

# VALORANT STATS

Valorant is a team-based first-person shooter game developed by Riot Games. It was released in 2020 and quickly gained popularity among gamers for its fast-paced gameplay, unique character abilities, and tactical team-based mechanics. In the game, players take on the roles of agents, each with their own set of abilities and weapons, and compete in 5v5 matches to complete objectives or eliminate the opposing team. The game has a competitive mode where players can climb the ranks and earn rewards based on their performance. With its high skill ceiling and emphasis on teamwork, Valorant has become a popular esports, with professional teams and tournaments around the world.

This is currently my favourite game right now and I am following it's every championship from 2021.

As a shooting game it has guns, a whole bunch of guns. Different guns for different situation. Some are suitable for some specific maps such as short range gun fight and long range gun fight.

## Questions to answer

1. Which gun is the most expensive?
2. Which gun has the overall most damage in all the range?
3. Which is the best riffle?
4. Which gun have best fire rate as compared to price?

## Hypothesis

1. Data is up to date with the new version.

## Data Analysis

I have downloaded the data from [Valorant Weapon Stats | Kaggle](#) as a primary data source. What interest me most is the damage data of each gun. There are 3 types of damage in the game. Head, body and leg damage. Head deals the highest damage and then body then comes the leg. It has 3 codes –

1. HDMG\_0 – Head damage.
2. BDMG\_0 – Body damage.
3. LDMG\_0 – Leg damage.

In this case 0 means short range, \_1 will be mid-range and \_2 will be long-range damage.

BDMG\_0 is short-range, BDMG\_1 will be mid-range and so on.

### GUN PRICE –

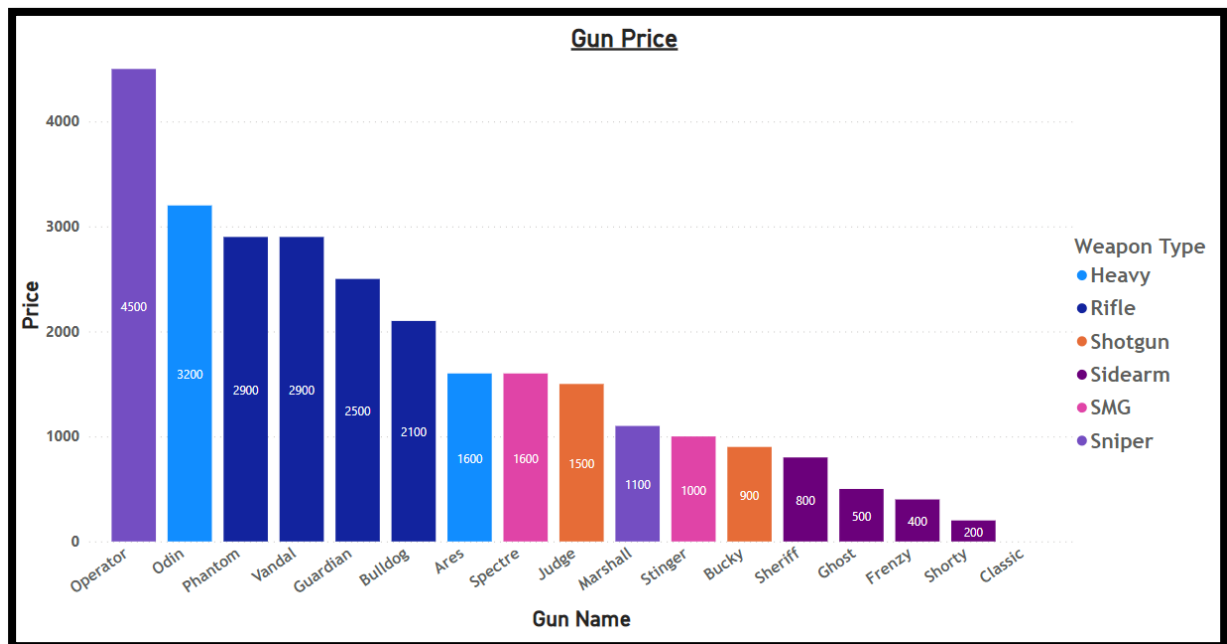


Fig 1: Gun Price

We can see there are total 6 types of gun in the game. **Operator** which is commonly known as OP among the players is the most expensive gun 4500 credits and classic is the gun that you get at the starting of each round so it is free.

