Title

A Critical Analysis of EV Policy

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A Critical Analysis of EV Policy

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Abstract:

By analyzing the impact of electric vehicles on carbon emissions in the US and comparing them to alternative forms of transportation it becomes clear that the purpose of EV government funding and incentives is to provide Americans with new luxury vehicles rather than to significantly reduce emissions.

Introduction

Climate change is an issue that is surrounded by disagreement on how it should be addressed both within the US and on the international stage. A great example of this is the push for early adoption of electric vehicles in the US in the form of government subsidies and consumer incentives. To properly analyze the effect of these, it's important to identify the power structure controlling the EV market as well as who benefits and who is ignored by these policies. In this essay I will be analyzing three subtopics related to electric vehicle adoption: the issues with battery production, the funding our government has given the industry, and how EVs shift focus away from public transportation. This work is in partial fulfillment of the ENGR184 course using the blueprint curriculum in Ref.[1,2] and captured in collection [3].

Methods

I will be using Standpoint Theory to properly analyze the topic of electric vehicles as a solution to reducing greenhouse gas emissions in the US. By identifying who has received privileges and who has been penalized by EV adoption. By focusing on the experience of those who have been disenfranchised and ignored by EV policy, we can determine whether or not they have been an effective solution.

Analysis

Though EVs do generate less carbon emission than their ICE counterparts, they are hardly a full solution to cutting our carbon emissions when considering only 20% of the electricity to power them in the US comes from renewable sources (Ref. [4]). While renewable energy sources are being developed nationwide, there's no plan for our country to produce the majority of its power from green sources.

In addition to this, the processes and materials used in EV batteries are often harmful to the environment. Rare earth metals like Lithium and Cobalt are required for EV batteries, but these are almost exclusively mined in other countries which use cheap labor with little regard for working conditions. The best example of this is in the Democratic Republic of Congo, the world's largest Cobalt producer (Ref. [5]). Despite this, most Cobalt in the DRC is mined with simple hand tools and is often done by children whose small size gives them an advantage working in small enclosed spaces. In 2020, Tesla specifically was sued by representatives of children who died working in these mines for their alleged involvement in obscuring these labor practices.

Though the court ruled in favor of Tesla, this was only because it was deemed that there was only a buyer-seller relationship and that Tesla itself had no control over the mining operations (Ref. [6]). Lithium, another essential commodity used for EV battery production, has been surrounded by controversy in recent years. Bolivia, a major global exporter of Lithium, experienced a military coup in 2019 backed by their far-right oligarchy and the US military (Ref. [12]). The previous president of Bolivia was known for drastically improving the quality of life of the general population as well as his stance on keeping their Lithium deposits free from international exploitation. Tesla CEO Elon Musk has been open on his view that he should have cheaper access to South America's Lithium deposits, previously stating that he had plans to build a battery production factory in Brazil which was to be supplied by lithium from Bolivia. When confronted on Twitter about the US involvement in the coup, he replied in a now-deleted tweet "We will coup whoever we want, deal with it." Tesla's stock skyrocketed following the coup, rising over 80% in the next 2 months as multinational mining conglomerates took control of lithium deposits. The US EV market depends on human rights violations and the exploitation of other countries' resources to meet competitive price points, something our government is complicit in through its funding of this industry. This is evidence that the true purpose of EV subsidies isn't the greater good of the planet, but rather the greater good of the wealthy American consumer and stockholder.

The US has invested heavily in subsidizing both EV manufacturing as well as consumer purchasing. Tesla alone has received over $38 billion in government handouts (Ref. [7]), which it would have gone bankrupt multiple times without. At this current point in time, Tesla is by far the highest valued automotive OEM, with a market cap of over $800 billion with a recent peak of well over $1 trillion. In addition to this, its CEO Elon Musk holds the title of the wealthiest person in the world. This begs the question, is the real purpose of Tesla to combat climate change or to enrich its shareholders? With knowledge that Tesla's profitability has depended on cheap child labor and human rights violations, it's obvious that Tesla's true motivations being to maximize shareholder value at any cost. The US has also been subsidizing electric vehicle purchases for its citizens, the most notable of these being the Inflation Reduction Act of 2022. This offers up to $7,500 for customers purchasing a new electric vehicle, a strategy aimed to help offset the higher manufacturing costs of electric vehicles and make them more desirable for consumers. This has backfired, as research has shown that 75% of people buying an electric vehicle would have done so without the subsidy, and that the full effect of the Inflation Reduction Act costs taxpayers $32,000 per electric vehicle sold since the act was passed (Ref. [8]). With this number almost equaling the total cost of a Model 3, this means the American taxpayer is essentially funding luxury vehicle purchases for those that can already afford them. Additionally, these policies favor fully electric vehicles over sustainable hybrid ICE cars such as the Toyota Prius. The 2024 Prius produces approximately 155g of CO_2 per mile driven (Ref. 9) when powered by regular gasoline, while a Tesla Model 3/Y produces over 170g CO_2 per mile driven (Ref. [10]). There's currently no data on the equivalent CO_2 emissions of Tesla's newest vehicle, the Cybertruck, but due to its large size and battery pack, it will be significantly higher than those of the Model 3 and Y. Despite this, the Prius does not qualify for the federal tax credit as it's not a plug-in hybrid, while all Teslas, including the Cybertruck which costs over $100,000, qualify for the full $7,500 credit. If the true goal of these government subsidies was to reduce carbon

