

Summary of Project 3

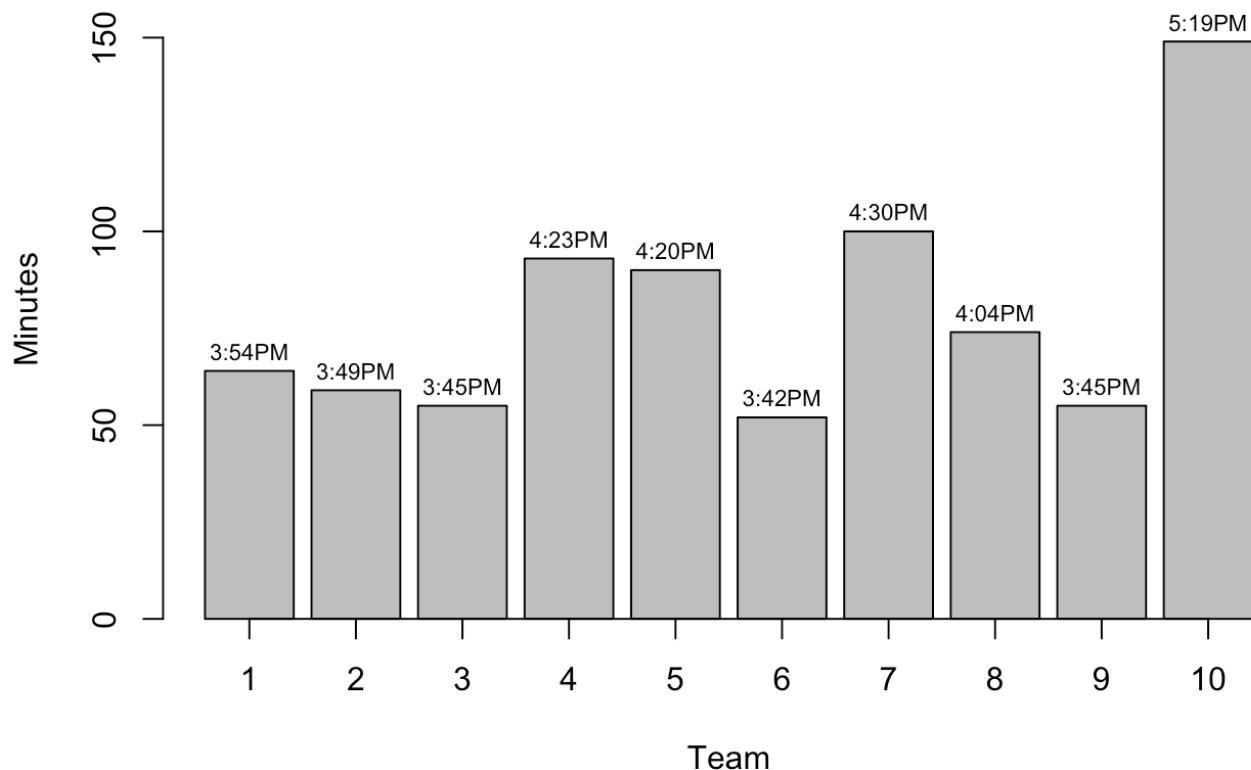
Yuting Ma

March 29, 2016

Feature extraction, storage, running time (cost)

