



Tax Exempt and Government Entities

Coding it Forward Fellowship – John Marion

8/19/22





Need for Visualizations

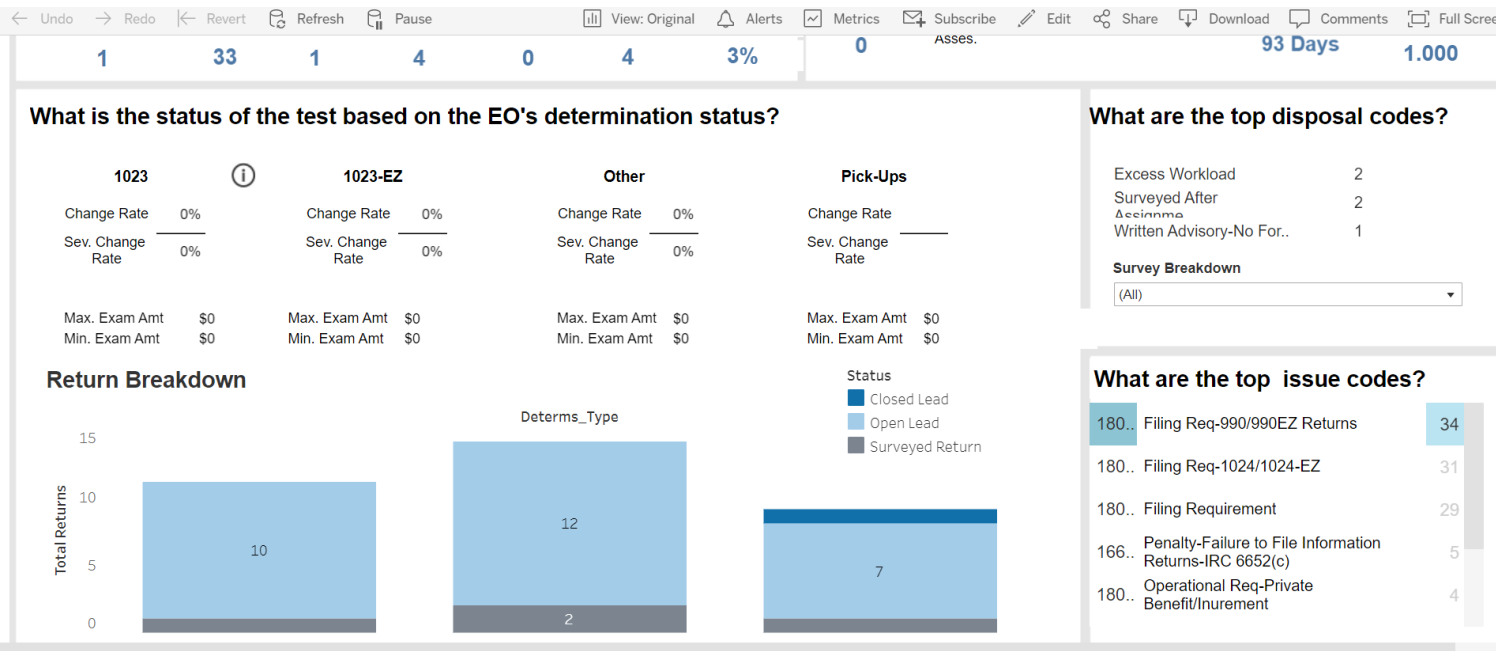
TEGE uses many various strategies to evaluate potential non-compliance

- Success of these strategies evaluated by several metrics
- Dashboards and visualization products help managers, agents, and other staff quickly understand the state of a strategy
- Metrics Include
 - Change Rate – What percent of cases led to a change in return amount
 - Status Codes – How many cases ended with a given code
 - Amount of change – How much did the return amount change



Update Software

- Previous dashboards built in Tableau
 - Many are helpful, but some aspects are difficult to understand and presentation can be busy
- Should new dashboards be built in Tableau, Power BI, R/Shiny, or other programs?





Building Shiny Pages

Demonstrating the capabilities and limitations of R/Shiny as well as the necessary code was largely an iterative process

- Began by mimicking the visualizations on previous dashboard versions
 - Helped understand the data, crucial elements, and to show the code used to generate similar elements
- Proceed to generating new visualizations/plots with guidance from supervisors regarding important information and preferred types.
 - Meant as test cases and demonstrations rather than finished, publishable product

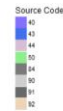
Select Lead/Pickup

Select Open/Closed

Change Rate: 7.08%

Total Amount: \$10126574

How Many Cases are Open or Closed?



