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A SURVEY OF CURRENT DRIVER EDUCATION PRACTICES IN PENNSYLVANIA

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ABSTRACT

The purpose of this study was to examine the current state of driver education in Pennsylvania public schools. Data were collected via an online survey regarding driver education instructor demographics and credentials, curricula used, and instructional practices employed. Results suggest that certified public-school driver education teachers are most likely to be mid-to-late career male teachers whose training was primarily in the health and physical education fields. It has been 10 to 20 years since most driver education teachers completed driver education coursework. One in five teachers never completed any coursework related to driver education, a somewhat concerning indication that many driver education instructors have not received formal training in an area in which they practice professionally. Most survey respondents indicated using an evidence-based curriculum in their classrooms. Further need for empirical study of driver education's methods, as well as, a need for expanding teacher training opportunities are discussed.

INTRODUCTION

Drivers age 15 to 24 have much higher crash and fatality rates compared to all other age groups (Arnett, 2002; Shope, 2006). These sobering facts about novice drivers' behavior while behind the wheel are often attributed to a variety of factors including internal personality traits, developmental status, and driving context. Given these statistics and their likely causes, instruction for novice drivers should focus on these factors or on increasing knowledge, skill level, problem-solving, and automaticity while driving. One such target at skill development is driver education. Driver education can occur in a classroom, behind-the-wheel of a vehicle, or in an online learning format. All types aim to increase the driver's knowledge, skills, and ability to quickly make life-saving decisions while operating a motor vehicle (Shope, 2006). While public and private driver education programs have existed since the 1950s, little is known about the current status of driver education in Pennsylvania. This study aimed to examine current public-school driver education practices in the state of Pennsylvania via online survey. More specifically, results report the characteristics of the teachers' educational history, the instructional format of the courses, and curriculums in use today.

Historical Trends in Driver Education

Prior to 1920, high school driver education in public schools was rare and programs operated independently. It was not until the mid-1930s that an organized national driver education movement began in

the United States. This movement coincided with increased concern over traffic collisions and the expansion of transportation safety structure (Aaron & Strasser, 1977; Albert, 1997). After initial local organization in Bergen County, New Jersey and State College, Pennsylvania, many states began to design and implement driver education courses. According to Stack (1966), by 1940, over 20 states had designed and implemented courses of study in driver education.

The driver education movement continued to gain momentum through the 1950s and began to more closely resemble the courses we see today. For example, in the 1957-1958 school year, the mean classroom time spent on driver education was 36 hours. On average, schools also provided six hours of behind-the-wheel instruction. Furthermore, these courses became more widespread and highly utilized as many states began requiring them for licensing (Albert, 1997). For example, enrollment jumped from 200 students in 1947 to 1,300,000 in 1964, and public schools offering driver education increased from 3,000 schools to over 12,000 in this same time period. This increase was also influenced by insurance companies beginning to offer discounts for successful course completion (Mayhew, 2002, 2007).

The decline of driver education began in the 1960s and continued into the 1970s due to two significant events which began to call the effectiveness of driver education into question (Crabb, 1994). In the late 1960s, the National Highway Traffic Safety Administration (NHTSA) conducted a study in DeKalb, Georgia to evaluate the effectiveness of driver education. Known as "The DeKalb Study", this project found a significant short-term decline in crash rates among novice drivers (Peck, 2006). However, according to Crabb (1994), due to the short-term nature of these effects, many interpreted this study as evidence that driver education was not effective in the long-term. Therefore, this study contributed to a decline in driver's education programs across the country. Additionally, public opinion of driver education furthered its decline, when in 1977 the Insurance Institute of Highway Safety (IIHS) questioned driver education. The IIHS stated that if public schools eliminated driver education, then teens would need to wait until 18 years-of-age to drive. According to Crabb (1994), the nationwide spread of media regarding this statement had broad and lasting impacts on the public's view of driver education. Moreover, the lack of teachers specifically trained in driver education further called the discipline into question (Smith, 1994).

Higher Education and Driver Education

Colleges and universities are key in preparing teachers to work both in private and public driver education, as well as, developing curriculums and offering a wide range of learning opportunities that include both classroom and in-service training (Aaron & Strasser, 1977; American Driver and Traffic Safety Education

Association [ADTSEA], 1980). Universities began offering driver education certifications in the 1940s, and by the 1950s, new driver education programs were producing many teachers credentialed in driver education (Crabb, 1994). However, the prevalence of these programs has declined significantly since the 1950s. From 1956-1958, 18 universities and colleges across the commonwealth of Pennsylvania offered safety/driver education teacher certification programs. In 2007, the Pennsylvania Department of Education (PDE) listed four institutions of higher education offering Driver Education Certification courses in Pennsylvania. According to Pesci (2009), only two universities offering these course sequences remained at that time, representing an 80% decline in college certification programs since 1958. The current number of existing programs is no longer reported by the PDE but is believed to be just one.

