

# 16-Questions to Find Domestic-Terrorists, Mass-Murderers, Spree-Shooters, With a Study-1: 370-Workplace-Shooters vs. 370-Controls, and a Study-2: 9-Adult-Shooters With 12-Homicidal and 24-Controls Rated on the Ask Standard Predictor of Violence Potential-Adult Version and the MMPI-2: Implications Are to Use Computer-Tests and Machine-Learning-Equations to Lower Insurance Premiums and Prevent Church Bankruptcy

Robert John Zagar<sup>1</sup>, James Garbarino<sup>2</sup>, Brad Randmark<sup>3</sup>, Ishup Singh<sup>4</sup>, Joseph Kovach<sup>5</sup>, Emma Cenzon<sup>5</sup>, Michael Benko<sup>5</sup>, Steve Tippins<sup>6</sup>, Kenneth G. Busch<sup>7</sup>, Rohit Baghel<sup>8</sup>

<sup>1</sup> Consultant, Juvenile Division, Cook County Circuit Court, Chicago, IL, U.S.A

<sup>2</sup> Psychology Department Loyola University Chicago, IL, U.S.A

<sup>3</sup> Cicero Illinois School District 99, Burnham School and Technology Department, U.S.A

<sup>4</sup> British College Business Administration Department, Nepal

<sup>5</sup> Psychology Department of the Calumet College of Saint Joseph, Whiting, IN., U.S.A

<sup>6</sup> College of Management and Technology, Walden University, Minneapolis, MN, U.S.A

<sup>7</sup> Private Practice, Chicago, IL, U.S.A

<sup>8</sup> Private Practice, Chicago, IL, U.S.A

Correspondence: Robert John Zagar, 233 East Erie Street, Suite 404A, Chicago, Illinois 60611-4675, USA. E-mail: doctorzagar@gmail.com

Received: December 1, 2021 Accepted: May 12, 2022 Online Published: May 16, 2022

doi:10.5539/res.v14n2p76

URL: <https://doi.org/10.5539/res.v14n2p76>

## Abstract

630 Terrorist-Mass-Murdering-Spree-Shooters are compared with 623-controls and separated by 16-Questions with  $a=.846$ ,  $p<.01$ ,  $AUC=.704$ ,  $p<.01$  that are: (1) homicidal? (2) suicidal? (3) stressful-life-event? (4) handgun-many-weapons-access? (5) violence-planning-preparing? (6) revenge? (7) eliciting-others-concern? (8) intent-leakage? (9) criminal-misconduct? (10) grievance? (11) random-violent-behavior? (12) threatening-victims? (13) dead-male-victim? (14) targeting-person-school-work? (15) student-professional-work-relationship? and (16) student? Before killing, terrorists come twice to courts-police, doctors-hospitals, schools-universities and human resources and are not diagnosed as dangerous due to error-prone current ways. In Study-1: 370-workplace-shooters (1968-2021) are contrasted with 370-controls using logistic-regression ( $F=134.64$ ,  $p<.01$ ,  $df=13/726$ ,  $R=.84$ ,  $p<.01$ ,  $R^2=.71$ ,  $p<.01$ ) resulting in 13-Questions: (1) homicidal? (2) intent-leakage? (3) stressful-life-event? (4) revenge? (5) many-weapons? (6) elicited-others-concern? (7) criminal-misconduct? (8) threatened-victims? (9) dead-male-victim? (10) targeted-workplace? (11) professional-work-relationship? (12) suicidal? (13) random-violence? In Study-2: 9-spree-shooters are distinguished from 12-homicidal and 24-control adults showing a "7-point-violence-profile on two scales: (1) [Ask Standard Predictor of Violence Potential-Adult Version] violence ( $F=17.48$ ,  $p<.01$ ); and (2) the Minnesota Multiphasic Personality Inventory, Second Edition [MMPI-2] F (infrequency) ( $F=92.15$ ,  $p<.01$ ); L (lie) ( $F=13.13$ ,  $p<.01$ ), (3) D (depression) ( $F=37.76$ ,  $p<.01$ ); (4) Pd (psychopathic-deviance) ( $F=44.66$ ,  $p<.01$ ); (5) Pa (paranoia) ( $F=50.58$ ,  $p<.01$ ); (6) Sc (schizophrenia) ( $F=53.85$ ,  $p<.01$ ), (7) MacAndrews alcohol ( $F=42.01$ ,  $p<.01$ ); AAS (addiction admission) ( $F=57.34$ ,  $p<.01$ ). Looking from 1968-2021 at the insurance industry expense, there is the workplace-shooter loss = [ $\$1,418,945,589.60$  (370-shooters @  $\$3,834,988.08$ ) +  $\$4,053,582,400.56$  (1,057-deaths @  $\$3,834,988.08$  +  $\$37,556,154.24$  (1,112-injured @  $\$33,773.52$ ))] =  $\$5,510,084,144.40$  + [higher-insurance-premiums [ $\$5,510,084,144.40 \times 1.3$ ] =  $\$7,163,109,387.72$ ] =  $\$12,673,193,582.12$ . No-computer-tests-equations, 2022-2105 [2 x  $\$12,673,193,582.12$  =  $\$25,346,387,064.24$ . The 2<sup>nd</sup> violence example is the U.S-Catholic-Church-pedophilia-loss,

(1936-2107) [payouts, \$17,435,353,000] + [lost-donations = 1.3 x payouts =] 22,665,958,900= \$40,101,511,900 (1986-2107), with the 5,679 victims increasing (1936-2107) to 39,753-victims.

**Keywords:** computer-tests, machine-learning-equations, 16-questions-finding-terrorists, homicidal; suicide, stressful-life, handgun- multiple-weapons, planning-preparation, revenge, eliciting-others-concern, intent-leakage, criminal-misconduct, grievance, random-violence, threatening-victims, dead-male-victim, targeted-person-school-work, student-work-relationship, school-location.

### Introduction: Questions

Thirty-five-year-old Stanley H. has worked at the Agis Corporation for seven years. He was recently demoted from his team leader position because of missing nine days of work in the last three months. There were complaints from co-workers that he has been “obnoxious” in his dealings with them. The Agis Corporation has a protocol for identifying “at risk” employees, and as a result Stanley was sent to see the company’s Human Resources Department counselor. After an interview, the counselor is confused about how to proceed with Stanley’s case, knowing that the counselor risks exposing the company to a wrongful termination lawsuit, if he recommends dismissal based on “vague” concerns. Is Stanley at risk for becoming a workplace-shooter or is he just an angry disaffected employee? This article will address the issue of workplace-shooters and how to find them before the shooting occurs by using computer-tests and machine-learning-equations. Worldwide domestic-terrorist, mass-murdering, workplace-shooters are a growing concern. On 9/11 a group of jet passengers complain to the airline leadership that fellow first class passengers were acting strangely, eliciting passengers concern for their aberrant behavior. The airline corporations failed to heed the passenger warnings and did not report the terrorists to the military and police. A Chicago attorney successfully sues the airlines on behalf of the 9/11 family, terror victims collecting \$1,200,000,000. These terrorist’s actions result in over 3,000 deaths at the New York Twin Towers massacre (Bernstein, 2011). Daily the military and police have hundreds of calls from concerned citizens about terrorist activities. The past director of counterintelligence reveals that he sends out two agents, to follow up on each one of these leads (Watson, 2002). Only, a few percent turn out to be true. The empirically derived questions to find terrorists within this article are part of that effort to protect citizens from domestic terrorism, mass-murder, and specifically, workplace-shooters (59%). Workplace shooters occur more often (159% greater) than school-shooters (37%).

The goal of this study is to find the characteristics that predict domestic-terrorist, mass-murdering, workplace-shooters. This way, at each part of human development, hospitals, courts, schools and human resources, insurance leadership, military and police can proactively prevent costly massacres. Many recall seven multiple-murder locations in Asia, Australia, Europe and North America. These are the 1982 Uiryeong County South Korean spree-hooting with 56 mortalities, the Port Arthur, Tasmania, Australia carnage of 35, the 2011 Stavenger Norwegian government and youth labor camp with 77 deaths, the 2015 Paris France, Charlie-Hebdo domestic-terrorist, attack with twelve dead, the 2015 Bamako Hotel Mali massacre of 20 mortally wounded victims, and the 2017 Las Vegas Strip MGM Hotel bloodshed of 57 terminations (Kessler, 2018). Little scientific information is available for leaders to prevent these costly American or global tragedies.

### Past Scientific Study on Workplace-Shooters

Among domestic-terrorist, mass-murdering, life histories (Peterson, Densley, Knapp, Higgins, and Jensen (2021) listed, being on the internet social media, having delinquent or criminal arrests and a manifesto, being homicidal and suicidal and male, planning, targeting vulnerable victims, and using many weapons. Cantor, Mullen, and Alpers, 2000, described workplace-shooters as, being bullied, delusional, divorced, isolated, life-stressed, male, mentally ill, psychotic, rigid, suspicious, and having grandiose in ideas. McKenzie (1995) demonstrated depression, impulsivity, inconsistent parenting, interpersonal violence, prior arrests, psychopathy, serious school and work issues, and substance abuse. Delisi and Scherer (2006) confirmed these characteristics. Hempel, Meloy and Richards, 1999, found depression, lost employment and/or relationship, owning weapons legally, paranoia, psychosis, planning, suicide, and threatening victims.

### Prior Workplace Shooters Data Is Weak in Research Design and Statistics

Contradictory findings about the workplace shooter characteristics are due to bias and error in collecting data from one source, usually press data, incomplete information, lack of robust statistics or a control group, small samples, and threats to the reliability and the construct, external, internal, and external validity of the data collected. These samples and studies differ on several important characteristics: population density, sample selection, setting, statistical analysis, and type of measurement. Research from one area, method, setting and time, is vulnerable to inclusion or omission of descriptors, or different estimates of the effects of the same phenomenon. Serious methodological vulnerabilities

include single-time measurements, using only examinations, questionnaires, or records. Such studies, although limited, may provide clues that can be followed up in more carefully designed research. Studies of workplace-shooters that include many cases over time with data from multiple open source records are better than those with few examinations, a single-time record, or searches of media information, which is biased by the economic or political slant of the reporter. This study will address these issues with a more thorough approach to data collection, a larger sample, multiple sources of information, and a matched control group with robust statistics, acknowledging the limitations in any scientific study.

### **Challenges of Lowering Workplace-Shooters**

Two issues impede the prevention of mass-murdering massacres. The first is the fact that only computer-tests and machine-learning-equations can find multiple-murdering persons with 97% objectivity, reliability, specificity, sensitivity, and validity (Zagar, Kovach, Basile, Grove, Hughes, Busch, *et al.*, 2013; Zagar, Zagar, Busch, Garbarino, Ferrari, *et al.*, 2016; Zagar, *et al.*, 2019). The second issue is the limitations of deceptive self-presentation of neurological and psychiatric issues, which is what workplace-shooters have. There are 40,300 deceptive self-presentations, and 40,300,000 deceptive neurological and psychiatric self-presentations. Any professional, regardless of specialization, who says that their interview-judgment (46%), unstructured medical exam (49%), and background or credit check (25%) can discover these challenges should be considered biased, error-prone, and spurious because combined that accuracy and precision is 39% vs. the 97% for computer-tests and equations (Zagar, Zagar, Arbit, Bartikowski, and Busch, 2009; Zagar and Grove, 2010; Zagar, Kovach, Basile, Grove, Hughes, Busch, *et al.*, 2013; Zagar, Zagar, Busch, Garbarino, Ferrari, *et al.*, 2016). People generally believe that they are capable of identifying individuals who are high-risk. The scientific evidence in human decision making demonstrates that they are generally not. For more than half a century, in 128 of 136 empirical studies comparing clinical judgment versus actuarial assessment, Grove and Meehl (1996) and Meehl (1954) showed the superiority of statistical decision making with computer tests and machine-learning-equations. In two hundred studies comparing human-decision making or clinical judgment with computer-tests and machine-learning-equations, Kahneman (2011) established a 60% significantly better accuracy for computer-tests and machine-learning-equations (Hoffman, Slovic, and Rorer, (1968), Dawes, (1979), Stanteau (1988). Some other comparisons do not reveal this superiority, but because computer-tests and machine-learning-equations are cheaper, they should prevail (Kahneman, 2011). Finally, there is nearly half-a-century of research consistent with proof that statistical, actuarial assessment as better, more economical, more objective, reliable, sensitive, specific, and valid with a 97% rate compared to clinical current approaches that on average are 39% accurate and precise. For businesses, like the MGM Hotel in Las Vegas that paid out \$800,000,000 for the 57 dead and 4,400 victim's families and the \$1,040,000,000 losses in customers, increased insurance and taxes (1.3 x \$800K (Bottan and Perez-Truglia, 2016), computer-tests and machine-learning-equations are the answer to prevent such an incident in the future for a total loss of \$1,840,000,000.

### **Two Null and Alternative Hypotheses**

The null hypothesis is that there are no significant differences between workplace-shooters and controls. The alternative hypothesis is that there are significant differences. The second null hypothesis is that there is no seven-point violence profile for workplace-shooters when compared with homicidal and controls on the Ask Standard Predictor of Violence Potential Adult Version and the Minnesota Multiphasic Personality Inventory Second Edition, namely deception, depression, psychopathic deviance, paranoia, schizophrenia or confused thinking, alcohol-substance use, and violence potential. The alternative hypothesis is that there is a seven-point violence profile.

### **Methods: Study1. Definitions**

“Workplace domestic terrorist, mass murdering, spree-shooters” is more broadly, inclusively defined than “active workplace-shooters.” The agreed-upon, government, F.B.I., U.S. Department of Education, Emergency Management Agency, Homeland-Security, and Justice Departments, active-shooter definition is “an individual actively engaged in killing or attempting to kill people in a confined and populated area.” Firearms are the choice of an active-shooter. For precision in application and research, an expanded definition is “an individual, or team of individuals of common and/or specific operational purpose, indulging their pre-meditated or spontaneous desire(s) to either plan to kill others, or attempt to kill, or kill people (regardless of victim logy) using any weapon, equipment, tool or device, in a confined and populated space, regardless of the level of failure or success, ultimately achieved. It excludes gangs and bombings.” A workplace-shooter is someone who fits this operational definition with the shooting being at the site where persons work. Workplaces include government office or facility, manufacturing production or distribution facility, medical office or facility, military base or facility, professional office excluding medical, religious institution, residential, restaurant, retail, and other commercial site, and other location.

### **Statistics**

Workplace-shooters and controls, frequencies and percentages are analyzed with  $X^2$ , independent sample, two-tailed-tests, one-way analysis of variance (ANOVA) with degrees of freedom ( $df$ ), and logistic regression. A  $X^2$

goodness of fit test determines if sample data matches a population. A  $X^2$  test for independence compares two possibly related variables in a contingency table. Parametric,  $t$ -test and one-way ANOVA inferential statistics are used to determine if there is a significant difference between the means of two groups, workplace-shooters and controls on the dependent variables, the characteristics. Assumptions of normality and homogeneity of data are met for  $t$ -tests and ANOVA (Bock, 1975). The independent variable is group, workplace-shooters or controls. Logistic regression is a statistical model that in its basic form uses a logistic function to model a binary dependent variable, although many more complex extensions exist. In regression analysis, logistic regression (or logit regression) is estimating the parameters of a logistic model (a form of binary regression).

### **Sample Selection Workplace-Shooter Records: General Notes on Measures**

Thirteen investigators assess thoroughly the workplace-shooter risk, medical, police, press, school and work records from 1968 to April 15, 2021 which are compiled on survey monkey by. See Figure 1. There is the U.S. population, then the shooter data collection, and the workplace-shooter subgroup. Note that workplace-shooters occur 159% more often than school-shooters, despite media attention to the contrary.

### **Workplace-Shooters Characteristics**

Nominal variables are demographics, health, mental health, education, employment, warning signs, abuse and criminal history, crime scene, and crime method. *Demographics* include: (1) age; (2) gender; (3) ethnicity/race; (4) family situation or living dynamics; and (5) social interactions and observations. *Health* contains: (1) medical history; (2) stressful life events; (3) substance abuse; (4) prescribed medication; and (5) prescribed medication types. *Mental health* is: (1) concerns and symptoms; (2) disorders; (3) treatment history; and (4) alleged, known, or suspected behaviors, experiences and/or performance within a professional setting. *Education* comprises: (1) degree or training specialization; (2) highest level of schooling completed; (3) behavior and performance in a school setting; and (4) types of program or schooling attended or enrolled in. *Employment* consists of: (1) military service; and (2) vocational classification. *Warning signs* cover: (1) beliefs; (2) interests and fantasy; (3) cyber behaviors; (4) conflict indicators; and (5) operational behaviors. *Abuse and criminal history* incorporate: (1) experienced or witnessed abuse during childhood; (2) perpetrated abuse during childhood; (3) experienced or witnessed abuse during adulthood; (4) perpetrated abuse during adulthood; (5) the police interactions initiated by; (5) military misconduct; and (6) criminal misconduct. *Crime scene* has: (1) attacker's relationship to individual (intended if foiled); (2) attacker's relationship to institution (intended if foiled); (3) attack location; (4) motive; (5) number of attackers; (6) outcome of attack; (7) type of attack; (8) characteristics of selected victim; (9) victim demographics (deceased victims only); (10) victim's institution (intended if foiled); and (11) threatened one or more targeted or actual victims. *Crime method* constitute: (1) body armor and/or accessories; (2) chemicals, electronic weapons; (3) specialized weapon; (4) explosive material or detonator; (5) origin point of explosive; (6) firearm; (7) tactical equipment; (8) tactical training; (9) tactical response and situational analysis; (10) weaponized platforms; and (11) weapons. See Figure 1.

