

# 2014 CarMD® VEHICLE HEALTH INDEX™









MANUFACTURER & VEHICLE RELIABILITY RANKINGS AND LISTS

CarMD.com Corporation, a leading provider of car repair data and solutions, is pleased to release its 2014 CarMD® Vehicle Health Index™ Manufacturer & Vehicle Reliability Rankings – the only Index to offer an annual ranking of manufacturers and vehicles using statistically-based “check engine”-related failures and repair costs. The rankings are based on a combined average rating of fewest “check engine”-related problems and lowest repair costs for vehicles needing repairs over the past year. This Index also ranks the top 100 vehicles overall, top vehicles by category and lists the most common repairs by make. This Index analyzed more than 40,400 reported in-use repairs that apply to an estimated 88 million Model Year 2004-2014 vehicles.

*“This CarMD Index, now in its fourth year, is the only report to offer an annual ranking of manufacturers and vehicles with the lowest combined check engine repair incidents and costs, which is very different from survey-based reliability lists,” says Doug Sobieski, chief marketing officer, CarMD. “While this Index is based on in-use vehicle repairs needed over the past year, it has proven to be a useful tool to help car and truck shoppers make informed decisions about the vehicles they are considering. This data further empowers our software as a service partners to provide information to help their clients minimize the cost of vehicle ownership.”*

## SUMMARY: TOP MANUFACTURERS

For the first time since CarMD began ranking manufacturers, Honda ranks no. 1, edging out Hyundai (no. 2). Rounding out the top five vehicle manufacturers of 2014 are no. 3 Toyota, no. 4 GM and no. 5 Ford. New to this year’s list of the 10 most reliable manufacturers are Mazda (no. 9) and BMW (no. 10), beating out Mitsubishi and Volkswagen, which dropped off the list.

RANK	MANUFACTURER	% CarMD Red Light Reports / Problems Seen	Average Repair Cost (Parts & Labor)	Overall CarMD 2014 Index Rating	Year-Over-Year Comparison
1.	HONDA	6.7%	\$388.34	1.32 (0.97)	 from no. 5
2.	HYUNDAI	2.2%	\$306.34	1.33 (0.80)	 from no. 1
3.	TOYOTA	8.7%	\$486.93	1.48 (0.86)	 from no. 2
4.	GM	19.6%	\$329.82	1.80 (0.91)	 from no. 3
5.	FORD	17.2%	\$397.48	1.84 (1.04)	 from no. 6
6.	CHRYSLER	17.2%	\$303.38	2.11 (0.96)	 from no. 4
7.	KIA	2.3%	\$365.89	2.52 (1.56)	 from no. 8
8.	NISSAN	9.8%	\$470.39	2.53 (1.09)	 from no. 7
9.	MAZDA	1.1%	\$302.92	2.64 (NR* in 2013)	New to list
10.	BMW	1.2%	\$355.08	3.00 (NR* in 2013)	New to list

The lower the Index rating, the higher reliability ranking.

*(Top 10 vehicle manufacturers based on model year 2004-2014 vehicles needing repairs between Oct. 1, 2013 and Sept. 30, 2014, and determined by the manufacturers whose vehicles had the fewest percentage of CarMD repair incidents combined with the lowest cost per repair, per number of registered vehicles on the road. Sources: CarMD.com Corp., with vehicle population data provided by R.L. Polk.)*

\*Not Rated

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## HIGHLIGHTS

For the first time since CarMD began ranking manufacturers, Honda ranks no. 1, edging out Hyundai by one one-hundredth of a point.

- Honda's Index rating score and ranking were helped with its combined lower than average repair cost and frequency per vehicle population.



**HONDA**  
RANKED No.1

Based on Fewest  
"Check Engine"  
Failures & Lowest  
Repair Costs

Half of the top-10 manufacturers experienced a drop in reliability rating, with more frequent visits to the repair shop and increased average repair costs. The other five saw improved ratings.

- The manufacturers with improved Vehicle Health Index ratings include Honda, Ford, Kia, Mazda and BMW.
- Honda had the most marked improvement moving from no. 5 to no. 1 helped by the 2012 Civic (the top-ranked compact car) and a big improvement in the reliability of its Odyssey minivans.

## TOP 10 MANUFACTURERS

RISE AND FALL

**No.1** - HONDA -  
UP FROM NO.5

**No.6** - CHRYSLER -  
DOWN FROM NO.4

**No.2** - HYUNDAI -  
DOWN FROM NO.1

**No.7** - KIA -  
UP FROM NO.8

**No.3** - TOYOTA -  
DOWN FROM NO.2

**No.8** - NISSAN -  
DOWN FROM NO.7

**No.4** - GM -  
DOWN FROM NO.3

**No.9** - MAZDA -  
NEW TO LIST

**No.5** - FORD -  
UP FROM NO.6

**No.10** - BMW -  
NEW TO LIST

Mazda had the lowest average repair cost among the top 10-ranked manufacturers (\$302.92).

The manufacturer with the highest overall repair cost was Toyota (\$486.93); however, Toyota's average repair cost did drop 10 percent from the \$540.53 reported last year.

## AVERAGE REPAIR COST

HIGHS AND LOWS



# 2014 CarMD® VEHICLE HEALTH INDEX™

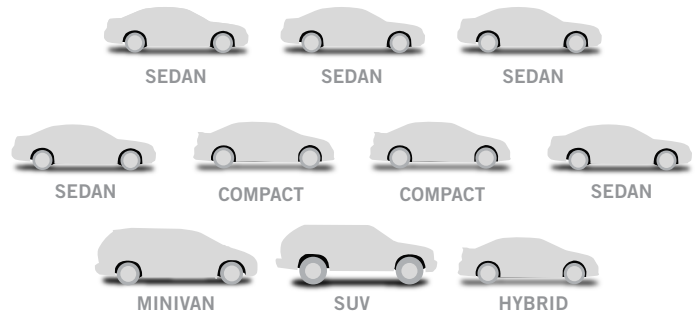
MANUFACTURER & VEHICLE RELIABILITY RANKINGS AND LISTS

## HIGHLIGHTS

### TOP 10 VEHICLE MAKES

The top 10 list of vehicles included five sedans, two compacts, one SUV, one minivan and one hybrid.

- This marks the first time either a hybrid or minivan ranks in the top 10.
- The no. 6-ranked vehicle this year is the 2011 Honda Odyssey and the no. 9-ranked vehicle is the 2010 Toyota Prius.



### TOP 100 VEHICLES BY MANUFACTURER

Ford had the most vehicles in the top 100 (24).

- Nissan dropped from having 14 vehicles in the top 100 in 2013 to four this year.
- Dodge – new to the list – has three vehicles in the top 100 including the 2009 and 2011 Caliber, and 2012 Challenger.

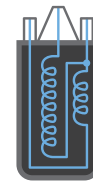
ACURA	BMW	BUICK	CHRYSLER	DODGE
3	1	2	1	3
FORD	GMC	HONDA	HYUNDAI	JEEP
24	2	13	9	3
KIA	LEXUS	MAZDA	MERCEDES	NISSAN
6	4	1	2	4
PONTIAC	SUBARU	TOYOTA	VOLVO	VW
1	1	17	1	2

Different vehicle makes tend to have unique sets of problems and common failures. The CarMD Vehicle Health Index points out common problems by manufacturer, providing a helpful resource for vehicle owners as they maintain and repair their vehicles.

### COMMON FAILURES BY MANUFACTURER



**SUBARU**  
Replace Catalytic Converter  
(19%)



**LINCOLN**  
Replace Ignition Coil  
(18%)



**MITSUBISHI**  
Replace Oxygen Sensor  
(17%)

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## SUMMARY: TOP VEHICLES

Sourcing a robust database of “check engine”-related problems and repairs of vehicles on the road today, CarMD is able to provide fact-based transparency into a wide range of vehicles, including a combination of new and used cars and trucks. CarMD provides the only Index that allows consumers to statistically analyze how vehicles age, and see real-life data on trends related to repair frequency and costs for a decade of makes and models.

Five sedans, two compacts, one SUV, one minivan and one hybrid comprise this year's top 10 list of most reliable vehicles, according to CarMD. Toyota leads the pack with four vehicles in the top 10, including the 2012 Camry (no. 1), 2011 Camry (no. 4), 2010 Prius (no. 9) and 2010 Corolla (no. 10). Honda's two top-10 vehicles include the 2012 Civic (no. 2) and the 2011 Odyssey (no.6). This is a marked improvement over Odyssey's ranking at the bottom of the list when CarMD first published its Index four years ago. Hyundai has two sedans on the top 10 list with the 2012 Sonata (no. 3) and 2013 Sonata (no. 5). Rounding out the list is Kia's 2012 Soul (no. 7) and 2012 Optima (no. 8).

### The Top 10 Most Reliable Vehicles

Rank	Year	Brand/Make	Model	Overall CarMD 2014 Index Rating
1.	2012	TOYOTA	CAMRY	0.015
2.	2012	HONDA	CIVIC	0.033
3.	2012	HYUNDAI	SONATA	0.041
4.	2011	TOYOTA	CAMRY	0.045
5.	2013	HYUNDAI	SONATA	0.052
6.	2011	HONDA	ODYSSEY	0.055
7.	2012	KIA	SOUL	0.072
8.	2012	KIA	OPTIMA	0.085
9.	2010	TOYOTA	PRIUS	0.086
10.	2010	TOYOTA	COROLLA	0.088

The lower the Index rating, the higher reliability ranking.

*(Top 10 vehicles based on Model Year 2004 -2014 vehicles that had the fewest percentage of CarMD repair incidents combined with the lowest cost per repair, per number of registered vehicles on the road between Oct. 1, 2013 and Sept. 30, 2014. Sources: CarMD.com Corp., with vehicle population data provided by R.L. Polk.)*

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## TOP 3 RANKED VEHICLES BY CATEGORY

Based on combined fewest and lowest cost "check engine"-related problems (Model Year 2004-2014):

### Compact

1. 2012 Honda Civic
2. 2010 Toyota Corolla
3. 2012 Kia Forte



### Minivan

1. 2011 Honda Odyssey
2. 2012 Honda Odyssey
3. 2012 Toyota Sienna



### Sedan

1. 2012 Toyota Camry
2. 2012 Hyundai Sonata
3. 2011 Toyota Camry



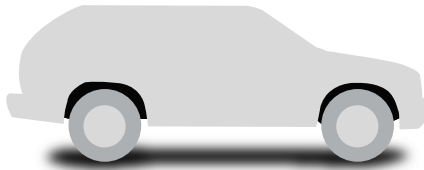
### Luxury

1. 2010 Lexus ES
2. 2008 Lexus RX
3. 2008 Lexus ES



### Full-Sized SUV

1. 2008 Toyota Highlander
2. 2011 Buick Enclave
3. 2012 Jeep Liberty



### Wagon / Crossover SUV

1. 2012 Kia Soul
2. 2011 Honda CR-V
3. 2007 Honda CR-V



### Truck

1. 2011 Ford F-150
2. 2012 Ford F-250
3. 2010 Ford F-150



## DETAILED SUMMARY FINDINGS

### TOP 10 VEHICLE MANUFACTURERS

No. 1-ranked **Honda**, which includes Acura and Honda makes, moved up four spots from its no.5 ranking a year ago. Its average repair cost dropped 17 percent from \$469 in 2013 to \$388 in 2014. Honda, which scored a 1.32 Index rating, edged out Hyundai, which has a 1.33 Index rating (*The lower the CarMD Index score, the higher the ranking*).

