Leveraging Data for Insight, Innovation and Impact in the Nonprofit Sector

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Social Venture Partners
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Agenda

• Digital Social Innovation
• Data for Social Good
• National, Provincial and Local Data Initiatives
• Data and Nonprofit Organizations
• Questions and Discussion
Innovation

- **Innovation** is the process through which economic and social value is extracted from knowledge through the generation, development, and implementation of ideas to produce new or improved strategies, capabilities, products, services, or processes.  

ref1

ref2
SiG’s Definition of Social Innovation

IN THE CONTEXT OF CHANGING THE SYSTEM DYNAMICS THAT CREATED THE PROBLEM IN THE FIRST PLACE, A SOCIAL INNOVATION IS:

Any initiative (product, process, program, project, principles or platform) that challenges and, over time, contributes to positively changing the defining routines, resource and authority flows or beliefs of the broader social system in which it is introduced.
Ecosystem for Social Innovation

**COLLABORATION**

*Collaboration is the human face of systems thinking – Peter Senge*

**MINDSET**

*Silicon Valley is not a place; it's a mindset. The Valley's ecosystem is fueled by culture, connectivity, and creativity – Victor W. Hwang*

**BRIDGING SOCIAL CAPITAL**

*Social innovations not only emerge from relationships, but also thrive and endure in relationships – Al Etmanski*

**LEADERSHIP**

*Whatever your vision or passion for the future...take the road less travelled by way of systems entrepreneurship because, as Robert Frost said, we will look back years from now and know “that has made all the difference” – Hamoon Ekhtiari*
Social Ideas and Concepts

ref – Tim Draimin
Virtual Reality
Immersive multimedia experiences for enterprise customers

IoT
Leverage sensor technology through integration with business applications

Social
Building collaborative networks within the organization and its ecosystem

Mobile
Harness the power of a mobile-first journey with industry-specific solutions

Analytics
Actionable & relevant insights into your business to achieve a competitive edge

Cloud
Drive innovation & lower costs with agile & scalable cloud solutions
Digital Technology Transformation

• Impact of digital technology
  – Innovation
  – Transparency
  – Collaboration
  – Participation

• Characteristics of digital technology
  – Connective
  – Efficient
  – Intelligent

• Potential to contribute to key challenges by reinventing
  – Public service, often in less costly ways
  – Community, and how people collaborate
  – Business, in ways that are better aligned with human needs
Digital Social Innovation

• Digital technologies and the Internet are changing how social innovation happens

• A growing movement of innovators in civil society, technology and social enterprises are now developing inspiring solutions to social challenges

• Digital technologies can for example be used for;
  – Mobilising large and disperse communities
  – Sharing resources and spreading power
  – Creating online platforms for citizen participation in policymaking
  – Leveraging data for enhanced decision making and to create positive social impact
Data Explosion

- **Volume**: Exponential growth
- **Variety**: Diversity of sources
- **Velocity**: Millisecond decisions
- **Veracity**: Varying data quality

**The Digital Universe:**
50-fold Growth from the beginning of 2010-2020

Source: IDC, “The Digital Universe”
Data is the new Oil

• “The world’s most valuable resource is no longer oil, but data” – The Economist (2017)
• Vital resource that is pervasive (society, economy)
• Increases in value as it is refined
• Many by-products that can serve many purposes
• Source of power and wealth – power struggles to control
• Unregulated extraction and use causes problems
• Ethical issues are prevalent
Data is NOT like Oil

• Data is abundant, has many forms and is an infinitely renewable resource – volumes growing not depleting
• Data can be replicated and moved around the world at the speed of light and at very low cost
• Data becomes more useful the more it is used, rather than its energy being lost as heat or light
• Once processed or combined, data often reveals further insights and innovative applications
• Rules around how data is captured, used and reused are still evolving – privacy and confidentiality issues
THE KNOWLEDGE PYRAMID

DATA

INFORMATION

KNOWLEDGE

WISDOM
Data and the Social Sector

• Amount and importance of data is increasing
• Most advanced use of data is for business and commercial purposes
• Social Organizations are trying to do good
• Lack skills and resources to collect, understand and use data to make better decisions
• Data professionals with knowledge and skills want to become more engaged
• Worldwide ‘Data for Social Good’ movement
Data for Good

• Data for Good is registered as a Canadian not-for-profit organization. We now have close to 4,000 members through chapters active in Toronto, Ottawa, Montreal, Regina, Calgary, Edmonton and Vancouver.

