Consumer Reports' Car Reliability FAQ

Answers to common questions about our extensive surveys -- November 2021

Consumer Reports receives a wide range of questions from enthusiasts and industry looking for a deeper understanding of the methodology used in the reliability section of our latest Annual Auto Surveys. Here we present answers to common questions to show the thought process and science behind the colorful ratings that decorate the car model pages and influence purchases.

How Does CR Get Its Reliability Information?
Where Is the Data From?
Consumer Reports obtains its reliability data from the Auto Surveys sent to Consumer Reports members each year. In all, we received responses on over 300,000 vehicles in our 2021 surveys, detailing 2000 to 2021 models.

How Are the Surveys Conducted?
Consumer Reports’ Survey Research Department conducts multiple Auto Surveys each year asking about reliability as well as satisfaction. For reliability, we ask members to note any problems with their vehicles that occurred in the previous 12 months. They are asked to identify problems that they considered serious (because of cost, failure, safety, or downtime). We ask them to include problems covered by warranty, but not the ones resulting from accident damage or due solely to recall. Respondents check off problems from a list of trouble areas, ranging from the engine and transmission to climate system, brakes, electrical system, and power accessories. They also tell us in writing (verbatim) specifically what their experiences were to help us understand precisely what problems they are having. (See the full list of trouble spots below.)

How Current Is the Data?
All the data was collected in the 2021 calendar year. Respondents are asked about problems their vehicle experienced within the previous 12 months.

Due to our continuous improvement process, in addition to adjusting for a vehicle’s mileage, CR is now adjusting for the vehicle owner’s age, based on our findings that older owners are more likely to report fewer problems.
Scale of Car Reliability Data

How Many Cars Do You Have Information on Overall?
CR’s Auto Questionnaire is one of the largest scientific surveys conducted in the U.S. Our 2021 surveys, which were sent to members of Consumer Reports magazine and CR.org, gave us feedback on members’ experiences with over 300,000 vehicles. This high number of responses allows CR to provide the most comprehensive reliability information available to consumers.

How Many Samples Do You Have of Each Model?
A typical vehicle has about 200 to 300 samples for each model year. When we have small sample sizes for models, we may use brand history and the reliability of similar models that may share major components to determine our predictions. Since 2015, we use an online questionnaire exclusively instead of our previous mix of electronic and paper surveys from members. That change shrunk our respondent pool, but the internet-only surveys allow us to ask more in-depth questions and solicit detailed comments about problems.

What Effect Does Having a Larger Sample Size for Some Vehicles Compared With Others Have on the Validity of the Reliability Data?
Given an appropriate sample, the more data you have, the more statistical confidence you have in your information. A larger sample will always give more reliable information than a smaller sample (assuming, of course, that the data are valid and collected from an appropriate source).

When we have small sample sizes on vehicles, we may use brand history and the reliability of similar models that may share major components. This gives us the ability to predict reliability of brand-new vehicles or ones that have been recently redesigned. We will only publish the data if we feel the sample size is sufficiently large and indicative of the model.

What Types of Problems Are Reflected? Are All Automotive Problems Included?
Respondents to our surveys are asked to identify problems they have experienced in a 12-month period in any of 17 trouble spots. We do not currently publish scores for active driver assistance systems and airbags because problem rates in these areas are low or, in the case of airbags, because of recalls.

What Do the Trouble Areas Cover?
Our Reliability History charts cover problems in any of 17 trouble areas. Here’s a look at what’s covered in each of those areas, listed in order of mechanical and more serious problems first:

ENGINE (or ELECTRIC MOTOR), MAJOR: Engine or electric motor rebuild or replacement, cylinder head, head gasket, turbocharger or supercharger, timing chain or belt.
ENGINE (or ELECTRIC MOTOR), MINOR: Accessory belts and pulleys, engine computer, engine mounts, engine knock or ping, electric motor malfunction, fuel leaks, oil leaks.

ENGINE COOLING: Radiator, cooling fan, water pump, thermostat, antifreeze leaks, overheating.

TRANSMISSION, MAJOR: Transmission rebuild or replacement, torque converter, premature clutch replacement.

TRANSMISSION, MINOR: Gear selector and linkage, transmission computer, transmission sensor or solenoid, clutch adjustment, rough shifting, slipping transmission, leaks.

DRIVE SYSTEM: Driveshaft or axle, CV joint, differential, transfer case, four-wheel-drive/all-wheel-drive components, driveline vibration, electrical failure, traction control, electronic stability control.

FUEL SYSTEM/EMISSIONS: Sensors (O₂, or oxygen, sensor), emission-control devices (includes EGR), fuel-injection system, fuel gauge/sender, fuel pump, problems filling up the tank.

ELECTRICAL (or CHARGING) SYSTEM: Alternator, starter, hybrid/electric battery replacement, hybrid/electric battery related systems, regular battery, battery cables, engine harness, coil, ignition switch, electronic ignition, spark plugs and wires failure, auto stop/start, electric vehicle charging.

