

The causes and effects of declining driver license holdings in Sweden

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Car ownership and average annual mileage in Sweden has stagnated at the levels that were reached at the turn of the century. Driver licenses among the young (18-24) declined markedly during the first part of the 1990s, mainly as an effect of a severe economic recession. However, among citizens born in Sweden most of the gap compared to those who reached "driving age" before the crises had disappeared at the age of 35-39. A much lower rate of license holding among people born abroad, who make up 20 per cent of the Swedish population aged 15-39, explains most of the remaining difference for the population as a whole. The gender gap is small among people born in Sweden but large among those who immigrated from non-EU countries. The declining rate of license holding should not mistakenly be regarded a sign of Peak Car as changing priorities and better economic means may make second generation immigrants much more prone to acquire a license than their parents.

Car ownership and use reached a plateau in several OECD-countries during the first decade of the 21st century. In countries such as Australia, France, Sweden, UK, the United States and the United Kingdom the total annual mileage by car begun to level off even prior to the economic recession of 2008-2009. Road traffic per capita appears to have slowed in most industrialized countries and may have reached a saturation point in some of them (Litman, 2009, Millard-Ball and Schipper, 2010, Newman & Kenworthy, 2011). Peak-Car has become the topic of the day.

Analysis by government bodies suggest that most of the observed change in car travel may be explained by economic variables such income levels and unemployment, and fuel prices (UK Department for Transport, 2012, and BITRE, 2012). However, the overall decline appears, at least partly, to be the result of changing priorities among the young. Based on the US National Household Travel Survey, Baxandall, Davis, & Dutzik (2012) show that the annual number of vehicle miles travelled by young Americans (16 to 34-year-olds) shrunk by 23 percent between 2001 and 2009. Similarly van der Waard et al (2012) found that the contribution to growth in Dutch car mobility comes from people above 40 years of age, while a decrease in car mobility can be observed among young adults (18 – 29). Kuhnimhof et al (2012) and Le Vine and Jones (2012) show similar trends for respectively Germany and the United Kingdom. In both cases the trend is stronger among men.

After many decades of increasing rates of holding driving licenses, and with a greater increase for women than for men, a new trend is observed. License-holding percentages among young people have begun to decline in some highly developed countries, among them the United States, Canada, Norway, Sweden, France, Germany, United Kingdom, Japan and South Korea but not in comparable countries such as Finland, Switzerland and the Netherlands (Sivak and Schoettle, 2012).

Car ownership is still growing in most OECD-countries but in many cases not much faster than population growth.

Possible explanations of declining car use

Several phenomena might help explain the saturation or decline in car use, and fewer license-holders among the young. The affordability and the need of a car among young people are negatively affected by longer education and later entering into the labor market compared to many in their parent's generation, and by starting families at higher age. High unemployment rates may also be part of the explanation, at least in some countries. Rising fuel prices and costs of parking in combination with improved public transport and provision of cycle lanes are other factors of potential importance (Baxandall, Davis, & Dutzik, 2012).

Another potentially important factor is the trend in most countries towards an increasing share of the total population living in large cities, usually resulting in fewer annual miles traveled by car. Ageing populations is another factor to consider as the level of driving is known to decline from the age of 50 (OECD/ITF, 2011). Large net-immigration may also influence driving habits (Le Vine & Jones, 2012).

