



## Executive Summary

Polestar commissioned the *Car and Driver* Testing Team to execute a real-world highway-range evaluation to see how its first EV, the Polestar 2, stacks up against its peers in this all-important metric.

As we've seen in the range testing done on behalf of *Car and Driver* and *Road & Track* magazines in the past, the EPA combined range figure that appears on the window sticker is unachievable when traveling at highway speeds. But the typical road-trip scenario—traveling long distances over a relatively short amount of time—is necessarily done at high speed. This test is therefore a more relevant determinant of real-world highway range and ultimate EV usability at speed over long distances than the EPA rating.

So how far can today's EVs drive at highway speeds? That's what the *Car and Driver* team set out to discover, running five vehicles at a steady 70 mph until the vehicles could no longer hold that speed. The cars were as follows:

- Polestar 2 with 19-inch wheels and tires
- Polestar 2 with the Performance Package wearing 20-inch wheels with summer performance tires.
- Tesla Model 3 Performance
- Jaguar I-Pace
- Audi e-tron

Great care was taken to ensure comparable results, with all five vehicles driven at the same time on the same three-mile oval on a closed course (see Methodology section for a more complete account). And no matter how low the battery gauge got, each vehicle was driven until it could no longer maintain 70 mph.



HERE'S HOW FAR THE VEHICLES WENT



# Car and Driver-Tested Range at 70 mph

*Tesla Model 3 Performance*

**234 Miles**



*Polestar 2*

**205 Miles**



*Polestar 2 (with Performance Package)*

**197 Miles**



*Jaguar I-Pace*

**188 Miles**



*Audi e-tron*

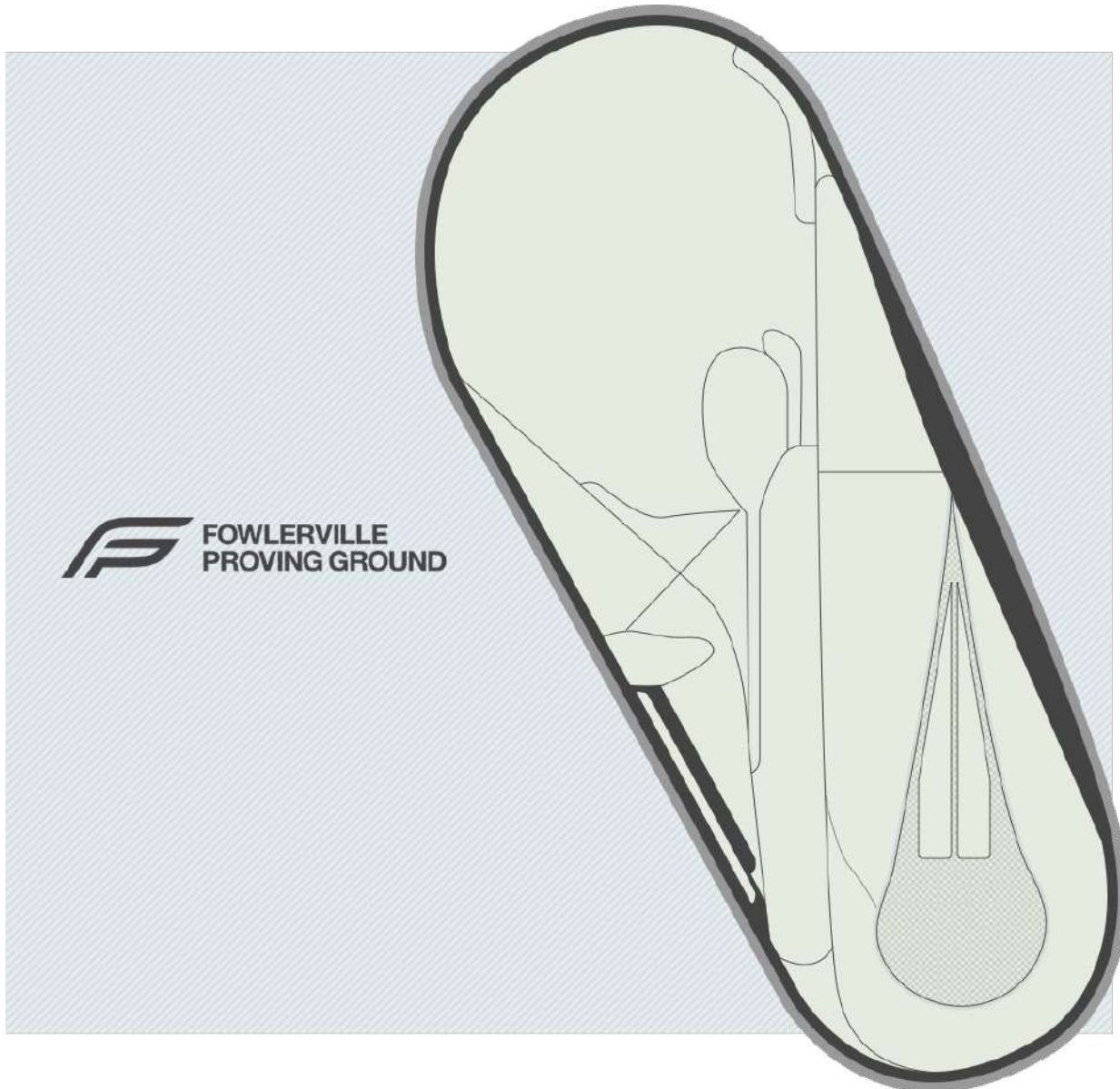
**187 Miles**



## Methodology

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This test was conducted on the three-mile oval (Road D) at FT Techno's [Fowlerville Proving Ground](#) in Fowlerville, Michigan on Sunday July 26<sup>th</sup> between approximately 11:30 am and 2:30 pm. The average outside temperature was 85F, with average wind speed of 9 mph from the southwest.



