RESEARCH BRIEF

Hit-and-Run Crashes: Prevalence, Contributing Factors and Countermeasures

Hit-and-run collisions are those in which at least one person involved in a crash flees the scene before offering any (or sufficient) information or aid to the other involved person(s) or fails to properly report the crash. Hit-and-run crashes contribute to the suffering and social and economic burdens typical of injury crashes but also can increase the severity of outcomes given delays in or the complete absence of medical attention for the victims. Moreover, hit-and-run violations—which are criminal offenses—can create additional burdens for law enforcement and for families looking for remediation and medical and insurance support.

The current analysis found that both the rates of hit-and-run crashes and fatalities are increasing. There were an estimated 737,100 hit-and-run crashes in 2015 (NHTSA, 2016). This translates to a hit-and-run crash happening somewhere in the U.S. every 43 seconds. The 2,049 fatalities that resulted from hit-and-run crashes in 2016 were the highest number ever recorded (NHTSA, 2017).

In addition to providing updated statistics concerning hit-and-run crashes, this brief provides a review of some of the scientific literature on environmental, vehicle and individual factors that are associated with this crash type as well as models and theories that speculate on the etiology of these crashes. Additionally, existing countermeasures that have been implemented in various states are reviewed. Lastly, areas of future research and data needs are described.

METHODS

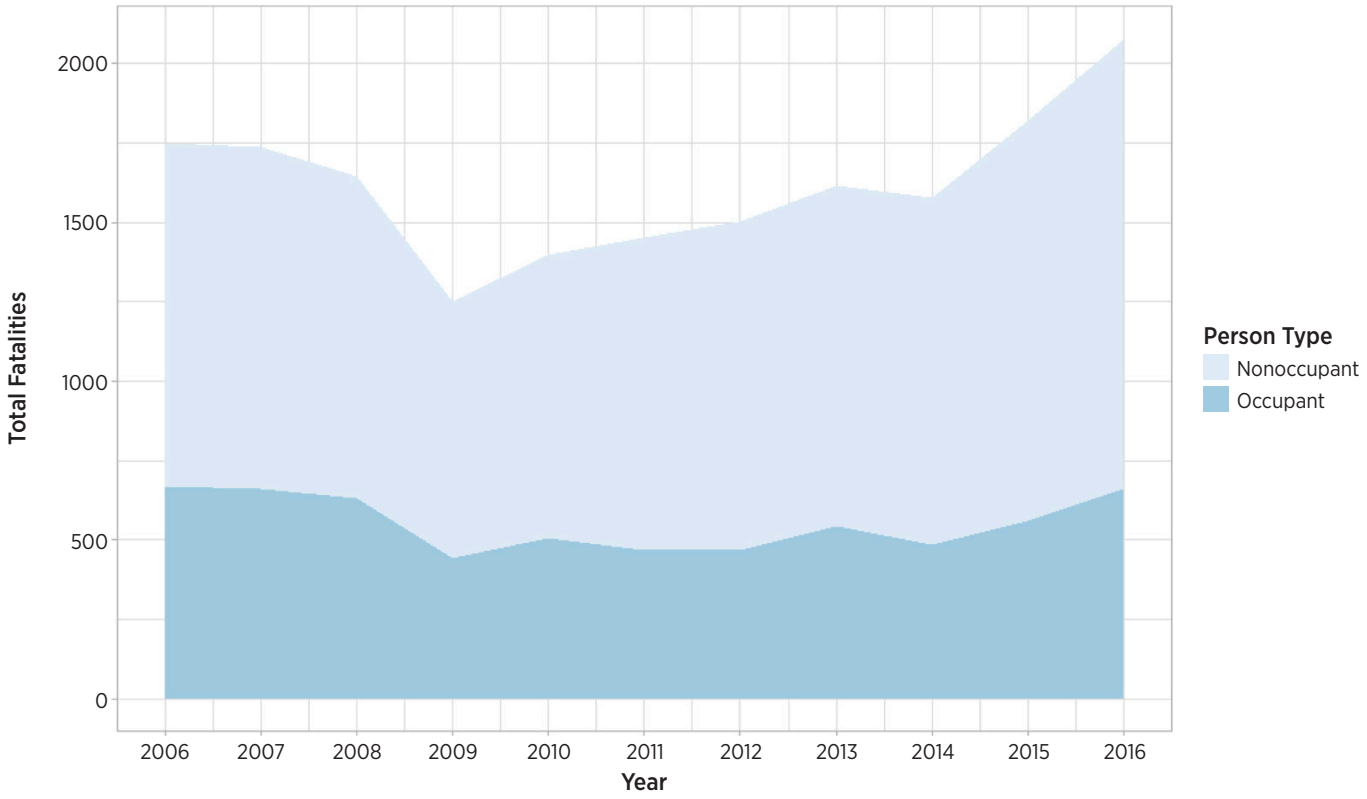
Data from the National Highway Traffic Safety Administration (NHTSA) Fatality Analysis Reporting System (FARS) were used to quantify fatal crashes and deaths. FARS contains detailed information about all motor vehicle crashes in the U.S. that occur on public roadways, involve a moving motor vehicle and result in a death within 30 days of the crash. Data from the NHTSA's National Automotive Sampling System General Estimates System (NASS GES) were used to quantify nonfatal crashes, people injured and total crashes. GES comprises a representative sample of all police-reported motor vehicle crashes nationwide. Fatal crashes recorded in the GES database were excluded to avoid double-counting. Statistics derived from GES were weighted to account for crashes' differential probabilities of being included in the GES database and to project estimates from the GES sample onto all police-reported crashes nationwide (NHTSA, 2016).

