

The Influence of Household Income and Cognitive Factors on Car Consumption

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Abstract. Car consumption has become a central issue for both transport policy and market strategy, particularly as many countries promote new energy vehicles (NEVs) to address energy security and climate concerns. This essay reviews existing research on the determinants of car consumption, with a specific focus on how total household income and cognitive factors jointly shape vehicle-related consumer behaviour. The literature shows that income acts as the primary structural constraint: it determines whether households can enter car ownership, influences vehicle segment and brand choice, and is associated with non-linear patterns such as threshold effects, multi-car ownership, and replacement cycles. At the same time, households with similar income levels often display markedly different choices, especially regarding NEVs. These differences are explained by cognitive mechanisms, including perceived value, attitudes toward new technologies, perceived behavioural control (e.g., confidence in charging and maintenance), subjective norms and social influence, and brand image considerations. In conclusion, the essay argues for a complementary perspective: income provides the financial capacity for car consumption, whereas cognition translates that capacity into concrete decisions about vehicle type and powertrain. The review concludes with implications for policy design and marketing strategy, highlighting the need to combine financial instruments with interventions that reduce perceived risks, improve perceived control, and strengthen credible NEV value propositions

Keywords: Household income, car consumption, EV adoption, perceived value, Theory of Planned Behaviour

1. Introduction

Car consumption is undergoing a structural transition. In addition to meeting basic mobility needs, private vehicles increasingly carry symbolic meanings of status and lifestyle, while the diffusion of electric and hybrid vehicles adds a visible environmental dimension to vehicle choice. In this context, understanding why households buy, use, and replace vehicles—and why they choose conventional vehicles versus new energy vehicles (NEVs)—has become important for both sustainable transport governance and competitive strategy.

Car consumption extends beyond a one-off purchase decision. It includes acquisition, long-term use, maintenance, and eventual replacement or disposal, and is shaped by external conditions such as policy incentives, energy prices, infrastructure availability, and cultural norms.

This multidimensional nature implies that a complete explanation must integrate economic constraints with behavioural and psychological mechanisms rather than treating consumers as purely price-driven decision makers.

This essay therefore synthesises research on two broad drivers of car consumption: total household income and cognitive factors. Income determines the feasible “budget set” and the likelihood of ownership, while cognitive factors—such as perceived value, attitudes, perceived behavioural control, subjective norms, and brand perceptions—shape how households evaluate alternatives within that budget. The remainder of the essay is organised as follows: Section 2 clarifies the scope and characteristics of car consumption; Section 3 reviews income effects on ownership, vehicle type and replacement dynamics; Section 4 examines cognitive determinants of vehicle choice, particularly for NEVs; and Section 5 integrates both strands to derive policy and managerial implications and identify directions for future research.

2. Overview of car consumption

Car consumption covers all aspects of vehicle-related consumer behaviour, including acquisition, use, maintenance, and final disposal or replacement [1]. This broad definition extends beyond initial purchasing decisions to include long-term usage patterns and related services.

Theoretically, automobile consumption can be viewed from multiple perspectives: as a practical necessity to meet the needs of travel, as an identity symbol reflecting social status, and an expression of environmental values through the increasing adoption of new energy vehicles. The emergence of electric vehicles (EVs) and hybrid vehicles has further strengthened the environmental dimension of automobile consumption, as consumers increasingly associate vehicle choices with sustainability and climate awareness [2].

According to its purpose, car consumption can be divided into different types. It can be classified as practical consumption, focusing on practical needs such as commuting and cargo transportation; it can also be classified as symbolic consumption, reflecting the pursuit of identity, status or lifestyle. Practical consumption is driven by the functional role played by vehicles in daily life, while symbolic consumption is influenced by consumers' desire to highlight their social status and personal values through their vehicle choices. Consumers with higher income levels may pay more attention to symbolic consumption, partly due to the desire for social distinction and self-expression [3].