Submission Time

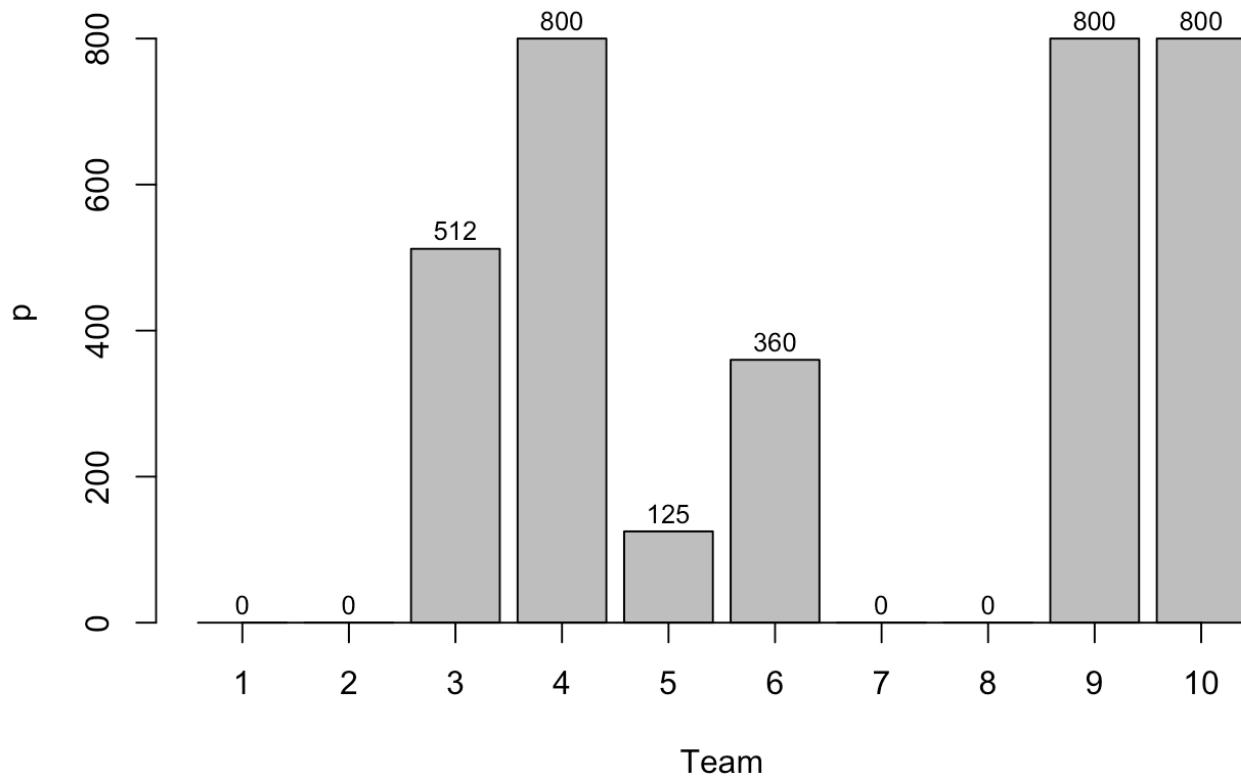
Submission Time: Minutues from 2:50PM



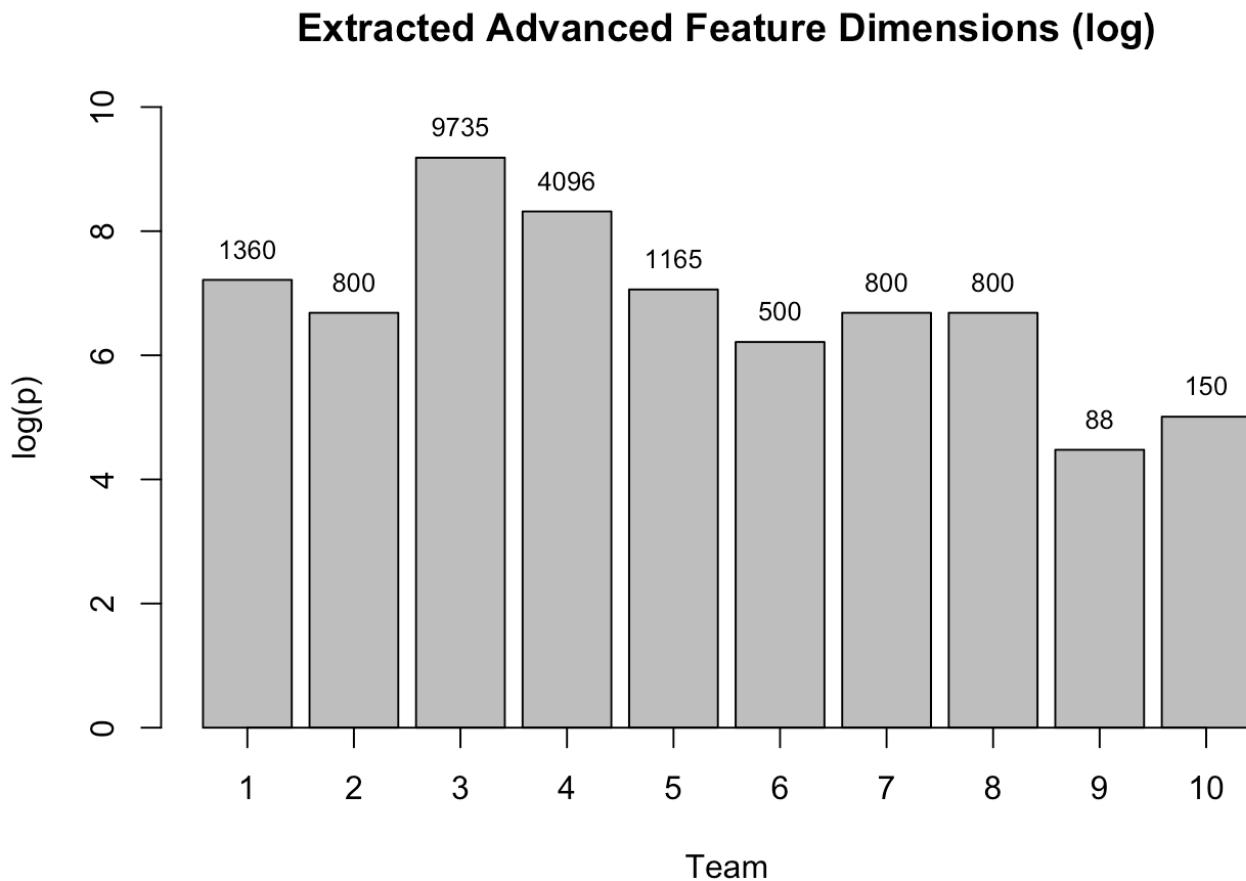
Dimensions of Extracted Features

Baseline Model

Extracted Baseline Feature Dimensions

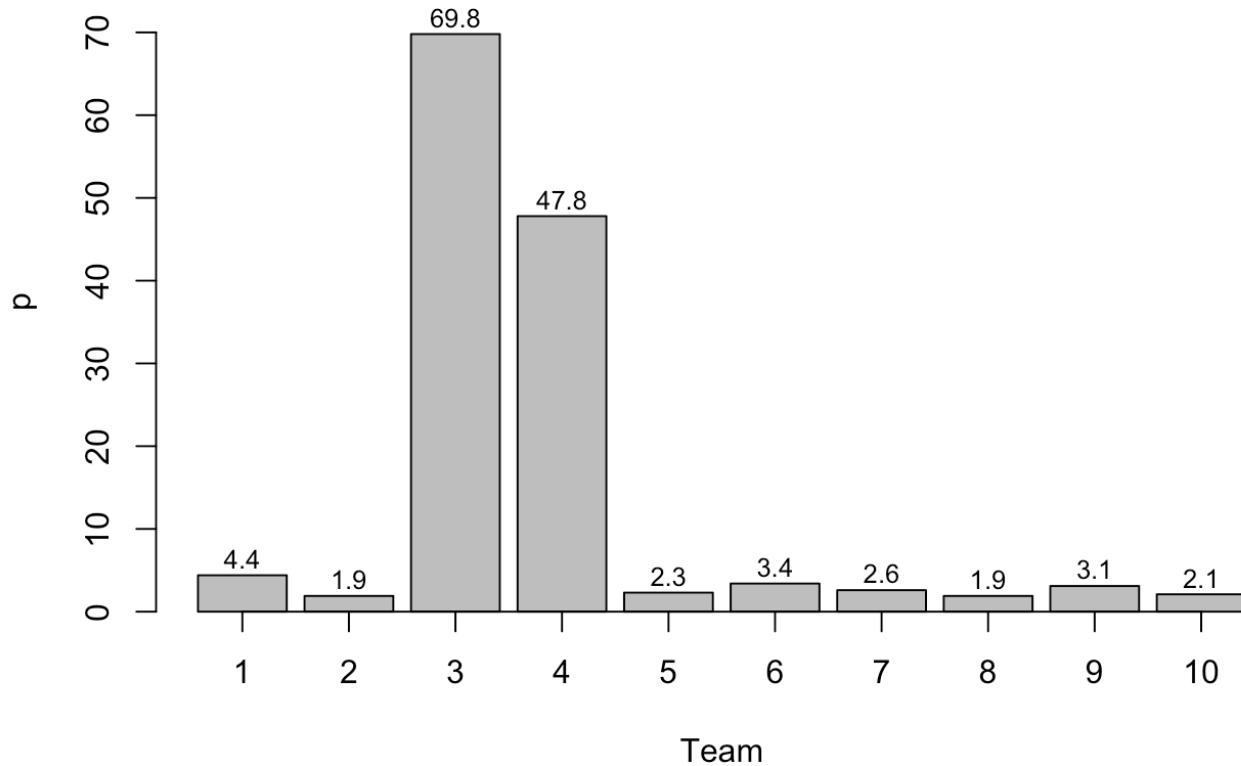


Advanced Model



Submitted File Sizes

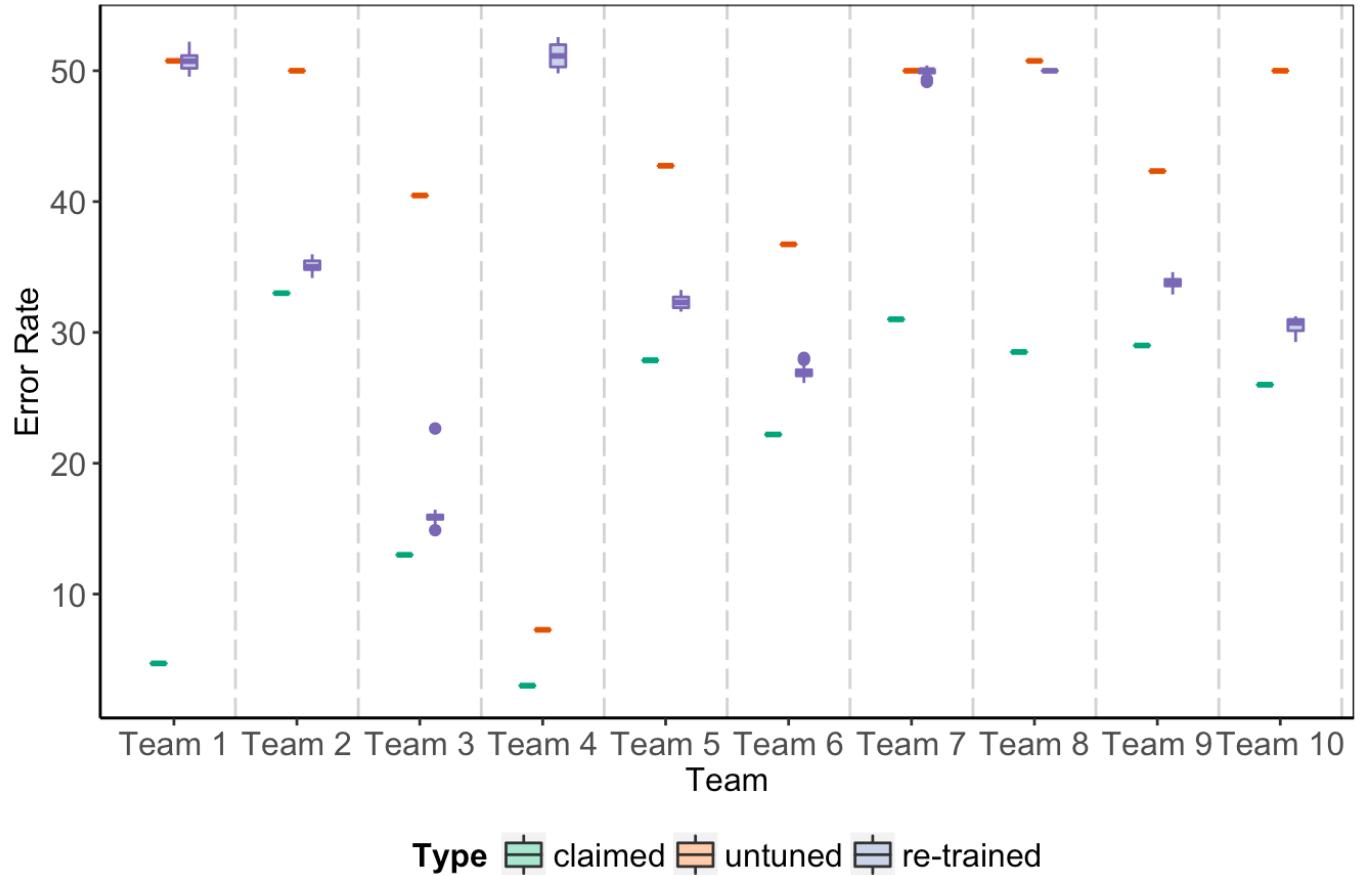
Sizes of submitted 'feature_eval.RData'



Performance

Prediction Accuracy

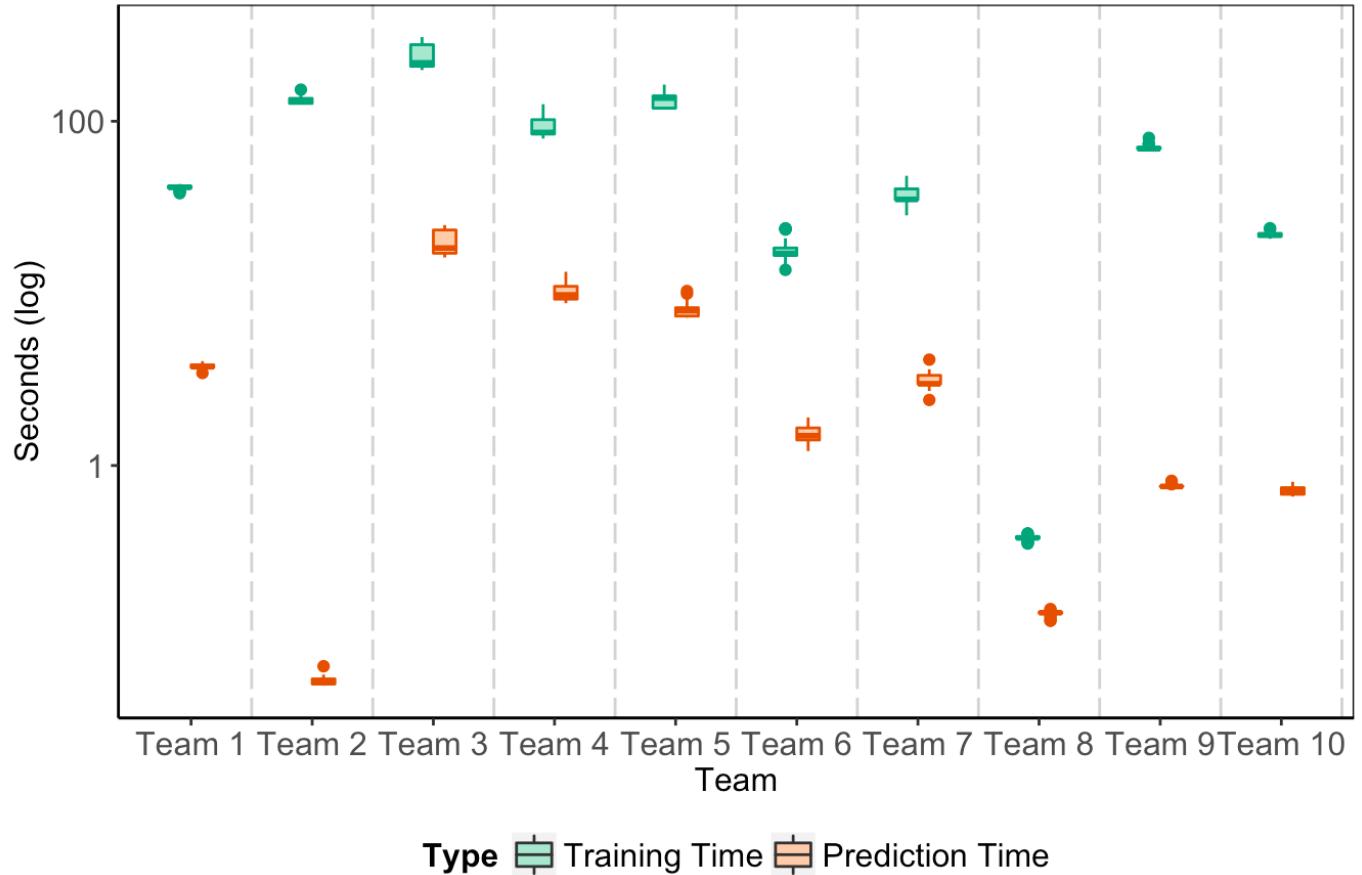
Advanced Model CV Error (%)



Computational Efficiency

Team 9 is the only team that implemented model selection within the training process, which takes much longer time. However, to be fair in the comparison, their average training CPU time per fold per replicate is divided 7, which is the number of their candidate parameter values. They've also performed a 5-fold CV within each GBM training.

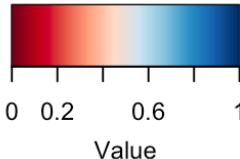
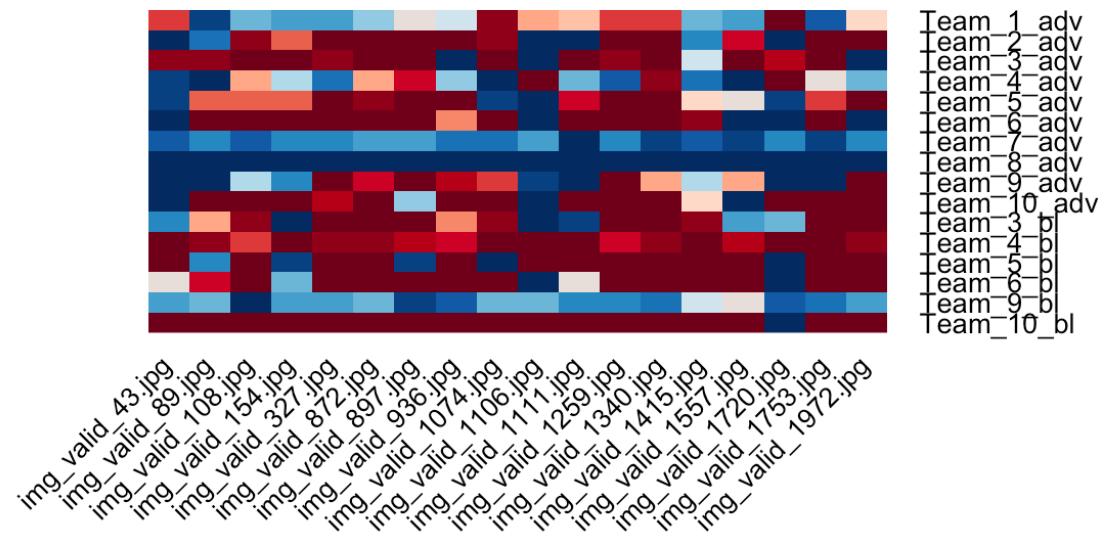
CPU Time Per Fold Per Rep