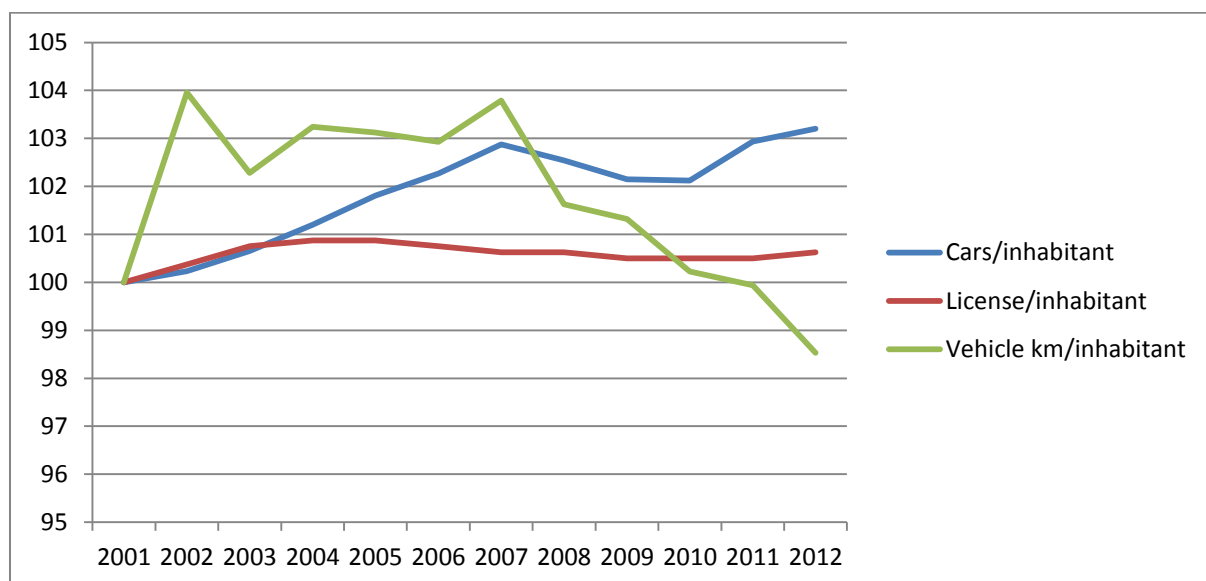
Objective of this paper

Of the potential explanations offered in the studies referred to above, the trend in license holdings among different age groups may be of particular importance. A license is a prerequisite for driving and in most cases for owning a vehicle. The purpose of this paper is to study the trend in license holdings among young people in Sweden and discuss its causes and how it may affect future car ownership and car travel.

Swedish trends in vehicle kilometer, car ownership and driver license holdings

Between 2001 and 2012, the Swedish population grew by 7.2 per cent and the total car vehicle fleet by 10.7 per cent. However, the average annual mileage of cars registered in Sweden (based on periodical inspections of cars in use) fell by 4 per cent as shown in Figure 1.

Figure 1. Recent trends in car ownership, license holdings and total car mileage per capita in Sweden. 2001 = 100.



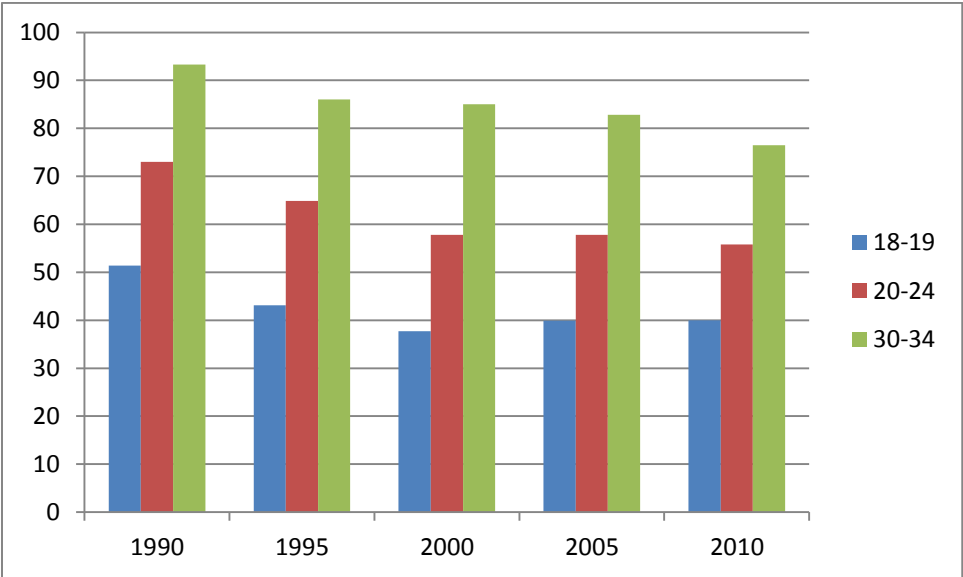
Sources: Swedish Transport Agency and Statistics Sweden

Over the period shown in Figure 1 disposable real income in Sweden grew by 28 per cent. Fuel prices, adjusted for inflation, rose by 46 per cent, but the effect on the cost of driving was partly offset by new cars becoming 31 per cent more fuel efficient between 2001 and 2012. However, the average fuel economy of the fleet improved less fast due to high medium vehicle age (10 years in 2012).

Trends in license holdings

The share of license holders among the young started to decline around 1990. Figure 2 shows that the tendency is strong not only among the youngest but also at the age of 30-34 when one could expect starting families may make people increasingly interested in having a driving license.