- The top 100 list includes three Acuras and 13 Hondas. The top-ranked Acura is the 2006 TSX (no. 76). The best-ranked Honda is the 2012 Civic (no. 2). Honda continues to make improvements in its minivan reliability; earlier models rank in the bottom 10 percent of vehicles rated by CarMD. In 2014, Odyssey ranks no. 6 and no. 11.

No. 2 **Hyundai's** ranking is helped by is having the lowest repair incident rate among the manufacturers, meaning its owners enjoyed the fewest trips to the repairs shop for malfunction indicator lamp-related (a.k.a. "check engine") problems.

- Hyundai's CarMD Vehicle Health Index rating score (1.34) was barely beat out by Honda (1.33).
- Hyundai has nine vehicles on the top 100 list, including three Sonata sedans: 2012 Sonata (no. 3), 2013 Sonata (no. 5) and 2011 Sonata (no. 31). Hyundai's Elantra earns five spots in the top 100, as does the 2012 Accent (no. 22).

**Toyota**, no. 3, had the second lowest repair incident rating and a 10 percent drop in year-over-year repair cost from \$540 to \$486, but is nudged out by Honda and Hyundai's slightly better overall scores.

- Four Lexus vehicles and 17 Toyota vehicles are listed in the top 100, led by the 2012 Camry, which ranks no. 1 for the second year in a row with a CarMD Index score of 0.15 versus last year's 0.11 score showing it is holding its reliability. No Scion vehicles made the top 100 list. Lexus swept the top three Luxury vehicles this year.
- For the first time since the CarMD Vehicle Health Index has been published, the Sienna minivan made the top 100 with the 2012 Sienna (no. 12) and the 2010 Sienna (no. 71). Another first is the 2010 Prius (no. 9), marking the first time a hybrid vehicle has made the top 100 list.

No. 4-ranked **General Motors** moves down one spot from no. 3.

- GM's drop in ranking is partially due to an 8 percent increase in repair cost from \$304 to \$329.
- In 2013, GM had 11 vehicles in the top 100; this year it has five vehicles on the list. This includes the 2011 Buick Enclave (no. 25), 2005 Buick Century (no. 34), 2001 GMC Acadia (no. 80), 2009 Pontiac Vibe (no. 81) and 2012 GMC Terrain (no. 92). No Chevrolet vehicles made the 2014 top 100 list. The oldest vehicle in the top 100 is GM's 2005 Buick Century (no. 34), demonstrating there are reliable older-model pre-owned vehicle options.

## DETAILED SUMMARY FINDINGS

### TOP 10 VEHICLE MANUFACTURERS

Ranked no. 5, **Ford** continues its reliability climb moving one spot from its no. 6 ranking in 2013.

- Again this year, Ford has the most vehicles in the top 100 with 24 Fords on the list. No Lincoln or Mercury vehicles made the 2014 list.
- Compacts and trucks are bright spots for Ford. It swept the Truck category with its 2011 and 2010 F-150s and 2012 F-250. And the Focus model year 2008 through 2013 all made the top 100 list.

**Chrysler**, no. 6, drops two spots from no. 4 with a big increase in frequency of “check engine” light repair incidents.

- Despite a drop in rank, Chrysler does have the second lowest repair cost (\$303) with only Mazda having a lower average repair cost (\$302).
- Chrysler has eight vehicles on the 2014 top 100 list, led by the 2012 Jeep Liberty (no. 30). Dodge makes the list for the first time this year, with the 2011 Caliber (no. 56), 2012 Challenger (no. 88) and 2009 Caliber (no. 99).

**Kia** improves one spot from no. 8 in 2013 to no. 7 this year helped by a very slight drop in repair incidents.

- Kia's repair costs were up for a second year in a row from \$346 in 2013 to \$365 – a 5 percent increase.
- Kia doubles its number of top 100 vehicles from three to six. This includes the 2012 Soul (no. 7), 2012 Optima (no. 8), 2010 Soul (no. 19), 2012 Forte (no. 24), 2011 Sorento (no. 70) and 2008 Sportage (no. 96).

Ranked no. 9, **Mazda** appears on the list for the first time.

- Mazda has the lowest average repair cost (\$302) among the manufacturers.
- The 2010 Mazda 3 (no. 66), is the only Mazda vehicle on the top 100 list this year. The 2009 Mazda 3 just missed the list coming in at no. 111. It is important to remember that CarMD's top 100 list represents the top 10 percent of all vehicles on the road today. There are many reliable pre-owned vehicles that just fall short of this honor.

In the no. 10 spot **BMW** returns to the top 10 list after a year off. It previously ranked no. 3 in 2012. BMW edges out Volkswagen, which drops off the list this year.

- The 2011 BMW 535 sedan ranks no. 78 on the top 100 list.
- BMW's score was hurt by some of its older model vehicles, which ranked in the bottom 10 percent, such as the 2004 BMW 545 and 2004 BMW 745. CarMD looks at a decade of vehicle models. Once some of these lower scoring, older-model vehicles drop off the list BMW will likely regain its higher ranking.

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MANUFACTURER & VEHICLE RELIABILITY RANKINGS AND LISTS

## DETAILED INDEX DATA TOP 100 VEHICLE RANKINGS & LISTS

**The Top 100 Vehicles in the U.S.** with the lowest overall CarMD Index ranking based on the combined fewest and lowest cost “check engine”-related problems (Model Year 2004-2014) from Oct. 1, 2013 and Sept. 30, 2014

Rank	Year	Brand / Make	Model	Average Repair Cost	Index Rating (Repair Incidents)	Index Rating (Repair Costs)	Overall CarMD Index Rating Score (Repairs&Costs)
1	2012	TOYOTA	CAMRY	\$57.24	0.029	0.002	0.015
2	2012	HONDA	CIVIC	\$138.50	0.049	0.017	0.033
3	2012	HYUNDAI	SONATA	\$185.25	0.055	0.026	0.041
4	2011	TOYOTA	CAMRY	\$153.44	0.065	0.025	0.045
5	2013	HYUNDAI	SONATA	\$257.25	0.063	0.041	0.052
6	2011	HONDA	ODYSSEY	\$117.00	0.085	0.025	0.055
7	2012	KIA	SOUL	\$191.50	0.098	0.047	0.072
8	2012	KIA	OPTIMA	\$188.25	0.116	0.055	0.085
9	2010	TOYOTA	PRIUS	\$611.00	0.068	0.105	0.086
10	2010	TOYOTA	COROLLA	\$371.63	0.091	0.085	0.088
11	2012	HONDA	ODYSSEY	\$528.00	0.080	0.106	0.093
12	2011	TOYOTA	SIENNA	\$196.25	0.127	0.063	0.095
13	2011	HONDA	CR-V	\$222.00	0.125	0.070	0.098
14	2012	HONDA	ACCORD	\$112.00	0.155	0.044	0.100
15	2007	HONDA	CR-V	\$172.55	0.144	0.063	0.103
16	2008	TOYOTA	AVALON	\$286.67	0.127	0.092	0.109
17	2010	HYUNDAI	ELANTRA	\$120.78	0.170	0.052	0.111
18	2010	HONDA	ACCORD	\$210.62	0.148	0.079	0.113
19	2010	KIA	SOUL	\$142.00	0.167	0.060	0.114
20	2010	LEXUS	ES	\$291.00	0.139	0.102	0.120
21	2013	TOYOTA	CAMRY	\$22.00	0.229	0.013	0.121
22	2012	HYUNDAI	ACCENT	\$191.50	0.171	0.083	0.127
23	2008	TOYOTA	HIGHLANDER	\$292.13	0.151	0.111	0.131
24	2012	KIA	FORTE	\$334.00	0.145	0.122	0.133
25	2011	BUICK	ENCLAVE	\$373.67	0.140	0.132	0.136



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## DETAILED INDEX DATA TOP 100 VEHICLE RANKINGS & LISTS

Rank	Year	Brand / Make	Model	Average Repair Cost	Index Rating (Repair Incidents)	Index Rating (Repair Costs)	Overall CarMD Index Rating Score (Repairs&Costs)
26	2011	FORD	F150	\$264.13	0.167	0.111	0.139
27	2009	TOYOTA	CAMRY	\$351.40	0.149	0.132	0.140
28	2012	FORD	F250	\$378.75	0.144	0.138	0.141
29	2008	FORD	FOCUS	\$166.21	0.201	0.084	0.143
30	2012	JEEP	LIBERTY	\$169.00	0.200	0.085	0.143
31	2011	HYUNDAI	SONATA	\$286.05	0.166	0.120	0.143
32	2013	FORD	MUSTANG	\$245.00	0.178	0.110	0.144
33	2012	FORD	FOCUS	\$315.06	0.161	0.128	0.145
34	2005	BUICK	CENTURY	\$179.33	0.202	0.091	0.146
35	2011	FORD	FOCUS	\$346.25	0.158	0.138	0.148
36	2011	TOYOTA	RAV4	\$395.50	0.150	0.150	0.150
37	2010	FORD	EDGE	\$204.00	0.199	0.102	0.151
38	2010	NISSAN	MURANO	\$545.67	0.127	0.175	0.151
39	2013	FORD	EXPLORER	\$400.14	0.153	0.155	0.154
40	2012	FORD	EXPLORER	\$127.75	0.235	0.076	0.155
41	2010	FORD	FOCUS	\$349.57	0.166	0.146	0.156
42	2012	FORD	FUSION	\$260.81	0.192	0.126	0.159
43	2012	HYUNDAI	ELANTRA	\$999.20	0.090	0.228	0.159
44	2009	TOYOTA	COROLLA	\$227.74	0.203	0.117	0.160
45	2010	FORD	F150	\$171.29	0.232	0.100	0.166
46	2008	LEXUS	RX	\$251.50	0.204	0.130	0.167
47	2008	LEXUS	ES	\$642.25	0.129	0.209	0.169
48	2010	TOYOTA	CAMRY	\$327.33	0.185	0.153	0.169
49	2008	HONDA	CR-V	\$240.56	0.215	0.131	0.173
50	2009	FORD	FOCUS	\$280.20	0.206	0.146	0.176

