

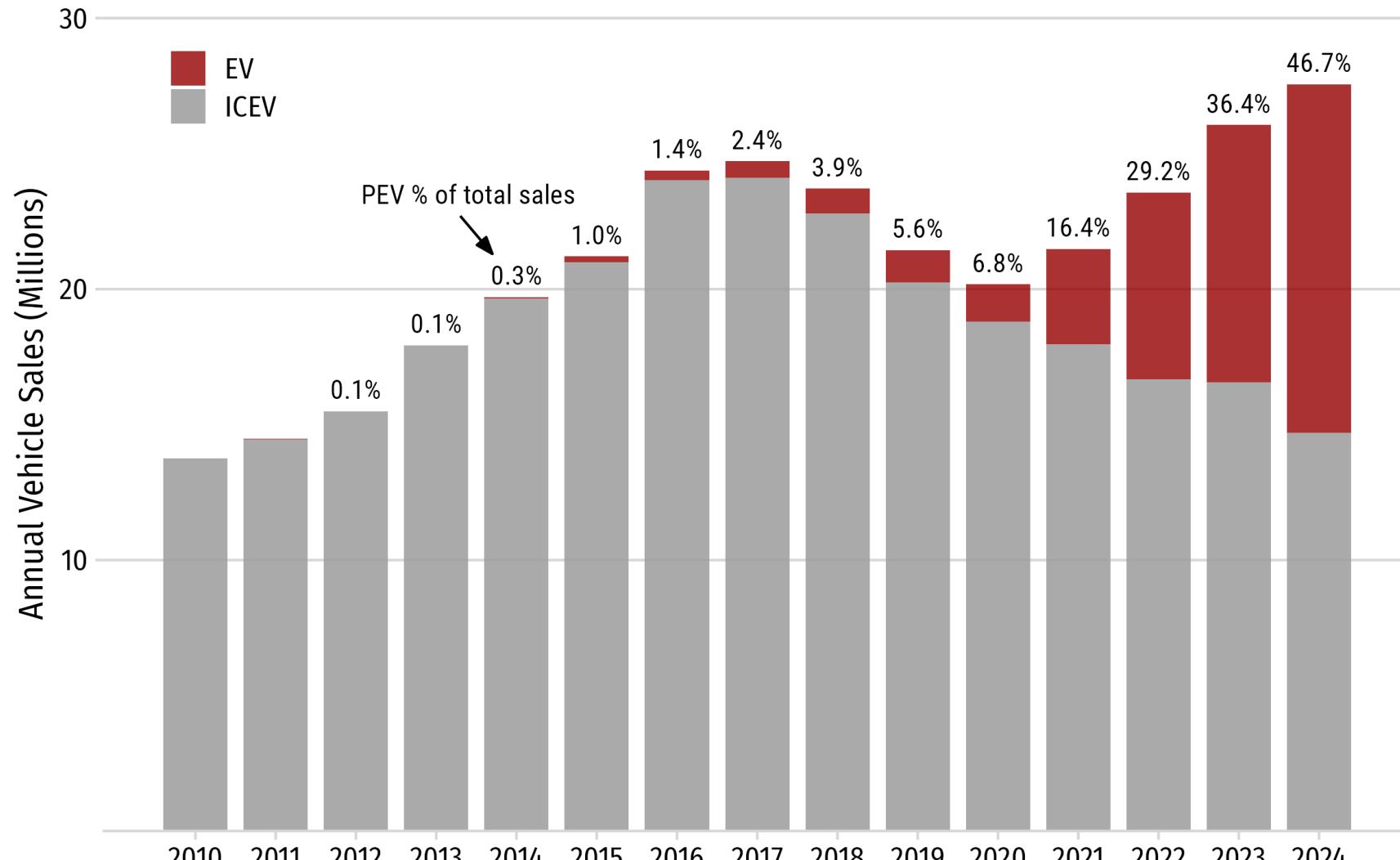
The EV Transition in the U.S. & China

John Paul Helveston, George Washington University

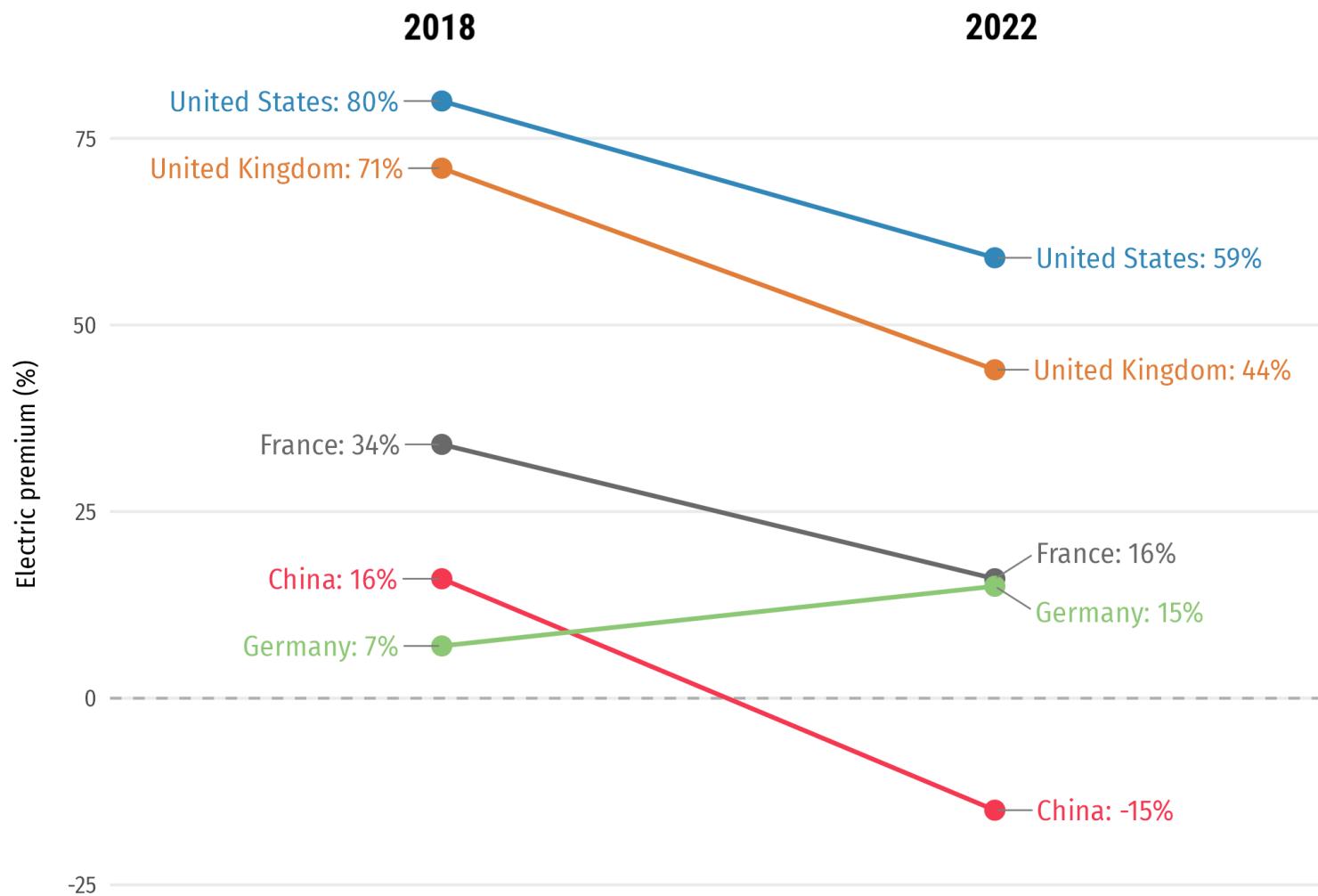
April 08, 2025

In China, PEV sales grow while ICEV sales slow

After peaking in 2017, internal combustion engine vehicle (ICEV) sales have declined for 7 straight years