MASTER HCCMS

Issue Code

Frequency

Status

- Undetermined
- Approved
- CPSC
- Pre-approved
- Rejected

Issue Code	Undetermined	Approved	CPSC	Pre-approved	Rejected
27030	1	0	0	0	1
27047	1	0	0	0	1
27044.005	1	0	0	0	1
27044	1	0	0	0	1
27042	1	0	0	0	1
27041	1	0	0	0	1
27029.007	1	0	0	0	1
27029.006	1	0	0	0	1
27029	1	0	0	0	1
27027.001	1	0	0	0	1
27027	1	0	0	0	1
27022	1	0	0	0	1
27021	1	0	0	0	1
27020	1	0	0	0	1
27019	1	0	0	0	1
27015	1	0	0	0	1
27014	1	0	0	0	1
27009	1	0	0	0	1
27008	1	0	0	0	1
27007.001	1	0	0	0	1
27007	1	0	0	0	1
27006.006	1	0	0	0	1
27006	1	0	0	0	1
27003.004	1	0	0	0	1
27003.002	1	0	0	0	1
27003	1	0	0	0	1
27002.001	1	0	0	0	1
27002	1	0	0	0	1
27000.002	1	0	0	0	1
27000.001	1	0	0	0	1
27000	1	0	0	0	1
0.001	1	0	0	0	1

Status Code Network
Edge width proportional to number of corresponding change

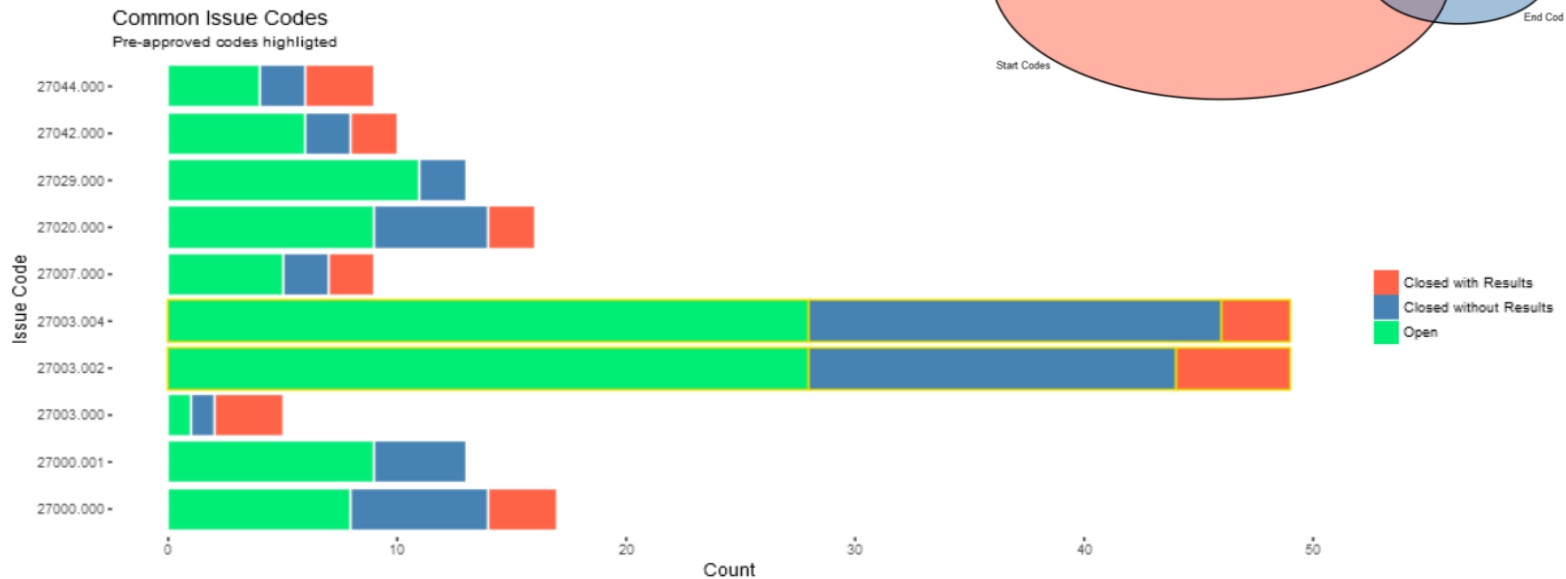




Pre-Approved Issues

Pre-approved issues are those identified within a given project. before analysis and are the issues that are believed to be present. One of the most important evaluations of a project is how commonly these issues yield final results or are changed to other issues upon inspection.

