

## How Does Car Sharing Interact With Sustainable Product Design?

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### » Research Questions Addressed

How does providing car sharing affect an auto manufacturer's product line design strategy in terms of fuel efficiency as well as its ability to meet the Corporate Average Fuel Economy (CAFE) standards?

What are the economic and environmental benefits (if any) of an auto manufacturer's involvement in car sharing?

Which "types" of auto manufacturers benefit the most from providing car sharing?

### » Primary Findings

Although car sharing has the potential to cannibalize car sales, it can boost auto manufacturers' profitability. Manufacturers can reach more customers and increase the selling price of products because car sharing allows for better market segmentation. Higher-end manufacturers benefit more from providing this type of service.

Furthermore, car sharing allows manufacturers to produce vehicles with higher fuel efficiency, which leads to environmental benefits. However, the average fleet economy may decrease due to the smaller number of cars needed. This may compromise the OEM's ability to meet the CAFE standards. Granting an incentive multiplier—so that each shared car counts as more than one vehicle towards the CAFE calculation—can ensure that manufacturers are not dissuaded from offering car sharing.

### » Relevant Sectors

Automotive industry  
Car manufacturers  
Government  
Transportation

### » Keywords

Car sharing  
Corporate Average Fuel Economy (CAFE) standards  
Fuel efficiency  
Product line  
Sustainable business models

### » Firms Appearing in Research

BMW  
Car2Go  
Daimler AG  
General Motors Company  
ReachNow  
Zipcar





## » Highlights

The auto manufacturer's choice of business model interacts with its product design decisions in the presence of environmental regulation. The business model of car sharing transforms the fixed costs of traditional car ownership into variable costs. From the manufacturer's perspective, providing car sharing means its revenue stream is tied to customer vehicle usage needs. Manufacturers enjoy cost benefits because they meet customer needs with fewer cars.

In terms of product design strategy, the research accounts for the trade-off between performance and efficiency as well as differences in customer preferences for these attributes. By calculating the average fuel efficiency of the manufacturer's produced fleet, we approximate how CAFE regulation is implemented in practice.

## » Topic Overview

Car sharing allows customers to meet their mobility needs without buying a car. Members of car-sharing programs obtain access to a fleet of vehicles and pay only for the amount of time the vehicle is removed from the service pool. Car sharing replaces fixed costs associated with vehicle ownership (e.g., purchase cost, depreciation, and insurance) with a variable cost that depends on vehicle usage.

Car-sharing programs were first introduced and popularized by third-party providers such as Zipcar. In recent years, automakers have steadily increased their engagement in car sharing. This paper analyzes what drives auto manufacturers to engage in business models that encourage customers not to buy cars. We focus at the intersection of three forces currently transforming the automotive sector: technological innovation (in the pursuit of higher fuel efficiency), business model innovation, and environmental regulation.

## » Implications for Sustainable Business

From a manufacturer's perspective, business model changes should be accompanied by changes in product design in order to realize their full economic and environmental potential. However, for this to happen, existing environmental policies should be aligned with emerging business models.

## » Link to Academic Paper

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Agrawal, V. V., & Bellos, I. (2017). The potential of servicizing as a green business model. *Management Science*, 63(5), 1545-1562. [doi.org/10.1287/mnsc.2015.2399](https://doi.org/10.1287/mnsc.2015.2399)

Gagan, O. (2018). How car-sharing services transformed manufacturing. *Raconteur*. Retrieved from <https://www.raconteur.net/manufacturing/car-sharing-manufacturing>