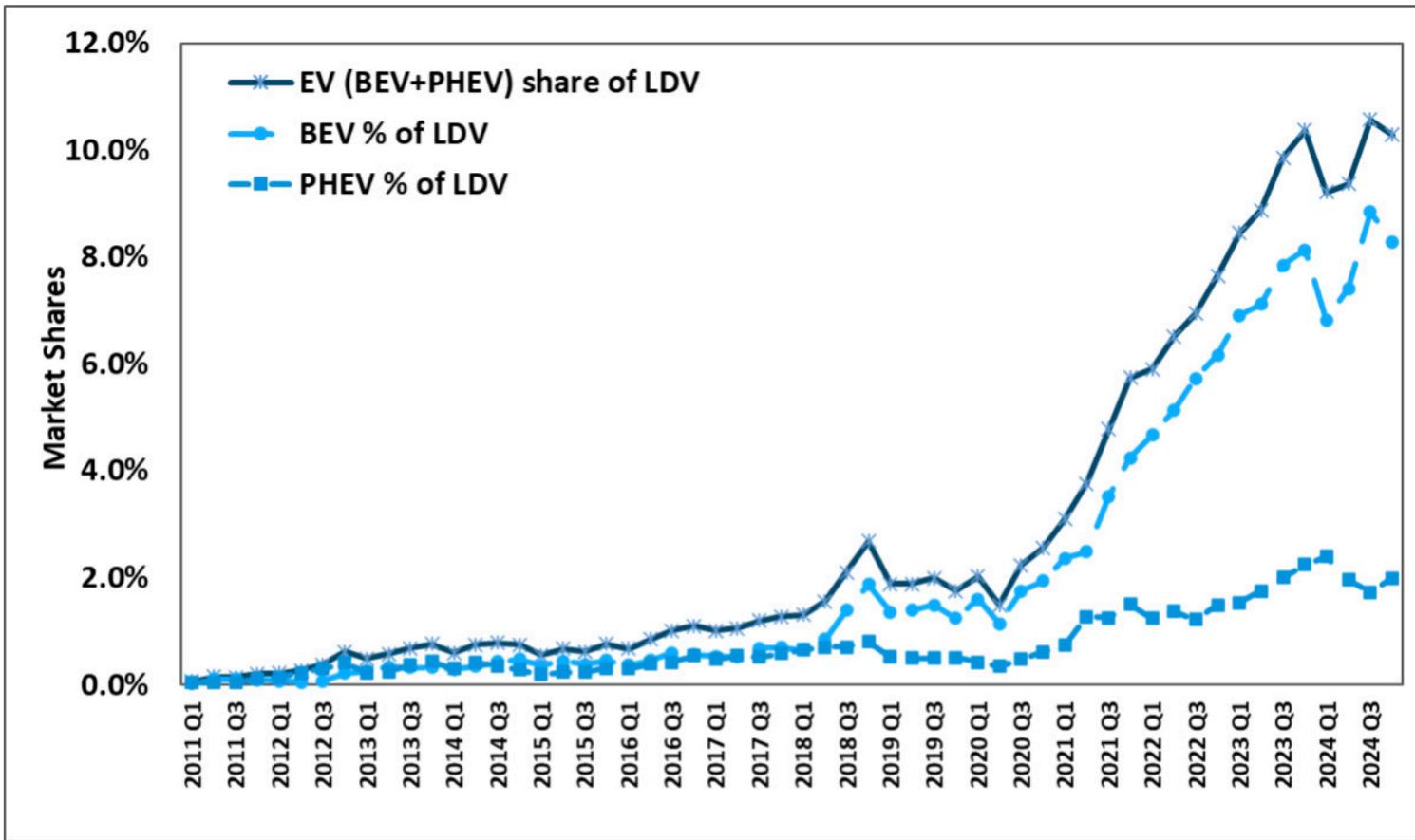
Data sources: OICA, marklines.com



The EV sector has an affordability problem (except in China)

Source: <https://www.iea.org/reports/global-ev-outlook-2024/executive-summary>

EV sales in US reaching ~10% of sales



Source: Argonne National Lab, <https://www.anl.gov/ev-facts/model-sales>

Things that don't help affordability:

Tariffs (100% tariff on imported Chinese EVs)

Effectively banning the use of Chinese suppliers (inc. raw materials) in US EVs

The biggest competitor
to an American EV
is not a Chinese EV...

...it's a gas car

Thanks!

