



# CarMD 2018 Vehicle Health Index™

MAKE & MODEL RELIABILITY RANKINGS



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## MAKE & MODEL RELIABILITY RANKINGS



## Overview

The 2018 **CarMD® Vehicle Health Index™** Make and Model Reliability Rankings studies and ranks in-use vehicles and brands based on frequency of check engine light (CEL) problems and then separately on average cost of repairs. In this report you will find the following:

- **10 Brands With The Lowest Repair Incidents/Lowest Average Car Repair Costs**
- **10 Vehicles By Year, Make And Model With The Fewest Repair Incidents/Lowest Average Repair Costs**
- **Top Three Vehicles By Category**

This Index report summary also provides insight on the most common repairs associated with the top 10 vehicles in each category. This can be useful to vehicle owners, used car buyers, as well as repair professionals looking to increase their knowledge of trends within the industry. For those who prefer to delve deeper into the data, a full report listing the 100 best vehicles by year, make and model is available online at <https://www.carmd.com/wp/vehicle-health-index-introduction/2018-carmd-manufacturer-vehicle-rankings/>.

Published annually since 2011, the CarMD Vehicle Health Index Make and Model Reliability Rankings is the only ranking that statistically measures check engine failures and repair costs. While other industry reports often rely on subjective survey data, we base our figures on statistical analyses reported directly from model year 1996 to current vehicles on the road in the U.S. over the past year, which is more comprehensive than many first-year owner surveys and studies.

To achieve this unmatched level of accuracy, we have analyzed the vehicle data and health of more than 5.6 million in-use vehicles manufactured from 1996 to 2018 reporting check engine health between Oct. 1, 2017 and Sept. 30, 2018.



## More About CarMD

Beginning in 1996, the U.S. government mandated that On-Board Diagnostics (OBD2) be included on all foreign and domestic cars, light trucks, vans and SUVs driven in the U.S. This system provides vital health and safety information for roughly 80 percent of a vehicle's system, and is installed on more than 90 percent of the vehicles in the U.S. today, including newer model hybrids and diesels. The system triggers the check engine light when a problem is found; alerting drivers and repair technicians to an issue that may affect emissions output, fuel economy, drivability and cost of ownership. CarMD has been compiling a robust database of information from in-use vehicles from a range of sources that tap into this OBD2 data. Recommended repairs are validated by CarMD's nationwide network of Automotive Service Excellence (ASE)-certified technicians.



### Current And Archived Indices Are Available

Please visit <http://www.carmd.com/wp/vehicle-health-index-introduction/list-of-indices/>



## Top 3 Brands with Lowest Average Repair Cost



**mazda**

**\$286**



**KIA**

**\$320**



**Dodge**

**\$326**



**The 2017 Hyundai Tucson** has the lowest average car repair costs (*vehicles must meet minimum vehicle population and data requirements of 1% to qualify for CarMD's top 10 ranking*).



**The 2016 Audi Q5** is the vehicle least likely to have a check engine light on among the 9,130 different model year 1996 to 2018 vehicles analyzed by CarMD in 2018.

## Top 3 Brands Least Likely to Have a Check Engine Light On



**TOYOTA**



**ACURA**



**HYUNDAI**

## Top 10 Brands Least Likely to Have a Check Engine Light On



At least 10 percent of the cars and trucks on the road in the U.S. have a check engine light on at any given time, and a pilot test of the new [CarMD® PRO SCAN™](#) repair shop solution found that as many as 25 percent of vehicles taken to the repair shop have a check engine light on. Because it is likely that every vehicle owner will eventually have to address a check engine light, CarMD studied data from more than 5.6 million vehicles from many sources to help identify the makes least likely to need check engine repairs. To rank these makes, CarMD developed a formula that accounts for those with the lowest percentage of repair incidents per percentage of vehicle population. Based on this data, an Index frequency score is assigned. The lower the score the higher the vehicle make ranking. CarMD found the following brands were least likely to need a check engine repair over the past year:

RANK (LEAST LIKELY)	BRAND	CARMD INDEX FREQUENCY SCORE 2018*	YEAR-OVER-YEAR COMPARISON
1	<b>TOYOTA</b>	0.58	Up from no. 3
2	<b>ACURA</b>	0.59	Down from no. 1
3	<b>HYUNDAI</b>	0.64	Not listed in 2017
4	<b>HONDA</b>	0.64	Down from no. 2
5	<b>MITSUBISHI</b>	0.65	No Change
6	<b>SUBARU</b>	0.73	Up from no. 9
7	<b>BUICK</b>	0.73	Not listed in 2017
8	Mercedes	0.78	Down from no. 4
9	<b>LEXUS</b>	0.79	Up from no. 10
10	<b>NISSAN</b>	0.80	Down from no. 6

\*The lower the Index frequency score, the higher the ranking.

