



# Pittsburgh’s Parks in Action: Understanding Public Engagement with PPC

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## Background & Introduction

The Pittsburgh Parks Conservancy (PPC) relies on its constituent database, Luminate, for outreach and engagement. However, the current structure is not well-suited for targeted communication based on constituents’ true interests, as existing categories—like volunteerism, wellness, and park affiliation—are inconsistently defined.

This project aims to examine, consolidate, and redefine these attributes through in-depth data analysis, enabling more personalized outreach. Ultimately, it will help PPC better connect with its community and strengthen engagement across its diverse audience.

### Guiding Questions:

- What patterns exist in constituent engagement across Pittsburgh’s park system?
- How does email status affect attendance and donation behavior?
- Can we identify overlaps in historical interest groups to inform a more efficient segmentation strategy?

## Data Pre-Processing

Our dataset, provided by PPC, includes approximately 43,000 constituent records from their Luminate database along with supplementary files containing event registration and donation transaction data

Luminate 55 variables	Event Registration 117 variables	Transaction 37 variables
<ul style="list-style-type: none"><li>• Demographics: name, gender, birthdate</li><li>• Contact: email, phone, address</li><li>• Location: city, state, districts</li><li>• Engagement: donations, giving status</li><li>• Privacy: communication preferences</li><li>• Attributes: tags for interests and campaigns</li></ul>	<ul style="list-style-type: none"><li>• Event Details: event name, category, location, dates, deadlines, and tags</li><li>• Ticketing: ticket class, price, inventory, promotions, and order limits</li><li>• RSVP Info: counts and availability</li><li>• Registration Metadata: dates, creation/modification details, offline status</li><li>• Event-Specific Engagement: interaction types and attendee counts</li></ul>	<ul style="list-style-type: none"><li>• Payment: method, card type, check number, discount value</li><li>• Transaction Info: date, type, ID, reference, authorization, batch ID</li><li>• Billing/Contact: billing and contact addresses</li><li>• Gift Info: amount, donation on behalf of, aid selection, first-time online donor</li><li>• Purchase Info: amount, receipt ID, campaign title</li></ul>

### Relevant/New Variables:

- `Event.Tag`, `Event.Accounting.Code`, `Event.Name`, `Event.Category.Name`, `Attribute.Category`
- `External.Lifetime.Gift.Amount`, `Monthly.Giving.Amount`
- `Member.ID`, `Constituent.ID`, `Email.Status`, `Fund.ID`
- `Park.Affiliation` - created by extracting park names from `Event.Name` & `Event.Location`
- `Engagement.Factor.Group` - created by binning `Engagement.Factor.1` into four levels
- `Campaign_Title` - created by using `Event.Name` (predictors) and `Gift_Amount`, `Transaction_Amount` (response)

