Generational Trends in Vehicle Ownership and Use: Are Millenials Different After All?

Stephen Jarvis*

March 2021

(Click here for the latest version)

Abstract

Anecdotes abound in the media regarding differences between generations. One such example are claims that Millennials have fundamentally different preferences for driving and vehicle ownership when compared to prior generations. Using data on the United Kingdom I find little difference in preferences for driving and vehicle ownership between Millennials and prior generations once confounding factors are controlled for. These findings confirm similar results from a prior study that looked at the United States.

JEL Codes: Q4, Q5, R1

Keywords: Vehicle ownership, Driving, Millennials, Demographic shifts

---

*Stephen Jarvis: Department of Economics, University of Mannheim, 68131 Mannheim, Germany. Email: jarvis@uni-mannheim.de. Disclaimer: I am a Millenial who has never owned a car and didn't get their license until age 25.

1 Introduction

Much ink has been spilled on the changing preferences of younger generations, and Millenials are no exception. Born in the eighties and early nineties, they have variously been labelled the Boomerang Generation, Generation Me, and the Green Generation, to name just a few. One area where it has been suggested that Millenials may fundamentally differ from prior generations is in their choices about transportation and driving. A preference for urban living, public transit, ride-hailing apps and making greener choices have all been raised as reasons why Millenial's might be in the process of leaving behind the car-centered lives of their predecessors (Buchholz and Buchholz, 2012; Badger, 2013; Caelainn Barr and Jones, 2016; Dias, 2019; Eliot, 2019). However, the precise role of changes in preferences remains unclear, not least because it is difficult to disentangle from the role played by other changes in life circumstances experienced by younger generations, such as economic conditions and living situations (Chatterjee et al., 2018). A study by Knittel and Murphy (2019) challenges the narrative that Millenials have fundamentally different preferences for driving and vehicle ownership. Using data on the United States they find little difference in preferences between Millennials and prior generations once confounding factors are controlled for.

In this paper I replicate the analysis undertaken by Knittel and Murphy (2019) with similar data for the United Kingdom. Using data from surveys spanning 1985 to 2019, I am able to compare individuals at similar life stages across generations. I focus on three variables of interest: whether a person has a driving license, a person's vehicle miles travelled, and the number of cars in a person's household. I find that the results for the UK are broadly consistent with those for the US; average differences between Millenials and prior generations can be accounted for by observable factors beyond their control, rather than any fundamental change in preferences.

2 Data

The data used in this study is from the UK's National Travel Survey. This is a household survey covering topics related to personal travel and transport policy. Individuals in sampled households are interviewed face-to-face to collect personal information, such as age, gender, working status, car access and driving licence holding. They are also asked to complete a seven day travel diary and provide details of trips undertaken, including purpose, method of travel, time of day and trip length.

The earliest data used here is from the 1985/6 survey, and then annual surveys from 1988 to 2019.[1] This provides observations spanning more than three decades which is critical to being able to examine the generational comparisons of interest. Most importantly, gathering observations over this long time period means the sample has overlap between the Baby Boomer and Millenial generations, with observations for 25 to 35 year olds within both cohorts. The definitions of the birth years for each generation can be found in Table 1.

[Table 1 about here.]

The main variables used to understand driving and vehicle ownership preferences are: (1) whether an individual has a license; (2) the number of cars in a household; and (3) the number of vehicle miles travelled for each individual. The full dataset contains around 505,000 observations. For the analysis I restrict the sample to individuals that are 18 years old or older, reducing the sample to around 388,000 observations. I then further restrict the sample to individuals classed as the head of household or household reference person, reducing the sample to around 211,000 observations.

In many respects the data used here is similar to that used by Knittel and Murphy (2019). In their case they use data from the US Department of Transportation's National Household Transportation Survey and the American (NHTS) for the years 1990, 1995, 2001, 2009, and 2017. They supplement this with additional data from the US Census and American

---

[1]The first NTS survey was commissioned by the Ministry of Transport in 1965. However, the structure of the survey has changed over time and the data is more readily integrated from 1985 onwards.