emissions, then there would be some sort of incentive for greener alternatives like the Prius and other hybrid electric vehicles. Without these, it becomes clear that the goal of these incentives is to provide the privilege of new, fast cars at a cheaper price to those who can already afford them.

Unethical business practices aside, EV subsidies only benefit those who can afford to buy an electric vehicle, while also upholding the US car-centric infrastructure which itself is extremely non-renewable. By advertising electric vehicles as the solution to reducing our transportation emissions, other modes of transportation are being neglected by public policy. A study at Monash University on the carbon emissions of different transportation modes highlights how little of an impact electric vehicles make when compared to alternatives like public transportation and biking (Ref. [11]). As shown in figure 1, a Model S only produces about 15% less emissions than the average ICE vehicle when powered by the Australian power grid. When considering that the Australian grid is powered by roughly 35% (Ref. [13]) renewable energy versus America's 20%, it's a reasonable assumption that the emissions produced by an American EV would be even larger. Comparing EV emissions to public transit emissions shows that trains, light rails, and buses all produce 85% less emissions per mile than an electric vehicle (figure 1). Despite this, there is little being done to incentivize the use of public transit when compared to electric vehicle incentives. In fact, the cost of using public transit has been steadily rising around the country, with the New York Metro being a prime example.

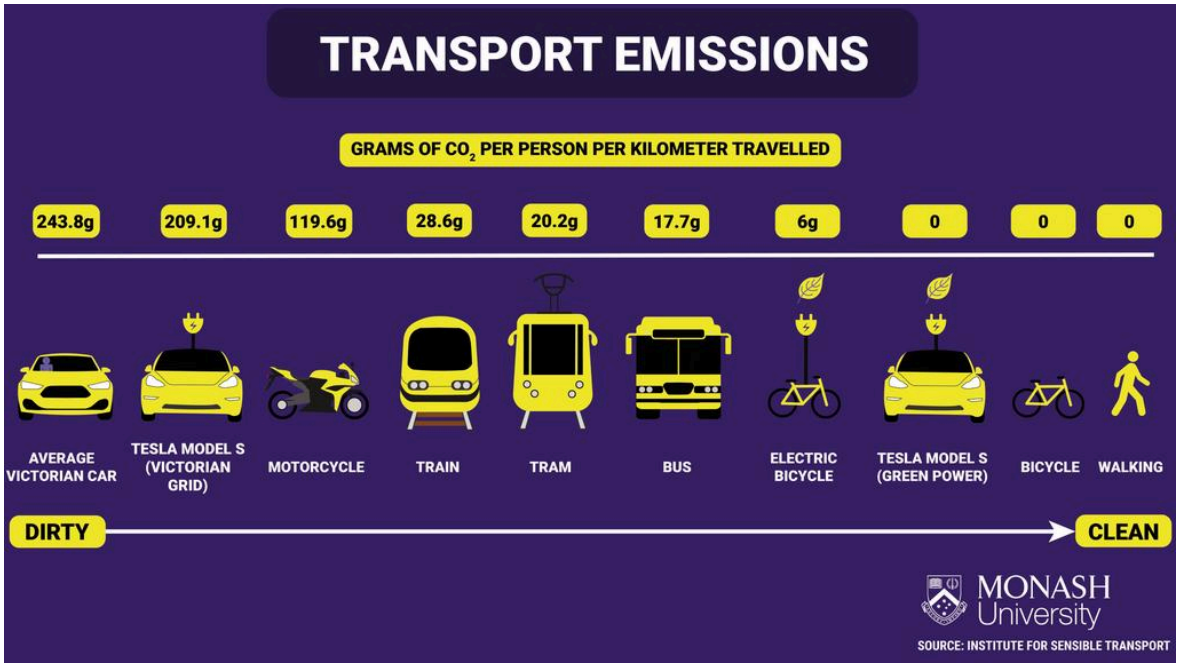

Figure 1. Transport emissions per mile of different transit modes (Ref. [11])

Conclusion

Electric vehicles are not an efficient way to lower our transportation emissions, and serve to benefit those in positions of power and wealth while ignoring those without. For how many issues they present and how little emissions they actually reduce, our government's funding of them is extremely wasteful. In order to properly make an impact on our emissions, we need to

cut all EV subsidies in favor of drastically boosting public transit infrastructure while also making it free for all to use.

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