Predicting Wool-Sucking

Data Science “Cat-pstone” Project, Springboard

Gwen Toves

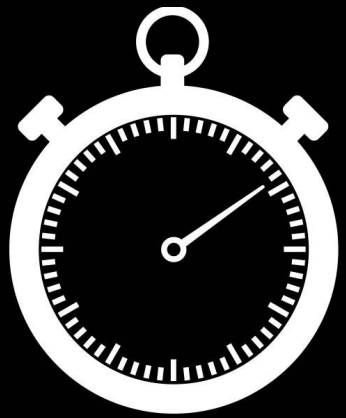
The Problem

The Problem

BuddyTheCat

The Problem

Takes too much one-on-one time to evaluate wool-sucking.



How can we identify wool-suckers that doesn't add more than 1 minute per intake evaluation?

APPROACH

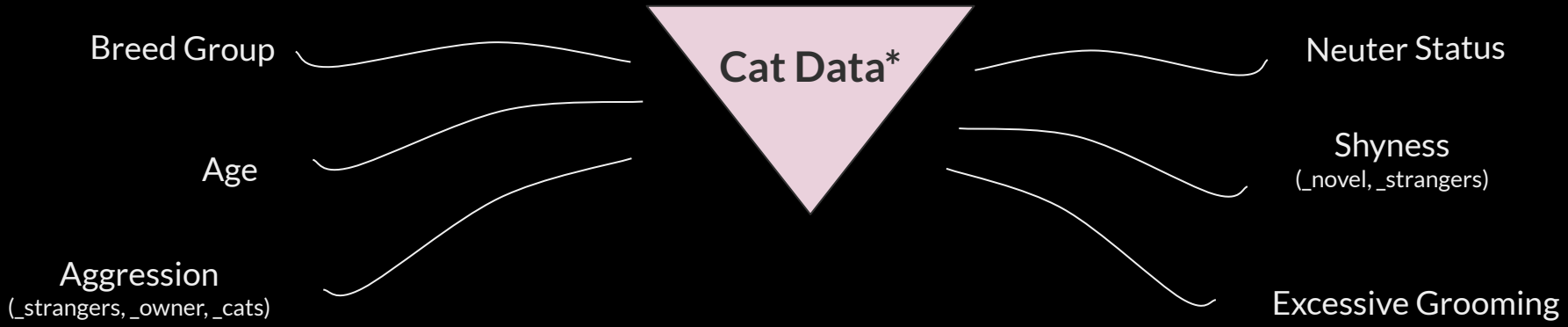
Find existing, public data

Ensure Features Align with Evaluations

Develop Binary Classifier to Identify Wool-Suckers

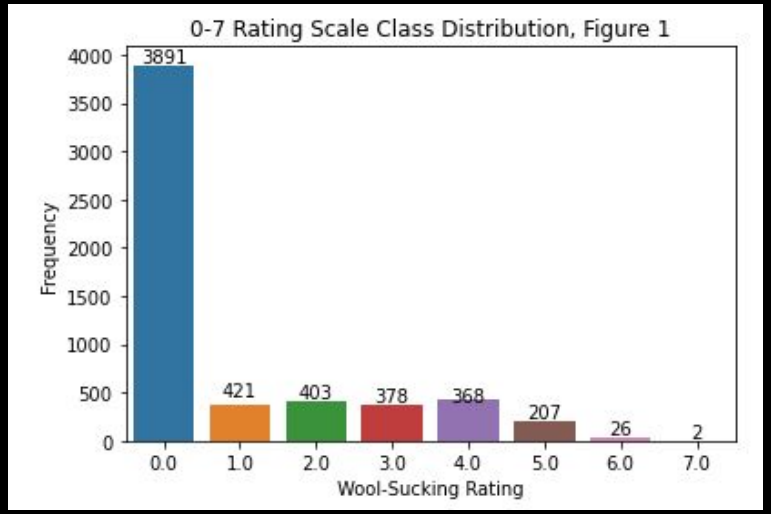
The Data

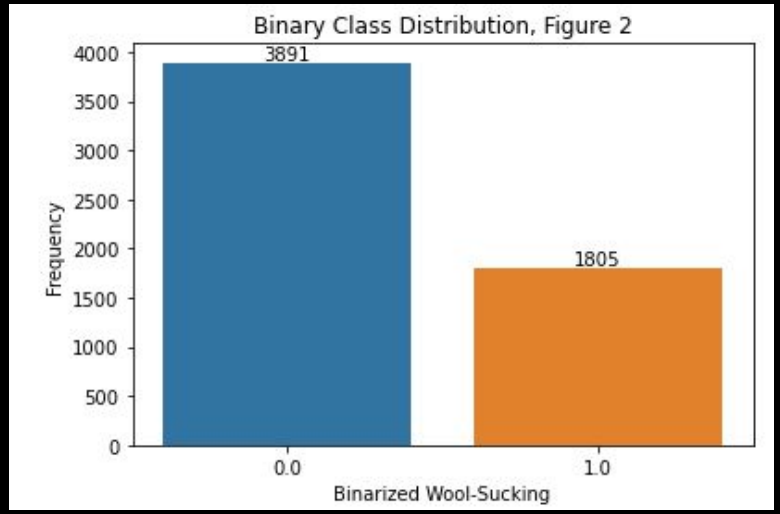
The Data



*Salonen et al. Breed differences of heritable behaviour traits in cats

The Data