Community Survey (ACS) over the same time period. Relative to their data, my sample spans a period that is seven years longer. Also, for almost the entire period the UK data has annual survey waves, while the NHTS is generally conducted every five to six years. This is valuable as it facilitates identifying changing trends in a smoother manner.

3   Empirical Strategy

The core empirical strategy is a fairly straightforward regression design and mirrors the approach taken by Knittel and Murphy (2019). In all specifications I regress the dependent variable of interest on indicator variables for a person's generation. The omitted category is the Baby Boomer generation, and so the resulting coefficients capture how preferences for driving and vehicle ownership differ from Baby Boomers across generations. In all regressions I include year fixed effects to account for general trends in transportation costs, economic growth, survey specific factors, and so on.

My first specification includes no additional controls besides the year fixed effects. The second specification adds a control for age to account for the distribution of ages observed for the people in each generation in the sample. The third specification then adds a wide range of demographic controls, including sex, marital status, household size and structure, income, employment status, household property type, housing tenure, geographic region and urban classification. Details on the control variables used are shown in Table 2.

[Table 2 about here.]

Despite controlling for age, we may still be concerned that the individuals that belong to each generation are still at sufficiently different life stages during our sample period. The fourth and fifth specifications therefore repeat the second and third, but now restricting the sample to ages 25 to 35 where the sample has common support between Baby Boomers and Millenials. This has the benefit of allowing a comparison of individuals of similar ages across generations. One potential limitation though is that this does entail comparing younger

4

Baby Boomers born in the 1960s with older Millenials born in the 1980s. This may tend to attenuate any differences relative to comparing the average individual in each generation.

4   Results

Figure 1 and Table 3 show the results based on whether an individual has a drivers license. The first specification clearly shows that there are indeed large differences across generations. 86% of Baby Boomers have a driving license. By comparison, younger generations are less likely to have a driving license, with only 69% of Millenials having one; a difference of 17%. A similar decline relative to Baby Boomers can also be seen for older generations.

It seems plausible though that these differences across generations just reflect age effects. The individuals in the sample from the Millenial or Gen Z generations will be relatively young and so it is not unsurprising that many of them have not yet gotten their licenses while still in their late teens or early twenties. Similarly the individuals in the sample from the Greatest and Silent generations will be relatively old and so many may have since surrendered their license, or even grown up before the era of mass car ownership. The second specification therefore controls for age, which does indeed reduce the observed effects, particularly for the youngest and oldest generations. Even so, sizeable differences remain. Millenials are still 15% less likely to have a driving license than Baby Boomers, conditional on age.

However, it may still be the case that much of this difference can be explained by other factors besides the fundamental tastes and preferences of each generation towards driving. For instance, the Baby Boomers in our sample may be wealthier than other generations, or be more likely to be married and have children. Other generations may simply have similar preferences for driving conditional on endowments, and any observed differences are merely a function of differences in endowments. To examine this the third specification now adds controls for important economic and demographic factors. The observed effects are now reduced even further. Millenials are now only 6% less likely to have a driving license than Baby Boomers, conditional on age and endowments.

Finally, specifications four and five repeat specifications two and three with the sample limited to individuals age 25 to 35. This causes the Gen Z generation to drop out as they have no individuals in the sample older than 25. Similarly the Greatest and Silent generations also drop out as they have no individuals in the sample younger than 35. The remaining generations now exhibit no significant difference relative to Baby Boomers in their likelihood of having a driving license. This is most clearly the case after controlling for both age and endowments.

[Figure 1 about here.]

[Table 3 about here.]