• On Twitter the Data for Good chapters have the following handles; @Data_for_Good, @dataforgoodyyz, @Data4GoodOttawa, @dataforgoodyqr, @DataForGoodYYC, @DataForGoodYEG and @DataForGoodVAN.

• Our national website is at http://dataforgood.ca/

• We are part of an international movement that is utilizing data for social good including organizations such as; DataKind, Data Analysts for Social Good, Data Impact, Powered by Data, Data Science for Social Good and Data & Society Research Institute.
Data for Good - Calgary

• Putting data into action for social good in Calgary
• Started in Nov 2013 and now have 1000+ members
• Partnering to assist local nonprofit organizations
  • DataThons: intense weekend events, significant preparation
  • DataCorps: project-based volunteer assistance to nonprofits
• Arrange monthly Meetups and collaborate with organizations nationally & internationally
• www.meetup.com/Data-for-Good-Calgary/
• @DataForGoodYYC
Datathon - Calgary Distress Centre

- Internal data from Crisis Line and 211
- External data on weather, suicide statistics, etc.
- Objectives were formulated and grouped
  - Analytics and visualization
  - Spatial analysis
  - Text analytics
- Very successful DataThon held in May 2015
  - Insights generated and documented
  - Results used in discussions with key stakeholders
  - New data analyst role justified and placed in 2016 budget
Distress Centre – Distress is Complex

179,975 calls
Dec 5, 2011 - Jan 11, 2015

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<th>Addictions</th>
<th>Family</th>
<th>Financial Economical</th>
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Nine major categories of issues, each with a large variety of detailed categories:

- 72% - Mental Health
- 36% - Relationships
- 26% - Family
- 22% - Physical Health
- 20% - Financial
- 17% - Legal/Misc
- 14% - Abuse, Violence
- 9% - Addictions
- 1% - Sexual

All calls have more than one issue
Distress Centre – Call Volume is Cyclical

Daily volume pattern changes during the hour of the day and day of the week.

Call volume picks up after 9:00, peaks at 1:00-2:00 and gradually decreases until 11:00 pm.

Weekends volume is lower and peaks less during the day.
Distress Centre – Time-of-Day Call Analysis

Total Number of Calls per Year
Hours When Other Agencies are Open vs Closed

Total Calls per Year versus Emergent Calls

Emergent Calls: Total Number of Calls per Year

Harm to Others: Total Number of Emergent Calls per Year Based on Initial Assessment
### Distress Centre – Call Volume across City

![Map showing call volume across different wards](image-url)

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<td>32</td>
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<tr>
<td>14</td>
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</tbody>
</table>
Distress Centre – Spatial Analysis of 211 Calls
Data For Good – Calgary Women’s Emergency Shelter Datathon
November 18-20, 2016

Overview:

On Nov. 18-20th 2016, the Calgary Women’s Emergency Shelter (CWES) participated in a DataThon, organized by Data for Good. This 72 hour event brought together 50+ data volunteers to analyze CWES’ data dating back as far as 2011.

CWES had six objectives for the data analysis:
1. Shelter Length of Stay and Where People Go
2. Client Characteristics; Length of Stay and Optimal Outcome
3. Helpline
4. Impact of Economic Downturn & Fundraising
5. Natural Language Processing Team: All Clinical Programs
6. Geographic Visualization Team: Domestic Violence and Client Mapping & Donor mapping

External data
To provide context and answers to the questions above, CWES’ data was analyzed in the context of select data sets from the following sources:

- YWCA data
- Police data of Domestic Violence calls in 2015
- Calgary Homeless Foundation data
- HomeFront data
- StatsCan census data
- Price of Oil
- Unemployment rate
- Vacancy rates
- Lunar data
Objectives

What works for whom in what context?

