GW2-SRS DATA MODELLING
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Daniel Lopez: **Data Modelling**

November 11, 2022

4.0 DATA MODELLING

4.1 Introduction

4.1.1 Dates and Data

All the data used in this study is based on the class performance between May and September. This means that, with future nerfs and buffs to classes, values can easily vary. Therefore, this information is only relevant in those months. Nonetheless, some classes does not change a lot, so not every value has a chance to change.

4.1.2 Model explanation

This project data was easier to store on MongoDB than it was on SQL, therefore, a data model was needed not only to connect data between tables, but also to have a data schema and keep everything ordered.

The basic structure of data on MongoDB was explained on the previous EXTRACT part, as the info was saves with that specific schema. In SQLite, I needed to create several tables:

- Player's info

- Boss names

- Profession names

- DPS Tables for each boss

The first table in the list contains names, accounts and two more columns, one of the columns contains a Foreign Key (**FK**) that connects to Boss Names by its Primary Key (**PK**), as for the second one, it contains another FK that connects to Profession names PK. Boss Names and Profession Names are two tables that only contains a PK and the names respectively. This was designed this way to prevent data repeating over and over when using a PK and FK was by far, the best option.

Inside the DPS Tables, I had quite a few problems linking data between tables. The DPS tables stored data based on an ID as well, but if *John-Doe.9100* had ID 30 on the players table and his damage in Vale Guardian corresponds to ID 2 it wouldn't work at all, there was no connection and therefore it leads to error.

The solution was not what I would have done if I had other options in mind, however, it worked fine. I created a FK for every dps table that contained the user account, this way we could just refer the FK to the players table and get the connection done. I thought on doing it with the boss number, but it could also resulted in some problems.

This choice was mainly done because we use ID as a unique value that represents something, and actually, in a game, your account name is already a unique value that identifies the player and it's also **immutable**.
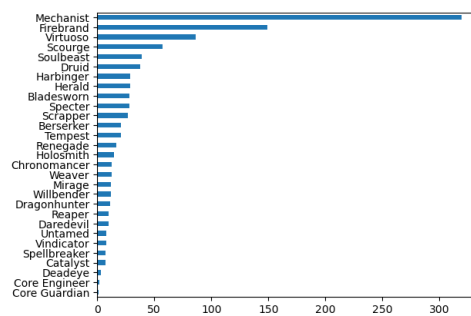
4.2 Results, Graphs and Analysis

The analysis on the project has two main objectives:

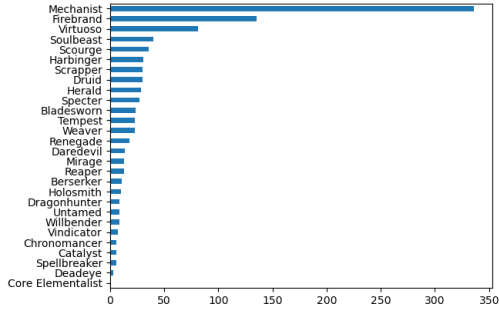- Profession/Class Usage per boss

- DPS done per class on each boss
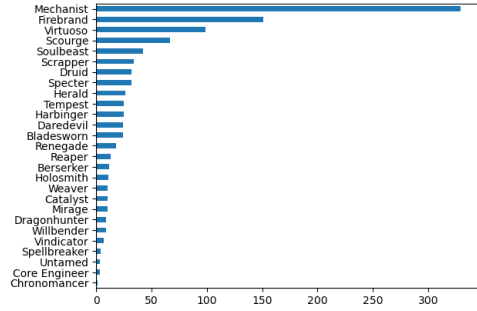
4.2.1 Profession/Class Usage
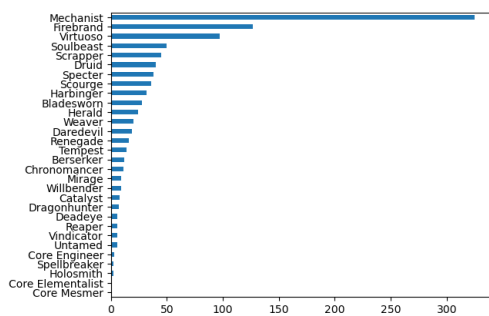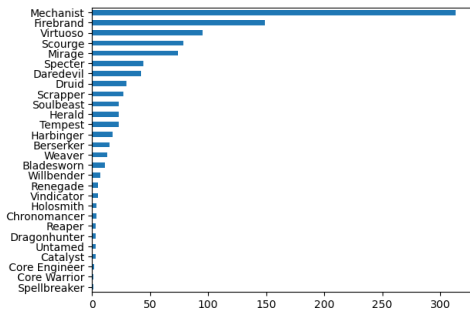

(a) W1: Vale Guardian Graph
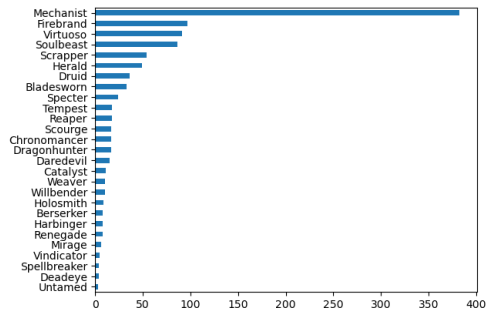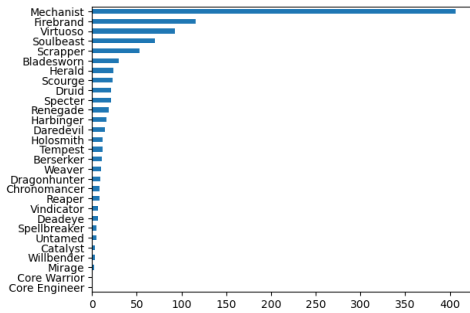(b) W1: Gorseval Graph

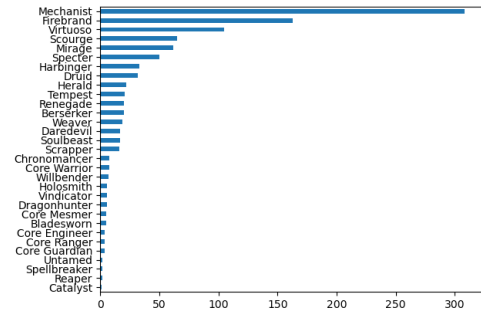(a) W1: Sabetha Graph

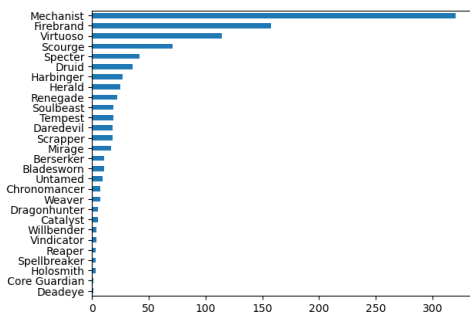(b) W2: Slothasor Graph

(c) W2: Matthias Gabrel Graph

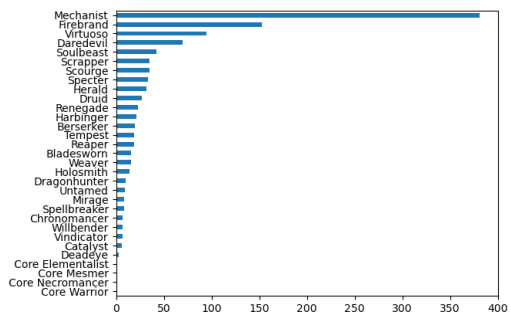
(d) W3: Keep Construct Graph
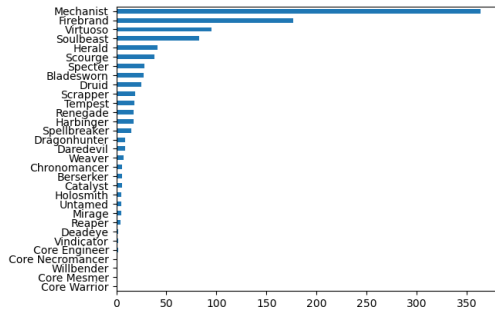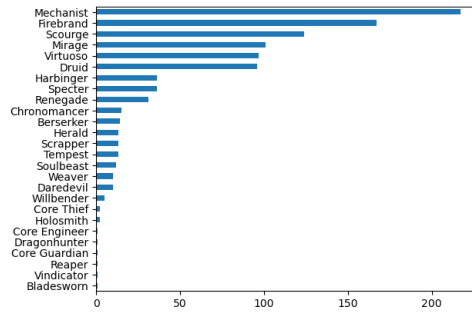

