

1 **Pritchard C, Parrish M, Williams R # (2020) Civilian Violent Deaths in the USA**
2 **International Comparison of USA Civilian Violent Deaths: A Public Health**
3 **Approach to Reduce Youth (15-24) Gun- Related Deaths. Public Health.**
4 **180:109-113**

5
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9 **Abstract.**

10 **Objectives:** The controversy about firearm fatalities amongst American Youth (15-
11 24) continues and this study examines whether a public health approach could
12 reduce USA gun-related Youth deaths.

13 **Study Design:** US and international population-based analysis.

14 **Methods:** Data from USA National Archives of American Military fatalities from the
15 Vietnam, Afghan and Iraq wars are contrasted against current USA Civilian Violent
16 Deaths (CVD) (suicides, assaults and road deaths), using WHO data, with special
17 focus upon Youth (15-24) CVD. To place USA CVD results in a wider context
18 American CVD rates are compared with the seven Major Western Countries (MWC)
19 based upon latest WHO data on CVD for 2015. Road deaths fatalities, between
20 1979-2015, are analysed, compared to suicide rates, to demonstrate the
21 effectiveness of a public health policy, when Governments intervened to ensure
22 technical improvements and change public behaviour to improve public safety.

23 **Results:** American Vietnam, Afghan and Iraq wars fatalities totalled 65,771. Vietnam
24 deaths averaged 5,838p.a. 2015 total USA CVD 101,456 consisted of 39,675 road
25 deaths, 44,193 suicides and 17,588 homicides of which 30,891 probably gun-related.
26 American CVD significantly higher than the other MWC. American Youth (15-24)
27 suicides and homicides totalled 10,223, minimum 5,112 gun-related. Public health
28 approach significantly reduced road deaths, compared to suicides, in every country.

29 **Conclusions:** Government intervention reduced transports deaths, so too, with gun-
30 related violence by America appreciating its level of CVD compared to military deaths
31 and other MWC rates. This would show that a Public Health approach is needed to
32 reduce firearms deaths and make America safer.

33

34 **Key Words.** homicide, suicide, guns, public health public good.

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37 human or animal involvement thus satisfying all ethical requirements.

38

39 **Introduction. [Text 3,000)**

40 The spate of USA school-based shootings shocked America and the world, with
41 tragedies at Stoneham Douglas, February, 2018 and Sante Fe, May 2018, triggering
42 protests of American high-school students cry of “we want change”.

43 Some have argued that USA gun-related violent deaths should be considered as a
44 public health problem ^{1,2} and it has recently been described as a Global public health
45 problem described in the international Global Burden of Disease study series ³.

46 This current project provides new and original evidence to support such an approach
47 and starts with what was the greatest civilian death toll of the 1970’s, namely
48 transport deaths ⁴. This saw a transformation following a preventative Public Health
49 approach across the Western world to improve road safety and behaviour, a model
50 that could be applied to gun-related violence. Over the past 30 years there had been
51 major Governmental campaigns and legislation to make cars safer in the 1970’s as
52 Western Governments began to appreciate the scale of the problem, which were far,
53 far higher than the powerful media highlighted child-related-abuse-deaths, especially
54 when including health-related knock-on effect of bereaved and orphaned children ^{5,6}.

55 There were major preventative legislation that reduced transport deaths, bringing
56 about changes such as the introduction of seat belts, campaigns against drinking and

57 driving as well as technical demands to make cars safer and as will be shown, is
58 perhaps one of the greatest modern Public Health achievements. For example,
59 extrapolating from WHO mortality data in the UK in 1979 there were 7,493 transport
60 deaths, which was four times the 2015 transport toll of 1,853 people killed ⁴. Whilst in
61 America, in 1979 there were 57,577 road deaths but by 2015 had fallen to 39,675,
62 despite a quadrupling of cars over the period ⁴.

63 One feature of road deaths is that apart from local media coverage there is relatively
64 little public awareness of the extent of such tragedies at the national level.
65 Conversely, there is a very high public awareness of military fatalities that surrounds
66 current and previous conflicts and of course the tragic school shootings. It is
67 suggested that if the extent of these Civilian Violent Deaths (CVD), that includes
68 firearm fatalities in the USA, compared with to the American military casualties was
69 better recognised, especially when compared with CVD in the seven Major Western
70 Countries (MWC), then the demand for a preventative Public Health approach would
71 be strengthened.

