A SIMPLE SCORE YOU CAN PROBABLY BUILD IN EXCEL

by Peter B. Wylie

Algorithms are all the rage now in the world of analytics. You see them at work everywhere. Maybe it's in weather prediction or in self driving automobiles or whether a ball is in or out in a tennis game. Even in what films and books get recommended to you by Netflix or Amazon. Algorithms are making our lives safer and better. No doubt about that. Not in my mind. And certainly not in the mind of John Sammis, who knows a lot more about algorithms than I do.

If you hear a "but" coming, it goes like this. John and I are big proponents of looking at data. Frequency distributions. Means. Medians. Fourfold tables. Scatter plots. All that sort of stuff. We were taught to do that early on in our careers as analysts. And, right or wrong, we think that looking at data has gotten a bit lost as so many analysts focus on building faster and more accurate algorithms.

So… what do our strongly held beliefs have to do with your interest in analytics in the field of fundraising?

Here's how we see things: Some of you are interested in building sophisticated algorithms to predict giving. But *most* of you are not. Most of you, if the truth be told, want something simple and straightforward you can do in Excel. Yeah, it'd be nice to get good at using R or SPSS or DataDesk. But for now? Nope. We're talking Excel.

In this piece we use data from two schools that will show you something you can try with your own data. Something that will get you (1) digging into that data, (2) building a predictive score, and (3) doing it all in Excel.

The Schools and the Data We looked at

Both schools are private higher ed institutions, each with over 25,000 or so solicitable alums. Obviously, they're not representative of the broad universe of colleges and universities in North America. However, some of the data patterns we see in both schools are strikingly similar. Let's start by looking at Table 1.

**Table 1: Total and Median Lifetime Dollars Given by 20 Groups of School A Alums as of The End Of FY 2010**

Five Percent Groups	Count	Sum	Median
1	1018	$2,828	$2
2	770	$8,552	$10
3	1170	$27,889	$25
4	1002	$44,384	$45
5	880	$58,430	$66
6	967	$94,346	$100
7	1027	$134,239	$130
8	915	$165,594	$180
9	964	$231,676	$245
10	1009	$314,478	$310
11	944	$380,223	$400
12	956	$497,103	$520
13	959	$643,447	$670
14	991	$874,759	$880
15	945	$1,085,580	$1,143
16	971	$1,494,910	$1,550
17	968	$2,098,930	$2,150
18	969	$3,233,610	$3,300
19	967	$6,100,420	$6,050
20	967	$71,068,800	$20,755

To build this table we:

1. Computed the lifetime giving (as of the end of FY 2010) for every alum in School A who had given anything at all up to that point. (We excluded any giving that occurred from FY 2011 up through FY 2015. Later on you'll see why we did that.)
2. We rank ordered these alums by their giving and placed them in twenty roughly equal size groups where Group 1 comprised the lowest givers, and Group 20 comprised the highest givers. (We say "roughly" because many alums, especially ones at the lower end of the giving ladder, had given identical amounts, like $20, $30, and so on. That made it impossible to construct equal size groups. You'll run into the same problem with your own data.)

3. For each group we computed the total amount (sum) and the median amount given.

It doesn't take much looking to see that, as the group number increases, the total amount given and the median amount given rise slowly; then they pretty much sky rocket at the end. Figure 1 makes this pattern easier to see than does Table 1.

