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

**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

**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

**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
Understanding and engaging nonprofit organizations
There are many similarities, but also some key differences between nonprofit and for-profit companies:

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<tr>
<th>For-profit company</th>
<th>Nonprofit company</th>
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<tr>
<td>To generate income for employees and shareholders</td>
<td>To provide needed services where there is insufficient profit motive</td>
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<tr>
<td>Critical to stay in business – generated by services rendered</td>
<td>Critical to stay in business – dependent on government grants and private donations</td>
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<td>Staff of dedicated, full-time employees</td>
<td>Typically a small paid staff, supplemented with a volunteer network</td>
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<td>Often focused on next quarterly Wall Street reporting</td>
<td>Some programs may take years or decades to realize the benefits</td>
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Limited capacity of community partners to collect and analyze data, and to make productive use of analytically-advanced solutions
Skepticism among community partners that outside experts really understand their problems
Need for volunteers to move from client-consultant relationship to peer-to-peer relationship to support collaborative problem-solving
Tension between a specific problem to be solved, and underlying community needs that may not align with funders’ immediate priorities
Acceptance by volunteers trained in OR/analytics that qualitative as well as quantitative data and solution methods may be necessary
Do projects involving nonprofit organizations engaged in social issues have a higher standard for ethics?

- **Honest** in reporting our results, even when they fail to yield the desired outcome.
  - Is it OK to skew results so donors to a nonprofit feel better about providing support?
- **Objective** in our assessments of facts, irrespective of our opinions or beliefs.
  - How should we report a poor outcome assessment for a program we like?
- **Alert** to possible unintended or negative consequences that our results and recommendations may have on others.
  - In an effort to help some, does our work have a negative impact on others?
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.
How can OR and analytics help solve business problems faced by nonprofit organizations?

**Business Problem: How to improve 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?
How can OR and analytics help solve business problems faced by nonprofit organizations?

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

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

**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?
What can INFORMS and Pro Bono Analytics do *with* and *for* nonprofit organizations to build strong relationships?

1. Listen and ask questions

2. Move from the problem that brought you two together to the problem that the organization really wants to solve

3. Increased understanding, ‘satisficing’ and making incremental improvements are perfectly fine (initial) project outcomes

4. Adapt the collaboration style to the organization: does it want a consultant, partner or listening board?

5. Understand that many nonprofits focus as much on social change as service delivery
Be part of Pro Bono Analytics!

Sign up today as a volunteer on the web site, or contact a member of the Pro Bono Analytics Committee

www.probonoanalytics.org
probono@informs.org

Thank You!