WHY ARE YOUNG PEOPLE LESS LIKELY TO GET A DRIVING LICENCE?

Alexa Delbosc, Research Fellow, Institute of Transport Studies, Department of Civil Engineering, Building 69, Monash University, Clayton, Victoria 3800, AUSTRALIA Phone: +61 3 9905 5568, Fax: +61 3 9905 4944, Email: alexa.delbosc@monash.edu

Graham Currie (Corresponding Author), Professor, Chair in Public Transport, Institute of Transport Studies, Department of Civil Engineering, Building 60, Monash University, Clayton, Victoria 3800, AUSTRALIA Phone: +61 3 9905 5574, Fax: +61 3 9905 4944, Email: graham.currie@monash.edu

ABSTRACT

In recent decades, young adults in many developed nations have become increasingly less likely to acquire a car licence. If this trend continues it could have significant impacts on transport planning into the future. The reduction in licensing has only recently been identified and researchers are only just beginning to investigate the factors influencing this trend. This paper presents the first review of factors influencing the decline in licensing among young adults. It begins by documenting the declining trend evident in eight countries; average trend is -0.22% p.a. with highest declines in Australia (-0.9 to -1.2% p.a.). The paper documents available evidence on causal factors from both cross-sectional and longitudinal studies. Factors are categorised into five groups: changes in life stage and living arrangements, changes in the cost of motoring and income, location and transport changes, graduated driver licensing schemes, attitudinal influences and the role of e-communication. The paper concludes by weighing available evidence to suggest more likely explanations for the decline and highlighting areas needing further research.

Keywords: Driver licensing, young adults, literature review

INTRODUCTION

Over the last two decades, several industrialised nations have identified a trend of stagnating per capita car travel demand. First recognised in Germany (Zumkeller et al. 2004), the trend was later recognised in the United States (Puentes and Tomer 2008), Great Britain (Le Vine et al. 2009) and Australia (Newman and Kenworthy 2011). This has lead researchers to question whether the developed world is approaching a new era of 'peak car' use (Newman and Kenworthy 2011).

The causes of this trend are likely to be multi-faceted and are only now being established. One likely cause is a complementary emerging trend: young people in much of the developed world are less likely to get a car licence and, if they can drive, they are driving less (Raimond and Milthorpe 2010; Kuhnimhof et al. 2011; Sivak and Schoettle 2011; Sivak and Schoettle 2011). This trend has only recently been identified and researchers are just beginning to understand its causes. Establishing causes will also assist in understanding its consistency and impact into the future. Is a transition to a post 'peak car' use period needed and by how much will car use decline? Members of generation Y are now in their late teens to early thirties and this generation now outnumbers the baby boomers (Australian Bureau of Statistics 2011; Lachman and Brett 2011). As they continue to transition into adulthood, their travel habits will become an increasingly significant influence on total travel.

This paper provides a review of the evidence that licensing and driving among young people is declining in much of the developed world. It also reviews the existing evidence on causal factors for this trend. It weighs this evidence and proposes some preliminary causal hypothesis.

THE DECLINE IN YOUTH DRIVER LICENSING

The decline in driver licensing among young people was first recognised in Sweden and Norway in the late 1990s, where licensing of young adults dropped by over 10% between the mid-1980s and the late 1990s (Berg 2001). The research that followed was limited to Scandinavia (e.g. Ruud and Nordbakke 2005) and did not gain wider traction, perhaps because other countries were not yet experiencing this trend. This changed by around 2010 when researchers began to recognise a drop in licensing in Australia, North America, Japan and much of Europe.

The trends within developed countries are presented in Table 1 with an emphasis on people aged between 18 and 30 for countries with at least 5 years between survey periods. Overall trend data illustrate a range of annual changes between +1.3% to -1.6% with the vast majority of data points suggesting a decline. The average change is decline is 0.22% p.a. (or about 2.3% over 10 years). The median change is -0.3% p.a. (or about a 3% decline in 10 years). Some of the fastest changes have occurred in Australia. In the state of Victoria the percent of people under 25 with a licence has dropped from over 75% in 2000 to 65% in 2010(Delbosc and Currie in press). In New South Wales (NSW) the drop was slightly slower with those aged 25 with a licence reducing from 84% to 74% (Raimond and Milthorpe 2010). Within the city of Sydney the drop has been quite dramatic, with the percent of those aged 20-24 with a licence dropping from 79% in 1991 to 51% in 2008 (Raimond and Milthorpe 2010). This already highlights the role that geographic location is likely to play on these patterns, which will be discussed in greater depth in the next section. But it is worth noting that these relatively large changes may be due in part to the urbanised nature of Australia where 66% of the population lives in a capital city (Australian Bureau of Statistics 2011). The following data from North America, Japan and Europe aggregates trends across entire countries with varying levels of urbanisation.

Table 1: Trends in driver licensing of young people in 13 developed countries

Location	Years	Age group	Licensing change	Change per year	Source
Victoria, Australia	2000/01-2010/11	18-25	77% to 65%	-1.2%	(Delbosc and Currie in press)
NSW, Australia	1998-2009	25	84% to 74%	-0.9%	(Raimond and Milthorpe 2010)
Sydney, NSW, Australia	1991/92-2008/09	20-24	79% to 51%	-1.6%	(Raimond and Milthorpe 2010)
United States	1983-2010	18 19 20-24 25-29	80% to 59% [a] 86% to 68% [a] 91% to 80% [a] 94% to 86% [a]	-0.8% -0.7% -0.4% -0.3%	(Sivak and Schoettle 2012)
Canada	1999-2009	16-19 20-24 25-34	61% to 60% [a] 82% to 81% [a] 92% to 86% [a]	-0.1% -0.1% -0.6%	(Sivak and Schoettle 2011)
Japan	2001-2009	16-19 20-24 25-29	19% to 17% 79% to 75% 90% to 90%	-0.3% -0.5% 0.0%	(Sivak and Schoettle 2011)
Sweden	1983-2008	18 19 20-24 25-29	50% to 27% [a] 70% to 49% [a] 78% to 63% [a] 82% to 70% [a]	-0.9% -0.8% -0.6% -0.5%	(Sivak and Schoettle 2011)
Norway	1991-2009	18 19 20-24 25-34	58% to 40% [a] 74% to 55% [a] 85% to 67% [a] 89% to 75% [a]	-1.0% -1.1% -1.0% -0.8%	(Sivak and Schoettle 2011)
Great Britain	1995/97-2008	17-20 21-29	43% to 36% [a] 74% to 63% [a]	-0.5% -0.8%	(Sivak and Schoettle 2011)
Germany	2002-2008	18-24	85% to 84% [a]	-0.2%	(Sivak and Schoettle 2011)
Finland	1983-2008	18-19 20-29	37% to 68% [a] 51% to 82% [a]	+1.2% +1.2%	(Sivak and Schoettle 2011)
Israel	1983-2008	19-24 25-34	42% to 64% [a] 62% to 78% [a]	+0.9% +0.6%	(Sivak and Schoettle 2011)
Netherlands	1985-2008	18-19 20-24 25-29	25% to 45% [a] 64% to 64% [a] 77% to 83% [a]	+0.9% 0.0% +0.3%	(Sivak and Schoettle 2011)
Switzerland	1984-2005	18 19 20-24 25-29	4% to 15% 43% to 49% 77% to 77% 85% to 87%	+0.5% +0.3% 0.0% +0.1%	(Sivak and Schoettle 2011)
Spain	1999-2009	15-24 25-29	37% to 50% 73% to 75%	+1.3% +0.2%	(Sivak and Schoettle 2011)

