

Externalities



https://pliedo.github.io/unit10_externalities.pdf

Pedro Liedo

pliedo@ucdavis.edu

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Today's plan

- What are externalities
- Pigouvian taxation
- Externalities linked to cars
- Evolution of the vehicle fleet
- Policies in place in CA related to EV's and heavy cars.
- Policy design is not so simple

Unit 10: Market successes and failures



The Economy 2.0

Economics for a changing world

An open-access textbook for any first course in economics, whether principles, micro, or macro.

Read The Economy 2.0: Microeconomics

Read The Economy 2.0: Macroeconomics

Read The Economy 1.0

The Economy 2.0 is a complete introduction to economics and the economy. It's student-centred and motivated by real-world problems and real-world data. *The Economy 1.0* is CORE Econ's original textbook, still available.

<https://core-econ.org/the-economy/microeconomics/10-market-successes-failures-01-bananas-fish-cancer.html>

What is an externality?

A side effect or consequence of an industrial or commercial activity that affects other parties without this being reflected in the cost of the goods or services involved.

Type	Positive Externality	Negative Externality
Production	Research and Development (R&D): A company investing in R&D benefits other firms and society by advancing technology.	Air Pollution from Factories: A factory emits pollutants, harming public health and the environment.
Consumption	Vaccination: Getting vaccinated reduces disease spread, benefiting others.	Smoking: Second-hand smoke affects non-smokers' health.

Why we study externalities?

- **Market Failures** – Externalities cause markets to allocate resources inefficiently, leading to overproduction (negative externalities) or underproduction (positive externalities).
- **Real-World Examples** – Pollution, traffic congestion, and research spillovers all involve externalities that impact society beyond individual choices.
- **Policy Implications** – Governments use taxes, subsidies, and regulations to correct externalities and improve overall welfare.

Why we study externalities?

- **Energy and environmental economics**
 - **Renewable Portfolio Standard**
- **Transportation**
 - **Congestion pricing**
- **Health economics**
 - **Vaccines**

What are some externalities linked to cars?

- Pollution
- Noise
- Congestion
- Accidents

What about car's weight?

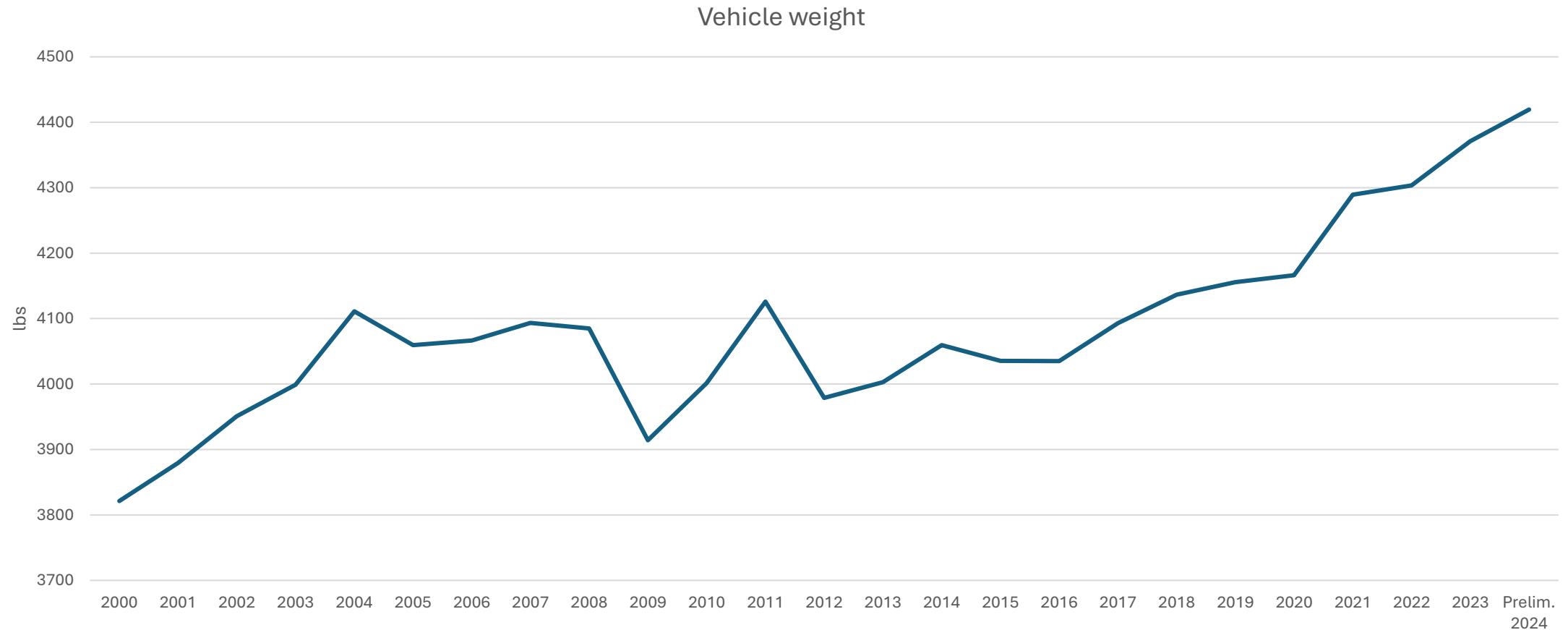
- Are the following externalities?
 - Heavy cars have worst fuel efficiency.
 - Heavy cars erode the pavement faster.
 - Heavy cars wear their tires faster.
 - In a two-car collision, the heavier the striking vehicle, the greater the risk of severe injury or death for occupants of the lighter vehicle.

