Excellence Through Quality Improvement Project (E-QIP)
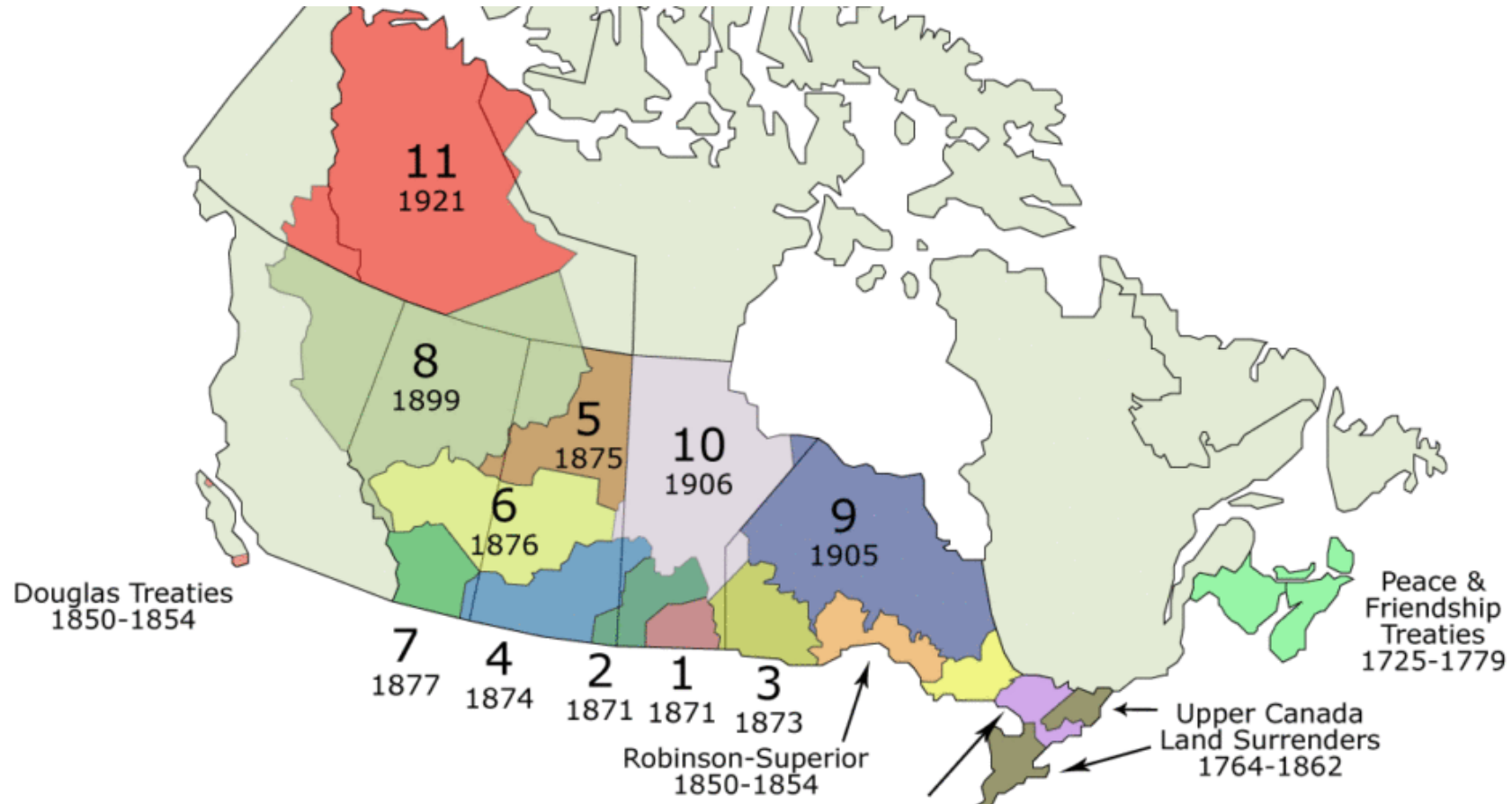
Unlock The Power of Data: The Data Journey Continues

February 1, 2024

Land Acknowledgement

Agenda

#1 Review Key Components from Webinar 1

#2 Data Literacy Component 3: **Manage**

#3 Data Literacy Component 4: **Apply**

#4 Data Visualization as a Means of Error Checking

#5 Data Quality at Pine River Institute

e-QiP

Excellence through Quality Improvement Project

Community-focused. Data-driven.