### **Follow-up or Error Control**

Two independent analysts among the thirteen analysts compiling data over thirty months had a sample of workplace-shooter records finishing 15 April, 2021. In this study, intra-coder reliability was done by undertaking a continuous coding and recoding process, as well as a repeated analysis of data. Small subsets of data were coded by two investigators. This ensured results reliability over time and minimized threats, including fatigue and stress impacting human error. Intercoder unreliability was not a factor in this research study. Data mimicked foreign terrorist threat assessment terminating serious mass military deaths combined with domestic public safety approaches.

### **Control Sample Selection**

Controls were 370 survey monkey respondents who answered questions online anonymously in February and March, 2021 during the virus pandemic. Questions were the same as used with workplace-shooters excepting: crime scene (but including tactical method since there are many U.S. citizen gun owners) and crime method.

### **United States Population Comparison with Controls**

U.S. population (U.S. Census Bureau, 2019) is compared with 370 controls on age, gender, ethnicity/race demographics to show they are similar. Controls differed on age and gender, but not on ethnicity/race. See Table 1. The insignificant  $\chi^2$  is consistent with sample similarity to the U.S. Population on ethnicity-race.

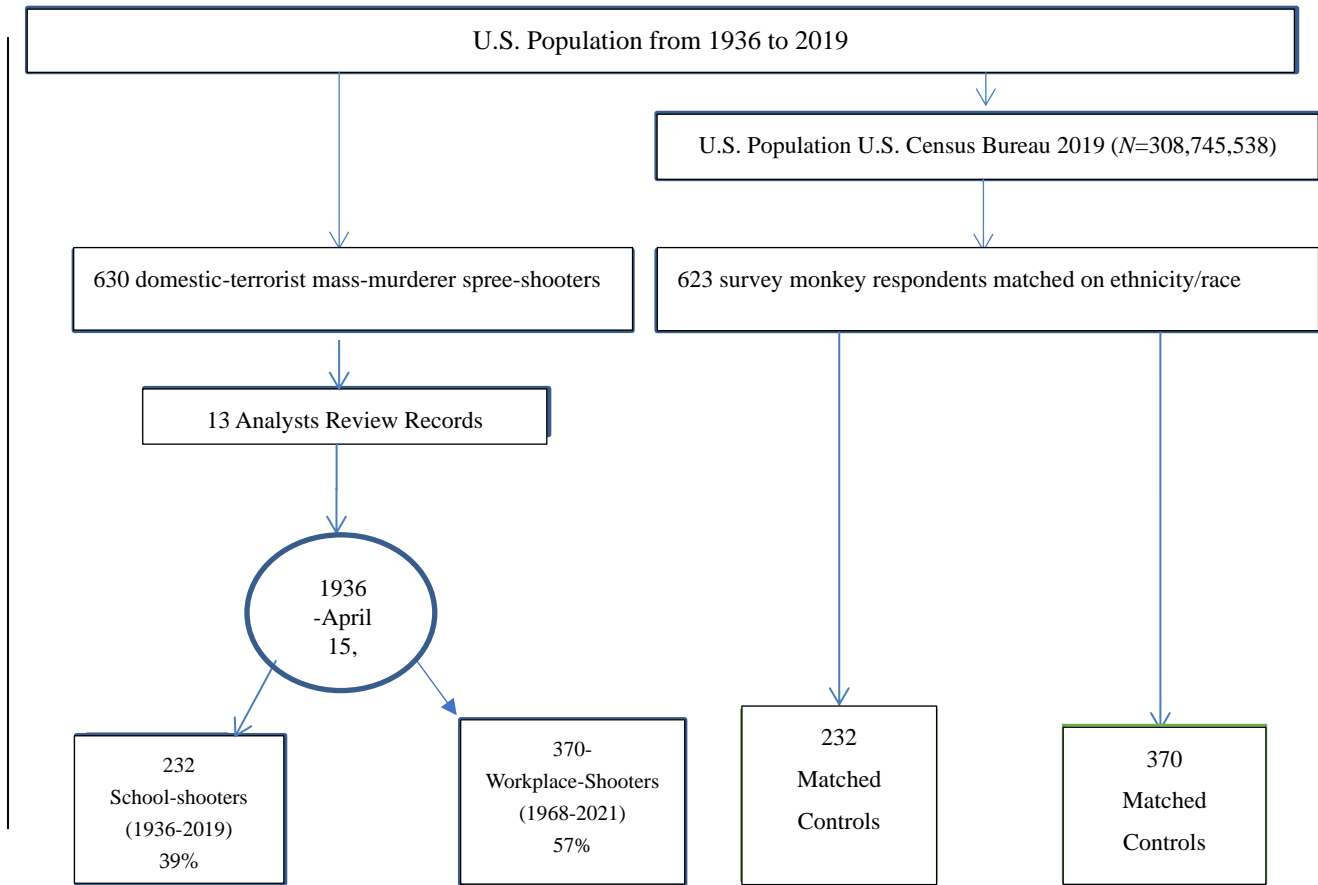


Figure 1. Sample Selection of 370 Workplace Shooters

Table 1. U.S. Population and Controls Percentiles \*  $p < .01$  significance \*\* $p < .05$

Gender	U.S Population (2019)	370 Controls	$\chi^2$
Female	51	5	52.48* $df=1$
Male	49	95	
Age			
Birth – 17 years	24	10	10.2** $df=4$
18-24 years	9	16	
25-35 years	27	25	
36-50 years	21	32	
51+ years	19	17	
Ethnicity / Race			
African-American	13	14	12.39* $df=6$
Asian	5	4	
Caucasian	60	72	
Hispanic-American	18	5	
Middle Eastern	1	4	
Native American	1	1	
Native Hawaiian	2	0	

**Demographics**

370 workplace-shooters and 370 matched control demographics are, gender, male [353 (95%) vs. 353 (95%)], female [17 (5%) vs. 17 (5%)], age, birth – 12 years [0 vs. 0], 13-17 year [36 (10%) vs. 36 (10%)], 18-24 years [59 (16%) vs. 59 (16%)], 25-35 years [92 (25%) vs. 93 (25%)], 36-50 years [119 (32%) vs. 118 (32%)], 51+ years [64 (17%) vs. 64 (17%)], ethnicity / race, African-American [52 (14%) vs. 52 (14%)], Asian [15 (4%) vs. 15 (4%)], Caucasian [109 (29%) vs. 265 (72%)], Hispanic-American [20 (5%) vs. 19 (3%)], Middle Eastern [18 (5%) vs. 16 (4%)], Native American [2 (1%) vs. 2 (1%)], Native Hawaiian [2 (1%) vs. 1], and unknown [152 (41%) vs. 0].

**Cumulative Workplace-Shooters from 1968-2021 and Annual 370 Workplace Shooters from 1968-2021**

See Figure 2 for the cumulative number upward opening parabola third degree curve (adding an  $x^3$  term to a parabolic model). Workplace-shooters are increasing. See Table 2 for workplace-shootings.

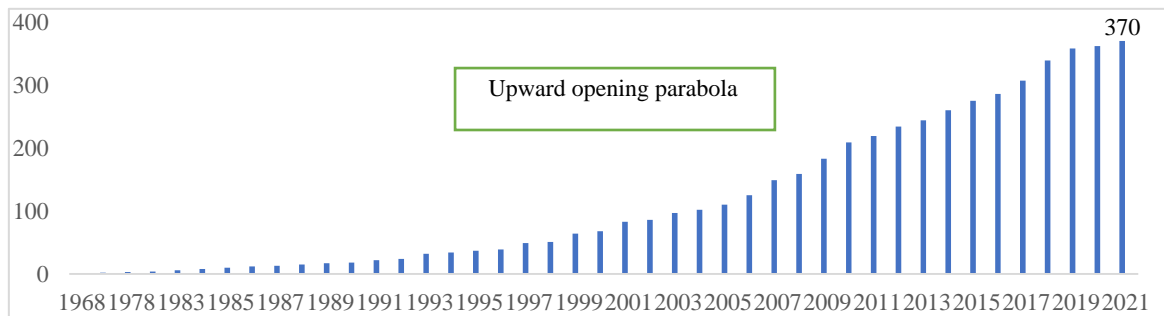


Figure 2. Cumulative Annual Workplace-Shooters from 1968-2021

**Workplace-Shooter Sample Limitations**

It is unknown whether this workplace shooter sample of 370 is representative beyond the U.S. area, because random samples are better estimates. It is likely that some upper-, middle-, and even lower-class cases with knowledge and resources were able to avoid detection of multiple homicides and also avoid courts, hospitals, media, military, public safety, school, universities, and work records, so data may be incomplete. Differential attrition in selection due to exclusion of cases with incomplete data is also present. All limitations, nonrandom sampling, avoiding detection, evading being in records, and exclusions of incomplete cases, affect the generalizability of findings, including the distributions and the relationships of characteristics (dependent variables) to serious violence. However, these 370-workplace-shooter, complete records provided a more accurate and precise set of data across age, gender, ethnicity, location, and time warning corporate, government and school agencies and residences to predict and prevent the increasing loss of many lives and expense of billions of U.S. (2021) dollars.

Table 2. Annual Workplace-Shootings (1968-2021)

Year	Frequency	Percent	Cumulative Percent
1968	1	0.3	0.3
1973	1	0.3	0.5
1978	1	0.3	0.8
1981	1	0.3	1.1
1983	2	0.5	1.6
1984	2	0.5	2.2
1985	2	0.5	2.7
1986	2	0.5	3.2
1987	1	0.3	3.5
1988	2	0.5	4.1
1989	2	0.5	4.6
1990	1	0.3	4.9
1991	4	1.1	5.9
1992	2	0.5	6.5
1993	8	2.2	8.6
1994	2	0.5	9.2
1995	3	0.8	10
1996	2	0.5	10.5
1997	10	2.7	13.2
1998	2	0.5	13.8
1999	13	3.5	17.3
2000	4	1.1	18.4
2001	15	4.1	22.4
2002	3	0.8	23.2
2003	11	3	26.2
2004	5	1.4	27.6
2005	8	2.2	29.7
2006	15	4.1	33.8
2007	24	6.5	40.3
2008	10	2.7	43

2009	24	6.5	49.5
2010	26	7	56.5
2011	10	2.7	59.2
2012	15	4.1	63.2
2013	10	2.7	65.9
2014	16	4.3	70.3
2015	15	4.1	74.3
2016	11	3	77.3
2017	21	5.7	83
2018	32	8.6	91.6
2019	19	5.1	96.8
2020	4	1.1	97.8
2021	8	2.2	100

**Annual Workplace Shooters from 1968-2021**

In Figure 3 there is the number of annual workplace shooters from 1968 to 2021 which is increasing.

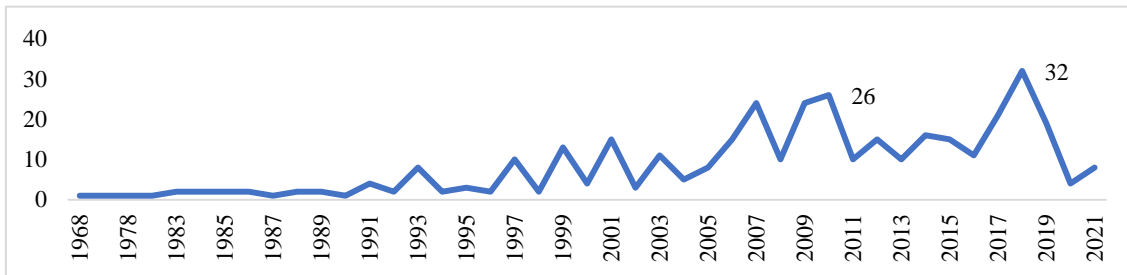


Figure 3. Annual 370 Workplace-Shooters from 1968-2021 (Mode or Most Frequent 2018: 32)

**State Where Workplace-Shooters Killed and Injured from 1968-2021**

See Figure 4 for the state in which the 370 workplace-shooters killed and injured. Highly populated states, California (54), Colorado (16), Florida (33), New Jersey (12), New York (23), Pennsylvania (18), Tennessee (10), Texas (30), Virginia (10), Washington (10) and Wisconsin (11) have ten or more workplace-shooters.

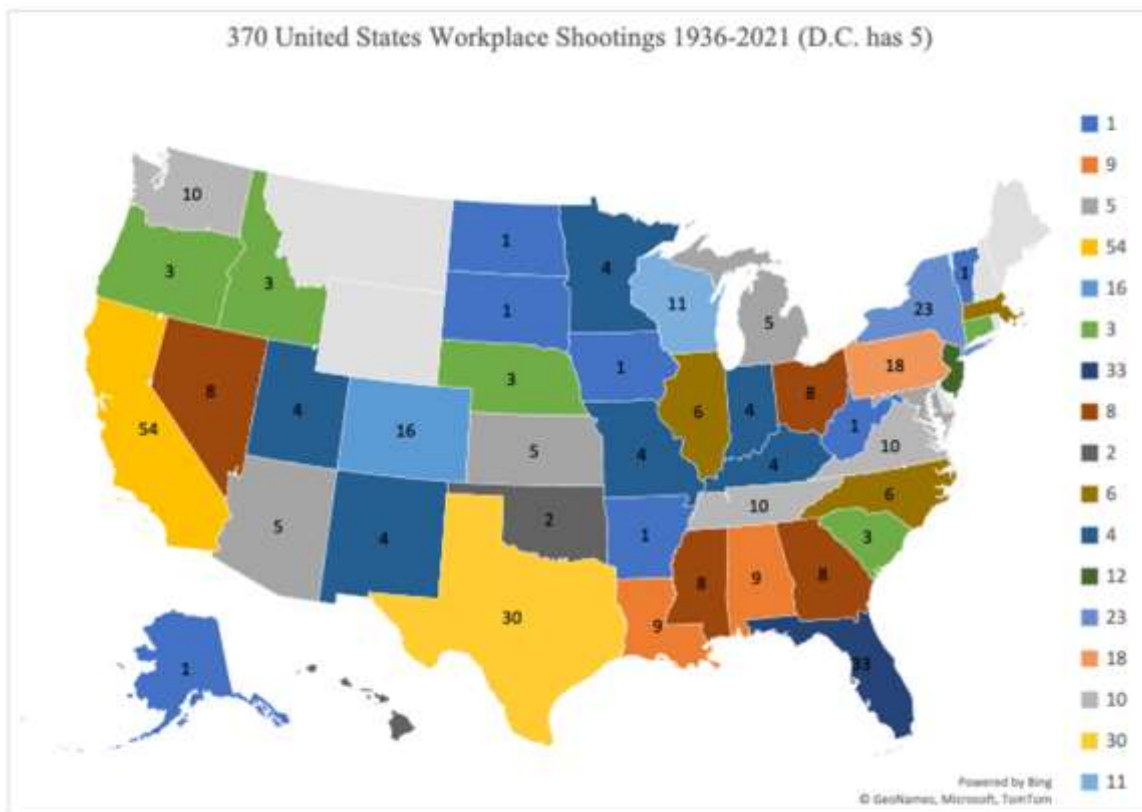


Figure 4. State Where Workplace-Shooters Killed and Injured from 1968-2021

**Cumulative (1968-2107) 370 Workplace-Shooters Cost (@ \$3,834,988.08)**

See Figure 5 for the 370 workplace-shooters, dead-victim’s cumulative cost. Each life is worth @3,834,988.08. Like the former curves this is also an upward curve. The curve is extended to 2107 as if no machine-learning-equations and computer-tests are used to prevent workplace-shooters. The reasons for this increase include, the surge of dysfunctional families in the 1970s (PEW Research Center, Murphy, 2015), the growing deinstitutionalization of mentally ill out of hospitals in the 1980s, the rising numbers of psychiatric cases in jails and prisons starting in 1980 and spiraling in the 1990s and now (Figure 20, Zagar, Zagar, Busch, Garbarino, Ferrari, Hughes, Patzer, Kovach, Grove, Tippins, Imgrund, Dempsey, and Basile (2016), combined with less access to mental health service due to federal and state budget cuts beginning in the 1950s and insurance companies limiting psychiatric treatment reimbursement (Higgins, 2017; National Council of Mental Well Being, 2018).

