



An analysis of **hero statistics** across different ranks in

# OVERWATCH 2



Olive Belcher

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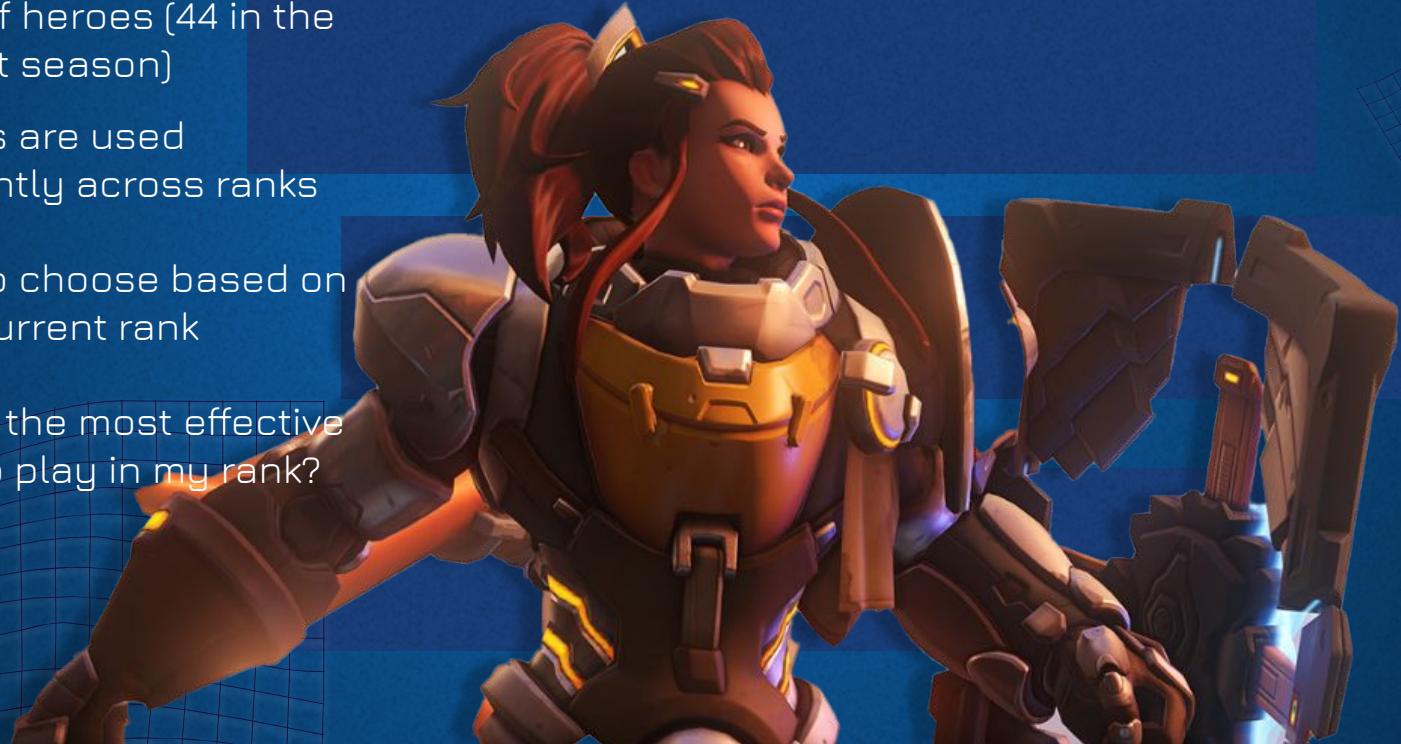




# MOTIVATION

Why does looking at and processing **hero data** really matter to players?

- ④ A lot of heroes (44 in the current season)
- ④ Heroes are used differently across ranks
- ④ Hard to choose based on your current rank
- ④ Who is the most effective hero to play in my rank?



# PREPROCESSING



Preprocessing the data was simple.

2 main data sets were used:

Overwatch Data Set (Seasons 1-4)

Overwatch Official Hero Statistics (Current Season)

For k-means cluster analysis, our **main focus** was on pick rate & win rate. Other columns removed.

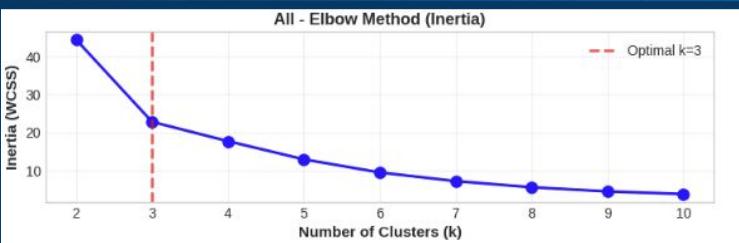
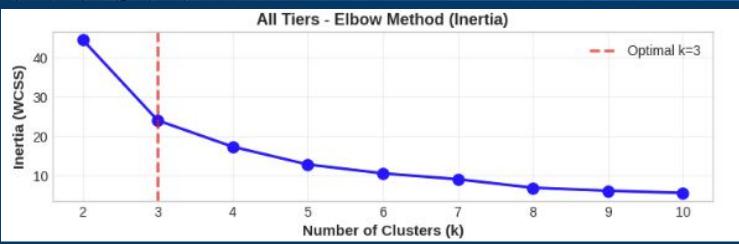
Simple conversions (remove % symbols)

Certain heroes also removed for consistency.



# K-MEANS CLUSTERS

The most optimal k for ALL datasets was  
(8 current season tiers by rank, 32  
historical season tiers by rank)



Current

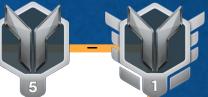
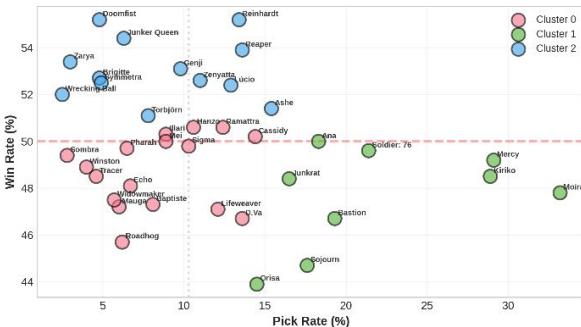
Historical