Fun Images

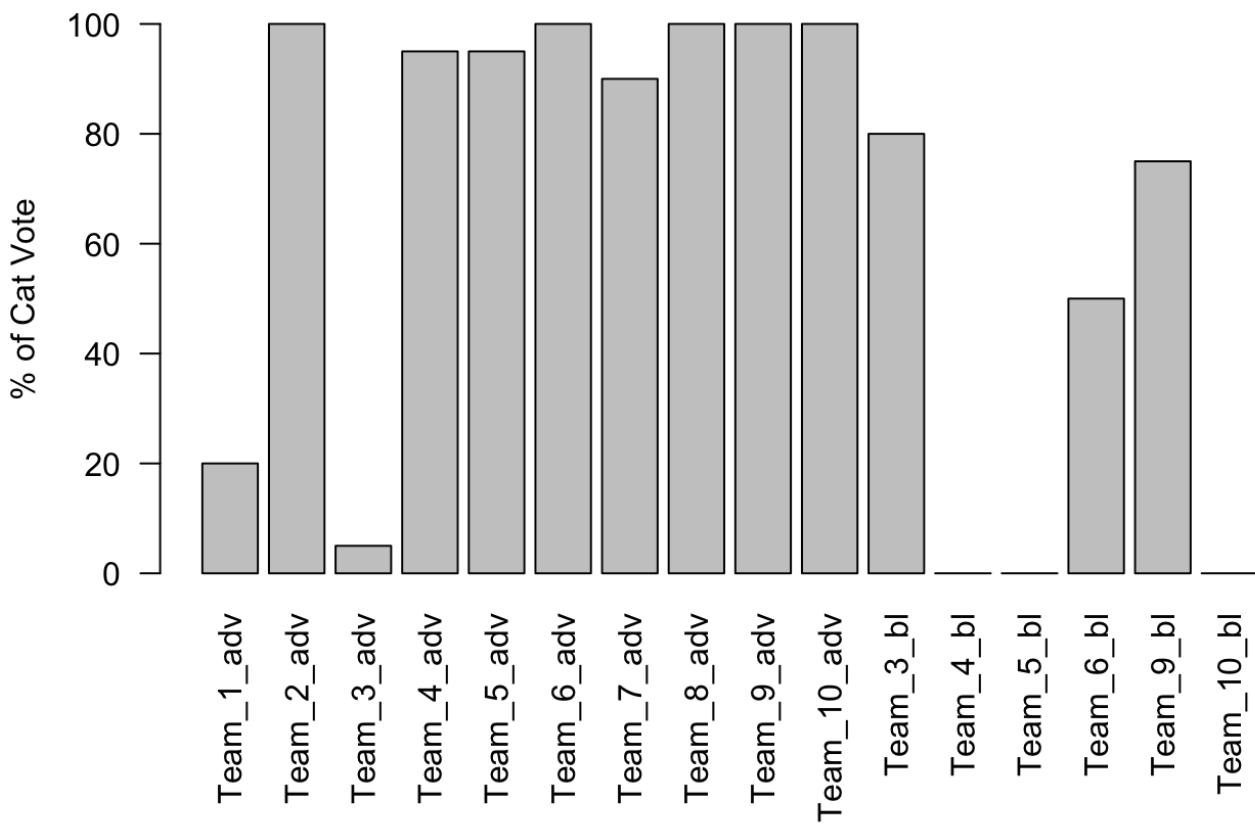
The percentages of votes to cat (1) of 18 fun images.

```
## NULL
```