[a] *percentages are taken from graphs and should be taken as approximate.*

In the United States between 1983 and 2010, licensing dropped for all age groups below 30 with the largest decreases among the youngest age groups (Sivak and Schoettle 2012). In Canada between 1999 and 2009 the trend is not as evident with only a marginal drop among those aged under 25 but a more noticeable drop for those aged 25 to 34 from over 90% to around 85% (Sivak and Schoettle 2011).

Most Asian countries are still economically developing and currently have very low levels of household car ownership; countries such as India and China are projected to rapidly increase their motorisation in the coming decades (Chamon et al. 2008). However in Japan, a country with relatively high motorisation, youth driver licensing decreased slightly between 2001 and 2009 from 79% to 75% of those aged 20 to 24 (Sivak and Schoettle 2011).

A review by Sivak and Schoettle (2011) showed that in Europe the trend is somewhat mixed. Supporting the earliest research in licensing, in Sweden between 1983 and 2008 licensing continued to drop for all age groups under 34; similar trends were found in Norway between 1991 and 2009. Great Britain also saw significant decreases in licensing between 1995 and 2008, especially for those aged 21 to 29. In Germany licensing has remained relatively stable with only a slight decrease between 2002 and 2008; however other research suggests that young Germans are becoming less likely to have a car and are more likely to use other travel modes (Kuhnimhof et al. 2011; Kuhnimhof et al. 2012).

In other European countries youth licensing is increasing, in some cases quite dramatically. Finland has seen an increase in licensing between 1983 and 2008 from 51% to 82% of 20 to 29 year olds. Israel, the Netherlands, Switzerland, Spain and Latvia all showed at least modest increases in licensing (Sivak and Schoettle 2011). However it is worth noting that in each case, only two survey years are discussed and in some cases the two comparison years are over 20 years apart. It is possible, therefore, that in some countries licensing peaked in the 1990s and have begun to decline, but not to levels below the 1980s.

In summary, in many developed countries people under the age of 30 are less likely to hold a driving licence than they were 10 to 20 years earlier. Among those countries where licensing is decreasing, the average rate of decrease is -0.6% per year with most values between -0.3% and -1.0%. In most cases the rate of decrease is greater for younger age groups than older age groups.

Although some European developed countries are showing increases in youth licensing rates, without further trend data it is unclear whether some of these increases are continuing trends or whether licensing peaked and is now in decline. The following sections of this paper will focus on those countries where licensing is declining in an attempt to understand why this is occurring.

WHY ARE YOUNG PEOPLE LESS LIKELY TO GET A LICENCE?

The trend toward reduced youth licensing has only recently been noted and, consequently, research into why this is occurring is still emerging. Table 2 presents a review of reasons for decreased licensing identified in the literature. These studies were sourced from a range of sources including conference papers, journal articles, theses, government reports and commercial reports. It is limited to English-language sources, primarily from North America, the United Kingdom and Australia. It is supplemented by the authors' recent analyses of Australian census trend data.

Some studies directly measured both licence-holding and potential causes in the same study, although these studies are generally cross-sectional in nature and so they cannot measure trends. Other evidence is indirect, that is, it identifies a long-term change in a potential cause but does not directly measure both licensing rates and the hypothesised cause in the same study.

Table 2: Explanations for reduced licensing

Explanation	Direct evidence	Indirect evidence	Notes
Life stage changes			
Increasing rate of educational participation	(Noble 2005; Delbosc and Currie in press)	(Australian Bureau of Statistics 2011; Office for National Statistics 2011; Taylor et al. 2012)	Licensing also dropping among non-students (Noble 2005)
Decreasing employment rates	(Noble 2005; Delbosc and Currie in press)	(Bureau of Labor Statistics 2011; Office for National Statistics 2011; Australian Bureau of Statistics 2012; Taylor et al. 2012)	
Delaying marriage/ children	(Delbosc and Currie in press)	(Mitchell 2006; Australian Bureau of Statistics 2012; Stokes 2012)	
Living with parents longer	(Licaj et al. 2012; Delbosc and Currie in press)	(Mitchell 2006; Cobb-Clark 2008; Settlersten and Ray 2010; Office for National Statistics 2012; Stokes 2012; Taylor et al. 2012)	
Cost of motoring and income			
Insurance Cost	(Noble 2005)		Very rapid increase in UK
Cost of petrol		(Davis et al. 2012)	
Cost of car purchase	(Noble 2005; KRC Research 2010)		*Real cost of car purchase declining (Noble 2005)*
Costs – general	(Berg 2001; Williams 2011)		
Household income	(Licaj et al. 2012; Delbosc and Currie in press)		*Biggest drop in miles driven is among young men of higher income (Stokes 2012)*
Recession / economy		(Berg 2001; Davis et al. 2012)	*Driving began dropping before GFC (Newman and Kenworthy 2011; Davis et al. 2012); drop continued in Sweden after 1990 recession ended (Berg 2001)*
Location and transport			
Use PT /other modes instead	(Berg 2001; Noble 2005; Williams 2011)	(Raimond and Milthorpe 2010; Davis et al. 2012)	
Moving to inner-city / accessible areas	(Noble 2005; McDonald and Trowbridge 2009; Raimond and Milthorpe 2010; Licaj et al. 2012)	(Environmental Protection Agency 2010; Raimond and Milthorpe 2010; Belden Russonello & Stewart 2011; Lachman and Brett 2011; Davis et al. 2012)	
Graduated driver licensing			
Licensing regimes became more strict	(Noble 2005; Raimond and Milthorpe 2010; Williams 2011)	(Preusser and Tison 2007; Senserrick 2009)	Began dropping before GDL in Australia (Raimond and Milthorpe 2010); has been dropping in UK which does not have GDL (Directgov 2012)
Household car access / driving supervisor	(Williams 2011; Licaj et al. 2012; Delbosc and Currie in press)		
Attitudes			
Want to help the environment	(Forward et al. 2010; KRC Research 2010); *(Delbosc and Currie 2012)*	*(Department for Environment Food and Rural Affairs 2002; Noble 2005)*	
Cars no longer a status symbol	(Berg 2001)	*(Steg 2005)* (Kalmbach et al. 2011; Delbosc and Currie 2012)	
Too busy / other priorities	(Berg 2001; Noble 2005; Williams 2011)		
E-communication			
E-comms replacing face-to-face contact	(KRC Research 2010; Williams 2011) *(Delbosc and Currie 2012)*	(Sivak and Schoettle 2011)	
E-comms suit PT use		(Davis et al. 2012)	