Fig 1. Median Lifetime Dollars Given by 20 Groups of School A Alums as of the End Of FY 2010
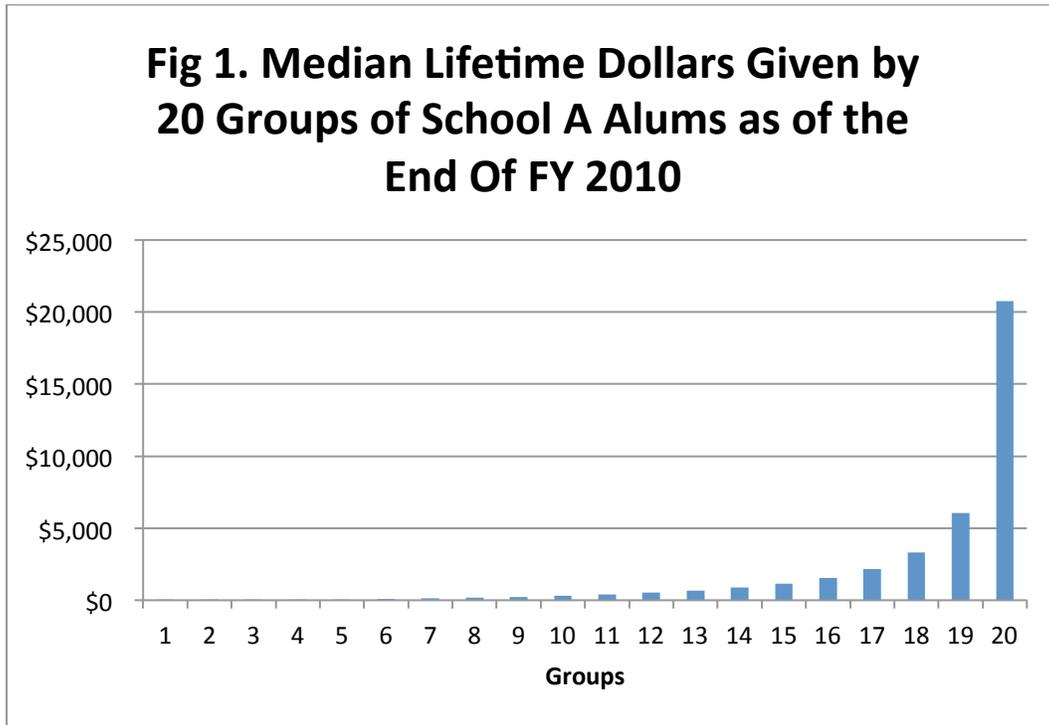
If you build a similar table and chart for your own institution, we're sure you'll see the same pattern. In fact, we've never seen *any* exception to it in the hundreds of higher ed databases we've looked at over the last ten years. ***The top five percent of givers donate way, way more than the other ninety-five percent of givers***. (See *The Lopsided Nature of Alumni Giving*, CoolData Blog, 21 March 2013.)

Now take a look at Table 2 and Figure 2. We built Table 2 for School B the exact same way we built Table 1 for School A. And we built Figure 2 for School B the exact same way we built Figure 1 for School A.

**Table 2: Total and Median Lifetime Dollars Given by 20 groups of School B Alums as of the End of FY 2010**

Five Percent Groups	Count	Sum	Median
1	866	$1,155	$1
2	1344	$12,132	$10
3	971	$19,655	$20
4	1239	$39,609	$30
5	1139	$67,532	$60
6	1100	$108,669	$100
7	1070	$160,908	$150
8	1125	$251,900	$222
9	1093	$354,839	$324
10	1099	$511,862	$465
11	1113	$721,749	$645
12	1104	$984,551	$888
13	1104	$1,323,780	$1,190
14	1107	$1,816,330	$1,635
15	1104	$2,512,010	$2,262
16	1104	$3,529,090	$3,196
17	1106	$5,124,120	$4,600
18	1105	$8,296,500	$7,361
19	1105	$16,456,400	$14,385
20	1105	$144,730,000	$44,686

Fig 2. Median Lifetime Dollars Given by 20 Groups of School B Alums as of the End Of FY 2010
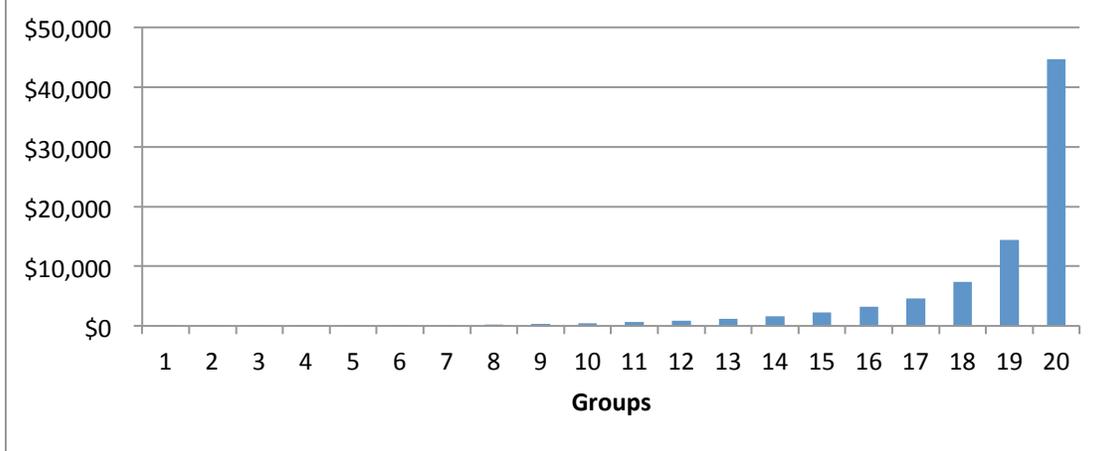
Earlier we said that the data patterns we saw in both schools are very similar. Figure 3 is a good example of that fact. Yes, the *level* of giving in School B is considerably greater than School A, especially in the higher groups. But that "sky rocketing" pattern we mentioned is apparent in both schools.