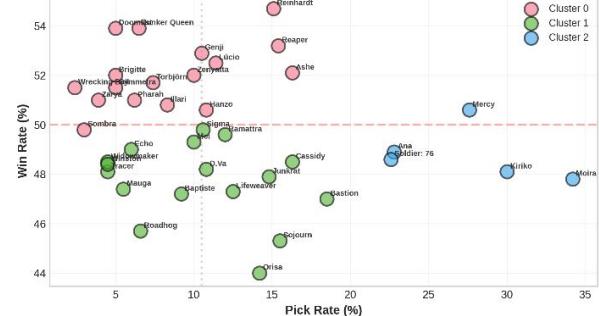
# K-MEANS CLUSTER



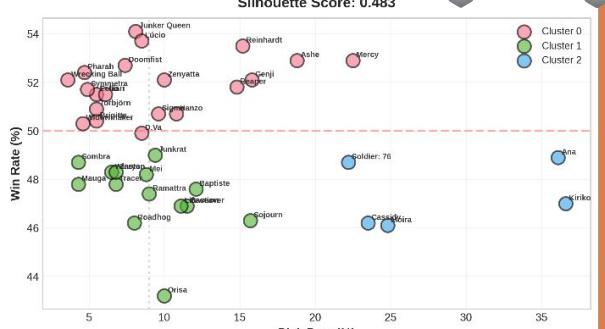
Bronze  
Silhouette Score: 0.367



Silver  
Silhouette Score: 0.431



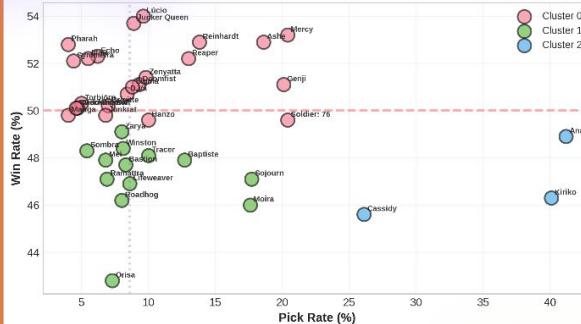
Platinum  
Silhouette Score: 0.483



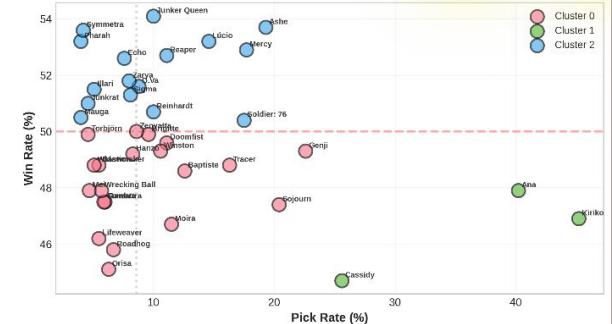
# CONTINUED...



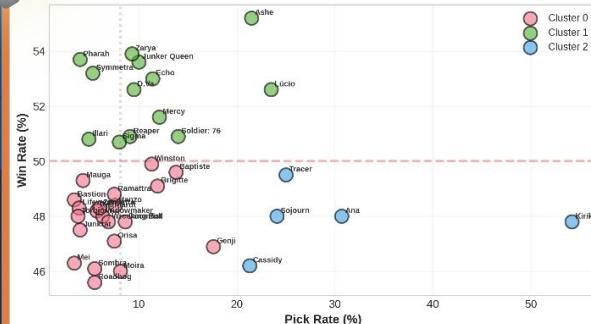
**Diamond**  
Silhouette Score: 0.429



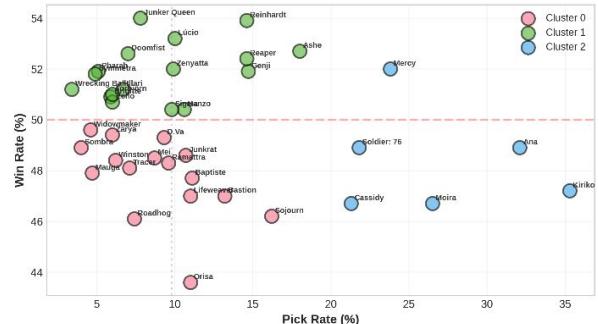
**Master**  
Silhouette Score: 0.415



**Grandmaster/Champion**  
Silhouette Score: 0.495



**All Tiers**  
Silhouette Score: 0.446



# HISTORICAL DATA

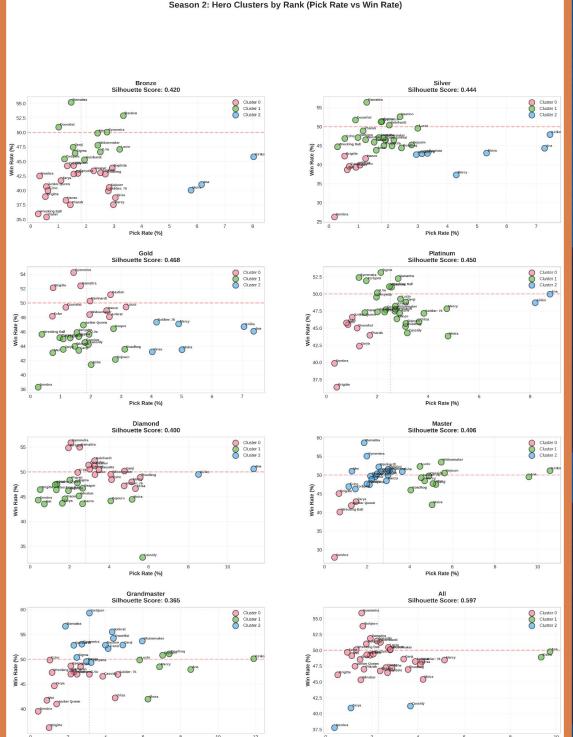


(There's a lot more!)

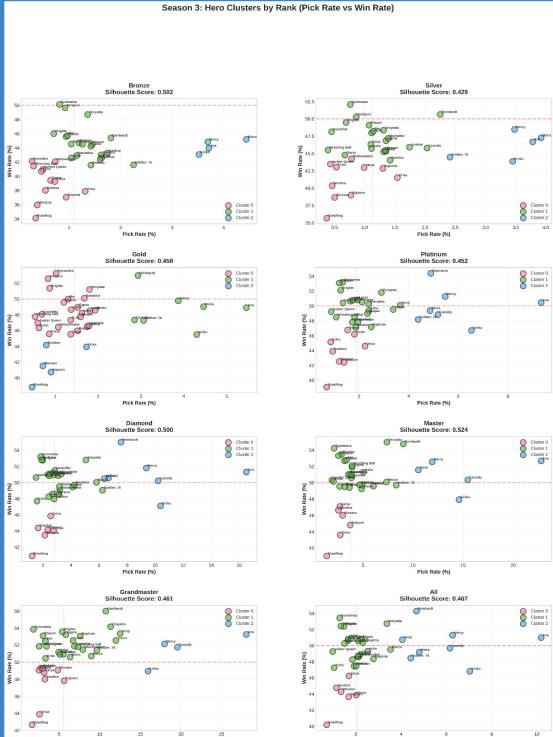
Season 1: Hero Clusters by Rank (Pick Rate vs Win Rate)



Season 2: Hero Clusters by Rank (Pick Rate vs Win Rate)