There are several key characteristics of car consumption behaviour. First of all, as a high-value durable product, car purchase involves a complex decision-making process that includes evaluating costs, safety features, and long-term maintenance. Consumers usually spend a lot of time evaluating different vehicle options based on cost, reliability, brand reputation and other factors. Secondly, car consumption shows a high degree of participation, and consumers will actively seek information and compare alternatives before making purchasing decisions [1]. Third, consumption patterns are strongly influenced by external factors such as oil prices, government policies, infrastructure availability and cultural norms. For example, the government's incentives for electric vehicles have a significant impact on the adoption rate of consumers, especially in countries with advanced infrastructure [4].

The emergence of new consumption models such as online car-hailing and car subscription services, especially in urban environments, has added complexity to the traditional ownership model. These models provide more flexible and cost-effective alternatives than full ownership, attracting consumers who prefer right of use over ownership, which is especially relevant in cities with high transportation costs and traffic congestion.

Understanding these basic concepts and characteristics is crucial for analysing the specific impact of family income and cognitive factors discussed in the following chapters. The multidimensionality of automobile consumption requires an integrated method, which should examine both economic constraints and psychological motivation, so as to fully understand consumption behaviour in different markets and periods.

3. The impact of total household income on car consumption

Total household income is the main economic constraint that directly affects the mode and possibility of car consumption. A large number of empirical studies consistently show that the income level sets the budget limit for car purchase decisions, affecting factors such as ownership probability, vehicle category selection and brand preference [5]. The relationship between household income and car consumption is complex, and there are differences between different income groups, vehicle types and geographical locations.

One of the key mechanisms that household income affects car consumption is through the income threshold effect. Research shows that a specific income level corresponds to different stages of vehicle ownership, such as the ability to buy entry-level vehicles or luxury models. For example, Wei and Zhang found that Chinese urban families with an annual income of about 100,000 yuan are more likely to buy entry-level vehicles, while families with an income of about 200,000 yuan are more likely to buy high-end vehicles [5]. This threshold effect illustrates a nonlinear relationship, as consumers may delay purchase until reaching a perceived adequate income level.

Transnational research highlights how income elasticity varies by development stage and other factors such as urbanization and transport alternatives. A study conducted by Dargay et al. on developed and developing countries found that vehicles in developing economies have a significantly higher income elasticity (about 1.5-2.0) than in developed countries (usually 0.7-1.2) [6]. This shows that with the growth of income, the increase in vehicle ownership is more significant in developing countries that still have relatively low car ownership. This model is consistent with the rapid growth of vehicle ownership in emerging economies, where revenue growth is accelerating [6].

The impact of income on vehicle ownership is also reflected in the composition of vehicle portfolios. High-income families are more likely to own multiple cars, and for every \$10,000 increase in family annual income, the probability of having more than one car increases by about 3.5% [3]. This is especially true for consumers who seek a variety of vehicles, such as family sedans, SUVs, and recreational models. In addition, high-income families tend to prefer vehicles with better performance and higher brand reputation, which reflects the symbolic dimension of car consumption. As consumers' income rises, they may prioritise vehicles that can highlight their status and social identity, rather than just meeting basic practical needs.

Research on the adoption of electric vehicles (EVs) further proves how household income affects car consumption in the context of new technologies. Li et al. studied the adoption of electric vehicles in China and found that although income has a positive impact on the willingness to buy electric vehicles, this relationship is regulated by the availability of charging infrastructure [4]. In areas with complete charging infrastructure, the income effect follows the conventional pattern, and high-income families are more likely to adopt electric vehicles [4]. However, in areas with limited infrastructure, the income effect weakens, indicating that structural constraints such as insufficient charging stations and long charging times may outweigh economic factors [4]. This highlights the importance of complementary factors such as infrastructure and policy development in shaping the consumption model of alternative fuel vehicles.

