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Which type of vehicle mileage tax is the public most willing to accept?

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With

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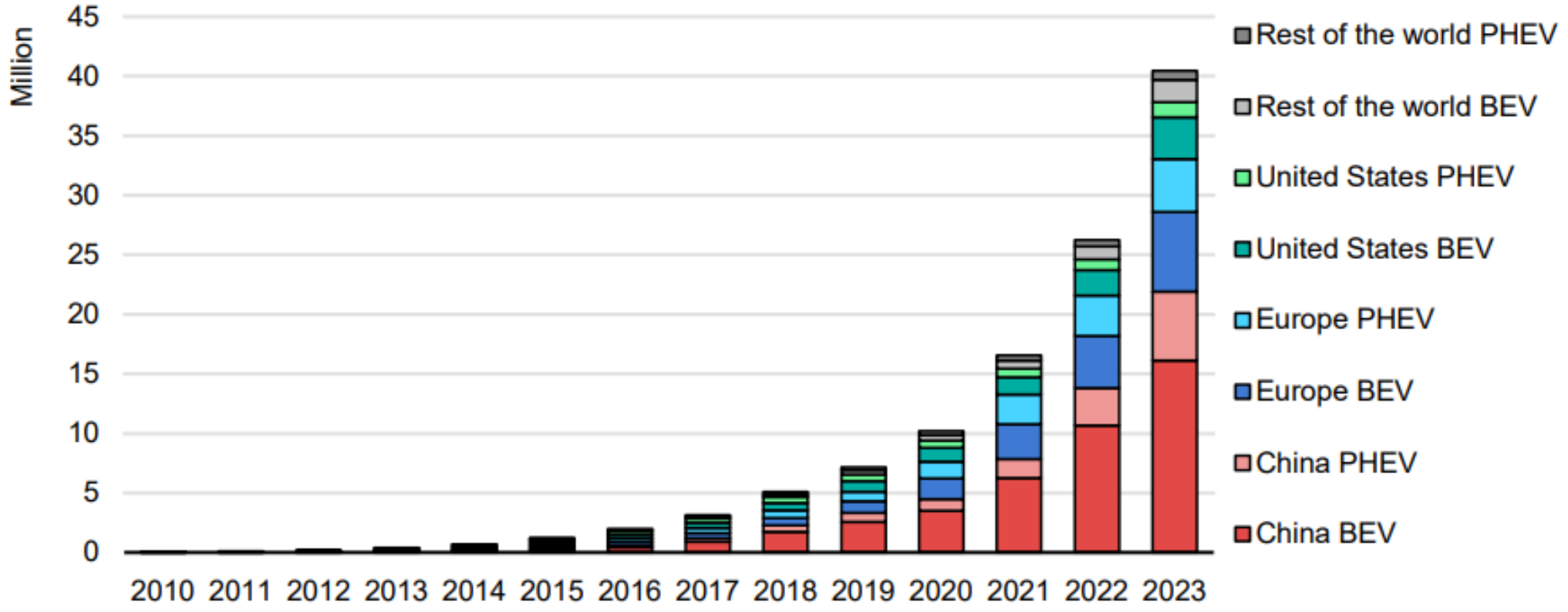
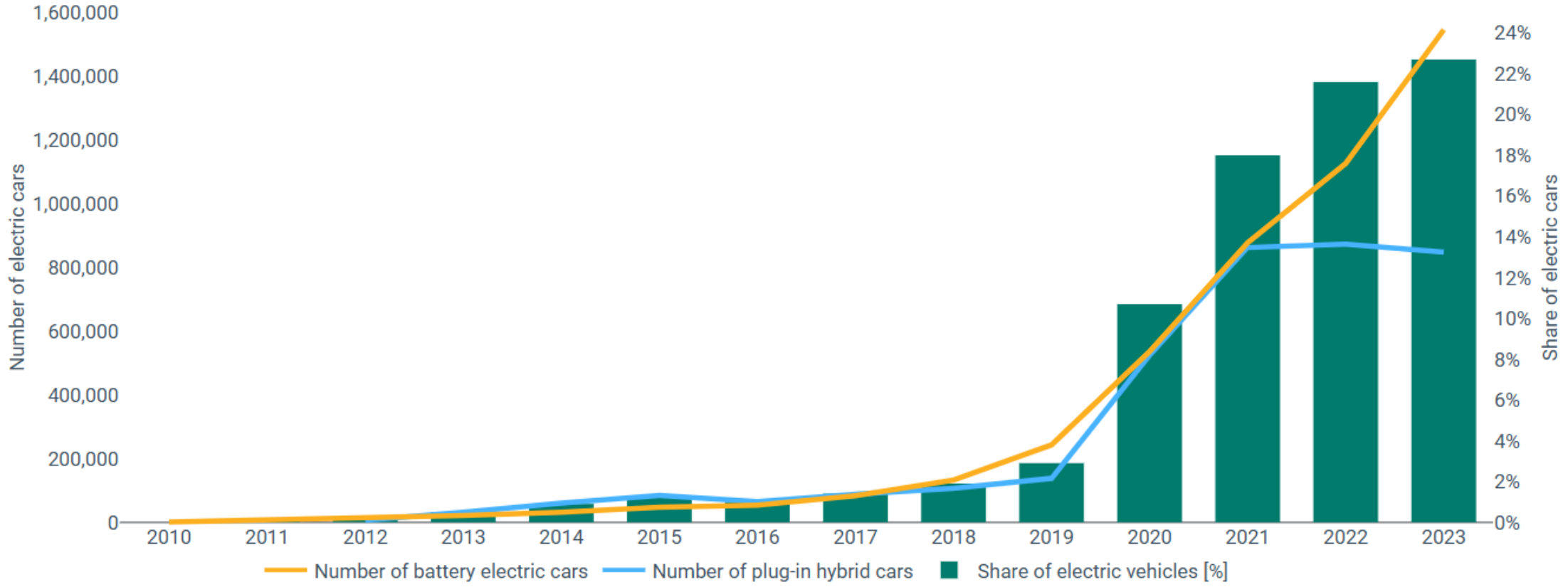
Global electric car stock trends