Note: References in italics found evidence that this effect did not influence licensing

Table 2 classifies potential causal factors into six categories:

1. Lifestyle changes,
2. location and transport changes,
3. graduated licensing,
4. motoring costs,
5. e-communication, and
6. attitudes.

The following sections describe the evidence presented in each of these categories.

Life stage changes

Some research has examined how household variables influence licensing among young people. Two studies have found that if a young person is a student or working part-time they are less likely to have a licence than if they have a full-time job; for example in the UK 58% of young adults with a full-time job have a licence compared to 38% with a part-time job and 32% of students (Noble 2005; Delbosc and Currie in press). Other studies have found that if young adults are still living at home with parents they are less likely to hold a driving licence (Licaj et al. 2012; Delbosc and Currie in press). This is slightly counter-intuitive as young adults in the parental home are likely to have access to shared household vehicles and the lower housing costs frees up income that could be spent on a car. Conversely, young adults who are living independently with their own children are more likely to hold a licence (Delbosc and Currie in press).

Indirect, longitudinal research shows that these four demographic influences have been changing in recent decades in many countries. Rates of educational participation have increased and full-time employment has decreased among young adults, both of which likely act to reduce the financial ability to purchase and run a car in the short-term. For example in Australia, the percent of people aged 20 to 24 attending some form of education increased from 25% in 1991 to 41% in 2011 (Australian Bureau of Statistics 2011). In America, enrolment in high school or university increased from 31% in 1990 to 45% in 2011 (Taylor et al. 2012); similarly, attendance of summer school (traditionally a time for summer employment) has steadily grown since the mid 1990s (Bureau of Labor Statistics 2011). In the UK, full-time educational enrolment increased from 10% in 1992 to almost 20% in 2011 (Office for National Statistics 2011).

In America the employment-population ratio for young adults has decreased from a high of 67% in 1990 to 49% in 2010 (Bureau of Labor Statistics 2011). Figure 1 shows that the proportion of young Australians in full-time work has dropped from almost 50% in 1985 to 33% in 2011 whereas part-time work has steadily increased.

In combination with these trends, young adults have been living at home for longer in Australia, North America and Europe (Mitchell 2006; Cobb-Clark 2008; Australian Bureau of Statistics 2009; Settlersten and Ray 2010). For instance, the percent of Canadians aged 20 to 29 living in the parental home jumped from 27% in 1981 to 41% in 2001 (Mitchell 2006). Almost half of young Australians who had not left home by 24 said their main reason was to save money (Australian Bureau of Statistics 2009). Parents appear to recognise this shift, as the percent of American parents who thought that children should be financially independent by the time they were 22 dropped from 80% in 1993 to 67% in 2011 (Taylor et al. 2012).

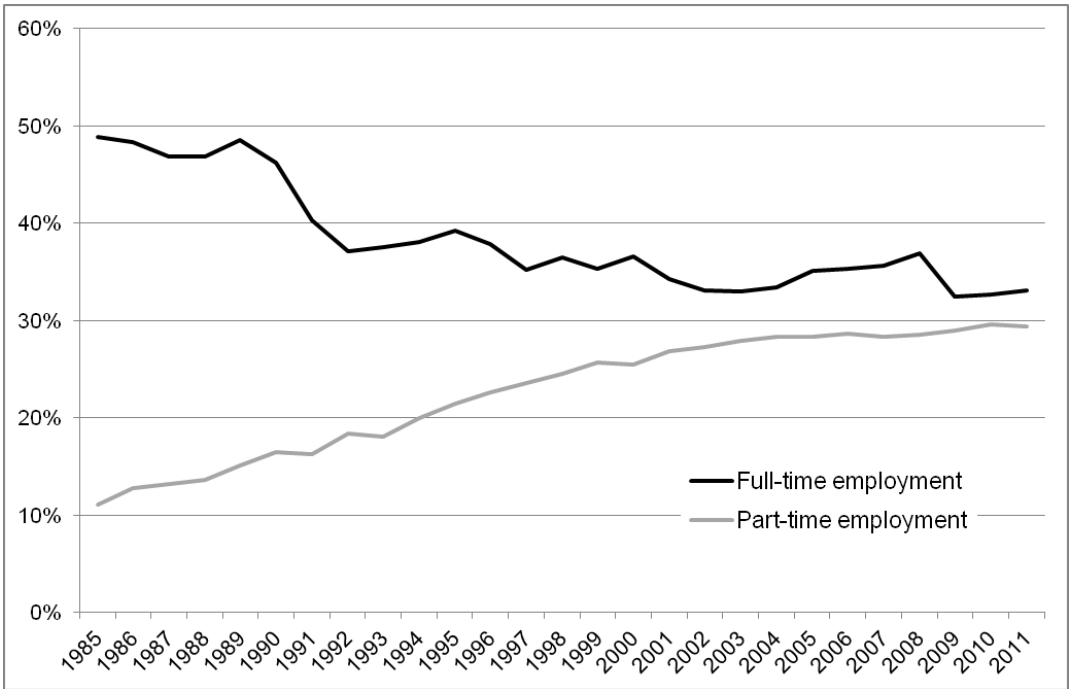

Figure 1: Percent of Australians aged 15 to 24 in employment, 1985-2011

Note: Employment data seasonally adjusted. Population and employment taken at June 30.
Source: (Australian Bureau of Statistics 2012) and (Australian Bureau of Statistics 2011)

Similarly, young adults are marrying and having children later in life; for example the median age of first marriage in Australia has increased over three years since 1990 (Mitchell 2006; Australian Bureau of Statistics 2012) and young Australians are much less likely to live with a spouse or partner than they were in the 1980s (Australian Bureau of Statistics 2009).