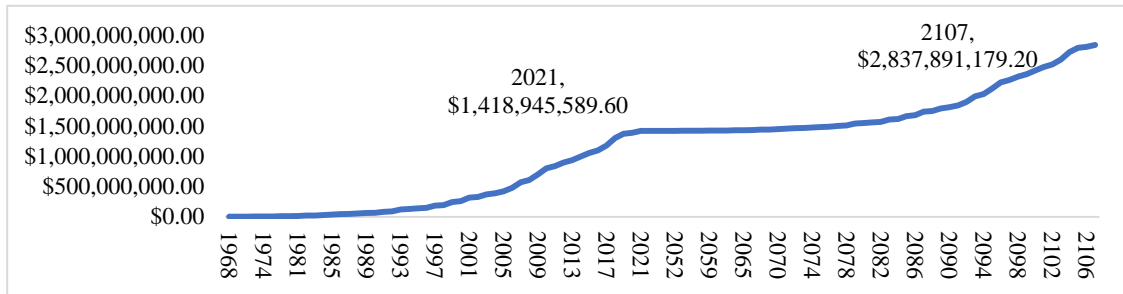


Figure 5. 370 Cumulative (1968-2107) Cost of Workplace-Shooters @ 3,834,988.08 in 20 May 2021 US\$

**Cumulative (1968-2107) Cost of 370 Workplace-Shooters Dead @ \$3,834,988.08**

See Figure 6 for the cumulative cost of 370 workplace shooters 1057 dead @ \$3,834,988.08each projected as if no machine-learning-equations and computer-tests are used until 2107.

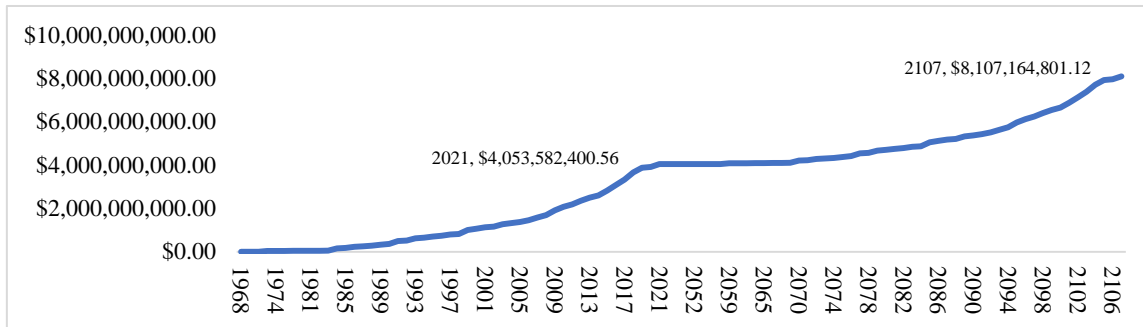


Figure 6. Cumulative (1968-2107) Cost of 370 Workplace-Shooters 1,057 Dead in 20 May 2021 Dollars

**Cumulative (1968-2107) Cost of 370 Workplace-Shooters 1, 112 Injured @33,773.52**

In Figure 7 the cost per assault injury is 25,440 in 2006 US dollars (modified from Miller, Cohen, and Wiersma, 1996; Table 4, Zagar, Arbit, Bartikowski, Busch, Bussell, Grove, Hughes, Isbell, Stark, and Zagar. (2009) times 132% (Consumer Price Index Calculator, 2021, May 20) 1.32 (15 year’s inflation) = \$33,773.52 for each workplace-shooter’s injured victim. This cost is then multiplied times each year’s number of workplace-shooter injured. Then each year’s injured cost is cumulatively added. Like the former curves this is also an upward curve. The curve is extended to 2107 as if no machine-learning-equations and computer-tests are used to prevent workplace-shooters.



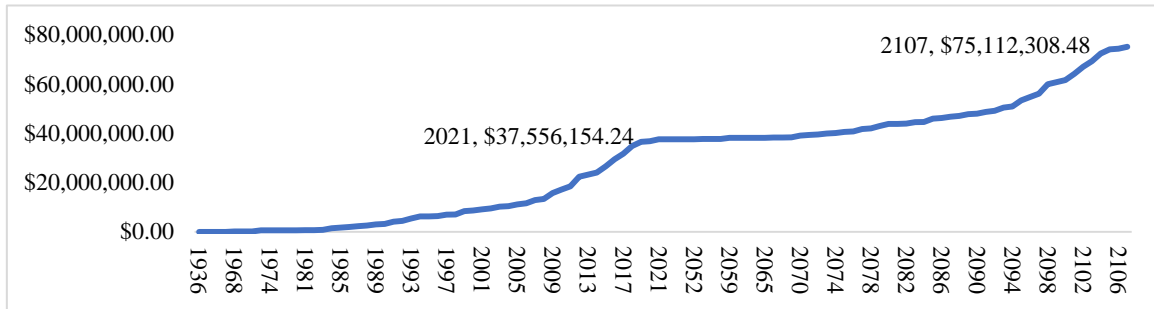


Figure 7. 370 Cumulative (1968-2107) Cost of 370 Workplace-Shooters 1,112 Injured in 20 May 2021 US \$

**Cumulative (1968-2021) Combined 370 Workplace-Shooters, 1,057 Dead +1,112 Injured in 20 May 2021\$**

In Figure 8 there is the combined cost per death and injured which is added for each year’s workplace-shooting. Then, each year’s sum of the dead and injured cost is cumulated. Like the former curves, this is also an upward curve. The curve is extended to 2107, as if no machine-learning-equations and computer-tests are used to prevent workplace-shooters. Placing a value on suffering from violent crime is cold and impersonal, but without an objective measure, one cannot examine the losses from violence. It is basic to have objective data on criminals and victims. The victimization cost is one of the less well-documented aspects of crime. It is challenging to gather data on out-of-pocket expenses, with estimates at 20% of direct victimization costs and 35% of pain, suffering, and lost quality of life (Miller, Cohen, and Wiersma., 1996). Expenses are out-of-pocket expenses for medical bills, property loss, reduced productivity at work, home, and workplace, and nonmonetary losses (fear, pain, suffering, and lost quality of life). Major categories of tangible loss per victimization were productivity, medical care, ambulance, police, fire services, mental health care, social victim service, property loss and damage (Zagar, Arbit, Bartikowski, Busch, Bussell, Grove, Hughes, Isbell, Stark, and Zagar (2009).

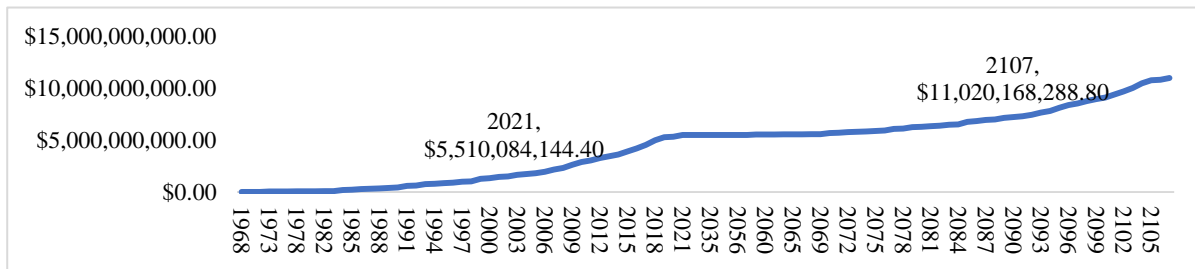


Figure 8. Cumulative (1968-2107) Cost: 370 Workplace-Shooters +1,057 Dead + 1,112 Injured 20 May 2021\$

**Cumulative (1968-2107) Cost: Higher Insurance (1.3 x Sum of Shooters, Dead and Injured) 20 May 2021\$**

In Figure 9 there is the combined cost of lost business, customers, increased insurance, and taxes for 370 workplace-shooters. This is computed by taking the combined cost for each year’s shooters, dead and injured victims and multiplying by 1.3, the number Bottan and Perez-Truglia (2015); Rotanda, 2016; Ruhl and Ruhl, 2016, found is the lost donations that the U.S. Roman Catholic Church due to another violence, pedophilia. This is a situation, where violence costs a corporation which is analogous to a workplace-shooting for which no study has yet been published. This expense number is then cumulatively added for each year.

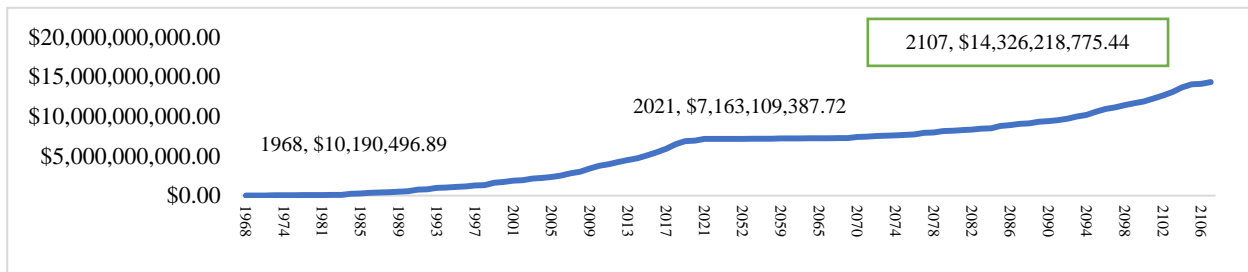


Figure 9. Cumulative (1968-2107) Cost Higher Insurance, Taxes (1.3 x Sum of Shooters, Dead, Injured)

**Cumulative Cost of Workplace-Shooters + Dead + Injured + Lost Business, Higher Insurance, Taxes**

In Figure 10, the combined cost of workplace-shooters, dead, injured, and lost business, increased insurance, taxes from 1968 to 2107 is computed by adding each year’s expense. The curve is extended to 2107 as if no computer-tests and

machine-learning-equations are used to predict and prevent workplace-shooters. Who pays these billions? Insurance purchasers and taxpayers because insurers (disability, errors and omission, health, life, liability, personal injury, workers compensation, etc.) and governors and state legislatures cover the expense by raising taxes for the families of the dead and injured and the cost of incarceration of the workplace-shooter with lost business, residents moving from a workplace-shooter location, direct and indirect health costs of the community stress. This does not include inflation (Consumer Price Index). The fact is that this is close to the U.S. Roman Catholic Church expense with no machine-learning-equations and computer-tests adds to its reliability and validity. The U.S. workplace-shooter cost is born by the workplace corporation, higher taxes and insurance industry. The U.S. Roman Catholic expense is taken up by liquidating Church property, increased insurance and donations. Using machine-learning-equations and computer-tests will protect corporations, insurance companies and religious nonprofit organizations.

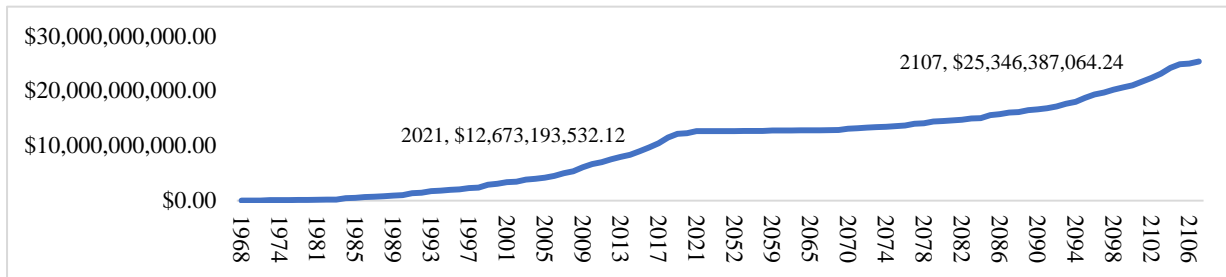


Figure 10. Cost of Workplace-Shooters + Dead + Injured + Lost Business Higher Insurance 20 May 2021\$

**370 Workplace--Shooters (1968-2021) vs. 277 FBI Active-Shooters (2000-2018), Dead, + Injured**

In Table 3 and Figure 11, 370 workplace-shooters (1968-2021) are compared with 277 FBI active-shooters (2000-2018) with a  $\chi^2 = 43.82$ ,  $df=2$ , significant ( $p<.01$ ) difference. There are double the workplace-shooters, dead and injured, and likely a more reliable, sensitive, specific, valid estimate of domestic-terrorist, mass-murdering, workplace-shooters due to relying on multiple sources of data in medical, police, press, workplace and work records vs. the FBI reliance on press records only (FBI, 2021). Using 370 workplace-shooter data, that includes more characteristics in 9 categories (demographics, health, mental health, education, employment, warning signs, abuse and criminal history, crime scene, and crime method), with the additional advantage of a more thorough record inclusion and a control group, making this data consistent with a more representative sample.

Table 3. 370 Workplace-Shooters + 277 F.B.I Active Shooters \*  $p<.01$  significance \*\* $p<.05$  significance

	1968-2021	FBI 2000-2018	$\chi^2$
Shooters	370	277	43.82*
Deaths	1,057	844	
Injured and Wounded	1,112	1,546	

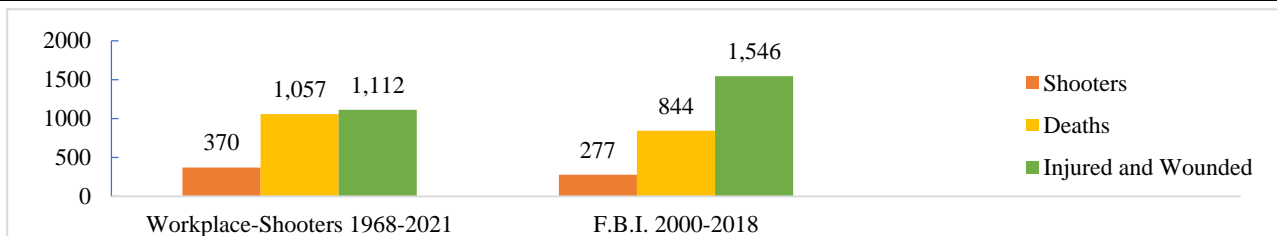


Figure 11. 370 Workplace-Shooters (1968-2021) vs. 277 FBI Active-Shooters (2000-2018)

**Locations of 370 Workplace-Shootings (1968-2021) and 277 F.B.I Active Shootings (2000-2018)**

In Table 4 and Figure 12 the locations of 370 workplace-shootings are compared with 277 F.B.I. active-shootings with significant ( $p<.01$ ) differences and a  $\chi^2=16.88$ ,  $df=7$ . There is distribution, manufacturing, production, and non-medical professional office (closed to pedestrian traffic) [48 (13%) vs. 37 (13%)], government [55 (15%) vs. 19 (7%)], restaurant, retail or other commercial (open to pedestrian traffic) [117 (32%) vs. 84 (30%)]; homes or residential [25 (7%) vs. 12 (4%)] medical office or facility [22 (6%) vs. 12 (4%)]; religious institution [17 (5%) vs. 11 (4%)]; military base or facility [11 (3%) vs. 7 (2.5%)] or other location [19 (5%) vs. 1 (.4%)]. Government locations nearly triple (289%); homes and medical offices or facilities double (208% and 183%); military bases or facilities, places of worship, open to pedestrian traffic business locations, and closed to pedestrian traffic businesses increase (157%, 155%, 139%, and 130%). Because of the larger sample with more inclusive medical, media, police, school and work record, data collection, it is interpreted that these workplace-shooters locations are more representative.

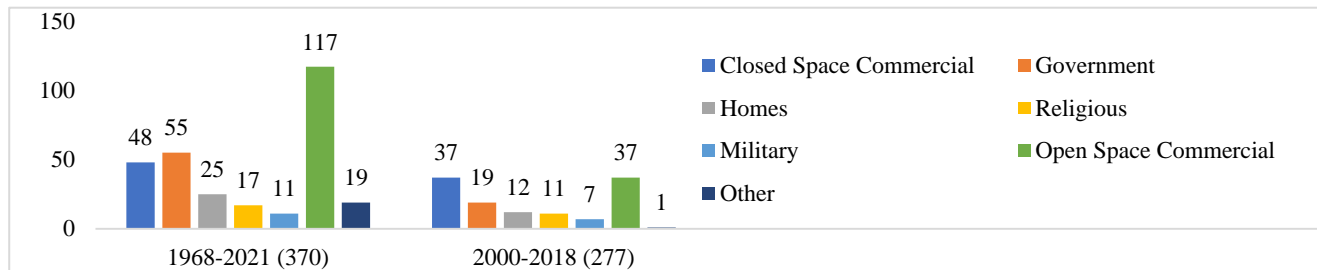


Figure 12. Locations of 370 Workplace-Shooters (1968-2021) vs. 277 F.B.I Active-Shooters (2000-2018)

Table 4. Locations of 370 Workplace-Shooters + 277 F.B.I Active-Shooters

Attack Location (Number, %)	1968-2021	FBI 2000-2018	Increase (%)
Government	55 (15%)	19 (7%)	289
Homes or Residential	25 (7%)	12 (4%)	208
Medical Office or Facility	22 (6%)	12 (4%)	183
Military Base or Facility	11 (3%)	7 (2%)	157
Religious Institution (Houses of Worship Church Mosque Synagogue Temple, etc.)	17 (5%)	11 (4%)	155
Restaurant, Retail or Other Commercial (Open to Pedestrian Traffic)	117 (32%)	84 (30%)	139
Distribution Manufacturing Production Non-Medical Professional office (Closed to Pedestrian Traffic)	48 (13%)	37 (13%)	130
Other	19(5%)	1 (.4%)	1900

**Media FBI Active-Shooter Data + Workplace-Shooter Media-Medical- Police-School-Work Data**

Silva (2019) studies the accuracy of media reports on workplace-shooters with bivariate analyses (i.e. cross-tabs) of media coverage/frames by mass shooting characteristics used to determine the perpetrator, motivation, and incident characteristics that receive more coverage. Second, there is an estimated logistic regression to determine the characteristics influencing any coverage/frames. Finally, robust regressions (for general news coverage) and multiple regressions (for frames) determine the characteristics influencing salient levels of coverage/framing. These analyses address the media newsworthiness hypotheses and framing hypotheses. Specifically, these analyses determine the significance of characteristics influencing coverage. School-shootings are one of the greatest predictors of newsworthiness. There is the public misconception of the mass shooting phenomenon as a largely a school-shooting problem (Schildkraut & Elsass, 2016) when workplace shootings are just as common. The intertextual nature of media coverage, academic knowledge, and public understanding (i.e. the strategic web of facticity) is what determines social construction more broadly. Similar to the mediated construction of reality, it is important to recognize academic “reality” of mass shootings as a social construction (Silva, Duran, Freilich, and Chermak, 2019). The FBI media based collected data is likely biased and error prone by the fact that its data from media report only, rather than concrete, evidence based academic facts in multiple medical, police, school and work record.