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Rank	Year	Brand / Make	Model	Average Repair Cost	Index Rating (Repair Incidents)	Index Rating (Repair Costs)	Overall CarMD Index Rating Score (Repairs&Costs)
51	2013	FORD	FOCUS	\$306.40	0.200	0.155	0.177
52	2011	HONDA	PILOT	\$174.14	0.247	0.109	0.178
53	2011	FORD	EDGE	\$321.89	0.200	0.162	0.181
54	2011	FORD	MUSTANG	\$134.33	0.275	0.093	0.184
55	2011	SUBARU	OUTBACK	\$148.80	0.273	0.103	0.188
56	2011	DODGE	CALIBER	\$100.25	0.300	0.076	0.188
57	2012	VOLKSWAGEN	JETTA	\$234.00	0.238	0.141	0.189
58	2008	FORD	EDGE	\$237.33	0.237	0.142	0.190
59	2013	VOLKSWAGEN	PASSAT	\$112.67	0.296	0.084	0.190
60	2013	FORD	TAURUS	\$150.00	0.278	0.105	0.192
61	2013	HYUNDAI	ELANTRA	\$462.27	0.085	0.300	0.192
62	2009	HYUNDAI	ELANTRA	\$197.00	0.265	0.132	0.198
63	2013	FORD	ESCAPE	\$144.91	0.294	0.108	0.201
64	2008	TOYOTA	CAMRY	\$242.33	0.250	0.153	0.202
65	2011	FORD	FUSION	\$166.48	0.287	0.121	0.204
66	2010	MAZDA	3	\$153.75	0.299	0.116	0.208
67	2012	NISSAN	ROGUE	\$777.13	0.141	0.276	0.208
68	2008	VOLVO	XC90	\$146.67	0.304	0.113	0.209
69	2009	NISSAN	MAXIMA	\$374.20	0.216	0.204	0.210
70	2011	KIA	SORENTO	\$421.30	0.204	0.217	0.210
71	2010	TOYOTA	SIENNA	\$324.33	0.232	0.190	0.211
72	2012	FORD	F150	\$547.17	0.179	0.248	0.214
73	2008	HONDA	CIVIC	\$242.00	0.266	0.162	0.214
74	2012	FIAT	500	\$195.33	0.288	0.142	0.215
75	2009	FORD	RANGER	\$272.00	0.256	0.176	0.216

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Rank	Year	Brand / Make	Model	Average Repair Cost	Index Rating (Repair Incidents)	Index Rating (Repair Costs)	Overall CarMD Index Rating Score (Repairs&Costs)
76	2006	ACURA	TSX	\$430.33	0.207	0.225	0.216
77	2011	JEEP	WRANGLER	\$154.00	0.313	0.122	0.217
78	2011	BMW	535	\$342.67	0.234	0.202	0.218
79	2008	HYUNDAI	ELANTRA	\$210.25	0.289	0.153	0.221
80	2011	GMC	ACADIA	\$273.67	0.264	0.183	0.224
81	2009	PONTIAC	VIBE	\$243.67	0.278	0.171	0.224
82	2007	TOYOTA	YARIS	\$202.00	0.299	0.152	0.225
83	2013	CHRYSLER	TOWN & COUNTRY	\$233.00	0.285	0.168	0.226
84	2007	LEXUS	ES	\$372.18	0.237	0.223	0.230
85	2012	NISSAN	FRONTIER	\$173.57	0.322	0.141	0.232
86	2009	HONDA	ACCORD	\$238.81	0.292	0.176	0.234
87	2010	MERCEDES-BENZ	C	\$326.33	0.260	0.214	0.237
88	2012	DODGE	CHALLENGER	\$183.33	0.327	0.151	0.239
89	2008	ACURA	TL	\$315.33	0.271	0.216	0.243
90	2010	HONDA	CIVIC	\$358.06	0.256	0.231	0.243
91	2008	TOYOTA	TACOMA	\$298.00	0.283	0.213	0.248
92	2012	GMC	TERRAIN	\$243.60	0.308	0.189	0.249
93	2011	FORD	ESCAPE	\$205.33	0.328	0.170	0.249
94	2007	HONDA	ELEMENT	\$141.50	0.367	0.131	0.249
95	2008	ACURA	MDX	\$292.33	0.287	0.212	0.250
96	2008	KIA	SPORTAGE	\$283.00	0.293	0.209	0.251
97	2012	JEEP	WRANGLER	\$569.67	0.207	0.298	0.252
98	2009	MERCEDES-BENZ	C	\$396.00	0.252	0.252	0.252
99	2009	DODGE	CALIBER	\$161.40	0.364	0.148	0.256
100	2011	FORD	F250	\$262.11	0.311	0.206	0.258

(Top 100 vehicles based on CarMD diagnostic reports generated from Oct. 1, 2013 – Sept. 30, 2014, representing an estimated 88 million model year 2004 – 2014 vehicles on the road in the U.S., and determined by those that had the fewest number of CarMD repair incidents combined with the lowest cost per repair, per number of registered vehicles on the road. Sources: CarMD.com Corp., with vehicle population data provided by R.L. Polk)

## COMMON REPAIRS BY BRAND / MAKE

### MODEL YEAR 1996-2014

Different vehicle makes tend to have a unique set of problems and common failures. The CarMD Vehicle Health Index points out common “check engine” light-related problems and repairs by brand, providing a helpful resource for owners as they maintain and repair their vehicles.

For instance “Replace Oxygen Sensor” accounted for 17 percent of Mitsubishi repairs over the past year. Earlier this year, CarMD revealed that the no. 1 most common repair on vehicles in the U.S. is “replace O2 sensor,” accounting for 7.55 percent of all “check engine”-related repairs last year. O2 sensors measure the amount of unburned oxygen in the exhaust and tell a car’s computer when there is either too much or not enough fuel as compared with oxygen for ideal operation. If a faulty O2 sensor is not repaired, the car’s gas mileage can drop by as much as 40 percent.

Other examples: “Replace Ignition Coil” accounted for 18 percent of Lincoln vehicles and “Replace Catalytic Converter(s)” comprised 19 percent of Subaru’s check engine-related trips to the shop.

#### 5 Most Common Acura “Check Engine” Light Repairs (Oct. 1, 2013 - Sept. 30, 2014)

Rank	Repair	Labor	Parts	Total Repair Cost (Parts & Labor)	% Repairs Oct. 1, 2013 - Sept. 30, 2014
1	Inspect Battery and Charging System and Repair as Necessary	\$109.25	\$0.00	\$109.25	10.16%
2	Replace Oxygen Sensor(s) (O2S)	\$109.07	\$262.89	\$371.96	8.13%
3	Replace ABS Modulator Assembly	\$119.31	\$2,045.51	\$2,164.82	7.82%
4	Inspect for Faulty Wiring and Repair as Necessary	\$155.39	\$0.00	\$155.39	6.25%
5	Replace Catalytic Converter(s) with new OE Catalytic Converter(s)	\$131.73	\$732.64	\$864.37	6.18%

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## 5 Most Common Audi “Check Engine” Light Repairs (Oct. 1, 2013 - Sept. 30, 2014)

Rank	Repair	Labor	Parts	Total Repair Cost (Parts & Labor)	% Repairs Oct. 1, 2013 - Sept. 30, 2014
1	Replace Mass Air Flow (MAF) Sensor	\$120.11	\$250.30	\$370.41	10.98%
2	Inspect for Faulty Vacuum Hose(s) and Repair as Necessary	\$108.83	\$0.00	\$108.83	10.07%
3	Inspect for Faulty Vacuum Hose(s) at Air Injection System (AIR) and Repair as Necessary	\$110.10	\$0.00	\$110.10	6.18%
4	Replace Catalytic Converter(s) with new OE Catalytic Converter(s)	\$333.31	\$1,181.53	\$1,514.84	6.18%
5	Replace Ignition Coil(s)	\$109.12	\$30.06	\$139.18	6.18%

## 5 Most Common BMW “Check Engine” Light Repairs (Oct. 1, 2013 - Sept. 30, 2014)

Rank	Repair	Labor	Parts	Total Repair Cost (Parts & Labor)	% Repairs Oct. 1, 2013 - Sept. 30, 2014
1	Inspect for Vacuum Leak and Repair as Necessary	\$114.74	\$0.78	\$115.52	13.30%
2	Replace Mass Air Flow (MAF) Sensor	\$109.03	\$434.98	\$544.01	12.13%
3	Replace Ignition Coil(s)	\$116.19	\$101.23	\$217.42	10.16%
4	Inspect for Loose Fuel Cap and Tighten or Replace as Necessary	\$0.00	\$0.00	\$0.00	5.97%
5	Replace Camshaft Position Sensor (CMP)	\$111.96	\$134.81	\$246.77	5.97%

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## 5 Most Common Buick “Check Engine” Light Repairs (Oct. 1, 2013 - Sept. 30, 2014)

Rank	Repair	Labor	Parts	Total Repair Cost (Parts & Labor)	% Repairs Oct. 1, 2013 - Sept. 30, 2014
1	Replace Evaporative Emissions (EVAP) Purge Solenoid	\$109.91	\$54.92	\$164.83	6.29%
2	Replace Thermostat	\$162.69	\$27.42	\$190.11	5.62%
3	Replace Oxygen Sensor(s) (O2S)	\$109.30	\$102.71	\$212.01	5.58%
4	Replace Wheel Speed Sensor(s), Wheel Hub and Bearing Assembly	\$345.75	\$426.46	\$772.21	5.58%
5	Adjust Tire Pressure and Relearn Tire Pressure Sensor(s)	\$109.15	\$0.00	\$109.15	5.44%

## 5 Most Common Cadillac “Check Engine” Light Repairs (Oct. 1, 2013 - Sept. 30, 2014)

Rank	Repair	Labor	Parts	Total Repair Cost (Parts & Labor)	% Repairs Oct. 1, 2013 - Sept. 30, 2014
1	Replace Catalytic Converter(s) with new OE Catalytic Converter(s)	\$147.99	\$1,424.03	\$1,572.02	8.48%
2	Clean Fuel Injector(s)	\$123.48	\$34.28	\$157.76	5.36%
3	Replace Oxygen Sensor(s) (O2S)	\$110.02	\$150.87	\$260.89	5.07%
4	Remove Aftermarket Alarm System	\$109.38	\$0.00	\$109.38	4.73%
5	Replace Fuel Injector(s)	\$253.18	\$220.60	\$473.78	4.58%

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## 5 Most Common Chevrolet “Check Engine” Light Repairs (Oct. 1, 2013 - Sept. 30, 2014)

