On Luxury Cars*

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Abstract

Exploring detailed data in the Panel Study of Income Dynamics, we present a comprehensive study of luxury car ownership. We find that, at odds with the textbook definition of luxury goods, income elasticity of luxury car ownership is considerably lower than one, and the ownership among households at the bottom of the income distribution is disproportionately larger than their income and wealth. We further document two areas where signaling with luxury cars may deliver tangible outcomes beyond pure psychological gains as previously literature has focused on. First, the work context and activities performed by luxury vehicle owners relate to more interpersonal interactions, where signaling status tend to hold value. Indeed, people working in certain occupations such as executives and sales agents are more likely to own luxury cars. Second, we find that single males tend to have a greater chance of forming a relationship following the acquisition of a luxury car, a pattern does not hold for single females. However, such relationships also have a higher separation risk. Moreover, consistent with the signaling hypothesis, starting a relationship also predicts disposition of earlier possessed luxury cars, which is observed in the data. We show that these patterns in the relationship market are consistent with a model featuring positive assortative mating and "deceptive" signaling.

Keywords: Luxury cars, Conspicuous consumption, Social status, Signaling, Relationship formation, Relationship dissolution

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1 Introduction

Luxury consumption has attracted perennial interests from scholars of economics, sociology, psychology, and marketing. A large part of this research agenda has revolved around the question why do people buy luxury goods. For more than a century, research efforts have led towards some consensus—people consume luxury goods not only for their higher quality, but also for signaling their income, wealth, and social status (see Veblen, 2004; Duesenberry, 1949; Cole et al., 1992; Charles et al., 2009, for examples of notable treatment on the topic in different eras across the past 120 years).[1] Luxury goods are costly to buy and to keep, raising a natural question what do people gain from such signaling?

One paradigm of addressing this question resorts to psychological factors and argues that people get gratification from others' admiration and boosting own ego and confidence, which compensates the cost of luxury good consumption. Indeed, most of the literature on luxury consumption seems to be satisfied with such an explanation. We depart from this tradition and search for additional, more tangible benefits and document that people buy luxury goods of high visibility for career and personal relationship related reasons. Specifically, people working in certain occupations (e.g. sales agents and real estate brokers) are more likely to drive light vehicles of luxury-makes (henceforth luxury cars, and follow definitions widely adopted in the auto industry).[2] Single men who purchased a luxury car are more likely to form a long-term relationship in the subsequent few years.

To the extent that luxury goods are expensive, many have to stretch their budgets to afford such goods—for their intrinsic, genuine quality or as a way of signaling. We further address another understudied question in the literature—can people afford lasting luxury consumption? We find the answer appears to be "No," as the majority of luxury car ownership is ephemeral in nature—consistent with the idea set forth in Arrow and Dasgupta (2009).

Three factors lead us to focus on luxury cars among luxury goods. First, all luxury goods are not created equal, with some being more visible than others. Luxury cars have arguably the highest visibility among all goods, luxury or not (Heffetz, 2011). In addition, vehicle spending accounts for a much larger share of household expenditure than other visible luxury goods, such as clothing and jewelry, implying more costly signaling. Third, we are able to distinguish luxury from economy vehicles in the data, whereas available data sources do not allow for zooming into the more luxury portion of clothing and jewelry expenditures.

[1] Even earlier related discussion can be found in Mill (2018), originally published in 1848.

[2] Technically, many of the luxury vehicles are SUVs, typically categorized as light trucks in industry publications.

Our main data source is the Panel Study of Income Dynamics (PSID), which has detailed vehicle purchase and inventory information from 1999, along with rich data on household spending, employment, and demography. We begin with examining luxury car ownership across the income and wealth distribution. Economics textbook defines luxury goods as those with a demand elasticity of income greater than 1, whereas our estimate of the elasticity of luxury car ownership is consistently below 1 across the income and wealth distribution, suggesting that lower income households own disproportionately more luxury cars relative to their financial resources. For example, 5 and 27 percent of the households in the bottom and top quintile of the family income distribution own luxury cars respectively, compared with top-quintile households on average having an income over 12 times greater than bottom-income households. The contrast between ownership differentials and income differentials is even larger when comparing top and bottom decile of the distribution. Such a pattern is in spirit consistent with Charles et al. (2009) and Bricker et al. (2021) and exemplifies the disconnection between market and academic definitions of luxury goods.

To the best of our knowledge, there was little research on the duration of luxury car ownership or any luxury consumption. This question is, however, important to understand people's preference, including habits and potentially addiction, towards such goods. This paper take advantage of the longitudinal structure of the PSID data (1999–2023) and follow luxury car ownership changes of the same households for up to over 20 years, thereby doubling the length of the panel relative to our earlier analysis (Kurz and Li, 2015). We find that the majority of luxury car owners only owned it for a several years. Moreover, apart from the high-income households, most of those who disposed their luxury cars were never observed acquiring another one. We argue that a primary reason for the short-lasting ownership is the cost. Luxury cars are expensive—acquisition as well as operation and maintenance. We estimate that owning one luxury car costs almost $900 more per year than economy cars on maintenance, insurance, and gasoline expenditures, where the extra annual costs can be nearly $2,000 for those who own multiple luxury ones.

We then explore two tangible factors that potentially motivate luxury car ownership—job-related considerations and prospects of forming a relationship. Jobs are vastly different not only on pay but on their routines and natures. We postulate that people working in certain occupations tend to use luxury cars to signal to their supervisors, the team they managed, and their clients. Consistent with such a hypothesis, we document large gaps in luxury car ownership across 2-digit occupations above

and beyond what can be accounted for by current and permanent income differentials therein and other observable characteristics. Furthermore, in a dynamic context, switching to certain occupations, such as management, business & finance, and sales, from other jobs is associated with a higher likelihood of acquiring luxury cars among those who didn't own a luxury car prior to the job change. We then add information from a specialized occupational data set on the characteristics of work, which provides additional context to luxury auto ownership. Specifically, the status that is derived from the signal of owning a luxury vehicle, be it income, wealth, or employment, is more concentrated in areas in which the signal–based on personal interaction–is more likely to be observed.

We further explore how owning a luxury car potentially boosts one's odds of entering a relationship (marriage or lasting cohabitation) and find a robust positive association. Interestingly, acquiring cars of similar prices but not of the luxury brands are not associated with such a higher odds, highlighting the signaling purpose of luxury cars. Noting that car ownership and family formation decisions can very well be influenced other common factors and a proper instrumental variable is elusive in this context, we push the analysis in the following four dimensions to corroborate a causal interpretation.

1. We exploit the longitudinal structure of the PSID data and focus on the dynamic connections between luxury car *acquisition* and subsequent relationship formation. Specifically, among single individuals who didn't own a luxury car in year, those who acquired one were over 25 percent more likely to form a relationship.

2. One of the most prominent confounding factors is income—both current income and expected future income growth. Accordingly, we include flexible, nonparametric vectors of income and household consumption of t, $t+2$, and $t+4$ in order to control for observed and expected current and permanent income changes. We argue that, doing so, the analysis is conditioning on a information set potentially more encompassing than what the households possessed at t and $t+2$, thereby rendering a more conservative estimate.

3. A range of comparative statics illustrate which subpopulation the above effects are most pronounced. Consistent with the theory of status signaling (for example, Cole et al., 1992), we find it is male, racial minority, low-income, and low-education singles who experienced the largest boost in odds of relationship formation.

4. Not only relationship formation can be predicted by prior luxury car acquisition, relationships

are also more prone to dissolution if they were formed following the male spouse acquiring a luxury car. This could reflect one being over-confident about future income prospect that didn't materialize after forming the relationship. It could alternatively suggest one deliberate sent a false signal beyond the true expected earnings capacity. The failed relation could also be the result of luxury car, as a signal of wealth and income, overwhelmed other aspects of the match quality that only be realized as two lived together. While we remain agnostic among these possibilities, the fact that luxury car acquisition helps predict relationship dissolution provides additional support of a causal interpretation.

While career and relationship factors are both associated with luxury car acquisition, they predict different trajectories of future ownership. Among luxury car owners, people of occupations that are associated with greater likelihood of luxury car acquisition also have a substantially lower odds of disposing luxury cars they own. By contrast, getting married is one of the potent predictors of quitting luxury car ownership. This distinction further corroborates the signaling purpose and the intended benefits—the need for signaling is perpetual in the workplace but diminishes quickly after the relationship is formed.

We conclude the paper with introducing a simple model with assortative mating and signaling to organize the observed patterns in the relationship market concerning the role of luxury cars as a tool of signaling.

In the context of the literature

Our results help bridge a waiting gap in the literature. Duesenberry (1949) pointed out that making one derive utility from perceived status per se requires a psychological theory. More than 40 years later, Cole et al. (1992) proposed a relationship-matching model that make people value status (in their model, the relative position in an economy) without resorting to any particular psychological or behavioral assumptions.[3] While an extensive literature has analyzed the assortative mating aspect (theory and empirics) of the relationship market (Chiappori and Salanié, 2016), few in the economic literature had provided direct empirical evidence for how signaling social status through luxury consumption are related to success in the mating process. Nor were there many papers aiming at tangible benefits of luxury consumption in other context, such as in workplace.

[3]Moreover, there were a number of papers in the 1980s and 1990s concerning social status and their implications on various aspects of the economy (see, for example Frank, 1985; Fershtman and Weiss, 1993; Bernheim, 1994, among others).

The role of luxury consumption for signaling in the market of romantic relationships was explored, to some extent, by our colleagues in psychology and marketing. For example, Griskevicius et al. (2007) run a series of experiments that suggest inducing mating goals in men increased their willingness to spend on conspicuous luxuries but not on basic necessities. The experiments conducted by Sundie et al. (2011) imply that men signaling with conspicuous consumption are motivated more by seeking for short-term than long-term relationships, and these implications are broadly consistent with our finding that pre-relationship purchases of luxury cars predict future relationship dissolution. A common feature shared by these studies is that they almost exclusively use experimental research design and data. As a results, the sample size is typically small, the experiment subjects are often university students, the spending and payoffs are either notional or small in their monetary values, and the preferences of the participants are often manipulated by the technique of priming.

Another strand of literature we contribute to is the link between luxury consumption and household welfare. A notable contribution in this literature is due to Charles et al. (2009), who document carefully that racial minorities have a significantly larger share of spending on conspicuous goods, at the cost of other household spending. We are able to put one particular type of conspicuous consumption—luxury cars—under microscope and have a thorough, comprehensive analysis on the ownership, acquisition, disposition, and costs associated across the income distribution. In this regard, our paper is also related to those address the link between conspicuous consumption and income inequality (Hwang and Lee, 2017; Ferrer et al., 2025).

Many contributions to the relative income and status signaling literature have clear macroeconomic growth and taxation policy implications (Corneo and Jeanne, 1997; Ireland, 1994, 1998, are a few notable examples). This strand of literature typically is absent of tangible benefits of wealth signaling that we study, which themselves have a real effect to the labor and relationship markets and therefore should be taken into account in optimal taxation considerations.

Finally, luxury consumption has been explored in the asset pricing literature on the premise that such consumption is a more proper metric of marginal consumption, but so far this research agenda used only aggregate data on luxury consumption (Ait-sahalia et al., 2004). Our analysis on luxury car ownership across the income and wealth distribution provides useful stylized facts at the household level, and the transient nature of luxury car ownership also informs household consumption habit formation on luxury goods, another potentially important ingredient of luxury-good motivated asset

pricing models.

The remainder of the paper is structured as follows. Section 2 introduces the two main data sources: the Panel Study of Income Dynamics and the O*NET data. Section 3 explores luxury car ownership across household income and wealth distribution. Section 4 discusses the costs and duration of luxury car ownership. Sections 5 and 6 explore career- and relationship-related signaling incentives of owning luxury cars, respectively. Section 7 contrasts and sheds further lights on these two types of signaling behavior, section 8 and Section 9 concludes.

