**KNN Cross Validation Results (Non-PCA)**:

Cross-Validation Repeat: 1/10

y\_pred\_df Animal.ID: [ 6 17 18 ... 38475 38476 38482]

y\_test\_df Animal.ID: [ 6 17 18 ... 38475 38476 38482]

Accuracy: 0.5327

Precision: 0.5167

Recall: 0.5336

F1 Score: 0.5191

Log Loss: 5.4081

y\_pred\_df Animal.ID: [ 3 4 7 ... 38469 38470 38479]

y\_test\_df Animal.ID: [ 3 4 7 ... 38469 38470 38479]

Accuracy: 0.5412

Precision: 0.5225

Recall: 0.5451

F1 Score: 0.5281

Log Loss: 5.3439

y\_pred\_df Animal.ID: [ 0 1 2 ... 38468 38478 38481]

y\_test\_df Animal.ID: [ 0 1 2 ... 38468 38478 38481]

Accuracy: 0.5451

Precision: 0.5299

Recall: 0.5486

F1 Score: 0.5329

Log Loss: 5.2410

y\_pred\_df Animal.ID: [ 5 14 20 ... 38471 38472 38477]

y\_test\_df Animal.ID: [ 5 14 20 ... 38471 38472 38477]

Accuracy: 0.5482

Precision: 0.5308

Recall: 0.5506

F1 Score: 0.5362

Log Loss: 5.0141

y\_pred\_df Animal.ID: [ 10 11 13 ... 38463 38473 38480]

y\_test\_df Animal.ID: [ 10 11 13 ... 38463 38473 38480]

Accuracy: 0.5386

Precision: 0.5224

Recall: 0.5417

F1 Score: 0.5278

Log Loss: 5.3530

Average Metrics for Repetition 1/10:

Accuracy: 0.5412

Precision: 0.5245

Recall: 0.5439

F1\_score: 0.5288

Log\_loss: 5.2720

Cross-Validation Repeat: 2/10

y\_pred\_df Animal.ID: [ 2 3 8 ... 38473 38478 38479]

y\_test\_df Animal.ID: [ 2 3 8 ... 38473 38478 38479]

Accuracy: 0.5397

Precision: 0.5194

Recall: 0.5412

F1 Score: 0.5249

Log Loss: 5.2817

y\_pred\_df Animal.ID: [ 26 29 32 ... 38455 38468 38470]

y\_test\_df Animal.ID: [ 26 29 32 ... 38455 38468 38470]

Accuracy: 0.5446

Precision: 0.5295

Recall: 0.5460

F1 Score: 0.5308

Log Loss: 5.1468

y\_pred\_df Animal.ID: [ 0 4 5 ... 38472 38474 38477]

y\_test\_df Animal.ID: [ 0 4 5 ... 38472 38474 38477]

Accuracy: 0.5371

Precision: 0.5206

Recall: 0.5384

F1 Score: 0.5244

Log Loss: 5.3238

y\_pred\_df Animal.ID: [ 1 31 39 ... 38476 38480 38482]

y\_test\_df Animal.ID: [ 1 31 39 ... 38476 38480 38482]

Accuracy: 0.5434

Precision: 0.5326

Recall: 0.5475

F1 Score: 0.5340

Log Loss: 5.3453

y\_pred\_df Animal.ID: [ 9 10 14 ... 38471 38475 38481]

y\_test\_df Animal.ID: [ 9 10 14 ... 38471 38475 38481]

Accuracy: 0.5427

Precision: 0.5281

Recall: 0.5460

F1 Score: 0.5302

Log Loss: 5.3006

Average Metrics for Repetition 2/10:

Accuracy: 0.5415

Precision: 0.5261

Recall: 0.5438

F1\_score: 0.5289

Log\_loss: 5.2796

Cross-Validation Repeat: 3/10

y\_pred\_df Animal.ID: [ 0 2 11 ... 38467 38474 38481]

y\_test\_df Animal.ID: [ 0 2 11 ... 38467 38474 38481]

Accuracy: 0.5457

Precision: 0.5280

Recall: 0.5492

F1 Score: 0.5325

Log Loss: 5.3481

y\_pred\_df Animal.ID: [ 1 6 19 ... 38464 38470 38472]

y\_test\_df Animal.ID: [ 1 6 19 ... 38464 38470 38472]

Accuracy: 0.5459

Precision: 0.5290

Recall: 0.5496

F1 Score: 0.5312

Log Loss: 5.2883

y\_pred\_df Animal.ID: [ 4 5 8 ... 38463 38465 38482]

y\_test\_df Animal.ID: [ 4 5 8 ... 38463 38465 38482]

Accuracy: 0.5507

Precision: 0.5406

Recall: 0.5519

F1 Score: 0.5386

Log Loss: 5.2085

y\_pred\_df Animal.ID: [ 3 7 14 ... 38475 38477 38479]

y\_test\_df Animal.ID: [ 3 7 14 ... 38475 38477 38479]