Taken together, these four influences are combining to delay the traditional 'markers' that symbolise a transition to adulthood. For many young people, this may result in a postponement of the need for and the financial ability to pay for a car. However affordability is a complex issue; young adults living in the parental home are likely to have access to parental resources such as low housing costs and household vehicles. This makes it difficult to discern whether the financial resources of young adults have changed in recent years. The next section examines whether the cost of motoring could be an influence on the change in licensing.

The cost of motoring and income

Some researchers have considered whether the costs of motoring have an impact on the trend in youth licensing. Household income has been identified as a significant influence on whether a young person holds a drivers licence, at least in some analyses (Licaj et al. 2012; Delbosc and Currie in press). It is not surprising, then, that financial shocks like major recessions have been proposed as a major factor in reduced youth licensing (Berg 2001; Davis et al. 2012). For example, the global financial crisis of 2008 and the resulting increase in unemployment rates had a disproportionate impact on young people (Davis et al. 2012).

However it is not clear whether short-term financial shocks are a significant influence on licensing. In Sweden, for example, licensing rates began to fall before a recession in the 1990s and continued to fall afterward (Berg 2001). More recently in America, even young people with jobs or in high-income households are more likely to use public transport and less likely to drive than a decade ago (Davis et al. 2012). And in both America and Australia, vehicle miles travelled began to drop several years *before* the global financial crisis

(Newman and Kenworthy 2011; Davis et al. 2012). Furthermore, an analysis in the UK found the largest drop in miles driven since 1995 was among young men of higher incomes and men in full-time work (Stokes 2012).

Similarly, it is unclear whether the costs of owning and running a car have a significant influence on the licensing trend. In some cases costs have rapidly increased; for example in the UK the cost of insurance for young drivers has increased significantly and now makes up over half the cost of motoring for a male teenager (Noble 2005). Similarly, petrol prices have increased significantly in recent decades and are unlikely to significantly reduce (Davis et al. 2012). Overall, however, the real cost of motoring has declined compared to inflation, driven primarily by reduced purchase costs (Noble 2005).

The actual cost of motoring, however, may not be as influential as the *perceived* cost. Several surveys have found that young people cite costs as a reason for not getting a licence (Berg 2001; Noble 2005; KRC Research 2010; Williams 2011). For example, 30% of American 18-year-old who had not yet begun to get a licence said it was because it 'cost too much', although this explanation was fourth behind 'no car available,' 'can get where want without driving' and 'too busy' (Williams 2011). In the UK, on the other hand, the top three main reasons for not driving were the cost of learning to drive, the cost of insurance and the cost of buying a car (Noble 2005).

It is unlikely that income and costs have no impact on the change in youth licensing, although it is clear that these influences are complex. It may be that other influences are causing some young people to reprioritise their spending away from cars and toward other necessities and interests. An analysis of the Australian Household Expenditure Survey, for example, suggests that young households are spending a significantly larger proportion of their income on housing compared to decade ago (Figure 2). Discretionary spending on clothing, alcohol and recreation does not appear to have reduced but spending on transport is slightly lower (Australian Bureau of Statistics 2011).

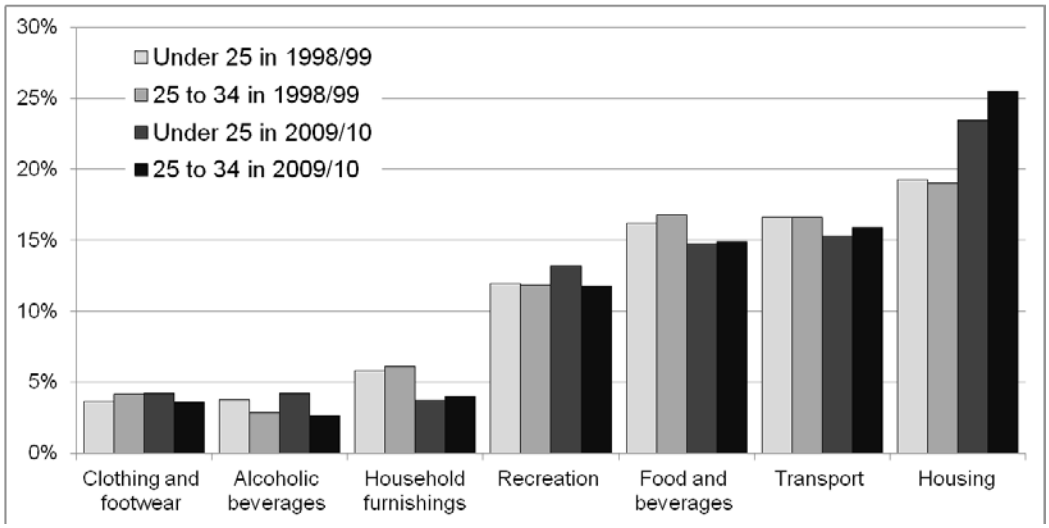

Figure 2: Australian household expenditure by age of household reference person, 1998/99 and 2009/10

Note: Shown as percentages of total weekly expenditure. Young adults living in parental home are not included. Source: (Australian Bureau of Statistics 2011) and (Australian Bureau of Statistics 2000)

Location and transport changes

Young people without a licence must use alternative modes to access activities, either relying on lifts, using public transport or living in areas where walking and cycling can meet travel needs.

