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HAS MOTORIZATION IN THE U.S. PEAKED? PART 2: USE OF LIGHT-DUTY VEHICLES

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16. Abstract <p>The main contribution of this study is an examination of recent trends in distances driven by <i>light-duty vehicles</i> (cars, pickup trucks, SUVs, and vans) in the U.S. fleet. This is in contrast to several other recent studies that analyzed distances driven by <i>all vehicles</i> (including medium and heavy trucks, buses, and motorcycles). The period examined was from 1984 through 2011. This is a follow-up study to Sivak (2013), in which I analyzed the recent trends in the number of registered light-duty vehicles.</p> <p>Although the report also presents trends in the absolute distances driven, of primary interest were the distances driven per person, per licensed driver, per household, and per registered vehicle. All of these rates reached their maxima in 2004—four years prior to the beginning of the current economic downturn—and decreased by 5% to 9% by 2011. These reductions likely reflect, in part, noneconomic changes in society that influence the need for vehicles (e.g., increased telecommuting, increased use of public transportation, increased urbanization of the population, and changes in the age composition of drivers). Because the onset of the reductions in the driving rates was not the result of short-term, economic changes, the 2004 maxima in the distance-driven rates have a reasonable chance of being long-term peaks as well. An exception is the rate per registered vehicle. Should the numbers of vehicles per person, per driver, and per household continue to fall (Sivak, 2013), it is possible that the distance driven per vehicle would eventually start to increase and thus this rate has a better chance in the future of surpassing the 2004 maximum.</p> <p>The combined evidence from this and the previous study (Sivak, 2013) indicates that—per person, per driver, and per household—we now have fewer light-duty vehicles and we drive each of them less than a decade ago. The best estimates of the current annual distance-driven rates by light-duty vehicles are as follows: 8,500 miles per person, 12,500 miles per licensed driver, 22,100 miles per household, and 11,300 miles per registered vehicle.</p>					
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Introduction

In a report published in June 2013 (Sivak, 2013), I examined recent trends in the numbers of registered light-duty vehicles (cars, pickup trucks, SUVs, and vans) in the U.S. fleet. The analysis considered both the absolute numbers and the rates per person, per licensed driver, and per household. The period examined was from 1984 through 2011.

That study showed that the absolute number of light-duty vehicles reached a maximum in 2008 (see Figure 1). However, it is likely that this was only a temporary maximum and that the decline after 2008 was strongly influenced by the current economic downturn that started in 2008. Consequently, I argued that with the improving economy and the expected increase in the U.S. population, it is highly likely that (from a long-term perspective) the absolute number of vehicles has not yet peaked.