RESULTS

In 2016, there were 1,980 fatal hit-and-run crashes resulting in 2,049 fatalities. This is the highest annual number of hit-and-run fatalities or crashes recorded since NHTSA began compiling statistics on fatal motor vehicle crashes in 1975. Of these, 1,398 crashes involved nonvehicle occupants such as pedestrians and bicyclists. Figure 1 plots the number of people killed in hit-and-run crashes, breaking out victim type by motor vehicle occupants and nonoccupants. A more detailed breakdown of victim type can be found in Table A1 in the Appendix. The number of hit-and-run fatalities has been increasing at an average rate of 7.2 percent per year since 2009. A large part of this increase has been in fatal crashes involving nonvehicle occupants, mostly pedestrians.

States with higher populations tend to have more fatal hit-and-run crashes (the correlation is 0.965). However, examining differences per capita reveals some important variation across states. Figure 2 shows the rate of fatal

Figure 1. Total fatalities by year and person type. Rare and unknown person types are not plotted; these make up less than 2% of the total.

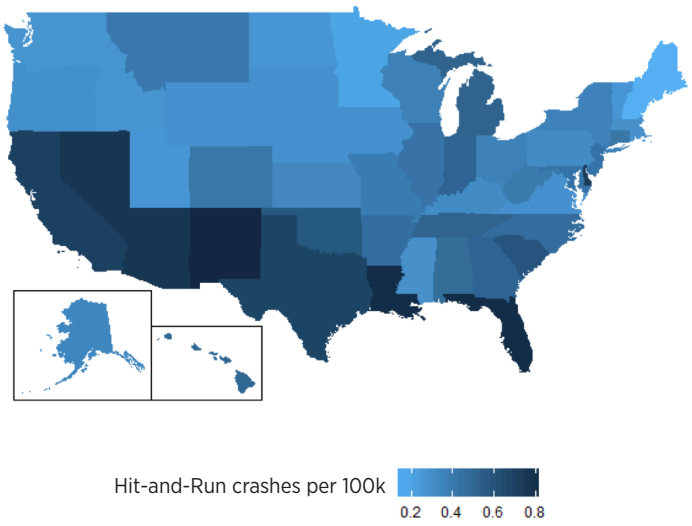


hit-and-run crashes per 100,000 people in each state from 2010 to 2016 (see Table A2 in the Appendix for a breakdown by state). New Mexico, Louisiana, and Florida top the list of states with the highest rates and New Hampshire, Maine and Minnesota have the lowest rates.

Similar to trends in fatal crashes and fatalities noted above, there has been an increase in recent years of numbers of hit-and-run crashes that resulted in a police report. An average of 682,000 hit-and-run crashes occurred per year over the last 10 years, with 737,100 occurring in 2015, the most recent year for which GES data was available.