Change Rate: 13.502%





Filing Types and Donation Amounts

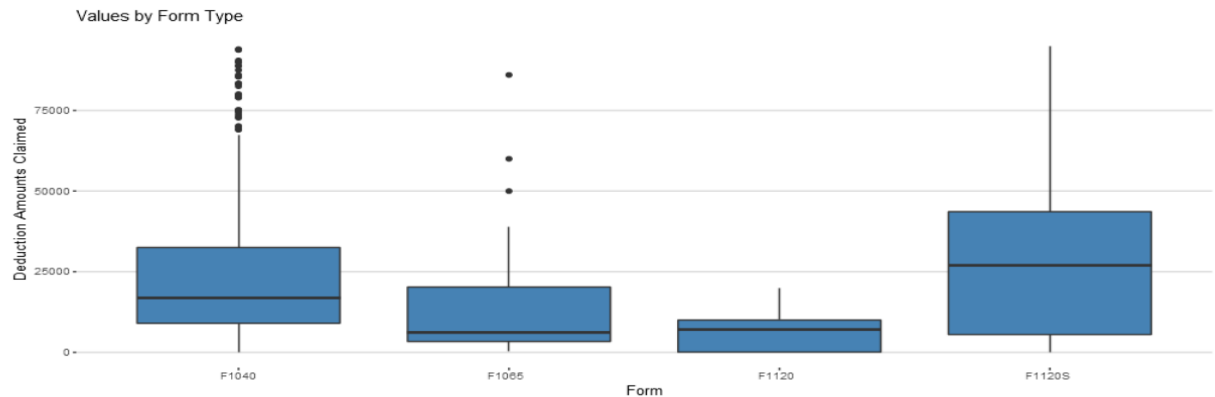
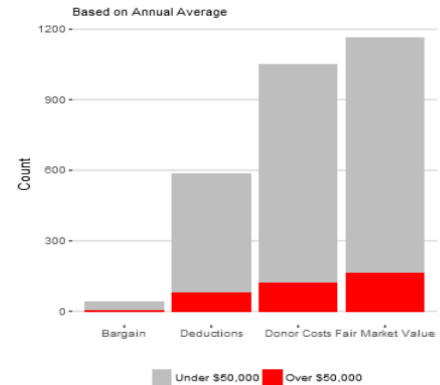
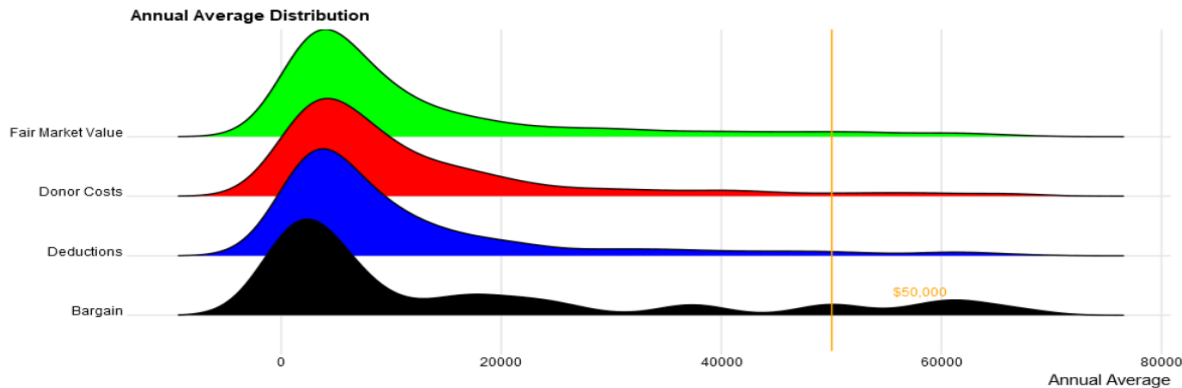
A second project focused organizations filing 990Ns and comparing amounts of donation types with the \$50,000 threshold.





Filing Types and Donation Amounts

Additional visualizations demonstrate some potentially informative aspects of the data.





Benefits

- Test cases of R and Shiny to evaluate benefits and limitations present
 - Customization, interactivity, convenient manipulation of data
 - Potentially cumbersome code; publishing/hosting Shiny sites
- Exposure to R and Shiny and provision of relevant code to build upon or serve as demonstrations for future work



Thank you for your time

Any questions?