



COLUMBIA | ENGINEERING
EXECUTIVE EDUCATION

PGDMLAI Capstone

nuveen

A TIAA Company

Nuveen Marketing Strategy for
Year 2020

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Sep 2021

 EMERITUS



Agenda



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Background

2

Objective

3

Methodology

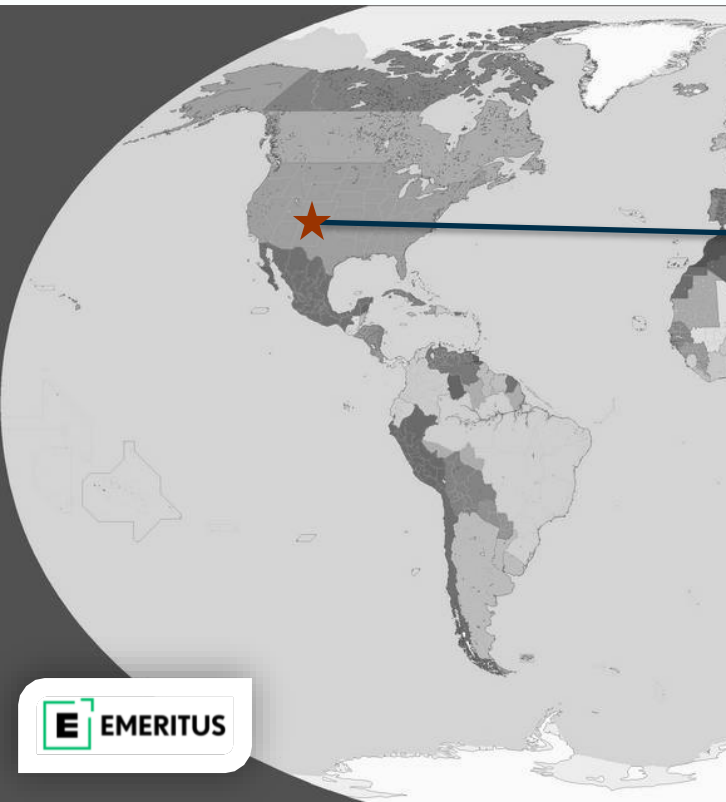
4

Models construction: Variables & Lift Chart

5

Recommendations

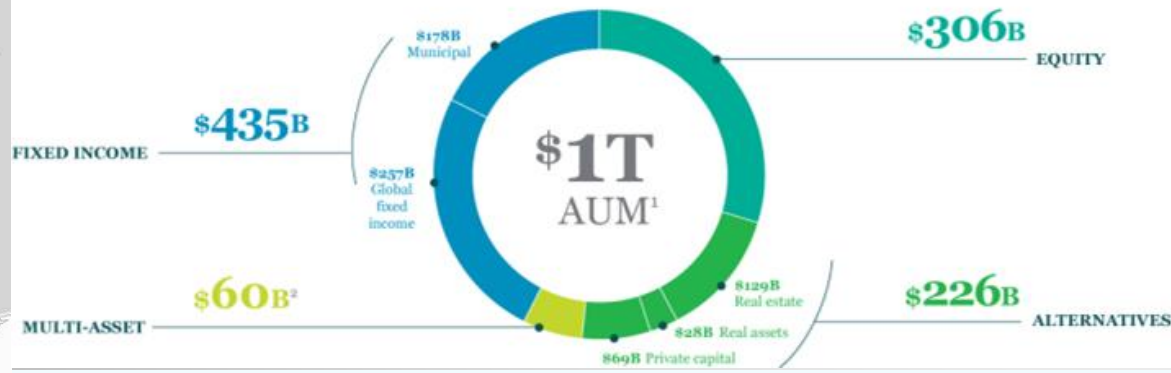
Background



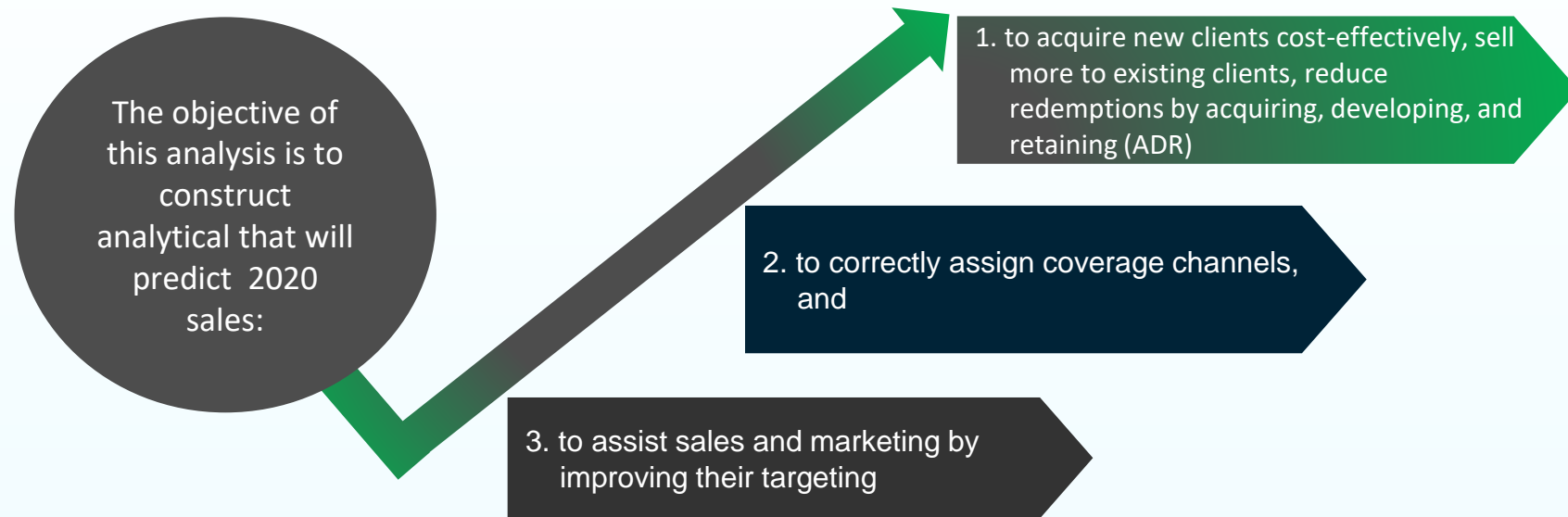
Nuveen is a mutual fund company that is a subsidiary of TIAA which has over \$1 trillion in assets under management (AUM). Nuveen was acquired by TIAA in 2014 for \$6.3B.