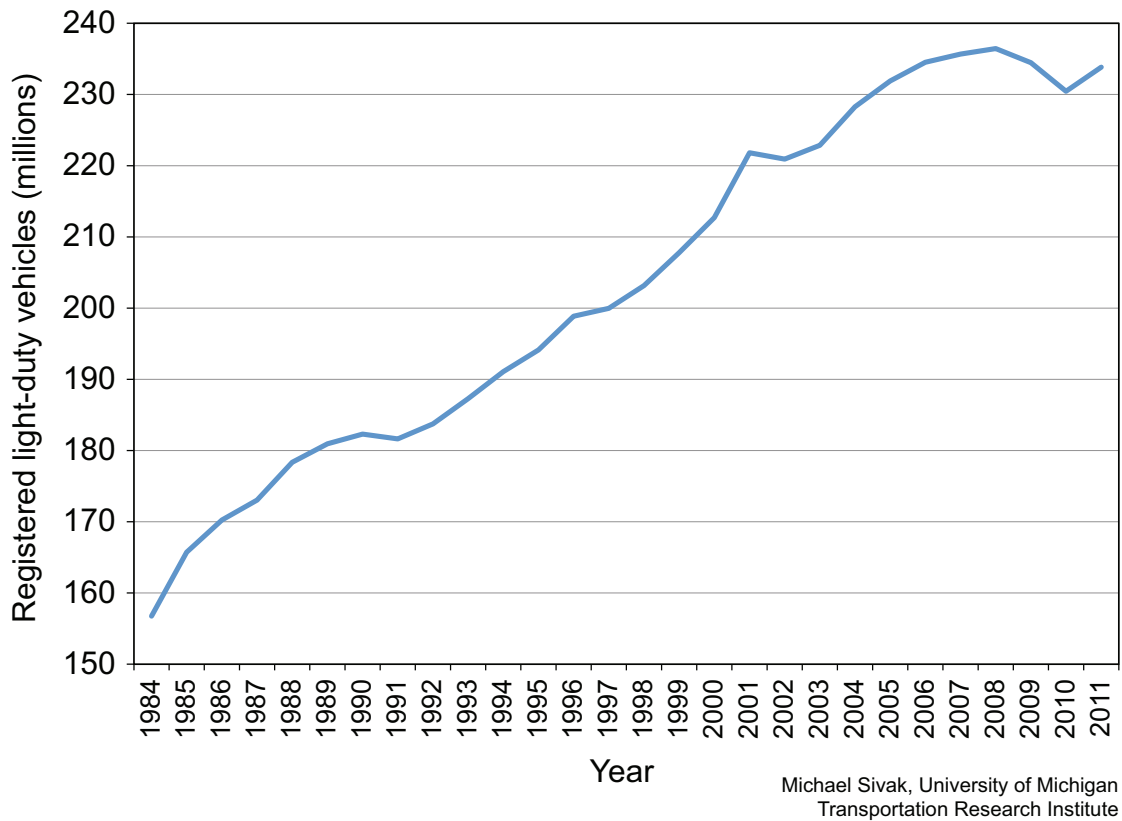


Figure 1. Registered light-duty vehicles, 1984-2011 (Sivak, 2013).

On the other hand, the same study showed that the rates of light-duty vehicles per person, per licensed driver, and per household reached their maxima between 2001 and 2006 (see Figure 2)—prior to the onset of the current economic downturn in 2008. Therefore, I argued that it is likely that the declines in these rates prior to 2008 reflect other societal changes that influence the need for vehicles (e.g., increases in telecommuting and in the use of public transportation). Therefore, the recent maxima in these rates have better chances of being long-term peaks as well. However, because the changes in the rates from 2008 on likely reflect both the relevant societal changes and the current economic downturn, whether the recent maxima in the rates will represent long-term peaks as well will be influenced by the extent to which the relevant societal changes turn out to be permanent.

The present study analyzed the recent trends in distances driven. As in Sivak (2013), the focus was on *light-duty vehicles*. (This is in contrast to studies by Puentes and Tomer (2008), Dutzik and Baxandall (2013), and Short (2013), which examined recent driving trends by *all vehicles*.) In addition to the absolute distances driven, of interest in the present study were also the rates per person, per licensed driver, per household, and per registered light-duty vehicle.