Figure 2. Share of license holders in different age groups 1990-2010. Per cent.

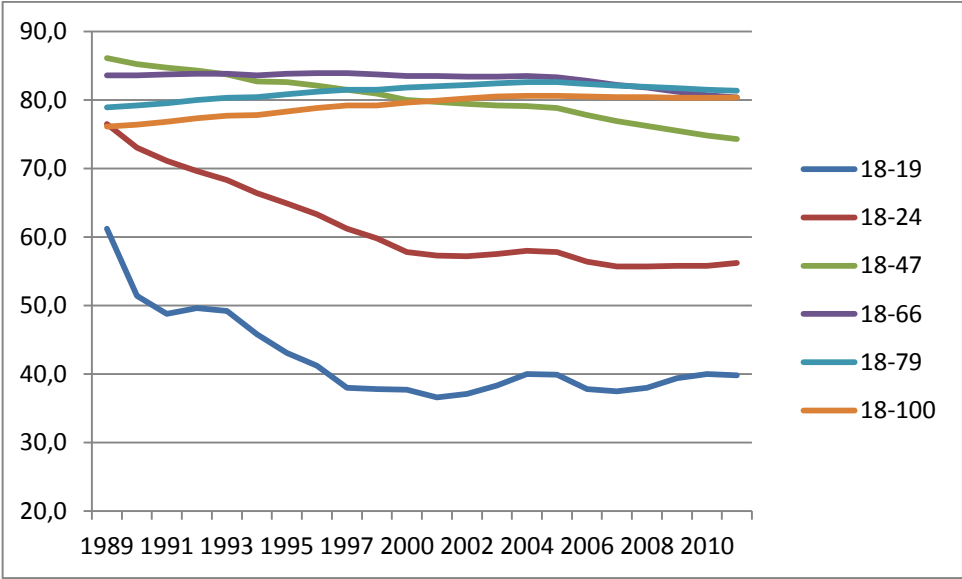


Sources: Swedish Transport Agency and Statistics Sweden

The decline between 1990 and 2010 is stronger among those between 30 and 34 than in the youngest cohort (17 percentage points compared to 11). This suggests that the growing inclination among persons born in the late 1970s and early 1980s (who were between 30 and 34 in 2010) of not having a license may continue through their lives. However, 19 per cent of them actually acquired a license in the ten years between 2000 and 2010 (the difference in the table between the red bar in 2000 and the green bar in 2010). Traditionally few people obtain a license after having turned 40. However, with a declining share at the age of 35, maybe one should expect a growing interest among those above 40 to make a late effort to get a license?

Figure 3 shows that license holding among the youngest declined rapidly between 1990 and 2000 and has since then been relatively stable. For the 18-19 years old the decline ended in 1997. Thus the reasons for the decline should primarily be sought among changes in relevant background parameters during the first half of the decade, although other parameters may explain why the rate has not gone back to normal after the turn of the century.

Figure 3. Accumulated rates of license holding in different age groups in Sweden.