OP falls under sniper and most expensive of all. **Phantom** and **vandal** are of same cost and expensive in rifle category. **Judge** is the expensive shotgun. **Spectre** is the expensive SMG (sub-machine-gun) and finally among all the sidearm or handgun **sheriff** is the most expensive one.

**FUN FACT:** classic is the free gun in the start of each round and this is the only handgun that has alternate fire option. You can either shoot single bullet of 4 bullet at the same time. Which make it most interesting and best default gun.

## GUN DAMAGES –

Different guns deals different damages in different scenario. We all have seen guns in movies and TV shows. So we know that shot guns are for close distance combat and sniper are for long range. On the other hand riffles are better in both the situation more or less. These are specially used in mid-range combat.

## SHORT-RANGE DAMAGE -

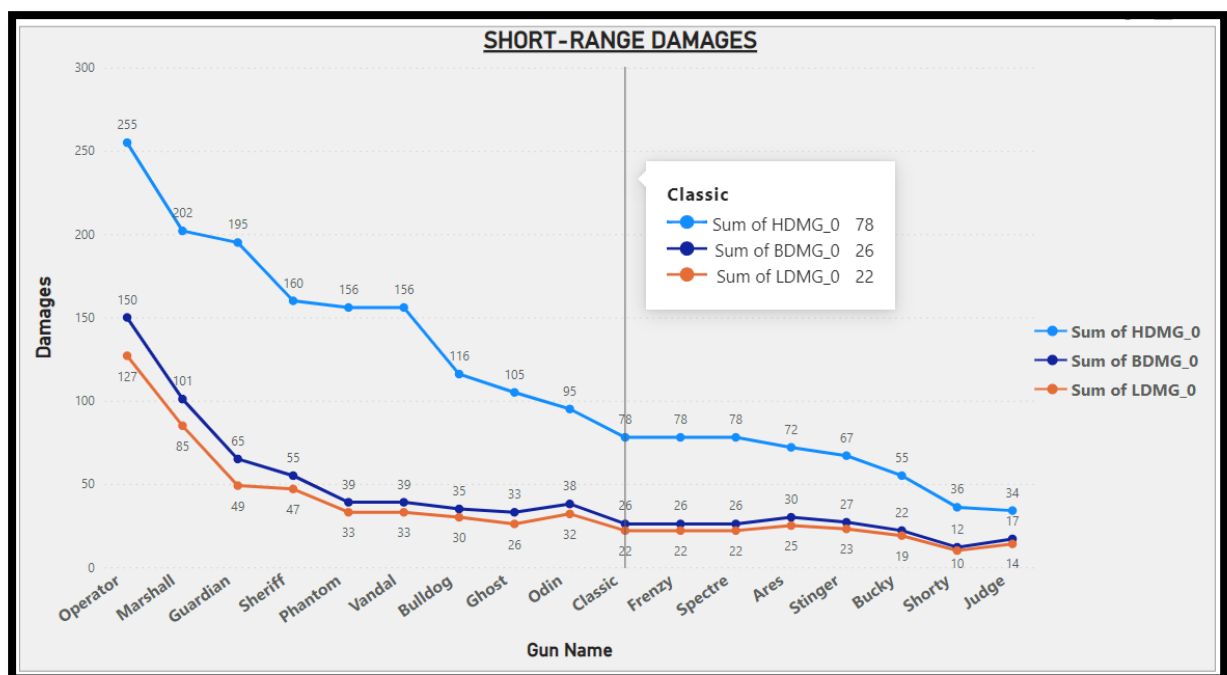


Fig 2: Short-range Damage

In the above line chart blue line is the head damage, violet is the body damage and orange is leg damage. Line chart concludes that head shots are most lethal than other damages. (So throughout the analysis I will treat body and leg damage as one because of very small difference).