Table 1 gives a summary of total hit-and-run crashes, injuries and fatalities since 2006. It shows the prevalence of hit-and-run collisions has been increasing over the past few years. The total percentage of fatalities that involve a driver fleeing is also increasing, reaching a high of 5.5 percent in 2016. That figure rises to 20.5 percent when looking only at crashes in which the victims are pedestrians. The U.S. has a relativity high rate of hit-and-run crashes compared with other developed nations for which data were available. For example, a survey of European countries found rates of fatal hit-and-run crashes

Figure 2. State-by state-comparison of fatal hit-and-run crash rate per 100K population (2010 – 2016).



Population data from U.S. Census Bureau.

Table 1. Prevalence of hit-and-run crashes in the U.S. from 2006 to 2016.

Year	Number of hit-and-run crashes[1]	Percentage of all crashes[1]	Hit-and-run injuries[1]	Percentage of all injuries[1]	Hit-and-run fatalities[2]	Percentage of all traffic fatalities[2]
2006	732,900	12.3	172,200	6.8	1,772	4.1
2007	722,900	12.0	158,100	6.5	1,763	4.3
2008	734,300	12.7	150,800	6.5	1,673	4.4
2009	652,100	11.9	139,000	6.4	1,274	3.8
2010	627,200	11.6	158,400	7.1	1,393	4.2
2011	614,200	11.5	136,900	6.4	1,459	4.5
2012	655,400	11.7	143,500	6.4	1,513	4.5
2013	640,100	11.3	125,700	5.8	1,612	4.9
2014	703,900	11.6	140,900	6.3	1,578	4.8
2015	737,100	11.7	138,500	5.9	1,819	5.1
2016	—	—	—	—	2,049	5.5

Note. [1]from GES. [2]from FARS.

no higher than 6 percent with most reporting 3 percent or less (Martensen & Kluppels, n.d.). In Singapore the rate was 1.8 percent for both fatal and nonfatal hit-and-run crashes combined (Tay, Rifaat, & Chin, 2008). Differences in data-recording procedures across different countries make these comparisons imprecise but generally show the U.S. with a higher rate of hit-and-run crashes.

CONTRIBUTING FACTORS IN HIT-AND-RUN CRASHES: A REVIEW OF THE LITERATURE

The scientific literature on hit-and-run crashes is sparse, with only a few major works written over the last 30 years. In that research, three focus areas have emerged: descriptions of the victims, with a strong focus on pedestrians; characteristics of the crash scene; and descriptions of the drivers committing the offense. This section highlights the major findings.

VICTIM CHARACTERISTICS

Pedestrians account for the majority of people killed in hit-and-run crashes; as a result, they are the focus of the majority of available research studies. Studies of U.S. road fatalities over the past 30 years have shown that approximately 1 in 5 pedestrian deaths involve a hit-and-run crash (MacLeod, Griswold, Arnold, & Ragland, 2012; National Center for Statistics and Analysis, 2017; Solnick & Hemenway, 1995). This trend continues in the current data with 19.5 percent of pedestrian fatalities involving hit-and-run crashes for the period of 2006 to 2016. To put this in perspective, only 1 percent of vehicle driver deaths involved hit-and-run crashes in the same time period.

An early study by Solnick and Hemenway (1995) analyzed FARS data on pedestrian hit-and-run victims in the continental U.S. between 1989 and 1991. They found that victim age was a factor in whether or not the driver flees the scene. Fatally injured pedestrians under the age of 6 or over age 80 were half as likely to be victims of hit-and-run collisions as fatally injured pedestrians in other age groups. There are also gender disparities among hit-and-run victims. MacLeod et al. (2012) found that males make up around 70 percent of hit-and-run victims in single car/single pedestrian crashes.