Season 3: Hero Clusters by Rank (Pick Rate vs Win Rate)





# FINDINGS

## 1. CLUSTER QUALITY - Silhouette scores indicate how well-separated the hero clusters are.

- ⌚ Higher scores = more distinct meta at that rank
- ⌚ Lower scores = more homogeneous hero performance

## 2. META ARCHETYPES (Common Cluster Patterns)

- ⌚ Meta Heroes (High win, high pick)
- ⌚ Average Heroes (Balanced win/pick)
- ⌚ Niche/Weak Heroes (Low win or low pick)



## 3. TEMPORAL EVOLUTION

⌚ Historical data shows how balance patches and meta shifts affected hero viability

⌚ Rising stars: Heroes gaining popularity over seasons

⌚ Fallen heroes: Previously dominant picks that declined

## 4. PRACTICALITY

⌚ **Bronze-Gold players:** Focus on high win rate heroes in your rank

⌚ **Platinum-Diamond:** Start incorporating skill-dependent picks

⌚ **Master-GM:** Leverage high skill ceiling heroes that excel at top ranks

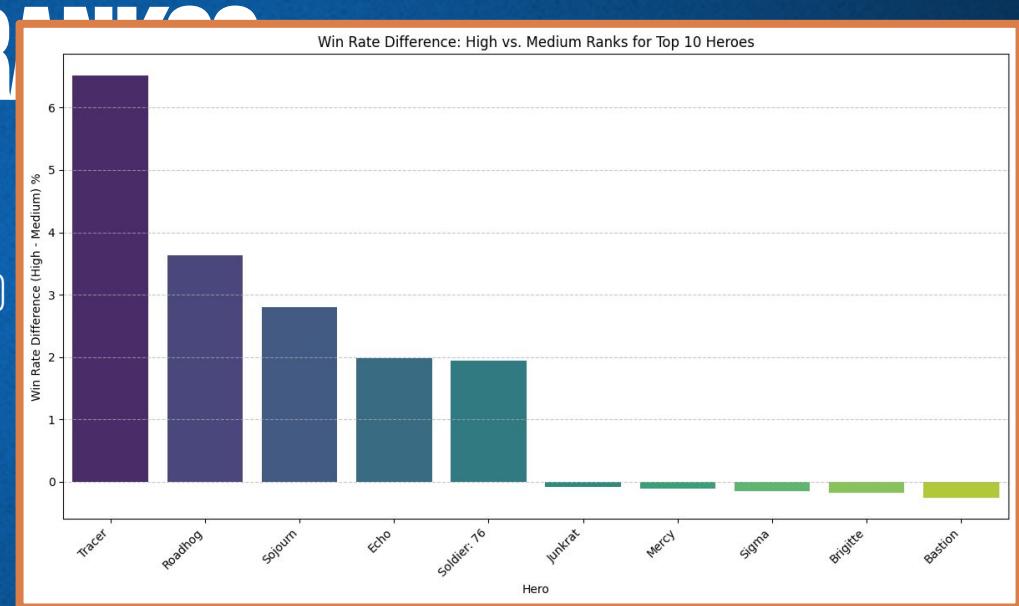
# WHAT SEPARATES HEROES AT DIFFERENT RANKS?





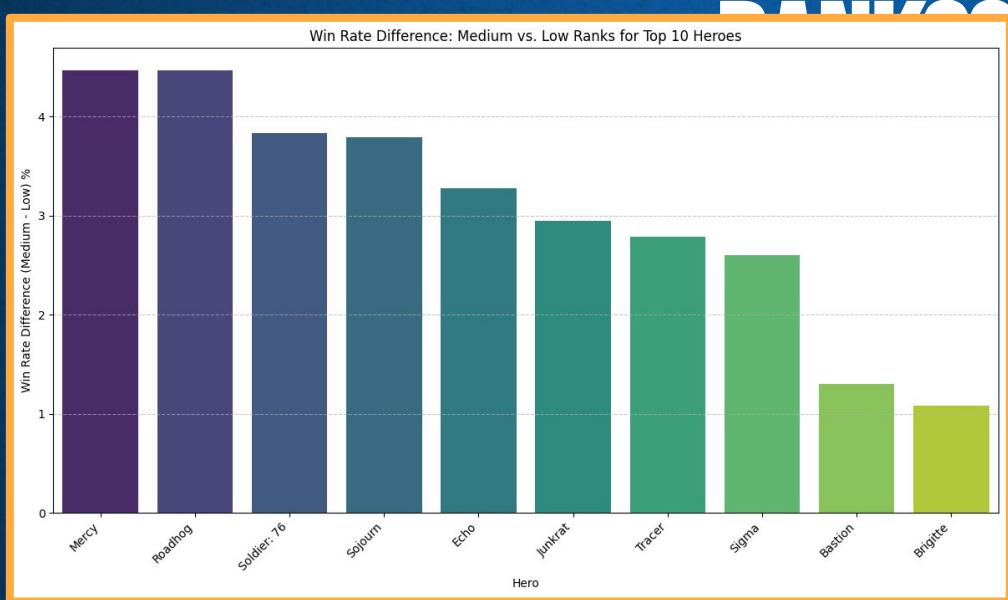
# WHICH HEROES ARE BETTER AT HIGH RANKS

- Win rate comparison between high ranks (Master, Grandmaster) and medium ranks (Gold, Platinum, Diamond)
- 5 heroes with the largest difference in win %
- 5 heroes with similar win %





# HOW DO THEY SHAPE UP AGAINST LOW RANKS?



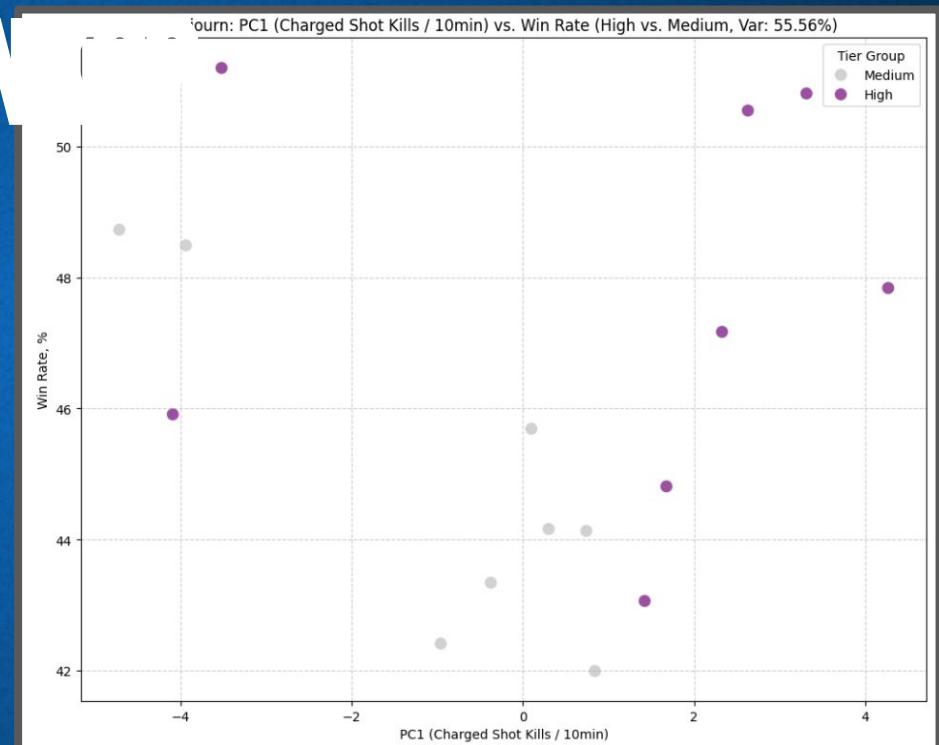
- Same heroes compared
  - between medium and low ranks (bronze and silver)
- All heroes appear to experience more success
- Sign of a trend?