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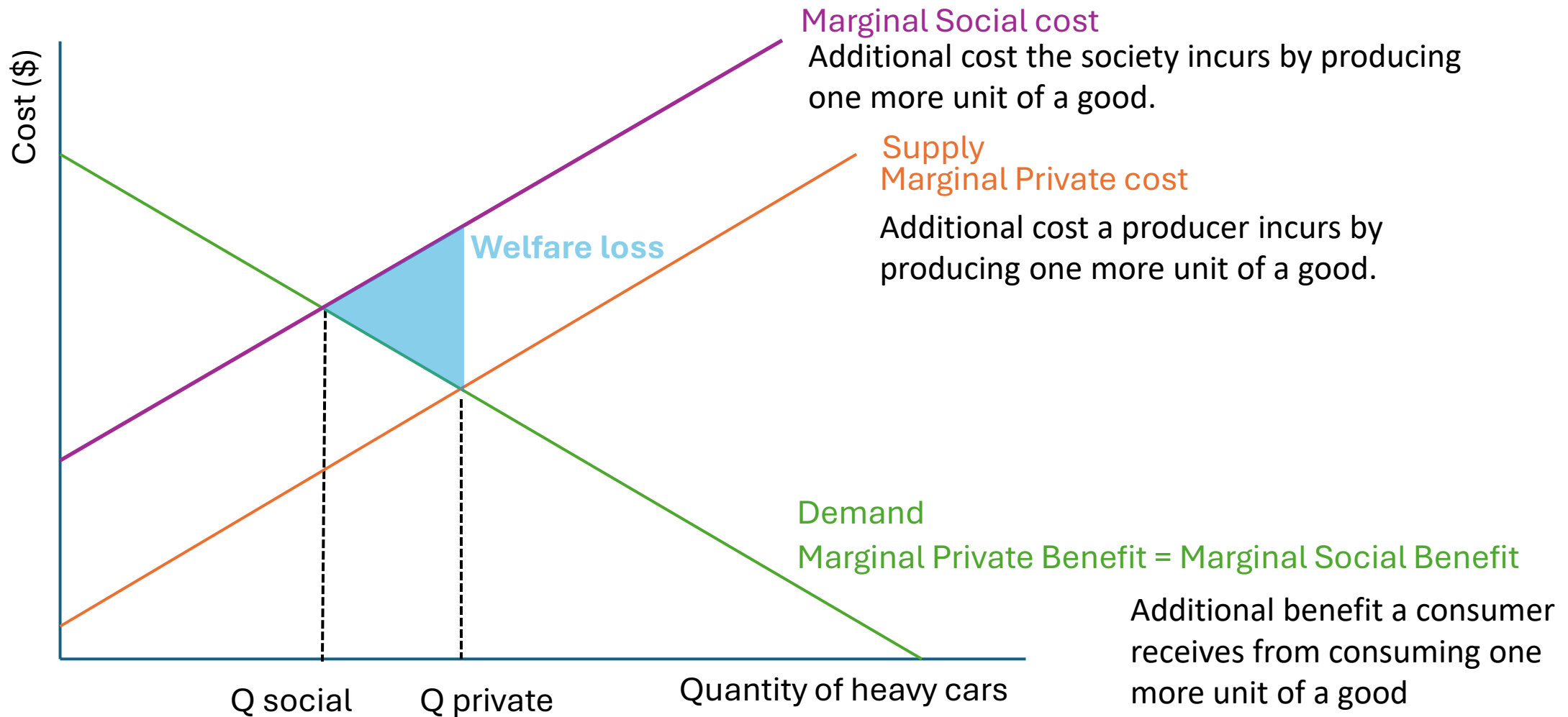
Cars are getting heavier.