Nuveen markets and sell mutual funds from its headquarters in Chicago and its offices across the world through brokers, financial planners and financial advisors.

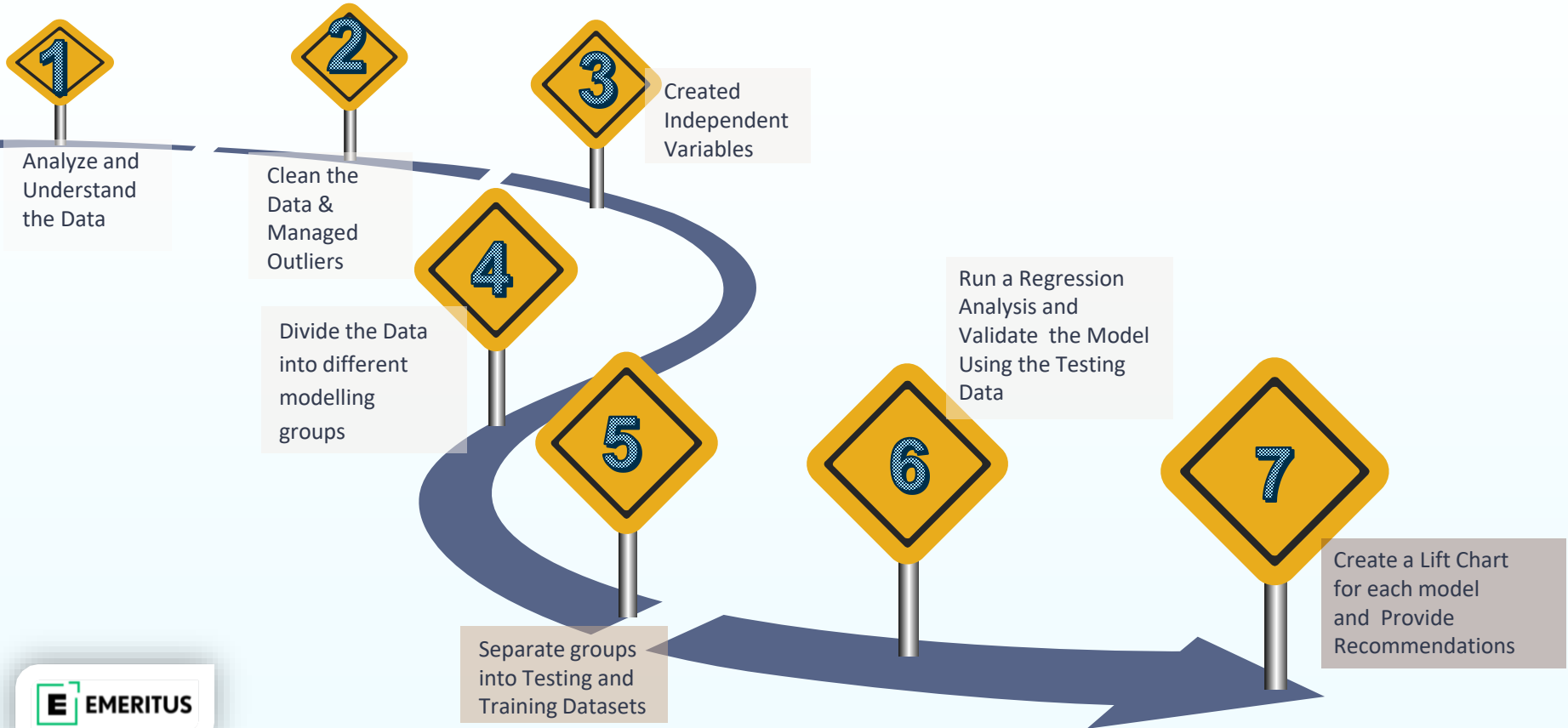
Nuveen charges investors a percent of assets under management (AUM)



Objectives



Methodology



Understand the Data

High level
data
overview

- The available data has 360 thousand rows and 40 column or variables
- Transaction were categorized by year and there were:
 - ✓ 10k transactions in 2017
 - ✓ 120k transactions in 2018
 - ✓ 120k transactions in 2019
 - ✓ 110k transactions in 2020
- The sale is main variable of interest and that would be predicted
 - ✓ The mean of sales in utilised data was \$194,405
 - ✓ The maximum 12-month sale value of \$96, 422, 888 was reported in 2018
 - ✓ The minimum 12-month sale value of **\$30,606** was reported in 2019
 - ✓ The data had 563 negative sales

