defaulted.

Step by step, one law after another has been enacted by Congress to make student debt the worst kind of debt for Americans—and the best kind for banks and debt collectors.

Today, just about everyone involved in the student loan industry makes money off of the students—the banks, private investors, even the federal government.

Once in place, the privatized student loan industry has largely succeeded in preserving its status in Washington. And in one of the industry’s greatest lobbying triumphs, student loans can no longer be discharged in bankruptcy, except in rare cases.

At the same time, societal changes conspired to drive up the basic need for these loans: Middle-class incomes stagnated, college costs soared, and states retreated from their historical investment in public universities.

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*This is a condensed version of a story by  
Reveal from The Center for Investigative  
Reporting. To read the full investigation  
from James B. Steele and Lance Williams,  
visit [www.revealnews.org/studentdebt](http://www.revealnews.org/studentdebt).*

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## ◀ Jackie Krowen

32, PORTLAND, OREGON

LANE COMMUNITY COLLEGE,  
PORTLAND STATE UNIVERSITY,  
UNIVERSITY OF ROCHESTER

<b>\$128,000</b>	<b>\$152,000</b>	<b>\$1,200</b>
STUDENT LOANS	REMAINING BALANCE	MONTHLY PAYMENT

OCCUPATION: NURSE; SALARY: \$62,000

When she was 19, Jackie Krowen took out her first student loan to attend a community college in Oregon. She borrowed more when she transferred to Portland State University, and still more for nursing school at the University of Rochester in New York.

"You didn't have to meet with anybody," she says. "You just clicked some buttons on the computer and you had a huge check."

When she finished school in 2011, she was \$128,000 in debt. Today, with a good job as a nurse, she still can't make a dent.

Looking back, Krowen realizes she had no idea what she was doing when she took out her loans. Her parents, she says, encouraged her to borrow because the interest rate was low. Like many young borrowers, she didn't know how much interest could accrue. "It didn't make sense to me," she says.

Now she understands. Her balance is currently \$24,000 more than what she borrowed.

Buying a house isn't an option, she says, and the idea of having a family seems financially impossible. She fears it will be that way for the rest of her life.

If states had continued to support public higher education at the rate they had in 1980, they would have invested at least an additional \$500 billion in their university systems, according to an analysis by Reveal from The Center for Investigative Reporting.

The calculus for students and their families had changed drastically, with little notice. Today, there is a student debt class like no other: about 42 million Americans bearing \$1.3 trillion in debt that's altering lives, relationships, and even retirement.

"I feel I kind of ruined my life by going to college," says Jackie Krowen, 32, of Portland, Oregon, a nurse with a student loan balance of \$152,000. "I can't plan for an actual future."

One of the beneficiaries in the profit spree behind this debt is the federal government. By the Department of Education's own calculations, the government expects to earn an astonishing 20 percent for the loans it made in 2013.

Today student debt is a \$140 billion-a-year industry, and unlike many of its student customers, the industry's future looks bright.

### Retreat of the States

In the summer of 2010, Saul Newton was a 20-year-old rifleman stationed at a small U.S. Army outpost in the remote, dangerous Arghandab River Valley of Afghanistan.

It was a radical change for a kid from suburban Milwaukee who only months before had been a student at the University of Wisconsin-Stevens Point.

But after two years of tuition hikes, Newton found himself with about \$10,000 in student loans and the prospect of still more borrowing if he stayed in school. "I couldn't afford it any more," he says. He dropped out and enlisted, hoping one day to go back to school under the GI bill.

He wound up fighting the Taliban. His unit's worst day was when the battalion chaplain and four other soldiers were killed by a roadside bomb in August 2010.

"My focus was on doing my job and staying alive," Newton says. But no matter what else was going on at the outpost, once a month he says he went to the

wooden shack where the unit kept a laptop computer and made his online student loan payment of \$100.

He worried that if he didn't pay his loans, his credit would be shot. (Newton says he wasn't aware that the government offers student loan deferments to active soldiers in wartime.)

Today, back home in Wisconsin as director of the Wisconsin Veterans Chamber of Commerce, Newton says his state's cuts to higher education will force more young people to face the same choices he did.

"You shouldn't have to go to war to get a college education," he says.

In the last decade, Wisconsin has cut back sharply on funding its state university system.

In 2003, students paid about 30 percent of the University of Wisconsin system's total educational cost, according to data compiled by the State Higher Education Executive Officers Association. By 2013, after several rounds of state budget cuts, students were responsible for about 47 percent, and more state cuts to higher education are expected.

By 2014, 70 percent of Wisconsin students graduated with debt—the third-highest percentage in the nation for students at public and nonprofit colleges, according to the nonprofit Institute for College Access & Success, or TICAS.

Wisconsin's trajectory follows a national trend. After World War II, the states appropriated more and more funds for public higher education, and by 1975, they were contributing 58 percent of the total cost. But since then they have steadily reduced their share, pressured by, among other things, the rising costs of Medicaid and prisons. Today, state support is at 37 percent nationally, according to data from the U.S. Bureau of Economic Analysis.

"We ought to invest in the future, not take from the future," says Thomas G. Mortenson, a senior scholar at the Pell Institute for the Study of Opportunity in Higher Education. "Where I used to live we called that eating our seed corn."

As the states cut back funding, universities raised tuition. To cover the increase,

**“Debt is the first thing I factor in all of my decisions.”**

—JESSIE SUREN, 28, PHILADELPHIA  
\$90,000, STUDENT DEBT



more students borrowed, which brought in even more money for the thriving industry. The next step: collecting all that debt.

### **Calls, at All Hours**

The work was automated and fast-paced: Calls were robo-dialed, and the delinquent borrower's account history flashed on the computer screen in Jessie Suren's cubicle. Her job, which paid about \$12 an hour, was to engage with the borrower, stick to the script—and try to get some money out of people who were delinquent on student loans.

At the massive call center in Harrisburg, Pa., Suren felt like she was working for the enemy. The 28-year-old owes about \$90,000 in student loans.

Some calls were scary, Suren says; angry borrowers would curse and threaten, declaring they were jobless and broke. Other calls were heartbreaking; borrowers would say they or their children were terminally ill.

Whatever their story, Suren says she'd have to tell borrowers what would happen  
*(continued on page 33)*

### ▲ **Jessie Suren**

28, PHILADELPHIA

LA SALLE UNIVERSITY

<b>\$72,000</b>	<b>\$90,000</b>	<b>\$900</b>
STUDENT LOANS	REMAINING BALANCE	MONTHLY PAYMENT

OCCUPATION: SELLS VACATION PACKAGES;  
SALARY: \$39,000 A YEAR, ALL COMMISSION

**Suren was raised** by a single mom who worked in the restaurant business. She pushed Suren to get an education. “My mom wanted for me what she didn't have,” says Suren, who did well in school and became the first in her immediate family to attend college. She knew she'd have to finance it herself. Her mother hired a consultant to help with the financial aid forms, at a cost of nearly \$2,000, but that didn't prepare Suren for the obligations she was taking on. Nor did her high school counselors, she says. “No one talked to me about whether I could afford


college, how much it would cost or how interest would work. I knew nothing about money.”

Suren decided to go to La Salle University, a private Catholic school. Grant money and scholarships didn't cover the \$36,000 a year for tuition, fees, and room and board, so she took out the maximum she could in student loans. Her aunt co-signed a private loan and her mother took out a federal loan designed for parents.

By the time Suren graduated in 2010, she was already \$72,000 in debt.

Most troubling for Suren is that servicers and debt collectors can go after her family, too. “If I were only responsible for my loans, I might not pay and just say forget it,” she says. “But because this impacts my mom and aunt, I won't do that.” With such a high monthly payment, she wonders if she will ever be able to buy a house or start a family.





***“One day I want to own  
a home and have a family  
but I will have to pay  
my student debt first.”***

—MARVIN LOGAN JR., 24, ATLANTA  
\$78,000, STUDENT DEBT



## Marvin Logan, Jr.

24, ATLANTA

KENT STATE UNIVERSITY  
CLARK ATLANTA UNIVERSITY

**\$78,000**

STUDENT  
LOANS

**\$789**

MONTHLY PAYMENT  
ONCE HE GRADUATES

OCCUPATION: YOUTH COUNSELOR  
AT A FOUNDATION; SALARY: \$25,000

As a star athlete at Warren G. Harding High School in Warren, Ohio, Marvin Logan Jr. never worried about how he'd pay for college.

Raised by a single dad who worked as an electrician, Logan was an All-American in track and field and played football. College recruiters courted him in both sports.

He went to Kent State University on a track scholarship but soon discovered he couldn't afford it all. So he took out \$5,500 in loans freshman year to help pay for living expenses and school supplies.

Then sophomore year, he lost his scholarship when injuries prevented him from competing. To pay for school, he took out more loans.

Marvin graduated in 2015 and now works at a nonprofit helping disadvantaged youth.

Because he is going to grad school full time at night, he's added on to his overall debt.

Repayment starts when school ends.

He says he has no regrets: "College has given me the opportunity to do what I love and make a difference."

if they didn't pay: American Education Services, a loan servicing company, could take their tax refund and garnish their wages.

After hanging up, Suren would sometimes reflect on her own student loans. "This is going to be me in a couple of years," she would think. Eventually, she quit.

The federal government holds about 93 percent of the \$1.3 trillion in outstanding student loans. That makes the Department of Education, effectively, one of the world's largest banks, but one that rarely deals directly with its customers.

In the 1980s, the department began contracting with private companies to take over some debt collection. Then after privatization, a surge of investors poured into this field. Established debt-collection firms were bought up by privately held investor funds controlled by the likes of JPMorgan Chase and Citigroup.

Today, one in four borrowers are behind in their payments, according to the Consumer Financial Protection Bureau, with an estimated 7.6 million in default. As borrowers struggle to make payments, debt-collection profits rise.

Contractors are expected to make more than \$2 billion in commissions from the government this year, according to the National Consumer Law Center.

With the stakes so high, complaints about overzealous debt collectors have soared. Federal and state agencies have fined contractors millions for misconduct in harassing student debtors. Some have lost their contracts entirely.

San Francisco graphic designer Brandon Hill says debt collectors from Sallie Mae began calling him "yelling and

screaming" about his past-due payments as early as 5 a.m. After he complained to state regulators in 2013, Sallie Mae and Navient Credit Finance turned around and sued him for immediate repayment of a combined \$73,000 in student loans, records show. "I was sued for complaining," he says. His lawyer is negotiating a settlement.

In a letter to the California attorney general's office, Sallie Mae wrote that the company had "acted appropriately" in contacting Hill. The flurry of 5 a.m. calls occurred because Hill's cell phone has a Virginia area code, so the collectors assumed he was on the East Coast, a Sallie Mae official wrote.

Retired University of Cincinnati professor Mary Franklin says student debt collectors told her they would garnish her disability insurance benefits because she had fallen behind on a student loan dating back decades.

"I tried to explain to them that I was ill," she says. "They said the federal government [doesn't] care." Eventually, she says, she managed to resume payments.

Congress revised the program again and in 2010 took back control of issuing federal student loans; the government now loans directly to students. However, it left intact the industry that had grown up to service and collect the loans.

Other progress has been made. New regulations introduced after 2013 now limit a student debtor's federal loan payments to as low as 10 percent of discretionary income. And in 2015, the Obama administration launched a pilot program to test whether federal employees could

## The Partnership Behind This Package of Stories

As **Consumer Reports** celebrates its 80th birthday, the organization will be engaging with you in new ways to help build a fairer, safer, healthier marketplace. This month, CR is partnering with Reveal from The Center for Investigative Reporting to produce this special report on our nation's growing student debt crisis. Each nonprofit has contributed unique pieces of content to this project—including articles reported and written by each organization, videos, infographics, survey findings, and student profiles. Our respective institutions operate independently. Any policy positions that Consumer Reports may take in the marketplace do not reflect the views of Reveal, which does not take advocacy positions. Likewise, articles attributed to each organization are a result of its own work.

We hope the content found here and at [ConsumerReports.org/studentdebt](http://ConsumerReports.org/studentdebt), as well as at [revealnews.org/studentdebt](http://revealnews.org/studentdebt), will illuminate the forces that led to 42 million Americans owing \$1.3 trillion in debt, illustrate the profound and lasting impact this debt can have, and offer practical advice for those looking to avoid the trap.

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**ConsumerReports**



Note: Joaquin Alvarado, CEO of  
The Center for Investigative  
Reporting, is on Consumer Reports'  
board of directors.

## ▼ Saul Newton

28, MILWAUKEE

UNIVERSITY OF WISCONSIN-  
STEVENS POINT

**\$10,000**

ORIGINAL  
STUDENT LOANS

**\$23,000**

CURRENT BALANCE  
(after returning to  
college post-military)

OCCUPATION: DIRECTOR, WISCONSIN  
VETERANS CHAMBER OF COMMERCE;  
SALARY: \$28,800 A YEAR

After two years of tuition hikes at the University of Wisconsin-Stevens Point, Newton's student loan balance was already \$10,000.

"I couldn't afford it any more," he says. In 2009, he dropped out and joined the Army, hoping one day to continue his education under the GI Bill, which he has done.

Several months later, he was in

Afghanistan's Arghandab River Valley, a private in the 4th Infantry Division. His unit's worst day was when the battalion chaplain and four other soldiers were killed by a roadside bomb in August 2010.

"My focus was on doing my job and staying alive," he says. But he was careful never to forget to go and make his online student loan payment of \$100 a month.

"It was kind of crazy" that a soldier in a war zone had to worry about his student loans, Newton says, but he believed that "if I didn't pay my loans, my credit would be shot."

Now he's back home in Wisconsin, working as a veterans' activist. "You shouldn't have to go to war to get a college education," he says. On the other hand, "starting your post-college life with tens of thousands of dollars in debt is a weight around your ankles," he says. "I can relate to that."

effectively take over the job of collecting unpaid student loans, while at the same time being more helpful and less aggressive than private collectors.

To Deanne Loonin, a lawyer who monitored student debt for years for the National Consumer Law Center, the Treasury experiment is focusing on one of the biggest problems confronting borrowers.

"We need to eliminate the private collection agencies from this process," she says. "They are incentivized just to collect money, not to work out ways that might be better for the borrowers. We need to see what else might work." ■

*This story was produced by Reveal from The Center for Investigative Reporting, a nonprofit news organization based in the San Francisco Bay Area. Learn more at [revealnews.org](http://revealnews.org) and subscribe to the Reveal podcast, produced with PRX, at [revealnews.org/podcast](http://revealnews.org/podcast). Lance Williams can be reached at [lwilliams@cironline.org](mailto:lwilliams@cironline.org).*



**"You shouldn't have  
to go to war to get a  
college education."**

-SAUL NEWTON, 28,  
MILWAUKEE  
\$23,000, STUDENT DEBT

# Having the College Money Talk

10 Key Questions  
Every Family  
Should Discuss

by *Donna Rosato*

# W

With so many options, figuring out where to go to college can be overwhelming. Large research university or small liberal arts college? City school or rural school? Close to home or out of state? Guidance counselors talk of finding a school that's the right "fit" academically and that has an atmosphere that suits the student. But as students and parents get wrapped up in the emotional quest for a "dream school," they can lose sight of the financial consequences of the decisions they make. And when the acceptance letters finally (hopefully) roll in, families of college-bound students can find themselves scrambling to figure out exactly how they're going to pay for it all.

Today a four-year education at a state school—including tuition, fees, and room and board—costs an average of \$78,000; at a private university it's more than double that. More than 70 percent of graduates leave school with debt. Borrowers in the class of 2016 are finishing with record debt, averaging about \$37,000 per graduate, according to an analysis by Mark Kantrowitz, an industry expert, and publisher and vice president of strategy for Cappex.com, a website that helps students compare colleges and find scholarships.

Debt that size can cast a long shadow, according to a new Consumer Reports nationally representative survey of more than 1,500 student loan borrowers. Forty-four percent of those who have left college say they have had to cut back on daily living expenses, and 28 percent have had to delay major goals like buying a house and 37 percent put off saving for retirement. The financial impact is so

daunting that 45 percent of borrowers say knowing what they know now, their college experience wasn't worth the cost.

How do you avoid that kind of buyer's remorse?

Financial aid and college financing experts consulted by Consumer Reports say that families often don't pay enough attention to actual costs until they're deep in the college admissions process. "When you're looking for a school, it's not just about academics and the feel of the place," says Frank Palmasani, a college counselor at Providence Catholic High School in New Lenox, Ill., and author of "Right College, Right Price." "It should be a financial fit, too." Parents and children should have frank family talks early and often. Parents should be honest about how much they have saved and can afford. They should ask their college-bound son or daughter to think about his or her ambitions and expectations, and to be realistic about how much they are willing to shoulder when it comes to debt.