The oval consists of 0.85-mile straightaways connected by a 1000-foot radius curve on the south end and a decreasing radius (1500-foot diameter to 1000-foot diameter) on the north end. That equates to cornering forces of roughly 0.30 g on the south end and 0.25 g on the north end at our 70-mph test speed.

# Methodology

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## Test Setup

- All cars were charged to 100-percent battery capacity before the start of the test
- Cars were tested in their default/normal/comfort mode, with regenerative braking turned off, or in its least-aggressive setting
- Climate control was set to 72 degrees in automatic mode
- Tire pressures were set to door-placard values
- Headlights were on, as per the requirements of the test facility
- Each car had a VBox LapTimer or VBox DriftBox, logging GPS speed/position/acceleration at 10 Hz
- Other than the data acquisition and headlights, there were no other accessory loads (i.e., no radio use, phone charging, etc.)

## Test Details

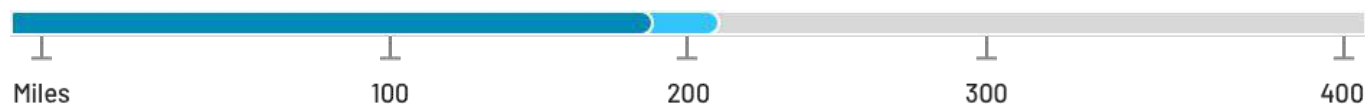
- Each car traveled approximately 1.3 miles at low speeds (maximum of 25 mph) through the facility to reach the oval track. This distance was excluded from the quoted range figures
- Starting at the entrance to the oval, each car accelerated at 0.3 g until reaching the 70-mph target speed
- Cruise control was then set as close to a true, GPS-verified 70 mph as possible
- For vehicles that couldn't be set within 0.5 mph of 70, drivers alternated the set speed every five miles (e.g., alternating between 70.5 mph and 69.5 mph)
- The vehicles drove in the left lane for the entirety of the test, spaced equally around the oval (roughly a 0.6-mile gap between the cars, which is most of the 0.85-mile straightaway at the facility)
- In the case of cruise control not being available at a low state of charge, drivers would override to maintain 70 mph for as long as possible
- The end of the test was defined as the point at which the car dropped below 69 mph
- In addition to the 10-Hz GPS data, we logged the indicated battery state of charge and predicted range every five miles
- All drivers are experienced members of *Car and Driver's* test team, with a collective 20,000 hours of test-track time