Credentialing and Certification

In the 1970s, a lack of adequate teacher preparation and regulatory consistency across state borders was cited as a limitation to the field of driver education (Aaron & Strasser, 1977; Hales, 1975). Since that time, the National Education Association and ADTSEA published recommendations for states regarding credentialing requirements for driver education teachers. Historically, the National Education Association (1964) recommended that driver education teachers "hold a bachelor's degree from an accredited university or college, have a teaching certificate in secondary schools with a supplemental twelve credit hours in traffic safety and driver education, possess the physical qualities validated by a health certificate and have a valid driver's license and acceptable driving record" (National Education Association, 1964 as cited in Pesci, 2009, p. 24). ADTSEA (2002) further made recommendations regarding educational requirements to become and maintain credentialing as a driver education teacher. First, ADTSEA recommended that all teachers take at least nine credits in college courses or 14.5 credits in continuing education units pertaining to driver education teacher preparation. Course topics in these recommendations included: the analysis of the specific steps necessary to operate a motor vehicle safely, topics necessary to teach behind-the-wheel driver education, and necessary teacher training in classroom driver education theory.

Currently, to become a certified driver education instructor in Pennsylvania, a teacher already holding an Instructional I or Instructional II teaching certification can add the Safety/Driver Education Certification to their credential. Certified teachers must pass the Pennsylvania Safety Driver Education Teacher Certification Assessment. Prior to 2011, teachers were also required to have completed 12 college credits and continuing education requirements (Pennsylvania State Transportation Advisory Committee, 2013). However, this educational requirement is no longer in place for certified teachers. Additionally, applicants

who are para-professionals within the public schools must: (a) have passed both the theoretical and practical exams, (b) posess a high school diploma, and (c) have a three-year driving record free of "Vehicle Code" violations, traffic violations, or accidents, and (d) complete 12-credits in driver education (PDE, 2020d).

Driver Education Curriculums

The "Driver Education Content and Performance Expectations" describe what students should know and be able to do at the end of a thirty-hour classroom and six-hour behind the wheel instruction" (PDE, 2007, p. 3). This document outlines content areas taught in the area of driver education. These content areas include: "Pennsylvania law and regulations, knowledge of vehicle operations, perceptual skills development, decision-making/risk reduction, driving conditions, and, influences upon driver performances" (PDE, 2007, p. 3). The 14 essential skills outlined by this document include: "judging speed going around a curve, recognizing a stopped vehicle, staying in driving line, starting from a stop, making a left turn into traffic, scanning environment and staying in driving lane, recognizing when to brake, looking before pulling out from driveway or stop sign, judging speed and distances of on-coming traffic, driving at night, driving in the rain, driving in the snow, identifying lights, signs, and road markings, and, selecting a sufficient gap to enter traffic" (PDE, 2007, p. 4).

Currently, PDE publishes a list of approved public and private driver education programs in the commonwealth and describes administrative and curricular materials (PDE, 2020a; PDE, 2020b). To be included on the online list of approved programs, schools must have a driver education program that includes 30 hours of classroom theory instruction and six hours of behind-the-wheel instruction, unless otherwise indicated. Classroom theory includes learning experiences presented in a traditional classroom environment with units similar to those outlined in the Pennsylvania Enhanced Curriculum Guide. These units include:

> *decision making-process, perceptions and driving strategies for different environments, responsibilities when entering Pennsylvania's driver licensing system, man-made laws, natural laws in relation to driving a motor vehicle, psychological conditions, physiological conditions, adverse conditions, alcohol/other drugs, financial responsibility, trip planning, and buy/maintaining a car.* (PDE, 2020c, p. 17)

Behind-the-wheel instruction consists of instruction in an approved driver education vehicle in both off-street and on-street environments. This instruction should include learning experiences designed to develop the skills necessary to drive efficiently and safely (PDE, 2020c). While schools approved by the state to

have a comprehensive driver education program must have both classroom theory and behind-the-wheel course offerings, some schools may offer just one or deliver classroom theory online. Online theory offers learning experiences equivalent to the 30 hours of typical classroom theory instruction (PDE, 2020c).