**Results: Study 2.**

**Comparing Controls, Homicidal, and Domestic-Terrorist, Mass-Murdering, Spree-Shooters**

*Adult Controls:* Among 24 persons there were 18 men and 6 women. The  $M_{age} = 41.75$  and the  $SD_{age} = 14.67$  years. The  $M_{education} = 16.00$  and the  $SD_{education} = 1.89$  years, or a college degree. There were 7 Euro-Americans (29%), 13 African-Americans (54%), 3 Hispanic-Americans (12%) and 1 other (Asian, Filipino, or Native American Indian) [5%]. Occupations included bookkeeper, bus driver, college track coach, emergency medical technician, engineer, firefighter, finance manager, golf professional, minister, nurse, Olympic athlete, occupational therapist, payroll personnel, physical therapist, pilot, police woman, priest, programmer, psychiatrist, rabbi, scout leader, stewardess, train engineer, and university volleyball champion with Air Force, Army, Coast Guard, Marine, and Navy veterans. The Control group comprised inpatient and out-patients referred to hospital, industry, and university clinics from 1992 to 2018 by health care workers, part or full time and summer work included babysitting, car washing, cashier, coding, cooking, delivery, dishwashing, farming, housekeeping, janitor, landscaping, nanny, painting, restaurant work, sales, snow removal and volunteering at nonprofit and religious organizations.

*Adult Homicidal:* Among the 12 homicidal adults there were 9 men and 3 women. The  $M_{age} = 39.23$  and the  $SD_{age} = 9.36$  years, or middle age. They had  $M_{education} = 15.38$ , and the  $SD_{education} = 2.06$  years, or some college. There were 3 Euro-Americans (25%), 6 African-Americans (50%), 2 Hispanic-Americans (17%) and 1 other (Asian, Filipino, or Native American Indian) [8%]. Occupations included professional coach, electric station controller, firefighter, handyman, mechanic, physician, police officer, port shipping supervisor, programmer, rabbi, sales person, and teacher with Army, Marines and Navy veterans. Homicide” is defined as adjudication and conviction, before a judge in court for killing of another individual(s), and by Illinois state laws.

*Adult Domestic-Terrorist, Mass-Murdering, Spree-Shooters:* Among the 9 spree-shooters are all men. The  $M_{age} = 35.66$  and the  $SD_{age} = 14.85$  years, or middle age. They had  $M_{education} = 12.66$ , and the  $SD_{education} = 3.84$  years, or some college. There were 3 Euro-Americans, 3 African-Americans, 2 Hispanic-Americans and 1 other (Middle-Eastern Asian). Occupations included kitchen worker, train engineer, truck driver and prisoner

**Nine Descriptive Categories of 370 Workplace-Shooters Characteristics**

There are 9 categories, 54 subcategories with 650 questions which are: (a) 48 demographic questions; (b) 106 health; (c) 63 mental health; (d) 46 education; (e) 52 employment; (f) 96 warning signs; (g) 24 abuse and criminal history; (h) 114 crime scene; and (i) 101 crime method questions. In an equation, nine categories (Poisson’s distribution of  $9 \times 8 \times 7 \times 6 \times 5 \times 4 \times 3 \times 2 = 362,880$ ) with a total of 650 questions. No human clinical decision maker that can match machine-learning-equations and computer-tests in the actuarial assessment of a combination of categories, subcategories and item characteristics.

**Logistic Regression’s 630 Spree-Shooters Characteristics**

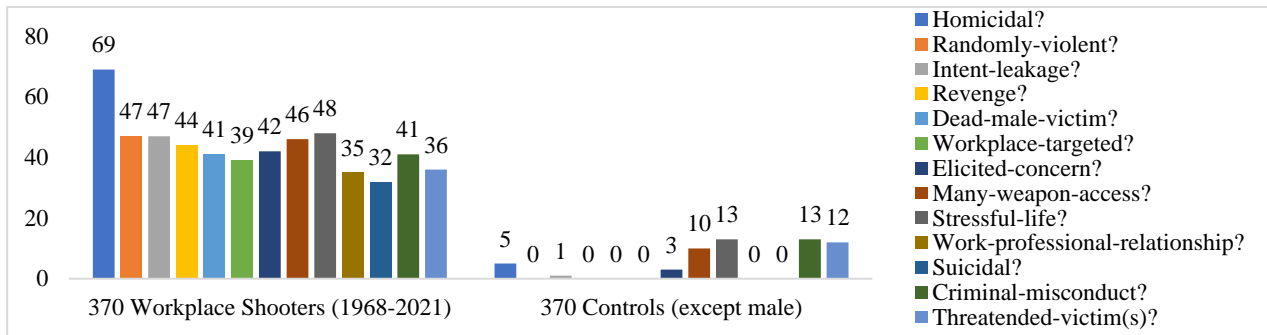


Figure 13. 370 Workplace-Shooter Significant (p<.01) Differentiating Characteristics

See Figure 13 and 14 and Tables 5 and 6, for logistic regression characteristics of workplace-shooters, homicidal? intent-leakage? dead-male-victim? elicited-concern? stressful-life? suicidal? threatened-victim(s)? randomly-violent? revenge? targeted-workplace? many-weapons-access? work-professional-relationship? and criminal-misconduct?

Table 5. Logistic Regression of 370 Workplace-Shooters:

R	R <sup>2</sup>	Adjusted R <sup>2</sup>	Standard Error of Estimate	R <sup>2</sup> of change	F Change	df1/df2		
.841	.707	.702	.27333	.707	134.64	13/72		
ANOVA Model	Sums	df	Mean	F				
Regression	130.761	13	10.059	134.637	.01			
Residual	54.239	726	.075					
Total	185.000	739						
Characteristic	Unstandardized B	Coefficient Standard	Standardized	t		Zero order	Correlation partial	Partial
Constant	+	+	+	59.482	.01			
Homicidal-ideation	+	+	+	-6.182	.01	-.660	-.224	-.124
Intent-leakage	+	+	+	-4.128	.01	-.550	-.151	-.083
Stressful-life-event	+	+	+	1.995	.05	-.379	.074	.040
Revenge-motive	+	+	+	-4.454	.01	-.532	-.163	-.090
Acquired-multiple-	+	+	+	-3.269	.01	-.406	-.120	-.066
Elicited-concern	+	+	+	-2.765	.01	-.475	-.102	-.056

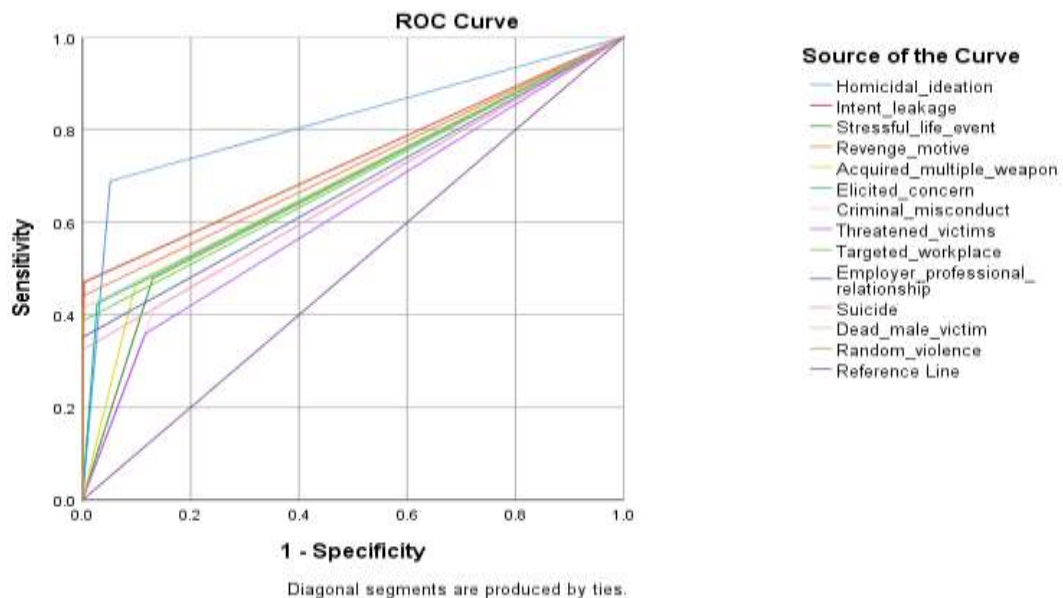
Criminal-misconduct	+	+	+	-2.743	.01	-.315	-.101	-.055
Threatened-victims	+	+	+	3.220	.01	-.286	.119	.065
Dead-male-victim	+	+	+	-3.068	.01	-.511	-.113	-.062
Targeted-workplace	+	+	+	-4.092	.01	-.489	-.150	-.082
Employer-professio	+	+	+	-7.753	.01	-.462	-.277	-.156
Suicide	+	+	+	-6.527	.01	-.440	-.235	-.131
Random-violence	+	+	+	-10.533	.01	-.554	-.364	-.212

+ Beta coefficients are not provided to maintain test integrity and security

Table 6. 370 Workplace-Shooter Area under the Curve (AUC)

Workplace-Shooter Characteristics	AUC	Standard	Significance	95% Lower	95% Upper
Homicidal?	.819	.016	.01	.787	.851
Intent-leakage?	.734	.019	.01	.697	.771
Stressful-life-event?	.674	.020	.01	.635	.713
Revenge-motive?	.720	.019	.01	.683	.758
Many-weapon-access?	.682	.020	.01	.644	.721
Elicited-concern?	.699	.019	.01	.660	.737
Criminal-misconduct?	.641	.020	.01	.601	.680
Dead-male-victim?	.707	.019	.01	.669	.745
Targeted-workplace?	.693	.020	.01	.655	.732
Work-professional-relationship?	.676	.020	.01	.637	.715
Suicidal?	.662	.020	.01	.623	.702
Randomly-violent?	.735	.019	.01	.698	.772
Average	.697		.01		

Figure 14. 370 Workplace-Shooters Receiver Operating Characteristic Curve (ROC)



### Logistic Regression of 13 Characteristics of 370 Workplace-Shooters

The logistic regression,  $F=134.637$ , with the multiple  $R$ ,  $R^2$  and  $t$ -tests on the  $\beta$  weights were all significant ( $p<.01$ ) for: homicidal? stressful-life-event? revenge-motive? many-weapon-access? elicited-concern? criminal-misconduct? threatened-victim(s)? dead-male-victim? targeted-workplace? work-professional-relationship? suicidal? and randomly-violent? Logistic regression gives a linear equation showing which variables are most strongly associated with workplace-shooting. Therefore, in the common sense of the term, it is a classification of group membership (status). Analyses are not only statistical analyses predicting outcomes; since the data are longitudinal, the resulting equations are truly “predictive” in the common sense of the word. Prior risk factors are used to predict whether the individual would later commit workplace-shooting. In logistic regression, it is the area under the receiver operating characteristic (ROC)

curve, the *AUC*, which captures the overall accuracy of prediction outcomes of interest such as workplace-shooting by comparing “hits” versus “misses.” The total group is treated as if it is a population, and samples are drawn without replacement from it, one after another, until 1,000 or more have been drawn. Logistic regressions are calculated for each sample and a corresponding *AUC* is estimated. The overall analysis yields an estimate of *AUC* that is the mean of all 1,000 samples’ *AUCs*. The *AUC* is a desirable measure of prediction performance, because it is not influenced by the base rate of the phenomenon being predicted and of the cutting scores on predictors used to make predictions. The *AUC*, or area under the binormal receiver operating characteristic (*ROC*) curve, is the proportion of the area to the range of the area index, plotted on linear probability scales, ranging from 0.5 to 1.0. This Area under the Curve is equal to the probability of a correct response in a two-alternative, forced-choice test (such as membership or non-membership in a group, namely workplace-shooting) that accounts for both the true positives and the false positives, i.e., sensitivity and specificity. Logistic regressions with resulting *AUCs* provide an easily understood, quantitative measure of the risks increase the workplace-shooting probability.

### Comparison of 630 Spree-Shooter, 232 School-Shooter and 370 Workplace-Shooter Regressions

The 630 spree-shooters, 232 school-shooters, and 370 workplace-shooters share these characteristics, homicidal-ideation, suicide, stressful-life-event and acquired-multiple-weapons or handgun. The 630 spree-shooters and 370 workplace-shooters share these characteristics, revenge-motive, intent-leakage, and elicited-concern. The 630 spree-shooters and 232 school-shooters share these descriptors, current-student, personal-grievance, and planning-preparation. The 630 spree-shooters have a unique descriptor, school location. The 232 school-shooter has the unique descriptor, targeted-individual. The 370 workplace-shooters have the unique descriptors, criminal-misconduct, random-violence, targeted-workplace, threatened-victims, employer-professional-relationship, and dead-male-victim. See Table 7.

Table 7. 232 School, 630-Spree, and 370 Workplace Shooters’ Regressions, 10, 8, and 13 Predictors

	232 School-shooters	630 Spree-Shooters	370-Workplace-shooters
<i>R</i>	.894	.823	.841
<i>R</i> <sup>2</sup>	.800	.677	.707
Adjusted <i>R</i> <sup>2</sup>	.796	.675	.702
Standard Error of Estimate	.22595	.28537	.2733
<i>R</i> Change	.800	.677	.707
<i>F</i> Change	227.14	260.422	134.637
<i>df</i> <sub>1</sub> / <i>df</i> <sub>2</sub>	8/455	10/1242	13/726
	Homicidal?	Homicidal?	Homicidal?
	Suicidal?	Suicidal?	Suicidal?
	Stressful-life-event?	Stressful-life	Stressful-life-event?
	Handgun-access?	Many-weapon-access?	Many-weapon-access?
		Elicited-concern?	Elicited-concern?
		Intent-leakage?	Intent-leakage?
		Revenge?	Revenge-motive?
	Grievance?	Grievance?	
	Planning?	Planning?	
	Student?	Student?	
	Targeted-person?	School-location?	Targeted-workplace?
			Criminal-misconduct?
			Threatened-victim(s)?
			Dead-male-victim?
			Randomly-violent?
			Work-professional-relationship?

### Study 2. Computer-tests and Machine-Learning-Equations

Several tests with high reliability, sensitivity, specificity and validity were chosen, after an exhaustive review of the research of actuarial evaluation. A brief description of the selected tests follows, along with the data collection, decision making algorithm, statistics and experimental design.

#### Computer Test: Minnesota Multiphasic Personality Inventory Second (MMPI-2)

The MMPI Second Edition (MMPI-2) is an evaluation of mental health, personality and deceptive self-presentation. Across the three editions, with item duplication, the computerized test takes less than 60 minutes to complete. The

MMPI-2 for adults has 567 true-false format questions. The MMPI-A has 468 questions. Computer administration allows for instantaneous scoring and report generation with a precision that exceeds 90%, in detecting mental illness. The MMPI alone is not sufficient in assessing violent-prone persons, because within the more than 100 scales, there is no reliable, sensitive-specific, valid measure of violence. This is why many court, hospital and human resource professionals, add a probation parole decision making risk test, like the Ask Standard Predictor to the MMPI. Over 19,000 empirical studies and 250 appellate court cases attest to the usefulness of this assessment that originated in the 1930s.

