RBC BOREALIS

Project Proposal – Forecasting of Needs for Food Banks

What is the problem?

Food banks are an essential societal resource dedicated to providing support to citizens experiencing food insecurity. By providing food and other essential goods, it significantly reduces the number of people suffering from hunger or other tough situations resulting from economic inequality. In Metro Vancouver, the Greater Vancouver Food Bank is providing help to approximately 8,500 people across Vancouver, Burnaby, New Westminster, and the North Shore each week. Of all the individuals accepting assistance, 24% are children or youth, and 18% are seniors. Thus, a highly-effective and efficient food bank is of great importance.
With seasonal and economic changes, the need for different food and essential goods shifts accordingly. However, the current food bank setting struggles with foreseeing the change in needs. As a result, the discrepancy between goods needed and the goods food banks have on hand increases. This causes insufficiencies and reduces the number of people that can be helped. The current solution is to put up posters in grocery stores, etc. to remind people what is needed. Even though it is effective to some extent, it still creates a lag between what is in need and what can be provided by local communities.
Assuming we have access to data from food banks, we believe it would be beneficial if we can predict what will be in need in the coming weeks/months based on the pattern extracted from the past. Having a prediction will allow local communities to prepare in advance and act before any shortage occurs.

Why is it important to me?

I believe in helping people who are in need. Since most cities across Canada already have functional local food banks, the efficiency and effectiveness of such organizations becomes increasingly important. When one of our team members volunteered at a local food bank, they noticed certain goods were out of stock while the quantity of other goods was exceeding demand. Thinking about this problem, we believe it is not because local communities are unwilling to donate goods in high demand, but rather they are not informed about what types of items should be donated to meet the community's current needs.

Having the ability to predict what will be in need can keep local communities informed in a timely manner, and as a result, provide better and more targeted help and support. In other words, the proposed project not only encourages the local community to contribute, but also guides them towards what items would provide the most impact if donated. With everyone working together, food banks could be more effective at maximizing their impact and in time reducing the overall need for food banks.

Why Machine Learning Can Help?

Machine Learning is a way of identifying patterns in data and using them to automatically make predictions. Since the demand for each category of the goods is mostly cyclic, a machine learning model would potentially be able to learn this pattern and provide a more precise prediction of changes in demand.

What Data to Use?

To train a machine learning model, it is important to have a dataset. We have found multiple datasets about food banks on the Open Data Network (https://www.opendatanetwork.com/search?q=food+banks). There is no dataset for Vancouver but there are datasets for other locations in North America and we think we can use these datasets as starting point to develop a machine learning model.