# Findings

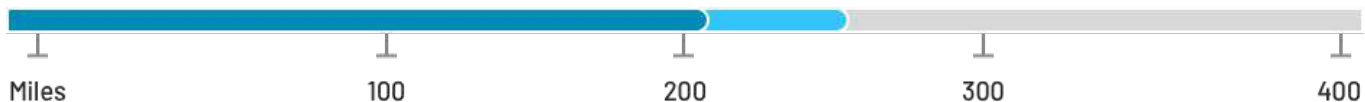
Although the finishing order in this range test mirrors the EPA combined range rankings, the difference in miles driven between the two varies substantially, with the Tesla Model 3 achieving only 75 percent of its EPA figure when driving at 70 mph, while the Audi e-tron got closest, with a 92-percent result in the same comparison. Polestar has yet to obtain its official EPA figures, but if the range number is in the mid-200s as estimated (say 250 for the purposes of this comparison), that would equate to the standard car achieving 82 percent of its window-sticker figure. Polestar is confident that, when the final figures are announced, its EPA range rating will be comfortably in line with the other vehicles here and mirror the results of this test and its finishing order.

## EPA Range + Percentage of EPA Range Achieved in Test

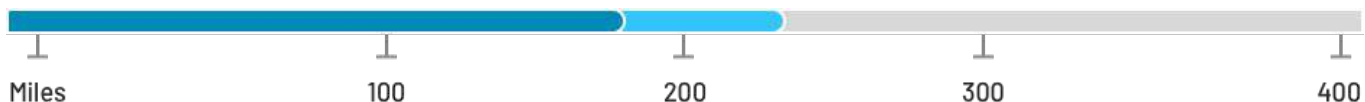
**Audi e-tron - EPA Range: 204 Miles - Achieved: 92%**



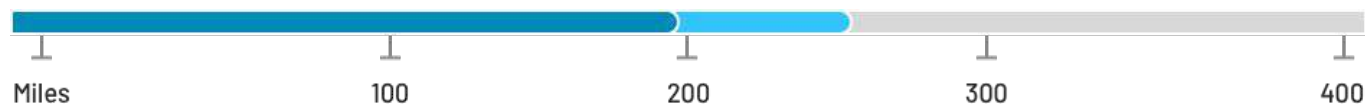
**Polestar 2 - EPA Range: 250 Miles (est.) - Achieved: 82%**



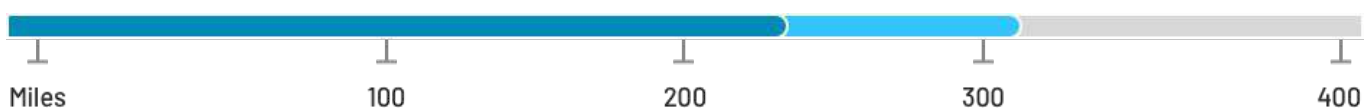
**Jaguar I-Pace - EPA Range: 234 Miles - Achieved: 80%**



