Advancing Data Analytics Through Research Collaboration

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*This project was completed with support from the Ontario Ministry of Government Services to fulfill the practicum component of the Masters in Applied Social Psychology at the University of Guelph.

Background Information

- Research collaboration improves access to resources for government policy analysts and academic researchers, resulting in more sophisticated policy outcomes.
- Data on individuals and communities is collected across government ministries and across academic disciplines (e.g., health records, census, faculty research, etc.)
- How can data from multiple places be used to inform policy decisions?
- Sharing raw government and academic data between institutions creates opportunities for collaborative work on research projects and policy formation.

Data Analytics involves explaining observed data trends in raw electronic data sets to inform policy. This process includes cleaning data errors, transforming, and modeling data.

Examples of Data Analytics Projects

British Columbia Provincial Housing Initiative
- Collected multiple data sets from government ministries, social services organizations, emergency services, and academic literature to evaluate the various services offered to the homeless (e.g., access to temporary shelters). Partnerships addressed procedures to best meet the needs of the homeless population.

IBM Water Data Management Project
- Collected real-time electronic data to monitor structural weakness in water pipes. The data is used to determine the exact location of pipe weakness to be replaced before a major leak in the system occurs. Academic and other external research data is used to improve infrastructure and to develop best practices for water data management.

Methodology

Purpose
- To explore the definition of data analytics within both government and academic contexts, and engage academics regarding research partnerships and collaboration.

Methods for Data Collection
- Two mixed-methods surveys were developed for government policy analysts and a sample of University of Guelph faculty.
- A focus group and interviews supplemented the surveys

Participants
- Survey: 35 Government Policy Analysts
- 8 University of Guelph Faculty
- Focus Group: 5 Government Policy Analysts representing various ministries
- Interviews: 3 Academic Researchers representing various research groups

Methodology

Results and Recommendations

- Government policy analysts value support from academics for raw data analysis. Academics endorsed more value for accessing journal articles for government.
- Data analytics is used in government and academia, but varies by ministry and discipline.

Provincial Government Use of Raw Academic Data

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
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</thead>
<tbody>
<tr>
<td>Government Response</td>
<td>76%</td>
<td>24%</td>
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<tr>
<td>Academic Response</td>
<td>63%</td>
<td>37%</td>
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</tbody>
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Note: The majority of academics reported accessing raw Federal Government data.

Recommendations
- Create research social networks that include government, academics, and other external researchers.
- Encourage government policy analysts to access open academic journal data bases.
- Open raw government data sets and reports to make information more accessible to externals.
- Develop an ethics framework that aligns with the Tri-Council Policy Statement.
- Clarify government research priorities and encourage research from a top-down process.
- Create a formalized research process at the government to engage the academic community in collaboration.

Research Collaboration Barriers

<table>
<thead>
<tr>
<th>Overall Accessibility – relying on staff with active university accounts, only accessing the abstract, information is not in a usable format</th>
<th>Never attempted access/unsure</th>
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<tbody>
<tr>
<td>Intellectual Property (IP) – determining the owner of the research, determining who gets credit, academic publication of research</td>
<td>Intellectual Property (IP) – ownership of the research, pushed to protect academic research</td>
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<tr>
<td>Privacy – concerns regarding how data is used, removing identifying information before distributing, concerns regarding what data is being used for, obtaining consent</td>
<td>Privacy – government is protective of data</td>
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<tr>
<td>Lack of Consistency – data sets, measures, and definitions across universities</td>
<td>Quality – data is variable in quality</td>
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<td>Ethics Procedures – lengthy, inconsistent procedures between universities</td>
<td>Approval – multiple levels of approval takes time, lack of consistency in ethics boards</td>
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<td>Additional Concerns</td>
<td>Conflicting Messages – sometimes government desperately wants data to be used, other times there is reluctance</td>
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Implications

- Opening raw data and moving research from the laboratory to the community can be an enriching experience.
- Data analytics can add context to academic research and provide opportunities to apply results to practical issues.
- Research collaboration improves access to resources for government policy analysts and academic researchers.
- Sharing data can lead to more sophisticated policy outcomes based on evidence that directly benefit the community.
- Provides tangible evidence to taxpayers that funding data analytics is a valuable endeavour to advance evidence-based policy and program development.

Contact Information

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