With an action plan in place early, families can weigh their options rationally at the moment when acceptance letters and student aid offers are on the kitchen table. Consumer Reports put together these questions and best practices to help you start the conversation and demystify the process. Going through them as a family may even reveal options you hadn't considered.

## 1 What does your student want to get out of college?

College can be an expensive place to figure out what you want to do in life. Yet many students, understandably, head off not knowing. They change majors, transfer schools, and often take and pay for too many classes that don't count toward the degree they eventually choose.

Those are among the reasons only 39 percent of college students graduate in four years, according to the National Center on Education Statistics. Extra time means extra debt. According to an analysis of students from the University of Texas at Austin who took out student loans, those who graduate on time will



# What Makes Student Debt Different

## HOW IS INTEREST SET?

**MORTGAGES** Private lenders continuously set and reset rates, based on movements in the secondary markets, where bundles of loans are bought and sold. Rates for a conventional 30-year fixed-rate mortgage fluctuate along with the 10-year Treasury yield.

**STUDENT LOANS** Congress sets federal loan rates each spring off the 10-year Treasury note. Private lenders have their own formulas. Student loan interest rates are typically higher than those of 30-year fixed-rate mortgages.

## CAN YOU REFINANCE TO TAKE ADVANTAGE OF LOWER RATES?

**MORTGAGES** Yes, through many banks and credit unions.

**STUDENT LOANS** Yes, but be warned: Few private providers offer these services, and when you refinance federal loans, you forfeit key consumer protections.

## CAN YOU DISCHARGE YOUR LOAN IN BANKRUPTCY?

**MORTGAGES** Yes.

**STUDENT LOANS** Not without proving “undue hardship” to a bankruptcy judge with challenges from the lender, a high bar.

## IS THERE RECOURSE AGAINST BAD LOAN SERVICING?

**MORTGAGES** Yes. If the mortgage servicer applies payment improperly—thus breaking the law—you can sue.

**STUDENT LOANS** Not much, because there are no consistent industry standards for student loan servicers.

## CAN THE LOAN GROW BIGGER OVER TIME?

**MORTGAGES** Not really, due to rules forbidding servicers from setting too-low payments, causing interest to add up.

**STUDENT LOANS** Yes. That can happen, with income-based repayment plans and in other circumstances. When unpaid interest is added to principal, debtors pay interest on interest.

—Tobie Stanger

owe an average of 40 percent less than those who graduate in six years.

A student who has a few years till college can get a better sense of his options by exploring different kinds of careers, whether by working as a volunteer or part time, or by doing job “shadows” following a worker through a typical day, says Cyndy McDonald, president of GuidedPath in Boulder, Colo., which advises high school college advisers, students, and their families on college planning. Older students who are still uncertain might consider commuting to a less expensive public university until they have a firm idea about what they want to study, says McDonald.

Taking a “gap year” can also pay off. That’s what Malia Obama, daughter of the president and first lady, who is heading to Harvard in 2017, plans to do. Research from Bob Clagett, a former dean of admissions at Middlebury College and a former senior admissions officer at Harvard College, found that gap-year students at Middlebury and UNC-Chapel Hill had, on average, higher overall GPAs than those who didn’t take time off. Gap-year students also performed better in college than their high school academic record would have predicted.

## 2 How much will college cost, bottom line?

Figuring out the true cost of college isn’t as simple as looking up the tuition and room and board charges and multiplying by four. Even at the most expensive colleges, few people pay the actual sticker price. How much you pay depends on your family’s financial situation, the student’s academic record, and other factors that influence how much a school offers in grants and scholarships, both types of free money that don’t need to be paid back. To evaluate a school’s true cost, you need to get down to the “net price.”

The net price is how much a student pays after subtracting scholarships and grants. Since 2011, undergraduate colleges and universities that participate in the federal financial aid system are required to have a net price calculator on

their websites. Input information about your family’s finances and the student’s academic record, such as GPA and SAT scores, which can affect merit aid, and get an estimate of the net cost to you. Loans are not included in the calculation.

You won’t know your exact cost until a school accepts you and gives you a formal financial aid offer. But using the calculators will give an idea of your eventual out-of-pocket costs and how much you might need to borrow to attend. It will help you target schools in your price range.

One mistake families often make is assuming that their state university will be the most affordable option, says Palmasani. Flagship state schools can be pricier than smaller private colleges. A public university in another state could be less expensive than going in-state where you live.

Some private colleges, even highly selective ones, can be cheaper than state schools, too. That’s because public colleges generally award smaller and fewer scholarships than private colleges, which may have richer endowments, says Zee Santiago, director of college counseling at the Collegiate Institute for Math and Science high school in New York City. “With cutbacks to state funding, state schools don’t have the money to give out that private schools do,” says Santiago.

That was the case for Aissata Samake, a 17-year-old senior in New York City. She was accepted to three schools in the State University of New York system but will be studying biology at Gettysburg College, a private school in Pennsylvania. While the total cost is about \$63,000 per year, Samake will pay only \$3,000, thanks to the financial aid package she received. Typical costs at SUNY schools average \$20,000 per year, and Samake would have had to pay nearly the whole tab.

## 3 How much federal financial aid can our family really expect?

You can get an early read on eligibility for federal aid—grants, loans, and work-study programs—using the Department of Education’s FAFSA4caster tool ([studentaid.ed.gov/sa/fafsa/estimate](http://studentaid.ed.gov/sa/fafsa/estimate)). It



*To make sure debt collectors got paid, “they said they would definitely take away [my father’s pension]. They said they have every right.”*

—VANESSA MCCLURG, 29  
SALT LAKE CITY  
\$73,000, STUDENT DEBT

offers a federal aid picture, but using it with a specific school’s net price calculators can give you a more detailed view.

Then, at the start of senior year of high school, parents of a college-bound student need to fill out the Free Application for Federal Student Aid (FAFSA). In addition to federal aid, this is the form that states, colleges, and many scholarship programs use to determine eligibility for grants and loans. New this year: You can submit the FAFSA as early as October, using what is awkwardly called the “prior-prior” year’s tax return. That means students who want to attend college for the 2017-2018 academic year can file in October of 2016 using the family’s 2015 tax info. Don’t make the mistake of not filing a FAFSA because you don’t think you’ll qualify for aid. Everyone is eligible for certain types of federal loans. There is no explicit income cutoff for need-based aid, such as Pell Grants and subsidized student loans, says Kantrowitz of Cappex.com. Parent and student income and assets are the major factors that determine whether you qualify. But the size of your family, the number of children in college at the same time, and

the age of the student’s parents are also considered. The older the parent, the less their assets will be weighed in financial aid calculations because it’s understood that older parents need to be saving for retirement, too.

#### 4 Are financial aid offers good for four years?

In what can seem like a bait and switch, some schools may offer more generous scholarships and grants to freshmen to entice them to enroll, but be aware that this money might not be fully renewable, says Kalman Chany, author of “Paying for College Without Going Broke.” “You need to know what strings are attached to get it every year,” says Chany. If you receive a merit-based scholarship, ask what the requirements are to qualify each year. You may need to maintain a certain GPA, for example. If you have a generous athletic scholarship, find out whether it continues if you sustain a career-ending injury, and have a contingency plan in case it doesn’t. Even if the amount of grants and scholarships stays the same for all four years, tuition is likely to rise,

**▲ Vanessa McClurg**

29, SALT LAKE CITY  
UNIVERSITY OF NORTH TEXAS

<b>\$67,000</b>	<b>\$73,000</b>	<b>\$522</b>
STUDENT LOANS	REMAINING BALANCE	MONTHLY PAYMENT

OCCUPATION: AUTO SHOP SERVICE MANAGER;  
SALARY: \$32,000 ANNUALLY

**McClurg’s father**, a retired U.S. Navy officer, co-signed her loans. Then illness disrupted her education. She was hospitalized with pneumonia as a sophomore and later contracted a staph infection: “Unbeknownst to me,” she says, “I didn’t have a good immune system.” After missing more than a year of classes, she dropped out in 2010.

McClurg moved to Utah and got a \$9-an-hour job in an auto repair shop, and says she couldn’t afford to pay her loans for a few years. Then debt collectors “really came after me,” she says, threatening to sue her. Then they said they would go after her father as well because he had co-signed her loans. “They would definitely take away his pension,” she says she was told. “They said they have every right.” Finally, she says, “my 84-year-old grandfather gave me every dime he had” so that she could get her loans current.

McClurg says she now earns \$32,000 per year, enough to pay \$522 each month for the education she never finished.

# Degrees of Debt & Regret

The data is consistent and compelling: Because a college education translates into a better future, it's worth the money you spend on it. But try telling that to the 1,500 Americans with student debt who responded to a nationally representative March 2016 Consumer Reports National Research Center survey. The burden of paying off significant loans has left many questioning—after the fact—whether college was worth the cost.

# 45%

OF PEOPLE WITH STUDENT LOAN DEBT SAID THAT COLLEGE WAS NOT WORTH THE COST.

**OF THOSE WHO SAID COLLEGE WASN'T WORTH THE MONEY**

- 38%** Didn't graduate.
- 69%** Have had trouble making loan payments.
- 78%** Earn less than \$50,000 per year.
- 43%** Didn't get help from parents making financial aid decisions.

## The Impact of Student Debt ...

**44%**  
CUT BACK ON DAY-TO-DAY LIVING EXPENSES.

**37%**  
DELAYED SAVING FOR RETIREMENT OR OTHER FINANCIAL GOALS.

**28%**  
DELAYED BUYING A HOUSE.

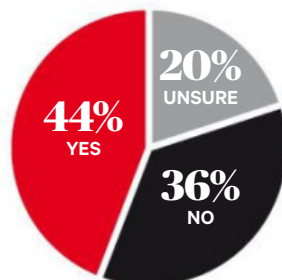
**12%**  
DELAYED MARRIAGE.

**14%**  
CHANGED CAREERS AS A RESULT OF STUDENT DEBT.

# 47%

SAID THAT IF THEY HAD TO DO IT OVER AGAIN, THEY WOULD ACCEPT LESS FINANCIAL AID. THAT MEANS THEY'D HAVE TO GO TO A CHEAPER SCHOOL OR FIND ANOTHER WAY TO FINANCE IT.

**Would you want to know how much student debt a person has before you begin a serious relationship?**



**More Than Half**  
reported having problems making payments on student loans at least once.

so the aid will cover less of the cost.

To maintain federal financial aid, you need to file the FAFSA each year. The amount of assistance you are eligible for can change if your financial circumstances change.

## 5 How much debt can one student manage?

There's a rule of thumb for that, too. The total amount of loans a student takes shouldn't exceed the salary he expects to earn annually in the early years of his career, advises Kantrowitz. According to the National Association of Colleges and Employers, the average starting salary for a person with a bachelor's degree is \$50,000. But if you don't know what you want to pursue as a career, be more conservative, he advises. If you earn \$50,000 after graduation and borrowed that much, expect to pay about \$555 per month under the standard 10-year repayment plan, assuming a 6 percent interest rate. Annually, that's about 13 percent of your salary toward your loans.

If possible, avoid private loans. Federal loans come with consumer protections like flexible repayment plans and deferment or loan-forgiveness options if you meet certain conditions. Private loans often hook borrowers with lower current interest rates, but they come with stricter terms and fewer, if any, debt relief options if you can't afford your payments, according to the experts we spoke with.

## 6 Should parents contribute, and if so, how much?

This is a tricky financial question, and the answer depends on willingness and circumstance. However, most financial advisers we spoke with tell parents to prioritize saving for retirement over paying for their kids' college, at least out of regular income. The thinking goes: You can borrow for college, but you can't get a loan for retirement. Parents should continue to save in their 401(k) at least up to the employer match. If you have no 401(k), put money in an appropriate IRA.



And if parents really want to contribute, even if they've saved money in a 529 college savings plan, they should think carefully about how much to borrow. Follow the same rule of thumb that Cappex.com's Kantrowitz suggests students follow. Favor federal Parent Plus loans over private loans, which have key advantages, such as flexible repayment options. Total debt assumed (for one or more child's education) shouldn't be more than your annual salary if you're 10 years or more from retirement, and even less the closer you are. If the costs are more than that, consider less expensive schools.

## 7 What about community college?

Starting off at a community college and then transferring to a four-year institution can be a good way to reduce costs. Tuition and fees at community college average just \$3,435 annually compared with \$9,410 at a public in-state school and \$32,405 for a private nonprofit college (not including room and board). In a growing number of states (Tennessee and Oregon) and cities (Salt Lake City, Los Angeles, Detroit, Boston, Chicago), there are grant and scholarship programs to make tuition more affordable or even free.

Some states, including Florida, California, Massachusetts, and Virginia, guarantee that anyone who earns an associate degree in-state can transfer to the state university. Wherever you go, make sure community college credits will transfer to the schools where you want to finish your degree. Most schools accept transfer credits from community colleges, but the classes might count as an elective and not toward the degree you want, says John Fink, a research associate at the Community College Research Center at Teachers College, Columbia University.

## 8 Any other ways to cut costs?

For those interested in a military career, the ROTC can pay a significant portion of college costs in exchange for some level of on-campus participation and three years

or more of active-duty service. The Army, Air Force, and Navy have ROTC programs with various levels of scholarship, up to full tuition with monthly stipends.

Or you can consider studying abroad, which can be significantly cheaper—and in some countries free (although you'll still need to pay for living expenses). After getting accepted to a half-dozen schools in the U.S. and the U.K., Ian McLellan, 22, chose the University of Glasgow in Scotland, where he earned a degree in history last spring. His total tuition tab: about \$60,000. More than half of the 43,600 American students who earn their diplomas abroad go to schools in the U.K. or Canada, where language isn't a barrier. The average tuition for international undergrads in Canada is about \$22,000, according to Statistics Canada. In the U.K., undergraduate programs are typically three years long, offering another opportunity to save. But even those that are four years can cost significantly less than many private schools in the U.S. A degree earned overseas can be attractive to domestic employers, says Peggy Blumenthal, a senior counselor to the president of the Institute of International Education in New York City. It might even be an advantage if a student wants to pursue international business.

## 9 How can we know if this expensive education will pay off?

The ultimate value of an education is, of course, hard to quantify. But a student isn't going to feel very good about all of the money she spent on college if afterward it's a struggle to find a job that barely covers the monthly debt payments. To get a sense for the quality of the education at a school and its student outcomes, look at measures like graduation rates and postgraduation earnings, says Rory O'Sullivan, deputy director of Young Invincibles, a millennial research and advocacy organization that focuses on financial issues for young adults.

Last fall the Department of Education made it easier to get that kind of outcome

data when it revamped its College Scorecard tool. You can use the Scorecard to filter schools by graduation rates and 10-year-out median salaries of graduates who received federal aid. The Scorecard reports the average amount students borrow and loan repayment rates after graduation. But while the Scorecard is a useful tool, the data is limited to averages by schools, O'Sullivan says. The results could be very different depending on the specific degree you earn. "Right now, it's all lumped in together," he says.

## 10 What if my student has trouble repaying his debt?

It may sound premature to consider how your student will manage to pay off his college loans before he's even matriculated. But the first debt payment is due six months after graduation on most federal student loans. Even if you've made smart choices about college financing all along—choosing an affordable school, limiting borrowing—that could still turn out to be a struggle. If it does, your student will need to understand the options.

There are several. Federal college loan payments can be deferred if a student goes back to school or for hardship, although interest may continue to accrue. If he is struggling to pay, he may be eligible for income-based repayment programs. If he works in public service, which encompasses a wide range of organizations including nonprofits, government jobs, and teaching, there is also the possibility of having loans forgiven.

Marvin Logan, Jr., who graduated in 2015 from Kent State University, is counting on a federal public service loan forgiveness program to help him manage nearly \$80,000 in student debt.

Once out of grad school, his plan is to elect an income-based repayment plan, which should limit his monthly payments to 10 to 15 percent of his income and spread payments to 20 to 25 years. Then, if he remains in the nonprofit world for a decade and has been making steady payments, the balance of his loan will be forgiven. ■

# Kitchen Makeover



KATE LESUEUR/VAULT ARCHIVES



Scan any page in this section using the Blippar app to see our kitchen appliance buying guides (see page 7 for details).

# overs Made Easy

*Product recommendations and savvy strategies that will bring your dream kitchen within easy reach*

BY DANIEL DICLERICO

**IF YOU'RE CONTEMPLATING** a kitchen remodel, there's a good chance you've been drooling over photos of Carrara marble countertops and commercial-grade ranges on websites like Houzz, Pinterest, and Remodelista. But for all of the inspiration those sites provide, they tend to be short of a couple of crucial details: the price of all that beauty and, just as important, how the pretty products perform.

