

Ethical Tech Competition: “Smart Guns” Memo

Data on Firearm-Related Injuries and Deaths

The issues of firearm suicides and accidental firearm deaths are often left out of the national gun debate. While 1,121 Americans were killed in mass shootings between 2009 and 2018, suicides still account for the [majority of firearm-related deaths](#). In 2017, the most recent year for which the Center for Disease Control (CDC) firearm death and injury data are available, [23,854 -or six out of 10 - firearm deaths](#) were suicides.

Firearm suicide rates among children and adolescents are particularly alarming. Out of all the gun related deaths in children and adolescents in 2016, [35% percent were suicides](#). In 2017, 43% of youth suicides involved a [firearm](#). Importantly, over 80% of children and adolescent firearm suicides involved a firearm belonging to a family [member](#). This statistic, coupled with the fact that [4.6 million](#) children in the United States live in a home with an unlocked, loaded firearm, helps explain why firearm suicide among youths occurs at the these [rates](#). Additionally, access to a firearm in the home [triples](#) one’s risk of dying by firearm suicide.

Accidental gun deaths are another type of preventable [tragedy](#). There have been at least [1714 unintentional shootings](#) by children since 2015. Unintentional deaths comprised [26%](#) of all firearm deaths among children (ages 1 – 9 years old). Additionally, studies suggest that there are strong correlations between the presence of a firearm at home and an [increased likelihood](#) of accidental child firearm deaths.

Smart Gun Technology

There are two main types of personalized [smart guns](#): (1) biometrical based trigger locks and (2) radio frequency identification (RFID) trigger locks. The former consists of fingerprint or palm-based readers that unlock the firearm when the user’s biometric information is recognized,

similar to the technology used to unlock smart phones by their owners. The latter have an electromagnet that is only activated when it receives a radio wave token from an external device, such as an electronically matched chip. When the firearm's electromagnet is activated by the transmission from the external token, the gun's locking mechanism is deactivated, and the gun can now be fired.

Potential Benefits of the Technology

While smart guns are unlikely to prevent mass shootings, homicides, and adult suicides, they may be useful in preventing youth suicide and accidental gun deaths. By only allowing the authorized user to fire the firearm, smart guns would prevent children from using it if they find it at home. Further, they would help to prevent firearm suicide in teenagers by only allowing the authorized user (the father and the mother, for example) to fire it. Even though these types of deaths do not comprise the majority of gun-related deaths, preventing gun-related deaths in children and teenagers is still a worthy public health goal.

Practical and Ethical Implications

It is important to note that smart guns are [not a perfect solution](#). Biometrical based trigger locks, for example, may malfunction if the user's hand is sweaty, dirty, or wet. More alarmingly, RFID trigger locks can be [easily hacked](#) with the use of \$15-dollar magnets, essentially enabling or disabling the firearm at the hacker's desire. While the technology itself is likely to be [constitutional](#) under the leading Second Amendment Case of *Heller*, these potential glitches may infringe on the right to self-defense and have been the cause of a lot of controversy. For example, the [backlash](#) by gun rights activists to a New Jersey law that mandated that all handguns sold in the state must be smart guns once the technology is sufficiently developed and to gun stores that have attempted to sell smart guns has been extraordinary. Further, with over [300 million firearms](#)

in circulation in the United States, not only would a gun-buy-back program to personalize the already-existing guns would be prohibitively expensive, but it would also encounter serious backlash.

Potential Solutions

In order to make smart guns less taboo among the gun-owning population, they could be [introduced](#) to the military and to the police forces first. Not only would this help prevent firearm deaths among police officers who are attacked with their own guns, but it would also normalize the technology, thus eventually reaching household firearm owners. Additionally, to mitigate the risk of malfunction, the government could [incentivize](#) private companies to further develop the technology through grants, tax credits, and subsidies. For example, biometrical based trigger locks have been [improved](#) by implementing grip recognition technologies that do not malfunction when the user's hand is sweaty or dirty, as opposed to the fingerprint and handprint recognition technologies that tend to malfunction more often.

Finally, a way to reduce the backlash around smart guns is by implementing *incremental* legislation. Many critics believe that the New Jersey law went too fast and too far, and thus garnered increased backlash. If, instead, legislation is introduced that allows for both smart guns and traditional guns to be sold concurrently for a period of time, this might reduce the backlash by normalizing the firearms that have an added safety benefit.

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