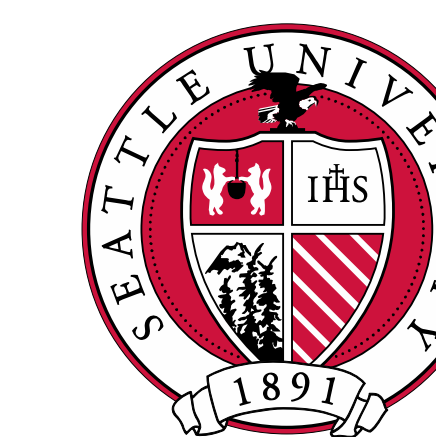




Camp Korey Donor Database Analysis and Recommendations

Master of Science in Data Science

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Abstract

As a non-profit organization providing free camp programs to children with severe medical conditions, Camp Korey depends on donors and volunteers to support their programs. However, they struggle with missing or incorrect contact information for their donors and a lack of data-driven insights into their donors. We have worked with their data to identify the donors with invalid addresses and emails, used Microsoft Power BI to visualize trends in the data, and developed a methodology for Camp Korey to score each donor's engagement. By improving the quality of their data and providing insights into their donor base, this work will help Camp Korey develop more informed and effective fundraising strategies.

Introduction

Data Problems

- Donors have incorrect or missing contact information and no easy way to identify them
- Not capturing trends in gift amounts & giving timelines, limiting their ability to make data-driven decisions in fundraising strategy
- No method of measuring engagement with the organization in a way that integrates both donation activity and volunteer activity

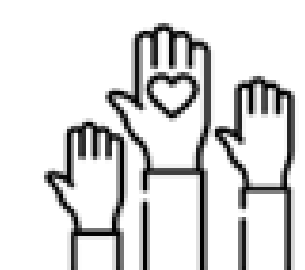
The Data



Constituents: records for all individuals in their system, limited biographical information, and their contact details



Gifts: records for all donations made to Camp Korey, including information on the donor and details about the gift

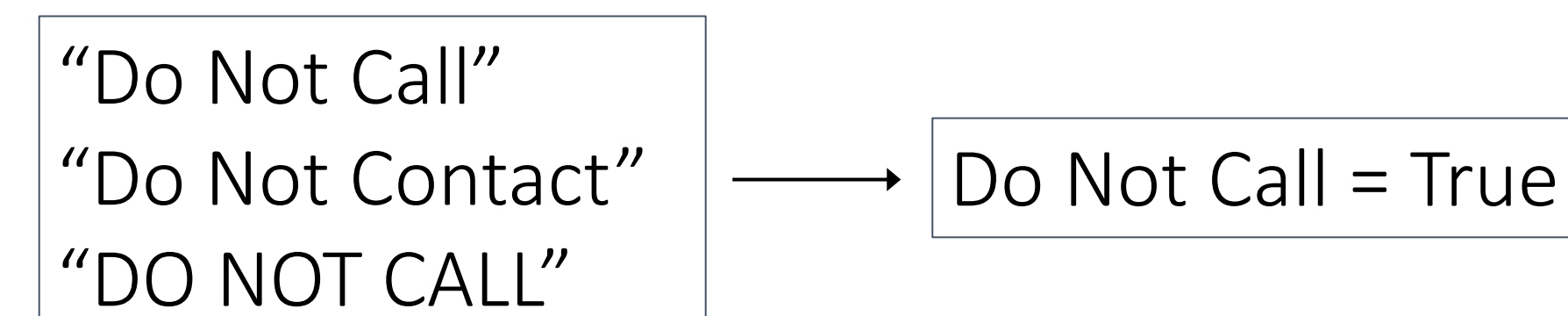


Volunteer Activity: records for all volunteering instances, including information on the person who volunteered and details about their activities

Methods & Results

Data Cleaning

- Filled in blank constituent IDs
- Removed duplicate constituents (same name and information, different ID)
- Produced email address status column from 12 columns of data
- Consolidated "do not solicit" codes into indicator columns based on meaning
- Created a relational database in MySQL Workbench with cleaned data tables



Example of process for creating indicator fields from inconsistent "do not solicit" codes.

Identifying Invalid Contact Information

Used SQL to identify & list constituents with:

