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Will EVs Leave You Out in the Cold?



...and the double-edged sword
inherent with EV

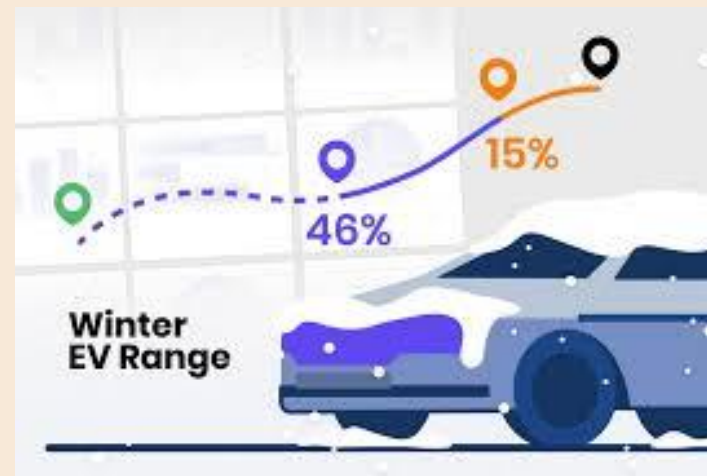


Range anxiety remains a major headwind for EVs.

The problem is compounded for those that live in colder climates.

But that's changing.

Is giving EVs the cold shoulder warranted?



- A recent Plug-in America survey of 3000+ EV owners found that 70% of the respondents worried about driving range prior to their purchase.
- **The good news:** That same survey also discovered that after purchasing an EV the percentage of people worried about range dropped by half.
- **The bad news:** Even after purchasing 35% of EV drivers still have range anxiety.
- And the problem is compounded in cold weather climates... or is it?

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Due to battery technology and the need to heat the car cabin, cold weather does reduce driving range.

Cold weather also increases charging times.

But the magnitude of downside depends greatly on the EV model.

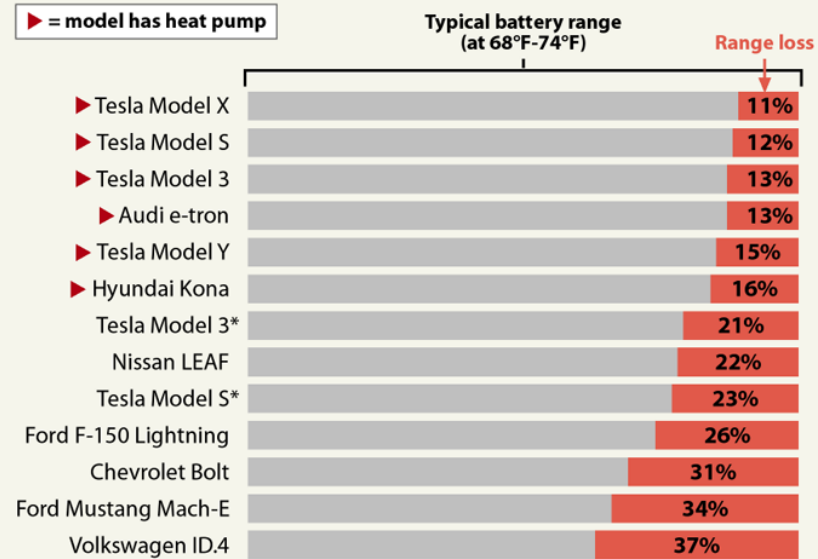
Range does decline in cold weather but...

How Do Different EVs Perform in Winter?

A new study from Recurrent found that, among 13 popular electric vehicle models, freezing temperatures reduced their driving range by an average of 21 percent. But the results differed drastically between models, with heat pumps playing a big role.

EV BATTERY RANGE LOSS DUE TO COLD WEATHER

Range performance at freezing (32°F) or less, 2024



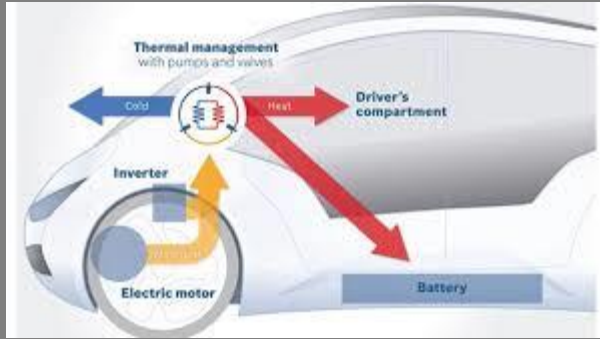
*These model years lack heat pumps.