Rank	Repair	Labor	Parts	Total Repair Cost (Parts & Labor)	% Repairs Oct. 1, 2013 - Sept. 30, 2014
1	Replace Oxygen Sensor(s) (O2S)	\$112.36	\$116.52	\$228.88	7.53%
2	Inspect for Loose Fuel Cap and Tighten or Replace as Necessary	\$0.00	\$0.00	\$0.00	4.95%
3	Replace Catalytic Converter(s) with new OE Catalytic Converter(s)	\$135.31	\$900.19	\$1,035.50	3.99%
4	Replace Mass Air Flow (MAF) Sensor	\$109.43	\$294.54	\$403.97	3.00%
5	Replace Fuel Injector(s)	\$284.36	\$375.76	\$660.12	2.85%

## 5 Most Common Chrysler “Check Engine” Light Repairs (Oct. 1, 2013 - Sept. 30, 2014)

Rank	Repair	Labor	Parts	Total Repair Cost (Parts & Labor)	% Repairs Oct. 1, 2013 - Sept. 30, 2014
1	Inspect for Loose Fuel Cap and Tighten or Replace as Necessary	\$0.00	\$0.00	\$0.00	7.85%
2	Replace Camshaft Position Sensor (CMP)	\$108.90	\$62.81	\$171.71	7.65%
3	Replace Oxygen Sensor(s) (O2S)	\$108.98	\$126.66	\$235.65	6.64%
4	Replace Leak Detection Pump (LDP)	\$159.09	\$55.04	\$214.13	6.04%
5	Replace Catalytic Converter(s) with new OE Catalytic Converter(s)	\$167.57	\$753.65	\$921.22	4.63%

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## 5 Most Common Dodge “Check Engine” Light Repairs (Oct. 1, 2013 - Sept. 30, 2014)

Rank	Repair	Labor	Parts	Total Repair Cost (Parts & Labor)	% Repairs Oct. 1, 2013 - Sept. 30, 2014
1	Inspect for Loose Fuel Cap and Tighten or Replace as Necessary	\$0.00	\$0.00	\$0.00	12.98%
2	Replace Exhaust Gas Recirculation (EGR) Valve and Clean All EGR ports	\$116.05	\$107.15	\$223.20	8.55%
3	Replace Oxygen Sensor(s) (O2S)	\$125.90	\$79.99	\$205.89	8.25%
4	Replace Supplemental Restraint System (SRS) Occupant Detection Module	\$109.13	\$204.16	\$313.29	7.05%
5	Replace Spark Plug Wires and Spark Plugs	\$208.74	\$123.41	\$332.15	5.63%

## 5 Most Common Ford “Check Engine” Light Repairs (Oct. 1, 2013 - Sept. 30, 2014)

Rank	Repair	Labor	Parts	Total Repair Cost (Parts & Labor)	% Repairs Oct. 1, 2013 - Sept. 30, 2014
1	Replace Ignition Coil(s) and Spark Plug(s)	\$288.01	\$159.80	\$447.81	8.61%
2	Replace Ignition Coil(s)	\$134.90	\$126.82	\$261.72	5.60%
3	Replace Oxygen Sensor(s) (O2S)	\$113.06	\$91.50	\$204.56	5.40%
4	Replace Spark Plug Wires and Spark Plugs	\$214.37	\$161.33	\$375.70	4.16%
5	Replace ABS Control Module	\$157.09	\$734.23	\$891.32	3.81%



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## 5 Most Common GMC “Check Engine” Light Repairs (Oct. 1, 2013 - Sept. 30, 2014)

Rank	Repair	Labor	Parts	Total Repair Cost (Parts & Labor)	% Repairs Oct. 1, 2013 - Sept. 30, 2014
1	Replace Oxygen Sensor(s) (O2S)	\$112.77	\$104.74	\$217.51	8.06%
2	Inspect for Loose Fuel Cap and Tighten or Replace as Necessary	\$0.00	\$0.00	\$0.00	4.34%
3	Replace Evaporative Emissions (EVAP) Purge Solenoid	\$125.93	\$54.93	\$180.86	3.29%
4	Replace Mass Air Flow (MAF) Sensor	\$108.92	\$313.99	\$422.91	3.23%
5	Replace Evaporative Emissions (EVAP) Canister Vent Solenoid	\$109.13	\$124.26	\$233.39	3.19%

## 5 Most Common Honda “Check Engine” Light Repairs (Oct. 1, 2013 - Sept. 30, 2014)

Rank	Repair	Labor	Parts	Total Repair Cost (Parts & Labor)	% Repairs Oct. 1, 2013 - Sept. 30, 2014
1	Replace Catalytic Converter(s) with new OE Catalytic Converter(s)	\$140.03	\$971.00	\$1,111.03	8.62%
2	Inspect Battery and Charging System and Repair as Necessary	\$110.86	\$0.00	\$110.86	7.92%
3	Replace Oxygen Sensor(s) (O2S)	\$109.45	\$200.32	\$309.77	6.10%
4	Replace Exhaust Gas Recirculation (EGR) Valve and Clean All EGR ports	\$192.70	\$204.06	\$396.76	4.81%
5	Replace ABS Modulator Assembly	\$179.56	\$1,060.17	\$1,239.73	4.76%

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## 5 Most Common Hyundai “Check Engine” Light Repairs (Oct. 1, 2013 - Sept. 30, 2014)

Rank	Repair	Labor	Parts	Total Repair Cost (Parts & Labor)	% Repairs Oct. 1, 2013 - Sept. 30, 2014
1	Replace Oxygen Sensor(s) (O2S)	\$114.29	\$140.88	\$255.17	14.64%
2	Inspect for Loose Fuel Cap and Tighten or Replace as Necessary	\$0.00	\$0.00	\$0.00	10.16%
3	Replace Catalytic Converter(s) with new OE Catalytic Converter(s)	\$130.62	\$900.43	\$1,031.05	7.46%
4	Replace Spark Plug Wires and Spark Plugs	\$192.31	\$106.18	\$298.49	7.46%
5	Replace Mass Air Flow (MAF) Sensor	\$108.93	\$298.67	\$407.60	5.54%

## 5 Most Common Infiniti “Check Engine” Light Repairs (Oct. 1, 2013 - Sept. 30, 2014)

Rank	Repair	Labor	Parts	Total Repair Cost (Parts & Labor)	% Repairs Oct. 1, 2013 - Sept. 30, 2014
1	Inspect for Loose Fuel Cap and Tighten or Replace as Necessary	\$0.00	\$0.00	\$0.00	9.29%
2	Replace Camshaft Position Sensor (CMP)	\$109.02	\$109.01	\$218.03	7.24%
3	Replace Catalytic Converter(s) with new OE Catalytic Converter(s)	\$222.67	\$946.16	\$1,168.83	7.24%
4	Replace Ignition Coil(s)	\$125.66	\$202.77	\$328.43	6.28%
5	Replace Variable Valve Timing (VVT) Solenoid	\$108.91	\$263.46	\$372.37	6.15%

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## 5 Most Common Jeep “Check Engine” Light Repairs (Oct. 1, 2013 - Sept. 30, 2014)

Rank	Repair	Labor	Parts	Total Repair Cost (Parts & Labor)	% Repairs Oct. 1, 2013 - Sept. 30, 2014
1	Replace Mass Air Flow (MAF) Sensor	\$139.53	\$253.43	\$392.96	11.33%
2	Replace Catalytic Converter(s) with new OE Catalytic Converter(s)	\$256.94	\$1,251.72	\$1,508.66	9.67%
3	Replace Oxygen Sensor(s) (O2S)	\$113.14	\$303.95	\$417.09	7.67%
4	Replace Positive Crankcase Ventilation (PCV) Tube	\$371.15	\$56.46	\$427.61	6.00%
5	Replace Ignition Coil(s) and Spark Plug(s)	\$231.65	\$749.78	\$981.43	4.67%

## 5 Most Common Kia “Check Engine” Light Repairs (Oct. 1, 2013 - Sept. 30, 2014)

Rank	Repair	Labor	Parts	Total Repair Cost (Parts & Labor)	% Repairs Oct. 1, 2013 - Sept. 30, 2014
1	Replace Oxygen Sensor(s) (O2S)	\$110.78	\$211.43	\$322.21	9.35%
2	Replace Spark Plug Wires and Spark Plugs	\$243.52	\$102.46	\$345.98	8.35%
3	Replace Catalytic Converter(s) with new OE Catalytic Converter(s)	\$184.21	\$992.01	\$1,176.22	7.12%
4	Inspect for Loose Fuel Cap and Tighten or Replace as Necessary	\$0.00	\$0.00	\$0.00	6.71%
5	Replace Ignition Coil(s)	\$119.50	\$136.72	\$256.22	6.41%

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## 5 Most Common Land Rover “Check Engine” Light Repairs (Oct. 1, 2013 - Sept. 30, 2014)

Rank	Repair	Labor	Parts	Total Repair Cost (Parts & Labor)	% Repairs Oct. 1, 2013 - Sept. 30, 2014
1	Replace Mass Air Flow (MAF) Sensor	\$109.13	\$257.39	\$366.52	14.53%
2	Replace Oxygen Sensor(s) (O2S)	\$111.08	\$215.05	\$326.14	12.50%
3	Replace Spark Plug Wires and Spark Plugs	\$415.34	\$399.60	\$814.94	11.49%
4	Inspect for Faulty Vacuum Hose(s) at Air Injection System (AIR) and Repair as Necessary	\$143.59	\$28.64	\$172.23	6.08%
5	Replace Evaporative Emissions (EVAP) Purge Control Valve	\$108.91	\$121.98	\$230.89	5.07%

## 5 Most Common Lexus “Check Engine” Light Repairs (Oct. 1, 2013 - Sept. 30, 2014)

Rank	Repair	Labor	Parts	Total Repair Cost (Parts & Labor)	% Repairs Oct. 1, 2013 - Sept. 30, 2014
1	Replace Oxygen Sensor(s) (O2S)	\$128.74	\$192.21	\$320.95	12.36%
2	Replace Air/Fuel Ratio Sensor (AFR)	\$123.88	\$243.22	\$367.10	10.54%
3	Replace Catalytic Converter(s) with new OE Catalytic Converter(s)	\$185.89	\$1,199.20	\$1,385.09	9.42%
4	Replace Mass Air Flow (MAF) Sensor	\$115.96	\$223.13	\$339.09	8.64%
5	Replace Ignition Coil(s)	\$158.11	\$120.58	\$278.69	5.88%

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## 5 Most Common Lincoln “Check Engine” Light Repairs (Oct. 1, 2013 - Sept. 30, 2014)