Notes: BEV = battery electric vehicle; PHEV = plug-in hybrid vehicle. Includes passenger cars only.

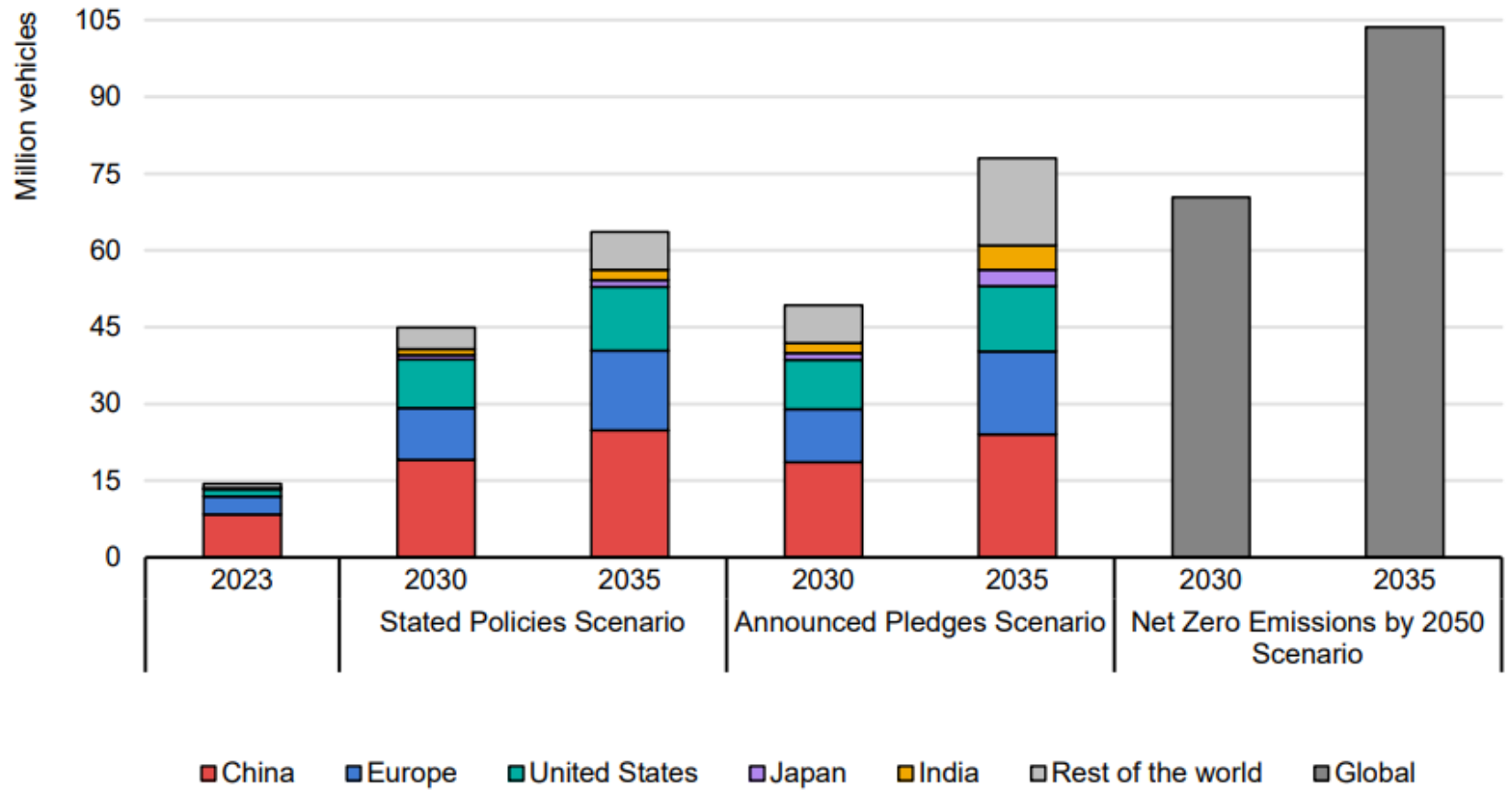
Sources: IEA analysis based on country submissions and data from ACEA, EAFO, EV Volumes and Marklines.

New registration of electric cars, EU-27



Source: https://www.eea.europa.eu/en/analysis/indicators/new-registrations-of-electric-vehicles

Electric vehicle sales by region and scenario, 2030 and 2035



EVs owners do not pay transport taxes

Tax Components "not paid" at the pump:

- **Excise Duty:** A fixed amount per liter, often the largest component of fuel taxation.
- **VAT:** Applied as a percentage of the total price, including excise.
- **Carbon Taxes:** Increasingly implemented to meet climate goals, though rates differ widely.
- **All together these taxes make up a significant portion of the fuel price at the pump (40 ~60%)**

Implications of EV exemption from fuel taxes

- **Equity concerns:** The benefits and costs of EV adoption are not evenly distributed
- **EV externalities are not fully accounted for:** Issues such as electricity production emissions or road wear
- **Declining fuel tax revenues:** The shift to EVs is reducing fuel tax income, creating funding gaps for transport infrastructure and maintenance

Concerns regarding the levying of a mileage tax

- Slow down the transition to Evs
- Public acceptance - recent significant protests perceived unjust policies:
  - Ultra Low Emission Zone (ULEZ) - Britain
  - Greens heating law - Germany
  - Yellow vests protests - France
  - Plans to reduce agriculture emissions (nitrogen) – Netherland
  - Protests over energy costs due to the gas crises - Germany

Fundamental questions regarding a mileage tax

Who should pay?

