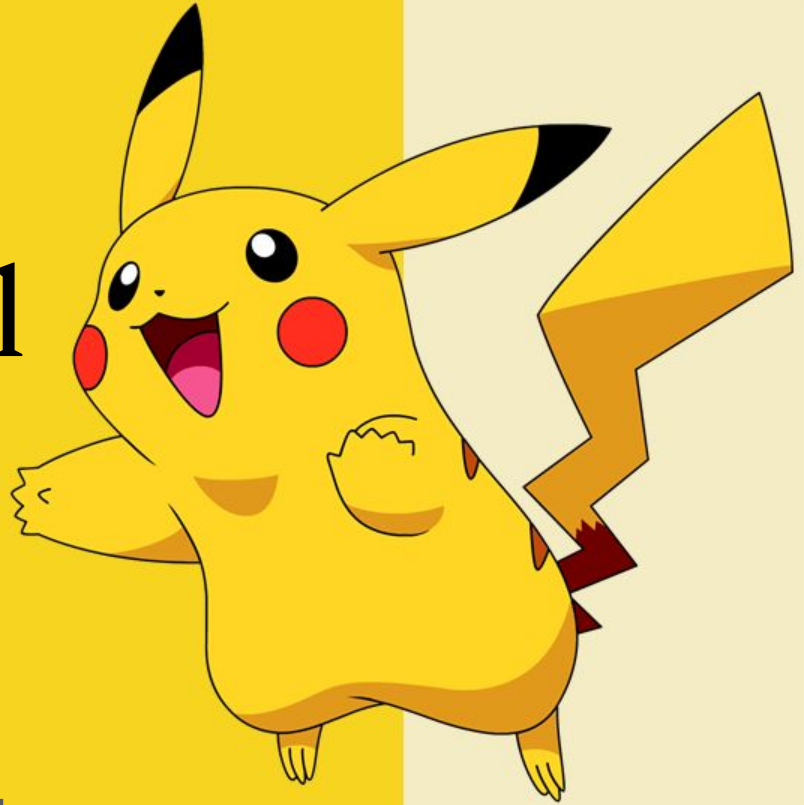


Competitive Pokemon Predictive Model

Can you predict who will win a Pokemon battle based on the teams they have?



Zachary Evans, Timothy Lencioni,
Calvin Pugmire, Carlos Borja Leano

Data Collection and Cleaning

Pokemon Data Downloaded from Kaggle and added to during Cleaning

Battle Data received from Pokemon VGC League and Scraped from battle simulator website Pokemon Showdown.



Urshifu-Rapid-Strike / Landorus-Therian / Amoonguss / Kingambit / Flutter Mane / Ogerpon-Hearthflame							Ogerpon-Hearthflame / Farigiraf / Landorus-Therian / Urshifu-Rapid-Strike / Flutter Mane / Rillaboom					
#	Name	Type 1	Type 2	Total	HP	Attack	Defense	Sp. Attack	Sp. Defense	Speed	Gen.	Legendary
1	Bulbasaur	Grass	Poison	318	45	49	49	65	65	45	1	FALSE
7	Squirtle	Water		314	44	48	65	50	64	43	1	FALSE