Figure 2 and Table 4 set out the results for vehicle miles travelled using the same five specifications. The findings largely mirror those for the analysis of driving licenses. The average differences between generations are initially very large. Baby Boomers drive an average of 8175 miles per year. Millenials drive 2135 miles per year less, which is a 26% reduction. Controlling for age cuts the difference substantially for the oldest and youngest generations, although does not significantly shift the coefficient for Millenials. Controlling for endowments further closes the gap across all generations, leaving a difference of 830 miles per year for Millenials. Finally, limiting the sample to 25 to 35 year olds eliminates any remaining differences across generations, with the resulting coefficients now very small and statistically indistinguishable from zero.

[Figure 2 about here.]

[Table 4 about here.]

The third and final variable I look at is vehicle ownership. Figure 3 and Table 5 set out the results for the number of cars in a household using the same five specifications. Once again the findings largely mirror those seen for the other two variables. The average differences between generations are initially very large. Baby Boomer households have an average of 1.22

cars. Millenial households have an average of 0.79 cars, which is a 35% reduction. Controlling for age cuts the difference roughly in half, and controlling for endowments cuts the difference further by a quarter. The remaining gap of 0.05 fewer cars is no longer statistically significant. Finally, limiting the sample to 25 to 35 year olds shrinks the remaining differences even further, with the resulting coefficients statistically indistinguishable from zero.

[Figure 3 about here.]

[Table 5 about here.]

5   Conclusion

There are large average differences between generations in the prevalence driving licenses, vehicle miles travelled and rates of vehicle ownership. However, this paper shows that these differences can be explained by variations in age and endowments, suggesting that younger generations do not appear to have fundamentally different preferences for driving and vehicle ownership. Previous research on this question had looked at the United States, where driving and car ownership is particularly high compared to many other developed countries (Knittel and Murphy, 2019). Using data from the United Kingdom, this paper demonstrates that the stability of generational preferences for driving and vehicle ownership is likely a fairly general phenomenon.

References

Badger, Emily. 2013. "Millennials Lead the Trend to Less Driving, But What Happens As They Get Older?" Bloomberg News Article.

**Buchholz, Todd, and Victoria Buchholz.** 2012. "The Go-Nowhere Generation." New York Times News Article.

Caelainn Barr, Mark Rice-Oxley, and Rupert Jones. 2016. "A hard sell: the industries that can't get millennials buying." The Guardian News Article.

Chatterjee, Kiron, B. Clark, J. Jain, S. Melia, M. Ricci, T. Schwanen, Jennie Middleton, Anna Plyushteva, and Georgina Santos. 2018. "Young People's Travel – What's Changed and Why? Review and Analysis." UWE Bristol Report 25674.

Dias, Duarte. 2019. "As millennials reject car ownership, renting by the minute could be motoring's unlikely saviour." The Daily Telegraph News Article.

Eliot, Lance. 2019. "The Reasons Why Millennials Aren't As Car Crazed As Baby Boomers, And How Self-Driving Cars Fit In." Forbes News Article.

Knittel, Christopher R, and Elizabeth Murphy. 2019. "Generational Trends in Vehicle Ownership and Use: Are Millennials Any Different?" National Bureau of Economic Research Working Paper 25674.