Rank	Repair	Labor	Parts	Total Repair Cost (Parts & Labor)	% Repairs Oct. 1, 2013 - Sept. 30, 2014
1	Replace Ignition Coil(s) and Spark Plug(s)	\$251.77	\$155.57	\$407.34	18.02%
2	Replace Ignition Coil(s)	\$127.28	\$92.11	\$219.39	9.26%
3	Replace Oxygen Sensor(s) (O2S)	\$109.25	\$87.97	\$197.22	6.29%
4	Replace Positive Crankcase Ventilation (PCV) Valve and Hose	\$133.06	\$19.86	\$152.92	4.66%
5	Replace Catalytic Converter(s) with new OE Catalytic Converter(s)	\$171.61	\$1,280.07	\$1,451.68	4.59%

## 5 Most Common Mazda “Check Engine” Light Repairs (Oct. 1, 2013 - Sept. 30, 2014)

Rank	Repair	Labor	Parts	Total Repair Cost (Parts & Labor)	% Repairs Oct. 1, 2013 - Sept. 30, 2014
1	Inspect for Loose Fuel Cap and Tighten or Replace as Necessary	\$0.00	\$0.00	\$0.00	8.66%
2	Replace Catalytic Converter(s) with new OE Catalytic Converter(s)	\$167.79	\$830.02	\$997.81	8.23%
3	Replace Mass Air Flow (MAF) Sensor	\$109.30	\$258.87	\$368.17	6.78%
4	Replace Oxygen Sensor(s) (O2S)	\$114.51	\$173.55	\$288.06	6.48%
5	Replace Ignition Coil(s)	\$146.62	\$121.41	\$268.03	6.00%

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## 5 Most Common Mercury “Check Engine” Light Repairs (Oct. 1, 2013 - Sept. 30, 2014)

Rank	Repair	Labor	Parts	Total Repair Cost (Parts & Labor)	% Repairs Oct. 1, 2013 - Sept. 30, 2014
1	Replace Ignition Coil(s) and Spark Plug(s)	\$231.28	\$147.24	\$378.52	11.36%
2	Replace Spark Plug Wires and Spark Plugs	\$190.48	\$237.15	\$427.63	9.19%
3	Replace Positive Crankcase Ventilation (PCV) Valve and Hose	\$108.87	\$19.51	\$128.38	6.89%
4	Replace Oxygen Sensor(s) (O2S)	\$112.17	\$88.78	\$200.95	6.11%
5	Replace Catalytic Converter(s) with new OE Catalytic Converter(s)	\$187.48	\$1,257.85	\$1,445.33	5.84%

## 5 Most Common Mini “Check Engine” Light Repairs (Oct. 1, 2013 - Sept. 30, 2014)

Rank	Repair	Labor	Parts	Total Repair Cost (Parts & Labor)	% Repairs Oct. 1, 2013 - Sept. 30, 2014
1	Replace Oxygen Sensor(s) (O2S)	\$109.34	\$267.23	\$376.57	14.58%
2	Inspect for Loose Fuel Cap and Tighten or Replace as Necessary	\$0.00	\$0.00	\$0.00	11.81%
3	Replace Thermostat and Housing Assembly	\$300.81	\$122.96	\$423.77	7.64%
4	Replace Ignition Coil(s) and Spark Plug Wires	\$131.27	\$282.00	\$413.27	5.56%
5	Replace Leak Detection Pump (LDP)	\$120.89	\$158.57	\$279.46	5.56%

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## 5 Most Common Mitsubishi “Check Engine” Light Repairs (Oct. 1, 2013 - Sept. 30, 2014)

Rank	Repair	Labor	Parts	Total Repair Cost (Parts & Labor)	% Repairs Oct. 1, 2013 - Sept. 30, 2014
1	Replace Oxygen Sensor(s) (O2S)	\$116.79	\$253.42	\$370.21	17.66%
2	Replace Catalytic Converter(s) with new OE Catalytic Converter(s)	\$161.81	\$961.11	\$1,122.92	8.54%
3	Replace Spark Plug Wires and Spark Plugs	\$244.20	\$166.69	\$410.89	7.53%
4	Replace Mass Air Flow (MAF) Sensor	\$109.19	\$546.83	\$656.02	6.61%
5	Inspect for Loose Fuel Cap and Tighten or Replace as Necessary	\$0.00	\$0.00	\$0.00	5.36%

## 5 Most Common Nissan “Check Engine” Light Repairs (Oct. 1, 2013 - Sept. 30, 2014)

Rank	Repair	Labor	Parts	Total Repair Cost (Parts & Labor)	% Repairs Oct. 1, 2013 - Sept. 30, 2014
1	Replace Catalytic Converter(s) with new OE Catalytic Converter(s)	\$221.70	\$677.93	\$899.63	13.17%
2	Replace Ignition Coil(s)	\$126.23	\$144.38	\$270.61	6.10%
3	Inspect for Loose Fuel Cap and Tighten or Replace as Necessary	\$0.00	\$0.00	\$0.00	6.01%
4	Replace Mass Air Flow (MAF) Sensor	\$109.14	\$418.41	\$527.55	5.41%
5	Replace Oxygen Sensor(s) (O2S)	\$116.55	\$216.63	\$333.18	4.89%

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## 5 Most Common Pontiac “Check Engine” Light Repairs (Oct. 1, 2013 - Sept. 30, 2014)

Rank	Repair	Labor	Parts	Total Repair Cost (Parts & Labor)	% Repairs Oct. 1, 2013 - Sept. 30, 2014
1	Replace Catalytic Converter(s) with new OE Catalytic Converter(s)	\$138.17	\$712.50	\$850.67	7.15%
2	Replace Thermostat	\$154.81	\$31.12	\$185.93	6.98%
3	Inspect for Loose Fuel Cap and Tighten or Replace as Necessary	\$0.00	\$0.00	\$0.00	6.44%
4	Replace Oxygen Sensor(s) (O2S)	\$109.99	\$133.85	\$243.84	6.01%
5	Replace Fuel Injector(s)	\$245.30	\$392.22	\$637.52	5.16%

## 5 Most Common Porsche “Check Engine” Light Repairs (Oct. 1, 2013 - Sept. 30, 2014)

Rank	Repair	Labor	Parts	Total Repair Cost (Parts & Labor)	% Repairs Oct. 1, 2013 - Sept. 30, 2014
1	Replace Mass Air Flow (MAF) Sensor	\$142.22	\$615.05	\$757.27	12.35%
2	Replace Oil Filler Vacuum Hose	\$174.11	\$32.71	\$206.82	11.11%
3	Inspect for Loose Fuel Cap and Tighten or Replace as Necessary	\$0.00	\$0.00	\$0.00	9.88%
4	Replace Air Injection (AIR) Check Valve	\$162.93	\$69.87	\$232.80	9.88%
5	Replace Oxygen Sensor(s) (O2S)	\$120.81	\$366.38	\$487.19	9.88%



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## 5 Most Common Subaru “Check Engine” Light Repairs (Oct. 1, 2013 - Sept. 30, 2014)

Rank	Repair	Labor	Parts	Total Repair Cost (Parts & Labor)	% Repairs Oct. 1, 2013 - Sept. 30, 2014
1	Replace Catalytic Converter(s) with new OE Catalytic Converter(s)	\$123.55	\$684.21	\$807.76	19.10%
2	Inspect for Loose Fuel Cap and Tighten or Replace as Necessary	\$0.00	\$0.00	\$0.00	10.06%
3	Replace Knock Sensor(s)	\$144.53	\$138.48	\$283.01	9.62%
4	Replace Oxygen Sensor(s) (O2S)	\$167.19	\$180.80	\$347.99	9.18%
5	Replace Spark Plug Wires and Spark Plugs	\$215.34	\$90.48	\$305.82	8.31%

## 5 Most Common Suzuki “Check Engine” Light Repairs (Oct. 1, 2013 - Sept. 30, 2014)

Rank	Repair	Labor	Parts	Total Repair Cost (Parts & Labor)	% Repairs Oct. 1, 2013 - Sept. 30, 2014
1	Replace Oxygen Sensor(s) (O2S)	\$111.38	\$284.18	\$395.56	14.78%
2	Replace Catalytic Converter(s) with new OE Catalytic Converter(s)	\$126.55	\$1,000.64	\$1,127.19	11.31%
3	Inspect for Loose Fuel Cap and Tighten or Replace as Necessary	\$0.00	\$0.00	\$0.00	4.93%
4	Replace Transmission Range Sensor	\$109.20	\$82.95	\$192.15	4.93%
5	Replace Timing Chain and Tensioner	\$1,303.03	\$512.39	\$1,815.42	4.56%

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## 5 Most Common Toyota “Check Engine” Light Repairs (Oct. 1, 2013 - Sept. 30, 2014)

Rank	Repair	Labor	Parts	Total Repair Cost (Parts & Labor)	% Repairs Oct. 1, 2013 - Sept. 30, 2014
1	Replace Catalytic Converter(s) with new OE Catalytic Converter(s)	\$126.03	\$1,158.59	\$1,284.62	11.95%
2	Replace Oxygen Sensor(s) (O2S)	\$117.54	\$185.54	\$303.08	10.81%
3	Replace Mass Air Flow (MAF) Sensor	\$122.13	\$239.88	\$362.01	6.81%
4	Replace Air/Fuel Ratio Sensor (AFR)	\$115.12	\$226.63	\$341.75	4.92%
5	Inspect for Loose Fuel Cap and Tighten or Replace as Necessary	\$0.00	\$0.00	\$0.00	4.17%

## 5 Most Common Volkswagon “Check Engine” Light Repairs (Oct. 1, 2013 - Sept. 30, 2014)

Rank	Repair	Labor	Parts	Total Repair Cost (Parts & Labor)	% Repairs Oct. 1, 2013 - Sept. 30, 2014
1	Replace Mass Air Flow (MAF) Sensor	\$110.63	\$249.57	\$360.20	9.25%
2	Replace Catalytic Converter(s) with new OE Catalytic Converter(s)	\$178.50	\$1,012.44	\$1,190.94	8.78%
3	Replace Ignition Coil(s)	\$108.98	\$126.01	\$234.99	8.36%
4	Replace Oxygen Sensor(s) (O2S)	\$115.52	\$223.05	\$338.57	5.57%
5	Inspect for Faulty Vacuum Hose(s) and Repair as Necessary	\$109.07	\$0.00	\$109.07	5.52%

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MANUFACTURER & VEHICLE RELIABILITY RANKINGS AND LISTS

## OVERVIEW

Since 1996, CarMD has compiled and maintained the industry's largest and most comprehensive database of "check engine" light-related problems and repairs. The database is procured from CarMD's nationwide network of Automotive Service Excellence (ASE)-certified technicians, who recommend, validate and upload repairs and costs to the database on a daily basis for 1996 vehicles to present. CarMD currently has millions of verified repairs in its proprietary database.

