Buckeye Firearms Association





# An Alternate Look at Handgun Stopping Power



*3:00PM FRIDAY, JULY 08, 2011*

by Greg Ellifritz

I've been interested in firearm stopping power for a very long time. I remember reading Handguns magazine back in the late 1980s when Evan Marshall was writing articles about his stopping power studies. When Marshall's first book came out in 1992, I ordered it immediately, despite the fact that I was a college student and really couldn't afford its $39 price tag. Over the years I bought all of the rest of Marshall's books as well as anything else I could find on the subject. I even have a first edition of *Gunshot Injuries* by Louis Lagarde published in 1915.

Every source I read has different


recommendations. Some say Marshall's data is genius. Some say it is statistically impossible. Some like big heavy bullets. Some like lighter, faster bullets. There isn't any consensus. The more I read, the more confused I get.

One thing I remember reading that made a lot of sense to me was an article by Massad Ayoob. He came out with his own stopping power data around the time Marshall published *Handgun Stopping Power*. In the article, Ayoob took his critics to task. He suggested that if people didn't believe his data, they should collect their own and do their own analysis. That made sense to me. So that's just what I did. I always had a slight problem with the methodology of Marshall and Sanow's work. For consistency purposes, they ONLY included hits to the torso and ONLY included cases where the person was hit with just a single round. Multiple hits screwed up their data, so they excluded them. This led to an unrealistically high stopping power percentage, because it factored out many of the cases where a person didn't stop! I wanted to look at hits anywhere on the body and get a realistic idea of actual stopping power, no matter how many hits it took to get it. So I started collecting data.

Over a 10-year period, I kept track of stopping power results from every shooting I could find. I talked to the participants of gunfights, read police reports, attended autopsies, and scoured the newspapers, magazines, and Internet for any reliable accounts of what happened to the human body when it was shot.

I documented all of the data I could; tracking caliber, type of bullet



## TODAY'S MOST READ

- Report: Mike Bloomberg assembles massive Ohio campaign staff
- First Impressions: The Henry Big Boy Lever-Action Rifle
- Hearing on HB 425 Duty to Notify Bill Scheduled for Wednesday, Feb 19, 2020
- Mark Robinson to Deliver Keynote Address at 2020 Buckeye Bash
- Yes, your Ohio

(if known), where the bullet hit and whether or not the person was incapacitated. I also tracked fatalities, noting which bullets were more likely to kill and which were not. It was an exhaustive project, but I'm glad I did it and I'm happy to report the results of my study here.

Before I get to the details, I must give a warning. I don't have any dog in this fight! I don't sell ammo. I'm not being paid by any firearm or ammunition manufacturer. I carry a lot of different pistols for self defense. Within the last 2 weeks, I've carried a .22 magnum, a .380 auto, a .38 spl revolver, 3 different 9mm autos and a .45 auto. I don't have an axe to grind. If you are happy with your 9mm, I'm happy for you. If you think that everyone should be carrying a .45 (because they don't make a .46), I'm cool with that too. I'm just reporting the data. If you don't like it, take Mr. Ayoob's advice...do a study of your own.

**A few notes on terminology:**

Since it was my study, I got to determine the variables and their definitions. Here's what I looked at:

- Number of people shot

- Number of rounds that hit

- On average, how many rounds did it take for the person to stop his violent action or be incapacitated? For this number, I included hits anywhere on the body. To be considered an immediate incapacitation, I used criteria similar to Marshall's. If the attacker was striking or shooting the victim, the round needed to immediately stop the attack without another blow being thrown or shot being fired. If the person shot was in the act of running (either towards or away from the shooter), he must have fallen to the ground within five feet.

I also excluded all cases of accidental shootings or suicides. Every shot in this study took place during a military battle or an altercation with a criminal.

- What percentage of shooting incidents resulted in fatalities. For this, I included only hits to the head or torso.



- What percentage of people were not incapacitated no matter how many rounds hit them

- Accuracy. What percentage of hits was in the head or torso. I tracked this to check if variations could affect stopping power. For example, if one caliber had a huge percentage of shootings resulting in arm hits, we may expect that the stopping power of that round wouldn't look as good as a caliber where the majority of rounds hit the head.

- One shot stop percentage - number of incapacitations divided by the number of hits the person took. Like Marshall's number, I only included hits to the torso or head in this number.