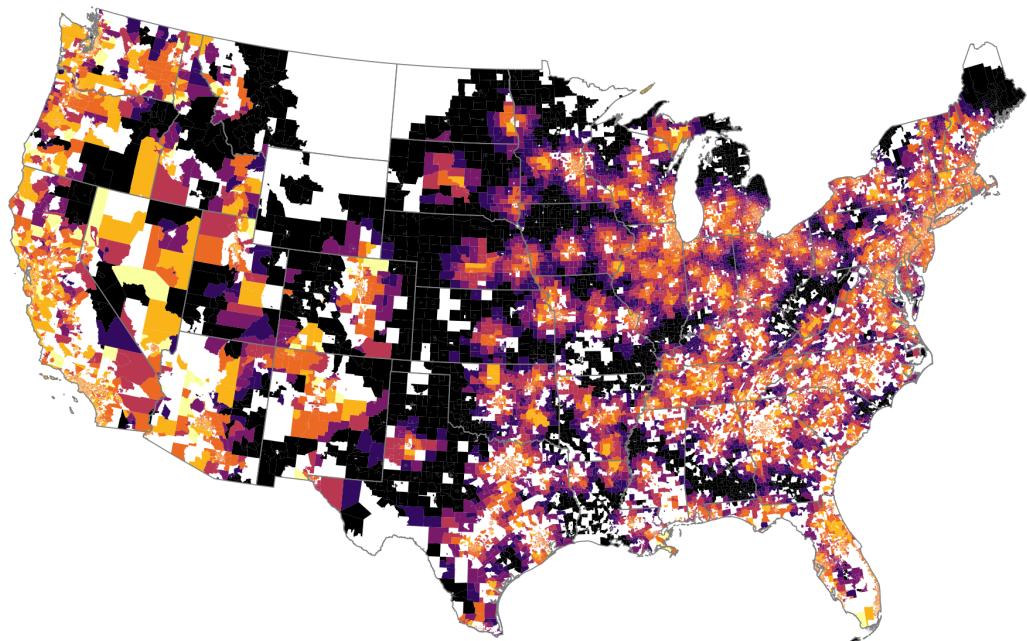
slides.jhelvy.com/2025-gwu-charging-ahead