72 To do this this study examines the extent of current Civilian Violent Deaths (CVD) in
73 the USA compared to the Vietnam, Afghan and Iraqi war fatalities. Then compares
74 current CVD with the other seven MWC. These include suicides and homicides,
75 which in America are predominately related to firearms ⁷⁻¹¹. These major Western
76 countries are Canada, France, Germany, Italy, Japan, Spain, and the UK.

77 The rationale for a public health approach is that it is preventative, aimed at the public
78 good and is evidenced-based to enable public and policy makers to take better
79 informed decisions.

80 The debate within the USA about whether there is a need for stricter gun control
81 arouses passions, nonetheless, there appears to be a growing consensus that
82 something must be done, echoing the cries of American youth "we want change",
83 reinforced by another tragedy at a Thousand Oaks in November 2018.

84 It is argued that stricter gun control is feasible if it was appreciated just how
85 extraordinary high is the level of risk of gun violence in America compared to
86 comparable Western countries, especially in relation to Youth deaths, young people
87 aged 15-24 ³.

88 The key difference between the USA and the other countries under review is that
89 USA homicide and suicide deaths are mainly gun-related, approximately 80% and
90 66% respectively ⁷⁻¹¹, whilst the rates of fire-arms related deaths are comparatively
91 rare in the other MWC ¹²⁻¹⁴. For example, in England & Wales in 2017 there were
92 1,388,000 firearm licences issued but of the 709 homicides only 4.8% (34) were the
93 result of guns ¹⁴ or a rate of 0.5 per million of the total UK population.

94 Perhaps the nightmare of every parent is that their child should pre-decease them.
95 How horrific if they died by murder, or the tragedy of a road accident or even worse,
96 by suicide, which becomes a scar that lives with them forever ¹⁵.

97 As it was the high-school shootings that aroused such public concern, the study
98 focuses upon Youth (15-24 years) deaths as a major risk factor in Youth suicide is
99 impulsivity, consequently the easy access to a lethal method of self-harm is truly vital
100 ^{8,16,17}. Hence the particular focus upon violent deaths amongst American Youth and
101 the other MWC.

102 **Method.** The numbers of USA military losses in the Vietnam (1963-73), Afghan
103 (2001-2013) and Iraq (2003-10) wars are drawn from the USA official National
104 Archives ¹⁸⁻²⁰. All fatalities of those killed in action, died of wounds or 'missing' but
105 not the 382 self-inflicted deaths reported, which suggest a different dynamic. It
106 should be stressed that in considering US military losses we intend no disrespect.
107 Indeed in remembering their loss, reflects their sacrifice which was to make the USA
108 safer.

109 The USA Civilian Violent Deaths (CVD) includes suicides and assaults because the
110 majority method involved firearms ⁷⁻¹¹. Transport deaths are also examined between
111 1979, the earliest year for which we have WHO data to 2015 ⁴. To make the public

112 health case, we compare all eight countries transport and suicide deaths, to
113 determine whether there were any statistically significant difference between the two
114 mortalities over the years that might indicate the impact of Governmental efforts to
115 reduce the transport toll. As many American States are bigger than many European
116 nations it was decided to compare only what were designated Major Western
117 Countries by having a general population of at least 35 million people. The seven
118 MWC are Canada, France, Germany, Italy Japan, Spain and the UK, all mortality
119 data was taken from the WHO ⁴. Five MWC data was for 2015 but Canada's latest
120 year was for 2013, and France 2014. We report the numbers of deaths for all the
121 countries reviewed, from which to calculate death rates per million (pm) per
122 population for all ages and for the Youth age-band 15-24, enabling us to compare the
123 USA with countries of smaller population size. This approach has been successfully
124 used across various international comparative studies, ranging from cancer, child
125 abuse, public health to changes in neurological mortality ²¹⁻²⁴.

126 *Reducing Suicide & Transport Deaths 1979-2015*: Every nation wants to reduce
127 civilian deaths as much as possible and to examine the degree of success we
128 compare each country's transport and suicide, drawing upon the current WHO data,
129 based upon the ICD-10 for the recorded year 1979, contrasted with the latest year of
130 each country under review, mainly 2015 ⁴. To compare relative success in reducing
131 suicide and transport deaths, chi square tests are used to determine any statistical
132 significant difference for each of the countries.