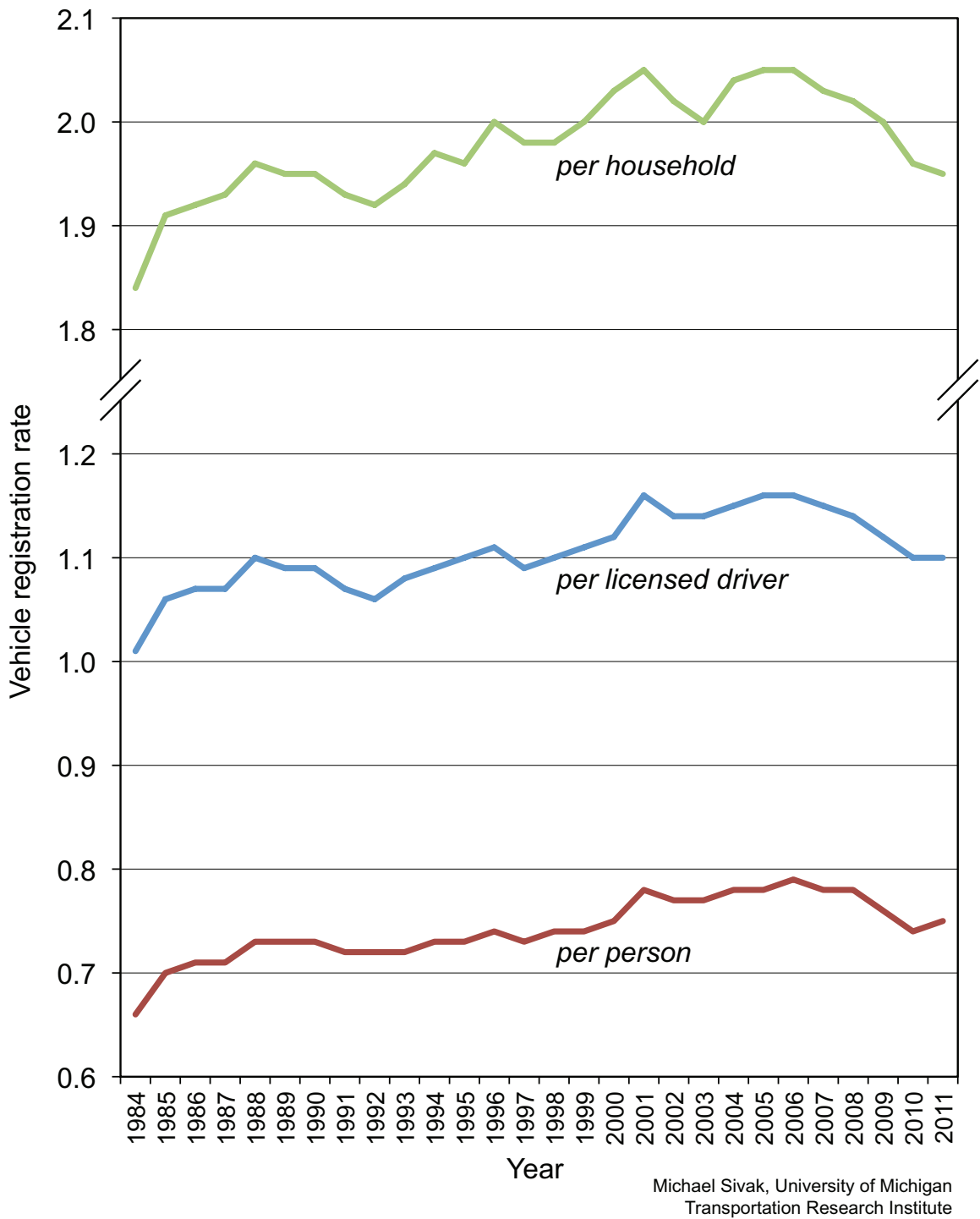


Figure 2. Registered light-duty vehicles per person, per licensed driver, and per household, 1984-2011 (Sivak, 2013).

Method

Distances driven by all light-duty vehicles (cars, pickup trucks, SUVs, and vans) were examined, as well as the corresponding rates per person, per licensed driver, per household, and per registered vehicle. The data were analyzed for each year from 1984 through 2011.

The distance driven by light-duty vehicles for each year was obtained or calculated from the information in FHWA (2013). For 1984 through 2006, this number was the sum of distances for cars and other two-axle, four-tire vehicles. For 2007 through 2011, this number was the sum of distances for short-wheel-base and long-wheel-base light-duty vehicles.

The sources of other relevant data were as follows:

- resident population: ProQuest (2012)
- licensed drivers: FHWA (2013)
- households: U.S. Census Bureau (2012)
- registered light-duty vehicles: FHWA (2013)

Results

Absolute distance driven

Figure 3 presents the number of miles driven by light-duty vehicles from 1984 through 2011. These data are also listed in Table 1.

The distance driven by light-duty vehicles in 1984 stood at 1.559 trillion miles. The number reached a maximum of 2.773 trillion miles in 2006. In 2011 (the latest year available), the number was 2.647 trillion miles (a reduction of about 5% from 2006).