(e) W3: Xera Graph

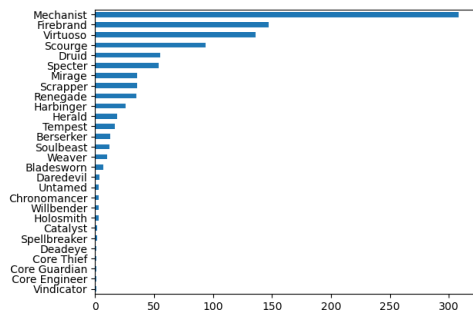(f) W4: Cairn Graph

(g) W4: Mursaat Graph
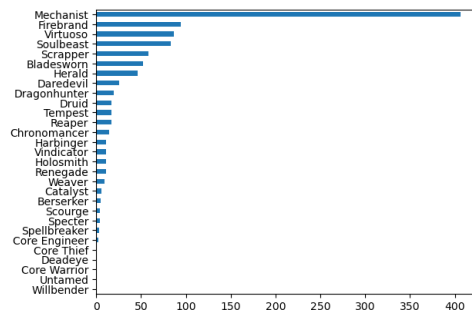

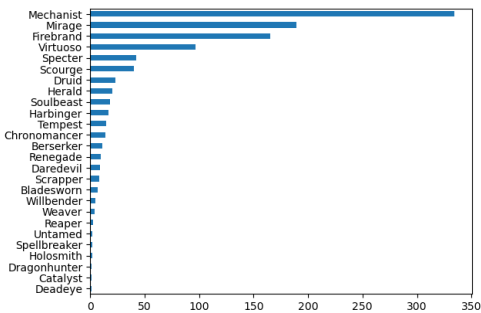(h) W4: Samarog Graph

(a) W4: Deimos Graph

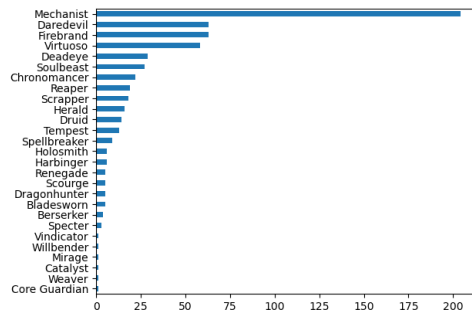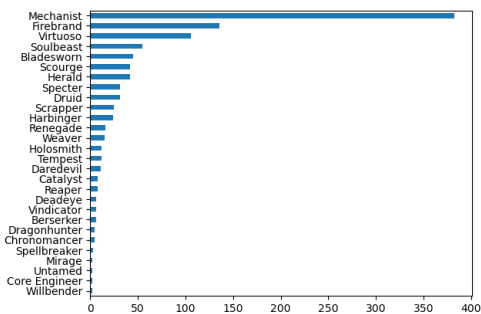(b) W5: Soulless Horror Graph

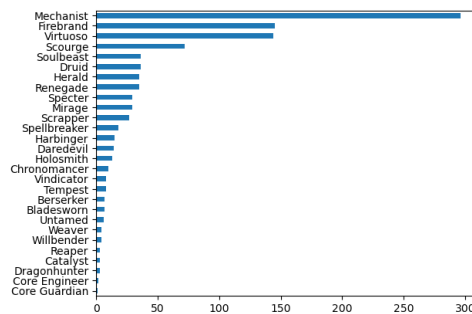(c) W5: Dhuum Graph

(d) W6: Conjured Amalgamate Graph

(e) W6: Twin Largos Graph

(f) W6: Qadim Graph

(g) W7: Cardinal Adina Graph

(h) W7: Cardinal Sabir Graph

All this graphs represent the class usage in each boss, and it stands out that the usage of the Mechanist class is huge. Just to be clear, **all this analysis is made from data between May and September 2022**, therefore, during this period, Mechanist was a rather new class since Guild Wars 2: End of Dragons came out in February 2022.
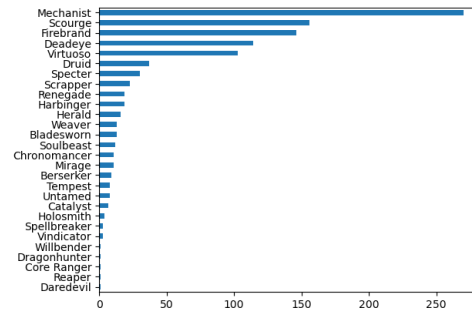

Figure 4: W7: Peerless Qadim Graph

Since the release of the Mechanist, as well as other classes, it became one of the best choices because it could be either support or dps, and it's results in raid were extremely good. We can also see that other classes such as Firebrand is also quite high on the graph, and this is also due to Firebrand's versatility. Guild Wars 2 is a game where versatility in terms of raid and fractals is really important, abilities that can provide **aegis**, **alacrity** and **quickness** are three of the key support buffs, while **power** and **fury** are two of the key damage buffs. This is why classes like Guardian and Engineer are always on top of the usage graphs.

Each boss also has certain classes that perform better than others, as some bosses are weaker to condition damage and other bosses to power damage. On top of that, each boss also has certain mechanics, which normally needs certain classes to perform those specific roles; as an example, Peerless Qadim has the **Pylon** mechanic, and it's normally performed by Deadeyes or Scourges.

