

# Score Evaluation

## Score Evaluation Evaluation Report

index	logistic	baseline
AUC	0.3771	0.394
AUC Variance	0.0	0.0
Gini	0.2458	0.2119
Gini CI Lower	0.2386	0.2034
Gini CI Upper	0.2529	0.2204
Hosmer-Lemeshow	Not Well Adjusted	Well Adjusted
Log-Likelihood	-31277.5	-31011.2
AIC	51631.4	51980.2
BIC	51691.4	52048.8
Wald Test	Informative Variable	Informative Variable
Power Odds	5.75	4.61
Relative Likelihood	1.0	0.0

logistic

## logistic Evaluation Report

### SCORE | LOGISTIC

#### MAIN DATAFRAME

index	score scr	score pod	score nv	restricoes
2	271.43	0.1482	171	3
13	330.25	0.1443	189	1
35	254.22	0.0952	334	0
37	359.27	0.2423	413	0
40	291.76	0.1109	282	1
48	690.15	0.577	328	1
68	330.25	0.2815	199	0
72	311.66	0.1195	146	8
74	295.81	0.0834	266	4
75	274.19	0.1321	284	2

index	idade	uf_loja_cliente	cidade_loja_cliente	over
2	40	0	0	1
13	31	1	0	0
35	22	1	0	0
37	33	0	0	0
40	34	1	1	1
48	42	1	0	0
68	48	0	0	0
72	44	0	0	0
74	42	0	0	0
75	36	1	1	1

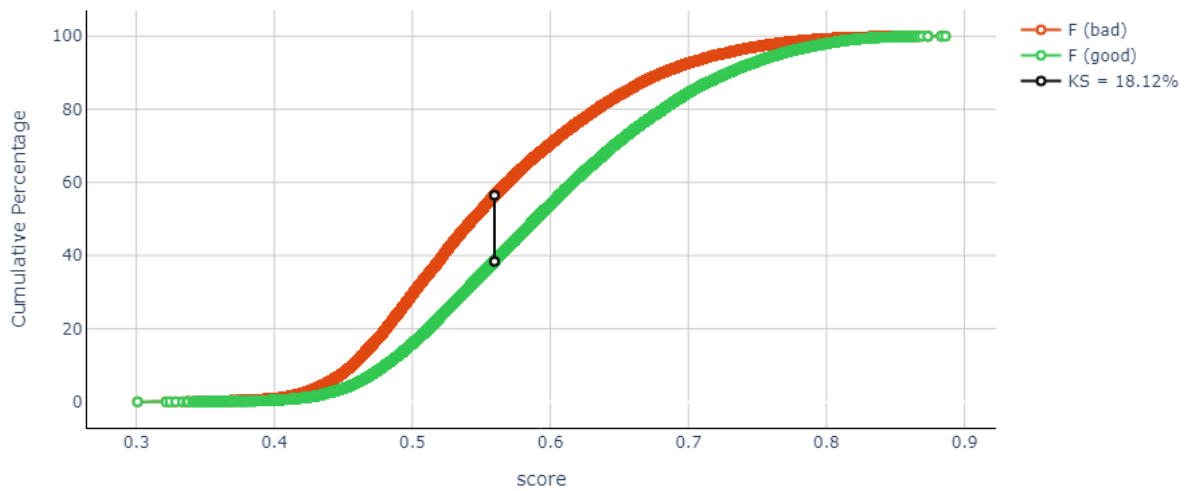
index	split	data	score	rating
2	train	2024-01-01 16:48:58	0.500957	J
13	train	2024-01-02 08:00:22	0.458977	L
35	train	2024-01-02 08:15:17	0.416052	M
37	train	2024-01-02 08:16:03	0.555056	H
40	test	2024-01-02 08:27:43	0.476646	K
48	train	2024-01-02 08:43:01	0.703602	B
68	test	2024-01-02 08:37:15	0.568673	G
72	test	2024-01-02 08:37:14	0.525125	I
74	train	2024-01-02 08:50:18	0.515009	I
75	train	2024-01-02 09:00:32	0.483178	K

## logistic Evaluation Report

### KOLMOGOROV SMIRNOV

index	KS	Credit Score	Behavioral Score
score	18.117	Low	Low
score scr	15.409	Low	Low
score pod	15.188	Low	Low
score nv	11.21	Low	Low

KS | score (Metric: over | V: 39252)

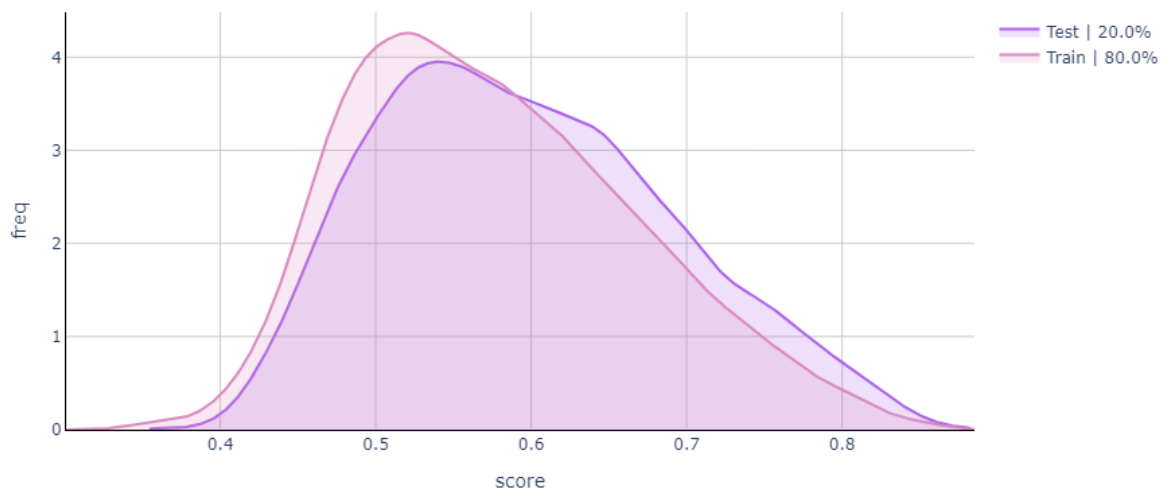


### POPULATION STABILITY INDEX

index	PSI	ANDERSON (2022)
score scr	0.049	Green
score pod	0.013	Green
score nv	0.0036	Green
score	0.05	Green