# WHICH FACTORS SEPARATE

# RANK

- We used PCA to determine what separates heroes the most.

- We then used this data to identify areas players could improve in order to rank up.



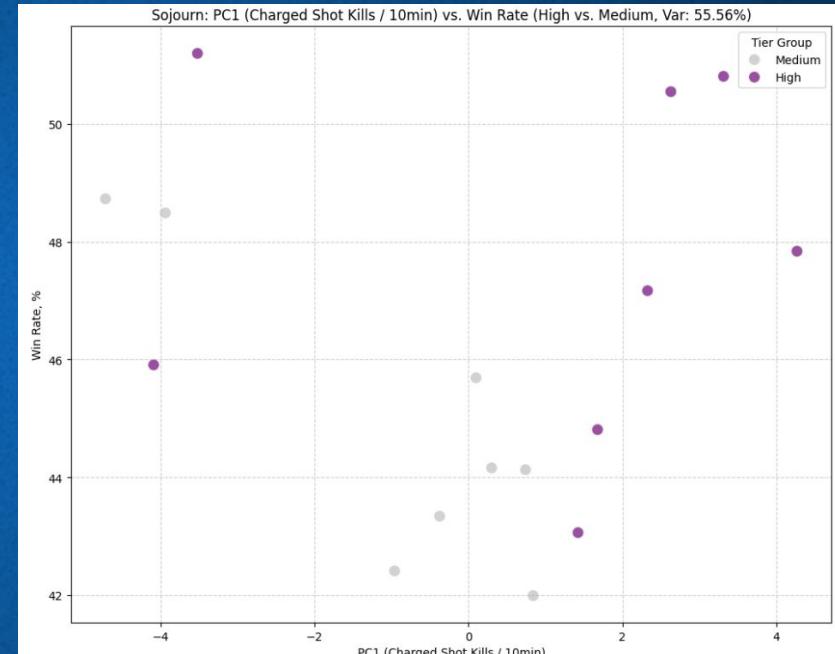
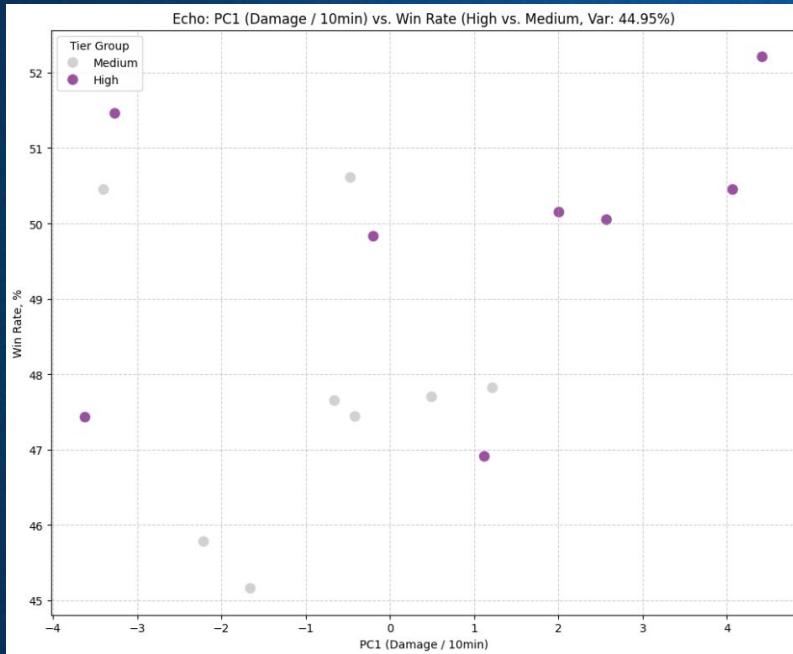


# THE METHOD

- ④ Before applying PCA, data from ranked seasons 1-4 were loaded and separated by hero.
- ④ Ranked groups were combined into their respective levels (low, medium, and high)
- ④ Hero-specific data was cleaned, removing all columns irrelevant to the hero.
- ④ PCA was conducted on each of the 10 identified heroes, first between high and medium ranks, then between medium and low ones.