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jhelvy.com 
jph@gwu.edu 

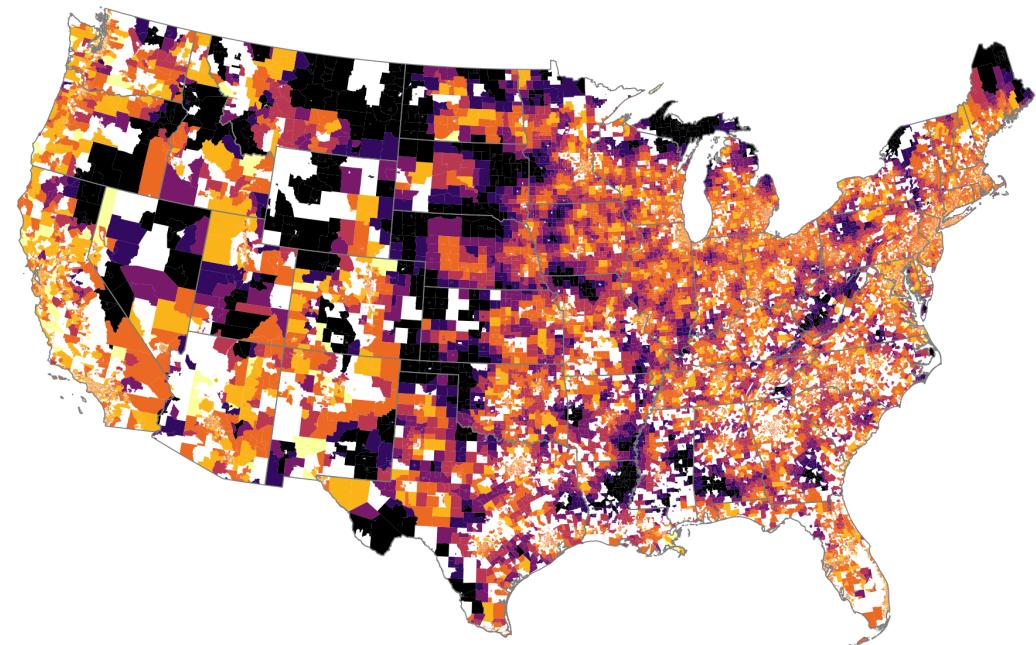
Extra Slides

The US has affordable EV deserts