Previous Surveys

Pesci (2009) previously examined the opinions and practices of driver education teachers in Pennsylvania. Results at that time indicated over half of driver education teachers surveyed would reach retirement age within the next decade. Eighty percent of driver education teachers surveyed were male. One-third of respondents had been teaching for over 26 years. In regard to educational background, results indicated that 45% of respondents held a bachelor's degree, 48% had a master's degree, and 13% had attained less than a bachelor's degree. Furthermore, Pesci (2009) found that most driver education teacher's had degrees in the field of health and physical education (48%). Additionally, the majority of teacher's held a public certification (67.3%), followed by both private and public certifications (20.8%), and private certification alone (10%).

In regard to driver education teacher training, 27.5% reported having completed driver education courses over 25 years earlier, with just a small proportion (17%) indicating they completed classes in the previous five years. Interestingly, 10.5% of respondents did not complete any driver education college courses. Most driver education teachers surveyed completed 10-12 credits in driver education teacher preparation (55.6), with 26% completing more than 13 hours of formalized preparation. Most teachers taught driver education for 10 years or less. Almost a quarter of respondents (24.1%) had been teaching driver education for 21 or more years. In sum, these data suggested that most Pennsylvania driver education instructors had completed formal training a number of years earlier and tended to be more senior teachers with extensive experience teaching driver education.

Survey respondents' reports of instructional practices were quite varied. Forty-five percent of teachers reported that they taught driver education for more than three hours per day. Most reported that during the school year, they taught driver education before or after school (59.6%), with 40% teaching classes on weekends. Over 60% of driver education teachers reported teaching a subject other than driver education. Seventy percent of respondents indicated that they taught driver education in the summer. The majority of respondents reported that they used the Pennsylvania Enhanced Driver Education curriculum (44.1%). Very few teachers reported using a multiple car range, or a driver simulation system in their driver education programs (13.4% and 6.5% respectively).

Purpose of the Study

Little is known about the current driver education teaching practices implemented in Pennsylvania. Over ten years have passed since Pesci (2009) surveyed Pennsylvania driver education teachers. Since then, there have been significant decreases in college and university training courses, high schools requiring driver education as a graduation requirement, high schools offering publicly-funded driver education instruction, and state requirements for teacher certification and curriculums have since been slightly altered (Pennsylvania State Transportation Advisory Committee, 2013). This study aimed to replicate the past investigation regarding the characteristics of driver education professionals and practices in Pennsylvania's public schools in an effort to track trends over time, place findings in the current educational context, and better inform policies regarding driver education at both the local and state levels. The following research questions guided this study:

RQ1. What is the sex, age, training, and credentialing characteristics of public-school driver education instructors in Pennsylvania?

RQ2. What driver education curricula are used by these public-school driver education instructors?

RQ3. How much time do public-school driver education instructors in Pennsylvania spend teaching both classroom and behind-the-wheel components?

RQ4. How much instructional time do public-school driver education instructors in Pennsylvania dedicate to seat belt use?

RQ5. How much instructional time do public-school driver education instructors in Pennsylvania dedicate to distracted driving (e.g., cell phone use)?

Research questions 4 and 5 were unique from previous investigations given the known benefits of seat belt use and prevalence of cell phones in society, with both viewed as important to specifically address in novice driver instruction as preventative measures for crashes and fatalities. These related but distinct behaviors were examined separately both on the questionnaire and in analyses, based on previous literature suggesting these behaviors occur at different rates within the population, with distinct influencing factors, especially in novice teen drivers (Briggs et al., 2008; Delgado, Wanner, & McDonald, 2016; Gershon et al., 2017). Furthermore, an extension of this work will examine developing curricular materials specifically addressing cell phone use and seatbelt use.

METHODS

This quantitative study utilized a descriptive survey research design (Mertler, 2019) to appraise the demographic characteristics of driver education instructors in Pennsylvania's public schools and their instructional practices and curricula used to teach novice drivers. These research questions were answered via completion of a self-report, anonymous survey distributed electronically to all credentialed public-school driver education instructors in Pennsylvania.

Population

Public schools in Pennsylvania are not obligated to offer driver education to their high school students. Consequently, the decision to offer driver education rests solely at the local level. Figure 1 presents a map of Pennsylvania's 500 school districts with indications of whether driver education is offered by that school district. If driver education is offered, the extent to which instruction used (a) classroom; (b) behind-the-wheel; and (c) online delivery is noted.

Note. IU = intermediate unit; DE = driver education.