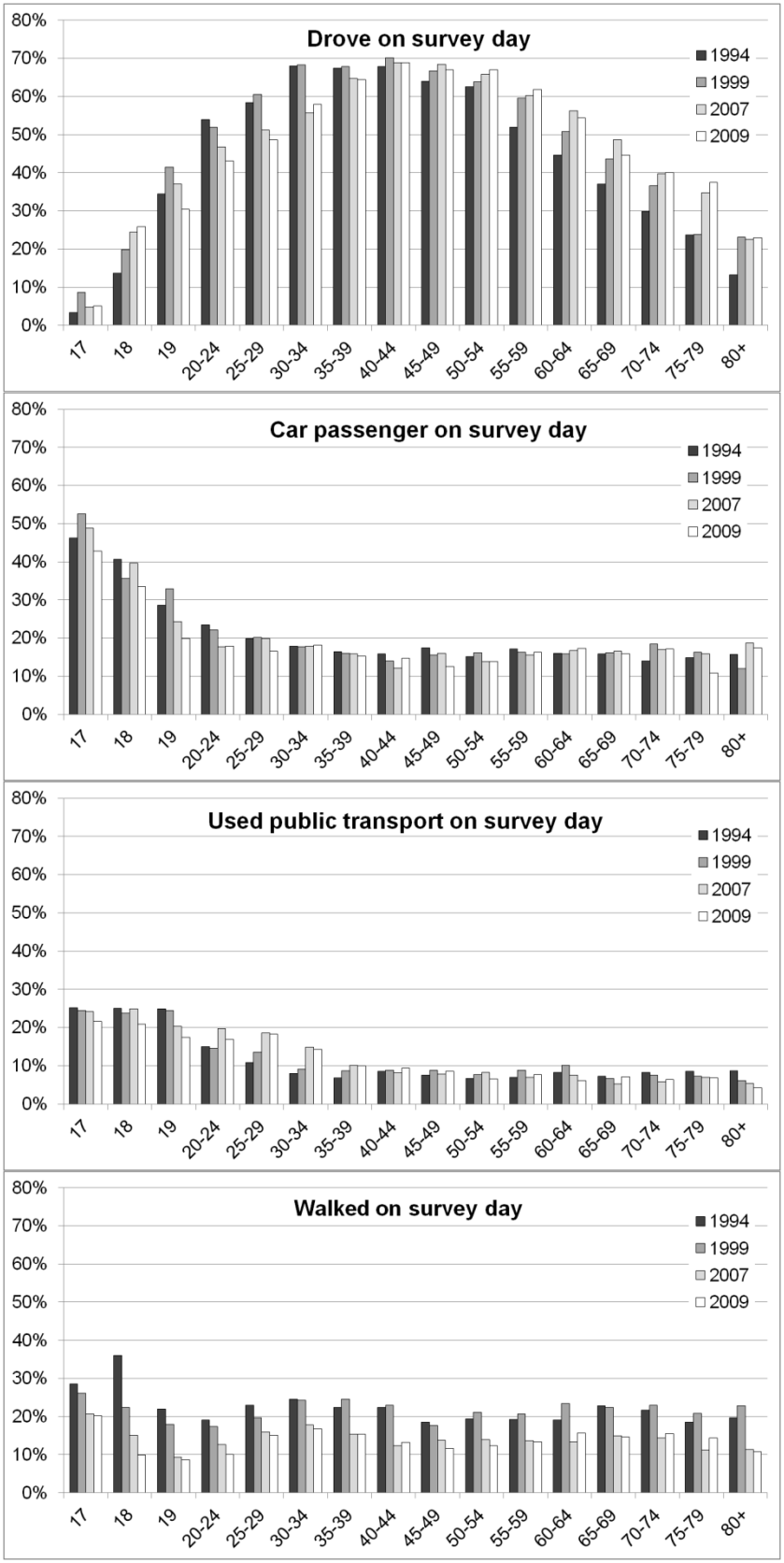

Figure 3: Mode use on day of travel survey by age, Victoria, 1994 to 2009

Note: minimum age of unsupervised driving in Victoria is 18. Source: Author's analysis of VATS and VISTA travel surveys (The Transport Research Centre 2001; Department of Transport 2009).

Several surveys have found that being able to 'get around without driving' is a common reason given for not having a licence (Berg 2001; Noble 2005; Williams 2011). Indirect research has examined which modes are being used instead. In the U.S. between 2001 and 2009, young people increased cycling by 24%, walking by 16% and public transport trips by 40%. In Sydney, between 1991 and 2008 young people increased their travel as a car passenger but did not increase public transport, walking or cycling in that time (Raimond and Milthorpe 2010). An analysis of household travel surveys in Victoria, Australia found that the percent of people aged 17 to 34 driving on the day of the survey decreased significantly whereas car passenger trips dropped for those under 20 (see Figure 3). Public transport use decreased for those under 20 but increased for those aged 21 to 40. Walking decreased for all age groups across the survey period.

Accessible and inner-urban areas facilitate living without a car and several researchers have examined the relationship between household location and youth licensing. In Australia and the United States, residential building approvals in inner-city, accessible areas is rapidly increasing (Environmental Protection Agency 2010; Raimond and Milthorpe 2010). Young adults, especially those without children, are a major market for this trend, preferring to live in mixed-use and walkable 'smart growth' suburbs or inner cities (Belden Russonello & Stewart 2011; Lachman and Brett 2011; Davis et al. 2012).

Young people living in inner and accessible areas are less likely to have a driving licence compared to living in outer-urban or rural areas (Noble 2005; McDonald and Trowbridge 2009; Raimond and Milthorpe 2010; Licaj et al. 2012), although it is important to note that in the UK licensing is also decreasing in small-town and rural areas (Noble 2005). The direction of causality is unclear – young adults who are attracted to inner-city living may choose not to get a licence, or young adults who don't want a licence end up living in inner-city areas. It is likely that the causality works both ways.

Graduated driver licensing schemes

Since the 1990s, many developed nations have introduced graduated driver licensing (GDL) which introduces requirements for learner drivers and 'provisional' drivers before the transition to a full driving licence (the UK is a notable exception to this). Although the schemes vary between countries (and between states within countries), common characteristics include increasing the minimum age for a permit, mandatory driving lessons, stricter theory and practical testing, minimum supervised driving hours, curfews, maximum speed or engine size restrictions, blood alcohol restrictions, mobile phone restrictions or restrictions on the number of non-relative passengers (Preusser and Tison 2007; Senserrick 2009). In some cases some of these restrictions are waived once people reach a certain age (Senserrick 2009).