### **Machine-Learning-Equation: Ask Standard Predictor of Violence Potential**

The Ask Standard Predictor of Violence Potential (ASP) is an assessment of adults, with 11 true-false or multiple-choice format questions and an Area under the Curve ( $AUC$ ) = .99. The test-retest reliability was .75-.76 and Cronbach's  $\alpha$  of .75-.78 with sensitivity of 97% and specificity of 97%. The ASP evaluates specific, historical self- descriptions and requires 15 minutes to complete. The ASP for Youth has no questions from any of the other tests and is a free standing instrument with 54 independent questions, distinct from the other tests. This measure was successful in discriminating randomly selected violent offenders (1,595 adults and 1,127 adolescents) from matched controls with  $AUC$  = .96 in a combined adult and adolescent version, based on a sample of 2,722 (Zagar and Grove, 2010).

### **Data Collection**

Testing of these individuals was done to assess current functioning and address the hypotheses, as well as the more immediate issues of offering interventions, assessing fitness for duty, schooling, screening, and/ or medical or psychological treatment. Then, records for these individuals were obtained from court, industry, hospital, school, and/or universities. The records were checked and accepted as accurate, with regard to convictions and illnesses. Records were examined for previous court contacts for neglect, substance-dependency, physical and sexual abuse, delinquent and criminal oneness such as truancy, disorderly conduct, solicitation, phone harassment, forgery, mob action, violating a court order, drug possession or sales, property damage, auto theft, theft, burglary, robbery, unlawful weapon possession [firearm(s)], arson, assault or battery, aggravated criminal sexual assault, and homicide and domestic terror, mass murder, spree shooting (same procedure from Zagar, Busch, Grove, Hughes, 2009; Zagar, Kovach, Basile, Hughes, Grove, *et al.*, 2013).

### **Computer Test and Machine Learning Equation**

According to the published test manual instructions, psychologists administered the MMPI-2 and the ASP Adult Version. The order of test administration was randomized. All of the MMPI data were scored using the Pearson Assessment and University of Minnesota Press computerized Clinical Interpretative Report. The instruments had high test-retest reliability, large standardizations samples, good internal consistency, and high concurrent and construct validity. When possible the tests were administered on the internet.

### **Records:**

After physical and psychological examinations, current medical and other records were coded using the International Classification of Diseases (ICD-9; World Health Organization, 1977) and the Diagnostic Statistical Manual V (American Psychiatric Association, 2013) and juvenile and adult court and school and industry records were reviewed by two independent psychologists, with coefficients of inter observer agreement of  $r=.92-.94$ .

### **Machine-Learning-Equation: Decision Making Algorithm**

For adults, using the record and test data, two independent psychologists' classified individuals with the following algorithm, to assess mental health including substance-abuse using test results: (a) The MMPI-2 with significantly ( $p<.01$ ) elevated validity and/or basic clinical scales consistent with a  $t$  score of 65 or above. Finally, (b) the SP Adult version cut-off was 70.6%, the lowest score of convicted violent offenders (Zagar and Grove, 2010). With this decision-making algorithm, for the two independent psychologists, Pearson-product-moment coefficients of inter-observer agreement were .92-.96 ( $p < .01$ ). The results of this algorithm were compared with records of the individuals' actual histories.

### **Statistics and Experimental Design**

For adults, the means and standard deviations were computed for age and years of education completed and the test scales. The test scales were normally distributed according to the Komolgorov-Smirnov Test and met the assumptions of homogeneity of variance on Bartlett's test. In simple terms, the data was normally distributed and homogenous, conditions for analysis of variance (ANOVAs). For the domains and tests employed, the sample size was sufficient (Kirk, 1982). The criterion for mental health including substance-abuse, abuse, and delinquency or crime was the individuals' actual records. These included court or health records of mental illness, substance-abuse, violence, and/ or abuse. For

example, if the records showed a finding of mental illness, it was assumed that the individual had mental illness, and so forth for the various criteria, substance-abuse, violence, and/or abuse. This carefully selected set of tests was administered over the internet with a total test time of 60-90 min for 578 questions for adults. In the internet format, tests with automated reports cost 70 to 80% less than current paper-and-pencil version reports. First, the adult domestic-terrorist, mass-murdering, spree-shooters, homicidal and control group data were subjected one way ANOVA. All of the psychometric measures or dependent measures met the assumptions of normality (Kolmogorov Smirnov Tests) and homogeneity of variance (Bartlett's Tests).

**Comparing Adult Average t-Scores**

When the adult workplace-shooter, homicidal, and controls average and standard deviation *t-scores* of the: ASP and the MMPI-2 were compared, there were significant ( $p < .01$ ) differences. There is the "7-point violence profile" across adult workplace-shooter and homicidal but not the controls, namely the Ask Standard Predictor of Violence Potential, the MMPI-2 deception (infrequency, lie) depression, psychopathic deviate, paranoia, schizophrenia and alcohol-addiction admission. See adult *t-score* and percentiles in Figures 15-16 and Table 8.

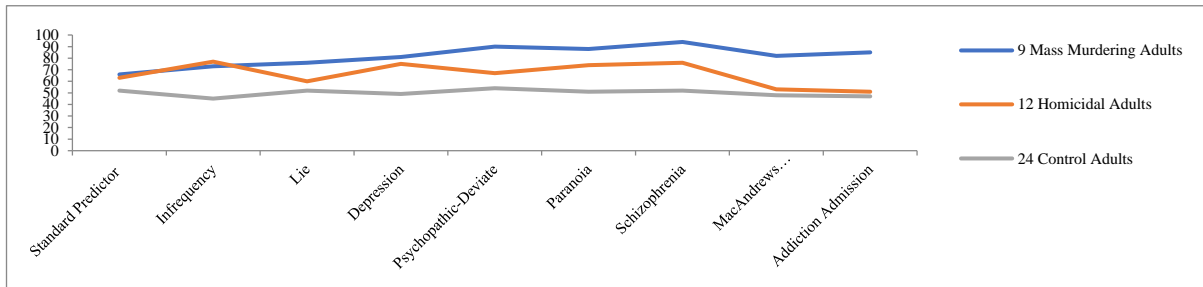


Figure 15. Adult Controls, Homicidal, Spree-Shooters Ask Standard Predictor & MMPI-2 t-scores (M=50, SD=10)

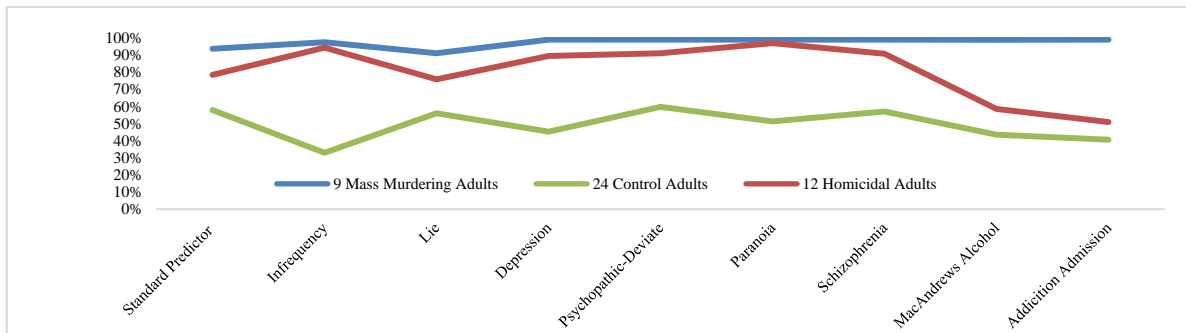


Figure 16. Mass-murdering, Homicidal, Controls on Ask Standard Predictor and MMPI-2 in Percentiles

Table 8. Ask Standard Predictor and MMPI-2 7 Point Violence Profile ANOVA Table

All: * $p < .01$		Adult			
		Sum of Squares	df	Mean Square	F
Ask Standard Predictor	Between Groups	1666.12	2	833.06	17.48*
	Within Groups	2001.87	42	47.66	
	Total	3668.00	44		
MMPI Infrequency	Between Groups	10453.35	2	5226.68	92.15*
	Within Groups	2382.29	42	56.72	
	Total	12835.64	44		
MMPI Lie	Between Groups	3666.93	2	1833.46	13.13*
	Within Groups	5863.51	42	139.61	
	Total	9530.44	44		
MMPI Depression	Between Groups	9215.89	2	4607.94	37.76*
	Within Groups	5125.89	42	122.04	
	Total	14341.78	44		
MMPI Psychopathic Deviate	Between Groups	8887.31	2	4443.65	44.66*
	Within Groups	4178.47	42	99.49	



	Total	13065.78	44		
MMPI Paranoia	Between Groups	10259.13	2	5129.56	50.58*
	Within Groups	4259.18	42	101.41	
	Total	14518.31	44		
MMPI Schizophrenia	Between Groups	12960.70	2	6480.35	53.85*
	Within Groups	5054.10	42	120.34	
	Total	18014.80	44		
MMPI MacAndrews Alcohol	Between Groups	7499.46	2	3749.73	42.01*
	Within Groups	3748.85	42	89.26	
	Total	11248.31	44		
MMPI Addiction Admission	Between Groups	9934.78	2	4967.39	86.63*
	Within Groups	2408.33	42	57.34	
	Total	12343.11	44		

### 650 Psynetix Questions Similar in Content to 7-Point Violence Profile of ASP and MMPI-2/A

Workplace-shooters significantly ( $p < .05$ ) differ from controls on characteristics consistent with seven-point violence profile of deception, depression, psychopathic-deviance, paranoia, schizophrenia, alcoholism-addiction, and violence potential as described in the 212 studies of 320,051, the test descriptions of the MMPI-A/2 and Ask Standard Predictor of Violence Potential (Zagar, Varela, Busch, Garbarino, Zagar, Kovach, *et al.*, 2019; Butcher, 1996; Butcher, Ellertsen, Lucio, Lim, *et al.*, 2000, Pope, Butcher, and Seelan, 2006; Zagar and Grove, 2010). See Table 9. On the ‘7-point violence profile’, workplace-shooters compare with the definition of *deception lie scale* with ambush tactical training and changing behavior, mood, and or personality, *deception infrequency* with fixated or delusions, mental illness motive and psychosis, *depression* with suicide, suicidal ideation, attempted suicide outcome, and public suicide/suicide by cop, psychopathic-deviance with psychopathy, criminal and military misconduct, others noted strange or aberrant behavior, narcissistic, and significant family stressor, paranoia with concerns about being followed, harassed or persecuted, paranoid schizophrenia, revenge motive, and personal grievance, schizophrenia with psychosis or psychotic thinking, reported hearing voices, schizophrenia, schizotypal personality, incompetent to stand trial and/or psychiatric facility commitment, sexual fixation, and pedophilia & related interests, alcohol-substance with substance abuse, alcohol, and other substances and prescription drugs abuse, and violence potential with criminal misconduct, male, alcohol substance use, planning-preparation, creating possessing kill list, habitually making violent threats when angry, involved in physical fights, employment termination, below average grades, significant family stressor, and separated or divorced.

### Workplace-Shooters Come Twice to Mental Health, Special Education Courts-Police Human Resources

As seen in Table 10, workplace-shooters access mental health before the shooting and access special education, while they also have human resource issues, and court or police contact, all before the shootings. The bottom line is that domestic-terrorist, mass-murdering, spree-shooters don’t want to be discovered, diagnosed, or treated. They are homicidal, suicidal and have access to multiple weapons, and experiencing a stressful life event, they elicit other’s concern with a personal grievance and revenge motive. They target a current student in a school and commit suicide. Machine-learning-equations and computer-tests need to be used in all sectors.

Table 9. Psynetix 650 Questions MMPI-2 and Ask Standard Predictor (ASP) “7-Point Violence Profile”

370 Workplace-Shooter Characteristics	7-Point Violence Profile Adults
Ambush tactical training, Move & shoot, cover & conceal, Changed in behavior, mood and/or personality, Obsessive	1A. MMPI-Deception Lie Scale attempts by individuals to present themselves in a favorable light, lack of insight
Fixated or delusions, Mental illness motive, Psychosis or psychosis symptoms, Significant mental health history, Mental illness motive	1B. MMPI-2 Deception F Infrequency Scale trying to appear worse than one really is, severe psychological distress, randomly answering
Suicide, Suicidal ideation, Attempted suicide, Suicide by cop, getting things in order, Stressful life event, Inappropriate affect	2.MMPI-2 Depression Scale, poor morale, hopelessness, helplessness, general dissatisfaction, life situation unhappiness
Others noted strange, aberrant behavior, Significant family stressor Elicited other’s concern, Criminal, hate, power-control, Bullying or harassing, recognition, or religion motive, unprovoked anger outbursts	3.MMPI-2 Psychopathic Deviate Scale social deviation, amorality, externalizes blame on others, hostility, poor judgment,

	lack of acceptance of authority, disregards morality
Concerns about being followed, harassed or persecuted, Paranoid schizophrenia, Revenge motive, Personal grievance	4.MMPI-2 Paranoia Scale suspiciousness, rigidity, feeling persecuted, grandiose self-concepts, excessive sensitivity
Psychosis, psychotic thinking, Hearing voices, Schizophrenia, Incompetent to stand trial, psychiatric facility commitment, Mental health hospitalization	MMPI-2 Schizophrenia Scale bizarre thoughts, low impulse control, strange perceptions, social alienation, inattentive, poor family relationships, uninterested, poor self-worth, self-identity. disturbing thoughts
Substance Abuse: Abused prescription drugs, Unknown illicit drug abuse type (s), Unknown psychiatric medication or type,	6.MMPI-2, MacAndrews Alcoholism Revised (MAC-R), Addiction Potential Alcohol-Addiction (AAS) direct measure of substance abuse, alcohol, drugs
Homicidal, Criminal Misconduct, Gang peer fringe group involved, Bullying, harassing others, Personal grievance, Planning, preparing murder, creating kill list, Developing, posting manifesto, previously attacked location, Holding or planning hostages, surveilling target, Recruiting accomplices. Target mapping, Acquired multiple weapons, Possessing bomb diagrams, Straw purchasing weapons, Prior murder interest, Authoring violent content, Watching violent media, Admiring prior murderers, Interested in prior attacks, Current or former worker, Attacker's professional relationship, Random violence, hate crime, terrorism motive, Habitually, making angry violent threats, Weapon fascination, Islamic belief, extremist ideology, Hate speech, Tactical research, Obtaining weapons, Handling weapons before attack, Circumventing security, Male, Intent leakage, formal job discipline, Work stressor, Disgruntled, Work termination, Problem worker report, Animosity to a culture, ethnicity, race, or religion, Significant family stressor, Separated, divorced, Abuse perpetrated during adulthood, Abused prescription drugs, Unknown illicit drug abuse, type(s), Unknown psychiatric medication or type, Romantic conflict, rejection, stress,	7. ASP Ask Standard Predictor Violence Potential-Adults (N=1595) Poor decision making Prior court contact, criminal or delinquent misconduct Male Alcohol substance use Violent family Unemployment Underachievement Antisocial personality disorder Hyperactivity, Attention deficit, Learning Disorder Low socioeconomic status Illnesses

In Figure 17 for the total test battery (MMPI-2/MMPI-A, ASP-MM), among 15 adult and teen spree-shooters and 36 controls with a total of 51, the true positives (*TPs*) are 14 of 15 (93% sensitivity) and the true negatives (*TNs*) are 35 of 36 (97% specificity). For the MMPI-2/MMPI-A among the 15 adults and teen spree-shooters, with a total of 51, the *TPs* are 14 of 15 (93% sensitivity) and the true negatives are 35 of 36 (97% specificity). For the Ask Standard Predictor Mass-Murder-Potential, among the 15 adult and teen spree shooters and 36 controls with a total of 51, the true positives are 14 of 15 (93% sensitivity) and the true negatives are 34 of 36 or 94% specificity similar to the results from the Ask Standard Predictor of Violence Potential Adult or Adolescent Versions (Zagar, Kovach, Basile, Hughes, Grove, et al., 2013; Zagar et al., 2016). For sensitivity-specificity see Table 11. See self-report vs. behavior-rating mass murder potential questions, mass-murderers (killers) vs. controls in Table 12.