2016



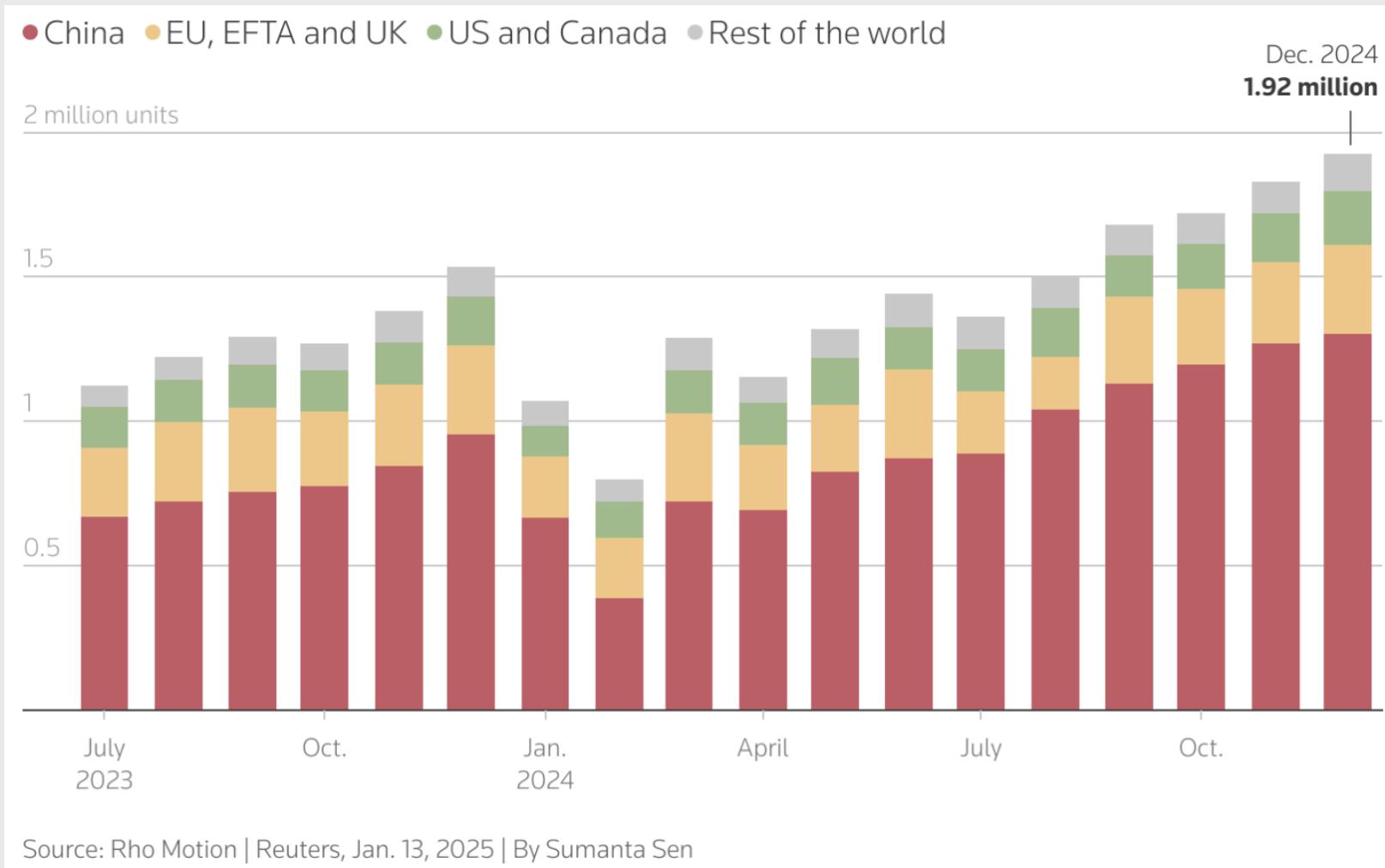
2021



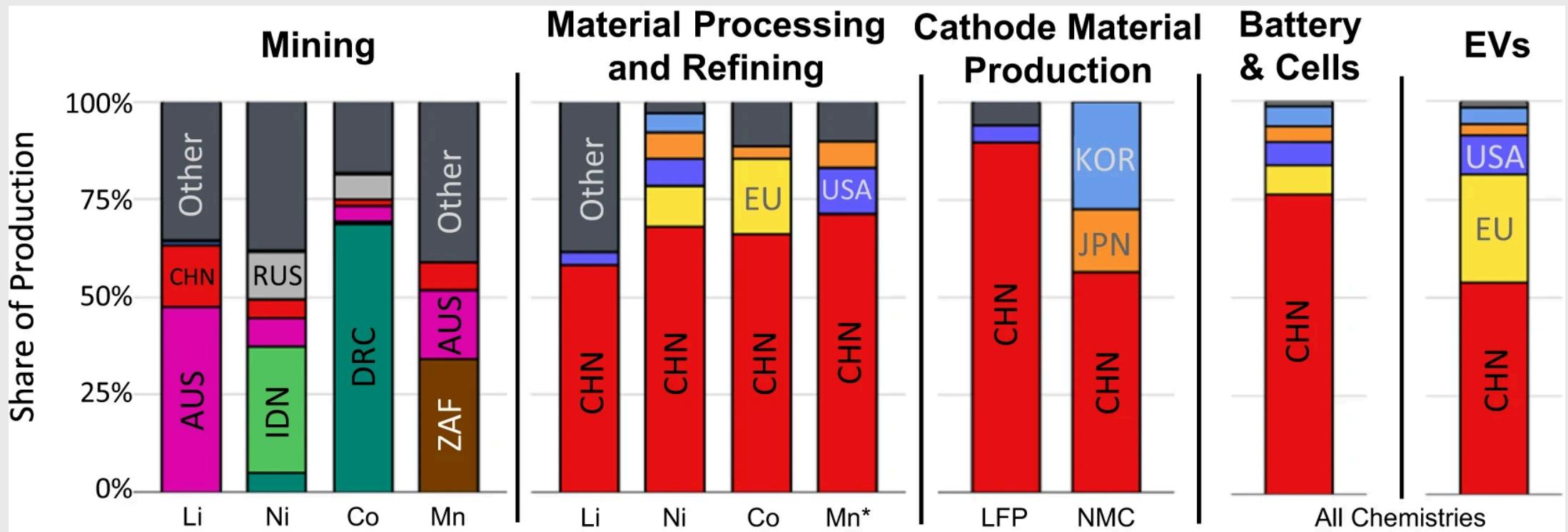
Additional travel time to nearest BEV (Minutes)