Ration of head, body and leg damage of Operator is (in the form of 1:n:m is)  $1 : 0.588 : 0.498$  and the most less damage gun Judge is  $1 : 0.5 : 0.412$ . By looking at the ration we can say that head shot damage is the alone is equal to body and leg damage.

We can see a huge drop in damage in all the parts from OP to Marshall. Even though both of them are the only two sniper in the game. But also it has a huge price difference. OP cost 4500 and Marshall cost only 1100. Nearly the 4<sup>th</sup> time of an OP (from fig 1).

All the rifles falls in the same difference of around 30-40 damage unit. But there is another huge fall with Bulldog. From 156 vandal & phantom to 116 bulldog. But keep in mind that their price difference is 700 (from fig 1).

After than there comes the SMG's, handguns and shot guns. But there is a noticeable between Odin & Classic and Bucky & Shorty around 17 and 19 damages respectively.

Most amazing details among all the gun is the Classic which was given as a free gun in the starting of each round. But it literally deals more damage than other 7 expensive guns. Only 17 difference in damage but dealing damages through one bullet is not the only reason to choose a gun in the game. Odin cost 3200 and classic is free but why is it so. That we will check on the upcoming charts where you got to know why it is costly and valuable.

### MID-RANGE DAMAGE:

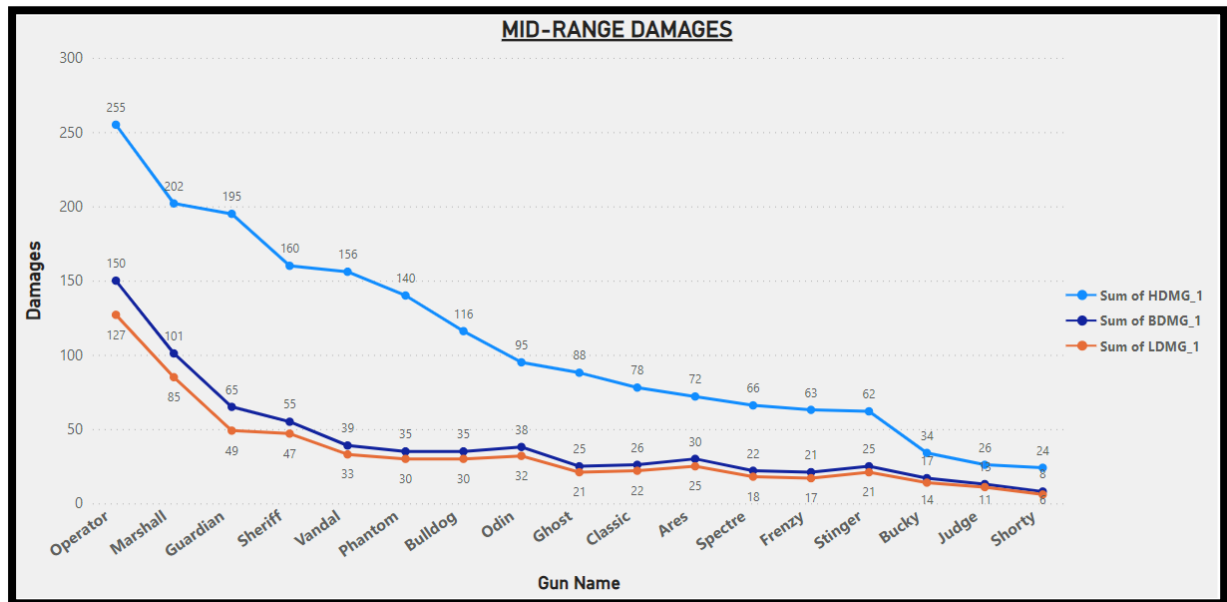


Fig 3: Mid-range Damage

If we compare mid from short we can see some changes in order of damage. Vandal and Phantom are used to be in same position in short-range but here phantom fall short with 16 less damages.

In mid-range fight we can see Odin by one position and Ares (from Heavy category) by two position leading in terms of damage dealt leaving behind Ghost, Spectre and Frenzy. Rest are still the same as short-range.