Clean the Data & Partitioning

Missing data

Check Null values

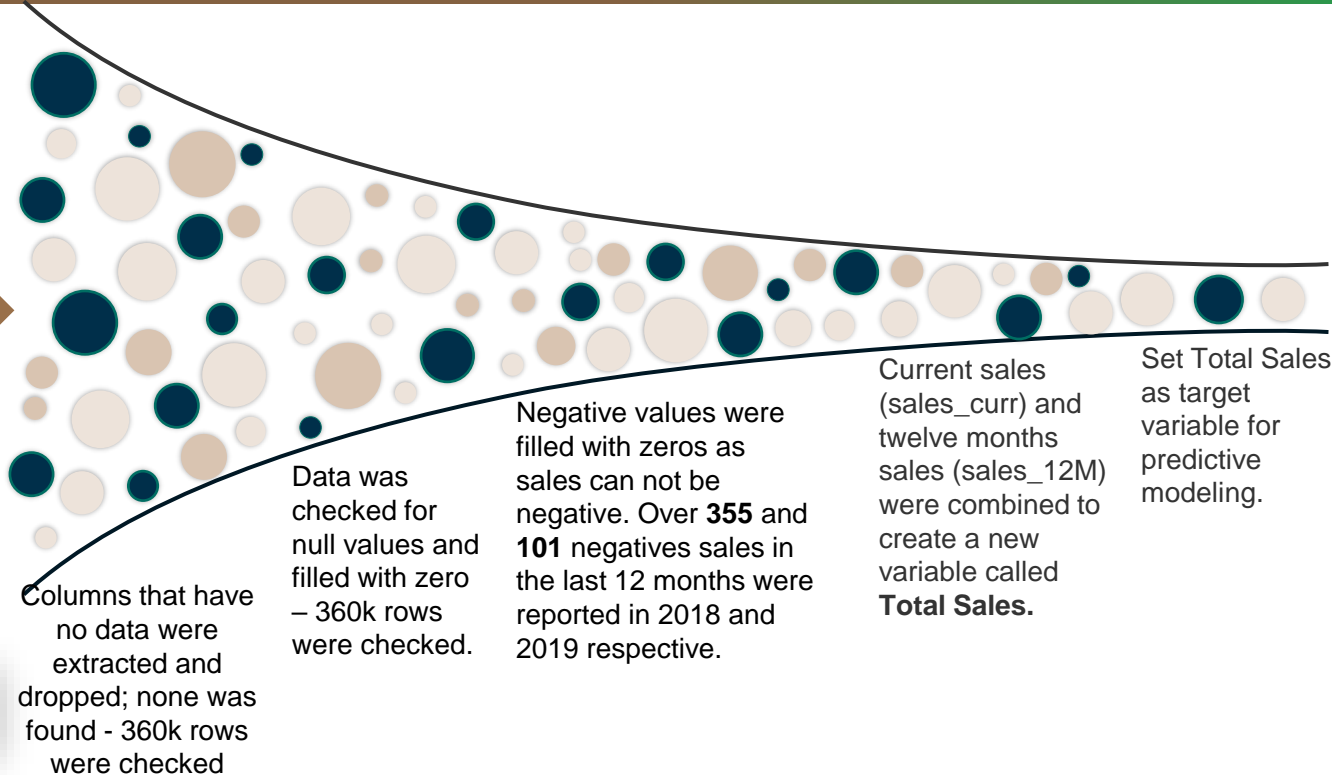
Check negative values

Create a Total Sale column

Set a Target variable

Create and save clean data set for modelling

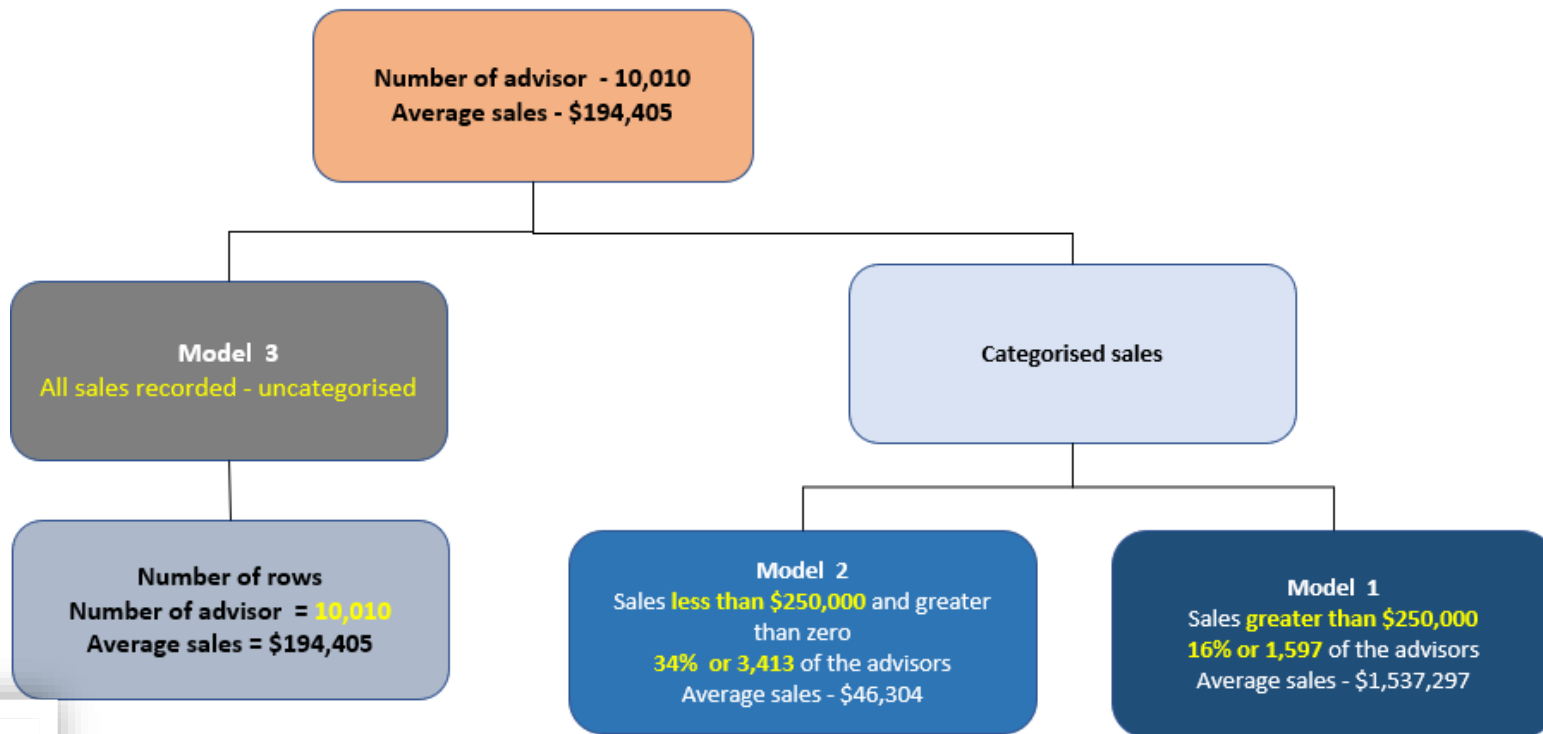
Data input
(360, 325 &
40 column)



Data
Output

Training data was **250,250** rows while testing data was **110,075** rows

Model Mapping Decision Tree



Model 1

12 Month sales from 2018 – 2019 with values greater than **\$250,000** sold by **16%** or **1,597** advisors and had an average sales of **\$1,537, 297**

Model 1- Variables

Positive
influencers

- Number of sales in in the last twelve months
- Number of redemption in the last twelve months
- AUM fixed income
- AUM till current refresh date
- Number of fund sold in the last twelve months
- AUM actual targets
- Number of redemption in last 12 M having $\geq 10K\$$
- Aum Account Fixed Income
- Number of funds currently held on the refresh date