Accuracy: 0.5398

Precision: 0.5249

Recall: 0.5422

F1 Score: 0.5274

Log Loss: 5.2895

y\_pred\_df Animal.ID: [ 9 12 13 ... 38476 38478 38480]

y\_test\_df Animal.ID: [ 9 12 13 ... 38476 38478 38480]

Accuracy: 0.5379

Precision: 0.5211

Recall: 0.5394

F1 Score: 0.5248

Log Loss: 5.1908

Average Metrics for Repetition 3/10:

Accuracy: 0.5440

Precision: 0.5287

Recall: 0.5465

F1\_score: 0.5309

Log\_loss: 5.2651

Cross-Validation Repeat: 4/10

y\_pred\_df Animal.ID: [ 3 9 13 ... 38471 38474 38479]

y\_test\_df Animal.ID: [ 3 9 13 ... 38471 38474 38479]

Accuracy: 0.5449

Precision: 0.5263

Recall: 0.5464

F1 Score: 0.5310

Log Loss: 5.1888

y\_pred\_df Animal.ID: [ 5 11 15 ... 38461 38473 38480]

y\_test\_df Animal.ID: [ 5 11 15 ... 38461 38473 38480]

Accuracy: 0.5397

Precision: 0.5224

Recall: 0.5410

F1 Score: 0.5250

Log Loss: 5.1943

y\_pred\_df Animal.ID: [ 14 16 19 ... 38464 38465 38476]

y\_test\_df Animal.ID: [ 14 16 19 ... 38464 38465 38476]

Accuracy: 0.5323

Precision: 0.5152

Recall: 0.5346

F1 Score: 0.5199

Log Loss: 5.2032

y\_pred\_df Animal.ID: [ 0 1 6 ... 38470 38477 38481]

y\_test\_df Animal.ID: [ 0 1 6 ... 38470 38477 38481]

Accuracy: 0.5355

Precision: 0.5204

Recall: 0.5398

F1 Score: 0.5245

Log Loss: 5.2728

y\_pred\_df Animal.ID: [ 2 4 8 ... 38475 38478 38482]

y\_test\_df Animal.ID: [ 2 4 8 ... 38475 38478 38482]

Accuracy: 0.5404

Precision: 0.5264

Recall: 0.5431

F1 Score: 0.5289

Log Loss: 5.0801

Average Metrics for Repetition 4/10:

Accuracy: 0.5385

Precision: 0.5221

Recall: 0.5410

F1\_score: 0.5259

Log\_loss: 5.1878

Cross-Validation Repeat: 5/10

y\_pred\_df Animal.ID: [ 0 5 19 ... 38473 38480 38481]

y\_test\_df Animal.ID: [ 0 5 19 ... 38473 38480 38481]

Accuracy: 0.5444

Precision: 0.5336

Recall: 0.5481

F1 Score: 0.5333

Log Loss: 5.1884

y\_pred\_df Animal.ID: [ 4 7 9 ... 38468 38478 38479]

y\_test\_df Animal.ID: [ 4 7 9 ... 38468 38478 38479]

Accuracy: 0.5409

Precision: 0.5277

Recall: 0.5451

F1 Score: 0.5299

Log Loss: 5.3278

y\_pred\_df Animal.ID: [ 3 6 8 ... 38475 38477 38482]

y\_test\_df Animal.ID: [ 3 6 8 ... 38475 38477 38482]

Accuracy: 0.5380

Precision: 0.5201

Recall: 0.5393

F1 Score: 0.5245

Log Loss: 5.3423

y\_pred\_df Animal.ID: [ 1 15 17 ... 38469 38471 38476]

y\_test\_df Animal.ID: [ 1 15 17 ... 38469 38471 38476]

Accuracy: 0.5505

Precision: 0.5392

Recall: 0.5542

F1 Score: 0.5387

Log Loss: 4.9761

y\_pred\_df Animal.ID: [ 2 21 27 ... 38466 38470 38474]

y\_test\_df Animal.ID: [ 2 21 27 ... 38466 38470 38474]

Accuracy: 0.5343

Precision: 0.5158

Recall: 0.5355

F1 Score: 0.5203

Log Loss: 5.4260

Average Metrics for Repetition 5/10:

Accuracy: 0.5416

Precision: 0.5273

Recall: 0.5444

F1\_score: 0.5293

Log\_loss: 5.2521

Cross-Validation Repeat: 6/10

y\_pred\_df Animal.ID: [ 3 5 7 ... 38466 38469 38471]

y\_test\_df Animal.ID: [ 3 5 7 ... 38466 38469 38471]