**Polestar 2 (w/Perf Package) - EPA Range: 250 Miles (est.) - Achieved: 79%**



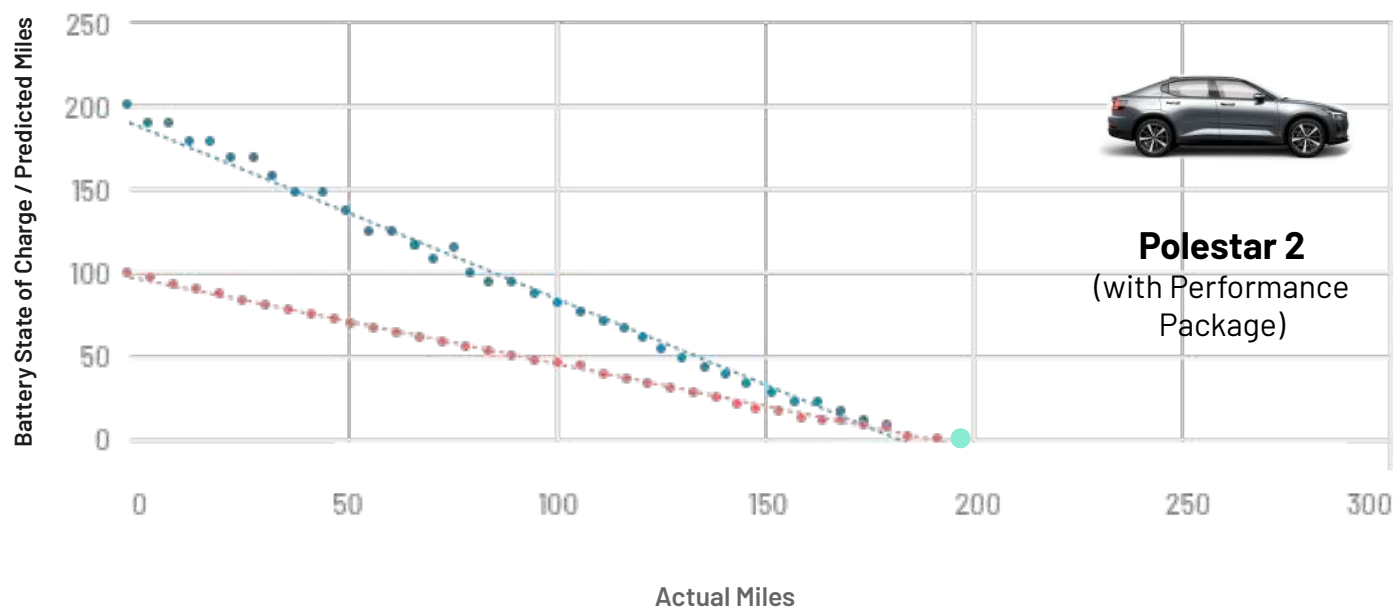
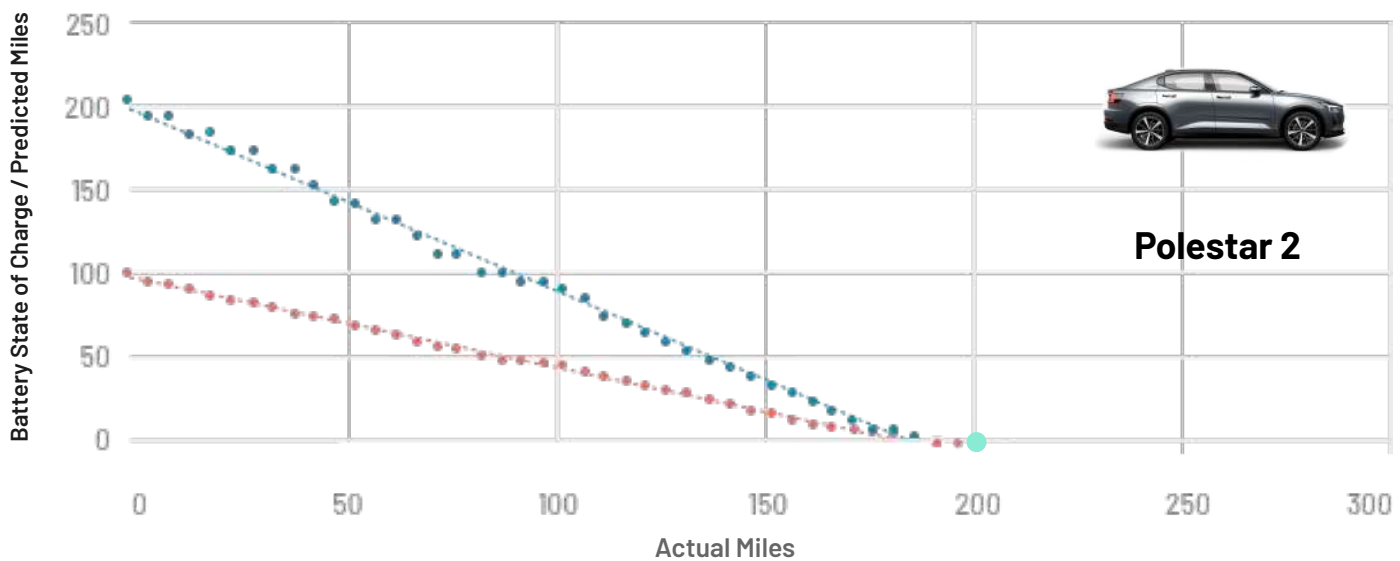
**Tesla Model 3 Performance - EPA Range: 310 Miles - Achieved: 75%**



