Pro Bono Analytics – Addressing Business Problems Faced by Nonprofit Organizations

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Pro Bono Analytics is a program by INFORMS to link OR & analytics professionals who are willing to volunteer their analytical skills with nonprofit organizations working in underserved areas or with underserved populations, that could benefit from analytics

How does Pro Bono Analytics Work?

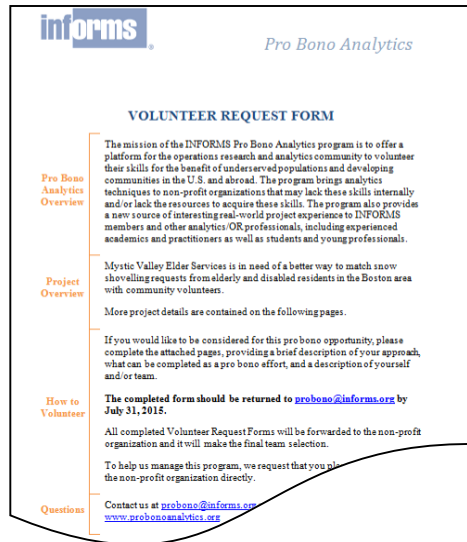| 1	2	3	4
Nonprofit organization submits a project request	**Request reviewed by the Pro Bono Analytics Committee and sent to volunteer list**	**Volunteers interested in the project submit a brief proposal**	**Nonprofit organization selects a team for the project**

Selected Pro Bono Analytics Projects

American Music Therapy Association

- Advances public awareness of the benefits of music therapy
- Decision analysis approach to assessing a proposed change in the credentialing of certified music therapists

Family Services of Greater Boston

- Provides integrated and culturally-sensitive social service to at-risk children, youth and families
- Designed integrated data system to help evaluate program performance

On the Rise Women's Shelter

- Daytime space provides safety and basic tangible needs while relationships grow with staff
- Tableau-based system to better communicate program effectiveness

Global Urban Observatory/UN Habitat

- Collects data and published "State of the World's Cities" report
- Developed Excel-based human vulnerability index; adding a missing dimension to the report

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To communicate the value of OR and analytics, must put it in terms of what business problems can be solved

- How can we attract and retain donors?

- How can we sustain and grow successful programs?

- How can we decide whether or not to start a new program?

- How can we decide whether or not to terminate a program?

- How can we increase staff and volunteer utilization?

- How can we make our work more relevant?

When working with a nonprofit, define and stay focused on the business problem first, and the OR/analytics solution second

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How can OR and analytics help solve business problems faced by nonprofit organizations?

Business Problem: How to improvement operational efficiency

A church cooks and delivers hot meals to the elderly and homebound. The volunteer delivery drivers wish to minimize total distance driven, so as to reduce wear and tear on their cars, while ensuring that meals are delivered to clients during specified timeframes. How many drivers are needed, and what sequence of deliveries for each route should be followed?

Business Problem: How to better utilize limited people time

A community health center serves low-income residents, many of whom are uninsured and have unstable personal situations. Given limited resources to provide uncompensated care and limited time to address no-shows, how can the center set priorities for providing free care and minimize the down-time of health service providers?

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Business Problem: Need to develop a strategic plan,

with goals of sustainability and equity rather than profit

A community-based nonprofit is devoted to developing small community gardens to provide low-cost and nutritious food to residents facing food insecurity. Many neighborhoods desire their own gardens, yet there are limited organizational resources to lease plots from the city, to teach farming techniques to residents and to provide necessary tools and seeds. Moreover, land leased for community gardens from the city may be eventually purchased by developers to build new housing for profit. How can this organization develop a strategy to identify and develop community gardens in a sustainable and equitable manner?

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Business Problem: How to measure and communicate impact

A community development corporation provides a variety of services: housing development, community organizing, economic development, adult education and many others. Given uncertain funding streams, limited information about future demands for and limited understanding of the social benefits of these services, how can the organization allocate resources towards fundraising and program management to balance efficiency and equity?

Business Problem: How to serve high need people in high cost areas

A mobile dentistry service for low-income rural residents requires providers to travel long distances to serve relatively few but high-need clients. Is there a design for routes and services that can enable this service to be self-supporting? If not, how can the service make the best case for sustained subsidies?

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Business Problem: How to expand a successful program

An organization developing 'safe spaces' within homeless shelters for educational enrichment, safe play and emotional supports wishes to expand to new cities. Expansion requires willing host partners, funders to provide operating support and volunteer staff. Given differing levels of these resources, and differing levels of need, in which cities should the service expand, and how and where should they provide new safe spaces?

Business Problem: How to best launch a new program

A local church wishes to engage at-risk youth to divert them from violence and toward counseling others. However, the organizers, not being at-risk youth themselves, may not know how to build a service that responds to authentic needs. How can they engage with community residents to do a needs assessment, train peer counselors and identify desired impacts?