Color Key**Vote for Cats**



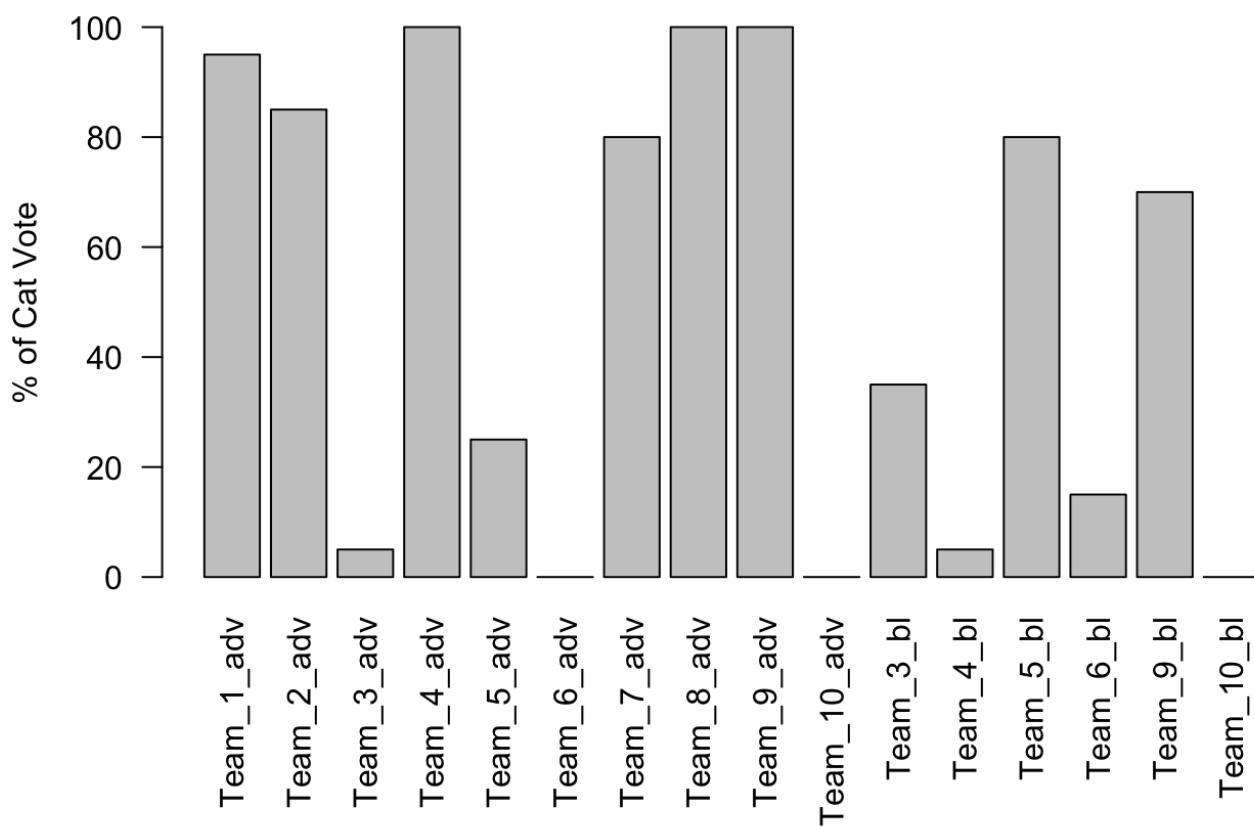
Vote for Cat: img_valid_43.jpg



img_valid_89.jpg

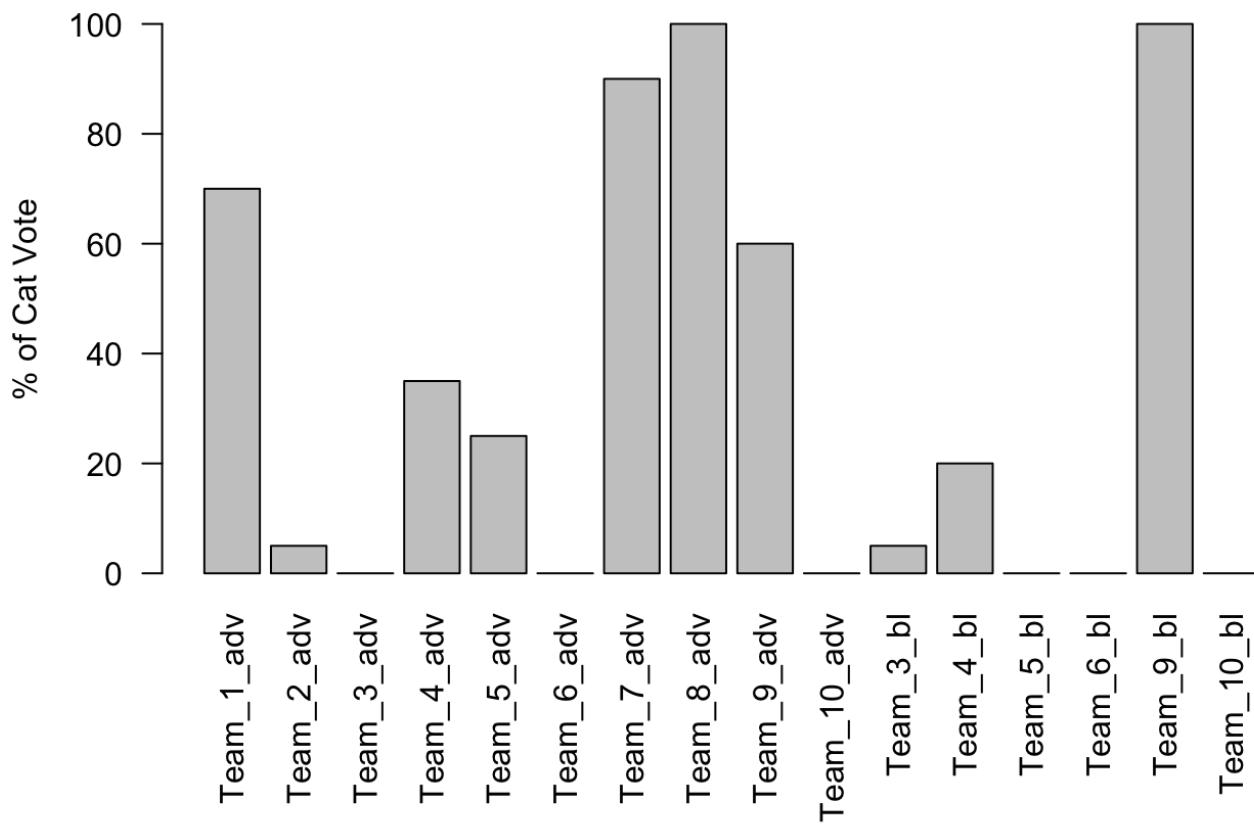


Vote for Cat: img_valid_89.jpg



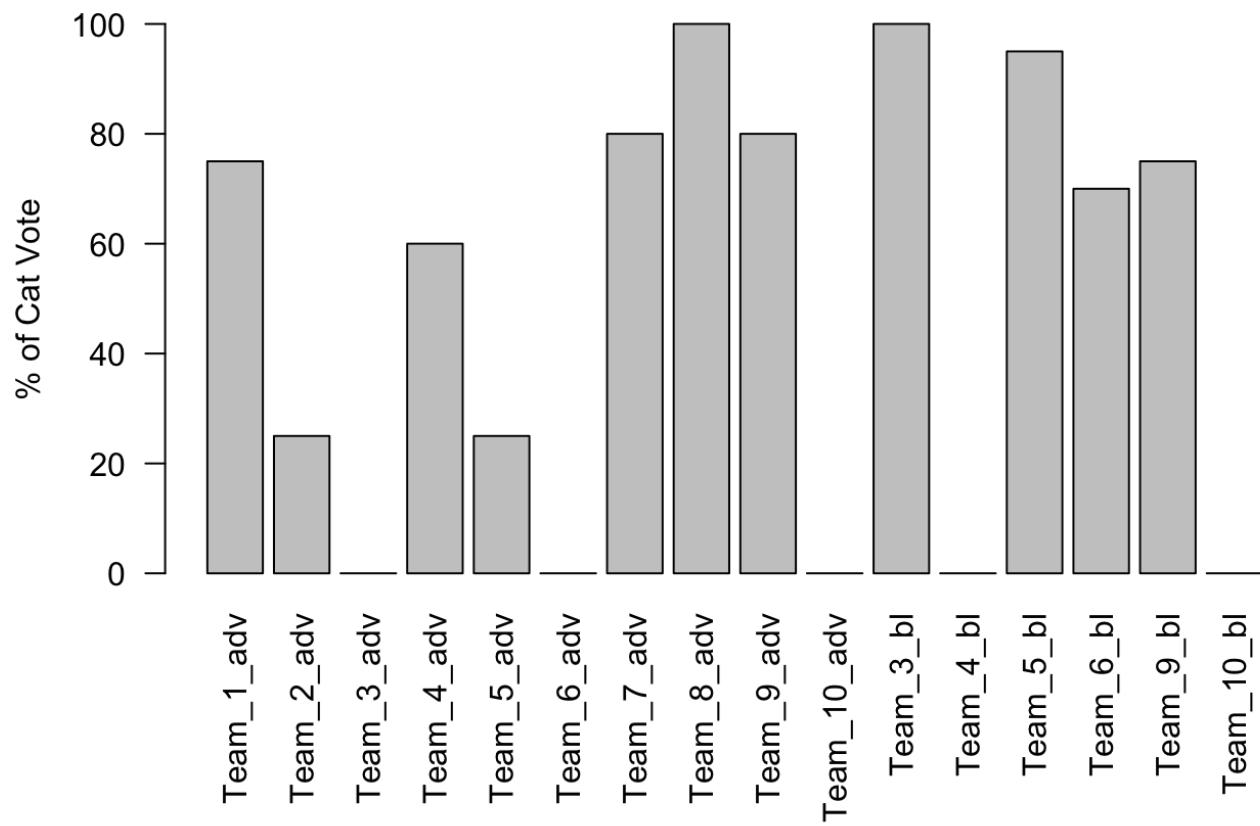


Vote for Cat: img_valid_108.jpg



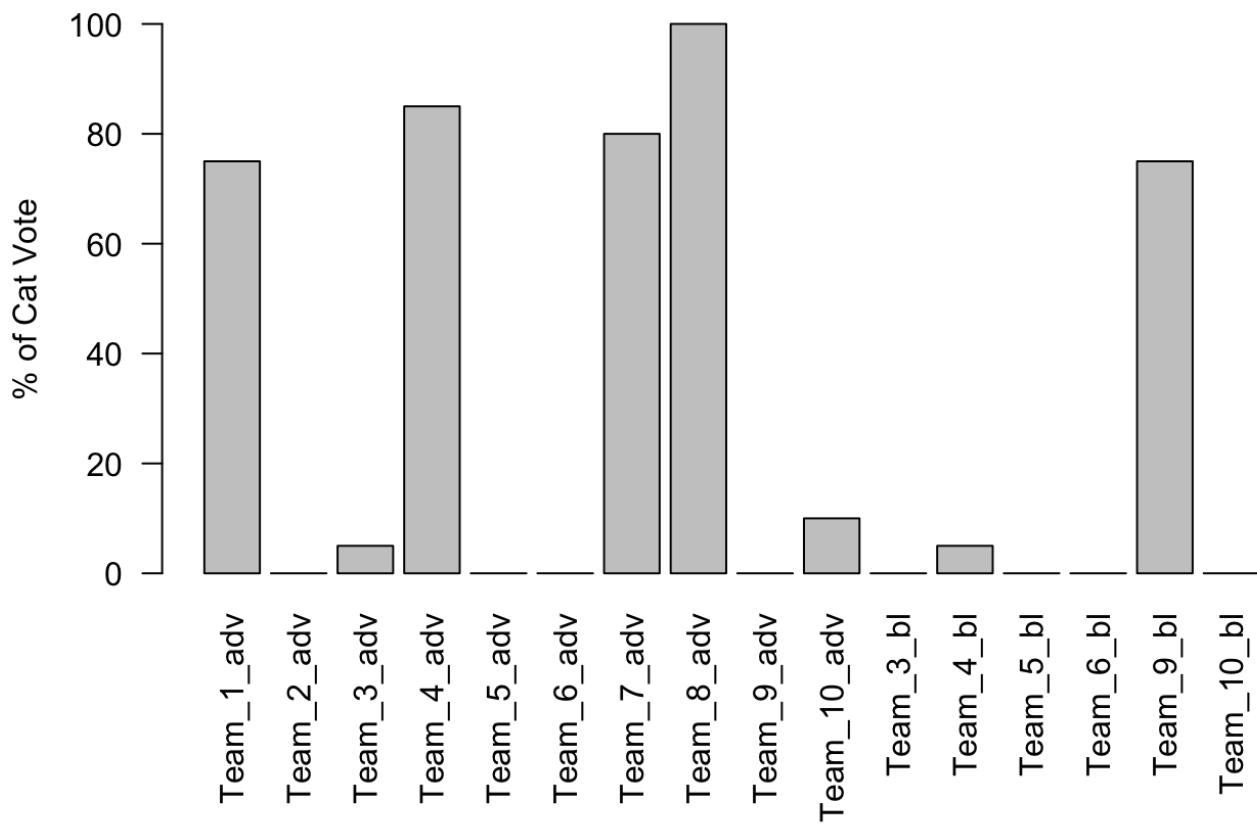


Vote for Cat: img_valid_154.jpg

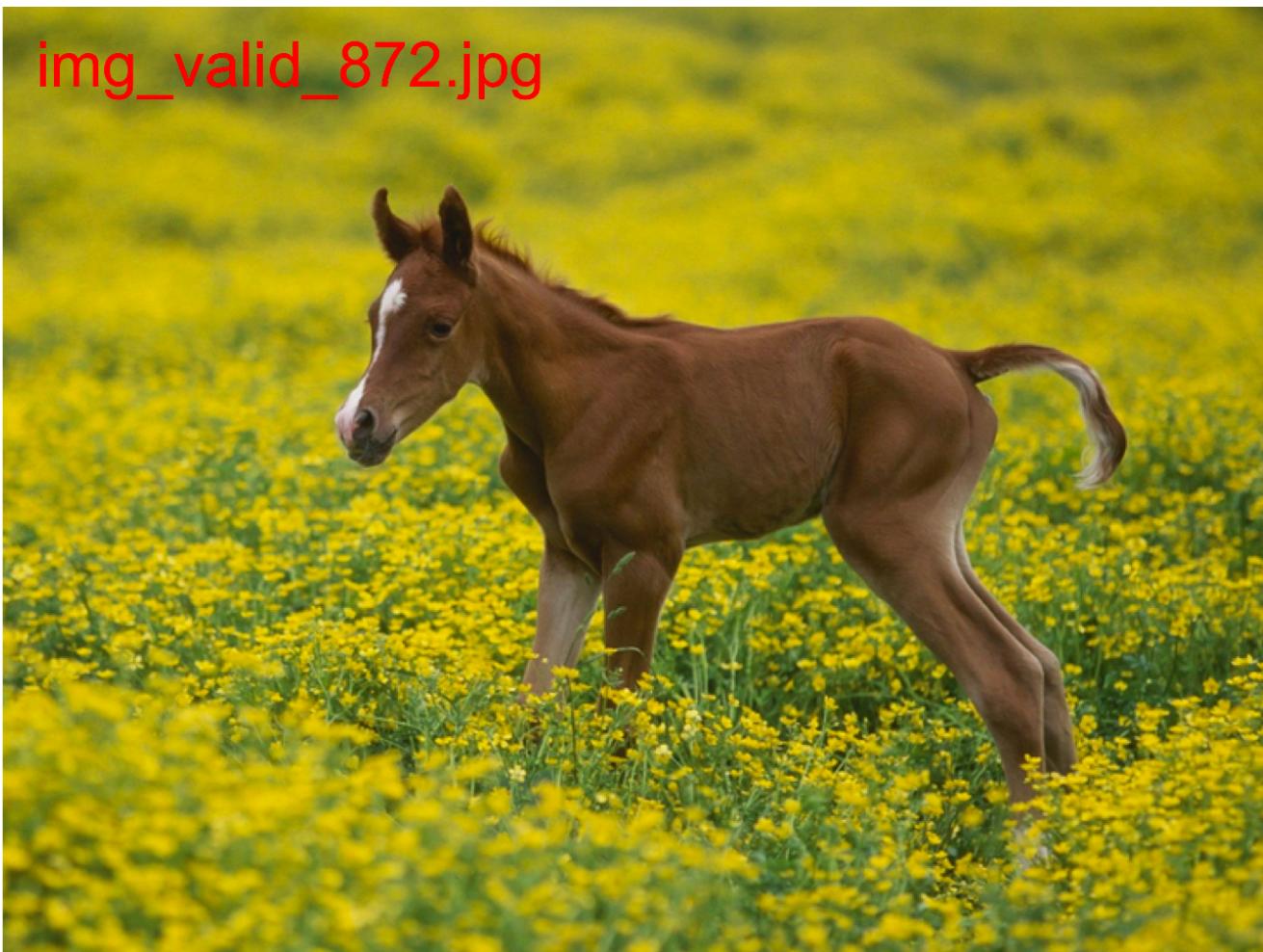




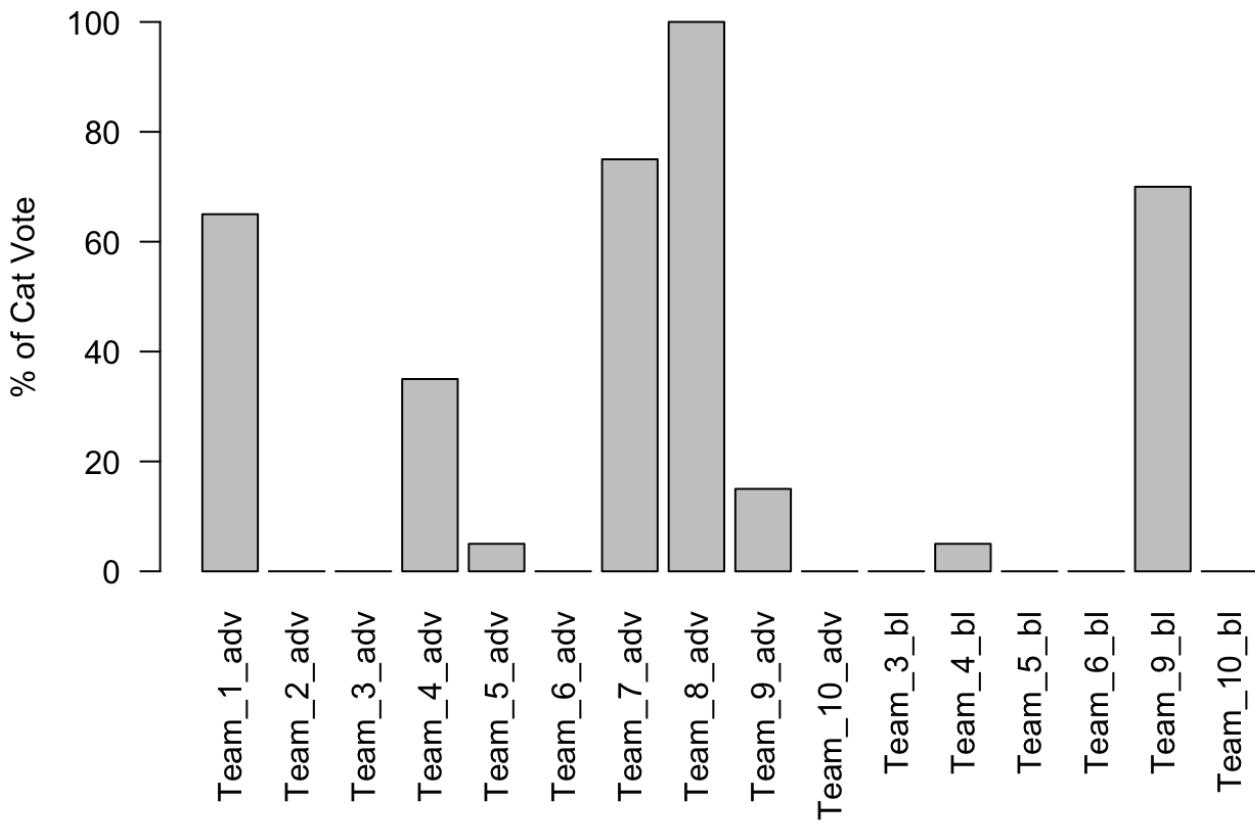
Vote for Cat: img_valid_327.jpg



img_valid_872.jpg

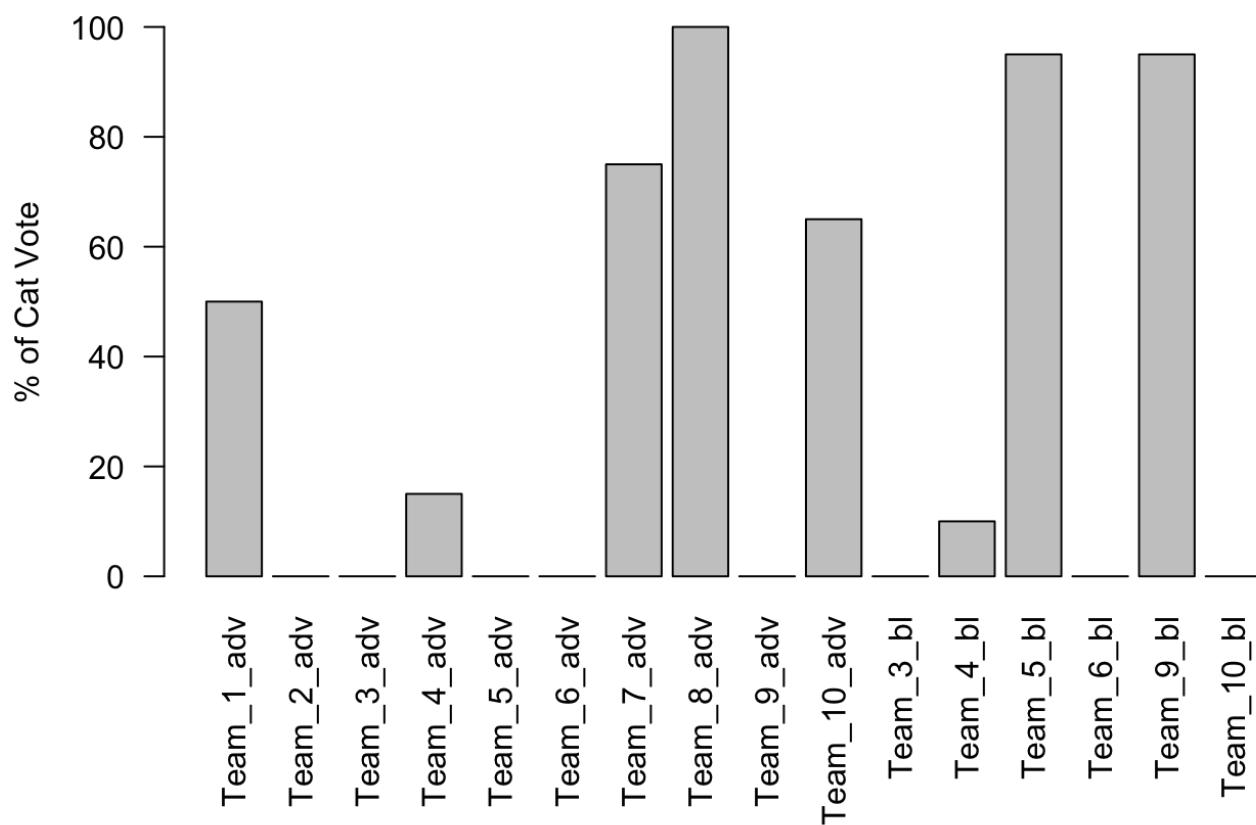


Vote for Cat: img_valid_872.jpg



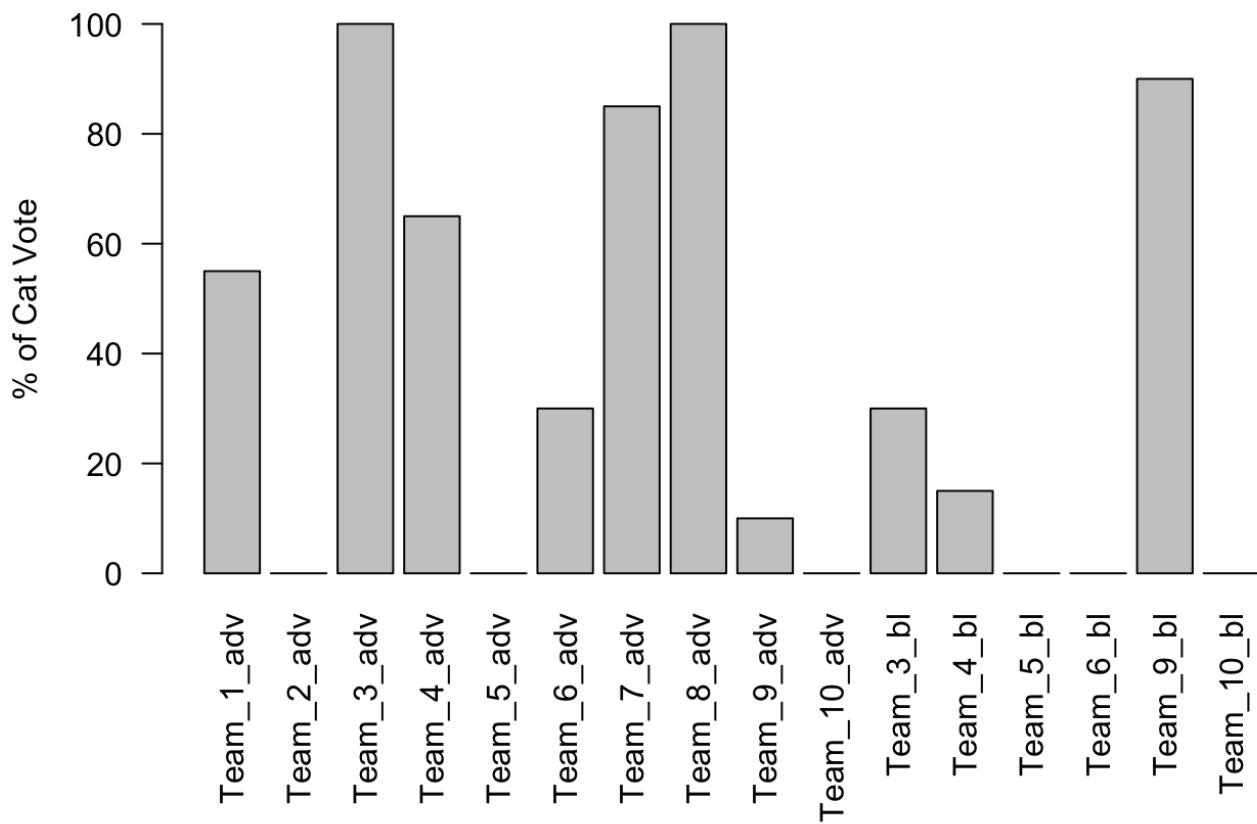


Vote for Cat: img_valid_897.jpg



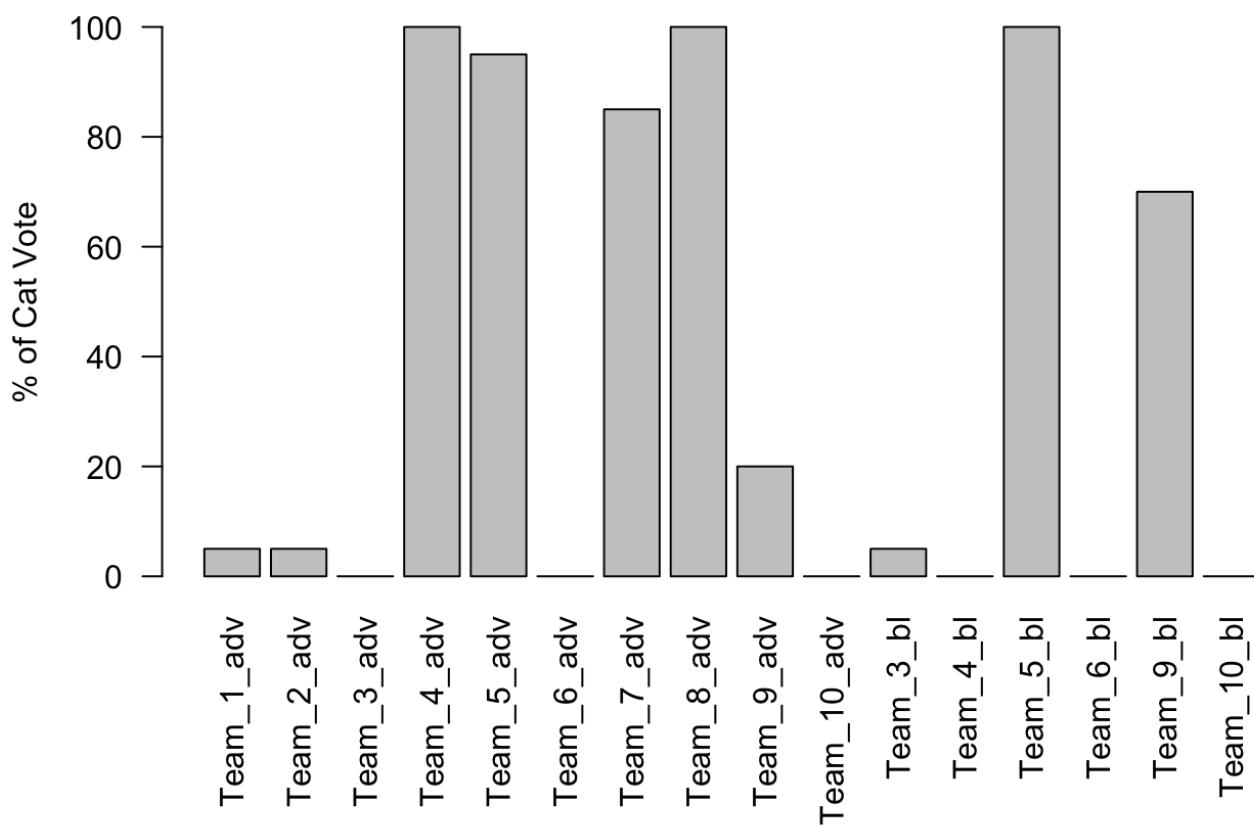