- Invalid email
- Invalid address

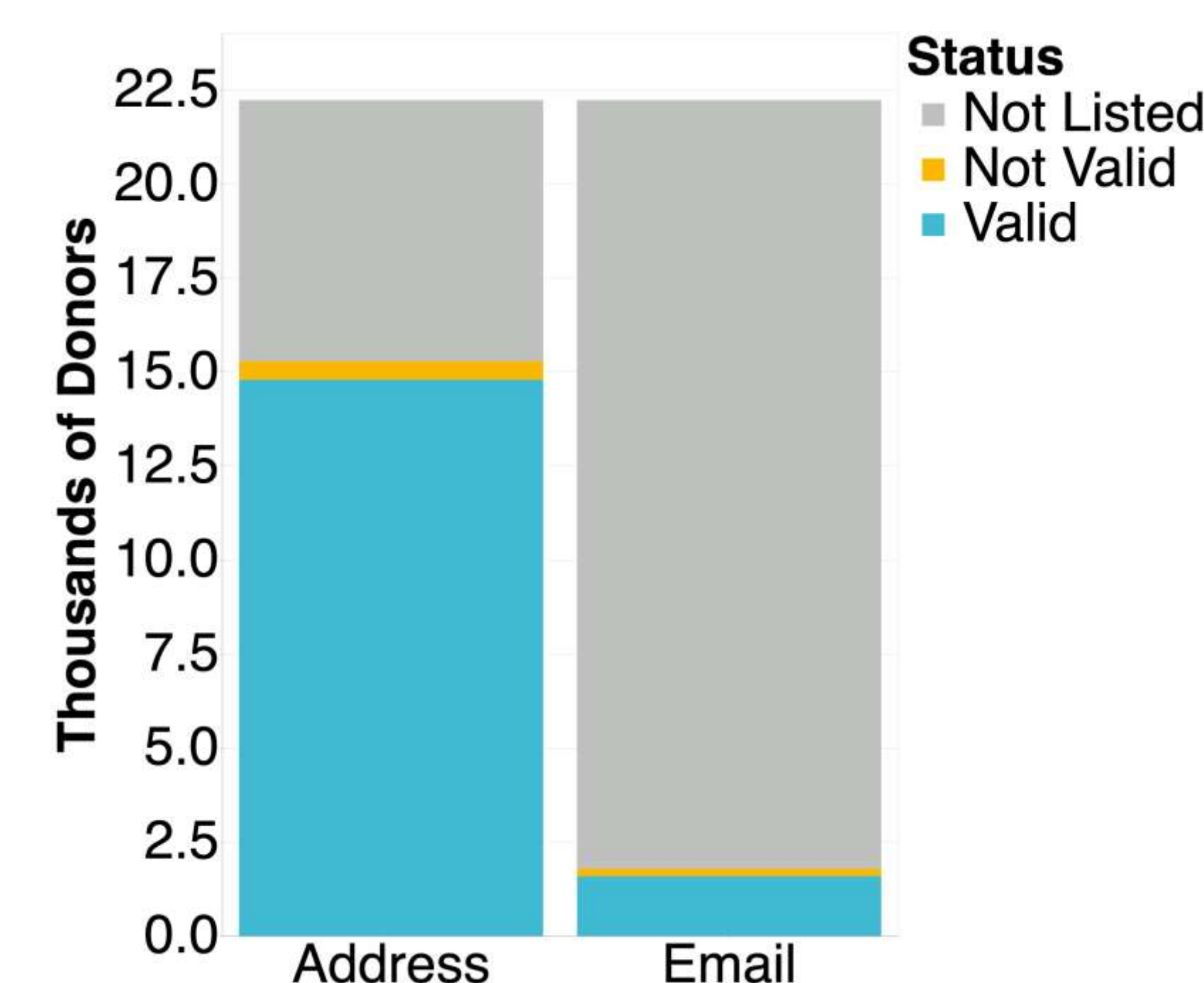


Figure 1: Status of Email and Address Information

Donor Segmentation & Giving Timelines

Created dashboards in Microsoft Power BI exploring various trends and key progress indicators for individual* donors

- Segmentation of donors by annual giving amount
- Trends over time (yearly, quarterly)
- Donor retention
- Geographical trends

*Individual persons, not corporations, government, foundations, etc.

Observations

- \$4.5 Million received from individuals between 2020 and 2022, and 4.8K gifts
- Dip in total giving amount in 2021, possibly due to the COVID-19 pandemic
- Most gifts are coming from nearby Camp Korey: donors based in King and Snohomish counties had the largest amounts donated

Quarterly trend of Gift Count



Figure 2: Quarterly Trend in Gifts

In the last 3 years, 44.8% of gifts were during the 3rd quarter (July - September), which is when Camp Korey has most of their summer camp programs.

Donor Engagement Score Calculation

For each constituent, calculated an "engagement score" (0-10) based on their giving and volunteer activity

Donation Score
(2020-2022)

- Amount
- Frequency
- Recency
- Event donation



Volunteer Score
(2022)

- Total hours
- Frequency
- Recency of last activity

Donation Score Prediction

Used 2018-2019 donation activity to predict 2020-2022 donation score (0-10).

Random Forest model was moderately predictive

- RMSE: 1.93 (on average, predicted scores were off by 1.93)

Neural Network model was slightly less accurate

- RMSE: 2.14

Conclusion

Our work will help Camp Korey to improve how they utilize their data and make decisions in their fundraising. This will allow them to:

- Identify constituents with invalid contact information so their files can be corrected, allowing for improved donor retention
- Develop strategies for fundraising based on insights into when people give, who is giving the most, and how engaged people are

Acknowledgements

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