The Quality of Newly Launched NEVs Lags Behind Carry-Over Models, J.D. Power Finds

Leap Motor T03; NETA U; XPeng P5; Volkswagen ID.4 X; NIO ES6 and AITO M5 Rank Highest in Respective Segments

SHANGHAI: 1 June 2023 – The overall average quality of new energy vehicles (NEVs) this year, measured as problems per 100 vehicles (PP100), is 173 PP100, an increase of 21 PP100 from 2022, according to the J.D. Power 2023 China New Energy Vehicle Initial Quality Study (NEV-IQS),[SM] released today. A lower number of problems indicates higher quality.

The study, first published in 2019, is based on the annual J.D. Power U.S. Initial Quality Study[SM] (IQS). The NEV-IQS measures new-vehicle quality by examining problems experienced by NEV owners in China within the first two to six months of ownership.

The study shows that the number of NEV-related problems have increased. The quality problems of newly launched NEV models is 184 PP100, which is 15 PP100 higher than that of carry-over models. The quality of all-new models lags that of carry-over models in almost all categories measured in the study, especially in driving experience, which is 3.6 PP100 higher than carry-over models. Additionally, the number of quality problems in carry-over models has also increased year over year, up 20 PP100 from 2022.

"The competition in the NEV market is heating up, with various automakers constantly launching new models and improving the product matrix to seize market share," said **Elvis Yang, general manager of auto product practice at J.D. Power China**. "The quality of new models is lower than of carryover models and a shorter R&D period and adaptation of complex technological configuration are contributing to this decline. Automakers need to pay more attention to user experience and quality management as they accelerate the launching of new models."

Following are some key findings of the 2023 study:

- **Interior smell and excessive road noise are most-often-cited problems:** Unpleasant interior smell (9.3 PP100) is cited most often by NEV owners. This and excessive road noise (7.5 PP100) are two problems that have been cited among the top three quality problems for five consecutive years. Additionally, these two problems are also among the most-often-cited problems by owners of fuel-powered cars, reflecting the fact that vehicle owners in China have similar quality requirements for their vehicles regardless of power source.

- **Midsize SUV segment is most competitive between BEV and PHEV:** Currently, the midsize SUV segment has the largest sales proportion of battery-operated vehicles (BEVs) and plug-in hybrid electric vehicles (PHEVs) and it is also the segment with the most newly launched NEVs. Compared with 2022, sales of midsize BEV SUVs have increased 8.7% and sales of midsize PHEV SUVs have increased 7.3%. With regard to PP100, midsize PHEV SUVs perform better on basic quality (e.g., driving experience, climate, seats), while midsize BEV SUVs perform better on powertrain.[*]

- **Proportion of replacement purchases grows fastest**: In 2023, the proportion of replacement purchase customers has grown the fastest in NEV market and the average transaction price is

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[*] *Sales data: Sales volume of 81 cities surveyed during the delivery period of qualified samples (July 2022-January 2023).*

higher than that for first-time purchase and additional purchase customers. However, the overall quality satisfaction of replacement purchase vehicles is worse, 180 PP100, higher than for first-time purchases (by 6 PP100) and additional purchases (by 15 PP100).

Highest-Ranked NEV Models

Models that rank highest in their respective segments are:

- Small BEV segment: **Leap Motor T03**
- Compact BEV segment: **NETA U**
- Midsize BEV car segment: **XPeng P5**
- Midsize/Large BEV SUV segment: **Volkswagen ID.4 X**
- Premium BEV segment: **NIO ES6**
- Mass Market PHEV segment: **AITO M5**

In the Premium PHEV and BEV MPV segments, criteria for awards were not met, thus no awards are given this year.

The China New Energy Vehicle Initial Quality Study (NEV-IQS) measures new-vehicle quality by examining problems experienced by NEV owners in two segments: design-related problems and defects/ malfunctions. Specific diagnostic questions include 236 problem symptoms across 10 categories: features/ controls/ displays; exterior; interior; infotainment system; seats; driving experience; driving assistance; powertrain; battery/ charging; and climate.

The study is based on responses from 7,191 vehicle owners who purchased their vehicle between July 2022 and January 2023. The study includes 76 models from 36 different brands, among which 53 models have sufficient samples. The study was fielded from January through March 2023 in 81 cities across China.

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NOTE: Four chart follows.