4.2.2 DPS Data Graphs

Now that class usage have been seen, it's time to focus a little on dps data. This time, as earlier, I did a series of graphs that represent the damage done per class in each boss and on each phase. DPS stats seen in graphs are a mean of all the 1000+ rows on each boss table.
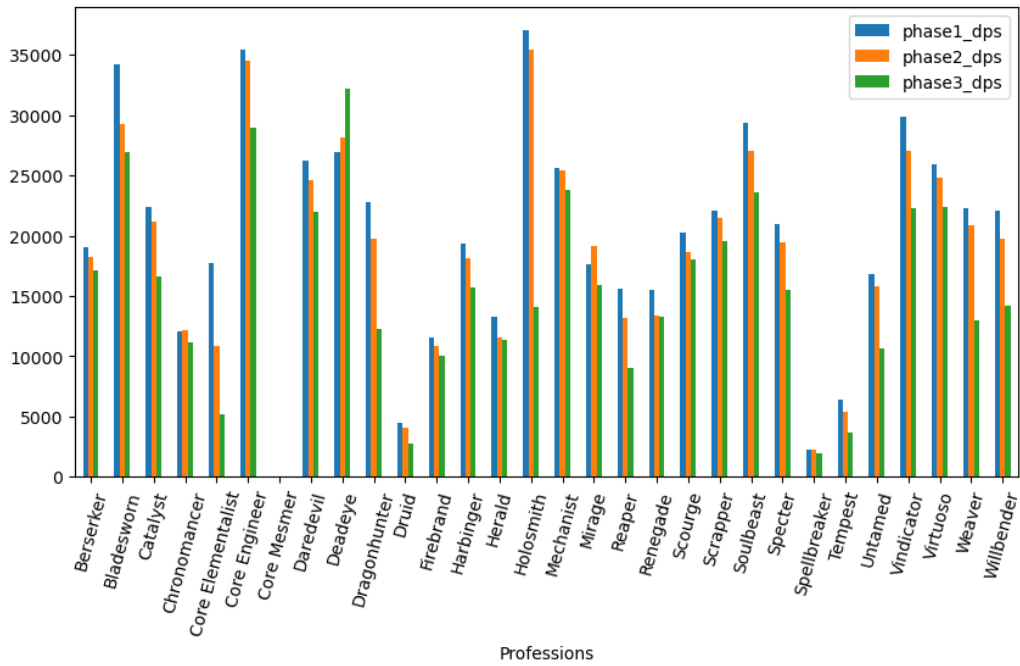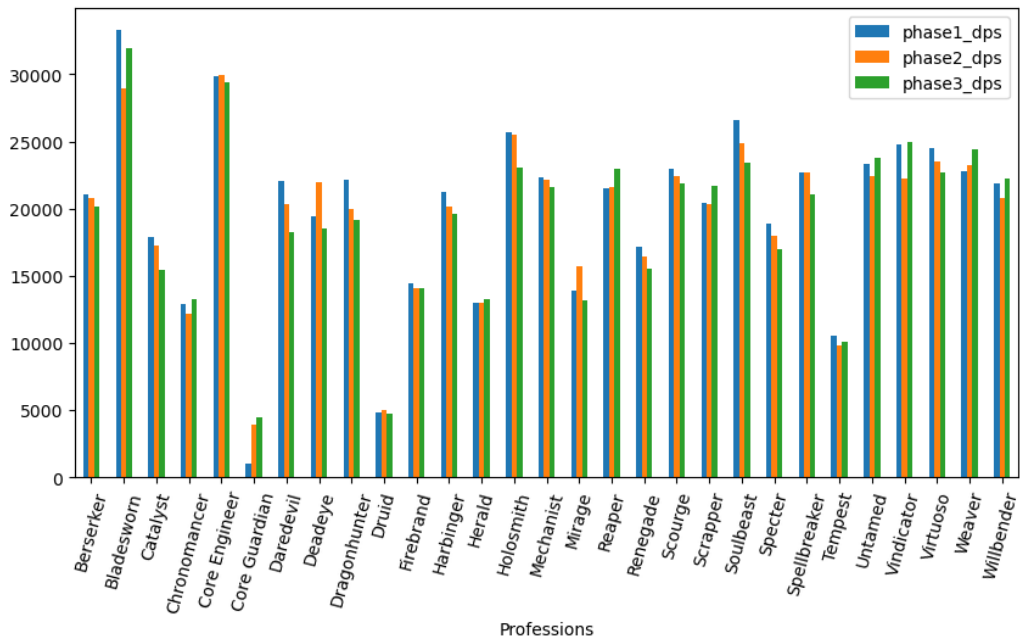
Figure 5: Vale Guardian

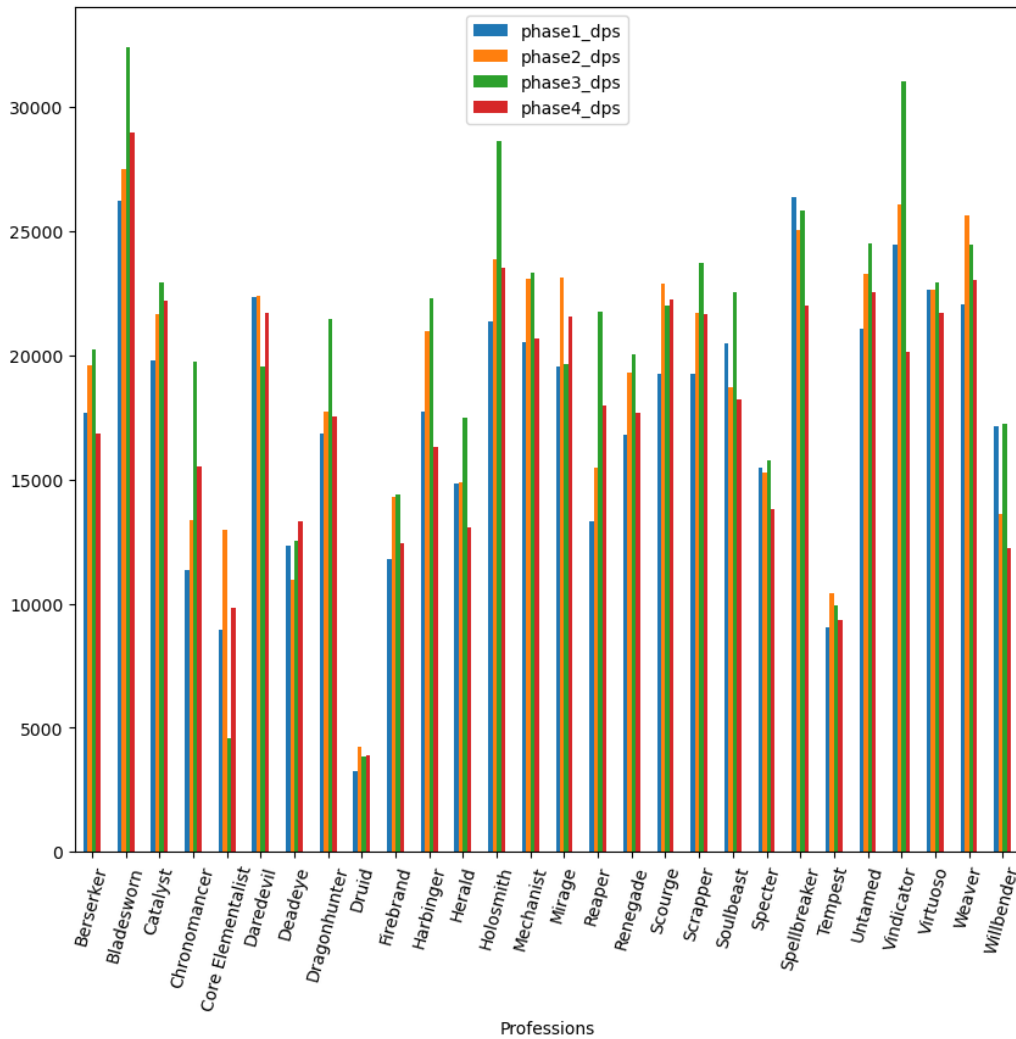

Figure 6: Gorseval The Multifarious

Figure 7: Sabetha The Saboteur

Some plots had to be adjusted due to bosses having too many phases, normally bosses have few phases, however, I had to adapt the phase system EliteInsights have, which is mainly obtained from the game itself.

In Sabetha's battle, there is a main mechanic consisting on destroying cannons that continuously attack the battle platform. If the platform falls due to damage, it will destroy and the battle will be lost. Therefore, two players are focused on destroying those cannons in an specific timing, while the rest of the team fights Sabetha and her minions.
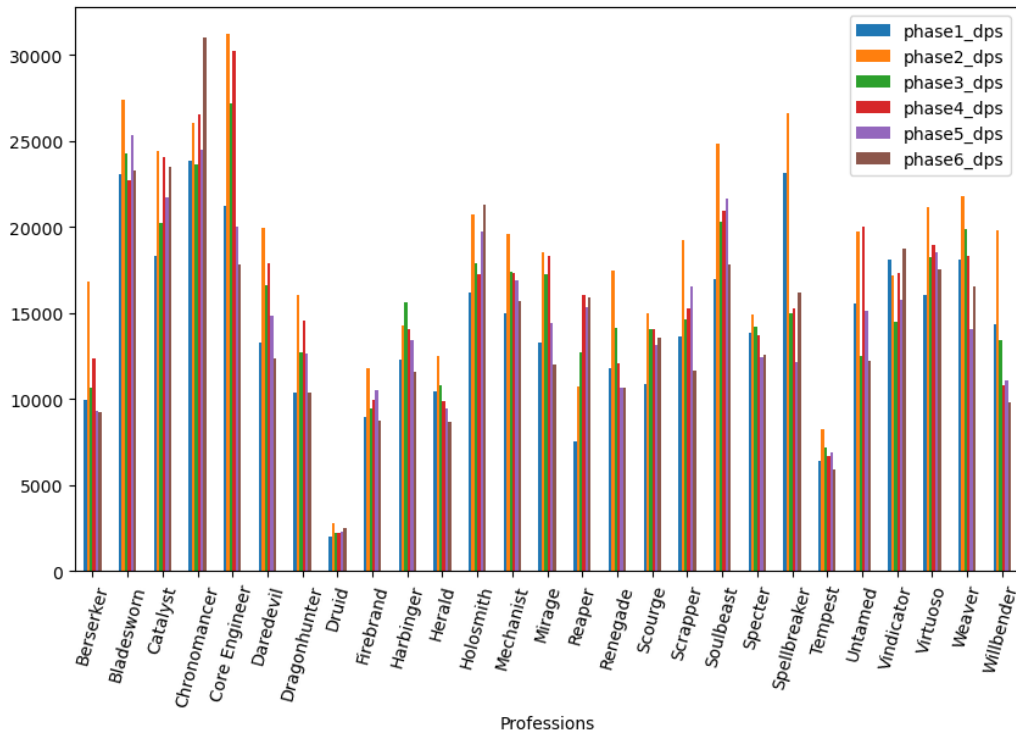
Figure 8: Slothasor