## LONG-RANGE DAMAGE

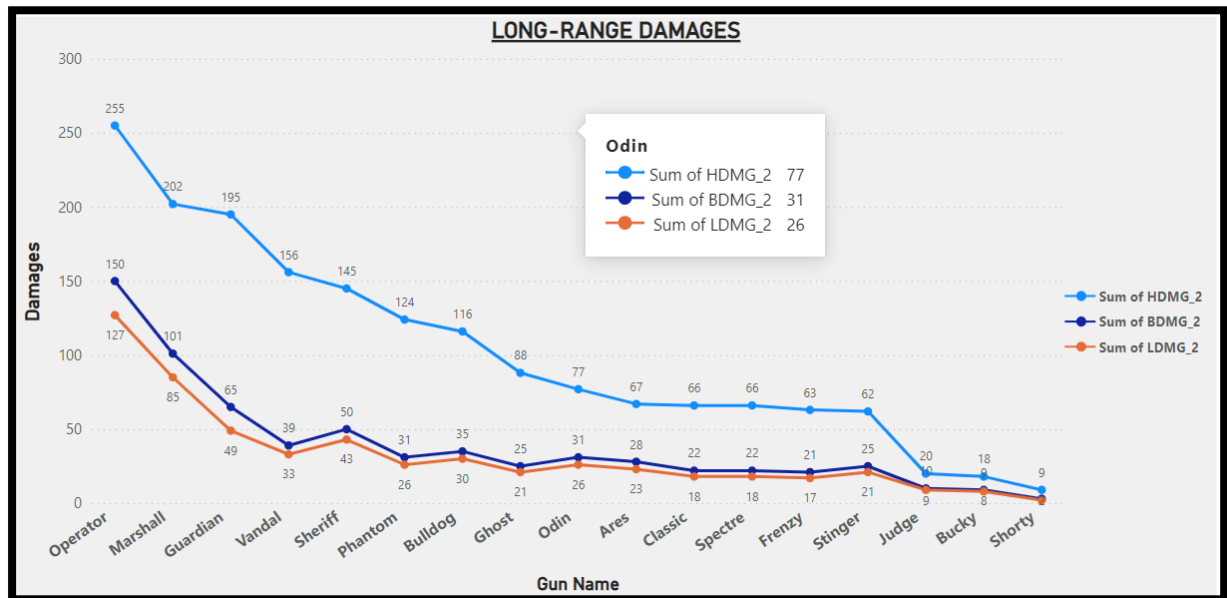


Fig 4: Long-range Damage

Here the stats becomes very interesting. OP is the one and only gun in the game that is consistent throughout all the ranges. We can see a huge drop from Guardian to Vandal of 39 damages. Another noticeable drop is Bulldog to Ghost. But important thing is that Ghost is a handgun and Odin is a heavy. Another huge fall is from Stinger to Judge of 42 damage. All Judge, Bucky and Shorty are shot guns. So they are not build for long-range combat.

For better visualization I will of last 5 guns using zoom slider in Power Bi.