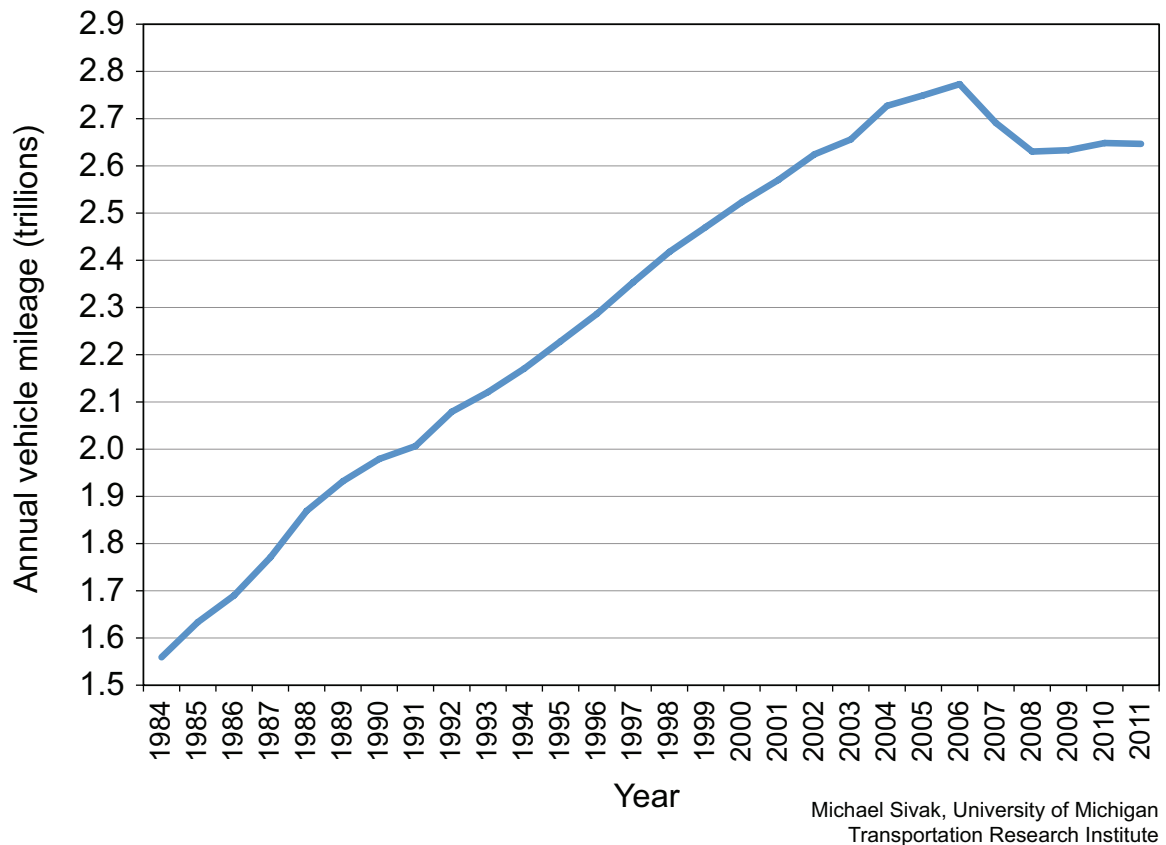


Figure 3. Distance driven by light-duty vehicles, 1984-2011.

Table 1
Distance driven by light-duty vehicles, 1984-2011.

Year	Miles driven (millions)
1984	1,559,227
1985	1,633,637
1986	1,690,261
1987	1,770,779
1988	1,869,075
1989	1,932,108
1990	1,979,276
1991	2,006,400
1992	2,079,032
1993	2,120,764
1994	2,170,723
1995	2,228,323
1996	2,286,394
1997	2,353,295
1998	2,417,852
1999	2,470,391
2000	2,523,346
2001	2,569,980
2002	2,624,508
2003	2,655,987
2004	2,727,054
2005	2,749,472
2006	2,773,025
2007	2,691,034
2008	2,630,213
2009	2,633,248
2010	2,648,456
2011	2,646,641

Distance-driven rates

Figure 4 and Table 2 present the distances-driven rates per four variables of interest: person, licensed driver, household, and registered vehicle. All four rates reached their maxima in 2004.

Distance driven per person. In 1984, the average distance driven per person was 6,612 miles. This rate increased to a maximum of 9,314 miles in 2004. The latest rate—for 2011—was 8,494 miles.

Distance driven per licensed driver. In 1984, the average distance driven per driver was 10,032 miles. The rate increased to a maximum of 13,711 miles in 2004. The rate for 2011 was 12,492 miles.

Distance driven per household. In 1984, the average distance driven per household was 18,256 miles. The rate increased to a maximum of 24,349 miles in 2004. The rate for 2011 was 22,069 miles.

Distance driven per registered light-duty vehicle. In 1984, the average distance driven per vehicle was 9,947 miles. The rate increased to a maximum of 11,946 miles in 2004. The rate for 2011 was 11,318 miles.