J.D. Power
2023 China New Energy Vehicle
Initial Quality Study[SM] (NEV-IQS)

Model Ranking per Segment
Problem per 100 Vehicles (PP100)

Small BEV

Model	PP100
Leap Motor T03	166
Wuling Hongguang MINI	168
SOL E10X	173
Chery eQ1	180
Chery QQ Ice cream	181
Small BEV	190
NETA V	191
Roewe Clever EV360	198
Changan Benni E-Star	200
Geometry E	206
Changan Lumin	260

Compact BEV

Model	PP100
NETA U	157
Aion Y/Y Plus	168
BYD Dolphin	168
ORA Haomao	170
Compact BEV	173
Geometry A Pro	175
BYD Qin BEV	189
Dongfeng Fengshen E70/E70 Pro	192
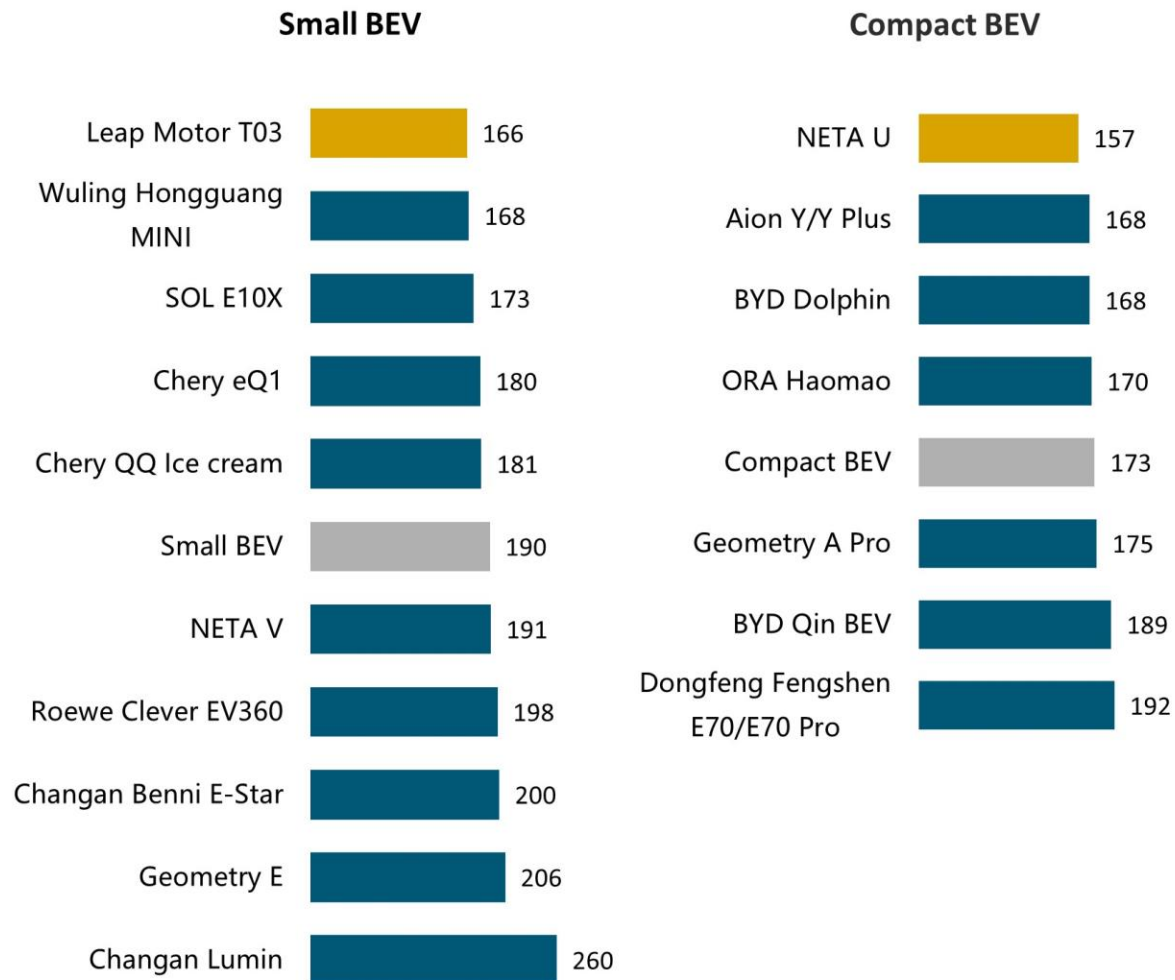
Notes: Models with identical scores are sorted alphabetically.
Scores are not shown for small sample (n=30~99)models. (Small BEV segment: Dongfeng Fengon E1, Baojun KiWi. Compact BEV segment: BAIC BJEV EU5 Plus, Buick Velite 6 BEV, Geely Emgrand BEV, Changan Eado EV)
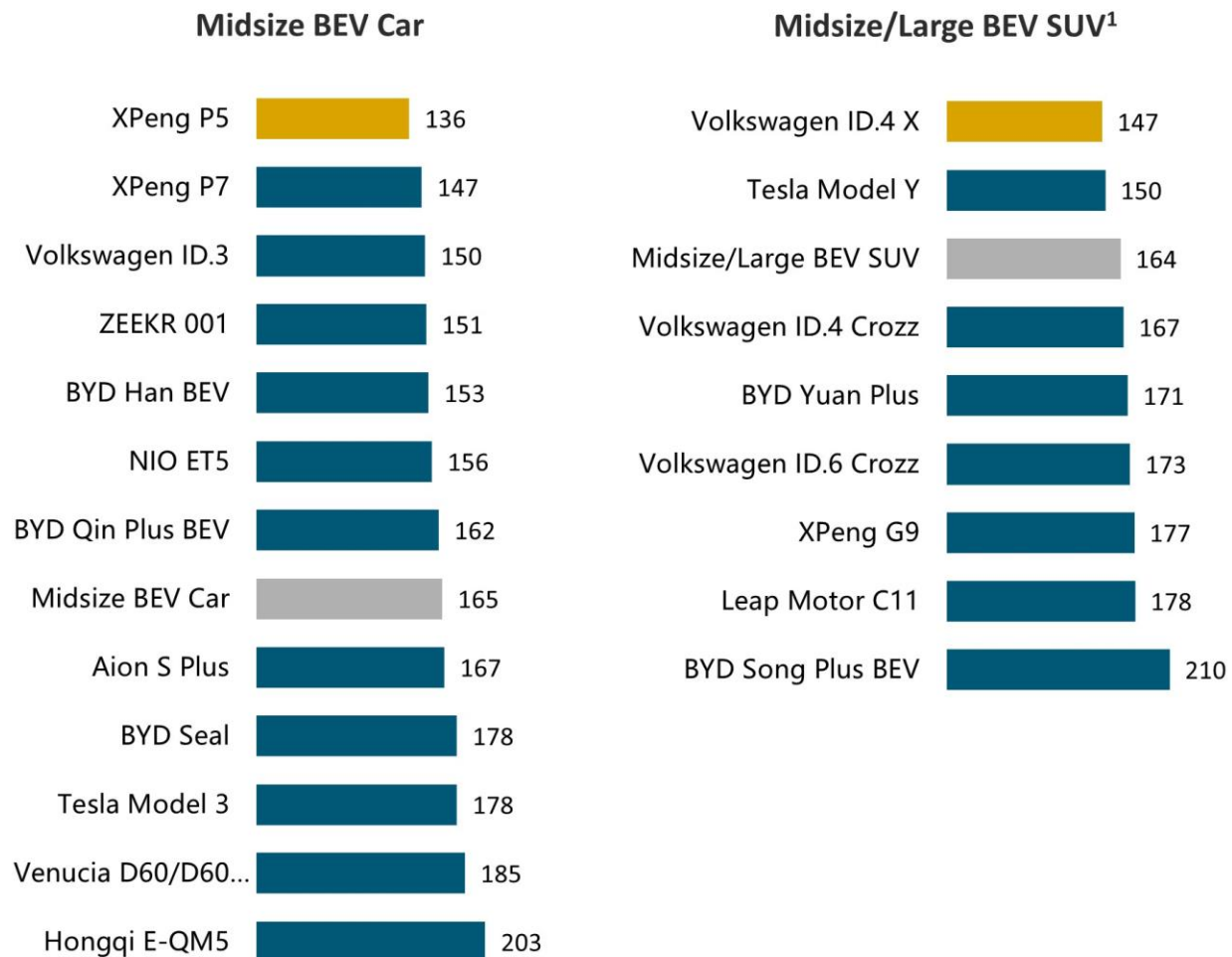
Source: J.D. Power 2023 China New Energy Vehicle Initial Quality Study[SM] (NEV-IQS)

