Australia’s 1996 gun law reforms halted mass shootings for 22 years: a response to criticism from Gary Kleck

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Biographical notes

Simon Chapman AO is emeritus professor in public health at the University of Sydney. He has published some 525 articles in peer reviewed journals and 21 books and major reports. In 2003 he was voted by his international peers to be awarded the American Cancer Society’s Luther Terry Award for outstanding individual leadership in tobacco control. In 2008 he won the NSW Premier’s Cancer Researcher of the Year award. In 2013 he was made an Officer in the Order of Australia for his contributions to public health and named Australian Skeptic of the Year. His research has spanned tobacco control, gun control, news media coverage of health and medicine, risk communication and wind farms.

Philip Alpers is adjunct associate professor and founding director of GunPolicy.org, a global project of the University of Sydney School of Public Health which compares armed violence, firearm injury prevention and gun law across 350 jurisdictions world-wide. A former senior fellow at the Harvard Injury Control Research Center, Alpers is a policy analyst in the public health effects of armed violence, firearm injury prevention and small arms proliferation. He contributes to small arms-related United Nations processes as a member of government delegations, and his publications include several impact analyses of Australia’s firearm legislation and its public health effects.
ABSTRACT

We reply to criticisms made by prominent anti-gun control researcher Gary Kleck of our widely reported 2016 study on the impact of Australia’s historic 1996 gun law reforms on mass shootings and firearm-related deaths. Thirteen mass fatal shootings in 18 years were followed by 22 years with no such incidents, with the probability of this being a chance occurrence calculated at 1:200,000 against. We concentrate on Kleck’s efforts to repudiate our conclusions by redefining mass shootings; his argument that mass shooters do not maximise the lethal potential of their semi-automatic weapons and so could just as well use (legal) single shot firearms; and that when mass shooters move about in their shooting locations, such events are improperly classified as mass shootings, rather than “sprees”.

In February 2018, we were invited by the executive editor of Contemporary Readings in Law and Social Justice to write a response to a lengthy critique by prominent firearms researcher and gun control critic Gary Kleck, of a paper we published in JAMA in July 2016 (Chapman, Alpers, Jones, 2016). Our paper reported on firearm death rates in Australia, 20 years after the historic 1996 National Firearms Agreement (NFA) which, among many other provisions, outlawed almost all private ownership of semi-automatic rifles and pump-action shotguns, with a mandatory buyback at market price (Australasian Police Ministers’ Council, 1996). Kleck declined to revise his paper after review, but as it is available on the web (Kleck, 2018) we are pleased to respond to its many egregious claims here.

Our JAMA paper went through a peer review process that was more detailed and rigorous than any of the three authors had experienced during research careers spanning a collective 97 years and a total of 754 papers. As of May 16, 2018, the paper has been viewed online 180,709 times and achieved an Altmetric media attention score of 2,207, the eighteenth highest of 21,994 JAMA papers assessed by Altmetric. (Altmetric, 2018) The New Yorker named the paper as one of the five most important pieces of health-related research published in 2016 (Groopman, 2016).

Since its publication, despite this huge attention, not a single letter or response has been published in JAMA about our analysis. So why did Kleck elect to write his commentary so long afterwards, and why did he not send it to the journal where our paper was published, which is customary in scientific debate? It is highly unusual to be invited to write a response to criticism of a paper one has published in another journal some 19 months after that paper first appeared.

Against the background of unabating incidents of mass murder by gunmen in the United States (Berkowitz et al 2018), and the frequent, global, high-level interest our paper has received, it seems likely that concern among gun control opponents about Australia’s policies catching fire in the US and elsewhere may have increased.
Background to our papers

Our 2016 paper was a sequel to our ten-year, 2006 report (Chapman et al 2006) which examined the data available at that point. The impetus for the 1996 NFA with its sweeping law reforms was a surge of mass fatal shootings in Australia. Several of these received massive news coverage, with commentators and editorialists invariably highlighting the weak and inconsistent firearm laws and regulations that existed across Australia and its six states and two territories. The dominant narrative was that major reforms needed to be implemented if Australia was to have any hope of reducing the incidence of such events.

