# Multi-Victim School Shootings in the United States

*A 50-Year Review*

PETER LANGMAN, PH.D.
Langman Psychological Associates, LLC

*This article details a study examining 64 school shooters who committed multi-victim attacks in the United States from 1966 through 2015. Results include demographic analysis of ages, venues of the attack, racial/ethnic identity of the attackers, magnitude of attacks, and frequency of perpetrator suicide. Data is provided for the sample as a whole, as well as for different time periods, to highlight trends over time. Notable results include numerous changes in post-Columbine attacks, including a greater age range of perpetrators, more perpetrators who are not white males, increased fatalities, and increased suicide rates.*

## INTRODUCTION

School violence is a major concern across all levels of education in the United States. Studies of school shooters have focused on a variety of types of violence, in different geographical locations, committed by particular types of perpetrators, and occurring within specific time frames.

In 2000, the Federal Bureau of Investigation released a report based on 14 shootings and four potential shootings (O'Toole). In 2002, the United States Secret Service and Department of Education published a study that investigated 41 school shooters involved in 37 attacks from 1974 through 2000 (Vossekuil, Fein, Reddy, Borum, and Modzeleski). Though these reports remain seminal documents in the field, they focused on perpetrators in middle school and high school; they did not include college and other adult perpetrators, nor provide any analysis of changes over time.

Other studies have also been limited to secondary school perpetrators (McGee and

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DeBernardo, 2002; Verlinden, Hersen, and Thomas, 2000; Meloy, Hempel, Mohandie, Shiva, and Gray, 2001; and Leary, Kowalski, Smith, and Phillips, 2003). As important as it is to study adolescent school shooters, the exclusive focus on them does not address the full spectrum of the perpetrators of mass attacks on schools.

Two works by Langman (2009*a,* 2009*b*) discussed school shooters from a psychological perspective, dividing them into three types: psychopathic, psychotic, and traumatized. The sample, however, was only ten perpetrators, and the studies contained no demographic or longitudinal analyses. Also, nine of the 10 shooters were secondary school shooters, providing virtually no data specific to older perpetrators. A more recent work (Langman, 2015*b*) investigated 48 perpetrators across all levels of education, as well as from five countries outside the United States. Though the study contained demographic data and intergroup comparisons, there was no analysis of changes over time. Also, the inclusion of 10 perpetrators from other countries limited the generalizability of the results for the United States.

Agnich (2015) studied multiple types of school violence, including both completed and foiled attacks, that occurred in 38 countries. Another broad-based study (Bushman, et al., 2016) explored both rampage school shootings and more common urban violence, presenting risk factors for those different types of incidents. Though these studies were large in scale, they either did not focus solely on the United States or specifically address multi-victim school shootings; nor did they analyze changes in perpetrators and attacks over time.

Using the sniper attack by Charles Whitman at the University of Texas in 1966 as the starting point for modern school shootings in the United States, there are now 50 years of school shootings to be investigated. Though school violence takes many forms, the focus in this study was on the larger-scale attacks that often strike people as more bizarre and incomprehensible than other types of aggression that occur in educational settings, such as gang violence, intimate partner violence, and the spontaneous eruption of violence at fraternity parties or sporting events. The fact that perpetrators, sometimes surprisingly young, walk into schools and open fire is a particularly disturbing phenomenon. Focusing on this specific type of school violence will hopefully lead to greater knowledge about the perpetrators.

## PURPOSE

The purpose of this study was to expand the literature by studying not only perpetrators who were secondary school students but rather those of all ages, and to analyze changes in the shooters and their attacks that have occurred over the last 50 years in the United States.

The study seeks to provide answers to the following questions:

1 Have multi-victim school shootings increased in frequency over the last 50 years?
2 What types of educational settings are most often attacked? Has this changed over time?
3 Who are the perpetrators in terms of age, gender, racial/ethnic identity, and immigration status, and has this changed over time? Does it vary among different groups of shooters?

4 Has the magnitude (number of casualties) of multi-victim school shootings changed over time? Does it vary among different groups of shooters?
5 What is the frequency of suicide among the perpetrators and has this changed over time? Does it vary among different groups of shooters?

Because this journal is devoted to safety in institutions of higher education, a particular focus will be given to results related to college and university attacks. For ease of reference, the term "college" will be used to refer to all institutions of higher education, including both colleges and universities.

## METHOD AND THE SAMPLE

The incidents included in this study met the following criteria:

1 The attacks occurred in education-related settings.
2 The attacks involved the use of firearms (though other types of violence may have also been employed).
3 The attacks were premeditated. Violence that erupted spontaneously at campus parties, sporting events, in parking lots, or other locations was not included.
4 The attacks resulted in at least three victims being killed or wounded (perpetrators who shot themselves or were shot by the police were not included in the victim count).
5 The incidents were not a result of rival gang violence.
6 The incidents did not consist of intimate partner violence that happened to occur on school property.
7 The incidents occurred in the United States during the years 1966 through 2015.

The rationale for these criteria was to have a data set that met several needs: to be focused enough on a particular type of school shooting that the results are not confounded by multiple types of violence; to be large enough to allow for subgroup comparisons; to cover a sufficient timespan to allow for analyses of changes over time; and to be limited to attacks within the United States so that the results are not confounded by international incidents whose populations and dynamics may differ from those in this country.

The method of data collection involved combing through scholarly works that provide lists or profiles of school shooters, as well as online lists and databases to identify as many perpetrators as possible. The scholarly works reviewed included Fox and Burstein (2010), Langman (2015*b*), Newman (2004), and Van Brunt (2012). Online sources included Columbine-angels.com, the National School Safety Center, School Shooters .info, the Stanford University Mass Shootings in America database (courtesy of the Stanford Geospatial Center and Stanford Libraries), the Violence Policy Center, and Wikipedia.