Slothasor is a boss with many phases due to his main mushroom mechanic. It consists of four mushrooms that need to be picked in order to clean areas and avoid stepping into venomous floor that kills the player slowly. When you pick this mushrooms, your character will stop doing damage to the boss and it will turn an enemy target for anyone on your team, therefore, players must be careful not to kill the teammate doing this mechanic.

Added to this mechanic, Slothasor will shake his body from time to time causing several conditions on players that must be cleaned. Slothasor will also smash the ground and create three blue areas that players need to dodge or else, they will be stunned for a while.

Last mechanic is an active ability that will appear on a random player, this ability is a poison that will drain player's life until he release the ability, and this must be done out of the group as it creates a venomous pool that will also damage other teammates.
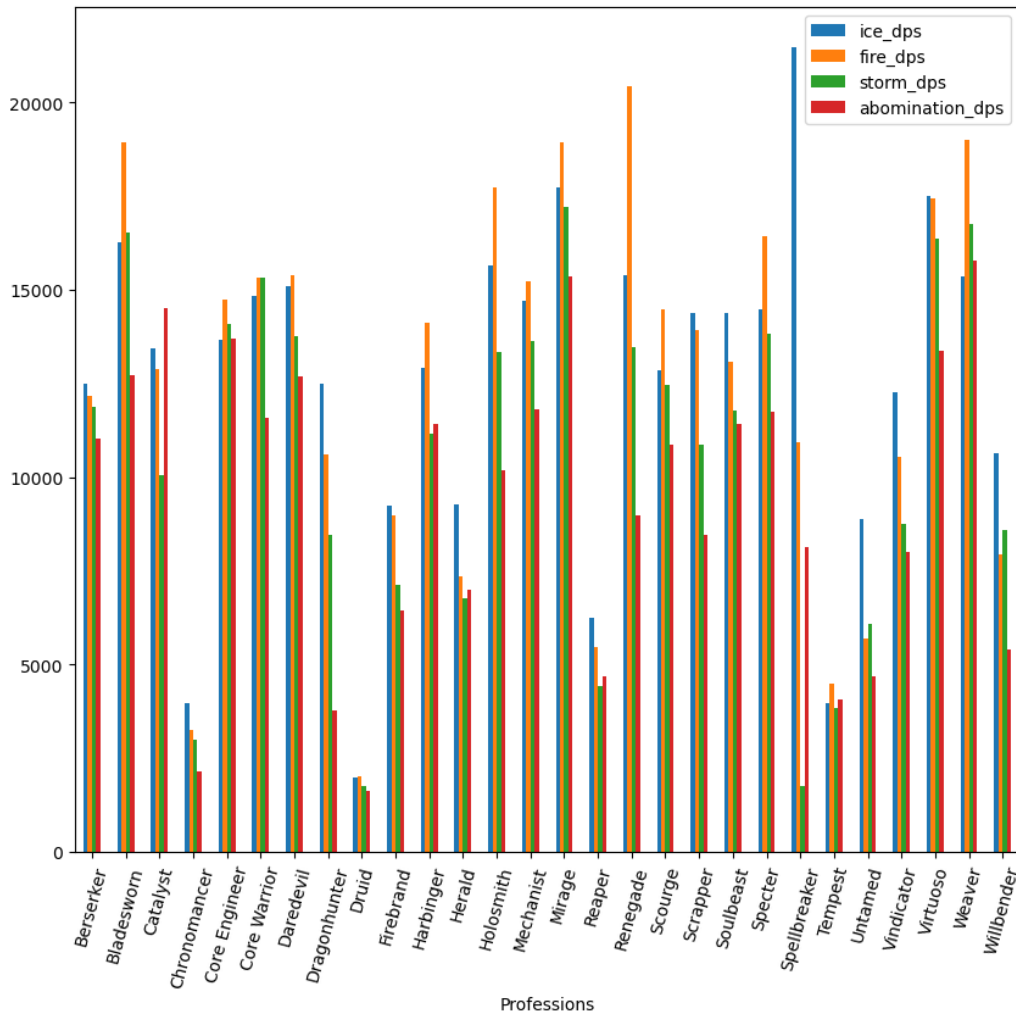
Figure 9: Matthias Gabrel

