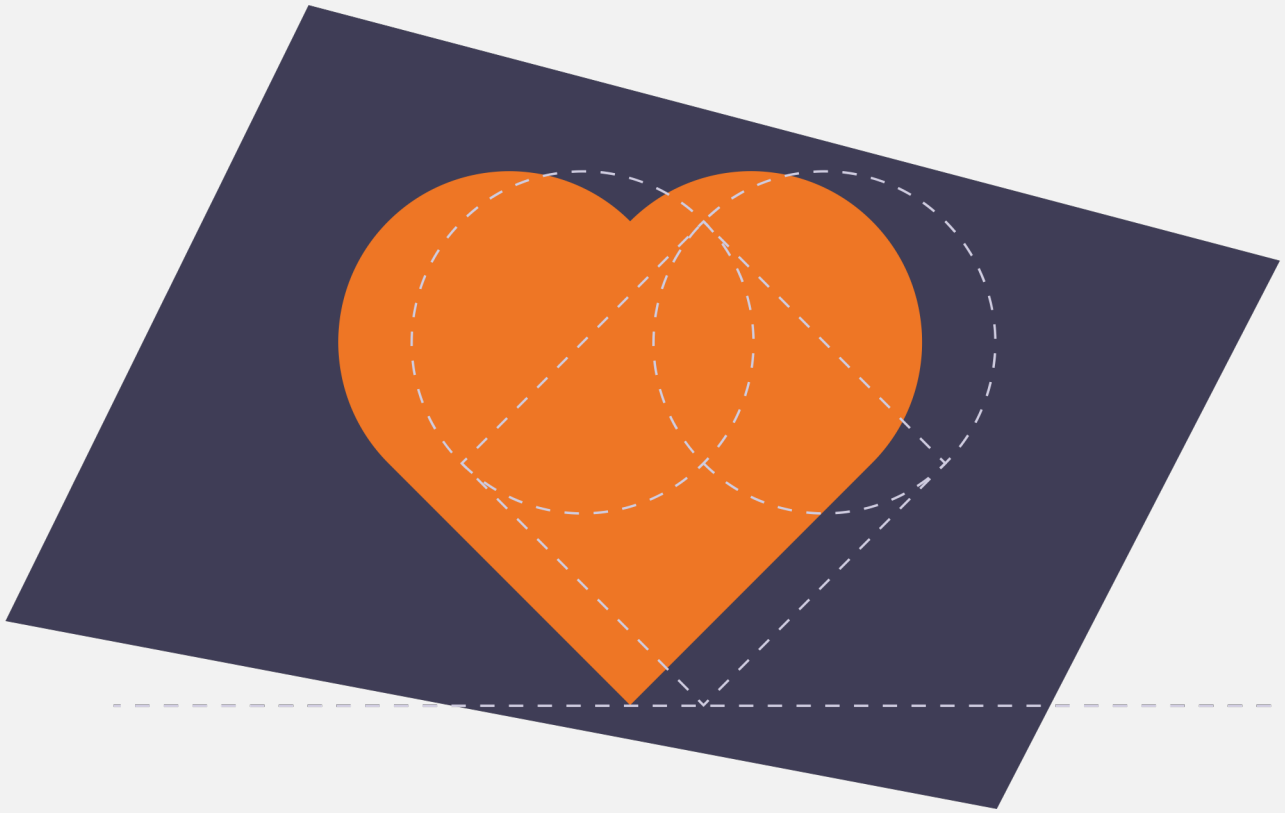
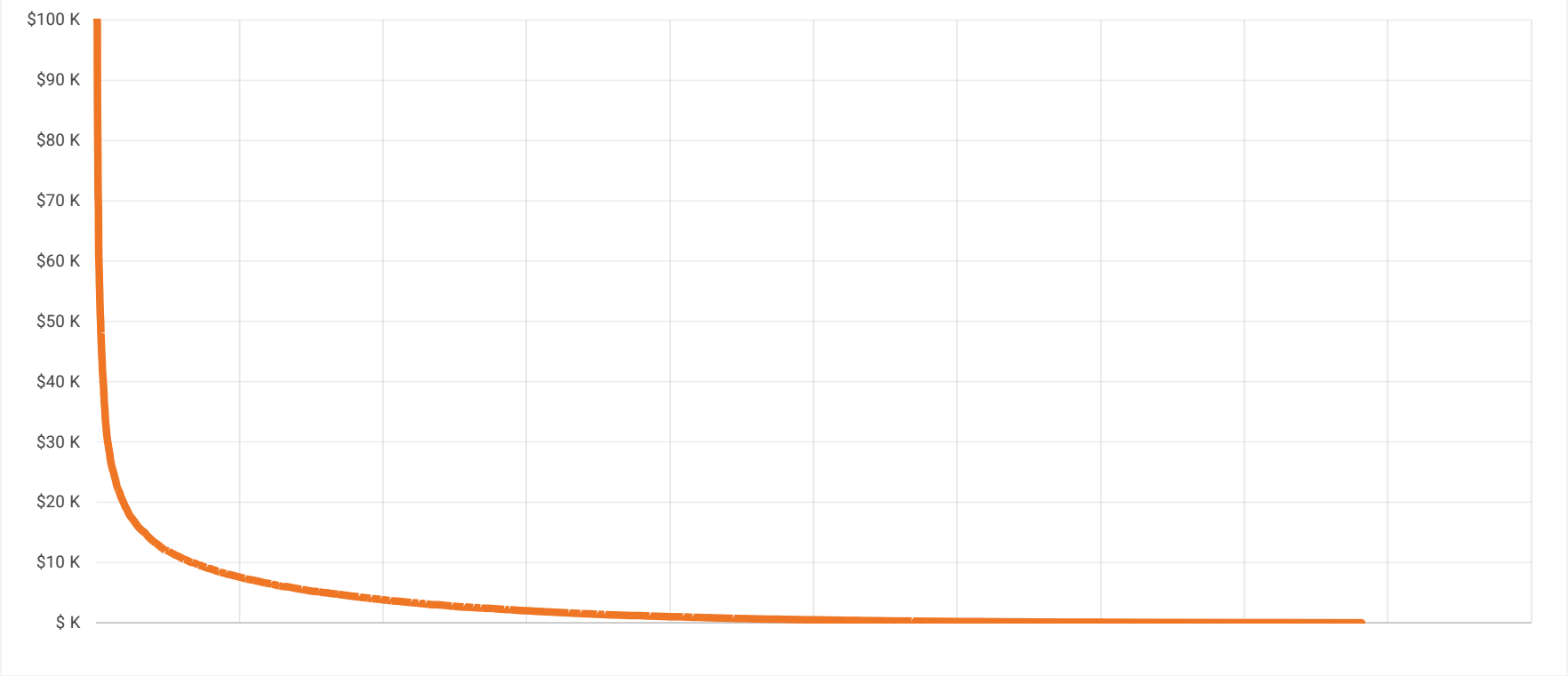
Giving Analytics

Measuring Heart Change



Typical Yearly Giving Distribution



Power Log Distribution

Collective Philanthropy: Describing and Modeling the Ecology of Giving

William L. Gottesman[1], Andrew James Reagan[1,2,3,4], Peter Sheridan Dodds[1,2,3,4]

Abstract

Reflective of income and wealth distributions, philanthropic gifting appears to follow an approximate power-law size distribution. Leveraging access to the entire universe of contributions received by a collection of institutions, we obtain data sets of individual gifts for a diverse group of institutions dedicated to education, medicine, art, public support, and religion. We find that the detailed forms of gift-size distributions differ across but are relatively constant within charity categories. We construct a model for how a donor's income affects their giving preferences in different charity categories, offering a mechanistic explanation for variations in institutional gift-size distributions. We discuss how knowledge of gift-sized distributions may be used to assess an institution's gift-giving profile, to help set fundraising goals, and to design an institution-specific giving pyramid.