### TIME PERIODS 1 AND 2

In addition to providing data for the full date range, the data was divided into two time periods, with the attack at Columbine High School on April 20, 1999 serving as the dividing line. As noted by Larkin (2009), the Columbine attack was a watershed

event that had profound ramifications for subsequent school shootings. This study compared the nature of the perpetrators and their attacks up to and including Columbine (Period 1) to those perpetrators and attacks that occurred after Columbine (Period 2).

This dividing point has the added advantage of resulting in a similar number of attacks in the two periods (34 and 28, respectively), allowing for a fairly balanced comparison in terms of sample sizes. It should be noted that the 34 attacks in Period 1 actually involved 36 perpetrators because two of the attacks were carried out by pairs of perpetrators. The 50 years of data was also divided into other time periods to highlight shifts over time.

### INTENTION VS. OUTCOME

As explained earlier, this data set contains only those shooters who killed or wounded at least three people. It should be noted that several shooters intended to kill many people but were stopped or gave up before doing so. Conversely, other perpetrators may have intended to limit their attacks to one or two people, but ended up wounding or killing more, either deliberately or inadvertently. Though all these perpetrators are of interest in understanding school shooters, the ambiguity in sorting out intention resulted in limiting the sample to those who wounded or killed at least three people, regardless of their intentions prior to their attacks.

Similarly, the suicide data include perpetrators who died by their own hand or were killed by police in what is often referred to as "suicide by cop." Some perpetrators intended to die in their attacks but changed their minds or were apprehended before they shot themselves. Conversely, at least one perpetrator apparently intended to survive and escape, but killed herself when escape became impossible. The suicide data only includes those who died during their attacks, regardless of their intention prior to the attacks. At least two of the six perpetrators killed by police left writings and/or made comments during their attacks indicating their intention to die. In the absence of any contrary information, the other four were counted as suicides.

The sample for this study consisted of 64 perpetrators who committed 62 attacks (two attacks involved pairs of perpetrators). The shooters ranged in age from 11 to 62. They were 95.3 percent male ($n = 61$) and 4.7 percent female ($n = 3$). Other demographic data will be presented in the Results section as part of the findings. A list of the shooters included in the study is provided in the appendix.

## RESULTS

The results are presented in response to each of the sets of questions. Results have been rounded to one decimal place. Those results that are most notable are presented in boldface type.

TABLE 1 *Number of School Shootings by Decade*

| Decade | *N* = |
|---|---|
| 1966 to 1975 | 3 |
| 1976 to 1985 | 8 |
| 1986 to 1995 | 14 |
| 1996 to 2005 | 18* |
| 2006 to 2015 | 19 |

TABLE 2 *Type of Schools Attacked*

| School Type | *N* = | Percent |
|---|---|---|
| Elementary | 8 | 12.90% |
| Middle | 9 | 14.50% |
| High School | 21 | 33.80% |
| College | 21 | 33.80% |
| Other | 3 | 4.80% |

* The 18 incidents involved 20 perpetrators, because two of these attacks were committed by two people.

### QUESTION 1

*Have multi-victim school shootings increased in frequency over the last 50 years?*

Based on this sample, multi-victim school shootings have increased over the last 50 years. Dividing the 50 years into five decades gives the results seen in Table 1.

If the 50-year period is divided into two 25-year periods, the results are that 17 attacks occurred during the first 25 years and 45 attacks during the second 25 years. Though it is possible that these results are skewed due to more recent events being better documented, the magnitude of the change suggests an actual increase in frequency.

### QUESTION 2

*What types of educational settings are most often attacked? Has this changed over time?*

Table 2 shows the data regarding which educational settings were the sites of attacks. "Other" education settings included a cosmetology school, a computer training class,

FIGURE 1 *Types of Schools Attacked, by Time Period*

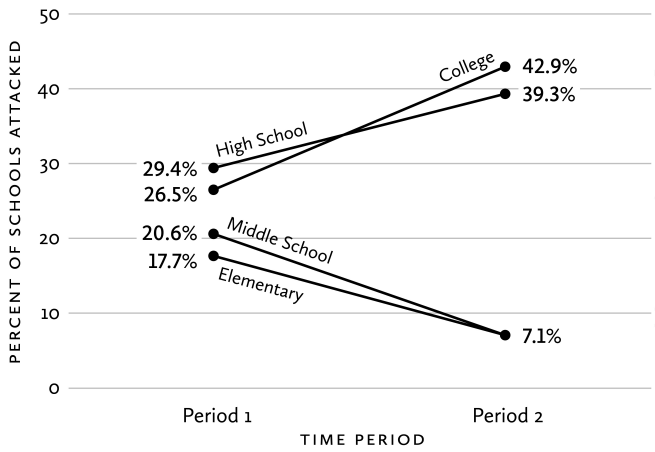


TABLE 3 *Number of Shooters by Age Group*

| Age | *N* = | Percentage |
|---|---|---|
| 10 to 19 | 34 | 53.1% |
| 20 to 29 | 16 | 25.0% |
| 30 to 39 | 7 | 10.9% |
| 40 to 49 | 6 | 9.4% |
| 50 to 59 | 0 | 0.0% |
| 60 to 69 | 1 | 1.6% |

TABLE 4 *Populations by Time Period*

| Time Period | Juvenile | Adult | Average Age |
|---|---|---|---|
| Period 1 | 47.2% | 52.8% | 21.7 |
| Period 2 | **42.9%** | **57.1%** | **25.4** |
| Total | 46.9% | 53.1% | 23.3 |

and a community center where English was taught to immigrants. The numbers (*N*) signify the number of attacks.