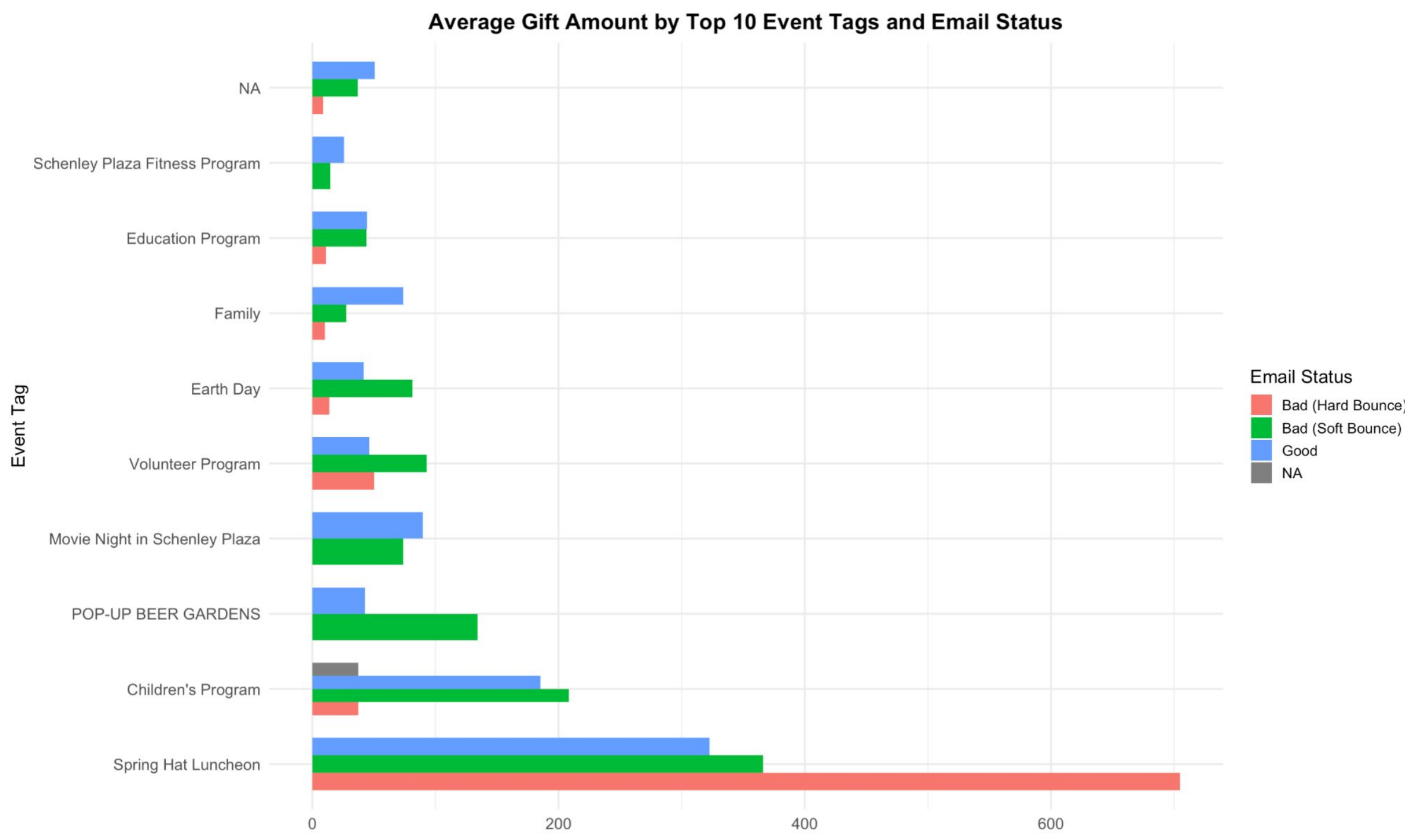
## Analysis & Results

**How does constituent engagement vary in relation to park affiliation?**  
**Do certain groups engage in specific programming more frequently than others?**

- Engagement metrics: park affiliation, discretized engagement factor
- Applied logistic regression and Youden’s J statistic for optimal class prediction (see confusion matrix below)
- Donor status is tied to high engagement factor and affiliations with Mellon, Frick, & Schenley Park

	Actual Non-Donor	Actual Donor
Predicted Non-Donor	5888	741
Predicted Donor	3015	2164