2 Data Description and Summary Statistics

We use data from the Panel Study of Income Dynamics (PSID), a nationwide representative household longitudinal survey that has been collecting data for 55 years. Collected by the University of Michigan, the PSID is the longest-running longitudinal survey of a nationwide representative sample of U.S. households.[4] Starting in 1999, the PSID collected detailed information on light vehicle stocks, including make, model, year, and date of acquisition. To the best of our knowledge, the PSID presents the longest panel data on vehicle ownership at the household level. Our sample covers a period over 20 years, from 1999 to 2023, the most recent wave.

Following the industry convention, we define Acura, Audi, BMW, Cadillac, Infinity, Jaguar, Lexus, Lincoln, Mercedes-Benz, Porsche, Saab, and Volvo as luxury brands and refer to other brands as economy brands.[5] In our sample, the average purchase price of luxury cars is 80 percent higher than that of economy cars. In addition, we restrict a vehicle to be younger than 10 years at the time of acquisition to qualify a luxury vehicle, but relaxing this restriction does not qualitatively change our results.

We also merge Occupational Information Network (O*NET) data to the PSID occupation codes.[6], O*NET contains hundreds of standardized and occupation-specific descriptors on almost 1,000 occupations covering the entire U.S. economy.[7] We focus on the O*NET files that contain information

[4]The first wave of PSID data were collected in 1968. The survey was in the field annually from 1968 to 1997 and biennially afterwards. For more information, see https://psidonline.isr.umich.edu.

[5]We follow the IHS/Polk luxury vehicle segmentation. Similar taxonomies are widely used in other auto industry publications, such as the Kelly Blue Book. We do not include super luxury brands (e.g. Rolls Royce) because they either have too few observations in the data or were topcoded by the survey.

[6]See https://www.onetcenter.org/overview.html for more information on the O*NET data

[7]The PSID O*NET merger is nontrivial. PSID occupation code changed in 2003, which necessitates use of 1970 census code (SOC) prior to 2003, 2000 census code 2003–2015, and 2010 census code from 2017. ONET occupation codes have 8 digits, and the first six digits correspond to the SOC 2000 code. The last two digits range from 00 to 11, with 00 accounting for over 80 percent of occupation codes. We use only the occupations with '00'. Among over 500 occupation

on various physical and contextual aspects of occupations. Specifically, of the many files, we merge the Work Context and Work Activity data files. "Work context" includes the physical and social factors that influence the nature of work, such as public speaking, exposure to radiation, and contact with others. "Work activities" includes general types of job behaviors, such as "having face-to-face discussions" to "analyzing data or information."

Table 1 presents the composition of households by vehicle ownership status pooled across our sample period, and each observation in the pool sample is household × year. For simplicity, we count households with purchased and leased luxury vehicles as luxury car owners and our main results hold when vehicle leases are excluded. As the table shows, between 1999 and 2023, over 14 percent of the pooled sample did not own a vehicle. The majority of the sample (72 percent) owned economy cars only. 12 percent of the sample owned only one luxury car, whereas a small share of the sample (2 percent) own multiple luxury cars.[8]

Comparing with households owning only economy vehicles (column 2), luxury car owners (columns 3–4) were older and more likely to be college educated. Accordingly, luxury car owners had significantly higher family income and labor earnings. Regarding other demographic characteristics, relative to those who owned only economy cars, luxury car owners are more likely to be married (and less likely to be divorced) by sizable margins and are slightly more likely to be black.[9] Moreover, we also note that owning luxury vehicles appears to be quite costly. Expenditures on auto insurance, gasoline and other vehicle related-items were all appreciably higher for luxury vehicle owners than those who own only economy vehicles. Finally, as indicated in the memo line of the table, on average, 14 percent of the households in our sample owned luxury vehicles in a given year. By contrast, among all households who were in the PSID data for a minimum of 10 years, over 33 percent had ever owned a luxury car. This difference underscores the transient nature of luxury car ownership among many households, which we will discuss in detail later in the paper.

At the vehicle level, as shown in table 2, 85 and 87 percent of luxury and economy vehicles in our sample were purchased, respectively, and the average purchase price of luxury vehicles was above $30,000 in 2019 dollars, 80 percent higher than economy vehicles. In addition, a greater share of luxury

code in the PSID data, fewer than 30 cannot be merged with our crosswalk.

[8]The share and other statistics of table 1 are estimated using the PSID weights. Unweighted statistics are similar qualitatively.

[9]Relative to car owners, economy or luxury, the households who did not own a vehicle in our sample tend to be much worse off financially and economically. The statistics in column 1 show that such households had lower education, less likely to be married, much less likely to be working, and had much lower family and labor earnings (if working).

cars (10.3%) than economy cars (6.1%) were leased, and a slightly greater share of luxury cars (35%) than economy cars (30%) were acquired new instead of used. Finally, about similar shares of luxury and economy cars (14–15%) were used for business either partly or entirely.

3 How "Luxury" Are Luxury Cars?

It is interesting to note that what luxury goods are remains an unsettled question in the luxury consumption literature, and the definition appears to evolve with economic development, market trends, and consumer preferences (Batat, 2023). In textbook economic theory, luxury goods are defined as the goods that have an income elasticity greater than one. For example, if income doubles, demand for luxury goods will more than double. Do luxury cars satisfy this definition of luxury goods?

3.1 Luxury Vehicle Ownership across Income and Wealth Distribution

We first illustrate luxury car ownership across the income and wealth distribution. We find that luxury car ownership increases with household income and wealth, but at a rate substantially slower than income and wealth changes. Figure 1 plots the share of households owning at least one luxury car by total family income, household head labor income, and wealth distribution decile, with the corresponding levels of income and wealth shown on the horizontal axis in log-scale and the 95-percent confidence interval shaded in the blue area.

As shown in the upper panel, households within the lowest decile of family income distribution have a luxury car ownership of 3.4% and an average income below $7,000 in 2019 dollars. In the middle range of the distribution, ownership and average income increase to about 10.5% and $51,000, respectively, within the fifth decile. At the high-end of the distribution, ownership rises to about 35%, whereas total family income approaches near $300,000. Between the lowest and highest decile, luxury car ownership rises less than 10 times higher, whereas income is over 40 times higher. The middle panel shows how ownership varied with labor income among households whose heads are working. Interestingly, luxury vehicle ownership is largely flat, even slightly decreasing, across the bottom four deciles of the labor income distribution. Overall, the proportional increase in labor income far exceeds that in luxury car ownership. Thus, the luxury car owners with little family income are not merely income-poor but asset-rich (e.g. wealthy retirees). Low income households own a significant portion of luxury vehicles even among working individuals.

Looking across the wealth distribution, over 16 percent of households in the PSID data reported

zero or negative wealth. Thus, the bottom two deciles have an average total wealth of -$60,000 and -$2,000, which we label as "deep negative" and "negative", respectively. As shown in the lower panel, over 7 percent of the households with deep negative wealth own luxury vehicles, somewhat higher than the next three wealth deciles. For example, households in the 3rd decile have an average wealth of $2,500 and a lower ownership of about 4 percent. Ownership increased to about 35 percent to the top of the wealth distribution, with an average wealth level in the highest decile of over $2 million.

3.2 Income and Wealth Elasticity of Luxury Vehicle Ownership

The flatter gradient of luxury vehicle ownership relative to income and wealth across their respective distributions indicates that luxury vehicle ownership, on an unconditional basis, does not increase proportionally with income and wealth. This notion can be more concretely established by estimating the following linear probability model that control for household socioeconomic and demographic characteristics, which may influence people's preferences:

$$Lux_{i,t} = \alpha + \beta Y_{i,t-1} + \gamma Z_{i,t} + Age_{i,t} + Year_t + \varepsilon_{i,t}, \tag{1}$$

where $Lux_{i,t}$ is a dummy that is equal to one if household i owned at least one luxury vehicle in year t. Because of the pronounced nonlinear pattern of ownership figure established in 1, we include Y, a vector of dummies indicating the decile in total family income distribution (defined separately for each year). Note that the PSID collects income information for the year before the survey. For example, the 2001 PSID data include income data of the year 2000. Therefore, Y is indexed to $t-1$. Estimating the model using household head labor income among the households with working heads yields similar results. Z is a vector of socioeconomic and demographic characteristics (race, marital status, family size, and education), among which race and education are static characteristics in the PSID data and marital status and family size can be time-varying. Finally, Age and $Year$ denote respective fixed effects.[10]

We can then approximate the income elasticity of luxury vehicle demand using the estimated $\hat{\beta}$ as

$$\varepsilon_d = \frac{\hat{\beta}_{d+1} - \hat{\beta}_d}{\hat{\beta}_{d+1} + \hat{\beta}_d} \div \frac{\overline{Y}_{d+1} - \overline{Y}_d}{\overline{Y}_{d+1} + \overline{Y}_d}, \tag{2}$$

where ε_d denotes the income demand elasticity of luxury vehicle ownership between family income

[10]In the remainder of the paper, we will often suppress subscripts i and t for brevity when it does not introduce confusion.

distribution decile d and $d+1$, and $\overline{Y}_d$ is the average income within a particular decile.[11] The estimated income elasticity is plotted in the upper panel of figure 2, with the 1,000-rep bootstrapped 95-percent confidence intervals.Notably, the estimated income elasticity of luxury car and the corresponding confidence intervals are mostly below unity across the income distribution. Furthermore, the wealth elasticity of luxury car ownership is even more subdued, with all point estimates below 0.4 and the 95-percent confidence intervals barely crossing above 0.5.

The estimates above are largely based on cross-individual variations on income and luxury vehicle ownership. If we further control for household fixed effects, as preference over vehicles may reflect individual tastes beyond observable characteristics, the link between luxury vehicle ownership and family income is even more subdued. For example, we estimate a variation of equation (1), adding household fixed effects and keeping only time-varying characteristics. Unlike the cross-sectional model of equation (1), people's income does not always jump across distribution deciles. Accordingly, we replace the discrete $\overline{Y}_d$ with a continuous variable y, the inverse hyperbolic sine transformation of family income.[12] The β coefficient estimated with the entire sample, reported in column 1 of table 3, is extremely modest. The other columns report the coefficients estimated using the upper 80, 60, 40, and 20 percentiles of the income distribution. Consistent with the pattern shown in figure 1, the income sensitivity of luxury vehicle ownership is appreciably higher at the upper tail of the income distribution. For example, in the highest quintile (column 5), the estimated β coefficient is more than 10 times higher than in the entire sample. However, even this estimate implies doubling income being associated with an increase in ownership merely about one quarter of the average of that quintile.

3.3 Elasticity on the Intensive Margin:Vehicle Prices

The estimates illustrated in figure 2 focus on the extensive margin of luxury car ownership. On the intensive margin, Aguiar and Bils (2015) estimate the total expenditure elasticity of over 20 categories of household expenditure, including spending on vehicle purchase. Their estimate yields a total expenditure elasticity of 1.02 and cannot reject an elasticity below 1. By contrast, expenditures like food away from home, entertainment, and clothing (the classic luxury goods) have a significantly higher-than-unity elasticity. Furthermore, for the households who purchased a vehicle in a given year in our

[11] If we further assume that individual households deal with a perfectly elastic supply of luxury cars, the ownership elasticity is essentially equivalent to demand elasticity of luxury cars.

[12] The IHS (inverse hyperbolic sine transformation of x is defined as $log(x+\sqrt{x^2+1})$, the value of which is close to logarithm transformation for positive x but allows for zero and negative values of x. See Chen and Roth (2024) for a treatment on the IHS transformation.

