

BC2406 Analytics I: Visual and Predictive Analytics

White Rock

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Decreasing Outflow : Identifying Churn

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Linear Regression

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Problem Statement

How can we increase AUM for White Rock?



Introduction | Increasing Inflows – Mapping Relationships | Increasing Inflows – Robo Advisor | Decreasing Outflows – Identifying Churn | Models – CART | Models – Linear Regression | Conclusion

Considerations

- Considering that:

- White Rock is an investment company and asset manager.
- White Rock and its peers make most of their revenue through management fees.
- White Rock collects a lot of data regarding their operation and sales.



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Business Solutions

- One of the most important measures of success of asset management firms like White Rock is assets under management(AUM).
- A steadily growing AUM annually indicates growth prospects for the firm.
- There are **3 main ways** to increase AUM:
 - New investments from new/existing customers or **increasing inflows**
 - Retaining investments from existing customers or **reducing outflows**
 - Higher returns from existing AUM



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Decision Making

- Unwise to rely solely on investment returns to increase AUM which can vary widely from year to year depending on how risky the investment is.
- A more reliable approach would be to win new investments from new or existing customers and to retain as much of their investments as possible.



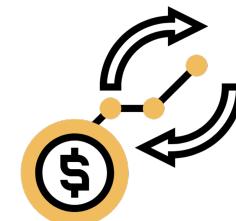
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Business Solutions

- Therefore, we will only be focusing on 2 main ways in this proof of concept (POC).



Increasing Inflow



Decreasing Outflow

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Dataset Used

- Analysis and recommendations will be given based on a similar dataset that we would expect from White Rock.
- This is accompanied by investor demographics and their portfolio information.
- Ensure that the models that we use will be relevant to White Rock.

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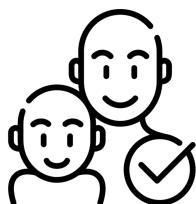


Yuki

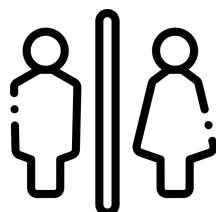
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BUSINESS RECOMMENDATIONS

Increasing Inflows - Mapping Relationships



Age



Gender



No. of Dependents

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Insights

↑ Age: ↑ Gold
↓ Age: ↑ ETF Tech

Female: ↑ Corp Bonds
Male: ↑ EMF

↑ Dependents: ↑ PE
↓ Dependents: ↑ Govt. Bonds

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Jarrel

Insights



Jarrel

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Action



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Jarrel

Limitations

"Women more likely than men to delay retirement"

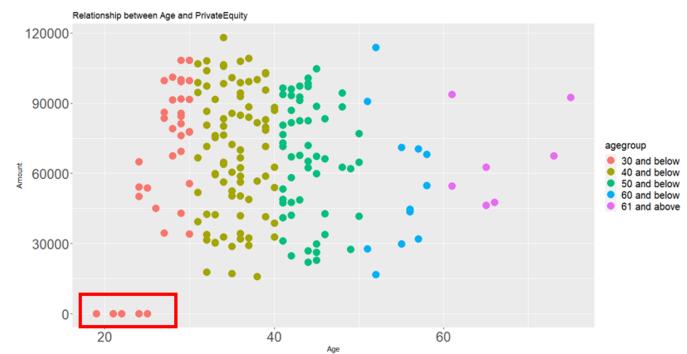
- Caitlin Mullen (BizWomen, 2020)



Jarrel

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Increasing Inflows- Robo Advisors

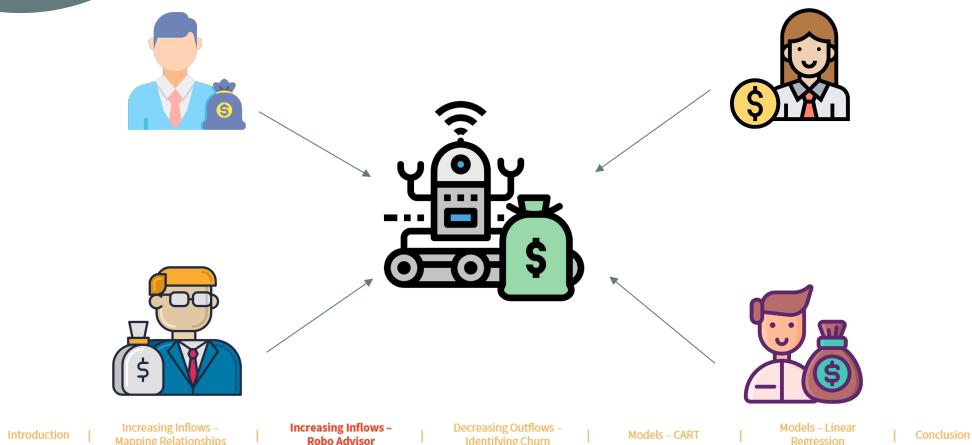


Minimum investment amount in PE: \$250,000 to millions

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Josiah

Increasing Inflows- Robo Advisors



Costs

Total Mobile Application Cost	
Startup Mobile Application Development Cost	Annual Maintenance Cost
\$270,000	\$54,000

*These costs do not include all variable expenses such as marketing and sales costs to drive application adoption by White Rock customers

- However, in the long run:
- Speed up due diligence processes
 - Centralise management system