Another important aspect of the impact of income on car consumption is its impact on the vehicle replacement cycle. High-income families tend to change their vehicles more frequently, partly because they face fewer financial limitations. Wei and Zhang found that the vehicle holding time of richer families in China is significantly shorter, and they change their vehicles more frequently than low-income families [5]. This shows that income not only affects the initial vehicle purchase, but also the frequency of vehicle replacement, further affecting the overall dynamics of car consumption.

Income-related factors also play a key role in shaping consumers' preferences for vehicle categories. For example, higher-income consumers are more likely to choose luxury, electric or hybrid cars, while lower-income consumers tend to prioritise more economical and fuel-efficient options. This distinction is driven not only by financial constraints, but also by different lifestyle pursuits and values related to different types of vehicles. The growing interest in electric vehicles (especially among high-income groups) highlights the symbolic role played by cars in expressing environmental values [2].

In a word, family income is the core determinant of car consumption, which affects not only the feasibility of vehicle ownership, but also the type of vehicle chosen by consumers. The relationship between income and car consumption is not linear, which is reflected in the increasingly important role of income threshold, vehicle portfolio composition and emerging vehicle technologies. Understanding the interaction between income and other situational factors, such as infrastructure and policies, is crucial for a comprehensive analysis of car consumption patterns.

4. The impact of cognitive factors on car consumption

As discussed in the previous section, household income sets the basic budget constraint for automobile consumption by determining whether a family can afford a car and what price range is feasible. Within this constraint, however, the decision about whether to purchase a vehicle, which powertrain to choose and which brand to select is strongly shaped by cognitive factors. These include perceived value, attitudes towards cars and new technologies, environmental concern, and subjective norms derived from social influence, which together interact to form a household's cognitive framework for car consumption. Empirical studies on vehicle choice show that consumers with stronger pro-environmental attitudes and higher perceived value of low-emission vehicles are systematically more likely to choose hybrids or electric vehicles (EVs) even when income and infrastructure are similar [7,8]. In this sense, cognitive elements act as psychological "filters" that convert economic capacity into actual car consumption behaviour.

A first group of cognitive drivers relates to attitudes and perceived value. Using an integrated TPB–TAM model for Beijing residents, Wang and Wang find that attitude towards new energy vehicles (NEVs) is one of the strongest predictors of purchase intention, over and above cost variables and socio-demographic characteristics [8]. Hu, Yusof and Mansor further show that Chinese consumers' attitudes towards NEVs are jointly shaped by perceived environmental benefits, perceived economic value and perceived innovation [9]. Their survey finds that more positive attitudes significantly raise NEV purchase intention, while negative value and risk perceptions weaken it [9]. Thus, Households with the same income can show very different car consumption patterns depending on whether they frame NEVs as 'expensive and unreliable' or as 'economical, environmentally responsible long-term investments', reflecting the critical role of cognitive framing in shaping perceived utility.

Perceived behavioural control (PBC) is another crucial cognitive factor. PBC reflects whether consumers feel they have the ability and resources to own and use a particular type of vehicle, such

as sufficient access to charging facilities or technical knowledge to maintain EVs. In the empirical model of , perceived behavioural control has a significant positive effect on NEV purchase intention, indicating that consumers are more willing to buy when they believe that charging, maintenance and day-to-day use will be manageable [9]. Evidence from Lashari, Ko and Jang also suggests that perceived control – such as confidence in using charging infrastructure – can offset part of the cost barrier [7]. Combined with the income effects discussed in Section 3, this implies that policies and marketing strategies that enhance consumers’ sense of control—through clear information, trial opportunities and reliable after-sales support—may be as important as direct subsidies in stimulating car consumption and sustaining long-term adoption.

