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Headlights improve, but base models leave drivers in the dark

ARLINGTON, Va. — Just over half of 2018 model vehicles evaluated by the Insurance Institute for Highway Safety are available with headlights that do an adequate job of lighting the road at night and limiting glare for oncoming drivers, but most good-rated headlights are optional or bundled with other features that can raise the price of the vehicle.

“Consumers shouldn’t have to buy a fully loaded vehicle to get the headlights they need to safely drive at night,” says David Aylor, manager of active safety testing at IIHS. “All new vehicles should come with good headlights.”

Since IIHS released its first headlight ratings for passenger vehicles in 2016, most manufacturers have focused on improving this key safety component. That year, only 2 of 95 headlight systems on 2016-model vehicles evaluated earned a good rating.

For the 2018 model year, the best-available headlights on 32 of 165 models evaluated earn the highest rating of good, and the best-available headlights on 58 models earn the second-highest rating of acceptable. Thirty-two models have only marginal-rated headlights, while poor-rated headlights are the only ones available for 43 models.

Good-rated headlights are needed to qualify for a 2018 *TOP SAFETY PICK+* award, and good- or acceptable-rated headlights are a requirement for *TOP SAFETY PICK*. The Institute is evaluating headlights on contenders for the 2019 awards, which will be announced in December.

A single model may have several different headlight options, and the Institute tries to test all of them as the vehicles arrive on dealer lots. In all, IIHS evaluated 424 headlight variants on 2018 models. Of these, 67 percent earn a marginal or poor rating because of inadequate visibility, excessive glare from low beams for oncoming drivers, or both.

The Genesis G90, a large luxury sedan, and the Lexus NX, a midsize luxury SUV, are the only 2018 models evaluated that come with good-rated headlights, no matter the trim line or options package. The best-available headlights on the Chevrolet Volt, Genesis G80, Mercedes-Benz E-Class and Toyota Camry are rated good, while the lowest are rated acceptable.

Fifteen other models have acceptable-rated headlights across the board.

Trim line matters

For most other vehicles, though, the difference in headlight performance among trim lines is night and day.

A case in point is the Hyundai Kona. The good-rated LED projector headlights on the high-end Kona illuminated almost 450 feet on the right side of the road in the straightaway test for low beams, but the small SUV’s poor-rated base-model



halogen projector low beams only illuminated 220 feet on the right side of the straightaway, far short of the optimal 325 feet to provide at least 5 lux illumination.

"The Kona's LED low beams should give a driver traveling straight at 65 mph enough time to identify an obstacle in the road and brake to a stop," Aylor says. "In contrast, someone with the halogen lights would need to drive 25 mph slower to have enough time to react to avoid a crash."

Good vs. poor headlights

Target distances – pedestrian 140 feet, deer 220 feet



The Kona is among the 17 vehicles with good-rated headlights that also have poor-rated variants.

The Hyundai Sonata and its twin, the Kia Optima, are in this group, too. Consumers have to pick a top trim line to get the best available headlights — on 2018 models, the Limited trims built after September 2017 for the Sonata and the SX trim with the SX Technology package for the Optima.

"In the past two years,

The Kona's LED projector low beams cast enough light for a driver to spot the pedestrian and deer straight ahead. In comparison, the halogen projector low beams don't light up enough of the road for the driver to see the targets at the same distance.

manufacturers have made changes to improve headlights, whether through better aim or the light source itself," Aylor says. "But we still see a lot of models where the base headlight is poor, so buyers really have to do their homework to make sure they are getting the best available headlights."

Aylor adds, "Unless you go for a test drive at night, IIHS ratings are the only way to know whether the vehicle you're considering will have good headlights."

Toyota and its Lexus luxury brand lead the way with the most 2018 models that only offer headlights that rate good or acceptable. Still, three Toyota models — the 4Runner, C-HR and Yaris iA — are only available with poor headlights.

The 4Runner's halogen projector headlights, for instance, rate poor because the midsize SUV's low beams don't provide enough light on gradual and sharp curves, and they also create some glare. Light from the high beams is inadequate on sharp curves.

Most headlights use one of three light sources: halogen, high-intensity discharge (HID) or LED. Each of these can be paired with either a multifaceted reflector or a projector lens. Projector headlights use one lens to spread the light out, while reflectors use shiny surfaces that bounce the light forward.

Domestic manufacturers, in general, have room for improvement, especially when it comes to pickups. Poor-rated headlights are the only ones available on Ford's popular F-150 and Chevrolet's Silverado 1500, for example. That is also the case for the Chevrolet Colorado, GMC Canyon and Nissan Frontier.

"Pickups are proportionally more likely than cars to be involved in fatal single-vehicle run-off-the-road crashes. Better headlights might help reduce crashes like these at night," Aylor says.

The Honda Ridgeline is the only pickup with available headlights that earn a good rating. Consumers will have to go for one of the top two trim lines to get them, though, paying nearly \$12,000 more than the base model, which only comes with poor-rated headlights.