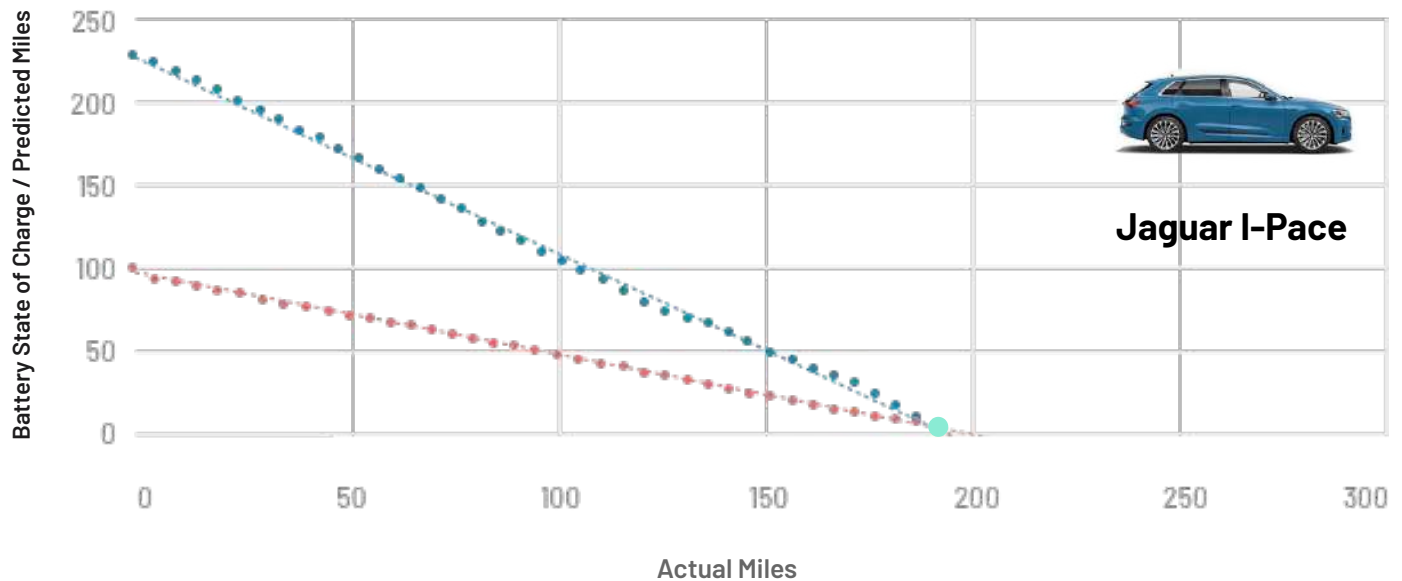
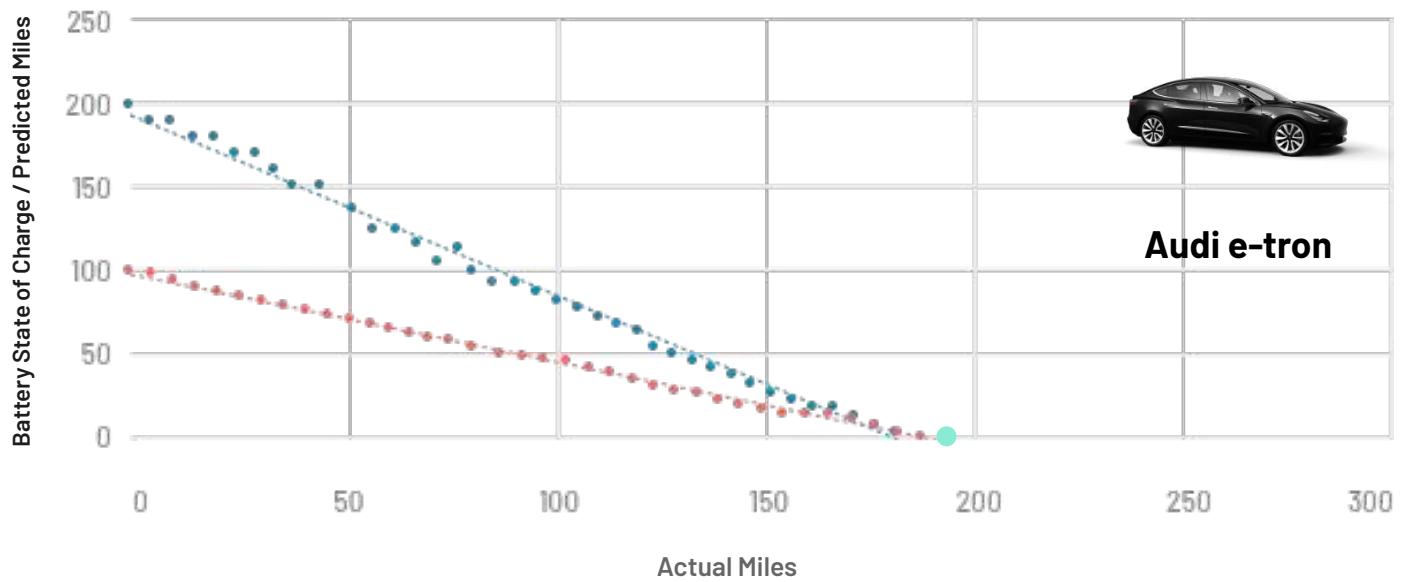