Vote for Cat: img_valid_936.jpg



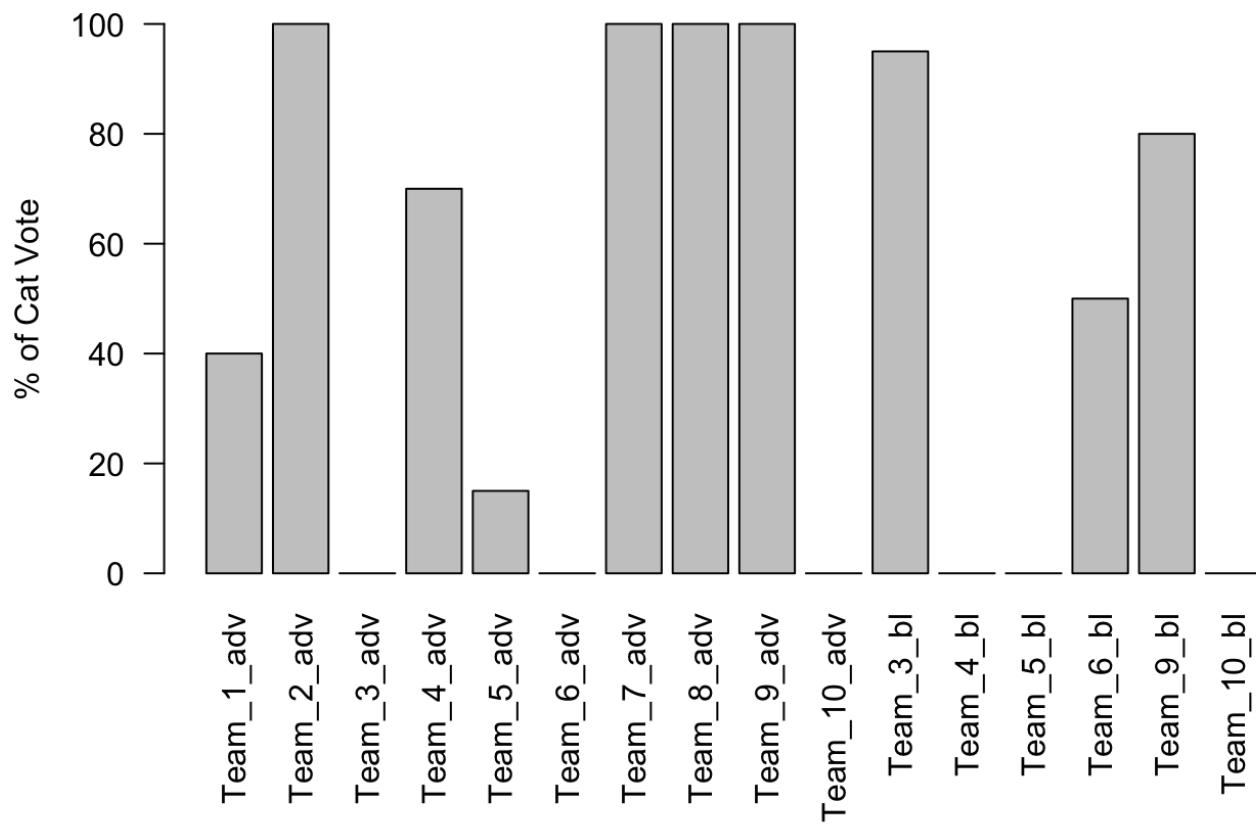


Vote for Cat: img_valid_1074.jpg



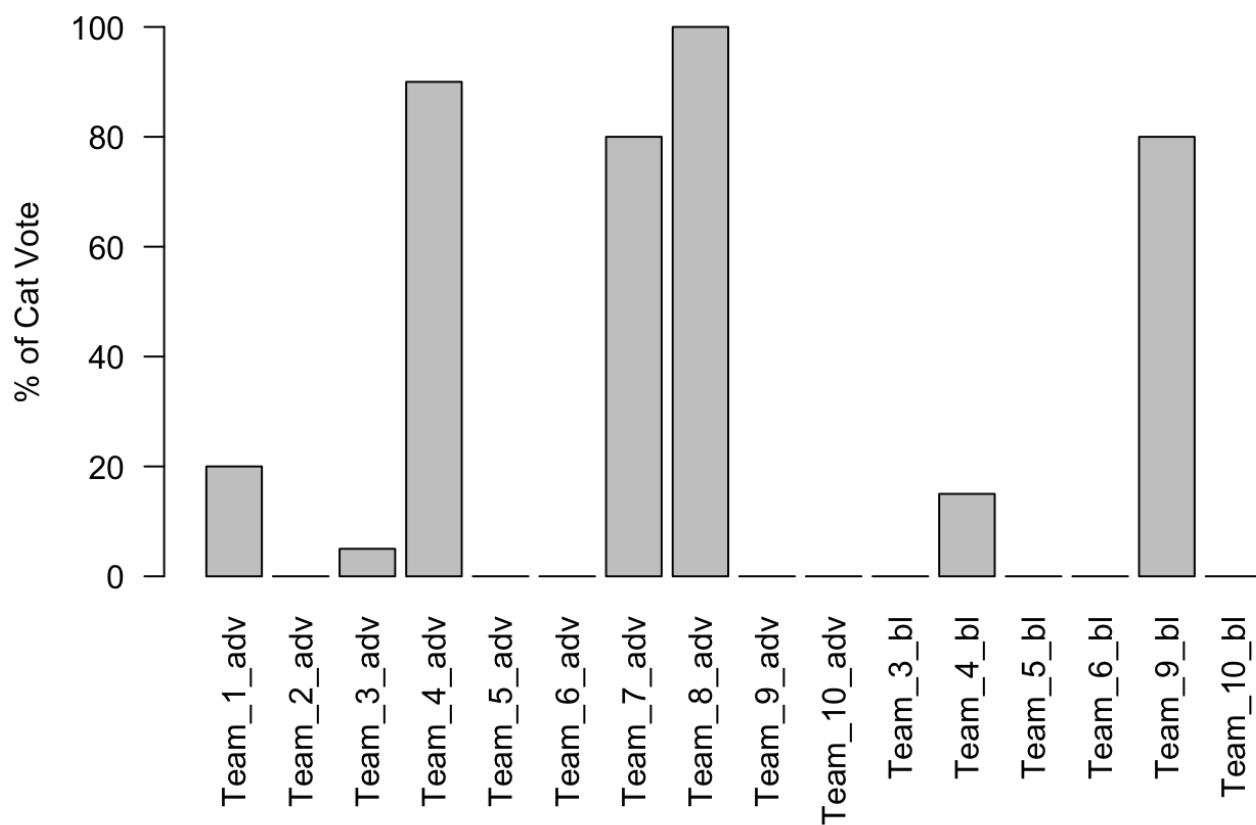


Vote for Cat: img_valid_1111.jpg



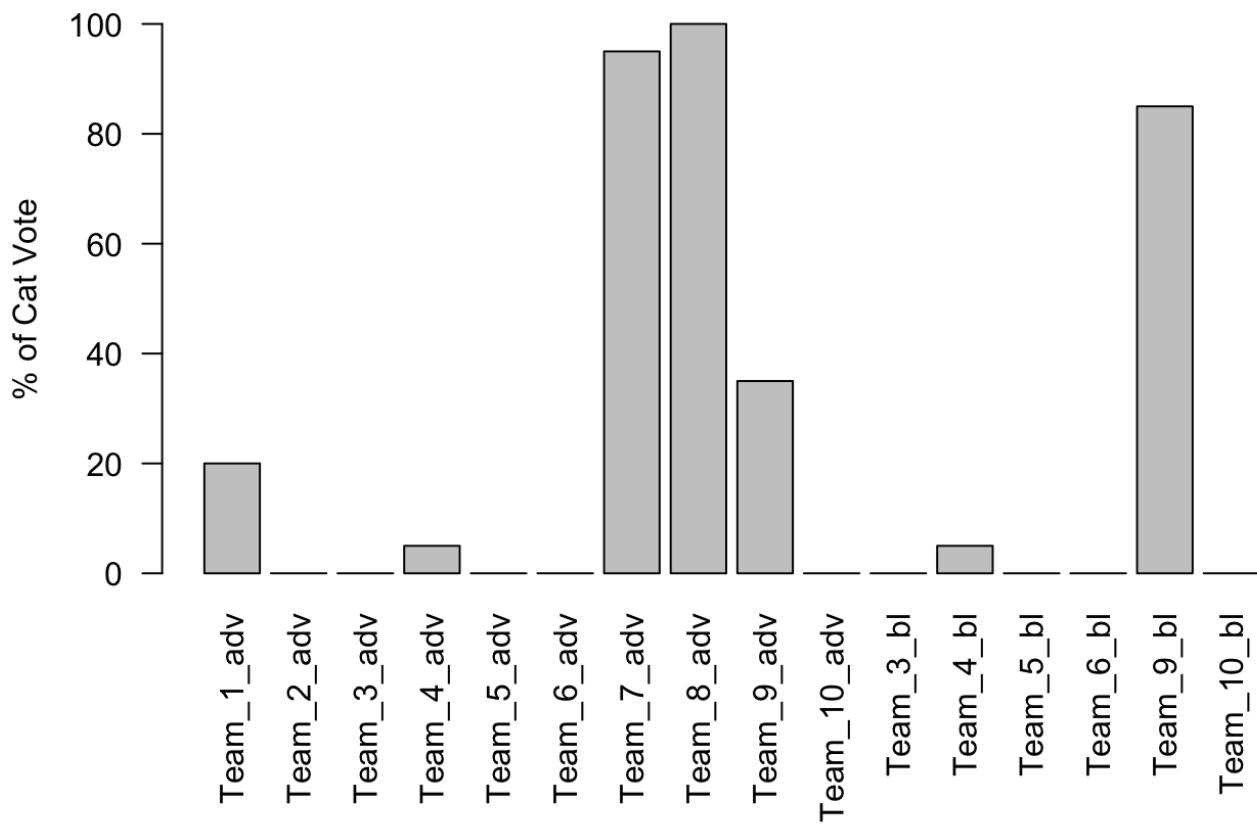


Vote for Cat: img_valid_1259.jpg





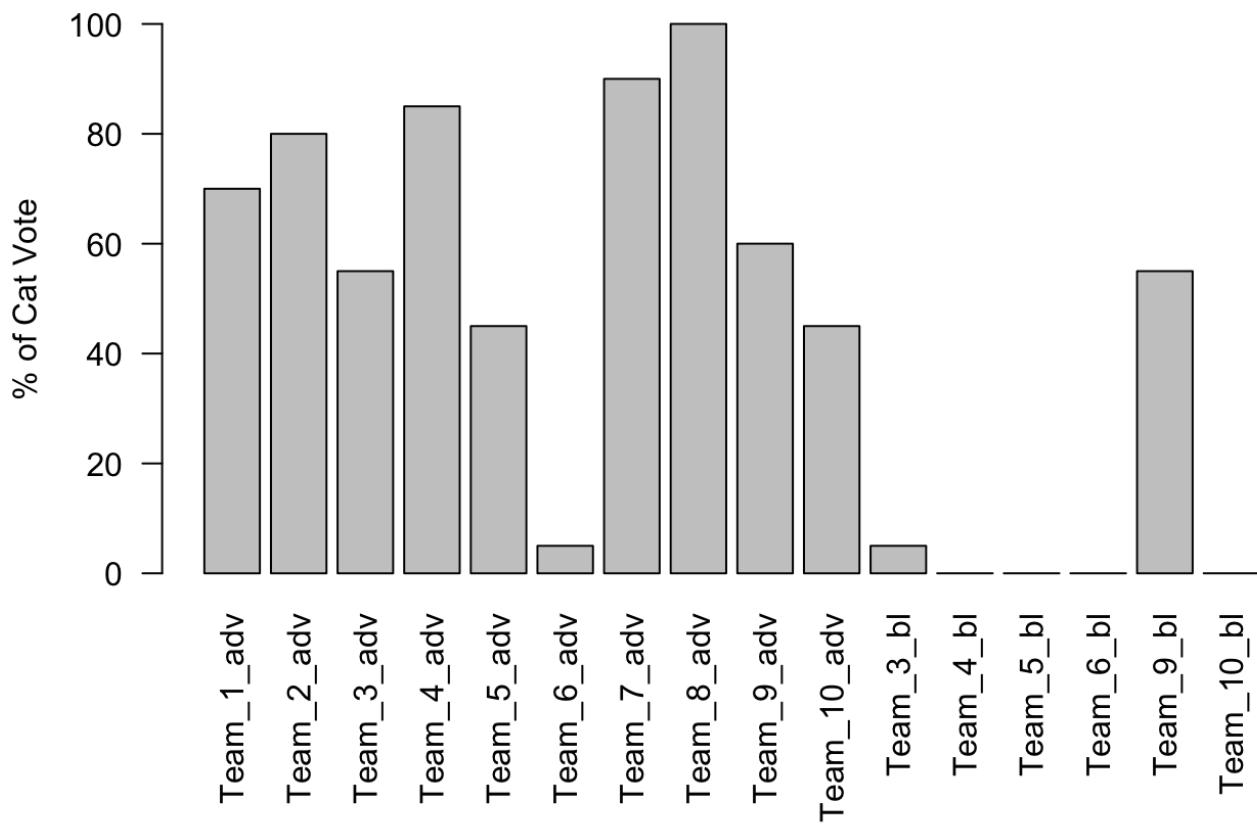
Vote for Cat: img_valid_1340.jpg





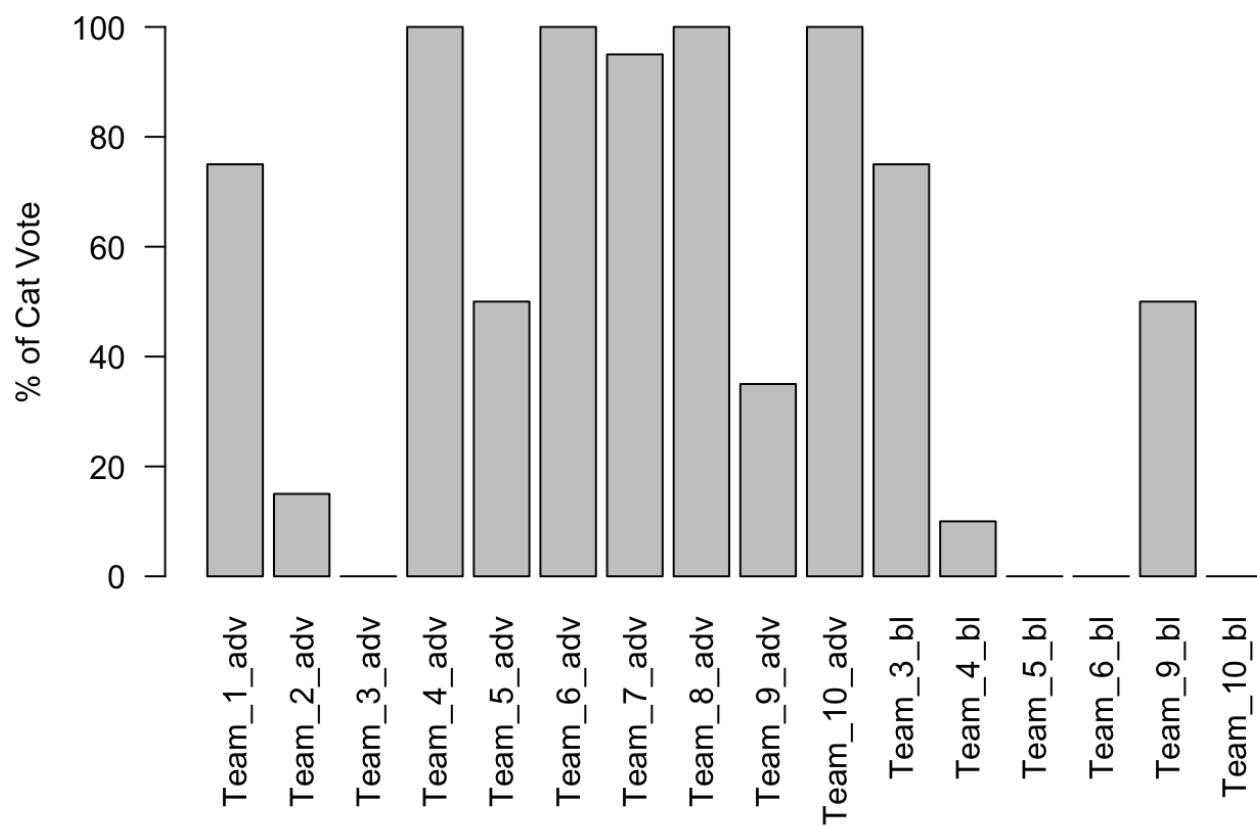
img_valid_1415.jpg

Vote for Cat: img_valid_1415.jpg



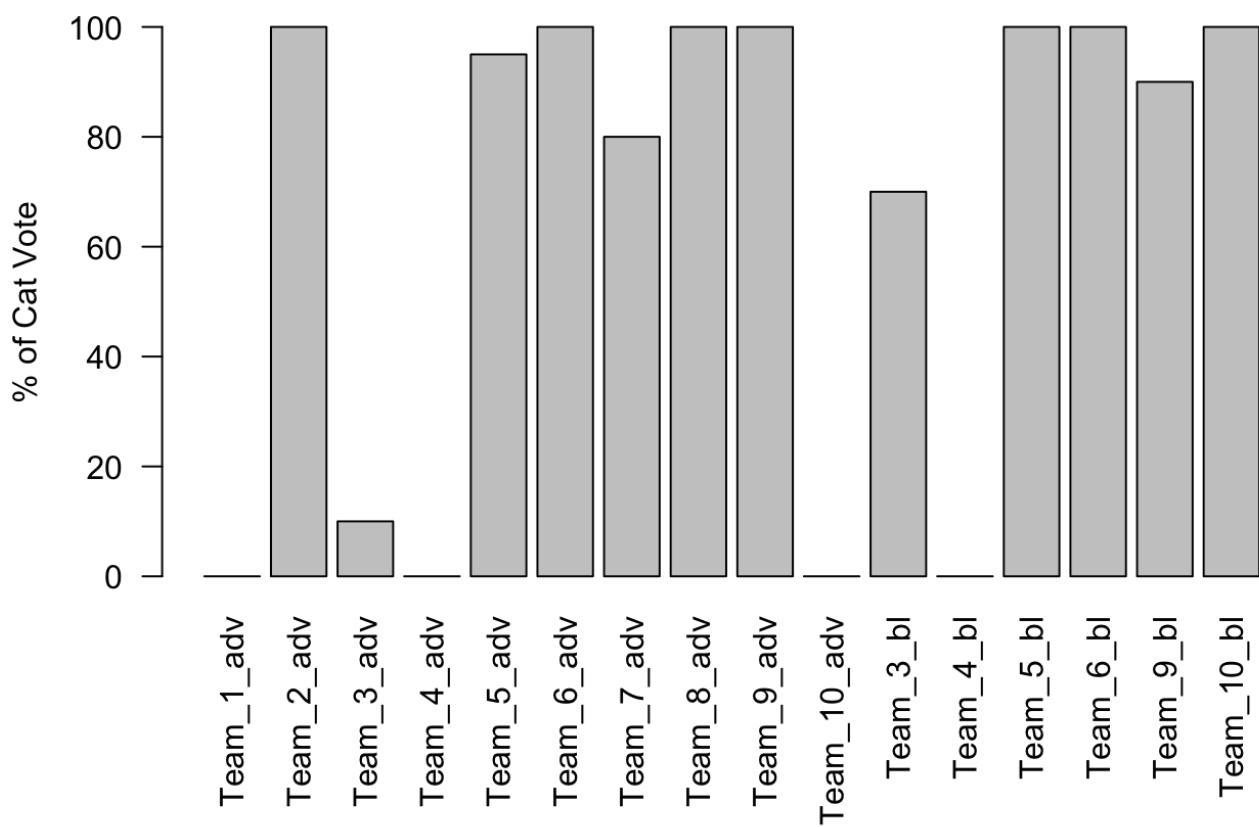


Vote for Cat: img_valid_1557.jpg



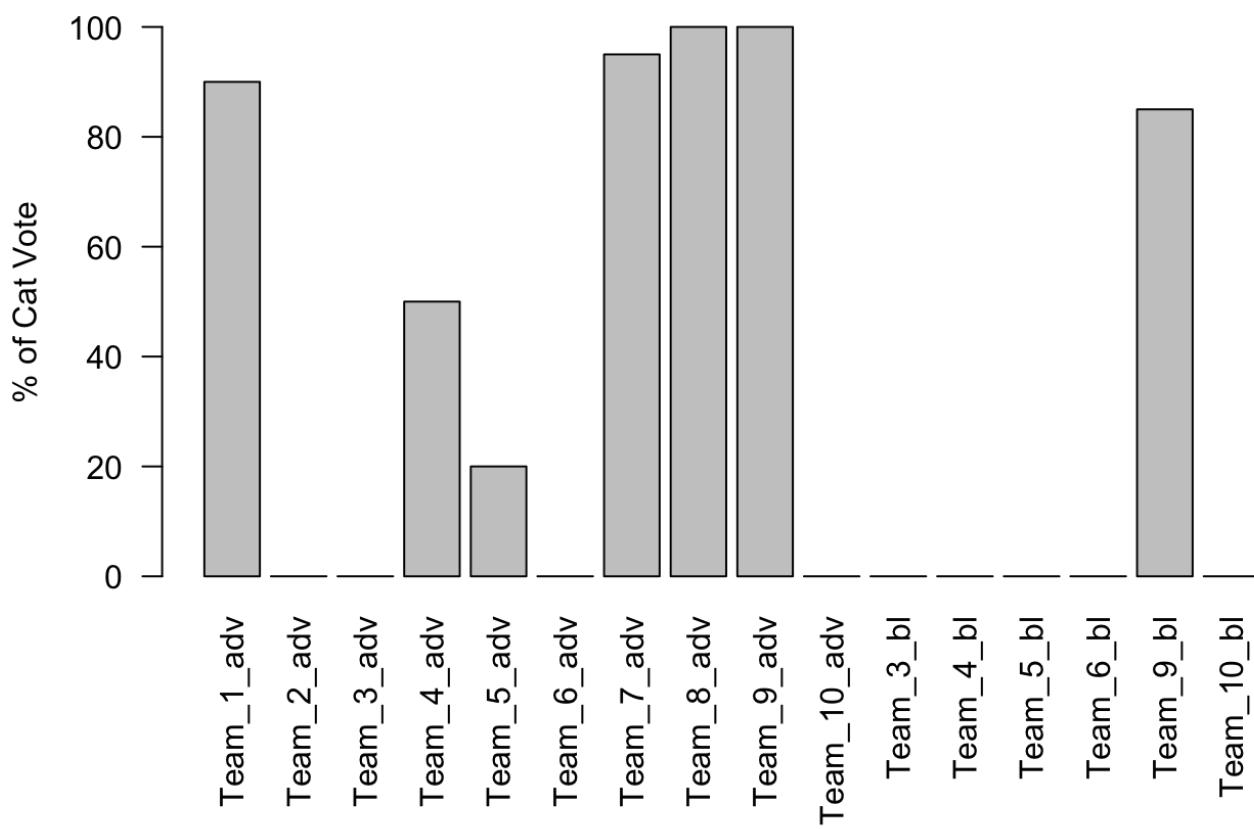


Vote for Cat: img_valid_1720.jpg



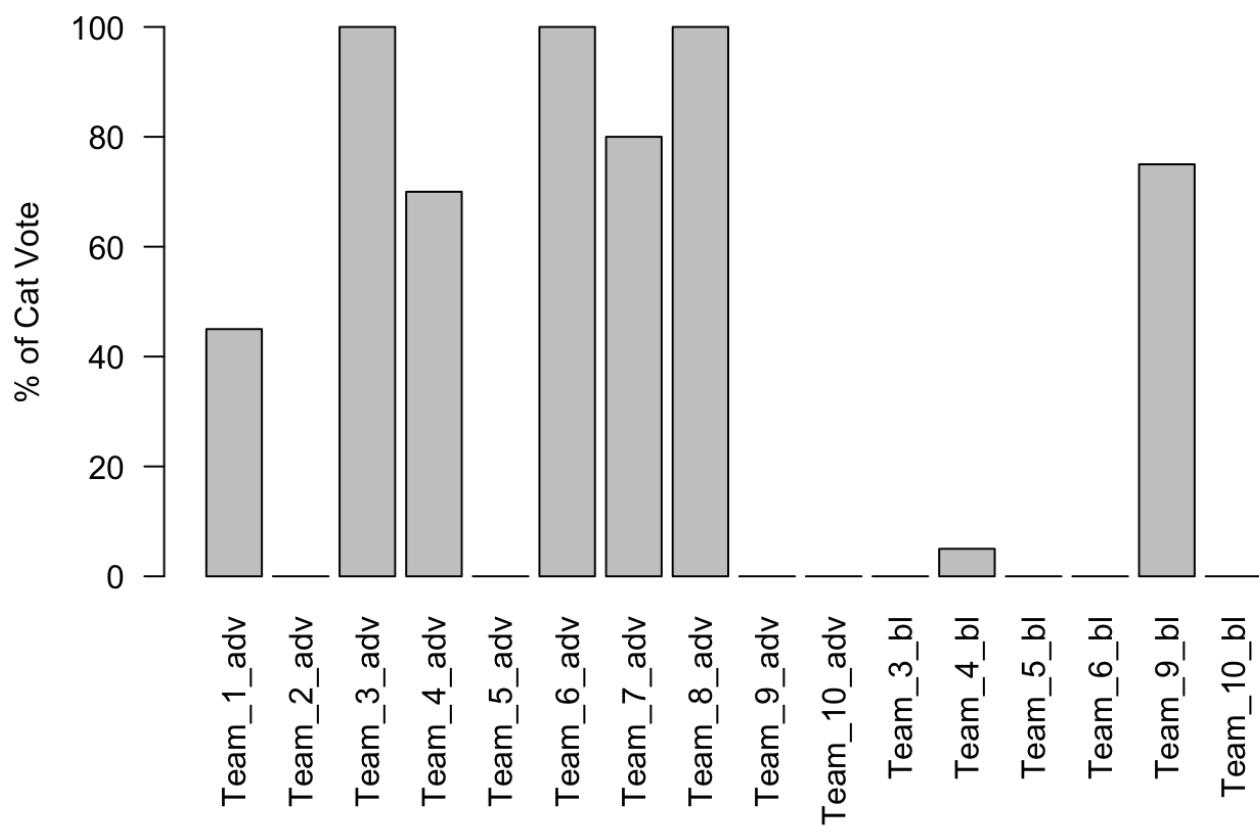


Vote for Cat: img_valid_1753.jpg