The purpose of these restrictions is to improve road safety and numerous evaluations have suggested that GDL achieves this goal (Preusser and Tison 2007). However another possible consequence of the increased restrictions is to discourage some young adults from dealing with the increased hassle of licensing. Raimond and Millthorpe (2010) have found that an increasing number of young people are not converting a learner's permit to a provisional licence, and common reasons for not having a licence among American teenagers included 'licensing requirements a hassle' and 'parents too busy to supervise [driving]' (Williams 2011). The requirement for a minimum number of supervised driving hours (20 to 60 hours in American states and up to 120 hours in some Australian states) may be particularly off-putting, especially for young adults without access to parental cars. The presence of household vehicles is already one of the strongest predictors of youth licensing (Licaj et al. 2012; Delbosc and Currie in press).

However other evidence suggests that GDL has only a minor impact on overall licensing rates. In Australia, licensing rates began to drop before GDL was introduced and reductions identified in the US appear to 'rebound' quickly (Zhu et al. 2009). Furthermore, the United Kingdom has no graduated licensing – learner drivers can become full drivers as long as they pass a theory test and a practical driving test (Directgov 2012) – yet there, too, youth licensing rates are declining. It may be that GDL is not onerous enough to keep young adults away from a driver licence if they really need one, yet difficult enough to provide one more reason not to get one if it is not needed.

Attitudinal influences

In addition to demographic and structural changes, attitudes may play a role in reducing the attractiveness of the car as a mode of transport. Some researchers have suggested that environmental attitudes may be discouraging young adults from driving cars. A study commissioned by the car-sharing company Zipcar found that almost half of young adults agreed with the statement 'I want to protect the environment, so I drive less' (KRC Research 2010), and a Swedish longitudinal survey did find a slight increase in the number of young people citing environmental reasons as a reason not to get a licence (Forward et al. 2010).

However other research casts doubt on whether young people are more environmentally aware than previous generations as well as whether these attitudes have an impact on behaviour. A large-scale survey in the UK found that people aged 18 to 24 were the least likely of any age group to recycle, cut down on energy and water use, or say they cut down on car use to save the environment (Department for Environment Food and Rural Affairs 2002). A qualitative study in Australia found that environmental issues were not top-of-mind for young people and many downplayed any possible impact their travel could have on the environment (Delbosc and Currie 2012). These studies suggest that environmental attitudes are unlikely to be a major contributor to these trends.

Cars have long been seen as a symbol of freedom, independence and social status (Stokes and Hallett 1992; Steg 2005), and young adults who hold these views are more likely to have a licence (Berg 2001). But there is some suggestion that the social status of the car may be waning for younger generations. Qualitative research conducted in Australia suggests that the car has become a symbol of adult responsibility rather than aspirational status (Delbosc and Currie 2012). In Europe and North America, some young adults are prioritising other pursuits over getting a car licence; being 'too busy' to get a licence has been cited in several studies (Berg 2001; Noble 2005; Williams 2011). However this trend is by no means clear; a study in the Netherlands found that young people were just as likely as their parents to believe that a car gives them prestige (Steg 2005).

If the car is losing its place as a major interest and status symbol, it is possible that its position is being displaced by technology and e-communications. A survey in Japan found that 27% of people aged 40-59 listed cars as an interest, ranking 7th (just ahead of computers); in contrast, this dropped to 23% of those aged 18-24, ranking 17th behind computers, portable music players, anime, video games and TV. The following section will explore the impact of e-communications and car licensing more specifically.

The role of e-communication

There is certainly no doubt that young adults spend considerable time and money on computers, mobile phones and the internet. Figure 4 demonstrates the different household expenditure patterns for selected communication equipment in Australia. Young adult households spend a far greater proportion of their income on mobile phone service than other household ages and slightly higher amounts on computers and internet charges (Australian Bureau of Statistics 2011).

Because of these differences, much of the media speculation about the cause of licensing declines leaps to the assumption that electronic communication is reducing the need for young people to travel, with conclusions such as 'today Facebook, Twitter and text messaging allow teenagers and 20-somethings to connect without wheels' (Chozick 2012, p. 1).

This effect is supported by a survey by Zipcar that found that 50% of young people say they sometimes spend time with friends online instead of in person, and an analysis by Sivak and Schoettle (2011) that found a relationship between a country's internet penetration rate and youth licensing. Up to 10% of American teenagers said they didn't have a licence because e-communications keep them in touch with friends, although no respondents cited this as their primary reason (Williams 2011).

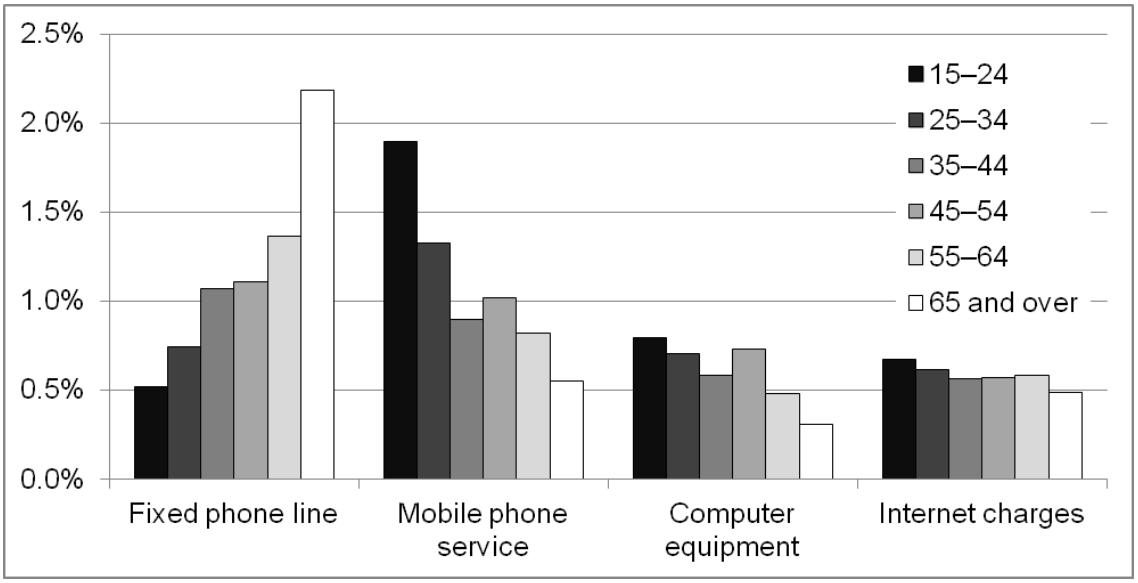

Figure 4: Australian household expenditure by age of household reference person, 2009/10

Note: Shown as percentages of total weekly expenditure. Young adults living in parental home are not included. Source: (Australian Bureau of Statistics 2011).