PSID sample, we can estimate the income elasticity of purchase price

$$Log(Price) = \alpha + \beta y + \gamma Z + Age + Year + \varepsilon, \tag{3}$$

and the estimated β coefficient is about 0.55, substantially smaller than unitary elasticity.[13]

In sum, vehicle expenditures increase roughly in line with total household expenditure, whereas luxury car ownership increases slower than income. Therefore, relative to high-income households, a disproportionately large share of lower-income household own luxury cars. Why do many people with relatively low income and wealth own luxury cars? An important factor explored in recent research was the signalling motivation. People consume luxury goods as a signal of their tastes, social status, and earnings relative to their peers. Before we explore how luxury car ownership and acquisition are associated with career and relationship considerations, we provide evidence of the expenses and temporary nature of luxury ownership.

4 Costs and Duration of Luxury Car Ownership

With the elasticities providing evidence that luxury vehicles are indeed not luxury goods by definition, now provide estimates that the costs of luxury car ownership is indeed far more expensive–not just in purchase price–than ownership of non-luxury vehicles. Moreover, there is a transient nature to luxury vehicle ownership, consistent with the previous findings of Kurz and Li (2015).

4.1 Driving a Luxury Car Is Expensive

Luxury cars are expensive. They are also costly to operate and maintain. We estimate a model that projects vehicle related expenditures (auto insurance, gasoline, and other vehicle related expenses) on luxury ownership indicators, household income, as well as socioeconomic and demographic controls. We first focus on the households with only one vehicle, contrasting owners with one luxury vehicle with those with one economy vehicle. We see that luxury car owners on average spent $540 a year more than economy car owners (table 4, column 1). When controlling for individual fixed effects, the annual spending gap narrows only slightly to $520 (column 2). For the households with two or more vehicles, we find that those with one luxury car spent about $525–$900 more than those owning only economy cars, depending on whether household fixed effects are controlled for (columns 3–4). The spending

[13] Estimating an equation similar to equation (1) with income decile dummies yields similar average estimated elasticity across the income distribution, with no estimated purchase price elasticity greater than 1 at any decile of income.

gap was even larger, up to over $1,800, for those with multiple luxury cars. Table A4 provides a more detailed decomposition of the extra spending, with broad, significant increases across auto insurance, gasoline, and other vehicle-related expenses.

4.2 Luxury Car Ownership Is Ephemeral, for Many

Characterizing durations of luxury car ownership is tricky, even in the longitudinal data because the panel tends to be unbalanced as not all households are in the survey throughout all waves. For the households who first showed up in the survey owning luxury cars and those who left the survey owning luxury cars, their ownership is censored. We estimate the ownership transition matrix between two consecutive waves (two years apart) to minimize the influence of unbalanced panel and characterize patterns of reacquisition of luxury cars after disposition.

The matrix shown in table 5 indicates that, among the households who owned at least one vehicle (luxury or economy) in both years, on average, 23 percent of luxury car owners in year t no longer owning any luxury cars two years later, whereas fewer than 5 percent of those who didn't own one in year t acquired ownership by $t + 2$. We restrict the sample to vehicle owners to isolate the effect of disposing any cars from disposing luxury cars. Both transition rates vary substantially by income. For owners with above-median family income, nearly 80 percent retained their luxury cars during the two years, whereas only 70 percent did among owners with below-median household income. Because owning a luxury car is costly, many households, particular those with a relatively low income, possessed luxury vehicles only for a few years. As we discussed in the summary statistics, the average luxury vehicle ownership in a given year is 14 percent. In contrast, an average of 33 percent of households who had been in the PSID sample for 10 years or longer had ever owned a luxury car.

Can people really let it go? It seems that many can. Among those previous luxury car owners whom we can follow for at least 6 years and an average of 11 years after luxury car disposition, over 60 percent were never seen owning a luxury car. For people with below-median income, this ratio is about 75 percent.

5 Why drive a luxury car? Career Considerations

5.1 Substantial Gaps across Jobs

Wages and earnings vary considerably across occupations.[14] Not surprisingly, we also find luxury car ownership varies substantially among households whose heads are of different occupations.[15] Table 6 presents information on occupation and luxury vehicle ownership ordered by occupations with the highest fraction of luxury car ownership. As shown in the first column of table 6, households whose heads are in the management occupation and the business and financial operation occupation have the highest luxury car ownership (23.0 and 20.3 percent respectively). Health care professionals, people in sales occupations, and scientists and engineers also have a significantly higher-than-average luxury car ownership. By contrast, people working on farming, fishing and forestry occupations, and health care support occupations (such as nurses and clinic assistants) have the lowest luxury car ownership of about 5 percent.[16]

5.2 Not Merely Driven by Income Gaps or Use for Business

Wages and salaries of workers of different occupations and industries vary substantially, and the differences in luxury car ownership across occupations and industries reflect such income differentials to a significant extent. To better isolate the potential influence of one's job from that of one's income on luxury car ownership, we estimate the following model, a modified version of equation (1).

$$Lux = \alpha + \zeta OCC + \beta \widetilde{Income} + \theta Food + \gamma Z + Age + Year + \varepsilon, \tag{4}$$

where OCC denotes the occupation of the household head, and the model is estimated with a subsample of households whose heads were between 20 and 65 years old and working with a valid occupation code. We use the office and administrative support occupations as the omitted group, which has an

[14] See Erosa et al. (2024) for an overview of the differences in wage and earnings inequality between and within occupations.

[15] For this part of the analysis, we skip the 1999 and 2001 waves of data. The PSID started mapping occupation and industry information to 2000 U.S. Census code from the 2003 wave and to 2010 code from the 2017 wave. For the purpose of our analysis, the 2000 and 2010 code systems are largely the same. Because the PSID weights are not calibrated to make the data representative across occupations, we report unweighted statistics. Weighted estimates are qualitatively similar.

[16] While not as large and extensive as across occupations, table A2 demonstrates some gradient of luxury car ownership exists across industries as well. People working in the finance, insurance, and real estate industry have the highest ownership over 20 percent, followed by the professional and management, utility, and information industries (all above 16 percent). By contrast, people working in the art, entertainment, and recreation industry and other services industry have the lowest ownership of below 9 percent.

unconditional ownership of 9.6 percent, because they include a substantial number of households and have an unconditional luxury car ownership roughly in the middle among all occupations.

Occupations are correlated with income, and some occupations account for a disproportionately large portion at the very top of the income distribution. We introduce two enhancements in our model to isolate the bearing of occupation choice on luxury car ownership from that of income. First, in order to better control for the nonlinear income effect of luxury vehicle ownership (figure 1), in addition to the array of income decile dummies included in equation (1), the augmented control $\widetilde{Income}$ includes indicators of households in the top 5% and top 1% of the income distribution to account for the very rich households in our sample. Second, purchases of major durable goods, such as a car, are influenced by one's permanent income, of which the current income collected by the survey is a noisy measure. In addition to the socioeconomic characteristics (education etc) in the model that are strong determinants of permanent income, we add food expenditure to the model to better account for variations in household permanent income.[17] In addition, including food expenditure also help control for potential consumption preference shifters that may affect vehicle and food spending in some correlated fashion.

The coefficients on OCC dummies estimated for the whole sample are shown in column 2 of table 6 and the standard errors are clustered at the household level. The results indicate that, on the one hand, much of the gap in cross-occupation luxury car ownership is indeed caused by income differences. For example, ownership in health care occupations is no longer higher than the omitted group once income is controlled for, in spite of a 7.5 percentage points gap in unconditional statistics.[18] On the other hand, income differentials do not account for the entire ownership gaps. Relative to the omitted group, three occupations (management, business & finance, and sales) have statistically significant coefficients that imply these occupations having an ownership more than 3 percentage points higher than people working office and administrative support occupations. In contrast, several occupations have negative coefficients that are both statistically and economically significant.

Consumers in other occupations do not appear to have a significantly different luxury car ownership

[17] As income, we include a vector of decile dummies of the food expenditure distribution, also defined for each year. In the PSID data, food expenditure and vehicle ownership have the same year of reference, whereas income data refer to the year before. We note that using food expenditure as a proxy of permanent income is not necessarily accurate for households who are liquidity constrained, for whom consumption tracks more close with their current income.

[18] Another interesting occupation is science & engineer. This occupation has an unconditional ownership of 15.7 percent, much higher than that of the omitted group. However, controlling for income differentials, the conditional ownership in science & engineer is 3 percentage points lower.

than office & admin. support, and these occupations, including the omitted group, account for nearly 60 percent of the sample.[19]

The occupations that have the highest unconditional luxury car ownership also appear to be high income jobs, raising the question if our model sufficiently addresses the income effect. We estimate the model again after trimming the top 10 and 25 percent of the family income distribution to exclude the households with higher income. As shown in columns 3–4, estimated from a sample of more moderate income, all three occupations with higher luxury car ownership in the baseline estimates continue to have positive, significant coefficients, with their magnitudes being somewhat smaller.

Statistics in table 2 show that about 15 percent luxury cars possessed by households were used for business. Business ownership may be facilitated by tax benefits or by company subsidies. This prompts the question on the extent of the relationship between occupation and luxury vehicle ownership that is driven by business use. As shown in column 5 of table 6, estimating equation (4) excluding households with vehicles used for business yields largely similar results as in column 2, with the positive ownership gap remaining sizable and significant for Management, Business & Finance, and Sales.

5.3 Occupation-Related Luxury Car Acquisition

People tend to engage in consumption when a new job is attained, whether it be to spend on a vacation, a new home, or a motor vehicle. In the context of luxury vehicles, does the movement into an occupation with a high share of luxury car ownership translate into an acquisition? We now show job changes into certain occupations are associated with luxury car acquisitions, which sheds light on the cross-sectional analysis in table 6 on the relationship between occupation and luxury vehicle ownership.

We estimate the following variation of equation (4)

$$Acq_{t,t+2} = \alpha + \delta Entry_{t,t+2} + \beta FamInc_{t+2} + \theta Food_{t+2} + \gamma Z_{t+2} + Age + Year + \varepsilon, \tag{5}$$

where an indicator of acquiring a luxury vehicle between year t and $t+2$ is projected on the indicator ($Entry_{t,t+2}$) of whether the individual switched to a job of the three occupations that have the highest luxury vehicle ownership—management, business & finance, and sales. The model is estimated using

[19]Similarly, the IND coefficients, shown in columns 2–4 of table A2, are positive and statistically significant for two industries—finance, insurance and real estate and professional and management—relative to the manufacturing industry. Four industries—education, health care, other services, and construction—have negative and significant coefficients. People working in other industries (over 50 percent of the sample) have similar luxury car ownership.

the subsample of individuals who did not own any luxury vehicles as of year t, with year $t+2$ values of income, food expenditure, and time-varying demographics.

The occupation-led luxury car acquisition results can be found in table 7. As shown in column 1 of upper panel of table 7, entering any of these three occupations is associated with a 1.3 percentage point higher likelihood of acquiring a luxury vehicle—an about 30 percent boost given that the mean acquisition likelihood within two years among those who do not currently possess a luxury vehicle is about 4.5 percent. We then replace the dependent variable with $Acq_{t+2,t+4}$ and estimate the model using a subsample not owning any luxury cars as of year $t+2$.[20] Doing so allows us to illustrate if switching to jobs of these occupations has a persistent or delayed effect of raising the likelihood of acquiring luxury cars in subsequent years, instead of in years contemporaneous to job switching. The estimate indicate that such job changes do appear to have a lasting bearing on luxury car acquisition, with entering any of the three occupations predicting a 1.4 percentage points higher probability. When we estimate the model for each of the three occupations, the statistical power is reduced because of the smaller number of occupation switch, but the estimated coefficients are generally positive, with a comparable magnitude comparable to those in column 1. The only exception is that joining the sales occupation does not predict luxury car acquisition two years after the job change.