Subjective norms and social influence further shape automobile demand by affecting how consumers interpret the social meaning of their vehicle choices. Pettifor et al. conduct a meta-analysis of alternative fuel vehicle studies and show that social influence – neighbour effects, peer adoption, perceived social approval and cultural norms – has a statistically significant impact on the diffusion of low-carbon vehicles [10]. Individuals are more likely to adopt EVs or hybrids when such vehicles are visible in their social networks and framed as socially desirable or ‘normal’, illustrating how conformity and social learning mechanisms drive adoption [10]. This helps to explain why, among households with similar incomes and travel needs, some communities experience rapid growth in EV penetration while others continue to rely on conventional fuel vehicles. More broadly, social norms can reinforce symbolic consumption, which provides marketers with opportunities to design differentiated brand narratives aligned with social identity expression.

Brand perception and the symbolic meaning of vehicles represent a third important dimension of cognitive influence. Fujita et al. analyse a large-scale survey of new car buyers in the United States and measure how consumers rank different vehicle attributes in their purchase decisions [11]. They find that price and safety remain more important than environmental attributes on average, but buyers who assign a higher importance weight to “environmental friendliness” and “image” tend to purchase vehicles with better fuel economy and a higher probability of hybrid or electric drive [11]. Leng et al. provides complementary evidence for China’s NEV market: using a DEMATEL–ANP model, this study finds that perceived brand reliability, technological advancement and after-sales service are key determinants of NEV purchase intention, alongside price and operating cost [12]. Thus, even where technical specifications are similar, a brand that successfully constructs a “smart, green and premium” image is more likely to attract consumers within the same income bracket.

Overall, cognitive factors mediate the relationship between household income and automobile consumption in several ways. Attitudes, perceived value and perceived behavioural control determine whether households interpret a given car – particularly NEVs – as a rational, worthwhile choice within their budget. Subjective norms and social influence shape how consumers perceive the social desirability of owning particular types of cars, reinforcing or weakening the tendency towards symbolic consumption. Brand image and environmental attributes further differentiate choices among vehicles with similar prices and technical performance. These mechanisms help to explain why households with comparable income levels can end up with very different vehicle portfolios, suggesting that policy incentives should consider behavioural segmentation beyond income brackets. For policymakers and firms, the analysis suggests that financial incentives alone are unlikely to be sufficient; measures aimed at expanding car consumption will be more effective if they are combined with strategies that actively shape consumer cognition by improving information, reducing perceived risks, enhancing perceived control and building brand images that align economic, environmental and symbolic values.

5. Discussion: integrating income and cognitive determinants of car consumption

5.1. Overall conclusions from existing research

Bringing together the evidence reviewed in Sections 2–4, current research suggests that automobile consumption is jointly shaped by structural economic constraints and more subjective cognitive processes. Cross-country studies show that rising income remains the most powerful long-run driver of car ownership, particularly in lower-income economies [6,13]. As household income grows, car ownership rises faster than income at early stages of development and then gradually slows, implying a non-linear income elasticity of demand [13]. At the same time, micro-level studies of vehicle choice reveal that within a given income band, households display very different patterns of vehicle type, body style and powertrain, depending on attitudes, lifestyles and perceived value [1,14]. This literature reinforces the core argument of this essay: income determines the overall capacity of car consumption, whereas cognitive factors determine the qualitative dimension of vehicle choice.

In the specific context of new energy vehicles (NEVs), empirical work further clarifies this interaction. Survey-based studies in China and elsewhere show that higher income increases the probability of NEV ownership, but this effect is partly mediated by perceived value and attitudes [14,15]. Consumers with strong pro-environmental values and higher perceived economic value are much more likely to choose NEVs once income and infrastructure are controlled for [11,15]. Social influence and subjective norms also matter: meta-analyses and case studies indicate that peer adoption effects accelerate the diffusion of low-carbon vehicles [10]. Overall, existing research supports a complementary view: income growth provides the necessary financial capacity for car ownership, while cognitive factors “translate” that capacity into concrete consumption decisions, especially in the transition towards cleaner vehicles.

