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How charitable foundations
set their spending rates

Rust never sleeps

Ian Harris and Mary O'Callaghan continue their discussion on the use of predictive analytics to boost membership fundraising.

IN THE LAST issue of *Charity Finance*, we presented a case study, 'Rubies in the Dust', showing how we used statistical learning models to boost direct donor fundraising in a charity with £12m per annum in voluntary income and a large list of donors.

We outlined several techniques we tend to use in civil society organisations to predict and classify information; to solve problems such as cost-benefit optimisation of charitable activity; to rebalance a charity's investment portfolio; or to set reserve-level ranges.

We showed that statistical learning models, known as support vector machines (SVMs), are especially good at predicting and classifying individual items of information. We concluded that the predictive ability of SVMs is significantly better than conventional 'rule-of-thumb' techniques for predicting whether a prospective donor is likely to give or not.

A regular bonanza?

We suspected that applying SVM techniques on higher-value items might graduate to regular giving or legacy pledges, and could be very valuable indeed.

As luck would have it, we soon got an opportunity to test a regular-income example with another civil society organisation; one whose income base stems largely from tens of millions of pounds in membership income each year, through hundreds of thousands of members.

The benefits of good follow-up processes for leavers include

improving data quality and understanding membership trends, but there is also a key financial benefit; if you get this process right it pays for itself many times over through income recovery, by persuading a proportion of the leavers to rejoin.

“ Without innovation, civil society income just corrodes away ”

The key point is to follow up swiftly and efficiently. Simple analysis and evidence from other membership organisations proves that you are far more likely to persuade a leaver to rejoin if you

follow up with them swiftly. If you allow two or three months to pass, the chance of success roughly halves.

And the financial benefits of rejoiners are substantial. For this large organisation, hundreds of thousands of pounds in membership income can be generated from rejoiners every year.

When this is compounded by the number of years the average rejoiner stays, the extra income soon runs to millions of pounds each year.

Case study two: 'Rust never sleeps'

Because a leaver is far more likely to rejoin if pursued promptly, it makes sense to pursue leavers with rigour.

Those leavers who do not respond to the basic, correspondence approach, but are subsequently contacted with an enhanced approach (eg with a telephone call), are as likely, in the end, to rejoin as those who respond to the basic approach.

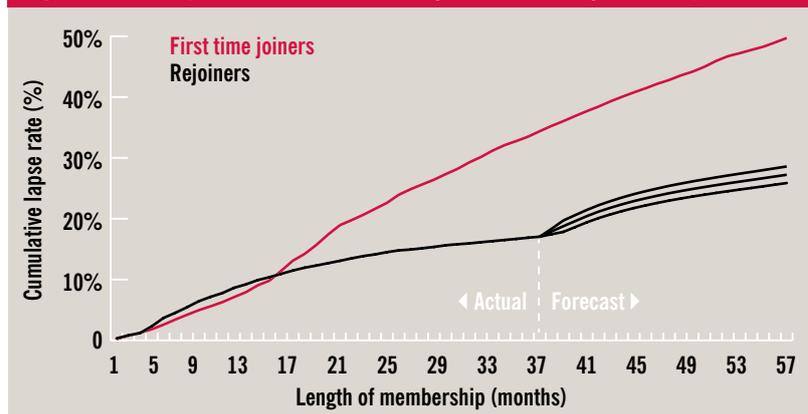
However, there is a significant cost to an enhanced approach; it

figure 1: Total members by propensity to rejoin

Propensity of rejoining	Total members	Actual rejoiners*	Actual rejoiner rate
High	192	16	8.33%
Medium	11,742	491	4.18%
Low	16,164	318	1.97%

* This analysis was based on responses to lapsing letters only

figure 2: Comparison of first-time-joiner and rejoiner lapse rates



is not viable to attempt to make telephone contact with all leavers who fail to respond to correspondence.

We thought this problem would lend itself to statistical-learning predictive analytics; which indeed it did. We trained our SVM, PropheZy, using members who had lapsed during 2009, including many who had subsequently rejoined through the basic follow-up process.

Key data included gender; date of birth; duration of membership; and various membership groupings and categories specific to the organisation, which indicated particular interests and the degree of involvement in those interests.