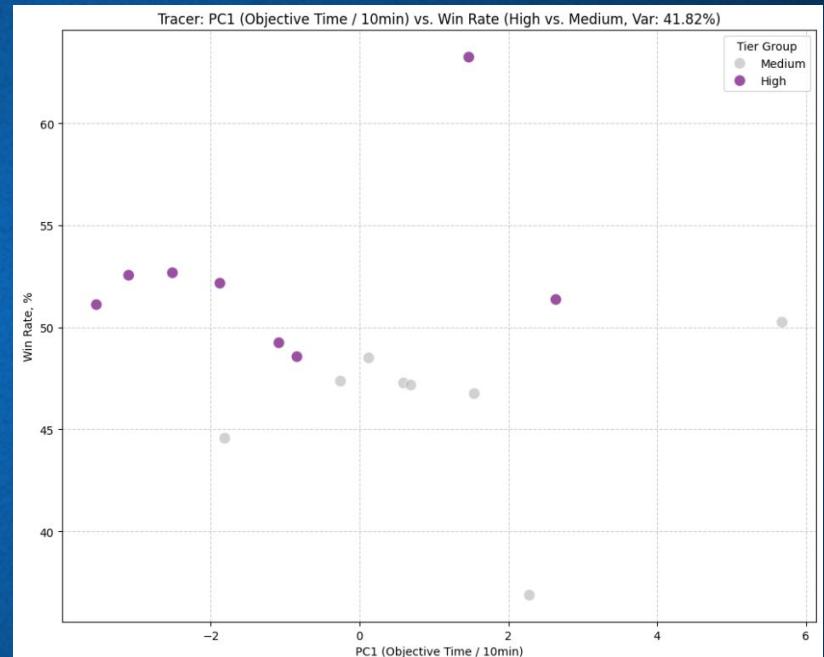
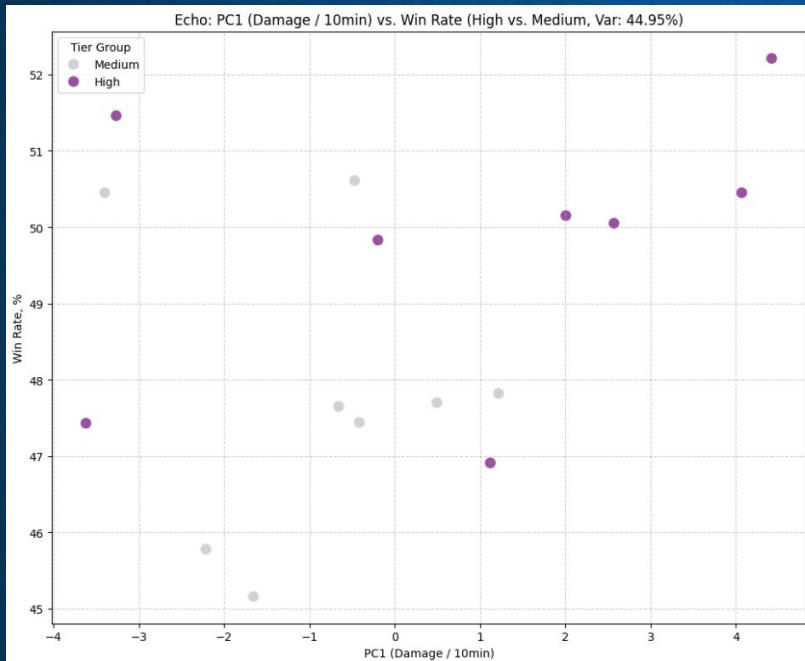
# HIGH-DIFFERENCE HEROES



Across the 5 heroes with the greatest difference in win rate, some had broadly predictable components while others were highly specific.



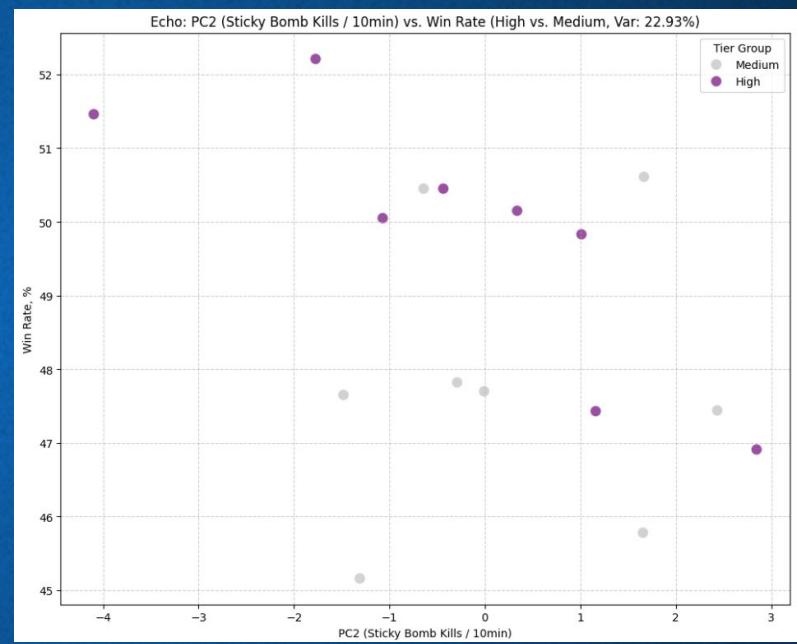
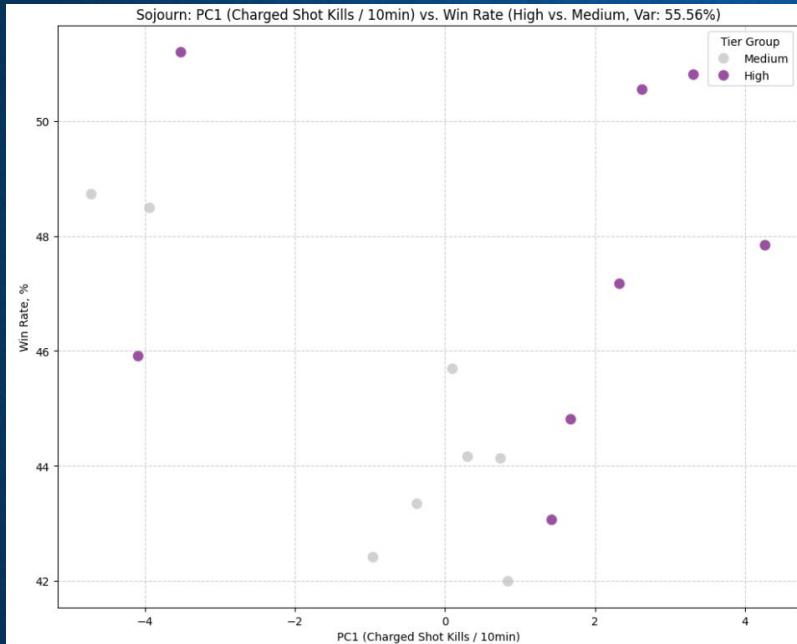
# BROAD FACTOR EXAMPLES



General performance indicators such as damage, deaths, objective time, etc. can be seen as important to all characters, but show differing levels of importance per hero.