133 It might be said that whilst many Western government's aspiration to reduce suicides,
134 we have not had the same Public Health input that has been given to making roads
135 safer.

136 To examine any the differences between the USA and the MWC CVD rates per
137 million for Youth (15-24) and Total population, we calculate a series of MWC to USA
138 ratio.

139 *Estimating Extent of Gun-Related-Deaths*: The percentage of reported gun-related
140 homicide and suicide deaths in America are approximately 80% and 66%
141 respectively ⁷⁻¹¹. It was decided to err on the side of caution and avoid any criticism
142 that we might be over-estimating American gun-related fatalities, so we
143 conservatively estimate that only fifty percent of homicides and suicides were gun-
144 related, which means the numbers of such deaths are a likely to be an under-
145 estimate.

146 Again to avoid over-stating the USA position accidental gun deaths of children and
147 other accidental gun deaths are not included ²⁵, as accidents are of a different nature
148 to suicide and homicide in which firearms are the method of lethality.

149 The Undetermined Death (UnD) category is another mortality that typically entails a
150 degree of violence ⁴. This was also excluded, although sub-categories in UnD include
151 'doubtful' road and gun deaths, which might infer under-reported suicides ^{25,26}.

152 **Results- The War Fatalities**: In the Vietnam war between 1963 and 1973 it has
153 been estimated that 57,838 American services personnel died during the conflict,
154 averaging 5,838 deaths p.a. During the main Afghan war years (2001-13), there were
155 3,410 fatalities, averaging 341 p.a. There was a further 131 deaths in the 2014-17
156 period, which are not included as it would minimise the overall average annual loss
157 during the height of the conflict.

158 In the Iraq wars between 2003 and 2010 there were 4,523 USA fatalities, averaging
159 646 p.a. From the three wars there was a total of 65,771 American service personnel
160 lost over 29 years shown in Table [1]

161

162 **Table [1] Numbers and Annual Average USA Military Deaths in Viet Nam, Afghan Iraq**
163 **Wars.**

164

Wars	Numbers	Annual Average
Viet Nam 1963-73	57,838	5,838 p.a.
Afghan War 2001-13	3,410 #	341 p.a.
Iraq Wars 2003-10	4,523	646 p.a.
Total Numbers	65,771	2,268 p.a.

165
 166 # Does not include 131 Killed in Afghan War between 2014-17
 167
 168 How do these tragic losses compare with the USA civilian losses in 2015 from
 169 homicide, suicide and transport, mainly road deaths?

170 **USA Civil Violent Deaths (CVD) 2015.**

171 In 2015 there were a total 17,788 homicides in the USA, which is more than three
 172 times the annual average Vietnam toll of 5,838 deaths.

173 Total suicides were 44,193, which is more than seven times the annual average
 174 Vietnam war fatalities.

175 Of the homicide and suicides it was estimated that only 50% of these fatalities were
 176 gun-related, giving an approximate 30,891 people dying from victims of gun-violence
 177 in one year.

178 Transport deaths in 2015 were 39,675 giving a total of 101,456 combined CVD in
 179 one year, exceeding the 65,771 losses incurred in three wars over twenty-nine years
 180 of war.

181 In respect to American Youth (15-24) CVD the total deaths for all three categories,
 182 was 17,432, at a rate per million population of 394pm.

183 There were 10,223 homicide and suicide Youth deaths, which if 50% were by guns
 184 gives an estimated 5,112 victims of gun-violence which was not far from the 5,838
 185 annual average of the Vietnam losses.