Bundling advanced safety features with things like leather seats and entertainment packages is a common industry practice that can add thousands of dollars to the price of a new vehicle.

The best available headlights on the Kia Soul, for instance, earn a good rating, but consumers must buy a \$3,000 or \$6,000 options package on one of the top two trim lines to get them. This pushes the small car's price to nearly \$26,000, compared with about \$16,000 for the base model and its poor-rated headlights.

Better aim and high-beam assist

Headlights are essential crash avoidance technology. About half of all fatal crashes in the U.S. occur in the dark, and more than a quarter occur on unlit roads. Headlights have an obvious role to play in preventing nighttime crashes, but not all headlights perform their job equally. Differences in light source, headlight technology and even something as simple as how the lights are aimed all affect the amount of useful light supplied. Properly aimed low beams light up the road ahead without temporarily blinding drivers of oncoming vehicles.

Subaru is among a handful of manufacturers that made running changes to certain 2018 models to improve ratings, mostly by readjusting headlight aim. As a result, the Crosstrek moved to a good rating from poor for its best-available headlights, the Forester climbed to acceptable from marginal, and the Outback rose to good from acceptable. Other manufacturers that made similar running changes are Hyundai/Kia, Mazda, Mercedes-Benz, Volkswagen and Volvo.

In IIHS evaluations, engineers measure the reach of a vehicle's headlights as the vehicle travels straight and on curves. Each rating provides information on the amount of visibility provided by low beams and high beams and whether the glare produced for other drivers is excessive.

Low beams are weighted more heavily than high beams because they are used more often. IIHS weights the readings on the straightaway more heavily than those on the curves because crashes are more common on straight sections of road.

"Properly aimed headlights that are bright enough to illuminate the road but not enough to bother oncoming drivers can make nighttime driving less stressful — and help drivers avoid crashes," Aylor says. "Good headlights also improve the chances that attentive drivers will see pedestrians in time to slow down for them."

High-beam assist is quickly gaining traction — 45 percent of the 2018 models evaluated have the feature, up from 37 percent in 2017. High-beam assist automatically switches between high beams and low beams, depending on the presence of other vehicles. Research shows drivers rarely turn on their high beams. High-beam assist helps boost driver use of high beams. Vehicles with the feature get extra credit in IIHS headlight evaluations.

See following page for lists of headlight ratings.

For more information, go to iihs.org

The Insurance Institute for Highway Safety (IIHS) is an independent, nonprofit scientific and educational organization dedicated to reducing the losses — deaths, injuries and property damage — from motor vehicle crashes. IIHS is wholly supported by auto insurers.

All headlights on these 2018 models have good or acceptable ratings.

Vehicle	Highest rating	Lowest rating
Genesis G90	Good	Good
Lexus NX	Good	Good
Chevrolet Volt	Good	Acceptable
Genesis G80	Good	Acceptable
Mercedes-Benz E-Class	Good	Acceptable
Toyota Camry	Good	Acceptable
Acura MDX	Acceptable	Acceptable
Acura RDX	Acceptable	Acceptable
Acura RLX	Acceptable	Acceptable
Acura TLX	Acceptable	Acceptable
BMW X2	Acceptable	Acceptable
BMW X5	Acceptable	Acceptable
Jeep Cherokee	Acceptable	Acceptable
Lexus IS	Acceptable	Acceptable
Tesla Model 3	Acceptable	Acceptable
Toyota Corolla	Acceptable	Acceptable
Toyota Highlander	Acceptable	Acceptable
Toyota Prius	Acceptable	Acceptable
Toyota Prius Prime	Acceptable	Acceptable
Toyota Sienna	Acceptable	Acceptable
Volvo XC60	Acceptable	Acceptable

■ Good ■ Acceptable

All headlights on these 2018 models have poor ratings.

Audi Q3
 Buick LaCrosse
 Cadillac ATS
 Cadillac CTS
 Chevrolet Bolt
 Chevrolet Colorado (crew)
 Chevrolet Colorado (extended)
 Chevrolet Impala
 Chevrolet Malibu
 Chevrolet Silverado 1500 (crew)
 Chevrolet Silverado 1500 (extended)
 Chrysler 300
 Dodge Charger
 Dodge Grand Caravan
 Dodge Journey
 Fiat 500X
 Ford Edge
 Ford Explorer
 Ford F-150 (crew)
 Ford F-150 (extended)
 Ford Fusion
 Ford Taurus
 GMC Canyon (crew)
 GMC Canyon (extended)
 GMC Terrain
 Honda Civic (2-door)
 Honda Civic (4-door sedan)
 Honda Civic (4-door hatchback)
 Honda Fit
 Honda HR-V
 Hyundai Accent
 Infiniti QX60
 Jeep Renegade
 Kia Niro Plug-In Hybrid
 Mercedes Benz C-Class
 Mercedes-Benz CLA
 Nissan Frontier (crew)
 Nissan Frontier (extended)
 Toyota 4Runner
 Toyota C-HR
 Toyota Yaris iA
 Volkswagen Passat
 Volkswagen Tiguan Limited