

A Comparative Expected Cost Analysis Study on Crime Prevention Products and Services Used in the United States

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ABSTRACT: The present comparative analysis study conducted expected cost analysis on crime prevention services and products used in the United States. The expected cost of products and services were determined by dividing cost by effectiveness and then ranked in terms of value within each of the following categories: 1) Firearms, 2) Home Burglary and 3) Individual Protection Services. Most burglaries are committed by non-professionals. Therefore some inexpensive products could provide value deterring a burglar without professional experience. Despite the annual costs of crime preventative measures, there is value in investing into some precautions such as a safe and door locks, but the most effective way to reduce costs would be to limit ownership of valuables, such as cash, jewelry, firearms and electronics. Guns did not seem to provide value since most burglaries occur when no one is home and the risks of killing oneself with a firearm are 16.23 (23,854/1469) times greater than being murdered by a stranger. Less dangerous options for consideration could be the A Taser Pulse+ at a cost of \$449 on Amazon or the Vipertek VTS-989 stun gun for \$21.95. Stun guns have prongs that have to make direct contact with a target, while Taser devices are a type of stun gun that shoot probes at a target. Neither has been found to be an effective suicide weapon, but could be effective deterrent in a burglary attempt

KEYWORDS: Firearms, Suicide, Homicide, Alarm System, Home Burglary

INTRODUCTION

In 2016, there were 138 million homes in the United States and 764,606 of them were robbed (McCarthy, 2018). The reported amount stolen on average was \$2,361 (McCarthy, 2018) and by many accounts the true value is probably much less. According to the latest FBI Uniform Crime Reporting Statistics (FBI, 2019) the Burglary rate in 2015 were 542 per 100,000 household (.00542), which is insignificant, given the massive demand for crime prevention products and services. The most commonly used products and services to reduce risk of a home invasion are firearms, insurance, dogs, sensor lights, home alarm systems, safes, shatterproof windows, bars, locks and individual protection services such as identify theft and title lock. The multiple crime prevention measures vary significantly in their effectiveness, as well as in cost.

Firearms

According to Ingraham (2018) Americans make up just 4% of the world's population, but own 46% of the entire global stock of 857 million civilian firearms. Azrael, Barnett, and Miller (2004) estimated that about 40% of households in the United States own at least one firearm. Thirty percent of Americans personally own a gun and an additional 11% live with someone who does (Gramlich & Schaffer, 2019).

Almost 80% (14,542/19,510) of all U.S. murders in 2017 involved a firearm and 51% (23,854/ 47,173) of all suicides

involved a gun (Gramlich, 2019). Only cancer claimed more lives among children ages five to fourteen years than firearms (Miller, Azrael, and Hemenway, 2002) and firearms were responsible for roughly 74,000 non-fatal injuries among US residents each year (Siegel, Ross & King III, 2013).

In 2017, 39,773 people died from gun-related injuries in the United States according to CDC fatality statistics based on information contained in death certificates (CDC, 2019). Sixty percent (23,854/39,773) were by suicide, 36.5% (14,542/39,773) were by homicide, 1.2% (486/39,773) were by accident, 1.4% involved law enforcement and 1.0% had undetermined circumstances (Gramlich, 2019). The relationships of the murder victims to their offenders were as follows: 1,867 victims (12.3 percent) were slain by family members; 1,469 victims (9.7 percent) were murdered by strangers; and 4,236 victims (28.0 percent) were slain by "other known" offender (FBI, 2017) and for the remaining victims the relationship between murder victims and offenders was unknown in 50.0 percent of murder and non-negligent manslaughter incidents.

The latest data show that people use guns for self-defence only rarely. Figures from the National Crime Victimization Survey reported that people defended themselves with a gun in .09% of crimes from 2007 to 2011 (Hemenway & Solnick, 2015). Do the risks of owning a gun outweigh the benefits of

having one in the rare case where one might need to defend themselves? The average person has basically no chance in their lifetime ever to use a gun in self-defense, but every day they have a firearm, there is a chance they use the gun inappropriately, get mad, have an accident, or get depressed. There are roughly 329 million Americans and there were 96,490 robberies with a firearm in 2018 (Statista, 2019), which makes the odds of getting robbed at gun point about .02% or about 1 in 5,000 in any given year.