Fig 3. Median Lifetime Dollars Given by 20 Groups of School A and School B Alums as of the End Of FY 2010
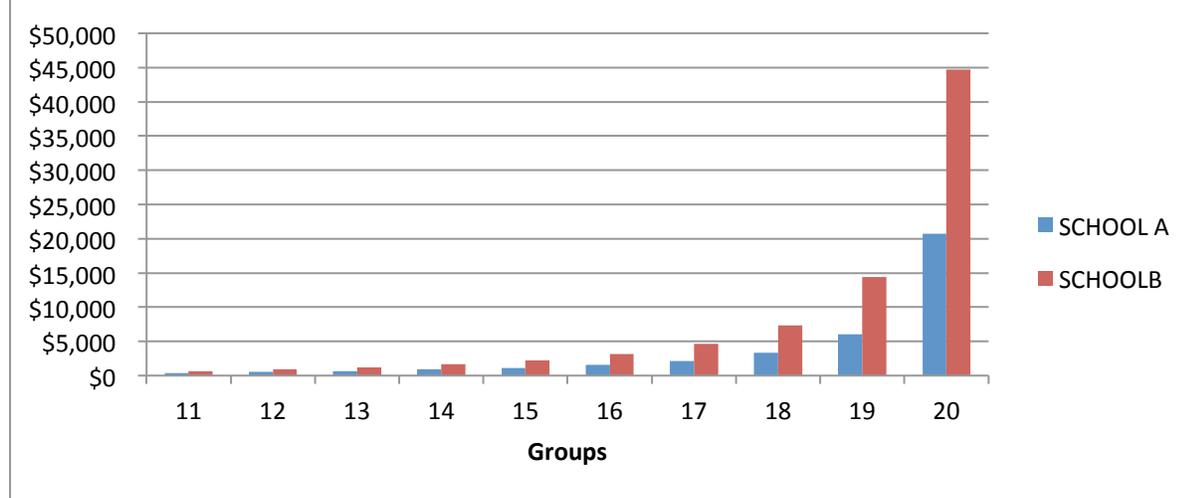
Building the Score

So…the score? The score is already built. That's right. For the purposes of this piece (and what you can do to create your own score), all you need to do is divide your current alumni givers into twenty roughly equal size groups, just as we've done here. So the groups are the score.

Okay. So maybe you're saying:

"Wait a minute. Why didn't you guys just tell us that in the first place? What's all this stuff about going back five fiscal years. How come you did that?"

We wanted to show you that a simply constructed score like this one has a great chance of predicting future giving. Future giving as measured by: Recency, frequency, and magnitude.

Let's look at what happened with these two schools.

Recency

There are a lot of ways to measure recency of giving. We chose a pretty simple one. Whether or not an alum had given anything at all in the most recent fiscal year for which we had data: FY 2015.

Go ahead and browse through Tables 3 and 4 and Figure 1. Then we'll tell you what we see.