The type of schools that have been the sites of rampage attacks shifted from Period 1 to Period 2, with elementary schools and middle schools seeing declines of 59.8 percent and 65.5 percent respectively, and high schools and colleges seeing increases of 33.7 percent and 61.8 percent. These results are presented in Figure 1.

QUESTION 3

*Who are the perpetrators in terms of age, gender, racial/ethnic identity, and immigration status, and has this changed over time? Does it vary among different groups of shooters?*

*Age*

As noted, the perpetrators ranged in age from 11 to 62, with an average age of 23.3. Table 3 shows how many shooters fell within each 10-year age group.

To further investigate the age of the perpetrators, the sample was divided into two populations: juvenile and adult. Those in the juvenile category committed their attacks

FIGURE 2 *Percent of Perpetrators Who Were Under the Age of 16, by Time Period*

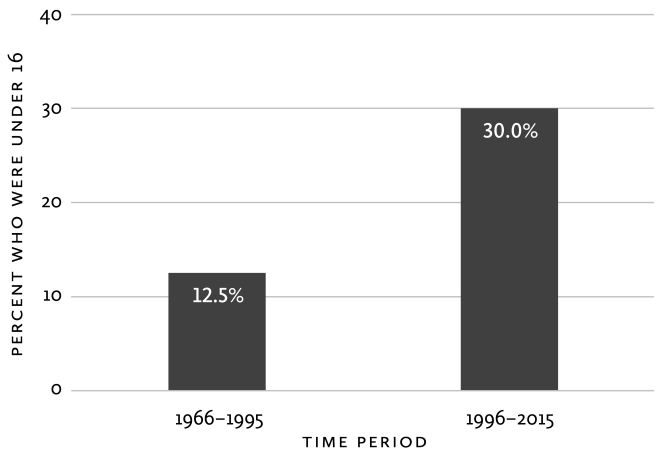


TABLE 5 *Racial/Ethnic Identity of Shooters*

| Racial/Ethnic Group | Percentage | *N* = |
|---|---|---|
| Caucasian | 54.7% | 35 |
| African American | 17.2% | 11 |
| Asian American | 12.5% | 8 |
| Latino | 7.8% | 5* |
| Native American | 6.3% | 4 |
| Middle Eastern | 1.6% | 1 |

* Aaron Ybarra was part Latino but also had Asian ancestors (Latinos who had settled in the Philippines).

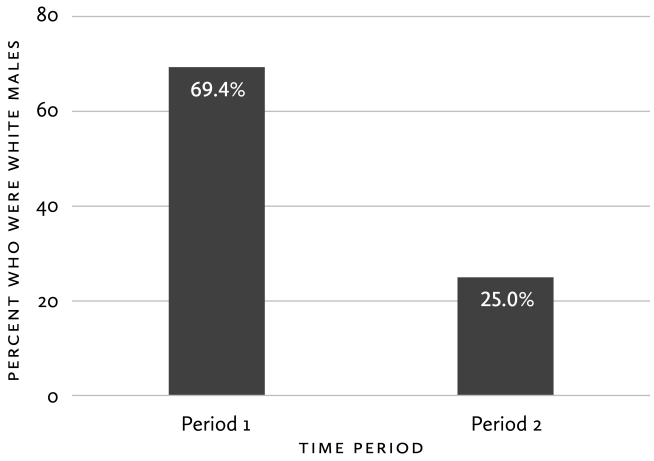
while they were secondary school students. Those in the adult category committed their attacks after secondary school. Apart from two exceptions, the juvenile shooters were 18 or younger in age, and the adult shooters were 19 or older. Though much of the literature on school shooters has focused on adolescents, the data in Table 4 demonstrates the significant number of older shooters. Table 4 also indicates that the number of youths versus adults changed over time, with Period 2 having an older population than Period 1.

Though Table 4 notes the increase in age, there has also been a rise in the number of very young perpetrators. This shift began several years before the attack at Columbine High School. The number of perpetrators under the age of 16 has more than doubled in the last 20 years (1996 through 2015) compared to the first 30 years (1966 through 1995). These results are presented in Figure 2. This increase is from one out of eight perpetrators (12.5 percent) to nearly one out of three being under the age of 16 (30.0 percent).

Shifting the analysis from percentages of very young perpetrators to the frequency of their attacks results in an even more striking finding. During the first 30 years, there were three shooters under the age of 16. Thus, on average, attacks by very young perpetrators occurred once every 10 years. In the last 20 years, however, there were 12 perpetrators under the age of 16, meaning that very young perpetrators committed school shootings every 1.7 years.

Thus, there have been two contrary trends over the last 15–20 years. On the one hand, the oldest perpetrator during the first 30 years was 40 years of age, but in the last 20 years there were six perpetrators over 40. On the other hand, starting in 1996, there have been more very young perpetrators. Thus, the number of perpetrators at both ends of the spectrum has increased. Instead of being primarily a phenomenon of older adolescents and young adults, over the last 20 years the phenomenon has included more early adolescent (and even pre-adolescent), and more middle-aged, perpetrators.

FIGURE 3 *Percent of Perpetrators Who Were White Males, by Time Period*




*Gender*

Due to the rarity of female perpetrators, and thus a minute sample size, this variable cannot be analyzed like other demographic factors. Several works have discussed concepts of masculinity and manhood in relation to school shooters, including Newman (2004) and Langman (2009*b,* 2015*b*), but female perpetrators of school shootings are so rare that they have received little attention. Langman (2015*b*) profiles four female perpetrators and discusses them briefly in comparison to male perpetrators, noting several similarities.