Figure 1: Regression Results for Has License
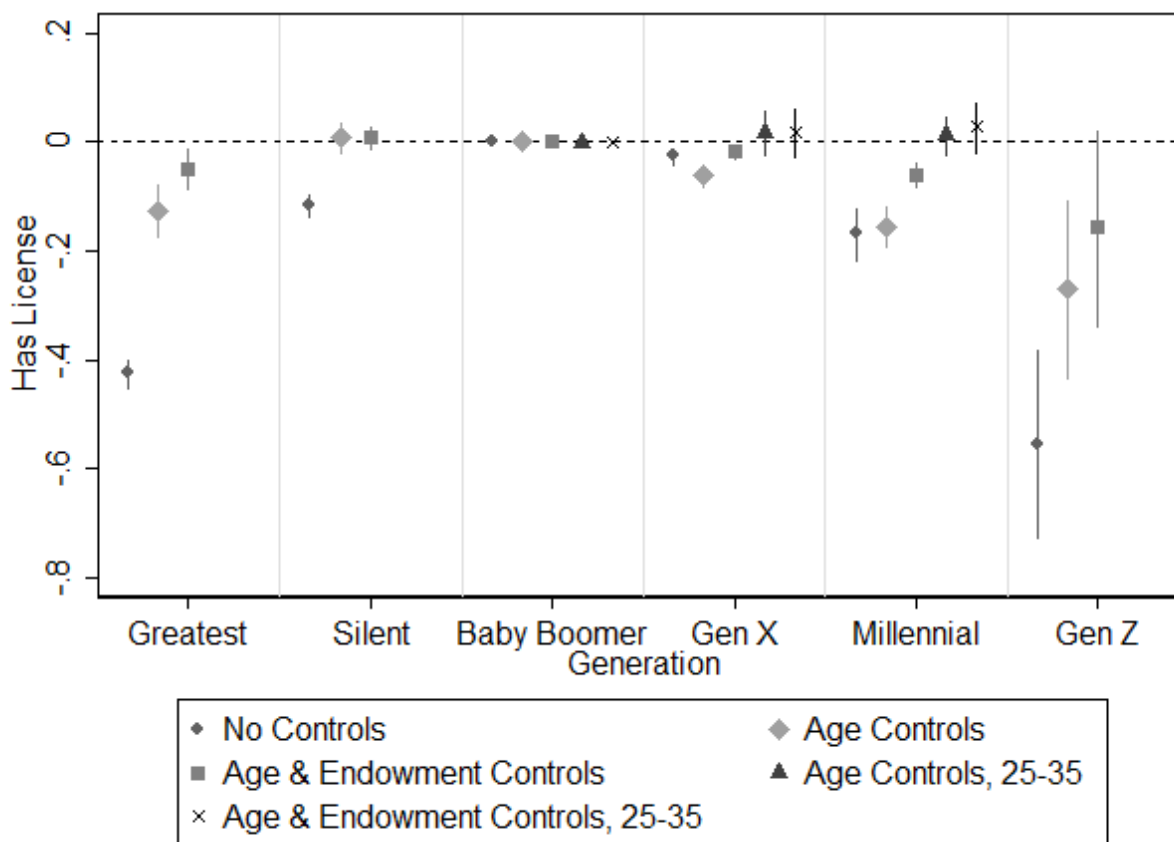
Notes: This figure shows the regression results with the dependent variable as whether an individual has a driving license. Baby Boomers are the omitted category. All regressions limit the sample to individuals that are 18 years or older and classed as the head of household or household reference person. Included controls vary by specification.