However other research casts these conclusions into doubt. Qualitative research in Australia suggests that e-communciation supplements face-to-face contact but cannot replace it (Delbosc and Currie 2012). An analysis of social networks in the Netherlands found that the more frequently people contacted others by telephone, e-mail or texting, the more frequently they maintained face-to-face contact as well (van den Berg et al. 2009).

Furthermore, these studies tend to suffer from the flawed assumption that replacing the need to *travel* equates with reducing the need to *drive.* If e-communications reduce the need for face-to-face contact (which does not appear to be the case), this should reduce all travel, not just car trips.

However there is at least one other way that electronic communications could be indirectly favouring public transport over the car: e-communication facilitates a lifestyle based around public transport travel better than car travel (Davis et al. 2012). While travelling on a train or bus, young adults can maintain constant contact through phone calls, email, texting, or updating their status on social media websites. Furthermore, e-communications are making public transport travel easier as more transit systems provide real-time information and network updates through websites and mobile apps. In contrast, most countries and states

ban the use of mobile phones or texting whilst driving, cutting off young people from communication while driving. Even so, many young drivers want touch-screen interfaces and Smartphone applications available in new cars, extending the reach of e-communication even within the automobile (Deloitte 2012).

CONCLUSIONS

Research into the downward trend in youth licensing is still emerging and much of the work is preliminary or indirect. There are likely to be multiple interacting factors behind this trend and the combination of factors will vary between countries and even within cities. However, some initial conclusions can be drawn from this review.

Based on the evidence documented so far, changes in life stage and household living arrangements demonstrate the clearest and most consistent impact on changes in youth licensing. Many nations have documented a decline in youth employment, an increase in attending educational institution, a delay in the age of marriage and a trend toward young people living at home for longer (Mitchell 2006; Cobb-Clark 2008; Settlersten and Ray 2010; Australian Bureau of Statistics 2011; Office for National Statistics 2011; Australian Bureau of Statistics 2012; Australian Bureau of Statistics 2012; Office for National Statistics 2012; Taylor et al. 2012). So far three studies have directly linked these factors to a reduction in licence-holding; one through a simple comparative survey (Noble 2005) and two through regression modelling (Licaj et al. 2012; Delbosc and Currie in press).

These changes are likely to be linked to the second set of potential explanations: changes in the cost of motoring and youth income. However the evidence of economic changes is not as clear or as consistent. Although in some instances certain motoring costs have increased, such as the rapid increase in insurance premiums for young drivers in the UK (Noble 2005), or the general increase in petrol prices (Davis et al. 2012) other motoring costs such as car purchase is decreasing (Noble 2005). Even the impact of economic recessions is unclear, as driving continued to decrease in Sweden after the end of a 1990s recession (Berg 2001) and driving began to decrease before the global financial crisis (Newman and Kenworthy 2011; Davis et al. 2012). It is likely that the trend toward delaying full-time work is reducing the disposable income of young people and that other costs (such as housing) are competing against transport costs; however more research is needed to better understand these complex influences.

The trend in decreased licensing appears to be accompanied by changes in mode use and household location for young adults. Which mode used varies by nation and city; it will likely be sensitive to the nature of the local transport system. There are also clear trends toward increased residential development in inner cities, which should support lifestyles without a car (e.g. Environmental Protection Agency 2010; Raimond and Milthorpe 2010). However it is unclear which is the cause and which is the consequence: do young people prefer to use transit and live in accessible areas, so they choose not to get a licence? Or do they choose not to get a licence and then realise that means they must use transit and live in accessible areas? Further research is needed in this area; however, this is also an area where policy and planning can most directly impact youth licensing outcomes. If society chooses to encourage this trend, improvements to the transport system and land change use should be targeted to facilitate this choice.

The introduction of graduated driver licensing (GDL) shows surprisingly little effect on youth licensing rates, although it has been proposed by many as a possible cause. Licensing rates began to drop in Australia before the introduction of GDL (Raimond and Milthorpe 2010) and licensing has been dropping in the UK without the introduction of GDL (Directgov

2012). Further research in this area is needed, especially on the potential impact of supervised driving hours.

The impact of attitudes and the role of e-communications are still emerging areas. The study of attitudes is hindered by a lack of longitudinal data; for example to the author's knowledge there is no consistent longitudinal record of the status role of the car over time. The role of e-communications is complex and constantly evolving, requiring a great deal of research before clear conclusions can be drawn.

It must be remembered that the majority of young adults have a licence and buy a car; most of them move out in their mid-20s and many will move to the suburbs and start families before they are 30. But a growing minority are delaying or forgoing a driving licence, either by choice or due to circumstances. The more that is known about the trend toward reduced youth licensing, the better planners and policy-makers can respond to the mobility needs of future generations.

References

Australian Bureau of Statistics (2000). 1998-99 Household Expenditure Survey, Australia. **Report 6530.0**.

Australian Bureau of Statistics (2009). Home and away: the living arrangements of young people. Australian Social Trends. **Report 4102.0**.

Australian Bureau of Statistics (2011). 2009-10 Household expenditure survey, Australia. **Report 6530.0**.

Australian Bureau of Statistics (2011). "Census table builder."

Australian Bureau of Statistics (2011). Education and Work, Australia (1991-2011). **Report 6227.0**.

Australian Bureau of Statistics (2011). Persons in greater capital city statistical areas.

Australian Bureau of Statistics (2011). Population by age and sex. **Report 3235.0**.

Australian Bureau of Statistics (2012). Australian social trends 2012: Love me do, Commonwealth of Australia. **Report 4102.0**.

Australian Bureau of Statistics (2012). Labour force participation, Australia.

Belden Russonello & Stewart (2011). The 2011 Community Preference Survey: What Americans are looking for when deciding where to live. Washington DC, National Association of Realtors.

Berg, H.-Y. (2001). Understanding subgroups of novice drivers: a basis for increased safety and health, Linköping University.

Bureau of Labor Statistics. (2011). "School's out." Spotlight on statistics Retrieved 10 October 2012, from http://www.bls.gov/spotlight/2011/schools_out/.

Chamon, M., P. Mauro and Y. Okawa (2008). "Mass car ownership in the emerging market giants." Economic Policy **23**(54): 243-296.

Chozick, A. (2012). As young lose interest in cars, G.M. turns to MTV for help. New York Times. New York City.