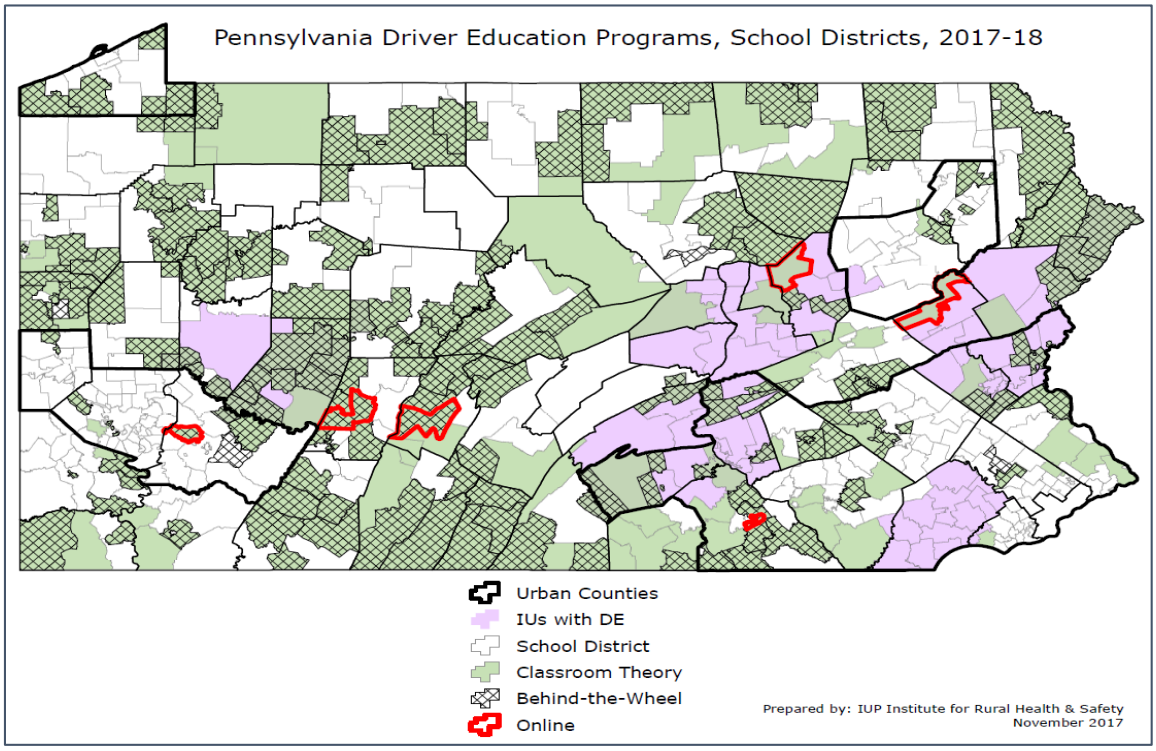

Figure 1.

Pennsylvania Driver Education Programs by Instructional Method

Sample

Pennsylvania Department of Education provided a comprehensive email list of names and email addresses of 315 appropriately-credentialed public school driver education instructors. An initial concern was maximizing response rates to an online survey, therefore literature on best practices for conducting survey research was referenced for survey development and distribution. One systematic review of 45 studies of online surveys indicated an average response rate of approximately 36% could be expected, although a wide range was reported (11.1% to 82.3%; Manfreda, Bosnjak, Berzelak, Haas, & Vehovar, 2008). Manfreda and colleagues and others (Fan & Yan, 2010; Liu & Wronski, 2017) noted that response rates were substantially influenced by a number of survey-design and survey-delivery factors. In general, online surveys that had fewer questions, fewer pages, fewer response options per question, questions worded in simple terms, and those that relied more on multiple-choice questions over open-ended responses tended to result in higher response rates. Moreover, reminders to complete the survey and incentives for completing surveys were also found to increase response rates. With the exception of offering an incentive for survey completion, best practices were generally followed when designing and delivering the survey used in the current study. Recruitment emails were delivered to all 315 potential participants in mid-July 2019 with a follow-up reminder sent in late August 2019 once most schools had returned for the 2019-2020 academic year. One hundred thirty-three completed surveys were submitted for analysis, resulting in a response rate of 42.9%. The authors concluded that this was an acceptable response rate given typical response rates for electronic surveys (Manfreda et al., 2008), thus permitting generalization of sample results to all credentialed driver education instructors in Pennsylvania's public schools.

Table 1.
Driver Education Instructors' Demographic Characteristics

	n	% of Sample
Sex		
Female	31	23.3%
Male	102	76.7%
Age		
21–30	5	3.8%
31–40	28	21.1%
41–50	43	32.3%
51–60	41	30.8%
61 and above	16	12.3%

Note. N = 133 respondents; Percentages may not sum to 100% due to rounding.