Single and Multi Layer Perceptron

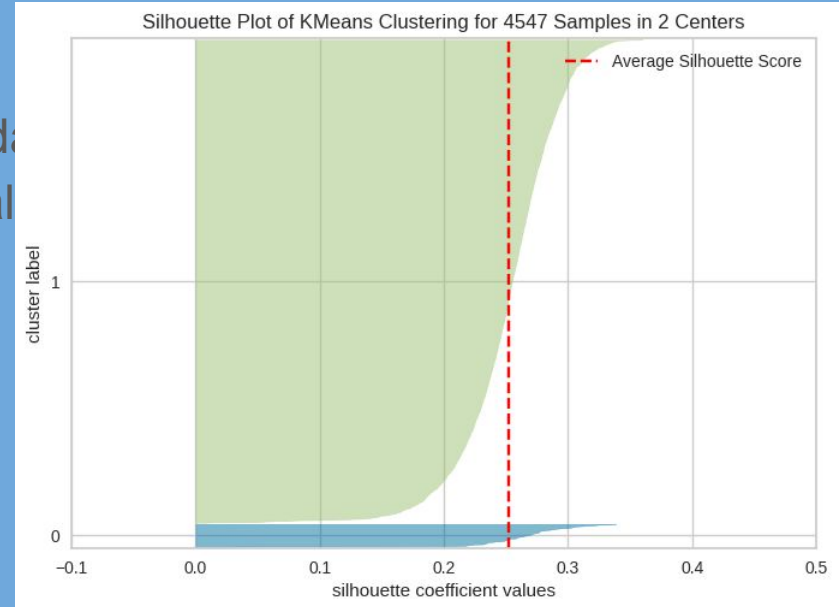
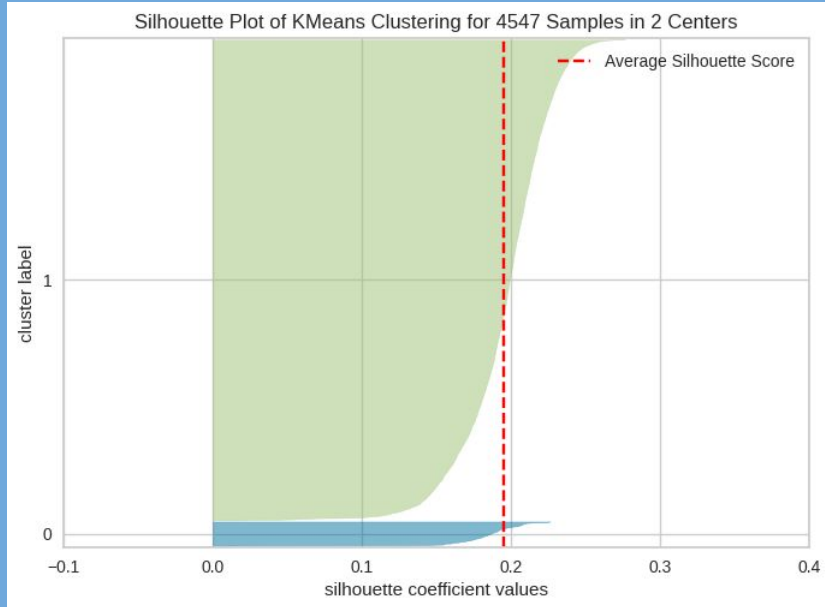


```
[[-1.154e+02  2.460e+01  3.350e+01  1.850e+01 -6.100e+00  5.400e+00
 -7.680e+01 -7.300e+01 -1.733e+02 -1.250e+02 -3.000e-01  1.020e+01
 -7.210e+01 -8.840e+01 -9.600e+00  8.700e+00  1.790e+01  3.830e+01
 -9.400e+01 -3.090e+01  7.920e+01 -5.940e+01  5.630e+01  6.310e+01
 -1.206e+02  7.230e+01 -2.540e+01  3.400e+00 -2.240e+01  3.530e+01
  3.000e+01 -7.820e+01  8.250e+01  1.733e+02 -8.760e+01 -5.330e+01
  2.630e+01  1.170e+01  2.600e+00  2.860e+01 -3.440e+01 -1.942e+02
  5.600e+00 -1.140e+01 -5.120e+01 -2.830e+01 -6.280e+01 -1.123e+02
 -5.490e+01 -1.130e+01  5.310e+01  1.320e+01 -3.180e+01  2.000e-01
  4.930e+01  7.000e+01  2.083e+02 -2.330e+01  1.500e+00 -2.630e+01
 -8.490e+01  1.180e+01  5.100e+00  3.330e+01 -1.535e+02 -6.870e+01
  9.500e+00  4.880e+01  1.490e+01 -9.200e+00 -3.860e+01 -3.760e+01
  3.058e+02  1.600e+00  1.710e+01  7.010e+01  3.650e+01  4.270e+01
 -5.670e+01  2.020e+01 -1.070e+01 -2.970e+01  8.910e+01 -4.140e+01
 -2.480e+01  5.560e+01  5.150e+01  7.930e+01  1.029e+02  1.288e+02
  4.880e+01  7.740e+01  1.531e+02  3.220e+01  4.720e+01  2.450e+01]]
```

KMeans Clustering

2 clustered KMeans with initialization of k-means++

High Inertia and Low Silhouette Score tells us That Clustering is not the best



Decision Trees

Used package `xgboost` to create XGBoosted Trees Classifier

Attained 52.5% Accuracy



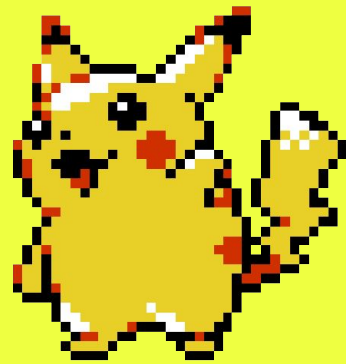
Conclusions

Accurately predicting which Pokemon team will win requires more information than just the team composition.

From what we did find is that HP and Speed are highly important in determining who will win just looking at stats of Pokemon

While we did not necessarily succeed, we did find the equivalent of Vegas “odds” for winner.

In the future, we would aim to use more detailed stats
Items, Movesets, Elo/Ranking of player



Questions?

