Donor Retention in Online Crowdfunding Communities

A CASE STUDY OF DONORSCHOOSE.ORG

Tim Althoff and Jure Leskovec
Crowdfunding

- Revolutionary way to collect funding
  - “Crowd” collectively funds projects through many small donations

- Projects rely on contributions from large number of individuals
  - Similar to non-profit organizations & charities
What factors predict donor return?
Donor Retention

- Donors making donations year after year
- Significant impact on effectiveness of fundraising campaigns
  - More cost-effective to maintain existing donor relationships than to recruit new donors
  - 10% improvement in retention may yield up to 200% more donations (Sargeant 2008)
- Present retention rates very low (~25%)
- Challenge for traditional non-profit organizations and online crowdfunding
What do we know?

- **Current knowledge** (Sargeant 2008)
  - Anecdotal evidence from professionals
  - Small lab experiments

- **Example anecdotes**
  - “Regularly […] show your donors loyalty – that you care – beyond just making the ask.”
  - “Thank donors well — and promptly.”

- **How to quantify these factors?**
- **Are donor subgroups affected differently?**
This Work

- Observational study of donor retention factors
  - U.S. platform for public school teachers to request donations of classroom materials
  - Used by >60% of U.S. public schools

- Data: full trace of donor and project activity (2000-2014)
  - 3.9M donations by 1.5M donors to 638k projects for a total of $282M
Related Work

- **Online crowdfunding**
  - project dynamics (Mollick ’14)
  - predicting project success (Greenberg et al. ’14)
  - completing donation bias (Wash ‘13)

- **Offline charities**
  - importance of donor retention (Barber & Lewis ’13)
  - retention factors (Sargeant ‘08)

- **Contributor retention**
  - newsgroups (Arguello et al. ’06)
  - forums (Lampe & Johnston ‘05)
  - Q&A Sites (Yang et al. ’10)
  - Wikipedia (Halfaker et al. ’12)
**Title:** Please, Teach Me Art!

**Teacher & School:** Ms. Novello's trips & visitors project at PS 98 Shorac Kappock in New York City, NY  |  Highest Poverty

**Essay:**

*My Students:* "I found I could say things with color and shapes that I couldn’t say any other way - things I had no words for."

- Georgia O’Keeffe

Art is a magical language of it's own. My students love art but they only have it once a week. They ...

I would like to participate in an art workshop in Florence that focuses on landscape and architecture. I will gain a deeper understanding of art elements and techniques that I can teach my students.

Through my experience in the ...

**Teacher Professional Development:** I need to attend an art workshop in Florence, Italy to learn about art, architecture and history. *This project is part of a pilot program.*

**Itemized List:**

<table>
<thead>
<tr>
<th>component</th>
<th>company</th>
<th>total</th>
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<tbody>
<tr>
<td>Activity</td>
<td>Academia del Giglio: Language, Art &amp; Culture</td>
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<td>Food</td>
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Vendor shipping charges $0.00  
State sales tax $0.00
Donor Retention in DC.org

74% donate once and never return

We focus on 470k first-time donors

Only 1% make five donations
What factors predict donor return?
Project Success = Retention?

- Project success = 100% funded
- Trust known driver of loyalty (Sargeant, 2008)

Strongly affects both groups!

Relative increase of 29%

Donor return

First project successful

Donor teacher–referred

site donor

teacher–referred
Four Questions about Donor

- How
- Where
- When
- How Much

...do they donate?
Tracking How Donors Joined

Site donors more likely to return

Both groups more likely to return if future “high-profile” teacher

→ Possible explanation: correlated with personal motivation and involvement
Four Questions about Donor Site donors more loyal than teacher-referred donors

Where

When

How Much
Distance ≈ Involvement?

Distance between classroom and donor

Donor return

Local donors are more loyal

Loyal site donors donate to far away projects

Local giving prevalent
Four Questions about Donor

Teacher-referred donors less likely to return

Local donors are loyal donors

When

How Much
Donor’s Role within Project

Donors assume different roles based on when they donate to project

› Starters: Make initial donation
› Closers: Finish off projects close to completion
Donor’s Role within Project

Consistent U-shape

Closers are very likely to return

Donor return

Project size in total number of donations

Closers are also more likely to be geo-distant

N-th donation to project (successful)

Starters

Closers

1 2 3 4 5
Four Questions about Donor

Teacher-referred donors less likely to return

Local donors are loyal donors

Starters and Closers are particularly loyal

How Much
Donation Amount

Donors can support DC.org with 15% of donation

Small donation and no support – still returning

Very strongly correlated with return!
Four Questions about Donor

Teacher-referred donors less likely to return

Local donors are loyal donors

Starters and Closers are particularly loyal

Large donations demonstrate commitment
Teacher Perspective

Acknowledge Support

Communicate Impact
Acknowledging support

Effect of **timeliness** of thank-you note on return to same teacher

- Teacher-ref donors more likely to return
- Timeliness matters for both groups
- Everyone thanks eventually

Hours make a difference!

