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Q1 Graduated driver licensing (GDL) in the United States in 2016: Q2 A literature review and commentary

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6 ABSTRACT

This is the sixth in a series of reviews of research on graduated driver licensing (GDL) published in the *Journal of Safety Research*, the present review covering the period mid-2012 through 2016. In the two decades since GDL programs began to be introduced on a widespread basis in the United States, a vast amount of research has been published. The current review discusses recent research and the present state of knowledge on the following topics: characteristics of the novice driver population; effects of GDL on crashes for ages 16–19; the learner and intermediate periods; night and passenger restrictions; cellphone laws; GDL for older novices; enforcement of GDL rules; and programs attempting to influence GDL compliance and safe driving practices in general. GDL stands out as a successful policy for reducing teen driver crashes and is worth building on to extend its benefits. Strengthening existing GDL programs has the most potential for producing further crash reductions.

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37 1. Introduction

38 Graduated driver licensing (GDL) is a system designed to introduce
39 novices into the driving population in ways that protect them while
40 they are learning. There are two stages prior to full driving privileges
41 being gained. The first is a learner period of at least several months dura-
42 tion, during which only supervised driving is allowed, with a minimum
43 number of practice hours often specified. The second is an intermediate
44 stage in which unsupervised driving is not allowed in higher risk situa-
45 tions. These situations have traditionally been limited to driving late at
46 night and driving with young passengers present. Prohibitions on use
47 of cellphones in vehicles have been added in most states.

48 There are other licensing systems around the world that have multi-
49 ple stages intended to prepare novices for full driving privileges. These
50 may involve, for example, some combination of supervised driving,
Q6 driver training, and probationary periods (Twisk & Colin, 2007). The de-
52 fining feature of GDL systems is the progression through stages in which
53 exposure to risk is gradually increased until driving unsupervised in all
54 situations is allowed. Use of cellphones is anomalous in this regard since
55 in many states there are bans on cellphone calls and texting by drivers of
56 all ages.

57 New Zealand established a GDL system in 1987 with a six-month
58 learner period and night and passenger restrictions. In the United
59 States, most jurisdictions did not have any GDL features until the mid-
60 1990s, when they began to be introduced on a widespread basis in
61 both the United States and Canada. Presently all jurisdictions in North

America have one or more features of GDL, although the systems vary
62 in their coverage (Williams, McCart, & Sims, 2016). Israel has a three-
63 month supervisory period for novice drivers who have passed the road
64 test, followed by a three-month period during which unsupervised driv-
65 ing from 9 p.m. to 6 a.m. is prohibited, and a two-passenger limit for two
66 years. Several licensing systems in Australian states have for many years
67 had extended learner periods, with longer durations than in the United
68 States, and three states have instituted requirements of 100–120 h of
69 driving in the learner stage, more than in any U.S. state. Restrictions in
70 the intermediate stage in Australia have historically been limited to pro-
71 hibitions on driving on high-speed roads, or vehicle power restrictions,
72 neither present in U.S. programs. Some Australian states have more re-
73 cently introduced versions of night and/or passenger restrictions. 74
75 Australia differs from North America in having higher licensing ages,
76 generally 17, 18 in Victoria. All GDL countries differ from the United
77 States in applying GDL policies to all novice drivers, or novices younger
78 than a certain age, generally 25. Except in six states and the District of
79 Columbia, only U.S. novices younger than 18 are covered by any GDL
80 policies. These differences provide the opportunity to consider the ex-
81 tent to which policies from other countries might be beneficially
82 imported to the United States.

The five countries identified are the only ones in which GDL systems
83 as defined above have been instituted. They have been under discussion
84 in other countries, promoted but not adopted in Great Britain (Kin-
85 near et al., 2013), and a passenger restriction after 11 p.m. is expected in
86 Northern Ireland in 2018. 87

88 There have been five previous research reviews covering the periods
89 2003, 2004–2005, 2006, 2007–early 2010, and 2010–mid-2012
90 (Hedlund & Compton, 2004, 2005; Hedlund, Shults, & Compton, 2006;

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Williams & Shults, 2010; Williams, Tefft, & Grabowski, 2012). In the 4-1/2 years between mid-2012 and the end of 2016, there has been an extensive amount of research published. This body of research has been partially covered in a report discussing policies that may be relevant to GDL programs in Australia, based on research prior to 2014 (Senserrick & Williams, 2015), and in a report recommending how GDL programs in the United States could be strengthened and might be augmented by other supportive, though largely unproven, features (Mayhew, Williams, & Pashley, 2014). However, there has been no comprehensive review and synthesis of GDL research studies through 2016.

The review is also timely because there is still lack of clarity about the effect of GDL on crashes by driver age and its overall effects. There are also new issues now being addressed by research, for example, the size of the novice driver population 18 and older and the extent to which GDL might benefit this group.

