

Technical Appendix

Supplement to Donor-Advised Fund Account Patterns and Trends (2017-2020)

Dr. Danielle Vance-McMullen and Dr. Dan Heist

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A1: Supplement to Section 1.2 - Sample Details

Original data collected

The DAFRC collected account-level DAF data in 2021 from 21 different DAF sponsor organizations, including 16 community foundations and 5 religiously-affiliated organizations. The data include account characteristics, some donor demographics, and transaction information. Some DAF sponsors provided data on all of their accounts, while other sponsors provided stratified random samples.

Data Summary, All Data Collected

Statistic	Count
Providers	21
Accounts	13,267
Advisors	20,469
Assets in 2020 (\$ M)	9,131.70
Grants Count	419,166
Grants in \$ M	6,845.24
Grants Count (2020 Only)	106,849
Grants in \$ M (2020 Only)	2,331.94
Contributions Count	88,668
Contributions in \$ M	10,362.65
Contributions Count (2020 Only)	16,503
Contributions in \$ M (2020 Only)	2,603.21

Sample data

The donor-advised funds accounts that are included in the final sample are those that were open on 1/1/2020 and that were advised by individuals (not companies or other groups). Accounts that were opened after this date, or that were technically opened but had not yet received a contribution that resulted in positive assets before this date were not included in the final sample. In addition, every effort was made to exclude accounts that had closed before this date. These accounts were filtered if they reported no assets, transactions, or contributions after 12/31/2019.

Furthermore, this report will only include DAF grant and contribution activity from 2017 - 2020. Data from before and after this time period were dropped.

Data Summary, Unweighted Sample

Statistic	Count
Providers	21
Accounts	11,071
Advisors	18,593
Assets in 2020 (\$ M)	8,926.50
Grants Count	414,593
Grants in \$ M	6,231.27
Grants Count (2020 Only)	105,115
Grants in \$ M (2020 Only)	1,801.69
Contributions Count	84,317
Contributions in \$ M	8,548.12
Contributions Count (2020 Only)	14,115
Contributions in \$ M (2020 Only)	1,622.40

Weighted final sample

Because some participating DAF sponsors provided random samples, weights are used to calculate the total organization-level statistics. Weights are equal to the inverse probability of inclusion by the DAF sponsor. For example: A random sample of 50% of accounts over \$1M in assets will be multiplied by 2 to represent the organization's total population of \$1M+ accounts. A summary of the weighted sample is shown in Section 1 of the full report and replicated here.

Data Summary, Weighted Sample

Statistic	Count
Providers	21
Accounts	12,998
Advisors	21,840
Assets in 2020 (\$ M)	10,849.79
Grants Count	499,908
Grants in \$ M	8,060.06
Grants Count (2020 Only)	121,031
Grants in \$ M (2020 Only)	2,328.38
Contributions Count	113,066
Contributions in \$ M	10,802.97
Contributions Count (2020 Only)	17,669
Contributions in \$ M (2020 Only)	2,228.99

A2: Supplement to Section 3.3 - Categorization of Contribution Assets

DAF sponsors provided administrative data on asset categories of contributions using their internal organizational classification schemes. The researchers recoded the categories recorded in the administrative data into three generic categories. The recoding process cannot guarantee that the original recording process was entirely accurate; in particular, it may be possible that some publicly-tradable securities are recorded as cash if accounting databases consider this asset category to be "cash-equivalent." The following data provides examples of asset types that were deemed to fall into each of the three generic categories: Cash, Securities, and Other.

Asset Categorization Examples

Cash	Securities	Other
Cash	Stock	Real Estate
Credit Card	Public Securities	Closely Held Security
ACH Transfer	Mutual Fund	LLC
Wire Transfer	Stock/Property	IRA
Check	Bond	Life Insurance

A3: Supplement to Section 3.4 – Table of Monthly Contributions

The proportion of contribution transactions and dollars for each month were calculated by totaling the weighted contributions for each month (i.e. for January 2017, January 2018, January 2019, and January 2020) and dividing by the weighted total of all contributions in the data (from January 1, 2017 to December 31, 2020). The following table was used to produce the figure in section 3.4.

