Car crashes rank among the leading causes of death in the United States.

Timing of Driver's License Acquisition and Reasons for Delay among Young People in the United States, 2012

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Title

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About the Sponsor

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Abstract

Graduated driver licensing (GDL) systems are designed to protect new drivers by limiting their exposure to risk initially and gradually phasing in additional driving privileges as they gain experience. Although numerous studies have shown that GDL has significantly reduced the numbers of 16- and 17-year-old drivers involved, injured, and killed in motor vehicle crashes, the few studies of its effects on 18- and 19-year-olds have produced conflicting results. Some researchers suspect that because most states' GDL systems only apply to new drivers younger than 18, GDL might encourage young people to wait until age 18 to obtain a license to avoid the requirements and restrictions associated with GDL, resulting in older teenagers having less driving experience and higher crash risk than they would without GDL.

This study investigated the ages at which young people obtain driver's licenses, as well as reasons for delaying licensure among those who did not obtain a license before turning 18. A questionnaire was administered online to a representative sample of 1,039 young adults ages 18-20. The data were weighted to reflect the population of 18- to 20-year-olds in the United States.

Delay in licensure was found to be widespread: only 44 percent of respondents reported that they obtained a driver's license within one year of the minimum age for licensing in their state, and only 54 percent reported that they obtained a license before turning 18. Large social and economic disparities in licensing rates and in the timing of licensure were identified. Among young adults who lived in households with annual incomes of $60,000 or more, 60 percent were licensed within one year of their state's minimum age for licensure and 72 percent were licensed before age 18. In contrast, among young adults who lived in households with annual incomes of less than $20,000, only 16 percent were licensed within one year of their state's minimum age and only 25 percent were licensed before age 18. Respondents who described themselves as black or as Hispanic were significantly less likely than non-Hispanic whites to have been licensed by any given age; this was observed even after controlling for household income.

There was little evidence that GDL was itself a major reason or motivator for delaying licensure. The most common self-reported reasons for delayed licensure were not having a car, being able to get around without driving, and costs associated with driving. Few cited difficulty associated with GDL requirements or undesirability of GDL restrictions. Furthermore, of 19- and 20-year-old respondents not licensed before age 18, fewer than one in three obtained a license before turning 19, suggesting that most were not simply waiting until age 18 to get a license merely to avoid the requirements and restrictions associated with GDL.

In conclusion, although there was little evidence that those who delayed licensure did so for the purpose of avoiding their state's GDL system, a substantial minority of all young people—and a majority of those who are black, Hispanic, or from low-income households—begin driving without the protection that GDL systems are designed to provide. Given the large proportion of new drivers who are 18 years old or older, further research is needed to investigate their levels of safety or risk, to evaluate the potential impacts of extending GDL systems to new drivers aged 18 and older, and to explore other ways to address the needs of older novice drivers.

Introduction

Motor vehicle crashes are the leading cause of death for children, teenagers, and young adults in the United States (Subramanian, 2012). Graduated driver licensing (GDL) systems, first introduced in the United States in 1996, are designed to protect young novice drivers by restricting exposure to risk initially and then gradually phasing in increased privileges as the driver gains experience (Williams, Tefft, & Grabowski, 2012). While numerous studies have found that strong GDL programs are associated with lower fatal crash involvement rates for 16- and 17-year-olds (Zhu *et al.*, 2012), results of the few studies investigating the effects of GDL on older teens have been mixed. Some researchers have hypothesized that because most states' GDL requirements and restrictions only apply to new drivers younger than 18, some young people might wait until they turn 18 to apply for a license, to avoid the requirements and restrictions associated with GDL. In this scenario, new drivers who delayed licensure until age 18 to avoid GDL would have less driving experience and thus higher crash risk than they would have had at the same age without GDL (Masten, Foss, & Marshall, 2011).

There is little data addressing factors that influence parents and their sons and daughters in deciding when to obtain a driver's license. The traditional view has been that teenagers want to get licensed as soon as possible, that is, get a learner's permit as soon as they reach the eligible age, and take the driving test as soon as they have satisfied minimum learner requirements (Preusser, 1996). In reality, that does not routinely happen. For example, a study conducted in 1983 in five states found that only a small minority got their learner's permit in the first month in which they were eligible, and most did not obtain licenses as soon as they were eligible to do so. In upstate New York, where the minimum age to obtain a license was 16, less than 40 percent obtained a license before they turned 17 (Williams, Lund, & Preusser, 1985). In 1990, several years before any state in the United States had enacted a GDL system, a national survey of self-reported travel behaviors found that only 41 percent of 16-year-olds, 70 percent of 17-year-olds, and 77 percent of 18-year-olds had a driver's license (Federal Highway Administration, 1991).

The current popular belief is that a greater proportion of young people delay licensure now than in the past. Although the national licensing data available from the Federal Highway Administration appear to show a downtrend in teen licensing rates (Sivak & Schoettle, 2012; 2012a), these data have been shown to contain substantial errors in the numbers of licensed teenage drivers that they report and thus are unusable for monitoring trends (Ferguson, Teoh, & McCartt, 2007; Foss, 2013). However, periodic national surveys of high school seniors show a downward trend in licensing rates among this group: 85 percent reported having a licensed in 1996 but only 73 percent reported having a license in 2010 (Shults & Williams, 2013).