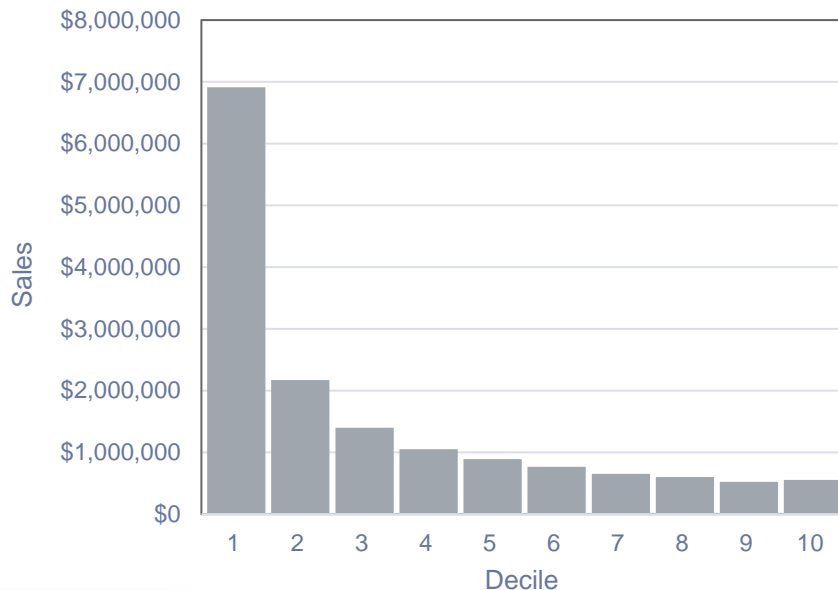
Model 1 - Variables

negative
influencers

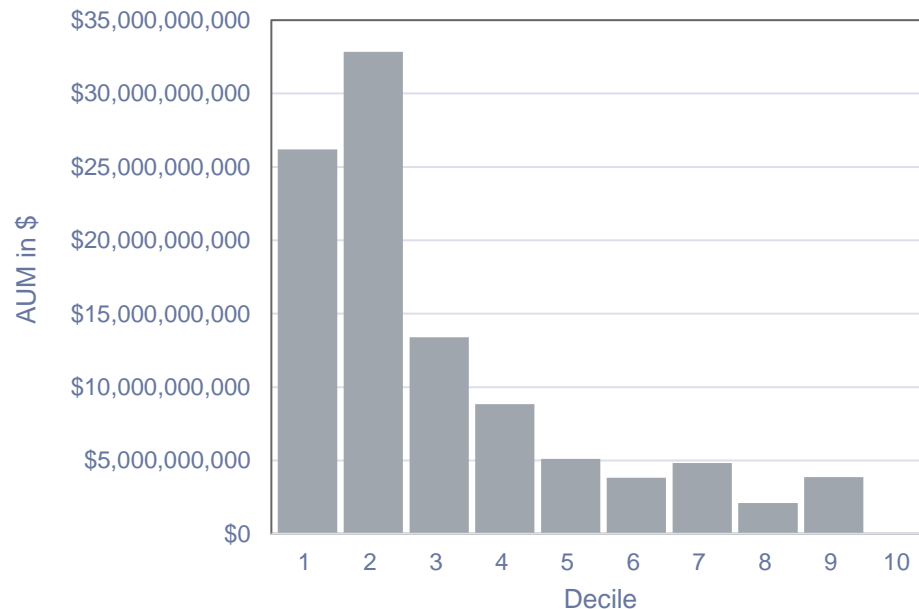
- AUM Account Money
- Number of total redemption in last 12 months
(excluding current month)AUM fixed income
- AUM Account real estate
- AUM Account – UIT
- AUM Account - ETF
- AUM Account - UCITS
- Redemption rate
- AUM P - 529 ETF

Model 1 - Variables

Total 2019 November Sales



2019 AUM



➤ Advisors in deciles 1 and 2 have more sales and more asset under its management in 2019

Model 1 - Lift Chart

Decile	Number of Customers	Actual Sales Per Customer	Lift Over Average	Cumulative No. of Customers	Cumulative Sales Per Customer	Cumulative Lift
1	820	\$ 6,911,813	345%	820	\$ 6,911,813	345%
2	820	\$ 2,172,593	40%	1,640	\$ 4,542,203	193%
3	820	\$ 1,399,623	-10%	2,460	\$ 3,494,676	125%
4	820	\$ 1,052,601	-32%	3,280	\$ 2,884,157	86%
5	819	\$ 888,804	-43%	4,099	\$ 2,485,476	60%
6	820	\$ 763,542	-51%	4,919	\$ 2,198,429	42%
7	820	\$ 653,881	-58%	5,739	\$ 1,977,741	27%
8	820	\$ 600,681	-61%	6,559	\$ 1,805,582	16%
9	820	\$ 520,457	-66%	7,379	\$ 1,662,771	7%
10	820	\$ 552,585	-64%	8,199	\$ 1,551,739	0%
Total	8,199	\$ 1,551,739	0%			

➤ Advisors in deciles 1 and 2 have a positive lift and a cumulative lift of 193%

Model 2

12 Month sales from 2018 – 2019 with values less than \$250,000 sold by 34% or 3,261 advisors and had an average sales of \$46,304

Model 2 - Variables

Positive
influencers

- Number of sales in in the last twelve months
- Number of redemption in last 12 M having $\geq 10K\$$
- Number of redemption in the last twelve months
- AUM fixed income
- AUM till current refresh date
- Number of fund sold in the last twelve months
- AUM actual targets
- Aum Account Fixed Income
- AUM for different Product type
- Number of funds currently held on the refresh date