Consumer Reports will tell you that those marble countertops are stain-prone, that many pro-style ranges don't work as well as models costing much less, and that the cost of both would devour much of the \$28,000 that the average American spends on a professionally installed kitchen. Our remodeling guide will also tell you how to create a beautiful and functional new kitchen filled with solid materials and reliable appliances at any price—all of it backed up by our rigorous testing.

We turned to designers and contractors for ways to stretch the budget and avoid common pitfalls. Then we filled in the details with the best kitchen appliances and countertops from our tests (arranged by budget on pages 49 through 51), and even a splurge in case you're feeling flush. You'll find products that deliver a luxury look for less, such as slide-in ranges and porcelain-tile floors, and even discover a way to get a six-figure kitchen for a fraction of the cost.

Experts say a kitchen redo should cost 5 to 15 percent of a home's total value, a helpful guideline that will keep you from overimproving your property. In this package, we offer three common budget ranges based on industry data: \$5,000 to \$15,000 for DIY spruce ups, \$25,000 to \$50,000 for midrange professional remodels, and \$75,000 to \$125,000 for the luxury projects in and around major cities, where real estate values and labor costs are highest.

Follow our advice and your dream kitchen can be a reality—without all those numbers to keep you up at night.



## The Simple Spruce Up

**\$5K**  
TO  
**\$15K**

YOU CAN BUY a lot of kitchen for under \$15,000 as long as the space isn't much more than 150 square feet and you're willing to do a lot of the work yourself. We allocated \$1,000 for labor, namely electrical and plumbing work, which is always best left to the pros.

### SAMPLE BUDGET

LABOR	<b>\$1,000</b>
CABINETS	<b>\$3,000</b>
APPLIANCES	<b>\$2,500</b>
COUNTERTOPS	<b>\$1,000</b>
FLOORS	<b>\$1,000</b>
FIXTURES <i>(faucet, sink, lighting)</i>	<b>\$1,000</b>
OTHER <i>(paint, accessories, etc.)</i>	<b>\$500</b>
TOTAL	<b>\$10,000</b>

## Where to Start

Major home centers, including Home Depot, Ikea, and Lowe's, provide free or affordable design assistance. If possible, work with a staffer certified by the National Kitchen & Bath Association (NKBA) or the American Society of Interior Designers (ASID). Home centers employ in-house installers. Or you can find your own certified contractor through the directory of the National Association of the Remodeling Industry, at [nari.org](http://nari.org).

## What's Trending

Our tests have turned up new products that look much pricier than they are and perform extremely well—perfect for this budget. For example, porcelain-tile planks that look remarkably like wood, right down to their textured grain. They're waterproof and have color that goes all the way through, so chipping isn't a big concern. Lumber Liquidators' Avella Brazilian Cherry 10039367 topped our latest tests, and at \$3.60 per square foot, it's about half the cost of many solid hardwood products.

## Appliances and Accents

You can get a top-rated refrigerator, range, and dishwasher all for about \$2,500, even in unifying stainless steel. And our tests have found that faucets costing as little as \$60 have top-notch valves and tough finishes with lifetime warranties. Many stainless steel sinks costing less than \$200 proved to be as durable as models costing twice as much.

Lighting fixtures have come down in price, which is welcome news for budget remodelers. "Lighting can make a space feel incredibly good," says Lauren Levant, a certified kitchen designer in Pittsburgh. "So it's a great way to fool people into thinking you spent more on the kitchen than you actually did."

## Cabinet Decisions

Stock cabinets start about \$70 per linear foot and come in limited sizes and basic finishes. Laminate units tend to be the least expensive, followed by stained and painted. The Shaker style, with its clean, simple lines, delivers elegance in a cost-effective cabinet. Avoid units made of particleboard and constructed with staples and flimsy hardware. Instead, look for cabinets with solid wood frames surrounding a solid wood or plywood panel.

Stretch the budget by incorporating open shelving, either mounted on brackets or with hidden anchors for a floating effect. "Besides saving on cabinet costs, open shelving can also make a small kitchen look larger and roomier," says Patricia Davis Brown, a certified kitchen designer in Vero Beach, Fla.

## Counters and Floors

For countertops, laminate is affordable and exceptionally resistant to heat and staining. High-definition laminate from brands like Formica and Wilsonart also do a better job at resembling natural materials, such as wood and stone. Formica's retro patterns, including a collection from the celebrity designer Jonathan Adler, inject a bit of fun into a functional material. Vinyl flooring continues to improve as well; it's now available in patterns that look convincingly like wood and natural stone. What's more, many vinyl floors fended off wear, scratches, discoloration from sunlight, and stains in our tough tests.

## Tips From the Pros

Entry-level products and materials always work best in a neutral color palette. "Consider going for the clean, livable look, with white cabinets and subway tile, and a countertop in gray or beige tones," says Suzy Opalinski, a project specialist for Lowe's in Orlando, Fla.

1. Capital Lighting Fixture Company mini pendant 4643BB-138 (not rated), \$98.
2. Frigidaire Gallery FGFE3035RF SCORE: 86, \$870.
3. Pergo Max Premier Heathered Oak 672976 (Lowe's) laminate flooring SCORE: 76, \$2.50 per square foot.
4. Kenmore 69313 SCORE: 80, \$800.
5. Bella Dots Collection 12-cup coffee maker SCORE: 65, \$35.
6. KitchenAid KDTE104ESS SCORE: 75, \$600.
7. Merillat Masterpiece Capri Square (not rated), \$233 per linear foot. (Other lines start at \$150 per linear foot.)
8. Delta Trinsic single-handle pull-out faucet in chrome (not rated), \$295.



Scan any page in this section using the Blippar app to see our kitchen appliance buying guides (see page 7 for details).



1



2



3



8



**Smart Splurge**

A bold backsplash can elevate the look of any kitchen. Going from the standard 4-inch backsplash to a 3x6 subway tile with an accent row in glass mosaic will add a touch of elegance to the space for about \$1,000 installed.



4



7



6



5



### Smart Splurge

Spending a few thousand dollars on a range hood will greatly improve the ventilation in your kitchen while boosting the overall look. A built-in microwave, either in a cabinet or island, takes the place of an over-the-range unit.





## The Major Makeover

# \$25k TO \$50k

### SAMPLE BUDGET

LABOR	<b>\$11,000</b>
CABINETS	<b>\$9,000</b>
APPLIANCES	<b>\$8,000</b>
COUNTERTOPS	<b>\$4,000</b>
BACKSPLASH	<b>\$500</b>
FLOORS	<b>\$2,000</b>
FIXTURES <i>(faucet sink, lighting)</i>	<b>\$3,000</b>
DESIGN FEES	<b>\$2,000</b>
OTHER <i>(small appliances, paint, etc.)</i>	<b>\$500</b>
TOTAL	<b>\$40,000</b>

THOUGH THERE ARE DO-IT-YOURSELFERS who spend \$25,000 on a kitchen, most people working in this price range use professional installers. In the National Kitchen & Bath Association's annual survey, about half of all kitchen projects completed last year cost \$20,000 to \$50,000, which makes this a sweet spot and means you'll have plenty of materials and appliances to choose from.

### Where to Start

At this price range, you can afford the guidance and expertise of a certified kitchen designer, whose fees will be about 5 percent of the budget. Find one through the websites of the National Kitchen & Bath Association or the American Society of Interior Designers. Shop at dedicated kitchen and bath showrooms, which have a more curated range of products and offer more handholding than mass-market home centers. Ferguson, for instance, has 270 retail outlets nationwide.

### What's Trending

The secondhand market for kitchen materials no longer means second-rate. Green Demolitions in Fairfield, N.J., for example, salvages about 600 kitchens per year from luxury homes, high-rises, showrooms, and more, and ships them to clients all over the U.S. "It's not for everybody," says its president and co-founder, Steve Feldman. "But if you're into the thrill of the hunt and you can be patient and flexible with your design, it's a way to get a kitchen that might be worth \$100,000 for as little as \$25,000." Check out [greendemolitions.com](http://greendemolitions.com) for

more information. You may also have luck at salvage shops in your area.

### Appliances and Accents

There's a market for secondhand appliances, but we recommend buying new to take advantage of the latest features, including ones that let you achieve a luxury look for less. For example, we're seeing more freestanding refrigerators in the \$2,000 to \$3,000 range with paneling that can match your cabinets and create an integrated look. That's a feature previously available only on built-in models costing several times more. Slide-in ranges also deliver a commercial-grade look for thousands less. And spending an extra \$100 or so on a double-bucket undermount sink makes hand-washing dishes easier, as will an upgrade to a pull-out faucet with an integrated sprayer.

### Cabinet Decisions

You can upgrade to semi-custom units from \$150 to \$250 per linear square foot. They come in more sizes, meaning they will fit your space more precisely, and offer a wider array of storage options, such as tiered drawers and pullout spice racks.

### Counters and Floors

Consider quartz for the countertops, an engineered stone that can be made to look just like marble, granite, and other natural materials. Because it's nonporous, it doesn't require the upkeep of other stone surfaces. Engineered wood flooring can provide the look, feel, and durability of solid wood but at a more affordable price.

"In an older kitchen, the flooring is always worn," says Karl Champley, a master builder in Los Angeles. "Installing a new wood floor in a finish that matches the rest of the home creates tremendous bang for the buck."

### Tips From the Pros

"Consider removing a nonstructural interior wall, because it won't add a lot to the cost and can have a huge impact on the circulation and overall aesthetics," says Patricia Davis Brown, a designer who is based in Vero Beach, Fla. You may also want to think about relocating electric appliances, because running wires is relatively inexpensive and won't make much of a dent in the budget.

1. KitchenAid Classic K45SS[WH] SCORE: 78, \$250.
2. Feiss Waveform pendant lamp (not rated), \$388.50.
3. LG LPXS30866D four-door refrigerator SCORE: 82, \$3,100.
4. GE PS920SFSS slide-in electric range SCORE: 83, \$1,800.
5. Bosch Ascenta SHX3AR7[5]UC SCORE: 81, \$700.
6. Hansgrohe Metris 2-Spray HighArc pull-out kitchen faucet (not rated), \$600.



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### ***Smart Splurge***

A showpiece range, like this one from the French manufacturer La Cornue, provides a commanding focal point. We haven't tested the range so we can't say how it performs. It costs \$9,500—but it's hard to put a value on its prestige.



6

## The Sky's the Limit

**\$75k**  
TO  
**\$125k**

WHEN YOU SPEND this much on a renovation, you're moving into "super kitchen" territory. Those are highly personalized, multipurpose spaces that stretch the boundaries of traditional kitchens, with entertainment areas (complete with TVs), beverage centers, and homework stations.

### SAMPLE BUDGET

LABOR	<b>\$40,000</b>
CABINETS	<b>\$19,000</b>
APPLIANCES	<b>\$15,000</b>
COUNTERTOPS	<b>\$5,000</b>
BACKSPLASH	<b>\$1,000</b>
FLOORS	<b>\$3,000</b>
FIXTURES (faucet, sink, lighting)	<b>\$7,000</b>
DESIGN FEES	<b>\$5,000</b>
OTHER (windows, ventilation, etc.)	<b>\$5,000</b>
TOTAL	<b>\$100,000</b>

### Where to Start

Your designer or architect will probably take you to a high-end showroom such as Waterworks, where single light fixtures run into the thousands, or the relative newcomer Pirch, where many appliances are hooked up, allowing you to try them under the guidance of trained chefs.

### What's Trending

Wall ovens, ranges, coffee makers, and even crockpots can now connect to the internet. The Samsung Family Hub refrigerator has a WiFi-ready 21.5-inch LCD screen so you can watch TV, order groceries, manage your family calendar, and more. It's a novel feature, but our testers found it hard to hook up and frustrating to use. Focus instead on technology that delivers true value, such as automated light controls that let you switch from different modes with the flip of a switch, say, from full brightness during meal prep to low-level postprandial mood lighting.

### Appliances and Accents

An entire suite of commercial appliances might not be possible even on this budget, but it's worth splurging on a built-in refrigerator for aesthetics alone. Maintain a coordinated look by choosing one with an integrated panel that matches your cabinets. "Faux pro" ranges actually perform better than true commercial-grade models in our tests and cost less than half as much, so choose one of the slide-in models we recommend for mid-priced renovations (page 49). You can have your pick of popular farmhouse sinks and tricked-out faucets, including no-touch versions that turn on and off with the wave of a hand, as well as built-in coffee makers, wine chillers, and more.

### Cabinet Decisions

Custom cabinets start about \$500 per linear foot, are built to the exact dimensions

of a space, and have solid wood doors and drawers and catalyzed finishes for added durability. Look for built-in lighting and storage options such as a pop-up shelf for your hefty stand mixer.

### Counters and Floors

Exotic stone countertops help personalize a kitchen because no two slabs look alike. "I might even recommend a creamy marble, since this type of client can afford to have it maintained," says Jeri Norris, a certified kitchen designer based in Indianapolis. High-end quartz is another option. Check out Silestone's Lusso from its Influencer series or Caesarstone's new faux concrete patterns.

Solid hardwood is the preferred flooring in luxury kitchens, especially in open-plan homes, where it helps unify the spaces. Lighter species like maple and white oak create an airy feel; darker species like walnut and cherry offer more elegance. Lumber Liquidators' Casa De Colour select pewter maple, at \$4.20 per square foot, did well in our tests.

### Tips From the Pros

In large kitchens, it's especially important to pay attention to the "work triangle," which connects the refrigerator, range, and sink, ensuring efficient traffic flow. An island with a cooktop or additional sink can create another work zone and help pull the floor plan together.

Exercise restraint with appliances and accents. Drew McGukin, an interior designer in New York City, likens an overstuffed kitchen to a woman wearing one too many accessories.

"I'll often tell clients they need to remove one element from the design—maybe an appliance they'll never use or a superfluous light fixture," McGukin explains. "Balance and scale need major attention in a kitchen." That's sage advice at any budget.

1. Vola KV15 faucet (not rated), \$1,400. 2. Hudson Valley Lighting Lambert pendant light fixture (not rated), \$642.  
3. Miele MasterCool KF1903SF built-in refrigerator SCORE: 81, \$8,600. 4. Walker Zanger Jet Set, Starlet tile in Calacata White (not rated), \$95.70 per square foot. 5. Wolf Gourmet 4-Slice WGTR104S toaster SCORE: 74, \$400. 6. Kenmore Elite 14763 dishwasher SCORE: 82, \$1,080.  
7. KitchenAid KDRU763VSS SCORE: 74, \$7,300. 8. Blanco Cerana apron-front 30-inch sink (not rated), \$1,245-\$1,450.



# The Incredible Shrinking Kitchen

With more people making do with less space, manufacturers are rolling out new suites of stylish appliances in petite sizes. But do they work?

**SMALL IS SUDDENLY** big business. A boom in apartment construction (more units were started in 2014 than in any other year since 1989) has made the U.S. market ripe for downsized appliances that will fit sleekly into tighter kitchens.

“Small-space living shouldn’t mean settling for dorm-room appliances,” says Lou Lenzi, industrial design director at GE Appliances. The company is developing a microkitchen that packs all of the components of a full kitchen—sink, refrigerator, dishwasher, cooktop, and oven—into a 6-foot-long modular unit designed for a small home or apartment. “It will be available in a range of finishes to match your aesthetic,” Lenzi says.

The movement is global: Other mainstream brands, many of them foreign, are also pushing the microliving trend with compact appliances in sleek designs.

The German manufacturer Bosch, for example, has added the option of custom paneling to its slim 24-inch-wide refrigerator and 18-inch dishwasher. When paired with Bosch’s 24-inch-wide cooktop and wall oven, the result is a fully coordinated appliance suite that takes up less than 6 linear feet. “Compact appliances have been the standard in Europe for years,” says Dan Kenny, director of brand marketing for Bosch. “We see the trend catching fire with young professionals and empty nesters moving into urban areas.”

The Italian manufacturer Smeg, a staple in trendy kitchens, offers streamlined appliances in similar configurations, each with the brand’s signature retro styling. Fisher & Paykel, from New Zealand, also has a line of compact appliances with clean, contemporary styling.

The growing variety of attractive compact appliances is making it easier to design a diminutive kitchen with style. But because premium brands are rolling them out, be prepared to pay prices on par with top-end, full-sized models. There can also be a trade-off in terms of performance. For example, the maximum burner output on Bosch’s 24-inch gas range is 12,000 BTU, compared with the 20,000 BTU you’ll see in a top-of-the-line 36-inch unit.