Table 10. 370 Shooters Come to Education Mental Health Courts-Police Human Resources 2 X

<b>Education History:</b> Graduate Equivalency Diploma (GED)	3	1%
Technical Diploma	2	1%
Below Average Grades	10	3%
Academic Probation	0	
Acted Out and/or Caused Trouble in Class	6	2%
Decline in Academic Performance	1	0%
Did Not Graduate College/ University (If Enrolled)	15	4%

Did Not Graduate High School	6	2%
Expelled from College / University, Technical, Or Other	2	1%
Expelled from Middle or High School	5	1%
Suspended	8	2%
Truancy	1	
Special Education	2	1%
Homeschool	0	
Alternative School	2	1%
Subtotal	63	17%
<b>Mental Health History: Anti-Anxiety Medication</b>	1	
Anti-Depressant(s)	10	1%
Anti-Epileptic(s)	0	
Anti-Psychotic(s)	4	1%
Mood Stabilizer(s)	0	
Sedatives(s)	3	1%
Narcotic(s)	3	1%
Unknown Psychiatric Medication	14	4%
Mental Health Hospitalization	34	9%
Attended Counseling and/or Therapy	35	9%
Received Inpatient Treatment for Alcoholism	1	
Seeking to Begin Therapy	5	1%
Subtotal	110	30%
<b>Employment History: Formally Disciplined</b>	75	20%
Disgruntled	79	21%
Employment Terminated	58	16%
Aggression, Sexual Harassment, Or Inappropriate Behaviors	27	7%
Below Average Performance	22	6%
Reported to Be a Problem Employee	22	6%
Knowledge or Suspicion of Impending Job Loss	18	5%
Placed on Mandatory Leave	7	2%
Decline in Work Performance	5	1%
History of Being Harassed by Supervisors	2	1%
History of Unstable Employment	17	5%
Subtotal	332	90%
<b>Abuse/Criminal History: Interactions Initiated By: Law Enforcement</b>	112	30%
Experienced/Witnessed Abuse During Childhood: Yes	12	3%
Perpetrated Abuse During Childhood: Yes	4	1%
Experienced/Witnessed Abuse During Adulthood: Yes	1	
Perpetrated Abuse During Adulthood: Yes	45	12%
Military Misconduct: Yes	11	3%
Criminal Misconduct: Yes	153	41%
Subtotal	338	91%

Total	843	228%
-------	-----	------

**15 Adult & Teen Spree-Shooters vs 36 Controls: MMPI-2/A and ASP-Mass Murder Potential**

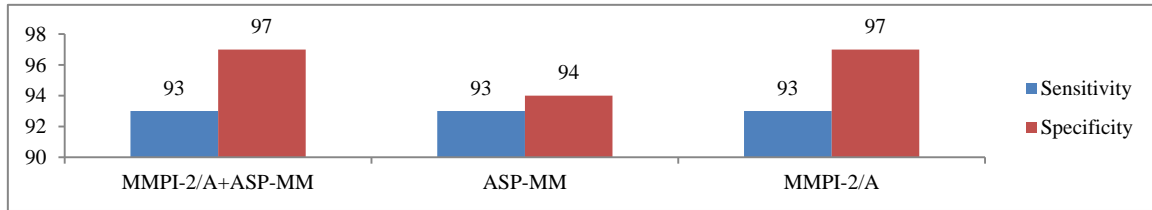


Figure 17. Sensitivity and specificity for MMPI-2/A, ASP-MM records = criterion) [N=51]

Table 11. Spree-Shooter Sensitivity- specificity: computer-tests-equation (N = 51) with records as criterion

Test	Measure	Prediction
	Deception-Mental-Illness-Psychopathic-Deviance-Addict-Alcoholic-Mass-Murder-	
True Positives (TPs)	Potential	
	False Negatives (FNs)	
14	1	Sensitivity
		93%
False Positives (FPs)	True Negatives (TNs)	
2	34	Specificity
		97%
Ask	Standard	Mass-Murder Potential
Predictor		
True Positives (TP)	False Negatives (FNs)	
14	1	Sensitivity
		93%
False Positives (FP)	True Negatives (TNs)	
2	34	Specificity
		94%
MMPI-2/A+ASP-M	Deception-Mental-Illness-Psychopathic-Deviance-Addict-Alcoholic-Mass-Murder-	
M	Potential	
	Deception-Mental-Illness-Psychopathic-Deviance-Addict-Alcoholic	
True Positives (TPs)	False Negatives (FNs)	
14	1	Sensitivity
		93%
False Positives (FP)	True Negatives (TNs)	
1	35	Specificity
		97%

Table 12. Spree-shooter vs Controls Ask Standard Predictor Mass Murder Questions

Question	Killers Self-Report		Controls		Killers Behavior Rating		Controls		
	Yes	No	Yes	No	Yes	No	Yes	No	
1 homicidal	14	1	0	36	15	0	0	36	
2 suicide	13	2	1	35	14	1	1	35	

3	stressful-life-event	15	0	4	32	15	0	3	33
4	handgun-many-weapons	12	3	0	36	13	2	0	56
5	elicited-concern	15	0	3	33	15	0	2	34
6	intent-leakage	14	1	1	35	14	1	1	35
7	revenge	13	2	2	34	14	1	1	35
8	grievance	14	1	2	34	14	1	1	35
9	Planning-preparation	12	3	0	36	13	2	0	36
10	student	7	8	8	28	8	7	7	29
11	person-school-work-target	13	2	0	36	14	2	0	36
12	arrest, prison-jail, conviction	12	3	1	35	13	2	3	33
13	threatening-victim	15	0	2	34	15	0	3	33
14	dead-male-victim	1	14	0	36	2	13	0	36
15	random-violence	14	1	3	33	14	1	2	34
16	student-professional-work-relationship	15	0	4	32	15	0	6	30

**630-Sprees-Shooters vs. 623 Controls on 16-Questions: ASP-Mass Murder Potential Group Separation**

See Figure 18 for a comparison of distributions of ASP-MM scores in the groups, 630 mass-murderers and 623 controls (N=1253).

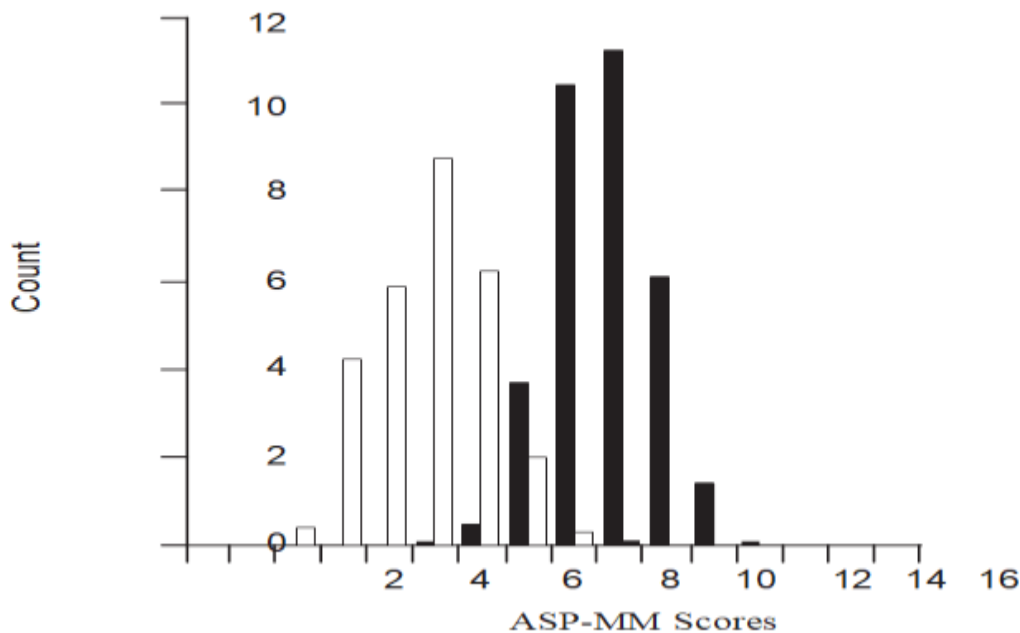


Figure 18. 630 spree-shooters (black) ■ □ 623 controls (white)

**U.S. Roman Catholic Church: Workplace Violence Example: Costs and Victims (1936-2107)**

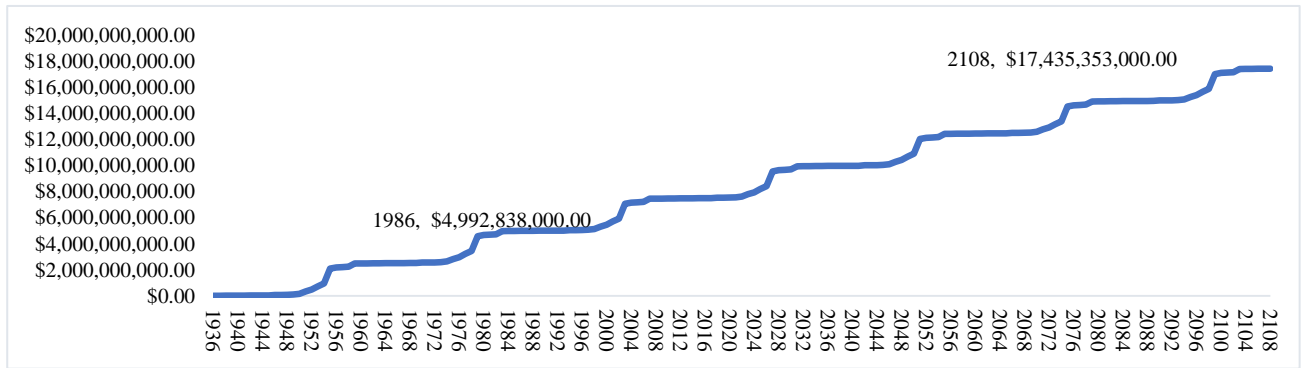


Figure 19. U.S. Roman Catholic Church Payouts (1936-2108) in 20 May 2021 U.S. Dollars

The U.S. Roman Catholic Church has (1936-2107) losses in Figures 19-20-21. It has [lost donations = 1.3 x payouts] (Bottan and Perez-Truglia, 2016) with payouts + lost donations = (1936-2107) with victims [(1936-2107), 39,753-victims projected forward with no computer-tests + machine-learning-equations. This is the same as U.S. insurance industry premiums. See the yearly payout + lost donations, \$203,925,239.80 (\$40,101,311,900/88 years) or weekly \$3,921,639.23 (\$203,925,239.80/52), an unsustainable business or corporate model. Half of American Catholics leave the U.S. Church (Murphy, 2015). There are the pedophilia and spree shooter victims. There is the US Church and US industry loss 1936-2108. There are declining baptisms/births. There is the weekly US Church loss (Gray, 2021). Without tests-equations future is grim.

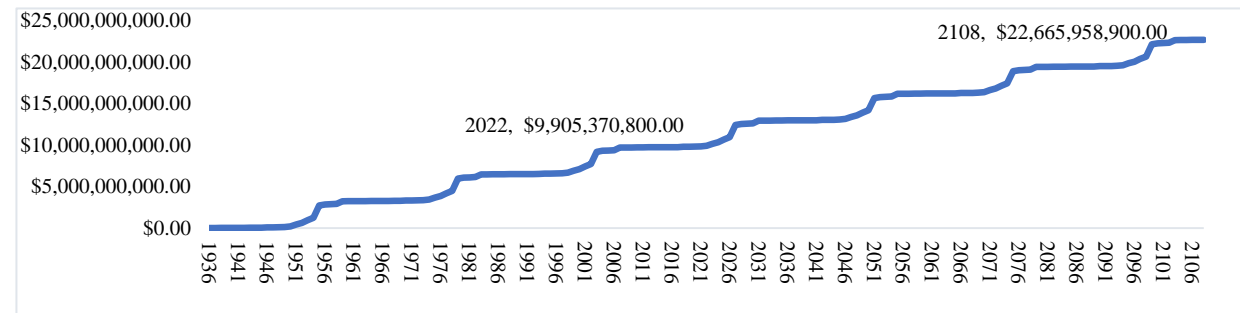


Figure 20. U.S. Roman Catholic Lost Donations (1986-2108) (1.3 x Payouts) in 20 May 2021 U.S. Dollars

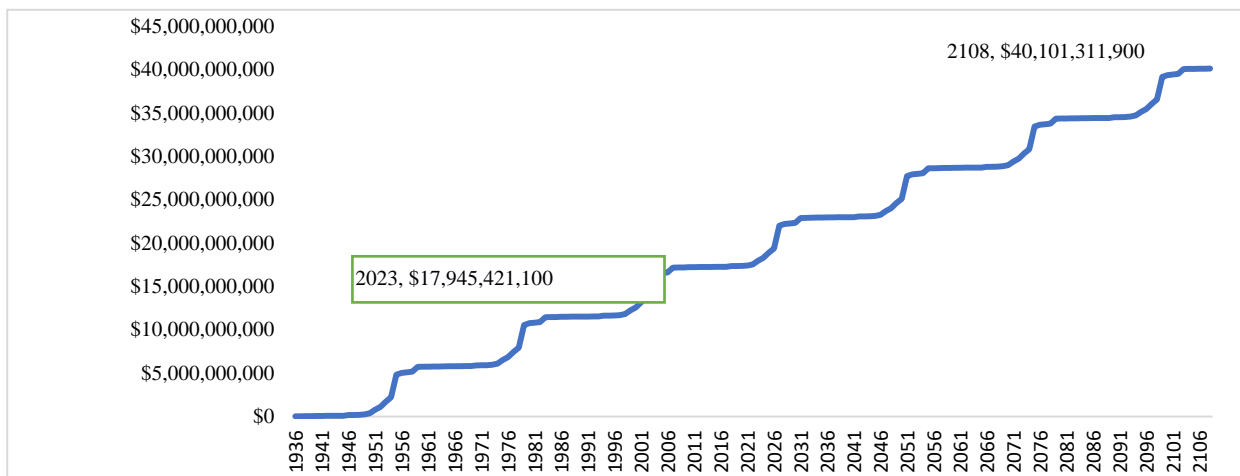


Figure 21. U.S. Roman Catholic Payouts + Lost Donations (1986-2108) in 20 May 2021 US Dollars

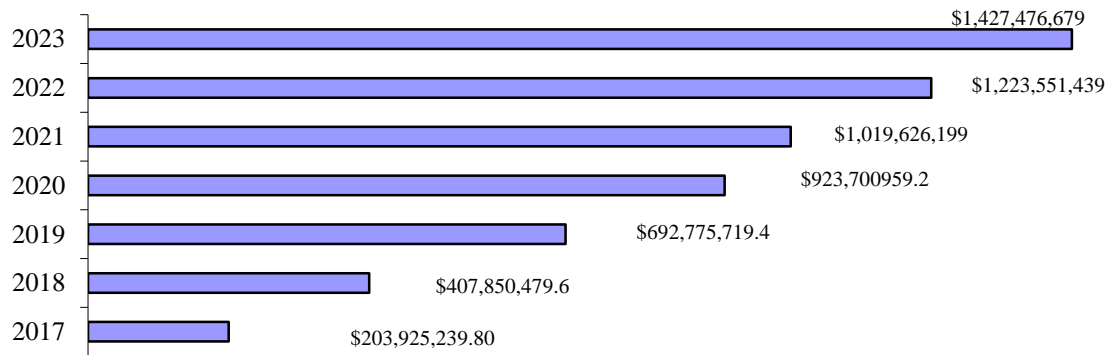


Figure 22. Yearly US Church Lost-Donations + Payouts and Annual Insurance + Premium Buyers Losses

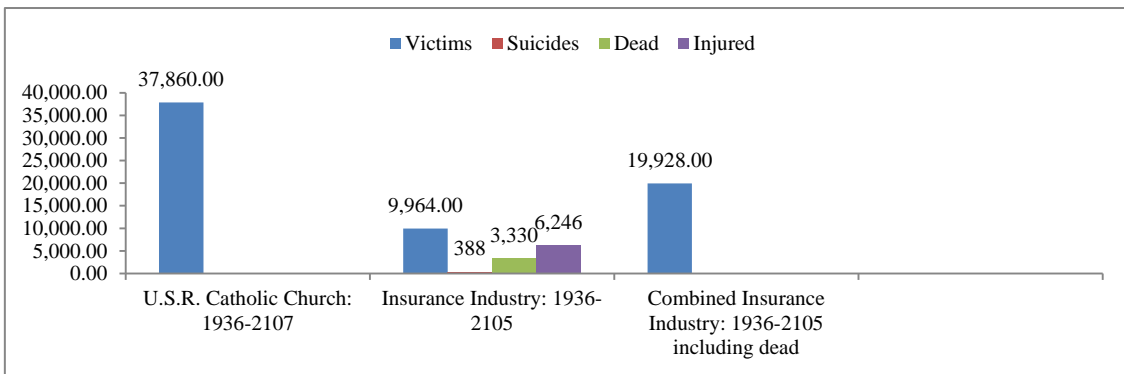


Figure 23. Church Pedophilia Victims vs. Total Spree-Shooter Victims, Suicides, Deaths, Injured 1936-2107

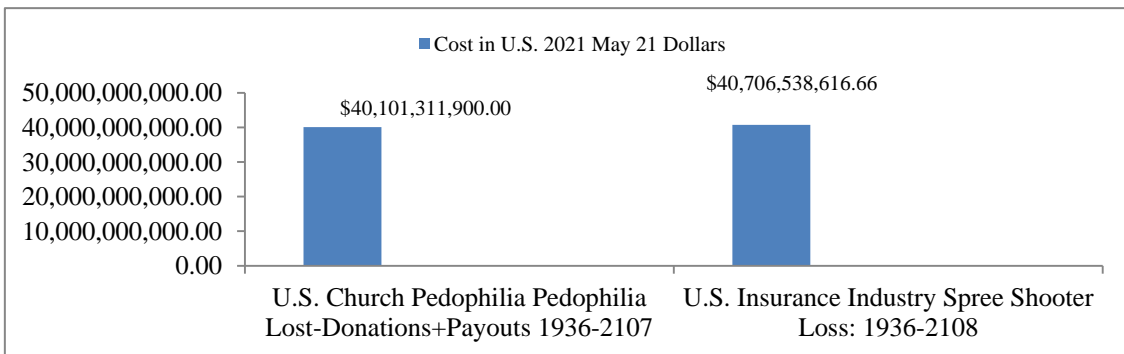


Figure 24. 1936-2108: US Church Pedophilia Payout- Lost-Donations vs. US Insurance Industry Spree Shooters