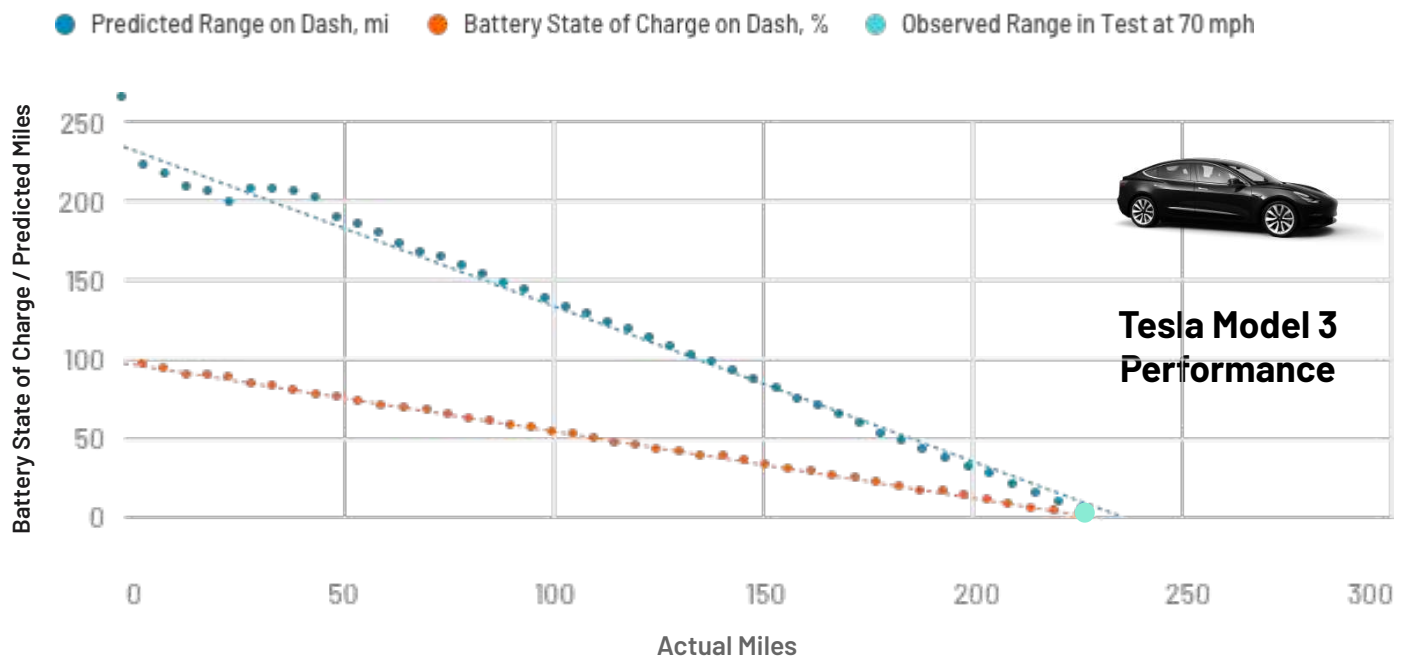
# Findings