Victim characteristics also are associated with the likelihood that a driver who flees the scene after a crash will later be identified. For example, MacLeod et al. (2012) found that the age of the victim in single-vehicle fatal pedestrian hit-and-runs was predictive of the likelihood of the driver being identified. In crashes involving children ages 6 to 15, the driver is identified more than 60 percent of the time versus a 39 percent driver identification rate for victims between 31 and 55 years old. There is an increase in driver identification rates for crashes with older victims–49 percent when victims are between 76 and 80 years old. Again, time of day of the crash may be a factor, along with the possibility that police and the local community put more resources into finding the perpetrator. MacLeod et al. (2012) also noted that drivers were 6.6 percent more likely to be identified in cases where the victim was female compared with cases with a male victim.

It is interesting to note the similarities between the profile of all pedestrian fatalities and those involving hit-and-run crashes. In both groups, males make up approximately 70 percent of the victims and there are lower numbers of victims at the ends of the age spectrum (National Center for Statistics and Analysis, 2017). There are also other similarities in crash characteristics, which will be discussed in the next section. This similarity in profile may suggest that countermeasures designed to reduce all pedestrian fatalities also may help decrease the number of hit-and-runs.

CRASH CHARACTERISTICS

Environmental factors such as lighting, roadway geometry and location of the crash have been shown to be associated with the likelihood of hit-and-run crashes. In general, the greater the visibility of a potential crash, either through more potential witnesses on heavily trafficked roads or better lighting conditions, the less likely a hit-and-run will occur. In contrast, areas with higher pedestrian traffic increase the likelihood. The research findings are sometimes mixed, but environmental characteristics are still important when considering countermeasures.

MacLeod et al. (2012), in their examination of single vehicle/single pedestrian fatal crashes, found fleeing to be nearly 4.4 times more likely between midnight and 4 a.m. compared with those between 8 a.m. and 11:59 a.m. Similarly, pedestrian-involved fatal hit-and-run crashes are less than half as likely to occur in daylight (Solnick & Hemenway, 1995). The increase seen at night is thought to be because lower visibility increases the chance of escape. Also, nighttime drivers may be involved in more risky behaviors such as driving while intoxicated (DWI) or without a license, which may in turn make them more likely to decide to flee the scene of a crash.

When looking at all hit-and-run crash types (i.e., involving fatalities and injuries, as well as property damage only), the time of crash varies. In Hawaii, for example, the most common time for hit-and-run crashes was between 3 and 4 p.m. (Kim, Pant, & Yamashita, 2008). Another study looking at all hit-and-run crash types in Calgary, Canada, found that approximately 85 percent of hit-and-run crashes occurred during the day (Tay, Kattan, & Sun, 2010). For crashes involving property damage only, it is possible that drivers may not know it is their responsibility to stop and report the crash (Hopkins, Chivers, & Stevenson-Freer, 2017).

Interestingly, weather conditions have not been shown to be a statistically significant predictor of hit-and-run crashes (Kim et al., 2008; Tay, Barua, & Kattan, 2009). While poor weather conditions may decrease visibility, they also reduce the exposure of people most vulnerable to hit-and-run crashes, mainly pedestrians. Jiang, Lu, Chen, and Lu (2016) suggest that in situations where the driver is not in control, such as when the weather is bad, they may not feel as responsible for the collision. Feeling less at fault for the crash may encourage drivers to stay at the scene.

The type of roadway may affect the likelihood of a hit-and-run; however, the findings in the scientific literature are mixed. Undivided roadways have been shown to increase the likelihood of a hit-and-run crash in the U.S. (Tay et al., 2009) and Ghana (Aidoo, Amoh-Gyimah, & Ackaah, 2013) but not in Japan (Fujita, Okamura, Kihira, & Kosuge, 2014). This difference may be explained by Japan's more urbanized infrastructure, with a greater proportion of undivided roadways in highly populated cities. The concomitant increase in potential witnesses may discourage fleeing the scene. In California, it was shown that interstate highways and county and municipal roadways are more common hit-and-run locations than the U.S. or state highway system (Tay et al., 2009). High speeds and minimal exposure to pedestrians on highways likely contribute to the lower hit-and-run rates.

Fatal hit-and-run crashes are more likely on roads with lower speed limits (MacLeod et al., 2012; Solnick & Hemenway, 1995). Hit-and-run crashes are also more common on lower-speed sections of roadways such as curved roads, bends, overpasses and ramps (Tay, Barua, & Kattan, 2009; Tay et al., 2008). These may be areas that pedestrians are more likely to cross. Additionally, damage sustained during crashes on higher-speed roads may limit the ability of a driver to flee the scene.