2. Methods

Articles and reports published between mid-2012 and the end of 2016 in journals and books by government agencies, research organizations, and other entities were identified. The review was largely restricted to the five countries with some form of GDL: Australia, Canada, Israel, New Zealand, and the United States. An attempt was made to identify all research reports related to novice drivers but to focus on studies with direct relevance to GDL. This excludes worthy topics such as teen alcohol or seat belt use, vehicle choice, driver education, or distracted driving, unless they have a clear GDL connection. In a few instances articles with publication dates of 2013 or 2014 were not included because they had been discussed in the previous GDL research review based on preliminary reports. Research published through the end of 2016 is included, as are some early reports from 2017.

A search was made of relevant databases, including PubMed, PsychINFO, Science Direct, Science Citation Index, SafetyLit, Social Sciences Citation Index, Academic Search Complete, ProQuest Central, Public Affairs Index, Google Scholar, and TRID, which is a combination of the Transportation Research Information Services (TRIS) database and the International Transportation Research (ITRD) database. The search involved a combination of key words and phrases, along with their derivatives: young drivers (and related terms, e.g., teen/teenage drivers, teenagers, adolescents); automobile driving (drivers, driving, automobiles); graduated driver licensing (gdl, graduated licensing, driver licensing).

A digital file of young driver articles through 2014, maintained by the Highway Safety Research Center at the University of North Carolina, was also obtained.

These computer-based searches were supplemented through personal contacts with young driver researchers from the five GDL countries. Information about GDL law requirements in the United States was drawn from files maintained by the Insurance Institute for Highway Safety (2017).

The following topics were covered. First, characteristics of the entire novice driver population are described: the breakdown by age; characteristics of those who wait until 18 or older to get licensed; age trends in licensure; and reasons for later licensure. Following this, studies addressing the effects of GDL on crashes are reviewed, for 16–17 year-olds, for 18–19 year-olds, and overall. This is followed by a review of research on features of GDL that have been applied to 16–17 year-olds: the learner period; intermediate period, night restrictions, passenger restrictions, and cellphone laws. Consideration is then given to issues in applying GDL policies for young novices to those 18 and older. The last sections address compliance issues, enforcement of GDL rules, and programs attempting to influence safe driving practices. Finally, comments are made about ways forward in reducing novice driver crashes, based on 20 years of accumulated research evidence.

Since there is an extensive existing knowledge base about most of the topics, the format was to summarize what was thought to be

known about each topic when the previous GDL review was published, and to focus on what has been learned since that time. These “what was known” segments are based on studies discussed and referenced in the 2012 review and generally are not separately referenced in the present report.

The voluminous research literature to be presented and discussed made it unfeasible to do critical reviews; most of the articles included are in peer-reviewed publications, which provides some degree of quality assurance. However, occasional comments are made about possible flaws that hinder interpretation of study results. In addition, discussions of results are necessarily brief, sometimes presented without numbers, and readers are invited to refer to the referenced articles for more details.

3. The novice driver population in the United States

To establish context, it is instructive to consider the size and age distribution of the novice driver population and relevant characteristics of those who obtain licenses at different ages.

It is known from prior research that despite the common conception that young people want to get licensed as soon as they are eligible, not all do so, and those who wait are different from earlier licensees. With the realization that older novices may be numerous and their numbers increasing, research addressing this population has accelerated. Since 2012, substantial new information has become available about the size, composition, and characteristics of novice driver populations of different ages, trends in licensure, and why people wait to get licensed (or never get licensed). In the U.S. context, “older novices” generally refers to those 18 and older and not covered by any GDL policies in most states. Nationally, it appears that about two-thirds of newly licensed drivers in the United States are 16–17, one-third are 18 or older, and the populations of older and younger initial license holders have quite different characteristics.

3.1. Size and characteristics of the older vs. younger novice populations

Based on a national survey of 18–20 year-olds, it was estimated that about one-third of all young people do not have a driver's license (the license granted after passing a driving test) prior to age 18, and the majority of those who are black, Hispanic, or from lower income households wait until age 18 or later (Tefft, Williams, & Grabowski, 2014). The relationships between later licensure and socioeconomic and minority group status have been reported in several other recent studies.

In New Jersey, where the licensing age is 17, 65% of 17 year-olds residing in the highest income ZIP codes obtained a license in their first month of eligibility compared with 13% in the lowest income ZIP codes (Curry, Pfeiffer, Durbin, Elliott, & Kim, 2015).

In a survey of 18–39 year-olds without a license, the unlicensed population had less education and higher unemployment than in the general population of the same age (Schoettle & Sivak, 2014).

Surveys of high school students have found that blacks and Hispanics were less likely to be licensed or to have done any driving in a recent time period (Shults, Olsen, & Williams, 2015; Shults & Williams, 2013).

Another study of high school students found that the amount of driving was less among blacks and among those with lower socioeconomic status, based on teen income and parental education (Shults, Banerjee, & Perry, 2016).

A survey of students at three high schools in California found that blacks and Hispanics were less likely to have licenses or obtained them later, as was the case for students whose parents had less formal education (Brown & Handy, 2015).

A study in Australia discussed later licensing among Aboriginals, resulting in part from financial issues, but also literacy/language issues, difficulties in navigating the licensing system, or in meeting supervised driving requirements (Cullen, Clapham, Hunter, Treacy, & Ivers, 2016).

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