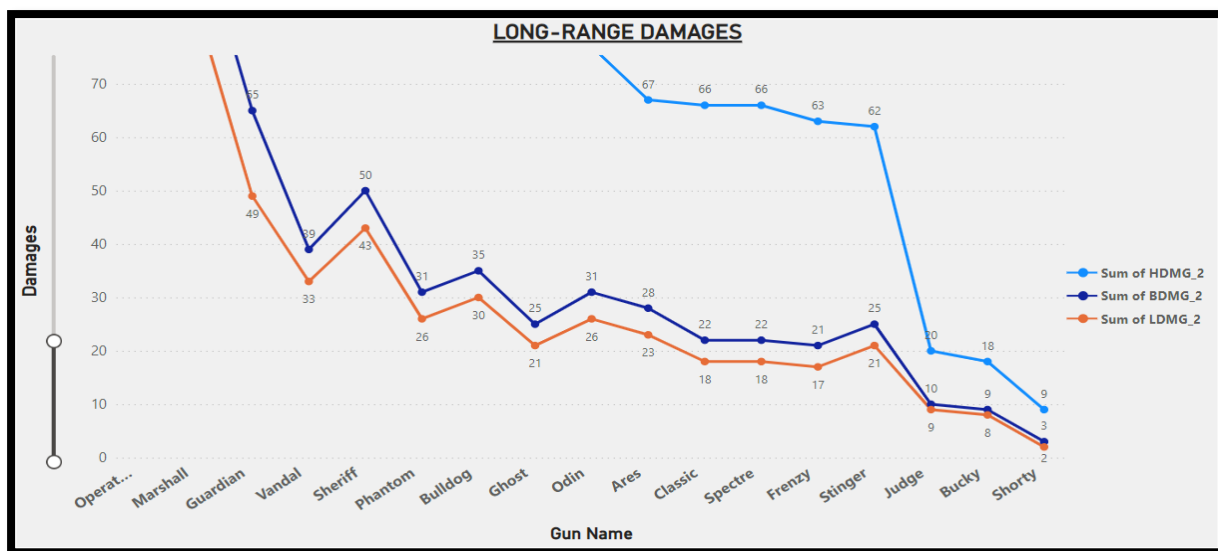


Fig 5: Zoom long-range Damage

Here we can see Judge, Bucky and Shorty has damage difference only 1 in body and leg damage.

Here is an overview graph of all the guns with price and head damages in all ranges. (In the game body and leg damage is very less as compared to head damage).

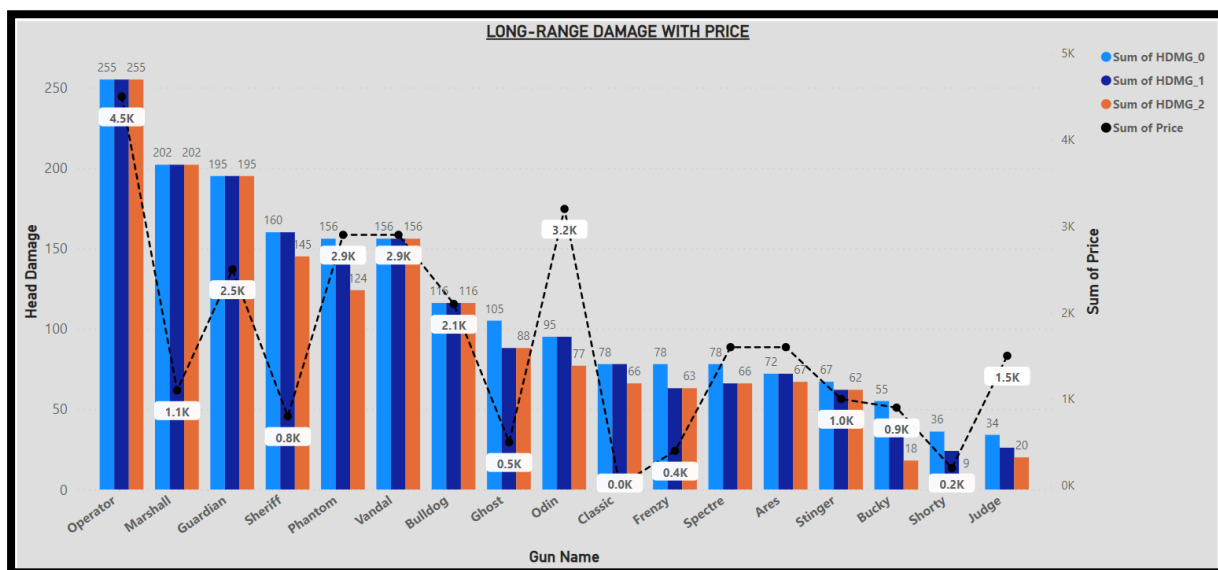


Fig 6: Long-range damage with Price

## WALL PENETRATION –

In the game there are many scenario where player shoot through wall to kill the opponent. But not all the guns can penetrate wall the same. We have already seen the guns and its damages in all the ranges. Now we will see which guns are best for wall penetration

Name	Wall Penetration
Ares	High
Bucky	Low
Bulldog	Medium
Classic	Low
Frenzy	Low
Ghost	Medium
Guardian	Medium
Judge	Medium
Marshall	Medium
Odin	High
Operator	High
Phantom	Medium
Sheriff	High
Shorty	Low
Spectre	Medium
Stinger	Low
Vandal	Medium