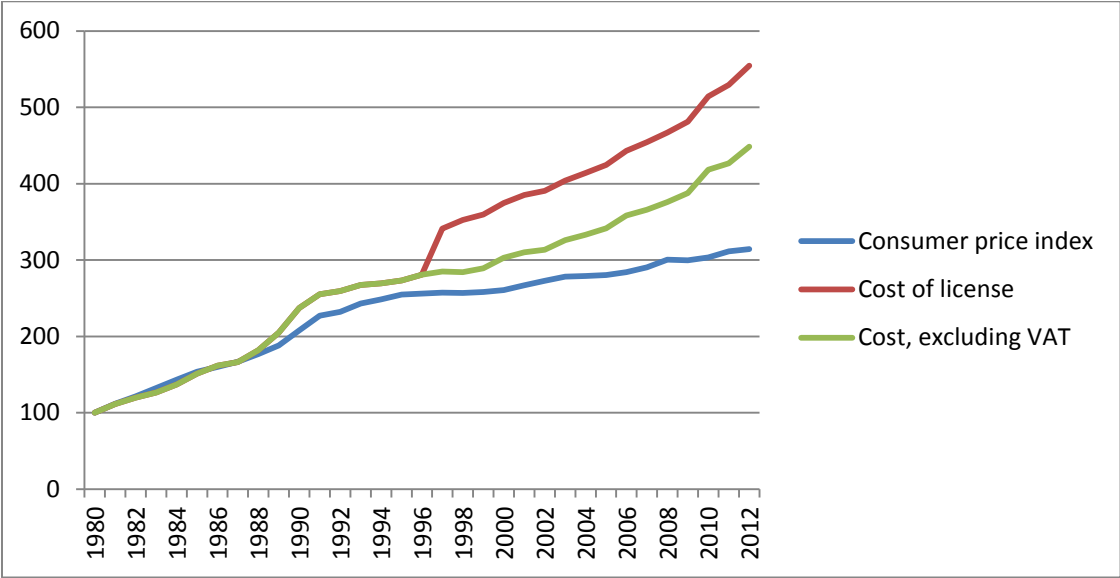


Sources: Swedish Transport Agency and Statistics Sweden

Potential explanations for the decline include economic factors such as rising cost for obtaining a license, perhaps in combination with an increasing rate of youth unemployment and more young people not being part of the workforce due to extended studies.

As shown in Figure 4, the rise of the cost of acquiring a license remained close to the consumer price index for most of the 1980s but began to depart from it in 1988 and with the gap growing over time. A big leap in the cost of licenses took place in 1997 as a result of VAT being enforced on driving lessons and the cost of the theory course. However, this happened precisely when the downward trend in license holdings among the youngest started to petering out. If price sensitivity was a major factor behind the decline during the first part of the decade this would not have happened unless the economic situation among young people had improved notably at the end of the decade.

Figure 4. The average cost of acquiring a license in Sweden (based on the cost of the theory course, an assumed fixed number of paid lessons and the test) over time. Index based on current prices (1980 = 100).

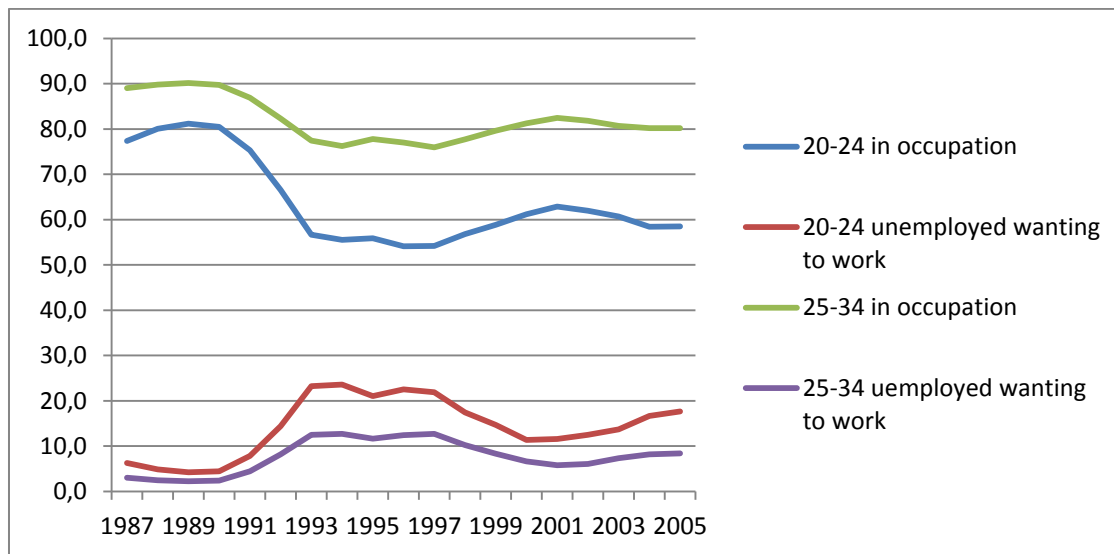


Sources: Statistics Sweden and the Swedish National Association of Driving Schools (STR)

Unemployment and fewer young people being part of the workforce appear to have a higher explanatory value than the cost of getting a license. Among those aged 20-24, unemployment (in per cent of the actual workforce) rose from 4.4 per cent in 1990 to 23.6 per cent in 1994 as a result of a severe recession. Simultaneously the workforce (in this age group) shrunk as a result of unemployed people leaving the labor force for studies. At the end of 1990s unemployment fell and has since the turn of the century fluctuated between 11 and 17 per cent. The trends were similar in the 24-34 cohort although less pronounced. As shown in Figure 5, the occupational rate in the two age groups were approximately 20 and 10 percentage points lower in 2005 compared to 1990. Being unemployed or a student means having less money to spend on a license and on owning a car. This appears to explain most of the decline, but it should be noted that the downward trend among 18-19 years old began in 1990 when Swedish economy was overheated and unemployment stood at its lowest point. Unemployment among the young, full time students excluded, have stayed at 11-15 per cent after 2005¹, which at least partly explains why the inclination to get a license has not returned to its pre-1990 level.

