

2019

THE YEAR IN RECALLS

AN AT-A-GLANCE LOOK AT THE US AUTOMOTIVE INDUSTRY'S RECALLS

50,725,785

TOTAL NUMBER OF EVENTS

BY CAUSE



46.7%

Design



42.0%

Manufacturing



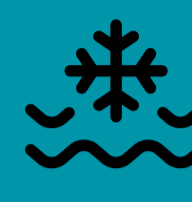
6.1%

Assembly



2.5%

Wear



2.4%

Weather



0.3%

Improper use

THE PRICE OF PROBLEMS

| 2015 | 2016 | 2017 | 2018 | 2019 |
|----------------|----------------|----------------|---------------|----------------|
| \$24.6 billion | \$22.8 billion | \$10.4 billion | \$9.8 billion | \$15.2 billion |

Based on average estimate of \$300 USD per recall in claims and warranty accruals.

BY CATEGORY

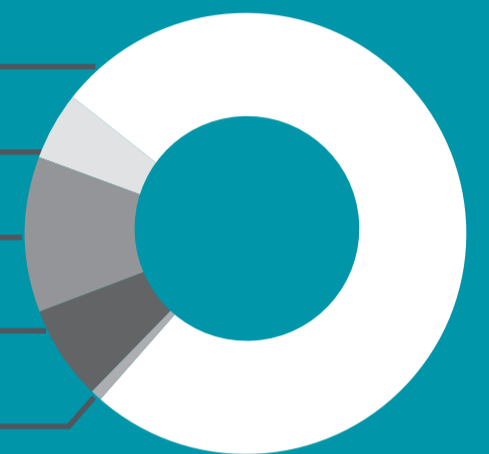
76.1% Mechanical

4.8% Electrical

11.5% Software

6.9% Software corrected

0.7% Notification



Software corrected issues are mechanical or electrical problems solved by a software workaround and ECU reflash

LARGEST CAMPAIGNS

| | | |
|----------------|---|-------|
| TAKATA* | Airbags Big problem in 2013, still accounts for 25% in 2019 | 12.9M |
| GM | Brake assist Failure of vacuum pump | 3.4M |
| HONDA | Airbags Previously repaired by earlier recall | 1.7M |
| FORD | Transmissions Trucks that unexpectedly downshift into first | 1.2M |

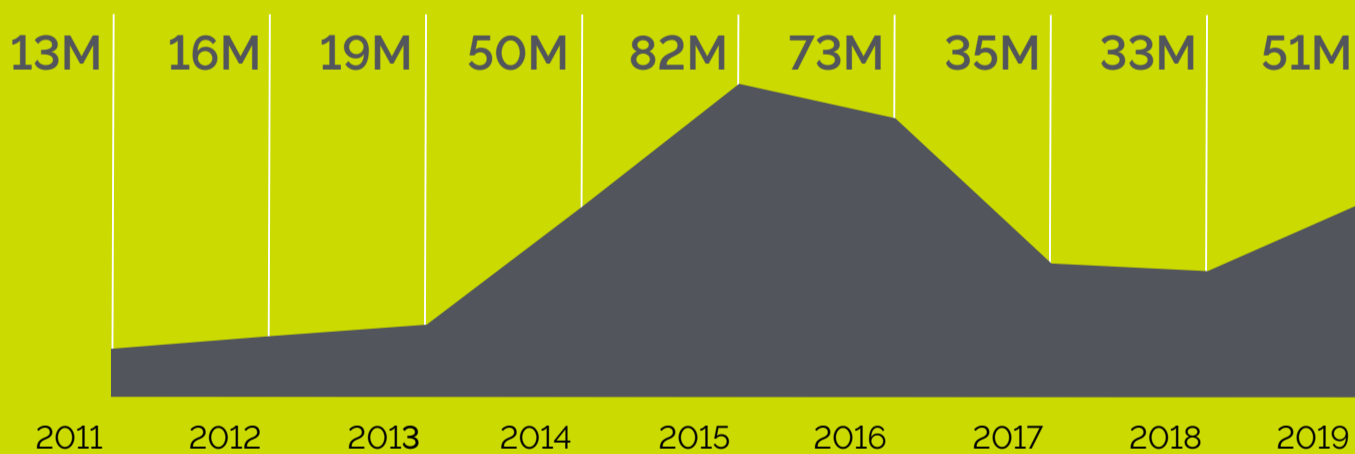
*As a fall-out from their industry-wide recall, Takata filed for bankruptcy in 2017.