## logistic Evaluation Report

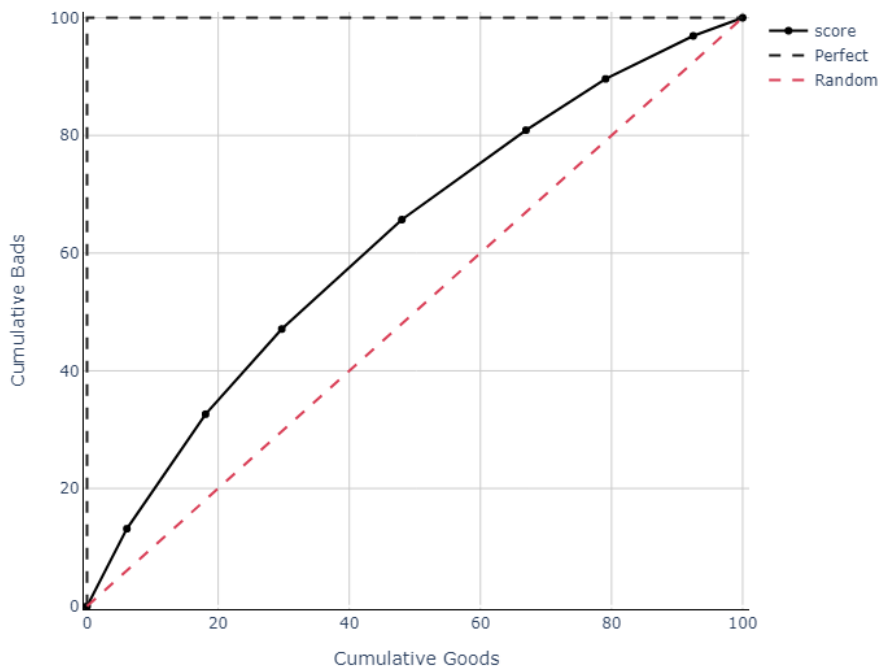
Population Stability Analysis | PSI = Green



### GINI LORENZ COEFFICIENT AND VARIABILITY

```
{ 'AUC': 0.6229,  
  'Gini': 0.2458,  
  'Gini CI Lower': 0.2386,  
  'Gini CI Upper': 0.2529,  
  'N_B': 16373,  
  'N_G': 22879,  
  'Var (Bamber)': 0.0,  
  'Var (Engelmann)': 0.0,  
  'Var (Van Dantzig)': 0.0001}
```

Lorenz & Gini | D = 24.458



## logistic Evaluation Report

### INFORMATION VALUE

index	IV	SIDDIQI (2006)	THOMAS (2002)	ANDERSON (2022)
score pod	0.444725	Strong	Strong	Strong
score scr	0.19579	Moderate	Moderate	Moderate
score nv	0.171162	Moderate	Moderate	Moderate
score	0.008609	No Discr.	No Discr.	No Discr.

### HOSMER LEMESHOW

```
{'HL': 71.011,
 'conclusion': 'Not Well Adjusted',
 'degrees of freedom': 8,
 'p value': 3.0907498782539733e-12,
 'reject null': True}
```

### DEVIANCE ODDS

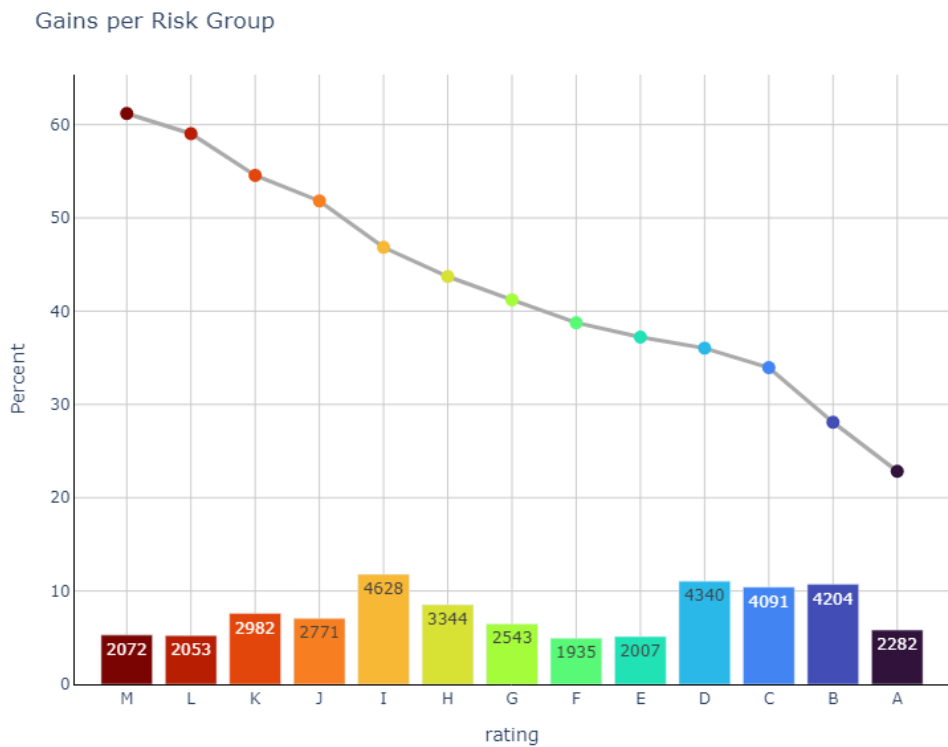
```
{'accuracy': 100.0,
 'conclusion': '<!-- The model has weak predictive power, indicating limited '
               'ability to rank or discriminate between outcomes. It may need '
               'retraining or feature engineering. --> The model is '
               'well-calibrated, with high naïve accuracy suggesting predicted '
               'probabilities align closely with observed outcomes.',
 'power': 5.75}
```