Vote for Cat: img_valid_1972.jpg



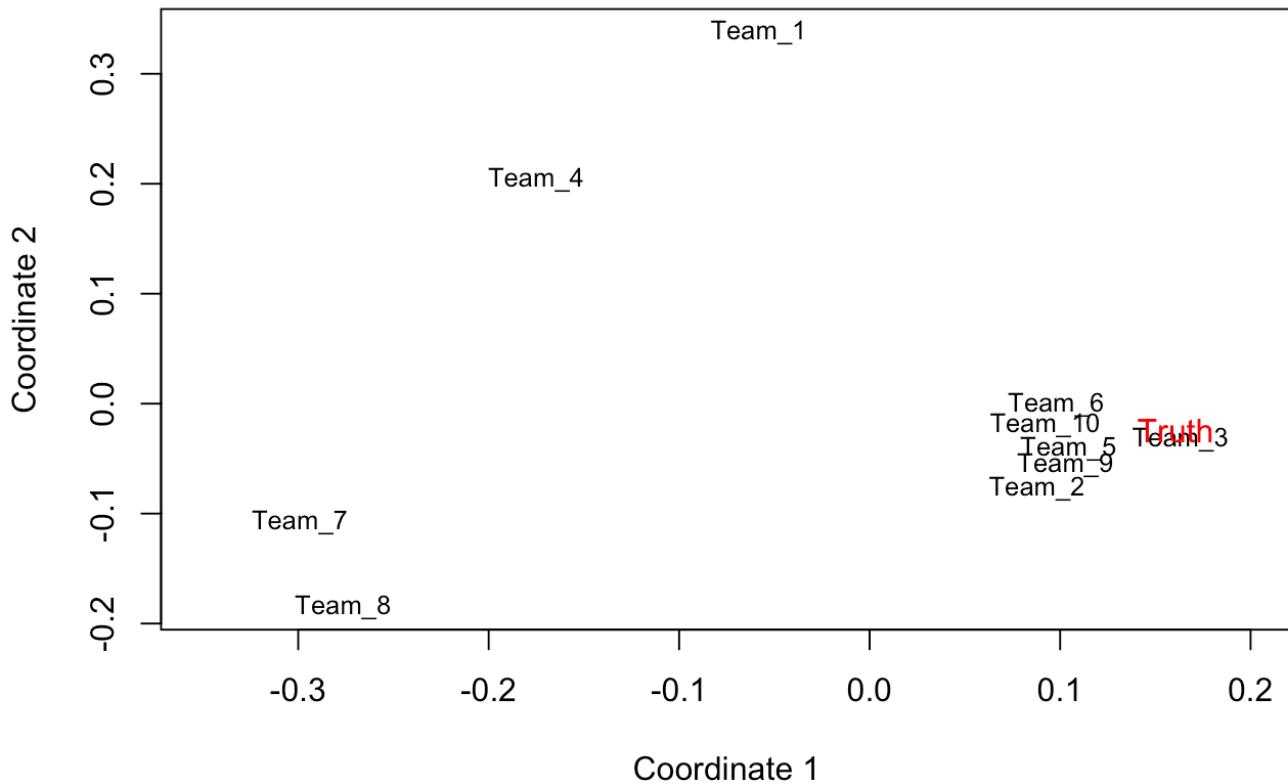
Team Performance Clustering

We use Multidimensional Scaling (MDS) to cluster the performance of each team using the prediction in the first replicate.

Retrained Advanced Model

```
## $points
##           [,1]      [,2]
## [1,] -0.05827984  0.3379870516
## [2,]  0.08787685 -0.0766731754
## [3,]  0.16314396 -0.0325527129
## [4,] -0.17510701  0.2040679592
## [5,]  0.10442062 -0.0406562996
## [6,]  0.09791828 -0.0008004062
## [7,] -0.29916904 -0.1074944152
## [8,] -0.27641054 -0.1846644649
## [9,]  0.10278298 -0.0552844831
## [10,]  0.09215284 -0.0195873549
## [11,]  0.16067089 -0.0243416987