In terms of regional differences, MacLeod et al. (2012) found that rates of hit-and-run in fatal pedestrian single-vehicle crashes are higher in the Midwest and western states than in the Northeast and South (see also Solnick & Hemenway, 1995). Urban areas have been shown to have higher rates of hit-and-run crashes. This may be due to higher population density, as the proportions of crashes and fatalities that involve pedestrians are generally greater in urban areas, and pedestrians account for a large proportion of all hit-and-run fatalities. In some cities, the rate of fatal pedestrian hit-and-run crashes can be as high as 40 percent (Greenfield, 2016).

Crash characteristics are generally not as consistent in predicting hit-and-run crashes as victim or driver characteristics but they can help identify areas where potential countermeasures could be focused. Low-speed roadways, urban areas and areas where pedestrians are more likely to cross should all be considered when developing countermeasures.

DRIVER CHARACTERISTICS

Given the nature of the crime, a comprehensive profile of hit-and-run offenders is not possible. In the U.S., about half of all hit-and-run drivers are eventually identified (Grembek & Griswold, 2012; MacLeod et al., 2012; Solnick & Hemenway, 1995). That number can vary significantly by state, with some states identifying less than 10 percent and some identifying every hit-and-run offender involved in a fatal crash (Grembek & Griswold, 2012). The information available is only for those drivers who have been identified and there is no way to know if they are representative of the whole. That being said, a profile does emerge that may be informative when considering the development of countermeasures.

Drivers in hit-and-run fatalities are more likely to be young males and have a history of prior DWI and license suspension. They tend to drive older model cars, suggesting having a lower socioeconomic status and they often have a positive BAC at the time of arrest (MacLeod et al., 2012; Solnick & Hemenway, 1994). Studies have shown that drivers who leave the scene are between two and nine times more likely to have been intoxicated at the time of collision (Fujita et al., 2014; Kim et al., 2008).

MacLeod et al. (2012) identified several factors associated with the likelihood that a driver will be identified in a hit-and-run pedestrian fatality. Time of day and daylight conditions both make identification more likely, as do crashes that happen in rural areas and outside of the southern and western U.S. states. Drivers who flee crashes involving children ages 15 and younger or women are more likely to be later identified. Lastly, drivers are about twice as likely to be identified in hit-and-run crashes that happen in locations other than the road or crosswalks.

Studies examining all hit-and-run crashes, as opposed to just those involving a fatality, show more variation in the profile of hit-and-run drivers. A Canadian study found that women ages 55 and older had the highest odds ratio for running away after a collision of any age and gender group (Tay et al., 2010). A study looking at data from Singapore found males between the ages of 45 and 69 to be the most likely to flee (Tay et al., 2008). As the range of crash severity being analyzed increases, the typical driver profile becomes less clear.

MOTIVATION TO RUN

Sometimes the motivation to flee is obvious, such as when a drunk driver with a criminal record does not want to go to jail. However, for less severe cases, such as those where only property damage has occurred, it is less clear why someone would put themselves in legal jeopardy by fleeing the scene. Theoretical frameworks for understanding why people commit hit-and-run offenses are limited and most have not been empirically tested. This section reviews some of the theories as to why people involved in crashes flee or fail to adequately report a crash.

Solnick and Hemenway (1994) offered two possible behavioral theories that they applied to drunk drivers who commit hit-and-run. The first, Rational Decision Theory, states that drivers make a decision to run given that they have the opportunity, the incentive and the ability to flee. For example, drunk driving is more common at night, when there are fewer witnesses and limited lighting, so when a crash occurs, there is more of an opportunity to get away. The incentive to flee is that the driver has been drinking and does not want to get into legal trouble. Finally, the driver has the ability to flee because their intoxicated state allows them to suppress their inhibitions against fleeing. The second theory proposed by Solnick and Hemenway, Personality Theory, states that there are underlying personality characteristics that predispose people to both drinking and driving and to other criminal behaviors, such as fleeing the scene of a crash. As noted, while both of these theories could offer some explanation as to why people would make the decision to flee, neither has been empirically tested.