186

187 **Table [2] USA Civilian Violent Deaths 2015 Numbers & rates per million [pm]. Ranked by**
 188 **Highest Total Mortality Category.**

189

Mortality Category	Youths 15-24	General Population
Suicide	5,491 - 124pm	44,193 - 138pm
Transport	7209 - 163pm	39,675 - 124pm
Homicide	4,732 - 107pm	17,588 - 56pm
[Ratio 50% Guns]	[5,112- 116pm]	[30,891 - 97pm
Total	17,432 - 394pm	101,456 - 318pm

190

191

192 **Civilian Violent Deaths in Major Western Countries (MWC):** The USA CVD might
 193 sound severe but how do they compare with the seven MWC, whose mortality rates
 194 per million of population and numbers of deaths are shown in Table [3]

195 The USA had the highest all-age total CVD at a rate of 318 per million (pm) followed
 196 by Japan at 233pm, Canada 196pm, France 190pm, Germany 183pm, Italy 135pm,
 197 Spain 129pm and the UK 105pm. This yields an average of 167pm for the seven
 198 MWC.

199 In respect to Total homicides, at 56pm the USA far exceeded every other country,
 200 homicides, compared to the MWC average of 6pm and only Canada reached double-
 201 figures at 13pm.

202 **Youth (15-24) CVD:** The total USA Youth CVD rate was 394pm, followed by Canada
 203 216pm, Japan 162pm, France 134pm, Germany 130pm, Italy 120pm, the UK 101pm
 204 and Spain 82pm.

205 USA Youth homicide rates were 107pm, followed by Canada 21pm, Germany 7pm,
 206 France and 5pm, Japan and the UK 2pm. The MWC average was 7pm for the year
 207 2015.

208 American Youth suicides at 124pm, were second to Japan at 126pm, followed by
 209 Canada 95pm, UK 59pm, France 50pm, Spain 36pm and Italy 33pm.

210 In respect to transport deaths the USA was highest at 163pm, the only other country
 211 to reach three figures was Canada at 100pm the other MWC averaging 55pm.

212 In column three in Table [3] are the MWC Youth to USA Youth CVD rate ratios. The
 213 final column gives the Total CVD MWC to USA ratios.

214

215 **Table [3] Numbers & Rates Civilian Violent Deaths 2015 in USA & MWC Youth & General**
 216 **Population rates per million [pm]. MWC to USA ratios.**

217

Country & Total Rank	Youth 15-24 Numbers- Rates	MWC:USA Ratio	General Population Numbers- Rates	MWC:USA Gen Ratio
1.USA. 2015. Suicide	5,491 - 124pm	1:1.00	44,193 - 138pm	1:1.00
Transport	7209 – 163pm	1:1.00	39,675 - 124pm	1:1.00
Homicide	4,732 – 107pm	1:1.00	17,588 - 56pm	1:1.00

Total	17,432 – 394pm	1:1.00	101,456 - 317pm	1:1.00
2. Japan 2015. Suicide	1,499 - 126pm	1:0.98	23,160- 185pm	1:0.75
Transport	404 - 34pm	1:4.79	5,646 - 45pm	1:2.75
Homicide	15 - 2pm	1:53.5	316 - 3pm	1:18.7
Total	1,918 - 162pm	1:243	29,122 - 233pm	1:1.36
3.Canada.2013.Suicide	438 - 95pm	1:1.31	4,054 - 115pm	1:1.20
Transport	463 - 100pm	1:1.63	2380 - 68pm	1:1.82
Homicide	95 - 21pm	1:5.10	446 - 13pm	1:4.31
Total	996 - 216pm	1:1.82	6,880 - 196pm	1:1.62
4.France 2014. Suicide	374 - 50pm	1:2.48	8881 - 138pm	1:1.00
Transport	596 - 79pm	1:2.06	3,056 - 48pm	1:2.58
Homicide	33 - 5pm	1:21.4	285 - 4pm	1:14.0
Total	1,003 - 134pm	1:2.94	12,222 - 190pm	1:1.67
5.Germany 2015. Suicide	512 - 59pm	1:2.10	10088 - 133pm	1:1.04
Transport	558 - 64pm	1:2.55	3,368 - 45pm	1:2.76
Homicide	57 - 7pm	1:15.3	434 - 5pm	1:11.2
Total	1,127 – 130pm	1:3.03	14,886 - 183pm	1:1.73
6.Italy 2015. Suicide	195 - 33pm	1:3.76	3989 - 66pm	1:2.09
Transport	478 - 81pm	1:2.01	3783 - 62pm	1:2.00
Homicide	38 - 6pm	1:17.8	395 - 7pm	1:8.00
Total	711 – 120pm	1:3.28	9,294 - 135pm	1:2.35
7. Spain 2015. Suicide	162 - 36pm	1:3.44	3604 - 78pm	1:1.77
Transport	186 - 41pm	1:3.97	2097 - 45pm	1:2.76
Homicide	24 - 5pm	1:21.4	288 - 6pm	1:9.33
Total	372 - 82pm	1:4.80	5,989 - 129pm	1:2.46
8. UK 2015. Suicide	478 - 59pm	1:2.10	4,910 - 75pm	1:1.84
Transport	321 - 40pm	1:4.08	1,853 - 28pm	1:4.43
Homicide	17 - 2pm	53.50	124 - 2pm	1:28.0
Total	816 - 101pm	1:3.90	6,763 - 105pm	1:3.02
Average MWC Suicide	65pm	1:1.91	56pm	1:2.46
Average Transport	55pm	1:2.98	40pm	1:3.10
Average MWC Homicide	7pm	1:15.3	6pm	1:9.33