Fig 7: Wall Penetration

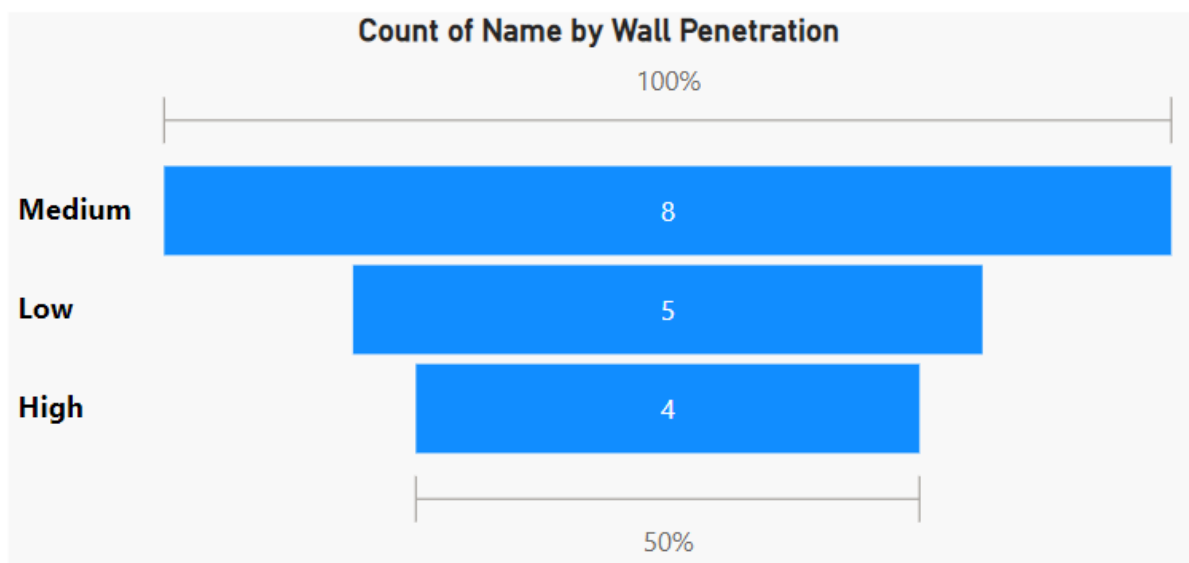


Fig 8: Count of Name by Wall Penetration



We can see that among all the 17 guns 8 guns have medium, 5 has low and 4 has high penetration.

But it also depend upon the distance from you are shooting.

## FIRE RATE –

In the last part of gun analysis we will see about the fire rate of each gun. In the game fire rate is measured in **RPS** or simply round per second. Now you might get confused that what is RPS. A unit of ammunition, made up of a cartridge case, primer, powder, and bullet. Also called a "round", or "load". Sometimes incorrectly called a "bullet".

We will check which gun has the highest fire rate in the game in compared to its prize.