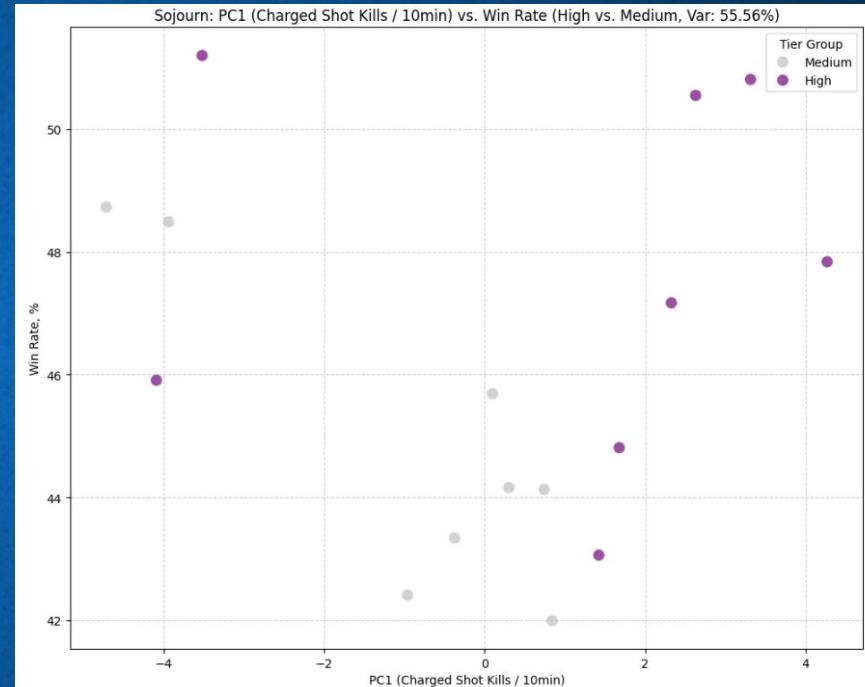
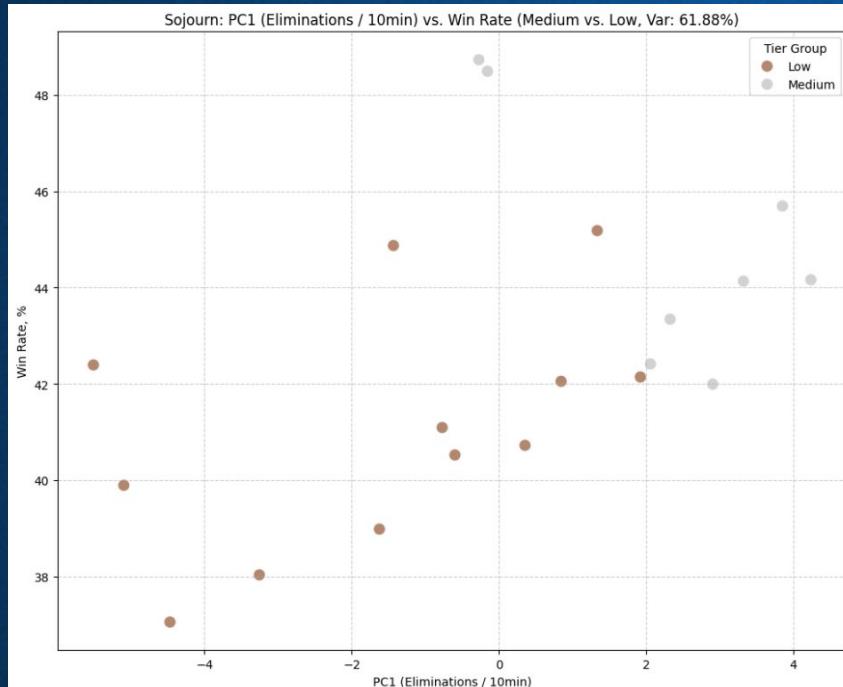
# HIGHLY SPECIFIC EXAMPLES



Highly specific components show factors related to abilities unique to the hero, showing a difference in kit usage instead of typical performance.



# COMPARED TO LOW RANKS



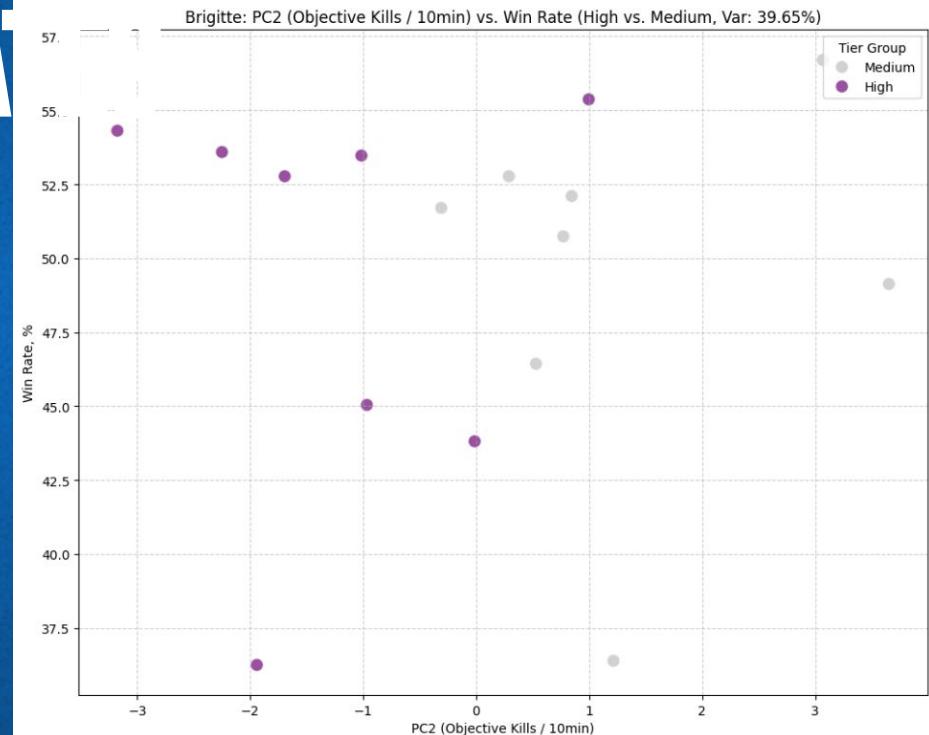
Lower ranks unsurprisingly tended to find more success through improvements towards the more general statistics, which could show an emphasis on fundamentals over specialization.