Figure 2: Regression Results for Vehicle Miles Travelled
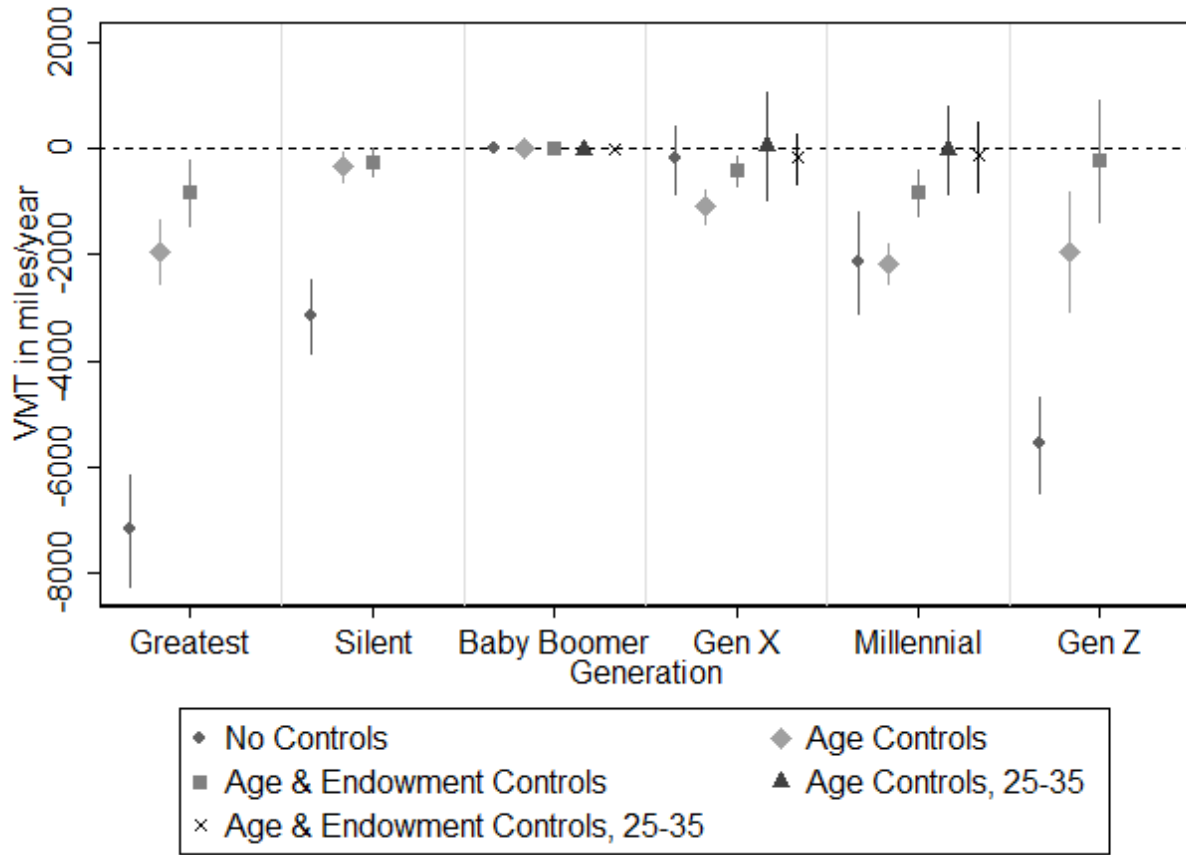
Notes: This figure shows the regression results with the dependent variable as an individual's annual vehicle miles travelled. Baby Boomers are the omitted category. All regressions limit the sample to individuals that are 18 years or older and classed as the head of household or household reference person. Included controls vary by specification.