**optimized**  
logistic

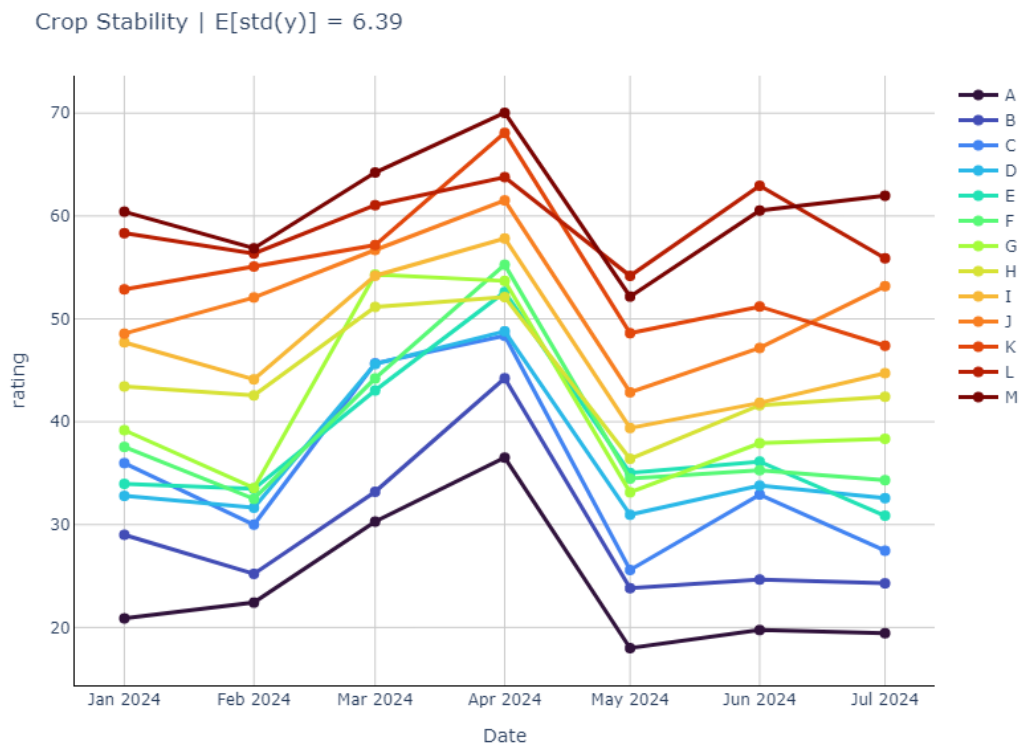


RATING | OPTIMIZED

GAINS PER RISK GROUP



STABILITY IN TIME

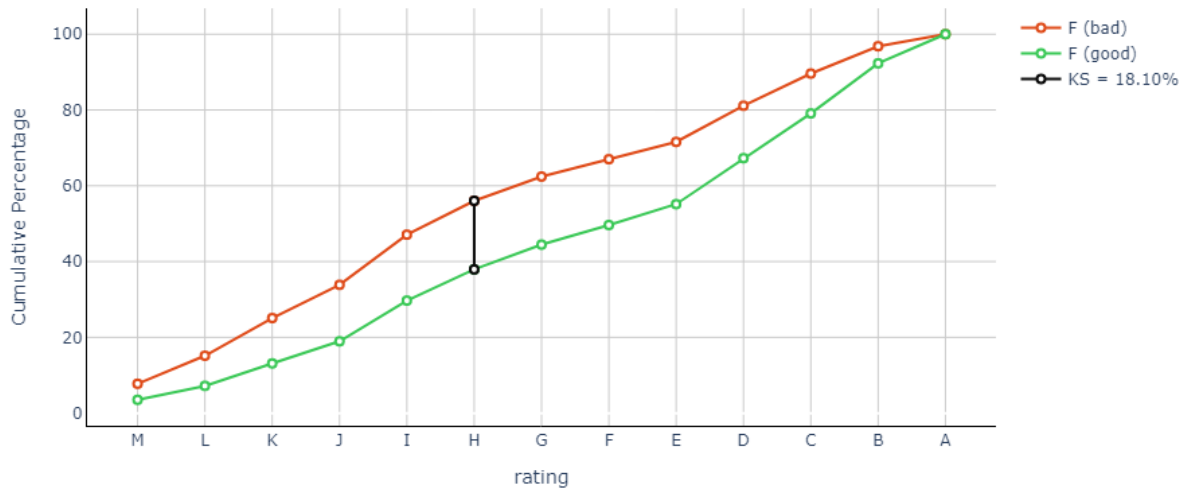


## optimized (logistic) Evaluation Report

### KOLMOGOROV SMIRNOV

index	KS	Credit Score	Behavioral Score
rating	18.099	Low	Low
score scr	15.409	Low	Low
score pod	15.188	Low	Low
score nv	11.21	Low	Low

KS | rating (Metric: over | V: 39252)