*(Top 10 vehicle makes by repair frequency based on model year 1996-2018 vehicles inspected between Oct. 1, 2017 and Sept. 30, 2018, and determined to have the fewest percentage of CarMD repair incidents, per vehicle population. Sources: CarMD.com Corp., with vehicle population data provided by R.L. Polk.)*



# 10 Vehicles Least Likely to Have a Check Engine Light On



Any given brand can have a mix of very reliable vehicles along with some that are inherently known to have more frequent issues. For this reason, our Index drills down to rank vehicles by year, make and model. Four Hondas, two Subarus, one Audi, one GMC, one Toyota and one Volvo comprise this list of 10 vehicles with the lowest check engine light-related repair frequency among the 9,130 different model year 1996 to 2018 vehicles on the road over the past year.

RANK	YEAR	BRAND/MAKE	MODEL	CARMD INDEX FREQUENCY SCORE 2018	MOST COMMON REPAIR WHEN THE CHECK ENGINE LIGHT COMES ON
1	2016	Audi	Q5	0.009	Replace O2 Sensor(s)
2	2017	Honda	Civic	0.009	Replace Fuel Filler Tube
3	2017	Subaru	Crosstrek	0.010	Replace EVAP Vent Filter
4	2017	Honda	CR-V	0.011	Replace O2 Sensor(s)
5	2017	Honda	HR-V	0.012	Tighten/Replace Fuel Cap
6	2017	GMC	Acadia	0.012	Tighten/Replace Fuel Cap
7	2015	Subaru	Forester	0.013	Tighten/Replace Fuel Cap
8	2017	Toyota	Sienna	0.013	Tighten/Replace Fuel Cap
9	2016	Honda	Civic	0.015	Tighten/Replace Fuel Cap
10	2016	Volvo	XC90	0.015	Replace Mass Air Flow (MAF) Sensor

\*The lower the Index frequency score, the higher the ranking.

*(Top 10 vehicle makes by repair frequency based on model year 1996-2018 vehicles inspected between Oct. 1, 2017 and Sept. 30, 2018, and determined to have the fewest percentage of CarMD repair incidents, per vehicle population. Sources: CarMD.com Corp., with vehicle population data provided by R.L. Polk.)*

# Top 10 Brands with Lowest Average Repair Cost



Of the 5.6 million vehicles analyzed by CarMD as needing repairs this past year, which brands cost their owners the least? CarMD found that the brand with the lowest average check engine-related repair cost this year was Mazda (\$286). Last year, Mazda ranked second with an average repair cost of just under \$311. Kia (\$320) moved up from third to second this year. Dodge (\$326) moved up from fifth to third. Hyundai dropped from first to fourth with an average cost of \$328 – up 6.8 percent from \$307 last year. Rounding out the top five is Chrysler, which dropped one spot. Joining this year’s list of the 10 vehicle brands with the lowest average repair costs are Honda and Toyota, debuting at no. 9 and no. 10 respectively.













RANK	BRAND	AVERAGE CHECK ENGINE LIGHT REPAIR COST	YEAR-OVER-YEAR COMPARISON (2017 RANKING/COST)	MODEL WITH THE LOWEST AVERAGE CEL REPAIR COST
1	Mazda	\$285.70	No. 2 (\$310.89)	2013 Mazda MX-5 Miata (\$81)
2	Kia	\$319.97	No. 3 (\$317.47)	2016 Kia Soul (\$70)
3	Dodge	\$326.41	No. 5 (\$340.97)	2017 Dodge Durango (\$144)
4	Hyundai	\$328.32	No. 1 (\$306.50)	2017 Hyundai Tucson (\$66)
5	Chrysler	\$329.43	No. 4 (\$336.23)	2017 Chrysler 200 (\$204)
6	Jeep	\$338.57	No. 7 (\$352.11)	2017 Jeep Wrangler (\$120)
7	Chevrolet	\$341.19	No. 8 (\$352.70)	2016 Chevrolet Traverse (\$129)
8	VW	\$357.92	No. 9 (\$361.93)	2017 VW Tiguan (\$121)
9	Honda	\$426.86	Not listed in 2017	2016 Honda CR-V (\$136)
10	Toyota	\$461.76	Not listed in 2017	2014 Toyota Prius C (\$83)