¹ In 2005 Statistics Sweden changed the methodology for calculating unemployment which makes detailed comparison with later years difficult.

Figure 5. Unemployment and total workforce in two age groups between 1987 and 2005. Per cent.



Source: Statistics Sweden

A diminishing interest in having a license may also be fuelled by change in relevant demographic parameters. The share of Sweden's total population living in large cities (Stockholm, Gothenburg and Malmö) and their suburbs has grown from 30.5 per cent in 1970 to 36.1 per cent in 2012 and is forecasted to continue to rise. This trend is most pronounced among young people and immigrants and affects total car ownership and the interest in having a license. There were 391 cars registered per 1,000 inhabitants in the Stockholm County at the end of 2012 compared to a nationwide average of 466. The 2012 Stockholm figure falls well below the 452 cars registered per 1,000 inhabitants in the county in 2002, perhaps reflecting an increasing regional density of population and rising costs of car ownership (e.g. the introduction in 2006 of congestion charging). During the same period the national average grew slightly.

Of considerable interest for understanding the long-term implications of the trend is to look at regional differences in citizens' tendency to acquire a license. Table 1 compares the frequency of license holding in the age group 30-34 in the Stockholm County and Jämtland. The latter is a sparsely populated county in northern Sweden. The rate of license holding is close to 20 percentage points lower in the metropolitan area than in Jämtland.

Table 1. License holders in age 30-34 in the Stockholm County and the Jämtland County in 2012. Per cent.

	Stockholm County	Jämtland County
Men	67	85
Women	59	79
All	63	82

Source: Statistics Sweden and Transport Analysis (unpublished data)

However, as shown in Table 2 license holding is less common among citizens with a foreign background. In 2012, 33 per cent of men and women belonging to the 30-34 year age group in the Stockholm County were born abroad compared to 13 per cent in Jämtland. From the table it is evident that a high share of immigrants in Stockholm explains about half of the difference in license holding

between the large city (including suburbs) and Jämtland. However, among Swedish-born citizens there remains a considerable gap of around 10 percentage points between the two counties while the regional difference for those with a foreign background is small.

Table 2. License holders in age 30-34 in the Stockholm County and the Jämtland County in 2012 by background. Per cent.

	Stockholm County	Jämtland County
Men born in Sweden	81	91
Women born in Sweden	76	88
Men born abroad	39	42
Women born abroad	27	25

Source: Statistics Sweden and Transport Analysis (unpublished data)

Gender differences may play a role. Table 3 shows that the gender gap has narrowed over the years for persons born in Sweden. In 2012 it was 5 percentage points in the two youngest age groups and 3 percentage points among those aged 30-34 and 40-44. Even if the gap eventually vanishes completely this would not add much to the total rate of license holding. However, among those born abroad there is large scope for improvement in both sexes and in particular among female citizens. The gender gap in 2012 for foreign-born was 16 and 14 percentage points respectively in the two oldest groups of the table. The declining trend of having a license among those born abroad may reflect the fact that this group is increasingly dominated by people from developing countries such as Iraq, Afghanistan, Somalia and Syria.

Table 3. License holding by age and gender in 2003 and 2012 among citizens born in Sweden. Per cent.

Age group	2003				2012			
	Male		Female		Male		Female	
	Born in Sweden	Born abroad	Born in Sweden	Born abroad	Born in Sweden	Born abroad	Born in Sweden	Born abroad
18-19	45	26	36	12	46	17	41	10
20-24	72	47	65	27	70	38	65	22
30-34	90	53	86	34	86	45	83	31
40-44	93	69	90	44	93	60	90	42

Source: Statistics Sweden and Transport Analysis (unpublished data)

Will things go back to normal?