Only EVs or all vehicles (Universal approach)

Tax structure:

Fixed rate per km

Variable rate based on time of use (congestion) or other externalities (e.g., pollution)

Use of tax revenues:

Maintain infrastructures

Addressing pollutions damages

Contributing to the state budget

The Israeli case

\ 1 out of every 4 cars sold in Israel is an EV

\ Current fuel taxes:

Excise Tax – 50%

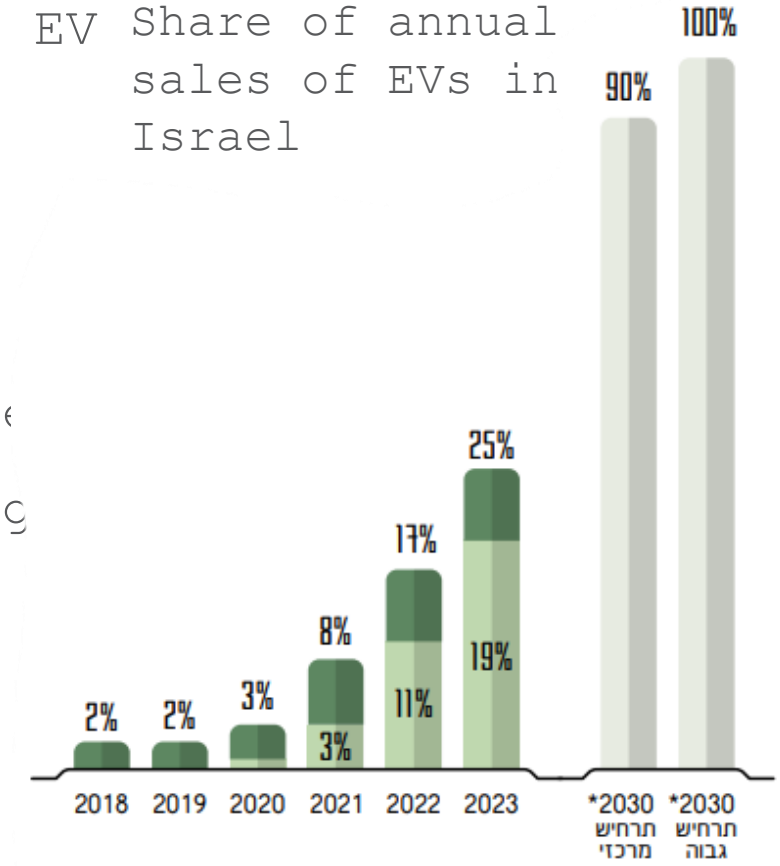
VAT – 17%