*(Top 10 vehicle manufacturers based on model year 1996-2018 vehicles inspected by CarMD's network, found to need repairs and receiving parts and labor estimates between Oct. 1, 2017 and Sept. 30, 2018.)*

# Top 10 Brands with Lowest Average Repair Cost



The vehicle brand with the lowest average repair cost for CHECK ENGINE problems in 2018? Mazda, which had an average recommended parts & labor estimate of \$286.

<b>mazda</b>	<b>#1</b>	<b>\$286</b>	
	<b>#2</b>	<b>\$320</b>	
<i><b>Dodge</b></i>	<b>#3</b>	<b>\$326</b>	
<b>HYUNDAI</b>	<b>#4</b>	<b>\$328</b>	
<b>CHRYSLER</b>	<b>#5</b>	<b>\$329</b>	
<b>Jeep</b>	<b>#6</b>	<b>\$339</b>	
<b>CHEVROLET</b>	<b>#7</b>	<b>\$341</b>	
	<b>#8</b>	<b>\$358</b>	
<b>HONDA</b>	<b>#9</b>	<b>\$427</b>	
<b>TOYOTA</b>	<b>#10</b>	<b>\$462</b>	



# Top 10 Vehicles with Lowest Average Repair Cost



When the check engine light comes on, here are the 10 vehicles with the lowest average repair cost among the 9,130 different year, make and model vehicles on the road today.

RANK	YEAR	BRAND/MAKE	MODEL	AVERAGE CHECK ENGINE LIGHT-RELATED CAR REPAIR COST
1	2017	Hyundai	Tucson	\$66.67
2	2017	Hyundai	Accent	\$69.31
3	2016	Kia	Rio	\$70.19
4	2014	Toyota	Prius C	\$82.77
5	2017	Mitsubishi	Mirage	\$84.41
6	2017	Kia	Soul	\$87.91
7	2016	Kia	Forte	\$89.51
8	2016	Hyundai	Tucson	\$91.13
9	2017	Hyundai	Santa Fe Sport	\$91.88
10	2017	Toyota	4Runner	\$106.58

*(Top 10 vehicle manufacturers based on model year 1996-2018 vehicles inspected by CarMD's network, found to need repairs and receiving parts and labor estimates between Oct. 1, 2017 and Sept. 30, 2018.)*

# Top 3 Vehicles By Category: Fewest Repair Incidents



The following is a list of the top three vehicles by category using data reported from Oct. 1, 2017 through Sept. 30, 2018, according to CarMD, which based its ranking on the vehicles with the fewest and those with the lowest cost check engine-related problems reported by or to our network:



**Compact**

- 1. 2016 Honda Civic
- 2. 2017 Honda Civic
- 3. 2017 Honda HR-V



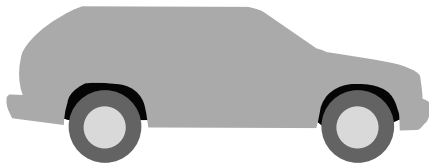
**Minivan**

- 1. 2017 Toyota Sienna
- 2. 2016 Honda Odyssey
- 3. 2016 Toyota Sienna



**Midsize**

- 1. 2017 Honda Accord
- 2. 2017 Hyundai Sonata
- 3. 2016 Ford Taurus



**Full-Sized SUV**

- 1. 2017 GMC Acadia
- 2. 2015 Subaru Forester
- 3. 2017 Ford Explorer



**Wagon / Crossover SUV**

- 1. 2017 Subaru Crosstrek
- 2. 2017 Honda CR-V
- 3. 2016 Honda CR-V



**Truck**

- 1. 2017 Ford F-150
- 2. 2017 Honda Ridgeline
- 3. 2017 Toyota Tacoma

# Top 3 Vehicles By Category: Lowest Average Repair Costs



The following is a list of the top three vehicles by category using data reported from Oct. 1, 2017 through Sept. 30, 2018, according to CarMD, which based its ranking on the vehicles with the fewest and those with the lowest cost check engine-related problems reported by or to our network:



**Compact**

- 1. 2017 Hyundai Accent (\$69)
- 2. 2016 Kia Rio (\$70)
- 3. 2017 Mitsubishi Mirage (\$84)



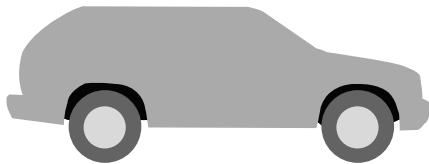
**Minivan**

- 1. 2016 Honda Odyssey (\$147)
- 2. 2014 Honda Odyssey (\$206)
- 3. 2015 Honda Odyssey (\$214)



**Midsize**

- 1. 2017 Hyundai Sonata (\$115)
- 2. 2016 Chevrolet Malibu (\$133)
- 3. 2011 Kia Optima (\$141)



**Full-Sized SUV**

- 1. 2017 Toyota 4Runner (\$107)
- 2. 2016 Buick Enclave (\$125)
- 3. 2016 Chevrolet Traverse (\$129)



**Wagon / Crossover SUV**

- 1. 2016 Honda CR-V (\$136)
- 2. 2016 Subaru Outback (\$164)
- 3. 2015 Subaru Outback (\$184)



**Truck**

- 1. 2017 RAM 2500 (\$166)
- 2. 2015 GMC Canyon (\$171)
- 3. 2015 Chevrolet Colorado (\$182)

# Index Methodology

CarMD has compiled the industry's most comprehensive database of expert repairs for check engine-related problems provided by automotive technicians and vehicle owners since 1996. Each CarMD® Vehicle Health Index™ draws from this database and CarMD's network of Automotive Service Excellence (ASE)-certified technicians who have input and validated failures and fixes into this database. Outputs are based on the input received from CarMD's customers and network.

The number of vehicles included in each Index report varies by quantity of vehicle incidents and repairs reported for each given Index report period. The Index is based on downloaded information from each vehicle's government-mandated onboard diagnostic computer, combined with uploaded repair information from CarMD's network of automotive technicians. Repair costs are based on original equipment retail MSRP. Labor rates are procured from several sources as well as the average amount of time required for each repair. Both are updated annually.

The 2018 Index statistically analyzes more than 5.6 million model year 1996 to 2018 vehicles reporting in-use repairs that apply to an estimated vehicle population of 238 million vehicles, taking place in the United States during the Oct. 1, 2017 to Sept. 30, 2018 date period. The data for the 2018 CarMD® Vehicle Health Index was pulled, analyzed and validated between Nov. 6, 2018 and Nov. 12, 2018, by CarMD's internal team.

For the 2018 Vehicle Health Index Make and Model Reliability Rankings, CarMD included model year 1996-2018 vehicles. In determining the Top 10 makes and Top vehicles per category, CarMD included all makes and models that were listed among the U.S. vehicle population, according to R.L. Polk data, and had a visit or repair need logged by a member of CarMD's professional repair technicians. The data in the Index is applicable to nearly 90 percent of the vehicles on the road, giving a unique perspective on vehicles driven and repaired in the U.S. In determining the most common repairs by manufacturer, this Index looked at the entire OBD2 vehicle population (1996-current) vehicles for each make/brand from Oct. 1, 2017 - Sept. 30, 2018. To be included in the ranking makes need to comprise at least 1 percent of the vehicle population report.

CarMD contracted with a third-party web-based project management company to program a formula that factored in the number of registered vehicles on the road for each make, model and year. A CarMD Vehicle Health Index rating was then assigned using the total number of red reports (or failures) per vehicle (or make) divided by the total number of vehicles in the population. Vehicles and makes are separately ranked based on average repair cost for vehicles needing OBD2-related repairs during the Index period.

On a daily basis, CarMD's nationwide network of thousands of factory-trained OE (original equipment) and independent automotive repair technicians recommend, confirm and upload repairs and costs by region to the CarMD database. As a result, subsequent CarMD Vehicle Health Index reports will draw from a larger sampling of expert fixes and repair costs.

## Media Contact:

**KRISTIN BROCOFF**  
CarMD.com Corp.  
M: 949.400.4899  
[KristinB@CarMD.com](mailto:KristinB@CarMD.com)