5.2. Policy and managerial implications

These findings have several implications for policymakers seeking to manage car consumption and for firms designing marketing strategies. First, because income remains a prerequisite for car ownership, traditional tools such as purchase subsidies, tax incentives and differentiated licence plate policies can still play a role in enabling low- and middle-income households to access basic mobility [6]. However, evidence on NEV adoption in China suggests that financial incentives are most effective when they are combined with policies that shape attitudes, perceived value and perceived behavioural control, such as preferential licence policies, parking benefits and investment in charging infrastructure [14,16]. In other words, policy design should address both the “capacity” side (affordability) and the “cognition” side (how households perceive and evaluate different vehicle options).

Second, from a managerial perspective, firms can leverage the interaction between income and cognition to refine market segmentation and product positioning strategies. Quantitative studies of car buyers indicate that consumers differ in how they weight attributes such as price, safety, image and environmental performance when choosing a car [1,11]. For middle-income households who are price-sensitive yet environmentally conscious, manufacturers might emphasise total cost of ownership, fuel savings and government incentives to increase perceived value and reduce adoption barriers. By contrast, for higher-income households who value symbolic consumption and lifestyle fit, branding strategies can highlight technological sophistication and environmental responsibility as part of a premium image [11]. The implication is that treating consumers as homogeneous

“income categories” is insufficient; effective interventions must be tailored to the cognitive profiles that coexist within each income group.

5.3. Directions for future research

Although the existing literature provides a rich foundation, several gaps remain. First, many studies estimate either income effects or cognitive effects on automobile consumption, but fewer empirically model the joint interaction between the two in a unified framework. Future research could build on dynamic car ownership models [6,13] and integrate latent variables capturing attitudes, norms and perceived value, using panel data to trace how changes in income and cognition jointly influence vehicle choices over time. Second, most evidence on cognitive factors in NEV adoption relies on cross-sectional surveys from major cities; there is still limited understanding of how these mechanisms operate in smaller cities, rural areas and among older or low-income households, where constraints and perceptions may differ markedly [15,16].

Third, new mobility trends such as ride-hailing, car-sharing and autonomous vehicles may alter the traditional link between income and car ownership, but their implications for household-level car consumption are not yet fully clear. Future work could therefore examine how shared mobility and changing work patterns interact with both income and cognition to reshape demand, offering insights for sustainable urban transport planning. Finally, more interdisciplinary research is needed to connect the determinants of car consumption with broader outcomes such as household welfare, energy demand and carbon emissions. By linking car consumption models with household energy accounts and environmental impact assessments, researchers can better inform policies that not only respond to consumer demand but also support sustainable development goals. Overall, addressing these gaps would deepen our understanding of how economic and cognitive determinants jointly drive automobile consumption and provide a more solid evidence base for designing effective interventions.

6. Conclusion

This essay has reviewed how total household income and cognitive factors jointly determine car consumption, with particular attention to the growing importance of NEVs. Car consumption is not only a functional mobility choice but also a symbolic and increasingly environmental decision, making it necessary to consider both structural and psychological drivers.

Overall, existing evidence supports a complementary conclusion: household income remains the strongest long-run determinant of car ownership capacity, while cognitive factors explain substantial within-income variation in vehicle portfolios, body styles, brands, and powertrains. In the NEV context, attitudes, perceived value, perceived behavioural control, and social influence help explain why households with similar economic resources adopt different technologies.

Based on these conclusions, several practical implications follow. For policymakers, affordability-oriented instruments (e.g., subsidies and tax incentives) are likely to be most effective when combined with measures that improve charging infrastructure, reduce perceived risks, and increase consumers’ sense of control over daily NEV use. For firms, market segmentation should move beyond income brackets to cognitive profiles, refining communication strategies to emphasise total cost of ownership, reliability, and credible “green + premium” brand narratives where appropriate.

In terms of research significance, the integrated perspective advanced here clarifies that income-based explanations alone are insufficient for contemporary car markets—especially during

technology transitions. Highlighting cognition as the mechanism that converts financial capacity into concrete choices strengthens the evidence base for designing interventions that can both satisfy mobility demand and support decarbonisation goals.

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