Firearm Deaths	Deaths	Percentage
Suicide	23,854	72.72
Slain by known offenders	4,236	12.91
Slain by family member	1,867	05.69
Murdered by stranger	1,469	04.47
Slain by law enforcement	553	01.69
Homicide by accident	486	01.48
Undetermined	338	01.03
Total	32,803	99.99

The risks of killing oneself with a firearm are 16.23 (23,854/1,469) times greater than being murdered by a stranger. A decent 9MM can cost you \$250-\$400, not including ammo costs, training fees, gun accessories, extra clips (magazines), maintenance costs and licensing fees.

Home Burglary

Money is the most common stolen item (19%), followed by jewelry (18%) and firearms. Electronics such as laptops, cameras, phones and televisions are also high on a burglar’s list of desirable items (Parish, 2017). If a homeowner has no cash, firearms, jewelry or expensive electronic items then their risk and of loss even if they are robbed would be insignificant.

Storing valuables in a \$500 home safe that has a 25-year life span is a convenient and a relatively cost-effective way to minimize cost associated with a robbery. A safe would eliminate virtually all burglaries committed by non-professionals, which according to Bera (2019) would be 85% of them. A small safe to store jewelry and cash is easy way to prevent two of the most common theft items from being targeted.

According to a report published by the Australian Institute of Criminology, based on interviews with 65 West Australian-based burglars, a dog was an effective deterrent 61% of the time. It wasn’t so much the fierceness of the dog that scared off burglars, but the dog barking and drawing attention to what’s going on. The next most common deterrent was a working alarm system at 49%, followed by sensor lights (\$35) at 23% (Davis, 2015). The combined cost of an alarm system, security screens and sensor lights is likely to be less over the long-term than the cost of owning a dog. Dogs only provide value as a theft deterrent if the value of companionship exceeds the cost of pet ownership.

In 2016, 278,600 break-ins occurred at night, 486,006 happened during the day and on average \$2,361 was stolen (McCarthy, 2018). According to the latest FBI Uniform Crime Reporting Statistics (FBI, 2019) the burglary rate in 2015 were 542 per 100,000 household (.00542). Therefore, the expected annual cost of break-in per household would be \$12.79 (\$2,361 * .00542). The annual cost of an ADT alarm system is \$335.88 (12 * \$27.99). Vivent has an annual cost of \$479.88 (12 * \$39.99) and the Brinks plan has a starting cost of \$249 for the equipment and then an annual cost of \$348 (12 * \$29). All of which exceed the expected annual cost of break-in per household which is \$12.79 (\$2,361 * .00542).

Roughly 1.9% of the average payout amount for insurance is for theft and the average cost of homeowner’s insurance in the U.S is \$1,083 per year (Penguin, 2019). Therefore, the expected value of the insurance policy would be \$20.57 (\$1,083 *.019), which is about \$7.78 (20.57 - \$12.79) more than the expected annual cost of a break-in per household would be \$12.79 (\$2,361 * .00542), not including the additional cost of a \$500 average deductible (Penguin, 2019). Homes without a security system have a 300% more chance of getting broken into (Bera, 2019) so a home security system would reduce the probability of a break-in by .0018 (.00542 / 3) or 180 break ins per 100,000 households.