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<https://www.epa.gov/automotive-trends/explore-automotive-trends-data#SummaryData>

Negative externality: Road erosion

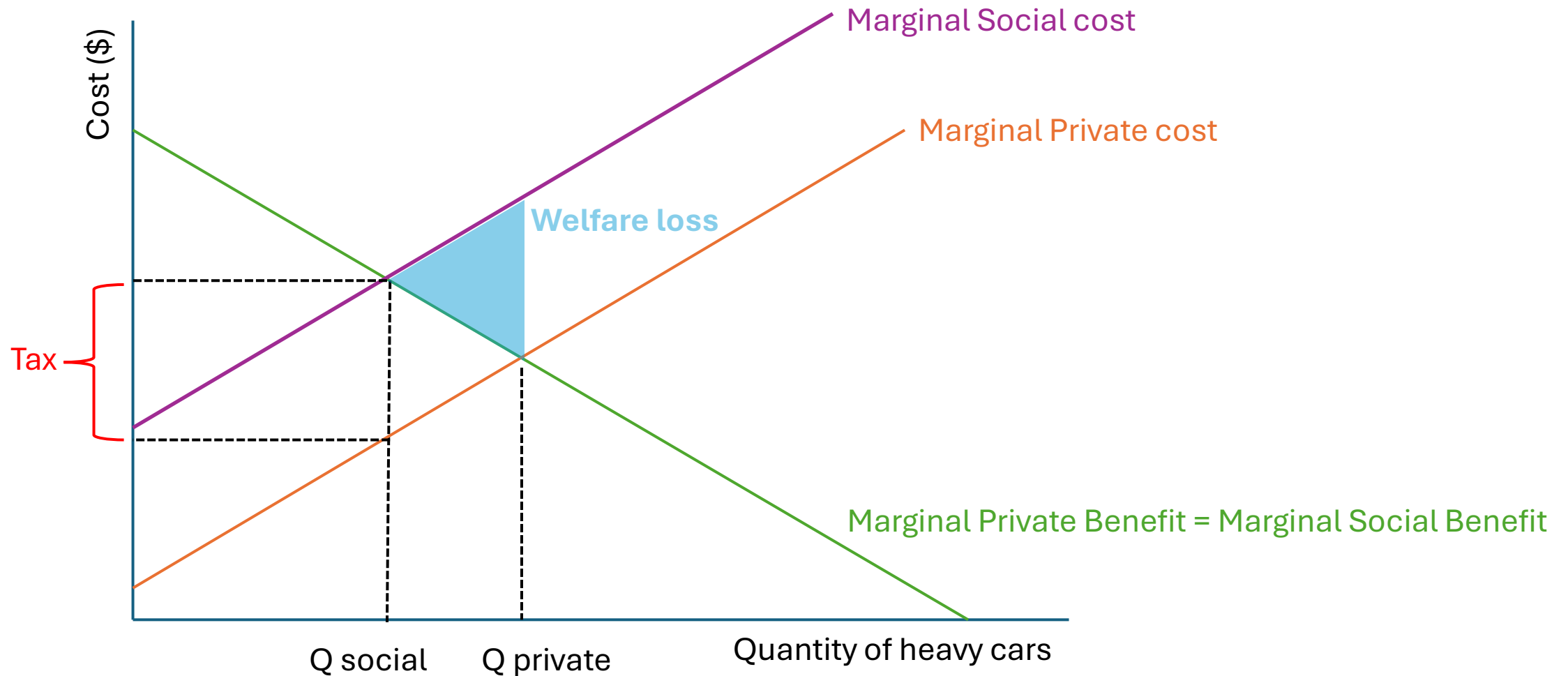