Purpose and Objectives

This webinar series is intended to enhance the knowledge and skills of participants to:

- increase their understanding of data and data literacy

- advance their abilities to analyze and use data to improve the planning and delivery of mental health and addiction services (MHA).

In today's webinar (the second in a series), participants can expect to:

- Learn about the importance of ensuring data quality, the many uses of data and how to assess and analyze.

- Hear from Dr. Laura Mills at Pine River Institute and their experience with ensuring data quality..

Presenters

- **Dr. Derek Chechak,** Director of Quality Improvement and Crisis Services, St. Leonard's Community Services, Brantford

- **Dr. Laura Mills,** Research and Evaluation Director, Pine River Institute

The Importance of Data Literacy

- Data literacy skills are designed to be used for application purposes: What are the data **telling** you? How are you **using** the data? What can be **done** with it?

- A critical skill for the 21st Century, as more and more people and organizations embrace data as a language to communicate with

- Use of data to inform local and regional planning, system efficiency and measurement-based care

- Use of data for integrated care, bundled service models and cross-sector planning (e.g., OHTs)

- Importance of an organizational culture that focuses on quality improvement and accountability

Remember, data is power

Data literacy is "the ability to collect, manage, evaluate, and apply data in a critical manner."
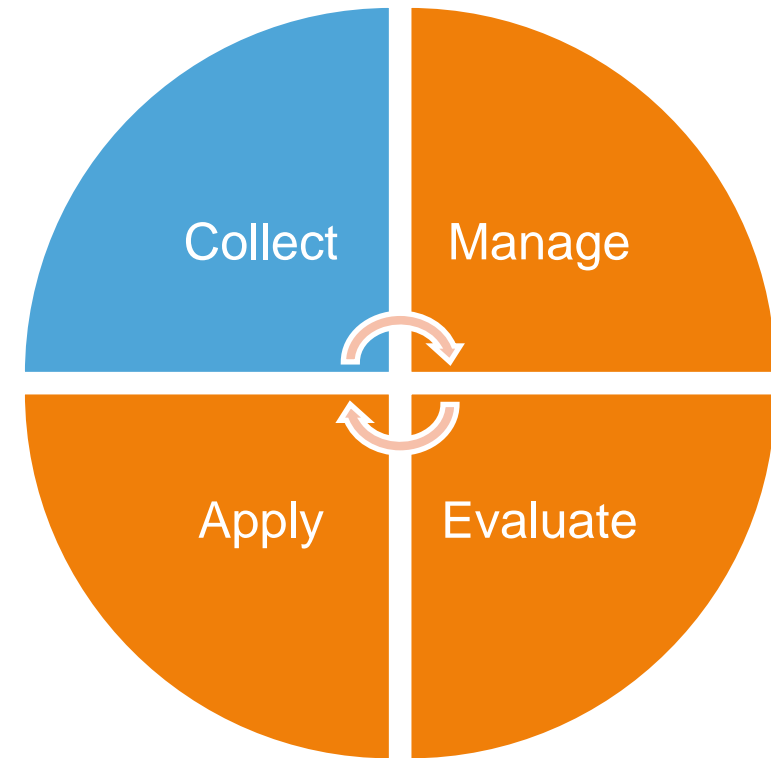
Collect

Manage

Evaluate

Apply

Ridsdale, C., Rothwell, J., Smit, M., Ali-Hassan, H., Bliemel, M., Irvine, D., Kelley, D., Matwin, S., & Wuetherick, B. (2015). *Strategies and best practices for data literacy education: Knowledge* synthesis report. Dalhousie University, Halifax, Nova Scotia. http://hdl.handle.net/10222/64578

Data Literacy Definition

Component #1: Collect

- "That which is measured, improves."
- Collect information in a routine and organized manner
- Must be findable and usable when you need it

Collect | Manage

Apply | Evaluate

Review of Key Components

From Webinar #1

| Data sources	Indicator selection	Reliability and validity	Data collection practices	Writing a data collection plan

Data Literacy Definition

Component #2: Manage

- Look at the quality of data and how this can be improved by data collection

- Ability to transform, summarize, or repurpose data for different audiences and purposes