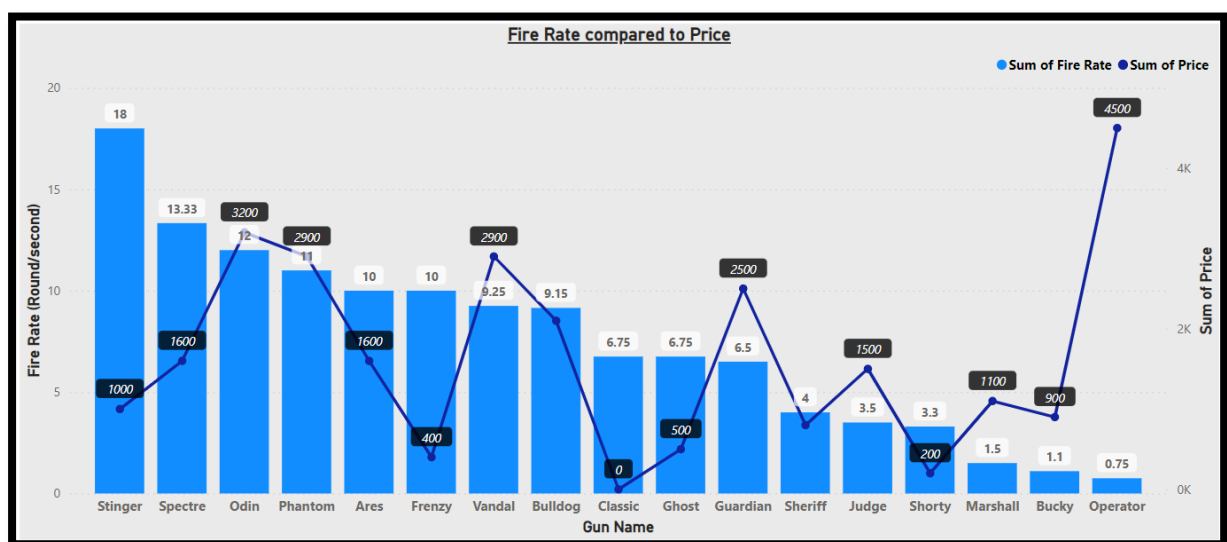


Fig 9: Fire rate compared to price

When it comes to fire rate, OP which one on top in all the categories above comes at the left of the graph and Stinger (SMG) comes at top. All the markers with black background denotes the price and white background denotes the RPS. If we see closely we can notice that some markers comes in the middle of RPS column and some are even in the bottom. More then comes inside of bottom more they are economical in terms of fire rate. Price of Stinger is 1000 and its RPS is 18. So the marker comes almost to the bottom of the column. Like that we can see in Odin, phantom vandal, guardian.

Their price marker is way above its corresponding column. But most noticeable one is the OP. with only 0.75 RPS it costs 4500.

### Questions to answer

#### 1. Which gun is the most expensive?

As we can see from fig 1 that **Operator** (sniper) is the most expensive gun in the game followed by Odin (heavy), Vandal (rifle) and Phantom (rifle). And most cheap gun is **Classic** (sidearm). Which is a free gun that gives to the player at the very starting of each round.

#### 2. Which gun has the overall most damage in all the range?

We have analysed that in the game there are three kinds of damage. Simply we can damage our enemies in three ways. Head, body and leg. Again there are ranges that all these guns deals damage differently. There are also three ranges. These are – Short-range, Mid-range and High-range. In fig 2, 3, 4 & 5 we have shown the damage of each gun in all the three ranges. From those graph we can conclude that **Operator** has the highest damage and it is consistent in all the ranges. Followed by **Marshall** (sniper) and **Guardian** (rifle). And **judge** (shotgun) deals less damage in long short-range and **shorty** is the less damage gun in mid-range and long range.

#### 3. Which is the best riffle?

In this game there are 4 riffles. Phantom, Vandal, Guardian and Bulldog. Here phantom and vandal cost same 2900. Guardian cost 2500 and bulldog cost 2100. (fig 1)

If we see in terms of head damages in short-range, Guardian -195, Bulldog – 116, Vandal - 156, Phantom – 156 (fig 4). Guardian stays at top in all the ranges. But in long-range phantom falls behind of vandal by 30 damage points and bulldog is always at the bottom.

But if we compare fire power and price then it phantom clearly wins here. So if we have to select a best rifle here than in terms of price, range-damage, fire-rate, wall penetration and most importantly the situation of the game you are in both **Phantom** and **Vandal** are good gun as compared to Guardian and Bulldog.

#### 4. Which gun has best fire rate as compared to price?

In the analysis (fig 9) I have mentioned that marker of line graph show price and more the marker goes below its corresponding bars more it provides damage by cost. But we have to keep in mind that high fire power doesn't mean high damage. In fig 9 we can see that Stinger wins the graph. But in terms of damage it comes 4<sup>th</sup> from bottom.

But if we follow this pattern then we can see that in Odin, Phantom the RPS marker is point just above its column. So according to price and RPS if we have a select a gun then it would be **Odin** and **Phantom** with 12 and 11 RPS. Above that we have spectre and stinger but that is not helpful as we have seen. If we go a point down there we will get **Vandal** with 9.25 RPS.