J.D. Power
2023 China New Energy Vehicle
Initial Quality Study[SM] (NEV-IQS)

Model Ranking per Segment
Problem per 100 Vehicles (PP100)

Midsize BEV Car

Model	PP100
XPeng P5	136
XPeng P7	147
Volkswagen ID.3	150
ZEEKR 001	151
BYD Han BEV	153
NIO ET5	156
BYD Qin Plus BEV	162
Midsize BEV Car	165
Aion S Plus	167
BYD Seal	178
Tesla Model 3	178
Venucia D60/D60…	185
Hongqi E-QM5	203

Midsize/Large BEV SUV[1]

Model	PP100
Volkswagen ID.4 X	147
Tesla Model Y	150
Midsize/Large BEV SUV	164
Volkswagen ID.4 Crozz	167
BYD Yuan Plus	171
Volkswagen ID.6 Crozz	173
XPeng G9	177
Leap Motor C11	178
BYD Song Plus BEV	210

Notes: Models with identical scores are sorted alphabetically.
Scores are not shown for small sample (n=30~99)models. (Midsize BEV Car segment: DEEPAL SL03 BEV. Midsize/Large BEV SUV segment: Aion V Plus, AITO M5 BEV, smart #1, BYD Tang BEV, HYCAN Z03)
[1]J.D. Power segmentation of New Energy Vehicles is based on four groups: BEV/PHEV, Mass Market/Premium, Small/Compact/Midsize/Large and Sedan/SUV. Some segments have been merged due to the limit of the sampled models. In 2023, certain Large BEV SUVs are covered in the survey and combined to Midsize BEV SUV, which segment is renamed to Midsize/Large BEV SUV.
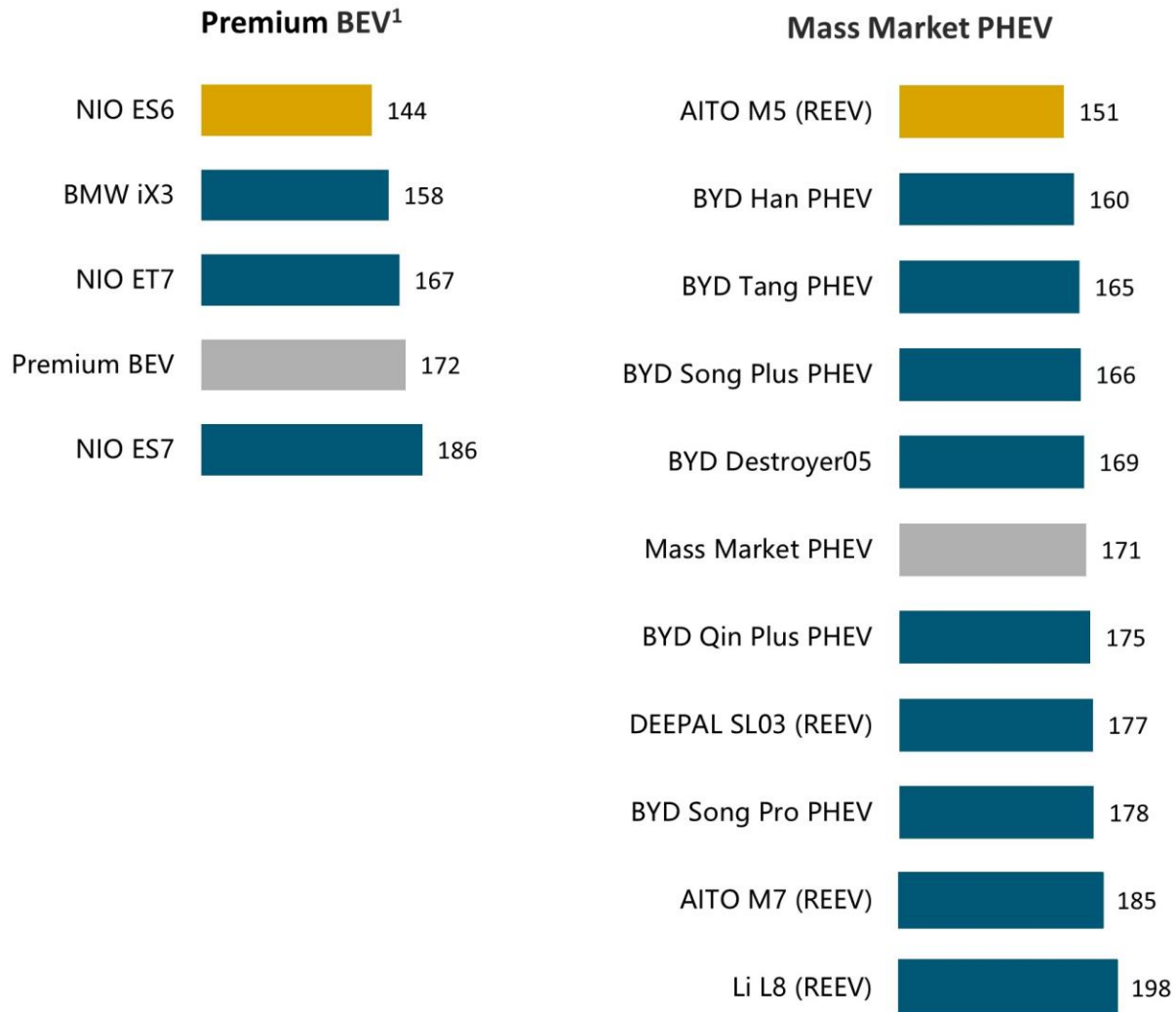
Source: J.D. Power 2023 China New Energy Vehicle Initial Quality Study[SM] (NEV-IQS)