All of the vehicles exhibited a consistent, reasonably linear decline in both their predicted range figures and battery state of charge throughout the test, with no large corrections up or down at any point. The Polestar 2 proved to be the most conservative in its dashboard predictions, as the test vehicles were able to drive an additional 7 to 10 miles at 70 mph after showing 0-percent battery, whereas the Tesla Model 3 made it just 2 more miles after zeroing out its battery gauge.

● Predicted Range on Dash, mi   ● Battery State of Charge on Dash, %   ● Observed Range in Test at 70 mph



# Findings



# Findings

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But even after they were unable to maintain the 70-mph test speed, each car still had some usable battery energy left. All but the Audi had no problem completing the roughly two miles of additional driving to exit the oval and making their way back to a plug. The e-tron, however, runs closest to the ragged edge. After it could no longer maintain 70 mph, it stopped after just an additional 1.9 miles.

VEHICLE DETAILS





# Vehicle Details

## 2021 Polestar 2

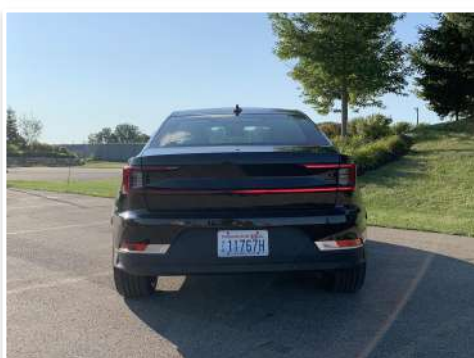
VIN: LPSED3KA0ML000496

Odometer, mi: 288

Tires: Michelin Primacy 4, 245/45R-19 102V POL

Tire pressures front/rear, psi: 41/42

Curb weight, pounds: 4726



# Vehicle Details

## 2021 Polestar 2 with Performance Package

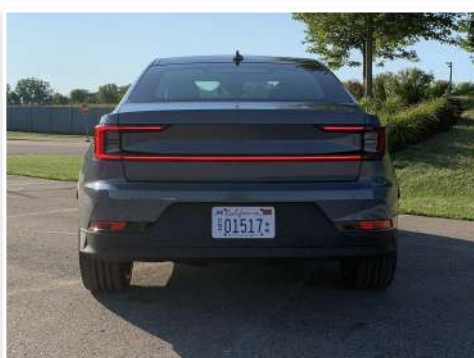
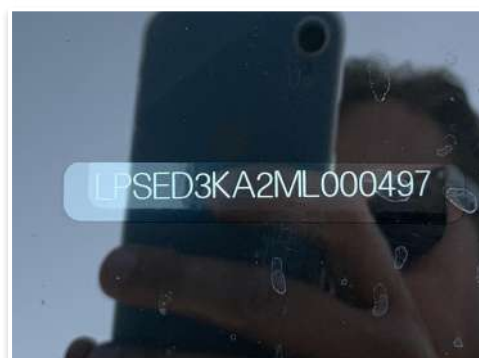
VIN: LPSED3KA2ML000497

Odometer, mi: 182

Tires: Continental Sport Contact 6, 245/40R-20 99V POL

Tire pressures front/rear, psi: 41/42

Curb weight, pounds: 4728



# Vehicle Details

## 2019 Audi e-tron

VIN: WA1LAAGE5KB007903

Odometer, mi: 1497

Tires: Goodyear Eagle Sport All Season, 255/50R-20 109H M+S A0

Tire pressures front/rear, psi: 38/41

Curb weight, pounds: 5790





# Vehicle Details

## 2018 Tesla Model 3 Performance

VIN: 5YJ3E1EB3JF070092

Software Version: 2020.24.6.9

Odometer, mi: 13,573

Tires: Michelin Pilot Sport 4S, 235/35R-20 92Y T0

Tire pressures front/rear, psi: 42/42

Curb weight, pounds: 4092