- Create visualizations and outputs that are accessible to different audiences
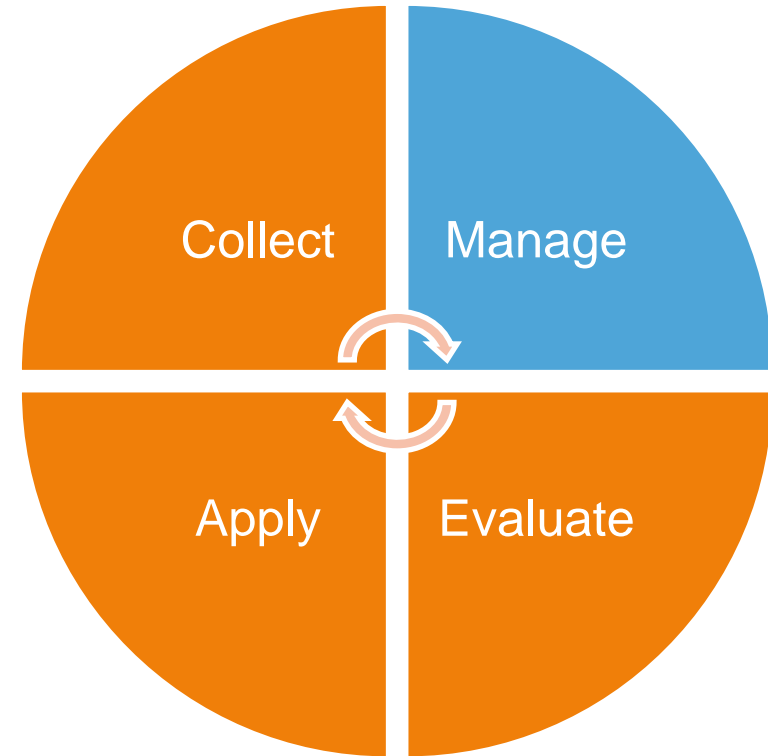
Review of Key Components

From Webinar #1

- Data quality practices
- Data/information quality frameworks
- Five dimensions of data quality:

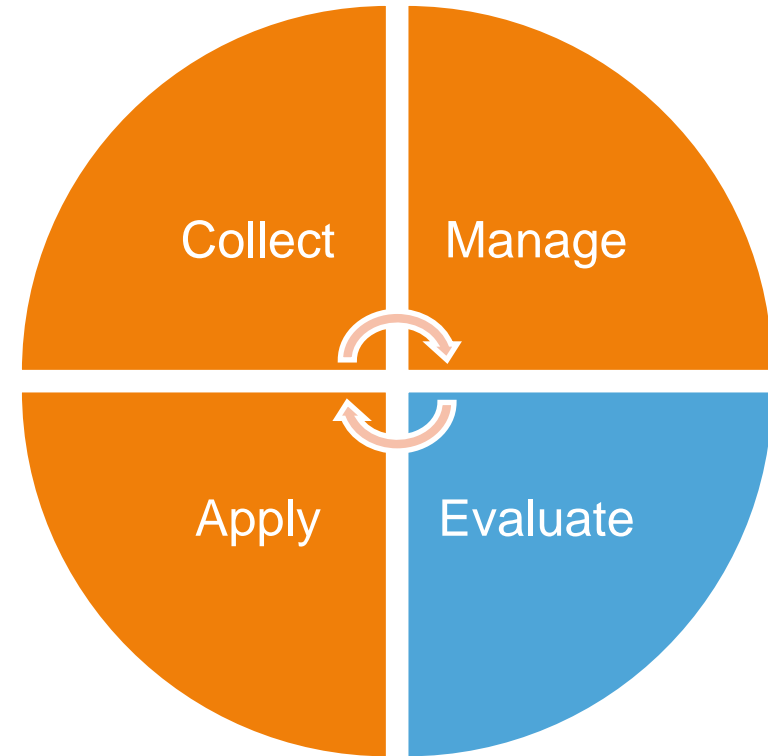| Accuracy | Timeliness | Comparability | Usability | Relevance |

Data Literacy Definition

Component #3: Evaluate

- Use technical skills to draw insights from the data that has been collected and presented

- Ability to translate the data into information that can be used to inform decisions

Picking up where we left off!

Collect

Manage

Apply

Evaluate

Steps in Data Analysis and Interpretation

What do you know already?

What is your question?