Table 3: Percentage of Each of 20 Groups of School A Alums who gave in FY 2015

Five Percent Groups	Count	Sum	%
1	1018	189	18.6%
2	770	168	21.8%
3	1170	272	23.2%
4	1002	220	22.0%
5	880	217	24.7%
6	967	200	20.7%
7	1027	239	23.3%
8	915	232	25.4%
9	964	219	22.7%

10	1009	291	28.8%
11	944	312	33.1%
12	956	344	36.0%
13	959	399	41.6%
14	991	460	46.4%
15	945	495	52.4%
16	971	537	55.3%
17	968	549	56.7%
18	969	580	59.9%
19	967	647	66.9%
20	967	672	69.5%

Table 4: Percentage of Each of 20 Groups of School B Alums who gave in FY 2015

Five Percent Groups	Count	Sum	%
1	866	78	9.0%
2	1344	142	10.6%
3	971	242	24.9%
4	1239	196	15.8%
5	1139	231	20.3%
6	1100	222	20.2%
7	1070	270	25.2%
8	1125	297	26.4%
9	1093	310	28.4%
10	1099	366	33.3%
11	1113	384	34.5%
12	1104	436	39.5%
13	1104	490	44.4%
14	1107	542	49.0%
15	1104	594	53.8%
16	1104	684	62.0%
17	1106	722	65.3%
18	1105	765	69.2%
19	1105	772	69.9%
20	1105	825	74.7%

Fig. 4: Percentage of Each of 20 Groups of School A and B Alums who gave in FY 2015
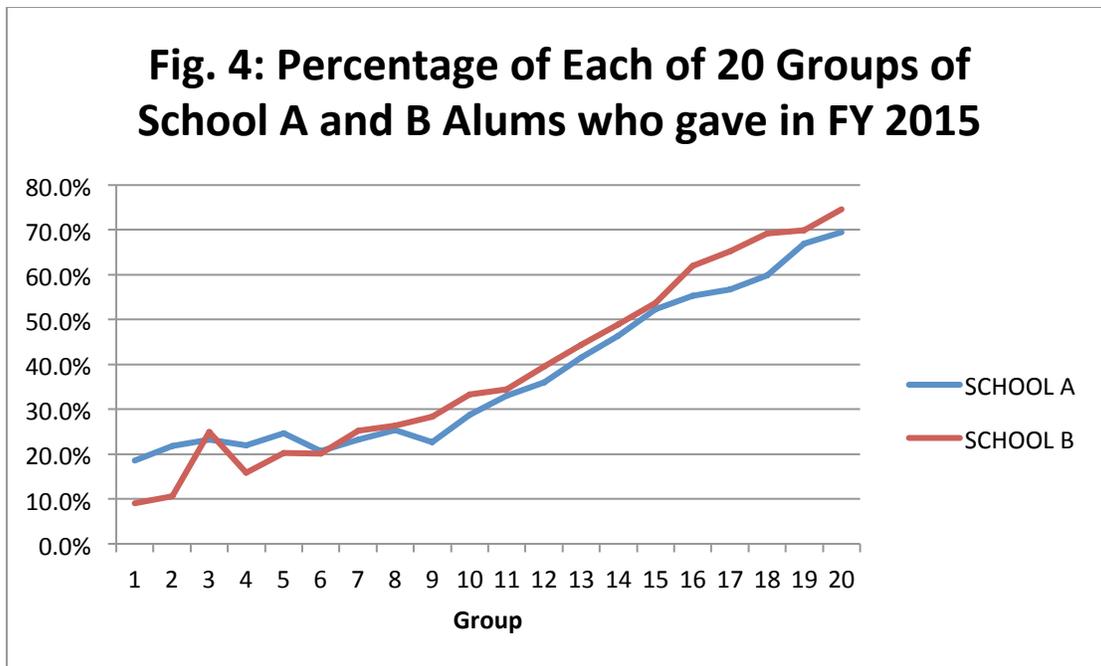
Here's our sense of what's going on in the two tables and the chart:

The percentage of alums in both schools who gave anything in FY 2015 goes up steadily with group number. Granted, that percentage does not go up in a perfectly straight line. There are some ups and down along the way. But the overall trend is *steadily* upward.

The percentages for both schools are remarkably similar. You can see that very clearly in Figure 4. It almost looks like we faked the data. We didn't.

Frequency

To measure frequency we counted the number of years from FY 2011 to FY 2015 that an alum had given anything at all. That number had to vary between 0 and 5.

If you take a look at Table 5 and understand what it shows, you can skip ahead.

