



JAMES

Machine Learning, Regulation and
Ethics

Pedro Fonseca, Head of R&D @James

Before we get started

Yay! Logistics!

Who's this guy?

Pedro Fonseca

Co-founder & Head of R&D

@ James Finance

Data science instructor

@ Lisbon Data Science Academy

What is James Finance?

Fintech startup - AI for Credit Risk

31 people

Lisbon & NYC (... and Ohio)

Logistics over.

Machine Learning, Regulation and Ethics

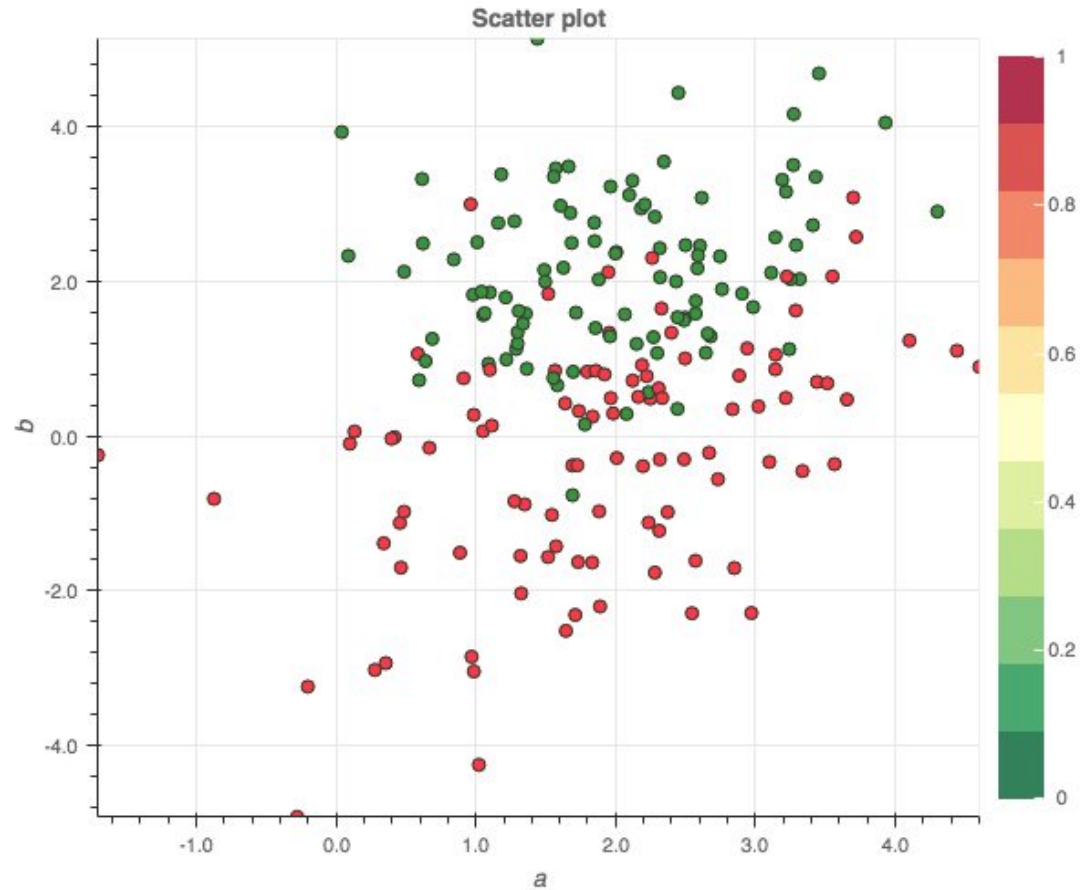
~~Machine Learning, Regulation and Ethics~~

Responsible Machine Learning, in 7 questions

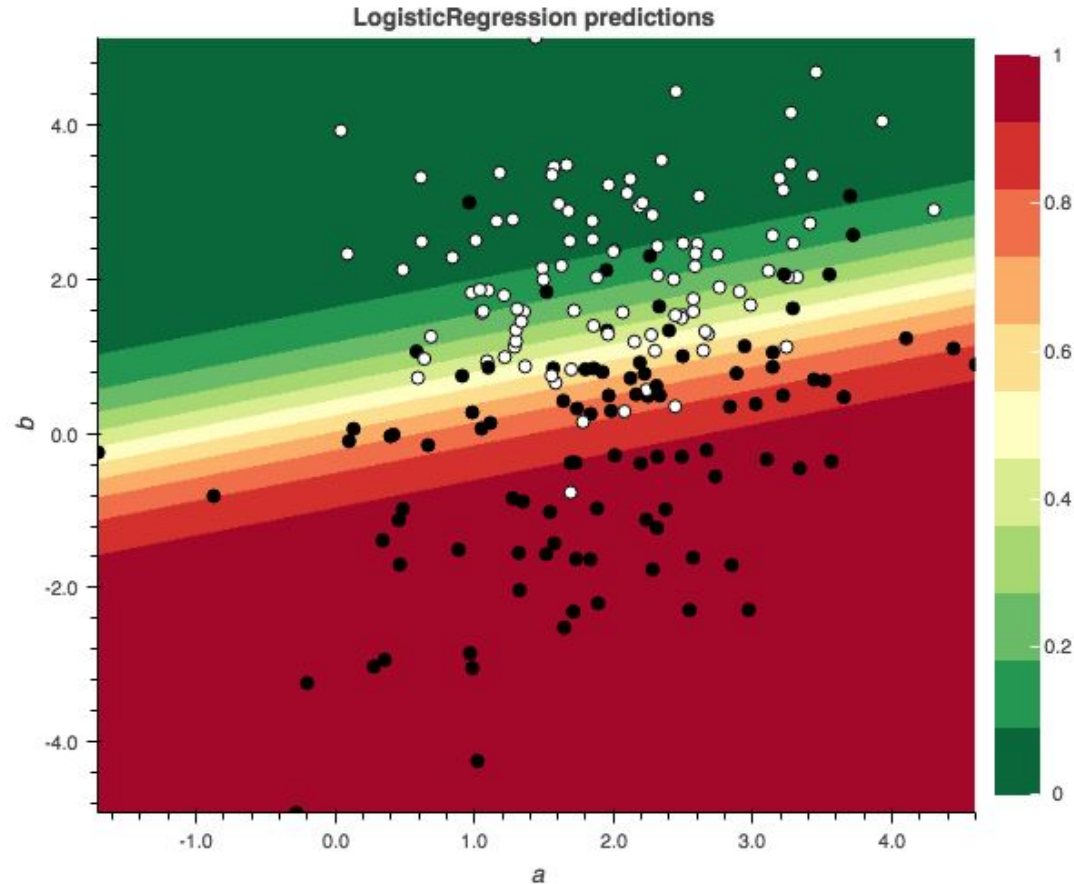
1. What is Machine Learning?