Several speculations have been offered regarding the reasons why the licensure rates of young people could be declining. One possible explanation is that the driving patterns of young people are more affected than are those of the overall driving population by economic factors. One study found that the effects of gas prices and unemployment were significantly associated with the number of teen drivers involved in fatal crashes, even after accounting for the contributions of GDL, alcohol laws, and other factors (Morrissey & Grabowski, 2010), suggesting effects of these factors on the proportion of teens who are licensed, the amount

that licensed teens drive, or both. It has also been conjectured that some teens may wait until age 18 to get a license in order to avoid the requirements and restrictions of GDL systems (Masten, Foss, & Marshall, 2011). Another possible reason why some young people might delay licensure until age 18 is to avoid having to take a driver education course. Driver education is required for licensure prior to age 18 in about half of all states, and in many states it is available primarily or exclusively through commercial driving schools, which can be quite expensive (Thomas, Blomberg, & Fisher, 2012). In addition, some limited data suggest that driving, and thus licensure, has become less useful to young people due to their ability to connect with their friends via the Internet. For example, one recent study of Internet access and driver licensing rates in 15 countries reported that the licensing rates of young people tended to be lower in countries in which a larger proportion of the population had access to the Internet (Sivak & Schoettle, 2012).

Changes in the timing of licensure could have implications for safety; however, those implications are presently unclear. Some studies suggest that older novice drivers have lower crash rates than equally inexperienced younger novices (McCartt et al., 2009; Maycock, Lockwood, & Lester, 1991). However, novices ages 18 and older miss the opportunity to begin driving under the relatively safe conditions of GDL and thus may have greater risk than if they had begun driving and accumulating experience at an earlier age under a GDL system. Some studies have reported increases in fatal crash involvement rates for 18- and 19-year-olds in states with strong GDL systems (Masten, Foss, & Marshall, 2011; Fell, et al., 2012); however, others have found decreases in fatal crash involvement rates at these ages (McCartt et al., 2010; Morrisey & Grabowski, 2010); and still other studies have found the crash rates of 18- and 19-year-olds are unrelated to GDL (Zhu et al., 2013). Understanding the extent of and reasons for delay in licensure among young people may shed light on the conflicting evidence currently available on the association of GDL and fatal crash rates 18- and 19-year-old drivers.

Many state GDL systems have the effect of increasing the minimum age for licensure, for example by requiring a new driver to hold a learner permit for a certain length of time and/or accumulate a certain amount of supervised practice prior to applying for a license. However, not much is known about the relationship between GDL requirements and voluntarily waiting even longer to apply for a license (e.g., delaying licensure for the specific purpose of avoiding the GDL requirements). In a study conducted in 2006, parents of 16- and 17-year-olds in Minnesota, North Carolina, and Rhode Island were interviewed while their teens were taking the driving test. In that study, delayed permit acquisition was defined as obtaining a permit more than two months after they reached the minimum age; delayed licensing was defined as waiting more than two months after the minimum permit holding period to take the driving test. By this definition, 61 percent of Minnesota teens delayed permit acquisition, as did 46 percent in North Carolina and 23 percent in Rhode Island (McCartt, Hellinga, & Haire, 2007). The most frequent reasons asserted for delay in obtaining a permit were to fulfill a driver education requirement, the teenager being immature or not ready, and school activities/time constraints. For delayed licensure, the most common reason provided by parents in all states was that the teen needed more practice driving. In North Carolina, 15 percent mentioned the high cost of insurance, but this was basically the only cost issue raised by a substantial proportion of teens. In an online national survey of 15- to 18-year-olds conducted in late 2010, 22 percent of the 18-year-old respondents had not yet obtained a learner's permit. When they were presented with a list of possible reasons and asked to indicate which, if any, were a factor, 55 percent

indicated that no car was available, 30 percent said that driving costs too much, 24 percent indicated that licensing requirements were a hassle, 13 percent indicated they did not need a car to connect with friends, and 6 percent said that Facebook and texting and other electronic communication devices kept them in touch with friends (Williams, 2012).

In the study of Williams (2012), most of the 15- to 18-year-olds were just starting the licensing process or were in the midst of it, so the full distribution of the timing of licensure and reasons for delay could not be investigated fully. The main objective of the current study was to address this gap by surveying a representative sample of young adults ages 18–20, all of whom were old enough to have obtained a license that allowed independent driving under at least some circumstances (i.e., at least an intermediate/provisional license) 12 months or more prior to the survey in any state in the United States.

Another objective of the study was to examine views of young people about GDL policies. Assuming than many in this age group will have gone through the GDL process, they will have a fresh and relevant perspective on the various possibilities for guiding young beginners to full-privilege driving. It has been established that states with the most comprehensive licensing systems have achieved the greatest reductions in crash rates of 16- and 17-year-olds (McCartt et al., 2010; Fell et al., 2011), but many states have relatively weak systems. The views of recent participants in the licensing process and others in that age cohort can provide insight about attitudes toward different policy options.

Methods

Sample

A sample of respondents ages 18–20 was recruited from GfK's KnowledgePanel® (Knowledge Networks, 2012) to complete an online questionnaire. KnowledgePanel® consists of members of households recruited using standard probability-based random digit dial (RDD) and address-based survey sampling methods. The sampling frame includes all United States households reachable by telephone or postal mail. Households that lack Internet access or Internet-capable computer are provided with a netbook computer and Internet connection at no cost. Individuals whose households were not sampled by GfK cannot volunteer to join the panel. Because each individual respondent's probability of being invited to join the panel and probability of selection for a particular survey are known, survey statistics can be weighted to reflect the entire population of the United States.

KnowledgePanel® members ages 18–20 were invited to complete an online questionnaire between June 27 and July 12, 2012. The sample was stratified to obtain approximately equal numbers of respondents ages 18, 19, and 20. Adult KnowledgePanel® members who had adult children ages 18–20 were also contacted for the purpose of recruiting their adult children to increase sample size. The questionnaire was made available in English and in Spanish; respondents were able to complete the survey in whichever language they preferred.

Responses were obtained from 642 of 1,464 KnowledgePanel® members aged 18-20 and from 409 of 2,082 18- to 20-year-olds recruited via parents who were members of KnowledgePanel®, yielding 1,051 total responses and an overall within-survey response

rate of 30 percent. After survey completion, 12 respondents were deemed ineligible on the basis of their date of birth (age < 18 years or age 21+ years), yielding 1,039 eligible respondents.[1]

Questionnaire

Licensure Status: The questionnaire asked respondents to indicate whether they had a driver's license, a learner's permit, or neither. Respondents who indicated that they had a license were asked whether the license allowed them to drive without another adult in the vehicle, to confirm that the respondent held a provisional or full license as opposed to a learner's permit. Because the focus of the study was the timing of initial licensure, respondents who reported that they had been licensed but that their license had been suspended or revoked (n=6) were treated as licensed.