Similar to Rational Decision Theory, Tay et al. (2008) attempted to explain the decision to flee through a "standard decision analysis framework," where drivers weigh the costs and benefits of fleeing. The costs of reporting a crash are known and could be severe, especially if illegal driving activity has occurred. In contrast, not reporting the crash could result in more severe

consequences if one flees and is then captured or much less severe consequences if they get away. Again, this theory does not account for crashes where the driver has very little to be concerned about if they decide to report the crash but could face criminal charges if they flee (e.g., crashes only involving property damage). This suggests that factors beyond the legal and financial costs of reporting a crash may be in play when a driver makes the decision to flee.

A framework proposed by Jiang et al. (2016) adds another dimension to the decision to flee by considering subjective and objective factors that lead to hit-and-run crashes. Subjective factors include being drunk or failing to keep control of the vehicle. Objective factors are those out of the driver's control such as poor weather or the behavior of the vehicle or pedestrian they hit. Jiang et al. (2016) stipulate that the driver weighs subjective factors more heavily than objective factors when making the decision to flee. The more at fault the driver thinks they are, the more likely they are to flee. Conversely, if the crash is entirely due to objective factors it would reduce the likelihood of leaving the scene. The researchers referred to the collective weighting of all of the information as the Subjective Responsibility Ratio (SRR). As the SRR gets higher, the likelihood of fleeing or failing to adequately report a crash increases. To test this theory, the researchers ran a logistic regression on hit-and-run crashes in urban river-crossing road tunnels in Shanghai, China. They found that the likelihood of a hit-and-run increased as the factors surrounding the crash pointed to more blame being placed on the driver (i.e., an increased SRR).

In a study by Hopkins et al. (2017), structured interviews were conducted with people in the United Kingdom who had been convicted in hit-and-run crashes that involved property damage and/or injury to other vehicle occupants or pedestrians but no fatalities. Of the 52 people interviewed in the study, 21 (40 percent) described their decision to flee as an act of self-preservation. This group gave several reasons for fleeing ranging from protecting themselves from what they perceived as a scam against them to concealing criminal activity, such as driving without a license. Sixteen subjects (30 percent) claimed that the reason for not stopping was that they did not think that the crash was serious enough to warrant a stop. Eight (15 percent) reported they did not know they were in a crash and seven (13 percent) were trying to hide the fact that they were under the influence of alcohol or other drugs. This study demonstrates that people have a diverse range of reasons for fleeing the scene of a crash. Countermeasures developed to stop people from fleeing the scene will have little impact on people who do not know it is their responsibility to stop and report minor crashes. Hopkins et al. (2017) suggest a broad range of countermeasures involving law enforcement, education and the use of dashcam recording technology to combat hit-and-run crashes.

COUNTERMEASURES

The standard approach to countering hit-and-run offenses is to create laws that punish the driver. These laws vary greatly among states in the U.S., with maximum sentences for a hit-and-run that results in a fatality ranging from six months to 30 years (Grembek & Griswold, 2012). Over the last five years, at least 13 states have passed laws to address the hit-and-run problem. The laws focus almost entirely on punitive measures against offenders. Jail time, fines, length of license suspension and level of offense (misdemeanor changed to felony) have been increased.

A common genesis for these laws is that the family of a victim, often a pedestrian or bicyclist, lobbies state lawmakers to address the hit-and-run problem. Several of the recently passed laws are named after the victim, for example, Erin's Law (West Virginia), Kevin's Law (Pennsylvania) and the Aaron Cohen Life Protection Act (Florida), among others. These individual laws that result from specific instances of hit-and-run crashes may signify a lack of coordination or attention by government to prevent hit-and-run collisions.

Grembek and Griswold (2012) analyzed the relationship between sentencing severity and prevalence of hit and run in pedestrian-involved crashes. They found that legal sanctions do not appear to have a deterrent effect when looking at rates of hit-and-run pedestrian fatalities and sentencing guidelines for fatal hit-and-run crashes. For example, states with a maximum prison term of five years have a similar rate of hit-and-run pedestrian fatalities as states with a maximum prison term of 25 years. There is some evidence to suggest that harsher traffic safety laws may make the problem worse. Fujita et al. (2014) found that stricter traffic safety laws (harsher penalties for careless and/or drunk driving) in Japan decreased

the overall rate of pedestrian crashes but increased the likelihood of a driver fleeing the scene. That said, it is unclear whether these outcomes are generalizable to the U.S. population and this is further underscored by the general lack of scientific evidence in this area.