Citation: Gottesman WL, Reagan AJ, Dodds PS (2014) Collective Philanthropy: Describing and Modeling the Ecology of Giving. PLoS ONE 9(7): e99876. doi:10.1371/journal.pone.0099876

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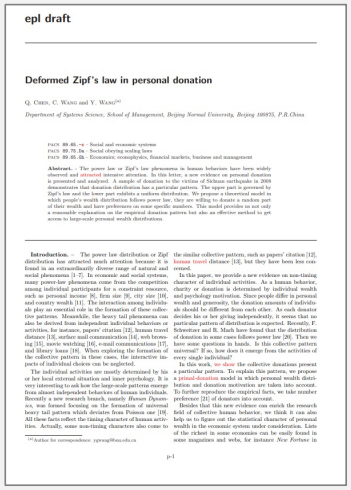
Collective Philanthropy: Describing and Modeling the Ecology of Giving

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4077655/



epl draft

Deformed Zipf's law in personal donation

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Department of Systems Science, School of Management, Beijing Normal University, Beijing 100875, P.R.China

PACS 89.65.-s – Social and economic systems

PACS 89.75.Da – Scale-invariant and scaling laws

PACS 89.65.Gh – Economics; econophysics, financial markets, business and management

Abstract. – The power law or Zipf's law phenomena in human behaviors have been widely observed and attracted intensive attention. In this letter, a new evidence on personal donation is presented and analyzed. A sample of donation to the victims of Sichuan earthquake in 2008 demonstrates that donation distribution has a particular pattern. The upper part is governed by Zipf's law and the lower part exhibits a uniform distribution. We propose a theoretical model in which people's wealth distribution follows power law, they are willing to donate a random part of their wealth and have preferences on some specific numbers. This model provides us not only a reasonable explanation on the empirical donation pattern but also an effective method to get access to large-scale personal wealth distributions.

Introduction. – The power law distribution or Zipf distribution has attracted much attention because it is found in an extraordinarily diverse range of natural and social phenomena [1–7]. In economic and social systems, many power-law phenomena come from the competition among individual participants for a constraint resource, such as personal income [8], firm size [9], city size [10], and country wealth [11]. The interaction among individuals leads to the emergence of power-law statistical collective patterns. Meanwhile, the heavy tail phenomena can also be derived from independent individual behaviors or activities, for instance, papers' citation [12], human travel distance [13], surface mail communication [14], web browsing [15], movie watching [16], e-mail communications [17], and library loans [18]. When exploring the formation of the collective pattern in these cases, the interactive impacts of individual choices can be neglected.

The individual activities are usually determined by his or her local external situation and inner psychology. It is very interesting to ask how the large-scale patterns emerge from almost independent behaviors of human individuals. Recently a new research branch, namely Human Dynamics, was formed focusing on the formation of universal heavy tail pattern which deviates from Poisson one [19]. All these facts reflect the timing character of human activities. Actually, some non-timing characters also come to

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the similar collective pattern, such as papers' citation [12], human travel distance [13], but they have been less concerned.

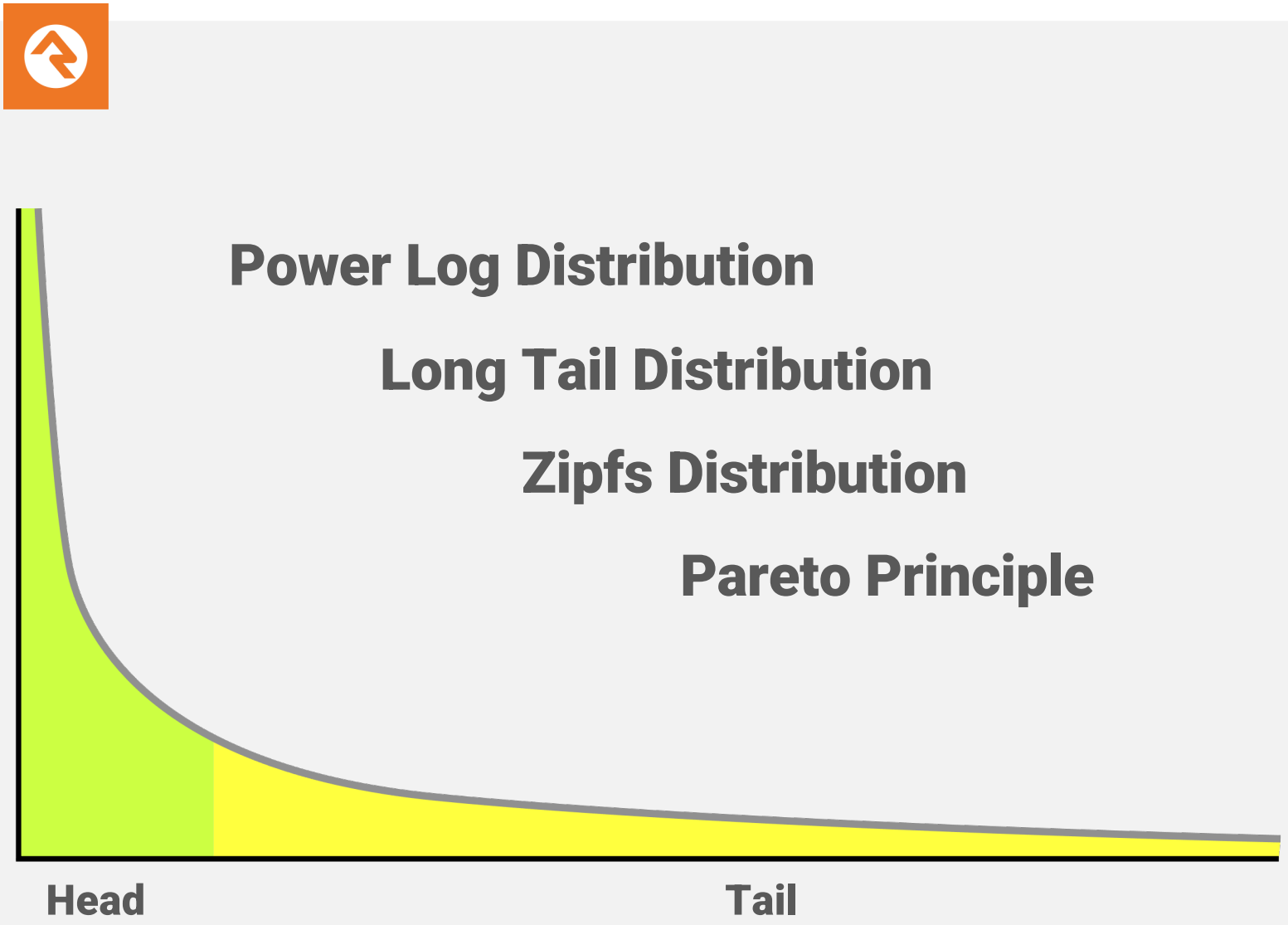
In this paper, we provide a new evidence on non-timing character of individual activities. As a human behavior, charity or donation is determined by individual wealth and psychology motivation. Since people differ it personal wealth and generosity, the donation amounts of individuals are different. Even though a person in a certain period decides his or her giving independently, it seems that no particular pattern of distribution is expected. Recently, F. Schweitzer and R. Mach have found that the distribution of donation in some cases follows power law [20]. Then we have some questions in hands. Is this collective pattern universal? If so, how does it emerge from the activities of every single individual?