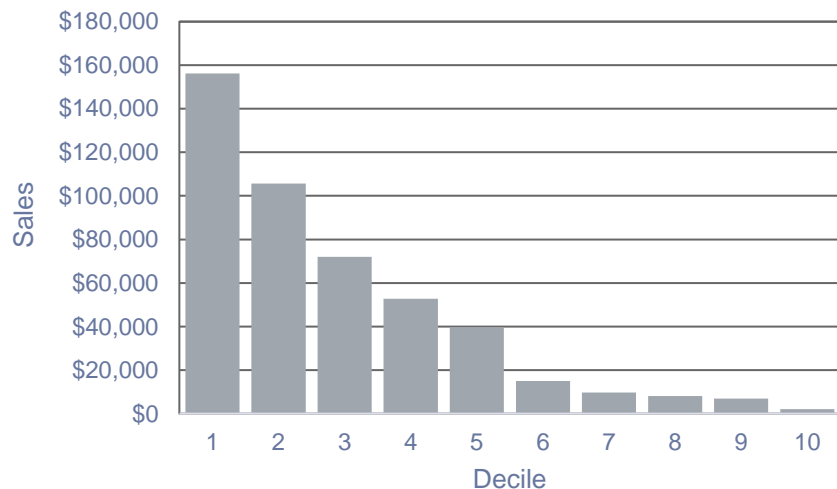
Model 2 - Variables

negative
influencers

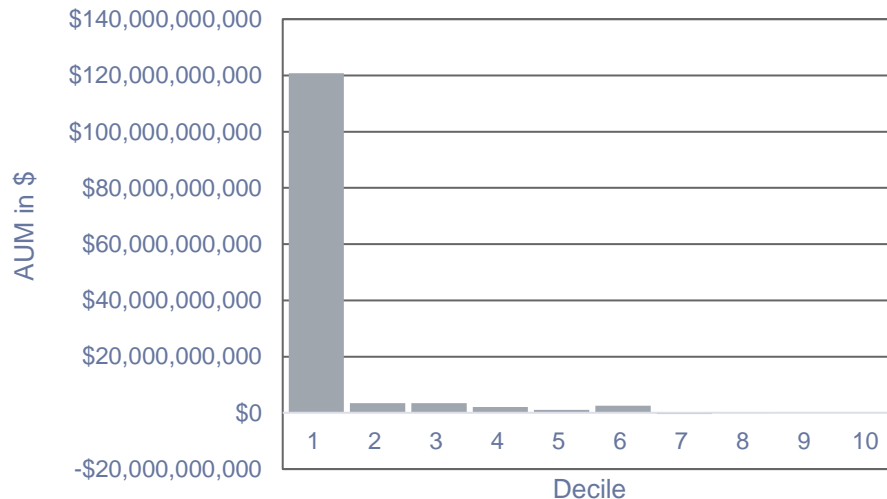
- AUM Account Money
- Number of total redemption in last 12 months
(excluding current month)AUM fixed income
- AUM Account Fixed income Taxable
- AUM_P Alternate
- AUM Account physical commodity
- AUM Account equity
- Redemption rate
- AUM P - 529 ETF
- Redemption – Last twelve months

Model 2 - Variables

Total 2019 November Sales



2019 AUM



➤ Advisors in deciles 1 and 2 have more sales but only Decile 1 has more asset under its management in 2019

Model 2 - Lift Chart

Decile	Number of Customers	Actual Sales Per Customer	Lift Over Average	Cumulative No. of Customers	Cumulative Sales Per Customer	Cumulative Lift
1	2,774	\$ 156,230	407%	2,774	\$ 156,230	407%
2	2,773	\$ 105,621	243%	5,547	\$ 130,930	325%
3	2,773	\$ 72,035	134%	8,320	\$ 111,301	261%
4	2,773	\$ 52,835	71%	11,093	\$ 96,686	214%
5	2,773	\$ 39,697	29%	13,866	\$ 85,289	177%
6	2,774	\$ 14,985	-51%	16,640	\$ 73,569	139%
7	2,773	\$ 9,707	-69%	19,413	\$ 64,447	109%
8	2,773	\$ 8,118	-74%	22,186	\$ 57,406	86%
9	2,773	\$ 6,905	-78%	24,959	\$ 51,795	68%
10	2,774	\$ 2,151	-93%	27,733	\$ 46,830	52%
Total	25,158	\$ 30,837	0%			

➤ Advisors in deciles 1 and 2 and have a positive lift and a cumulative lift of 325%

Model 3

All transactions for 12 Month sales from 2018 – 2019
sold by 10,010 advisors and had an average sales of
\$194,405

Variables

Positive
influencers

- Number of sales in in the last twelve months
- Number of redemption in the last twelve months
- AUM till current refresh date
- Number of fund sold in the last twelve months
- AUM actual targets
- Aum Account Fixed Income
- AUM for different Product type
- Number of asset class sales in the last twelve months
- Number of funds currently held on the refresh date

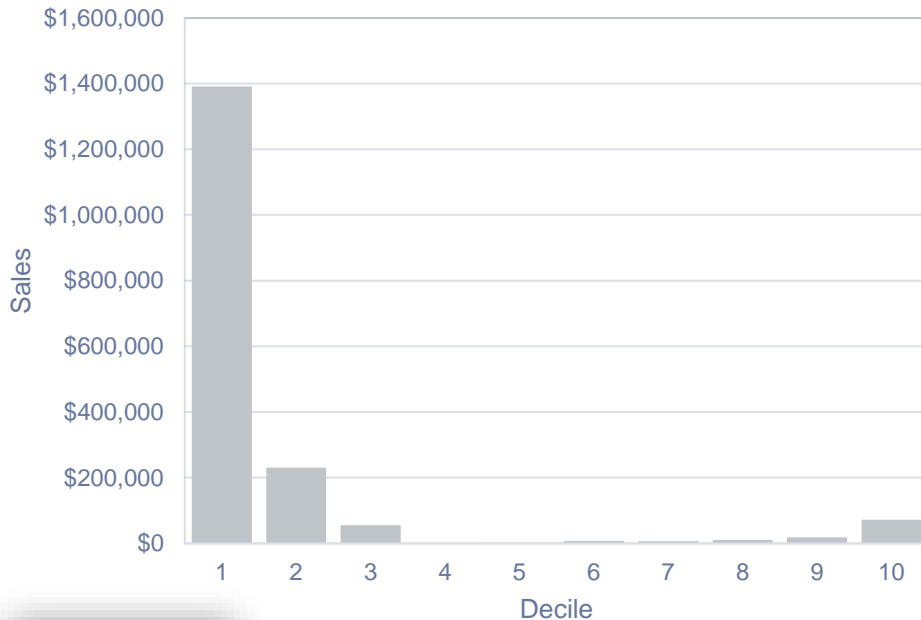
Variables

negative
influencers

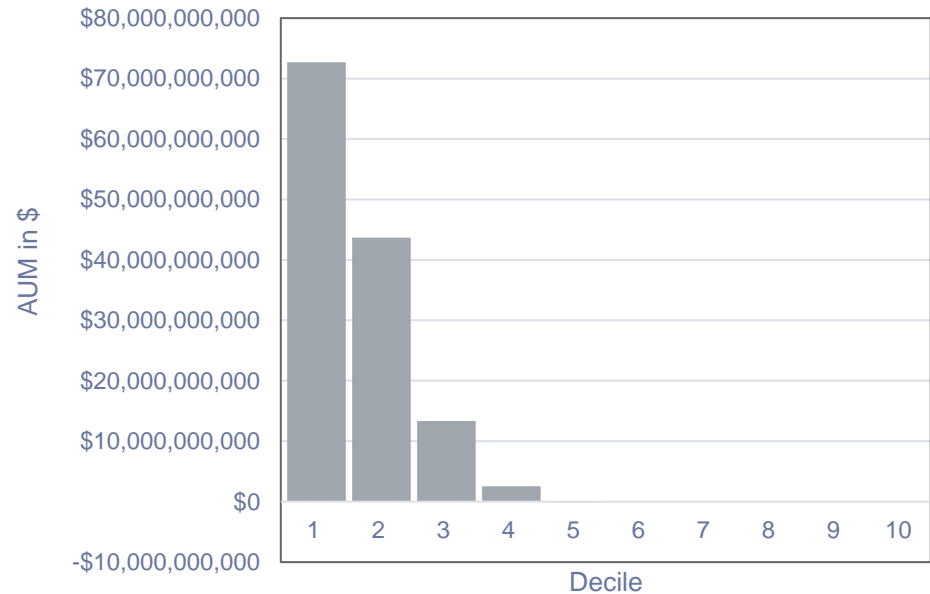
- AUM Account Money
- Number of total redemption in last 12 months
(excluding current month)AUM fixed income
- AUM Account Fixed income Taxable
- AUM Account equity
- AUM Account real estate
- AUM Account – UIT
- AUM Account - ETF
- AUM Account - UCITS

