

# Callaghan Investments

*New Service:  
Stock Value Proximity*

# Stock Value Proximity

- *What is it?*
  - Recommend similarly valued stocks

# Stock Value Proximity

- *Who is it for?*
  - Value investors
  - Use-cases: Shorting and Longing

# Stock Value Proximity

- *How does it work?*
  - Financial valuation metrics
  - Group similar stocks together

# Stock Value Proximity: Metrics Overview

- Silhouette Score
- Intra-Cluster Similarity
- Inter-Cluster Similarity
- Cluster Distribution

# Stock Value Proximity: Baseline Model Results

- Baseline Model
  - Silhouette Score: 0.86
  - Intra-Cluster Similarity: 1.51
  - Avg Inter-Cluster Distance: 34.5

# Stock Value Proximity: Baseline Model Results

<u>Cluster #</u>	<u>Number of Stocks</u>
0	1325
6	8
3	4
9	2
2	1

<u>Cluster #</u>	<u>Number of Stocks</u>
4	1
5	1
8	1
1	1
7	1

# Stock Value Proximity: Updated Model Results

- Updated Model
  - Silhouette Score: 0.144
  - Intra-Cluster Similarity: 2.6
  - Avg Inter-Cluster Distance: 10.40



# Stock Value Proximity: Updated Model Results

<u>Cluster #</u>	<u>Number of Stocks</u>
2	270
13	214
4	161
6	152
7	142
14	138
12	113

<u>Cluster #</u>	<u>Number of Stocks</u>
0	75
3	16
10	10
8	6
1	5
11	1

# **Stock Value Proximity:**

## **Final Model Results**

- Final Model
  - Silhouette Score: 0.15
  - Intra-Cluster Similarity: 2.18
  - Avg Inter-Cluster Distance: 11.23

# Stock Value Proximity: Final Model Results

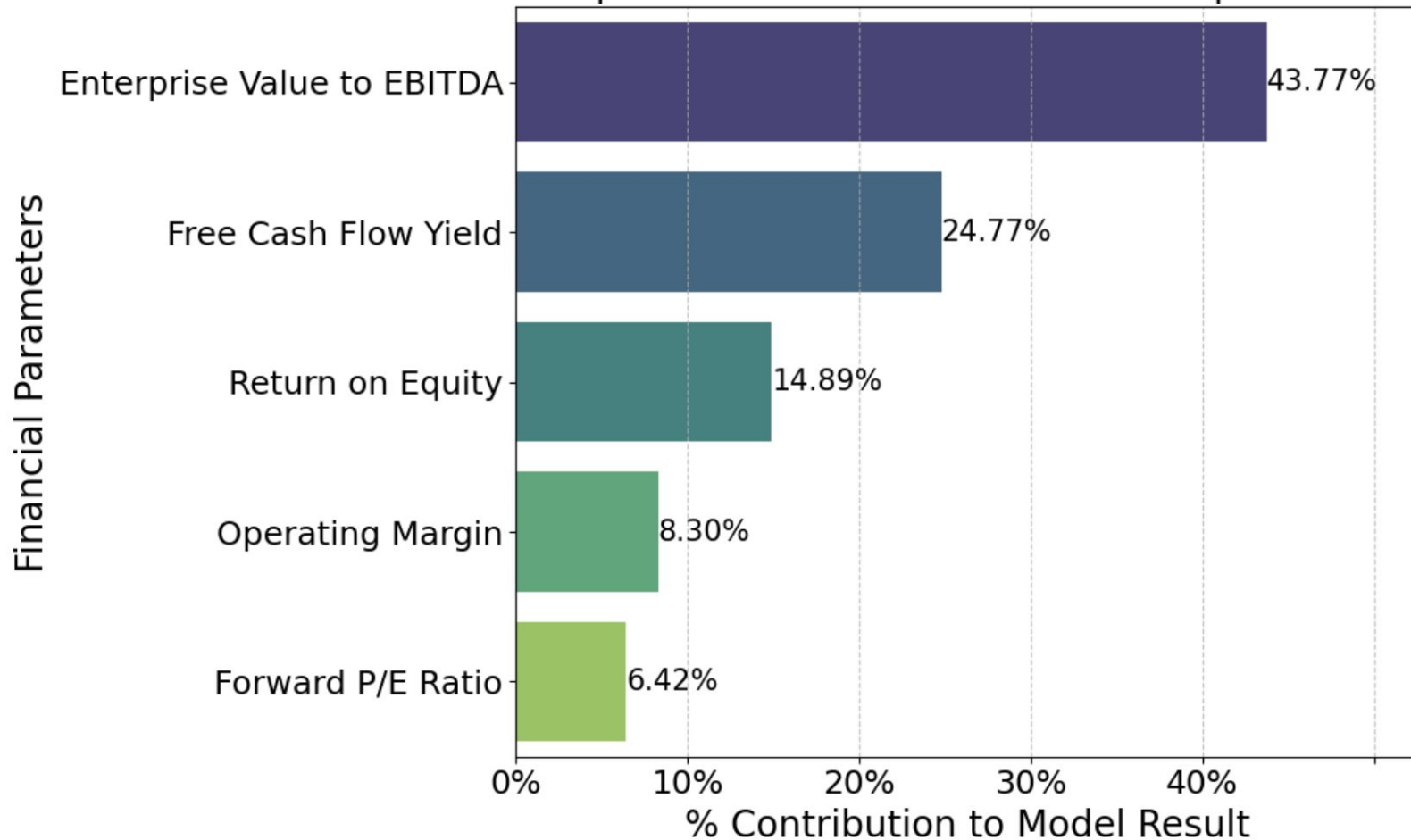
<u>Cluster #</u>	<u>Number of Stocks</u>
2	199
19	148
9	132
28	103
20	91
1	89
8	88
0	81
6	68

<u>Cluster #</u>	<u>Number of Stocks</u>
27	60
7	58
4	51
21	48
29	45
3	26
15	23
5	20
17	15

# Stock Value Proximity: Top Financial Metrics

- Top 3 metrics and their percentage contribution
  - *Enterprise Value to EBITDA: 43.8%*
  - *Free Cash Flow Yield: 24.8%*
  - *Return On Equity: 14.9%*

# Top 5 Financial Valuation Feature Importance



# Stock Value Proximity: 'AAPL' Input Example

	Symbol	Cluster	Distance
<b>0</b>	ORCL	1	0.0000
<b>16</b>	WM	1	0.9233
<b>17</b>	AON	1	1.6774
<b>22</b>	ECL	1	2.0956
<b>53</b>	AVY	1	2.2445

# **Stock Value Proximity:** **Limitations and Solutions**

- Limited Yahoo Finance Data
- Value Investor judgement
- Undetermined Cluster Distribution

# **Stock Value Proximity:**

## **Future Actions**

- More Valuation Parameters
- Neural Network
- Copy Value investors
- Classify Clusters



**Callaghan Investments:**  
**Stock Screening**  
**Proximity**

**Questions**