5.4 Detailed Occupation Information

We now zoom into more detailed definitions of occupations to shed light on job-related motivation for owning luxury cars.[21] Specifically, we estimate equation (4) at the more granular, 3-digit level, occupations. We continue to use the Office and Administrative Support occupation (the average of several 3-digit occupations therein) as the omitted group. [22]

Table 8 shows the estimated coefficients of 3-digit occupation dummies that are positive and statistically significant.[23] All but one of 17 such occupations are in the broader occupation categories in table 6 that have a significantly higher luxury car ownership. The high ownership within the Management occupation is particularly widespread (seven 3-digit occupations included in the table). In addition, six 3-digit sale occupations have a positive, significant coefficient. For example, the estimates indi-

[20] Income, food expenditure, and other control variables also take values of year $t+4$.

[21] The industry results can be found in table (A3) in the appendix.

[22] While the PSID data have a decent sample size, the number of households in some occupations at this level can be too small to have meaningful statistical estimates. Accordingly, we include only the occupations/industries that have more than 50 observations in the sample. Doing so reducing the number of unique 3-digit occupations by more than 40 percent, from over 520 to about 300.

[23] Negative and statistically significant dummy coefficients are reported in appendix table.

cate that security, commodity & financial services sales agents (482) and real estate brokers and sales agents (492) have a 12–15% higher luxury car ownership than the average of Office and Administrative Support occupations.

Some of these ownership gaps can be attributed to income differentials not adequately controlled for. Estimating the model after trimming the top 10 or 25 percent of the income distribution, several of the occupations no longer have significant coefficients. In addition, the subsample of some 3-digit occupations become too thin (smaller than 50 observations, e.g. pilots (903)) and we suppress these estimates. By contrast, some occupations consistently have higher luxury car ownership by a sizable and robust margin—for example, financial managers (012), property, real estate, & community association managers (041), and real estate brokers and sales agents (492).

5.5 Occupational Insights into Luxury Ownership

As we have seen, luxury ownership varies substantially across households based on occupation and industry, with specific industries and occupations reflecting higher concentrations of luxury vehicles. While luxury good purchases are thought of as partially reflecting status-signaling consumption, it is not entirely clear what that entails. One thing, for sure, is that that your erudite economist toiling away in her office might have little incentive to signal status by means of luxury vehicle ownership. By contrast, a real estate agent who transports clients to and from listings might want provide evidence of their business acumen via a higher-end auto.

One way of teasing out occupational-specific business needs can be achieved via the standardized O*NET descriptors, detailed information on worker attributes and job characteristics derived from nearly 1,000 detailed occupational profiles. We fold in variables from the Work Context and Work Activity O*NET data files into equation (4) and replace the occupation codes OCC with the indicators for either Work Context or Work Activity characteristics.[24] We present the positive and significant results of the 55 work context variables and the 41 work activity variables. The results of this analysis can be found in table 9.

The first column presents our findings for Work Context. There are several significant standardized Work Context O*NET descriptors that provide meaningful insight into status signaling. Specifically, we find "Dealing With External Customers," "Working With Work Group or Team" are significant. In addition, public speaking is an activity in which individual presence and status play an important

[24]The specification also includes an indicator for health specific fields and industry controls.

role. The other Work Context significant variables, such as wearing specialized equipment are related to differentials that were not adequately controlled for, such as being a specific doctor.

The results are similar in terms of Work Activities. We find "Judging Qualities," "Establishing and Maintaining Interpersonal Relationships," "Resolving Conflicts and Negotiating with Others" activities that involve interactions that likely benefit from status, significant. The other three significant variables also appear to be related to being a doctor or CEO.

Taken together, the 'work context' and 'work activity' data from O*NET provide additional insight into the underlying incentives for the career, industry, and occupational drivers for luxury vehicle ownership. That is, the status that is derived from the signal of owning a luxury vehicle, be it income, wealth, or employment, is more concentrated in areas in which the signal–based on personal interaction–is more likely to be observed. We now turn to the implications of observing the signal impacts relationship formation.

6 Why Drive a Luxury Car? Relationship Considerations

We begin with a stark contrast of relationship formation rates by status of luxury vehicle acquisition. Consider the single individuals in the PSID sample who did not own a luxury car in year t, 10 percent of those who did not acquired a luxury car by year $t+2$ formed a relationship during these two years, compared to near 30 percent among those acquired one—three times more likely.

6.1 Measurement and Econometric Considerations

While such an appreciably difference suggests that owning a luxury car boosts the prospects of relationship formation, it may also be a result of imprecise measurement or the effects of confounding factors. First, the PSID is a biennial survey during our sample period, we are not able to sequencing relationship formation and luxury vehicle acquisition. It is possible that the couple chose to buy a luxury vehicle *after* starting a relationship—a scenario in line with increases in household expenditure driven by major lifecycle events.[25] Second, both relationship formation and luxury goods acquisition may be caused by other factors (particularly current and expected income changes) that are not taken into account in the unconditional comparison above.

[25]For example, Favara et al. (2025) consider the home purchase-induced spending.

Measurement of Timing To address these concerns and shed light on the potential effect of luxury consumption boosting one's chance in the relationship market, we take advantage of the longitudinal structure of the PSID data that covers up to twelve two-year intervals during our sample period. Specifically, we focus on the working individuals who did not own a luxury vehicle in year t and were not in a relationship as of $t+2$ and correlate their luxury vehicle acquisition between t and $t+2$ with their relationship status as of $t+4$. We also restrict our sample to individuals who were between age 20 and 65 as of year $t+2$.

Controlling for the Income Effects Income is a main factor affecting relationship and vehicle acquisition decisions. To estimate such a dynamic relationship, we need to control for, in addition to income levels, changes in current income and the underlying permanent component. Therefore, we control for labor income and food expenditure in three years—t, $t+2$, and $t+4$.

In the analysis of the previous section, our models include both food expenditure and the number of adults and children in the households. Thus, food expenditure variations driven by family size and composition are controlled for. However, in the analysis of relationship formation, we cannot include family size and composition in the model as they are highly correlated with the outcome variable by construction. Accordingly, we estimate the following model to account for the family size effect on food expenditure

$$Log(Food) = \omega_0 + \omega_1 Adults + \omega_2 Children + res, \tag{6}$$

where the log total food expenditure, $log(Food)$, is projected on arrays of dummies indicating the numbers of adults and children in the household. We then include the residual term, res, in the following linear probability model of relationship formation.

$$\begin{aligned} Rel_{t+2}^{t+4} &= \alpha + \beta Lux_t^{t+2} + \gamma Z' + \theta_1 y_t + \theta_2 y_{t+2} + \theta_3 y_{t+4} + \\ &\quad \eta_1\, res_t + \eta_2 res_{t+2} + \eta_3 res_{t+4} + Age + Year + \varepsilon, \end{aligned} \tag{7}$$

where the indicator Rel_{t+2}^{t+4} is equal to one if the single individual formed a relationship between $t+2$ and $t+4$ and zero otherwise. Z' denotes the time-invariant demographic characteristics (race and educational attainment).

Sample Construction and Relationship Data in the PSID The baseline sample we use to estimate equation(7) include household heads who did not own a luxury vehicle in year t and was

not in a relationship in $t+2$. In addition, we keep only the heads who were working in t. One unique feature of the PSID data is its collection of detailed information on relationship dynamics over time. We use variables of couple status, marital status, and relationship to household head to infer relationship status changes over two years.[26]

Accordingly, our baseline specification designates $R_{i,t+2}^{t+4} = 1$ if individual i was not legally married, not in a long-term cohabiting relationship, nor was cohabiting with a partner for the first year in year $t+2$, but subsequently entered one of these three status by $t+4$. We will also explore the robustness of our results with respect to the definition of $R_{i,t+2}^{t+4}$, along with alternations to sample restrictions.

6.2 Baseline Results and Robustness Analysis

The estimated β coefficients are reported in table 10. The baseline estimate in column 1 suggests that singles who acquired a luxury car enjoyed a 2.1 percentage points (about 20 percent) higher likelihood of entering a relationship during the following two years, given the mean of $R_{i,t+2}^{t+4}$ is about 11 percent in our sample.

Splitting the sample by gender illustrates substantial differences between men and women. The estimate in column 2 shows essentially no effect of luxury vehicle acquisition on relationship formation among single women, whereas acquiring a luxury car is associated with a 6.3 percentage points (over 35 percent of subsample mean) higher probability of forming a relationship among single men (column 3). Indeed, historically the burden of signaling wealth in the relationship market was perceived to be the responsibility of men, and the extant psychological research also focused on men's signaling incentives and behavior Griskevicius et al. (2007). In the international context, Wei and Zhang (2011) attribute the high saving rate in China to its distorted sex-ratio with more men and women seeking for marriage.

The following analysis will accordingly focus on the single men subsample. First, we note that our sample includes both individuals who owned vehicles but not any luxury ones in t and those who did not own vehicle at all. For the latter, the effect of having a car and that of having a luxury one are confounded. We estimate equation(7) with a subsample that owned at least one vehicle but zero luxury vehicle in t, the estimated β coefficient is slightly larger (column 4). We further compare the

[26] A nuanced aspect of the relationship definition in our data is that the PSID survey labels couples who are legally married or in long-term cohabiting relationships as "married," but couples in first-year cohabitation are not labelled as "married." Thus, transitioning from being unmarried to married in the PSID data would include staying cohabiting beyond the first year. For these couples, the onset of cohabitation may happen prior to luxury vehicle acquisitions (if any), confounding our analysis and potentially leading to biased estimates.

effect of acquiring a luxury car with that of acquiring an economy car, with the latter being defined as either adding an economy car or replacing an existing economy car with another one. As shown in column 5, the coefficient for luxury car is over twice as larger as that for economy car, and the gap is marginally insignificant with a F-test of 2.52 and associated p-value of 0.11.[27]

Relatedly, we test if the luxury brands carry more weights in signaling than a better-quality economy car with similar price. To do so, we add log of vehicle purchase price in the model. As shown in column 6, which $log(price)$ has a positive, statistically significant estimate, the β coefficient on the luxury car acquisition dummy remains sizable and significant, suggesting the luxury brands have their glamour over other vehicles of similar prices for signaling purpose.[28] Finally, we estimate the model controlling for individual fixed effects, and the estimate yields a larger, statistically significant point estimate. Not shown in the table, we also estimate the model excluding leased vehicles, which account for a small portion of our sample, and the results are little changed.

Overall, our exercise indicates consistently a strong, robust association between single men's luxury vehicle acquisitions and relationship formation in the ensuing few years. Interestingly, such an association is not found among single women. We next explore whether, among single men, this association differ by socioeconomic and demographic characteristics.

6.3 What is the story with single men?

Table 11 illustrates the β coefficients estimated with various subsample of single men, with the baseline estimate included in column 1 as a referencing benchmark. As shown in the upper panel, the statistical link between luxury vehicle acquisition and subsequent relationship formation is most pronounced among the low-income (below median of the distribution of labor earnings) and low-education (high school and below) subsamples. By contrast, the relationship prospects of single men of higher income and higher education do not appear to be boosted by acquiring luxury cars. Turning to race split, we find that this link is only pronounced among non-white, single men.

In addition, we compare the estimated boost of the likelihood of forming long-term relationships and that of entering first-year cohabiting relationships. As columns 7-8 show, the likelihood boost is estimated to be economic and statistically significant for both long-term and first-year relationships

[27] Later in the paper we show further evidence that acquiring an economy car likely has a different effect on the relationship than acquiring a luxury one.