This is where a wall of text shows up.

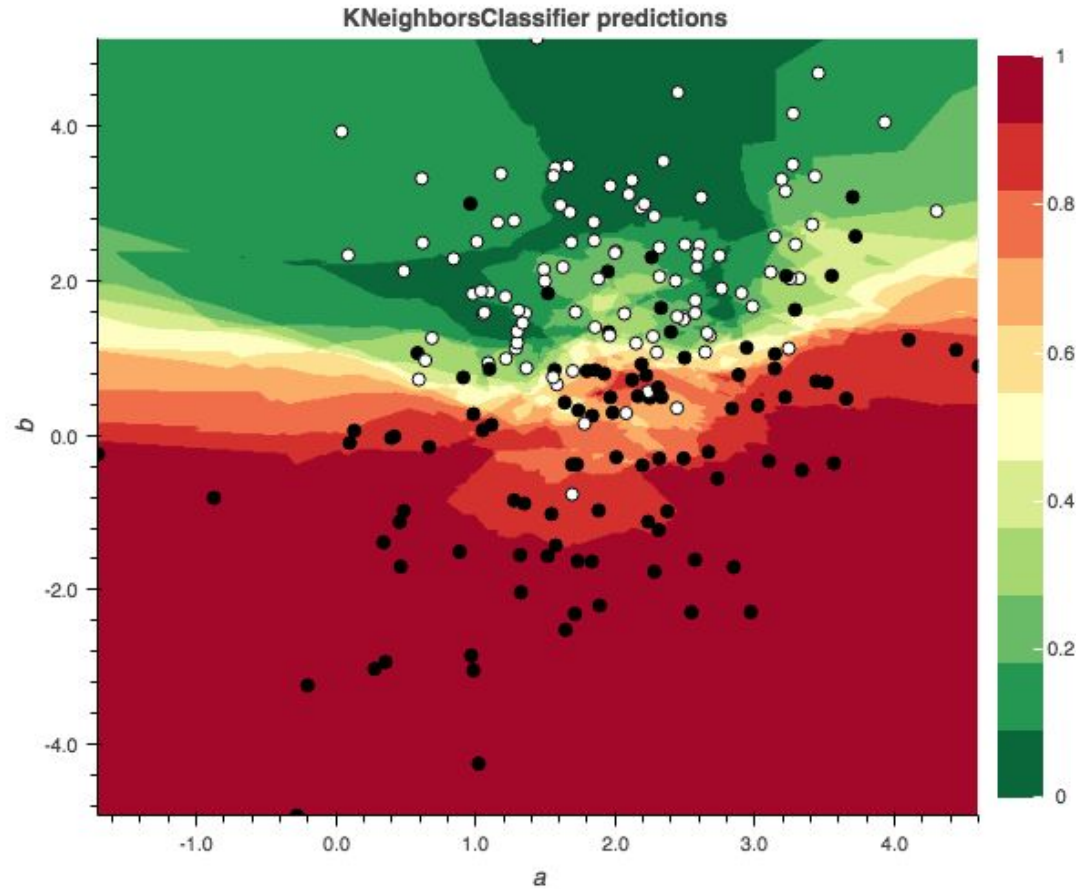
Linear dataset



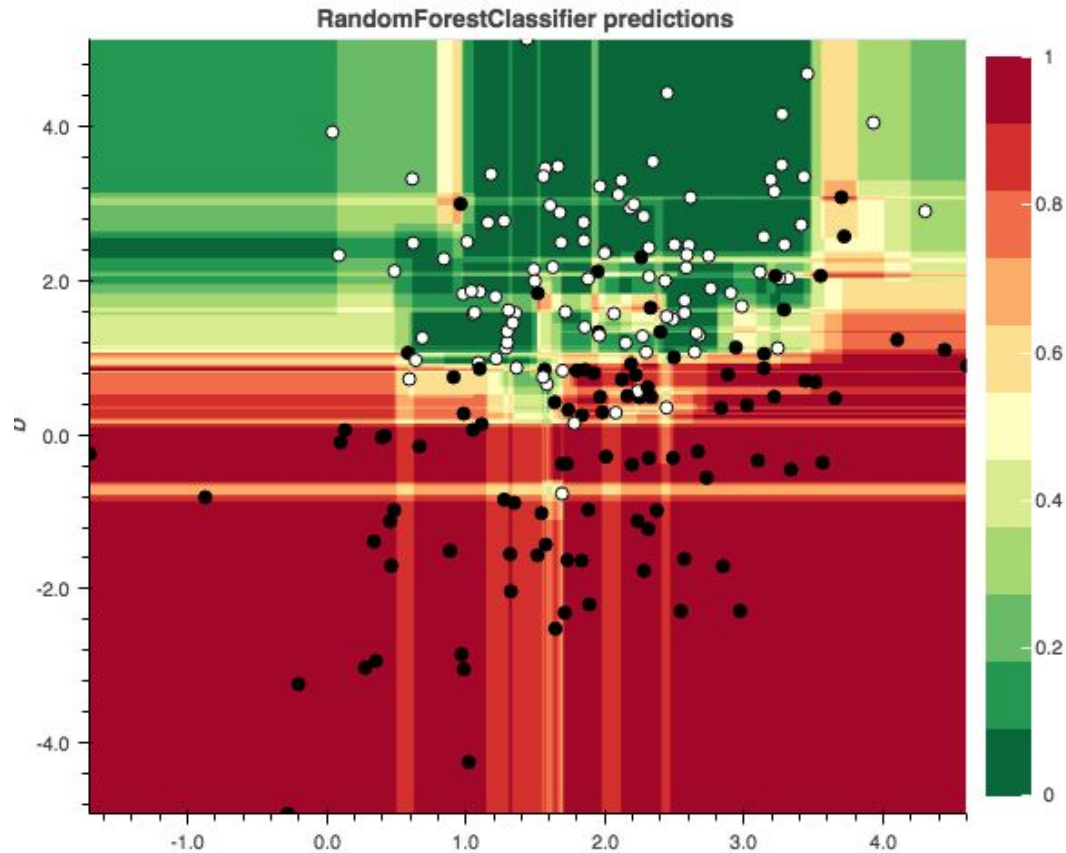
Linear dataset



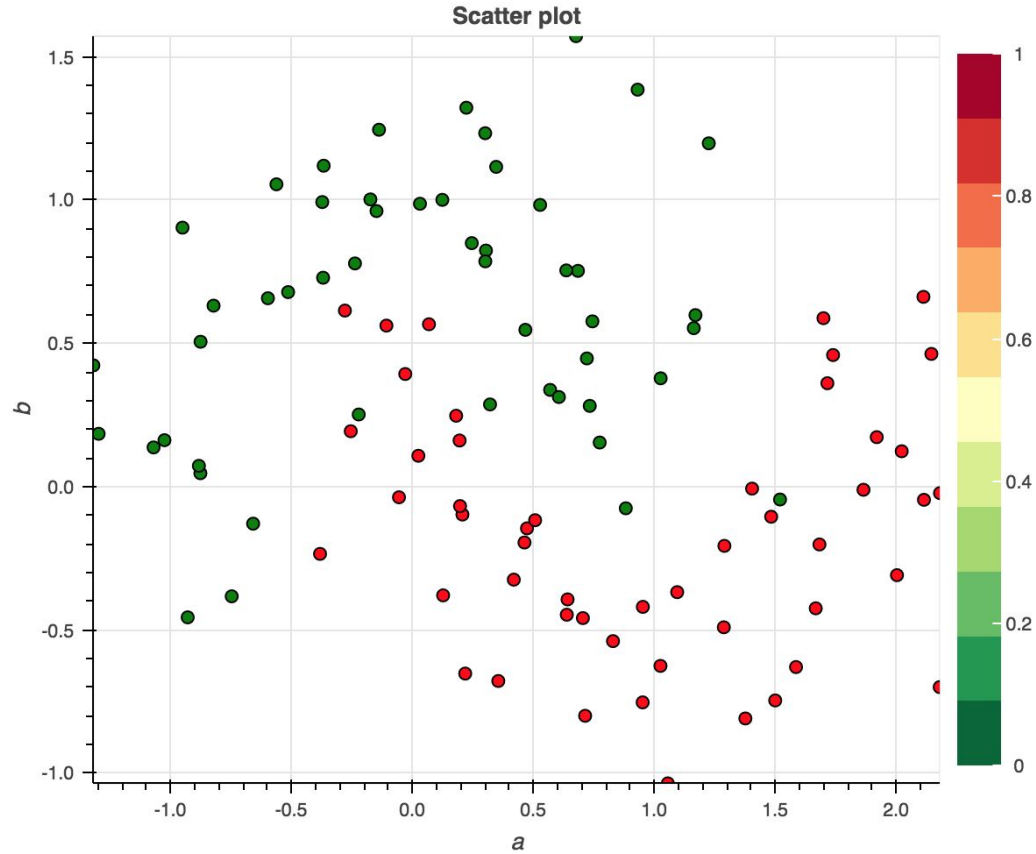
Linear dataset



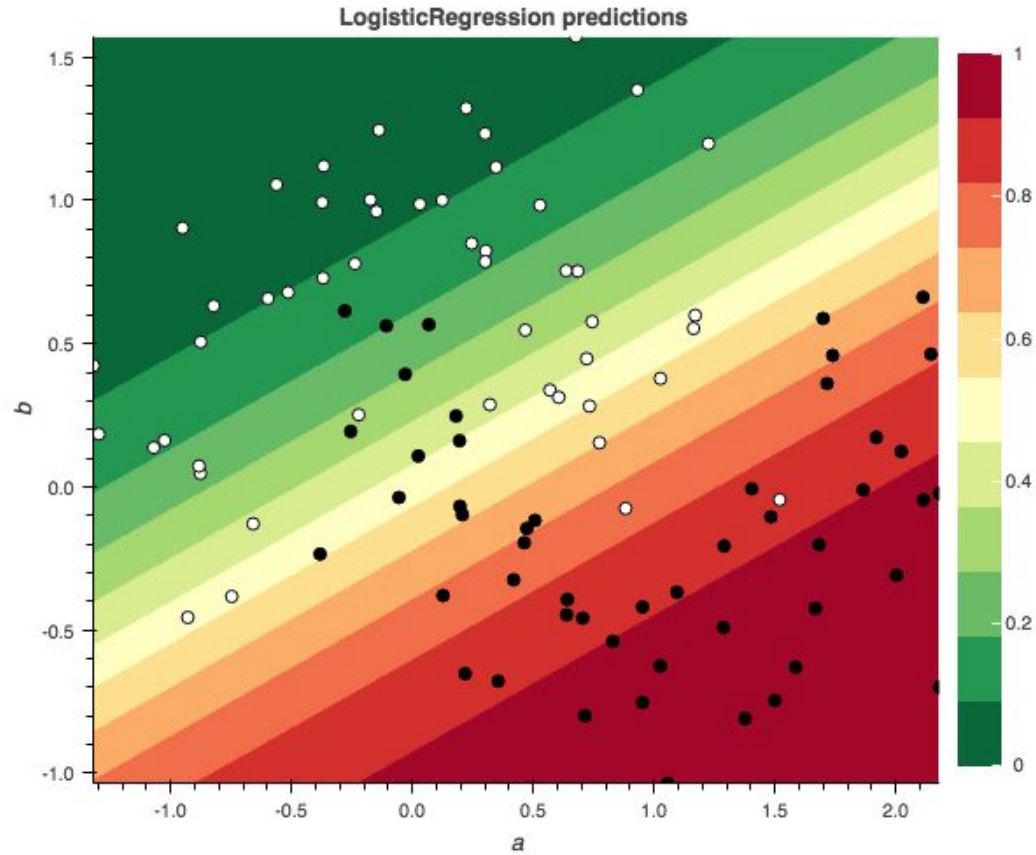
Linear dataset