Sometimes the sacrifice in functionality isn’t worth it. If you love to cook, for instance, you’ll probably find a way to fit the extra 6 inches of a standard 30-inch range with its high-powered burners and larger oven. And if you throw a lot of dinner parties, an 18-inch dishwasher, which holds about one-third less than standard units, could mean running a lot of additional loads.



This mini kitchen from Bosch—with a 24-inch-wide refrigerator, a cooktop, and a wall oven, even has room for the laundry.

# RATINGS



Samsung  
NX58H9500WS

## Ranges That Sizzle

Of the 109 ranges we bought and tested, the highest scored 89; the lowest, 23. No brand can be called out as having the most or least reliable electric range, though GE/GE Monogram is significantly more reliable than Samsung, LG, and KitchenAid. Listed below is a sampling of models in order of performance within price categories. For full Ratings, available to online subscribers, go to [ConsumerReports.org](http://ConsumerReports.org).

CR Best Buy  Recommended

● Excellent ● Very Good ○ Good ○ Fair ● Poor

Rec.	Rank	BRAND & MODEL	PRICE	SCORE	TEST RESULTS						Type	Convection Mode
					Cooktop, High	Cooktop, Low	Baking	Broiling	Oven Capacity	Self-Cleaning		

### FREESTANDING

#### ELECTRIC SMOOTHTOP RANGES

<input checked="" type="checkbox"/>	1	LG LRE3083SW	\$800	86	●	●	○	●	●	○	Smoothtop, single oven (30-inch)	●
<input checked="" type="checkbox"/>	2	Frigidaire Gallery FGEF3035RF	\$870	86	●	●	○	●	○	●	Smoothtop, single oven (30-inch)	●
<input checked="" type="checkbox"/>	3	Whirlpool WFE905C0ES	\$900	81	●	●	○	○	○	○	Smoothtop, single oven (30-inch)	●

#### GAS RANGES

<input checked="" type="checkbox"/>	1	Samsung NX58F5500SS	\$1,000	71	○	●	○	○	●	○	Gas, single oven (30-inch)	
<input checked="" type="checkbox"/>	2	Kenmore 74132	\$700	71	○	○	○	○	○	●	Gas, single oven (30-inch)	

### SLIDE-INS

#### ELECTRIC SMOOTHTOP RANGES

<input checked="" type="checkbox"/>	1	Samsung NE58F9710WS	\$1,800	85	○	●	○	●	○	●	Smoothtop, double oven (30-inch)	●
<input checked="" type="checkbox"/>	2	Samsung NE58F9500SS	\$1,640	83	●	●	○	●	○	○	Smoothtop, single oven (30-inch)	●
<input checked="" type="checkbox"/>	3	GE PS920SFSS	\$1,800	83	●	●	○	○	●	●	Smoothtop, single oven (30-inch)	●

#### GAS RANGES

<input checked="" type="checkbox"/>	1	Samsung NX58H9500WS	\$2,000	77	○	●	○	○	○	○	Gas, single oven (30-inch)	●
<input checked="" type="checkbox"/>	2	GE PGS920SEFSS	\$2,550	73	○	●	○	○	○	○	Gas, single oven (30-inch)	●

### PRO-STYLE

#### 30-INCH-WIDE RANGES

<input checked="" type="checkbox"/>	1	KitchenAid KDRS407VSS	\$4,140	72	○	●	○	○	○	○	Pro-style, dual-fuel (30-inch)	●
	2	Wolf DF304	\$6,400	68	○	○	○	○	○	○	Pro-style, dual-fuel (30-inch)	●

#### 36-INCH-WIDE RANGES

<input checked="" type="checkbox"/>	1	KitchenAid KDRU763VSS	\$7,300	74	○	●	○	○	○	○	Pro-style, dual-fuel (36-inch)	●
<input checked="" type="checkbox"/>	2	GE Monogram ZDP364NDPSS	\$7,600	72	○	●	○	○	○	○	Pro-style, dual-fuel (36-inch)	●
	3	Thermador PRG366JG	\$7,300	68	○	●	○	○	○	●	Pro-style, gas (36-inch)	●

**How we test ranges.** To test high cooktop heat, we time how long the highest-powered burner takes to bring a 6-liter pot of water to a near-boil. For low cooktop heat, we note how well the lowest-powered burner keeps a low temperature (such as for melting chocolate), and how well the highest-power burner, set on low, holds tomato sauce below a boil. To test how evenly the ovens bake, we bake cakes and cookies on two oven racks. We broil a pan of burgers to find out how evenly they brown and to check high-heat searing. To evaluate oven capacity, we measure usable space. And then it gets messy: We test the oven's ability to remove a baked-on mix of cheese, eggs, pie filling, and other stuff on the self-cleaning setting. Price is approximate retail.

**BUDGET**  
\$700  
to  
\$1,000

**MID-RANGE**  
\$1,600  
to  
\$2,600

**HIGH-END**  
\$4,100  
to  
\$7,600

## RATINGS



KitchenAid  
KDTM354DSS

### Dynamite Dishwashers

Of the 167 dishwashers we bought and tested, the highest scored 85; the lowest, 34. Bosch is among the more reliable brands of dishwashers. Samsung is the most repair-prone brand of dishwasher and can't be recommended at this time. Listed below is a sampling of models in order of performance within price categories. For full Ratings, available to online subscribers, go to [ConsumerReports.org](http://ConsumerReports.org).

CR Best Buy  Recommended

● Excellent ● Very Good ○ Good ● Fair ● Poor

**BUDGET**  
\$450  
to  
\$600

Rec.	Rank	BRAND & MODEL	PRICE	SCORE	TEST RESULTS						FEATURES		
					Washing	Drying	Energy Use	Noise	Ease of Use	Cycle Time (Min.)	Stainless/SS-Look Option	Hidden Controls	Adjustable Upper Rack
	1	Kenmore 13223	\$500	77	●	●	●	○	●	160	●		●
	2	GE GDT580SSFSS	\$600	76	●	●	●	●	●	155	●	All	●
	3	KitchenAid KDTE104ESS	\$600	75	●	○	●	●	●	135	●	Some	●
	4	Kenmore 13209	\$450	75	●	●	●	○	●	155			●
	5	LG LDS5040ST	\$500	75	●	●	●	●	●	110	●		●

**MID-RANGE**  
\$700  
to  
\$1,000

<input checked="" type="checkbox"/>	1	Bosch Ascenta SHX3AR7[5]UC	\$730	81	●	●	●	●	●	95	●	All	●
	2	Bosch 500 Series SHP65T55UC	\$900	80	●	●	●	●	●	125	●	All	●
	3	Blomberg DWT55300SS	\$850	79	●	●	●	○	●	130	●	All	●
	4	Maytag MDB8979SEZ	\$850	78	●	●	●	●	●	155	●	Some	●
	5	Kenmore 13693	\$700	78	●	●	●	○	●	160	●	Some	●

**HIGH-END**  
\$1,000  
and up

<input checked="" type="checkbox"/>	1	KitchenAid KDTM354DSS	\$1,080	85	●	●	●	●	●	125	●	Some	●
<input checked="" type="checkbox"/>	2	Kenmore Elite 14833	\$1,500	82	●	○	●	●	●	115	●	Some	●
<input checked="" type="checkbox"/>	3	Kenmore Elite 14763	\$1,000	82	●	○	●	●	●	115	●	Some	●
	4	Thermador Topaz Series DWHD-640JFM	\$1,500	80	●	●	●	●	●	125	●	All	●
	5	Bosch 800 Plus Series SHX7PT55UC	\$1,300	80	●	●	●	●	●	125	●	All	●



Caesarstone  
Noble Gray, Quartz

### Countertop Choices

Of the 12 materials we tested, the highest scored 84; the lowest, 10. Our tests revealed strengths and weaknesses between materials but few differences between brands. For that reason, we rate by material. For full Ratings, available to online subscribers, go to [ConsumerReports.org](http://ConsumerReports.org).

**BUDGET**  
\$5 to \$50

Rec.	Rank	MATERIAL	PRICE RANGE	SCORE	TEST RESULTS				
					Stains	Cutting	Heat	Abrasion	Impact
		Laminate	\$5-\$25	68	●	●	●	○	●
		Solid Surfacing	\$15-\$50	53	●	●	●	●	●

**MID-RANGE**  
\$20  
to  
\$60

		Quartz (engineered stone) <sup>1</sup>	\$20-\$60	84	●	●	●	●	●
		Granite <sup>1</sup>	\$20-\$60	81	●	●	●	●	●
		Stainless Steel	\$20-\$60	39	○	●	●	●	●
		Butcher Block (varnished)	\$20-\$60	37	●	●	●	●	●
		Butcher Block (oil finish)	\$20-\$60	24	●	●	●	●	●
		Bamboo (beeswax/mineral-oil finish)	\$20-\$60	10	●	●	●	○	●

**HIGH-END**  
\$25  
and up

		Recycled Glass (penetrating sealer) <sup>2</sup>	\$25-\$100	69	○	●	●	●	●
		Ultracompact (Dekton) <sup>3</sup>	\$50-\$100	63	●	●	●	●	●
		Soapstone (mineral oil finish)	\$20-\$70	46	○	●	●	●	●
		Limestone	\$25-\$75	27	●	●	●	●	●
		Marble	\$25-\$75	14	○	●	●	●	●

<sup>1</sup> Prices for some select slabs may reach high-end levels. <sup>2</sup> Unlike other brands, Cosentino's Eco line of recycled counters developed a thin crack during our heat tests and was excluded from the Ratings. The other recycled glass products tested were 3 centimeters thick. <sup>3</sup> Cosentino's Dekton was tested. In our impact tests, pieces of the edges chipped off, and the Dekton cracked into two pieces on samples that were the manufacturer recommended thickness of 2 centimeters.



## RATINGS



GE Café  
CYE22USHSS

### The Coolest Refrigerators

Of the 285 refrigerators we bought and tested, the highest scored 87; the lowest, 29. Electrolux and Frigidaire are the most repair-prone brands of bottom-freezers with icemakers. Whirlpool and KitchenAid are among the more repair-prone brands. KitchenAid is the most repair-prone brand of side-by-sides with icemakers. Listed below is a sampling of models in order of performance. For full Ratings, available to online subscribers, go to [ConsumerReports.org](http://ConsumerReports.org).

CR Best Buy  Recommended

● Excellent ● Very Good ○ Good ● Fair ● Poor

Rec.	Rank	BRAND & MODEL	PRICE	SCORE	TEST RESULTS				FEATURES			
					Temperature Performance	Energy Efficiency	Noise	Ease of Use	Claimed Capacity (Cu. Ft.)	Total Usable Capacity (Cu. Ft.)	Water Dispenser	Energy Cost/ Yr. (\$)

#### TOP-FREEZERS

<input checked="" type="checkbox"/>	1	LG LTCS20220S	\$950	67	●	●	●	●	20.2	40	No	16.7	66x30x33
<input checked="" type="checkbox"/>	2	Frigidaire Gallery FGHT1846QF	\$900	64	●	●	●	●	18.0	45	No	14.4	67x30x30
<input checked="" type="checkbox"/>	3	GE GTE15CTHRW	\$540	64	●	●	○	●	14.6	40	No	11.6	62x28x30

#### BOTTOM-FREEZER

<input checked="" type="checkbox"/>	1	Kenmore 69313	\$800	80	●	●	●	●	18.5	13.4	No	44	66x30x31
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#### SIDE-BY-SIDE

<input checked="" type="checkbox"/>	1	Frigidaire Gallery FGHS2631PF	\$1,000	71	●	●	○	●	26.0	17.4	Ext.	63	70x36x34
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#### FRENCH-DOORS

<input checked="" type="checkbox"/>	1	Samsung RF28HDEDPWW	\$2,100	87	●	●	●	●	27.8	20.0	Ext.	70	69x36x34
<input checked="" type="checkbox"/>	2	GE Café CYE22USHSS	\$2,970	80	●	●	●	●	22.2	15.1	Ext.	66	70x36x30
<input checked="" type="checkbox"/>	3	GE Profile PWE23KMDES	\$2,600	84	●	●	●	●	23.1	16.0	Int.	47	69x36x29
<input checked="" type="checkbox"/>	4	LG LPXS30866D	\$3,100	82	●	●	●	○	29.8	21.7	Ext.	74	69x36x37

#### SIDE-BY-SIDE

<input checked="" type="checkbox"/>	5	Samsung RH29H9000SR	\$2,200	72	●	●	●	●	28.5	21.2	Ext.	73	69x36x36
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#### BUILT-INS

<input checked="" type="checkbox"/>	1	Miele MasterCool KF1903SF	\$8,600	81	●	●	●	●	18.7	14.1	No	56	83x36x25
<input checked="" type="checkbox"/>	2	KitchenAid KBFN502ESS	\$9,000	80	●	●	●	○	24.2	17.0	No	58	83x42x26
<input checked="" type="checkbox"/>	3	Jenn-Air JF42NXFXDE	\$8,500	80	●	●	●	○	24.2	17.0	No	58	83x42x26
<input checked="" type="checkbox"/>	4	Viking VCSB5423SS	\$10,670	70	●	●	●	●	27.5	18.3	No	76	83x42x26

#### FRENCH-DOOR

<input checked="" type="checkbox"/>	5	LG LPCS34886C	\$5,400	84	●	●	●	○	33.5	24.4	No	73	73x36x37
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#### BUDGET

\$500  
to  
\$1,000

#### MID-RANGE

\$2,000  
to  
\$3,000

#### HIGH-END

\$5,000  
to  
\$10,000

**How we test dishwashers.** In our washing tests, we slather 10 place settings with a variety of foods and let the dishes sit in the machine overnight. (The machine is loaded according to instructions in the owner's manual.) Then we run a normal cycle using the high-temperature option if available. Noise is judged by a listening panel during fill, wash, and drain. We measure energy use, most of which goes to heating the water, as well as how much water is used per cycle. And we manipulate the adjustable tines and racks to see how easy they are to use.

**How we test countertops.** We apply 20 common foods and household products and let them stand overnight before cleaning. Not everybody uses a cutting board, so we slice and chop on countertops using weighted chef's and serrated knives. We put a pot filled with oil heated to 400° F to see how the material resists damage and discoloration. We run a weighted sanding block back and forth 25 times over each material to test its resistance to abrasion. And because pots drop and other accidents happen, we drop blunt and pointed weights from up to 3½ feet to test resistance to impact. Scoring is based on the drop height at which damage is first seen. Price is the typical range per square foot, including installation.

**How we test refrigerators.** To measure temperature performance, we see how uniformly models maintain 37° F in the fridge and 0° F in the freezer, even as we crank up the heat in our labs. Storage is also key, so we measure usable capacity, excluding nooks that manufacturers include but we don't think are usable. We also measure height, width, and depth (HxWxD), rounded to the nearest inch. Noise is measured with the compressor running. Energy cost is how much the unit will cost to run per year based on average electricity prices.



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# IS THERE A CURE FOR HIGH DRUG PRICES?

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A SPECIAL  
INVESTIGATION  
FROM  
CONSUMER  
REPORTS  
BEST BUY DRUGS

**LAST AUGUST** Martin Shkreli, then the CEO of Turing Pharmaceuticals, did something considered so reprehensible that he was dubbed “the most hated man in America.” What caused the outrage? He increased the price of a little-known but important drug called Daraprim from \$13.50 to \$750 per pill. Daraprim is the best treatment for toxoplasmosis, an infection to which those with HIV/AIDs or cancer are susceptible.

The story went viral, and calls came from around the country, including from U.S. Rep. Elijah Cummings, D-Md., to stop drug entrepreneurs from gouging consumers for pure profit. Overnight, Shkreli became the poster child of pharmaceutical greed. And yet raising the price of a drug by that much is 100 percent legal.

What makes the case of Daraprim so important is that it brought a serious—and growing—healthcare problem out into the open: America spends a tremendous amount of money for prescription drugs—\$424 billion last year alone before discounts, according to a new report by IMS Institute for Healthcare Informatics, a firm that tracks the pharmaceutical industry. And that number is rising fast with no sign of slowing down. What’s more, there are few regulations that shield consumers from the Martin Shkrelis of the world, or from drug companies that decide to raise prices to astronomical levels.