- Donor return to same teacher
- Teacher response time in hours after fully funded (confirmation letter)

Effect of timeliness of thank-you note on return to same teacher

Donor return to same teacher

- Donor
- Teacher-ref referred site donor
- Teacher-ref referred

Effect of timeliness of thank-you note on return to same teacher

- Number of donors
- [0,1)
- [1,3)
- [3,6)
- [6,12)
- [12,24)
- [24,72)
- [72,168)
- [168,Inf)
Teacher Perspective

Thank within first hours!

Communicate Impact
**Communicating Impact**

Effect of **timeliness** of teacher impact letter on return to same teacher.

- **Communicate within 30 days!**

- Teacher-ref donors more sensitive

**Graph Details:**
- Teacher response time in days after fully funded (impact letter):
  - ≤ 1 week
  - > 6 months

**Legend:**
- 30000
- 40000
- 50000

**Graph Key:**
- Donor teacher–referred
  - Site donor
  - Teacher–referred

**Note:** Never send letter.
Teacher Perspective

Thank within first hours!

Teacher-ref. sensitive to communication
Can we predict donor return?

**Data:** 470k first-time donors (26% return rate)

**Features:** split into four groups

- Time
- Project
- Donor
- Teacher

**Model:** Logistic Regression (SVM & RandomForest gave similar results)

**Metric:** Area under receiver operating characteristic curve (ROC AUC) (10-fold CV)
Prediction Results

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<tr>
<th>Method</th>
<th>ROC AUC</th>
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<tr>
<td>Random</td>
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</tr>
<tr>
<td>Time (t)</td>
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</tr>
<tr>
<td>Project (P)</td>
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<td>Donor (D)</td>
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<tr>
<td>t + P + D + T</td>
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</tbody>
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How, Where, When, How Much
How likely are donors to return?

Calibrated Model? Yes.

Impact estimate: Increasing retention by 10% on DC.org would lead to an over 60% increase in donations ($15M)

Most donors unlikely to return

Focus on these donors
Recommendations

- Make sure first-timers experience success
- Recommend local projects to “local givers”
- Use donations by “anywhere givers” wisely
- Acknowledge support within a few hours
- Communicate impact within a month

- Real-world impact:
  - DC.org now recommends smaller and more-likely-to-succeed projects to first-time donors
  - DC.org is rethinking the teacher communication workflow
Conclusion

- **Challenge** for traditional NPO & crowdfunding
- **Observational study** of donor retention factors
- **Predicted** donor return
- **Implications** for online & offline fundraising

- **Inform** crowdfunding communities and NPOs
- **Encourage** them to start collecting information
Thank you!

Data available at data.donorschoose.org

DonorsChoose.org
Teachers ask. You choose.

Paper and slides available at cs.stanford.edu/~althoff

Thanks to Vlad Dubovskiy and Thomas Vo at DonorsChoose.org for facilitating the research!
Backup Slides
Potential confounders

- Successful projects are smaller
- Donations towards them are larger

Almost exact pairwise matching

- On donation amount, project cost, etc.
- Still observe 19% difference
Donors to small projects more likely to return

Small difference for projects >$600

Project fully funded

- [Red] No
- [Blue] Yes

Project Cost

- Small project: greater sense of impact
Teacher Perspective

- Donor relationship management is a skill.
- Expect donors to get better over time.

Retention decreases over time

Site donors: Less limited resource

Teachers “drain” personal resources
Future Work

- Use of prediction models in fundraising campaigns
- Content analysis of essays, messages, photos…
- Online field experiments to test causal hypotheses
Example Thank You Note

DonorsChoose.org

Good news: Project fully funded!

Ms. Novello the Teacher

Let me begin by saying, thank you.

Thank you for believing in the importance of books.

Thank you for believing in my students.

Thank you for helping kids that need it the most.

Thank you for making reading fun again!

Thanks to your generous support, there will be new and exciting books in my classroom and in the hands of a great bunch of fourth graders. You have changed the experience of reading for them. Now, they can read books they want to read, every day! Becoming a reader and being interested in books changes the course of a person's life. You have truly helped make an impact on the lives of my students.

With gratitude,
Ms. Novello
Example Impact letter

Ms. Novello the Teacher

Thank you all from the bottom of my heart for your support in this project. My students love the graphic novels and biographies! Every day, during independent reading, students take turns reading the series books such as Amulet and then they discuss them. It is wonderful seeing my class engaged in reading.

They are reading books they want to read and they are excited about it! I have heard them recommending biographies to each other - "have you read the Frida Kahlo biography? She was cool!" They ask me questions like "who is your favorite artist to read about?" and "did you read the Hilda graphic novel yet Ms. Novello?"

Thank you for helping make a world of difference in my students lives.

With gratitude,
Ms. Novello