Matthias battle is quite special, as its phases are based on a weather happening on the battlefield and it affects players as well: ice will slow players, fire will create tornados damaging and stunning players... The abomination phase is the one that combines every effect happening before plus, Matthias becomes a bigger creature that will have the same movements as the original Matthias.
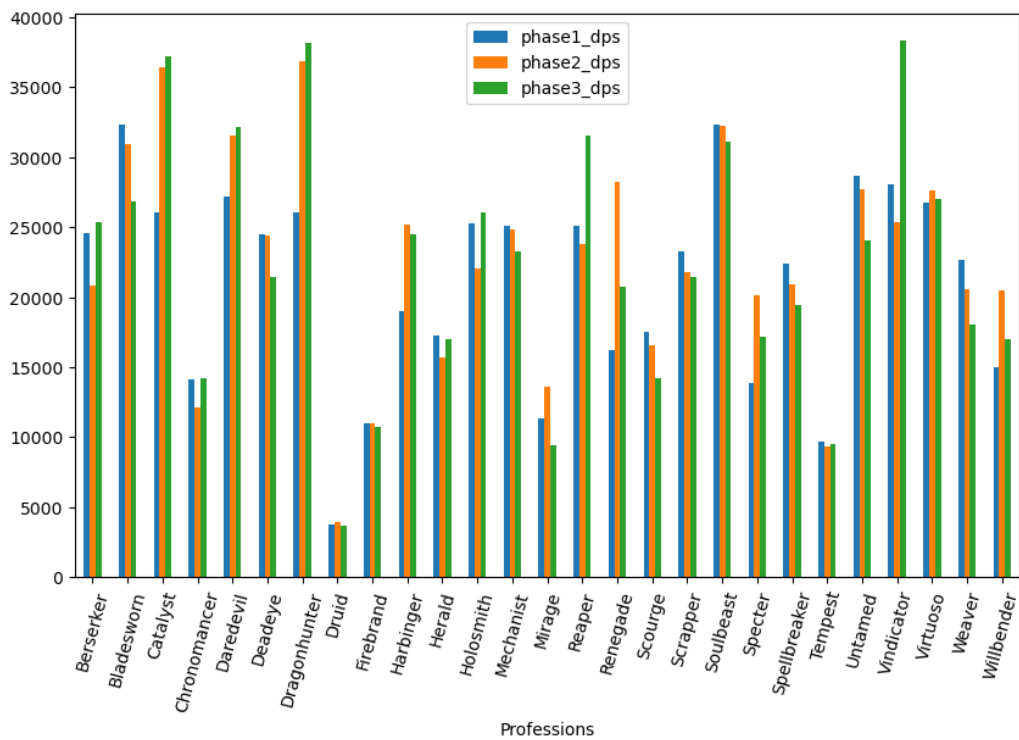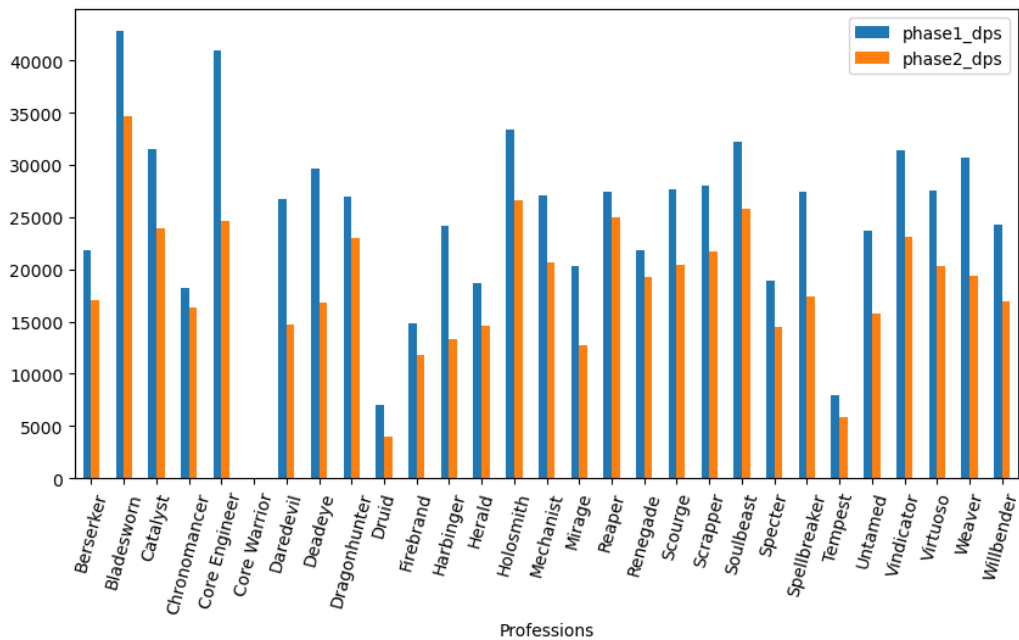
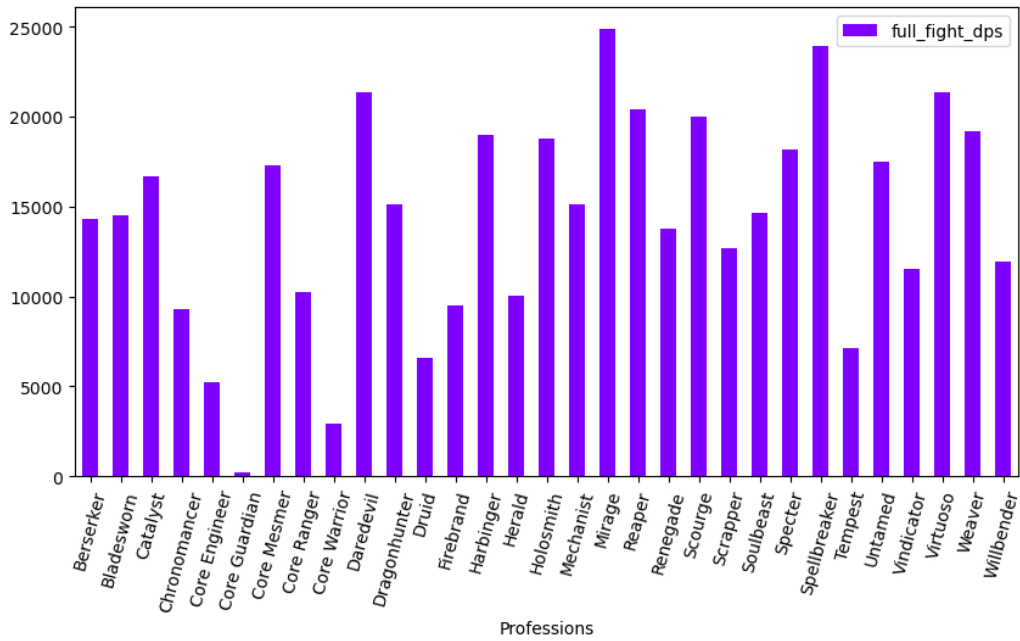Figure 10: Keep Construct

Figure 11: Xera
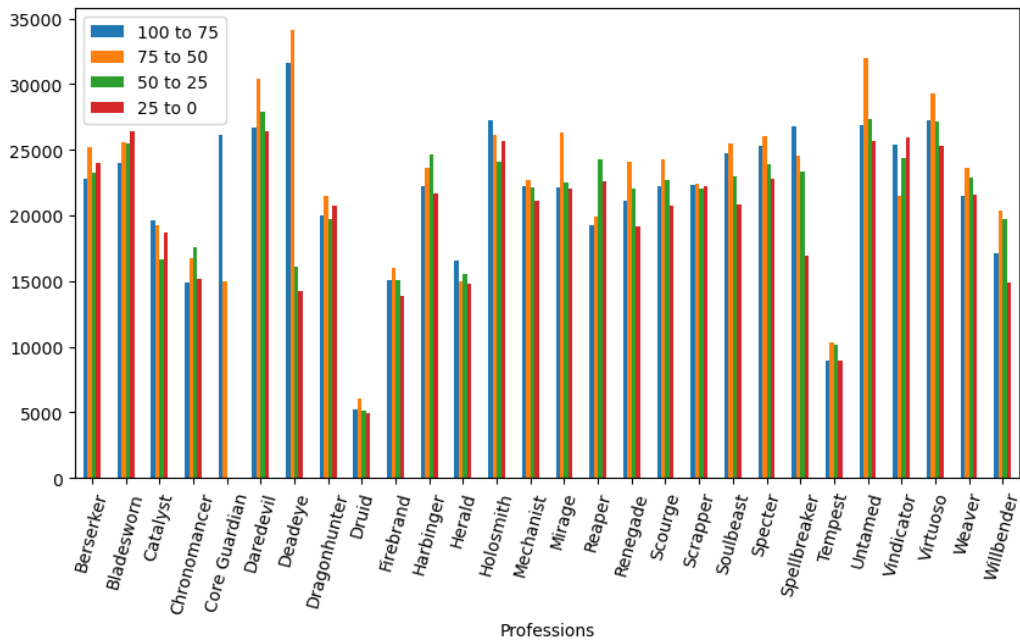
Figure 12: Cairn The Indomitable

Figure 13: Mursaat Overseer
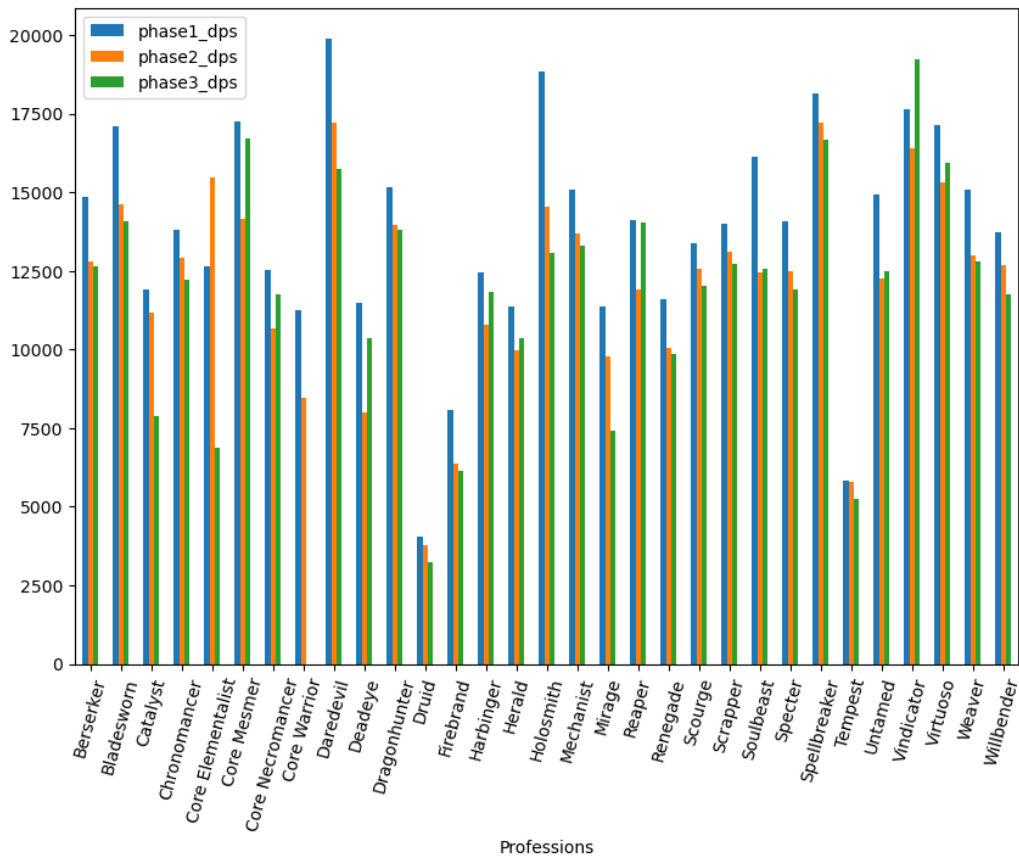
Figure 14: Samarog