While gun control advocates had long noted the dominance of suicides and single victim homicides in firearm deaths, mass shootings understandably command disproportionate media attention. The Port Arthur massacre (April 28, 1996) in which 35 were killed and 23 seriously injured, occurred just over six weeks after the globally publicised Scottish Dunblane school massacre where 16 children and a teacher were murdered by a licenced handgun owner (North, 2013). At the time, the Port Arthur firearm massacre was thought to be the largest in modern peacetime history, surpassed in 2011 by the fatal shooting of 68 teenagers at a Norwegian youth camp, then 49 in an Orlando, Florida nightclub in June 2017 and 58 in a park in Las Vegas in October 2017 (CNN, 2018). In the 15 years prior to the enactment of the NFA, Australia had seen 104 victims shot dead in 13 mass shootings in private and public settings. Those occurring in public, where gunmen shot strangers or non-intimates, had seen incendiary public and political outrage.

As we noted in our papers, those intent on suiciding by firearm have no need of a semi-automatic as one shot is generally all that is needed. Similarly, those intent on murdering a spouse or partner, a victim in a robbery or another criminal in a retributive killing may reason that a semi-automatic is unnecessary to the task. Kleck concurs with this. But the NFA buyback and subsequent amnesties removed some 729,000 firearms (Chapman et al, 2016) from the Australian community. As we and Kleck point out, many new (legally permitted) guns were registered in Australia in the years since the NFA.

In his summary of the provisions of the NFA, Kleck describes some as “main” and others as “lesser” without any attempt to explain or justify this simplistic dichotomy. He also fails to note the NFA’s explicit repudiation of self-defence as a legally sanctioned reason to own a gun, provisions for mandatory locked storage and registration of all guns, a mandatory 28-day "cooling off" period before taking possession of a firearm, the large penalties that accrued to breaches of the new laws, plus a raft of other public safety conditions. The collective, synergistic provisions of the NFA cannot be separated in any defensible analysis of their possible impact on firearm deaths and mass shootings.

Randomised controlled trials are inconceivable for either all components or separate components of the NFA. Similarly, comparisons with other nations with different gun control policies are fraught because national policies and laws are rarely if ever identical, with cultural confounding factors further weakening the validity of direct comparisons. Comparing just one selected nation, as Kleck attempts with New Zealand, is not as robust as comparisons which have considered many nations and shown a positive correlation
between guns per capita per country and the rate of firearm-related deaths. (Bangalore & Messerli, 2013; Hepburn & Hemenway, 2004; Miller & Hemenway, 1999)

The most defensible scientific approach to evaluation of the possible impact of such a multi-faceted intervention on the principal outcomes of interest is to use an historical comparison of relevant trends before and after such an intervention within the one country. This is what we did. Excluding unintentional firearm deaths (“accidents”), we looked at total intentional firearm deaths, firearm and non-firearm homicides and suicides and analysed the data using negative binomial regression with annual Australian person-years at risk used as an offset.

Kleck sees some devious motive in our not examining what he calls “the third major category” of unintentional gun fatalities (“accidents”) across our study period. We addressed our decision to exclude such deaths in our paper, the main reasons being that they have always been very low in number compared to suicides and homicides (<5% of all firearm deaths), and of low policy reform priority. Other Australian research also excluded these (Leigh & Neill, 2010; Lee & Suardi, 2008).

Kleck makes criticisms about our paper regarding information that it did not and was never intended to contain. This is a common route taken by reviewers, who perhaps forget that all journals have word limits and require authors to focus their papers on a limited number of research questions, and not address every possible question, however speculative or tangential, that might be asked about a subject. Our paper was not a review of the case for or against each policy component of the NFA. That evidence, such as it was available at the time of the NFA, was considered by policymakers in 1996. Kleck’s numerous criticisms of the absence or completeness of such a review appear to be a very belated effort to question these components, funneling to his a priori conviction that such policies could not possibly reduce firearm deaths. Given that the rate of firearm deaths had been decreasing prior to the national reform and harmonisation of gun laws, our paper set out to consider two questions - whether there was:

- A change in the annual trend for death rates across the study period
- A step change in which there is an abrupt change in mortality rates immediately after the introduction of the NFA

**Kleck’s six conclusions**

Kleck modestly believes his review of our paper allows him to announce six main conclusions about the NFA, which he thinks collectively repudiate any claimed positive impact of the NFA. Below, we quote his summary directly and briefly respond, before considering in detail his criticisms of the main “take home” finding of our paper: that the introduction of the NFA was associated with a 22 year halt in mass fatal shootings in Australia.