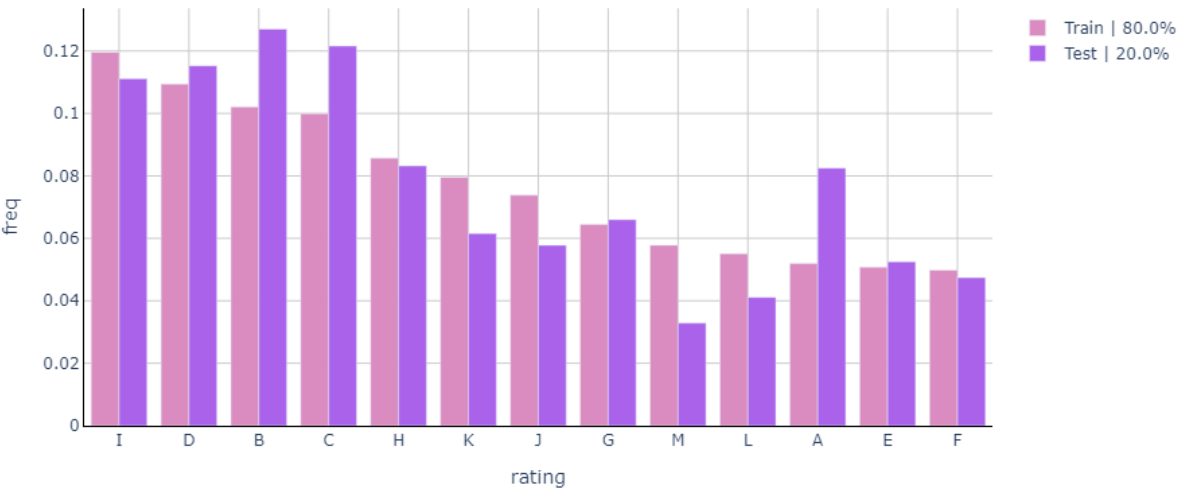


### POPULATION STABILITY INDEX

index	PSI	ANDERSON (2022)
score scr	0.049	Green
score pod	0.013	Green
score nv	0.0036	Green
rating	0.0516	Green

optimized (logistic) Evaluation Report

Population Stability Analysis | PSI = Green



optimized (logistic) Evaluation Report

INFORMATION VALUE

index	IV	SIDDIQI (2006)	THOMAS (2002)	ANDERSON (2022)
score pod	0.444725	Strong	Strong	Strong
score scr	0.19579	Moderate	Moderate	Moderate
rating	0.193932	Moderate	Moderate	Moderate
score nv	0.171162	Moderate	Moderate	Moderate

**baseline**

## baseline Evaluation Report

### SCORE | BASELINE

#### MAIN DATAFRAME

index	score scr	score pod	score nv	restricoes
2	271.43	0.1482	171	3
13	330.25	0.1443	189	1
35	254.22	0.0952	334	0
37	359.27	0.2423	413	0
40	291.76	0.1109	282	1
48	690.15	0.577	328	1
68	330.25	0.2815	199	0
72	311.66	0.1195	146	8
74	295.81	0.0834	266	4
75	274.19	0.1321	284	2

index	idade	tipo_cliente	uf_loja_cliente	cidade_loja_cliente
2	40	novο	0	0
13	31	novο	1	0
35	22	novο	1	0
37	33	novο	0	0
40	34	novο	1	1
48	42	novο	1	0
68	48	novο	0	0
72	44	novο	0	0
74	42	novο	0	0
75	36	novο	1	1

index	over	data	split	_rating_
2	1	2024-01-01 16:48:58	train	F2
13	0	2024-01-02 08:00:22	train	F2
35	0	2024-01-02 08:15:17	train	F1
37	0	2024-01-02 08:16:03	train	E3
40	1	2024-01-02 08:27:43	test	F2
48	0	2024-01-02 08:43:01	train	A3
68	0	2024-01-02 08:37:15	test	D2
72	0	2024-01-02 08:37:14	test	G1
74	0	2024-01-02 08:50:18	train	G1
75	1	2024-01-02 09:00:32	train	F2

index	rating_	score	rating
2	F	0.482571	G

## baseline Evaluation Report

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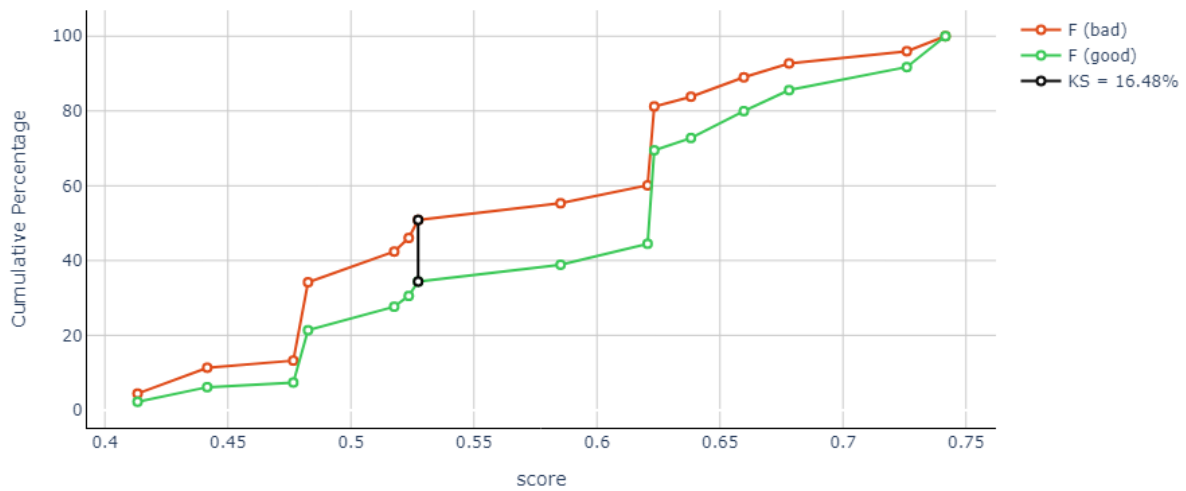
	13	F		0.482571	G	
	35	F		0.441597	H	
	37	E		0.523506	F	
	40	F		0.482571	G	
	48	A		0.725964	B	
	68	D		0.585227	E	
	72	G		0.527327	F	
	74	G		0.527327	F	
	75	F		0.482571	G	

## baseline Evaluation Report

### KOLMOGOROV SMIRNOV

index	KS	Credit Score	Behavioral Score
score	16.481	Low	Low
score scr	16.152	Low	Low
score pod	15.188	Low	Low
score nv	11.207	Low	Low

KS | score (Metric: over | V: 39252)