[28] We also experiment with nonlinear controls of vehicle purchase price, using an array of price dummies. The results remain unchanged qualitatively.

and, relative to their respective mean probability of relationship formation, the boost is more substantial for first-year cohabitation, broadly consistent with the results of Sundie et al. (2011) based on lab experiments. For long-term relationships (beyond first year), the estimated coefficient is about 35 percent of the mean probability, compared with 60 percent for first-year cohabitation.

As for age, the estimated β coefficients (not shown) is particularly large for single men aged 50 years or older, but much smaller for younger men. The age differential is broadly consistent with the notion of the signaling incentive being stronger within the subpopulation with more disperse income (Charles et al., 2009). Indeed, as evident in Mincer (1975), the variation in earnings increases with age.

7 A Tale of Two Signals

We have presented extensive evidence consistent with people's use of luxury cars as a signal to get ahead either on their career or in the romantic relationship market. In this section, we complete our analysis by contrasting the implications on luxury car ownership duration of these two signaling behaviors. The results also shed additional light on the notion that some of the conspicuous consumption signaling is motivated by tangible results and benefits, beyond pure psychological gains.

7.1 Predicting Disposition of Luxury Cars

We argue that the signaling process is quite different in these two contexts. Job-oriented signaling is an ongoing process, without a preset goal of success. A real estate agent will not downgrade his luxury car after completing ten sales. Thus, we expect career-motivated luxury car ownership to be more "sticky" and lasting as one need to constantly signal to bosses, coworkers, and clients. By contrast, if luxury cars were acquired for advantage in the relationship market, some may choose to replace them with economy cars one the relationship is secured. After all, as shown in table 4, maintaining and driving luxuries cars are expensive. Results in table 12 are consistent with such a hypothesis.

We project the dummy of disposing the luxury vehicles between t and $t+4$ on indicators of working in high ownership occupations as of $t+2$ as well as marital status changes and other major lifecycle events (job losses and purchasing a home) between t and $t+2$. The model follows the similar design of using current status and events to predict future changes in luxury car ownership. We find that people working in high-ownership occupations (management, business & finance, and sales) have a significantly lower probability of getting rid of their luxury cars. This gap is even wider for those

working in the 3-digit occupations of high ownership, highlighted in table 8. Regarding marital status transitions, we use those who stayed single between t and $t+2$ as the omitted group. Comparing to them, divorce is the most potent predictor of luxury car disposition, broadly consistent with the pattern discussed in Charles and Stephens (2004). However, getting married also has a significant, positive estimate. Thus, these estimates, interpreted as their face value, indicate that people have some incentive to retain luxury vehicles while single but are more willing to let them go after getting married.

7.2 Predicting Job Changes and Relationship Dissolution

Another perspective of distinguishing these two signals is to see their future consequences regarding career choices and relationship outcomes.

In the romantic relationship context, while acquiring a luxury car helps boost one's chance of starting a relationship, such a relationship may suffer a higher rate for separation, should the signal overstate a male's wealth and earning potential or it overwhelm other important aspects of the match quality. To that end, the literature finds women place higher weight on economic factors and a have a higher propensity to initiate divorce in response to earning declines (Charles and Stephens, 2004; Fisman et al., 2006)

To test this hypothesis, we estimate the following model to relate the likelihood of relationship separation within four years of its formation with whether a luxury car was acquired prior to the relationship formation.

$$\begin{aligned} Div_{t+4}^{t+8} &= \alpha + \beta Lux_t^{t+2} + \gamma Z' + \theta_1 y_t + \theta_2 y_{t+2} + \theta_3 y_{t+4} + \theta_4 y_{t+8} + \\ &\quad \eta_1\, res_t + \eta_2\, res_{t+2} + \eta_3\, res_{t+4} + \eta_4\, res_{t+8} + Age + Year + \varepsilon, \end{aligned} \tag{8}$$

where Div_{t+4}^{t+8} is a dummy whether a couple that formed the relationship between $t+2$ and $t+4$ subsequently separated between $t+4$ and $t+8$. Estimating this model, we are taking full advantage of long-panel feature of the PSID data as it requires tracking people's vehicle acquisition and relationship status for at least eight years continuously.

We find that relationships associated with a higher separation hazard of 9 percentage points, nearly 50 percent higher relative to the mean separation probability of about 20 percent among newly formed relationships (column 1 of table 13). As a placebo test, we do not find economy vehicle purchases prior to the start of the relationship predict its dissolution (column 2). Moreover, luxury car purchases

made by existing relationship that were formed more than two years before the acquisition does not predict separation either (column 3). Thus, buying luxury cars per se is not necessarily associated with relationship failure. However, a relationship formed shortly following luxury car acquisition is indeed less stable.

By contrast, in a similar research design, we do not find acquiring luxury cars between $t+2$ and $t+4$ following joining high-ownership occupations (management, business & finance, sales) between t and $t+2$ helps predict quitting such occupations. Estimating the following model

$$\begin{aligned} Exit_{t+4}^{t+8} &= \alpha + \beta Lux_{t+2}^{t+4} + \gamma Z' + \theta_1 y_t + \theta_2 y_{t+2} + \theta_3 y_{t+4} + \\ &\quad \eta_1\, res_t + \eta_2\, res_{t+2} + \eta_3\, res_{t+4} + Age + Year + \varepsilon, \end{aligned} \tag{9}$$

using a subsample of those who entered these occupations t–$t+2$ and didn't own a luxury car as of $t+2$, we find only a small and statistically insignificant estimate of β.[29] Running the model with an expanded sample of those working in these occupations as of $t+4$ but not necessarily joined between t and $t+2$ yields similar estimates. Finally, we note that while acquiring a luxury car doesn't predict leaving these occupations, it doesn't predict longevity of working in these occupations either.

8 Model Outline

We now sketch a model that simultaneously predict the patterns in the relationship market documented above. Specifically, the model is capable to predict

- **Formation effect**: Luxury car acquisition increases relationship formation probability for single men
- **Dissolution effect**: Relationships formed following luxury car acquisition have higher dissolution rates
- **Heterogeneity**: Effects are strongest among low-income, low-education, and minority men

The model synthesizes two key mechanisms commonly featured in the relationship literature:

1. Assortative mating in the relationship market Women are heterogeneous in an observable quality dimension ω (e.g. attractiveness, education, social status, etc.).

[29] Note that in this model, we choose not to include y_{t+8} and res_{t+8} because these variables can be highly correlated with job changes, and including them will likely bias against finding any predictability of luxury car purchases.

2. Costly signaling Men can acquire luxury cars to signal high permanent earnings capacity θ to "reach up" and match with higher-ω partners than they could without the signal. The signal is costly and more so for men with lower-θ.

The textbook separating or pooling equilibria do not simultaneously generate the patterns above. Therefore, we allow for a **partial-separating equilibrium** where luxury car ownership is an imperfect signal. In such a setup, high-θ men always signal, whereas a portion of low-θ men also signal. At equilibrium, signaling boosts the prospects of low-θ men forming a relationship, but their relationships have a greater risk of dissolution once their true type and match quality are learned.

8.1 Model Primitives and Setup

Men A continuum of single men indexed by $i \in [0, 1]$, each characterized by:

- **Permanent earnings capacity**: $\theta_i \in \Theta = \{\theta_L, \theta_H\}$ where $0 < \theta_L < \theta_H$
- **Observable current income**: y_i drawn from distribution $F(\cdot|\theta_i)$

Let $\lambda \in (0, 1)$ denote the proportion of high-type men in the population. Men know their own type θ_i but women do not observe it directly. Current income y_i is a noisy signal of θ_i:

$$y_i = \theta_i + \varepsilon_i, \quad \varepsilon_i \sim N(0, \sigma_y^2) \tag{10}$$

Women A continuum of single women $j \in [0, 1]$, characterized by an observable character $\omega_j \in \Omega = [\underline{\omega}, \bar{\omega}]$, with a probability density function $g(\omega)$.

Men can acquire a luxury car at cost $c(s, \theta)$ where:

- $s \in \{0, 1\}$: signal choice (0 = no luxury car, 1 = luxury car)
- $c(0, \theta) = 0$ for all θ (no cost if no signal)
- $c(1, \theta) = c(\theta) > 0$ (strictly positive cost to signal)
- $\dfrac{\partial c(\theta)}{\partial \theta} < 0$.

The last element is the so-called single-crossing property that implies luxury cars being less costly (e.g. as a fraction of permanent income) for high-θ men such that $c(\theta_L) > c(\theta_H) > 0$.

8.2 Preferences and Utility

Men's utility when matching with woman of rank ω:

$$U^M(s,\theta,\omega,d,m) = \begin{cases} V^M(\omega) - c(s,\theta) + \beta \cdot d \cdot [W^M + \omega + m] & \text{if relationship forms} \\ -c(s,\theta) & \text{if no relationship} \end{cases} \tag{11}$$

where:

- $V^M(\omega)$: Value of entering a relationship with woman of rank ω, which is assumed to be monotonically increasing in ω.
- W^M: Base value of relationship continuation (marriage payoff)
- $m \in [0, \bar{m}]$ is a relationship-specific match quality only observed after the formation of a relationship
- $d \in \{0, 1\}$: Continuation decision made after learning stage
- $\beta \in (0, 1)$: Discount factor

Women's utility when matching with man of type θ:

$$U^W(\theta,\omega,m,d) = \begin{cases} V^W + \beta \cdot d \cdot [W^W + \theta + m] & \text{if relationship forms} \\ \bar{U}^W(\omega) & \text{outside option} \end{cases} \tag{12}$$

where terms are similarly defined as in equation (11). Note that for simplicity, we assume ω and m enter men's preference in an additive way and θ and m enter women's preference in an additive way.

The partial-separating equilibrium implies that high-θ men always signal, where as a fraction of low-θ men also choose to signal. If men are different only in θ, then at the equilibrium, the share of low-θ men that signal will be at such a level that makes low-θ men indifferent between signaling or not. We can further enrich the model to allow V^W, the discount factor β, and the ex ante subjective belief of match quality m to differ across men. Then, low-θ men with higher V^W, lower β and higher perceived m will be more likely to signal, holding other factors constant.

9 Concluding Remarks

Aside from the super rich, luxury cars are the most prominent luxury consumption given their high visibility and large share in household budget. This paper presents a comprehensive study of the

dynamics of luxury car ownership and bridges a waiting gap in the literature regarding the intended tangible benefits of signaling with conspicuous consumption beyond psychological gratification. We explore the career and romantic relationship motivations of luxury car ownership.

As job changes, family formation, and purchases of large durables are notoriously endogenous, we focus on the dynamic connections therein and strive to control for both current and permanent income changes. Specifically, we document that first, people joining management, business & finance, and sales (MBFS) occupations are more likely to acquire luxury car in the two years subsequent to the job change. Deeper dive into job context and activities further illustrates key aspects of these occupations prompting luxury car ownership. Second, single men acquired luxury cars are more likely to start a relationship in the subsequent two years, with the results being most pronounced among the racial minorities with lower income and lower education. Further corroborating the interpretation of using luxury cars as signals at work and in the relationship market, we show that forming a relationship predicts future disposition of luxury cars and luxury car acquisition predicts dissolution of relationship form following the acquisition. By contrast, luxury car acquisition predicts neither joining nor leaving the (MBFS) occupations.