Accuracy: 0.5497

Precision: 0.5335

Recall: 0.5526

F1 Score: 0.5377

Log Loss: 5.0202

y\_pred\_df Animal.ID: [ 6 13 16 ... 38474 38477 38480]

y\_test\_df Animal.ID: [ 6 13 16 ... 38474 38477 38480]

Accuracy: 0.5385

Precision: 0.5290

Recall: 0.5400

F1 Score: 0.5251

Log Loss: 5.2342

y\_pred\_df Animal.ID: [ 0 8 12 ... 38472 38475 38482]

y\_test\_df Animal.ID: [ 0 8 12 ... 38472 38475 38482]

Accuracy: 0.5346

Precision: 0.5223

Recall: 0.5380

F1 Score: 0.5245

Log Loss: 5.2876

y\_pred\_df Animal.ID: [ 1 2 4 ... 38470 38479 38481]

y\_test\_df Animal.ID: [ 1 2 4 ... 38470 38479 38481]

Accuracy: 0.5356

Precision: 0.5218

Recall: 0.5392

F1 Score: 0.5233

Log Loss: 5.4671

y\_pred\_df Animal.ID: [ 10 18 20 ... 38473 38476 38478]

y\_test\_df Animal.ID: [ 10 18 20 ... 38473 38476 38478]

Accuracy: 0.5463

Precision: 0.5277

Recall: 0.5483

F1 Score: 0.5322

Log Loss: 5.3039

Average Metrics for Repetition 6/10:

Accuracy: 0.5409

Precision: 0.5269

Recall: 0.5436

F1\_score: 0.5285

Log\_loss: 5.2626

Cross-Validation Repeat: 7/10

y\_pred\_df Animal.ID: [ 7 18 21 ... 38466 38472 38481]

y\_test\_df Animal.ID: [ 7 18 21 ... 38466 38472 38481]

Accuracy: 0.5394

Precision: 0.5245

Recall: 0.5431

F1 Score: 0.5274

Log Loss: 5.2858

y\_pred\_df Animal.ID: [ 4 8 16 ... 38478 38479 38480]

y\_test\_df Animal.ID: [ 4 8 16 ... 38478 38479 38480]

Accuracy: 0.5388

Precision: 0.5237

Recall: 0.5423

F1 Score: 0.5271

Log Loss: 5.2106

y\_pred\_df Animal.ID: [ 1 2 3 ... 38468 38477 38482]

y\_test\_df Animal.ID: [ 1 2 3 ... 38468 38477 38482]

Accuracy: 0.5368

Precision: 0.5207

Recall: 0.5396

F1 Score: 0.5249

Log Loss: 5.3037

y\_pred\_df Animal.ID: [ 5 12 13 ... 38463 38464 38469]

y\_test\_df Animal.ID: [ 5 12 13 ... 38463 38464 38469]

Accuracy: 0.5387

Precision: 0.5241

Recall: 0.5399

F1 Score: 0.5251

Log Loss: 5.3669

y\_pred\_df Animal.ID: [ 0 6 19 ... 38459 38471 38475]

y\_test\_df Animal.ID: [ 0 6 19 ... 38459 38471 38475]

Accuracy: 0.5453

Precision: 0.5277

Recall: 0.5471

F1 Score: 0.5326

Log Loss: 5.3131

Average Metrics for Repetition 7/10:

Accuracy: 0.5398

Precision: 0.5241

Recall: 0.5424

F1\_score: 0.5274

Log\_loss: 5.2960

Cross-Validation Repeat: 8/10

y\_pred\_df Animal.ID: [ 19 30 32 ... 38456 38458 38459]

y\_test\_df Animal.ID: [ 19 30 32 ... 38456 38458 38459]

Accuracy: 0.5371

Precision: 0.5237

Recall: 0.5416

F1 Score: 0.5280

Log Loss: 5.4063

y\_pred\_df Animal.ID: [ 2 8 15 ... 38472 38476 38480]

y\_test\_df Animal.ID: [ 2 8 15 ... 38472 38476 38480]

Accuracy: 0.5429

Precision: 0.5297

Recall: 0.5463

F1 Score: 0.5300

Log Loss: 5.3731

y\_pred\_df Animal.ID: [ 1 3 7 ... 38471 38481 38482]

y\_test\_df Animal.ID: [ 1 3 7 ... 38471 38481 38482]

Accuracy: 0.5312

Precision: 0.5236

Recall: 0.5339

F1 Score: 0.5199

Log Loss: 5.0709

y\_pred\_df Animal.ID: [ 0 4 5 ... 38477 38478 38479]

y\_test\_df Animal.ID: [ 0 4 5 ... 38477 38478 38479]

Accuracy: 0.5427

Precision: 0.5193

Recall: 0.5431

F1 Score: 0.5271

Log Loss: 5.2014

y\_pred\_df Animal.ID: [ 6 10 14 ... 38470 38474 38475]

y\_test\_df Animal.ID: [ 6 10 14 ... 38470 38474 38475]