Model 3 - Variables

Total Sales to November 2019



2019 AUM



Model 3 - Lift Chart

Decile	Number of Customers	Actual Sales Per Customer	Lift Over Average	Cumulative No. of Customers	Cumulative Sales Per Customer	Cumulative Lift
1	7,508	\$ 1,391,535	675%	7,508	\$ 1,391,535	675%
2	7,506	\$ 231,070	29%	15,014	\$ 811,380	352%
3	7,503	\$ 54,887	-69%	22,517	\$ 559,305	212%
4	7,513	\$ 2,095	-99%	30,030	\$ 419,901	134%
5	7,506	\$ 773	-100%	37,536	\$ 336,088	87%
6	7,509	\$ 7,240	-96%	45,045	\$ 281,269	57%
7	7,504	\$ 6,675	-96%	52,549	\$ 242,057	35%
8	7,511	\$ 10,415	-94%	60,060	\$ 213,089	19%
9	7,507	\$ 18,324	-90%	67,567	\$ 191,449	7%
10	7,508	\$ 71,479	-60%	75,075	\$ 179,451	0%
Total	75,075	\$ 179,451	0%			

➤ Advisors in deciles 1 and 2 have a positive lift and a cumulative lift of 352%

Recommendations

1

Advisors who generate over **\$500,000** in sales should be the priority to the Sales team

These advisors are shown in:

- Deciles 1-10 in Model 1
- Deciles 1 in Model 3

2

Advisors who generate between **\$200,000 – \$500,000** in sales should take a lower priority to the sale team

These advisors are shown in:

- Deciles 2 in Model 3

3

Advisors who generate between **\$20,000 – \$200,000** in sales should take a priority to the telephone marketing team

These advisors are shown in:

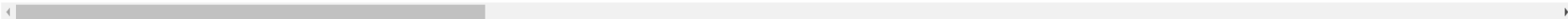
- Deciles 1-5 in Model 2
- Deciles 3 in Model 3

Thanks for Your Time

Appendix -Understand the Data

	CONTACT_ID	no_of_sales_12M_1	no_of_Redemption_12M_1	no_of_sales_12M_10K	no_of_Redemption_12M_10K	no_of_funds_sold_12M_1	no_of_funds_redeemed_12M_1	no_of_fund_sales_12M_10K	no_of_funds_Redemption_12M_10K	no_of_ass
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0	85102111664960504040	3096	6592	302	157	8	13	7	7
1	4492101	0	0	0	0	0	0	0	0
2	85102140943881291064	0	1	0	0	0	1	0	0
3	85202121774856516280	1	0	0	0	1	0	0	0
4	0360380	7	0	0	0	1	0	0	0



```
[44] 1 df.shape
```

```
(360325, 40)
```

▼ Combine sales_curr and sales_12M

```
✓ [10] 1 df['total_sales'] = df['sales_curr'] + df['sales_12M']
```

```
✓ [11] 1 df.total_sales
```

```
0      1.299992e+07
1      0.000000e+00
2      0.000000e+00
3      1.164760e+03
4      3.278145e+03
...
360320  8.138928e+04
360321  0.000000e+00
360322  2.511930e+03
360323  4.597563e+05
360324  7.205948e+05
```

```
Name: total_sales, Length: 360325, dtype: float64
```

Appendix –Missing data

Check out missing values



```
1 X_train1.isnull().sum()
```



```
no_of_sales_12M_1          0
no_of_sales_12M_10K        0
no_of_Redemption_12M_10K   0
no_of_funds_sold_12M_1     0
no_of_funds_redeemed_12M_1 0
no_of_fund_sales_12M_10K   0
no_of_funds_Redemption_12M_10K 0
no_of_assetclass_sold_12M_1 0
no_of_assetclass_redeemed_12M_1 0
no_of_assetclass_sales_12M_10K 0
no_of_assetclass_Redemption_12M_10K 0
No_of_fund_curr            0
No_of_asset_curr           0
AUM                         0
aum_AC_EQUITY              0
aum_AC_FIXED_INCOME_MUNI   0
aum_AC_MONEY               0
aum_AC_TARGET              0
aum_P_529                  0
aum_P_MF                   0
aum_P_SMA                   0
dtype: int64
```