Timing of Licensure: Licensed respondents were asked to report the age in years and months at which they first obtained a license that allowed them to drive without another adult in the vehicle, and the state in which it was issued. If the respondent did not remember or reported an implausible age (e.g., younger than the minimum age for licensure in the respondent's state), the respondent was asked to place it into one of four categories (less than 6 months, 6 months – 1 year, 1 – 2 years, or more than 2 years from the minimum age for licensure in the respondent's state), and this was used to calculate the range of ages at which the respondent could have been licensed. Respondents who reported that they held a learner permit at the time of the survey and respondents who reported that they obtained a license more than six months after their state's minimum age for licensure were asked to report the age at which they obtained a learner permit.

Reasons for Delaying Licensure: Respondents who reported having obtained their driver's license six months or longer after the minimum age in their state and those who had not yet obtained their license were shown a list of several possible reasons why a young person might delay obtaining their license or permit, and were asked to indicate whether each was a "Very important reason," "Somewhat important reason," "Minor reason," or "Not a reason" why they did not obtain their license sooner. Respondents were also given an opportunity to state in their own words why they delayed obtaining their license or permit.

Opinions about Driver Licensing Policies: Respondents also were asked several questions regarding their opinions about various licensing policies for new drivers. Specific items included whether they supported or opposed restrictions for newly-licensed young drivers on night driving and carrying passengers, as well as their opinions regarding the minimum age at which a learner permit should be available, the duration of the learner permit period, the number of hours of supervised driving practice that should be required, the age at which a new driver should be able to obtain a license to drive without another adult in the vehicle, the hours covered by night-time driving restrictions, and the number of passengers that a passenger restriction should allow.

[1] Three respondents were 20 years old on the date that the sample was drawn, but had turned 21 by the time they completed the questionnaire. Because the focus of the study was driver licensing, and these respondents would have become eligible to obtain their license in the same year as respondents who were one week younger (and still 20 years old), these respondents were deemed eligible and treated as 20 years old.

Analysis

The data were weighted to account for differences in probability of selection for recruitment into KnowledgePanel®, differences in probability of selection for this survey, and to align the characteristics of the respondents to those of the population of U.S. residents ages 18–20 nationwide with respect to age, sex, race and ethnicity, education, Census region, metropolitan area, and number of household members aged 18-20.

Binary variables were derived to indicate whether the respondent:

1. Obtained a driver's license within 12 months of the minimum age for licensure in his or her state.
2. Obtained a driver's license before age 18.
3. Obtained a learner's permit within 12 months of the minimum age for obtaining a permit in his or her state.
4. Obtained a learner's permit before age 18.

Whether the respondent obtained his or her learner's permit within 12 months of the state minimum age and by age 18 could not be determined in eight percent and seven percent of cases, respectively. Licensure within 12 months and by age 18 could not be determined in three percent and two percent of cases, respectively. Missing values of these variables were multiply-imputed (Rubin, 1987) using the method of chained equations (White, Royston, & Wood, 2011). Twenty independent imputations were performed. Variables included in the imputation model were respondent age, sex, Census region, household income, race and ethnicity, self-reported urbanicity of the place where the respondent lived when he or she was 16 years old, and the minimum age for licensure in the state where the respondent obtained his or her license or permit.

Multivariable logistic regression was used to examine the associations of each binary indicator variable for timing of licensure with each of the demographic variables after adjustment for the others. Marginal standardization was used to compute adjusted prevalence ratios from the logistic regression models (Localio, Margolis, & Berlin, 2007; Cummings, 2011). Separate models were estimated for each of the four main outcome variables.

All analyses were performed on weighted data using Stata statistical software, and took into account the variance associated with both the survey sampling method and the multiple imputation of missing values. Analyses of self-reported reasons for delay in obtaining a learner's permit or driver's license and analyses of attitudes toward licensing policies are descriptive only; no statistical tests were performed.

Results

The characteristics of the survey respondents are shown in Table 1. Seventy percent of respondents reported that at the time of the survey they had a license that allowed them to drive without another adult in the vehicle, 12 percent reported having a learner's permit, 1 percent reported having had a license or permit that had expired or had been suspended or revoked, and 17 percent reported having never had a license nor a learner's permit.

Table 1. Characteristics of respondents, survey of 1,039 young adults ages 18–20 conducted June 27 – July 12, 2012, weighted to reflect population of United States residents of same ages.

	Weighted N	Weighted %[a]
Age		
18 (n=329)	340.8	33
19 (n=359)	347.6	33
20 (n=351)	350.6	34
Sex		
Male (n=468)	510.8	49
Female (n=571)	528.2	51
Licensure status		
License (n=745)	729.0	70
Permit (n=115)	122.7	12
License suspended/revoked (n=6)	6.1	<1
Permit expired/suspended/revoked (n=12)	9.4	<1
Never obtained license or permit (n=161)	171.7	17
Place of residence at age 16[b]		
Out in the country (n=136)	133.2	13
Small town (n=212)	213.3	21
Medium-sized town (n=246)	246.4	24
Small city (n=224)	222.9	22
Large city (n=215)	217.5	21
Household income		
<$20,000 (n=200)	162.2	16
$20,000-$39,999 (n=230)	220.1	21
$40,000-$59,999 (n=159)	141.0	14
$60,000-$99,999 (n=233)	243.5	23
$100,000+ (n=217)	272.3	26
Race & Ethnicity		
Non-Hispanic white (n=632)	599.4	58
Non-Hispanic black (n=96)	133.2	13
Non-Hispanic other, including 2+ races (n=90)	85.0	8
Hispanic (n=221)	221.5	21

[a] Percents may not add to 100 due to rounding.
[b] Six respondents with missing data were excluded.