Pigouvian taxation

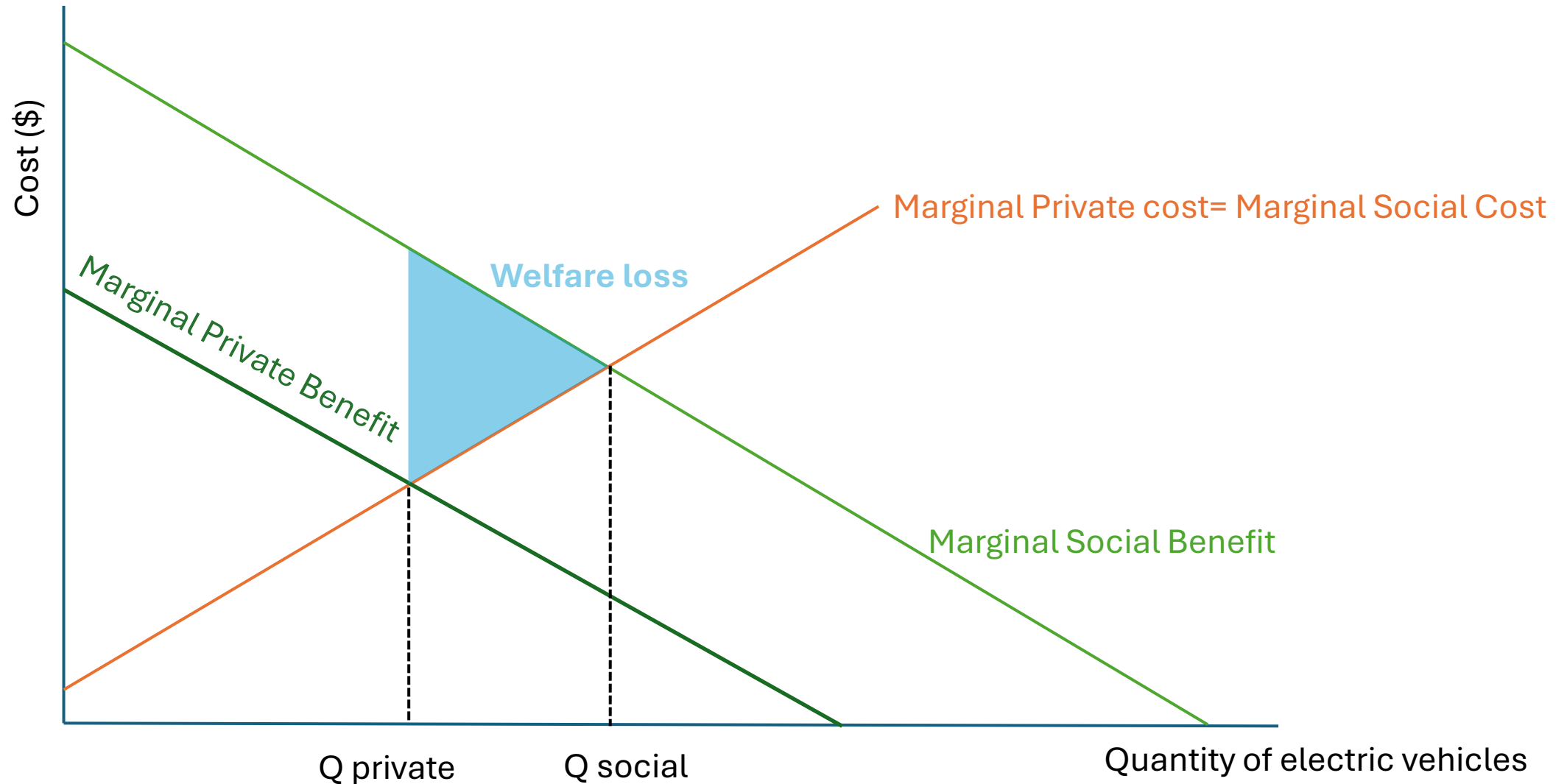


A tax levied on activities that generate negative external effects so as to correct an inefficient market outcome.