*Racial, Ethnic, and Gender Identity*

Though the term "white male" is a blend of racial, ethnic, and gender variables, it is a commonly used phrase in describing the perpetrators of school shootings. Both scholarly and journalistic sources have stated that school shooters are typically white males (Bushman, et al., 2016; Gladwell, 2015). For the purpose of this analysis, those

FIGURE 4 *Percent of Perpetrators Who Were White Males, by Population*

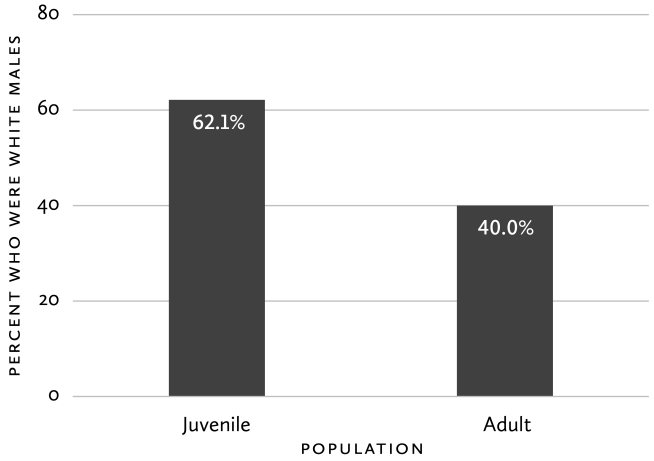
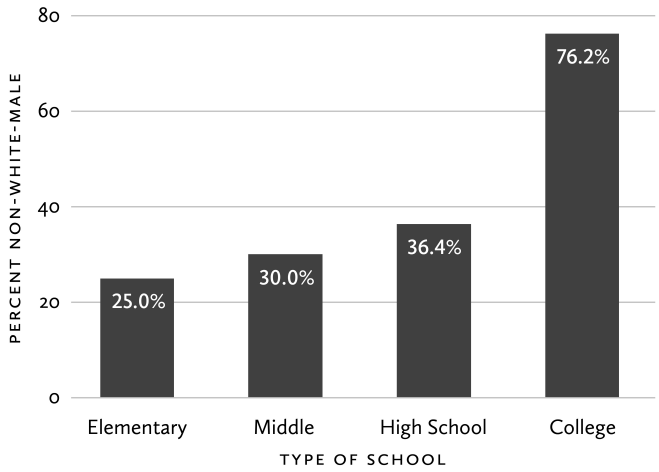


FIGURE 5 *Percentage of Perpetrators Who Were Not White Males, by Type of School Attacked*




designated as non-white perpetrators had either one or both parents who were not Caucasian (e.g., of European ancestry).

Looking at the intersection of racial/ethnic identity and gender, only 50 percent of the perpetrators were white male. There was a dramatic shift from Period 1 to Period 2, however, with white males decreasing from more than two-thirds of shooters (69.4 percent) to one quarter (25.0 percent), as presented in Figure 3.

Analyzing juvenile versus adult shooters reveals that 62.1 percent (18 out of 29) of juveniles were white males, compared to 40.0 percent (14 out of 35) of adult perpetrators.

Not only were there differences in racial/ethnic/gender identity across time periods and age groups, but also in those who attacked various levels of educational institutions (Figure 5). The percentage of perpetrators who were not white males was fairly consistent across those who committed their attacks at elementary (25 percent), middle (30 percent), and high schools (36.4 percent), but showed a dramatic increase among those who attacked institutions of higher education (76.2 percent).

FIGURE 6 *Percent of Perpetrators Who Were Immigrants, by Time Period*

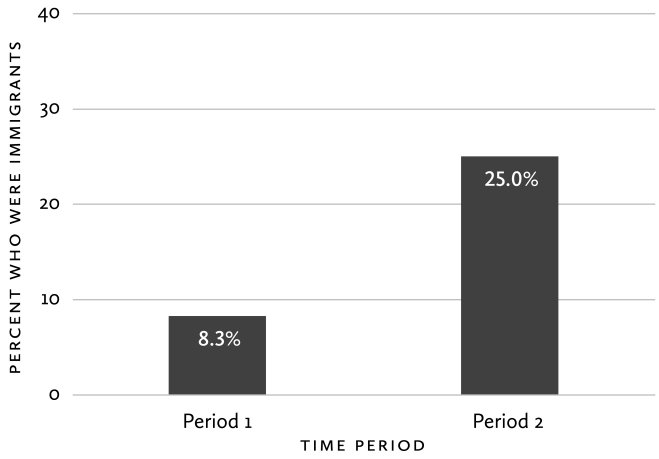


TABLE 6 *Average Number of Victims by Time Period*

| Time Period | Killed | Wounded | Total Victims |
|---|---|---|---|
| Period 1 ($n = 36$) | 2.9 | 6.6 | 9.6 |
| Period 2 ($n = 28$) | **5.1** | **5.1** | **10.2** |
| Total ($n = 64$) | 3.9 | 6.0 | 9.8 |

### *Immigration Status*

For the purpose of this study, the term immigrant also includes the one international student in the sample. None of the shooters (0 out of 17) during the first 25 years was an immigrant, whereas more than one in five was in the second 25 years (10 out of 47, or 21.3 percent). Looking at this variable across Periods 1 and 2 shows that there were three times as many immigrant perpetrators in Period 2 (8.3 percent versus 25 percent), as shown in Figure 6.

Nine out of 10 of the immigrants attacked colleges; the one who did not committed his attack at an adult learning center where immigrants were taught English. Thus, none of the immigrants attacked a primary or secondary school. Even when the perpetrators arrived in the United States as children, they did not commit their attacks until they were adults.

Leaving aside the one college attacker who was a white female, of the 20 male perpetrators who attacked colleges, 15 of them were non-white (75 percent); of these, 9 were immigrants (60 percent) and six were born in the United States (40 percent).