Accuracy: 0.5453

Precision: 0.5256

Recall: 0.5468

F1 Score: 0.5304

Log Loss: 5.3267

Average Metrics for Repetition 8/10:

Accuracy: 0.5399

Precision: 0.5244

Recall: 0.5423

F1\_score: 0.5271

Log\_loss: 5.2757

Cross-Validation Repeat: 9/10

y\_pred\_df Animal.ID: [ 11 19 23 ... 38478 38479 38481]

y\_test\_df Animal.ID: [ 11 19 23 ... 38478 38479 38481]

Accuracy: 0.5470

Precision: 0.5367

Recall: 0.5500

F1 Score: 0.5355

Log Loss: 5.0937

y\_pred\_df Animal.ID: [ 7 9 14 ... 38462 38466 38467]

y\_test\_df Animal.ID: [ 7 9 14 ... 38462 38466 38467]

Accuracy: 0.5479

Precision: 0.5344

Recall: 0.5512

F1 Score: 0.5373

Log Loss: 5.0706

y\_pred\_df Animal.ID: [ 0 2 6 ... 38469 38477 38482]

y\_test\_df Animal.ID: [ 0 2 6 ... 38469 38477 38482]

Accuracy: 0.5448

Precision: 0.5307

Recall: 0.5485

F1 Score: 0.5331

Log Loss: 5.4879

y\_pred\_df Animal.ID: [ 1 4 20 ... 38461 38470 38471]

y\_test\_df Animal.ID: [ 1 4 20 ... 38461 38470 38471]

Accuracy: 0.5356

Precision: 0.5163

Recall: 0.5390

F1 Score: 0.5238

Log Loss: 5.3415

y\_pred\_df Animal.ID: [ 3 5 8 ... 38472 38473 38480]

y\_test\_df Animal.ID: [ 3 5 8 ... 38472 38473 38480]

Accuracy: 0.5278

Precision: 0.5159

Recall: 0.5289

F1 Score: 0.5138

Log Loss: 5.3250

Average Metrics for Repetition 9/10:

Accuracy: 0.5406

Precision: 0.5268

Recall: 0.5435

F1\_score: 0.5287

Log\_loss: 5.2637

Cross-Validation Repeat: 10/10

y\_pred\_df Animal.ID: [ 2 4 12 ... 38476 38478 38479]

y\_test\_df Animal.ID: [ 2 4 12 ... 38476 38478 38479]

Accuracy: 0.5440

Precision: 0.5266

Recall: 0.5448

F1 Score: 0.5303

Log Loss: 5.1464

y\_pred\_df Animal.ID: [ 5 7 24 ... 38450 38451 38461]

y\_test\_df Animal.ID: [ 5 7 24 ... 38450 38451 38461]

Accuracy: 0.5398

Precision: 0.5202

Recall: 0.5414

F1 Score: 0.5247

Log Loss: 5.3991

y\_pred\_df Animal.ID: [ 1 27 32 ... 38460 38471 38480]

y\_test\_df Animal.ID: [ 1 27 32 ... 38460 38471 38480]

Accuracy: 0.5403

Precision: 0.5261

Recall: 0.5442

F1 Score: 0.5291

Log Loss: 5.1675

y\_pred\_df Animal.ID: [ 0 6 8 ... 38474 38475 38477]

y\_test\_df Animal.ID: [ 0 6 8 ... 38474 38475 38477]

Accuracy: 0.5465

Precision: 0.5313

Recall: 0.5500

F1 Score: 0.5336

Log Loss: 5.2061

y\_pred\_df Animal.ID: [ 3 9 10 ... 38470 38481 38482]

y\_test\_df Animal.ID: [ 3 9 10 ... 38470 38481 38482]

Accuracy: 0.5396

Precision: 0.5229

Recall: 0.5411

F1 Score: 0.5263

Log Loss: 5.3193

Average Metrics for Repetition 10/10:

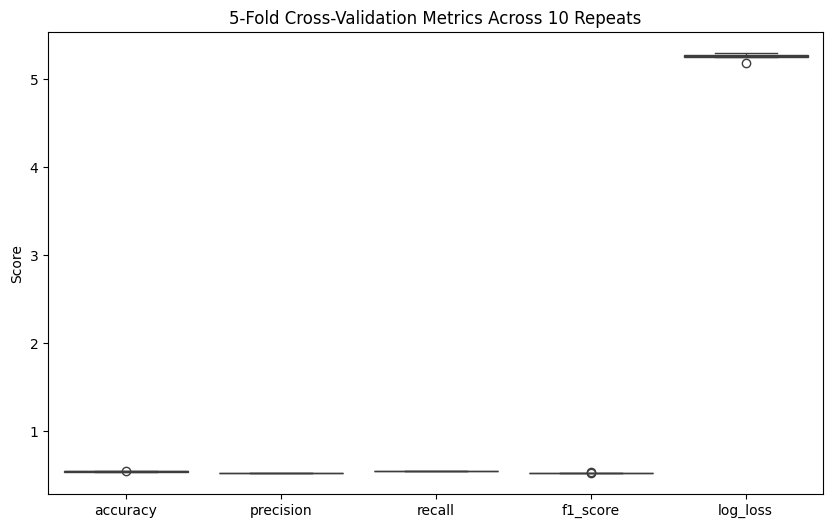
Accuracy: 0.5421

Precision: 0.5254

Recall: 0.5443

F1\_score: 0.5288

Log\_loss: 5.2477



**KNN Cross Validation Results (PCA)**:

Cross-Validation Repeat: 1/10

y\_pred\_df Animal.ID: [ 6 17 18 ... 38475 38476 38482]

y\_test\_df Animal.ID: [ 6 17 18 ... 38475 38476 38482]

Accuracy: 0.5275

Precision: 0.5093

Recall: 0.5284

F1 Score: 0.5133

Log Loss: 5.4685

y\_pred\_df Animal.ID: [ 3 4 7 ... 38469 38470 38479]

y\_test\_df Animal.ID: [ 3 4 7 ... 38469 38470 38479]

Accuracy: 0.5380

Precision: 0.5195

Recall: 0.5405

F1 Score: 0.5239

Log Loss: 5.4981

y\_pred\_df Animal.ID: [ 0 1 2 ... 38468 38478 38481]

y\_test\_df Animal.ID: [ 0 1 2 ... 38468 38478 38481]

Accuracy: 0.5402

Precision: 0.5241

Recall: 0.5437

F1 Score: 0.5285

Log Loss: 5.3316

y\_pred\_df Animal.ID: [ 5 14 20 ... 38471 38472 38477]

y\_test\_df Animal.ID: [ 5 14 20 ... 38471 38472 38477]

Accuracy: 0.5390

Precision: 0.5209

Recall: 0.5414

F1 Score: 0.5272

Log Loss: 5.1755

y\_pred\_df Animal.ID: [ 10 11 13 ... 38463 38473 38480]

y\_test\_df Animal.ID: [ 10 11 13 ... 38463 38473 38480]

Accuracy: 0.5351

Precision: 0.5170

Recall: 0.5365

F1 Score: 0.5208

Log Loss: 5.2860

Average Metrics for Repetition 1/10:

Accuracy: 0.5360

Precision: 0.5182

Recall: 0.5381

F1\_score: 0.5227

Log\_loss: 5.3519

Cross-Validation Repeat: 2/10

y\_pred\_df Animal.ID: [ 2 3 8 ... 38473 38478 38479]

y\_test\_df Animal.ID: [ 2 3 8 ... 38473 38478 38479]

Accuracy: 0.5380

Precision: 0.5297

Recall: 0.5395

F1 Score: 0.5242

Log Loss: 5.3386

y\_pred\_df Animal.ID: [ 26 29 32 ... 38455 38468 38470]

y\_test\_df Animal.ID: [ 26 29 32 ... 38455 38468 38470]

Accuracy: 0.5374

Precision: 0.5190

Recall: 0.5387

F1 Score: 0.5227

Log Loss: 5.1557

y\_pred\_df Animal.ID: [ 0 4 5 ... 38472 38474 38477]

y\_test\_df Animal.ID: [ 0 4 5 ... 38472 38474 38477]

Accuracy: 0.5329

Precision: 0.5172

Recall: 0.5342

F1 Score: 0.5200

Log Loss: 5.4178

y\_pred\_df Animal.ID: [ 1 31 39 ... 38476 38480 38482]

y\_test\_df Animal.ID: [ 1 31 39 ... 38476 38480 38482]

Accuracy: 0.5408

Precision: 0.5255

Recall: 0.5449

F1 Score: 0.5300

Log Loss: 5.3706

y\_pred\_df Animal.ID: [ 9 10 14 ... 38471 38475 38481]

y\_test\_df Animal.ID: [ 9 10 14 ... 38471 38475 38481]

Accuracy: 0.5303

Precision: 0.5116

Recall: 0.5312

F1 Score: 0.5150

Log Loss: 5.3749

Average Metrics for Repetition 2/10:

Accuracy: 0.5359

Precision: 0.5206

Recall: 0.5377

F1\_score: 0.5224

Log\_loss: 5.3315

Cross-Validation Repeat: 3/10

y\_pred\_df Animal.ID: [ 0 2 11 ... 38467 38474 38481]

y\_test\_df Animal.ID: [ 0 2 11 ... 38467 38474 38481]