In this work, we show the collective donations present a particular pattern. To explain this pattern, we propose a primal-donation model in which personal wealth distribution and donation motivation are taken into account. To further reproduce the empirical facts, we take number preference [21] of donators into account.

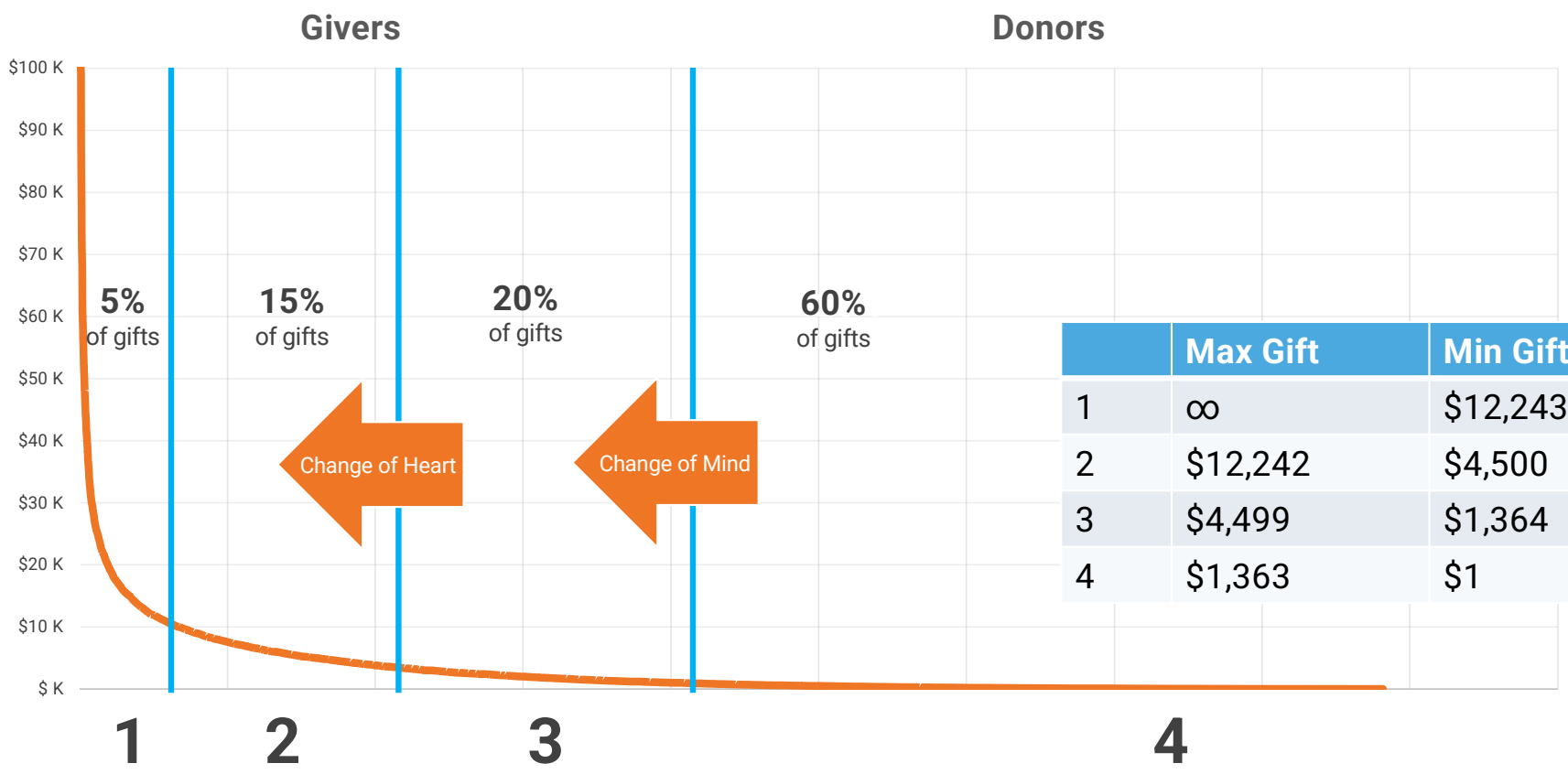
Besides that this new evidence can enrich the research field of collective human behavior, we think it can also help us to figure out the statistical character of personal wealth in the economic system under consideration. Lists of the richest in some economies can be easily found in some magazines and webs, for instance New Fortune in

Deformed Zipf's Law in Personal Donation

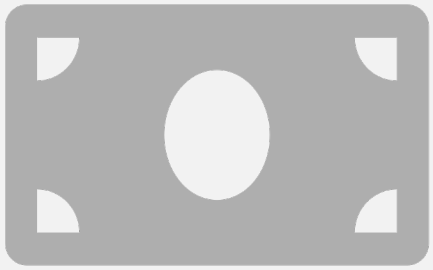
https://www.researchgate.net/publication/231134991_Deformed_Zipf's_law_in_personal_donation


Power Log Distribution
Long Tail Distribution
Zipfs Distribution
Pareto Principle
Head
Tail