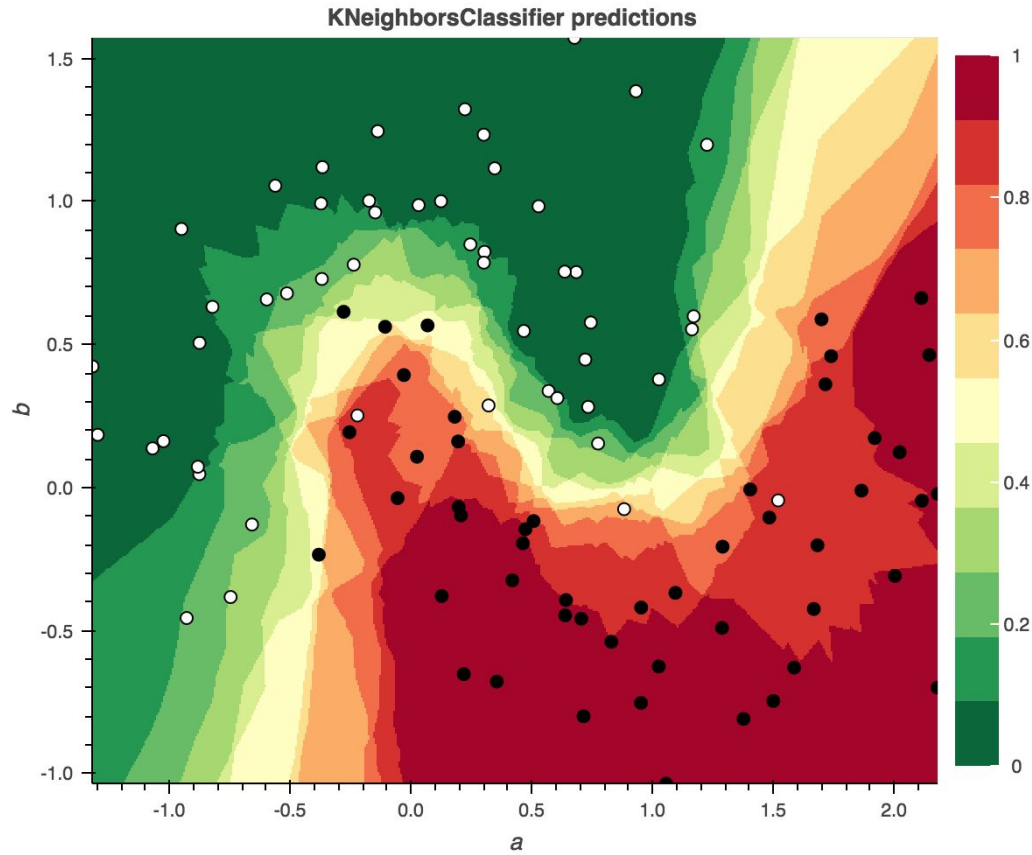
“Ying-yang” dataset



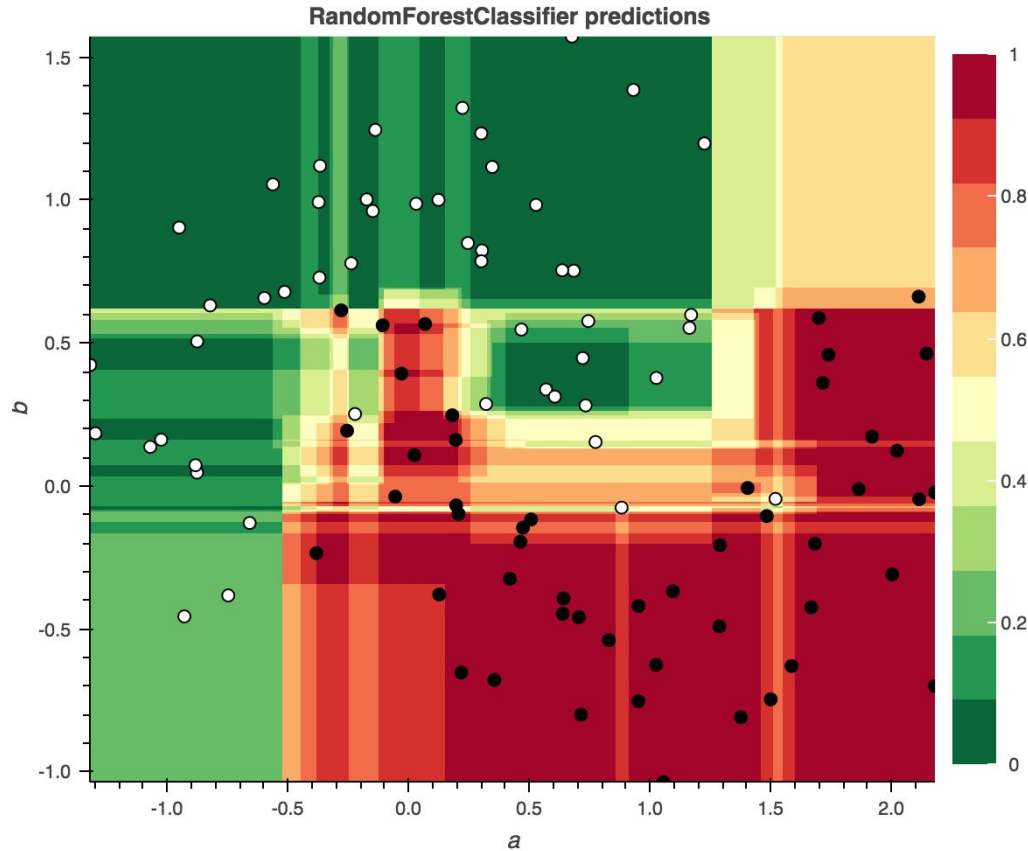
“Ying-yang” dataset



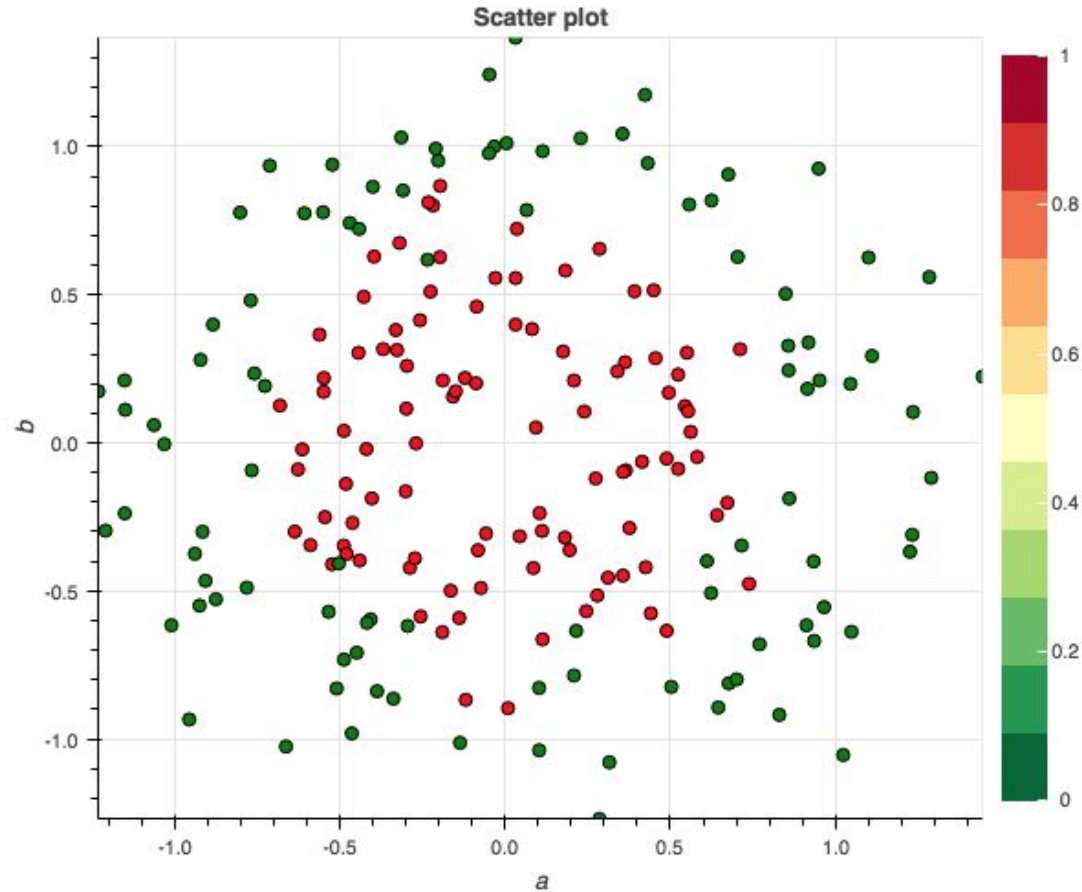
“Ying-yang” dataset



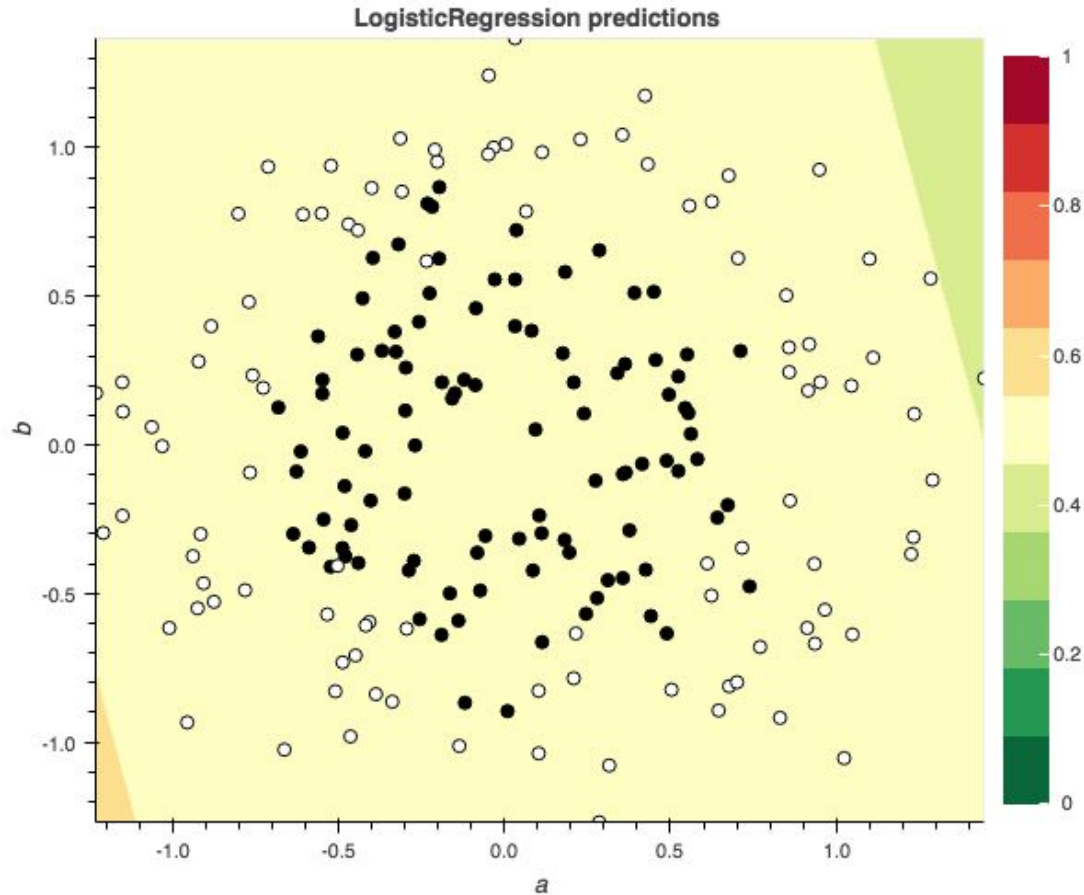
“Ying-yang” dataset