Where does Domestic Violence Occur and where do our clients and donors live and work? (Objective 6)

Who is calling the CWES Helpline, when and for what services? (Objective 3)
How are CWES and YWCA responding to the diverse needs of our clients? (Objective 2)

For the clients who are not as successful, are we doing something different? Are their needs different? (Objective 1)

What do clients tell CWES has changed for them, what should we change about our programs? (Objective 5)
Length of Stay vs Age
Shelter Exit Survey (2011 to 2016)

What changes have you made?
- confident
- stronger
- support
- help
- better
- life
- independent
- children

What did you find most helpful?
- counsellors
- help
- staff
- support
- more
- childcare
- information
- counselling
- help
- great

What could we change?
- more
- help
- staff
- great
- everything
- need
- counselling
- children
- housing
- shelter

What changes do you feel you have made as a result of this program?
- 499 responses

What could we change to better meet your needs?
- 475 responses

What did you find most helpful?
- 621 responses
Visualization of Callers and Shelter Intakes
Datathon with Calgary Arts Development

• Friday Nov 23rd 7pm to Sunday Nov 25th 1pm

• University of Calgary – ICT Building – 5th Floor
Data Collaboratives / Data Collectives

• Huge potential to use open and shared data to engage with the community and drive social innovation

• Data Collaboratives are an effective form of partnerships that are emerging across the public, private and nonprofit sectors

• Many different types of Data Sharing initiatives and related projects

• Nonprofit and Social Sector organizations can collaborate by collecting and sharing data in support of their mission, service delivery and measurement of impact
Data Landscape
The Data Spectrum

- **Internal access**: Employment contract + policies
- **Named access**: Explicitly assigned by contract
- **Group-based access**: Via authentication
- **Public access**: Licence that limits use

- **Closed**: Sales reports, Driving licences, Medical research
- **Shared**: Twitter feed
- **Open**: Open licence, Bus timetable

Small / Medium / Big data
Personal / Commercial / Government data
Continuum of Information/Data

- **Personally Identifying Information**: Used primarily to deliver services
- **Linked Data**: Administrative Data often linked, used for research and evaluation
- **Open Data**: Statistical, non-identifying, population level, available for public use
Principles of Data Sharing

- Clear value proposition
- Clearly defined roles & responsibilities
- Scope & relevance of data
- Timeliness & frequency of data collection
- Standardization
- Confidentiality & trust
- Data security
- Accessibility
Data Collective Examples and Resources

- Crisis Text Line and Human Needs Index
- CommunityView and Peg
- Canadian Index of Wellbeing
- National Neighborhood Indicators Partnership
- Community Indicator Consortium
- Data Collaboratives
- Data Commons Blueprint - New Zealand
- Initiative to Support People and Communities by Transformative Use of Data – U.S.
79,066,651 messages exchanged since August 2013

Crisis Trends empowers journalists, researchers, school administrators, parents, and all citizens to understand the crises their communities face so we can work together to prevent future crises. Crisis Trends was originally funded by the Robert Wood Johnson Foundation.
OPEN DATA COLLABORATIONS

While we use data to make our products and services better—ie, make us a better company—we also believe our data can make a better world. There is almost no real-time open data on most mental health issues. And, very few data sets are as general (cutting across issues) or as large. Simply, Crisis Text Line has a unique and large set of data on teens and mental health that can (1) inform the public and media, (2) shape government and school policies, and (3) drive cutting edge academic research.

We offer two levels of open data collaborations.

1. AGGREGATE

Aggregate data is available to the public at www.crisistrends.org.

2. ENCLAVE

We work with the top researchers in the world to reduce harm to those in crisis, with a special focus on preventing suicide.

Have a general question about Enclave Data? See our Frequently Asked Questions. For questions about how we use and protect data at Crisis Text Line in general, see our Privacy Policy.

Are you a researcher? See our Application Guidelines. Highlights:

- Only faculty members or post-doctoral researchers affiliated with a university or research institution may apply for access.
- Researchers must obtain approval from a university or independent IRB.
- Given Crisis Text Line’s limited resources, not all applications that pass security and privacy requirements can be approved. Successful applications must indicate strong potential value to helping people in crisis.
**Human Needs Index – Salvation Army**

**CAN POVERTY BE MEASURED?**

Official national poverty data have long been calculated using a single dimension: income. At best, income statistics provide only a hazy picture of the actual conditions facing the hungry, the homeless, the unemployed, and the underemployed.