218

219 The total MWC Youth to USA Youth CVD ratios were Canada 1:1.82, Japan 1:2.43,
220 France 2.94, Germany 1:3.03, Italy 1:3.28, the UK 1:3.90 and Spain 1:4.80. Apart
221 from Canada, American Youth (15-24) had more than double the MWC rate of
222 civilian violent deaths.

223 The salient ratios are in regard to suicides as the USA had more than double the rate
224 of MWC. Youth MWC to USA homicides ratios were substantial, ranging from just
225 1:5.10 in Canada, to six countries having more than 1: 15.3. There were notable
226 highs of 1:21.4 in France and Spain and Japan and the UK 1:53.5. Bearing in mind
227 that suicides in America are strongly linked to firearms, the high USA Youth rate may
228 be because of the relatively easy access to guns, by distressed impulsive Youth,

229 using the most lethal effective easily available method – firearms, which yields an
 230 estimated 2,746 possibly gun-related suicides a rate of 62pm.

231 In regard to Total CVD, the disproportionate MSW to USA ratios was repeated for
 232 both suicide and homicides, an average ratio of 1:2.46 and 1:9.3 respectively,
 233 another strong indication of the effect of easy access to firearms.

234 *Public Health Success Reducing Suicide & Transport Deaths:* This can be clearly
 235 demonstrated when examine changing patterns of transports and suicide fatalities
 236 between 1979 and 2015 shown in table [4].

237 In the USA suicides were 27,206 a rate of 121pm, now are 42,772, a rate of 134pm.
 238 Conversely, USA transport deaths fell from 57,577, a rate of 256pm, down to today's
 239 39,675 deaths, a rate of 118pm, more than halving the earlier toll, a statistically
 240 significant change (p<0.0001).

241 The success of a Public Health approach to transport deaths is exemplified in Table
 242 [4] showing that every MWC reduced its transport deaths significantly more than their
 243 suicides over the period, this was especially strong for Youth transport and suicide
 244 deaths (p<0.001). It should be noted, that except in Germany, in 1979 every MWC
 245 total transport rates were higher than their suicides but are now fare lower in every
 246 MWC. Whilst in respect to Youth fatalities the 1979 transport deaths were higher than
 247 suicides in all eight countries but today there has been a complete and significant
 248 reversal as via Government's Public Health preventative legislation lives have been
 249 saved.

250

251 **Table [4] Comparing Suicide & Transport Death Numbers & Rates per million 1979-2015**
 252 **Chi Square p value: Ranked by Highest Youth Suicide & Transport rates**
 253

Country 1979 & 2015	Total Population Suicide- Transport	X2 P value	Youth 15-24 Suicide-Transport	X2 P value
1.USA 1979 2015 % Change	121pm – 256pm. 138pm - 124pm +14% - -52%	27.2 ***<0.0001	124 pm – 476pm 124pm - 163pm + 0% - -66%	50.9 ***<0.0001
2. Canada 1979 2015 % Change	142pm - 275pm 115pm - 68pm -19% - -75%	43.0 ***<0.0001	172 pm - 523pm 95pm - 100pm -45% - -81%	41.7 ***<0.0001
3.Japan 1979	197pm - 213pm		148pm - 158pm	