Typical Yearly Giving Distribution



	Max Gift	Min Gift
1	∞	$12,243
2	$12,242	$4,500
3	$4,499	$1,364
4	$1,363	$1

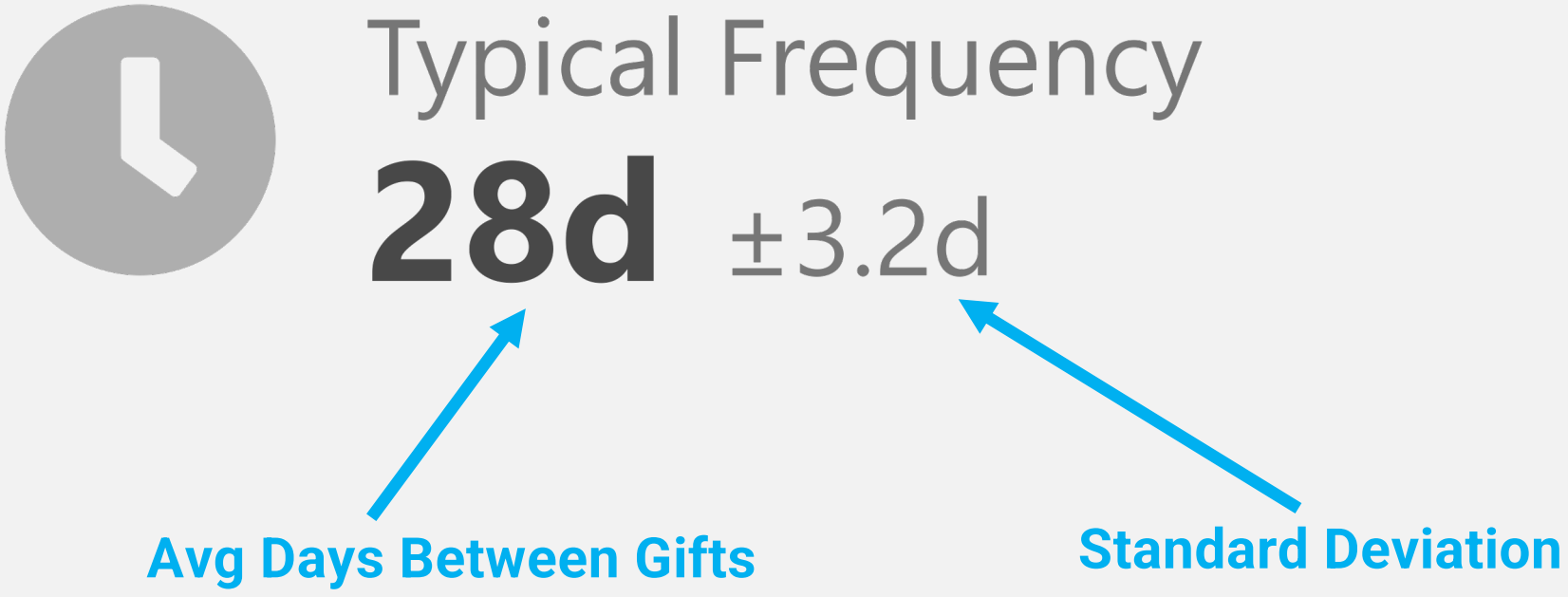


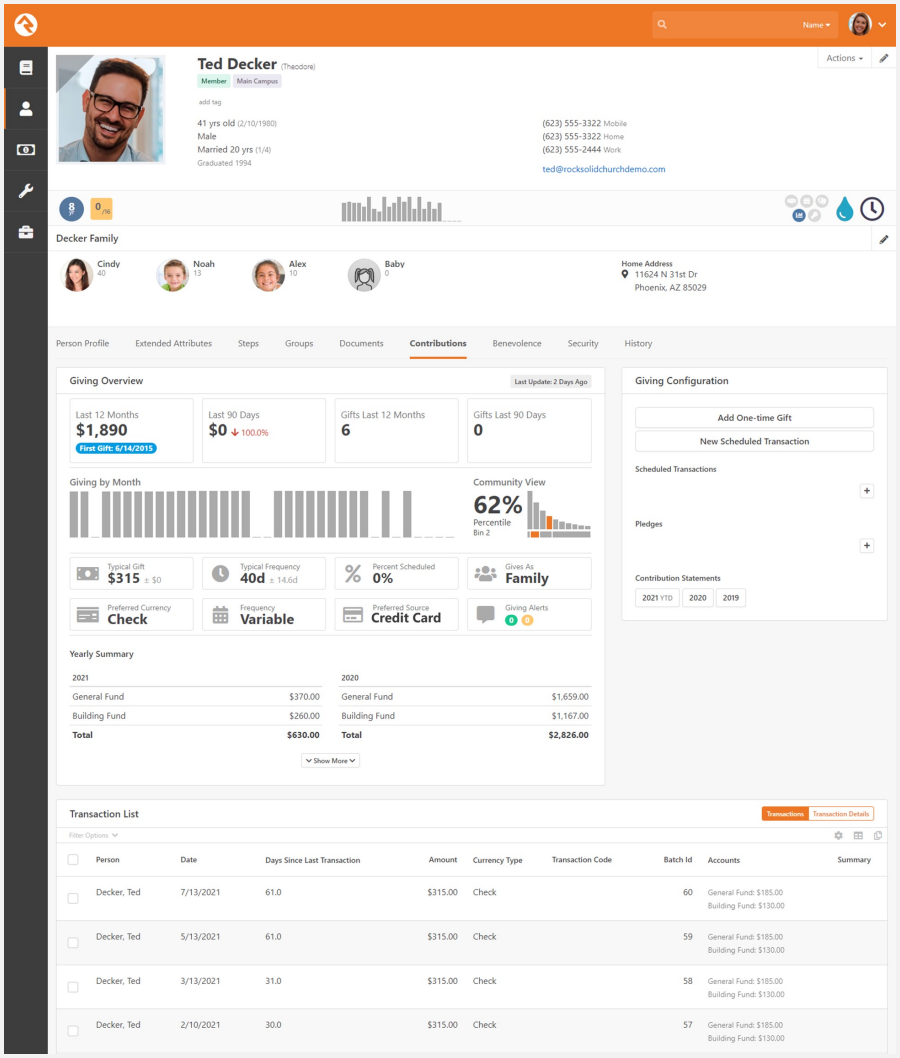
Typical Gift

$125 ±$25

Median Amount

Interquartile Range (IRQ)