Chinese firms dominate the global EV industry



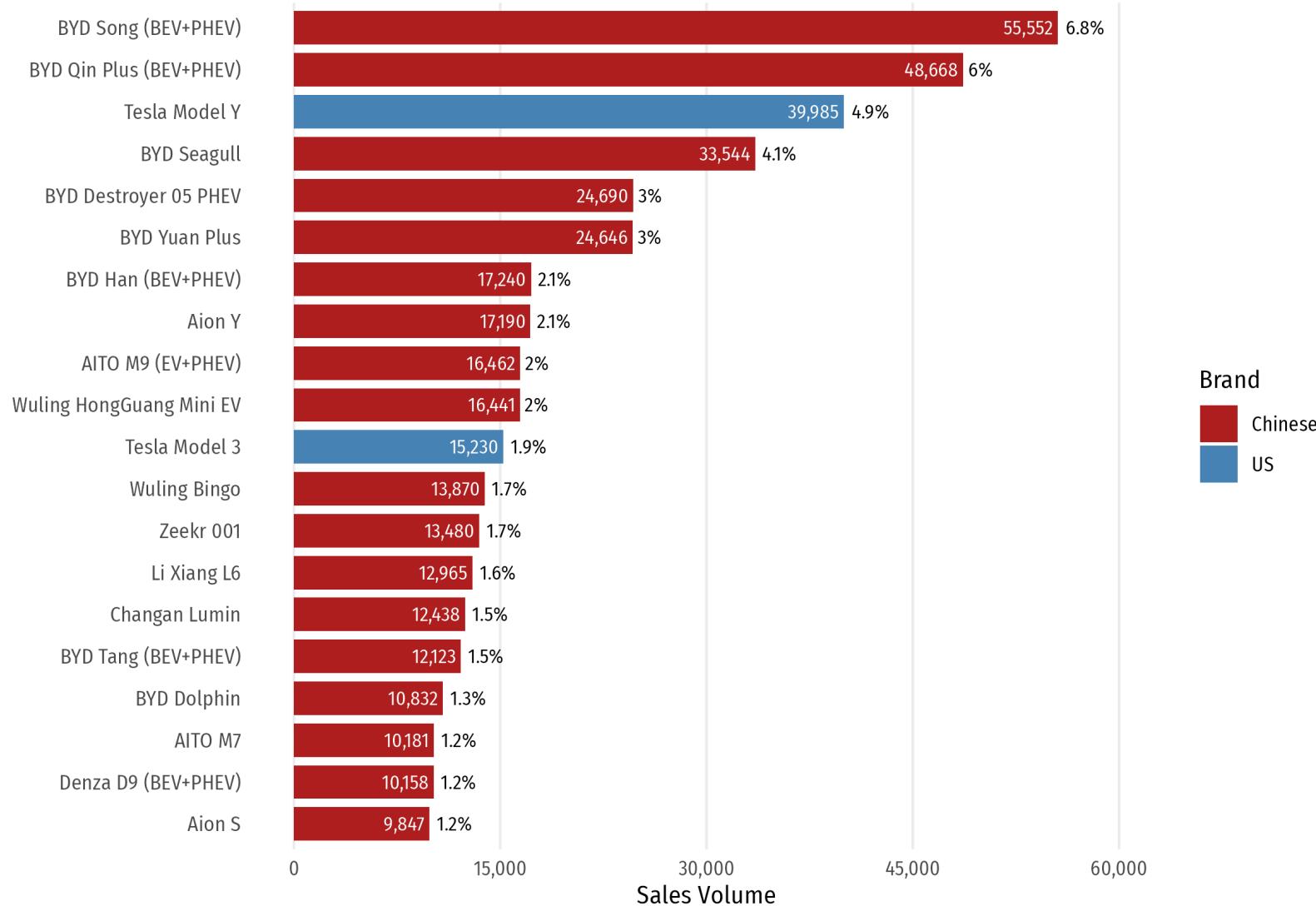
Chinese firms dominate the EV battery supply chain