As expected, the proportion of respondents who were licensed increased with age: 65 percent of 18-year-olds, 70 percent of 19-year-olds, and 76 percent of 20-year-olds had obtained a license (Table 2). There was little variation by sex in the proportion of respondents licensed. The proportion of respondents who were licensed varied strongly by Census region: licensing rates were much higher in the Midwest (82%) than in the Northeast (64%), South (68%), or West (71%). The proportion of respondents who were licensed increased with increasing household income across all categories: only 48 percent of respondents who reported household incomes of less than $20,000 per year, and fully 88 percent of those who reported household incomes of $100,000 or more had obtained their license. The proportion of respondents who were licensed was substantially lower among those who self-identified as non-Hispanic black (55%) or Hispanic (57%) than among those who self-identified as non-Hispanic white (79%). Respondents who reported that they lived "out in the country" (i.e., in a rural location) when they were 16 years old were much more likely to have been licensed (79%) than respondents who lived in towns or cities (68-72%).

Timing of Licensure

Substantial delay in licensure was observed: only 44 percent of respondents reported that they obtained a driver's license within 12 months of the minimum age for licensing in their state, and only 54 percent reported that they obtained a license before their 18th birthday (Table 3). Only 51 percent obtained a learner permit within 12 months of the minimum age in their state, and 72 percent obtained a permit before their 18th birthday.

Examination of the factors associated with the timing of licensure revealed that the characteristic most strongly related to delay in licensure was household income: only 16 percent of respondents from households with annual incomes of less than $20,000 obtained a license within 12 months of the minimum age, and 25 percent obtained a license before age 18 (Table 3). For comparison, among respondents from households with annual incomes of $100,000 or more, 67 percent obtained a license within 12 months of the minimum age, and 79 percent did before age 18.

Respondent race and ethnicity was also significantly associated with the timing of licensure: the proportions of respondents licensed within 12 months of the minimum age in their state and before age 18 were much lower among respondents who described themselves as Hispanic (21% licensed within 12 months; 29% licensed before age 18) or as non-Hispanic black (24% licensed within 12 months; 37% licensed before age 18) than among those who described themselves as non-Hispanic white (56% licensed within 12 months; 67% licensed before age 18).

Respondents from the Midwest tended to obtain licenses sooner than respondents from other parts of the country: the proportion of respondents from the Midwest who were licensed before age 18 (68%) was much greater than the corresponding proportion among respondents from other parts of the country (50%).

Although males were slightly more likely than females to obtain a license within six months of their state's minimum age (33% vs. 28%, not shown), females were actually slightly more likely than males to obtain a license within 12 months of their state's

Table 2. Licensure status at time of survey in relation to demographic characteristics in a representative sample of young adults ages 18–20, United States, 2012.

	Licensure status[a]		
	Driver's license	**Learner's permit**	**Neither**
		Row %	
All (n=1,039)	71	13	17
Age			
18 (n=329)	65	18	17
19 (n=359)	70	13	16
20 (n=351)	76	7	16
Sex			
Male (n=468)	70	12	18
Female (n=571)	71	14	15
Census region			
Northeast (n=193)	64	13	22
Midwest (n=261)	82	12	6
South (n=316)	68	15	18
West (n=269)	71	10	20
Place of residence at age 16[b]			
Out in the country (n=136)	79	14	7
Small town (n=212)	68	17	15
Medium-sized town (n=246)	72	12	17
Small city (n=224)	71	11	18
Large city (n=215)	68	11	22
Household income			
<$20,000 (n=200)	48	22	31
$20,000 – $39,999 (n=230)	53	15	32
$40,000 – $59,999 (n=159)	71	16	13
$60,000 – $99,999 (n=233)	82	10	8
$100,000+ (n=217)	88	7	5
Race & ethnicity			
Non-Hispanic white (n=632)	79	10	11
Non-Hispanic black (n=96)	55	23	22
Non-Hispanic other, incl. 2+ races (n=90)	75	15	11
Hispanic (n=221)	57	14	29

Notes: Row percents may not add to 100 due to rounding.

a. Six respondents who reported that their drivers' license had been suspended or revoked were counted as licensed, and 12 respondents who reported that their learner's permit had expired or had been suspended or revoked were counted as having learner's permits, because the focus of the study was the timing of license and permit acquisition, not current licensure status.

b. Six respondents with missing data on of place of residence at age 16 were excluded.

Table 3. Timing of driver's license and learner's permit acquisition in relation to demographic characteristics in a representative sample of 18- to 20-year-olds, United States, 2012.