\ Substantial tax discount are (still) offere

\ The government propose introducing a mileag

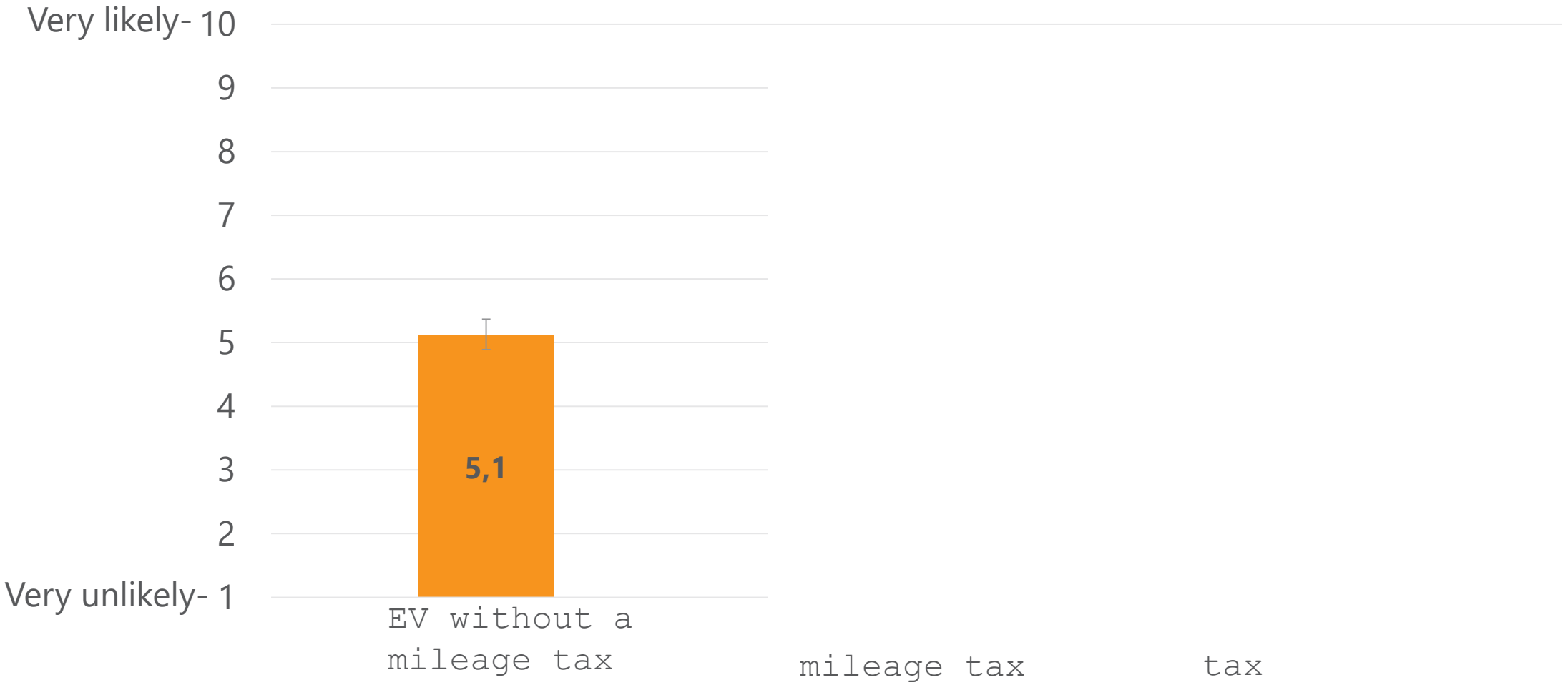
cents per kilometer for EV owners

Share of annual sales of EVs in Israel



Source: 2023 Annual report of the Israel Electricity Authority

How likely is it that the next vehicle you buy will be electric?



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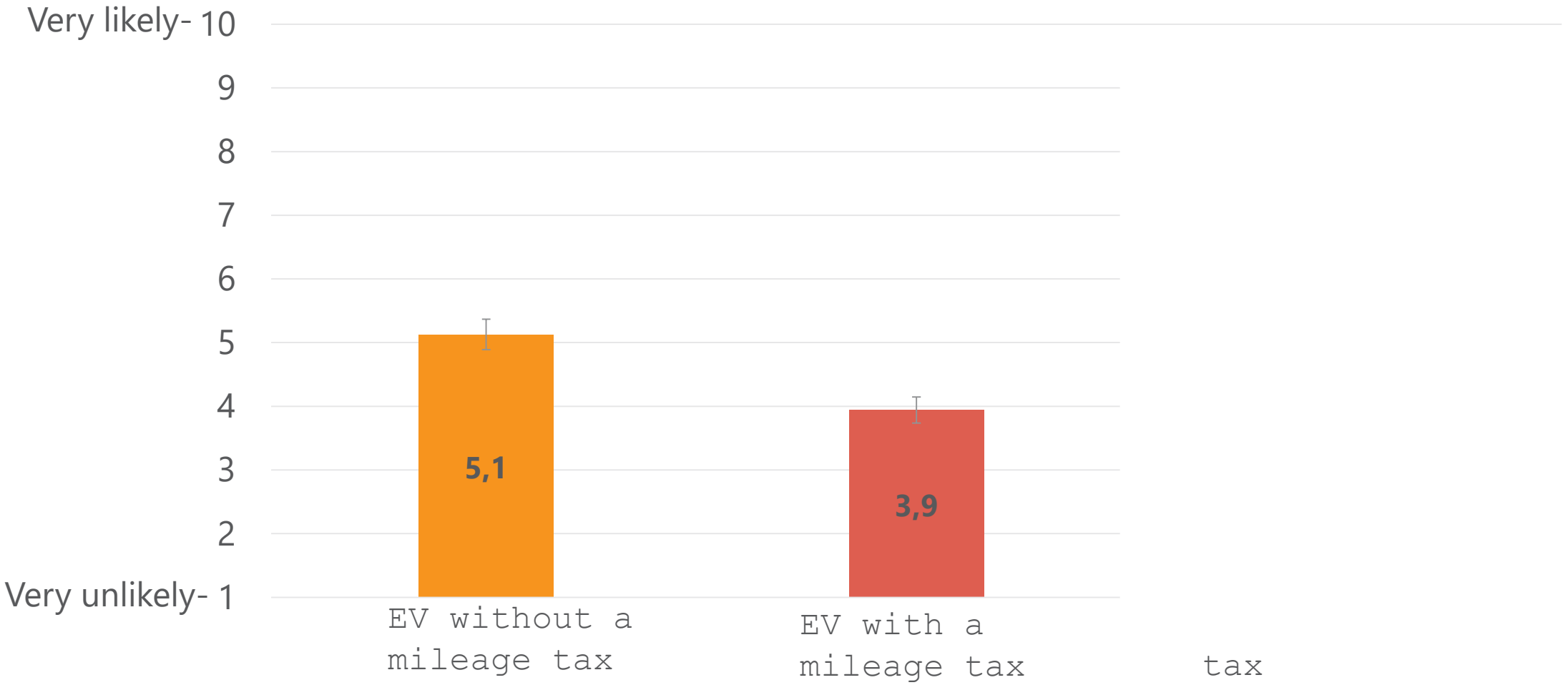