0-7 Rating Scale Class Distribution, Figure 1
Frequency
Wool-Sucking Rating
0.0
1.0
2.0
3.0
4.0
5.0
6.0
7.0
3891
421
403
378
368
207
26
2
0
500
1000
1500
2000
2500
3000
3500
4000


Binary Class Distribution, Figure 2
Frequency
Binarized Wool-Sucking
0.0
1.0
3891
1805
0
500
1000
1500
2000
2500
3000
3500
4000

The Model

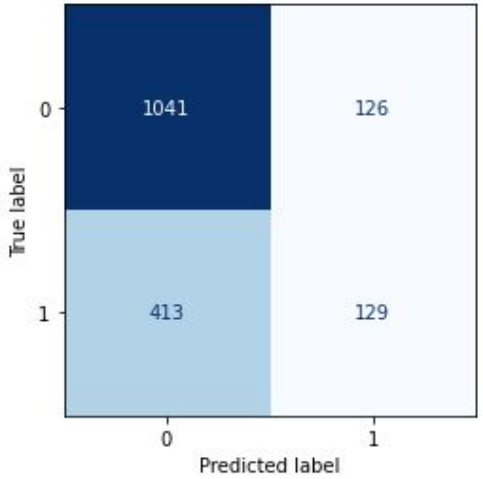
The Model

	Model	Recall	F1	Precision	Accuracy
2	Default RUS	0.627	0.52	0.444	0.633
3	Default ROS	0.627	0.52	0.444	0.633
1	class_weight='balanced'	0.622	0.519	0.446	0.635
0	Default	0.238	0.324	0.506	0.685

The Model

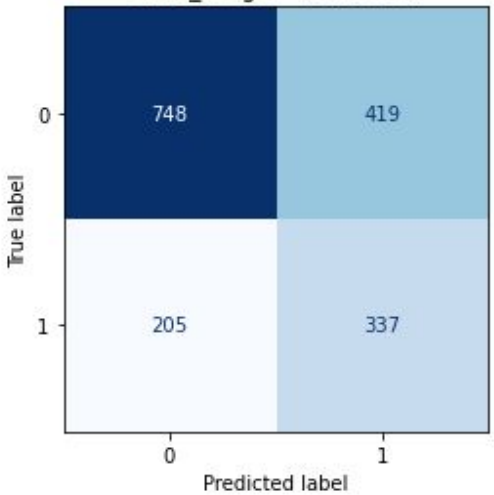
Model 0

Default



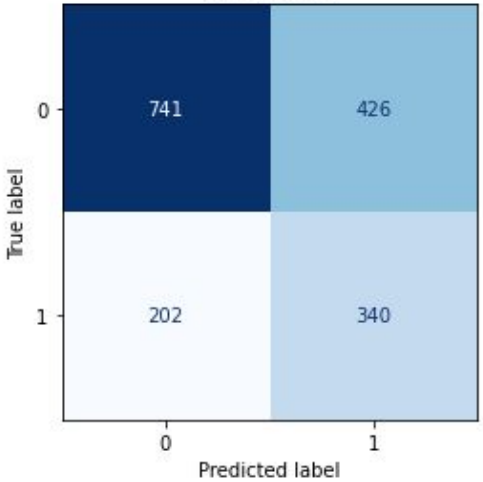
Model 1

class_weight='balanced'