Contributions by Month: Transactions and Dollars

	Transation count	Percent of total transactions	Total dollars M	Percent of total dollars
1	7656	6.8	456	4.2
2	6234	5.5	475	4.4
3	7389	6.5	652	6.0
4	7083	6.3	447	4.1
5	8640	7.6	400	3.7
6	7078	6.3	615	5.7
7	6551	5.8	468	4.3
8	7009	6.2	534	4.9
9	7707	6.8	815	7.5
10	8281	7.3	651	6.0
11	11818	10.5	1498	13.9
12	27624	24.4	3791	35.1

A4: Supplement to Section 4.1 – Number of Grantees and Grants

The primary method chosen in the paper for looking at the impact of grantmaking is by examining the number of grantees served by a given account in a given year. As in the main report, the four years of data can be averaged to show the average number of grantees for the years the account was open. The following table was used to produce the grantee figure in section 4.1.

Grantee Count Distribution, 4yr avg.

	Count	Percent
0	1545	13.96
Low-1.9	3148	28.43
2-3.9	1763	15.93
4-5.9	1102	9.95
6-7.9	753	6.80
8-9.9	545	4.92
10-11.9	410	3.70
12-13.9	339	3.07
14-15.9	265	2.39
16-17.9	219	1.98
18-19.9	172	1.55
20+	810	7.32
Total	11071	100.00

Another way of looking at the impact of grantmaking is by examining the number of unique grants made by a given account in a given year and averaging this finding over the years the account was open. The following table shows the results of such an analysis.

Grant Count Distribution, 4yr avg.

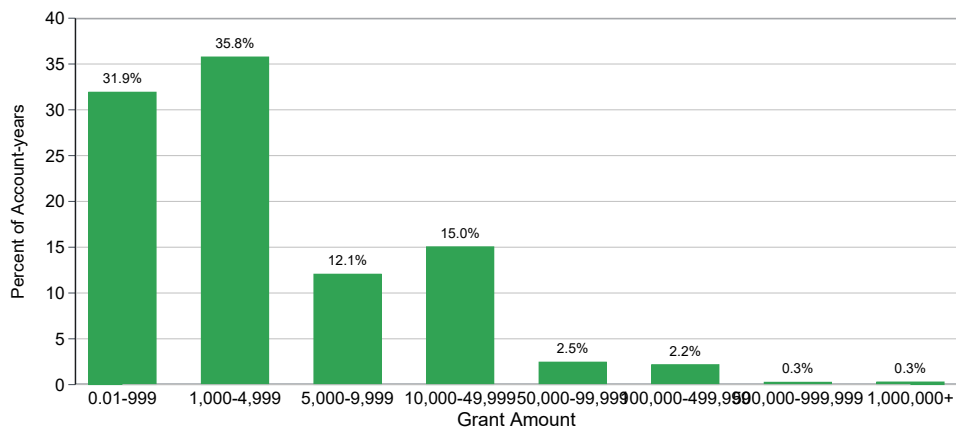
	Count	Percent
0	1543	13.93
Low-1.9	2642	23.87
2-3.9	1645	14.86
4-5.9	1010	9.12
6-7.9	794	7.17
8-9.9	602	5.44
10-11.9	458	4.14
12-13.9	368	3.32
14-15.9	301	2.72
16-17.9	286	2.59
18-19.9	212	1.91
20-21.9	158	1.43
22-23.9	136	1.23
24-25.9	135	1.22
26-27.9	90	0.81
28-29.9	77	0.70
30+	614	5.55
Total	11071	100.00

A5: Supplement to Section 4.2 – Transaction-level Grant Amount Table

The main text reports the grant distribution at the account-year level. The following table provides additional analysis at the grantee-account-year level. The data shows that most DAF accounts are providing grantees with grants in the \$1K range.

Grant Transaction Distribution

	Count	Percent
0.01-999	103576	31.93
1,000-4,999	116044	35.77
5,000-9,999	39126	12.06
10,000-49,999	48813	15.05
50,000-99,999	7982	2.46
100,000-499,999	7085	2.18
500,000-999,999	849	0.26
1,000,000+	937	0.29
Total	324412	100.00



Distribution of Grant Amounts (Account-Org-Year Dollar Amount)

A6: Supplement to Section 4.3 – Table of Monthly Grants

The proportion of grant transactions and dollars for each month were calculated by totaling the weighted grants for each month (i.e. for January 2017, January 2018, January 2019, and January 2020) and dividing by the weighted total of all grants in the data (from January 1, 2017 to December 31, 2020). The following table was used to produce the figure in section 4.3.