Appendix - Variables

Positive Influencers Correlation of sale(target attribute) with other attributes

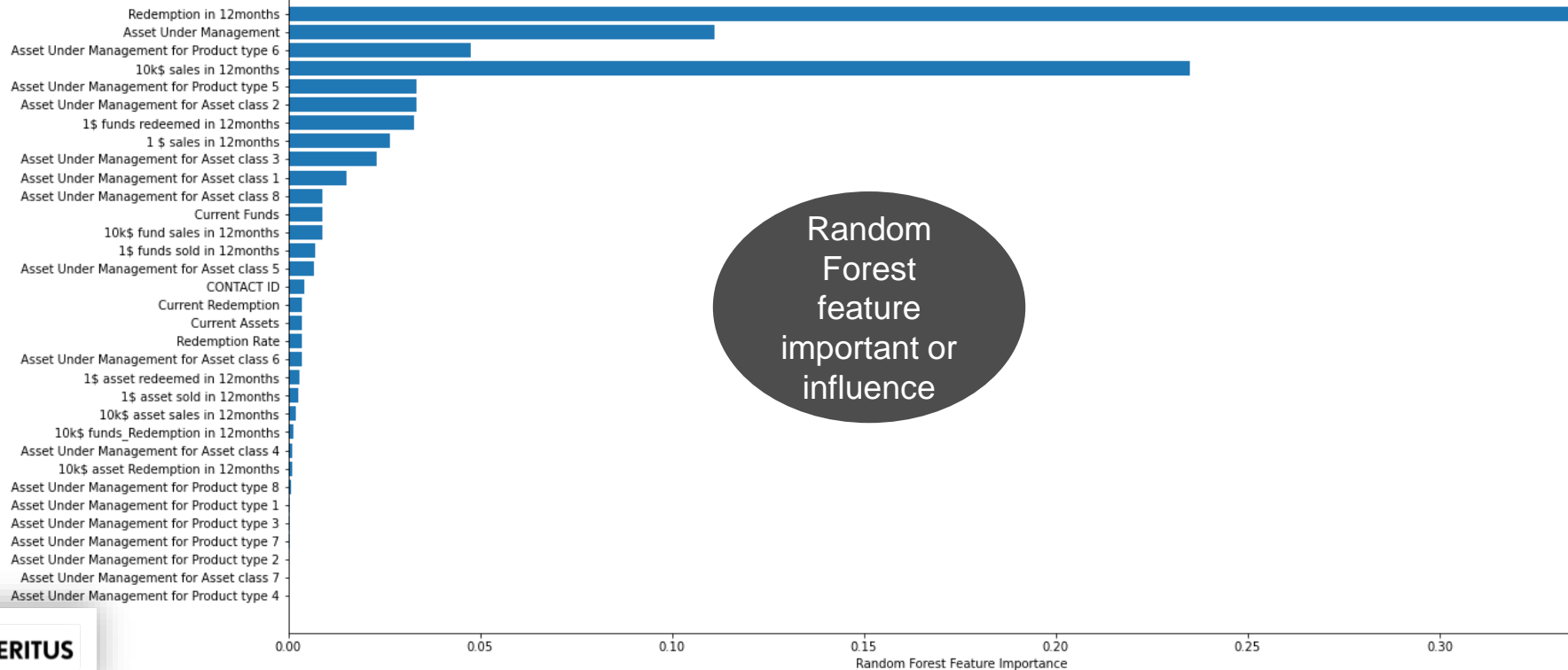
0	0.723602	no_of_sales_12M_10K
1	0.576209	no_of_Redemption_12M_10K
17	0.553078	aum_AC_FIXED_INCOME_MUNI
12	0.541029	AUM
28	0.487394	aum_P_MF
4	0.424328	no_of_fund_sales_12M_10K
5	0.370285	no_of_funds_Redemption_12M_10K
23	0.323903	aum_AC_TARGET
2	0.289023	no_of_funds_sold_12M_1
3	0.278460	no_of_funds_redeemed_12M_1
8	0.276660	no_of_assetclass_sales_12M_10K
10	0.266994	No_of_fund_curr
9	0.250039	no_of_assetclass_Redemption_12M_10K
29	0.246645	aum_P_SMA
6	0.166583	no_of_assetclass_sold_12M_1
11	0.162307	No_of_asset_curr

Appendix - Variables

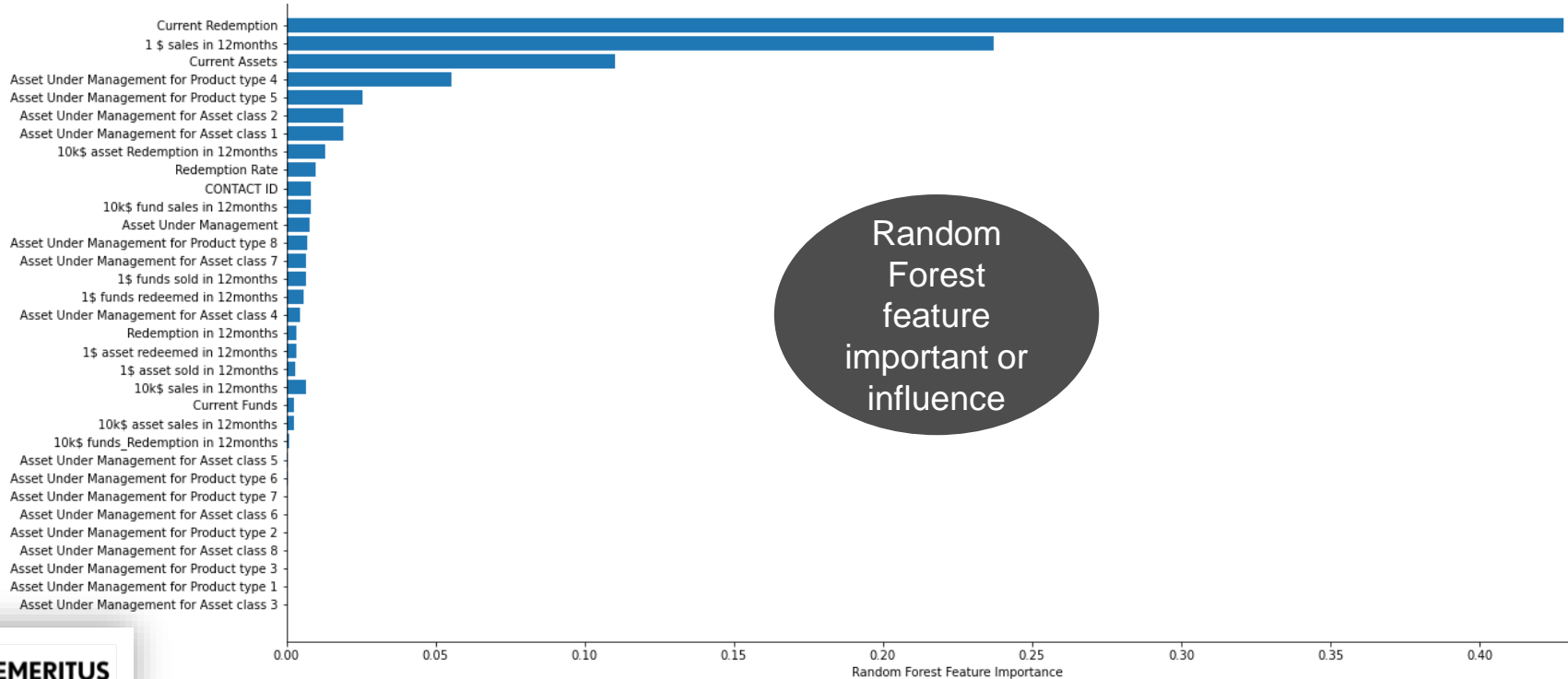
Negative Correlation of sale(target attribute) with other attributes