The Human Needs Index (HNI) introduces a new, multidimensional way to measure poverty and its effects. The key lies in the street-level knowledge of The Salvation Army, one of the country’s largest nonprofits delivering a safety net of services to those in need.

Published quarterly and developed from data amassed since 2004, the HNI provides the clearest illumination yet of trends in poverty and vulnerability. It is a critical new tool for policy makers, social services providers, and researchers. **Sign up for email updates.**

**INTERACTIVE TIMELINE**

**THE HUMAN NEEDS INDEX**

Choose Start Data: 2004  
Choose End Data: 2015  
State Data: National Data  
Time Increment: Yearly

![Graph showing Human Needs Index](image_url)
Welcome to the CommunityView Collaboration

Our goal is to provide you with relevant, reliable, local information and evidence to inform your planning, decision-making, and policy for Saskatoon and surrounding area.

We bring together data from different human service sectors and community based organizations, and the many resources, projects, initiatives and research that are contributing to the well-being of Saskatoon.

Ultimately, through community collaboration, we are Building Evidence for Action!

Help us Improve CommunityView Collaboration

The Community View Collaboration strives to continuously grow and improve. Please take a few minutes to fill in the CommunityView Collaboration User Survey.
Peg - Winnipeg

Tracking Key Issues

Explore our indicators, which highlight how we, as a city, are doing on key issues.

What is Peg?

Peg measures the health of our community year over year – in ways that count. We tally studies on everything from the health of babies born in Winnipeg right through to how many of them graduate 18 years later. We track how much garbage we take to the landfill and how often we give up our cars to take public transit. We calculate how often citizens volunteer and if we’re doing more or less of it. It’s here at Peg that Winnepeggers can learn how their life, their neighbourhood and their city is changing – for the good and the bad. Peg is a starting place for Winnipeg citizens, business owners and policy makers to learn the facts so you can lead change to create a better city for your children and their children.
Alberta Data Initiatives

- Alberta Information Strategy Office
  - Information Sharing Strategy
  - An Information Sharing Approach to Transition Planning: Within the Housing and Homeless Serving Sector

- Alberta Health / Alberta Health Services
  - Alberta Data Library for Health (formerly SUDP)
  - Interactive Health Data Application

- Alberta Open Government / Open Data / Service Alberta
  - GOA Open Data Portal and Enterprise Data Analytics

- Alberta Nonprofit Data Strategy
  - Leverage previous work of the Ontario Nonprofit Network
  - Alberta Culture & Tourism provided funding in March 2018
Nonprofit Data Strategy

Towards a Data Strategy for the Ontario Nonprofit Sector

July 2015
Alberta Nonprofit Data Strategy

• In March 2018 funding was announced by Alberta Culture & Tourism and the project was launched with CCVO serving as the fiscal agent.

• An Advisory Committee chaired by CCVO has been formed with representatives from the following organizations;
  • Alberta Culture & Tourism (Community Engagement)
  • Calgary Chamber of Voluntary Organizations
  • Edmonton Chamber of Voluntary Organizations
  • Service Alberta
  • Volunteer Alberta
Alberta Nonprofit Data Strategy

• The objective is to build awareness and engagement amongst a broad range of stakeholders in Alberta and to move towards expanding the acquisition, analysis, and utilization of data within the nonprofit sector.

• The project as outlined in a whitepaper will engage nonprofit and public sector leaders, determine sector priorities, and develop a roadmap that will serve as a foundation for the ANDS.