Accuracy: 0.5357

Precision: 0.5161

Recall: 0.5392

F1 Score: 0.5227

Log Loss: 5.4603

y\_pred\_df Animal.ID: [ 1 6 19 ... 38464 38470 38472]

y\_test\_df Animal.ID: [ 1 6 19 ... 38464 38470 38472]

Accuracy: 0.5407

Precision: 0.5235

Recall: 0.5444

F1 Score: 0.5265

Log Loss: 5.3617

y\_pred\_df Animal.ID: [ 4 5 8 ... 38463 38465 38482]

y\_test\_df Animal.ID: [ 4 5 8 ... 38463 38465 38482]

Accuracy: 0.5422

Precision: 0.5270

Recall: 0.5434

F1 Score: 0.5289

Log Loss: 5.2410

y\_pred\_df Animal.ID: [ 3 7 14 ... 38475 38477 38479]

y\_test\_df Animal.ID: [ 3 7 14 ... 38475 38477 38479]

Accuracy: 0.5374

Precision: 0.5235

Recall: 0.5399

F1 Score: 0.5246

Log Loss: 5.2092

y\_pred\_df Animal.ID: [ 9 12 13 ... 38476 38478 38480]

y\_test\_df Animal.ID: [ 9 12 13 ... 38476 38478 38480]

Accuracy: 0.5342

Precision: 0.5160

Recall: 0.5356

F1 Score: 0.5210

Log Loss: 5.3986

Average Metrics for Repetition 3/10:

Accuracy: 0.5380

Precision: 0.5212

Recall: 0.5405

F1\_score: 0.5247

Log\_loss: 5.3342

Cross-Validation Repeat: 4/10

y\_pred\_df Animal.ID: [ 3 9 13 ... 38471 38474 38479]

y\_test\_df Animal.ID: [ 3 9 13 ... 38471 38474 38479]

Accuracy: 0.5383

Precision: 0.5201

Recall: 0.5398

F1 Score: 0.5236

Log Loss: 5.3403

y\_pred\_df Animal.ID: [ 5 11 15 ... 38461 38473 38480]

y\_test\_df Animal.ID: [ 5 11 15 ... 38461 38473 38480]

Accuracy: 0.5364

Precision: 0.5162

Recall: 0.5377

F1 Score: 0.5216

Log Loss: 5.3214

y\_pred\_df Animal.ID: [ 14 16 19 ... 38464 38465 38476]

y\_test\_df Animal.ID: [ 14 16 19 ... 38464 38465 38476]

Accuracy: 0.5276

Precision: 0.5128

Recall: 0.5285

F1 Score: 0.5136

Log Loss: 5.2561

y\_pred\_df Animal.ID: [ 0 1 6 ... 38470 38477 38481]

y\_test\_df Animal.ID: [ 0 1 6 ... 38470 38477 38481]

Accuracy: 0.5330

Precision: 0.5146

Recall: 0.5373

F1 Score: 0.5211

Log Loss: 5.3195

y\_pred\_df Animal.ID: [ 2 4 8 ... 38475 38478 38482]

y\_test\_df Animal.ID: [ 2 4 8 ... 38475 38478 38482]

Accuracy: 0.5408

Precision: 0.5271

Recall: 0.5435

F1 Score: 0.5294

Log Loss: 5.0470

Average Metrics for Repetition 4/10:

Accuracy: 0.5352

Precision: 0.5182

Recall: 0.5374

F1\_score: 0.5219

Log\_loss: 5.2569

Cross-Validation Repeat: 5/10

y\_pred\_df Animal.ID: [ 0 5 19 ... 38473 38480 38481]

y\_test\_df Animal.ID: [ 0 5 19 ... 38473 38480 38481]

Accuracy: 0.5432

Precision: 0.5263

Recall: 0.5460

F1 Score: 0.5299

Log Loss: 5.3273

y\_pred\_df Animal.ID: [ 4 7 9 ... 38468 38478 38479]

y\_test\_df Animal.ID: [ 4 7 9 ... 38468 38478 38479]

Accuracy: 0.5354

Precision: 0.5199

Recall: 0.5396

F1 Score: 0.5242

Log Loss: 5.3551

y\_pred\_df Animal.ID: [ 3 6 8 ... 38475 38477 38482]

y\_test\_df Animal.ID: [ 3 6 8 ... 38475 38477 38482]

Accuracy: 0.5388

Precision: 0.5201

Recall: 0.5400

F1 Score: 0.5246

Log Loss: 5.2842

y\_pred\_df Animal.ID: [ 1 15 17 ... 38469 38471 38476]

y\_test\_df Animal.ID: [ 1 15 17 ... 38469 38471 38476]

Accuracy: 0.5425

Precision: 0.5283

Recall: 0.5461

F1 Score: 0.5304

Log Loss: 5.1668

y\_pred\_df Animal.ID: [ 2 21 27 ... 38466 38470 38474]

y\_test\_df Animal.ID: [ 2 21 27 ... 38466 38470 38474]