CLIMATE SYSTEM: AC compressor, blower (fan) motor, condenser, evaporator, heater system, automatic climate system, electrical failure, refrigerant leakage.

SUSPENSION/STEERING: Shocks or struts, ball joints, tie rods, wheel bearings, alignment, steering linkage (includes rack and pinion), power steering (pumps and hoses, leaks), wheel balance, springs or torsion bars, bushings, electronic or air suspension.

BRAKES: Antilock system, parking brake, master cylinder, calipers, rotors, pulsation or vibration, squeaking, brake failure, premature wear, regenerative braking.

EXHAUST: Muffler, pipes, catalytic converter, exhaust manifold, heat shields, leaks.

PAINT/TRIM: Paint (fading, chalking, peeling, or cracking), loose interior or exterior trim or moldings, rust.

BODY INTEGRITY (Noises/leaks): Squeaks, rattles, wind noises, seals and/or weather stripping, air and water leaks.

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BODY HARDWARE: Windows, locks and latches, doors or sliding doors, tailgate, trunk or hatch, mirrors, seat controls (power or manual), seat belts, sunroof, convertible top, glass defect.

POWER EQUIPMENT AND ACCESSORIES: Cruise control, clock, warning lights, body control module, keyless entry, wiper motor or washer, tire pressure monitor, interior or exterior lights, horn, gauges, 12V power plug, USB port, alarm or security system, remote engine start, heated or cooled seats, heated steering wheel, headlights, automatic headlights.

IN-CAR ELECTRONICS: CD player, rear entertainment system (rear screen or DVD player), radio, speakers, in-dash GPS, display screen freezes or goes blank, phone pairing (e.g., Bluetooth), voice control commands, steering wheel controls, portable music device interface (e.g., iPod/MP3 player), backup or other camera/sensors, Android Auto/Apple CarPlay, infotainment hardware replacement and software over-the-air fixes.

Are All Problems Considered Equally Serious?
Engine major, engine cooling, transmission major, and drive system problems are more likely to take a car out of service and to be more expensive to repair than the other problem areas. Consequently, we weight these areas more heavily in our calculations of model year overall reliability verdict. Problems such as broken trim and in-car electronics have a much smaller weight. Problems in any area can be an expense and a bother, though, so we report them all in the reliability history charts.

What Do the Different CR Reliability Ratings Mean?
What Different Reliability Scores Does CR Publish?
Consumer Reports uses the data from its member surveys to compile detailed reliability histories on several hundred makes and models of cars, minivans, pickups, and sport-utility vehicles, covering the 2000 to 2021 model years. For each model that we have sufficient data on, the reliability history chart shows you whether the model has had more or fewer problems than the average model of that year in each of 17 trouble spots. That information can be a big help when inspecting and purchasing a used car. The overall reliability verdict summarizes the 17 trouble spots for each model year and compares that with the average of all vehicles in the same model year. We use these reliability scores to identify lists of reliable used cars and used cars to avoid.

For new 2022 models that are currently available, our predicted reliability rating is based on the model’s recent history, provided the model hasn’t been significantly redesigned for the current model year. Online, predicted reliability is presented in the new car model overview and ratings comparison pages, in car type pages under Reliability and Ratings in the Vehicle Overall Ratings comparison. It is also incorporated into the reliability history charts as the new-car prediction in print publications.
We also present reliability scores in more detail in our graphs. This presentation, with bar graphs where we used to show the score as a percentage difference between each model’s overall reliability and the average reliability of all models, is scored on a scale of 0 to 100 points. We group models by vehicle type (for example, midsized cars or minivans), for ease of comparing models that are direct-market competitors.

The overall reliability verdict summarizes a model’s overall reliability over all 17 trouble spots. Because problems with major engine and transmission components, the cooling system, and drive system can be serious and more expensive to repair, our calculation gives extra weight to problems in these areas. The reliability scores show whether the model had more or fewer problems overall than the average model of that year.

**What Is Predicted Reliability?**
The predicted reliability, also called new-car prediction, forecasts how well a new model that is currently on sale is likely to hold up based on its recent history. For this rating, we average a model’s overall reliability score for the newest three years, provided the vehicle did not change significantly in that time and hasn’t been redesigned for the current model year. Over the years, we have found that several years of data are a better predictor than the most recent model year alone. One or two years of data may be used if the model was redesigned within that three-year time frame or if there was insufficient data for some years.

We will make a prediction for a brand-new or redesigned model, or a model with insufficient data, based on the manufacturer’s track record, history of the previous generation, or similar models that shared the same components. Of course, this is only a prediction, and these scores are not a guarantee of the reliability of any individual car. However, buying a car that has an above-average score for predicted reliability will reduce the likelihood of having significant problems with your car.

You can find our predicted reliability for new cars in many of Consumer Reports’ auto publications, including the April Annual Auto Issue, CR monthly road tests, our special new-car publications, and in the Cars section of CR.org.