	Driver's License				Learner's Permit			
	Within 12 months of state minimum age		Before 18th birthday		Within 12 months of state minimum age		Before 18th birthday	
	Unadjusted %	adjusted Prevalence Ratio[a] (95% CI)	Unadjusted %	adjusted Prevalence Ratio[a] (95% CI)	Unadjusted %	adjusted Prevalence Ratio[a] (95% CI)	Unadjusted %	adjusted Prevalence Ratio[a] (95% CI)
All (n=1,039)	44		54		51		72	
Age								
18 (n=329)	45	1 [Reference]	56	1 [Reference]	52	1 [Reference]	78	1 [Reference]
19 (n=359)	42	1.01 (0.80–1.27)	52	0.95 (0.79–1.15)	49	0.97 (0.78–1.21)	67	0.85 (0.75–0.97)
20 (n=351)	45	1.09 (0.88–1.35)	53	1.02 (0.86–1.21)	54	1.09 (0.89–1.33)	72	0.95 (0.85–1.06)
Sex								
Male (n=468)	42	1 [Reference]	51	1 [Reference]	50	1 [Reference]	71	1 [Reference]
Female (n=571)	46	1.01 (0.84–1.21)	57	1.05 (0.91–1.22)	53	1.02 (0.87–1.19)	74	1.01 (0.91–1.11)
Census region								
Northeast (n=193)	48	1 [Reference]	50	1 [Reference]	55	1 [Reference]	65	1 [Reference]
Midwest (n=261)	56	1.21 (0.95–1.54)	68	1.48 (1.19–1.85)	60	1.14 (0.91–1.44)	86	1.44 (1.21–1.72)
South (n=316)	38	1.01 (0.77–1.32)	51	1.30 (1.03–1.63)	46	1.05 (0.82–1.35)	71	1.29 (1.07–1.55)
West (n=269)	39	0.98 (0.74–1.29)	49	1.23 (0.97–1.55)	49	1.09 (0.86–1.39)	67	1.22 (1.01–1.47)
Place of residence at age 16[b]								
Out in the country (n=136)	57	1 [Reference]	69	1 [Reference]	59	1 [Reference]	88	1 [Reference]
Small town (n=212)	42	0.87 (0.63–1.20)	50	0.82 (0.64–1.05)	55	1.08 (0.81–1.43)	67	0.81 (0.68–0.97)
Medium-sized town (n=246)	45	0.84 (0.62–1.15)	56	0.84 (0.66–1.07)	49	0.89 (0.67–1.19)	74	0.85 (0.72–0.99)
Small city (n=224)	47	0.97 (0.71–1.33)	54	0.89 (0.70–1.14)	53	1.04 (0.77–1.40)	70	0.83 (0.70–0.98)
Large city (n=215)	34	0.80 (0.56–1.14)	48	0.86 (0.67–1.11)	45	1.00 (0.74–1.35)	69	0.85 (0.73–0.99)
Household income								
<$20,000 (n=200)	16	0.28 (0.17–0.47)	25	0.37 (0.25–0.55)	27	0.41 (0.26–0.63)	48	0.54 (0.42–0.69)
$20,000 – $39,999 (n=230)	27	0.50 (0.36–0.71)	34	0.54 (0.41–0.70)	36	0.61 (0.46–0.81)	52	0.66 (0.55–0.78)
$40,000 – $59,999 (n=159)	44	0.72 (0.54–0.95)	52	0.68 (0.54–0.85)	50	0.72 (0.56–0.93)	80	0.87 (0.76–1.00)
$60,000 – $99,999 (n=233)	52	0.81 (0.65–1.01)	64	0.81 (0.68–0.96)	59	0.83 (0.68–1.01)	82	0.91 (0.81–1.02)
$100,000+ (n=217)	67	1 [Reference]	79	1 [Reference]	72	1 [Reference]	90	1 [Reference]
Race & ethnicity								
Non-Hispanic white (n=632)	56	1 [Reference]	67	1 [Reference]	65	1 [Reference]	82	1 [Reference]
Non-Hispanic black (n=96)	24	0.57 (0.36–0.90)	37	0.67 (0.48–0.93)	32	0.60 (0.40–0.89)	64	0.88 (0.74–1.05)
Non-Hispanic other, incl. 2+ races (n=90)	46	0.94 (0.69–1.28)	51	0.87 (0.67–1.13)	53	0.89 (0.66–1.20)	75	1.00 (0.87–1.16)
Hispanic (n=221)	21	0.57 (0.38–0.87)	29	0.60 (0.45–0.81)	27	0.53 (0.37–0.76)	49	0.77 (0.64–0.91)

Notes: Missing values for timing of licensure (n=23; 3% of weighted data) and permit (n=78; 7% of weighted data) were multiply-imputed.
a. Adjusted prevalence ratios were estimated using multivariable logistic regression followed by marginal standardization.
b. Six respondents with missing data on place of residence at age 16 were excluded.

minimum age and before age 18; however, neither even approached statistical significance after controlling for other factors.

Respondents who described their place of residence at the age of 16 as "out in the country" appeared much more likely than respondents from more urbanized areas to have obtained a license within 12 months and prior to their 18th birthday; however, differences were much smaller and were no longer statistically significant when associations with other demographic differences were controlled.

Relationships between demographic characteristics and the timing of obtaining a learner's permit were similar to those described previously for obtaining a driver's license (Table 3). Respondents from lower-income households were less likely to have obtained a permit within 12 months of the minimum age in their state and prior to their 18th birthday, compared with respondents from higher-income households. Respondents who self-identified as Hispanic or as non-Hispanic black were significantly less likely than respondents who self-identified as non-Hispanic white to have obtained a permit by any given point. Respondents from Midwestern states were much more likely to have obtained their permit prior to their 18th birthday compared to respondents from other parts of the country. Sex and urban vs. rural residence were not significantly associated with the timing of obtaining a learner's permit after relationships with other variables were controlled.

Reasons for Delay in Licensure

Table 4 shows possible reasons for delaying licensure that respondents rated as "very important" or "somewhat important" reasons why they did not obtain their license sooner, for those who did not obtain their license prior to their 18th birthday. The reasons most commonly rated as very or somewhat important were not having a car (44%), ability to get around without driving (39%), the cost of gasoline (36%), the cost of driving overall (36%), and "just didn't get around to it" (35%). Fewer than one in four respondents not licensed before age 18 cited reasons plausibly related to graduated driver licensing, such as that special requirements for younger new drivers made it more difficult to get a license sooner (23%) or that they did not want a license with special restrictions for young drivers (21%).

Among respondents who did not obtain a learner permit before their 18th birthday, 52 percent rated not having a car as a very or somewhat important reason, 45 percent rated their ability to get around without driving as a very or somewhat important reason, and 42 percent said they "just didn't get around to it." Those who did obtain a learner permit but not a driver's license prior to their 18th birthday were somewhat less likely to rate not having a car (33%), being able to get around without driving (31%) or just not getting around to it (25%) as very or somewhat important reasons. Those who did not obtain a learner permit before their 18th birthday were also more likely to cite avoiding getting a license with special restrictions for young drivers (24%) as a very or somewhat important reason for delaying licensure, compared to those who obtained a learner permit but not a driver's license prior to age 18 (14%). Similarly few (17%) cited the ability to connect with friends online via social media as an important reason for not getting their license sooner.