As seen before, there are also bosses like Cairn that have a single phase, and this is due the kind of battle it has. Cairn battle it's based on a 100 to 0 battle, it has certain mechanics that everyone needs to do, but those mechanics doesn't stop some players from doing damage or being outside of the group needing to have in certain objectives in mind. A way to explain this would be Samarog; his battle is quite straight-forward, but, at every 33% HP lost he will exit the battlefield and another fight phase with two other enemies will began.

Figure 15: Deimos
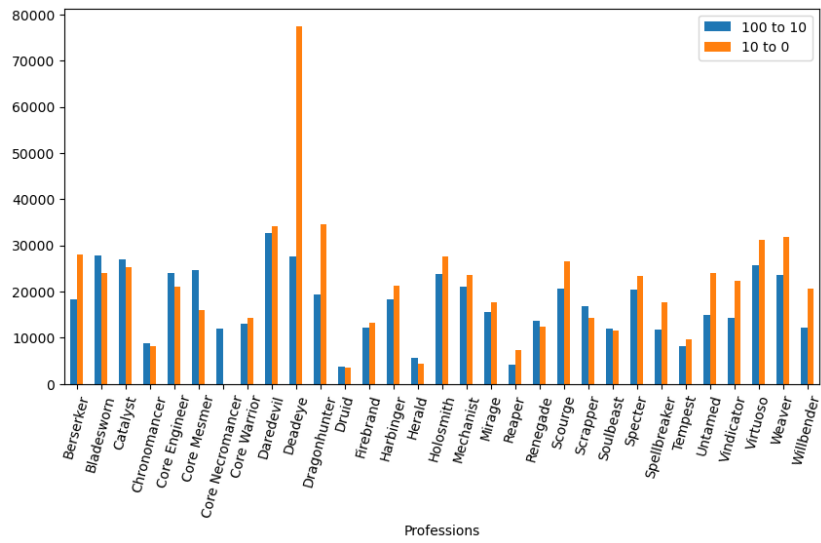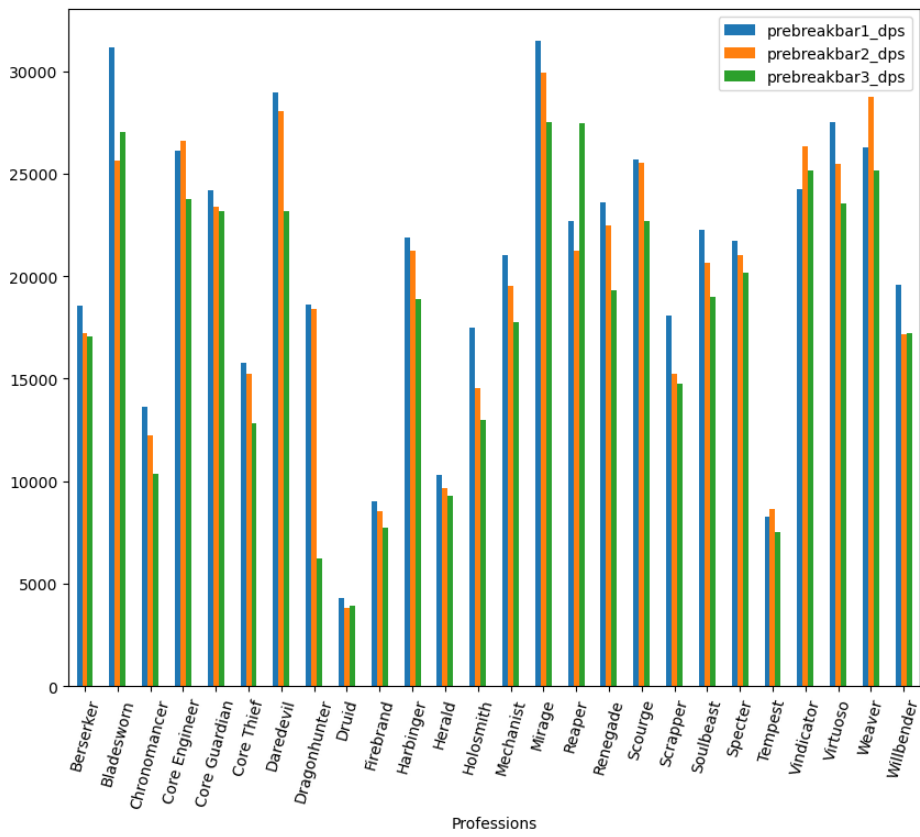

Figure 16: Soulless Horror
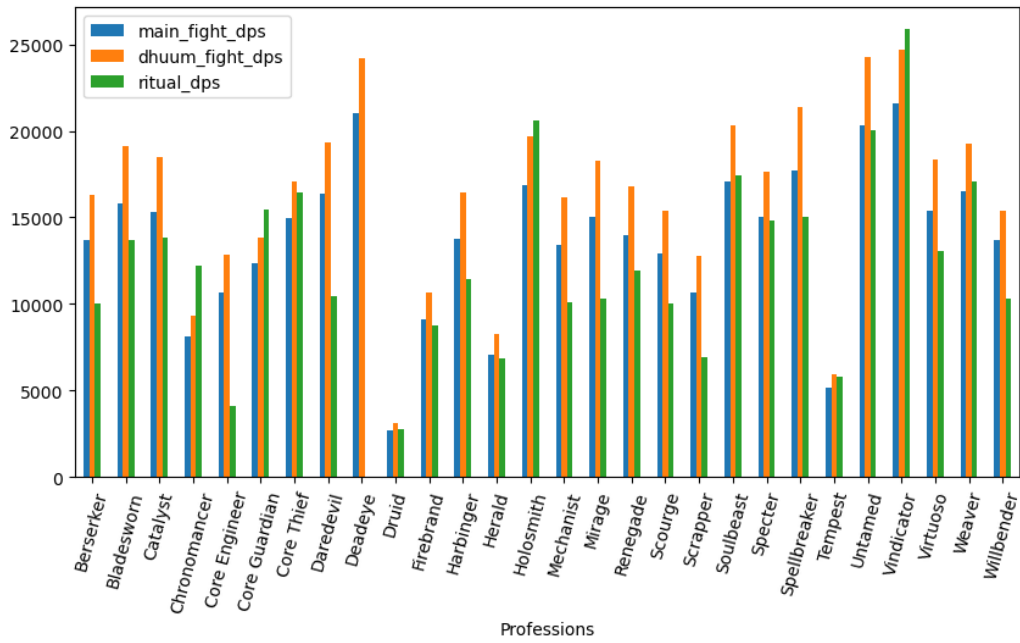
Figure 17: Dhuum
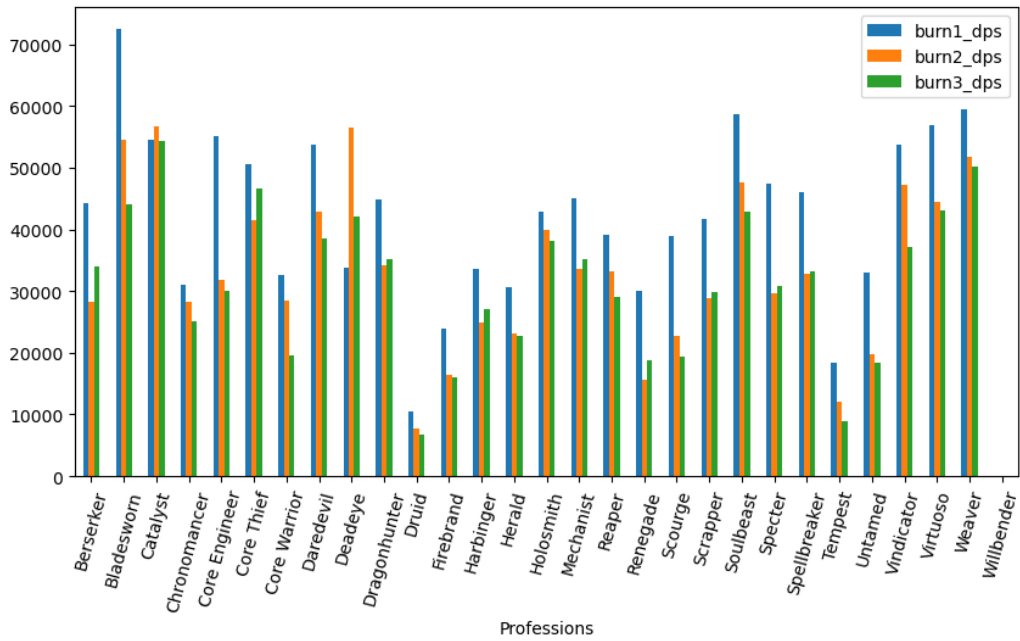
Figure 18: Conjured Amalgamate