- Beginning in 1996, the U.S. government mandated that On-Board Diagnostics (OBD2) be included on all foreign and domestic cars, light trucks, vans, SUVs and now hybrids driven in the U.S. This universal technology is designed to detect malfunctions, set a diagnostic trouble code (DTC) and turn on the "check engine" light if there is a problem. This system provides vital health and safety information for roughly 80 percent of a vehicle's systems, and is installed on roughly 85 percent of the vehicles in the U.S. today.
- As a result of compiling the industry's most comprehensive database of diagnostic trouble codes and repairs for "check engine"-related problems, CarMD is uniquely able to provide statistics on a wide range of vehicles and manufacturers.
- By offering this unbiased and unprecedented repair and reliability information over time, CarMD is able to present an unparalleled view of reliability over the lifecycle of vehicles, enabling consumers and the industry to compare and contrast makes based on facts and not just opinion surveys.
- The top 100 vehicles represent the best vehicles out of more than 1,400 different types of model year 2004 to 2014 vehicles on the road today, and the top 10 manufacturers represent the best out of more than 20 parent manufacturers.
  - It is important to remember that even the 99th or 100th ranked vehicle on the top 100 list is a significant achievement, as this puts it in better than the top 10% of all 2004 to 2014 vehicles being ranked.
- Each spring, the company also releases its CarMD® Vehicle Health Index™ of unbiased statistical information covering the most common "check engine" light-related car repairs and associated costs, on a national basis. Each summer, CarMD shares state-by-state rankings of car repairs and costs to help motorists better understand how geography and climate play a role in car maintenance and repairs.
- Current and archived indices are available at <http://corp.carmd.com>.

**(MEDIA NOTES:** This document is provided on an embargoed basis to allow you to research and file your stories before this is posted to the <http://corp.carmd.com> website. Additional information, including Index news release, detailed data, logos and graphics are available upon request.)

# 2014 CarMD® VEHICLE HEALTH INDEX™

MANUFACTURER & VEHICLE RELIABILITY RANKINGS AND LISTS

## METHODOLOGY

CarMD has compiled the industry's most comprehensive database of diagnostic trouble codes and repairs for "check engine"-related problems downloaded by automotive technicians and vehicle owners since 1996. The data for the 2014 CarMD® Vehicle Health Index™ Manufacturer & Vehicle Rankings was procured from CarMD's network of thousands of independent and original equipment Automotive Service Excellence (ASE)-certified technicians who have input and validated failures and fixes into the CarMD diagnostic database.

The 2013 Index statistically analyzes more than 40,400 specific repairs that apply to roughly 88 million model year 2004 to 2014 vehicles, taking place in the United States during the Oct. 1, 2013 to Sept. 30, 2014 date period. The data for the 2014 CarMD® Vehicle Health Index was pulled, analyzed and validated between Oct. 1, 2014 and Nov. 3, 2014, by CarMD's internal team. 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 plus 10% markup. Labor rates are procured from several sources, including the Undercar Digest National and Regional Hourly Shop Labor Rate reports, as well as the average amount of time required for each repair. Both are updated annually.

For the 2014 Vehicle Health Index, CarMD focused on model year 2004-2014 vehicles, since the average age of a vehicle is now 11 years old, and these are the vehicles that will be of interest to new and used car buyers. In determining the Top 10 manufacturers and Top 100 vehicles, 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 logged by a member of CarMD's professional repair technicians. In determining the Top 10 manufacturers, brands were grouped under their parent manufacturer (i.e. Lexus and Scion under Toyota; Acura under Honda; Buick, Chevrolet, Cadillac, GMC, Hummer, Oldsmobile, Pontiac and Saturn under GM; Audi under Volkswagen; etc.) The data in the Index is applicable to roughly 85 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 manufacturer from Oct. 1, 2013 - Sept. 30, 2014.

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 manufacturer, 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 manufacturer) divided by the total number of vehicles in the population. Percentage of problems and average repair costs have been equally weighted in the CarMD Overall Index rating. The overall Index ranking for the Top Ranked Manufacturers and Vehicles were derived by the average of the Index and cost ranking and reliability scores.

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 diagnostic trouble codes, expert fixes and repair costs.

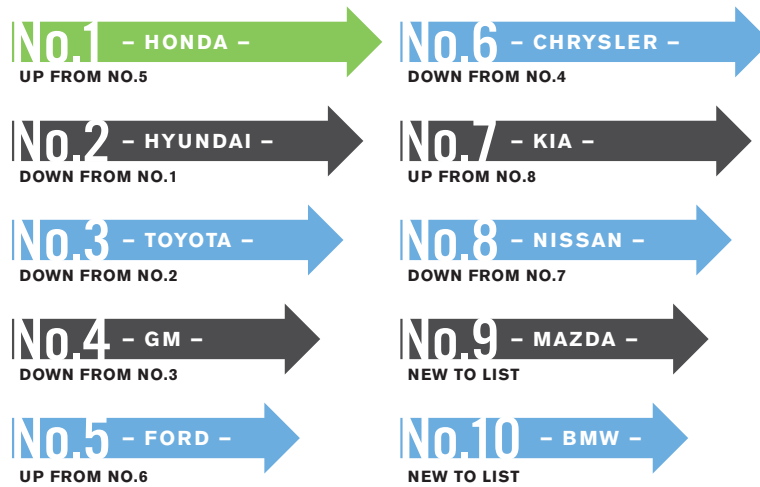
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# 2014 CarMD® VEHICLE HEALTH INDEX™

MANUFACTURER & VEHICLE RELIABILITY RANKINGS AND LISTS

RANK	MANUFACTURER	% CarMD Red Light Reports / Problems Seen	Average Repair Cost (Parts & Labor)	Overall CarMD 2014 Index Rating	Year-Over-Year Comparison
1.	HONDA	6.7%	\$388.34	1.32 (0.97)	↑ from no. 5
2.	HYUNDAI	2.2%	\$306.34	1.33 (0.80)	↓ from no. 1
3.	TOYOTA	8.7%	\$486.93	1.48 (0.86)	↓ from no. 2
4.	GM	19.6%	\$329.82	1.80 (0.91)	↓ from no. 3
5.	FORD	17.2%	\$397.48	1.84 (1.04)	↑ from no. 6
6.	CHRYSLER	17.2%	\$303.38	2.11 (0.96)	↓ from no. 4
7.	KIA	2.3%	\$365.89	2.52 (1.56)	↑ from no. 8
8.	NISSAN	9.8%	\$470.39	2.53 (1.09)	↓ from no. 7
9.	MAZDA	1.1%	\$302.92	2.64 (NR* in 2013)	New to list
10.	BMW	1.2%	\$355.08	3.00 (NR* in 2013)	New to list



# 2014 CarMD® VEHICLE HEALTH INDEX™

MANUFACTURER & VEHICLE RELIABILITY RANKINGS AND LISTS

## THE TOP TEN CHECK ENGINE LIGHT REPAIRS



**1** **Replace O2 Sensor**  
\$261.61 AVG repair  
7.55% of CEL repairs

**2** **Inspect Gas Cap**  
11¢ AVG repair  
7.17% of CEL repairs

**3** **Replace Catalytic Converter**  
\$1,154.23 AVG repair  
6.10% of CEL repairs

**4** **Replace Spark Plug(s) and Wire(s)**  
\$361.95 AVG repair  
3.35% of CEL repairs

**5** **Replace Mass Airflow Sensor**  
\$423.61 AVG repair  
3.35% of CEL repairs

**6** **Replace Ignition Coil(s)**  
\$250.94 AVG repair  
3.00% of CEL repairs

**7** **Replace Ignition Coil(s) and Spark Plug(s)**  
\$420.34 AVG repair  
2.89% of CEL repairs

**8** **Inspect/Replace Battery/Charging System**  
\$110.82 AVG repair  
2.54% of CEL repairs

**9** **Replace EGR Valve and Clean EGR Ports**  
\$351.97 AVG repair  
2.32% of CEL repairs




**10** **Inspect/Replace Vacuum Hose(s)**  
\$122.52 AVG repair  
2.22% of CEL repairs

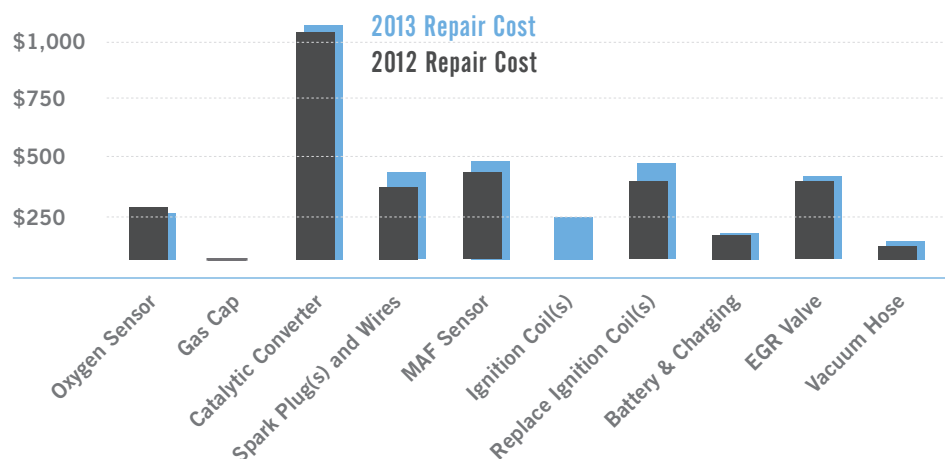
# 2014 CarMD® VEHICLE HEALTH INDEX™

MANUFACTURER & VEHICLE RELIABILITY RANKINGS AND LISTS

## THE TOP TEN CHECK ENGINE LIGHT REPAIRS

Increase / Decrease In Cost To Repair 10 Most Common  
Check Engine-Related Car Repairs 2012 vs. 2013

Rank	Vehicle Repair	2012	2013	% Change in Repair Cost Over Prior Year
1	Replace Oxygen Sensor(s) (O2S)	\$293.88	\$261.61	10.9% 
2	Inspect for Loose Fuel Cap and Tighten or Replace as Necessary	\$ 0.10	\$0.11	No Change
3	Replace Catalytic Converter(s) with new OE Catalytic Converter(s)	\$ 1,101.44	\$1,154.23	4.8% 
4	Replace Spark Plug Wires and Spark Plugs	\$342.55	\$361.95	5.7% 
5	Replace Mass Air Flow (MAF) Sensor	\$410.17	\$423.61	3.2% 
6	Replace Ignition Coil(s)	No Change	\$250.94	No Change
7	Replace Ignition Coil(s) and Spark Plug(s) if needed	\$316.58	\$420.34	32.7% 
8	Inspect Battery and Charging System and Repair/Replace as Necessary	\$100.63	\$110.82	10.1% 
9	Replace Exhaust Gas Recirculation (EGR) Valve and Clean All EGR ports	\$325.95	\$351.97	7.9% 
10	Inspect Faulty Vacuum Hose(s) and Repair/Replace as Necessary	\$107.32	\$122.52	14.1% 