Respondents were also given the opportunity to state in their own words any additional reasons why they did not obtain their license sooner. The dominant theme among these

Table 4. Reasons for delaying licensure among respondents who did not obtain a license before age 18 in relation to learner permit status at age 18, from a representative sample of young adults ages 18–20, United States, 2012.

	Learner's permit before 18th birthday[a]		
	Yes (N=186)	**No (N=271)**	**All (N=458)**
	% who rated item as a "Very important reason" or "Somewhat important reason"		
Did not have a car	33	52	44
Could get around without driving	31	45	39
Gas was too expensive	35	37	36
Driving was too expensive	38	34	36
Just didn't get around to it	25	42	35
Could do what I wanted to do without driving	31	32	32
Was nervous about driving	24	34	30
Just not very interested in driving	27	30	29
Had to complete driver education course first	22	33	28
Getting a license was too expensive	27	26	26
Parents didn't have time to take me out to practice driving	21	28	25
Special requirements made it hard to get licensed at younger age	19	26	23
Too busy to spend time learning how to drive	18	23	21
Didn't want license with special restrictions that only applied to drivers under a certain age	14	24	21
Parents wouldn't let me get license sooner	24	17	20
To avoid having to take driver education	11	24	19
Could connect with friends online	15	19	17
Tried to obtain license sooner, but failed test	13	16	15
Took long time to get appointment for test	8	10	10

Notes: Missing values for timing of permit and licensure were imputed 20 times and averaged.
Raw number (weighted %) of values imputed: License before 18th birthday: 18 (2%); Permit before 18th birthday: 63 (7%).
a. Timing of permit was missing and could not be imputed for 1 driver.

open-ended responses was the expense of driving—particularly insurance costs, which were not specifically asked about in the questionnaire. Another theme was issues related to parents (e.g., parents' financial issues, parents wanting them to get more practice, willing to transport them, parents refused to allow licensure because of poor grades). Personal issues were also mentioned, e.g., medical conditions, being intimidated by driving, considering driving to be dangerous or stressful, and environmental concerns. Some respondents stressed that they did not need a license, in many cases citing easy access to public transportation. Two respondents said they were waiting until age 18 to avoid having to take driver education. No respondent specifically indicated they were waiting until 18 in order to avoid GDL requirements.

In additional analysis of 19- and 20-year-old respondents not licensed before age 18 (N=332), only 32 percent obtained their license before they turned 19. Of those who obtained a learner permit but not a driver's license before turning 18, 59 percent obtained their driver's license before turning 19. In contrast, only 18 percent of those who did not obtain their learner permit before turning 18 obtained their driver's license before turning 19. In addition, of those not licensed prior to their 18th birthday, those who rated avoiding getting a license with special restrictions for young drivers and/or the difficulty associated with special requirements for younger new drivers as very or somewhat important reasons for delaying licensure were virtually no more likely to get their license before turning 19 (32%) than those who did not (30%).

Opinions about Driver Licensing Policies

Table 5 shows the percentage of respondents who expressed support for a range of licensing-related policies for new drivers. When asked at what age a young person should be able to obtain a learner's permit, 62 percent selected a response of 16 or older (Table 5). Virtually all respondents (96%) indicated that they thought the minimum age for a new driver to obtain a license that allows driving without another licensed adult in the vehicle should be at least 16; 27 percent selected an age of 17 or 17 ½, and 31 percent selected an age of 18 or older. When asked at what age a new driver should be able to obtain a full-privilege driver's license with no special restrictions for new drivers, 87 percent selected an age of at least 17, including 61 percent who said 18 or older. Respondents who obtained their license at younger ages favored a younger minimum age for obtaining a permit and a license than did those who obtained their license at older ages or had not yet obtained a license. There were also large regional differences in opinions about the ages for obtaining a permit and a license. Compared to respondents from the West or South, respondents from the Northeast favored older ages and respondents from the Midwest favored younger ages.

When asked how long a new driver should have to hold a learner permit before being able to obtain a license that allows unsupervised driving, 86 percent of respondents favored requiring holding the learner permit for at least six months, including 46 percent who favored requiring holding the permit for 12 months or longer (median = 8 months). Opinions about the length of the learner period did not vary substantially with respect to any of the demographic characteristics examined other than region: respondents from the Midwest and South—who also favored a younger minimum age for obtaining learner permits—tended to favor a longer learner permit period than did respondents from the Northeast or the West.

Table 5. Support for various licensing policies for new drivers, representative sample of 18- to 20-year-olds, United States, 2012.

	% Favor
Learner permit: minimum age < 15	5
15 or 15 ½	33
16+	62
Initial license: minimum age <16	4
16 or 16 ½	38
17 or 17 ½	27
18+	31
Full license: minimum age <17	13
17 or 17 ½	26
18+	61
Learner permit period: < 6 months	14
6 months	36
7-11 months	5
12+ months	46
Supervised practice required: 0-12 hours	19
30-50 hours	39
60-90 hours	19
100+ hours	23
Restriction on teenage passengers other than family (in general)	77
0 Teenage passengers*	12
1 Teenage passenger*	44
2 Teenage passengers*	73
Night restriction (in general)	77
Beginning at 10 PM*	51
Beginning at 11 PM*	66
Beginning at Midnight*	87

* Respondents were asked to indicate specific number of passengers that should be allowed for passenger restriction and specific time that night restriction should begin, and were counted as favoring the option shown if their selection was equal to or more restrictive than the option shown. For example, a response indicating that the night restriction should begin at 11 PM was counted as favoring a night restriction that begins at 11 PM, and as favoring a night restriction that begins at midnight, but not favoring a night restriction that begins earlier than 11 PM.