Figure 2 (above) shows a significant difference between 1990 and 2010 in license holding in different groups of young people. More important, perhaps, is to assess the remaining difference between cohorts who reached driving age before the 1990 economic recession and those that became adults in the 1990s. Table 4 and 5 show the degree of license holding among people born respectively in 1964 to 1968 and in 1974 to 1978. The former turned 18 during 1982-1986 and were not affected by the recession until after the age of 25, while the latter reached the age of 18 during the recession. As license data broken down by gender and country of birth are only available from 2003, the comparison in Table 6 is limited to the time when members of the two cohorts were between 35 and 39 years old. At this age the average difference between the cohorts had shrunk to 6 percentage points

but was smaller for those born in Sweden, and higher for men born abroad. It still remains an open question whether the gap will eventually close completely.

Table 4. License holding among people born in 1964-1968 by age. Per cent.

Age	All	Male			Female		
		Years	All	Born in Sweden	Born abroad	All	Born in Sweden
35-39	85	88	93	63	81	90	40
40-44	85	88	94	65	82	91	44
45-49	86	89	94	68	82	91	45

Source: Statistics Sweden and Transport Analysis (unpublished data)

Table 5. License holding among people born in 1974-1978 by age. Per cent.

Age	All	Male			Female		
		Years	All	Born in Sweden	Born abroad	All	Born in Sweden
25-29	75	78	84	46	71	79	29
30-34	77	80	88	47	74	85	33
35-39	79	82	89	53	76	88	37

Source: Statistics Sweden and Transport Analysis (unpublished data)

Table 6. Remaining difference in license holding at the age of 35-39 between the 1964-1968 and the 1974-1978 cohorts. Per cent and percentage points.

Born	All	Male			Female		
		Years	All	Born in Sweden	Born abroad	All	Born in Sweden
1964-68	85	88	93	63	81	90	40
1974-78	79	82	91	53	76	88	37
Difference	6	6	2	10	5	2	3

License holding among those between 48 and 66 years of age reached a peak in 2006 (90.8 %) and has declined somewhat since then. In 2008 the share of holdings among people between 67 and 79 years passed the average rate of the 18-66 cohort, and by 2011 the difference was considerable (87% compared to 80%). This is a clear sign of license holdings having passed a peak. Whether this is a temporary peak or the beginning of a decline is too early to say. The outcome depends to a large extent on net-immigration and the preferences among new Swedes.

The effect of unrecorded license data

The data provided by the Swedish Transport Agency and Statistics Sweden on license holdings do only include licenses registered in Sweden. Since 1996 EU and Norwegian, Swiss and Icelandic licenses are considered equivalent to a Swedish license and do not need to be exchanged upon immigration to Sweden. The numbers registered by the agencies, thus, do not fully reflect the true number. However, the missing figures do not appear to be large. For those aged 18-19 around 90 per cent must have arrived in Sweden with their parents before the age of 18, and no European countries allow licenses to be taken by those younger than 18. At this age official data confirm a large difference between those born in Sweden and those born abroad as shown in table 7, but for men there is no difference at all between those born in other EU countries and those coming from other parts of Europe (24 % in both groups), and for women of this age the difference is small. This clearly indicates that the impact of unrecorded data on the true number of licenses is small in this age group.

Table 7. Degree of license holding in 2013 among different age groups by region of birth and based on official Swedish data. Per cent.

	Sweden	Rest of EU + Norway, Switzerland and Iceland	Rest of Europe	Non-Europe
Men 18-19	47	24	24	14
Women 18-19	42	14	10	7
Men 30-34	85	29	65	46
Women 30-34	83	28	43	29

Source: Statistics Sweden (unpublished data).

The difference between official data and true figures is presumably greater at the age of 30-34. From the numbers of this age group in table 7 it is clear that official data for those born in other Member States of the EU do not reflect the true number as the rates fall short of those of immigrants from other (non-EU) European countries. In this age group a larger share of the individuals have arrived in Sweden as adults and may have acquired a license before leaving their country of origin. Assuming that the true rate of license holding at 30-34 among those born in other EU Member States (and Norway, Switzerland and Iceland) is at least as high as among those born in the rest of Europe, the unrecorded number in this age group (men + women) is 10 437. Including them would raise the overall share of license holding at this age from 72.0 per cent to 73.3 per cent and the rate among all immigrants of this age from 37.9 per cent to 44.3 per cent. That the effect is so small is due to immigrants from other EU Member States only making up 24 per cent of all those born abroad in this age group, which is dominated by people coming from Asia, Africa and Latin America (altogether 57%) and from Eastern European non-EU countries (16%).

The reasons for young people born in other parts of Europe having driving licenses to a smaller extent than their Swedish-born peers is probably a combination of three factors: Living in cities to a large extent, higher than average unemployment and lower wages, and cultural differences, particularly affecting the women.