Grants by Month: Transactions and Dollars

	Transation count	Percent of total transactions	Total dollars M	Percent of total dollars
1	37272	7.5	699	8.7
2	27831	5.6	592	7.3
3	34257	6.9	735	9.1
4	37142	7.4	608	7.5
5	37189	7.4	545	6.8
6	37317	7.5	826	10.3
7	26132	5.2	485	6.0
8	26564	5.3	509	6.3
9	30386	6.1	666	8.3
10	39509	7.9	519	6.4
11	53514	10.7	618	7.7
12	112801	22.6	1256	15.6

A7: Supplement to Section 4.4 – Categorization of Grant Types

Each DAF provides various grants to non-profits. These grants can be one of two broad types: Restricted or General Operating. Restricted grants are required to be used for a specific purpose (e.g. donation to a capital campaign or to scholarship fund) and so are restricted in their end use. General Operating grants can be used for any purpose at the discretion of the receiving nonprofit. Of the 21 providers, 22 for whatever the non-profit wants. Of the 21 providers, 11 had administratively classified the grants into a subset of categories, so these categories were mapped to the Restricted and General Operating tags and 1 did not have information on grant purpose stored in an easily accessible format. The remaining 9 providers use free text entries from the users for each grant and so these entries must be algorithmically classified as either Restricted or General Operating. The present report includes data for 8 of these 9 providers due to delays in data receipt/processing.

To develop and test the algorithm, the researchers labeled a randomly selected sample of grant descriptions from the different providers. The researchers chose to label approximately 100 grant descriptions for each of the nine providers where grant type mapping was required. This means that results are significant (95% confidence and <5% margin) across the entire sample but not at the level of an individual provider. Several NLP algorithms were tested. The performance was evaluated on two dimensions: frequency weighted (how many grants were mapped correctly) and unique instance (how many grant descriptions were mapped correctly). These two dimensions were useful because some raw grant types are used multiple times within a provider. For instance, the description “greatest need” (genops) is used for 29 different grants within provider 5. Descriptions that are used more frequently tend to be for General Operating tags. The final selected algorithm produces frequency weighted results with 94+% accuracy and unique instance results with 82+% accuracy.

Testing found that a rule-based algorithm based on general operating terms performed best. Terms included “unrestricted”, “general”, “memory”, “greatest need”, and many others. Grants with no text specified were classified as general operating. Grants that included the terms were classified as general operating. Grants with text that did not include any general operating terms were classified as restricted.

A8: Supplement to Section 5.1 – Table of Payout Rates

Payout rate is intended to measure the proportion of grantable assets expended. The measurement of grantable assets is difficult because theses assets fluxuate within the calendar year due to outflows like

grants and inflows like interest earnings and contributions. The main analyses in the report define payout rate (here, PR_1) using calendar year grantmaking (G), beginning of year assets (BOY), and calendar year contributions (C). The average grantmaking across the years (t) that the account was open was used ($t \leq 4$). All payout rates were calculated at the account level, although account subscripts are removed for brevity. The equation used to calculate the payout rate in the main report was:

$$PR_1 = \frac{1}{t} \sum_{t=1}^4 \frac{G_t}{BOY_t + C_t}$$

This definition likely understates the interest earnings for the accounts and overstates the contributions available for grantmaking. The following table was used to produce the figure in section 5.1.

Payout By Designation

Designation	Endowed	NonEndowed	Total
Zero	30.22	12.64	14.43
Low-4	48.28	17.34	20.50
5-9	10.16	13.01	12.72
10-14	4.84	9.98	9.45
15-19	1.66	7.17	6.61
20-24	1.21	6.27	5.75
25-29	0.91	4.85	4.45
30-34	0.30	4.19	3.79
35-39	0.38	3.86	3.50
40-44	0.53	3.46	3.16
45-49	0.53	2.87	2.63
50-54	0.15	2.71	2.45
55-59	0.23	1.68	1.54
60-64	0.08	1.98	1.79
65-69	0.00	1.41	1.27
70-74	0.00	1.23	1.11
75-79	0.08	0.99	0.89
80-84	0.08	0.77	0.70
85-89	0.15	0.75	0.69
90-94	0.00	0.55	0.49
95+	0.23	2.29	2.08
Total	100.00	100.00	100.00
	(1127)	(9937)	(11064)

A9: Supplement to Section 5.1 – One-year Vs. Four-year Payout Rates

The main analyses use 4-year average payout rates, both because of simplicity of interpretation (each account has a single payout rate) and because averages tend to represent typical behavior relatively well. The following table shows one-year payout rates, which each account having up to four records in the data set. The most notable difference is the presence of “fatter tails,” or more low and high payout rates, which is expected due to year-over-year variation/noise in the longitudinal data.