## QUESTION 4

### *Has the magnitude (number of casualties) of multi-victim school shootings changed over time? Does it vary among different groups of shooters?*

In tallying the data for this analysis, for the two attacks conducted by pairs of shooters (Eric Harris and Dylan Klebold; and Andrew Golden and Mitchell Johnson), it cannot be known definitively who wounded or killed which victim, particularly when both perpetrators shot the same person. An attempt has been made to divide the victims between the perpetrators as accurately as possible.

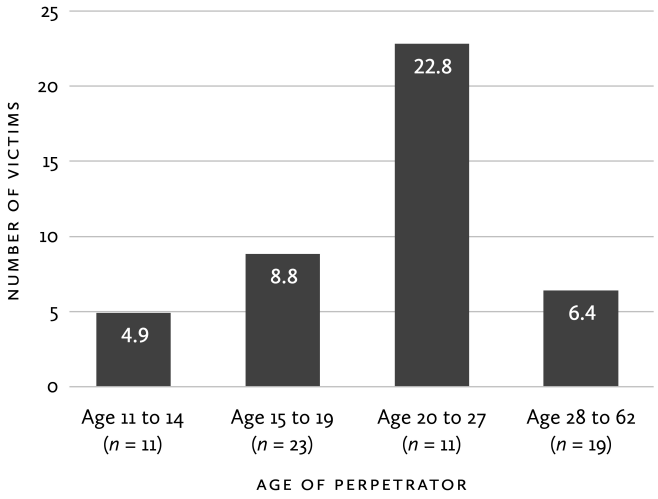
Table 6 presents data regarding changes in victim counts from Period 1 to Period 2.

Though the total victims increased slightly from Period 1 to Period 2, the more

TABLE 7 *Magnitude of Attacks by Population*

| Population | Killed | Wounded | Total Victims |
|---|---|---|---|
| Juvenile ($n = 30$) | 2.3 | 5.4 | 7.7 |
| Adult ($n = 34$) | **5.3** | **6.5** | **11.8** |
| Total ($n = 64$) | 3.9 | 6.0 | 9.8 |

FIGURE 7 *Average Number of Victims by Age of Perpetrator*




notable shift was in the ratio of the killed and wounded. In Period 1, the number of wounded was more than twice the number killed. In Period 2, however, the number killed was equal to the number wounded. The jump in fatalities from 2.9 to 5.1 deaths represents a 75.9 percent increase in fatalities, indicating that school shootings have become more deadly.

Comparing juvenile to adult perpetrators revealed that on average, adults had 53.2 percent more victims than juveniles, and 130 percent more fatalities (Table 7).

An analysis of the relationship between perpetrator age and number of victims (regardless of time period or population) provides remarkable results. Figure 7 shows that the youngest perpetrators had the fewest victims, and that young adults (ages 20 to 27) committed the largest attacks.

The percentage of large-scale attacks (10 or more victims) at colleges and universities increased significantly from Period 1 to Period 2. In Period 1, only one out of nine college attacks had more than 10 victims (11.1 percent). In Period 2, the number jumped to 5 out of 12 attacks (41.6 percent).

FIGURE 8 *Percent of College Attacks That Were Large-Scale, by Time Period*

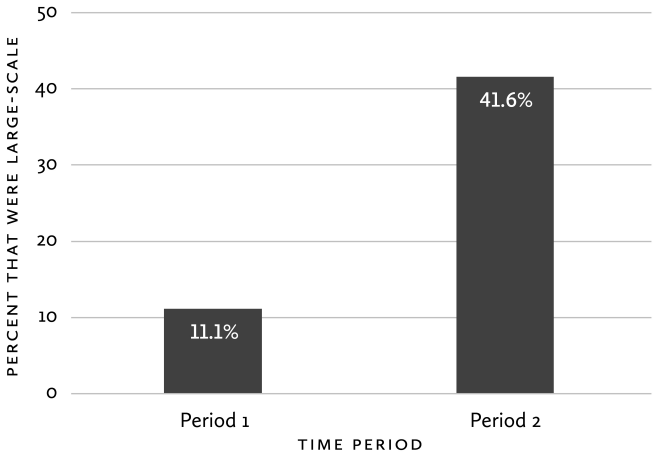
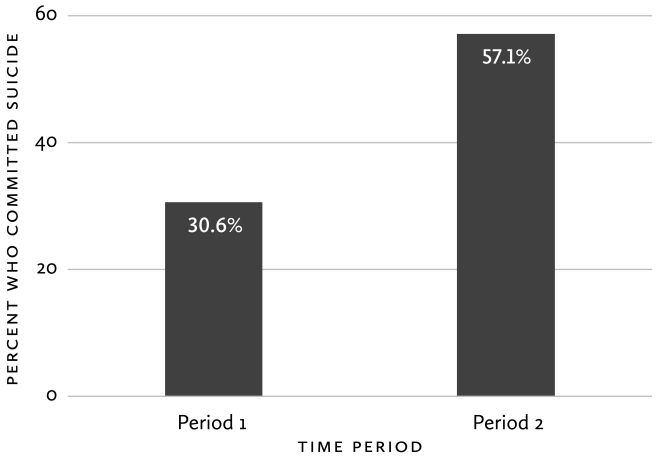


FIGURE 9 *Percent of Perpetrators Who Committed Suicide, by Time Period*




The frequency of large-scale attacks in high schools, however, has dropped significantly, from 50 percent (5 out of 10) in Period 1, to only 18.2 percent (2 out of 11) in Period 2. The sample sizes for elementary and middle school attacks across the two periods were too small to identify meaningful trends.