≈ 68% Accuracy



**How does email status correspond to event attendance and donation amount?**

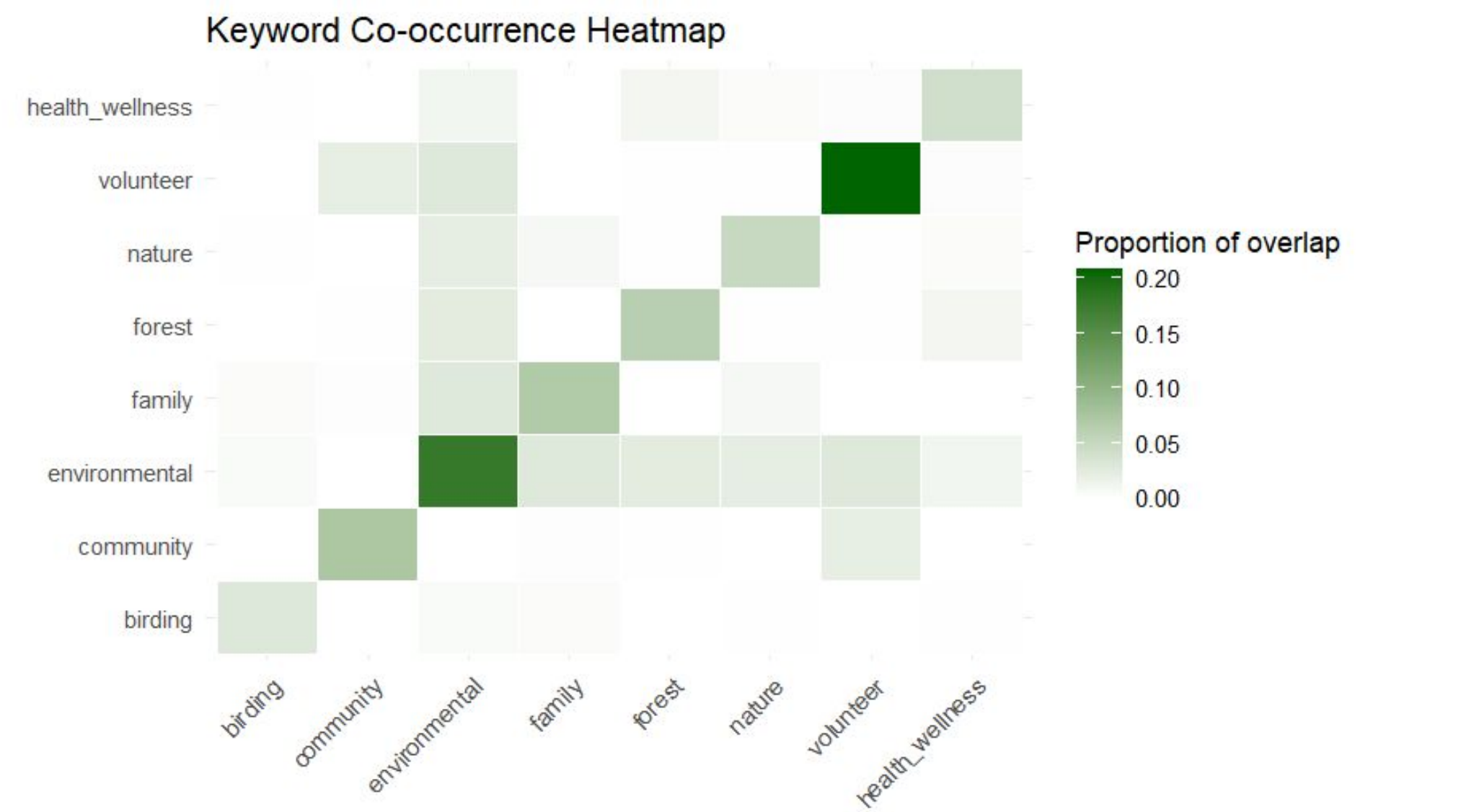
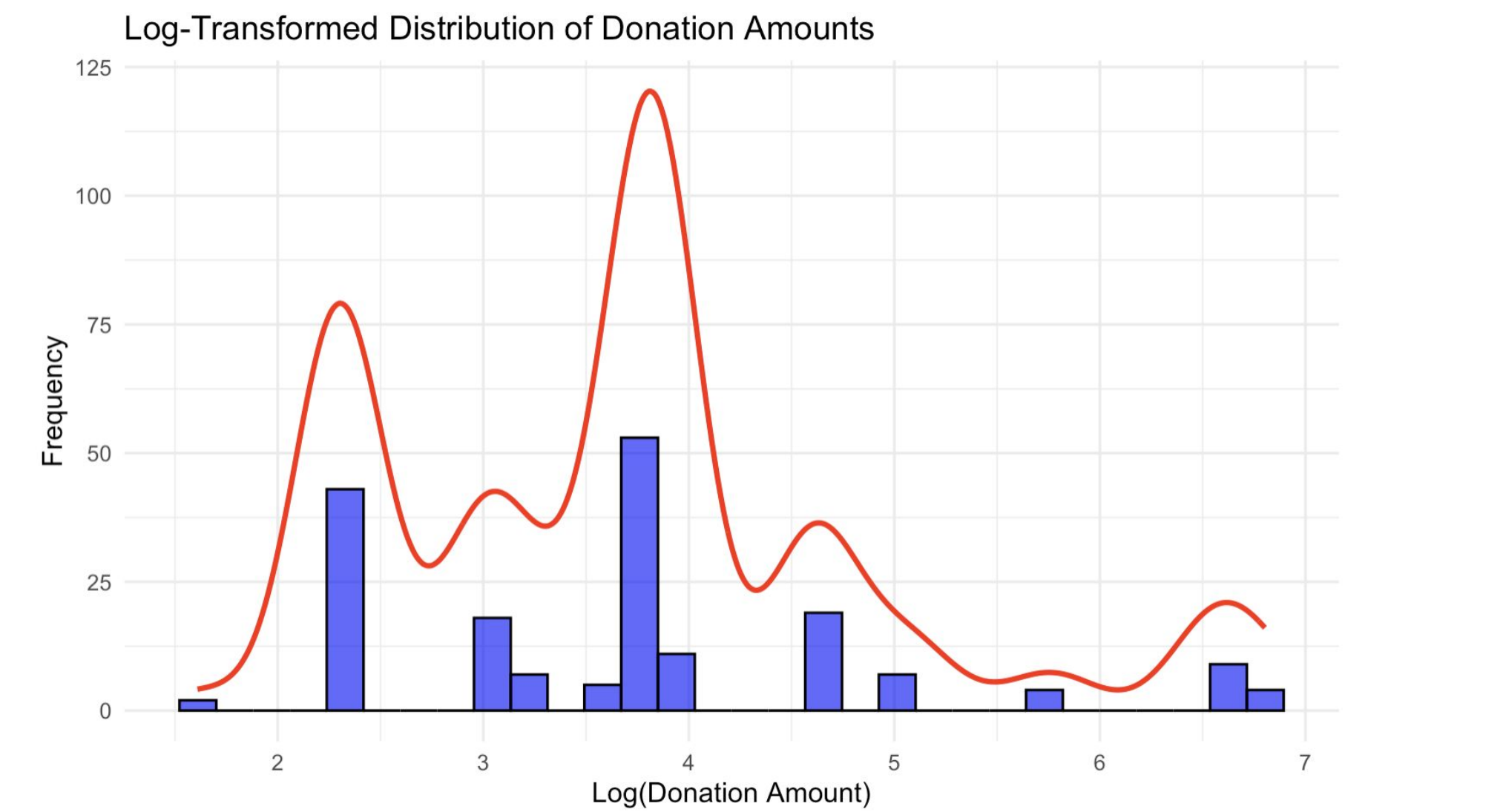
- Good email status generally corresponds with higher average gift amounts compared to bounced emails
- There is noticeable variation in average gift amounts across events, with some events showing inconsistent trends between email status categories, making it difficult to draw definitive conclusions

## Conclusions

- Mellon, Frick, and Schenley Parks are the most popular parks and have the most engaged constituents.
- Donation requests should be scaled back across all parks except Frick, which shows strong giving potential.
- Email Status data does not indicate that PPC should make any email solicitation changes
- Targeted outreach to, e.g., those with an interest in nature should also be directed towards those with an interest in health and wellness, etc.
- PPC should engage the environmentally engaged and volunteers more than other groups.

**What attributes best predict a donor’s lifetime gift amount?**

- Environmentally engaged volunteers give larger amounts, on average.



**Do interest groups overlap?**

- **K-Prototype Clustering:** We use the metric of silhouette score to identify four park engagement clusters
  - No affiliation (11,095 people)
  - Nature and Health/Wellness (392 people)
  - Environmental (2160 people)
  - Environmental and Family (715 people)