# 2014 CarMD® VEHICLE HEALTH INDEX™

MANUFACTURER & VEHICLE RELIABILITY RANKINGS AND LISTS

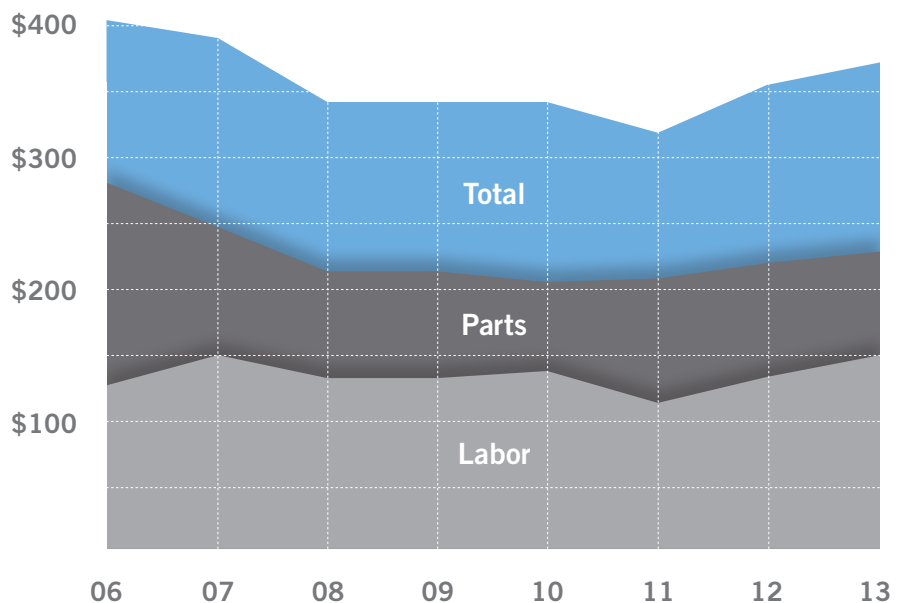
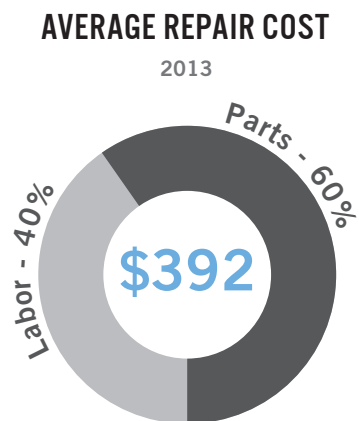
## REPAIR COSTS/NATIONAL TRENDS

Car repair costs are on the rise after a two-year dip in overall check engine-related repair costs.

- In 2013, the average repair including parts and labor jumped 6.7percent from \$367.84 to \$392.49.
- Average repair costs are now more in line with 2009 averages but still 7 percent less than their high in 2006 (\$422.36).

**U.S. Average Car Repair Cost Trends (8-Year History, 2006 – 2013) Source: CarMD.com Corp.**

Year	Labor	Parts	Total Avg. Repair Cost
2013	\$157.23	\$235.26	\$392.49
2012	\$138.96	\$228.88	\$367.84
2011	\$118.61	\$215.32	\$333.93
2010	\$143.61	\$212.44	\$356.04
2009	\$138.37	\$221.13	\$359.50
2008	\$135.21	\$220.98	\$356.19
2007	\$152.92	\$256.98	\$409.91
2006	\$131.06	\$291.30	\$422.36





# 2014 CarMD® VEHICLE HEALTH INDEX™

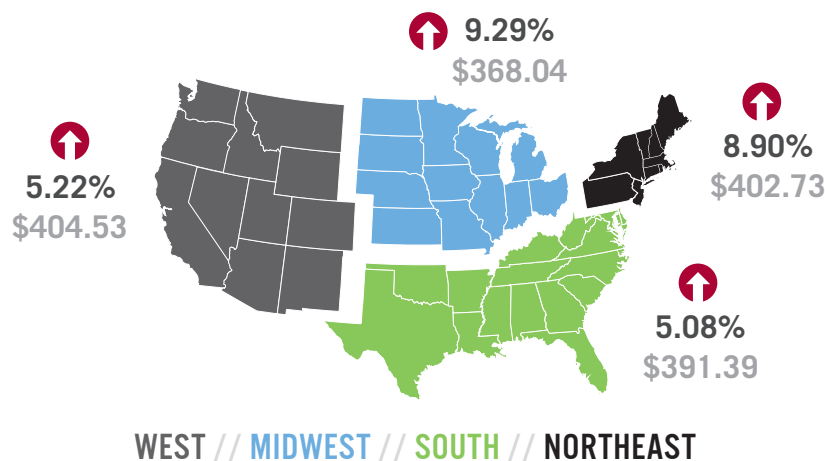
MANUFACTURER & VEHICLE RELIABILITY RANKINGS AND LISTS

## REPAIR COSTS/REGIONAL TRENDS

In 2013, the national average for automotive repair labor costs increased 13 percent from the previous year. Parts costs jumped 3 percent from the previous year.

Car repair costs were up across all regions of the U.S., but the Midwest and Northeast got hit the hardest with a 9 percent increase in repair costs, which may be a result of the record low temperatures caused by the Polar vortex, although the South that also experienced temperature extremes only incurred a 5 percent increase in average check engine-related repair costs.

Vehicle owners in the West paid the most for check engine-related car repair – 9 percent more than drivers in the Midwest, who paid the least, but a gap is closing between the regions with the highest and lowest average car repair costs.



U.S. National Average Repair Costs – 2013 vs. Previous Year (Source: CarMD.com Corp.)

Region	2012 Total Avg. Repair Cost	2013 Total Avg. Repair Cost	% Increase From Previous Year
Nationwide	\$367.84	\$392.49	↑ 6.70%
West	\$384.46	\$404.53	↑ 5.22%
South	\$372.44	\$391.39	↑ 5.08%
Northeast	\$369.81	\$402.73	↑ 8.90%
Midwest	\$336.75	\$368.04	↑ 9.29%

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## DETAILED INDEX DATA

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### Nationwide 2013: Top 25 Most Common Check Engine Vehicle Repairs






*(Top 25 most common vehicle repairs are based on 145,571 repairs made in calendar year 2013 on 1996-2014 model year vehicles. This data applies to roughly 85 percent of cars, light trucks, minivans, SUVs and hybrids on the road in the U.S. – foreign and domestic. Source: CarMD.com Corp.)*

# 2014 CarMD® VEHICLE HEALTH INDEX™

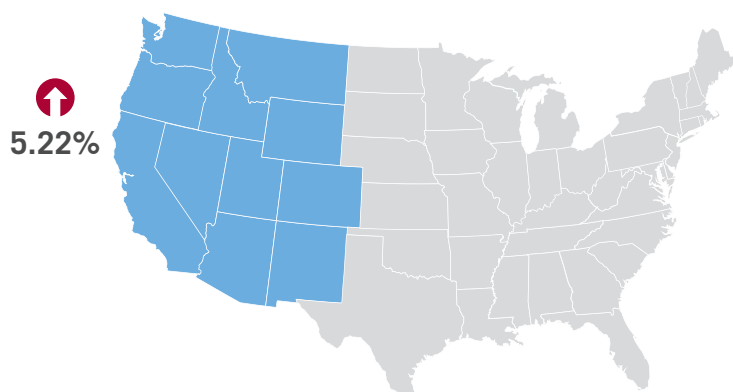
MANUFACTURER & VEHICLE RELIABILITY RANKINGS AND LISTS

## DETAILED INDEX DATA

### Western U.S. 2013: Top 10 Most Common Check Engine Vehicle Repairs

Rank	Vehicle Repair	Total Average Repair Cost (Parts & Labor)	% 2013 Western U.S. Repairs	Change In Western Rank Since 2012
1	Replace Oxygen Sensor(s) (O2S)	\$269.47	7.18%	1 – No Change
2	Inspect for Loose Fuel Cap and Tighten or Replace as Necessary	\$0.08	6.65%	2 – No Change
3	Replace Catalytic Converter(s) with new OE Catalytic Converter(s)	\$1,164.36	5.59%	3- No Change
4	Replace Mass Air Flow (MAF) Sensor	\$433.55	4.01%	5 - 
5	Replace Spark Plug Wires and Spark Plugs	\$366.03	3.36%	6 - 
6	Replace Ignition Coil(s)	\$242.07	2.99%	Reported as Coil / Plug
7	Inspect Battery and Charging System and Repair/ Replace as Necessary	\$111.85	2.59%	9 - 
8	Replace Ignition Coil(s) and Spark Plug(s)	\$408.85	2.38%	6 - 
9	Replace Exhaust Gas Recirculation (EGR) Valve and Clean All EGR ports	\$365.43	2.11%	7 - 
10	Replace Camshaft Position Sensor (CMP)	\$224.03	1.85%	New to West Top 10

(Top 10 most common vehicle repairs in the Western U.S. are based on 31,782 repairs in 2013 in AK, AZ, CA, CO, HI, ID, MT, NM, NV, OR, UT, WA and WY. This data applies to roughly 85 percent of cars, light trucks, minivans and SUVs on the road in the U.S. – foreign and domestic. Source: CarMD.com Corp.)








# 2014 CarMD® VEHICLE HEALTH INDEX™

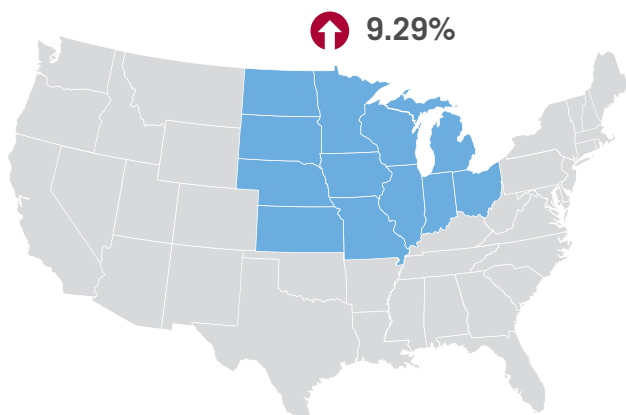
MANUFACTURER & VEHICLE RELIABILITY RANKINGS AND LISTS

## DETAILED INDEX DATA

### Midwestern U.S. 2013: Top 10 Most Common Check Engine Vehicle Repairs

Rank	Vehicle Repair	Total Average Repair Cost (Parts & Labor)	% 2013 Midwestern U.S. Repairs	Change In Midwestern Rank Since 2012
1	Replace Oxygen Sensor(s) (O2S)	\$247.34	8.22%	1 – No Change
2	Inspect for Loose Fuel Cap and Tighten or Replace as Necessary	\$0.02	7.32%	2 – No Change
3	Replace Catalytic Converter(s) with new OE Catalytic Converter(s)	\$1,149.05	5.44%	3 – No Change
4	Replace Spark Plug Wires and Spark Plugs	\$361.76	3.58%	5 - 
5	Replace Mass Air Flow (MAF) Sensor	\$405.65	2.98%	6 - 
6	Replace Ignition Coil(s)	\$255.41	2.57%	Reported as Coil / Plug
7	Replace Wheel Speed Sensor(s)	\$269.28	2.52%	9 - 
8	Replace Ignition Coil(s) and Spark Plug(s)	\$436.39	2.44%	4 - 
9	Remove Aftermarket Alarm System	\$108.60	2.33%	7 - 
10	Inspect Battery and Charging System and Repair as Necessary	\$109.78	2.22%	New To Mid-West Top 10

(Top 10 most common vehicle repairs in the Midwestern U.S. are based on 23,271 repairs in 2013 in IA, IL, IN, KS, MI, MN, MO, ND, NE, OH, SD and WI. This data applies to roughly 85 percent of cars, light trucks, minivans and SUVs on the road in the U.S. – foreign and domestic. Source: CarMD.com Corp.)