- Percentage of people who were immediately stopped with one hit to the head or torso

**Here are the results:**

| | |
|---|---|
| **.25ACP**<br># of people shot - 68<br># of hits - 150<br>% of hits that were fatal - 25%<br>Average number of rounds until incapacitation - 2.2<br>% of people who were not incapacitated - 35%<br>One-shot-stop % - 30%<br>Accuracy (head and torso hits) - 62%<br>% actually incapacitated by one shot (torso or head hit) - 49% | **.22 (short, long and long rifle)**<br># of people shot - 154<br># of hits - 213<br>% of hits that were fatal - 34%<br>Average number of rounds until incapacitation - 1.38<br>% of people who were not incapacitated - 31%<br>One-shot-stop % - 31%<br>Accuracy (head and torso hits) - 76%<br>% actually incapacitated by one shot (torso or head hit) - 60% |
| **.32 (both .32 Long and .32 ACP)**<br># of people shot - 25<br># of hits - 38<br>% of hits that were fatal - 21%<br>Average number of rounds until | **.380 ACP**<br># of people shot - 85<br># of hits - 150<br>% of hits that were fatal - 29%<br>Average number of rounds until incapacitation - 1.76 |

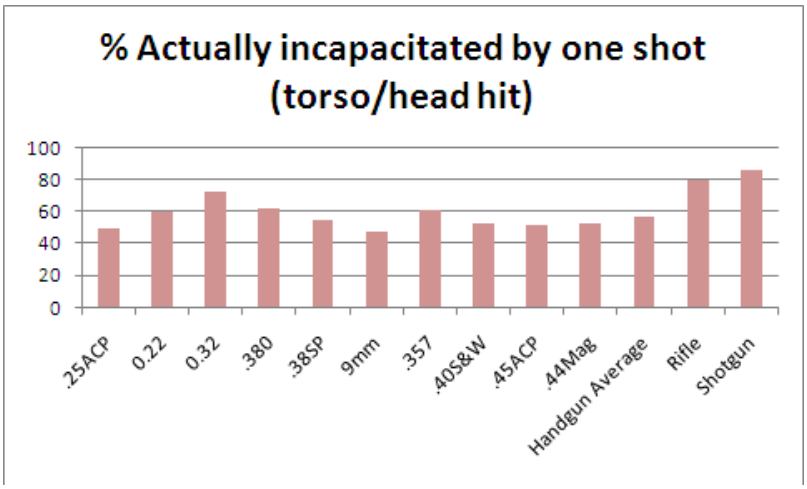
| | |
|---|---|
| incapacitation - 1.52<br>% of people who were not incapacitated - 40%<br>One-shot-stop % - 40%<br>Accuracy (head and torso hits) - 78%<br>% actually incapacitated by one shot (torso or head hit) - 72% | % of people who were not incapacitated - 16%<br>One-shot-stop % - 44%<br>Accuracy (head and torso hits) - 76%<br>% actually incapacitated by one shot (torso or head hit) - 62% |
| **.38 Special**<br># of people shot - 199<br># of hits - 373<br>% of hits that were fatal - 29%<br>Average number of rounds until incapacitation - 1.87<br>% of people who were not incapacitated - 17%<br>One-shot-stop % - 39%<br>Accuracy (head and torso hits) - 76%<br>% actually incapacitated by one shot (torso or head hit) - 55% | **9mm Luger**<br># of people shot - 456<br># of hits - 1121<br>% of hits that were fatal - 24%<br>Average number of rounds until incapacitation - 2.45<br>% of people who were not incapacitated - 13%<br>One-shot-stop % - 34%<br>Accuracy (head and torso hits) - 74%<br>% actually incapacitated by one shot (torso or head hit) - 47% |
| **.357 (both magnum and Sig)**<br># of people shot - 105<br># of hits - 179<br>% of hits that were fatal - 34%<br>Average number of rounds until incapacitation - 1.7<br>% of people who were not incapacitated - 9%<br>One-shot-stop % - 44%<br>Accuracy (head and torso hits) - 81%<br>% actually incapacitated by one shot (torso or head hit) - 61% | **.40 S&W**<br># of people shot - 188<br># of hits - 443<br>% of hits that were fatal - 25%<br>Average number of rounds until incapacitation - 2.36<br>% of people who were not incapacitated - 13%<br>One-shot-stop % - 45%<br>Accuracy (head and torso hits) - 76%<br>% actually incapacitated by one shot (torso or head hit) - 52% |
| **.45 ACP**<br># of people shot - 209 | **.44 Magnum**<br># of people shot - 24 |