Payout Distribution, Account-year (1-yr) Data

Payout Category	Count	Percent
Zero	11745	29.39
Low-5	6263	15.67
5-9	4488	11.23
10-14	2875	7.2
15-19	2072	5.19
20-24	1686	4.22
25-29	1320	3.3
30-34	1114	2.79
35-39	995	2.49
40-44	907	2.27
45-49	797	1.99
50-54	720	1.8
55-59	611	1.53
60-64	520	1.3
65-69	490	1.23
70-74	409	1.02
75-79	462	1.16
80-84	397	0.99
85-89	408	1.02
90-94	398	1
95+	1279	3.2
Total	39956	100

A10: Supplement to Section 5.1 – Payout Calculated Using Alternative Formulas

Several alternative formulas for payout rates exist in addition to the main payout rate formula (PR_1) described above. Each of these is calculated on an account-level basis, although account subscripts are removed for brevity. In addition to the notion in section A8, some of these definitions also use the end-of-calendar-year assets (EOY) in calculations. The additional payout rate calculations include:

$$PR_2 = \frac{1}{t} \sum_{t=1}^4 \frac{G_t}{BOY_t} \quad (\text{NPT})$$

$$PR_3 = \frac{1}{t} \sum_{t=1}^4 \frac{G_t}{EOY_t + G_t} \quad (\text{Andreoni and Madoff})$$

$$PR_4 = \frac{1}{t} \sum_{t=1}^4 \frac{G_t}{EOY_t + G_t - C_t} \quad (\text{Heist and Vance-McMullen})$$

Notably, each of these payout rate formulas involve strong, likely non-valid, assumptions about the total amount of funds available for grantmaking at a given point in the calendar year. When contributions or grants are added to or subtracted from beginning- or end-of-year assets, the assumption becomes that these funds are either present or absent for the whole year. In reality, available funds are constantly changing on a daily basis. Future research will explore payout rate formulas that take advantage of the transaction-level detail of the present data. Ideally, payout rate will be measured on a monthly basis in a way that reflects foundation payout rate calculations.

The following table describes the distribution of the accounts in the data set when using each of the payout rate definitions:

Payouts Distribution Comparison

	Count PR1	Pct PR1	Count PR2	Pct PR2	Count PR3	Pct PR3	Count PR4	Pct PR4
Zero	1597	14.43	1636	14.82	1542	13.93	1601	14.51
Low-4	2268	20.5	2070	18.75	2389	21.58	2234	20.25
5-9	1407	12.72	1296	11.74	1427	12.89	1319	11.95
10-14	1046	9.45	881	7.98	1091	9.85	868	7.87
15-19	731	6.61	625	5.66	705	6.37	601	5.45
20-24	637	5.75	533	4.83	674	6.09	528	4.79
25-29	492	4.45	413	3.74	471	4.26	376	3.41
30-34	419	3.79	350	3.17	457	4.13	362	3.28
35-39	388	3.5	288	2.61	406	3.67	258	2.34
40-44	350	3.16	229	2.07	335	3.02	217	1.96
45-49	291	2.63	195	1.77	308	2.78	201	1.82
50-54	271	2.45	168	1.52	258	2.33	164	1.49
55-59	170	1.54	162	1.47	201	1.81	142	1.29
60-64	198	1.79	140	1.26	194	1.75	135	1.22
65-69	140	1.27	111	1.01	138	1.25	102	0.92
70-74	123	1.11	102	0.93	108	0.97	89	0.81
75-79	99	0.89	99	0.89	86	0.78	83	0.76
80-84	78	0.7	100	0.91	63	0.57	83	0.75
85-89	76	0.69	88	0.79	78	0.7	66	0.6
90-94	55	0.49	73	0.66	55	0.5	72	0.65
95+	230	2.08	1484	13.44	84	0.76	1532	13.88
Total	11064	100	11043	100	11067	100	11035	100

The following table compares the median four-year-average payout rate using the various definitions:

Payouts Median Comparison

Statistic	Endowed	Spendable	All
Median Payout, PR1	3.15	13.33	11.06
Median Payout, PR2	3.27	15.69	12.69
Median Payout, PR3	2.91	12.87	10.75
Median Payout, PR4	2.98	14.83	11.84

A11: Supplement to Section 5.3 – Shelf Life Estimation and Table

The shelf life of opening contributions was examined for accounts with opening gifts in 2017. First, all accounts that opened in 2017 were identified. Then, the initial (opening year) gifts were identified by totaling all 2017 contributions. Including gifts within the 2017 calendar year allows for the fact that donors often make donations into a DAF using several types of assets that often take time to show up as grantable funds in the DAF account.

After calculating the initial gift, the grants from the opening date until the end of 2020 were totaled. When donors granted at least as much as their opening contribution during this time period, the shelf life was defined using the first date on which their grants were equal to (or greater than) the original contribution.