Eighty-one percent of respondents favored requiring at least 30 hours of supervised driving practice during the learner period, including 23 percent who favored requiring 100 or more hours (median = 50 hours). This did not vary substantially with respect to any of the demographic characteristics examined.

When asked their opinion about restricting the number of teenage passengers that a new driver is allowed to carry in general, without specifying the number of passengers allowed, 77 percent of respondents expressed support. However, when asked specifically how many passengers should be allowed, only 12 percent said zero and an additional 32 percent said one. When asked about restrictions on nighttime driving for newly-licensed drivers in general, 77 percent expressed support. When asked what time the restriction should begin, 51 percent said 10 PM or earlier, an additional 15 percent said 10:30 or 11 PM, and another 21 percent said 11:30 PM or midnight.

When asked whether all new drivers, only new drivers under age 18, or no drivers should be required to get a license with special restrictions for new drivers prior to obtaining a full license, 28 percent supported requiring all new drivers regardless of age to first obtain a license with special restrictions for new drivers; 60 percent supported requiring all new drivers under age 18 to obtain a license with special restrictions. Only 12 percent indicated that not even a new driver under age 18 should be required to obtain a license with some restrictions prior to obtaining a full license.

Discussion

In a representative sample of young adults aged 18-20, fewer than half obtained a driver's license within a year of the minimum age for licensure in their state, and only slightly more than half obtained a driver's license before their 18th birthday. Most states' GDL systems only apply to new drivers younger than 18. If it is assumed that all young people will eventually obtain a license, this means that nearly half will obtain a license after turning 18 and thus without the protection that modern driver licensing systems are intended to provide for new drivers. Even if the proportion of respondents who had at least a learner's permit at the time of the survey is taken as a more conservative estimate of the proportion of this cohort who will ever obtain a license (i.e., some people may never drive), this implies that more than one in three young people who eventually become licensed will do so after turning 18 and thus outside of the GDL system.

Significant social and economic disparities were identified. Respondents who self-identified as black or Hispanic were significantly less likely to be licensed before age 18 compared with non-Hispanic whites. Lower household income was independently associated with a lower rate of licensure before age 18 across the entire range of household incomes examined. Only 32 percent of respondents who were black or Hispanic, 25 percent of respondents who were from households with incomes of less than $20,000 per year, and 17 percent of those who were both black or Hispanic and from low-income households were licensed before age 18; these groups made up 63 percent of all of those who were not licensed before age 18. These results suggest that most minority and low-income young people do not experience the protective learning environment of GDL and thus do not benefit from it.

Historically, it was never the case that most young people obtained their license as soon as they reached their state's minimum age. In a study of young drivers in upstate New York, Williams, Lund, & Preusser (1985) found that fewer than 40 percent of young people were licensed upon reaching age 17. This was more than a decade before the enactment of GDL in the state. In 1990, several years before any U.S. state had enacted a GDL system, a national survey found that only 41 percent of 16-year-olds, 70 percent of 17-year-olds, and 77 percent of 18-year-olds were licensed drivers (Federal Highway Administration, 1991). Prior studies (e.g., Williams, 2011; CHOP, 2007) have reported that Hispanics were less likely than non-Hispanic whites to obtain licenses at young ages—that was observed in this study as well. Heck & Nathaniel (2011) also suggested that rural teens were licensed earlier and city-dwellers were more likely to delay licensure. The same relationship was observed in the current study in bivariate comparisons, but was substantially attenuated after controlling for other demographic characteristics such as income, race and ethnicity, and Census region. However, the current study did not have sufficient sample size to completely disentangle the contributions of these factors, which in many cases were correlated.

Unfortunately, it has been difficult to address the question of whether delay in licensure among young people is more widespread now than it was in the past, due to shortcomings in multiple sources of data. Whereas a periodic nationwide travel survey (Federal Highway Administration, 1991) investigated driver licensing status in a representative sample of driving-aged U.S. residents, similar surveys conducted in 1995, 2001, and 2008 only asked respondents whether or not they drove but did not assess licensure directly, thus rendering these data unusable for analysis of trends in licensure. In addition, data submitted by individual states to the Federal Highway Administration has been found to contain major errors with respect to data on teenage drivers, thus rendering it unusable for trend analysis as well (Foss, 2013). Periodic cross-sectional surveys have shown that the proportion of high school seniors who reported having a driver's license declined from 85 percent in 1996 to 73 percent in 2010 (Shults & Williams, 2013). The reasons why licensing rates appeared to be so much higher in those surveys than in the current study are unclear; given that their samples comprised high school students surveyed during the spring of their senior year, the majority of respondents in those studies were likely 17 or 18 years old. It is possible that some respondents in that survey who possessed the type of license that the current study classified as a learner permit (i.e., a license that allows driving only with a licensed adult supervisor in the car) responded affirmatively; some states no longer use the term "learner permit" and now refer to this a "learner license" or similar. Changes in the basic structure of state licensing systems cloud the interpretation of post-GDL vs. pre-GDL comparisons of the percent of young people who have a "license."

In regard to reasons for delay, there has been concern that GDL has resulted in young people waiting until after they turn 18 to apply for a license in order to avoid being subject to the requirements and restrictions of GDL systems. While GDL is known to have reduced the crash involvement of 16-year-old drivers substantially and 17-year-old drivers moderately (Zhu, Cummings, Li, & Coben, 2013), some studies have suggested that strong GDL systems have been associated with increases in the fatal crash involvement of 18- and 19-year-olds. Some researchers have suggested voluntary delay in licensure until age 18 for the purpose of avoiding GDL as one possible explanation for those findings (Masten, Foss, & Marshall, 2011). The current study could not investigate that hypothesis directly, as GDL had already become virtually universal by the time the cohort of young adults surveyed in

the current study had reached driving age (93% of respondents lived in states whose GDL systems were rated as "Fair" or "Good" by the Insurance Institute for Highway Safety by the time they reached their state's minimum age for licensure). However, this was investigated indirectly in two ways, both of which suggested that desire to avoid GDL was at most a minor factor in delaying licensure among young people who did so.

