

Researchers suggest electric vehicles need to be made lighter

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A pair of economists, one with the University of Calgary, the other, the University of California, along with a civil engineer from Carnegie Mellon University, is suggesting in a Comment piece in the journal

Nature, that electric vehicles (EVs) need to be lighter if they are to replace gasoline-powered vehicles. In their paper, Blake Shaffer, Maximilian Auffhammer and Constantine Samaras suggest that the added weight of EVs makes them less safe and less efficient and therefore less economical.

In their paper, the authors note that climate change has put EVs on a path to replace cars powered by gasoline. But they also note that for the changeover to be successful EVs need to be made much lighter.

EVs are heavier than gasoline-powered vehicles because of their heavy battery packs. They are also heavier because engineers have to add strength to the vehicles to allow them to carry such heavy batteries. Therefore, the authors conclude, batteries need to be made lighter. They note that up until now, most of the engineering effort involved with batteries has been focused on making them hold more energy so that EVs can travel farther on a charge. But they suggest that focus now needs to include reducing weight. They point out that heavier EVs, in addition to being less efficient because of their weight, pose a danger in collisions with [gasoline](#) powered cars due to the weight differential. They note also that heavier vehicles produce more tread wear on tires, which means more roadside pollution.

The authors have several suggestions to help the EV industry reduce its [weight](#) problem. The first is to shrink the size of the batteries by using other materials that are more energy dense and removing those that are heavy, such as the liquid electrolytes. They also suggest it should be possible to lighten the frames of EVs that had been made heavier to hold the heavy batteries—again, by using other, lighter materials. They note also that adding technology to reduce crashes could help with acceptance of EVs. And they suggest that efforts could be made by communities to promote less driving. The pandemic, they point out, has shown that more people could be working at home.

More information: Blake Shaffer et al, Make electric vehicles lighter to maximize climate and safety benefits, *Nature* (2021). [DOI: 10.1038/d41586-021-02760-8](#)

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