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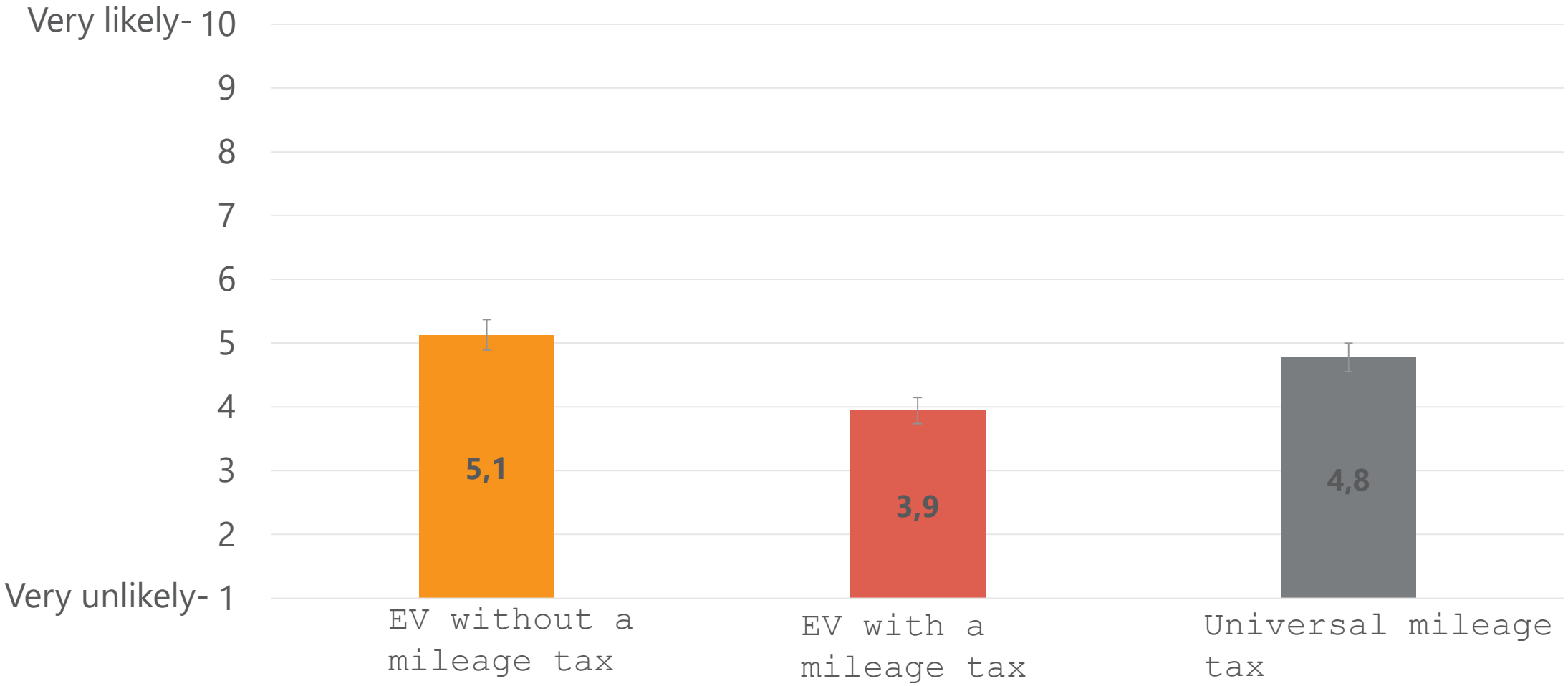