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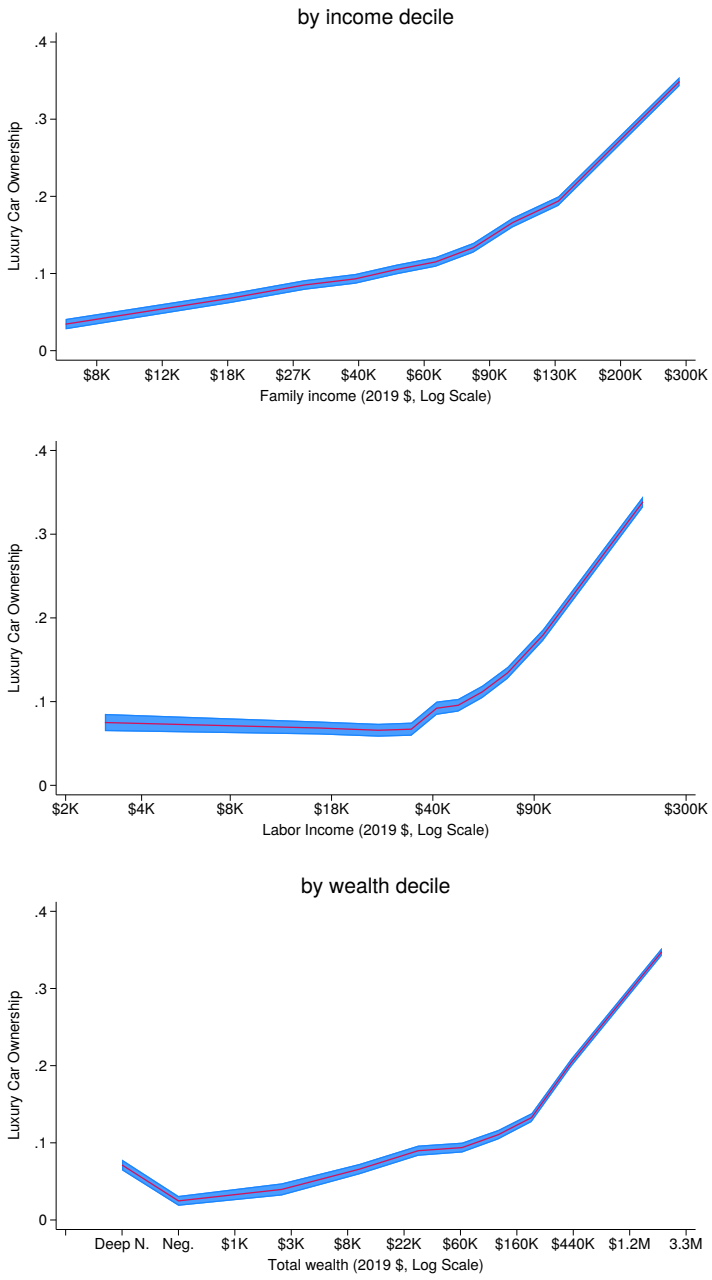
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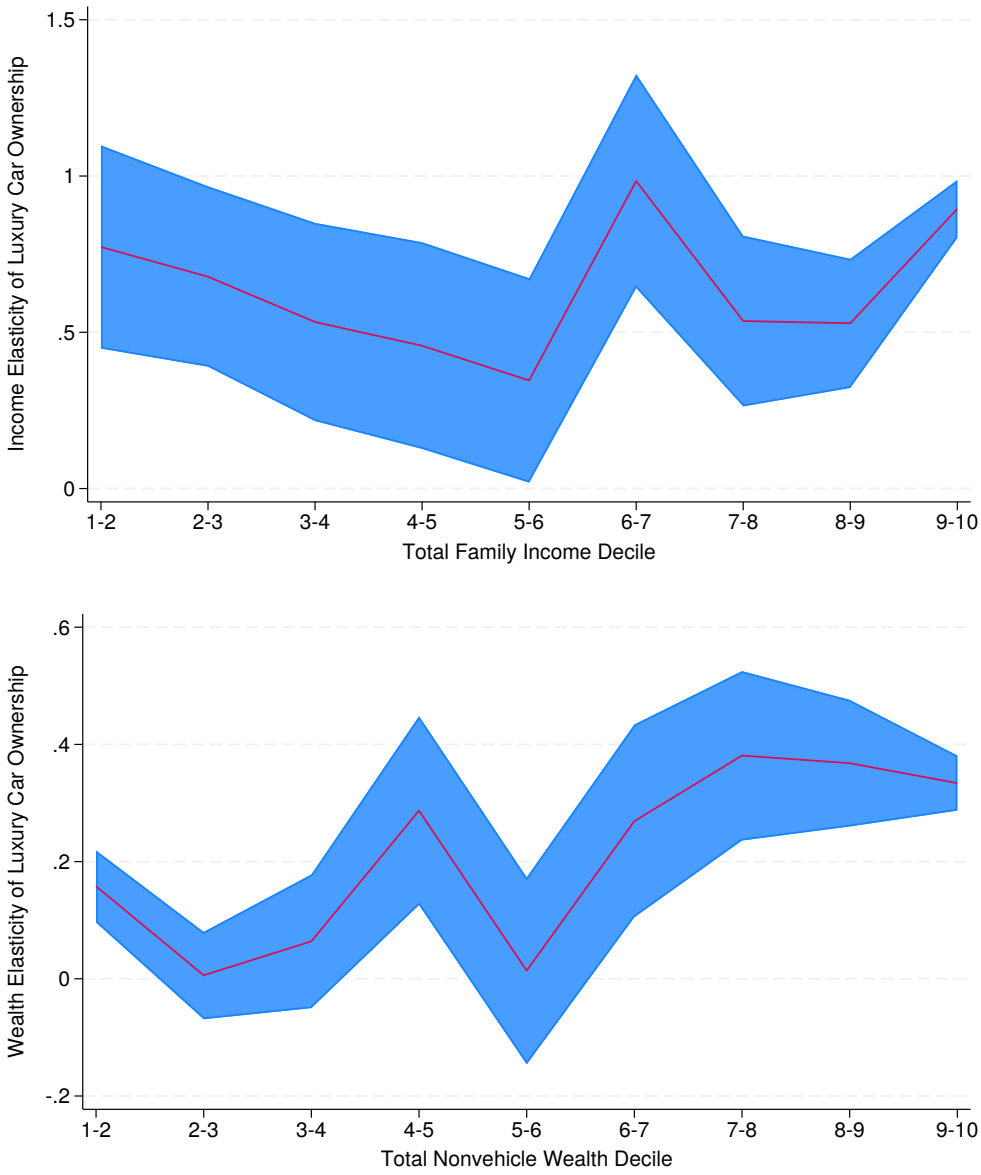
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Figure 1: Luxury Car Ownership by Income and Wealth



Note: The charts show the luxury car ownership by decile of total family income (upper panel), household head labor income (middle panel), and wealth (lower panel) distributions. The middle panel plots luxury vehicle ownership among the households whose heads were working. The horizontal axis is in natural-log scale. The 95-percent confidence intervals are plotted in blue shaded area.
Source: authors' estimates using data from the Panel Study of Income Dynamics.

Figure 2: Income and Wealth Elasticity of Luxury Car Ownership



Note: The charts show the luxury car ownership elasticity by decile of total family income and wealth distributions, estimated using equations (1–2). The horizontal axis is in natural-log scale. The 95-percent confidence intervals are plotted in blue shaded area.
Source: authors' estimates using data from the Panel Study of Income Dynamics.

Table 1: Household Characteristics by Vehicle Ownership

	(1) Do not own	(2) Economy only	(3) One luxury	(4) Multi. luxury
Share of sample (%)	14.3	71.8	11.9	2.0
Average age	53.3	50.0	56.7	57.6
Demographic composition (%)				
Black	32.1	12.0	13.4	10.1
Educational attainment				
Below high school	29.6	14.1	8.3	3.9
High school	32.2	29.4	21.7	10.1
Some college	20.6	24.8	23.5	13.2
College	17.6	31.6	46.5	72.8
Marital status				
Married	16.3	53.3	61.6	88.1
Single	39.1	19.0	12.2	5.3
Widowed	19.0	7.6	11.6	2.3
Divorced	25.6	20.1	14.6	4.3
Currently working	38.4	68.9	61.4	67.8
Income and expenditures (2019 $)				
Family income	37,613	82,291	131,081	271,450
Working head labor income	43,536	59,965	105,301	210,074
Auto insurance	NA	1,782	2,128	3,049
Gasoline	NA	2,301	2,540	3,225
Other vehicle exp.	NA	2,747	3,261	4,874
N	18,239	79,773	11,813	1,934
Memo:				
Luxury vehicle ownership (%)	In a given year		Ever	
	13.9		33.6	

Note: The table shows weighted statistics of demographic characteristics, income, and expenditures of households by luxury vehicle ownership. Income and expenditures are CPI-adjusted to 2019 dollars. The "Ever" column in the memo line refers to the share of households had ever owned luxury cars among those who stayed in the PSID sample for more than 10 years.

Table 2: Luxury and Economy Vehicle Characteristics

	Luxury	Economy
Purchased	85.0	86.7
Purchase price (2019 $)	30,812	17,051
Leased	10.3	6.1
Received as gift	4.7	7.2
Acquired new (%)	35.0	30.4
Used for business (%)	15.1	13.9
Number of unique vehicles	11,001	110,391

Note: The table compares the main characteristics of luxury and economy vehicles. Purchase price is CPI-adjusted to 2019 dollars and is estimated among vehicles that were purchased.

Table 3: Income Semi-Elasticity of Luxury Vehicle Ownership

	whole sample (1)	top 80% (2)	top 60 % (3)	top 40% (4)	top 20 % (5)
Log(income)	0.005***	0.041***	0.050***	0.050***	0.060***
	(0.001)	(0.003)	(0.004)	(0.005)	(0.009)
controlling for					
Demographics	Yes	Yes	Yes	Yes	Yes
Household FE	Yes	Yes	Yes	Yes	Yes
Age FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
R-squared	0.549	0.556	0.569	0.591	0.619
N	108,963	85,981	63,623	41,780	20,320
Mean of dep. var.	0.123	0.146	0.171	0.206	0.269

Note: The table shows the estimated β coefficient of equation (**??**), which controls for time-varying demographic characteristics, age fixed effects, year fixed effects, and household fixed effects. Different columns show coefficients estimated with subsamples that trim the lower tail of the income distribution at different quintiles.

Table 4: Luxury Car Ownership and Household Spending

	One vehicle		Multiple vehicles	
	(1)	(2)	(3)	(4)
One luxury car	539.4***	522.6***	899.0***	526.1***
	(81.7)	(124.5)	(86.5)	(119.9)
2 or 3 luxury cars			1809.7***	1571.7***
			(177.7)	(252.0)
Family income	1.4***	1.2***	5.1***	2.0***
	(0.3)	(0.4)	(0.3)	(0.4)
Widowed	-168.5	251.3	-470.8**	820.9*
	(116.5)	(343.6)	(206.7)	(487.3)
Divorced	-5.6	-161.8	-70.8	-191.6
	(88.0)	(197.6)	(123.7)	(277.4)
Single	-107.2	-101.7	-238.2*	154.8
	(90.2)	(203.8)	(138.0)	(296.9)
White	-930.1***		-1172.1***	
	(48.8)		(68.2)	
High school	115.6*		394.8***	
	(70.0)		(99.9)	
Some college	373.8***		863.3***	
	(72.2)		(102.6)	
College	237.8***		398.5***	
	(76.8)		(102.8)	
controlling for				
Household fixed effects	No	Yes	No	Yes
Num. adults and children bins	Yes	Yes	Yes	Yes
Age bins	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
R-squared	0.064	0.378	0.085	0.376
N	36,724	32,990	50,321	46,989

Table 5: Transition of Luxury Car Ownership

	Year $t+2$ ownership					
	Whole sample		Below-median income		Above-median income	
(percent)	Owner	Non-owner	Owner	Non-owner	Owner	Non-owner
Year t owner	77.2	22.8	70.7	29.3	79.3	20.7
Year t non-owner	4.8	95.2	3.4	96.6	5.9	94.1

Note: The table shows the luxury car ownership transitions between year t and $t+2$ among the households who owned at least one vehicle in both years.