SOURCE: Recurrent

PAUL HORN / Inside Climate News

- Not surprisingly, Tesla models perform better than most others in cold weather.
- That's one of the advantages of having market and development experience.
- The Volkswagen ID.4 performed over three times worse than the Tesla Model X.
- But why?

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Heat pumps aren't just for your home.

In 2020 EV manufacturers started installing heat pumps in their vehicles.

Even in cold weather heat pumps extract warmth from outdoor air to warm the car's interior and battery.

Pump up the heat



- Research has found that when temperatures drop below freezing, range can be reduced from 25% to 41%. That's a problem.
- But heat pumps go a long way to mitigating the downside. On average, EV models without a heat pump – like the Volkswagen ID.4 – saw a reduction in battery life of 28% compared to only 13% for cars with heat pumps.
- It should be noted that cold weather impacts the performance of all cars. The Department of Energy estimates that gas-powered cars lose between 10% to 20% of their driving range when temperatures drop from 77°F to 20°F.
- The difference: gas stations are plentiful and it takes only a few minutes to fill up.

So what is the double-edged sword inherent in EVs?

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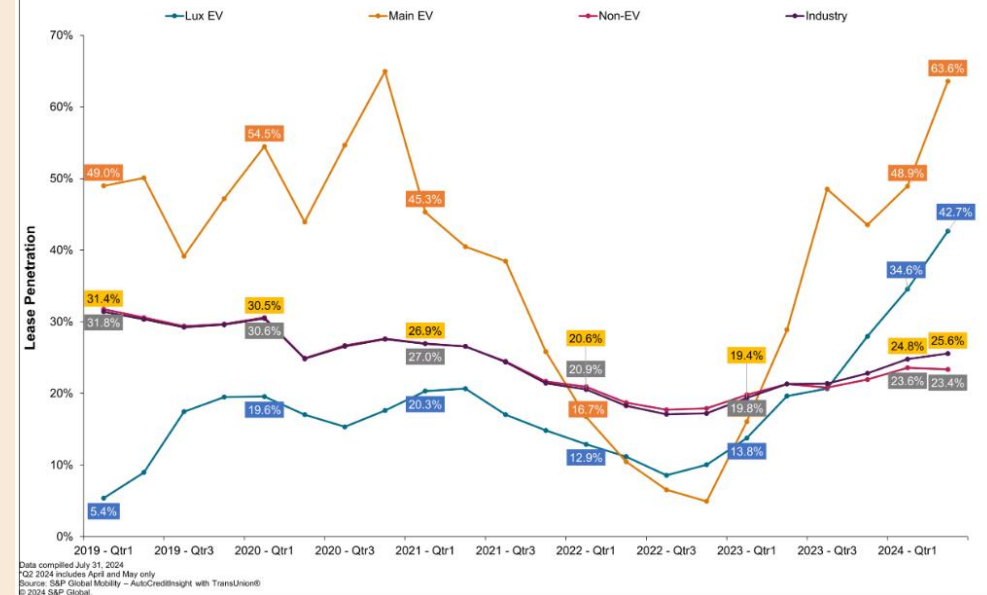
...or maybe a little long.

When consumers know a better version of a product will be available soon, purchasing decisions are delayed.

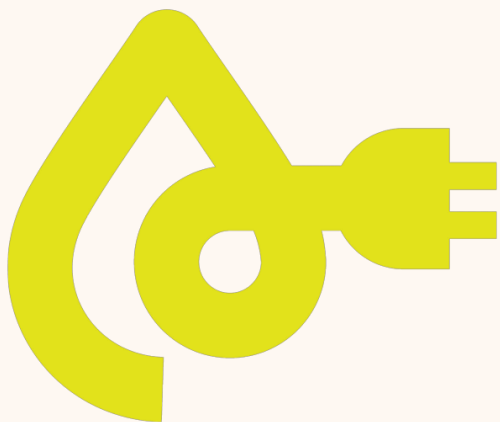
In the case of EVs, so much is evolving that market acceptance is inhibited.

Evolving technology

Figure 4: Percentage of New Vehicles Sold on Lease, by Vehicle Type



- Notwithstanding the need to build out an adequate charging network, many aspects of EV technology continues to evolve.
- This is why such a large percentage of EVs are lease. That and tax credits being applied to leases.
- According to data from Edmunds, nearly 80% of new EVs bought from dealers are leased. Other sources have the number lower, but still above 60%.
- Until the technology achieves an acceptable point of stabilization, continued improvements will remain both a market tailwind and headwind.



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Unbiased and Unfiltered

- An honest assessment of the climate change effort.
- I cover what's working – but more important - the issues/roadblocks that the industry would prefer to ignore.
- A must-read for anyone with a desire to understand what's really going on with renewable energy and climate change.



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