J.D. Power
2023 China New Energy Vehicle
Initial Quality Study[SM] (NEV-IQS)

Model Ranking per Segment
Problem per 100 Vehicles (PP100)

Premium BEV[1]

NIO ES6	144
BMW iX3	158
NIO ET7	167
Premium BEV	172
NIO ES7	186

Mass Market PHEV

AITO M5 (REEV)	151
BYD Han PHEV	160
BYD Tang PHEV	165
BYD Song Plus PHEV	166
BYD Destroyer05	169
Mass Market PHEV	171
BYD Qin Plus PHEV	175
DEEPAL SL03 (REEV)	177
BYD Song Pro PHEV	178
AITO M7 (REEV)	185
Li L8 (REEV)	198

Notes: Scores are not shown for small sample (n=30~99)models. (Premium BEV segment: NIO EC6, NIO ES8, BMW i3, IM L7. Mass Market PHEV segment: Roewe eRX5 PHEV, Buick Velite 6 PHEV, Geely Emgrand L PHEV)

[1]Premium BEV is a combination of Midsize Luxury BEV and Large Luxury BEV. J.D. Power defines a model as Premium if the average MSRP exceeds 400,000 RMB. This definition for new energy vehicle is the same as ICEV.

Source: J.D. Power 2023 China New Energy Vehicle Initial Quality Study[SM] (NEV-IQS)
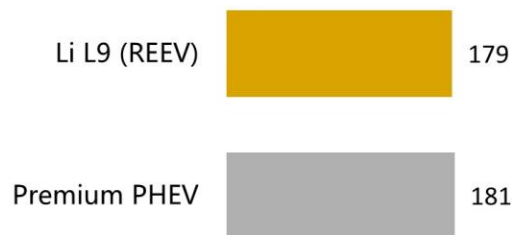
J.D. Power
2023 China New Energy Vehicle
Initial Quality Study^{SM} (NEV-IQS)

Model Ranking per Segment
Problem per 100 Vehicles (PP100)

Premium PHEV

Li L9 (REEV)	179
Premium PHEV	181

BEV MPV

Maple 80V	210
BEV MPV	210

Notes: Scores are not shown for small sample (n=30~99)models. (Premium PHEV: Mercedes-Benz E-Class PHEV, BMW 5 Series PHEV, Voyah Dreamer PHEV, Porsche Cayenne PHEV)
Criteria for segment awards: Four models must meet the required sample threshold (at least 100 samples) for inclusion in segment ranking. Or three models must meet the required sample threshold (at least 100 samples) to be included in segment ranking and the sales volume of these related three models must achieve at least 80% of total market share within that segment during the sampling period. At least one model located within a segment and getting a sufficient sample size must perform better than its segment average. These two segments above do not meet the foregoing criteria for segment awards, thus there is no award for these two, only ranking and scores are released for reference.

Source: J.D. Power 2023 China New Energy Vehicle Initial Quality Study^{SM} (NEV-IQS)