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*The cost of prescription drugs for tens of millions of Americans rose \$2 billion last year, and all signs point to a continued rise. At stake is nothing less than the ability of Americans to afford the medicines they need. Can we stop the madness?*



## The Rampant Rise of Drug Prices

The practice of raising drug prices on new—and old—medications is common and widespread. From a nationally representative telephone poll conducted by Consumer Reports Best Buy Drugs in March, we learned that three in 10 Americans (about 32 million people) were hit with price hikes within the previous 12 months, costing them an average of \$63 more for a drug they routinely take—and a few paid \$500 or more. We also found price increases on everything from longtime generics used to treat common conditions such as diabetes, high blood pressure, and high cholesterol to new treatments for diseases such as hepatitis C. Our poll shows that when people were hit with higher drug costs, they were more likely to take unhealthy measures such as skipping doctor appointments, tests, or procedures, or not filling their prescriptions or taking them as directed.

Take the case of Marlene Condon, a nature writer living in Crozet, Va. Two years ago she paid about \$32 for 180 tablets of hydroxychloroquine (a generic available for almost two decades) to treat her rheumatoid arthritis. When the drug's price more than doubled to \$75, Condon says she was annoyed but paid the bill anyway. Then, last September, the price of her drug skyrocketed, costing her \$500 out of pocket. Condon panicked and did what thousands of Americans do under those circumstances: She stopped taking the drug. Her arthritis pain grew much worse. Walking and doing simple household chores such as washing the dishes became almost impossible.

### The Forces of Profit

Our analysis suggests that high prices for generic and brand-name drugs stem in part from a battle over profit between mammoth industries—big pharma and insurance companies—with consumers caught in the middle. On the one hand, pharmaceutical companies blame insurance companies for passing along high costs to consumers. And insurance companies point to very high-priced drugs for which there are few or no alternatives,

#### THE PROBLEM

## 2 Old Drugs Combine to Become a Single Costly 'New' Drug

In 2013 Susan Umbaugh, 71, of Rogers, Ark., received a free sample of a drug called Treximet for migraine pain. The drug worked well, so Umbaugh got a three-month supply (27 pills) for \$92; her insurance covered the remaining \$679. In less than a year, when she went to refill the same prescription, she was charged \$827 and her insurer had to pay \$1,053. Now she can't afford to refill her prescription as often, so she's using less and hopes it will last all year. "After that, I don't know [what I'll do] since it's so expensive."

#### THE REASON

GlaxoSmithKline created the "new" drug, Treximet, by combining two older generic drugs—sumatriptan, the generic of Imitrex; and naproxen, the generic of Aleve—into one pill. In 2014 the company sold Treximet to Pernix Therapeutics, which more than doubled its price.

#### THE FIX

There's no generic of Treximet, but its two main ingredients are available as generics with similar dosing. We found naproxen 500 mg for \$4 at Walmart and a three-month supply of various doses of sumatriptan for less than \$45 at HealthWarehouse.com. Umbaugh could save as much as \$790 for a three-month supply.

which ultimately affects how much insurance coverage people receive and how much they must pay out of their pockets.

"Even as more patients have health insurance coverage, many more are facing high pharmacy deductibles and rising out-of-pocket costs, and other barriers to care, putting their ability to stay on needed therapy at risk," says Holly Campbell, a representative at PhRMA, an industry association that represents pharmaceutical manufacturers.

"If there's one treatment and there's no alternative and no competition, then that's where the challenge is," says Matt Eyles, executive vice president of policy and regulatory affairs at America's Health Insurance Plans (AHIP), a national trade organization for the insurance industry.

The first step in attempting to correct prices for the consumer good is to understand and acknowledge how we got to this moment. Here, a closer look at the reasons drug costs are ballooning:

#### REASON 1

### DRUG COMPANIES CAN CHARGE WHATEVER PRICE THEY WANT

Nothing protected Condon from the price increases she experienced. That's because for Medicare and commercial health plans, no government body—including the Federal Trade Commission, the Food and Drug Administration, and the Centers for Medicare & Medicaid Services—has rules or laws that dictate or restrict the price a pharmaceutical company can set for a drug. And in most cases, there's nothing that restricts how much a company can raise that price. Here's an example: Last year, on the same day that Valeant Pharmaceuticals purchased the rights to lifesaving heart drug Isuprel (isoproterenol) and blood pressure medication Nitropress (nitroprusside), the company jacked up the prices. A single dose of Isuprel rose from \$180 to \$1,472, and Nitropress went from \$215 to \$1,346. The company also purchased Cuprimine (penicillamine)—a drug used to treat Wilson's disease, a rare genetic disorder—and upped its price from \$8.88 to \$262 per

capsule. In all three cases, the drugs had no generic equivalents available, so Valeant was able to corner the market with a built-in base of customers.

“Valeant raised the price of these drugs after an analysis of their actual value,” says company representative Laurie Little.

These huge increases have drawn congressional attention because the U.S. government is the largest purchaser of drugs in the country for programs including Medicare and Medicaid, as well as for veterans and the military. Spending more money on drugs because of price increases can mean more taxpayer dollars are used than originally budgeted—something Congress must manage. Last fall, Sens. Susan Collins, R-Maine, and Claire McCaskill, D-Mo., launched a large-scale investigation into sudden and aggressive price increases by four drugmakers, including Turing and Valeant, requesting that the companies turn over documentation to justify the hikes. And earlier this year, Rep. Cummings held a similar congressional hearing, releasing reams of internal memos to the public that detailed the profit goals that companies like Turing were trying to reach by setting

the price hikes.

Stephen Lederer, a spokesman for Turing, said the company’s pricing for Daprim “reflected its clinical value.” He notes that the company also funded access programs so that a person’s insurance co-pays would amount to \$10 and provided the drug free to certain disadvantaged patients.

Price manipulations aren’t limited to small pharmaceutical firms: Major firms raked in an additional \$25.6 billion (gross) in 2015 simply by raising prices on their brand-name drugs, according to a recent report by the IMS. The firm estimates that figure to grow to \$155 billion over the next five years.

How do drug companies explain high prices and price hikes? Says Campbell on behalf of PhRMA: “There are many factors that go into a price of a medicine.” Those include the drug’s “clinical merits”—how well it works, Campbell notes, and whether it reduces other healthcare costs, for example, such as reducing the need for surgery or other types of medical care.

But other considerations may factor into how a drug’s value is determined. For example, in the U.K., a centralized advisory

board calculates the value of a medication by taking into account a drug’s efficacy, safety, and total benefits to the healthcare system and to society at large. In the U.S., no such central advisory board exists; we effectively leave it up to industry to make that determination instead.

PhRMA’s Campbell adds that the price a drug company sets also takes into account expenses involved in research and development. Plus, “revenue from commercially successful medicines is reinvested in research for the next generation of treatments.” She points to data from a recent PhRMA survey of member companies that found that companies invested \$58.8 billion on research and development in 2015, up 10.3 percent from the prior year.

But American taxpayers already shoulder a substantial burden of those costs. About 38 percent of all basic science research is paid for with tax money through federal and state governments, according to a 2015 study published in the *Journal of the American Medical Association*.

Moreover, drug companies may spend up to twice as much or more on marketing and promoting their products—including advertising—as they do on research and development. That’s according to a new analysis published in the *Annals of Internal Medicine* in March 2016. Says Wayne Riley, M.D., immediate past president of the American College of Physicians (ACP), one of the largest physician groups in the U.S. and the organization that did the review: “Pharmaceutical companies may price drugs at will, and in truth, it’s not clear what that price is based on.”

In fact, it would seem that the spending drug companies need to recoup with higher prices is at least partly due to how much is spent on direct-to-consumer advertising. Our review of the 2015 annual reports of 10 of the world’s largest drug companies revealed that all spent more on marketing and administration costs



Go to [ConsumerReports.org/drugprices](https://www.ConsumerReports.org/drugprices) to see more in-depth coverage and to learn more about what you can do to get a better price on your medications.

than research and development. Ideally, a drug company will spend a substantial portion of its revenue in R&D seeking new discoveries—finding new medical treatments and cures. We found that drug company behemoths Johnson & Johnson and Pfizer spent about 13 percent and 16 percent on R&D, respectively. At the same time, both companies spent about 30 percent of revenue on selling, marketing, and administrative expenses.

The drug industry doesn't play by the same rules as any other market, where exorbitant prices dissuade customers, says Kevin Riggs, M.D., a researcher at the Johns Hopkins University, where he focuses on healthcare costs. "A drug company can increase the price of a product many times over, and people will still buy it because they need it," he says. "At the end of the day, they largely charge whatever the market will bear—and with life-saving medication, that's a lot."

## REASON 2 INSURANCE COMPANIES ARE ALSO CHARGING YOU MORE

Insurance companies exist, in theory, to protect people from unexpected high costs of healthcare. You pay a monthly premium that goes into large "pool." The idea is that should you need to draw from that pool to pay for a healthcare expense, it's there for you. In the case of drugs, insurance companies often work with firms called pharmacy benefit managers, or PBMs, that further pool consumers together to negotiate large-volume discounts from drug companies. The idea is that those discounts will ultimately save you money.

The only way left for insurers to provide coverage for a drug but maintain their profit margins is to reduce how much insurance coverage—and thus protection from high prices—they offer to a consumer. That can happen in at least one of four ways: by raising your deductible; by increasing monthly premiums; by increasing your co-pay by putting drugs into more expensive "tiers"; or by making you pay "co-insurance," where you pay a percentage of the medication's

### THE PROBLEM

## No Limit on How High Drug Companies Can Raise Prices

**Sherry Ackley, 47**, of Raleigh, N.C., is allergic to bee stings. To protect her from having a reaction—blackening out or fainting, and thus potential injury from falling—her doctor told her to carry an EpiPen—a self-injectable form of epinephrine that quickly reduces severe allergy symptoms. She took the prescription for the EpiPen to a pharmacy, which quoted her a price of \$525, which she would have to pay entirely; her insurance kicks in only after she pays \$10,000 out of pocket. "I told the pharmacist I couldn't afford it." So Ackley left the prescription behind. To avoid bees, she now spends most of her time indoors, although she loves gardening.

### THE REASON

Epinephrine dates back to the early 1900s and costs pennies to make. EpiPen has a unique, patented, self-injectable syringe system. Since drug company Mylan purchased EpiPen in 2007, the price increased by about 450 percent. No generic version of EpiPen is available.

### THE FIX

A cheaper epinephrine injector called Adrenaclick is an option. It's not the same technology, nor is it administered exactly like EpiPen, but it's the same drug. We found it for \$138 at Walmart using a GoodRx coupon.

cost; usually one-third or more.

"The dramatic increase in prescription drug costs is definitely contributing to a move" to higher insurance deductibles and greater cost sharing with consumers, says Eyles from AHIP, the insurance industry trade organization.

Ten years ago, less than 10 percent of employees with health insurance were enrolled in a plan with a deductible of \$1,000 or more. Today, almost half (46 percent) of Americans have those plans, according to research by the Kaiser Family Foundation, a nonprofit organization focused on national health concerns.

Eyles says that insurers have limited leverage with drugmakers, especially when it comes to new and expensive drugs. "There's not a lot we can do other than say we won't cover it, and that's an extreme most plans want to avoid."

But that's exactly what has happened. For its 2016 formulary—the list of drugs covered—Express Scripts, the largest PBM in the U.S., dropped coverage of 80 drugs, including insulins such as Novolin and NovoLog for people with type 1 diabetes, and instead offering coverage for Humulin and Humalog. The company noted in its announcement about the change that it "only exclude[s] medications from our formulary when clinically equivalent alternatives are already covered on our formulary, and only then when those exclusions would result in significant cost savings for our clients and patients."

## REASON 3 OLD DRUGS ARE REFORMULATED AS COSTLY 'NEW' DRUGS

Reinventing old medications is a tactic called evergreening—where companies change or tweak the formula of a drug by, say, combining two older drugs to form a "new" pill. Or they create an extended-release version, or change the delivery method—for example, instead of a tablet or an injectable, the new version is inhaled. When that happens, the federal government may grant the drug company a new patent, which could be



worth up to 20 years of protection for its drug, meaning it may not have any generic drug competitors. That can translate to greater revenue for a pharmaceutical company and higher costs for the consumer.

One example is the diabetes drug insulin. The drug is almost 100 years old, and yet no generic version is available in the U.S. That's because drug companies keep changing its formulation and getting new patents for it. Thomas Woodard, 73, of Greensboro, N.C., takes a newer form of insulin called Toujeo. Instead of taking multiple daily injections, his single Toujeo injection lasts about a week. (To be sure, injecting less frequently is more convenient.) Woodard pays about \$85 per month for the drug, but there's a problem: When Woodard fills his prescription, the pharmacy and his insurance company will permit him only three vials, which don't entirely cover him for the month, and he can't afford another set of three vials. (They come in a box of three, and pharmacies can't break them up.) So he deals with it another way. "I get to the end of the month, and I just cut back on the number of units I take," Woodard says. That's not a good idea for a person with diabetes like Woodard, whose blood glucose level needs to remain fairly consistent. "Drug companies keep coming out with new insulins, which work better, but the price keeps going up," he says.

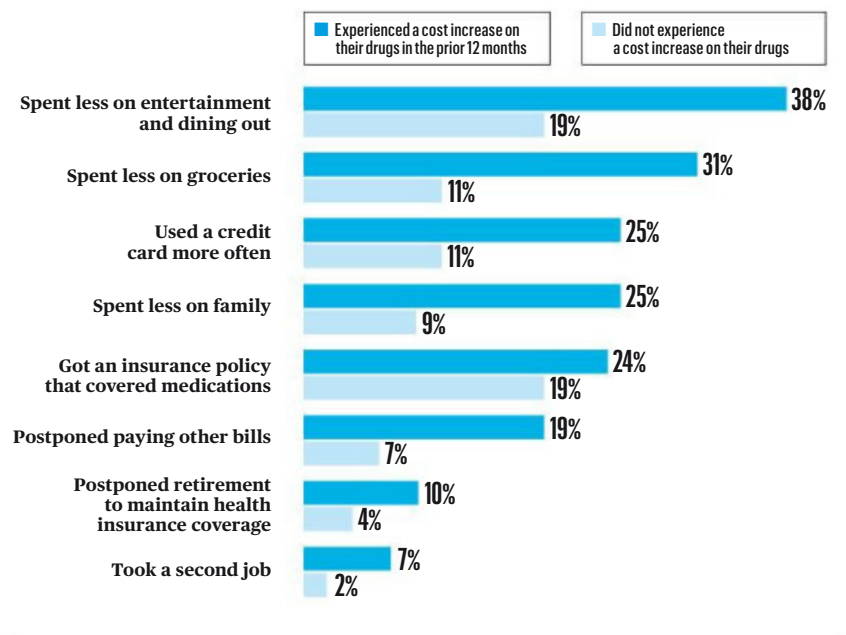
Last year 30 products that were reformulations of old drugs hit the market, according to another recent report by the IMS. Says George Slover, senior policy counsel for Consumers Union, the advocacy arm of Consumer Reports: "Evergreening keeps drug prices high for consumers because it makes it harder for lower-cost generic alternatives to enter the market and give consumers a choice."

**REASON 4**  
**GENERIC DRUG SHORTAGES CAN TRIGGER MASSIVE PRICE INCREASES**

Marlene Condon's experience with her medication's skyrocketing price is not an isolated event. Overall, prices of generics increased by almost 9 percent between

**WHEN DRUG PRICES RISE, QUALITY OF LIFE GOES DOWN**

**Consumer Reports Best Buy Drugs** conducted a nationally representative telephone poll of 4,015 adult Americans in March 2016. We found that 45 percent of people regularly take a prescription drug and on average take between four and five medications. To afford those, people made adjustments in household spending (see light blue bar below). But for the three in 10 people (29 percent) who reported that they paid more money out of pocket for at least one of their drugs over the prior 12 months, the budget crunch was more dramatic (see darker blue bar).



November 2013 and November 2014, according to a 2015 report by Elsevier, a company that supplies information on drug pricing. Some prices remained stable or even dropped. But the cost of certain drugs went up—way up—when they should have stayed the same or even gone down.

"It's those huge price hikes in everyday drugs that are having the greatest impact on consumers," says Riley of the ACP. "Patients who have been taking generics for years are suddenly finding that their medication is unaffordable." In Marlene Condon's case, it's clear what made her generic arthritis drug, hydroxychloroquine, so expensive. First, some background: At least six companies are approved by the FDA to create generic copies of the drug Condon takes, including three of the biggest in the U.S.: Mylan, Sandoz, and Teva. In theory, having so many companies that make the same drug should increase competition and bring the

price down. And that's exactly what happened for more than two decades.

But in recent years, several companies have stopped making older generic drugs such as hydroxychloroquine altogether because they said they couldn't make enough profit selling them. For example, Teva, the largest generic drugmaker, told us it stopped making the arthritis drug in 2012 because of "profitability challenges." Another company, West-Ward, ceased production of the drug in 2014.