19	0.128976	aum_AC_MONEY
26	0.076014	aum_P_CEF
18	0.063529	aum_AC_FIXED_INCOME_TAXABLE
25	0.056877	aum_P_ALT
21	0.039626	aum_AC_PHYSICAL_COMMODITY
16	0.028497	aum_AC_EQUITY
22	0.023321	aum_AC_REAL_ESTATE
20	0.018411	aum_AC_MULTIPLE
31	0.005181	aum_P_UIT
30	0.001105	aum_P_UCITS
27	0.000539	aum_P_ETF
15	0.000488	redemption_rate
24	-0.003195	aum_P_529
13	-0.281086	redemption_curr
14	-0.533129	redemption_12M

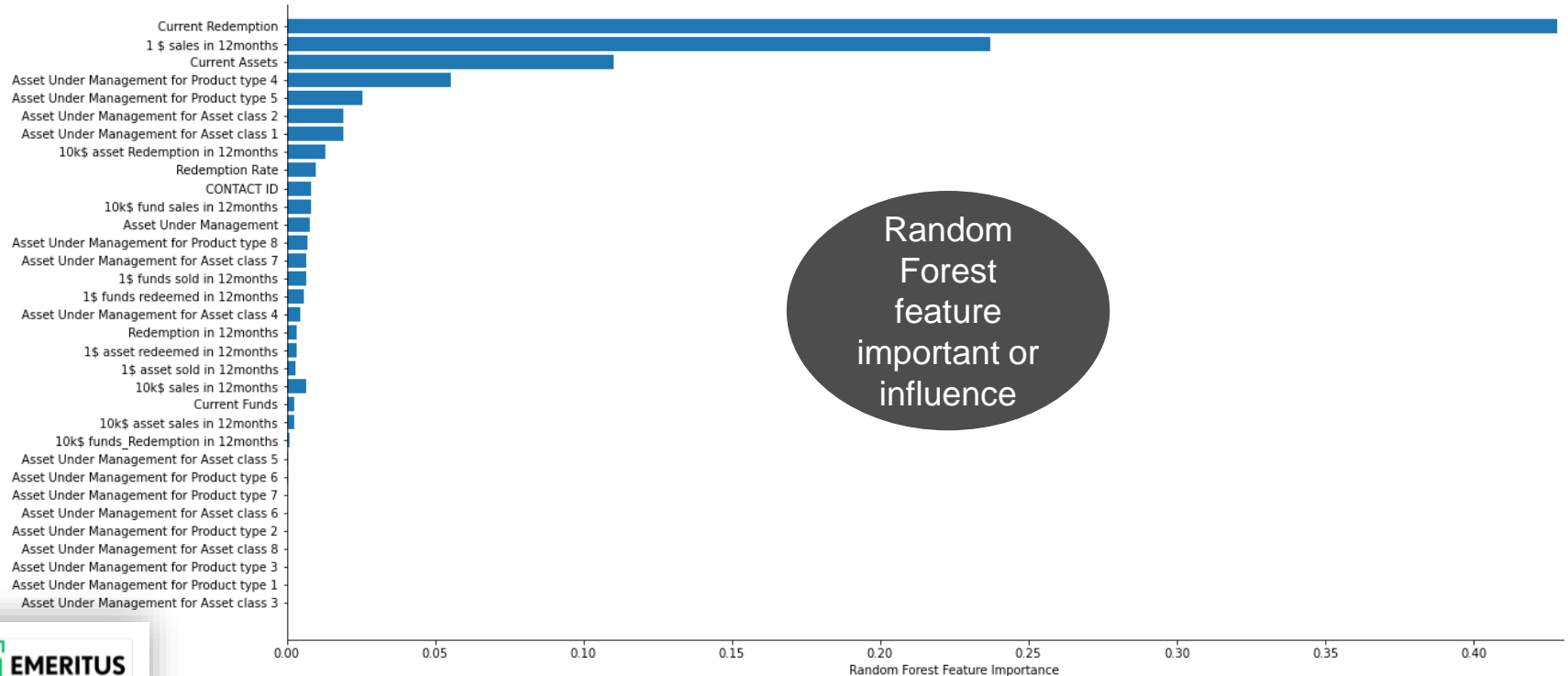
Appendix – Model 1 Random Forest



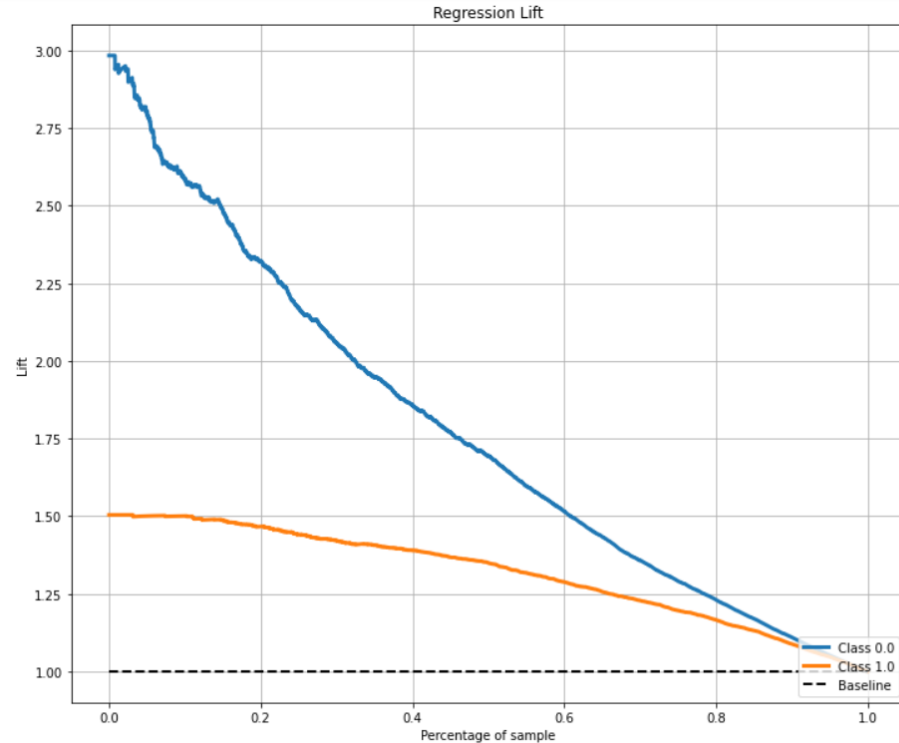
Appendix – Model 3 Random Forest



Appendix – Model 2 Random Forest



Appendix - Model 1 Regression Lift



Appendix - Model 2 Regression Lift

