

UMTRI-2013-14

MAY 2013

MARKETING IMPLICATIONS OF THE CHANGING AGE COMPOSITION OF VEHICLE BUYERS IN THE U.S.

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Report No. UMTRI-2013-14
May 2013

Technical Report Documentation Page

1. Report No. UMTRI-2013-14		2. Government Accession No.		3. Recipient's Catalog No.	
4. Title and Subtitle Marketing Implications of the Changing Age Composition of Vehicle Buyers in the U.S.				5. Report Date May 2013	
				6. Performing Organization Code 383818	
7. Author(s) Michael Sivak				8. Performing Organization Report No. UMTRI-2013-14	
9. Performing Organization Name and Address The University of Michigan Transportation Research Institute 2901 Baxter Road Ann Arbor, Michigan 48109-2150 U.S.A.				10. Work Unit no. (TRAIS)	
				11. Contract or Grant No.	
12. Sponsoring Agency Name and Address The University of Michigan Sustainable Worldwide Transportation				13. Type of Report and Period Covered	
				14. Sponsoring Agency Code	
15. Supplementary Notes Information about Sustainable Worldwide Transportation is available at http://www.umich.edu/~umtriswt .					
16. Abstract <p>This study examined the differences in the probability of licensed drivers purchasing a new light-duty vehicle (car, pickup truck, SUV, or minivan) as a function of their age. Data analyzed were for 2007 and 2011. Both relative and absolute probabilities were examined.</p> <p>The main results are as follows: In 2007, the peak probability of buying a new vehicle per driver was for those between 35 and 44 years of age. In 2011, the peak shifted to those between 55 and 64 years of age. Overall, in 2011, one vehicle was purchased for every 19.7 drivers. However, this probability varied greatly by age, with the highest probability (one vehicle per 14.6 drivers) for those aged 55 to 64, and the lowest probability (one vehicle per 221.8 drivers) for those aged 18 to 24—for a 15-fold difference in the probability.</p> <p>The present findings suggest that marketing efforts that focus on drivers 55 to 64 years old should have the highest probability of success per driver. The emphasis on this relatively older age group is further supported by the expected continuation of the graying of the general population and the consequent continuation of the increase in the number of older licensed drivers.</p>					
17. Key Words Vehicle buyers, age, drivers				18. Distribution Statement Unlimited	
19. Security Classification (of this report) None	20. Security Classification (of this page) None	21. No. of Pages 11	22. Price		

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Introduction

This study examined the recent changes in the age composition of vehicle buyers in the U.S. The primary measure of interest was the likelihood of purchasing a new vehicle per licensed driver as a function of age.

There are two relevant background trends. First, the recent economic downturn has substantially reduced overall vehicle sales. After peaking at 17.8 million units in 2000, the sales of light-duty vehicles (cars, pickup trucks, SUVs, and minivans) plummeted to 10.6 million units in 2009 before rebounding to 14.8 million in 2012 (WardsAuto, 2013).

The second relevant trend is the recent substantial decrease in the proportion of young persons with a driver's license and an increase in the proportion of older persons with a driver's license (Sivak and Schoettle, 2012). For example, in 1983, 91.8% of persons between 20 and 24 years had a driver's license; in 2011, that percentage dropped to 79.7% (FHWA, 2013). The corresponding percentages for those aged 60 to 64 were 83.8% in 1983 and 92.7% in 2011 (FHWA, 2013).

In this study, vehicle sales per licensed driver will be examined for 2007 and 2011 (the latest year with available licensing data).

Method

Retail sales (excluding fleet sales) per licensed driver were analyzed as a function of the age of the buyer. The primary variable of interest was the probability of purchasing a new vehicle per licensed driver. This variable was derived from the following annual information:

- total sales of new light-duty vehicles
- fleet sales of new light-duty vehicles for the top seven manufacturers
- licensed drivers
- buyers of new vehicles by age

Results

Relevant background information

- The total numbers of new vehicles sold in 2007 and 2011 were 16,460,315 and 13,040,613, respectively (WardsAuto, 2013).
- The numbers of licensed drivers in 2007 and 2011 were 205,741,845 and 211,874,649, respectively (FHWA, 2013).
- The fleet sales of the top seven manufacturers in 2011 represented 19% of all vehicle sales (Automotive News, 2012). This percentage was subtracted from the total sales of all manufacturers.
- Buyers of new vehicles by age group in 2007 and 2011 are shown in Table 1.

Table 1
Vehicle buyers by age group, 2007 and 2011 (Polk, 2012).

Age	2007	2011
18-24	1%	1%
25-34	15%	10%
35-44	29%	22%
45-54	24%	26%
55-64	18%	23%
65-74	9%	13%
≥75	4%	5%
<i>Total</i>	<i>100%</i>	<i>100%</i>

Relative probability by age of buying a vehicle per licensed driver

Table 2 presents the relative probability by age of buying a vehicle per licensed driver in 2007 and 2011. The data are normalized to the peak in each year.

Table 2
Relative probability by age of buying a vehicle per licensed driver,
2007 and 2011.

Age	2007	2011
18-24	0.06	0.07
25-34	0.57	0.42
35-44	1.00	0.92
45-54	0.80	0.97
55-64	0.79	1.00
65-74	0.69	0.98
≥ 75	0.41	0.55

The results indicate that in 2007, the peak relative probability of drivers buying a new vehicle (1.00) was for those between 35 and 44 years of age. The probability decreased as the driver age either decreased or increased. For example, the relative probability was 0.06 for those 18 to 24 years old, and 0.41 for those 75 years of age and older.