When fewer companies make a drug, a new problem is created: If there are any hiccups with getting the drug's "raw" ingredients, it can affect the entire supply in the U.S. That's what happened with hydroxychloroquine, according to a representative from Sandoz, a pharmaceutical firm still making the drug. In 2014, a company that supplies the raw ingredient for the drug failed an FDA inspection and temporarily stopped making it—and

soon there was a shortage. The two drug-makers that were able to still get the raw material then upped the price.

Condon's arthritis drug is still expensive, and now she finds discount drug coupons online that cut the cost to less than \$300. But it's still a hardship.

What can protect us from sudden price hikes on old drugs? Apparently not the FDA. An agency spokesman, Christopher Kelly, told us the "FDA doesn't have a way to control what a company ultimately decides to charge under our present authorities." Kelly notes that the FDA pays particular attention to new generic drug applications from companies that would prevent shortages of medically necessary drugs. But "the pricing and decisions that companies make regarding pricing is an area currently outside FDA purview, and we have no enforcement capability in this area," Kelly notes.

## REASON 5 SPECIALTY DRUGS ARE COSTING ALL OF US

The rise of super-expensive, so-called specialty drugs is a new threat. Examples include the hepatitis C medications Sovaldi (\$84,000 for a 12-week course of treatment) and Harvoni (up to \$95,000) that usually target small groups of patients with less common conditions. But their astronomical prices are driving up overall costs for the healthcare system.

Currently, specialty drugs account for less than 1 percent of prescriptions in the U.S. but represent about one-third of total drug spending by consumers, employers, and the government, which all purchase medications, according to a recent report by the Congressional Research Service. And as drug companies invest heavily in those highly profitable products, the IMS

estimates that by 2020 very expensive drugs are likely to constitute an even bigger chunk of drug spending.

More than half of the 56 medications approved by the FDA in 2015 were specialty drugs. And more than 900 biologic drugs are currently under development, according to PhRMA. "We're all excited about these new technologies, but it's not at all clear how we as a society are going to pay for it," says Kevin Schulman, M.D., a professor of medicine and business administration at Duke University, where he is also director of the Center for Clinical and Genetic Economics and an associate director of the Duke Clinical Research Institute.

One thing is clear: Consumers' costs will rise. Most Medicare prescription plans require patients to pay one-third or more of the costs of specialty drugs. And consumers still face higher insurance premiums and deductibles, says Eyles of AHIP. "The

## DOCTORS AND DRUG PRICES: ENDING THE SILENCE

It seems that everyone's talking about the high costs of drugs—to friends, with family, on social media—but where those conversations are not happening often enough is at the doctor's office. Despite the clear toll of high drug costs, only 6 percent of people in our consumer poll who currently take a prescription drug found out the cost of their new prescription during a doctor's appointment, when the prescription was being written. In fact, 63 percent didn't learn the price of the drug until they were standing at the pharmacy counter.

When costs were discussed, it was patients who stepped up. In our poll, of those who did talk about costs with their doctor (25 percent), most told us that they initiated the conversation, not their doctor. And doctors report the same: Our April 2016 poll of

200 internal medicine doctors revealed that a majority said that in a typical week they discuss drug costs and affordability with just 2.6 out of every 10 patients.

"The ability to afford a medication can have a huge effect on patient compliance," says Consumer Reports' Chief Medical Adviser, Marvin M. Lipman, M.D. "If there are no less costly alternatives, the doctor should go to bat with the insurance company or the drug's manufacturer on behalf of the patient." And considering that doctors prescribed an estimated 4.4 billion drugs last year, not talking about a patient's ability to pay can be an expensive oversight.

Some doctors said in our poll that they try to help patients cut costs by prescribing generics or switching to a less expensive alternative. Yet although most doctors

said they are concerned about affordability, when it comes to treatment, they were more likely to consider efficacy and safety, suggesting reluctance on the part of doctors to engage in more substantial conversations about costs with patients.

Recognizing the financial strain on U.S. consumers, the American College of Physicians (ACP), the second-largest physicians' group in the country, last March published a position paper, taking the unusual step of wading into the pricing debate as doctors increasingly find that drug costs eclipse other health worries for patients, says ACP past-president Wayne Riley, M.D. "Pharma must be more responsive to this problem, or there will be stronger pleas from many for mandated transparency, price controls, and more regulation."

### 'CAN WE TALK?'



8 out of 10 doctors are concerned about their patients' ability to afford their treatments.



Yet in a typical week, doctors discuss drug costs with only 2.6 out of every 10 patients.

Source: Consumer Reports Best Buy Drugs online survey of 200 internal medicine doctors conducted April 8 to 18, 2016.

dramatic growth in this part of the marketplace is unsustainable,” he says. “Health plans just can’t absorb those costs indefinitely without making adjustments to premiums and benefits.”

Unfortunately, we can’t always count on competition among drugmakers to drive down prices, says Riggs from Johns Hopkins. Many specialty drugs are biologics, medications that start out as a living organism derived from animals or humans, or from microorganisms, such as bacteria or yeast. That makes them much more difficult to copy than conventional drugs.

To date, the FDA has approved only two “biosimilar” drugs, essentially versions of already existing biologics. Even as those drugs trickle onto the market, Riggs says he’s skeptical that biosimilar drugs would substantially lower prices; estimates predict price reductions between 20 and 40 percent, compared with about 80 percent for traditional generics.

### What the Government Can Do

Consumers are looking to the government to take action to control drug prices. In our CR Best Buy Drugs poll, 77 percent of people taking a medication said the government should allow more generics onto the market sooner; 74 percent want the government to pressure drug companies to charge less. Seventy-nine percent say insurers should pressure pharmaceutical companies to lower drug prices; 81 percent said consumers should do the same.

More specific steps that could help control costs include asking the government to:

- **Set a limit on out-of-pocket costs.** That would ensure that consumers have some protection against very high costs or sudden large spikes in prices. For example, last year California enacted a law so that a consumer won’t pay more than \$250 for a single prescription drug per month, or \$500 for certain high-deductible plans.
- **Approve more generic versions of common drugs.** Currently, 4,300 generic drug applications await an FDA decision. The agency says it’s working to review new applications within 15 months.
- **Allow limited importation of drugs from legitimate Canadian and European**

### THE PROBLEM

## Change in Insurance Coverage Makes Price Go Up

**Dawn Conrow’s 12-year-old daughter** in Chesapeake, Va., received a diagnosis of attention deficit hyperactivity disorder (ADHD) and has been taking Vyvanse to treat it, which works well. With the family’s insurance, the drug co-pay is \$50. But two weeks ago Dawn’s husband lost his job, and the family then lost their health insurance coverage. Without insurance, the drug costs \$293 per month.

### THE REASON

There is no generic of Vyvanse (lisdexamfetamine). Even with a manufacturer’s discount of \$60, the family cannot afford the medication. Conrow was considering taking her daughter off the drug for the summer. “If I have to choose, I’ll give her the medication during the school year,” she says.

### THE FIX

With the family’s doctor, Conrow’s daughter could consider trying an older generic, dextroamphetamine, which, according to the manufacturer’s FDA-approved drug label, is what Vyvanse becomes once it’s metabolized in the body. Dextroamphetamine may have to be taken several times per day (Vyvanse is taken just once) and may have other side effects. We found it for about \$22 per month at a Target in Chesapeake, Va., when using a coupon from GoodRx.

sources, which currently is illegal under U.S. law. The ability to import drugs from countries that have a regulatory system similar to that of the U.S. could alleviate shortages or moderate prices.

- **Use government’s existing “march-in” rights.** It works like this: If there is a problem with the public’s access to a drug (a supply shortage or an exorbitant price), and if a drug was developed using taxpayer money, the Department of Health and Human Services has the right to force the company to allow another manufacturer to make generic versions that are cheaper for the consumer.

### What Drug Companies Can Do

The most obvious help pharmaceutical makers can provide is to charge less—or at least slow the pace of price increases. There is a precedent: Rising drug prices in the 1990s led to public outcry and congressional hearings. And fearing price controls, nine drug companies, led by Merck, made a pledge to keep price increases at or below increases in inflation.

“Pharma has a right to make a profit,” says Riley of the ACP, but it also has a “moral obligation” to be transparent about its pricing because it benefits greatly from government-funded research. “The American taxpayer has been providing the venture capital to fund their products,” he says. “The public deserves to realize a return on that investment in the form of medications they can afford.” But pharmaceutical industry representatives think the focus on price alone is misguided and threatens “to squander our opportunity to usher in the next wave of medical progress,” says Campbell at PhRMA.

States are starting to fight back. This past June, Vermont passed the first legislation in the U.S. that requires drug companies to justify high costs and price increases, and to calculate the financial effect on insurance premiums with a select set of drugs. California is currently considering a similar bill.

### What Consumers Can Do

Although much of drug pricing is out of consumers’ hands, consider these tips



to find the best deals at the pharmacy:

- **Talk to your doctor about the cost of the drug she is prescribing.** For less expensive alternatives, ask about generics, which can cost up to 90 percent less. Your doctor might consider “therapeutic substitution”—a different drug that works as well. If your insurance drops or reduces coverage of a drug, your doctor can also help by appealing to your insurance company for an exception to cover the drug anyway. The administrative process for filing the exception is different with each insurance company and can take a few weeks before a decision is made.
- **Shop around and negotiate.** Consumer Reports’ secret shoppers have found that retail drug prices can vary widely, even within the same ZIP code. Our shoppers also found that asking, “Is this your lowest price?” could get you further discounts.

- **Check online.** If you pay out of pocket, check GoodRx to learn a drug’s “fair price.” You can also fill a prescription with a low-cost online pharmacy based in the U.S., such as HealthWarehouse.com. Be careful of fraudulent websites: Use only an online retailer that operates within the U.S. and displays the VIPPS symbol to show that it’s a Verified Internet Pharmacy Practice Site.
- **Choose a plan that covers the medications you need.** Compare plans during your open-enrollment period because coverage may change from year to year. Keep in mind that high-deductible plans have lower premiums but require you to pay a larger chunk of your drug costs.

**Consumer Reports is Working to Lower Your Drug Costs**

You are outraged by rising drug costs, and we’ve listened. Because we do not

accept money from the pharmaceutical industry, we can call it like it is. If a drug is too risky or a poor value, we are not afraid to say so. We want your voice to be heard by industry and government. We are advocating for a range of evidence-based solutions for lowering consumers’ out-of-pocket costs, ensuring access to essential medicines, and getting better value for our country’s prescription-drug spending—without sacrificing safety or effectiveness. See [ConsumerReports.org/drugprices](http://ConsumerReports.org/drugprices) for more.

*Funding for the preparation of this article was provided in part by the Atlantic Philanthropies and by a grant from the state Attorney General Consumer and Prescriber Education Grant Program, which is funded by the multistate settlement of consumer-fraud claims regarding the marketing of the prescription drug Neurontin (gabapentin).*

**SENIORS’ SPECIAL STRUGGLE WITH HIGH DRUG COSTS**

**With age** comes experience, wisdom ... and a lot of medication: A Consumer Reports Best Buy Drugs national telephone poll found that three-quarters of Americans 65 and older currently take an average of six prescription drugs. (By comparison, only half of people younger than 65 regularly use medication, and when they do, they take about four drugs on average.) Despite having insurance coverage such as Medicare, our poll also found that one-third of people 65 and older experienced cost hikes in the

previous 12 months and paid an average of \$53 more for at least one of their drugs—though others may have increased as well. The perfect storm of taking more medications, having them spike in price, and living on fixed incomes means that seniors especially feel the price pain, says Joe Baker, president of the Medicare Rights Center, a nonprofit organization that provides assistance to people with Medicare. “Even with Medicare, many people wind up paying substantial out-of-pocket costs,” he says. “We hear

stories about people mortgaging their house just to afford their medications.” Seniors with Medicare coverage for medication have another worry: hitting the “doughnut hole,” an odd accounting system that tallies how much money the person and the plan spend together. In 2016 a senior would hit the doughnut hole if she and her plan together spent \$3,310. Once that happens, all of her drugs switch to a complex “cost sharing” formula. She’ll pay 45 percent of a discounted price for branded drugs,

or 58 percent for generics. Her costs won’t drop back down until she’s out of the “hole,” when spending reaches \$4,850. Fortunately, the coverage gap is gradually narrowing and will be closed by 2020. Expensive drugs are another concern because Medicare usually covers them differently. In 2016, drugs to treat hepatitis C, multiple sclerosis, rheumatoid arthritis, and cancer, for example, can cost a person on Medicare \$4,000 to \$12,000 for one drug alone, according to the Kaiser Family Foundation, a group

that tracks insurance plans. Even for garden-variety drugs, research shows that coverage varies dramatically. For example, out-of-pocket costs for 10 commonly prescribed brand-name medications were up to 14 times higher with certain Medicare plans than with others. Avoid the problem by scrutinizing your plan during open enrollment, Oct. 15 to Dec. 7, 2016. Says Baker: “Look beyond the premium to see how well a plan covers your particular health conditions and medications.”

**STICKER SHOCK**

\$4,000-\$12,000

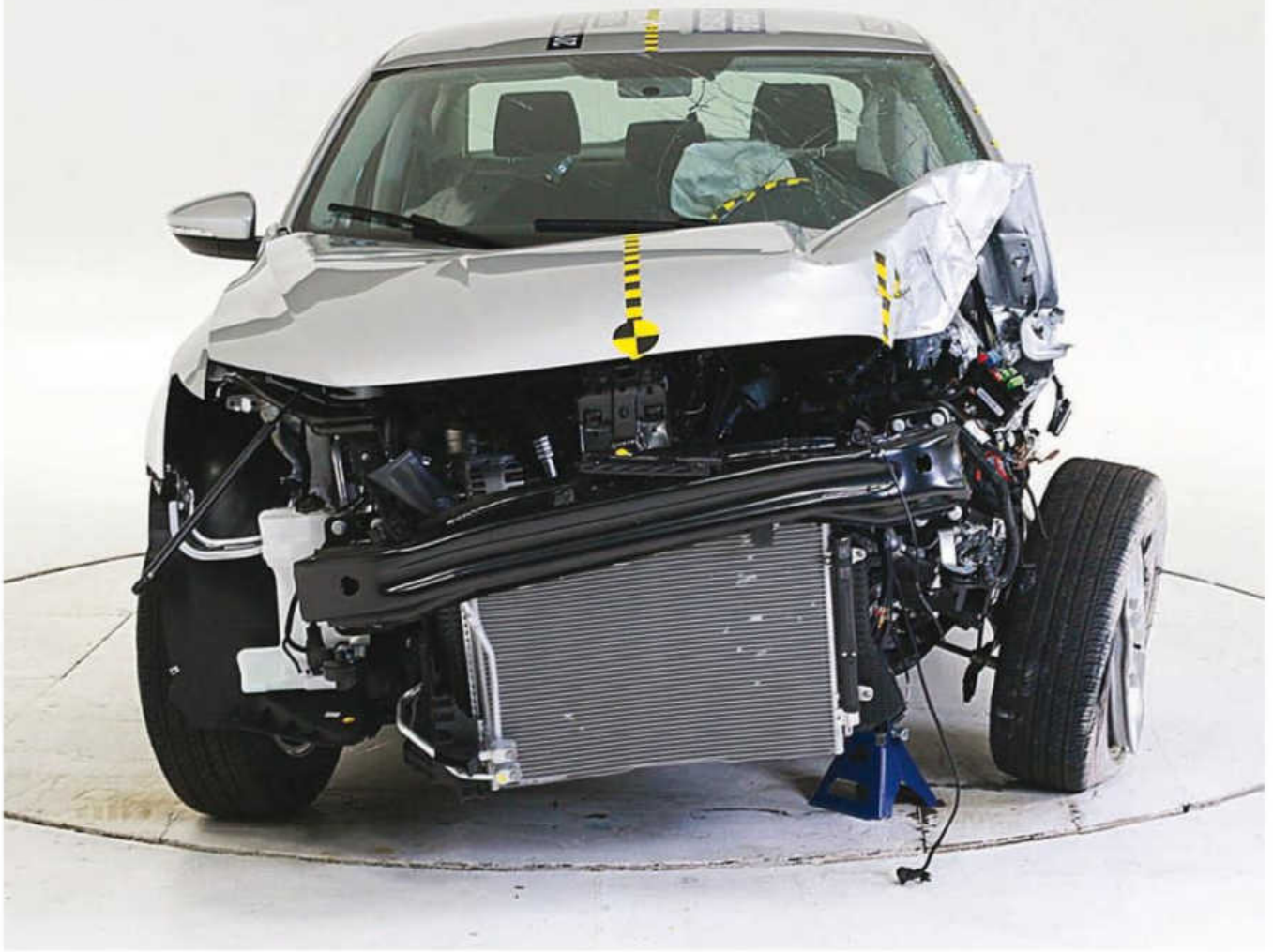
The range of prices a person on Medicare Part D would pay per year for just one drug to treat hepatitis C, multiple sclerosis, rheumatoid arthritis, or cancer.