Cheng, Anthony L., et al. "Electric vehicle battery chemistry affects supply chain disruption vulnerabilities." *Nature Communications* 15.1 (2024): 2143.

Top 20 EV Models by Sales (May 2024)

Percentage is total % of all vehicle sales

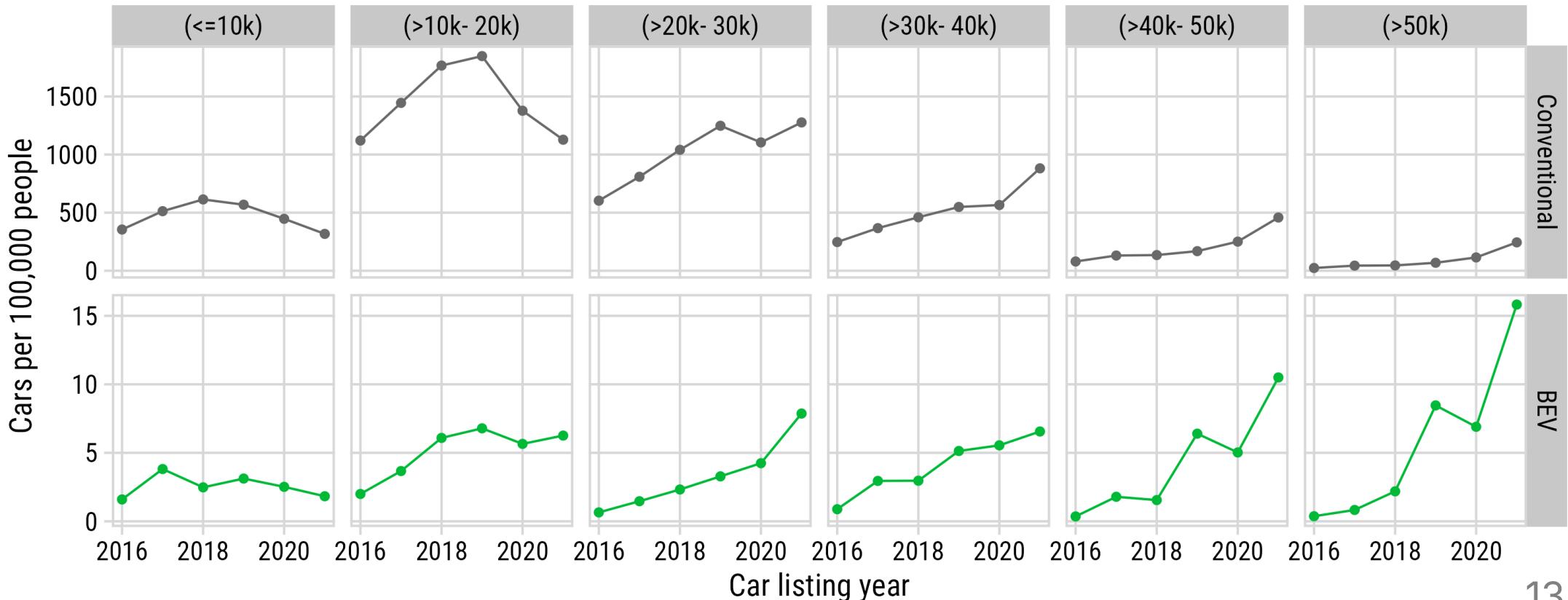


Chinese firms dominate China's EV market

Most BEV supply growth in higher-price segments (and overall supply still quite low)