Experimental design

- Discrete choice experiments
- Mixed multinomial logit model
- Representative sample of 505 adults who own a car
- 6 choice sets
- 3 alternatives
- 6 attributes
- Pilot of 203 participants

Example of a choice set

	Adjusted tax	Fixed tax per kilometer	Status quo
Who pays the mileage tax?	Electric vehicle ✓ Gasoline/Diesel ✓	Electric vehicle ✓ Gasoline/Diesel ×	Electric vehicle × Gasoline/Diesel ×
Energy-efficient vehicle	No discount	No discount	No discount
Payment based on vehicle damage (pollution, etc.)	Polluting vehicle penalty	Level of damage does not affect tax	Level of damage does not affect tax
Periphery households	Periphery household discount	No discount	No discount
Tax allocation	Pollution repair	Infrastructure repair	State budget
Retention of fuel tax	× Fuel tax canceled	✓ Remains 4500 per year	✓ Remains USD 4500 per year
Average yearly mileage payment (NIS)	4700	4500	USD 0

1 NIS ~ 0.25 EURO

Results – Mixed Multinomial Logit

Variables	Full estimation
Only EVs pay mileage tax	-0.180 (0.0486)***
Energy efficiency	0.0827 (0.0754)
Polluting vehicle penalty	0.151 (0.0752)**
Periphery households	0.0959 (0.0753)
Pollution repair allocation	0.0943 (0.0656)
Infrastructure repair allocation	0.246 (0.0645)***
Yearly tax payment	-0.00057 (7.50e-05)***
Adjusted tax	2.180 (0.342)***
Fixed tax per kilometer	1.717 (0.332)***
Observations	9,090

Standard errors in parentheses, *** p<0.01, ** p<0.05,

Calculated willingness to pay

Chosen alternative	Coef.	Std. Err.	z	P>z	[95% Conf.	Interval]
Only EVs pay mileage tax	**-315.956**	**93.44814**	**-3.38**	**0.001**	-499.111	-132.801
Energy efficiency	145.2624	133.8449	1.09	0.278	-117.069	407.5935
Polluting vehicle penalty	**265.6806**	**135.8344**	**1.96**	**0.05**	-0.54998	531.9112
Periphery households	168.524	134.209	1.26	0.209	-94.5208	431.5689
Pollution repair allocation	165.5847	116.5936	1.42	0.156	-62.9345	394.1038
Infrastructure repair allocation	**431.8251**	**124.444**	**3.47**	0.001	187.9193	675.7309
Adjusted tax	**3829.189**	**176.518**	**21.69**	**0**	3483.22	4175.158
Fixed tax	**3015.839**	**211.9501**	**14.23**	**0**	2600.424	3431.253

1 NIS ~ 0.25 EURO

Main findings

- Preference for universal mileage tax (not limited to electric vehicles)
- The tax should "penalize" polluting vehicles
- Only residents of geographic peripheries prefer a tax that accounts for residential location
- Preference for dedicating revenue to infrastructure improvements
- Both an adjusted mileage tax and a fixed mileage tax are preferred over the current situation (without a mileage tax)

Policy implications

- Higher public acceptance for a **universal mileage tax**
- Option for **offsetting mileage tax payments against excise tax (on fuel) during annual vehicle** inspections
- Opportunity to reduce the gap between the tax level and the cost of externalities
- Provides other incentives to **accelerate the transition to electric vehicles**

Thank You .

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