
USA Charity
Data Exploration
Jack Vessa - Sep 2019

USA Charity Data Exploration

Project Focus

- Gather Information about USA Charities

Motivation

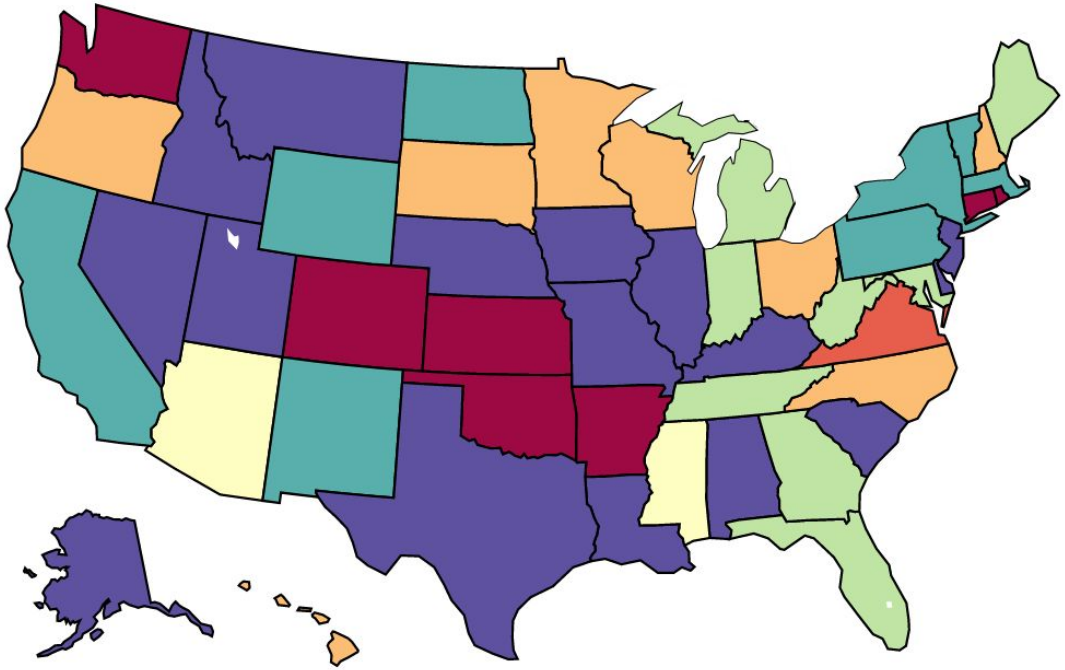
- Interested in career making positive social impact
- Partnering with a charity donation organization

Data Pipeline

What is the ***Mission*** of USA Charities?

What Does Each State Care Most About?

Investigating Yearly Donation Totals By Category



Category Name

- **Human Services (17)**
- **Community Development (10)**
- **Health (8)**
- **Arts, Culture, and Humanities (8)**
- **International (7)**
- **Education (2)**
- **Environment (1)**

** includes DC, Puerto Rico & Virgin Islands*

Let’s Take a Look at Charity Region!

Does Region affect AVG Charity Income?

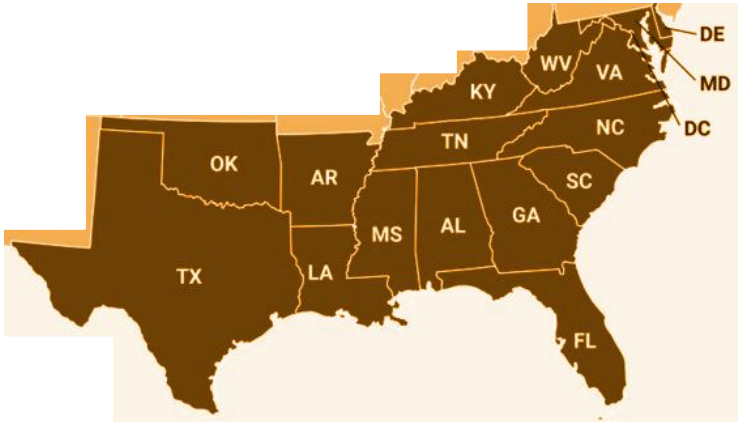
United States Charitable Organizations by Region (8,642 Total)

West Region (1,986)

Midwest Region (1,615)

