Expanded Vision Statement

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1 Food Bank Wish List

What is the title of your vision statement?

- Food Bank Wish List

What is your name?

- Maxwell Goldberg

What is your ONID username?

- goldbema

What world problem are you concerned about?

- Hunger in the United States. The U.S. Department of Agriculture estimated that in 2015, 12.7% of American households were food insecure. A household is "food insecure" when it has "difficulty at some time during the year providing enough food for all [its] members due to a lack of resources." [1] Food insecurity in the U.S. remains higher than its level prior to the Great Recession in 2007 by approximately one percent, and predominately impacts households with incomes less than or equal to the Federal poverty line. [1]

  Hunger can have far-reaching impacts on the children of food-insecure households, depending on the length and severity of a period of food insecurity. The long-term effects of hunger on these children include greater risk of homelessness, depression, anxiety, and other behavioral and psychological issues. [4]

What is one anecdote about how this problem might possibly play out in real life for somebody?

- A family composed of a single mother with a young child has an income below the Federal poverty line. The mother ensures that her child has enough food to eat, but must choose whether to eat only one meal a day for a week in order to ensure that her utility bills and car payment can be paid for the month. As a result of this choice, she feels tired during the day and is unable to think as clearly, leading her performance at her job to slip. Over time, this difficult decision might lead to the loss of employment, making it even harder to provide food security in the household, depression and anxiety, or other negative impacts on the family's well-being.

Within this world problem, what is one subproblem that bothers you?

- In addition to the increased pressure placed on food banks due to the Great Recession beginning in 2007, federal funding for the Supplemental Nutrition Assistance Program (SNAP) was reduced in 2013 after a temporary 13.6% increase enacted in 2009 expired. [2]

  Due to these pressures food banks must rely more on individual donations, but individual donors create inefficiencies for food banks due to the ways in which they give. Food banks have the ability to purchase food at wholesale prices that are much lower than retail (as much as 20 times lower in some cases) [3]. As a result, when consumers donate canned goods purchased at retail prices rather than give a cash equivalent to a food bank, economic inefficiency results. [3] Also, food banks are in a better position than donors to understand the dietary and nutritional needs of the communities they serve, and are thus better able to select foods that can actually be used by food bank clients. [5]

  As a result of the greater pressures placed on food banks, it is increasingly necessary to take advantage of the opportunity to reduce the inefficiencies present in the food bank donation process.

What is one quote illustrating that this subproblem is important?

- "The biggest resource constraints are food and funds. With the SNAP cuts and more people turning to [food banks] for food, either new people or people coming more frequently, that only exacerbates the already strained system." - Maura Daly, spokesperson for Feeding America [2]

- "The same $10 that you would spend to, say, get three cans of food, could actually buy retail value 20 times more food. And that can be the difference between just providing enough lunch for a couple of people to actually feeding a family of four for a week." - Katherina Rosqueta, Executive Director of the Center for High Impact Philanthropy at the University of Pennsylvania [3]

- "We find that almost half of what comes to us in any given food drive just doesn't meet our nutritional standards." - Greg Bloom, Development Assistant at Bread for the City

What is one anecdote about how this subproblem might possibly play out in real life for somebody?

- A local food bank serves a community with a large elderly population. Many of these people have conditions such as high blood pressure or diabetes that place a strict limit on daily sodium intake. Donations to this food bank consist primarily of canned goods high in salt content. As a result of the mismatch between donated food and the community's actual needs, the food bank is unable to field a considerable portion of the donations it receives.

What is a second anecdote about how this subproblem might possibly play out in real life?

- A local food bank has agreements in place with a regional network of food banks to purchase certain foods at pennies on the dollar. Retail consumers donate these same types of food to the local food bank. These donations are welcomed by the food bank, but the food bank would have been able to use a donation of cash equivalent to the value of the consumer's purchased food to either purchase greater quantities and varieties of food. As a result, the donation puts increased pressure on the food bank not only because of the economic inefficiency introduced, but because the donation must be go through the collection and sorting process.

What is one possible software system that could help to solve this problem?

- An app that connects food banks to potential donors through the use of two wish lists. The first wish list belongs to the foodbank, and represents the items that the food bank can actually benefit from when they are donated by consumers (these might be items that aren't covered under wholesale agreements between food banks and distributors, or more items that simply aren't available at wholesale prices). The second wish list is for consumers, and represents the items that they plan to donate over the given period of time.

  The app attempts to match local food banks' wish lists and consumers' wish lists, and on the basis of these matches provides a recommended wish list to consumers. This wish list attempts to maximize the consumer's actual preferences for donation, but if an item that the consumer wants to donate is not requested by the food bank, the app will do one of two things: If the item is covered by wholesale agreements,

the app will recommend that the user make a cash donation equivalent to the price of the item (and will show an estimate for how much of the item can be purchased with cash). Otherwise, if the item is not currently requested by the food bank, the app will make a recommendation of some other item to the user based on the food bank's needs and the other items that the user intends to donate.

Once the user's recommended wish list has been formed, the app provides an interface for the user to make cash donations to her local food banks, and allows the user to keep track of the wish list's state of completion. The app also allows the foodbank's wish list to update as cash and in-kind donations come in. This can be achieved through the tracking of cash donations through the app and the scanning of bar codes on food as donations are submitted to the program.

A reward system could be implemented for users' reaching wish list completion milestones for a given time period. This could include manufacturer and retailer coupons, gift cards, and other items which provide users with an incentive to participate in the program. There could also be a system that allows users to form teams and compete for rewards against other local teams.