Figure 3: Regression Results for Cars in Household
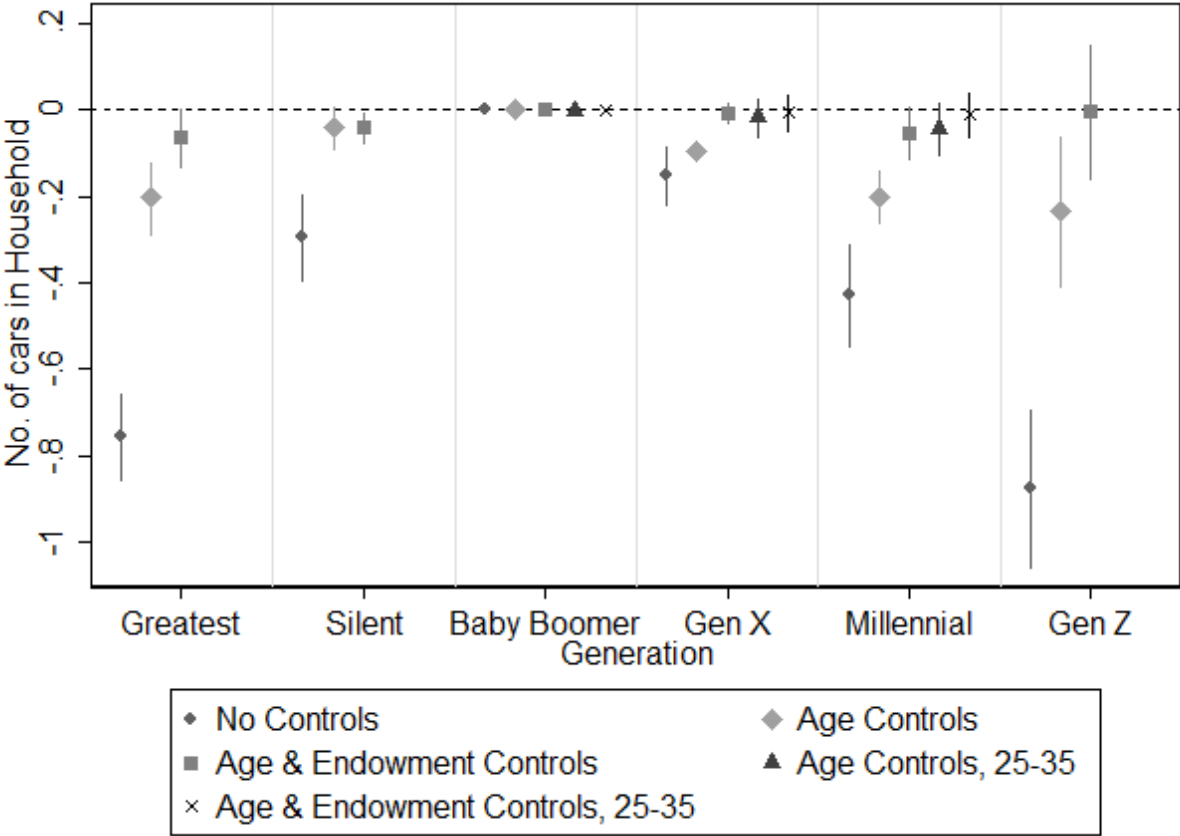
Notes: This figure shows the regression results with the dependent variable as the number of cars in the household. Baby Boomers are the omitted category. All regressions limit the sample to individuals that are 18 years or older and classed as the head of household or household reference person. Included controls vary by specification.

Table 1: Generation Definitions

Generation	Birth Years
Greatest	1901-1927
Silent	1928-1945
Baby Boomer	1946-1964
Gen X	1965-1980
Millenial	1981-1996
Gen Z	1997-2012

Table 2: Demographic and Endowment Variables

Variable	Type	Details
Age	Categorical (21)	18, 19, 20, 21-25, ..., 80-84, 85+
Sex	Categorical (2)	
Marital Status	Categorical (2)	
Employment Status	Categorical (7)	Full-time, student, retired etc.
Number of Adults in Household	Number	
Number of Children in Household	Number	
Household Structure	Categorical (6)	Groupings of adults/children
Household Income Quintile	Categorical (5)	Within survey year incomes
Property Address Type	Categorical (7)	House, Flat/Maisonette etc.
Property Tenure Type	Categorical (3)	Owner, Renter or Other
Geographic Region	Categorical (11)	Government Office Regions
Geographic Area Type	Categorical (7)	Rural to urban classifications
Survey Year	Categorical (33)	

Table 3: Regression Results for Has License

	(1)	(2)	(3)	(4)	(5)
Greatest	-0.424***	-0.126***	-0.0492*		
	(0.0124)	(0.0220)	(0.0172)		
Silent	-0.116***	0.00832	0.00988		
	(0.0104)	(0.0135)	(0.0102)		
Baby Boomer	0	0	0	0	0
	(.)	(.)	(.)	(.)	(.)
Gen X	-0.0247**	-0.0611***	-0.0182**	0.0169	0.0188
	(0.00713)	(0.00945)	(0.00506)	(0.0189)	(0.0207)
Millennial	-0.168***	-0.154***	-0.0597***	0.0138	0.0287
	(0.0224)	(0.0172)	(0.0106)	(0.0161)	(0.0212)
Gen Z	-0.554***	-0.269**	-0.157		
	(0.0785)	(0.0740)	(0.0818)		
Observations	210569	210569	190561	47224	42016
R^2	0.093	0.122	0.335	0.011	0.254
Age Control	No	Yes	Yes	Yes	Yes
Other Controls	No	No	Yes	No	Yes
Age 25 to 35	No	No	No	Yes	Yes
Sample Mean	0.86	0.86	0.86	0.85	0.85