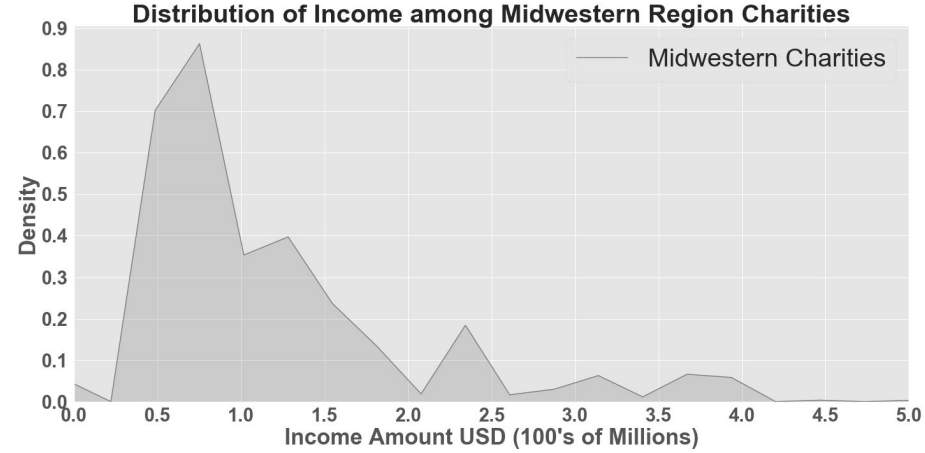
Northeast Region (2,081)

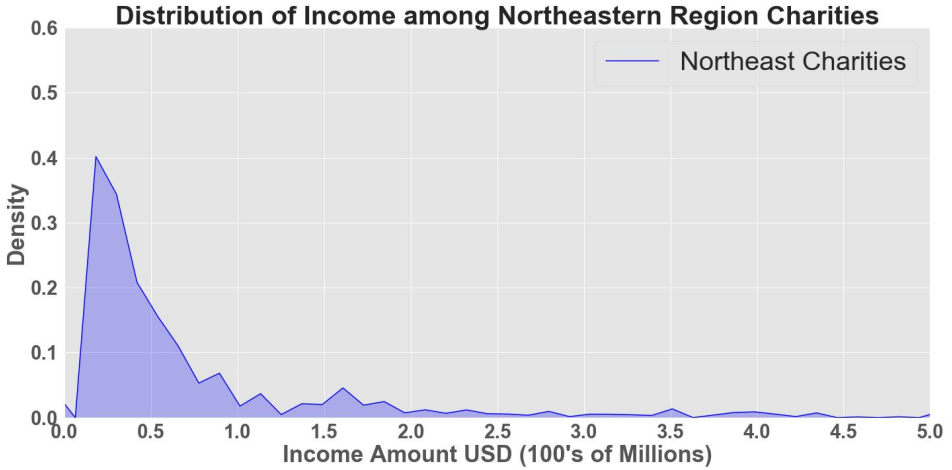
South Region (2,960)