Instrument

A 24-item survey was created to answer the aforementioned research questions. Twelve questions were intended to gather demographic data from respondents, including sex, age, highest level of education and major field, licenses/certifications to teach driver education, continuing education credits earned, duration of certification as a driver education instructor, and state transportation district in which they taught, among other characteristics. Twelve additional questions gathered information about the curriculum taught, use of a multiple-car driving range or simulator, how much time was dedicated to teaching both classroom instruction and providing behind-the-wheel instruction, whether they were currently providing driver education instruction, whether their school participated in end-of-course skills testing program or third party testing, whether they taught driver education in summers or weekends, and whether they taught other subjects in school. Two of those questions specifically asked how much instructional time was dedicated to seat-belt use and distracted driving (i.e., cell phone). A very similar version of this survey was used in previous research (Pesci, 2009) and found to be useful in appraising current educator demographic characteristics, professional credentials, and instructional practices (α = .73; for full validity and reliability procedures, see Pesci [2009]). This survey was adapted from the survey utilized in Pesci (2009) with permission from the author. The full set of survey questions is available upon request.

Data Collection and Analysis

Invitations to complete the survey were distributed via email to all individuals whose contact information was provided by PDE. The recruitment email briefly introduced the study, its purpose, and expectations for commitment. The informed consent and survey were hosted on our institution's, secure, web-based Qualtrics platform that individuals accessed if they were interested in participating. Participant anonymity was maintained by not requesting any identifiable information (e.g., name, school district), thus increasing the probability that participants would respond honestly. Raw data were extracted from Qualtrics, and Microsoft ExcelTM was used to analyze the data. Descriptive statistics were utilized to report percentages of each response option for every question (Mertler, 2019).

RESULTS

Data from 133 consenting participants were obtained and used for statistical analysis. Organization of results and discussion is based on the aforementioned research questions.

Demographic Characteristics of Pennsylvania Public School Driver Education Instructors

Demographic characteristics of the sample are provided in Table 1 followed by training, credentialing, and years of service in Table 2.

Over three-fourths of all public-school driver education instructors in Pennsylvania who responded to this survey are male. Further, the age distribution of driver education instructors is somewhat negatively skewed with a higher concentration of respondents indicating they were over 40 years of age (n = 100; 75.4%). In sum, Pennsylvania driver education instructors tend to be mid-to-late career males.

Table 2.

Driver Education Instructors' Professional Training, Credentialing, and Years of Experience

	n	% of Sample
Highest Level of Education		
< Bachelor's degree	2	1.5%
Bachelor's degree	52	39.1%
Master's degree	79	59.4%
Major Field of Study		
No response	1	0.8%
English	3	2.3%
Foreign Language	3	2.3%
Mathematics	3	2.3%
Sciences	3	2.3%
Elementary Education	4	3.0%
Business Education	5	3.8%
Industrial Arts	6	4.5%
Other	6	4.5%
Social Sciences / History	22	16.5%
Health / Physical Education	77	57.9%
Licenses / Certifications Held		
Public School Certified	5	3.8%
Private Driver Training School License	28	21.1%
Public School Certified and Private Driver Trainer School License	43	32.3%
Emergency Certification	16	12.3%
Years Certified as a Driver Education Instructor		
No response	5	3.8%
< 1 year	28	21.1%
1–10 years	43	32.3%
11–20 years	43	32.3%
21 or more	16	12.3%

Note. *N* = 133 respondents; Percentages may not sum to 100% due to rounding.

The sample's highest educational achievement, primary professional discipline, licensure/certification, and years of experience teaching driver education are offered in Table 2. Over half of the sample reported earning a master's degree (n = 79; 59.4%), with a majority of respondents indicating their primary field of study was health and/or physical education (n = 77; 57.9%). The second-highest field of study was social sciences/history at 16.5%. None of the remaining fields of study were endorsed by more than 5% of the sample. Over a third of all respondents (n = 45; 33.8%) indicated they have been teaching driver education for over 20 years. An additional third (n = 48; 36.1%) have taught for 11-20 years. Collectively, these years of teaching suggest that a majority of driver education instructors are in their middle-to-later stages of their professional careers, a finding that is consistent with the sample's self-reported age.

Not surprisingly, nearly all respondents (n = 130; 97.7%) reported maintaining certification to teach in public schools. Two respondents (1.5%) indicated they had a license to teach in private schools only, and one respondent indicated being emergency certificated. Of those who are certified to teach in public schools, 20 (15%) are also licensed to teach in private driver training schools. Finally, while not displayed in Tables 1 or 2, survey respondents identified being located in all 11 Pennsylvania Department of Transportation Districts, thus providing additional validation that the sample adequately represented public-school driver education instructors across all geographic regions in Pennsylvania. However, inferences about the population cannot be made due to the lack of random sampling and absence of inferential statistical procedures. Furthermore, margin of error was not calculated due to the descriptive nature of this study. Therefore, the obtained results cannot be generalized beyond the sample.