• Categories of nonprofit data will be addressed in this project in order of priority;
  1. Data about the sector
  2. Data held by the sector
  3. Data external to the sector
Alberta Nonprofit Data Strategy

• The objectives of the stakeholder engagement process will be to get input on;
  – Current state utilization of nonprofit data in Alberta
  – Partial inventory of datasets that are of interest to the sector
  – Prioritization of datasets, resource availability and areas for capacity building
  – Desired future state utilization of nonprofit data in Alberta

• A series of Stakeholder Roundtables will be held across Alberta.
  – Calgary session is Tues Sept 25th 1:30 – 4:00 PM
  – Details available through this link
Calgary Data Initiatives

• Calgary Thrives/SAGE Collaborative Data Partnership
  – PolicyWise for Children and Families (SAGE)
  – Calgary Thrives – Centre for Child Well Being at MRU
  – Calgary organizations serving children and families

• YYC Data Collective
  – Engaging Open Data Research - University of Calgary
  – Launch event held and data portal is now open

• Enabling Community Data Sharing for the ‘Enough for All’ Poverty Reduction Evaluation Framework
  – Catalyst Fund project through the Calgary Foundation
  – Final report including roadmap is available
Data Sharing Toolkit

• **Policies**
  - Privacy, Confidentiality and Intellectual Property
  - Governance
  - Data Management and Data Sharing Plan
  - Community Engagement

• **Processes**
  - Inter and Intra Organizational Data Processes across Data Lifecycle
  - Monitoring and Compliance
  - Reporting

• **Technologies**
  - Infrastructure and Technical Operations across Data Lifecycle
  - Security
  - Role-based access
  - Anonymization
  - Analytics and visualization tools
Data Sharing Resources

• **Community Data Program** - Enabling communities to measure and track local well-being the Community Data Program is a membership-based community development initiative open to any Canadian public, non-profit or community sector organization with a local service delivery or public policy mandate.

• **PolicyWise (SAGE – Secondary Analysis to Generate Evidence)** - A research paper was written on LAW & GOVERNANCE OF SECONDARY DATA USE - OBLIGATIONS OF NOT-FOR-PROFIT ORGANIZATIONS IN ALBERTA that was referenced in the article **Sharing Data and Protecting Privacy: A Case Study from Alberta**.
Data and Nonprofit Organizations

Growing recognition of the need to:

● collect data about programs and operations

● manage the data efficiently and effectively

● make data-informed decisions

● share insights with stakeholders and society
Why does data matter?

Measure Performance
Track key metrics that drive your business

Increase Efficiency
Optimize efforts that yield the best results

Glean Insights
Discover key learnings on what drives performance and why

Understand Donors
Identify who your best donors are and engage them
So...what is data?
There are two types of data

**Quantitative Data**
Numbers, things that can be measured and counted

**Qualitative Data**
Things that can be observed but not measured

**Discrete**
Based on counts, can only be certain values (e.g. Number of M&Ms in a bag)

**Continuous**
Data that can take on any value in a range (e.g. height, time, temperature)
Current State

UK national survey of over 200 social sector organizations revealed only:

- 57% collect the right data
- 43% have the right skills to analyse data in useful and meaningful ways
- 37% have data accessible to everyone in the organisation who needs it
Significant Barriers

• Lack of understanding on how to use analytics to improve what they do

• Lack of management capacity (competing priorities)

• Lack of internal skills

• Existing culture doesn’t encourage sharing
Data Management Maturity

Data Adoption Scale
Struggling  Functioning  Operating  Leading

HIGH

Reward

Unaware  Reactive  Proactive  Predictive

People, Process, Technology Adoption

LOW

Risk

HIGH
Data Lifecycle Framework

1. Capture
   - Collect, generate, acquire
   - Identify data types and classification
   - Reuse data from other stages

2. Store
   - Store structured data in databases
   - Store unstructured data in files and system
   - Establish and use data formats & standards

3. Process
   - Combine and integrate data
   - Data conversion and standardization
   - Extract, transform & load

4. Analyze
   - Analytics, visualization and spatial mapping
   - Predictive analysis
   - Conclusions & recommendations generated

5. Share
   - Range of informal sharing to performance reporting
   - Provisioning & dissemination
   - Develop data catalogues

6. Preserve
   - Destroy & discard data based on approved policies
   - Document management & audit plan
   - Retain description and classification

Data Governance

- Strategies, Policies & Guidelines
- People & organizational bodies
- Data Quality Processes

Description, Classification and Documentation

- Data Quality Standards and Procedures
- IT infrastructure, Security and Backup
CULTURE
Team approach, self-questioning, openness and sharing, governance.

