Applying Data Science For Social Good In Non-Profit Organization With Troubled Family Risk Profiling R Dashboard Application

Background

Assessing the troubled families' risk status and distributing the resources appropriately is a big issue for nonprofit organizations, not to mention the national program like UK Trouble Families Program. Unfortunately, those organizations and national programs still use the conventional way to deal with these problems.

As the increasing demands for social assistance and long-term shortage of social workers in these field, a more precise and continuous way to handle the social resources wisely and efficiently is needed. Besides, the junior social workers are hard to quickly get a hang of several families through lots of interview records and past documents, then decide whether providing their intervention. And most importantly of all, they lack of ability to utilize those information with proper data engineering and summarize those experience through data analysis.

So here we first apply an evidence-based approach on assessing the troubled families’ risk status with a R dashboard application integrated the prediction model generated from those families archives, follow-up records under the Data Science For Social Good Program in Taiwan with the cooperation between a volunteer data science team and local nonprofit organization HFoundation.

Objective

1. **Visualize these historical data** with the simple and clear plots to help the social workers understand the conditions of different troubled families in a short time.
2. **Construct the forecasting models** to provide information for the social workers to take correct actions to assist the troubled families.
3. **Build an electronic system** to store all the data of the troubled families. At the same time, social workers can also easily create the new data for the new-coming troubled family.

Data process workflow

- **Data processing**
- **Structured data**
- **Modeling**
- **Data visualizing**
- **ShinyDashboard Interface**
- **Models and tools**
- **MS words/pdf**
- **Unstructured data**

Trouble Family Monitor Framework

**Family Risk factor monitoring**

- **Risk Factors Frequency**
- **Overall Risk Score**
- **Risks Components**
- **Family Risk History**

We use the association rule analysis to reveal the possible unnoticed problems according to family’s current risk facts, and construct a Markov chain model from past follow up documents to predict future risk factors.

Data Management system

we design an interface for social workers to easily create or update a file for specific individual. the input data will be updated to our management system and all the predicting model or descriptive graph will be recalculation and updated.

Reference


GitHub Link: https://github.com/dspim/Hfoundation-Troubled-Family-Risk-Profiling