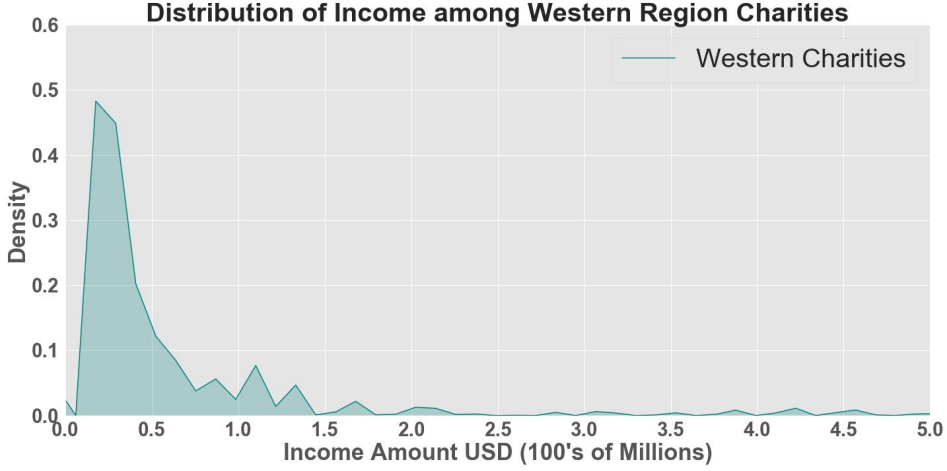


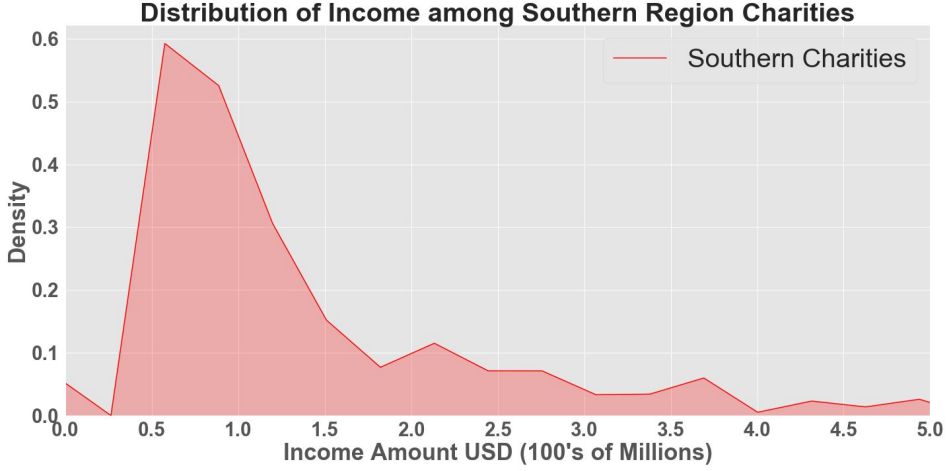
Source:
[Business Insider]

KDE of Average Charity Income by Region

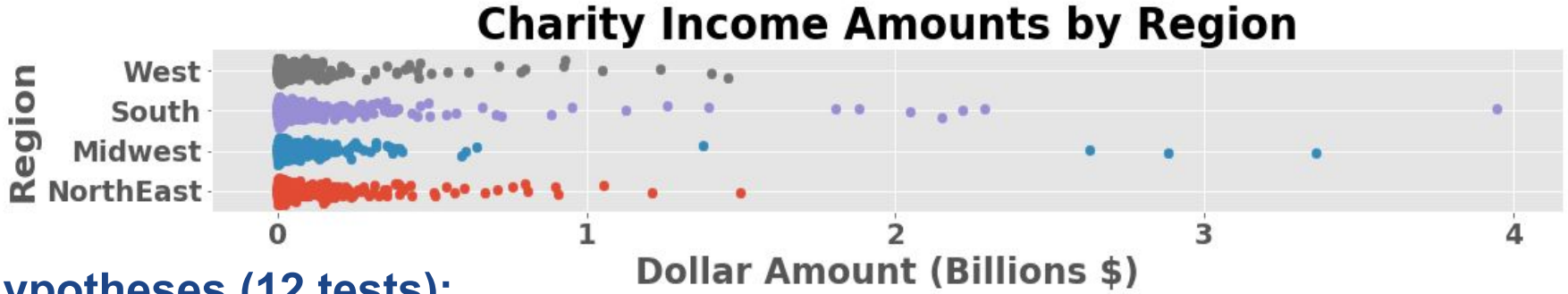








Does Region Affect Average Charity Income?



Hypotheses (12 tests):

H_0 → The average charity income in region 1 is less than/equal region 2

$\mu_1 <= \mu_2$ (Compared across all regional pairs)

H_A → The average charity income in region 1 is greater than region 2

$\mu_1 > \mu_2$ (Compared across all regional pairs)

Significance Level: $\alpha = 0.05$

(Bonferroni Correction): $\alpha = 0.05/12 = 0.004$

Mann-Whitney Signed Rank Test

```
p-value for NorthEast <= MidWest: 0.00012 *
p-value for NorthEast <= South  : 0.00110 *
p-value for NorthEast <= West   : 0.00583 *
```

Conclusion: There is significant evidence to REJECT Null Hypothesis (NorthEast AVG charity income is higher than MidWest and South)

Other Notable Results

```
p-value for West <= MidWest     : 0.10458 *
p-value for South <= MidWest    : 0.14954 *
```

Project Takeaways

- **Charities** care about **Providing Community Programs**
- **Northeast Charities** receive **MORE** donation income, on average, than **Midwestern** and **Southern** charities

Future Exploration

- Connect USA Charity Data to **Company User Data**
- Build **Charity Recommender** (Capstone 3)

Thank You!

Questions?

Works Cited

- **Charity Navigator API Data. Retrieved from:** https://www.charitynavigator.org/index.cfm?bay=content.view&cpid=1397
- **IRS Charitable Organization Data. Retrieved from:** https://www.irs.gov/charities-non-profits/exempt-organizations-business-master-file-extract-eo-bmf
- **Business Insider USA Regional Graphs. Retrieved from:** https://www.businessinsider.com/regions-of-united-states-2018-5#the-us-census-bureau-divides-the-united-states-into-four-regions-theres-the-north--1