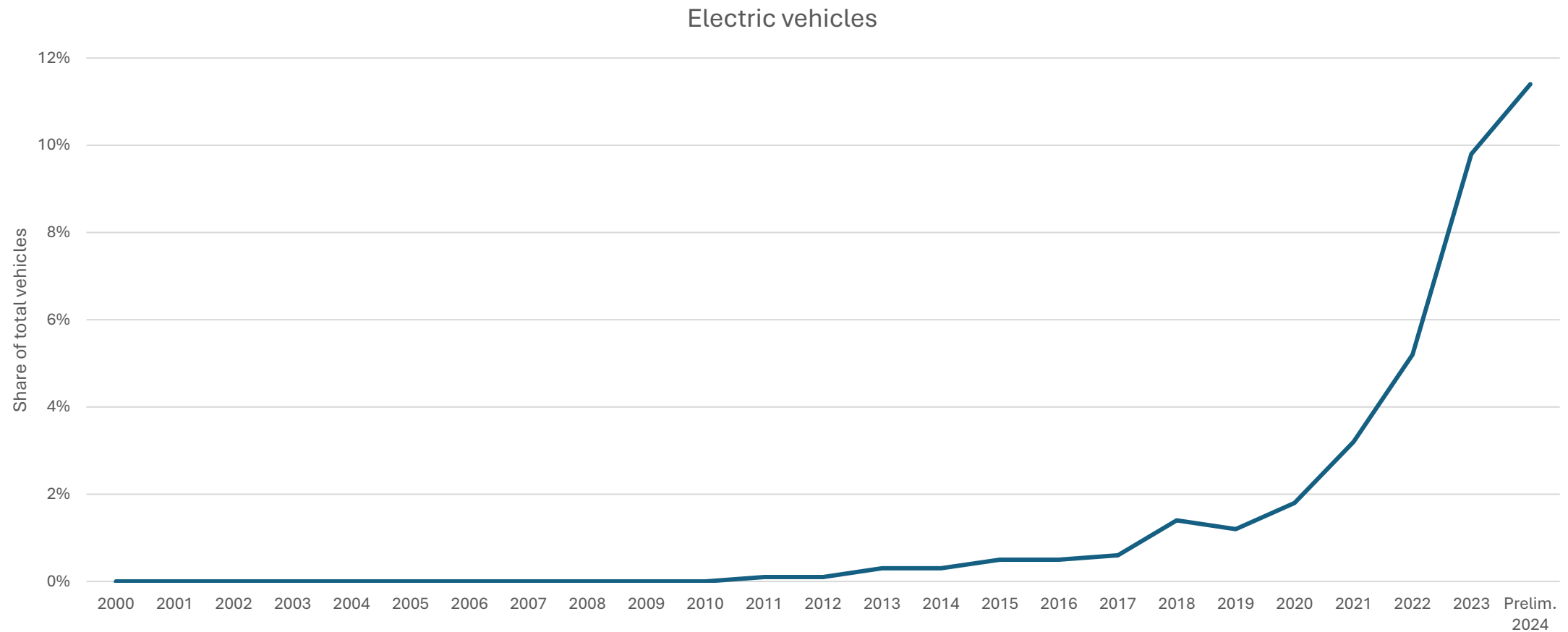
Negative externality: Road Erosion



Positive externality: Emissions reduction



BEV are becoming more popular.



What are the differences?



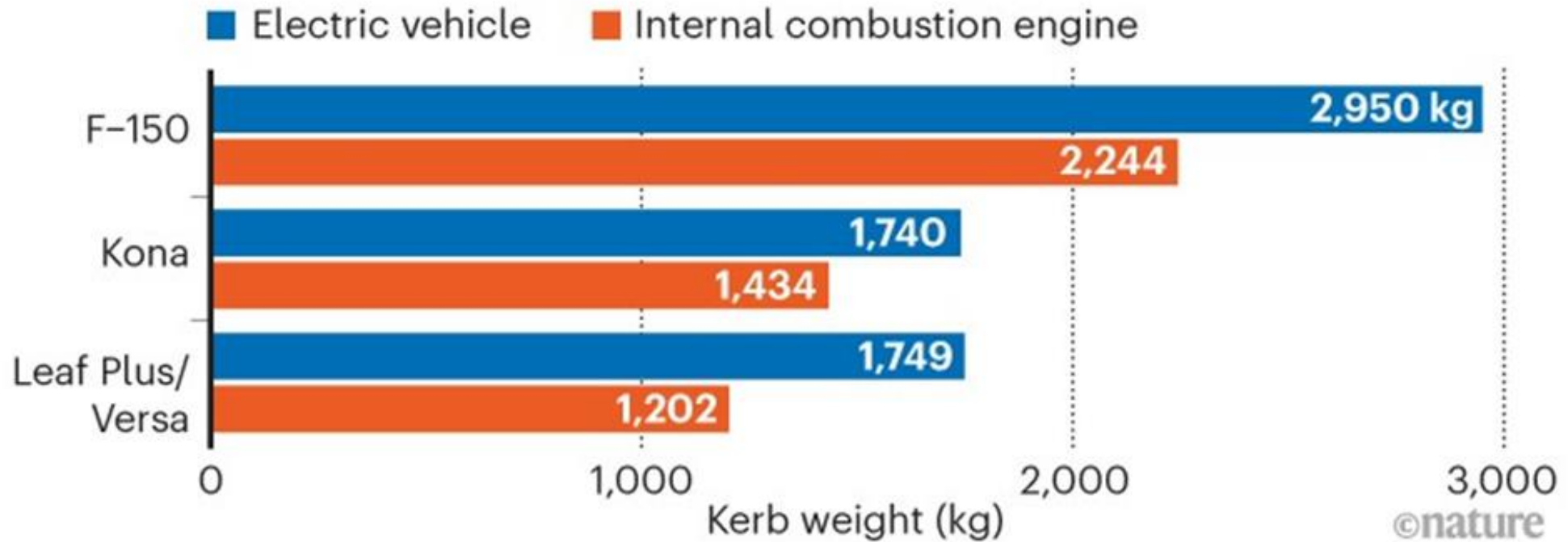
- 2,000 pounds
- Internal combustion engine