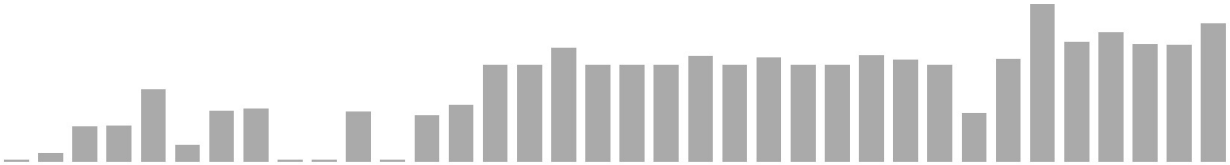

Typical Frequency
28d
±3.2d
Avg Days Between Gifts
Standard Deviation


Ted Decker (Theodore)
Member
Main Campus
add tag
41 yrs old (2/10/1980)
Male
Married 20 yrs (1/4)
Graduated 1994
(623) 555-3322 Mobile
(623) 555-3322 Home
(623) 555-2444 Work
ted@rocksolidchurchdemo.com
Actions
Decker Family
Cindy
40
Noah
13
Alex
10
Baby
0
Home Address
11624 N 31st Dr
Phoenix, AZ 85029
Person Profile
Extended Attributes
Steps
Groups
Documents
Contributions
Benevolence
Security
History
Giving Overview
Last Update: 2 Days Ago
Last 12 Months
$1,890
First Gift: 6/14/2015
Last 90 Days
$0 100.0%
Gifts Last 12 Months
6
Gifts Last 90 Days
0
Giving by Month
Community View
62%
Percentile
Bin 2
Typical Gift
$315 ± $0
Typical Frequency
40d ± 14.6d
Percent Scheduled
0%
Gives As
Family
Preferred Currency
Check
Frequency
Variable
Preferred Source
Credit Card
Giving Alerts
Yearly Summary
2021
General Fund $370.00
Building Fund $260.00
Total $630.00
2020
General Fund $1,659.00
Building Fund $1,167.00
Total $2,826.00
Show More
Giving Configuration
Add One-time Gift
New Scheduled Transaction
Scheduled Transactions
Pledges
Contribution Statements
2021 YTD
2020
2019
Transaction List
Transactions
Transaction Details
Filter Options
Person
Date
Days Since Last Transaction
Amount
Currency Type
Transaction Code
Batch Id
Accounts
Summary
Decker, Ted 7/13/2021 61.0 $315.00 Check 60 General Fund: $185.00 Building Fund: $130.00
Decker, Ted 5/13/2021 61.0 $315.00 Check 59 General Fund: $185.00 Building Fund: $130.00
Decker, Ted 3/13/2021 31.0 $315.00 Check 58 General Fund: $185.00 Building Fund: $130.00
Decker, Ted 2/10/2021 30.0 $315.00 Check 57 General Fund: $185.00 Building Fund: $130.00

Giving Overview

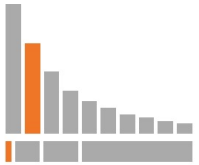
Last 12 Months	Last 90 Days	Gifts Last 12 Months	Gifts Last 90 Days
$6,924	**$1,804** ↓ 8.4%	**40**	**12**
First Gift: 2/10/2008			

Giving by Month



Community View

82%
Percentile
Bin 1



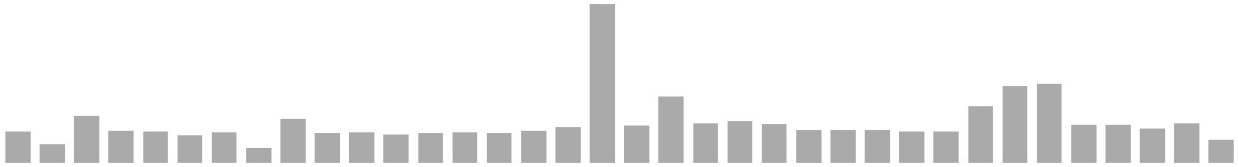
Typical Gift	Typical Frequency	Percent Scheduled	Gives As
$235 ± $217	**10d** ± 6.2d	**61%**	**Family**

Preferred Currency	Frequency	Preferred Source	Giving Alerts
Credit Card	**Bi-Weekly**	**Website**	0 0

Giving Overview

Last 12 Months	Last 90 Days	Gifts Last 12 Months	Gifts Last 90 Days
$8,453	**$1,497** ↓ 37.5%	**57**	**10**
First Gift: 1/10/2018			

Giving by Month

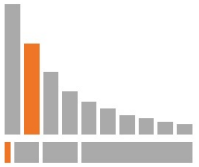


Community View

87%

Percentile

Bin 1



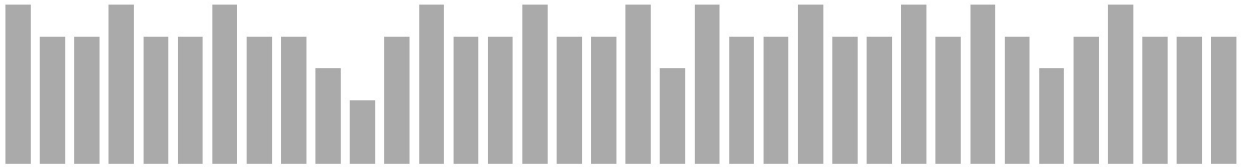
Typical Gift	Typical Frequency	Percent Scheduled	Gives As
$157 ± $245	**7d** ± 5.1d	**0%**	**Family**

Preferred Currency	Frequency	Preferred Source	Giving Alerts
Credit Card	**Weekly**	**Website**	0 0

Giving Overview

Last 12 Months	Last 90 Days	Gifts Last 12 Months	Gifts Last 90 Days
$2,750	**$650** ↑ 8.3%	**55**	**13**
First Gift: 1/6/2007			

Giving by Month

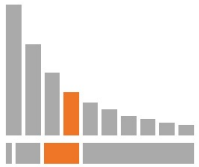


Community View

64%

Percentile

Bin 3



Typical Gift	Typical Frequency	Percent Scheduled	Gives As
$50 ± $0	**7d** ± 1.0d	**100%**	**Family**

Preferred Currency	Frequency	Preferred Source	Giving Alerts
Credit Card	**Weekly**	**Website**	0 0

General Settings

The settings below help to configure the giving analytics features within Rock.

Enable Giving Analytics

- [x]

Days to Update Giving Group Classifications

- [x] Sunday
- [x] Monday
- [x] Tuesday
- [x] Wednesday
- [x] Thursday
- [x] Friday
- [x] Saturday

TransactionTypes

- [x] Contribution
- [ ] Event Registration

Accounts

- (•) All Tax Deductible Accounts
- ( ) Custom

TransactionDateTime	DaysSinceLastGift	FrequencyAlertStdDevs	Amount	AmountAlertStdDevs
1/27/2018			$ 350.00	
3/12/2018	43.7		$ 500.00	
4/17/2018	36.4		$ 500.00	
6/4/2018	47.5		$ 500.00	
11/13/2018	162.1		$3,500.00	
12/7/2018	24.2		$ 100.00	
12/7/2018	-		$ 400.00	
12/19/2018	12.4		$6,000.00	
12/26/2018	6.7		$3,700.00	
1/27/2019	31.9		$ 300.00	
7/27/2019	181.0	3.1	$1,000.00	
10/8/2019	73.3		$ 600.00	
10/8/2019	0.0		$ 800.00	
12/1/2019	54.1		$ 300.00	
12/29/2019	27.9		$1,000.00	
1/30/2020	31.2		$ 300.00	
3/3/2020	33.0		$ 300.00	
3/30/2020	27.0		$ 300.00	
4/20/2020	21.9		$1,300.00	2.2
6/5/2020	45.8		$ 300.00	
6/5/2020	0.0		$ 300.00	
7/26/2020	51.2		$ 300.00	
10/8/2020	73.5		$ 300.00	

Bin
3

Percentile
78.08%

Senior married woman who serves.