1. The NFA did not reduce the prevalence of gun ownership in Australia. **Response:** We agree, but the NFA dramatically reduced the ownership of newly illegal rapid fire semi-automatics and pump action shotguns, weapons often chosen by those
perpetrating mass killings and the only weapons that were outlawed and subject to the national buyback.

2. The NFA only temporarily reduced the total number of guns in civilian hands; within 20 years imports of new guns cancelled out the subtractions from the gun stock produced by buybacks and gun destruction programs. **Response:** see (1) above.

3. The NFA did not reduce Australia’s homicide rate. **Response:** Our analysis found that total (firearm + non-firearm) homicide annual death rates had been decreasing by a mean of 0.3% per year before the introduction of NFA for an overall mean of 1.93 (95% CI, 1.86-2.00) per 100 000 population, but this decline accelerated to a mean of 3.1% per year after the introduction of the NFA in 1996 for an overall mean of 1.29 (95% CI, 1.17-1.43) per 100 000.

4. The NFA did not reduce Australia’s suicide rate. **Response:** Our analysis found that total (firearm + non-firearm) suicide annual death rates had been increasing by a mean of 1.0% per year before the introduction of the NFA, for an overall mean of 12.3 (95% CI, 11.9-12.7) per 100 000 population, but declined by a mean of 1.5% per year after the introduction of the NFA in 1996, for an overall mean of 11.7 (95% CI, 11.1-12.3) per 100 000.

5. The NFA appears to have increased the rate of fatal gun accidents. **Response:** Our 2006 paper found that the average annual national increase in unintentional firearm deaths in the 7 years since 1996 was just 1.4 deaths (Chapman et al 2006). Kleck’s highlighting of this as an imagined repudiation of the NFA gives a whole new dimension to the expression “clutching at straws”

6. There is no strong evidence that the NFA reduced mass shootings in Australia. Such crimes were extremely rare even before implementation of the NFA, and were unlikely to become common even if the NFA had never been implemented. Of all his conclusions, this final, glib “rare mass shooting events are still rare” argument is frankly ludicrous and mathematically ill-informed. In a recent paper (Chapman et al, 2018), we tested the null hypothesis that the rate of mass shootings in the 18 years before and the zero incidence 22 years after the 1996 NFA may have simply been a chance occurrence because these events are so uncommon. We found strong evidence of a structural “step” change in 1996. A (conservative, 2-sided) likelihood ratio test for a changepoint in a Poisson process model gave a $P$ value of less than 0.001, allowing the conclusion that the probability of this 22 year absence occurring following the pattern in the preceding 18 years was about 1 in 200,000. These odds are slightly worse than a ticket holder winning first prize in a popular lottery in the Australian state of New South Wales where the odds are 1 in 180,000.

Over the 18 years prior to 1996, mass shootings occurred in Australia at a rate of about three every four years. Had they continued at this rate, the expected number of additional mass shooting incidents since 1996 would by March 2018 have been 16.3. Australia’s gun law reforms therefore seem likely to have averted some 16 mass shootings.

Kleck leaves his extended treatment of mass killings till the end of his review. As we have emphasized, these incidents – especially the 1996 Port Arthur massacre – were the central
impetus for the NFA. The hope was that by making access to rapid fire weapons illegal, that their availability would be greatly reduced and the likelihood of mass shooting incidents would commensurately reduce. Other aspects of the NFA (firearm registration, repudiation of self-defense as an acceptable reason for gun ownership, mandatory locked storage, ending mail order sales, etc.) were expected to put further downward pressure on the incidence of all gun deaths.

Kleck goes to pains to frame mass shooting victims as trivial in number compared to those who die in homicides and suicides ("an extremely minor threat to the health and safety of Australians"). In Australia Between 1979-2013, there were 14,601 intentional firearm deaths in Australia (12,247 suicides and 2,354 homicides) while in the same period 104 victims died in mass shootings – (0.7% of all intentional firearm deaths). (Chapman et al, 2016). He seems oblivious or insensitive to the factors that cause public outrage about mass shootings and reveals no apparent understanding of why the public does not clamour for government action on (for example) firearm suicides with the intensity it did for laws to remove rapid fire weapons from civilians. The Australian public were horrified at the public mass killings in streets, shopping centres, office and apartment buildings and the tourist centre at Port Arthur. With a regular television news diet of gun massacres in the USA screened in Australia, many Australians were concerned that Australia was “going down the American path” of gun violence and wanted serious government action to prevent it.