2015 % Change	185pm - 45pm -6% - -79%	64.2 ***<0.0001	126pm - 34pm -15% - -78%	40.0 ***<0.0001
4.France 1979 2014 % Change	187pm - 213pm 138pm - 48pm -26% - -77%	38.7 ***<0.0001	99pm - 391pm 50pm - 64pm -49% - -84%	28.1 ***P<0.0001
5.Italy 1979 2015 % Change	140pm -172pm 66pm - 62pm -53% - -64%	1.63 <0.2 n.sig	68pm - 281pm 33pm - 81pm -51% - -71%	4.51 *<0.04
6.Germany 1990 2015 % Change	175pm - 145pm 133pm - 45pm -24% - -69%	19.5 **<0.001	95pm - 285pm 59pm - 64pm -38% - -78%	23.1 ***<0.0001
7.UK 1979 2015 % Change	88pm - 134pm 75pm - 28pm -15% - -79%	31.0 ***<0.0001	49pm - 253pm 59pm - 40pm +20% - -84%	26.7 ***<0.0001
8. Spain 1980 2015 % Change	88pm - 172pm 78pm - 45pm -11% - -74%	29.7 ***<0.0001	54pm - 223pm 36pm - 41pm -33% - -82%	23.6 ***<0.0001

254 ! Unified Germany's base line was 1990

255 # Gen pop 26.044 million –Baseline Years Denmark 1994, Finland 1987, Norway 1986 and
256 Sweden 1987

257

258 Discussion

259 This studies results provides evidence for the high-school student's call "we want
260 change" , showing that America had substantially higher rates of gun-related civilian
261 deaths than the other major Western countries. Whilst homicides often attract high
262 media attention there does not appear to be the same appreciation that suicides
263 often involve firearms. Moreover these gun-related deaths might be thought of an
264 under-reporting as the USA results did not include children's deaths and serious
265 injuries related to guns, 1,300 and 5,790 respectively ²⁵. Furthermore, there is
266 indicative evidence that the official suicide figures for Youths are under-reported in
267 many countries, including the USA, often being designated as Undetermined ^{26,27}.

268 Moreover, there is considerable evidence that the impact of a homicide upon family
269 members often has long-lasting negative consequences upon surviving family and
270 friends ^{6, 28-31} . As an American study of 3,614 adolescent's response to homicide,
271 the results were projected the results onto the national population, which estimated
272 that in their life-times, one in five young people might be affected by a homicide of
273 someone they knew or a family member ²⁸.

274 The multi-national study looking of firearm deaths across in the world, estimated the
275 250,000 people die annually and that the USA, along with Colombia, Mexico
276 Guatemala and Venezuela, accounted for more than 50% of these deaths world-wide
277 ³.

278 Is there a possible solution to reduce USA gun deaths, especially its Youth? Yes, as
279 lessons can be drawn from the massive improvement in transport deaths brought
280 about Governments preventive Public Health approaches. It was essentially Western
281 Government action that brought about a range of changes - seat belts, restrictions on
282 alcohol, changing attitudes that improved safety, saving thousands of lives.

283 If we are to reduce the tragic loss of young lives from suicide and homicides, where
284 the easy access to firearms have such fatal consequences then Government at
285 Federal and State level must take a preventative approach and act. It should be
286 remembered that guns are not banned in Britain but whilst 1.338 million British
287 people own a gun, there were less than forty gun-deaths in 2017 ¹⁴, which included
288 accidental military casualties. This is because of UK safety controls, not bans, are so
289 effective, which is the core of a preventive Public Health approach, the common good
290 of all.

291 The core message of these results is the need for the American public and policy
292 makers to look outside the USA in order for a change of mind set needed to bring
293 about change. The American general public need to be aware of the toll of gun-
294 related victims of violence compared to the rest of the Western world, especially
295 amongst young people. Seen in the simple fact that US Youth (15-24) firearm deaths
296 are close to the tragic annual average of the Vietnam war.

297 This evidenced-based Public Health study to reduce gun-relates deaths indicates
298 that this is achievable and feasible in the USA. So that that families might feel more
299 relaxed when their children leave for school or when young people, who experiencing
300 psychosocial turbulence, do not have easy access to fatal weapons, which with
301 youthful impulsivity ends so tragically.

302

303

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