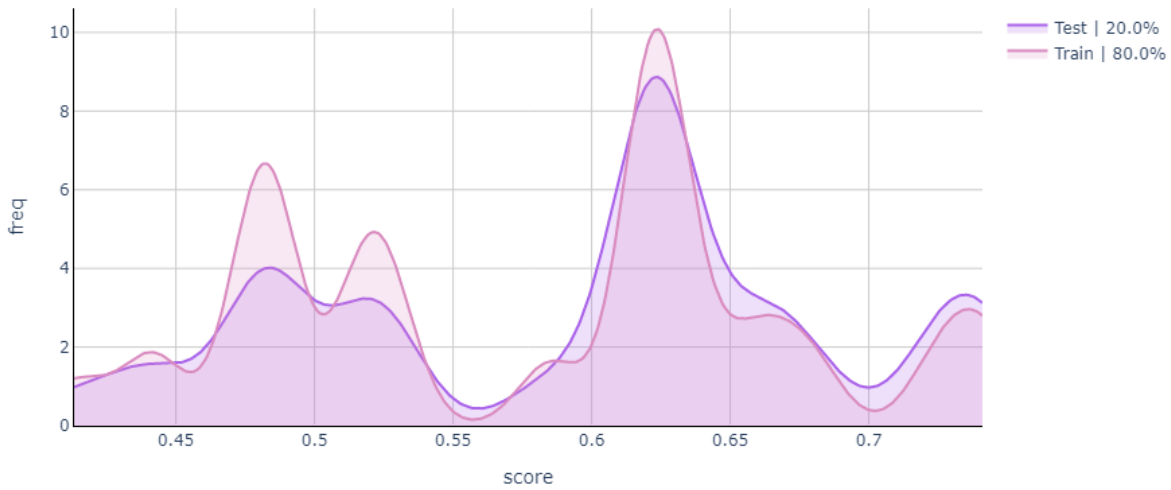
### POPULATION STABILITY INDEX

index	PSI	ANDERSON (2022)
score scr	0.0361	Green
score pod	0.013	Green
score nv	0.0036	Green
score	0.0366	Green



## baseline Evaluation Report

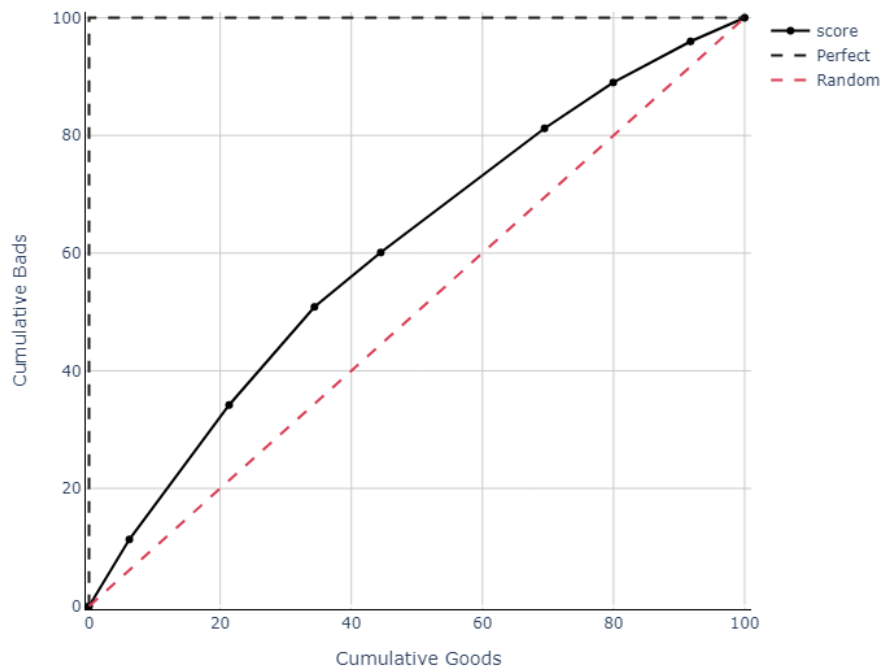
Population Stability Analysis | PSI = Green



### GINI LORENZ COEFFICIENT AND VARIABILITY

```
{'AUC': 0.606,  
'Gini': 0.2119,  
'Gini CI Lower': 0.2034,  
'Gini CI Upper': 0.2204,  
'N_B': 16373,  
'N_G': 22879,  
'Var (Bamber)': 0.0,  
'Var (Engelmann)': 0.0,  
'Var (Van Dantzig)': 0.0001}
```

Lorenz & Gini | D = 21.051



## baseline Evaluation Report

### INFORMATION VALUE

index	IV	SIDDIQI (2006)	THOMAS (2002)	ANDERSON (2022)
score pod	0.444725	Strong	Strong	Strong
score scr	0.204349	Moderate	Moderate	Moderate
score nv	0.171168	Moderate	Moderate	Moderate
score	0.145171	Moderate	Moderate	Moderate

### HOSMER LEMESHOW

```
{'HL': 0.0,  
 'conclusion': 'Well Adjusted',  
 'degrees of freedom': 8,  
 'p value': 1.0,  
 'reject null': False}
```