Driver Education Training and Continuing Education Experiences

Table 3 summarizes data on respondents' continuing education experiences. The distribution of years since respondents last took a college course in driver education somewhat resembled the normal curve, with the majority clustered around 10-20 years ago (i.e., 1996-2008). Interestingly, nearly 1 in 5 respondents indicated they have never taken a college course in driver education. The majority of those who reported taking college credits in either driver education or related traffic safety issues indicated completing 10 or more credits (n = 91; 68.4%). Finally, 33% of respondents (n = 44) indicated they attended one of the last three Pennsylvania Department of Transportation Safety Conferences. Forty-five percent (n = 60) indicated that they have never attended that annual event.

Table 3.

Driver Education Instructors' Continuing Education Experiences

	n	% of Sample
Most Recent College Credit for Driver Education Courses		
No response	2	1.5%
2014 to present	8	6.0%
2008–2013	15	11.3%
2002–2007	29	22.8%
1996–2001	22	16.5%
1990–1995	13	9.8%
1984–1989	9	6.8%
Before 1983	9	6.8%
Never took college courses in driver education	26	19.5%
Credit Hours Earned in Driver Education or Related Traffic Safety		
No response	2	1.5%
0	26	19.5%
1–3	9	6.8%
4–6	2	1.5%
7–9	3	2.3%
10–12	66	49.6%
13 or more	25	18.8%
Last PennDOT Traffic Safety Conference Attended		
No response	9	6.8%
2018 (last year)	33	24.8%
2017	6	4.5%
2016	5	3.8%
< 2016	20	15.0%
Never attended	60	45.1%

Note. PennDOT = Pennsylvania Department of Transportation;
N = 133 respondents; Percentages may not sum to 100% due to rounding.

Driver Education Curriculum Used

Data regarding the curricula that respondents use are summarized in Table 4. The Pennsylvania Enhanced Driver Education curriculum (48%) was endorsed more than any other curriculum. The ADTSEA's Driver Education Classroom and In-Car curriculum is used second-most in Pennsylvania's public schools, with 20% of respondents indicating they use it. A small percentage of respondents (9.3%) use AAA's How to Drive curriculum. Additionally, 22.7% of responded "Other" and provided an "open-ended" response. These "Other" responses were coded by program mentioned. Of those who responded "Other," 23.5% indicated they use a combination of curricula. Importantly, the specific curricula used in combination were included in their respective tallies above in the table.

Table 4.
Curriculum Used by Driver Education Instructors

Curriculum	*n*	% of Responses
Pennsylvania Enhanced Driver Education Curriculum	72	48%
American Driver & Traffic Safety Education's Driver Education Classroom and In-Car Curriculum	30	20%
AAA How to Drive	14	9.3%
Other:	**34**	**22.7%**
Drive Right	10	29.4%
Pennsylvania Driver's Manual	7	20.6%
Teacher-created	4	11.8%
Glencoe / McGraw-Hill Responsible Driving	2	5.9%
Shields Online	1	2.9%
Online	1	2.9%
Indiana University of Pennsylvania Curriculum	1	2.9%
Unknown	1	2.9%
Combination with any above	8	23.5%

Note. *N* = 133; percentages will not sum to 100% given the option for respondents to "check all that apply"; "Combination of the above" indicates those respondents who reported using more than one curriculum, and each curriculum reported was tallied in its respective row. Italics indicate coded "open-ended" responses specified when "Other" was selected. % of Responses in italics indicate percent of "Other" responses coded as each category, not total % of Responses.

Driving Range and Simulation System Use

Results indicated that 82% of respondents do not utilize a multiple car driving range when teaching novice drivers. Furthermore, 90.3% of respondents do not utilize a driving simulation system when teaching novice drivers. Less than 1% of respondents did not select answers for these two questions (0.02% and 0.02% respectively). These omitted responses cannot be interpreted as it is unclear whether the respondent did not understand the questions, elected to skip the questions, or if these methods are not utilized.

Time Dedicated to Instruction on Seat Belt Use and Distracted Driving

Given the nature of work related to the grant that funded this project and the crash and fatality data for novice drivers (Arnett, 2002; Shope, 2006), respondents were asked to report the amount of time they spend teaching novice drivers the importance of wearing seat belts and avoiding driving while distracted (e.g., using cell phones while driving). These data are summarized in Figures 2 and 3, respectively.

A plurality of responses was received for the amount of time spent directly instructing on seat belt use and laws, with <1 hour receiving the greatest number of endorsements (n = 46; 34.6%) followed by 1-2 hours (n = 35; 26.3%). Thirty-two percent of respondents reported allocating more than 2 hours for instruction on seat belt use and laws. The 10 no responses (7.5%) cannot be interpreted given that a no response could mean this topic is not directly taught, respondents were unsure of how long they taught that content, or those respondents elected to skip this question.