##
## $eig
## [1] 2.996655e-01 2.141596e-01 1.470708e-01 1.189221e-01 6.357198e-02
## [6] 4.980865e-02 2.556054e-02 1.519005e-02 1.142172e-02 9.986528e-03
## [11] 1.386641e-17
##
## $x
## NULL
##
## $ac
## [1] 0
##
## $GOF
## [1] 0.5378354 0.5378354
```

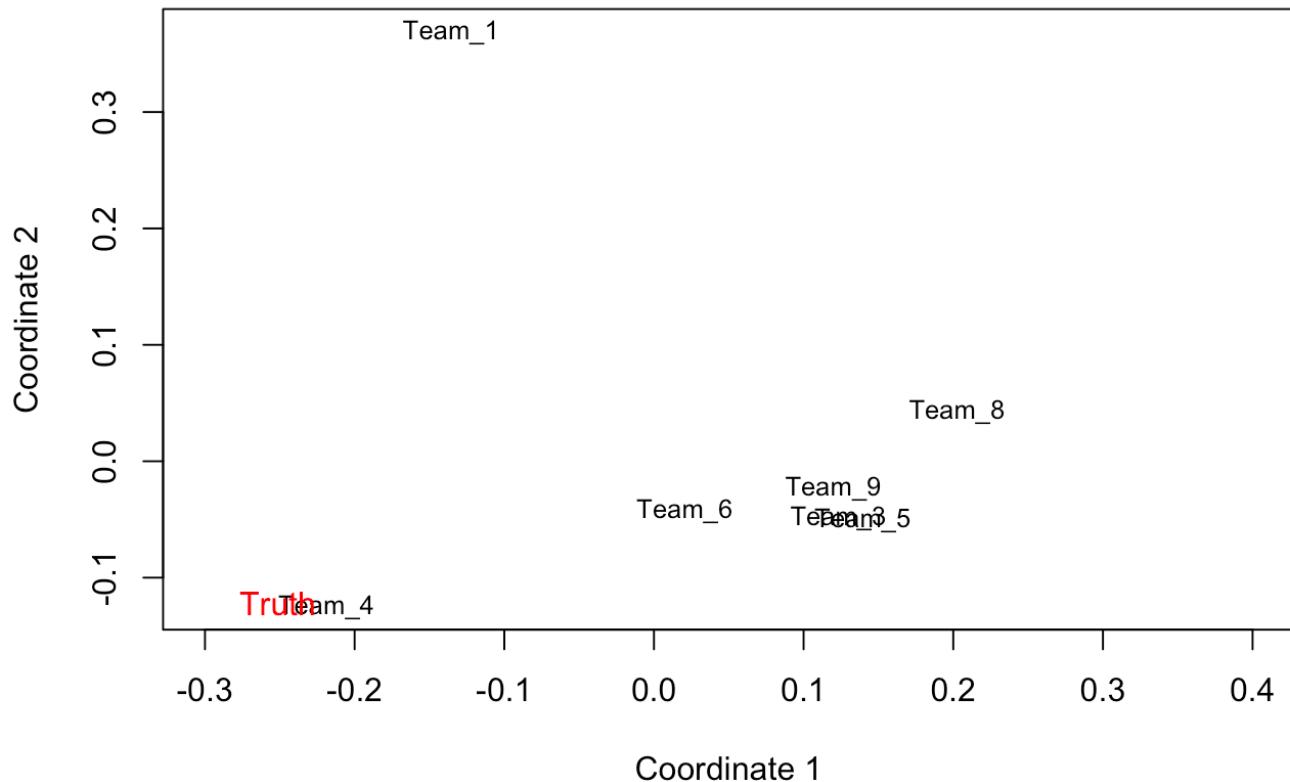
MDS of Re-trained Advanced Model



Untuned Advanced Model

```
## $points
##          [,1]      [,2]
## [1,] -0.13557125  0.36873194
## [2,]  0.12319907 -0.04894373
## [3,] -0.21887867 -0.12494272
## [4,]  0.13957533 -0.05057108
## [5,]  0.02061158 -0.04208791
## [6,]  0.20248544  0.04288016
## [7,]  0.11984681 -0.02299910
## [8,] -0.25126831 -0.12206756
##
## $eig
## [1] 2.198709e-01 1.755664e-01 4.509765e-02 3.899978e-02 2.717722e-02
## [6] 1.775751e-02 2.020690e-03 3.418264e-17
##
## $x
## NULL
##
## $ac
## [1] 0
##
## $GOF
## [1] 0.7510821 0.7510821
```

MDS of Untuned Advanced Model



Summary of Common Problems

- 9 teams did not have model selection
- 3 teams did not have baseline model
- 5 teams did not return the correct prediction values in either advanced model or baseline model
 - predictions are 1& 2 instead of 0&1
 - predicted probabilities/link values are returned instead of class labels.
- 4 teams did not deal with constant features, which ran into scaling error.
 - Variable(s) 'V22' and 'V46' and 'V110' constant. Cannot scale data.