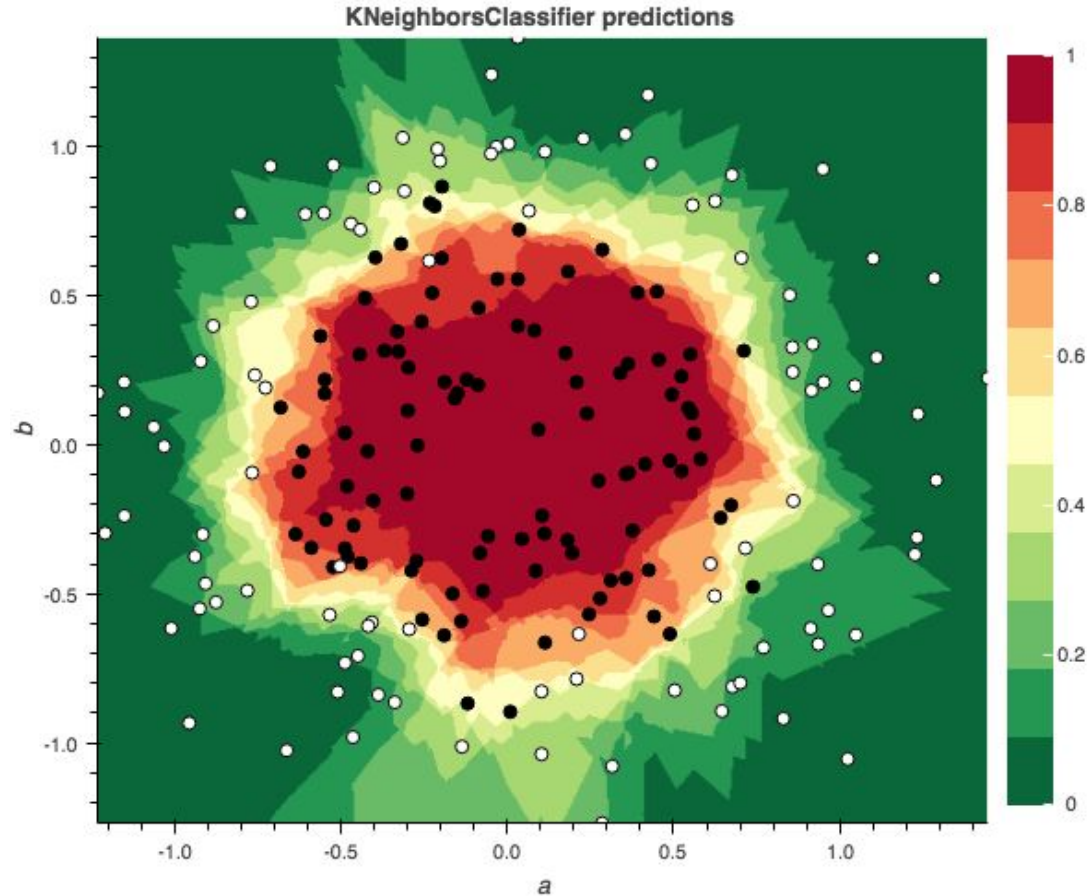
Concentric circles with noise dataset



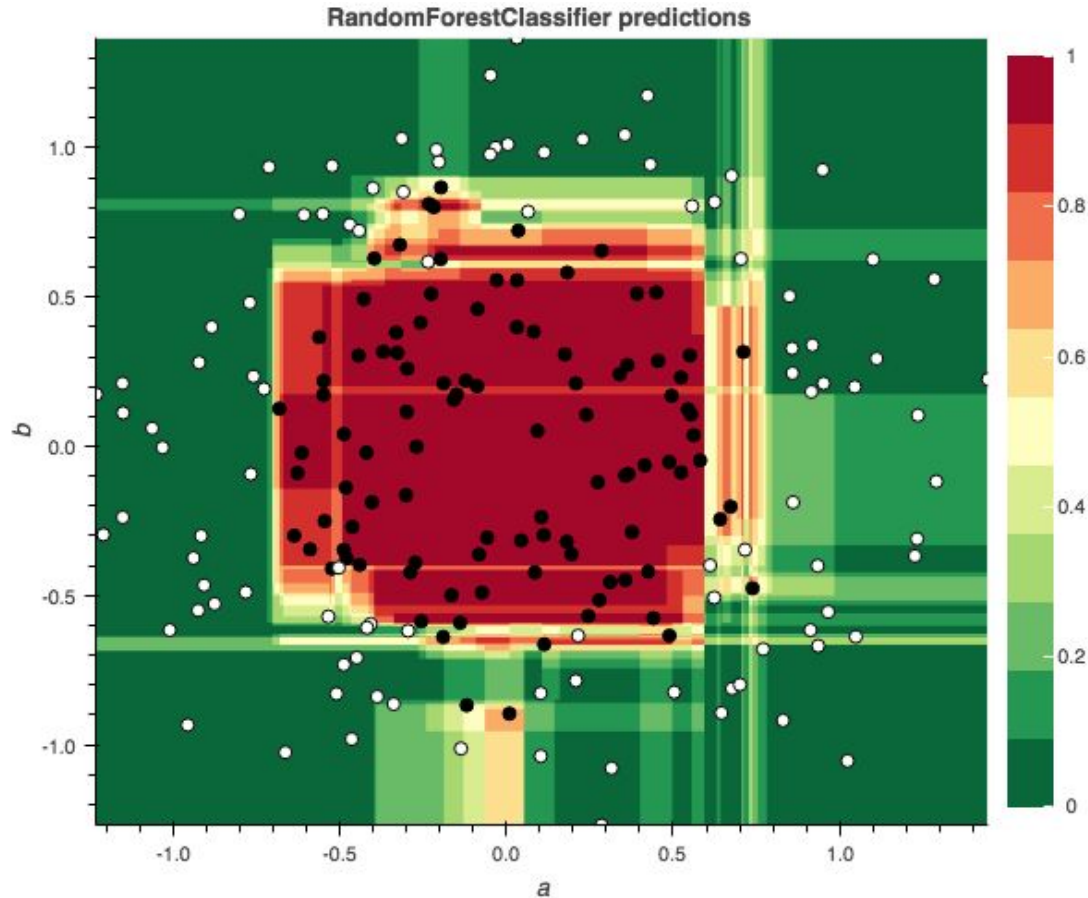
Concentric circles with noise dataset



Concentric circles with noise dataset



Concentric circles with noise dataset




annual_inc	dti	emp_length	grade	installment	int_rate	loan_amnt	purpose	term	proba	pred	loan_status	outcome
50000.0	24.17	6 years	A	306.45	6.49%	10000.0	debt_consolidation	36 months	0.12	0	0	True Negative
40500.0	18.99	10+ years	D	349.11	18.99%	9525.0	debt_consolidation	36 months	0.35	1	1	True Positive
28750.0	23.01	6 years	C	208.91	15.31%	6000.0	moving	36 months	0.33	1	0	False Positive
40000.0	10.38	< 1 year	D	434.82	17.27%	12150.0	major_purchase	36 months	0.11	0	1	False Negative

2. What are the zeros and ones?


		Observed	
		0	1
Predicted	0		
	1		


Hmmm... but what are they really?