Benefits



Easy to rebalance
investment portfolios



Automate tax-loss
harvesting



Decrease labour costs, as staff can
liaise with their customers through
electronic means

Implementation Guidelines

- Charge low management fees (~0.375%)
- Allow for a “no minimum” investment amount
- Set up onboarding surveys to find out each investor preferences
- Create different tiers of service based on portfolio amount
 - > Investments above \$100,000 can have 4 reviews per year with a dedicated advisor



Implementation Schedule



Most likely to churn conditions:

- Number of days since last transaction is **more than or equal to 201 days**
- Annual salary of **less than \$159k**
 - Cart Model
 - 71% Accuracy



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Josiah

Impact

Assuming:
Each young investor in White Rock invest **\$5000** at annual management fees of **\$18.75 (0.375%)**

Annual break even point in customers acquired:
2,880

Annual AUM inflow increase: **\$14,400,000**



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ChiHui

Decreasing Outflows- Identifying Churn

ChiHui

Decreasing Outflows - Possible Explanations

Conditions	
Number of days since last transaction ≥ 201	Annual salary $< \$159k$
Irrelevant Products	Feel underserved as compared to customers with higher income
Not as good as competitors	Products not tailored enough
Lack engagement	

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ChiHui

Decreasing Outflows - Possible Solutions

2 pronged approach	
Automated	Human touch
1. Set a predetermined cut-off eg. 50 days before customers reach 201 days of inactivity	1. Have in depth conversations with this group of customers to find out the root cause(s)
2. The system will automatically identify customers at high risk of churning (those at 151 days of inactivity and annual salary < \$159k)	2. Make necessary changes that will address the issues faced. For eg. if they commonly cite irrelevant products then we will need to come out with more relevant products
3. Engage them in low touch ways eg. send push notifications to remind them to continue with their investment plans	
A/B test whatever approaches we implement to see if it's effective	

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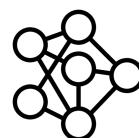
Decreasing Outflows- Impact

Average amount of assets each churned customer had	\$118,861
Assume average management fee charged is	0.1%
Loss in revenue per customer per year	\$118
Assume 1M customers and 5% churn rate, loss of revenue is	\$5.9M/yr
Loss of AUM is	\$5.9B/yr

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Things to note about Algorithmic Bias

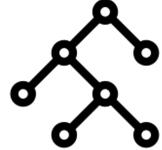
- We do not want to end up like the financial equivalent of Google tagging black people as gorillas.
- Need to make sure data is representative and interpreted correctly.
- Models might give sales teams recommendations.
- Always have to take into account the customer's financial goals and White Rock's vision of being a trusted financial services company.



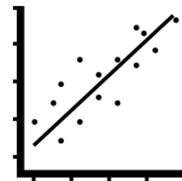
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03 MODELS

Models



Classification and Regression Trees (CART)



Linear Regression Model

CART

Churn
86 NC, 113 C
100%

Number of days since last transaction < 201 days

Yes

Nochurn
22 NC, 3 C
13%

Legend
NC: No churn
C: Churn

No

Churn
64 NC, 110 C
87%

Yes

Nochurn
23 NC, 8 C
16%

No

Churn
41 NC, 102 C
72%

CART

Churn
86 NC, 113 C
100%

Legend
NC: No churn
C: Churn

Number of days since last transaction < 201 days

No

Churn
64 NC, 110 C
87%

Estimated salary >= \$159,000

No

102/143 = 71% accuracy

Churn
41 NC, 102 C
72%

Linear Regression Model

Model predicted Emerging Market Funds investment

$$= \$7429.80 + \$7040.60 \times \text{Male}$$



Female



Male

\$7429.80

\$14770.40

Linear Regression Model



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Shaun

04 CONCLUSION

Summary



Older clients tend to buy more Gold, while younger clients invest more in ETF Tech.

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Yuki

Summary



Female clients prefers Corporate Bonds while male clients prefers Emerging Market Funds (EMF).

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Yuki

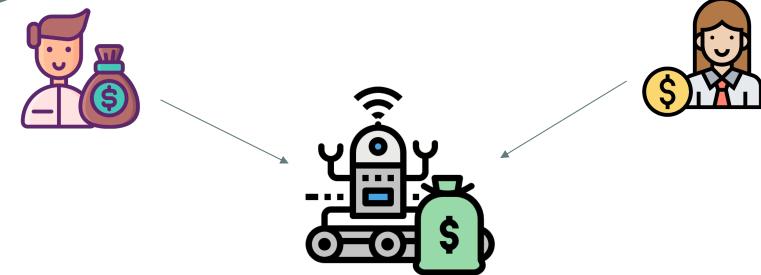
Summary



Clients with more dependents invest more in Private Equity (PE), while clients with fewer dependents invest more in Government Bonds.

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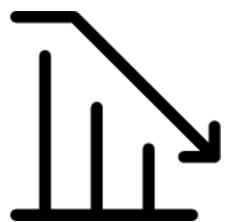
Summary- Robo Advisors



Robo advisors can help pool funds of younger clients together to invest in private equity.

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Summary- Reducing Outflows



In order to reduce churn, White Rock has to retain inactive customers who have not made any transactions for more than 201 days and have an annual salary of less than \$159,000.

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Questions?



Thank You