In 2011, the age at which this probability peaked was 55 to 64, and the probability decreased as the age either decreased or increased. For example, the relative probability was 0.07 for those 18 to 24 years old, and 0.55 for those 75 years of age and older.

Absolute probability by age of buying a vehicle per licensed driver

Table 3 presents two related measures by age of the probability of buying a vehicle by licensed drivers in 2011: drivers per purchased vehicle, and purchased vehicles per driver.

Table 3
Absolute probability by age of buying a vehicle by licensed drivers, 2011.

Age	Drivers per purchased vehicle	Purchased vehicles per driver
18-24	221.8	0.005
25-34	34.9	0.029
35-44	15.9	0.063
45-54	15.0	0.067
55-64	14.6	0.069
65-74	14.9	0.067
≥75	26.6	0.038
<i>Total</i>	<i>19.7</i>	<i>0.051</i>

The data in Table 3 indicate that at the peak of the probability by age of buying a new vehicle in 2011—for those between the age of 55 and 64—one vehicle was purchased for every 14.6 drivers, for a probability of 0.069 of buying a vehicle per driver. By comparison, for those between 18 and 24 years of age, one vehicle was purchased for every 221.8 drivers, for a probability of 0.005 of buying a vehicle per driver. Analogously, for those 75 years of age and older, one vehicle was purchased for every 26.6 drivers, for a probability of 0.038 of buying a vehicle per driver. Overall, for drivers 18 years and older, one vehicle was purchased for every 19.7 drivers, for a probability of 0.051 of buying a vehicle per driver.

Discussion

Peak relative probability of buying a vehicle by age

As is evident from Table 2, from 2007 to 2011 there has been a shift in the age peak of the probability of buying a vehicle from the 35 to 44 year olds to the 55 to 64 year olds.

Differences in absolute probability of buying a vehicle by age

Overall, in 2011, one vehicle was purchased for every 19.7 persons (see Table 3). However, this probability varied greatly by age, with the highest probability (one vehicle per 14.6 drivers) for the 55 to 64 year olds, and the lowest probability (one vehicle per 221.8 drivers) for the 18 to 24 year olds—for a 15-fold difference in the probability.

Recent changes in the age composition of drivers

Table 4 presents the changes in the number of persons with a driver's license from 2007 to 2011 (calculated from the information in FHWA, 2013).

Table 4
Percentage change in the number of persons with
a driver's license from 2007 to 2011.

Age	Percentage change
18-24	0.8
25-34	3.1
35-44	-6.6
45-54	0.2
55-64	13.6
65-74	16.0
≥75	5.2

The increases for those under 55 years of age were small. (Indeed, for the 35 to 44 year olds, there was a decrease.) On the other hand, there were substantial increases from 2007 to 2011 in the number of drivers 55 to 64 years of age (+ 13.6%) and 65 to 74 years of age (+16.0%). These two trends likely reflect the aging of the general population (ProQuest, 2012), coupled with the decreases in the probability of younger persons having a driver’s license and the increases in the probability of older persons having a driver’s license (Sivak and Schoettle, 2012).

Putting it all together

Table 5 presents three relative measures by age group, all applicable to 2011. The second column lists the probability of buying a new vehicle (from Table 2), normalized to the peak at 55 to 64 years of age. The third column includes the number of persons with a driver’s license (from FHWA, 2013), normalized to the peak at 45 to 55 years of age. The fourth column—a product of the second and third columns—lists the number of purchased vehicles, normalized to the peak at 45 to 54 years of age. (The values in this column also correspond to the normalized values of the right-most column in Table 1.)

Table 5
Probability of buying a new vehicle, number of persons with a driver’s license, and number of purchased vehicles, each normalized to the corresponding peak, 2011.

Age	Probability of buying a vehicle	Number of persons with a driver’s license	Number of purchased vehicles
18-24	0.07	0.57	0.04
25-34	0.42	0.90	0.38
35-44	0.92	0.90	0.85
45-54	0.97	1.00	1.00
55-64	1.00	0.86	0.88
65-74	0.98	0.50	0.50
≥75	0.55	0.34	0.19

The data in Table 5 indicate that the probability of buying a vehicle in 2011 peaked at 55 to 64 years of age, followed closely (with a drop of only 2%) by those 65 to 74 years of. On the other hand, the number of persons with a driver's license peaked at 45 to 54 years of age, followed by those 25 to 34 and 35 to 44 years of age (both with a drop of 10%). The product of the probability of buying a vehicle and the number of drivers—the number of purchased vehicles—peaked at 45 to 54 years of age, followed by those 55 to 64 years of age (with a drop of 12%).

Conclusions

Currently in the U.S., individuals between 45 and 54 years of age purchase the largest number of light-duty vehicles. This is because this age group contains the largest number of licensed drivers and because the probability of buying a vehicle per licensed driver is relatively high (but not the highest). The second-ranked age group in terms of purchased new vehicles consists of those between 55 and 64 years of age. This group is ranked high because the probability of purchasing a vehicle per licensed driver is the highest of all age groups; the number of licensed drivers in this age group is currently lower than for 45 to 54 year olds, 35 to 44 year olds, and 25 to 34 year olds.

The present findings suggest that marketing efforts that focus on drivers 55 to 64 years old should have the highest probability of success per driver. The emphasis on this relatively older age group is further supported by the expected continuation of the graying of the general population (ProQuest, 2012) and the consequent continuation of the increase in the number of older licensed drivers (see Table 4).

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