### DEVIANCE ODDS

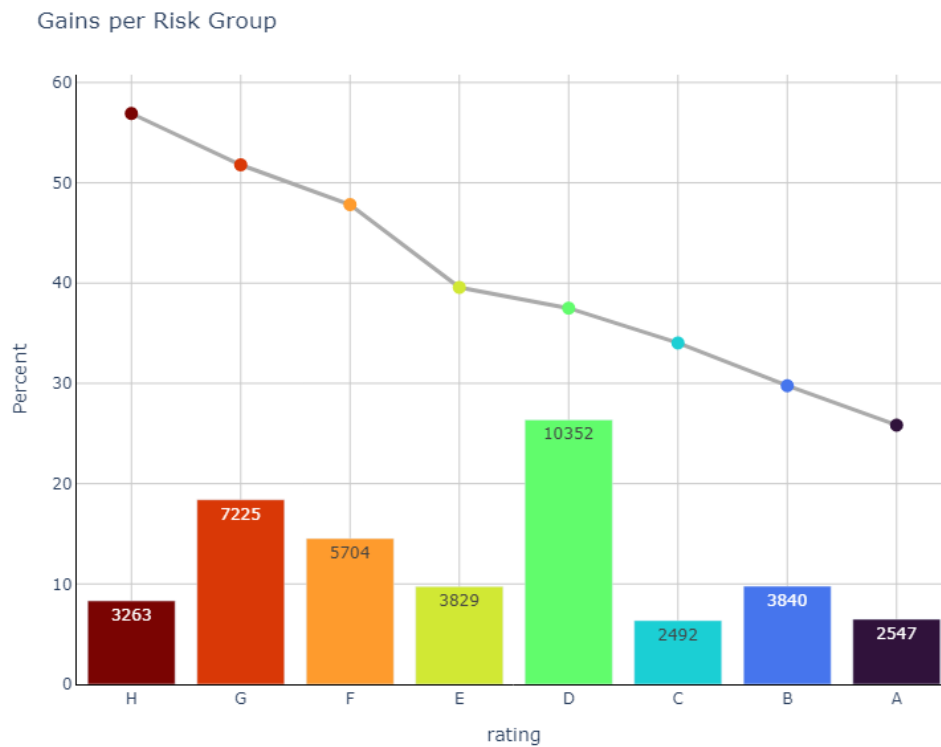
```
{'accuracy': 100.0,  
 'conclusion': '<!-- The model has weak predictive power, indicating limited '  
                'ability to rank or discriminate between outcomes. It may need '  
                'retraining or feature engineering. --> The model is '  
                'well-calibrated, with high naïve accuracy suggesting predicted '  
                'probabilities align closely with observed outcomes.',  
 'power': 4.61}
```

**optimized**  
**baseline**

## optimized (baseline) Evaluation Report

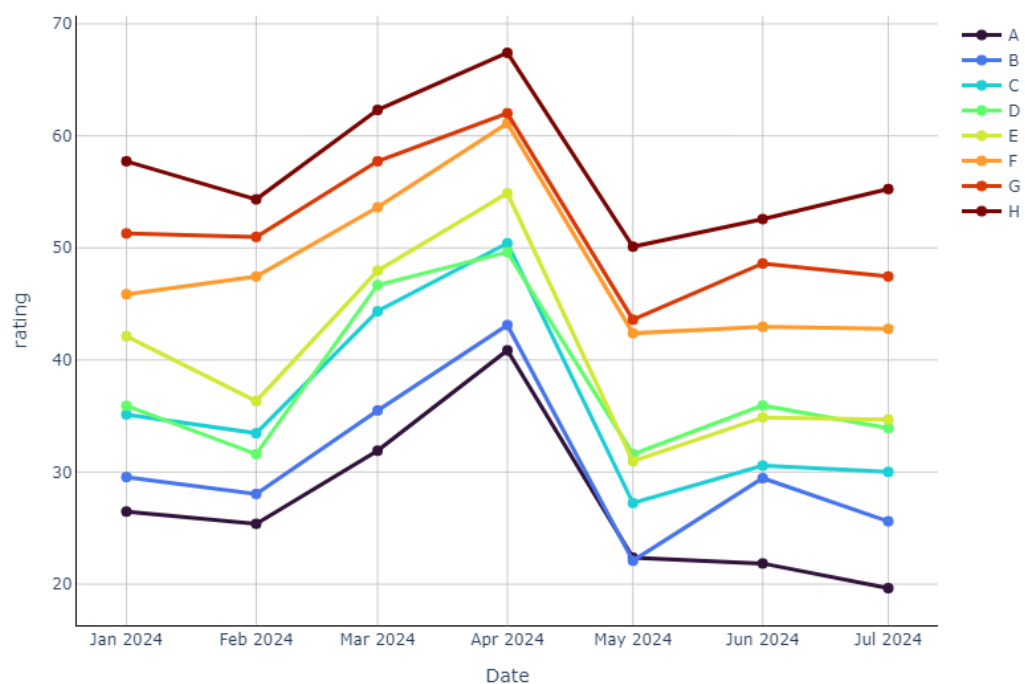
### RATING | OPTIMIZED

#### GAINS PER RISK GROUP



#### STABILITY IN TIME

Crop Stability |  $E[\text{std}(y)] = 6.68$

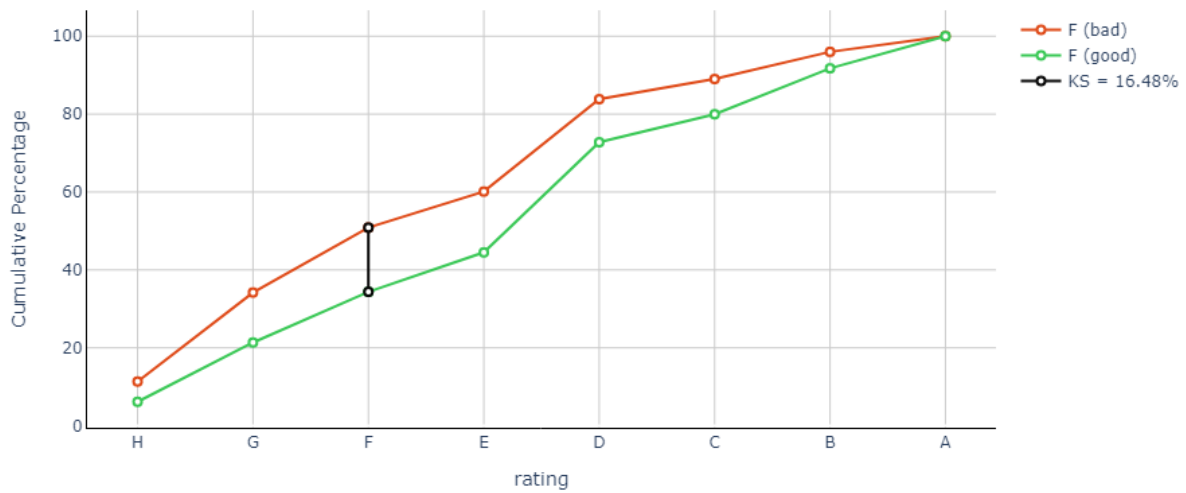


## optimized (baseline) Evaluation Report

### KOLMOGOROV SMIRNOV

index	KS	Credit Score	Behavioral Score
rating	16.481	Low	Low
score scr	16.152	Low	Low
score pod	15.188	Low	Low
score nv	11.207	Low	Low