# HEROES WITH SIMILAR WIN

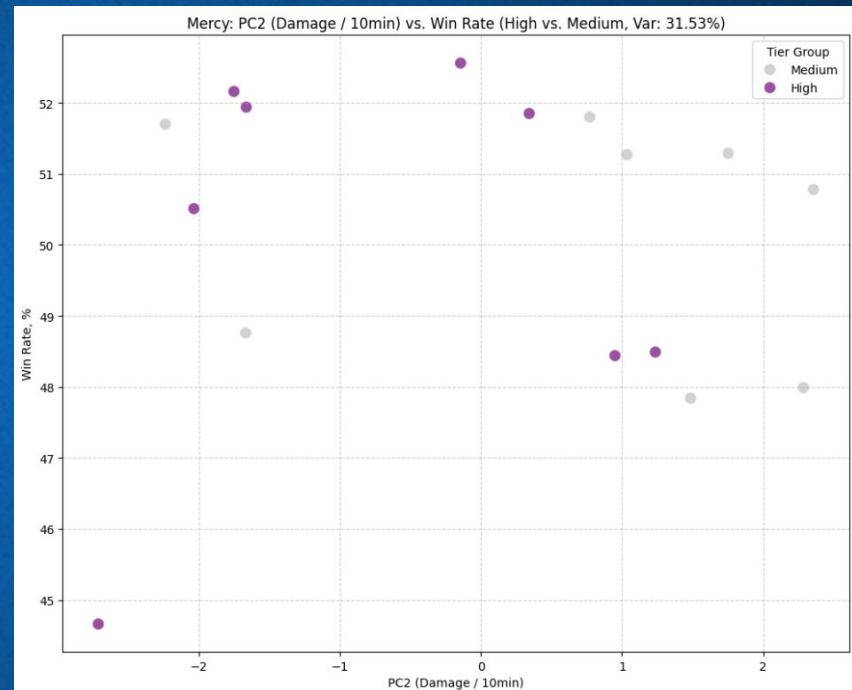
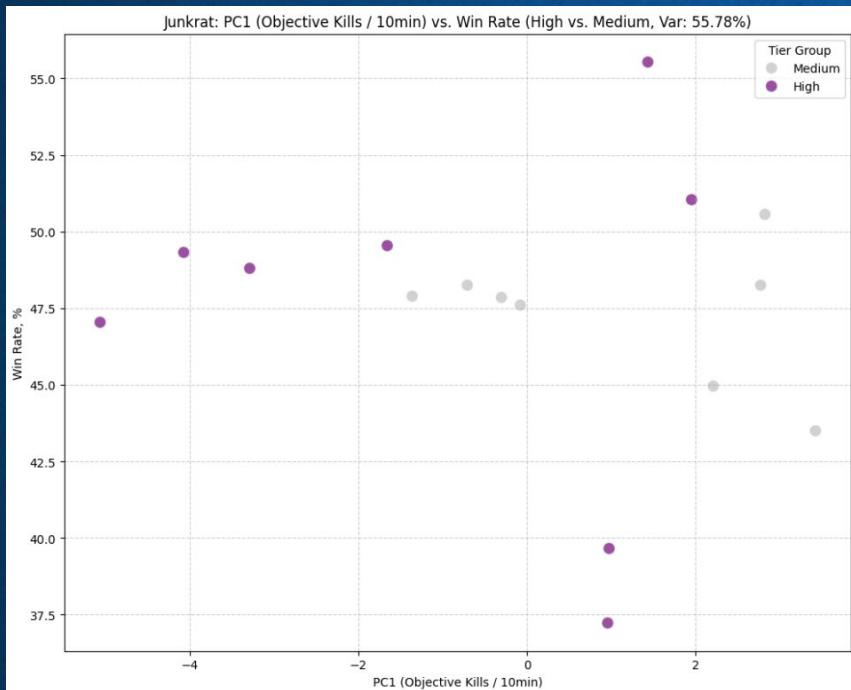
## RAT

- Understanding the differences in hero utility from rank to rank.
- Although the hero might have a similar win rate, what makes them useful might change.
- Useful for players to adjust their playstyle as they rank up.



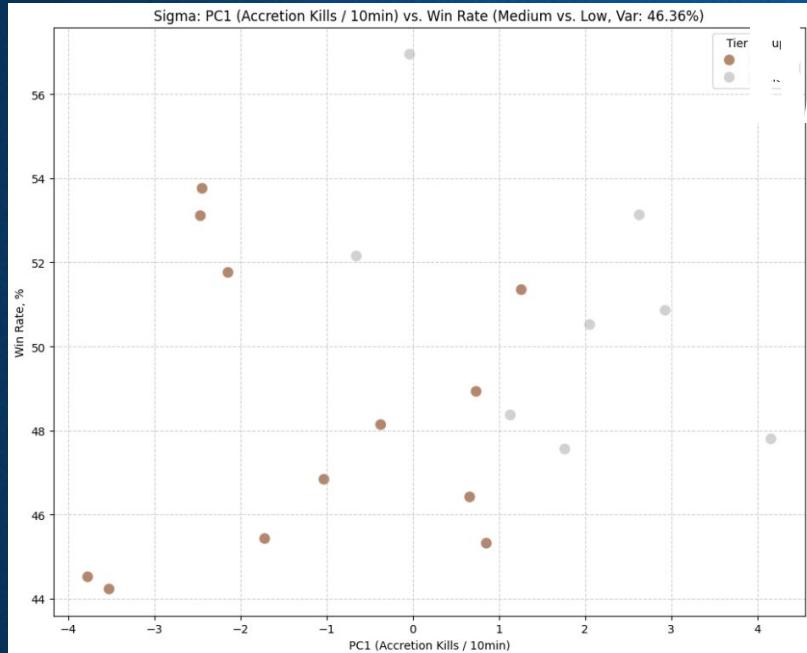


# EXAMPLES

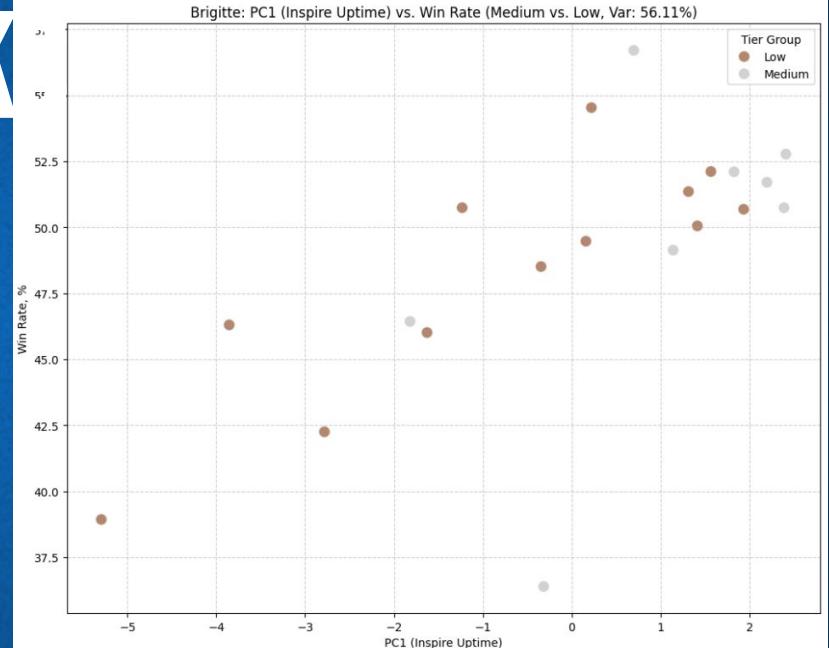


Junkrat sees much more success finding kills away from the objective in higher ranks and Mercy can get away with dealing more damage in lower ranks.