Table 6: Do Jobs Affect Luxury Car Ownership?

		Regression analysis			
Occupation	Ownership (%)	Whole sample	Bottom 90%	Bottom 75%	Excl. business use
	(1)	(2)	(3)	(4)	(5)
Management	23.0	0.030***	0.027***	0.020**	0.033***
		(0.010)	(0.010)	(0.010)	(0.011)
Business & fin. op.	20.3	0.032**	0.033***	0.026**	0.032**
		(0.013)	(0.013)	(0.012)	(0.014)
Health care	17.1	0.001	0.002	0.007	0.002
		(0.015)	(0.013)	(0.014)	(0.015)
Sales	16.1	0.026***	0.020**	0.013	0.018*
		(0.009)	(0.009)	(0.008)	(0.009)
Science & engineer	15.5	-0.029**	-0.013	0.002	-0.023**
		(0.012)	(0.011)	(0.012)	(0.012)
Entertainment & media	15.3	0.016	0.028	0.027	0.003
		(0.018)	(0.018)	(0.018)	(0.021)
Education	15.5	-0.015	-0.002	-0.006	-0.007
		(0.011)	(0.010)	(0.010)	(0.011)
Transportation	10.9	-0.003	-0.003	-0.003	-0.004
		(0.008)	(0.008)	(0.008)	(0.009)
Production	10.1	-0.002	-0.005	-0.006	-0.006
		(0.008)	(0.008)	(0.007)	(0.008)
Office & admin. support	9.6	– –	– –	– –	– –
		(.)	(.)	(.)	(.)
Installation & maintenance	9.3	-0.018*	-0.012	-0.007	-0.016
		(0.010)	(0.010)	(0.010)	(0.011)
Construction & extraction	8.3	-0.016*	-0.019**	-0.015**	-0.016*
		(0.009)	(0.008)	(0.008)	(0.009)
Cleaning & maintenance	7.6	-0.011	-0.008	-0.007	-0.014
		(0.010)	(0.010)	(0.009)	(0.010)
Personal care & service	7.2	-0.003	-0.003	-0.002	-0.017*
		(0.010)	(0.010)	(0.010)	(0.010)
Food preparation	6.3	-0.001	-0.003	-0.001	-0.006
		(0.009)	(0.008)	(0.008)	(0.009)
Health care support	5.1	-0.020**	-0.020**	-0.022***	-0.022**
		(0.009)	(0.009)	(0.008)	(0.009)
Farming, fishing & forestry	4.9	-0.034**	-0.028**	-0.027**	-0.029**
		(0.014)	(0.014)	(0.013)	(0.015)
R-squared		0.094	0.041	0.030	0.083
N		63,463	55,811	47,561	50,131

Note: Column 1 compares unconditional luxury vehicle ownership by household head occupation for the subsample of households whose heads were working in civic occupations. The subsample excludes the 1999 and 2001 waves, the occupation information for which was not available. Columns 2–4 present the estimated coefficients of occupation dummies in equation (1), using Office & Administrative Support as the omitted group. In addition to those in equation (4), the models control for deciles of household food expenditure and dummies that indicate households in the top 5 and 1 percent of family income distribution. Columns 2 are estimated using the entire sample of working households, columns 3 the bottom 90 percent of the family income distribution, columns 4 the bottom 75 percent. Column 5 reports the coefficients estimated with the subsample excluding households with vehicles used for business. Standard errors are reported in parentheses in upper and middle panels and are not shown in the bottom panel for brevity. *, **, *** stand for statisitcal significance at 90, 95, and 99 percent level, respectively.

Table 7: Occupation Entry and Luxury Vehicle Acquisition

Entering Occupations below between t and $t+2$			
Any of the Three Occupations (1)	Management (2)	Business & finance (3)	Sales (4)
Acquisition between year t and $t+2$			
0.013***	0.010	0.013	0.017**
(0.005)	(0.007)	(0.011)	(0.008)
Acquisition between year $t+2$ and $t+4$			
0.015***	0.019***	0.029***	-0.003
(0.005)	(0.007)	(0.012)	(0.009)

Note: The table presents the estimated β coefficient in equation (5), where the the likelihood of acquiring a luxury vehicle is associated with switching to management, business & finance, and sales occupations. The upper panel shows how the acquisition likelihood between year t and $t+2$ is associated with such job changes during the same time interval, among those who did not own luxury vehicle in year t. The lower panel shows how the acquisition likelihood between year $t+2$ and $t+4$ is associated with such job changes during the previous two years, among those who did not own luxury vehicle in year $t+2$. The model controls for dummies of family income and food expenditure deciles, constructed for each year, household demographics, and age and year fixed effects. *, **, *** stand for statistitcal significance at 90, 95, and 99 percent level, respectively.

Table 8: Relationship between Detailed 3-Digit Occupation and Luxury Car Ownership

	Whole sample (1)	Bottom 90% (2)	Bottom 75% (3)
Management			
Chief Executives (001)	0.133***	0.075	0.163**
	(0.036)	(0.056)	(0.071)
General & Operations Managers (002)	0.079**	0.046	0.007
	(0.033)	(0.033)	(0.030)
Admin. Services Managers (010)	0.162**		
	(0.078)		
Financial Managers (012)	0.116***	0.114***	0.090**
	(0.034)	(0.039)	(0.037)
Purchasing Managers (015)	0.124**		
	(0.061)		
Medical & Health Services Managers (035)	0.066*	0.036	-0.019
	(0.040)	(0.044)	(0.031)
Property, Real Estate,	0.119**	0.163***	0.118***
& Community Association Managers (041)	(0.046)	(0.050)	(0.043)
Business			
Human Resources, Training,	0.099***	0.106***	0.086**
& Labor Relations Specialists (062)	(0.037)	(0.038)	(0.038)
Management Analysts (071)	0.105**	0.078*	0.064
	(0.044)	(0.044)	(0.044)
Personal Fin. Advisors (085)	0.093*	0.093	0.137**
	(0.051)	(0.058)	(0.067)
Sales			
First-Line Supervisors Managers	0.076**	0.053*	0.021
of Non-Retail Sales Workers (471)	(0.030)	(0.031)	(0.026)
Advertising Sales Agents (480)	0.119*	0.078	
	(0.068)	(0.071)	
Insurance Sales Agents (481)	0.074*	0.099**	0.087**
	(0.041)	(0.039)	(0.043)
Securities, Commodities,	0.124**	0.064	
& Financial Services Sales Agents (482)	(0.057)	(0.063)	
Sales Representatives,	0.042*	0.025	0.007
Wholesale & Manufacturing (485)	(0.025)	(0.024)	(0.022)
Real Estate Brokers & Sales Agents (492)	0.156***	0.136***	0.138***
	(0.047)	(0.045)	(0.050)
Transportation			
Aircraft Pilots & Flight Engineers (903)	0.181**		
	(0.087)		
R-squared	0.107	0.052	0.042
N	59,011	51,048	41,822

Note: The table presents the estimated ζ coefficients of equation (4) with dummies of 3-digit occupation codes. The table shows only the occupations with positive estimates that are statistically significant. The omitted group is all 3-digit codes that belong to the group of office & administrative support. In addition to those in equation (1), all columns control for deciles of household food expenditure and dummies that indicate households in the top 5 and 1 percent of family income distribution. Columns 1 are estimated using the entire sample of working households, columns 2 the bottom 90 percent of the family income distribution, columns 3 the bottom 75 percent. Column 4 reports the coefficients estimated with the subsample excluding households with vehicles used for business. Standard errors are reported in parentheses in upper and middle panels and are not shown in the bottom panel for brevity. *, **, *** stand for statisitcal significance at 90, 95, and 99 percent level, respectively.

Table 9: Luxury Car Purchases and Occupational Context and Activity

ONet Variable	Work Context	Work Activity
	(1)	(2)
Public Speaking	0.021***	
	(0.009)	
Electronic Mail	0.023***	
	(0.008)	
Work With Work Group or Team	0.022***	
	(0.009)	
Deal With External Customers	0.016**	
	(0.006)	
Cramped Work Space, Awkward Positions	0.010*	
	(0.006)	
Wear Specialized Protective or Safety Equipment	0.014***	
	(0.003)	
Importance of Being Exact or Accurate	0.022***	
	(0.008)	
Structured versus Unstructured Work	0.015***	
	(0.005)	
Judging the Qualities of Objects, Services, or People		0.014***
		(0.006)
Making Decisions and Solving Problems		0.029***
		(0.007)
Updating and Using Relevant Knowledge		0.012***
		(0.004)
Establishing and Maintaining Interpersonal Relationships		0.021***
		(0.005)
Resolving Conflicts and Negotiating with Others		0.024***
		(0.006)
R-Squared	0.110	0.109
N	55,501	55,501

Note: The table presents only the positive and significant estimated ζ coefficients of two equations based on (4) with the occupation codes replaced with either the 55 work context variables (column 1) or the 41 work activity variables (column 2). The specification also includes an indicator for health specific fields and industry controls. *, **, *** stand for statistical significance at 90, 95, and 99 percent level, respectively.

Table 10: Luxury Car Acquisition and Prospects of Long-term Relationships

				Sample of single men			
	Whole sample	Women	Men	Own veh.	Acq. econ veh.	Price	Panel
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Luxury veh. acq.	0.031**	0.004	0.068***	0.071**	0.073**	0.060**	0.080***
	(0.014)	(0.016)	(0.026)	(0.028)	(0.028)	(0.026)	(0.028)
Economy veh. acq.					0.007		
					(0.012)		
Log(price)						0.003***	
						(0.001)	
R-squared	0.077	0.068	0.101	0.110	0.110	0.102	0.377
N	13,347	8,569	4,777	3,937	3,937	4,777	5,594
Memo:							
Mean of dep. var.	0.118	0.087	0.175	0.186	0.186	0.175	0.119

Note: The table shows the estimated β coefficients of equation (7). The model is estimated using a subsample of working individuals who were single as of year t and relates acquiring a luxury vehicle between t and $t+2$ with the likelihood of forming a relationship between $t+2$ and $t+4$. The model controls for race, education, age and year fixed effects. The model also controls for levels and changes of individuals' labor earning and food expenditures. Column 1 is estimated with all working single individual who did not own a luxury vehicle in year t. Columns 2–3 show estimates of single women and single men subsamples, respectively. Columns 4–7 shows various robustness specifications among single men. *, **, *** stand for statisitcal significance at 90, 95, and 99 percent level, respectively.

Table 11: How Does It Differ across Various Groups of Unmarried Men?

	All single men	by age			by race	
		20–34	35–49	50–65	Non-white	White
	(1)	(2)	(3)	(4)	(5)	(6)
Luxury veh. acq.	0.068***	0.051	0.069*	0.103**	0.074**	0.056
	(0.026)	(0.045)	(0.039)	(0.042)	(0.032)	(0.040)
Mean of dep. var.	0.175	0.239	0.150	0.077	0.140	0.201

	by income		by edu.		by rel. type	
	Low	High	Low	High	Long-term	First-year
	(7)	(8)	(9)	(10)	(11)	(12)
Luxury veh. acq.	0.105*	0.024	0.113**	0.058*	0.045*	0.039**
	(0.063)	(0.047)	(0.046)	(0.030)	(0.024)	(0.016)
Mean of dep. var.	0.138	0.201	0.174	0.175	0.131	0.044

Note: The table shows the estimated β coefficients of equation (7), using various subsamples of unmarried men (columns 2–10) and alternative dependent variables (columns 11–12). The model relates acquiring a luxury vehicle between t and $t+2$ with the likelihood of forming a relationship between $t+2$ and $t+4$. The model controls for race, education, age and year fixed effects. The model also controls for individuals' labor income and food expenditures of t, $t+2$, and $t+4$. *, **, *** stand for statistical significance at 90, 95, and 99 percent level, respectively.