| | |
|---|---|
| # of hits - 436<br>% of hits that were fatal - 29%<br>Average number of rounds until incapacitation - 2.08<br>% of people who were not incapacitated - 14%<br>One-shot-stop % - 39%<br>Accuracy (head and torso hits) - 85%<br>% actually incapacitated by one shot (torso or head hit) - 51% | # of hits - 41<br>% of hits that were fatal - 26%<br>Average number of rounds until incapacitation - 1.71<br>% of people who were not incapacitated - 13%<br>One-shot-stop % - 59%<br>Accuracy (head and torso hits) - 88%<br>% actually incapacitated by one shot (torso or head hit) - 53% |
| **Rifle (all Centerfire)**<br># of people shot - 126<br># of hits - 176<br>% of hits that were fatal - 68%<br>Average number of rounds until incapacitation - 1.4<br>% of people who were not incapacitated - 9%<br>One-shot-stop % - 58%<br>Accuracy (head and torso hits) - 81%<br>% actually incapacitated by one shot (torso or head hit) - 80% | **Shotgun (All, but 90% of results were 12 gauge)**<br># of people shot - 146<br># of hits - 178<br>% of hits that were fatal - 65%<br>Average number of rounds until incapacitation - 1.22<br>% of people who were not incapacitated - 12%<br>One-shot-stop % - 58%<br>Accuracy (head and torso hits) - 84%<br>% actually incapacitated by one shot (torso or head hit) - 86% |

**Discussion:**

I really would have liked to break it down by individual bullet type, but I didn't have enough data points to reach a level of statistical significance. Getting accurate data on nearly 1800 shootings was hard work. I couldn't imagine breaking it down farther than what I did here. I also believe the data for the .25, .32 and .44 magnum should be viewed with suspicion. I simply don't have enough data (in comparison to the other calibers) to draw an accurate comparison. I reported the data I have, but I really don't

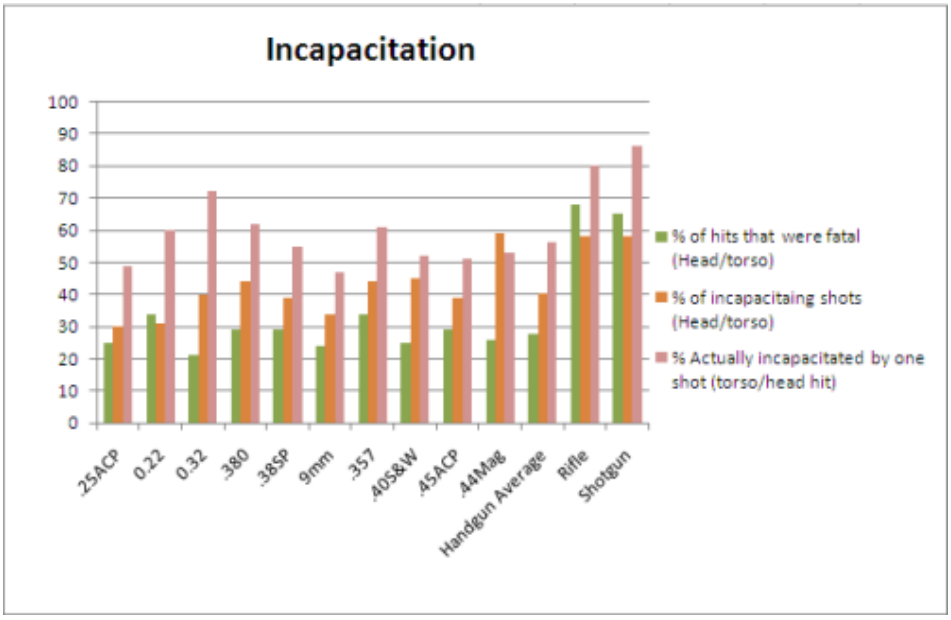
believe that a .32 ACP incapacitates people at a higher rate than the .45 ACP!




One other thing to look at is the 9mm data. A huge number (over half) of 9mm shootings involved ball ammo. I think that skewed the results of the study in a negative manner. One can reasonable expect that FMJ ammo will not stop as well as a state of the art expanding bullet. I personally believe that the 9mm is a better stopper than the numbers here indicate, but you can make that decision for yourself based on the data presented.

**Some interesting findings:**

I think the most interesting statistic is the percentage of people who stopped with one shot to the torso or head. There wasn't much variation between calibers. Between the most common defensive calibers (.38, 9mm, .40, and .45) there was a spread of only eight percentage points. No matter what gun you are shooting, you can only expect a little more than half of the people you shoot to be immediately incapacitated by your first hit.