When donors granted less than their opening contribution by the end of 2020, an estimated shelf life was calculated. First, the total grants were divided by the opening contribution to calculate the percent of dollars granted in the observed period.

This process was repeated for the end of 2017, 2018, and 2019 to produce the following table, which was used to create the figure in section 5.3a.

2017 Opening Cohort, Percent of 2017 contributions granted - running (yearly) total

Year	2017	2018	2019	2020	Total
Zero	59.33	18.30	12.22	8.87	24.68
Low-5	7.37	9.12	4.79	2.58	5.97
5-9	3.87	6.03	5.72	2.99	4.65
10-14	2.63	4.90	3.45	3.87	3.71
15-19	1.60	4.54	2.99	2.16	2.82
20-24	2.22	4.69	4.12	1.65	3.17
25-29	1.75	4.28	3.09	2.73	2.96
30-34	1.34	3.09	3.20	3.51	2.78
35-39	1.65	2.37	2.53	2.58	2.28
40-44	1.03	2.37	2.89	2.58	2.22
45-49	1.13	1.91	2.73	2.16	1.98
50-54	1.44	3.09	3.30	2.58	2.60
55-59	1.44	1.65	1.29	1.80	1.55
60-64	0.93	1.75	1.65	1.49	1.46
65-69	0.72	2.37	2.06	2.27	1.86
70-74	0.62	1.44	1.91	2.11	1.52
75-79	1.13	1.65	2.42	2.73	1.98
80-84	1.44	1.08	1.34	2.11	1.49
85-89	1.44	1.03	1.65	1.44	1.39
90-94	1.03	2.89	2.84	3.09	2.46
95	1.13	3.09	2.47	2.53	2.31
100+	4.74	18.35	31.34	42.16	24.15
Total	100.00	100.00	100.00	100.00	100.00
	(836)	(836)	(836)	(836)	(3344)

Then, the inverse of the percent granted was used to estimate the total shelf life. For example, the inverse of 50% is 2, so the calculated shelf life was 2x the observed period. Here, the observed period was simplified to be 4 years. *It is important to know that this may overstate the length of the observed period for those accounts that opened at the end of 2017.* Based on those calculations, the following table was used to produce the figure in section 5.3b.

Estimated Shelf Life for 2017 Opening Cohort

Shelf Life Estimate	Count	Percent
0-1	153	18.35
2-3	199	23.81
4-5	127	15.21
6-7	54	6.44
8-9	41	4.95
10-11	32	3.81
12-13	28	3.3
14-15	17	2.01
16-17	5	0.62
18-19	7	0.82
20+	173	20.67
Total	836	100

An additional analysis was performed using the date of first contribution to determine the number of days (and years) the account had been open by the end of 2020. This number was substituted into the shelf life calculation and the results are presented here.

Estimated Shelf Life for 2017 Opening Cohort Using Date of First Gift

Shelf Life Estimate	Count	Percent
0-1	153	18.35
2-3	280	33.45
4-5	91	10.88
6-7	54	6.49
8-9	35	4.23
10-11	30	3.56
12-13	9	1.13
14-15	11	1.34
16-17	5	0.62
18-19	9	1.03
20+	158	18.92
Total	836	100

A12: Supplement to Section 7.1 - Table of Grant Totals by Size and by Year

The grant recorded in the DAFRC database include grants from 2017-2020. Since the largeset accounts (the outliers) were excluded from the sample, we do not have a subset of grants made by ultra-large DAF accounts. These would likely increase the amount and proportion of giving from the “large” accounts in each year. Like in other sections of the report, the analysis in 7.1 groups accounts by their asset size at the end of fiscal year 2019. The following table was used to produce figure 7.1a.

Total Grants Over Time, by Size

SizeGroup	2017	2018	2019	2020
Small	120	120	185	102
Medium	338	333	344	412
Large	749	1199	1405	1814

A13: Supplement to Section 7.4 – Table of Grant Timing by Year

The timing of grants and the count of grants in each month was calculated by totaling the grant transactions in the data. For pre-2020 grants, the total grants from 2017-2020 were totaled and divided by 3 (years). The following table was used to produce figure 7.4.

Pre-2020 and 2020 Grant Transactions by Month

	Pre 2020 Count	2020 Count
1	5194	9029
2	3698	6811
3	4426	8456
4	4495	11429
5	4984	8759
6	5017	8730
7	3444	6599
8	3727	6004
9	4067	7244
10	5667	8896
11	7292	12136
12	15722	26942