Conclusions and discussion

The falling tendency in Sweden among adolescents to spend time and money on getting a license early in life was triggered by a deep economic recession which started in 1991. However, at the age of 35 to 39 most of the difference between those who turned 18 in the first half of the 1980s and those reaching the same age ten years later had disappeared. For people born in Sweden the remaining gap was only 2 percentage points. The propensity among young people to delay license-taking by a few years remains and can at least partly be explained by studying longer and starting families later than the previous generation. A notable phenomenon is that many young Swedes after graduating from secondary school spend some time on low-skilled labor in order to save enough to be able to tour the globe before entering different types of university education. This delays their entry into the professional labor market.

The share of the overall population belonging to the workforce picked up after the end of the recession. However, it has not quite returned to its pre-crisis level which may explain part of the remaining difference in license holding at the age of 40 among those born in Sweden. A growing share of the population living in cities and changing priorities with regard to working habits, leisure activities and choice of holiday destinations may be the cause of the remaining part of the difference. When

17-18 year olds are asked about reasons for not acquiring a driver license, several recent surveys show that most of them mention lack of money or time but a growing minority also underlines that access to sufficient public transport makes a license less needed (Forward et al, 2010). Funding opportunities may change as they grow older but the access to public transport is likely to remain or improve and may thus for some of them be a lasting reason for not spending time and money on a license.

The rising cost may have contributed to decisions among young people to delay taking a license, but the effect on the total number of licenses is small. As noted above, the introduction of VAT on professional driving lessons in 1997 raised the cost by 25 per cent without causing demand to decline, and the rising cost was only to a small extent offset in the next few years by growing employment or increased wages. The overall price sensitivity, thus, could not be particularly high. However, in combination with high unemployment rising costs may have forced many young adults to postpone acquiring a license. This is a problem for some of them as employers require a driver license for a large number of both high- and low-skilled positions. In mid-January 2014, 56 per cent of young jobseekers (18-24) in Sweden did not have a license, up from around 25 per cent 20 years ago.²

That the inclination in the total population to get a license has not returned to its pre-crisis level is to a large extent influenced by a growing number of immigrants, particularly from developing countries. In 2012, 19 per cent of the population aged 15-34 was born abroad and immigrants show a much lower preference for or ability to get a license than their Swedish-born peers. This explains most of the difference in total license holding even at the age of 35-40 compared to 1990, though an exact figure cannot be calculated as data on license holding by type of background is not available for years prior to 2003. However, in the 1980s immigration was tiny and the share of people coming from developing countries was small. For example, in 1990 people aged 30-34 and born in Asia, Africa and Latin-America numbered 26 700 compared to 93 300 for the same category in 2013.

For the 18-24 old high unemployment in combination with a high cost for getting a license does play a role. The rate of license holding in this age-group is also influenced by the tendency, regardless of background, to study longer and to wait with starting a family. Under current circumstances the trend of postponing getting a license will remain.

This difference between citizens with a Swedish and a foreign background may diminish over time, but with a continuous large net-immigration, particularly to the fast-growing Stockholm region, it is likely to take many years until the difference becomes negligible.

Effects of fewer license holders on car ownership and use

A declining rate of license holding does affect total car mileage and the average per capita distance travelled by car as fewer people are legally able to use a car on their own. Delaying taking a license by a few years means driving among young people is reduced. Between 1990 and 2011 the number of licenses belonging to people aged 18-24 fell by 16 percent in Sweden despite a growing population. If the current trend is sustained an increasing share of all licenses will belong to people who are retired. This group is known to drive less than those that are part of the workforce. However, the overall effect on the national average is not huge, and it should be noted that for a household to

² Swedish Employment Service, press service 14.1.2014.

have a car only requires one individual to be in possession of a license. On the other hand, single person homes in 2012 made up 38 per cent of all households in Sweden.

The overall conclusion is that so far the effect of a declining rate of license holding among citizens born in Sweden on car ownership and annual mileage has been small and difficult to distinguish from other factors that may have contributed to a Peak Car tendency in Sweden. The impact on average car ownership and use of a comparatively low rate of license holding among immigrants is more distinct.

To get a better picture of what lies ahead it might be relevant to ask the 30-40 years old who do not hold licenses for their reasons and whether they plan to get one later in life. Of particular interest in this context would be to find out how those born abroad value getting a license.

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