**Definition of mass shootings**

Kleck asserts that our definition of a mass fatal shooting (5 or more victims not including the perpetrator) used in both our 10 and 20 year NFA anniversary papers evaluating its impact (Chapman et al 2006; Chapman et al, 2016 ) was “arbitrary”. In a truly bizarre, excitable passage he writes “had the authors used a cut-off of seven or more victims only three incidents … would have qualified as mass shootings”. The *reductio ad absurdum* of this argument would take us to mass shootings being defined as anything from two victims upward.

In Australia domestic murder-suicides where a perpetrator typically murders family members before suiciding have often involved two or three and occasionally four victims, but rarely involve five or more murder victims. Such an incident finally occurred in Australia almost 22 years to the day after the NFA was signed when a grandfather apparently shot dead his four autistic grandchildren, their mother and his wife, before suiciding (the coronial report being as yet unpublished), the largest domestic murder-suicide incident ever recorded in Australia (Australian Associated Press, 2018). Our original selection of 5 or more victims to define a mass shooting was in line with many other studies at the time, and was intended to exclude the more common multiple-victim domestic homicides.

**Mass shootings or “spree” shootings?**

But Kleck’s tendentious sophistry on mass shootings goes further. He next argues that “The contrast between the post-NFA count of zero and the pre-NFA count (13 in 15 years) would impress readers only if the pre-NFA count was reasonably large, suggesting that Australia would have had mass shootings had the NFA not been implemented.” He offers no evidence
for this conjecture. Being from the USA where mass shootings are obscenely common, he seems to be suggesting that no American should be impressed with a “mere” 16 massacres being averted (as we have calculated) and perhaps that nations blessed with comparatively low mass shooting event histories like Australia should have been indifferent to the events we experienced. In fact, opinion polling at the time of the NFA showed that some 90% of Australians supported strong gun control (Chapman, Simon 2013:p101)

In a second effort to “move the goalposts” by redefining mass shootings to suit his agenda, Kleck also tries to argue that the very concept of a mass fatal shooting is flawed because some firearm incidents where five or more are killed are “Spree shootings … crimes in which multiple victims are shot, but over an extended period of time, in multiple separate incidents occurring in different locations.” He suggests that “at least six” of the 13 mass shootings in the 15 years should not be classified as mass shooting events because the gunmen involved did not shoot all their victims in the one spot or at exactly the same time. He highlights incidents where a gunman shot people in four different locations within 200 metres, on two different floors of an apartment block, and on three floors of an office block. He writes “in any one of these spurts of firing, the shooter typically shot no more than two or three victims”.

So by Kleck’s bizarre reasoning, when a gunman enters a school, and moves about the building killing victims, if he moves and kills many victims between classrooms, up a floor, outside and also inside, or takes a few hours to do so, “mass killing” should not be entered into data records. The far more breezy “spree” is his preferred term, redolent with the connotations suggested by the Cambridge Dictionary as “a short period of doing a particular, usually enjoyable activity, much more than is usual” as in a spending, shopping or drinking spree. The separate components of these “sprees” apparently disqualify them collectively counting as a mass killing, all in the service of Kleck’s indomitable crusade to destroy gun control arguments.

“Rapid fire” description is misleading

Kleck expresses faux surprise that we were not explicit about why anyone might expect that a ban on rapid fire weapons could lead to a reduction in mass shootings. We are very happy to spell it out for him.

Given the opportunity, a person planning on killing large numbers of people with a firearm will try to choose weapons that will best enable this to happen most efficiently. This is blindingly obvious from any even casual review of the vast number of such killings in the USA in the last decade. These killers will clearly anticipate that those being threatened may seek to escape their gunfire, making them more elusive targets. They would also anticipate that police may arrive quickly on the scene and that gunfire exchanges would severely disadvantage them if they were armed with a single shot weapon, needing often to be reloaded. For these three very obvious reasons, many mass killers using firearms choose semi-automatic weapons.