Accuracy: 0.5234

Precision: 0.5066

Recall: 0.5258

F1 Score: 0.5108

Log Loss: 5.4258

Average Metrics for Repetition 5/10:

Accuracy: 0.5367

Precision: 0.5202

Recall: 0.5395

F1\_score: 0.5240

Log\_loss: 5.3119

Cross-Validation Repeat: 6/10

y\_pred\_df Animal.ID: [ 3 5 7 ... 38466 38469 38471]

y\_test\_df Animal.ID: [ 3 5 7 ... 38466 38469 38471]

Accuracy: 0.5470

Precision: 0.5305

Recall: 0.5485

F1 Score: 0.5335

Log Loss: 5.0666

y\_pred\_df Animal.ID: [ 6 13 16 ... 38474 38477 38480]

y\_test\_df Animal.ID: [ 6 13 16 ... 38474 38477 38480]

Accuracy: 0.5328

Precision: 0.5209

Recall: 0.5364

F1 Score: 0.5217

Log Loss: 5.3817

y\_pred\_df Animal.ID: [ 0 8 12 ... 38472 38475 38482]

y\_test\_df Animal.ID: [ 0 8 12 ... 38472 38475 38482]

Accuracy: 0.5362

Precision: 0.5203

Recall: 0.5388

F1 Score: 0.5247

Log Loss: 5.4626

y\_pred\_df Animal.ID: [ 1 2 4 ... 38470 38479 38481]

y\_test\_df Animal.ID: [ 1 2 4 ... 38470 38479 38481]

Accuracy: 0.5295

Precision: 0.5071

Recall: 0.5308

F1 Score: 0.5145

Log Loss: 5.3893

y\_pred\_df Animal.ID: [ 10 18 20 ... 38473 38476 38478]

y\_test\_df Animal.ID: [ 10 18 20 ... 38473 38476 38478]

Accuracy: 0.5374

Precision: 0.5242

Recall: 0.5395

F1 Score: 0.5230

Log Loss: 5.3704

Average Metrics for Repetition 6/10:

Accuracy: 0.5366

Precision: 0.5206

Recall: 0.5388

F1\_score: 0.5235

Log\_loss: 5.3341

Cross-Validation Repeat: 7/10

y\_pred\_df Animal.ID: [ 7 18 21 ... 38466 38472 38481]

y\_test\_df Animal.ID: [ 7 18 21 ... 38466 38472 38481]

Accuracy: 0.5307

Precision: 0.5130

Recall: 0.5318

F1 Score: 0.5159

Log Loss: 5.4024

y\_pred\_df Animal.ID: [ 4 8 16 ... 38478 38479 38480]

y\_test\_df Animal.ID: [ 4 8 16 ... 38478 38479 38480]

Accuracy: 0.5393

Precision: 0.5246

Recall: 0.5428

F1 Score: 0.5275

Log Loss: 5.3959

y\_pred\_df Animal.ID: [ 1 2 3 ... 38468 38477 38482]

y\_test\_df Animal.ID: [ 1 2 3 ... 38468 38477 38482]

Accuracy: 0.5405

Precision: 0.5219

Recall: 0.5410

F1 Score: 0.5256

Log Loss: 5.3013

y\_pred\_df Animal.ID: [ 5 12 13 ... 38463 38464 38469]

y\_test\_df Animal.ID: [ 5 12 13 ... 38463 38464 38469]

Accuracy: 0.5318

Precision: 0.5148

Recall: 0.5330

F1 Score: 0.5179

Log Loss: 5.4180

y\_pred\_df Animal.ID: [ 0 6 19 ... 38459 38471 38475]

y\_test\_df Animal.ID: [ 0 6 19 ... 38459 38471 38475]

Accuracy: 0.5348

Precision: 0.5189

Recall: 0.5387

F1 Score: 0.5228

Log Loss: 5.3288

Average Metrics for Repetition 7/10:

Accuracy: 0.5354

Precision: 0.5186

Recall: 0.5375

F1\_score: 0.5220

Log\_loss: 5.3693

Cross-Validation Repeat: 8/10

y\_pred\_df Animal.ID: [ 19 30 32 ... 38456 38458 38459]

y\_test\_df Animal.ID: [ 19 30 32 ... 38456 38458 38459]

Accuracy: 0.5323

Precision: 0.5157

Recall: 0.5367

F1 Score: 0.5228

Log Loss: 5.3274

y\_pred\_df Animal.ID: [ 2 8 15 ... 38472 38476 38480]

y\_test\_df Animal.ID: [ 2 8 15 ... 38472 38476 38480]

Accuracy: 0.5396

Precision: 0.5240

Recall: 0.5429

F1 Score: 0.5265

Log Loss: 5.4691

y\_pred\_df Animal.ID: [ 1 3 7 ... 38471 38481 38482]

y\_test\_df Animal.ID: [ 1 3 7 ... 38471 38481 38482]