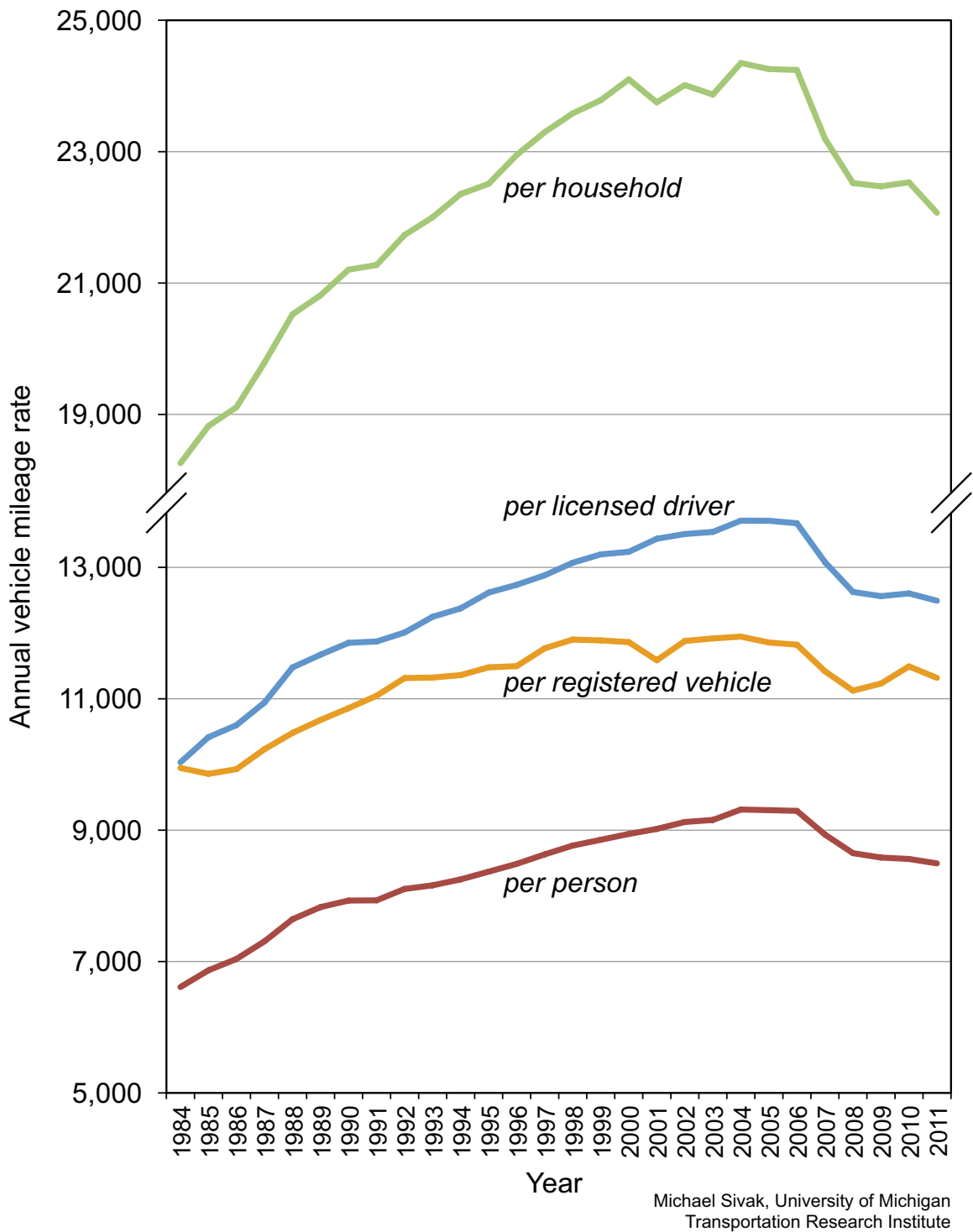


Figure 4. Distances driven per person, per licensed driver, per household, and per registered vehicle, 1984-2011.

Table 2
Distances driven per person, per licensed driver, per household, and
per registered vehicle, 1984-2011.