Source: Kaiser Family Foundation.

# ROAD REPORT

## The Three Seconds That Save Lives

That's all it takes to buckle up, yet a confounding 11.5 percent of Americans put themselves at risk by not doing so. The consequences, from higher insurance rates to compromised car design, affect us all. *by Cheryl Jensen*



**MORE THAN A HALF CENTURY** of safety advances, public-relations campaigns, legislation, and advertising pitches by the Department of Transportation (DOT) and the world's automakers have persuaded 88.5 percent of Americans to fasten their seat belts when they get into their cars.

But that also means 11.5 percent of vehicle drivers and passengers still don't buckle up. That translates to almost 25 million people who ignore the public-service ads, the reminder chimes in their vehicles, the 49 state laws that make seat belt use mandatory, and the nagging from loved ones who do click into their seat belts.

At this point in the history of the seat belt, the research behind its effectiveness is so conclusive and well-socialized that few abstainers can claim ignorance, forgetfulness, or confusion. To regulators and safety advocates, the remainder of stubborn people who refuse to buckle up represents an incredibly high number of unnecessary vehicle fatalities.

The societal consequences extend beyond the tragedies themselves. The added risk from unbelted motorists raises auto-insurance rates and healthcare costs for everyone. And automakers have made numerous design compromises to their vehicles to account for unbelted occupants, resulting in cars that are less safe for the rest of us.

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SEAT BELT USE SAVED  
**12,500**  
 LIVES AND PREVENTED  
**308,000**  
 SERIOUS INJURIES IN 2010.  
 THOSE AVERTED  
 TRAGEDIES ALSO SAVED  
**\$50 billion**  
 IN MEDICAL CARE AND  
 LOST PRODUCTIVITY.

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Seat belts have been standard equipment in passenger cars since 1968. Usage was low at first, but in the 1980s states began to set mandatory seat belt laws. The DOT then pushed out a large-scale public-education campaign, which turned crash-test dummies into cultural icons.

The results were significant. After New York State passed the first seat belt law in 1984, observed belt use rose from 14 percent to 37 percent within two years. By the end of the 1990s, it was above 70 percent.

"The 'Vince and Larry' ads and high visibility enforcement campaign 'Click It or Ticket' have proven tremendously helpful in increasing seat belt use," says Mark

Rosekind, chief of the National Highway Traffic Safety Administration (NHTSA).

Rosekind's agency is America's official record-keeper when it comes to traffic accidents. According to its data, seat belts represent the single greatest public-safety innovation in automotive history. In the past 50 years, 14 safety innovations have saved 613,501 lives. They include frontal airbags, child safety seats, and side impact protection and curtain airbags. But not one has come close to seat belts, which are responsible for saving 329,715 lives—more than half the total.

Consumer Reports recently posted an online request to hear from seat belt abstainers. A majority of respondents complained of discomfort, especially shorter drivers and women with large breasts.

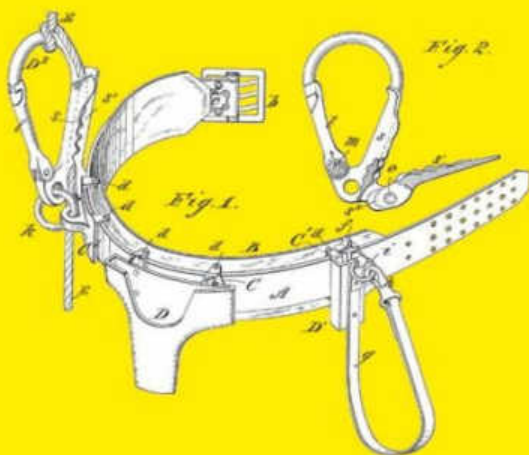
Others expressed a fierce libertarian streak, seeing seat belt laws as onerous and unjustified. Some were baby boomers who grew up not wearing belts and never got into the habit of using them. Many said they buckled up on highway trips but not when driving around town. We even heard from someone—who said he's in law enforcement—who refuses to wear a seat belt and doesn't think anyone else should have to, either.

More than a few who responded said they had been in accidents while unbelted but continued not to wear a seat belt. Some even theorized that

PHOTOS: TEENIE HARRIS ARCHIVE/CARNEGIE MUSEUM OF ART/GETTY IMAGES (1930S); CONSUMER REPORTS ARCHIVE (1949-50 AND 1956); VOLVO CARS (1959)

## SEAT BELTS THROUGH THE AGES

*The seat belt is the earliest form of occupant protection, dating back to 1885. It was designed mostly to keep people from falling out of cars.*



### ◀ 1885

The first known patent for a vehicular seat belt is given to **Edward J. Claghorn** by the U.S. Patent Office.

### 1930s

Members of the medical profession urge the **automotive industry** "to equip automobiles with seat belts as standard."

### 1903

**Gustave-Désiré Leveau** of France invents a seat belt system with adjustable diagonal chest and lap belts.





# 5 DANGEROUS LIES PEOPLE TELL THEMSELVES

*We noticed some common themes when examining responses to our online request to hear from people who don't wear seat belts. We also drew on our anecdotal findings over the years. Many of the reasons people give for not buckling up are false—and hazardous.*

**LIE**

If I do get into a crash, I'd have a better chance of survival because I'd be thrown clear of the car.

**TRUTH**

You're far more likely to be killed or seriously injured if you're ejected from your vehicle. In 2014, about 80 percent of occupants ejected from vehicles were killed. By design, seat belts are meant to keep you contained in your vehicle during a crash. According to the Michigan state police website: "The idea of being thrown from a car and gently landing in a grassy area beside the road is pure fantasy. There is a far greater chance of being thrown through the windshield, scraped along the pavement, or even crushed by your own vehicle or another one."

**LIE**

I don't need to be belted just to drive a few blocks away. When I'm on the highway I will buckle up, because most crashes occur at high speeds.

**TRUTH**

Most car crashes occur at less than 40 mph. And most fatal crashes occur within 25 miles of home. So you should wear a seat belt during even the shortest trips. Even if you're on local streets and not speeding, others around you may be. If your vehicle hits a solid object at 30 mph, unrestrained people and objects inside will continue to move forward at that speed until they hit a solid part of the car.



**LIE**

My car has airbags, so wearing a seat belt won't add protection.

**TRUTH**

Airbags are meant to work with seat belts, not to replace them. They deploy in a fraction of a second and can hit your face and body at speeds up to 200 mph. In a crash, if you're not wearing a seat belt, you could be thrown into an airbag as it inflates, which could cause severe injury or death.

**LIE**

If my car goes off the road into a river, I don't want to be trapped by my seat belt.

**TRUTH**

That happens in less than one half of 1 percent of all crashes. The possibility of being trapped by a seat belt that doesn't release is far less than being injured if you're unbelted and flung around the car.

**LIE**

I'm strong enough to brace myself against the steering wheel or dashboard in a collision.

**TRUTH**

No, you're not. The sudden deceleration of a car in a crash at just 30 mph will transform the mass of an unbelted 160-pound person into 12 tons. And you can't predict the onset of a sudden crash, which can happen in less than a second.



▲ **1949-50**

Nash automobiles are the first to offer factory-installed lap belts.

**1951**

Roger W. Griswold and Hugh DeHaven obtain a patent for a three-point belt.

**1956 ▶**

Consumer Reports finds that many cross-lap seat belts fail basic safety and durability tests.

**1955-56 ▶**

Ford and Chrysler begin to offer lap belts.



▲ **1959**

Volvos become the first cars to be fitted with three-point lap/shoulder belts.

*(continued on page 64)*

## ROAD REPORT

being ejected from the car actually saved their life.

There are always stories of people defying the odds and surviving a car crash unbelted, but the likelihood of being injured or killed as a result of being ejected is actually very high, says Jennifer Stockburger, director of operations for Consumer Reports' Auto Test Center.

"The odds are not in your favor," Stockburger says. "You'll only hear survival stories from survivors, but unfortunately not from the many whose lives could have been saved by buckling up."

Statistically speaking, you're twice as likely to die in a crash if you're not wearing a lap/shoulder seat belt. Your chances are even worse if you're in a light truck or SUV.

According to the Centers for Disease Control and Prevention, women are more likely to buckle up than men, and drivers in urban and suburban areas are more likely to wear their seat belts than those in rural areas.

### Backseat Bad News

Data on rear-seat passengers are the most distressing. Adult seat belt use in 2014 was only 73 percent in rear seats, down from 78 percent the previous year. Worse still, rear seat belt use among younger passengers (ages 16 to 24) fell significantly, to 68 percent from 78 percent, a possible reason motor-vehicle crashes are

the leading cause of death among teens. NHTSA data show that more than half of teenagers who died in crashes weren't wearing a seat belt.

Rear-seat passengers are three times more likely to die in a crash if they're unbelted, according to a recent study done for the Governors Highway Safety Association. It noted that 883 unrestrained rear-seat passengers ages 8 and older were killed in crashes, but that buckling up might have saved 436 of them.

The study also revealed a macabre fact: A driver wearing a seat belt is more than twice as likely to be killed in a frontal crash when an unbelted person in the backseat is hurled forward.

"By being completely unrestrained in a vehicle, the child or the adult is free to fly around inside the vehicle and strike basically anything," says Dennis Durbin, M.D., director of the Office of Clinical and Translational Research at The Children's Hospital of Philadelphia. "Anything" can include hard surfaces such as the side pillars, glass—or other occupants.

An unrestrained passenger in the backseat might not only become a projectile that hits the driver in the back of the head; he or she can also be propelled forward with enough force to compress the driver against the steering wheel or windshield, Durbin says.

"I suspect that when people choose

not to wear their seat belt, particularly in the backseat," he says, "they don't realize that they are putting others in the vehicle at risk."

### Society Picks Up the Tab

In 2010 NHTSA studied the social and economic costs of motor-vehicle crashes. The conclusion? A direct cost to society of \$242 billion that year. When pain and suffering were included, it came to \$836 billion.

Seat belts saved 12,500 lives and prevented 308,000 serious injuries that year. As a result, seat belts saved \$50 billion in medical care costs and the lost productivity and other costs they would entail. But crashes involving unbelted passengers cost society more than \$10 billion.

Those of us not directly involved in crashes pay for more than 75 percent of all crash-related costs, direct and indirect. Those costs are primarily related to higher insurance premiums, taxes, travel delays, and excess fuel consumption because of traffic, according to NHTSA's study.

Also, about one-third of what insurers pay out in auto-insurance claims is for medical bills. Therefore, about one-third of what consumers pay for liability coverage is affected by medical costs, says Robert Passmore, assistant vice president of the Property Casualty Insurers Association of America.

"If you are using your seat belt, you are

PHOTOS: BETTMANN/GETTY IMAGES (1965); GETTY IMAGES (1968); THE DENVER POST/GETTY IMAGES (1994); FORD MOTOR COMPANY (2015)

1965 ▶

Ralph Nader's "Unsafe at Any Speed," an indictment of the auto industry for its lack of safety standards, is published.



◀ 1968

The new **National Highway Safety Bureau** (later to become NHTSA) requires passenger cars to have lap belts for each designated seat. Shoulder belts are required if crash tests prove they're necessary.

1972

The **federal government** requires shoulder belts in the outboard front seats of all passenger cars. At that time, shoulder belts could still be separate or integrated with lap belts. Also, **NHTSA's safety standard** for a 30-mph frontal barrier crash test requires manual seat belts to remain intact.

1973

Because of low use of the separate shoulder belts and lap belts, **integrated three-point lap/shoulder belts** are required in the outboard front seats of passenger cars.

1976

Observed seat belt use is measured at **19 percent**.

### SEAT BELT USE OVER TIME

The National Highway Traffic Safety Administration (NHTSA) started tracking seat belt use in 1976. Observed usage actually dropped through the 1970s, but then made significant gains in the 1980s and 90s after states began adopting mandatory seat belt laws.

19%

1980

much less likely to sustain an injury in the first place, and the severity of that injury is going to be less," Passmore says. "Generally speaking, the less severe the injuries, the lower medical costs will be. But among the worst things that can happen to you is to go through the windshield or be thrown outside the car. That's where you hear of the most catastrophic injuries occurring."

The more severe an injury, the higher the related costs. According to NHTSA's 2010 report, the cost of an accident in which a passenger is critically injured is estimated at more than \$3.3 million in terms of medical bills, property damage, and lost wages. For a fatality, that number climbs to more than \$5.3 million.

### How Seat Belts Affect Car Design

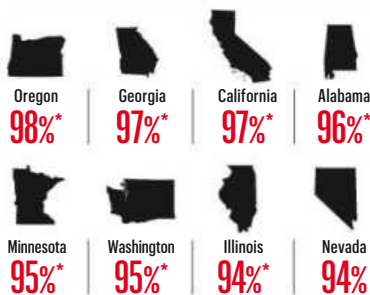
Auto-industry experts consulted by Consumer Reports say that modern cars are designed to protect unbelted occupants in a crash, but that those protections result in compromises that can actually reduce safety and comfort. One result is that automotive engineers essentially have to supersize airbags.

"The belted occupant is subject to a much larger, more powerful airbag than necessary," says Chris Caruso, a former GM crash-safety engineer and now a consultant with Automotive Safety Consulting in Las Vegas. He spent more than 20 years designing three generations of airbag safety

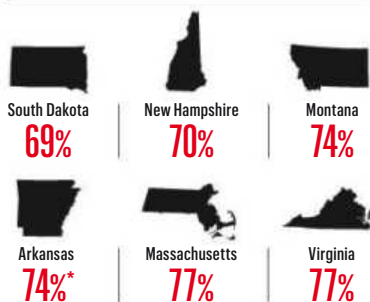
ILLUSTRATIONS: ISTOCK

## BEST & WORST SEAT BELT USAGE BY STATE

### BEST



### WORST



\*A state with primary enforcement laws.  
Source: Y.Y. Chen and the National Highway Traffic Safety Administration.

systems, leading to the airbags that are in vehicles today.

Modern cars take into account how passengers are seated, their weight, and whether or not they're belted, then adjust the force at which airbags deploy accordingly. But there are design and engineering limitations for how much the airbag can be depowered. Also, airbags could be made smaller if federal standards didn't require them to protect unbelted occupants, Caruso says.

"The larger size and volume of the driver airbag to compensate for unbelted occupants results in an airbag that is larger than the steering wheel rim diameter," Caruso explains. That can result in injuries to the driver's hands, wrists, and forearms in a crash.

In Europe, where a higher percentage of people use seat belts, regulators don't require automakers to build airbags to protect unbelted passengers, so airbags are smaller.

If the U.S. adopted similar regulations, "belted occupants actually could be much safer, although that would mean unbelted occupants would be at a much greater risk," Caruso says.

Sam Campbell, the head of U.S. safety engineering at BMW, says that the requirement to accommodate unbelted passengers makes a difference in cabin design as well.

BMW's vehicles, especially its smaller

## 1984

New York sets the first mandatory seat belt law. Within three years, 28 more states will follow.



## 1989

Cars are required to have **three-point lap/shoulder belts** in the outboard rear seats.

## 1994

The overall observed seat belt use rate reaches **58 percent**.

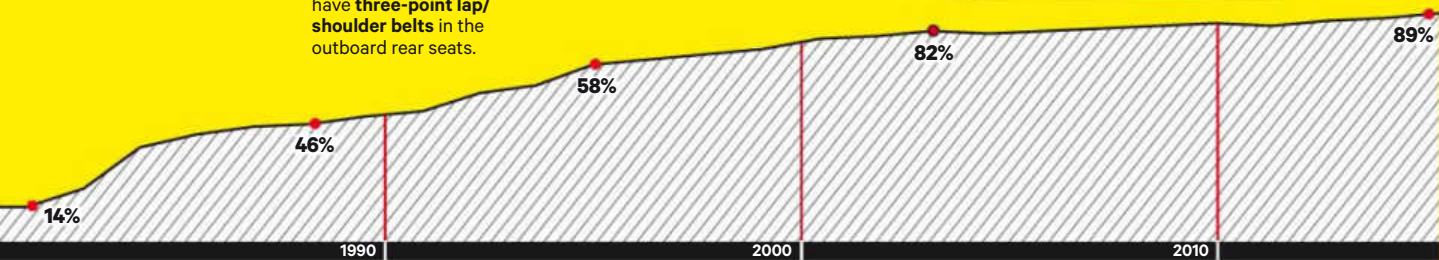
## 2005

All rear seats, including the middle one, are required to have three-point lap/shoulder belts in **passenger cars and light trucks**.