Accuracy: 0.5312

Precision: 0.5212

Recall: 0.5339

F1 Score: 0.5191

Log Loss: 5.2659

y\_pred\_df Animal.ID: [ 0 4 5 ... 38477 38478 38479]

y\_test\_df Animal.ID: [ 0 4 5 ... 38477 38478 38479]

Accuracy: 0.5404

Precision: 0.5163

Recall: 0.5408

F1 Score: 0.5247

Log Loss: 5.3511

y\_pred\_df Animal.ID: [ 6 10 14 ... 38470 38474 38475]

y\_test\_df Animal.ID: [ 6 10 14 ... 38470 38474 38475]

Accuracy: 0.5357

Precision: 0.5171

Recall: 0.5387

F1 Score: 0.5202

Log Loss: 5.4442

Average Metrics for Repetition 8/10:

Accuracy: 0.5358

Precision: 0.5189

Recall: 0.5386

F1\_score: 0.5227

Log\_loss: 5.3715

Cross-Validation Repeat: 9/10

y\_pred\_df Animal.ID: [ 11 19 23 ... 38478 38479 38481]

y\_test\_df Animal.ID: [ 11 19 23 ... 38478 38479 38481]

Accuracy: 0.5440

Precision: 0.5267

Recall: 0.5453

F1 Score: 0.5302

Log Loss: 5.1912

y\_pred\_df Animal.ID: [ 7 9 14 ... 38462 38466 38467]

y\_test\_df Animal.ID: [ 7 9 14 ... 38462 38466 38467]

Accuracy: 0.5458

Precision: 0.5322

Recall: 0.5491

F1 Score: 0.5349

Log Loss: 5.1513

y\_pred\_df Animal.ID: [ 0 2 6 ... 38469 38477 38482]

y\_test\_df Animal.ID: [ 0 2 6 ... 38469 38477 38482]

Accuracy: 0.5314

Precision: 0.5187

Recall: 0.5350

F1 Score: 0.5197

Log Loss: 5.4911

y\_pred\_df Animal.ID: [ 1 4 20 ... 38461 38470 38471]

y\_test\_df Animal.ID: [ 1 4 20 ... 38461 38470 38471]

Accuracy: 0.5343

Precision: 0.5136

Recall: 0.5361

F1 Score: 0.5208

Log Loss: 5.2816

y\_pred\_df Animal.ID: [ 3 5 8 ... 38472 38473 38480]

y\_test\_df Animal.ID: [ 3 5 8 ... 38472 38473 38480]

Accuracy: 0.5316

Precision: 0.5170

Recall: 0.5327

F1 Score: 0.5169

Log Loss: 5.1792

Average Metrics for Repetition 9/10:

Accuracy: 0.5374

Precision: 0.5216

Recall: 0.5396

F1\_score: 0.5245

Log\_loss: 5.2589

Cross-Validation Repeat: 10/10

y\_pred\_df Animal.ID: [ 2 4 12 ... 38476 38478 38479]

y\_test\_df Animal.ID: [ 2 4 12 ... 38476 38478 38479]

Accuracy: 0.5390

Precision: 0.5237

Recall: 0.5422

F1 Score: 0.5281

Log Loss: 5.2380

y\_pred\_df Animal.ID: [ 5 7 24 ... 38450 38451 38461]

y\_test\_df Animal.ID: [ 5 7 24 ... 38450 38451 38461]

Accuracy: 0.5325

Precision: 0.5148

Recall: 0.5341

F1 Score: 0.5174

Log Loss: 5.5484

y\_pred\_df Animal.ID: [ 1 27 32 ... 38460 38471 38480]

y\_test\_df Animal.ID: [ 1 27 32 ... 38460 38471 38480]

Accuracy: 0.5354

Precision: 0.5207

Recall: 0.5392

F1 Score: 0.5234

Log Loss: 5.3332

y\_pred\_df Animal.ID: [ 0 6 8 ... 38474 38475 38477]

y\_test\_df Animal.ID: [ 0 6 8 ... 38474 38475 38477]

Accuracy: 0.5391

Precision: 0.5240

Recall: 0.5426

F1 Score: 0.5252

Log Loss: 5.2683

y\_pred\_df Animal.ID: [ 3 9 10 ... 38470 38481 38482]

y\_test\_df Animal.ID: [ 3 9 10 ... 38470 38481 38482]

Accuracy: 0.5333

Precision: 0.5136

Recall: 0.5347

F1 Score: 0.5197

Log Loss: 5.3293

Average Metrics for Repetition 10/10:

Accuracy: 0.5359

Precision: 0.5194

Recall: 0.5386

F1\_score: 0.5228

Log\_loss: 5.3435