DATA
Assets, Collection, sources, quality.

TOOLS
Storage, type and quality of tools and infrastructure.

USES
Range and extent of reasons for collecting and analysing data, and benefits and rewards reaped.

SKILLS
Internal capacity, roles and skill levels, access to external knowledge and expertise.

LEADERSHIP
Attitude, investment, plans for data development, alignment to business plans, capability.

ANALYSIS
Type of data analysed, techniques, presenting and communicating.
MAKING THE MOST OF YOUR DATA

Data literacy is key to an organization’s success

OPENNESS
How available is your data to others?

TYPE
What data will generate the information you need?

COMPLEXITY
How much data do you actually need?

DATA-DRIVEN CHARITIES ARE BETTER PREPARED TO MEET COMPLEX NEEDS
The Charity Data Process

Plan

Start with your business objectives which inform your data strategy. Once you have established a data strategy that meets your business objectives, follow these two steps:

Prepare

Gather all data that is relevant to your donors, your organization, and its mission. Establish a routine to keep data updated and fresh. Regularly seek out new types of data to improve your reporting.

Execute

With all that great data, you can develop short-term and long-term strategies, improve donor communications, accurately and quickly report successes and setbacks, and motivate your team towards your mission.

This project was made possible through the generous funding of the Ontario Trillium Foundation, an Agency of the Government of Ontario.
Download the exercise book and data action plan
Deciding which data to collect

1. Identify the questions you want to answer

2. Pinpoint the data you need to answer that question

3. Determine how or where you can capture that data

4. Specify the form the data should take (format, organization, etc)

5. Develop a system/process for collecting the data
Ethical Principles

• respect for human dignity
• respect for informed consent
• respect for vulnerable persons
• respect for privacy and confidentiality
• respect for justice (fairness and equity) and inclusiveness
• balance of harms and benefits (minimizing harm while maximizing benefit)

Resources from panel discussion on Data Ethics
10 PRINCIPLES OF GOOD DATA

01. Good data is accurate
02. Good data is accessible
03. Good data is helpful
04. Good data is understandable
05. Good data is measurable
06. Good data is honest
07. Good data is trusted
08. Good data is actionable
09. Good data is prescriptive
10. Good data is valuable

DATA DRIVEN NONPROFITS
Data Quality Considerations

• Problem #1: No standardization of data practices
• Problem #2: No training on data capture
• Problem #3: Data integrations are not set up properly

• Step #1: Undergo a data audit
• Step #2: Create/clarify data standards
• Step #3: Clean up existing data
• Step #4: Assign one person to “own” database management
• Step #5: Use APIs and custom integrations where possible
• Step #6: Institute ongoing training and education
Data Analytics Tools

• Python, R, MATLAB, Stata, SAS, SPSS, Minitab: Statistical & data analysis software programs in which users write and execute code or commands in order to organize, clean, analyze, and visualize data.

• Tableau, Microsoft Power BI, Qlik, TIBCO Spotfire: Data visualization software programs with primarily point-and-click interfaces that enable users to visualize data and share those visualizations in the form of interactive charts, graphs, maps, and tables.
Data Visualization Tools

1. Tableau Public - public version
2. Infogr.am - Infogr.am
3. DataHero - DataHero
4. Microsoft Power BI - Microsoft Power BI
5. Openheatmap - Openheatmap
6. Weave - Weave
7. Chartbuilder - Chartbuilder
8. Metabase - Metabase
9. Zoho Reports - Zoho Reports
DataBasic - easy-to-use web tools

• WordCounter analyzes your text and tells you the most common words and phrases.

• WTFcsv tells you WTF is going on with your .csv file.
DataBasic - easy-to-use web tools

- SameDiff compares two or more text files and tells you how similar or different they are.

- ConnectTheDots shows you how your data is connected by analyzing it as a network.
School of Data

• **Essentials**
  – Data Fundamentals
  – Data Cleaning
  – Exploring Data
  – Extracting Data
  – Mapping
  – Collecting data
  – Presenting Data

• **Thematic**
  – Aid Data
  – Budget Data

• **Campaigning**
Questions and Discussion

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