**\$368.04**






Average cost to repair the most common check engine vehicle problems in the Midwestern United States in 2013.

# 2014 CarMD® VEHICLE HEALTH INDEX™

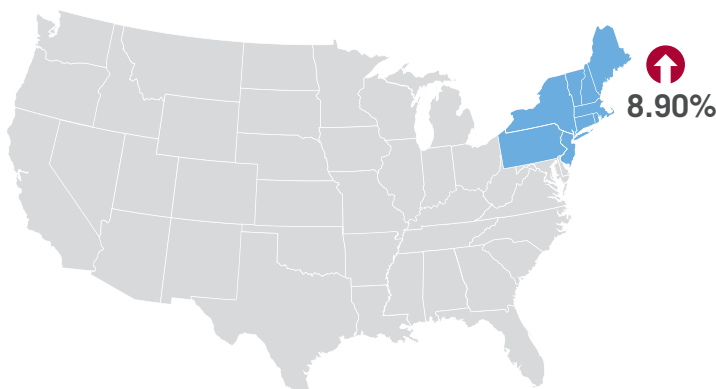
MANUFACTURER & VEHICLE RELIABILITY RANKINGS AND LISTS

## DETAILED INDEX DATA

### Northeastern U.S. 2013: Top 10 Most Common Check Engine Vehicle Repairs

Rank	Vehicle Repair	Total Average Repair Cost (Parts & Labor)	% 2013 Northeastern U.S. Repairs	Change In NE Rank Since 2012
1	Replace Oxygen Sensor(s) (O2S)	\$268.55	8.69%	1 – No Change
2	Inspect for Loose Fuel Cap and Tighten or Replace as Necessary	\$0.00	8.10%	2 – No Change
3	Replace Catalytic Converter(s) with new OE Catalytic Converter(s)	\$1,153.45	6.27%	3 – No Change
4	Replace Mass Air Flow (MAF) Sensor	\$422.90	3.02%	6- 
5	Replace Ignition Coil(s)	\$257.41	2.98%	Reported as Coil / Plug
6	Replace Spark Plug Wires and Spark Plugs	\$359.21	2.97%	5- 
7	Inspect Battery and Charging System and Repair as Necessary	\$109.83	2.81%	8- 
8	Replace Ignition Coil(s) and Spark Plug(s)	\$410.38	2.54%	4- 
9	Replace Wheel Speed Sensor(s)	\$224.42	2.46%	7- 
10	Replace ABS Control Module	\$750.54	1.93%	New to NE Top 10

(Top 10 most common vehicle repairs in the Northeastern U.S. are based on 23,562 repairs in 2013 in CT, MA, ME, NH, NJ, NY, PA, RI and VT. This data applies to roughly 85 percent of cars, light trucks, minivans and SUVs on the road in the U.S. – foreign and domestic. Source: CarMD.com Corp.)



# \$402.73







Average cost to repair the most common check engine vehicle problems in the Northeastern United States in 2013.

# 2014 CarMD® VEHICLE HEALTH INDEX™

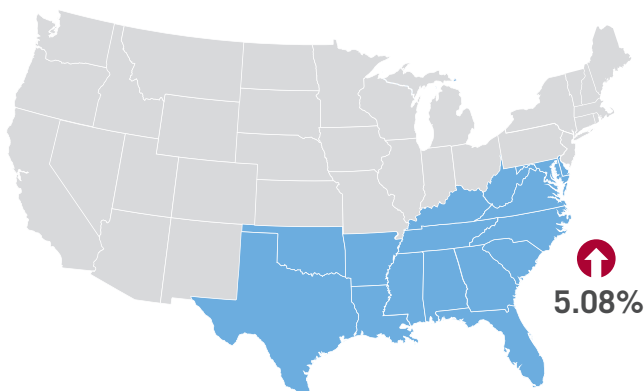
MANUFACTURER & VEHICLE RELIABILITY RANKINGS AND LISTS

## DETAILED INDEX DATA

### Southern U.S. 2013: Top 10 Most Common Check Engine Vehicle Repairs

Rank	Vehicle Repair	Total Average Repair Cost (Parts & Labor)	% 2012 Southern U.S. Repairs	Change In Southern Rank Since 2012
1	Replace Oxygen Sensor(s) (O2S)	\$260.69	7.09%	1 – No Change
2	Inspect for Loose Fuel Cap and Tighten or Replace as Necessary	\$0.19	7.05%	3 - 
3	Replace Catalytic Converter(s) with new OE Catalytic Converter(s)	\$1,151.93	6.53%	2 - 
4	Replace Ignition Coil(s) and Spark Plug(s)	\$422.76	3.43%	6 - 
5	Replace Spark Plug Wires and Spark Plugs	\$361.10	3.40%	5 – No Change
6	Replace Mass Air Flow (MAF) Sensor	\$422.85	3.27%	4 - 
7	Replace Ignition Coil(s)	\$251.82	3.16%	Reported As Coil / Plug
8	Inspect Battery and Charging System and Repair as Necessary	\$111.05	2.52%	7 - 
9	Replace Thermostat	\$195.77	1.92%	New to South Top 10
10	Replace Exhaust Gas Recirculation (EGR) Valve and Clean All EGR ports	\$356.68	1.87%	9 - 

(Top 10 most common vehicle repairs in the Southern U.S. are based on 66,378 repairs in 2013 in AL, AR, DC, DE, FL, GA, KY, LA, MD, MS, NC, OK, TN, VA, SC, TX and WV. This data applies to roughly 85 percent of cars, light trucks, minivans and SUVs on the road in the U.S. – foreign and domestic. Source: CarMD.com Corp.)



# \$391.39

Average cost to repair the top 10 most common check engine vehicle problems in the Southern United States.

# 2014 CarMD® VEHICLE HEALTH INDEX™

MANUFACTURER & VEHICLE RELIABILITY RANKINGS AND LISTS

## DETAILED INDEX DATA

### Nationwide 2013: The 10 Most Expensive Check Engine Vehicle Repairs

Rank	Vehicle Repair	Type of Vehicle(s)	Total Repair Cost (Parts&Labor)
1	Replace Transmission Assembly and Reprogram Electronic Control Module (ECM)	Honda Civic 2001-2004 Jaguar X-Type 2002-2008 Range Rover 2003-2009 Volvo 2001-2006	> \$5,900
2	Replace Transmission and Torque Converter	Various makes and models	~ \$5,140
3	Replace Engine	Chevrolet Geo Prizm 2001 Chevrolet Cruz 2011-2012 Dodge Caliber, Jeep Compass, and Patriot 2007-2009 Mazda RX8 2004-2005	> \$5,100
4	Replace Hybrid Battery and Reprogram Engine Control Module (ECM)	Honda Hybrid Vehicles 2000-2010 Saturn Vue Hybrid 2007-2009	~ \$4,000
5	Repair Transmission Assembly	Various Dodge, Jeep, Lincoln, and VW Vehicles 2000-2009	> \$3,600
6	Replace Transmission Assembly	Dodge Stratus 2000 Jeep Wrangler 2005-2006 Lincoln Aviator 2003-2005 VW Routan 2009	~ \$3,635
7	Replace Transmission Case and Torque Converter	Saturn Vue 2004-2004	~ \$3,490
8	Replace Transmission Valve Body Assembly and Engine Control Module (ECM)	Ford Focus 2007 Jaguar S-Type 2005 Toyota Trucks 2001-2002	> \$3,150
9	Replace Hybrid Battery	Various Ford, Honda, Nissan & Toyota Hybrid Vehicles 2000-2009	> \$3,140
10	Replace Integrated Motor Assist (IMA) Battery	Various Hybrid Vehicles	~ \$2,900

*(Top 10 most expensive repairs are based on 145,571 verified repairs made and input into the CarMD database by the company's team of factory trained repair professionals in 2013. This data is for model year 1996 to 2014 OBD2 cars, light trucks, minivans and SUVs in the U.S. – foreign and domestic. Although these are the most expensive repairs, very few are common. Source: CarMD.com Corp.)*

# 2014 CarMD® VEHICLE HEALTH INDEX™

MANUFACTURER & VEHICLE RELIABILITY RANKINGS AND LISTS

## DETAILED INDEX DATA

### Nationwide 2013: The 10 Least Expensive Check Engine-Related Vehicle Repairs

Rank	Vehicle Repair	Total Cost (Parts & Labor)
1	Inspect Engine Oil for Correct Level and Viscosity	\$0.00
2	Inspect for Loose Fuel Cap and Tighten or Replace as Necessary	\$0.11
3	Replace Fuel Tank Gas Cap	\$26.42
4	Inspect Air Filter	\$107.17
5	Inspect Exhaust System	\$107.17
6	Inspect for Faulty Wiring at Powertrain Control Module (PCM)	\$107.17
7	Inspect for Vacuum Leak at Air Injection (AIR) System and Repair as necessary	\$107.17
8	Inspect Exhaust Waste Gate Actuator and Repair as Necessary	\$107.98
9	Inspect for Faulty Wiring at Air/Fuel Ratio Sensor(s) (AFR) and Repair as Necessary	\$107.98
10	Disable Air Injection (AIR) System and Reprogram Powertrain Control Module (PCM)	\$108.25

*(Top 10 least expensive repairs are based on 145,571 verified repairs made and input into the CarMD database by the company's team of factory trained repair professionals in 2013. This data is for model year 1996 to 2014 OBD2 cars, light trucks, minivans and SUVs in the U.S. – foreign and domestic. Source: CarMD.com Corp.)*