BY AUTOMAKER

| | | | | | |
|----|--------|------|-----|----------|------|
| #1 | Ford | 7.1M | #6 | Toyota | 2.5M |
| #2 | GM | 6.3M | #7 | VW | 2.5M |
| #3 | FCA | 5.6M | #8 | Nissan | 1.7M |
| #4 | Honda | 4.4M | #9 | Mercedes | 1.2M |
| #5 | Subaru | 3.3M | #10 | BMW | 1.0M |

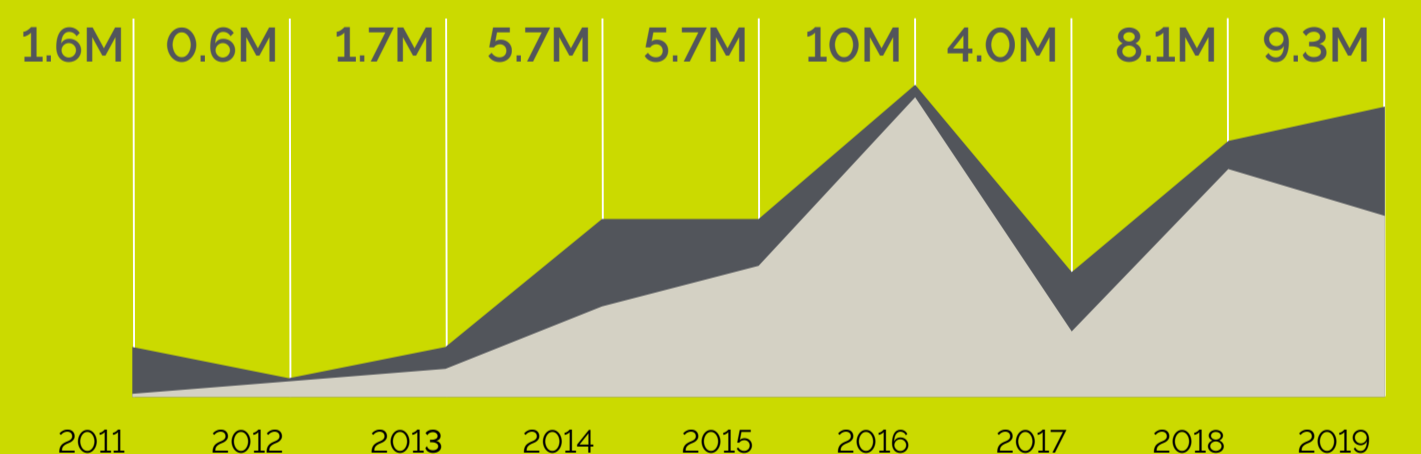
RECALLS OVER TIME

TOTALS



SOFTWARE FIXABLE OVER TIME

TOTALS



WORST RECALL RATIO

| | |
|-----|-------------------|
| 4.3 | Mitsubishi Motors |
| 3.5 | Audi |
| 3.4 | FCA |
| 3.2 | Honda |
| 3.1 | Mazda/BMW |

BEST RECALL RATIO

| | |
|-----|--------|
| 0.7 | Tesla |
| 0.8 | Jaguar |
| 0.9 | MINI |
| 1.0 | Kia |
| 1.1 | Volvo |

Recall ratio provides a relative estimation of an automaker's build quality, computed as the ratio of vehicle sales compared to the number of recalls over a five-year period (2015-2019). Lower numbers are better, higher numbers are worse.

BEST REDUCTION



BIGGEST INCREASE



The raw data behind these statistics is drawn from recall records catalogued by the Office of Defects Investigation (ODI), a department of NHTSA. Vehicles targeted by multiple recall campaigns are counted per recall event. Campaigns that are explicitly superseded by a later recall within the same year are not counted. Differences from CX3 Marketing 2015 report are due to corrections in ODI historical information, improvements in data analysis techniques, and redefined categories.