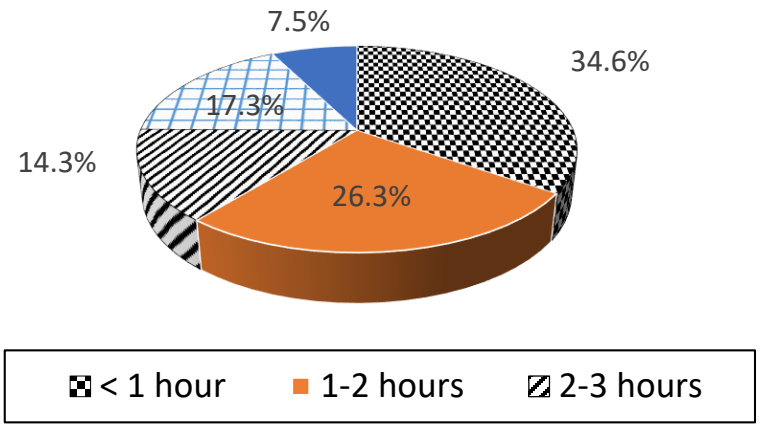

Figure 2.
Amount of time providing direct, explicit instruction in seat belt use and laws.

The time spent providing direct instruction on distracted driving, including refraining from using cell phones while operating a vehicle, was much more evenly distributed across reporting categories (< 1 hour, 1-2 hours, 2-3 hours, > 3 hours). The 12 respondents (9.0%) who did not offer a response cannot be interpreted given a no response could indicate that this topic was not covered, respondents could not recall how long they dedicated to this topic, or respondents elected to skip this question.

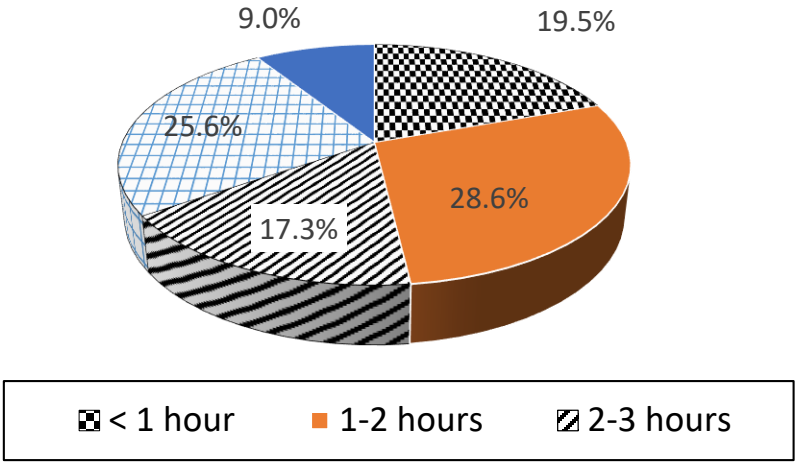

Figure 3.
Amount of time providing direct, explicit instruction in seat belt use and laws.

DISCUSSION AND IMPLICATIONS

The electronically-distributed survey of public-school driver education instructors in Pennsylvania yielded a response rate of 42.9%, which is higher than typical for such research methods (Manfreda et al., 2008); therefore, we believe conclusions drawn from this sample have the potential to generalize to all public-school driver education instructors in Pennsylvania, depending on representativeness of the sample. Due to the voluntary, nonrandom nature of the survey, external validity cannot be determined at this time. Future research should examine these questions utilizing random sampling and inferential statistics to examine the goodness-of-fit between demographic characteristics of the sample and the intended population.

Current results indicate that the at least 60% of all public-school driver education instructors in Pennsylvania who responded to the survey are male, mid-to-late career teachers primarily certified in health

and/or physical education or social studies/history, a finding that is comparable to previous survey results (Pesci, 2009). These data suggest growth opportunities for females, younger educators, and those whose primary credentialing are outside health and/or physical education or social studies/history.

Similar to previous survey results (Pesci, 2009), approximately 20% of driver education instructors in Pennsylvania surveyed have completed a college course in driver education, a somewhat concerning indication that many driver education instructors in the sample have not received formal training in an area in which they practice professionally. Thus, a call for such opportunities offered by institutions of higher education and strong endorsement to complete such in-service training by PDE may be warranted. With only one public institution of higher education in Pennsylvania offering such coursework, there is a need for PDE to consider how to expand formal training opportunities across the commonwealth. Concurrently, stronger endorsement by PDE to take such coursework would be valuable as this would likely increase professional knowledge and competencies in the field of instruction for novice drivers. With a third of respondents indicating attendance at the seminal statewide conference for novice driver education instructors, opportunities for increased attendance is recommended. Incentivizing attendance, through nominal registration and travel fees to attend this conference in State College, and endorsements of such attendance as one path to achieve continued credentialing are potential ways to increase driver education instructors' attendance.