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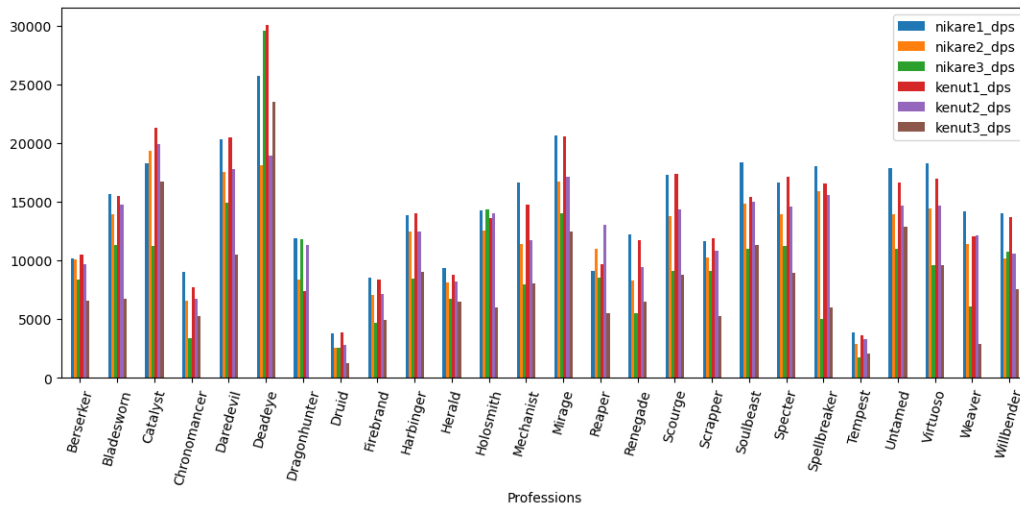
Figure 19: Twin Largos
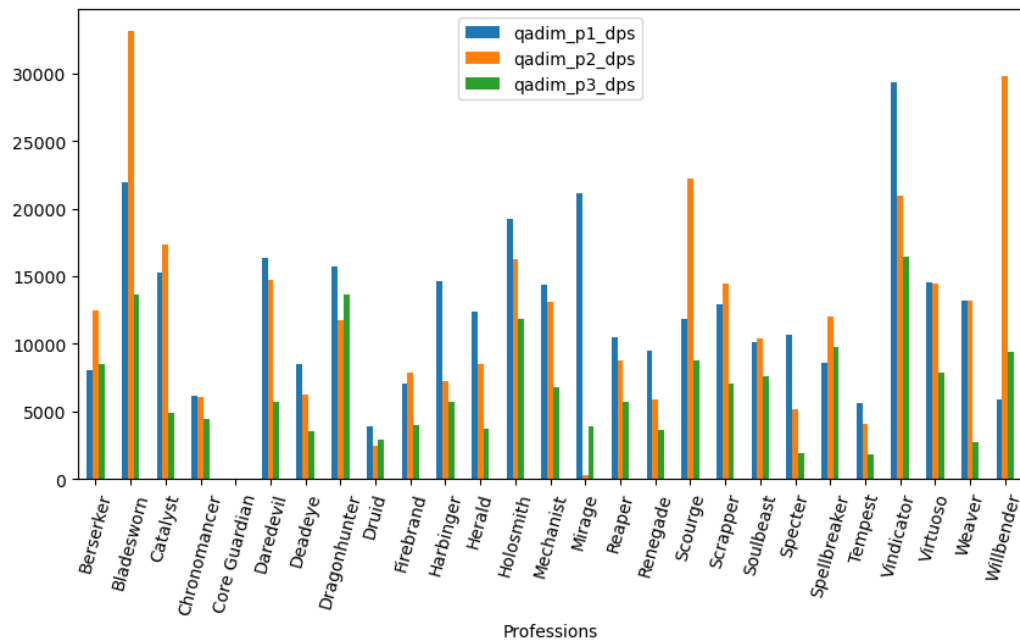
Figure 20: Qadim
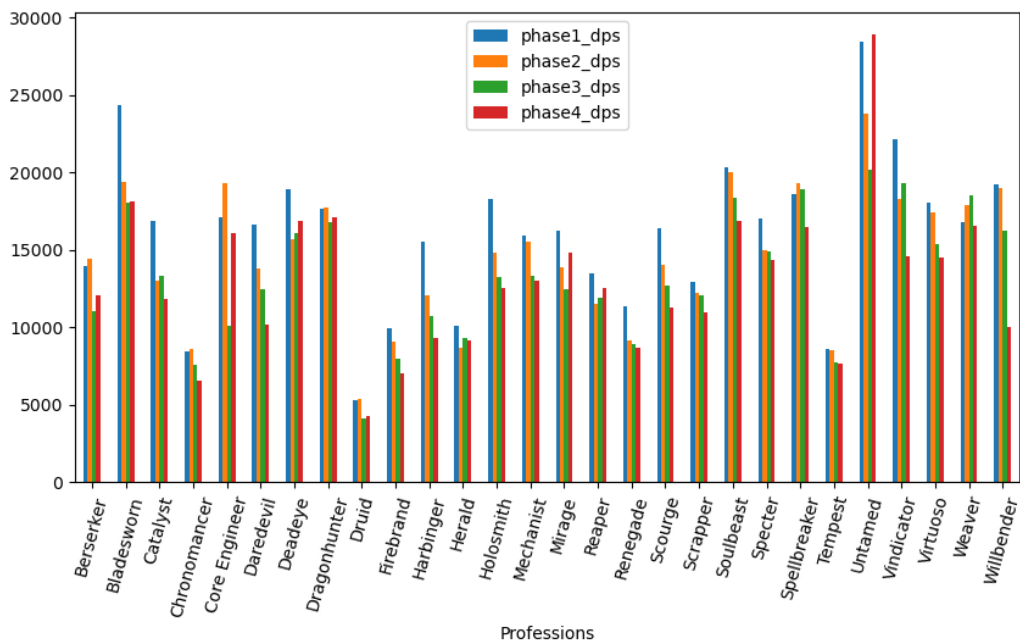
Figure 21: Cardinal Adina
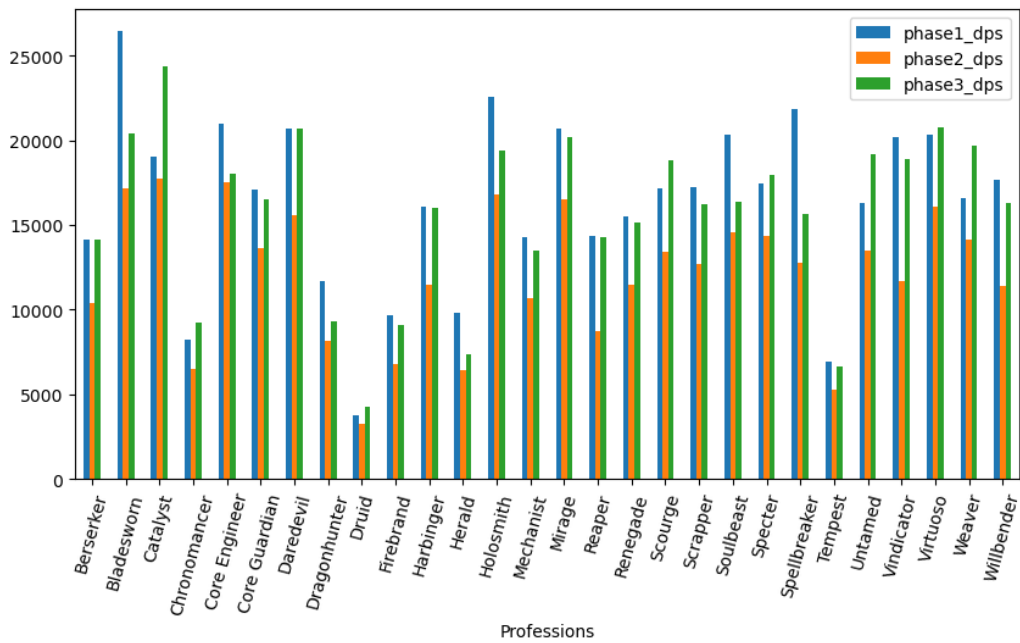
Figure 22: Cardinal Sabir
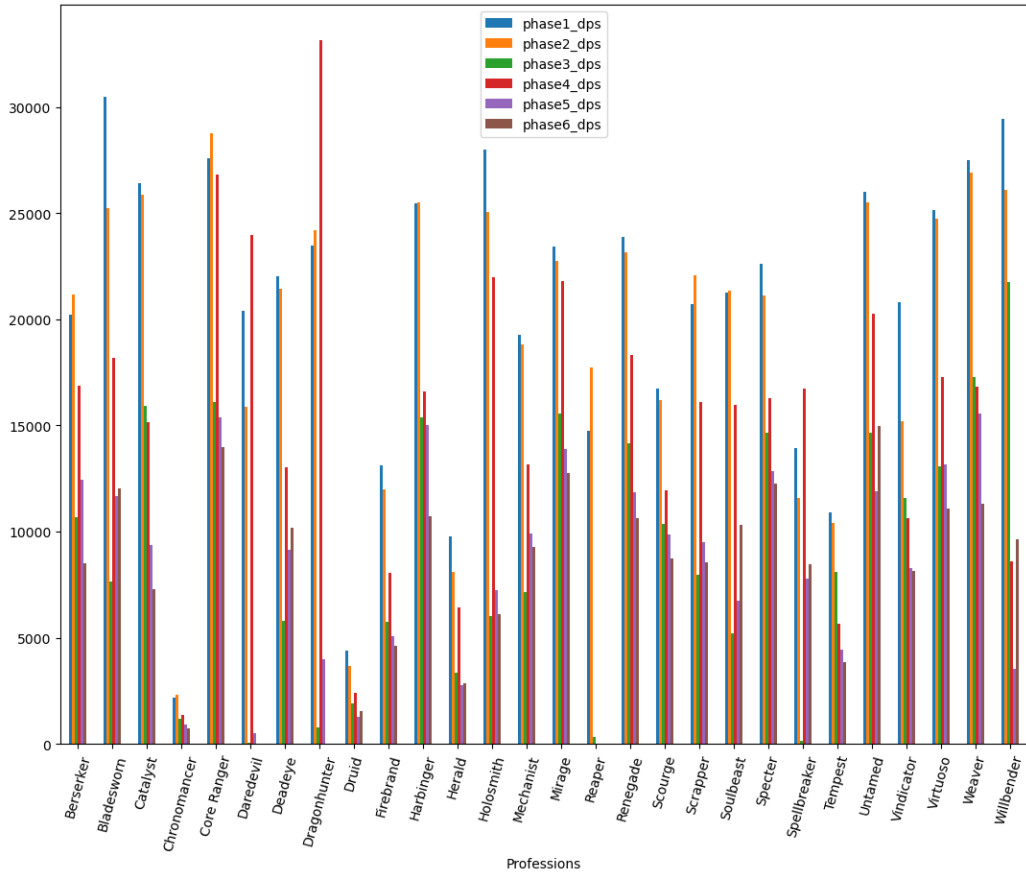
Figure 23: Qadim The Peerless