Table 12: Luxury Car Disposition

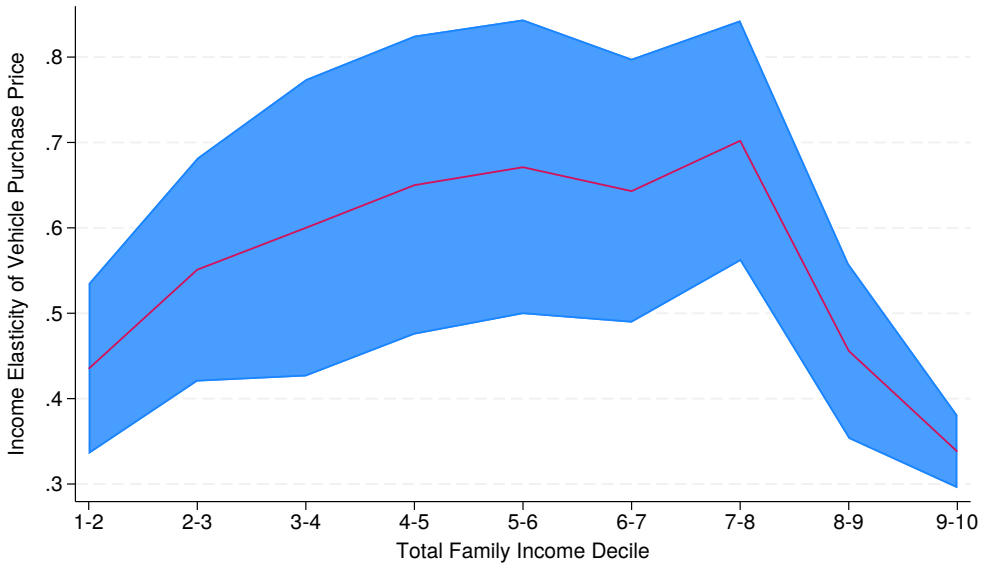
	All households	Working households in $t+2$
	(1)	(2)
High ownership occupation	-0.056**	-0.052**
	(0.022)	(0.022)
Stay married	0.039*	0.052**
	(0.021)	(0.022)
Newly wedded	0.020	0.064*
	(0.035)	(0.037)
Newly divorced	0.253***	0.226***
	(0.048)	(0.052)
Became unemployed	-0.073*	–
	(0.039)	
Purchased a home	0.088***	0.087***
	(0.029)	(0.030)
R-squared	0.078	0.085
N	5,825	5,453
Memo: dep. var. mean	0.347	0.348

Table 13: Luxury Car and Relationship Dissolution

	New relationships		Existing relationships
	(1)	(2)	(3)
Luxury veh. acq.	0.092**		-0.002
	(0.046)		(0.006)
Economy veh. acq.		-0.004	
		(0.020)	
R-squared	0.076	0.073	0.025
N	1,551	1,551	19,520

Note: The table shows the estimated β coefficients of equation (8). For relationships that were formed between $t+2$ and $t+4$, we correlate the likelihood of the relationship ending up with in separation over the subsequent four years, $t+4$–$t+8$, with whether one spouse acquired a luxury vehicle between t and $t+2$. The model controls for race, education, age and year fixed effects. The model also controls for individuals' labor income and food expenditures of t, $t+2$, $t+4$, and $t+8$. *, **, *** stand for statistical significance at 90, 95, and 99 percent level, respectively.

Figure A1: Income Elasticity of Vehicle Purchase Price



Note: The charts show the income and wealth elasticity of luxury car ownership by decile of total family income and non-vehicle wealth distributions. Source: authors' estimates using data from the Panel Study of Income Dynamics.

Table A1: Income and Wealth Elasticity of Vehicle Purchase Price

	Income			Wealth		
	(1)	(2)	(3)	(4)	(5)	(6)
IHS(income)	0.315***	0.207***	0.063***			
	(0.004)	(0.004)	(0.005)			
IHS(wealth)				0.034***	0.020***	0.006***
				(0.001)	(0.001)	(0.001)
White		0.095***			0.087***	
		(0.011)			(0.011)	
High school		0.368***			0.402***	
		(0.016)			(0.016)	
Some college		0.545***			0.624***	
		(0.016)			(0.016)	
College		0.793***			0.926***	
		(0.017)			(0.016)	
Famsize		-0.048***	0.027***		-0.042***	0.029***
		(0.004)	(0.006)		(0.004)	(0.006)
Widowed		-0.145***	-0.136**		-0.229***	-0.152**
		(0.032)	(0.067)		(0.032)	(0.067)
Divorced		-0.359***	-0.245***		-0.430***	-0.260***
		(0.015)	(0.029)		(0.015)	(0.029)
Single		-0.348***	-0.308***		-0.449***	-0.339***
		(0.017)	(0.032)		(0.016)	(0.032)
controlling for Age bins	No	Yes	NA	No	Yes	NA
Household FE	No	No	Yes	No	No	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.140	0.223	0.614	0.099	0.206	0.613
N	45,928	45,928	41,714	45,928	45,928	41,714

Table A2: Do Jobs Affect Luxury Car Ownership? Industry Analysis

		Regression analysis			
Occupation	Ownership (%)	Whole sample	Bottom 90%	Bottom 75%	Excl. business use
	(1)	(2)	(3)	(4)	(5)
Finance, insurance & real estate	20.4	0.043***	0.043***	0.030***	0.028**
		(0.012)	(0.012)	(0.011)	(0.012)
Information	16.7	0.013	0.019	0.019	0.020
		(0.017)	(0.015)	(0.015)	(0.018)
Professional & management	16.7	0.025***	0.020**	0.013	0.016*
		(0.009)	(0.009)	(0.008)	(0.009)
Utility	16.6	-0.001	0.000	0.003	-0.003
		(0.024)	(0.024)	(0.024)	(0.024)
Public Services	14.8	-0.008	0.002	0.005	0.003
		(0.012)	(0.012)	(0.012)	(0.012)
Manufacturing	13.3	–	–	–	–
		(.)	(.)	(.)	(.)
Transportation & warehousing	13.2	0.006	0.003	0.000	0.009
		(0.010)	(0.010)	(0.009)	(0.011)
Wholesale	13.2	0.001	-0.004	-0.012	-0.004
		(0.012)	(0.011)	(0.010)	(0.012)
Education	10.9	-0.022**	-0.013	-0.011	-0.012
		(0.010)	(0.010)	(0.010)	(0.011)
Health care	10.6	-0.009	-0.011	-0.016**	-0.006
		(0.009)	(0.008)	(0.007)	(0.009)
Retail	10.1	0.007	0.008	0.001	0.018*
		(0.009)	(0.008)	(0.008)	(0.009)
Construction	10.0	-0.006	-0.007	-0.011	-0.005
		(0.008)	(0.008)	(0.007)	(0.009)
Agriculture & mining	9.4	-0.016	-0.012	-0.016	-0.012
		(0.013)	(0.012)	(0.011)	(0.013)
Other services	8.4	-0.009	-0.006	-0.007	-0.010
		(0.009)	(0.008)	(0.008)	(0.009)
Arts, entertainment & recreation	7.8	0.004	0.003	0.000	0.002
		(0.008)	(0.008)	(0.008)	(0.008)
R-squared		0.094	0.041	0.030	0.082
N		63,431	55,776	47,527	50,094

Note: Column 1 compares unconditional luxury vehicle ownership by household head occupation for the subsample of households whose heads were working. The subsample excludes the 1999 and 2001 waves, the occupation and industry information for which was not available. Columns 2–4 present the estimated coefficients of occupation dummies in equation (**??**), using Office $ Administrative Support as the omitted group. In addition to those in equation (1), the models control for deciles of household food expenditure and dummies that indicate households in the top 5 and 1 percent of family income distribution. The upper portion of the table shows occupations and industries that have significantly higher luxury vehicle ownership than the omitted group. The middle portion of the table shows occupations and industries that have significantly lower luxury vehicle ownership than the omitted group. Columns 2 are estimated using the entire sample of working households, columns 3 the bottom 90 percent of the family income distribution, columns 4 the bottom 75 percent. Column 5 reports the coefficients estimated with the subsample excluding households with vehicles used for business. Standard errors are reported in parentheses in upper and middle panels and are not shown in the bottom panel for brevity. *, **, *** stand for statisitcal significance at 90, 95, and 99 percent level, respectively.

Table A3: Relationship between Detailed 3-Digit Industry and Luxury Car Ownership

Industry	3-digit Ind.	Whole sample (1)	Bottom 90% (2)	Bottom 75% (3)	Exclude business use (4)
Wholesale	Recyclable Material Wholesalers (429)	0.156*	0.157*	ND	ND
		(0.091)	(0.093)		
	Automobile Dealers (467)	0.038*	0.050**	0.035	0.054**
		(0.021)	(0.021)	(0.023)	(0.023)
Retail	Health and personal care stores	0.155*	0.163*	0.165*	0.202**
		(0.086)	(0.087)	(0.089)	(0.103)
Transportation	Air Transportation (607)	0.104**	0.025	-0.015	0.089*
		(0.049)	(0.036)	(0.030)	(0.050)
	Courier and Messengers (638)	0.050*	0.025	-0.002	0.040
		(0.028)	(0.024)	(0.020)	(0.025)
Information	Wired Telecommunications Carriers (668)	0.062*	0.053	0.067*	0.063*
		(0.033)	(0.032)	(0.035)	(0.035)
Finance, Insur.	Savings Institutions, Credit Unions (688)	0.060*	0.035	0.030	0.027
& Real Estate		(0.036)	(0.035)	(0.036)	(0.034)
	Non-depository Credit	0.059*	0.034	0.032	0.057*
	and Related Activities (689)	(0.033)	(0.028)	(0.029)	(0.034)
	Real Estate (707)	0.075***	0.074***	0.059***	0.030
		(0.023)	(0.021)	(0.020)	(0.021)
Professional	Accounting, Tax Preparation, Bookkeeping	0.076*	0.054	0.055	0.037
& Management	Payroll Services (728)	(0.039)	(0.036)	(0.037)	(0.038)
	Waste Management (759)	0.049*	0.045*	0.012	0.050*
		(0.029)	(0.027)	(0.019)	(0.030)
Health care	Dentist (798)	0.112**	0.028	0.024	0.087*
		(0.049)	(0.033)	(0.033)	(0.051)
	Health practitioner (808)	0.128*	0.048	ND	0.090
		(0.074)	(0.062)		(0.074)
	Other health care services (818)	0.056**	0.047*	0.043*	0.057**
		(0.026)	(0.024)	(0.024)	(0.027)

Table A4: Luxury Car Ownership and Household Spending—Details

	One vehicle			Multiple vehicles		
	Insurance	Gasoline	Other	Insurance	Gasoline	Other
	(1)	(2)	(3)	(4)	(5)	(6)
One luxury veh.	162.4***	129.3***	237.2***	229.7***	234.3***	439.1***
	(20.1)	(29.1)	(69.2)	(23.3)	(29.3)	(72.2)
2 or 3 luxury veh.				549.9***	284.7***	940.5***
				(47.9)	(60.2)	(148.3)
controlling for						
Fam. inc.	Yes	Yes	Yes	Yes	Yes	Yes
Demo. char.	Yes	Yes	Yes	Yes	Yes	Yes
Age bins	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.050	0.102	0.030	0.048	0.098	0.047
N	36,736	36,737	36,729	50,371	50,370	50,331