QUESTION 5

*What is the frequency of suicide among the perpetrators, and has this changed over time? Does it vary among different groups of shooters?*

The overall suicide rate among the perpetrators was 42.2 percent. As noted, however, more shooters expressed suicidal intent than actually died by suicide during their attacks. An analysis by time periods reveals that the percent of suicide nearly doubled from Period 1 (30.6%) to Period 2 (57.1%), as seen in Figure 9.

There was an even greater discrepancy in suicide rates between juvenile and adult perpetrators (Figure 10).

An analysis of suicide rates using the same four age groups detailed earlier in the

FIGURE 10 *Percent of Perpetrators Who Committed Suicide, by Population*

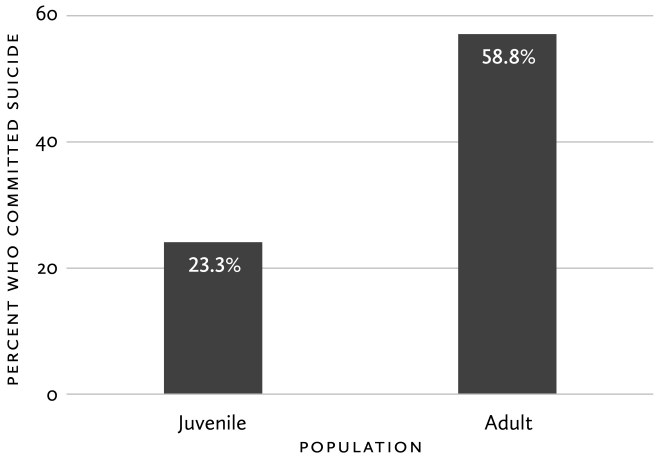
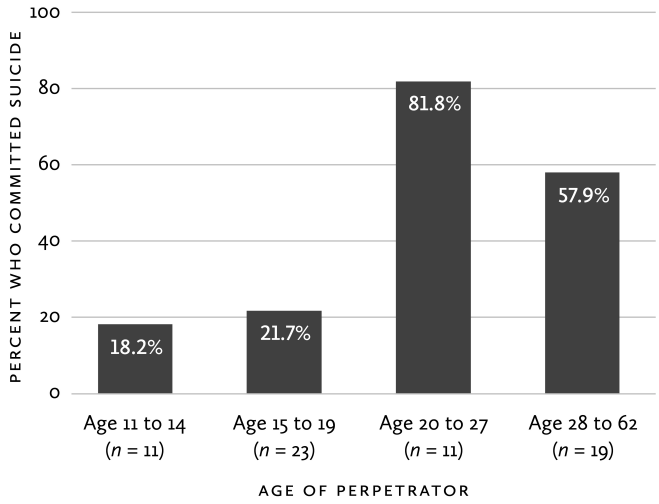


FIGURE 11 *Percent of Perpetrators Who Committed Suicide, by Age*




analysis of the magnitude of attacks reveals that young adults (ages 20 to 27) had the highest rate (81.8 percent). Comparing Figure 7 with Figure 11 shows that young adults were the most homicidal and suicidal. Figure 11 also indicates that the two groups of older perpetrators had a much higher suicide rate than the two younger groups.

## DISCUSSION

### GENERAL COMMENTS

The results of this study shed light on several issues and misconceptions related to school shootings. First, there is a controversy regarding whether or not school shootings have increased in frequency. The results presented here suggest that the type of multi-victim attacks focused on in this study have become more common in the last 30 years. As noted, however, this could be the result of more recent attacks being easier to identify due to the availability of news stories on the internet.

As discussed in the introduction, many previous studies have focused largely or exclusively on secondary school perpetrators. The current study reveals that school shootings are not simply a phenomenon of youth. The fact that adult perpetrators outnumbered juveniles in this sample highlights the need for research beyond school shooters in middle school and high school.

In addition, despite frequent references to the perpetrators of school shootings as being virtually all white males, this sample consisted equally of white males and those who were not white males. This level of diversity among perpetrators is important to recognize because it should not be assumed that the same dynamics occur across the entire spectrum of school shooters. There may be different factors at play depending on the racial, ethnic, and gender identities of the perpetrators. This result is also important for violence prevention because if the professionals conducting threat assessments believe that school shooters are virtually always white males, they might discount a threat from potential shooters who do not fit this stereotype.

This study identified numerous changes in both the demographic variables of the perpetrators and the nature of their attacks from Period 1 to Period 2. These included a shift toward older perpetrators; a decreased frequency of attacks at elementary and middle schools and an increased frequency of attacks at high schools and colleges; an increased frequency of perpetrators who were not white males; an increase in the average number of fatalities; an increase in the number of large-scale attacks in higher education; and an increased rate of suicide.

Though the attack at Columbine High School on 20 April 1999 was used as the demarcation point between the two periods, it cannot be known how much this one attack is responsible for the changes cited in this paper. To the extent that subsequent perpetrators used Eric Harris and Dylan Klebold (the Columbine attackers) as role models, the shift toward greater magnitude of attacks as well as perpetrator suicide could be a result of imitating Columbine. Interestingly, however, the number of large-scale attacks in high schools dropped dramatically from Period 1 to Period 2.

In addition, the drastic shift in the racial/ethnic identity of the perpetrators is hard to explain. Because some subsequent shooters have viewed Columbine as an example of the downtrodden rising up against their oppressors, this may have resonated with non-white perpetrators who felt victimized by their peers, school personnel, or society at large. For example, Seung Hui Cho (the shooter in the 2007 Virginia Tech massacre), referred to "we martyrs, like Eric and Dylan" in his manifesto (Cho, 2007). Other non-white shooters, including Alvaro Castillo (responsible for the 2006 Orange High School shootings) and Aaron Ybarra (responsible for the 2014 Seattle Pacific University shootings), cited Harris as an influence. None of these, however, cited any racial/ethnic oppression as a factor in their attacks, so the validity of this as a factor remains unknown.