Frequency
Erratic

% of Gifts Scheduled
0

Preferred Currency
ACH

Preferred Source
Online

Amount Given
$4,000

Transaction Count
6

Avg Days Between Gifts
67.3

Std Dev Days
62

Avg Gift Amount
$666.67

Std Dev Amount
$292.50

2019	1	35	1/11/2019	28.00	3.793753524	$ 159.00	
2019	2	36	1/25/2019	14.00		$ 141.00	
2019	3	37	2/2/2019	8.28		$ 44.00	
2019	4	38	2/8/2019	5.81		$ 161.00	
2019	5	39	2/22/2019	13.80		$ 165.00	
2019	6	40	3/8/2019	14.14		$ 146.00	
2019	7	41	3/20/2019	12.13		$ 50.00	
2019	8	42	3/22/2019	1.79	-1.776348838	$ 146.00	
2019	9	43	4/5/2019	13.96		$ 152.00	
2019	10	44	4/19/2019	14.04		$ 146.00	
2019	11	45	4/25/2019	6.52		$ 52.00	
2019	12	46	5/3/2019	7.69		$ 205.00	
2019	13	47	5/17/2019	13.79		$ 145.00	
2019	14	48	5/31/2019	13.99		$ 146.00	
2019	15	49	6/14/2019	13.99		$ 166.00	
2019	16	50	6/28/2019	14.05		$ 159.00	
2019	17	51	7/12/2019	13.99		$ 168.00	
2019	18	52	7/26/2019	14.00		$ 149.00	
2019	19	53	8/9/2019	14.48		$ 173.00	
2019	20	54	8/23/2019	13.46		$ 160.00	
2019	21	55	9/6/2019	14.34		$ 151.00	
2019	22	56	9/20/2019	13.73		$ 176.00	
2019	23	57	10/4/2019	14.41		$ 148.00	
2019	24	58	10/18/2019	13.56		$ 148.00	
2019	25	59	11/1/2019	13.97		$ 200.00	
2019	26	60	11/15/2019	14.05		$ 146.00	
2019	27	61	11/29/2019	14.01		$ 153.00	
2019	28	62	12/13/2019	14.45		$ 244.00	
2019	29	63	12/27/2019	13.48		$ 178.00	
2020	1	64	1/10/2020	13.74		$ 182.00	
2020	2	65	1/26/2020	16.00		$ 211.00	
2020	3	66	2/8/2020	13.00		$ 301.00	1.500689
2020	4	67	2/21/2020	13.00		$ 290.00	
2020	5	68	3/6/2020	14.00		$ 198.00	
2020	6	69	3/20/2020	14.00		$ 192.00	
2020	7	70	4/3/2020	14.34		$ 201.00	
2020	8	71	4/18/2020	15.24		$ 273.00	
2020	9	72	5/1/2020	12.77		$ 152.00	
2020	10	73	5/15/2020	14.50		$ 225.00	
2020	11	74	5/30/2020	14.74		$ 149.00	
2020	12	75	6/12/2020	12.73		$ 159.00	
2020	13	76	6/26/2020	13.99		$ 171.00	
2020	14	77	7/24/2020	27.99	3.537661155	$ 145.00	
2020	15	78	8/7/2020	14.24		$ 163.00	
2020	16	79	8/21/2020	13.78		$ 207.00	
2020	17	80	9/4/2020	13.91		$ 153.00	
2020	18	81	9/19/2020	15.30		$ 163.00	
2020	19	82	10/2/2020	12.78		$ 160.00	
2020	20	83	10/16/2020	14.01		$ 177.00	
2020	21	84	10/31/2020	15.43		$ 226.00	
2020	22	85	11/13/2020	12.47		$ 171.00	

Bin
3

Percentile
79.65%

Late forties single woman.

Frequency
Biweekly

% of Gifts Scheduled
0%

Preferred Currency
Credit Card

Preferred Source
Online

Amount Given
$4,377

Transaction Count
29

Avg Days Between Gifts
12.5

Std Dev Days
3.2

Avg Gift Amount
$150.93

Std Dev Amount
$40.92

Alerts

The configuration below will be used to generate alerts. An alert will be triggered the first matching rule unless that rule is configured to continue matching other rules.

Global Repeat Prevention Duration

60 days

Gratitude Repeat Prevention Duration

60 days

Follow-up Repeat Prevention Duration

200 days

	Name	Campus	Min Amount	Max Gift Amount	Action	Continue	
☰	Everything OK?	All Campus					×
☰	Large Gifts	All Campus	$50.00				×

Alert Details

Name *
Large Gifts

Campus

Alert Type
Gratitude Follow-up

Continue If Matched

Days to Run
Sunday Tuesday Thursday Saturday
Monday Wednesday Friday

Repeat Prevention Duration
120 days

Match Criteria

The following criteria will be considered to determine if this alert should be fired.

Amount Sensitivity Scale
3.00

The amount sensitivity scale determines how many gifts will trigger the alert based on the amount of the gift. This will most often be used to alert for situations when a gift is larger than expected. Positive numbers will trigger alerts for gifts larger than normal. Negative Values would trigger for gifts smaller than expected (use caution).

Typical Values are shown below.

- 2 (Aggressive) - This would alert when a gift was within 2 times the interquatile range (IQR) from their median gift amount. For a bi-weekly giver with a median gift of $400 and an IQR of $65, this alert would be generated if a gift of $530 was recieved.
- 3 (Normal) - This would alert when a gift was within 3 times the interquartile range (IQR) from their median gift amount. For a bi-weekly giver with a median gift of $400 and an IQR of $65, this alert would be generated if a gift of $595 was recieved.

In the event that there is a very consistent giver—every gift is the exact same amount—we use a fallback value. The fallback amount sensitivity is calculated as 15% of the median gift amount.

Minimum Gift Amount

$ 50.00

Maximum Gift Amount

$ 0.00

Minimum Median Gift Amount

$ 0.00

Maximum Median Gift Amount

$ 0.00

Maximum Days Since Last Gift

days

Person Data View

Alert Actions

If the criteria above is matched the following actions will be taken.

Launch Workflow of Type

Facilities Request

Connection Type

Send Communication From Template

Send Bus Event

Alert Summary Notification Group

Alert Details

Name *

Everything OK?

Campus

Alert Type

Gratitude Follow-up

Continue If Matched

Days to Run

Sunday Tuesday Thursday Saturday
Monday Wednesday Friday

Repeat Prevention Duration

days

Match Criteria

The following criteria will be considered to determine if this alert should be fired.

Amount Sensitivity Scale

The amount sensitivity scale determines how many gifts will trigger the alert based on the amount of the gift. This will most often be used to alert for situations when a gift is larger than expected. Positive numbers will trigger alerts for gifts larger than normal. Negative Values would trigger for gifts smaller than expected (use caution).

Typical Values are shown below.

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same amount—we use a fallback value. The fallback amount sensitivity is calculated as 15% of the median gift amount.