	Cost	SR	Expected Cost	Expected Benefit	Net Benefit
No Valuables	-	100%	-	\$12.79	
Insurance	\$20.57	-	-	\$12.79	-\$7.78
Safe	\$20	85%	\$23.52	\$12.79	-\$10.73
Sensor lights	\$35	23%	\$152.17	\$12.79	-\$139.38
Alarm system	\$335.88	49%	\$685.47	\$12.79	-\$672.68
Dog	\$500	61%	\$819.67	\$12.79	-\$806.88

In order to further understand home burglaries and their prevention, aside from precautions that may be taken, it is crucial to identify how these burglaries occur. When comparing burglaries occurring through windows vs. home doors, evidence suggests that doors are at higher risk. Roughly 34% of burglars use the front door, 22% use the back door and 23% use first-floor windows (Jones, 2019). Therefore, investments in both door and window protection can greatly lessen the probability of a home break in. Various safety precautions such as shatter-proof windows, or window bars are few examples one may take to halt a home burglar. An average home in the United States has about 8 windows. Comparing the table data, shatter proof

windows have a significantly higher cost at \$2,400 versus \$800 for window bars perhaps for aesthetic purposes. Additionally, locks are a crucial aspect of home burglaries. Whether they occur through unlocked doors or forced entry these break-ins account for 34% of burglary methods. It is suggested that individuals add additional locks to doors, while remaining aware of having all doors always locked.

	Annual Cost (20 years)	SR	Expected Cost
Locks	\$4	34%	\$12
Window Bars	\$40	23%	\$172
Shatter-proof windows	\$120	23%	\$521

Only the purchase of safety locks with an expected cost of \$12 would provide value since the expected annual cost of break-in per household is \$12.79 ($\$2,361 * .00542$).

Individual Protection Services

According to Weisman (2017) the cost of identity theft insurance is about \$17.50 per month or about \$210 a year. The service provides credit monitoring by Equifax, Trans Union or Experian, alerts victims, but does prevent identity theft nor does it cover monetary losses. Market Watch (2014) referenced a Javelin Strategy & Research Survey reporting that 80% of the 12.6 million victims in 2012 didn't face any out-of-pocket expenses and reported that according to the Bureau of Justice Statistics that it took most victims less than a day to resolve problems. According to Market Watch (2014) buying identity theft insurance is like hiring a wedding planner. One can pay someone to call florists and caterers, and in this case, contact their bank to cancel a card, or they can do it themselves. The expected value of a policy that costs \$210 would be \$0 since the policy does not prevent identity theft nor does it cover monetary losses.

The annual cost to insure jewelry is about 1.5% of the reported value (Gilbert, 2018) so a \$5,000 piece would cost around \$75 a year to insure. Manhattan Bride (2018) reported that a Jewelers Mutual Survey found that 53% of women or around 31.8 million had their jewelry insured. Allstate Insurance Company estimated that 7 to 8% of households purchase additional coverage for items, such a jewelry (Treastersept, 2008). A U.S. Justice Department study reported that insurers paid out 200,000 claims totaling about \$1 billion in insured jewelry losses (Fisher, 2009). There was an estimated .00628 (200,000 claims / 31.8 million policies) chance of a jewelry loss payout for each policy purchased with an average loss amount of \$5,000. The expected value of a policy that costs \$75 would be \$31.45 ($\$5,000 * .00628$).

Home Title Lock is a company that provides a service to monitor your home's deed to prevent title fraud for an annual cost of around \$150. Home owners, can protect

themselves on their own, without paying this fee simply by checking their property record on the website of their county's register of deeds. Most homeowners are already doing this when they pay their property taxes on line.

CONCLUSIONS

According to Bera (2019)85% of burglaries are committed by non-professionals. Therefore some inexpensive products could provide value deterring a burglar without professional experience. Despite the annual costs of crime preventative measures, there is value in investing into some precautions such as a safe and door locks, but the most effective way to reduce costs would beto limit ownership of valuables, such as cash, jewelry, firearms and electronics. Guns do not seem to provide value since most burglaries occur when no one is home and the risks of killing oneself with a firearm are 16.23 (23,854/1469) times greater than being murdered by a stranger. Less dangerous options for consideration could be the A Taser Pulse+ at a cost of \$449 on Amazon or theVipertekVTS-989 stun gun for \$21.95. Stun guns have prongs that have to make direct contact with a target, while Taser devices are a type of stun gun that shoot probes at a target. Neither has been found to be an effective suicide weapon, but could be effective deterrent in a burglary attempt

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