KS | rating (Metric: over | V: 39252)



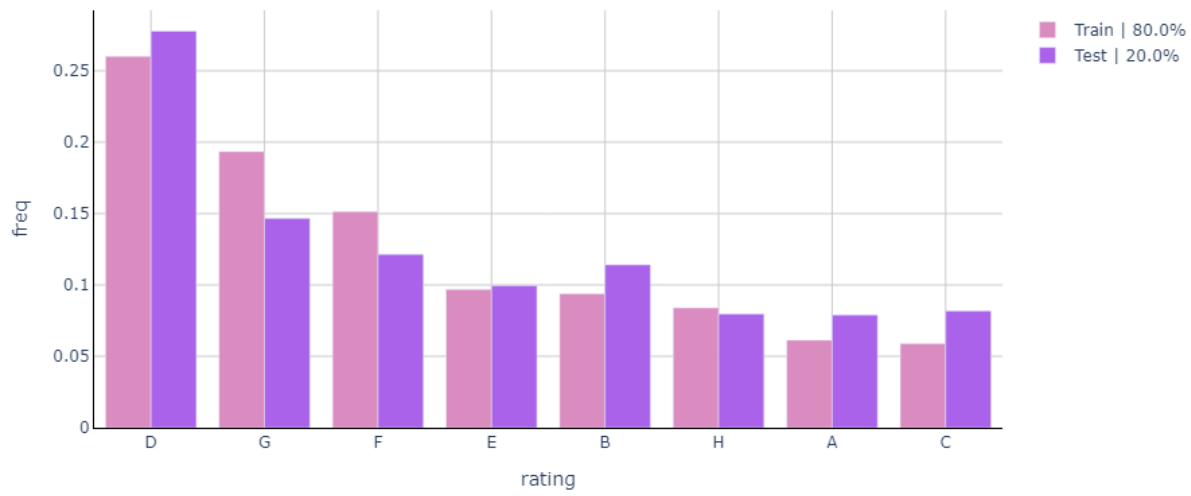
### POPULATION STABILITY INDEX

index	PSI	ANDERSON (2022)
score scr	0.0361	Green
score pod	0.013	Green
score nv	0.0036	Green
rating	0.0369	Green

## optimized (baseline) Evaluation Report

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Population Stability Analysis | PSI = Green



## optimized (baseline) Evaluation Report

### INFORMATION VALUE

index	IV	SIDDIQI (2006)	THOMAS (2002)	ANDERSON (2022)
score pod	0.444725	Strong	Strong	Strong
score scr	0.204349	Moderate	Moderate	Moderate
score nv	0.171168	Moderate	Moderate	Moderate
rating	0.14298	Moderate	Moderate	Moderate