## 2015

The observed seat belt use rate increases to **88.5 percent**.





cars, could be roomier and lighter, reducing emissions and fuel consumption, Campbell says. But to protect the unbelted, the instrument panel has to be closer to occupants to keep them from being hurtled as far and fast toward the airbags. “If they were belted, you would have a little bit more design freedom to make the instrument panel a little bit slimmer.”

And without that requirement, BMW could do away with part of the instrument panel and knee airbags, Campbell says.

But those airbags are designed to protect the lower extremities of unbelted occupants, who could otherwise be thrown into the footwell. Smaller, less expensive airbags could also mean a reduction in the cost of a vehicle or the addition of features, Campbell adds.

### Rolling Out New Tech

Technology exists that could get more people to buckle up and keep them safer when they do. The new Chevrolet Malibu, for instance, can mute the vehicle’s stereo when people in the front aren’t wearing their seat belts.

Adding seat belt reminder chimes for rear seats like those for up front could also get more people to buckle up. That’s why Congress, at the urging of Consumer Reports and other safety advocates, asked the Department of Transportation to propose a rule for rear seat belt reminder systems by October 2014. The agency still hasn’t done so.

Other technologies are also available to further improve seat belt performance. For years, front seat belts have had pre-crash pretensioners and load limiters to help reduce chest injuries for belted occupants in a collision, yet those systems are rare to nonexistent for rear seat belts. And some Fords and Mercedes-Benzes offer seat belts with a small airbag in the shoulder portion for rear seat occupants.

Getting drivers—and their passengers—to buckle up “is one of the great success stories in our society, about how we can change behavior,” says Rosekind of NHTSA. But more work needs to be done.

“We are at 88.5 percent,” he says. “We need to get all the way to 100.”

## WHAT WILL IT TAKE TO GET TO 100 PERCENT?

*Between 1975 and 2014, seat belts saved 330,507 lives in car crashes. But if everyone had been wearing belts, an additional 378,983 lives could have been saved, according to a study by the Department of Transportation.*

One way to promote seat belt use is to enact the strictest seat belt laws. But states may have lost the will to do so, says a nonprofit group that supports those laws.

Last year saw the fewest number of states enact highway safety laws since 2004. That’s when the group, Advocates for Highway & Auto Safety (AHAS), began rating states on progress in meeting 15 lifesaving laws regarding motorcycle helmets, texting, and more.

By its most recent tally, AHAS found that 34 states and the District of Columbia have “primary enforcement” laws for the front seats. Of those, only 18 states and the District have laws for front and rear seats.

New Hampshire is the only state that doesn’t require adults to wear seat belts. Sherman Packard, a New Hampshire state representative when the last attempt was made to pass a mandatory seat belt law, in 2009, currently serves on the House transportation committee.

He says he wears a seat belt “most of the time, sometimes not.”

He was opposed to a mandatory law then and still is. If wearing seat belts is the law, he asks, “Where do we stop?”

“Do I think seat belts are a good thing? Absolutely,” Packard says. “But I believe it’s an issue of personal freedom and personal responsibility, and I don’t believe the government should be telling us that we have to put on a safety device. It should be up to the individual.”

All other states have some form of seat belt law, but the way they’re written makes a difference.

In states with the strictest primary enforcement laws, the police are allowed to stop and ticket people if they’re unbelted. With “secondary enforcement,” officers can give tickets to people not wearing seat belts only when they stop vehicles for another violation.

In 2015, states with primary enforcement seat belt laws had a 91.2 percent use rate; in states with secondary enforcement, it was 78.6 percent.

The difference in the usage rates directly translates to lives saved. A study by the Insurance Institute for Highway Safety

found that in states that strengthened their laws from secondary to primary enforcement, driver death rates declined by about 7 percent.

### PRIMARY FOR ALL

Consumer Reports believes that every state should have primary seat belt enforcement for the front and rear seats. “Stronger seat belt laws mean fewer deaths on our roads,” says William Wallace, a policy analyst for Consumers Union, the policy and advocacy arm of Consumer Reports. “It’s time for all states to step up and pass these proven measures, which can keep a crash from becoming a tragedy.”

Advocates for Highway & Auto Safety publishes regular “Roadmap Reports” comparing seat belt laws in all 50 states, at [saferoads.org](http://saferoads.org).

“The U.S. still has the lowest rate of seat belt usage in the developed world,” says Chris Caruso from Automotive Safety Consulting. “Imagine how many more lives could be saved if 100 percent of occupants used their seat belts 100 percent of the time.”

# High Marks for Hybrids

Even in an era of two-buck gasoline, the redesigned Toyota Prius and Chevrolet Volt have a lot to recommend them—to consumers and to the planet. Plus four other green cars to consider.



## HYBRIDS

### Toyota Prius



**OVERALL SCORE**  
**76**

**FIFTY-TWO MPG.** That's a drop-the-mic moment.

That overall fuel economy milestone we recorded in our tests for the redesigned 2016 Prius hybrid is a phenomenal achievement, especially viewed against the previous generation's already impressive 44 mpg overall. In fact, it gets the most miles per gallon of any vehicle we've ever tested.

At a glance the Prius' powertrain appears largely carry-over—which makes you wonder how fuel economy could jump so quickly. It turns out that an extensive collection of small

engineering changes conspires to make the 1.8-liter, four-cylinder engine exceptionally miserly. Also helping is a more efficient transmission, a higher-tech lithium battery, and a more aerodynamic lozenge body shape. One mpg here, another mpg there ... pretty soon you're talking a huge improvement.

The results don't lie: The new Prius achieved 43 mpg in our city cycle, vs. the old car's 32 mpg; highway fuel economy improved from 55 to 59 mpg.

The lighter, more compact electric drive system combines with the gas engine to produce 121 hp. Despite the modest output, it has sufficient oomph around town, and the hybrid's initial hit of battery power moves the car off the line smoothly until the gas engine kicks in. Still, the car is far from quick—it loafed to 60 mph in 10.3 seconds. That matters when you're merging on the freeway.

The new Prius has a more sophisticated rear suspension that helps smooth out the car's ride as well as sharpen the handling. There's now less body roll in corners, with an alert nature that was missing from

the sloppy last generation. The brakes are less grabby than in most hybrids, making it easier to modulate smooth stops.

The car's sleeker, lower stance requires you to duck your head to get in. And the lack of lumbar adjustment in the chintzy front seats—along with minimal door and center armrest padding in lower trim levels—compromises comfort on longer trips. The rear seat has enough space for most adults, but it is lower and less comfortable than before.

The interior sees a major upgrade in terms of fit and finish. Gone is the plasticky trim that encased the dashboard; instead, the new Prius brings soft-touch surfaces, flashes of chrome, and a high-tech look. But oddities remain: The instrument panel is in the middle of the dashboard, the gearshift stays akin to a joystick, and the bizarre white plastic center console looks like a Stormtrooper's bedpan.

We think the Prius Three trim level we purchased with the optional Advanced Technology package hits the sweet spot. It brings forward-collision

warning with automatic emergency braking, lane-departure alert with steering assist, automatic high beams, and adaptive cruise control.

Without question, this is the best Prius ever. Its fuel economy is stunning. It's more pleasant to drive, and the interior feels more commensurate with its price. Even with gas at two bucks a gallon, the Prius' strong reliability and owner satisfaction set the new standard for green transportation.

#### Toyota Prius Three

Price as Tested \$27,323

**OVERALL SCORE 76**

Predicted Reliability ●

Owner Satisfaction ●

Front Crash Prevention Optional

**ROAD-TEST SCORE 75**

Overall MPG 52

Acceleration, 0-60 MPH, Sec. 10.3

Dry Braking, 60-0 MPH, Ft. 135

Avoidance Maneuver, MPH 53.5

Routine Handling ●

Ride/Noise ●●

Seat Comfort, Front/Rear ○/○

Controls ●

Luggage, Suitcase and Duffels 2+2



HYBRIDS

# Chevrolet Volt

**OVERALL SCORE**  
**69**

**CHEVROLET'S** battery-powered hatchback returns, with a revised version of its supplemental gas engine that eliminates the dreaded "range anxiety" of electric vehicles.

When the Volt's battery is full, it operates just like an electric car for about



**Chevrolet Volt LT**

Price as Tested \$35,890

**OVERALL SCORE 69**

Predicted Reliability ○\*  
Owner Satisfaction ●  
Front Crash Prevention Optional

**ROAD-TEST SCORE 70**

Overall MPG 105 [1] /38 [2]  
Acceleration, 0-60 MPH, Sec. 8.0  
Dry Braking, 60-0 MPH, Ft. 133  
Avoidance Maneuver, MPH 52.5  
Routine Handling ○  
Ride/Noise ●/●  
Seat Comfort, Front/Rear ○/○  
Controls ●  
Luggage, Suitcase and Duffels 2+0

50 miles—covering most commutes on a single charge.

In electric mode, it leaves the line silently but robustly, thanks to the motor's instant wallop of torque. The Volt sprinted to 60 mph in a zippy 8 seconds.

When the battery runs low, the Volt transitions to a 1.5-liter gasoline engine—whereupon it uses both gas and electric power to propel the car. We measured 38 mpg overall in that hybrid mode, providing a total of 390 miles of range.

For those who just want to run on juice, it takes 4½ hours to fill the battery with a 240-volt connector or 13 hours with a standard 120-volt plug.

The Volt initially feels responsive through curves but is reluctant to change direction at speed. At least the suspension smooths out bumpy pavement.

The quiet interior allows you to hear the complaints of your passengers. The front seats have a short cushion under your butt and thighs, the footwells are cramped, and there's no lumbar adjustment.

The awkward and tight rear seat makes fitting three across impossible. Plus the car's low stance and narrow door openings require a gymnast's flexibility. Forget installing a child seat in the rear-center position.

For infotainment, a new center console with conventional knobs mates to GM's reliable, intuitive MyLink system.

The Volt is improved—yet still flawed. If you drive locally and charge often, the Volt's economics make sense.

## 4 RECOMMENDED ALTERNATIVES

Scores in context: Recommended models rated well in the Overall Score, which factors in road-test score, predicted reliability, owner satisfaction, crash-test results, and availability of front crash prevention features such as forward collision warning and automatic braking. For full Ratings, available to online subscribers, check out [ConsumerReports.org/cars](http://ConsumerReports.org/cars)

Recommended

● Better ← → Worse ●



**Toyota Camry Hybrid XLE**

Price as Tested \$29,052

**OVERALL SCORE 84**

Predicted Reliability ●  
Owner Satisfaction ●  
Front Crash Prevention Optional

**ROAD-TEST SCORE 87**

Overall MPG 38  
Acceleration, 0-60 MPH, Sec. 7.6  
Dry Braking, 60-0 MPH, Ft. 133  
Avoidance Maneuver, MPH 51.0  
Routine Handling ●  
Ride/Noise ○/○  
Seat Comfort, Front/Rear ●/●  
Controls ●  
Luggage, Suitcase and Duffels 3+1



**Hyundai Sonata Hybrid SE**

Price as Tested \$26,950

**OVERALL SCORE 77**

Predicted Reliability ○\*  
Owner Satisfaction ○\*  
Front Crash Prevention Optional

**ROAD-TEST SCORE 80**

Overall MPG 39  
Acceleration, 0-60 MPH, Sec. 8.2  
Dry Braking, 60-0 MPH, Ft. 140  
Avoidance Maneuver, MPH 51.0  
Routine Handling ○  
Ride/Noise ○/○  
Seat Comfort, Front/Rear ○/○  
Controls ●  
Luggage, Suitcase and Duffels 2+2



**Ford Fusion Hybrid SE**

Price as Tested \$28,290

**OVERALL SCORE 76**

Predicted Reliability ○  
Owner Satisfaction ●  
Front Crash Prevention Optional

**ROAD-TEST SCORE 80**

Overall MPG 39  
Acceleration, 0-60 MPH, Sec. 8.3  
Dry Braking, 60-0 MPH, Ft. 140  
Avoidance Maneuver, MPH 52.0  
Routine Handling ●  
Ride/Noise ○/○  
Seat Comfort, Front/Rear ○/○  
Controls ●  
Luggage, Suitcase and Duffels 2+3



**Ford C-Max Energi**

Price as Tested \$34,940

**OVERALL SCORE 69**

Predicted Reliability ○  
Owner Satisfaction ●  
Front Crash Prevention NA

**ROAD-TEST SCORE 77**

Overall MPG 94 [1] /37 [2]  
Acceleration, 0-60 MPH, Sec. 8.1  
Dry Braking, 60-0 MPH, Ft. 136  
Avoidance Maneuver, MPH 50.5  
Routine Handling ●  
Ride/Noise ○/○  
Seat Comfort, Front/Rear ○/○  
Controls ○  
Luggage, Suitcase and Duffels 1+1

\*Based on limited data. [1] Miles-per-gallon equivalent (MPGe).  
[2] Miles per gallon while running on gas engine.



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Lane also cared deeply about the work of Consumer Reports. She included a generous bequest to Consumer Reports in her estate.

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- Washing machines ..... Nov 15, 18; May 16, 56
- Wedding industry ..... Jun 16, 48
- Windshield defrosting ..... Feb 16, 13

# Ignorance Is Bliss

Sometimes you just don't want to know

## Yes, We Have No Coconuts

Apparently, no coconuts were harmed in the manufacturing of this water.

Submitted by Sarah Shea, Vista, Calif.



## A Meal That Gives Us Paws

Salmon, herring, beef ... the dinner choices were looking good ... until we got to the Kitten Formula.

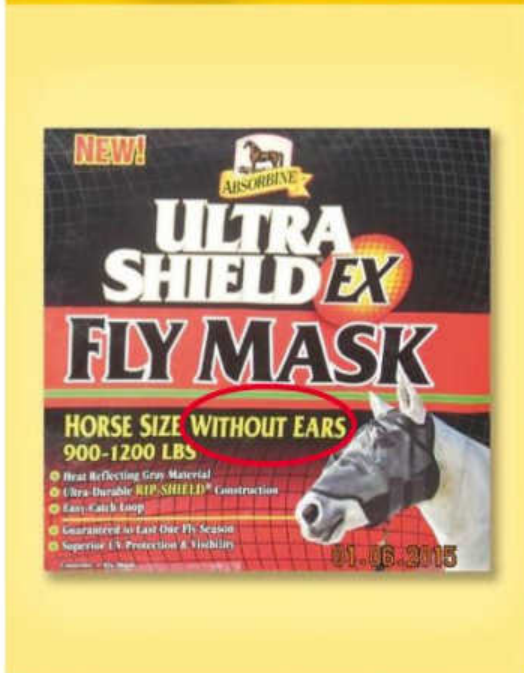
Submitted by Peter Muller, Wauwatosa, Wis.



## Who Was That Masked Fly?

This packaging begs the question: What does a horse—or a fly—with ears weigh, anyway?

Submitted by Paul Misleh, Gainesville, Fla.



## One Man's Crab Is Another Man's ...

Though the "get 1 free" offer is no doubt delightful, we think we'll pass.

Submitted by Fredrik Raab, Santa Rosa, Calif.



**SHARE** Be on the lookout for goofs and glitches like these. Share them with us—via email at [SellingIt@cro.consumer.org](mailto:SellingIt@cro.consumer.org); mail to Selling It, Consumer Reports, 101 Truman Ave., Yonkers, NY 10703; or 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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\*Between 7/1/15 and 9/30/15, the average estimated savings off MSRP presented by TrueCar Certified Dealers to users of the Build & Buy Car Buying Service, based on users who configured virtual vehicles and who TrueCar identified as purchasing a new vehicle of the same make and model listed on the certificate from Certified Dealers as of 10/31/2015, was \$2,954, including applicable vehicle specific manufacturer incentives. Your actual savings may vary based on multiple factors including the vehicle you select, region, dealer, and applicable vehicle specific manufacturer incentives which are subject to change. The Manufacturer's Suggested Retail Price ("MSRP") is determined by the manufacturer, and may not reflect the price at which vehicles are generally sold in the dealer's trade area as not all vehicles are sold at MSRP. Each dealer sets its own pricing. Your actual purchase price is negotiated between you and the dealer. Neither TrueCar nor Consumer Reports brokers, sells or leases motor vehicles. Service not available in Canada.