While most laws focus on increasing punishment, a few states and cities have developed legislation with the goal of increasing the probability of capturing offending drivers. In January 2015, Colorado implemented the Medina Alert Program (Co. HB 14-1191), where an Amber Alert-style message is pushed through text message, email, local television and radio if a driver is involved in a hit-and-run. In order for an alert to be sent, the law requires that the hit-and-run involve a fatality or severe injury and that a partial or full license plate number and vehicle make and model are known. The city of Los Angeles, California, implemented a similar program called the Yellow Alert Program in January 2016 (Nelson, 2015). In its program, alerts are pushed out to the social media pages of Los Angeles law enforcement agencies and also shared with city bus and taxi drivers through an internal messaging system. The large number of bus and taxi drivers serving the area can therefore effectively broaden the surveillance capacity of the police. In addition to alerts, the Los Angeles program also increased rewards for information leading to arrest, up to $50,000 for information on fatal hit-and-runs. Both the Colorado and Los Angeles programs focus on increasing the likelihood that a driver involved in a hit-and-run crash will be captured. Further research is necessary in order to determine if this will decrease the rate of hit-and-run crashes.

Another legislative action out of California has been shown to decrease the rate of hit-and-run collisions. Lueders, Hainmueller, and Lawrence (2017) analyzed the rates of hit-and-run crashes in every county in California before and after a law was put into place allowing undocumented immigrants to receive driver's licenses. They found that while rates of collisions remained the same before and after the law change, rates of hit-and-run crashes decreased. The decrease was most pronounced in counties that had a higher number of people receiving the new licenses. One of the largest predictors of a driver's decision to leave the scene is not having a valid license (MacLeod et al., 2012; Solnick & Hemenway, 1995), so this law removed an incentive for some drivers to flee.

RESEARCH AND DATA NEEDS

The research on hit-and-run crashes is limited when considering the frequency of the crime. This leaves open several avenues for future research. First, researchers need to evaluate the newer countermeasures that focus on identifying offenders discussed above. Such research should also consider the prevalence of the alerts and the capture rate as well as a comparison of incident rates before and after the laws were put into place. Information on how the laws were communicated to the public should be collected and compared with surveys assessing public knowledge of the laws. It would be important to evaluate what role public education plays in people's understanding of hit-and-run laws and how that affects behavior.

A clearer profile of hit-and-run drivers, especially those who flee crashes where only property damage has occurred, would be useful for understanding why people make such a seemingly irrational decision. This could include structured interviews and more thorough descriptions of crashes than are available through databases such as FARS and GES. Another driver-focused area of research that could shed new insight in this domain could be to evaluate how similar the profile of hit-and-run offenders is to other groups that commit other serious traffic violations, such as driving drunk or without a license. Information about the people committing the crime will help inform countermeasures specific to hit-and-run crashes or give additional support to existing initiatives targeting other criminal groups.

Very little attention has been paid to the role of the pedestrian in hit-and-run fatalities. While it is understandable to not focus on the victim when looking at a crime, 34 percent of fatally injured pedestrians were found to have a BAC level over 0.08 (National Center for Statistics and Analysis, 2017). This suggests that pedestrian behavior could be putting them at a higher risk of becoming a victim of a crash.

Lastly, a detailed analysis of state laws should be conducted to see if any one set of countermeasures is performing better than others. This would include not only information about hit-and-run laws but also possibly related laws concerning DWI, license suspension, and pedestrian behavior.