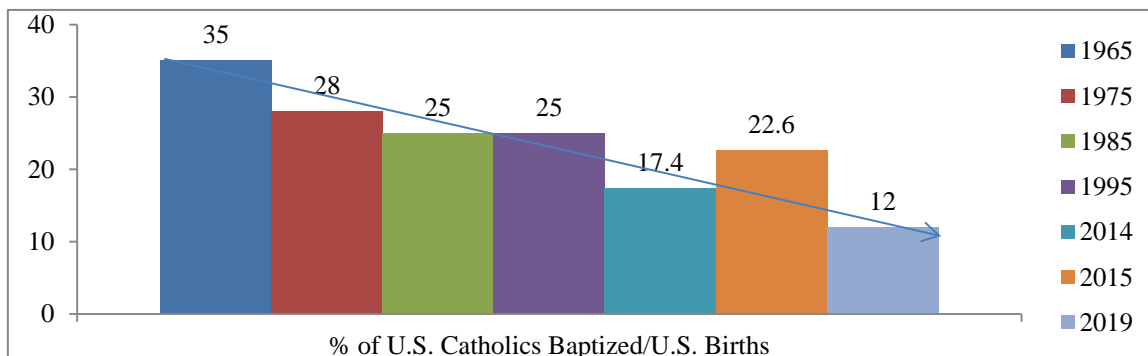


Figure 25. Five Decade Trend of % of Fewer Baptisms per Births in the U.S. from 1965-2019

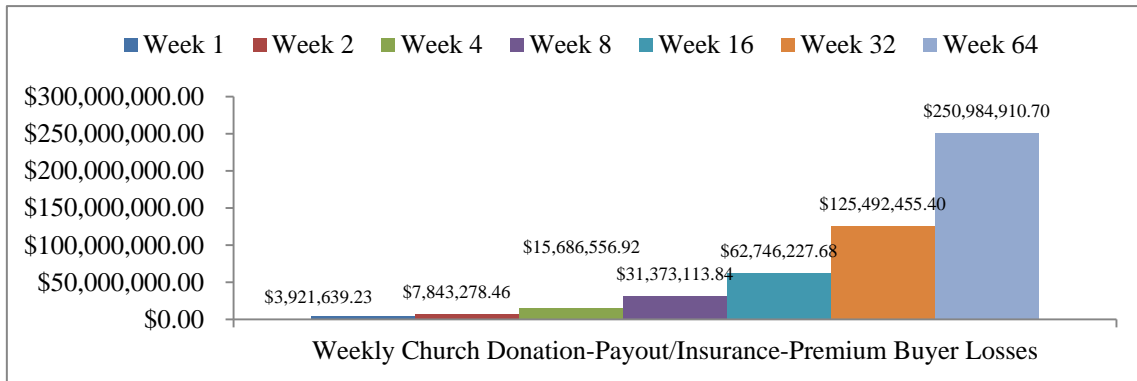


Figure 26. Weekly US Church Lost-Donations + Payouts/Insurance + Premium Buyers Losses (2021 21May US \$)

**School-Workplace Violence, Payout, Donation Loss Example: the U.S. Roman Catholic Church**

In 2007, total U.S. Roman Catholic payout is \$4,520,363,843 and in 2008, \$436,000,000. Gallagher Insurance of Illinois, who insures Catholic dioceses payout = \$1,500,000,000 (Wilhelm, 2010; United States Conference of Catholic Bishops, 2014). Since 1994, 21 US Roman Catholic dioceses bankruptcies occur with a trend of all 198 being bankrupt by 2144. See Figure 21. Partially due to pedophilia there is a 9 to 14% decline in Roman Catholic affiliation, which if it continues will result in 0% Roman Catholics with five centuries in the U.S population. Given each pedophilia-affected annual zip code, estimated U.S. Roman Catholic loss is 1.3 in total charitable contributions. Bottan and Perez-Truglia, 2015, Rotanda, 2016, computed this annual lost collections and donation revenue as roughly greater than payouts in each location are donation loss. The insurance industry and premium buyers have similar weekly and annual losses from spree shooters.

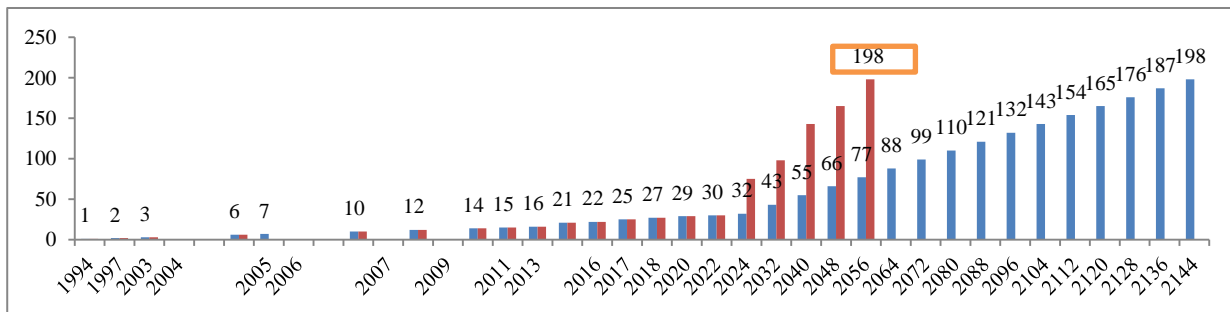


Figure 27. 1994-2016 Bankrupt and 198 Projected Bankrupt US Roman Catholic Dioceses

With 1.3 x 3,000 scandals the loss is equal to \$1,770,000 per year. Non-itemized contributions are 25% of all giving. Bottan and Perez-Truglia assume similar effects on non-itemized givers. A pedophilia scandal costs \$590,000,000 per year equal to \$1,770,000,000 plus \$590,000,000 which equals to \$2,366,000,000 per year (Ruhl and Ruhl, 2016). Charitable giving does return, and the losses affect the pedophilia localized diocese (Zagar, Zagar, Busch, Garbarino, Ferrari, Hughes, Patzer, Kovach, Grove, Tippins, Imgrund, Dempsey, and Basile (2016); Zagar, Varela, Busch, Garbarino, Zagar, Kovach, Tippins, Hughes, and Singh, (2019). Insurance and law professors and judges have concurred that since the U.S. Roman Catholic Church has the solution, namely “computer-tests and machine-learning-equations for 30-years now and the “seven-point violence profile” with cases across different sectors, that pedophilia settlements will only move one to two digits and accelerate the impending bankruptcy as seen in Figure 27 and then shown in Figure 28 with the example of the Chicago Archdiocese Father McCormack and Las Vegas MGM Hotel 4500 victims case settlements.



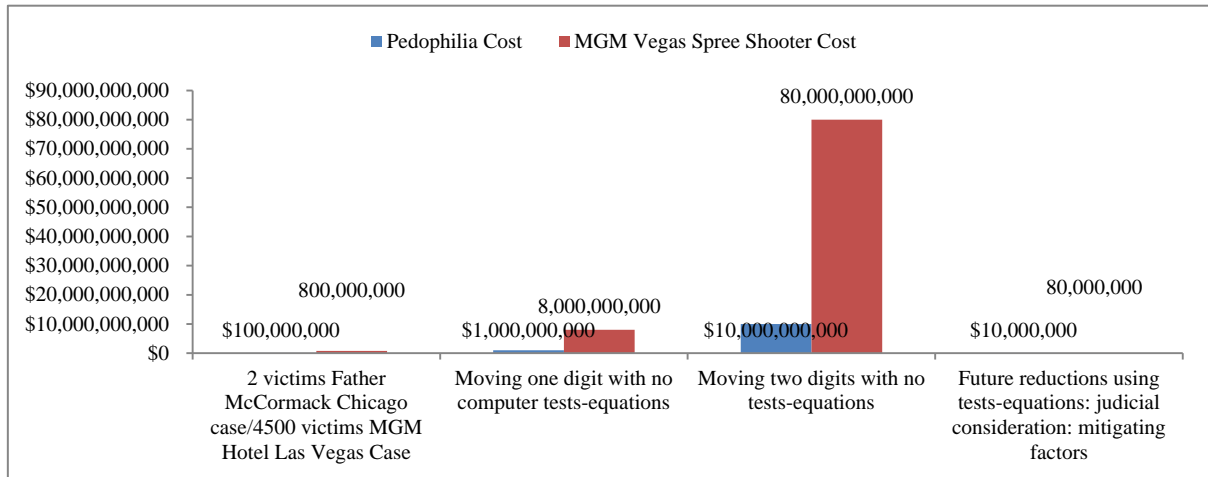


Figure 28. Chicago Case/Las Vegas MGM Hotel Case: Projected Rising Costs for Not-Using Computer-tests-Equations

## Discussion

### First Null and Alternative Hypotheses

The null hypothesis on workplace--shooters and control differences is rejected. The alternative hypothesis is that workplace--shooters are different on, homicidal-ideation, stressful-life-event, revenge-motive, acquired-multiple-weapons, elicited-concern, criminal-misconduct, threatened-victims, dead-male-victim, targeted-workplace, employer-professional-relationship, suicide, and random-violence.

### Second Null and Alternative Hypotheses

The second null hypothesis is that workplace-shooters do not differ from homicidal and controls. This null hypothesis is rejected and the alternative hypothesis that workplace-shooters tend have higher amounts of characteristics in the 7-point violence profile and tend to be deceptive, depressed, psychopathic deviate, paranoid, confused thoughts (elevated schizophrenia scale), alcohol-substance abusing, and violence is accepted. Many of the questions on the measures of the 7-point profile scales are consistent with workplace--shooter characteristics. But the real question is, what are the costs of workplace—shooters? The mnemonic for workplace-shooters is “young current or former working man hates self, with personal grievances, stressed, leaking intent, plans revenge, with multiple handguns, homicidal and suicidal ideation, criminal misconduct, attacking employees in workplace with dead male victims.”

### Objective, Reliable, Sensitive, Specific, Valid Computer-tests and Machine-learning-equations

Inexpensive reliable sensitive specific valid tools include the Pearson, PsychCorp, Behavior Assessment System for Children Third Edition (BASC-3) has 150 questions for parents, teachers, and infants, children, teens, and adults from birth to 25 years for \$5 US (2021 dollars) generating a 30-page report with diagnosis and treatment (Kamphaus and Reynolds, 2015a; 2015b). The Pearson MMPI-A/2 has 500+ questions giving a 30-page report comparing the teen or adult with millions including personal, interpersonal skills, diagnosis, treatment, and probability outcomes for \$50 US (2021 dollars) [Pope, Butcher, and Seelan, 2006]. The PAR Incorporated, Psytec, Child Abuse Potential Inventory is another test for adult violence risk with 150 questions for 18 to 99 years with an objective, reliable, sensitive, specific, valid rating scale (Milner, 1986) with a one-page report. The Ask Standard Predictor of Violence Potential, along with the MMPI-2/A, have a *combined* specificity and sensitivity for deception, mental illness, substance abuse and violence of 0.97 (Zagar and Grove, 2010; Zagar, Kovach, Basile, Hughes, Grove, *et al.*, 2013) for homicidal, overdosing-substance-abusing, sex-offending and suicide-completers. The Ask Standard Predictor of Violence Potential (ASP) is an assessment of adults, with 11 true-false or multiple-choice format questions and an Area under the Curve ( $AUC$ ) = .99. The ASP for Adolescents has 54 questions with  $AUC$  = .91. The test-retest reliability was .75-.76 and Cronbach's alpha of .75-.78 with sensitivity of 97% and specificity of 97%. The ASP evaluates specific, historical self-descriptions and requires 15 minutes to complete. The ASP has no questions from any of the other tests and is a free-standing instrument with 11 or 54 independent questions, distinct from the other tests. This measure was successful in discriminating randomly selected violent oleanders (1,595 adults and 1,127 adolescents) from matched controls with  $AUC$  = .96 in a combined adult and adolescent version, based on a sample of 2,722 (Zagar and Grove, 2010). Psynetix is a developer of human behavioral analysis software and artificial intelligence designed to create better functioning business, finance, criminal, and counter-terror human personality profiles. Psynetix also develops predictive software to identify "Students of Concern" who might become violent on campus. The company's human behavioral analysis

software fuses advanced mathematical and technical knowledge from top research institutions, along with decades of police investigative and military special operations experience to provide an innovative and highly efficient behavioral analytics, deep-learning program with actionable insights, enabling law enforcement, national intelligence and national defense entities to instantly identify and disrupt dangerous behavioral patterns before criminals and terrorists act.

### **Security Measures: Inexpensive Finger Print Identification, Wider Metal Detector Use, Risk Education**

More widespread use of inexpensive finger print identification scanners less susceptible to identification error or fraud, metal detectors in schools, commercial locations, and workplaces will make people less vulnerable. When more professionals learn to use computer-tests and machine-learning-equations, there will be a decrease in violence, whether spree-shooters, homicide, overdose, sex-offending or suicide completion. Armed security personnel would help.

### **Insurance Chief Financial Officer, US Roman Catholic Church Leadership**

Education of insurance chief financial officers, bishops, cardinals, and church chief financial officers in the use of computer-tests and machine-learning-equations namely the Ask Standard Predictor of Violence Potential, the math of computer-tests and machine-learning-equations and cost savings, and case studies of homicidal, mass murdering, overdosing, sex-offending, suicide-completers is available to offer hope for future safer world.

### **Impact on the Insurance Industry**

Workplace spree-shooters can have an exponential effect on the cost of monthly premium payments, fixed co-pays, or provider deductibles within the insurance industry if a shooting is not prevented. Insurance claims regarding injuries and deaths are often filed by the victims' families in the response to a spree shooting. Thousands to even millions of tangible and intangible costs for medical care, hospitalization, public services, or lost quality of life can increase premiums and rates. Shootings can also drive deductibles costs up due to the liability the insurance company holds. Take the MGM shooting for example. A peaceful public event that turns into a huge disaster and liability for the insurance company covering said event. Insurance rates are then based upon claims projections. Those projections are based upon actuarial calculations using past loss data and models to project experience into the future. Therefore, these premiums and rates are based upon the claim projection and a variety of factors that include age, sex, coverage, and risk management. Using different factors and data gathered from computer-tests and machine-learning-equations, insurance companies can make premiums and rates cheaper based upon actuarial assessment and calculation. Insurance companies that implement computer-tests and machine-learning-equations within their coverage can reduce the risk of violence in the workplace by taking objective, valid, reliable data to produce standard operating procedures before a shooting event occurs. Firms that proactively take actions such as employee training, product design or risk assessment, based on computer-tests like the CAPI and MMPI-2/A and machine-learning-equations like Psynetix and the Ask Standard Predictor, realize lower premiums because the insurance industry has quantified the impact of numerous risk management activities. This is the idea of "pre-loss loss control". Proactive decisions like this are likely to reduce the impact of losses. As the cases discussed here are consistent with, even if an insured entity ultimately is found not liable for the actions of a spree-shooter or pedophile, there are costs of defending businesses and billing owners from claims arising out of spree-shooter or pedophile incidents which have not been included in the expense (1936-2108). A time may come when institutional awareness, public policy and public perception converge to place greater duties and responsibilities on businesses, corporations, institutions and professionals to act affirmatively to intervene and prevent spree-shootings and pedophilia or violent offenses. Until then count on insurance industry to respond to insured's' concerns with new coverage and endorsements designed to help entities prepare and respond to active assailants regardless of a spree-shooting, pedophile, homicide or other violent offense. Revising insurance contracts to include computer tests and equations can reduce settlements for those premium owners opting to lower future costs for "pre-loss loss control acts."

### **Clinics and Hospitals**

There is the action plan through human development from infancy to adulthood, hospital workers must use computer-tests and machine-learning-equations at the emergency room or clinic, when someone with mental health and violence issues presents. Insurance leadership can provide incentives because psychiatric hospitalization and treatment is expensive, whereas the computer-tests and machine-learning-equations costs less than \$200 and even if it has to be orally dictated or repeatedly give to obtain reliable, sensitive, specific, valid results, it is less expensive than the tens of thousands for hospitalization, or even more a death or injury. If it is a child or teen, then the Ask Standard Predictor, Psynetix, and CAPI-3 from parent and youth is available. If it is a teen or adult, then the Ask Standard Predictor, Psynetix, BASC-3, the MMPI-A, the MMPI-2 and the CAPI are useful. Since insurance chief financial officers pay out the disability, errors and omission, life, personal injury and workers compensation, making insurance contingent upon use of computer-tests and machine-learning-equations makes economic sense. Likely universal computer-tests and machine-learning-equations will shorten psychiatric hospital stays and also shorten outpatient treatment, since patients

will know objectively what they have, like with a blood test, an x-ray or other medical procedure and judge intervention objectively.