Frequency Sensitivity Scale

3.0

The frequency sensitivity scale determines how many gifts will trigger the alert based on the frequency. This will most often be used to alert for situations when a gift would have been expected but not given. Positive numbers would trigger alerts for gifts that are late. Negative Values would trigger for gifts that are early.

Typical Values are shown below.

- 2 (Aggressive) - This would alert when a gift was within 2 standard deviations from their mean. For a bi-weekly giver with a mean of 14 days and a standard deviation of 3.8, this alert would be generated if no gift was recieved within 22 days since their last gift.
- 3 (Normal) - This would alert when a gift was within 3 standard deviations from their mean. For a bi-weekly giver with a mean of 14 days and a standard deviations of 3.8, this alert would be generated if no gift was recieved within 26 days since their last gift.

In the event that there is a very consistent giver—every gift is the same number of days apart—we use a fallback value. The fallback frequency sensitivity is calculated as 15% of the average days between gifts. If that value is less than a day, then we again fallback to 3 days.

Minimum Gift Amount

$ 0.00

Maximum Gift Amount

$ 0.00

Minimum Median Gift Amount

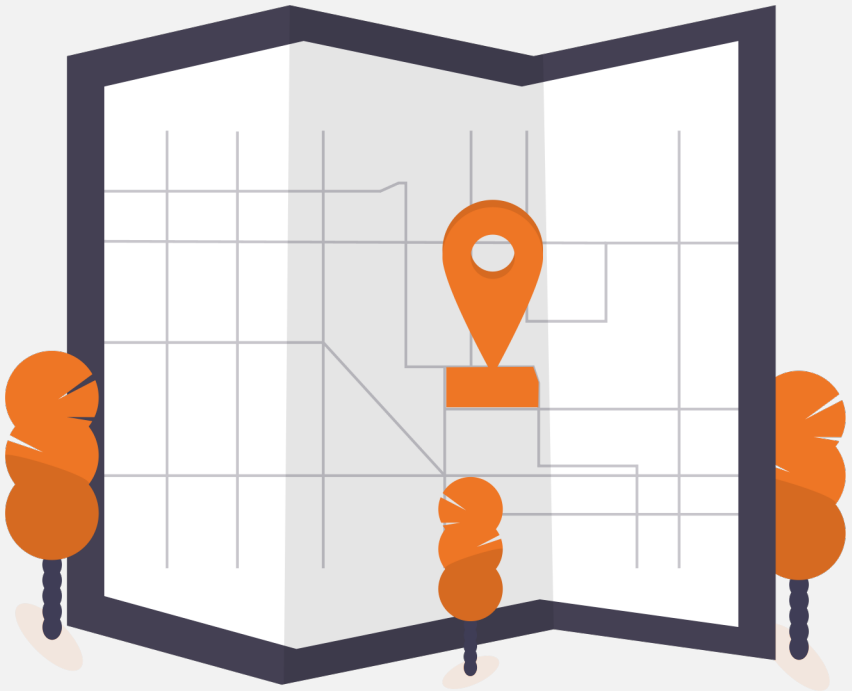
$ 0.00

Maximum Median Gift Amount

$ 0.00

Maximum Days Since Last Gift

days



Giving Journeys

Celebrating Steps of Faith

1.Non-Giver

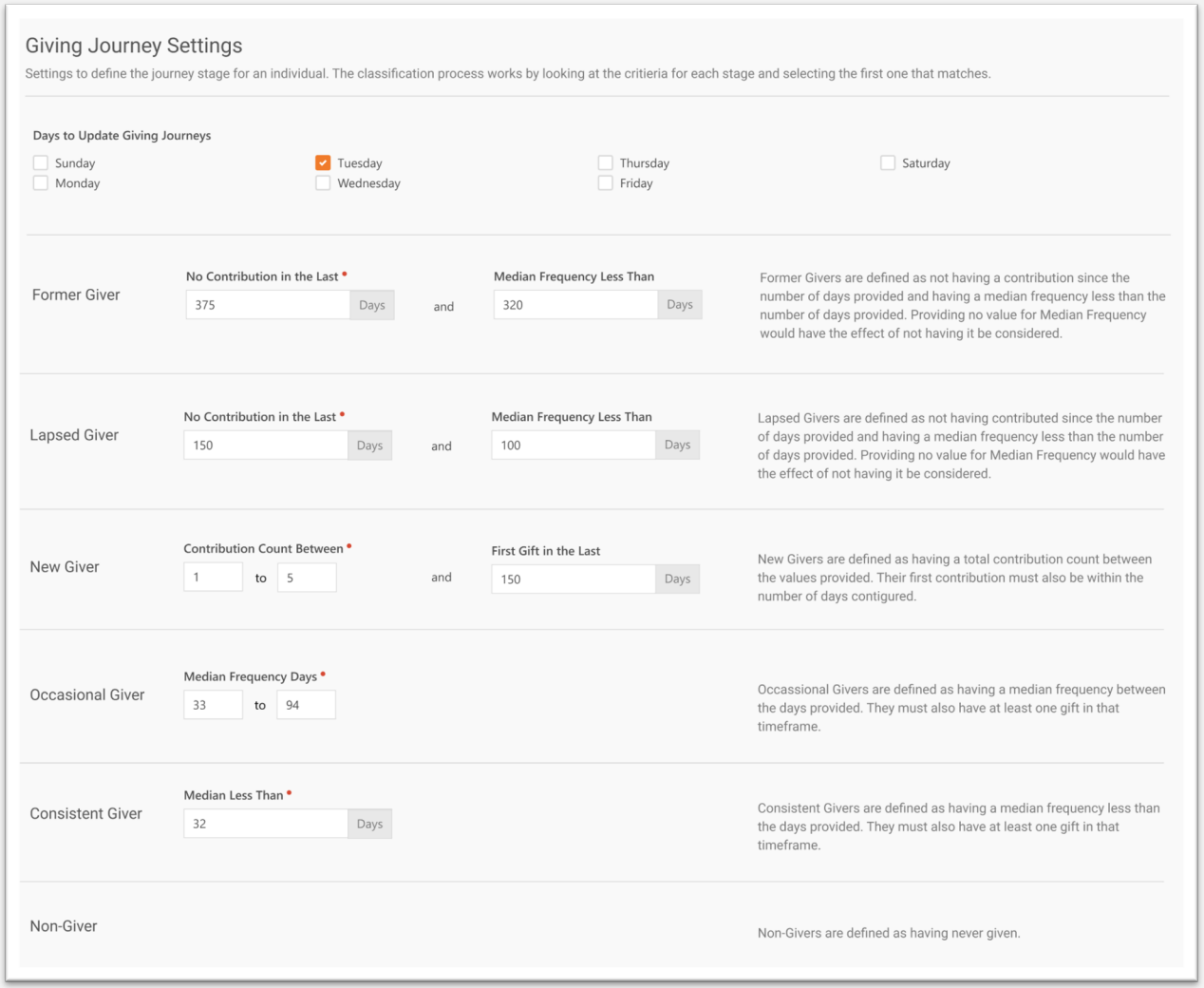
2.New Giver

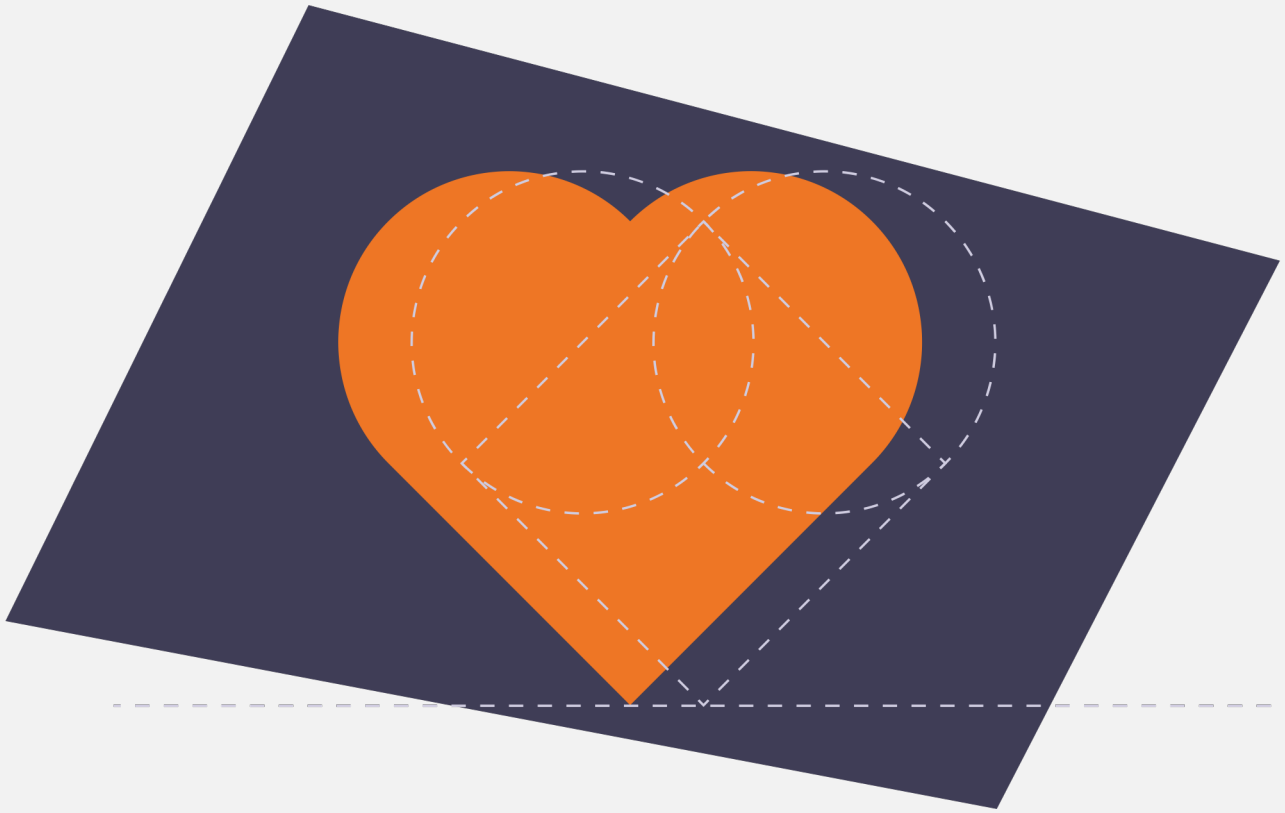
3.Occasional Giver

4.Consistent Giver

5.Lapsed Giver

6.Former Giver

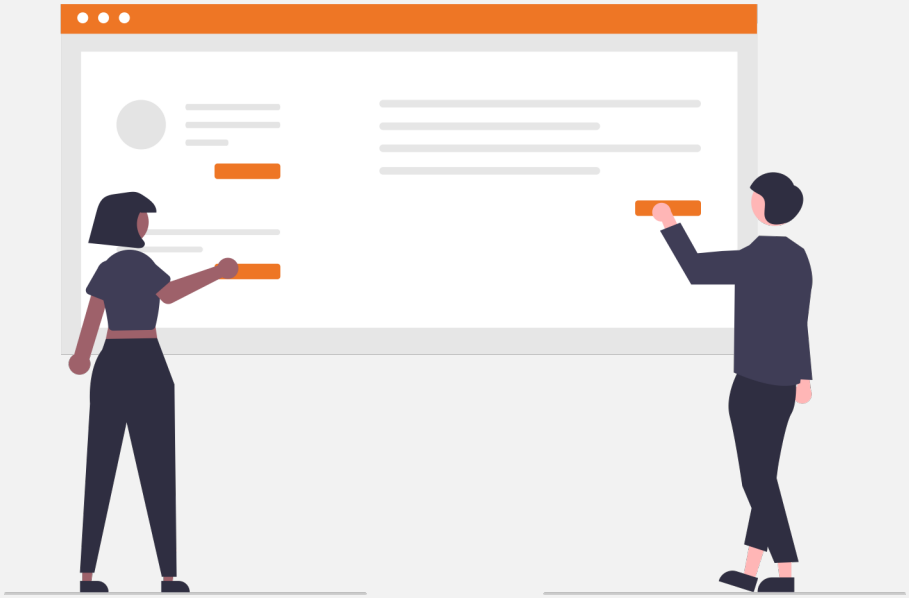

Giving Journey Settings