If you're a little shaky on what the table conveys, see if this helps. For each group, we summed the number of years between FY 2011 and FY 2015 that each alum had given anything. Then we divided that sum by the number of alums in the group. That gave us the mean(average) number of years that each alum had given in that five year period.

A couple of examples:

- Look at Group 20 in Table 5. There are 967 alums in that group. The sum of years of giving for that group is 3,227. If you divide 3,227 by 967 , you get 3.34. In plain English that means that the average number of years of giving for Group 20 was about three and a third years.
- Now look at Group 1. There are 1,018 alums in that group. The sum of years of giving for that group is 875. If you divide 875 by 1,018 , you get 0.86. That means the average number of years of giving for Group 1 was less than one year.
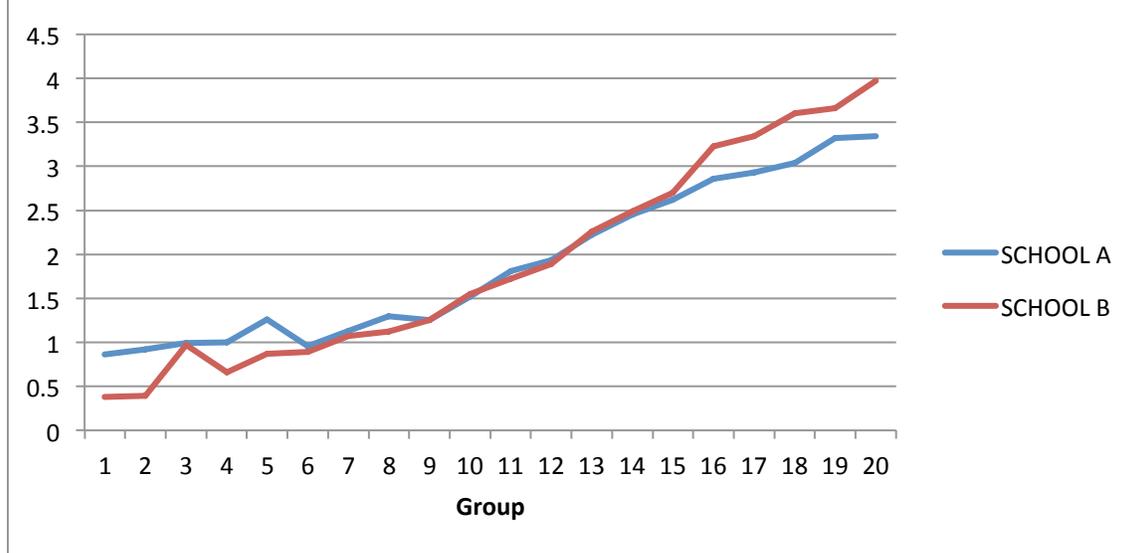
Table 5: Mean (Average) Number of Years of Giving by 20 Groups of School A Alums from FY 2011 through FY 2015

Five Percent Groups	Count	Sum	Mean Years of Giving FY11-FY15
1	1018	875	0.86
2	770	710	0.92
3	1170	1162	0.99
4	1002	1004	1.00
5	880	1110	1.26
6	967	931	0.96
7	1027	1159	1.13
8	915	1193	1.30
9	964	1204	1.25
10	1009	1534	1.52
11	944	1708	1.81
12	956	1848	1.93
13	959	2132	2.22
14	991	2426	2.45
15	945	2476	2.62
16	971	2778	2.86
17	968	2839	2.93
18	969	2943	3.04
19	967	3209	3.32
20	967	3227	3.34

Table 6: Mean (Average) Number of Years of Giving by 20 Groups of School B Alums from FY 2011 through FY 2015

Five Percent Groups	Count	Sum	Mean Years of Giving FY11-FY15
1	866	333	0.38
2	1344	529	0.39
3	971	942	0.97
4	1239	821	0.66
5	1139	986	0.87
6	1100	984	0.89
7	1070	1142	1.07
8	1125	1260	1.12
9	1093	1371	1.25
10	1099	1707	1.55
11	1113	1917	1.72
12	1104	2085	1.89
13	1104	2499	2.26
14	1107	2754	2.49
15	1104	2982	2.70
16	1104	3567	3.23
17	1106	3691	3.34
18	1105	3975	3.60
19	1105	4040	3.66
20	1105	4386	3.97

Fig. 5: Mean (Average) Number of Years of Giving by 20 Groups of School A and B Alums from FY 2011 through FY 2015

What we see in Tables 5 and 6 and in Figure 5 will sound repetitious:

The mean(average) number of years of giving in both schools goes up steadily with group number. The mean does not go up in a perfectly straight line. There are some ups and downs along the way. But the overall trend is *steadily* upward.