Another way of conceptualizing the data is to see a shift from a more narrow demographic profile of white perpetrators in their late teens to early adulthood to a broader demographic range including more older shooters (as well as more very young perpetrators) and more non-white attackers. This still does not explain the drastic shift in percentages of perpetrators who were white males from Period 1 to Period 2 (69.4 percent to 25 percent, respectively); nor does it explain the result that over the last 50 years, white males have been a minority among adult perpetrators (40 percent) but a majority of juvenile perpetrators (62.1 percent). The connection between age and racial/ethnic identity is elusive.

The frequent references in both scholarly sources and journalism to school shooters being primarily white males may be due to two factors. Based on the data included here, white males were the majority of school shooters during Period 1. Also, for the 50-year period as a whole, white males constituted the majority of juvenile shooters. Some of the earlier studies focused wholly or largely on incidents that occurred during Period 1, during which most of the attackers were white males. In addition, because many studies were limited to secondary-school shooters, they concluded (as did this study) that secondary-school shooters were predominantly white males. Including a broader range of incidents (i.e., post-secondary-school perpetrators) and a 50-year time period allowed for a more nuanced analysis of demographic trends.

The many changes noted over the last 15 to 20 years raise the question of what factors contributed to these shifts. Grossman and DeGaetano (2014) attribute the rise in juvenile violence to the influence of video games and other violent media, but it is not clear that all the young perpetrators included in this study were immersed in media violence. Nonetheless, this may have been a factor for many shooters, and the impact of media violence on vulnerable individuals has also been cited as a factor in school shootings by Cornell (2006).

The dramatic increase in the suicide rate from Period 1 to Period 2 (30.6 percent to 57.1 percent) is difficult to explain. One factor appears to be age: older perpetrators had higher suicide rates, and Period 2 had more adult perpetrators than Period 1. Regardless of the cause of the increased suicide rate, the results highlight the frequent intersection of homicidal and suicidal ideation. Greater suicide prevention efforts in secondary schools and colleges might help prevent school shootings by more effectively identifying people who are at risk and providing appropriate interventions that prevent both suicide and homicide.

## HIGHER EDUCATION

Analysis revealed several trends relating to institutions of higher education. The percentage of attacks that were directed at colleges increased from Period 1 to Period 2 (26.5 percent to 42.9 percent), and the percentage of large-scale attacks (10 or more victims) at colleges increased from Period 1 to Period 2 (11.1 percent to 41.6 percent). Another trend identified is that the majority of perpetrators of college attacks were not white males (76.2 percent), but included a high percentage of immigrants.

The fact that none of the immigrant perpetrators who arrived in the United States as children committed attacks until adulthood suggests that the pressures of higher education may be significant factors. Fox (2008) discussed violence in higher education by noting that many perpetrators have either been graduate students or not been traditional-aged undergraduates. He highlighted the academic pressures of graduate school, as well as the life challenges associated with being self-supporting adults while also attending a university. He also cited the increased stress for students "who come from cultures where failure is seen as shame on the entire family." In addition, immigrants and international students commonly deal with stresses related to acculturation, language differences, and isolation from their family and/or a supportive community. They may also come from cultures in which the stigma attached to seeking mental-health treatment is severe, preventing them from seeking help when they are in emotional distress.

Keeping these factors in mind, colleges and universities need to examine their current programs and processes to assist immigrants and international students with their transition to the United States, as well as to higher education. The same may apply to working with non-white students who were born in the United States who may face similar issues of acculturation, English as a second language, and stigma associated with seeking mental health treatment.

Pointing out the stresses faced by immigrant and other minority students, however, does not account for the increase in frequency in their attacks in higher education from Period 1 to Period 2. In addition, such considerations are not relevant for every inci-

dent. Myron May, for example, was an African American man who reportedly had an outstanding experience at Florida State University. At the age of 31, 10 years after he graduated, he returned to his alma mater and for no comprehensible reason shot people on campus (Langman, 2016). Similarly, Aaron Ybarra had a mixed Latino/Asian heritage. He attacked Seattle Pacific University, an institution he had never attended and to which he had no connection. He had considered other venues for his attack, but chose this university as a target of convenience (Langman, 2015). Thus, caution needs to be exercised in attempting to make sense of the trends highlighted in this study.

### LIMITATIONS

First, it is likely that this study did not identify every perpetrator of multi-victim school attacks as defined by the parameters stated in the introduction. Second, even if all the relevant perpetrators were identified, the results could not be generalized to all types of school shootings (e.g., gang violence, spontaneous violence that erupts at social gatherings, etc.). Finally, the robustness of the findings is limited due to the sample sizes that were available for analysis.

## CONCLUSION

This study presented data on 64 multi-victim school shooters in the United States from the 50-year period of 1966 through 2015. The results highlighted significant changes in the perpetrators and their attacks in the years since the attack at Columbine High School, as well as differences among various subgroups of shooters. These results demonstrate the importance of not viewing school shooters as a homogeneous population, and the need for continued research into the variations that exist among those who commit large-scale school violence. Particularly, the increase in very young perpetrators (under the age of 16) deserves study, as does the increase in middle-aged perpetrators, as well as the recent trend of more attacks by those who are not white males.