Year	Miles driven per person	Miles driven per driver	Miles driven per household	Miles driven per vehicle
1984	6,612	10,032	18,256	9,947
1985	6,866	10,414	18,823	9,857
1986	7,039	10,598	19,108	9,928
1987	7,309	10,943	19,790	10,233
1988	7,645	11,477	20,524	10,480
1989	7,828	11,670	20,813	10,678
1990	7,929	11,851	21,203	10,856
1991	7,931	11,873	21,274	11,046
1992	8,105	12,009	21,732	11,315
1993	8,159	12,248	22,002	11,323
1994	8,250	12,376	22,354	11,361
1995	8,368	12,616	22,511	11,479
1996	8,487	12,735	22,950	11,497
1997	8,631	12,880	23,296	11,768
1998	8,765	13,071	23,582	11,901
1999	8,853	13,199	23,783	11,889
2000	8,943	13,237	24,100	11,863
2001	9,018	13,436	23,750	11,586
2002	9,125	13,508	24,013	11,879
2003	9,155	13,540	23,868	11,918
2004	9,314	13,711	24,349	11,946
2005	9,304	13,710	24,258	11,856
2006	9,294	13,673	24,243	11,824
2007	8,933	13,080	23,196	11,418
2008	8,649	12,626	22,522	11,124
2009	8,584	12,562	22,472	11,231
2010	8,562	12,605	22,533	11,493
2011	8,494	12,492	22,069	11,318

Table 3 shows the percentage changes in the distance-driven rates from the peaks in 2004 to 2011. The rates per person, per licensed driver, and per household decreased by about 9% each, while the rate per registered vehicle decreased by about 5%.

Table 3
Percentage changes in the distance-driven rates
from the peaks in 2004 to 2011.

Distance-driven rate	Percentage change from 2004 to 2011
Per person	-8.8%
Per licensed driver	-8.9%
Per household	-9.4%
Per registered vehicle	-5.3%

Table 4 shows the latest year prior to the 2004 peak that had a rate that was lower than the 2011 rate. As an example, let us consider the rate per person. In 2011, that rate was 8,494 miles (see Table 2). Prior to the peak in 2004, the last time this rate was below 8,494 miles was in 1996 (see Table 2).

Table 4
Latest year prior to 2004 peak that had a rate
lower than the 2011 rate.

Distance-driven rate	Year
Per person	1996
Per licensed driver	1994
Per household	1993
Per registered vehicle	1992

Discussion

Light-duty vehicles: Absolute distances driven

Distance driven by light-duty vehicles peaked in 2006 at 2.773 trillion miles. However, this was likely only a temporary peak. With the expected growth in the population (and the rebounding economy), the absolute distance driven will likely increase in the near future. Thus, despite the apparent peaking of the distance-driven rates (per person, driver, household, and vehicle), the absolute distance driven in the near future will almost certainly exceed the 2006 peak value.

Light-duty vehicles: Distance-driven rates

All examined distance-driven rates (per person, per driver, per household, and per vehicle) peaked in 2004, four years prior to the onset of the current economic downturn in 2008. Thus, as I argued in the case of the rates of registered light-duty vehicles (Sivak, 2013), we must search for noneconomic factors as the explanations for the onset of this trend. As discussed in Sivak (2013), two likely contributing factors are the recent increase in the use of public transportation and the recent increase in telecommuting. Among many other potential factors (see Litman, 2013) are the aging of the driving population (Sivak and Schoettle, 2013) paired with the decrease in driving by the elderly (Ferguson, Teoh, and McCartt, 2007), and the increased urbanization of the population (U.S. Census Bureau, 2013).

Although economic factors are unlikely to be responsible for the onset of the decrease in distance-driven rates, economic factors are likely contributing to the post-2008 reduction in the rates. Among relevant economic factors are high unemployment rates, stagnating real income for a majority of the population, and the increased price of gasoline.

Because the onsets of the reductions in the driving rates were not the results of short-term, economic changes, the 2004 maxima in the distance-driven rates have a reasonable chance of being long-term peaks as well. An exception is the rate per vehicle. Should the number of vehicles per person, per driver, and per household continue to fall

(Sivak, 2013), it is possible that the distance driven per vehicle would start to increase and eventually surpass the 2004 value.

Based on the present data, the best estimates of the current annual distance-driven rates are as follows: 8,500 miles per person, 12,500 miles per licensed driver, 22,100 miles per household, and 11,300 miles per registered vehicle. These rates are down about 9% from their peaks in 2004, except that the rate per vehicle is down about 5%. (The fact that the rate per vehicle is down less than the rates per person, driver, and household reflects the fact that there has been a decrease in the number of vehicles since 2008 (Sivak, 2013).) The rates now are comparable to those in the early and mid 1990s.