The means for both schools are remarkably similar. You can see that very clearly in Figure 5.

Magnitude

Magnitude? That just means how *much* money alums gave during the five year period from FY 2011 through FY2015. (Here, of course, we're focusing on how much money each of the twenty *groups* gave in the two schools.)

If you look at Tables 7 and 8, you'll see that things are not as neat and clean as they were when we were looking at recency and frequency. Two things stick out:

- You'll see what we call "bounce" in the sum column of both tables. For example, in Table 7 for School A, the alums in Group 15 gave over $700,000 more than did the alums in Group 16. ($2,041,860 versus

$1,336,430). In Table 8 for School B, the alums in Group 6 gave over $71,000 more than did the alums in Group 7. ($163,098 versus $91,267). That happens because a few people (or maybe just one) were especially generous during the five year period.

- You'll see 0 values for the medians in both tables. In Table 7 all the median values are 0 for the first nine groups. In Table 8 all the median values are 0 for the first eight groups. That means that in each of those groups more than half of the alums gave nothing at all in the five year period.

But let's jump down and take a look at Figure 6.

Table 7: Total and Median Lifetime Dollars Given by 20 Groups of School A Alums from FY 2011 through FY 2015

Five Percent Groups	Count	Sum	Median
1	1018	$25,644	$0
2	770	$34,999	$0
3	1170	$36,358	$0
4	1002	$48,581	$0
5	880	$45,214	$0
6	967	$61,418	$0
7	1027	$72,553	$0
8	915	$89,088	$0
9	964	$96,469	$0
10	1009	$118,972	$25
11	944	$321,137	$50
12	956	$293,560	$100
13	959	$294,120	$110
14	991	$341,134	$175
15	945	$2,041,860	$250
16	971	$1,336,430	$315
17	968	$2,163,910	$500
18	969	$2,921,390	$600
19	967	$5,409,070	$1,150
20	967	$25,448,100	$4,000

Table 8: Total and Median Lifetime Dollars Given by 20 Groups of School B Alums from FY 2011 through FY 2015

Five Percent Groups	Count	Sum	Median
1	866	$17,135	$0
2	1344	$61,846	$0
3	971	$47,885	$0
4	1239	$34,981	$0
5	1139	$66,461	$0
6	1100	$163,098	$0
7	1070	$91,267	$0
8	1125	$163,384	$0
9	1093	$155,968	$20
10	1099	$267,806	$50
11	1113	$412,411	$80
12	1104	$339,476	$100
13	1104	$392,517	$150
14	1107	$774,253	$250
15	1104	$954,796	$350
16	1104	$1,883,490	$550
17	1106	$1,624,870	$750
18	1105	$2,798,560	$1,300
19	1105	$6,695,690	$2,500
20	1105	$41,295,400	$8,768