Model 3

Default ROS



Insights

Positive Predictive

Turkish Van, Angora

Saint Birman

Balinese, Oriental L/S, Seychellois L/S, Siamese

Negative Predictive

Russian Blue

Persian

Burmese, Burmilla

Excessive Grooming

Positively Predicts Wool-Sucking

Behavior Problems and Spayed/Neutered

Positive Predictors of Wool-sucking

Recommendations

Breed Expert On Intake Staff

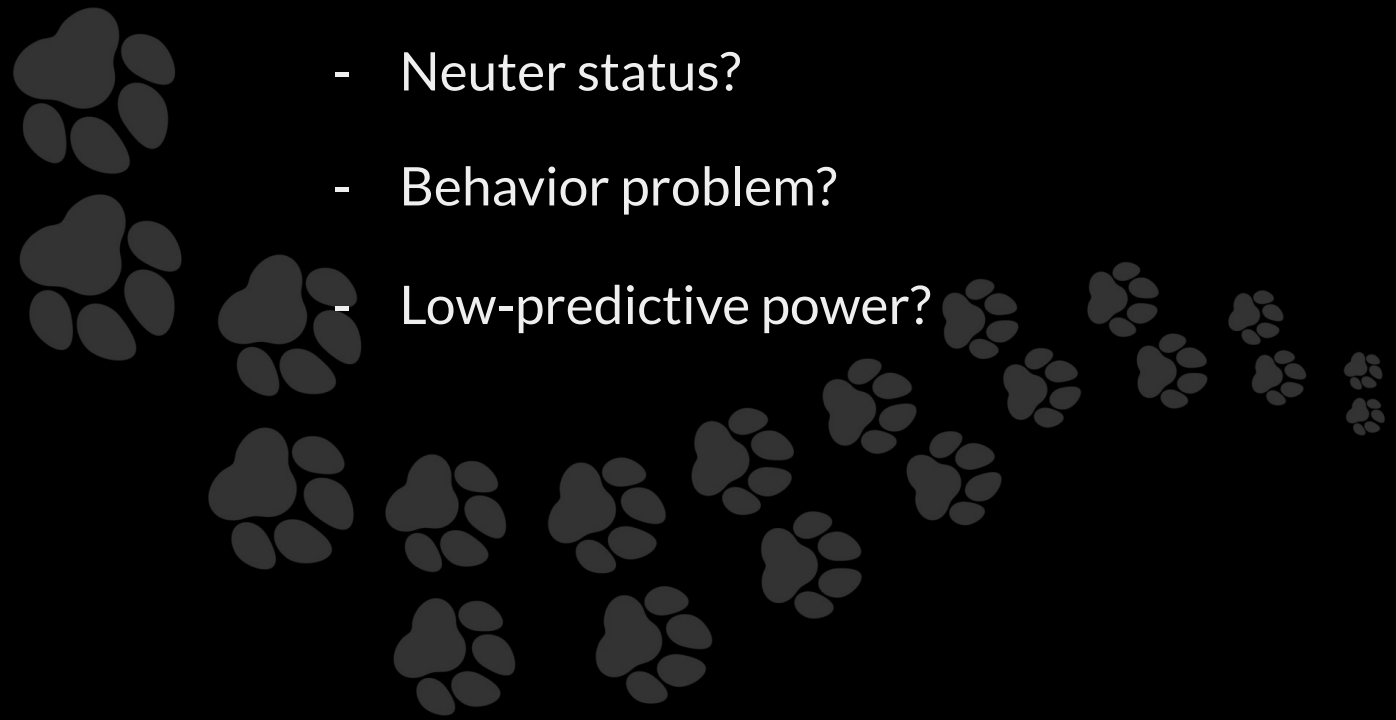
Monitor and Record Hairball Incidents

Excessive Grooming → More Hairballs

What’s Next?

Extend Feature Engineering:

- Neuter status?
- Behavior problem?
- Low-predictive power?



What's Next?

Non-Suckers
(Never)

Mild Sucker
(Yearly/Monthly)

Extreme Suckers
(Weekly/Daily)