Most survey respondents indicating using an evidence-based curriculum in their classrooms. Over three-quarters of all respondents reported using one of two curricula (i.e., Pennsylvania Enhanced Driver Education; ADTSEA). An additional 11% of respondents indicated using AAA's How to Drive curriculum. These results suggest that most driver education instructors utilize commercially-available, evidenced-based curricula when instructing novice drivers (Pesci, 2009). Very few driver education instructors (3%) reported using their own curriculum, an encouraging finding given the importance placed on used evidence-based instructional materials. In regard to use of driving ranges and driving simulation systems to teach notice drivers, few instructors reported utilizing these instruction delivery methods (15.8% and 8.3% respectively). These findings are consistent with Pesci's (2009) results, suggesting that the use of these instructional methods has likely remained low over the past decade.

One of the greatest known contributors to automobile crashes and fatalities, particularly among novice drivers, is a cluster of behaviors related to distracted driving such as interactions with passengers, operation of motor vehicle accessory controls, and use of mobile devices (Atchley, Atwood, & Boulton, 2011; Prat, Gras, Planes, Gonzalez-Iglesias, & Sullman, 2015). Specifically, use of cell phones while driving is

increasingly cause for concern, especially among notice teen drivers. Additionally, novice drivers' inconsistent seat belt use (e.g., Shults, Haegerich, Bhat, & Zhang, 2016) give rise to the need to focus instruction with novice drivers on both safe driving behaviors in an effort to reduce crashes and fatalities. Direct, explicit instruction in these safe driving behaviors might result in more novice drivers refraining from using cell phones and using seat belts while driving. Empirical inquiry into whether such direct instruction results in improved novice drivers' behavior remains to be conducted; however, it is reasonable to believe that such direct instructional practices would be at least as effective, if not more effective, than simply ignoring direct instruction in these areas. To that end, results from this study indicate at least 9 out of 10 instructors surveyed spend at least some time directly instructing novice drivers on the importance of not using cell phones and wearing seat belts while driving. Despite these encouraging data, it is recommended that *all* driver education instructors provide direct, explicit instruction in safe driving, including cell phone and seat belt use, given these are factors that would likely result in fewer crashes and fatalities. Failure to directly instruct safe driving behaviors, inclusive of cell phone and seat belt use, should be of critical emphasis particularly given the ubiquitous use of cell phones and ease of securing oneself in a car with a seat belt.

There are, of course, some limitations of this study that must be acknowledged. A broader sample of driver education instructor characteristics and practices is needed beyond just Pennsylvania to fully appraise current practices across the United States. Further, a deeper analysis of the methods of instructing around minimizing distracted driving (i.e., safe driving) are needed. For example, what methods do instructors use to teach, reinforce, and emphasize not using a cell phone while driving? What approaches are used to teach the important of seat belt use? Use of scare tactics to change behavior in general (Goldberg, Halpern-Flesher, & Millstein, 2002; Hastings, Stead, & Webb, 2004; Witte & Allen, 2000) and driving behavior, in particular, is of questionable utility (LeGarde, Lubman, & Hartnett, 1971). Therefore, more effective approaches need to be developed and empirically tested. Given that direct, explicit instruction is known to be highly efficacious in many traditional academic areas including literacy and mathematics (Hattie, 2009), it stands to reason that such approaches might generalize well to driver education.

Finally, what would be most insightful is to appraise the extent to which driver education of any kind results in appreciable changes in novice driver behaviors. Such a study would require directly assessing the extent to which particular driver education curricula had an impact on novice drivers engaging in safe driving behaviors. The few studies to date on the efficacy of driver education instruction on novice driver behaviors have been correlational, offering little validation of the cause-effect relationship we need to conclude whether

driver education is effective. Such a study is well beyond the scope of this manuscript, although work we continue to implement aspires to shed some initial light into these cause-effect relationships.

In the end, educating novice drivers about how to engage in safe driving likely is the cornerstone to reducing crashes and fatalities among this and all age groups. Certainly, a multi-faceted approach, including incentives for safe driving (e.g., reductions in car insurance for sustain safe driving) and increases in technology to prevent crashes and fatalities (e.g., airbags, vehicle warning systems; lane drift detection systems), will be important as well in the effort to improve driving safety. But it is also likely that effective driver education will be a necessary component to the solution. Certainly, our youngest drivers, along with everyone else who rides on American roads, is deserving of further empirical study.

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