**How Do You Decide on Reliable Used Cars and Used Cars to Avoid?**
Reliable used cars are specific models with above-average overall reliability, based on the overall reliability score for that model. We also compile a best of the best list. These are models that have had consistently better-than-average reliability for multiple years, and performed well in CR’s tests when they were new. Note that just because a model is not listed as a reliable used car does not mean that it is necessarily unreliable—it may be the case that we do not have sufficient data to assess its reliability.
How Does the Reliability Rating Impact Recommendations?
CR-tested vehicles are ranked in order of their Consumer Reports Overall Score. The predicted reliability rating and the road-test score are major components. Crash safety, crash-avoidance technologies, and owner satisfaction are also factors. The vehicles with the highest Overall Score that met CR’s criteria in their respective categories are recommended.

How Accurate Is CR’s Reliability Information?
Are These Scientific Surveys?
There are generally two criteria that social scientists use to evaluate the quality of a survey: its validity and its reliability. Validity refers to whether the survey actually measures what it says it does. Reliability refers to whether the information generated by the survey could be repeated if the survey were to be conducted again.

We have strong evidence that our surveys are both valid and reliable. The questions in the surveys are designed professionally by experts in CR’s survey research department, in consultation with our automotive engineers and statisticians. Members of our survey team have advanced degrees and many years of experience in conducting all sorts of consumer surveys. The surveys use an aided response technique that leads respondents through well-defined specific items and gives each respondent the same perspective in answering the questions. The data we report tracks well with other sources of repair and reliability information available on the market. From year to year, our members’ reports of their problem experiences are fairly consistent; when there is a difference on a particular model, we can often attribute it to known issues with a particular component of a car.

Are the Surveys Based on a Representative Sample?
A sample is considered to be representative of a population if the relevant characteristics of the population are reflected in the sample. So considering the population of interest is critical in evaluating the quality of a sample. Our survey sample is drawn from the population of Consumer Reports members. While all members are invited to participate in the surveys, participation is voluntary, and there is always the possibility that those who respond are unique in some particular way. For example, members have sometimes questioned whether those who respond are those who have a complaint to make about their cars.

One reason for this is that our surveys are omnibus surveys, asking members about not only their cars but also a dozen other products, as well as major services they have used (such as insurance, cable services, cell phone plans, and airlines). Many members return surveys reporting that they had no problems at all with their cars in the previous year. This is true for all makes and models of cars. So owners with complaints about their cars are not the only ones who return the surveys.

Any survey has some sort of sampling frame that limits the people being surveyed. We choose our members as our sampling frame. On average, CR members tend to be more...
educated and affluent than the general population. With the growth of Consumer Reports online, a wider demographic range of individuals has been surveyed in recent years. However, our reliability questions do not ask respondents about their attitudes or opinions about the reliability of their cars, where one might expect different groups of individuals to have different perspectives. Instead, we ask for factual information about whether specifically defined problems occurred; these types of questions are less sensitive to the nature of the characteristics of the sample itself.

Further, our results track well with other sources of reliability information available on the market.

**Your Survey Results Do Not Match With My Experience. Are Your Surveys Wrong?**
Even in the most unreliable models, some individual car owners are lucky and experience few or no problems during the 12 months covered by the survey. For example, in one of the worst models in our recent surveys, about 60 percent of the owners reported problems in at least one trouble area over the previous 12 months; of course, this means that about 40 percent of owners reported no problems. You might be one of those lucky owners. Of course, the opposite can happen as well—even in a model that tends to be quite reliable, there is an occasional “lemon.”

**Since the Average Number of Problems Is Small for Most Models, Is Consumer Reports Overemphasizing Differences That Might Not Be Important?**
Beyond statistical significance, we believe these differences are also meaningful to car buyers. We think that car buyers should expect a new car to be entirely problem-free in its first months or years of service. While the difference between two ratings may be small, a pattern of several less-than-perfect trouble spots in a brand-new car should be cause for concern and does not bode well for a model’s long-term reliability. We have not seen many models in our survey that are entirely problem-free. The 2019 Kia Niro Electric has very few problems, with less than 1 percent of owners reporting a problem, whereas the Audi E-Tron (also an electric vehicle) has 26 percent of its owners reporting at least one problem, the highest among 2019 models. Those differences among models are important for car buyers to consider in choosing a car. We present the ratings scores for trouble spots primarily to allow consumers to compare the relative incidence of problems among models. While there are no guarantees, you can improve your odds of buying a reliable car if you choose a model that has had a lower rate of problems in the past.

**Some People Maintain Their Cars Differently From Others. How Does This Affect the Ratings?**
The biggest growing area of concern in late-model cars is the in-car electronics: infotainment, entertainment, phone pairing and navigation systems. Other problem areas include the climate system (AC compressor, condenser, heater system), and power equipment (body control module, gauges, and warning lights). Maintenance does not affect those items. Problems in those areas might more likely reflect the inherent design or quality.
How Do You Account for Mileage Differences?
Vehicles with higher mileage will most likely experience more problems than vehicles of the same age with lower mileage. We adjust our analyses to minimize differences among models due to varying mileage. Our data are mileage-standardized by dividing cars of each model into groups of high, medium, and low mileage, and employing the statistical technique of direct standardization.