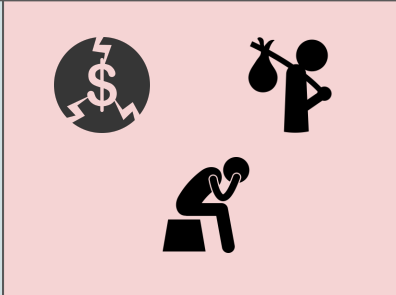

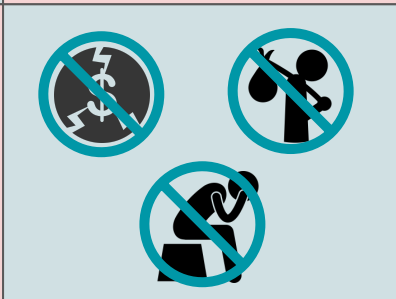
		Observed	
		0	1
Predicted	0		
	1		

		Observed	
		0	1
Predicted	0		
	1		

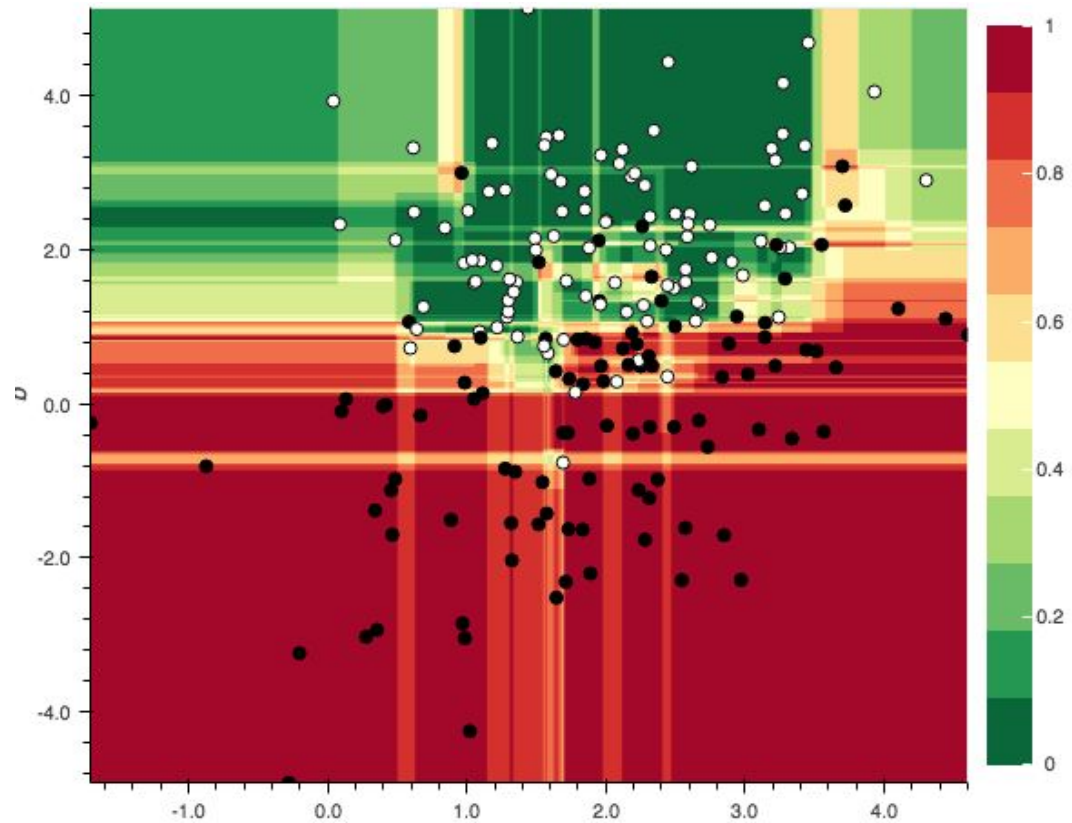
		Observed	
		0	1
Predicted	0		
	1	   	

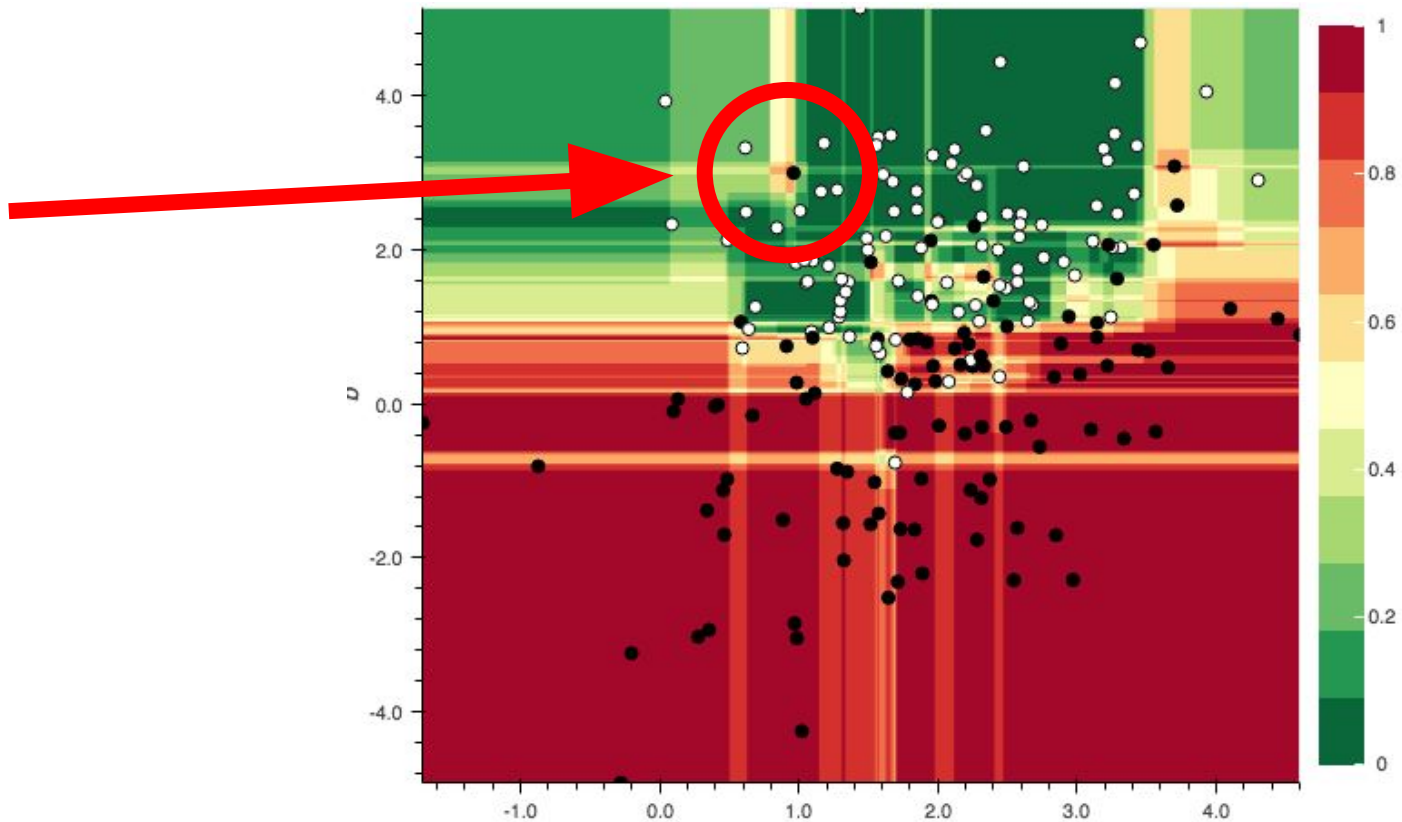
		Observed	
		0	1
Predicted	0		
	1		

		Observed	
		0	1
Predicted	0		
	1		

		Observed	
		0	1
Predicted	0		
	1		

3. Is my model just predicting the past?