### **Schools**

In the elementary and high school special education departments, the universal use of computer-tests and machine-learning-equations, the Ask Standard Predictor, Psynetix, and the CAPI-3 by the parent, the student and the teacher. If there is a mental health and violence issue, then the Ask Standard Predictor of Violence Potential and Psynetix filled out by the staff and the student with preference for the rating by staff based on past behavior, is helpful, as well as the MMPI-A or in later high school the MMPI-2. In alternative programs, colleges, universities, home school, magnet, online programs, private excluding religious, religious or religious based, special, trade or technical school, depending upon the age, the BASC-3 or CAPI should be used. This will also make schools, colleges and other academic locations safer for students and staff.

### **Courts, Jails, Prisons**

In the courts, jails and prisons, since taxpayers fund these institutions and insurance financial officers and governors, supreme court justices and legislatures have to find money for these agencies, universal use of the CAPI-3, Psynetix, the Ask Standard Predictor, and the MMPI-A for youth and teens, and the Ask Standard Predictor, Psynetix, the MMPI-2 and the CAPI for adults will save judges, lawyers, court, jail and prison workers from disability, health, life, personal injury and workers compensation costs. Mental illness and violence should be 97% reliably, sensitively, specifically, validly measured to divert, intervene and treat or to contain, incarcerate, or execute. Many court workers suffer when the unexpected happens and predictability makes business and life easier.

### **Workplaces-Human Resources**

At the government office or facility, manufacturing production or distribution facility, medical office or facility, military base or facility, professional office excluding medical, religious institution, residential, restaurant, retail, and other commercial site, and other location, there are human resources and employee assistance programs and family emergency medical leave of absence and short- or long-term disability costs. Making insurance contingent upon use of computer-tests and machine-learning-equations makes practical sense. Many of these conditions are now dealt with in a haphazard, illogical way, whereas with computer-tests and machine-learning-equations, the accuracy, efficiency, low cost and speed likely will decrease the human resource and the insurance expense. For the teen worker, the CAPI, BASC-3 or MMPI-A Psynetix, and the Ask Standard Predictor Youth Version, while for the adult, the MMPI-2, the Ask Standard Predictor, Psynetix, and CAPI are useful in 97% objective, reliable, sensitive, specific assessment and treatment planning.

### **U.S. Roman Catholic Church Leadership and Later Global Church Leadership**

At the intake within the convent, monastery or seminary, again before ordination or vows, at promotion to a parish, or leadership position, at transition and at retirement, computer-tests and machine-learning-equations assesses mental illness and violence with 97% versus the current interviews, judgment, medical exams and paper-and-pencil tests that are 39%. The Roman Catholic Church must codify in canonical law that computer-tests and machine-learning-equations must be used, specifying the CAPI (English, Spanish), the MMPI-A and MMPI-2 in 33 languages (MMPI in 150 languages, 85% of questions reappear in the MMPI-A and MMPI-2) with 250 appellate court cases, 19,000 empirical studies [Butcher, 1996; Butcher, Ellertsen, Lucio, Lim. *et al.*, 2000, Pope, Butcher, and Seelan, 2006] and the CAPI (English) and the Ask Standard Predictor (English, French, Italian, Polish, Spanish) and Psynetix. The computerized report in English can be converted from an Adobe PDF format to Microsoft Word and then dropped into google translate. Canonical codification must include use of computer-tests with machine-learning-equations at the abovementioned career time line. Also, there must be a centralized system where each diocese monitors computer-tests with machine-learning-equations and each religious organization leader and then reports to the Psychology Institute at the Gregorian University and the Jesuit Education Secretary to monitor globally. The experience of the coauthors in the Chicago archdiocese, the Toronto diocese, the Newark diocese and the Tarnow Poland diocese with hundreds of millions in payouts, billions in lost donations, and priest babies being supported by the European Union bishops should be negative incentive to codify and computerize monitoring of compliance with computer-tests with machine-learning-equations. Translations of these tools can be also overseen by the Psychology Institute and Jesuit Education Secretary to comply with University of Minnesota Psychology. Butcher's international procedures for psychological tests (Butcher and Pancheri, 1976; Butcher, 1996, pp. 38-40).

### **Summary and Conclusion: Action Plan Results**

When the legal community in the US which makes up a quarter of the global number of attorney, finds that neither the US church nor the insurance customers (clinic-hospital, court-police, human-resources, schools-universities) have used

computer-tests-equations commonly available for thirty-years, based on 500K persons in 300-scientific studies over 100-years, liability payouts will only increase exponentially by 2-3 digits. The insurance chief-financial-executive-officers, the governors, the presidents, the supreme court justices and the Roman Catholic leadership put into procedure, law and canonical law codification and then set up oversight of the implementation of computer-tests and machine-learning-equations whether during the human development (hospitals, school, workplaces, courts, jails and prisons) or the career life span (intake into the Church through promotion and retirement), then the homicide, mass-murder, overdose, sex-offending, and suicide-completion will decrease, first in the US, and then globally, and the loss of lives and expense of higher insurance and taxes will lower. Perhaps Francis, Church and US insurance leadership is future oriented rather than an ostrich with the head buried in the sand exemplifying past directors. Only their pragmatic response in the next 12 months will tell. Hesitate not, for there is hope in leadership, education, science and oversight for the use of computer-tests and machine-learning-equations to protect God's people.

### Acknowledgement

Funding came from Psynetix Laboratories and Actuarial Risk Tests, L.L.C. Authors thank Lieutenant Colonel Russell Baker, U.S. Air Force (Retired), Georgia State Patrol (Retired), Metro-Atlanta Police Academy Director (Retired), First and Later Deputy Georgia Secretary of State (Retired), Psynetix Laboratories, Sherri McKittrick, Fielding Graduate University, Psychology Department and Lori Baker, Western Governors University, Business College for domestic terrorist, mass murder, spree shooter, data and data collection, Tom Shea, University of Chicago, Booth College of Business, for collection, matching and organization of the survey monkey control group, and William Revelle, Northwestern University, Psychology Department and Leroy Bronson for critical reviews of earlier drafts focusing on the unique aspects of computer-tests and machine-learning-equations. Thanks to Emma Cenzon and Jaune Gelabert for their Italian and Spanish translations.

### References

- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th Ed.). Washington, DC. <http://dx.doi.org/10.1176/appi.books.9780890425596>
- Bernstein, D. (2011). For Chicago lawyer Bob Clifford, 9/11 case could be his biggest yet. *Chicago Magazine*, March 16. Retrieved at <https://www.chicagomag.com/Chicago-Magazine/March-2011/For-Chicago-Lawyer-Bob-Clifford-9-11-Case-Could-Be-His-Biggest-Yet/>
- Bock, R. D. (1975). *Multivariate statistical methods in behavioral research*. New York, Academic.
- Bottan, N. L., & Perez-Truglia, R. (2015). Losing My Religion: The *Effects of Religious Scandals on Religious Participation and Charitable Giving* (July 2015). Available at SSRN: <https://ssrn.com/abstract=1922950> or <http://dx.doi.org/10.2139/ssrn.1922950>
- Butcher, J. N. (1996). *International adaptations of the MMPI-2*. Minneapolis, MN: University of Minnesota Press.
- Butcher, J. N., Ellertsen, B., Bubb, E., Lucio, E., & Lim, J. et al. (2000). *International case studies on the MMPI-A*. Minneapolis, MN: University of Minnesota Press.
- Butcher, J. N., & Pancheri, P. (1976). *A handbook of crossnational MMPI Research*. Minneapolis, MN: University of Minnesota Press.
- Cantor, C. H., Mullen, P. E., & Alpers, P. A. (2000). Mass homicide: The civil massacre. *Journal of American Academy of Psychiatry and the Law*, 28(1), 55-63. <https://doi.org/10.1177%2F0093854806286193>
- Consumer Price Index Calculator (2021). U.S. Bureau of Labor Statistics. Retrieved at [https://www.bls.gov/data/inflation\\_calculator.htm](https://www.bls.gov/data/inflation_calculator.htm)
- Dawes, R. M. (1979). The robust beauty of improper linear models in decision-making. *American Psychologist*, 34, 571-582. <https://doi.org/10.1037/0003-066X.34.7.571>
- Delisi, M., & Scherer, A. M. (2006). Multiple Homicide Offenders: Offense Characteristics, Social Correlates, and Criminal Careers. *Criminal Justice and Behavior*, 33, 367-391. <https://doi.org/10.1177/0093854806286193>
- FBI (2021). *Quick look: 277 active-shooter incidents in the US from 2000-2018*. Retrieved at <https://www.fbi.gov/about/partnerships/office-of-partner-engagement/active-shooter-incidents>
- Gray, M. M. (2021). Center for Applied Research in the Apostolate (CARA): Five decade downward trend in baptisms. Retrieved at [nineteensixtyfour.blogspot.com/2010/08/there-will-likely-be-fewer-catholic.html/](https://nineteensixtyfour.blogspot.com/2010/08/there-will-likely-be-fewer-catholic.html/)
- Grove, W., & Meehl, P. (1996). Comparative efficiency of informal and formal prediction procedures: the clinical-statistical controversy. *Psychology, Public Policy, and Law*, 2, 293-399.

<http://doi:10.1037/1076-8971.2.2.293>

- Hempel, A. G., Meloy, J. R., & Richards, T. C. (1999). Offender and offense characteristics of a nonrandom sample of mass-murderers. *Journal of American Academy of Psychiatry and the Law*, 27, 213-225. <http://dx.doi:10.1097/00004583-200106000-00018>
- Higgins, E. S. (2017). Is Mental Health Declining in the U.S.? Despite more people taking medications, progress against mental illness seems to have stalled. *Scientific American Mind*, 28, 1-20. <https://doi.org/10.1038/scientificamericanmind0117-20>
- Hoffman, P. J., Slovic, P., & Rorer, L. G. (1968). An analysis of variance model for the assessment of configural cue utilization in clinical judgment. *Psychological Bulletin*, 69, 338-339. <http://doi:10.1037/h0025665>
- Kahneman, D. (2011). *Thinking fast and slow*. New York: Farrar, Straus and Giroux.
- Kamphaus, R. W., & Reynolds, C. R. (2015a). *Behavior and emotional screening system*. Bloomington, Minnesota: Pearson, PsychCorp.
- Kamphaus, R. W., & Reynolds, C. R. (2015b). *Parent relationship questionnaire*. Bloomington, Minnesota: Pearson, PsychCorp.
- Kessler, G. (2018). Does the U.S. lead the world in mass shootings? *Washington Post*, September 5. Retrieved at <https://www.washingtonpost.com/politics/2018/09/05/does-us-lead-world-mass-shootings/>
- Kirk, R. E. (1982). *Experimental design: Procedures for the behavioral sciences*. Pacific Grove, CA: Brooks/Cole Publishing Company.
- McKenzie, C. (1995). A study of serial murder. *International Journal of Offender Therapy and Comparative Criminology*, 39, 3-10. <https://doi.org/10.1177/0306624X9503900102>
- Meehl, P. (1954) *Clinical versus statistical prediction*. Minneapolis, MN: University of Minnesota Press.
- Miller, T. R., Cohen, M. A., & Wiersma, B. (1996) *Victim costs and consequences: a new look*. National Institute of Justice Research Report (NCJ-155282, February) Washington, DC: U.S. Department of Justice.
- Milner, J. S. (1986). *Child Abuse Potential Inventory*. DeKalb, Illinois: Psytec, ParInc. *An interpretative manual for the Child Abuse Potential Inventory*.
- Mossman, D. (2013). When forensic examiners disagree: Bias or just inaccuracy? *Psychology, Public Policy and the Law*, 19, 40-45. <https://doi.org/10.1037/a0029242>
- Murphy, C. (2015). Half of U.S. adults raised as Catholic have left the church at some point. PEW Research Center. Retrieved at [www.pewresearch.org/fact/2015/09/15/half-of-U-S-adults-raised-as-Catholic-have-left-the-church-at-some-point/](http://www.pewresearch.org/fact/2015/09/15/half-of-U-S-adults-raised-as-Catholic-have-left-the-church-at-some-point/)
- National Council of Mental Well Being. (2018). *New Study Reveals Lack of Access as Root Cause for Mental Health Crisis in America*. Retrieved at <https://www.thenationalcouncil.org/press-releases/new-study-reveals-lack-of-access-as-root-cause-for-mental-health-crisis-in-america/>
- Peterson, J. K., Densley, J. A., Knapp, K., Higgins, S., & Jensen, A. (2021). Psychosis and mass shootings: A systematic examination using publicly available data. *Psychology, Public Policy, and Law*. Advance online publication. <https://doi.org/10.1037/law0000314>
- Pope, K. S., Butcher, J. N., & Seelen, J. (2006). *MMPI, MMPI-2, and MMPI-A in court, a practical guide for expert witnesses and attorneys*. Washington, DC: American Psychological Association. <http://dx.doi.org/10.1037/11437-000>
- Rotanda, V. (2016). Researchers find drop in giving in areas hit by sex abuse. *National Catholic Reporter*, 52, 1-16.
- Ruhl, J., & Ruhl, D. (2016). National Catholic Reporter research: Costs of sex abuse crisis to U.S. church underestimated. *National Catholic Reporter*, 52, 1-16.
- Schildkraut, J., & Elsass, H. J. (2016). *Mass shootings: Media, myths, and realities: Media, myths, and realities*. Santa Barbra, CA: Praeger.
- Silva, J. R. (2019). Mass shooting films: Myths, academic knowledge, and popular criminology. *Victims and Offenders*. 1-26. <https://doi.org/10.1080/15564886.2019.1580232>
- Silva, J. R., Duran, C., Freilich, J. D., Chermak, S. M. (2019). Addressing the myths of terrorism in America. *International Criminal Justice Review*, 1-24. <https://doi.org/10.1177%2F1057567719833139>

- Stanteau, J. (1988). Psychological characteristics and strategies of expert decision makers. *Acta Psychologica*, 68, 203-215. [https://doi.org/10.1016/0001-6918\(88\)90056-X](https://doi.org/10.1016/0001-6918(88)90056-X)
- U.S. Census Bureau (2019). *The 2019 Census Population counts*, Washington, D.C:U.S. Printing Office.
- Watson, D. L. (2002). *Testimony before the Senate Select Committee on Intelligence*. Executive Assistant Director, Counterterrorism/Counterintelligence Division, Federal Bureau of Investigation, Washington, DC, February 06, 2002. Retrieved at <https://archives.fbi.gov/archives/news/testimony/the-terrorist-threat-confronting-the-united-states>
- World Health Organization. (2013). *Manual for the International Classification of Diseases (ICD-10): Injuries and causes of death*. Geneva, Switzerland.
- Zagar, R., Arbit, J., Bartikowski, B., Busch, K. G., Bussell, R. E., Grove, W. M., Hughes, J. R., Isbell, S. E., Stark, R., & Zagar, A. K. (2009). Predicting and preventing homicide: A cost effective empirical approach from infancy to adulthood. *Psychological Reports*, 104, 363-377. <http://www.dx.doi.org/10.2466/PR0.104.1.1-377>
- Zagar, R. J., & Grove, W. M. (2010). Violence risk appraisal of male and female youth, adults, and individuals. *Psychological Reports*, 107(3), 983-1009. <http://dx.doi.org/10.2466/02.03.16.PR0.107.6.983-1009>
- Zagar, R. J., Kovach, J., Basile, B., Grove, W. M., Hughes, J. R., Busch, K. G., ... Zagar, A. K. (2013). Finding workers, offenders or students most at-risk for violence: actuarial tests save lives and resources. *Psychological Reports*, 113, 685-716. <http://dx.doi.org/10.2466/16.03.PR0.113x29z3>
- Zagar, R. J., Varela, S. A., Busch, K. G., Garbarino, J., Zagar, A. K., Kovach, J. W., ... Singh, I. (2019). Implications of Machine-Learning, Internet-Tests to Save Lives and Money: "7-Point Violence Profile:" Review of 212 Studies, 320,051 Persons, Over 95 Years, With a Cross-Validation Among 136 Homicidal, Overdosing- Substance-Abusing, Sex-Offending, Suicide-Completers, and Controls. *Review of European Studies*, 11(1), 106-165. <http://doi.org/10.5539/res.v11n1p106>.
- Zagar, A. K., Zagar, R. J., Bartikowski, B., & Busch, K. G. (2009). Cost comparisons of raising a child from birth to 17 years among samples of abused, delinquent, violent, and homicidal using victimization and justice system estimates. *Psychological Reports*, 104, 309-338. <http://dx.doi.org/10.2466/PR0.104.1.309-338>
- Zagar, R. J., Zagar, A. K., Busch, K. G., Garbarino, J., Ferrari, T., Hughes, J. R. ... Basile, B. (2016). Finding high risk persons with internet-based tests to manage risk: A literature review with policy implications to avoid tragedies, save lives and money. *Review of European Studies*, 8(1), 1-31. <https://doi.org/10.5539/res.v8n1p212>

### Copyrights

Copyright for this article is retained by the author(s), with first publication rights granted to the journal.

This is an open-access article distributed under the terms and conditions of the Creative Commons Attribution license (<http://creativecommons.org/licenses/by/4.0/>).