# COMPARED TO LOWER



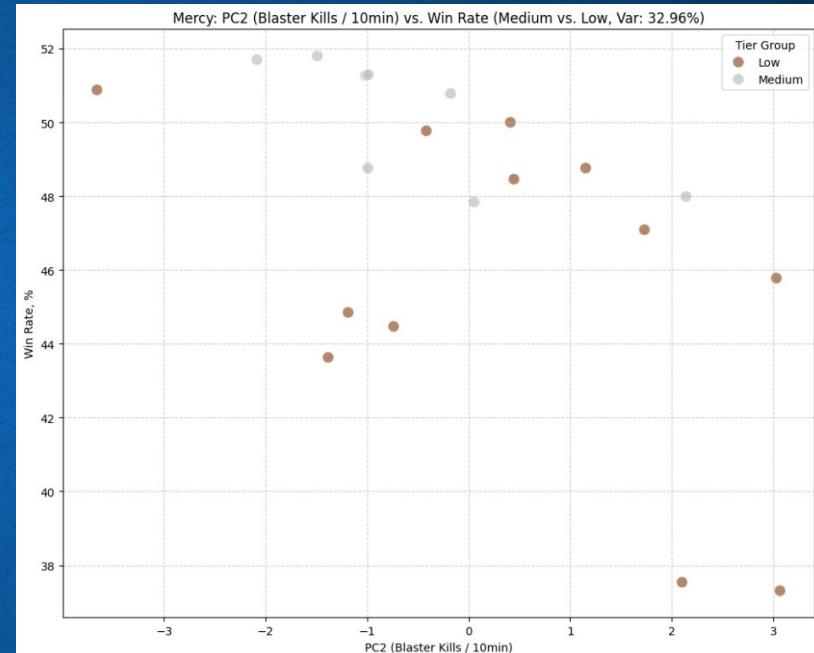
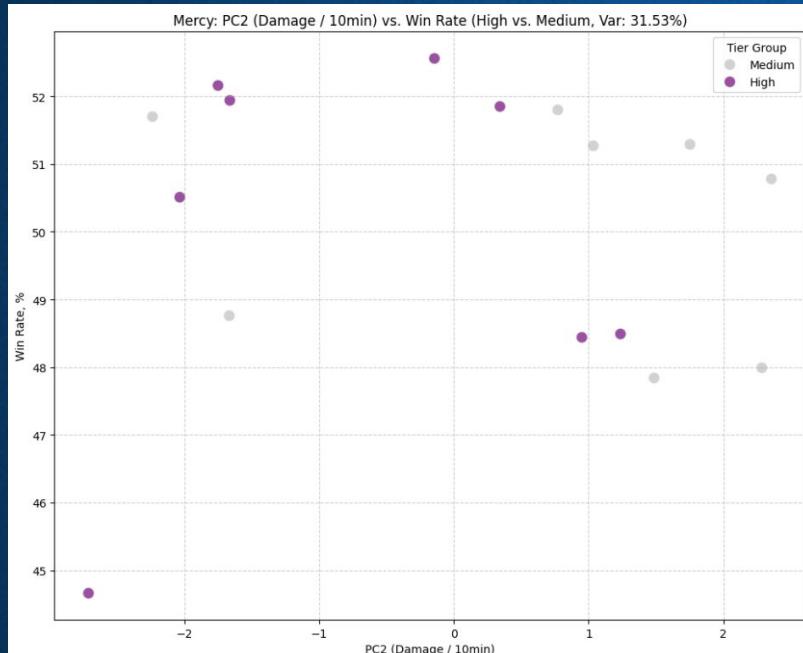
# ANK



The primary factors of variance were more frequently the unique attributes.



# OVERLAPS



In both high-medium and medium-low comparisons, the Hero that seemed to benefit the most from the same changes was Mercy, where the success was found more often and in higher ranks by dealing less damage.



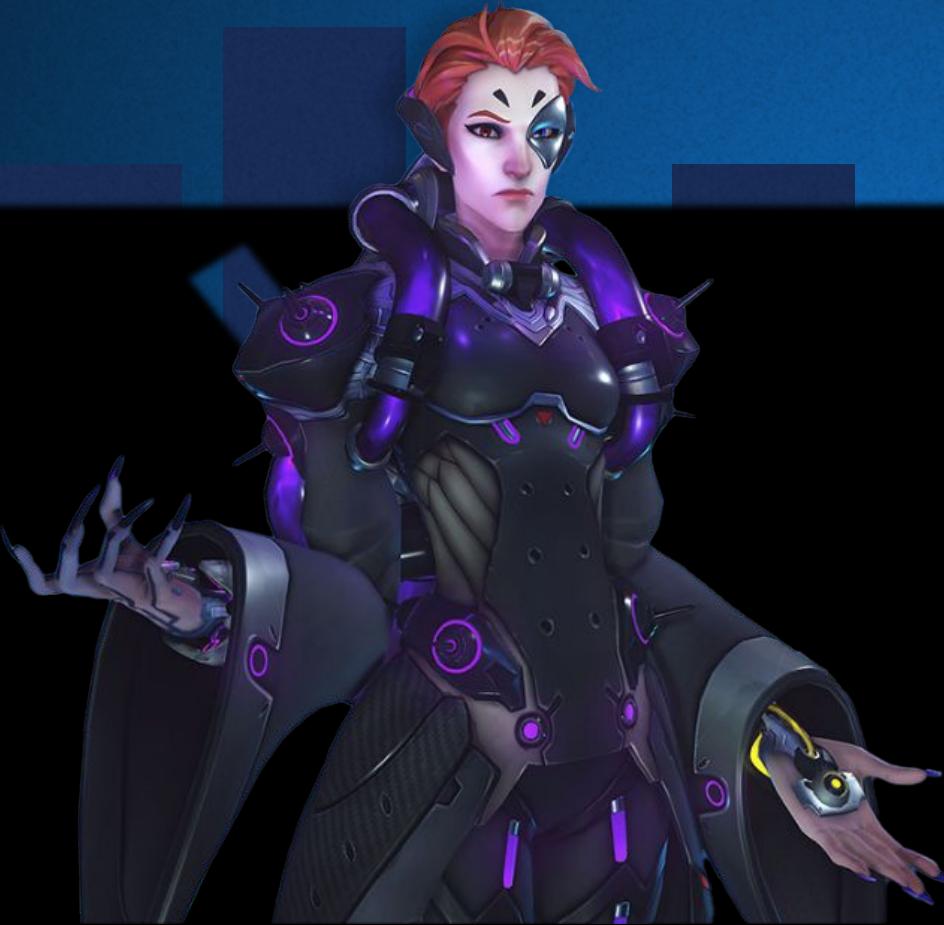
# WHAT DOES THIS MEAN FOR THE PLAYER?

When trying to go from medium to high ranks (average players):

- ⦿ Utilizing a hero's kit is important for many heroes that see greater success in high ranks than lower ones.
- ⦿ Success can be found in different ways for a hero depending on the rank they are played at.

When trying to go from low to medium ranks (below-average players):

- ⦿ Heroes see the greatest difference in success based on understanding of fundamentals (survability/offensive impact)
- ⦿ Heroes that are equally effective across ranks tend to find increasing success through kit utility while climbing ranks.



**THANK  
YOU**