What are the three most important features that this helpful software system should have?

1. An algorithm that is able to effectively match food bank wish lists with app user wish lists so that users' recommended wish lists resemble their actual wishlists as closely as possible.

2. The capacity to track user cash and in-kind donations so that user and food bank wish lists can be updated appropriately as users complete items on their lists.

3. A social reward component that encourages users to form teams and compete to achieve the most team donations (possibly with extra reward tiers that are team-based).

For the 1st of these three features, why is this feature important?

- An effective matching algorithm is the *sine qua non* of this project because the app's primary purpose is to reduce the economic inefficiencies present in food bank donations. If the algorithm itself is inefficient, then it bounds the maximum effectiveness of the entire program.

  The algorithm's robustness is complicated by the fact that users don't create their wish lists at the same time, and because users may be able to update their wish lists after they have been created.

What is some sort of hypothetical example about how a person would use the 1st feature?

- A food bank creates a wish list for November that includes 500 cans of canned tuna (Because this food bank is unable to obtain canned tuna at wholesale prices). A user lists on their wish list that they would like to donate 2 cans of canned tuna. When the user generates their recommended wish list, the app's matching algorithm finds a clear match between the food bank's need and the user's offer, and places 2 cans of canned tuna on the users recommended wish list (Possibly more if the algorithm determines that the food bank's need for canned tuna is great enough).

For the 2nd of these three features, why is this feature important?

- This part of the app is important because it allows food banks to track which items have already been donated, as well as how much cash has been donated (and the sources of cash donations). Given that there is a rewards feature for this app, it is important to ensure that donation fraud (e.g., by scanning but not donating an item) is kept to a minimum.

  The implementation of this feature for in-kind donations could take several forms. There could be a piece of hardware that scans in user-donated items using bar codes already available on the items themselves. Another option would be to use bar code scanning on mobile devices in conjunction with some sort of proximity detection to a donation site in order to verify that donations have actually occurred.

What is some sort of hypothetical example about how a person would use the 2?

- A user receives their recommended wish list, which includes a jar of peanut butter. The user goes to the grocery store, which has an approved donation site for the app inside, and purchases (among other things) peanut butter. The user then goes to the approved donation site, uses their phone to access the app and indicate that they would like to make a donation. The app prompts them to scan the bar code on the peanut butter and to place the peanut butter in the donation site. The donation site verifies (perhaps by scanning the bar code as well) that the donation occurred as expected, and the user receives a notification that the donation went through. Peanut butter is then removed from the user's recommended wish list, and the local food bank's wish list is updated as well.

For the 3rd of these three features, why is this feature important?

- A social, team-based, competitive aspect may help to drive donations to higher levels than would exist were this feature not present in the app. Also, the positive social pressure to participate from making this into a team game will help to overcome some of the issues surrounding the politeness of asking for cash donations rather than in-kind donations. Finally, sustained team-based competition will encourage donors to continue to give even after the holiday season is over.

What is some sort of hypothetical example about how a person would use the 3^{rd} feature?

- A user joins a team formed during a workplace food bank drive. The team receives an incentive to purchase certain items within a certain time frame, and is notified that they will receive bonus points for donating these items before other area teams. The user goes to the store, buys the items, and donates them. The team is notified that it is now the high-scoring team for the area.

Which of these three features is most important? Which is least important/optional? Why?

- The matching algorithm is the most important feature because it is the basis of the app's philanthropic mission. Without an efficient matching algorithm that is able to respond to user updates in real time, it is unlikely that the app will be as effective at reducing the economic inefficiencies present in donating to food banks. A close second to the importance of this part of the app is the ability to accurately record donations, because this ensures that the system is less likely to be abused for rewards. The team competition feature is optional because app users will be able to donate without it, but it will play an important role in driving increased levels of donation as well as sustaining donation from the user base for a longer period of time.

How would you ensure that your system is economically viable?

- As was said above, it is important to make sure that the algorithm efficiently matches consumers with food banks and that a donation verification system is in place to prevent fraud. The most expensive part of this system will likely be this verification system, so care must be taken to make this system as lightweight as possible (Both in terms of hardware requirements and in terms of food bank resources needed to verify that donations have gone through successfully). Ideally, the verification system should use no more information than can be made available to a mobile app to conduct verifications.

  There is a clear financial incentive for grocery stores and product manufacturers to supply rewards in order to drive product sales and reinforce corporate social responsibility branding messages. Adding new

features to the social component of the app could help to ensure that users sustain their donating activities over an extended period of time.

How would the world be a better place if the system was actually implemented?

- Food banks would see an increased level of individual donations to offset falling federal and industry support. This support will take the form of cash donations, which will increase the efficiency of delivering needed food to Americans. In-kind donations will be reduced to those which are actually able to benefit local communities.

What are your references?

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- [3] Conan, N. (Interviewer) & Rosqueta, K. (Interviewee). (2011). *A Case For Cash Donations, Instead Of Cans* [Interview transcript] . Retrieved from NPR web site: http://www.npr.org/2011/11/22/142661882/a-case-for-cash-donations-instead-of-cans.

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- [5] Yglesias, M. (2011, Dec. 7). Can the Cans: Why food drives are a terrible idea. *Slate*. Retrieved from: http://www.slate.com/articles/business/moneybox/2011/12/food_drives_charities_need_your_money_not_your_random_old_food_.html