**baseline**

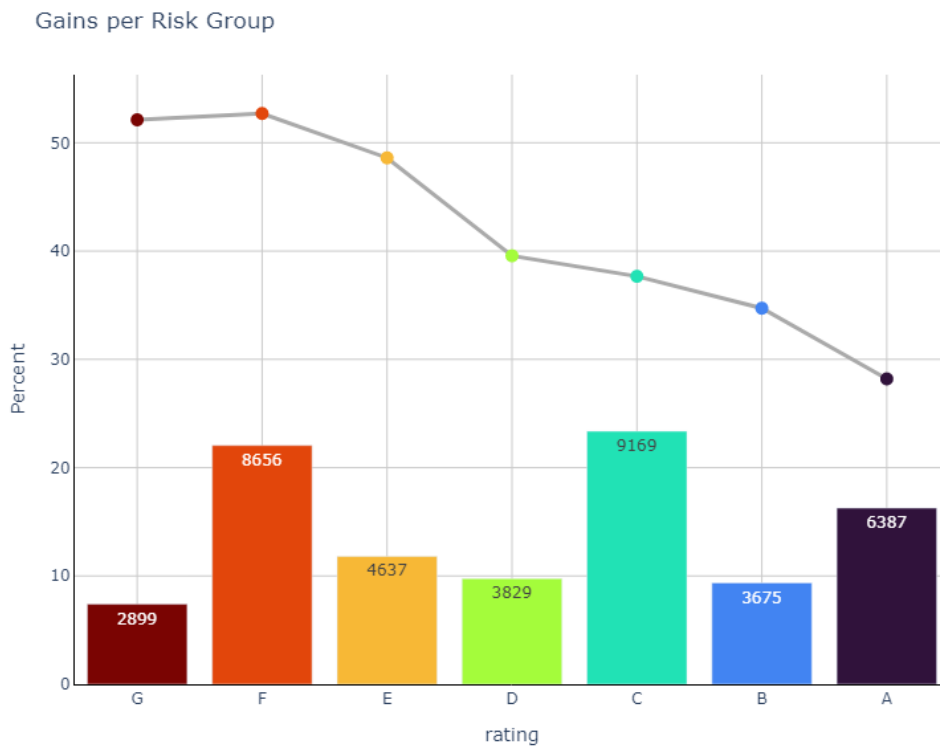
**baseline**



## baseline (baseline) Evaluation Report

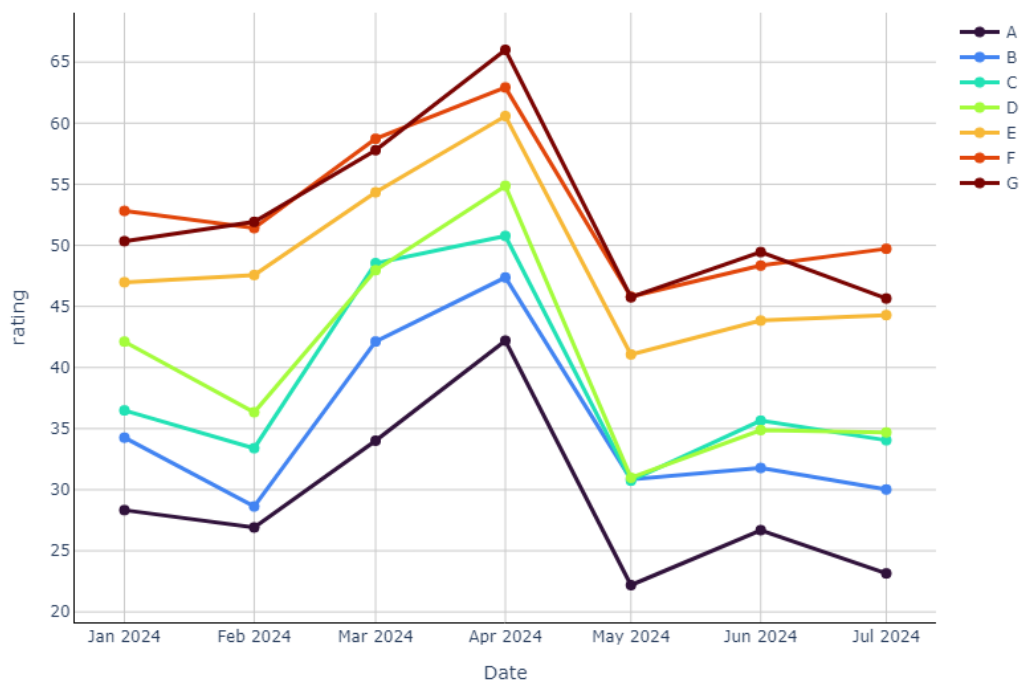
### RATING | BASELINE

#### GAINS PER RISK GROUP



#### STABILITY IN TIME

Crop Stability |  $E[\text{std}(y)] = 6.68$

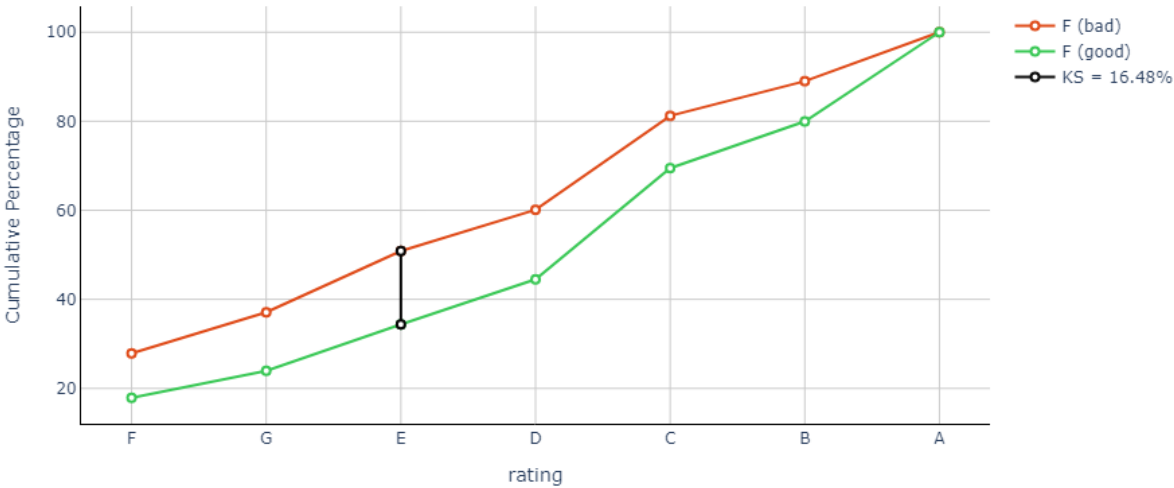


# baseline (baseline) Evaluation Report

## KOLMOGOROV SMIRNOV

index	KS	Credit Score	Behavioral Score
rating	16.481	Low	Low

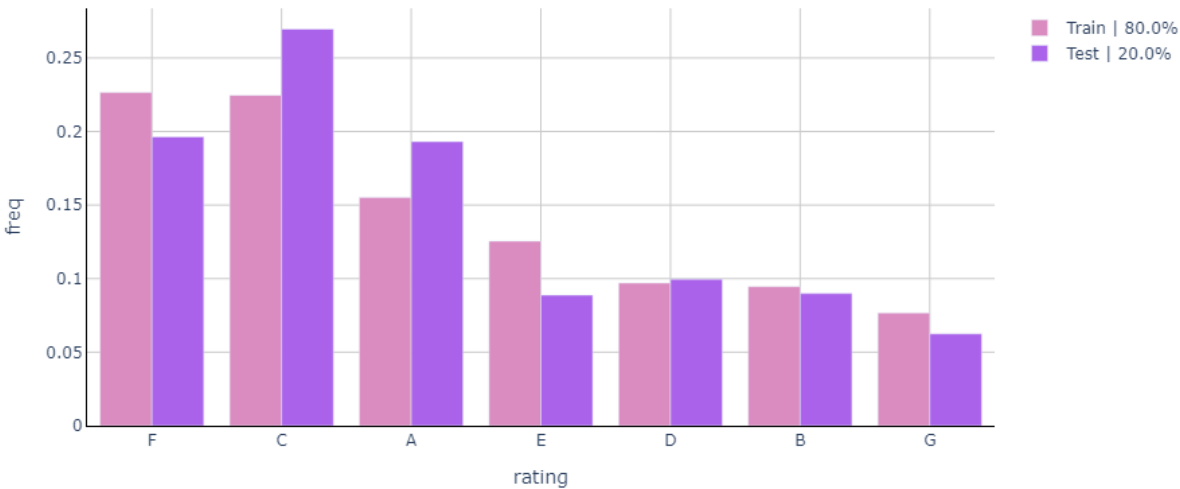
KS | rating (Metric: over | V: 39252)



## POPULATION STABILITY INDEX

index	PSI	ANDERSON (2022)
rating	0.0367	Green

Population Stability Analysis | PSI = Green



baseline (baseline) Evaluation Report

INFORMATION VALUE

index	IV	SIDDIQI (2006)	THOMAS (2002)	ANDERSON (2022)
rating	0.136348	Moderate	Moderate	Moderate