Notes: This table shows the regression results with the dependent variable as whether an individual has a driving license. Baby Boomers are the omitted category. All regressions limit the sample to individuals that are 18 years or older and classed as the head of household or household reference person. Included controls vary by specification as described in the bottom rows. Coefficients on controls are not shown.

Table 4: Regression Results for Vehicle Miles Travelled

	(1)	(2)	(3)	(4)	(5)
Greatest	-7177.2***	-1933.3***	-828.5*		
	(475.8)	(273.8)	(285.5)		
Silent	-3133.7***	-336.5*	-246.3		
	(318.4)	(134.9)	(124.4)		
Baby Boomer	0	0	0	0	0
	(.)	(.)	(.)	(.)	(.)
Gen X	-191.7	-1074.1***	-417.3*	63.73	-175.8
	(296.1)	(149.2)	(137.8)	(468.1)	(217.4)
Millennial	-2134.7***	-2163.1***	-827.1**	-7.132	-136.6
	(432.9)	(177.0)	(204.0)	(381.2)	(301.4)
Gen Z	-5565.0***	-1931.0**	-204.8		
	(410.8)	(510.0)	(524.6)		
Observations	210569	210569	190561	47224	42016
R^2	0.073	0.092	0.258	0.016	0.184
Age Control	No	Yes	Yes	Yes	Yes
Other Controls	No	No	Yes	No	Yes
Age 25 to 35	No	No	No	Yes	Yes
Sample Mean	8,174.56	8,174.56	8,056.37	9,168.77	9,219.99

Notes: This table shows the regression results with the dependent variable as an individual's annual vehicle miles travelled. Baby Boomers are the omitted category. All regressions limit the sample to individuals that are 18 years or older and classed as the head of household or household reference person. Included controls vary by specification as described in the bottom rows. Coefficients on controls are not shown.

Table 5: Regression Results for Cars in Household

	(1)	(2)	(3)	(4)	(5)
Greatest	-0.755***	-0.202***	-0.0644		
	(0.0449)	(0.0387)	(0.0310)		
Silent	-0.294***	-0.0403	-0.0406*		
	(0.0447)	(0.0222)	(0.0168)		
Baby Boomer	0	0	0	0	0
	(.)	(.)	(.)	(.)	(.)
Gen X	-0.151***	-0.0930***	-0.00698	-0.0173	-0.00475
	(0.0315)	(0.0119)	(0.0114)	(0.0203)	(0.0201)
Millennial	-0.425***	-0.200***	-0.0519	-0.0425	-0.00949
	(0.0540)	(0.0279)	(0.0286)	(0.0272)	(0.0236)
Gen Z	-0.875***	-0.234*	-0.00131		
	(0.0820)	(0.0793)	(0.0704)		
Observations	210551	210551	190545	47219	42011
R^2	0.084	0.120	0.448	0.013	0.359
Age Control	No	Yes	Yes	Yes	Yes
Other Controls	No	No	Yes	No	Yes
Age 25 to 35	No	No	No	Yes	Yes
Sample Mean	1.22	1.22	1.23	1.00	0.98

Notes: This table shows the regression results with the dependent variable as the number of cars in the household. Baby Boomers are the omitted category. All regressions limit the sample to individuals that are 18 years or older and classed as the head of household or household reference person. Included controls vary by specification as described in the bottom rows. Coefficients on controls are not shown.