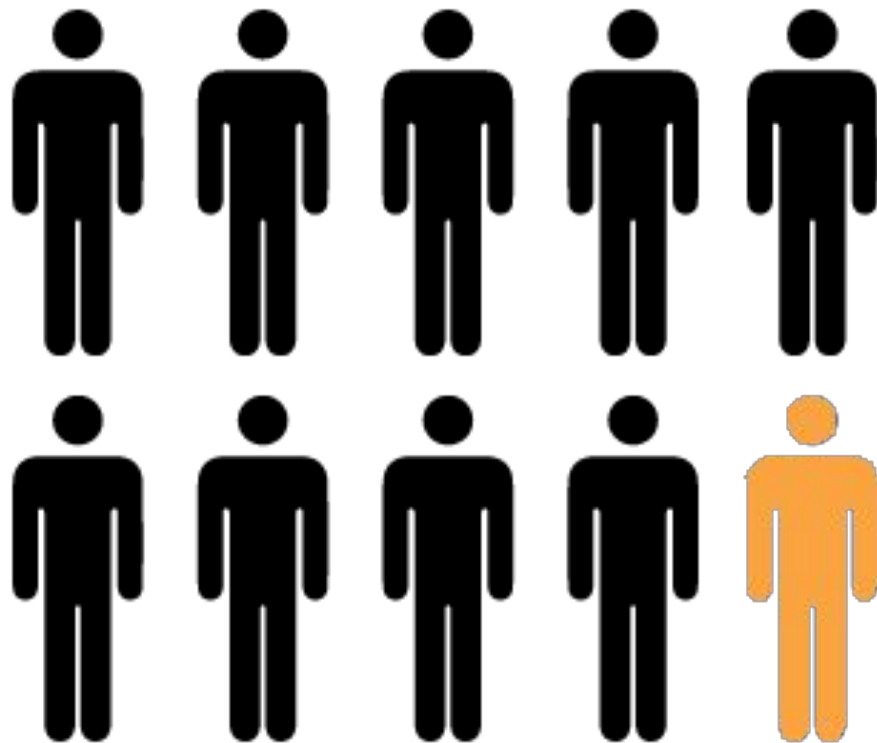
4. Can the model explain its reasoning?



Images (explaining prediction of 'Cat' in pros and cons)

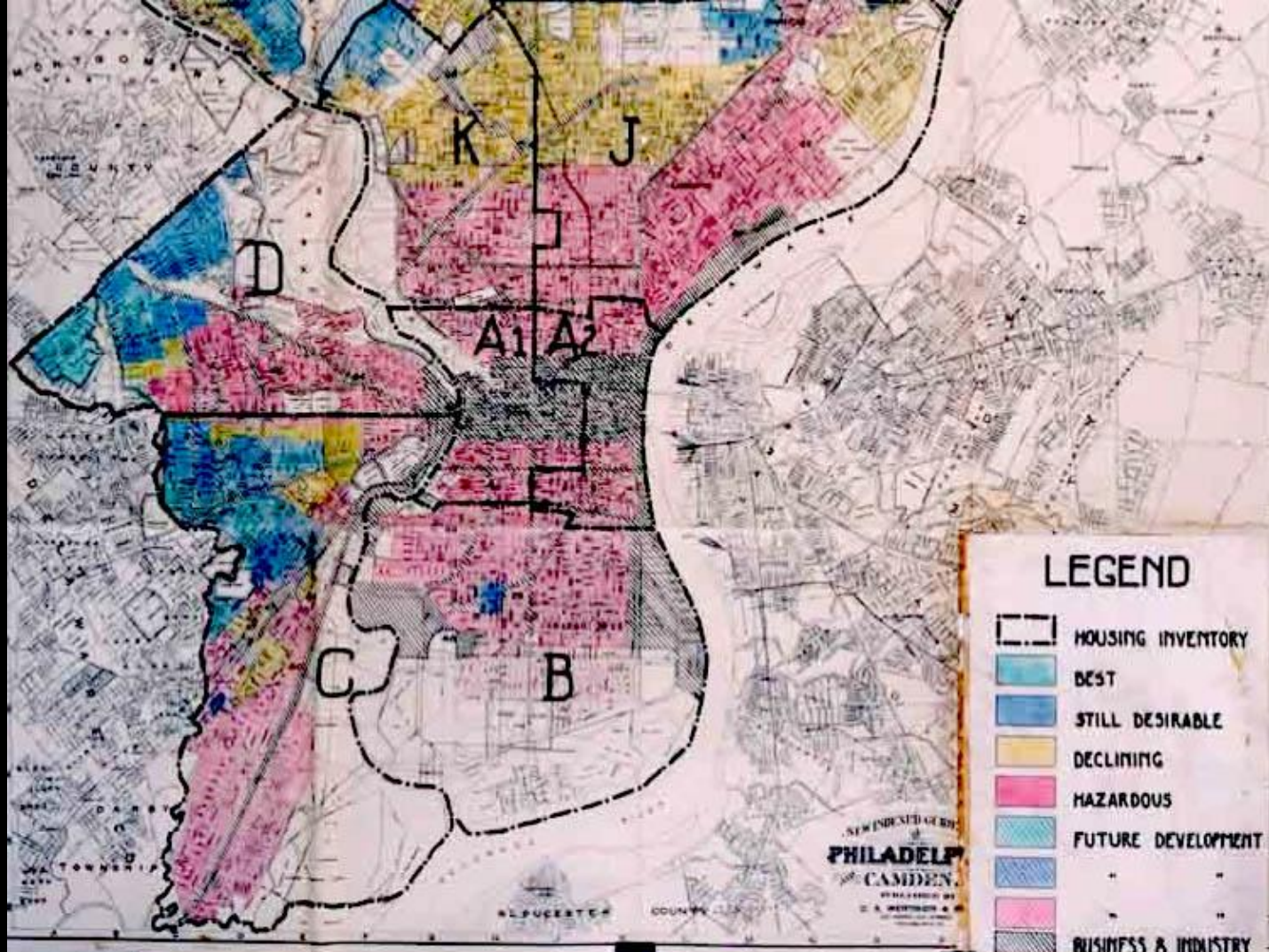


5. Does the model care about small sub-groups?



6. Are people being blamed for the actions of others?

1935



2018



7. Is the model predicting the future,
or creating it?





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