Cobb-Clark, D. A. (2008). "Leaving home: What economics has to say about the living arrangements of young Australians." Australian Economic Review **41**(2): 160-176.

Davis, B., T. Dutzik and P. Baxandall (2012). Transportation and the new generation: why young people are driving less and what it means for transportation policy, Frontier Group.

Delbosc, A. and G. Currie (2012). Using online discussion forums to study attitudes toward cars and transit among young people in Victoria. 35th Australasian Transport Research Forum. Perth, Australia.

Delbosc, A. and G. Currie (in press). Are changed living arrangements influencing youth driver licence decline? Transportation Research Board 92nd Annual Meeting. Washington, DC.

Deloitte (2012). Fourth annual Gen Y automotive survey.
Department for Environment Food and Rural Affairs (2002). Survey of public attitudes to quality of life and the environment - 2001. London.
Department of Transport (2009). Victorian integrated survey of travel and activity (VISTA) 2007.
Directgov. (2012). "Learners and new drivers and riders." Retrieved 4 October 2012, from http://www.direct.gov.uk/en/Motoring/LearnerAndNewDrivers/index.htm.
Environmental Protection Agency (2010). Residential construction trends in America's metropolitan regions, Development, Community and Environment Devision.
Forward, S., A. Åretun, I. Engström, S. Nolén and J. Börjesson (2010). Young people's attitudes towards acquiring a driving licence 2002-2009 [Swedish], VTI.
Kalmbach, R., W. Bernhart, P. G. Kleimann and M. Hoffman (2011). Automotive landscape 2025: opportunities and challenges ahead, Roland Berger.
KRC Research (2010). Millennials & driving; A survey commissioned by Zipcar.
Kuhnimhof, T., R. Buehler and J. Dargay (2011). "A new generation: travel trends for young Germans and Britons." Transportation Research Record **2230**: 58-67.
Kuhnimhof, T., R. Buehler, M. Wirtz and D. Kalinowska (2012). "Travel trends among young adults in Germany: Increasing multimodality and declining car use for men." Journal of Transport Geography **24**: 443-450.
Lachman, M. L. and D. L. Brett (2011). Generation Y: America's new housing wave. Washington, DC, Urban Land Institute.
Le Vine, S. E., P. M. Jones and J. W. Polak (2009). Has the historical growth in car use come to an end in Great Britain? 37th European Transport Conference. Leeuwenhorst, Netherlands.
Licaj, I., M. Haddak, P. Pochet and M. Chiron (2012). "Individual and contextual socioeconomic disadvantages and car driving between 16 and 24 years of age: a multilevel study in the Rhône Département (France)." Journal of Transport Geography **22**(0): 19-27.
McDonald, N. and M. Trowbridge (2009). "Does the built environment affect when American teens become drivers? Evidence from the 2001 National Household Travel Survey." Journal of Safety Research **40**: 177-183.
Mitchell, B. A. (2006). "The boomerang age from childhood to adulthood: emergent trends and issues for aging families." Canadian Studies in Population **33**(2): 155-178.
Newman, P. and J. Kenworthy (2011). "'Peak car use': understanding the demise of automobile dependence." World Transport Policy and Practice **17**(2): 31-42.
Noble, B. (2005). Why are some young people choosing not to drive? European Transport Conference. Strasbourg, France.
Office for National Statistics (2011). Young people in the labour market - 2011. London.
Office for National Statistics (2012). Young adults living with parents in the UK - 2011. London.
Preusser, D. F. and J. Tison (2007). "GDL then and now." Journal of Safety Research **38**: 159-163.
Puentes, R. and A. Tomer (2008). The road ... less traveled: an analysis of vehicle miles traveled trends in the U.S. Metropolitan Infrastructure Initiatives Series. Washington D.C., Brookings Institution.
Raimond, T. and F. Milthorpe (2010). Why are young people driving less? Trends in licence-holding and traevl behaviour. Australasian Transport Research Forum. Canberra, Australia.
Ruud, A. and S. Nordbakke (2005). Decreasing driving licence rates among young people - consequences for local public transport. European Transport Conference. Strasbourg, France.
Senserrick, T. (2009). "Australian graduated driver licensing systems." Journal of the Australasian College of Road Safety **20**(1): 20-28.

Settlersten, R. A. J. and B. Ray (2010). "What's going on with young people today? the long and twisting path to adulthood." The Future of Children: Transition to Adulthood **20**(1).

Sivak, M. and B. Schoettle (2011). Recent changes in the age composition of drivers in 15 countries. Ann Arbor, University of Michigan Transportation Research Institute. **Report No. UMTRI-2011-43**.

Sivak, M. and B. Schoettle (2011). "Recent changes in the age composition of U.S. drivers: implications for the extent, safety, and environmental consequences of personal transportation." Traffic Injury Prevention **12**: 588-592.

Sivak, M. and B. Schoettle (2012). "Update: percentage of young persons with a driver's licence continues to drop." Traffic Injury Prevention **13**: 341.

Steg, L. (2005). "Car use: lust and must. Instrumental, symbolic and affective motives for car use." Transportation Research Part A **39**: 147-162.

Stokes, G. (2012). Has car use per person peaked? age, gender and car use. Transport Statistics User Group Seminar. London.

Stokes, G. and S. Hallett (1992). "The role of advertising and the car." Transport Reviews **12**(2): 171-183.

Taylor, P., K. Parker, R. Kochhar, R. Fry, C. Funk, E. Patten and S. Motel (2012). Young, underemployed and optimistic: coming of age, slowly, in a tough economy, Pew Research Center.

The Transport Research Centre (2001). User Manual Volume 2 Coding Frame: A companion document to the VATS94-VATS99 databases. Melbourne, RMIT University.

van den Berg, P., T. A. Arentze and H. J. P. Timmermans (2009). "Size and composition of ego-centered social networks and their effect on geographic distance and contact frequency." Transportation Research Record **2135**: 1-9.

Williams, A. F. (2011). "Teenagers' licensing decisions and their views of licensing policies: A national survey." Traffic Injury Prevention **12**(4): 312-319.

Zhu, M., H. Chu and G. Li (2009). "Effects of graduated driver licensing on licensure and traffic injury rates in Upstate New York." Accident Analysis and Prevention **41**: 531-535.

Zumkeller, D., B. Chlond and W. Manz (2004). "Infrastructure development in Germany under stagnating demand conditions: a new paradigm?" Transportation Research Record **1864**: 121-128.