Fig 6. Median Dollars Given by the Top 11 Groups of School A and School B Alums between Fy 2011 and FY 2015
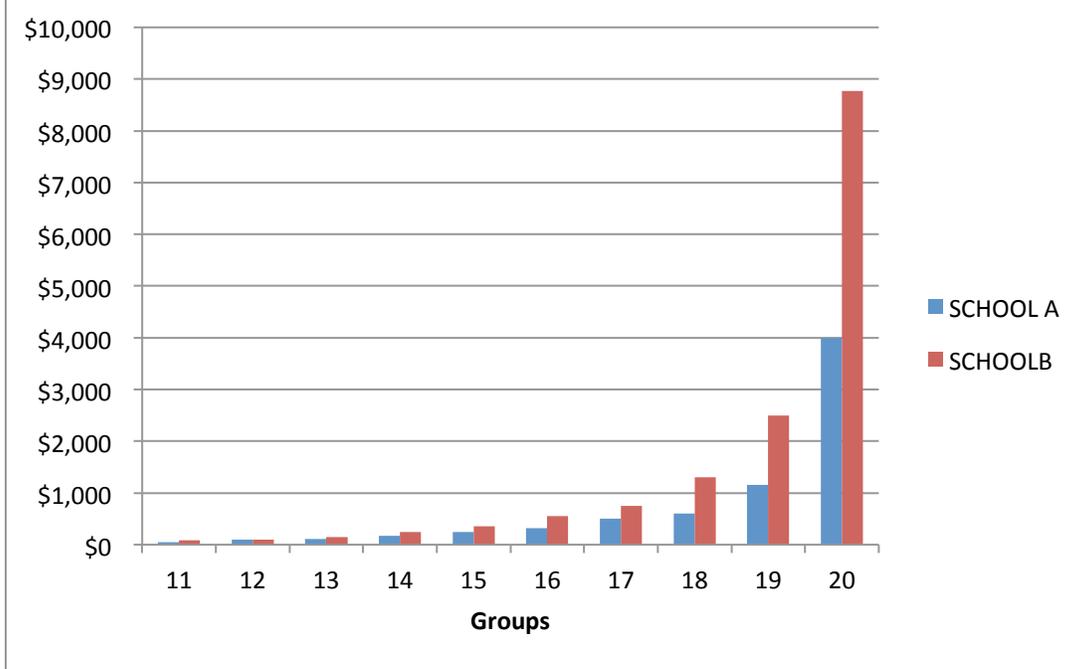
In Figure 6 we're showing you just the median values for the top 10 groups (11-20) for the two schools over the last five fiscal years. Again, the *level* of giving in School B is considerably greater than School A (especially in the higher groups). But once again, the "sky rocketing" pattern is apparent in both schools.

So Where Are We Here?

Let's try and pull things together for you. Let's:

- Summarize what we've shown you so far.
- Talk about some of the implications of what we've shown.
- Answer some questions that you (and folks you work with) may have about this piece.

What We've Shown You So Far

For two schools we created a very simple "score." We computed the lifetime giving as of the end of FY 2010 for every alum who had given anything at all up to

that point. We rank ordered these alums by their giving and placed them in twenty roughly equal size groups where Group 1 comprised the lowest givers, and Group 20 comprised the highest givers. So our "score" went from 1 to 20.

We showed that our score (for both schools) was highly related to how *recently*, how *frequently*, and how *much* alums gave during the next five years.

Some of the Implications of What We've Shown You

Let's assume you work in advancement in a higher ed institution. Let's further assume you have neither the resources nor the know-how to build "fancy" predictive models. We have every reason to believe that you can use a simple score like this to decide where your appeal and planning dollars will do the most good. For example:

- Focus your annual fund mailing and calling on the high scorers.
- Spend your prospect research dollars for wealth screenings and more focused research on the high scorers.
- Convince your gift officers to pursue the higher scorers as opposed to the low scorers they believe are very wealthy but haven't given you a dime.

Some Questions That You (and Folks You Work With) May Have About This Piece

These are three we thought you might ask:

How is this different from RFM? Well, it's not even RFM. It's just M. That is, all we're asking you to do is rank order all your giving alums in terms of their lifetime giving, and chop them up into 20 equal size groups. We're not even asking you to rank these alums in terms of their recency or frequency of giving.

If this is so good, why even bother with modeling? On the one hand, it's hard to argue with the contention that the best predictor of future giving is past giving. In most instances, it *is* the best predictor. On the other hand, there are large amounts of other kinds of data in the vast majority of alumni databases. Data that can enhance the power of past giving as a predictor. For example, take reunion attendance. Number of reunions attended combined with past giving makes for a much better predictor of future giving than does either one by itself. We could have shown you that in this piece. We didn't because we were concerned about complicating rather than clarifying things for you.

What about new givers who will appear? How does this predict them? Past giving is *not* going to predict new givers. It can't. So how do you predict them? Well, we have our own way of doing that. For lots of reasons we're not going to cover that here. But here's a hard truth. Over the next five years you're going to get some new givers. However, unless yours is an exceptional institution, you will not get a lot of them. And the number of old givers who lapse over the next five years will greatly outweigh the "newbies." So we think building a score based *only* on people who have given makes good sense.