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APPENDIX

Table A1. Number of fatalities from hit-and-run crashes, by person type, 2006 – 2016

Victim Type	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Driver	348	350	316	250	272	276	267	298	278	334	380
Passenger	321	312	313	192	222	183	182	227	193	205	229
Pedestrian	947	949	893	711	791	862	902	935	953	1123	1229
Bicyclist	135	126	121	97	94	112	127	124	131	129	169
Other/Unknown Type	21	26	30	24	14	26	35	28	23	28	42
Total	**1772**	**1763**	**1673**	**1274**	**1393**	**1459**	**1513**	**1612**	**1578**	**1819**	**2049**

Table A2. Number of hit-and-run crashes involving at least one fatality, by state, 2006 – 2016

Victim Type	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Alabama	25	29	24	21	15	25	23	16	24	39	17
Alaska	4	5	2	1	1	3	0	1	5	3	4
Arizona	83	72	71	46	44	59	45	47	50	62	55
Arkansas	9	17	15	9	13	20	14	8	9	14	15
California	328	275	271	206	234	238	226	282	285	300	337
Colorado	18	22	21	15	12	18	33	15	20	24	31
Connecticut	10	10	17	5	20	10	11	12	15	14	24
Delaware	5	5	9	3	7	4	8	5	6	11	7
District Of Columbia	8	6	3	3	3	3	2	3	2	7	6
Florida	195	190	168	143	135	135	145	146	166	185	206
Georgia	42	41	44	37	52	48	37	45	36	63	72
Hawaii	8	10	7	5	5	10	8	8	4	1	12
Idaho	4	4	1	3	3	3	2	6	4	3	9
Illinois	68	77	54	48	50	40	68	60	46	47	69
Indiana	31	20	25	20	24	28	32	27	35	41	45
Iowa	7	9	9	8	1	6	5	9	9	20	10
Kansas	5	2	10	3	6	4	9	6	16	9	15
Kentucky	15	15	22	10	13	11	8	11	10	21	23
Louisiana	45	51	41	40	32	30	42	38	40	42	42
Maine	2	1	4	1	0	0	0	0	2	4	7
Maryland	21	36	21	20	22	27	26	23	24	31	25
Massachusetts	17	17	9	11	15	22	17	21	17	20	20
Michigan	43	63	48	45	28	44	42	55	61	56	67
Minnesota	11	8	10	7	8	10	3	15	5	11	18
Mississippi	4	5	4	5	4	2	2	10	9	22	10

Table A2. Number of hit-and-run crashes involving at least one fatality, by state, 2006 – 2016 *(continued)*

Missouri	28	37	25	26	20	22	22	16	22	32	30
Montana	10	6	6	6	5	3	6	7	1	3	4
Nebraska	3	4	2	5	3	6	4	4	5	9	5
Nevada	35	29	17	12	13	10	18	21	32	27	32
New Hampshire	0	1	2	0	2	0	0	3	1	2	4
New Jersey	42	37	33	35	45	37	34	28	37	42	43
New Mexico	9	13	10	2	10	3	17	18	23	21	31
New York	71	61	68	50	64	77	76	74	61	72	59
North Carolina	45	45	40	36	31	39	43	49	43	52	62
North Dakota	0	1	1	2	2	0	3	2	3	0	3
Ohio	33	35	50	30	40	36	32	39	37	42	61
Oklahoma	12	19	19	8	29	18	23	20	18	23	25
Oregon	18	16	9	13	14	16	10	9	8	12	12
Pennsylvania	35	46	47	28	33	36	49	28	38	36	50
Rhode Island	5	5	4	5	6	3	0	3	4	1	3
South Carolina	31	33	35	4	12	23	30	34	19	33	44
South Dakota	4	0	2	0	5	4	2	2	2	0	1
Tennessee	45	34	19	29	29	32	29	34	28	32	48
Texas	175	179	198	155	165	172	183	187	168	179	233
Utah	5	5	6	7	5	7	7	9	7	9	6
Vermont	0	3	1	1	0	0	3	3	1	1	3
Virginia	21	25	21	9	15	18	27	16	26	23	32
Washington	21	14	23	19	23	12	18	22	21	19	13
West Virginia	5	4	4	5	6	10	4	5	8	7	11
Wisconsin	25	31	25	18	18	18	16	23	14	36	19
Wyoming	0	1	4	0	0	4	5	1	1	0	0
Total	**1686**	**1674**	**1581**	**1220**	**1342**	**1406**	**1469**	**1526**	**1528**	**1763**	**1980**