The average number of rounds until incapacitation was also remarkably similar between calibers. All the common defensive calibers required around 2 rounds on average to incapacitate. Something else to look at here is the question of how fast can the rounds be fired out of each gun. The .38 SPL probably has the slowest rate of fire (long double action revolver trigger pulls and stout recoil in small revolvers) and the fewest rounds fired to get an incapacitation (1.87). Conversely the 9mm can probably be fired fastest of the common calibers and it had the most rounds fired to get an incapacitation (2.45). The .40 (2.36) and the .45 (2.08) split the difference. It is my personal belief that there really isn't much difference between each of these calibers. It is only the fact that some guns can be fired faster than others that causes the perceived difference in stopping power. If a person takes an average of 5 seconds to stop after being hit, the defender who shoots a lighter recoiling gun can get more hits in that time period. It could be that fewer rounds would have stopped the attacker (given enough time) but the ability to fire more quickly resulted in more hits being put onto the attacker. It may not have anything to do with the stopping power of the round.

Another data piece that leads me to believe that the majority of commonly carried defensive rounds are similar in stopping power is the fact that all four have very similar failure rates. If you look at the percentage of shootings that did not result in incapacitation, the numbers are almost identical. The .38, 9mm,

.40, and .45 all had failure rates of between 13% and 17%.

Some people will look at this data and say "He's telling us all to carry .22s". That's not true. Although this study showed that the percentages of people stopped with one shot are similar between almost all handgun cartridges, there's more to the story. Take a look at two numbers: the percentage of people who did not stop (no matter how many rounds were fired into them) and the one-shot-stop percentage. The lower caliber rounds (.22, .25, .32) had a failure rate that was roughly double that of the higher caliber rounds. The one-shot-stop percentage (where I considered all hits, anywhere on the body) trended generally higher as the round gets more powerful. This tells us a couple of things...

In a certain (fairly high) percentage of shootings, people stop their aggressive actions after being hit with one round regardless of caliber or shot placement. These people are likely NOT physically incapacitated by the bullet. They just don't want to be shot anymore and give up! Call it a psychological stop if you will. Any bullet or caliber combination will likely yield similar results in those cases. And fortunately for us, there are a lot of these "psychological stops" occurring. The problem we have is when we don't get a psychological stop. If our attacker fights through the pain and continues to victimize us, we might want a round that causes the most damage possible. In essence, we are relying on a "physical stop" rather than a "psychological" one. In order to physically force someone to stop their violent actions we need to either hit him in the Central Nervous System (brain or upper spine) or cause enough bleeding that he becomes unconscious. The more powerful rounds look to be better at doing this.

One other factor to consider is that the majority of these shootings did NOT involve shooting through intermediate barriers, cover or heavy clothing. If you anticipate having to do this in your life (i.e. you are a police officer and may have to shoot someone in a car), again, I would lean towards the larger or more powerful rounds.

What I believe that my numbers show is that in the majority of shootings, the person shot merely gives up without being truly incapacitated by the bullet. In such an event, almost any bullet will

perform admirably. If you want to be prepared to deal with someone who won't give up so easily, or you want to be able to have good performance even after shooting through an intermediate barrier, I would skip carrying the "mouse gun" .22s, .25s and .32s.

Now compare the numbers of the handgun calibers with the numbers generated by the rifles and shotguns. For me there really isn't a stopping power debate. All handguns suck! If you want to stop someone, use a rifle or shotgun!

What matters even more than caliber is shot placement. Across all calibers, if you break down the incapacitations based on where the bullet hit you will see some useful information.

Head shots = 75% immediate incapacitation
Torso shots = 41% immediate incapacitation
Extremity shots (arms and legs) = 14% immediate incapacitation.

No matter which caliber you use, you have to hit something important in order to stop someone!

**Conclusion:**

This study took me a long time and a lot of effort to complete. Despite the work it took, I'm glad I did it. The results I got from the study lead me to believe that there really isn't that much difference between most defensive handgun rounds and calibers. None is a death ray, but most work adequately...even the lowly .22s. I've stopped worrying about trying to find the "ultimate" bullet. There isn't one. And I've stopped feeling the need to strap on my .45 every time I leave the house out of fear that my 9mm doesn't have enough "stopping power." Folks, carry what you want. Caliber really isn't all that important.

Take a look at the data. I hope it helps you decide what weapon to carry. No matter which gun you choose, pick one that is reliable and train with it until you can get fast accurate hits. Nothing beyond that really matters!

You may also enjoy this Greg Ellifritz story: A Parent's Guide to School Shootings

*Greg Ellifritz is the full time firearms and defensive tactics training officer for a central Ohio police department. He holds instructor or master instructor certifications in more than 75 different weapon systems, defensive tactics programs and police specialty areas. Greg has a master's degree in Public Policy and Management and is an instructor for both the Ohio Peace Officer's Training Academy and the Tactical Defense Institute.*

*For more information or to contact Greg, visit his training site at Active Response Training.*

JOIN