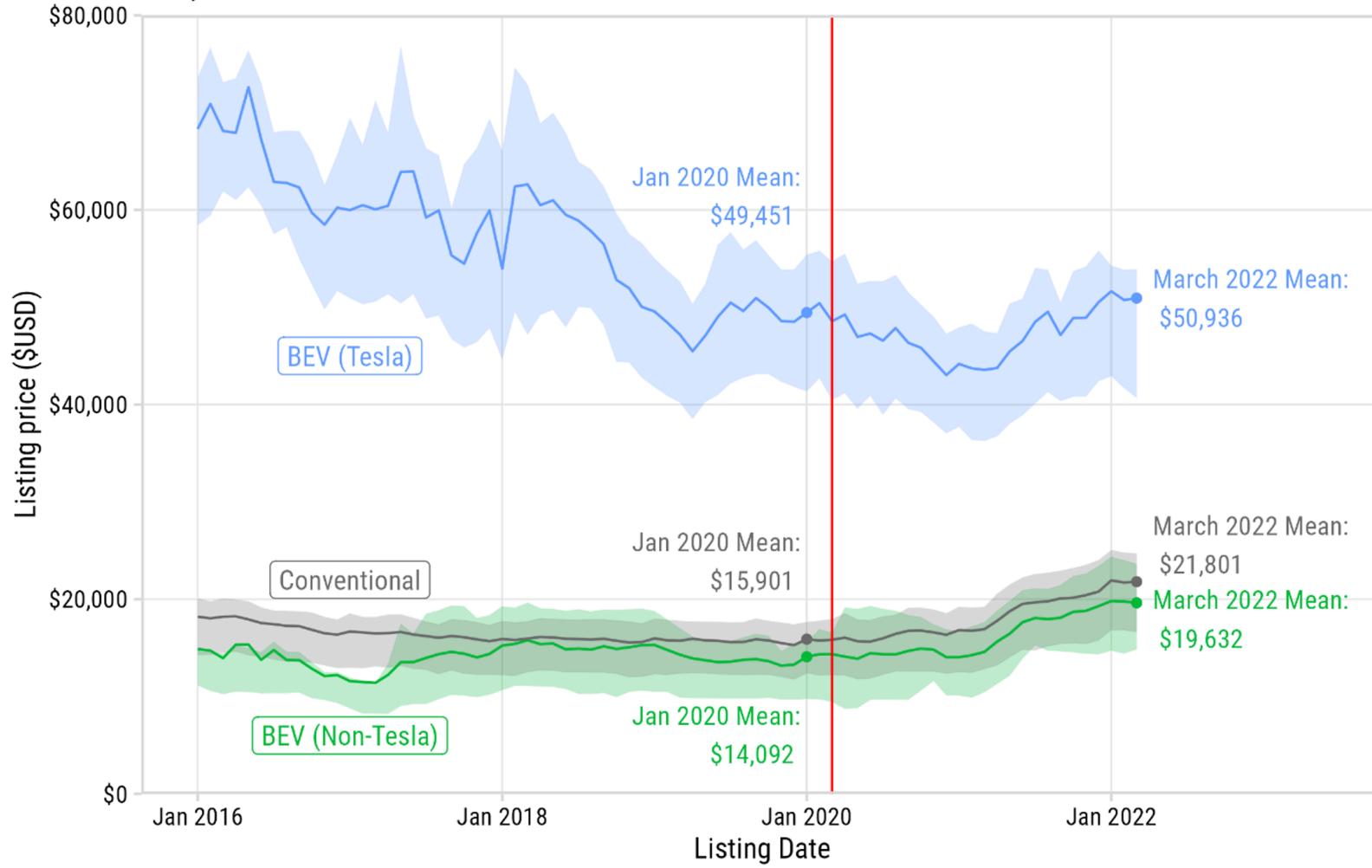
U.S. vehicle availability by price bin

Cars per 100,000 people computed using both new and used vehicles combined



Used market listing prices are substantially higher post-COVID19

Prices inflation-adjust to constant 2019 \$USD



Used market is more affordable, but post-COVID prices are up in all markets, not just EVs

Source: Roberson, Laura A., *Pantha, S., & Helveston, J.P. (2024) "Battery-Powered Bargains? Assessing Electric Vehicle Resale Value in the United States" Environmental Research Letters.

Bipartisan goal: The US needs to counter China's lead in clean energy tech

Keep Chinese clean tech out of US market: Steep tariffs on imported Chinese EVs, batteries

Keep Chinese firms out of US clean tech supply chains: IRA restrictions on EV subsidy eligibility, unclear guidance on Foreign Entities of Concern (FEOC) rules

Chinese FDI into U.S.

Gotion batteries: Multi-billion dollar investments in Illinois and Michigan

Challenge: Uncertainty around Foreign Entities of Concern (FEOC) status

Technology Licensing Agreements

Ford-CATL: Licensing battery technology in a Michigan plant

Challenge: CATL was recently added to DOD's list of "Chinese military companies"