- 10,000 pounds
- Electric vehicle

HEAVIER ELECTRIC FLEET

Bulky batteries and their supports mean electric vehicles weigh more than petroleum predecessors.



Some policies in place in CA

- Federal tax credit for EVs:
 - New: \$7,500
 - Used: \$4,000
- PG&E: Up to \$4,000 on the purchase of preowned EV
- Carpool lanes for single use EV
- Weight Fees for Commercial Vehicles: \$24

[Electric Vehicles](#) / [Economy](#)

Who covers the gas tax when the electric revolution hits?

Alberta slipped EV owners a bill for \$200 to account for the wear and tear on roads their cars cause

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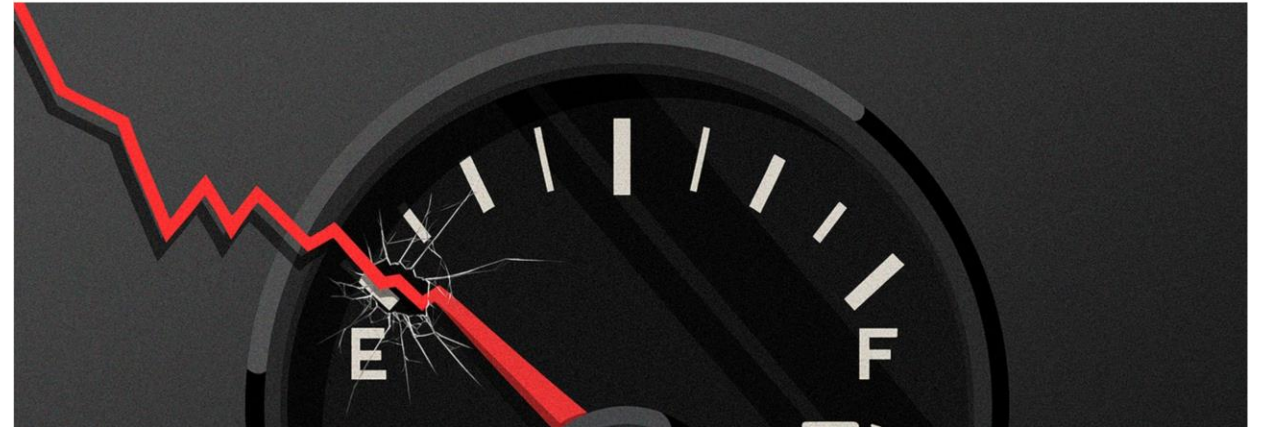


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THE FIFTY

The dark side of the EV revolution: Road taxes

Pay-per-mile fees have emerged as the most likely solution to dropping gas revenues linked to electric vehicles.



The New York Times

E.V. Owners Don't Pay Gas Taxes. So, Many States Are Charging Them Fees.

States are using higher registration fees for electric cars to make up for declining fuel taxes, but some are punitive, environmentalists say. A federal tax could be coming.

Part of my work

- Vehicles are portfolio of attributes.
- How effective a tax addressing an externality depends on how correlated the attribute taxed and the externality are.
- Some taxes work in opposite directions.
 - Tax on vehicle price
 - Taxes heavier cars. (good)
 - Taxes better technology. (bad)
- Tax avoidance mitigates the distortions.

- What other externalities are you aware of?

Congestion I-80 and 24



Shell to Pay \$50,000 Fine for Releasing 20 Tons of Gas From Martinez Refinery



By [Ted Goldberg](#)  Mar 14, 2019  [Save Article](#)



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The PBF Energy refinery in Martinez, pictured in August 2018 when it was owned by Shell. (Justin Sullivan/Getty Images)