Normally we would stop here and suggest you go out and try building a "simple score" (and then test it) in Excel. However, when Kevin MacDonell took a look at the draft of this piece, he had a question: How would you actually *do* this in Excel? Okay … well, John and I are not experts in the use of Excel for analysis. We use our own software, which is far faster and more flexible than Excel. We just *assumed* that folks out there who use Excel for analysis would be able to figure this out on their own.

Kevin, in his inimitable and conscientious way, took things a step further. Using Excel, he built a score on several different constituencies of donors for which he had very good data. Specifically, he built a score for these constituencies based on their lifetime giving as of FY 2010. And then he tested the scores based on six years of giving from FY 2011-FY 2016.

Now here's the rub, having taken the time to build the scores in Excel, he decided not to figure out how to test the scores in Excel. Why? He's a busy guy, and it's just so much easier to do it using his own statistical software package. We don't blame him. So the three of us (John, Kevin, and me) will leave it to you (or an Excel savvy colleague) to figure out how to do both the scoring and evaluation of the scores. (If you are unable to figure this out on your own and can't find someone to help you, we'll find someone for you.)

Before we close this off, we'll show you a few results from the rather extensive analysis Kevin did to see if he could replicate our own results. Take a look at Table 9 and Table 10. Then we'll tell you what we see in them.

Table 9: Total & Median LT Dollars Given by 20 Groups as of the End of FY 2010

Group	Count	Sum	Median
1	330	$1,889	$5
2	1,152	$13,107	$10
3	1,674	$33,050	$20
4	815	$16,933	$20
5	1,594	$40,185	$25
6	1,620	$60,946	$39
7	1,756	$87,800	$50
8	1,090	$68,168	$60
9	1,467	$121,213	$80
10	1,540	$154,000	$100
11	1,355	$162,133	$120
12	1,767	$282,248	$155
13	1,566	$330,819	$200
14	1,808	$523,031	$295
15	1,678	$687,887	$400
16	1,861	$1,106,330	$597
17	1,768	$1,657,740	$929
18	1,832	$3,012,110	$1,612
19	1,564	$5,699,560	$3,372
20	905	$38,935,200	$11,793

Table 10: Percentage of Each of 20 Groups Who Gave in FY 2016

Group	Count	Sum	%
1	330	3	0.9%
2	1,152	12	1.0%
3	1,674	33	2.0%
4	815	20	2.5%
5	1,594	34	2.1%
6	1,620	65	4.0%
7	1,756	71	4.0%
8	1,090	58	5.3%
9	1,467	71	4.8%
10	1,540	84	5.5%
11	1,355	92	6.8%
12	1,767	182	10.3%
13	1,566	188	12.0%
14	1,808	262	14.5%
15	1,678	329	19.6%
16	1,861	431	23.2%
17	1,768	518	29.3%
18	1,832	642	35.0%
19	1,564	642	41.0%
20	905	426	47.1%

Table 9 shows the sum and median of lifetime giving (as of FY 2010) for some 25,000 or so alums divided into twenty very roughly equal size groups. You'll notice that Kevin, as we did, had trouble creating equal size groups. You'll also notice the sky rocketing effect in the higher scores that we saw in our data.

Kevin did a thorough test of these scores. Because we've already shown you a lot of data, here we're only reporting the results of these scores with respect to recency: Table 10 shows the percentage of alums in each of the twenty groups who gave anything at all in FY 2016. You can see that Kevin's scores worked quite well.

His scores also worked very well in predicting both frequency and magnitude over the six year period from FY 2011 through FY 2016.

That's enough for now. As always, we'd like to hear what you think of all this.

POSTSCRIPT

It is possible to score a file in Excel very roughly into vingtiles, with this formula:


```
=ROUND(PERCENTRANK.INC(A:A,A2,3)*20,0)
```


... A:A is the range of data values to chop into percentiles -- so if 'giving' is in column A, the range is A:A.

... A2 is the cell containing the first value to assign a score to ... the formula is of course copied all the way down the rows.

... the '3' specifies the number of significant digits for the percentile rank.

... the rest of the formula multiplies the percentile rank by 20 and rounds to the nearest whole number.