Settings to define the journey stage for an individual. The classification process works by looking at the critieria for each stage and selecting the first one that matches.
Days to Update Giving Journeys
Sunday
Monday
Tuesday
Wednesday
Thursday
Friday
Saturday
Former Giver
No Contribution in the Last *
375
Days
and
Median Frequency Less Than
320
Days
Former Givers are defined as not having a contribution since the number of days provided and having a median frequency less than the number of days provided. Providing no value for Median Frequency would have the effect of not having it be considered.
Lapsed Giver
No Contribution in the Last *
150
Days
and
Median Frequency Less Than
100
Days
Lapsed Givers are defined as not having contributed since the number of days provided and having a median frequency less than the number of days provided. Providing no value for Median Frequency would have the effect of not having it be considered.
New Giver
Contribution Count Between *
1
to
5
and
First Gift in the Last
150
Days
New Givers are defined as having a total contribution count between the values provided. Their first contribution must also be within the number of days contigured.
Occasional Giver
Median Frequency Days *
33
to
94
Occassional Givers are defined as having a median frequency between the days provided. They must also have at least one gift in that timeframe.
Consistent Giver
Median Less Than *
32
Days
Consistent Givers are defined as having a median frequency less than the days provided. They must also have at least one gift in that timeframe.
Non-Giver
Non-Givers are defined as having never given.



Special Thanks

LIFE.CHURCH

Rodney Ross



Extra Testing Needed During Beta