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## APPENDIX *List of School Shooters Included in the Study*

| Date | Name | School | City/State |
|---|---|---|---|
| 08/01/66 | Charles Whitman | University of Texas | Austin, TX |
| 11/12/66 | Bob Smith | Rose-Mar College of Beauty | Mesa, AZ |
| 11/11/71 | Larry Harmon | Gonzaga University | Spokane, WA |
| 02/19/76 | Neil Liebeskind | Computer Learning Center | Los Angeles, CA |
| 07/12/76 | Edward Allaway | University of California | Fullerton, CA |
| 01/29/79 | Brenda Spencer | Cleveland Elementary School | San Diego, CA |
| 10/06/79 | Mark Houston | University of South Carolina | Columbia, SC |

| Date | Name | School | City/State |
|---|---|---|---|
| 03/19/82 | Patrick Lizotte | Valley High School | Las Vegas, NV |
| 02/24/84 | Tyrone Mitchell | 49th Street Elementary School | Los Angeles, CA |
| 01/21/85 | James Kearbey | Goddard Junior High School | Goddard, KS |
| 12/10/85 | Floyd Warmsley III | Portland Junior High School | Portland, CT |
| 08/12/86 | Van Hull | New York City Technical College | Brooklyn, NY |
| 12/04/86 | Kristofer Hans | Fergus County High School | Lewistown, MT |
| 05/20/88 | Laurie Dann | Hubbard Woods Elementary School | Winnetka, IL |
| 09/22/88 | Clemmie Henderson | Montefiore School | Chicago, IL |
| 09/26/88 | James Wilson | Oakland Elementary School | Greenwood, SC |
| 01/17/89 | Patrick Purdy | Cleveland Elementary School | Stockton, CA |
| 11/01/91 | Gang Lu | University of Iowa | Iowa City, IA |
| 05/01/92 | Eric Houston | Lindhurst High School | Olivehurst, CA |
| 12/14/92 | Wayne Lo | Simon's Rock College | Great Barrington, MA |
| 07/08/93 | Mark Duong | Weber State University | Ogden, UT |
| 09/17/93 | Kevin Newman | Central Middle School | Sheridan, WY |
| 12/16/93 | Steven Leith | Chelsea High School | Chelsea, MI |
| 11/07/94 | Keith A. Ledeger | Wickliffe Middle School | Wickliffe, OH |
| 11/15/95 | Jamie Rouse | Richland High School | Lynville, TN |
| 02/02/96 | Barry Loukaitis | Frontier Junior High School | Moses Lake, WA |
| 08/15/96 | Frederick Davidson | San Diego State University | San Diego, CA |
| 02/19/97 | Evan Ramsey | Bethel High School | Bethel, AK |
| 10/01/97 | Luke Woodham | Pearl High School | Pearl, MS |
| 12/01/97 | Michael Carneal | Heath High School | West Paducah, KY |
| 03/24/98 | Mitchell Johnson | Westside Middle School | Jonesboro, AR |
| 03/24/98 | Drew Golden | Westside Middle School | Jonesboro, AR |
| 04/24/98 | Andrew Wurst | Parker Middle School | Edinboro, PA |
| 05/21/98 | Kip Kinkel | Thurston High School | Springfield, OR |
| 04/20/99 | Dylan Klebold | Columbine High School | Littleton, CO |
| 04/20/99 | Eric Harris | Columbine High School | Littleton, CO |
| 05/20/99 | T.J. Solomon | Heritage High School | Conyers, GA |
| 12/06/99 | Seth Trickey | Fort Gibson Middle School | Fort Gibson, OK |
| 03/10/00 | Darrell Ingram | Beach High School | Savannah, GA |
| 03/05/01 | Andy Williams | Santana High School | Santee, CA |
| 03/22/01 | Jason Hoffman | Granite Hills High School | El Cajon, CA |
| 01/16/02 | Peter Odighizuwa | Appalachian School of Law | Grundy, VA |
| 10/29/02 | Robert Flores | University of Arizona | Tucson, AZ |
| 05/09/03 | Biswanath Halder | Case Western Reserve University | Cleveland, OH |
| 03/21/05 | Jeffrey Weise | Red Lake High School | Red Lake, MN |
| 08/30/06 | Alvaro Castillo | Orange High School | Hillsborough, NC |
| 10/02/06 | Charles Roberts IV | West Nickel Mines School | Bart Township, PA |
| 04/16/07 | Seung Hui Cho | Virginia Polytechnic Institute and State University | Blacksburg, VA |

| Date | Name | School | City/State |
|---|---|---|---|
| 10/01/07 | Asa Coon | SuccessTech Academy | Cleveland, OH |
| 12/11/07 | Nicco Tatum | Mojave High School | Las Vegas, NV |
| 02/14/02 | Steven Kazmierczak | Northern Illinois University | DeKalb, IL |
| 04/03/09 | Jiverly Wong | American Civic Association | Binghamton, NY |
| 02/12/10 | Amy Bishop | University of Alabama | Huntsville, AL |
| 01/05/11 | Robert Butler, Jr. | Millard South High School | Omaha, NE |
| 02/27/12 | T.J. Lane | Chardon High School | Chardon, OH |
| 04/02/12 | One Goh | Oikos University | Oakland, CA |
| 12/14/12 | Adam Lanza | Sandy Hook Elementary School | Newtown, CT |
| 06/07/13 | John Zawahri | Santa Monica College | Santa Monica, CA |
| 12/21/13 | Jose Reyes | Sparks Middle School | Sparks, NV |
| 05/23/14 | Elliot Rodger | University of California at Santa Barbara | Isla Vista, CA |
| 06/05/14 | Aaron Ybarra | Seattle Pacific University | Seattle, WA |
| 10/24/14 | Jaylen Fryberg | Marysville-Pilchuck High School | Marysville, WA |
| 11/20/14 | Myron May | Florida State University | Tallahassee, FL |
| 10/01/15 | Chris Harper-Mercer | Umpqua Community College | Roseburg, OR SS.I |