Predictive data

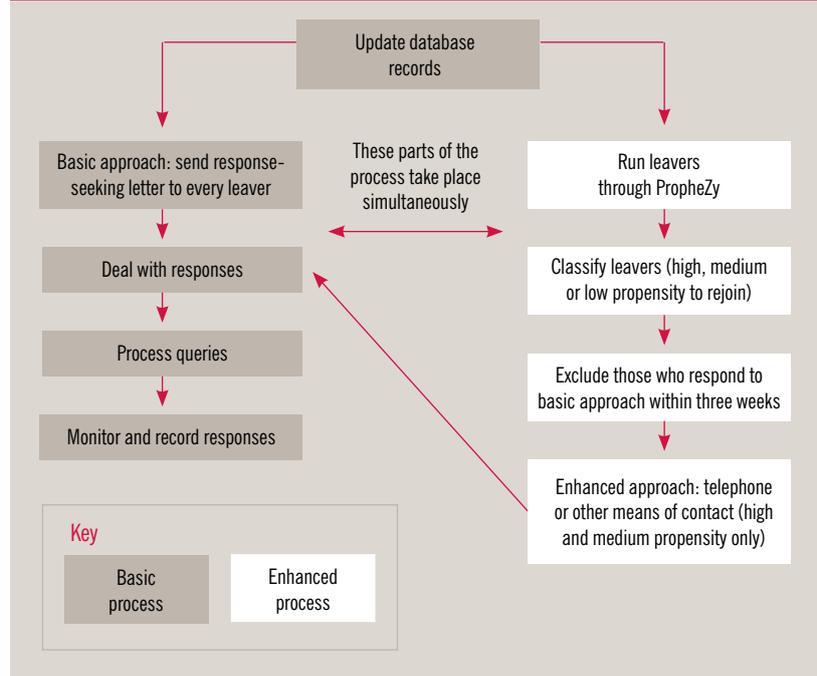
The data proved highly predictive and we were able to construct three bands showing high, medium and low propensity to rejoin, as indicated in figure 1.

PropheZy is not the only tool available if you want to apply statistical learning through an SVM. Statistical packages such as SPSS, Minitab, SAS, R and Matlab all offer SVM capability. Indeed, in simple cases with very few variables, even using Excel's regression functions can be predictive to some extent.

One benefit of our SVM, PropheZy, is that it can cope with gaps in the data, as long as the 'gappy variables' have reasonable amounts of data in them.

In this instance, the gender and duration of membership data was very clean, but the date of birth and some of the 'member interests' fields had gaps. PropheZy will ignore a variable completely if the data within it is too sparse or not predictive. We found even the 'gappy member interests variables' were all predictive, so we used them, even when they were sparse.

figure 3: Enhanced workflow of leaver follow-ups using PropheZy analytics



Leavers with high and medium propensity to rejoin tend to have been members for a relatively long time, but also tend to be younger than the low propensity leavers.

“ Rejoiners are far more valuable than we had first anticipated ”

Also, in this case, (much to the delight of the finance staff), the high and medium propensity to rejoin leavers tend to be in more expensive membership categories than the low propensity leavers.

Applying simple cost-benefit analysis to these results produced some straightforward conclusions: it is unquestionably worthwhile to undertake enhanced, telephone follow-up on high and medium propensity people, but borderline to go beyond the basic follow-up

with the low propensity people.

The workflow diagram in figure 3 illustrates the follow-up process when enhanced by the use of predictive analytics using PropheZy.

Lapse rates

In this particular membership organisation, the average duration of membership is about ten years.

When we started working on follow-up processes to generate rejoiners, we assumed in our initial cost-benefit calculations that rejoiners would be more 'flaky' than other members, and that we might get five years' additional membership on average.

However, once we had three years' history of follow-ups, we looked at the actual lapse rates for rejoiners and learned some interesting things, as illustrated in figure 2.

During the first 14 months or so of joining or rejoining, the lapse rates are quite similar, with rejoiners

'relapsing' slightly more than first-time joiners. But, after that, the actual relapse rate for rejoiners is significantly lower than the lapse rates for joiners in the same period. This raised several interesting points.

It indicates that rejoiners are actually far more valuable than we had originally estimated. Secondly, it infers that proactive work with recent joiners might prevent some of that lapsing.

And so it is proving. We are currently working on sample proactive campaigns with recent joiners and getting a highly-statistically-significant, positive effect on reducing leaver rates.

The next stage of our work is to see if we can boost the efficiency of the telephone follow-up work by using the SVM to predict which recent

joiners and leavers are likely to be relatively easy to contact. Assuming this works, we can then optimise the cost side of the equation, in addition to the income optimisation described in this case study.

Innovation is critical

Civil society organisations need to get as much value as possible from their member and regular-giver base, with as little cost and effort as possible. The cost and effort involved in recruiting new members and regular givers is high, and is only getting higher.

We call this case study 'Rust never sleeps' because innovation is critical, otherwise civil society income erodes (or corrodes) away. Charities need to maximise the value of their supporter bases through efficient,

effective and innovative processes.

Much of the analysis used in this study can be scaled, and deployed in smaller, as well as in large, civil society organisations.

We hope that significant numbers of charities can learn useful things from this work and improve their financial position as a result of that learning. ■



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