Light-duty vehicles versus all vehicles

The 2004 peak in the distance-driven rate per person by light-duty vehicles obtained in this study is comparable to the finding of Millard-Ball and Schipper (2011) for the distance-driven rate by light-duty vehicles, and to several recent findings for the distance-driven rate per person by *all vehicles*. For example, Puentes and Tomer (2008), Dutzik and Baxandall (2013), and Short (2013) all found that the distance driven per person (or per person 16 years and older) by all vehicles peaked in 2004/2005.

Private, commercial, and public vehicles

Because data on distances driven by only privately owned light-duty vehicles are not available, the analysis dealt with all light-duty vehicles (private, commercial, and public). Thus, the absolute numbers and the rates derived in this study are higher than they would have been if only privately owned vehicles were included. Furthermore, these statistics on all light-duty vehicles cannot distinguish whether trends for privately owned vehicles are different from those for commercial and/or public vehicles.

Vehicle registrations and distances driven

Table 5 summarizes the years in which the maxima were reached for the number of registered light-duty vehicles, distance driven by light-duty vehicles, and their rates,

and the magnitudes of the reductions from the corresponding maxima. The information for vehicles and the vehicle rates is from Sivak (2013), while the information for distance driven and the distance-driven rates is from the present study.

Table 5
Years in which the maxima were reached for the number of light-duty vehicles, distance driven by light-duty vehicles, and their rates, and the magnitudes of the reductions from the corresponding peaks.

Measure	Peak year(s)	Reduction in 2011 from the peak	Source
Vehicles	2008	-1%	Sivak (2013)
Vehicles per person, per licensed driver, and per household	2001-2006	-5%	
Distance driven	2006	-5%	Present study
Distance driven per person, per licensed driver, and per household	2004	-9%	
Distance driven per vehicle	2004	-5%	

The bottom line: We drive fewer light-duty vehicles and we drive each of them less

In the previous study (Sivak, 2013), I documented the fact that the number of registered light-duty vehicles per person, per driver, and per household peaked between 2001 and 2006. The findings of the present study indicate that the corresponding rates for the distance driven also peaked during this period. (They all peaked in 2004.) Furthermore, distance driven per vehicle also decreased since 2004. Thus, the combined evidence from the two studies indicates that—per person, per driver, and per household—we now have fewer light-duty vehicles and we drive each of them less than a decade ago. This is an important finding of a double reduction, because one does not necessarily lead to the other.

Conclusions

The main contribution of this study is an examination of recent trends in distances driven by *light-duty vehicles* (cars, pickup trucks, SUVs, and vans) in the U.S. fleet. This is in contrast to several other recent studies that analyzed distances driven by *all vehicles* (including medium and heavy trucks, buses, and motorcycles). The period examined was from 1984 through 2011. This is a follow-up study to Sivak (2013), in which I analyzed the recent trends in the number of registered light-duty vehicles.

Although the report also presents trends in the absolute distances driven, of primary interest were the distances driven per person, per licensed driver, per household, and per registered vehicle. All of these rates reached their maxima in 2004—four years prior to the beginning of the current economic downturn—and decreased by 5% to 9% by 2011. These reductions likely reflect, in part, noneconomic changes in society that influence the need for vehicles (e.g., increased telecommuting, increased use of public transportation, increased urbanization of the population, and changes in the age composition of drivers). Because the onset of the reductions in the driving rates was not the result of short-term, economic changes, the 2004 maxima in the distance-driven rates have a reasonable chance of being long-term peaks as well. An exception is the rate per registered vehicle. Should the numbers of vehicles per person, per driver, and per household continue to fall (Sivak, 2013), it is possible that the distance driven per vehicle would eventually start to increase and thus this rate has a better chance in the future of surpassing the 2004 maximum.

The combined evidence from this and the previous study (Sivak, 2013) indicates that—per person, per driver, and per household—we now have fewer light-duty vehicles and we drive each of them less than a decade ago. The best estimates of the current annual distance-driven rates by light-duty vehicles are as follows: 8,500 miles per person, 12,500 miles per licensed driver, 22,100 miles per household, and 11,300 miles per registered vehicle.

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