Then he goes even further. In yet another quite bizarre passage, Kleck writes “shooters in mass shootings do not maintain high average rates of fire in their crimes, and certainly not
rates of fire anywhere near as high as those of which semi-auto guns are capable (Kleck, 2016). He uses this observation to argue that semi-automatic weapons are therefore quite unnecessary to a mass killer’s purpose. They could do just as “well” by being armed with single-shot weapons, apparently. Kleck here acknowledges that semi-automatics are capable of far higher rates of slaughter than single shots, and if gunmen used them to their full potential they could kill far more than they sometimes do. From this convoluted logic, he wants us to understand that we should not think of semi-automatics as any more dangerous than single-shot firearms. He is apparently trying to be serious.

Just as the military do not arm their combat troops with single-shot weapons, intending mass killers want firepower that will maximize their objectives being reached. Kleck would presumably be impressed with data that showed that during many combat incidents in war, some soldiers do not fire their automatic or semi-automatic weapons at the maximum rate either. And he would presumably concede that soldiers, like mass civilian killers, also reload their weapons. Would he conclude from this, and offer advice to the military, that troops may as well be armed with single shot weaponry? Good luck with that argument gaining traction.

His paper is strewn with intemperate language about his perception of our motives and intent in writing the paper (“strongly hinted conclusions”, “hinted to readers”, “wanted to suggest”, “spin placed on their findings by the authors”, “a dense web of speculations”, “wanted readers to believe”, that “99% of the paper” talked of the NFA being “associated” with reductions in gun deaths.

The language we used in our paper was the precise language expected and demanded by JAMA, a high ranking scientific journal. Kleck makes almost apoplectic attempts to denigrate our use of the word “association” rather than “cause” in our paper. One can only imagine the depths of abuse he would have plumbed had we used the word “caused”. As was entirely appropriate, we did not attempt to use causal language from the data available. That said, given the vanishingly small probability (1 in 200,000) that a 22 year absence of mass shootings was a chance outcome and totally unrelated to the NFA, the rush by commentators to interpret this finding as causal is very understandable.

**Extraneous factors?**

Kleck argues that in our analysis we “did not control for a single other factor that might have affected violence trends” and that there were “many other factors changing in Australia that could have reduced the suicide or homicide rate”. Yet remarkably, he fails to name even a single such extraneous factor that we should have included in such an analysis or reference other papers which have done so. He finally asserts that “unknown extraneous factors” – meaning anything but firearms – were likely to be responsible for the data we reported.

In fact, our 2016 paper did consider such factors in our Discussion where we considered the Australian trend between 1994-2007 toward less fatal methods of suicide (Spittal et al, 2012). That study noted that “the decline in firearm deaths over the study period was due primarily to a decline in attempts; lethality remained relatively flat.”
Other historical factors over the period we examined, such as improved trauma care for less lethal assault methods and reduced times in victims accessing and receiving out-of-hospital and hospital emergency services as well as massive increase in cell phone use are likely to be relevant. As we wrote:

“With increasing cell phone use over the past two decades, it is plausible that ambulances will have increasingly attended traumatic incidents like assaults and suicide attempts earlier than in previous times when landlines were only or more commonly used to make such calls. There have also been improvements in emergency care, and the lower lethality of non-firearm assault and suicide may explain the greater reductions in non-firearm homicide and suicide rates.”

Kleck’s lazy response to this is to summarily dismiss it all as “a dense web of speculations”, which would be news indeed to all involved in the research fields of emergency and trauma care.

Conclusions

Kleck’s commentary on our paper relentlessly seeks to suggest that the Australian NFA achieved nothing. We have shown that the probability of there being no firearm massacres in 22 years following 13 in the 15 years before the NFA was infinitesimally small. Something made a difference and the enactment of the NFA remains the obvious factor, in the total absence of any coherent analyses of why this should not be the case. Australia’s experience is rightly seen as a beacon of hope for efforts to reduce mass shootings and accelerate downward trends in overall gun death rates. Kleck’s flailing attempt to eviscerate our work stands as a sad indictment of anti-gun control “scholarship” that gives succour to those intent on opposing measures that could make a difference.

Disclosure Simon Chapman was a member of the Coalition for Gun Control (Australia) from 1993-1996, 22 years ago. Philip Alpers is director of GunPolicy.org, a global online source of evidence on gun death and injury, firearm law and its effects.

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