First, when young people not licensed prior to their 18th birthday were asked why they did not obtain their license sooner, the predominant reasons related to opportunity (e.g., not having a car), cost (e.g., gas was too expensive), and motivation (e.g., "could get around without driving," "just didn't get around to it"). Few rated the difficulty of the licensing process (e.g., "special requirements made it hard to get a license at a younger age") or perceived undesirability of having a license with restrictions (e.g., "I didn't want to get a license with special restrictions that only applied to drivers under a certain age") as very or somewhat important reasons why they did not obtain a license sooner.

Second, of 19- and 20-year-olds who did not obtain a license before they turned 18, fewer than one in three obtained a license before they turned 19. Of those who did not even obtain a learner permit before they turned 18, fewer than one in five obtained a license before they turned 19. If large numbers of young people were waiting until their 18th birthday to obtain their license *for the purpose of avoiding the GDL system*, one might expect more of them to obtain their license soon after turning 18 and fewer to reach their 19th birthday still not having a license.

Young people ages 18-20 have an important perspective on the driver licensing system. Those who obtained their driver's license prior to age 18 would have already graduated from a GDL program. Those who do not yet have a driver's license will not be subject to GDL (except those residing in New Jersey) if they do apply for a driver's license in the future. Since they are not currently within the GDL system and are not faced with the prospect of entering it in the future, 18- to 20-year-olds may be more able to assess its merits than younger teens still within the GDL system or faced with the prospect of entering it in the future. For example, in a previous survey of young people ages 15-18, only 21 percent of 15-year-olds, but 59 percent of 18-year-olds approved of having a minimum age of 16 for obtaining a learner permit (Williams, 2011). It is clear from the results of the current study that 18- to 20-year-olds favor at least some aspects of more comprehensive GDL systems. For example, many favored older minimum ages for licensure than are presently found in the vast majority of U.S. states. There was strong support for night driving restrictions and passenger restrictions in general; however, support was somewhat weaker for variations of these that are regarded by experts as key elements of a comprehensive GDL system, such as a passenger restriction that allows no more than one teenage passenger or a night restriction beginning as early as 10 PM.

Table 6 compares the attitudes of respondents in the current study (ages 18-20) to those in a study of young people ages 15-18 conducted in 2010 (Williams, 2011) and to a sample of parents of children ages 15-18 conducted in 2010 (Williams, Braitman, & McCartt, 2011). It is clear that the 18- to 20-year-olds in the current study viewed older ages for obtaining permits and licenses much more favorably than did the 15- to 18-year-olds in the previous study; they actually viewed a minimum age of 17 or older for initial licensure and 18 or older for full licensure more favorably than did the parents of children ages 15-18. The respondents in the current study viewed requiring new drivers to hold their learner permit

for at least a full year and requiring at least 50 hours of supervised driving practice more favorably than did the 15- to 18-year-olds in the previous study, but less favorably than parents did. Similarly, the 15- to 18-year-olds were least likely to favor passenger restrictions, the respondents in the current study were more likely to favor them, and the parents were the most likely to favor passenger restrictions. The respondents in the current study were about as likely as the 15- to 18-year-olds to favor night restrictions, with parents being substantially more likely to favor them. Note, however, that differences observed here between the attitudes of 15- to 18-year-olds, 18- to 20-year-olds, and parents cannot be attributed definitively to age or experience with GDL. The survey reported in Williams (2011) was conducted 19 months before the survey conducted for the current study, and the survey reported in Williams, Braitman, & McCartt (2011) was conducted approximately two years before the survey for the current study. In addition, slight differences in question wording and response options could have elicited different responses.

Table 6. Support for various licensing policies for new drivers in samples of young people ages 15-18, ages 18-20, and parents of children ages 18-20.

	Ages 15-18 (Williams, 2011)	Ages 18-20 (This Study)	Parents of children ages 15-18 (Williams, Braitman, & McCartt, 2011)
		% Favor	
Learner permit: minimum age 16+	46	62	66
Initial license: minimum age 17+	27	58	53
Full license: minimum age 18+	30	61	53
Learner permit period: 12+ months	34	46	60
Supervised practice required: 50+ hours	49	56	60
Passenger restriction	57	77	89
Night restriction	78	77	90

A limitation of this study is that it relied on respondents to report accurately the age at which they first obtained their driver license. Some stated that they did not remember, and others may have remembered incorrectly. However, the authors believe that even if respondents did not remember the exact age in years and months at which they obtained their license, most would have at least remembered whether it was before or after they turned 18, and thus that the main finding of this study—that only 54 percent of young people obtained a driver's license before their 18th birthday—is unlikely to be biased by a large amount.

Another limitation is that although nationally representative, the results of this study should not be construed as representative of the situation in any given state. Substantial regional variation was observed. Because the sample was designed to be representative of the young adult population nationwide, 52 percent of all respondents were from only nine states, while nine other states were represented by three or fewer respondents each, accurately reflecting the distribution of the population of the United States.

Conclusion

Most young people do not obtain a driver's license as soon as they are eligible to do so; fewer than half are licensed within one year of reaching their state's minimum age for licensure, and barely more than half are licensed before they turn 18 years old. Large social and economic disparities in licensure were identified: young people who described themselves as black or Hispanic or who were from low-income households were much less likely than other respondents to have been licensed before age 18. There was little evidence that those who delayed licensure did so for the purpose of avoiding the requirements of their state's GDL system. However, given the large proportion of drivers who do not become licensed until after they turn 18, further research is needed to investigate the safety impact of obtaining a license at older vs. younger ages as well as to identify specific risk factors for older novice drivers and ways to address them.

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