Twin Largos is a really special boss, because it actually contains two bosses in one fight, however, it is separated between extremely clear phases that, in game, are specified by platforms. Each boss, Nikare and Kenut, have three platforms each, which define their phases quite well.

As for Qadim The Peerless, classes like Scourges and Deadeyes are the ones playing a **Pylon** role and therefore, they are used almost a 90% of the times.

4.2.3 Analysis

After seeing all the previous graphs is quite obvious how some classes are used a lot more than others. This changes a lot as it is important to know that buffs and nerfs get done within the game after some time, which in the end keeps the game balanced.

Important: This whole project data analysis was made using the May to September 2022 status of the game, therefore, with future changes and also, more data, it's highly probable that results change.

On this side figure, I wanted to show data in a more understandable format. All this results are based on a global table and, as it portrays, **Mechanist** and **Firebrand** are the two classes with higher usage on a global percentage. As I explained earlier, Mechanist is one of the most versatile classes the game ever had, and yes, other classes like Firebrand is also quite versatile. In terms of damage, this also varies from encounter to encounter but some professions still stand out more since they can have an easier burst damage, which is essentially based on the class rotation.

	professions
Mechanist	0.32503%
Firebrand	0.1383%
Virtuoso	0.09851%
Scourge	0.05562%
Soulbeast	0.04016%
Druid	0.03439%
Specter	0.03125%
Mirage	0.03077%
Scrapper	0.02967%
Herald	0.02784%
Harbinger	0.02155%
Daredevil	0.02045%
Bladesworn	0.01961%
Renegade	0.01809%
Tempest	0.01657%
Berserker	0.01132%
Weaver	0.01122%
Chronomancer	0.00954%
Deadeye	0.00949%
Reaper	0.00792%
Holosmith	0.00755%
Dragonhunter	0.00687%
Willbender	0.00524%
Spellbreaker	0.00509%
Vindicator	0.00498%
Catalyst	0.00493%
Untamed	0.0044%
Core Engineer	0.00131%
Core Warrior	0.00068%
Core Guardian	0.00052%
Core Mesmer	0.00042%
Core Ranger	0.00026%
Core Thief	0.00021%
Core Elementalist	0.00016%
Core Necromancer	0.0001%

Rotations are the main damage
source classes have, as guild web-
pages like **Snowcrows** or **Luck-
yNoobs** made sure to optimize this
so every player can make use of the
class full potential by applying the correct ability order that creates several
effects such as buffs, field effects and combos.

Extra:
To understand what **Snowcrows** and **LuckyNoobs** does, I will leave links
to the pages but also, explain what they do and contribute to the Guild Wars
2 community. Since Fractals and Raids were release as new PvE modes, some
guilds and players tried to find ways to optimize how this stages could be
cleared. This is how this guilds were born, but they are not something new
as they always existed on other games like World Of Warcraft for PvP.

What they give to players are builds adapted to the current meta-game
and they also revise them from time to time so all build are also up-to-date
with new changes that Guild Wars team release into the game.

- SnowCrows **here**.

- LuckyNoobs **here**.