Assess the quality of your data

Perform the analysis

Summarize your findings

Disseminate your findings

Assessing Data Quality

- The Manitoba Centre for Health Policy, a world leader in the use of administrative data for research purposes, developed a data quality framework that can be used to conduct data quality evaluations based on common dimensions of data quality.

- Many repositories have data quality reports that identify missing data

- If not, data quality reports or data quality checklists can be produced
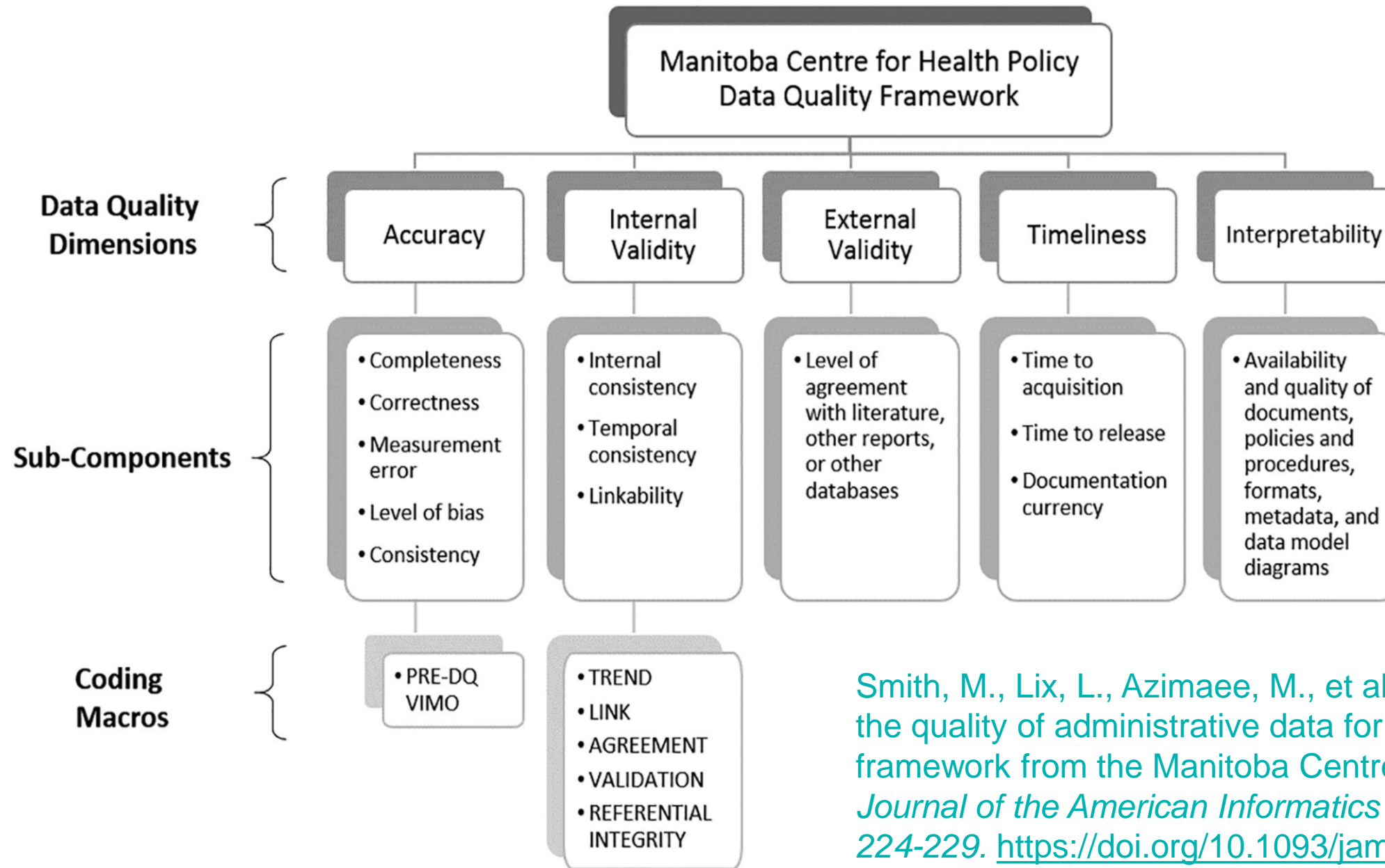
Smith, M., Lix, L., Azimaee, M., et al. (2018). Assessing the quality of administrative data for research: A framework from the Manitoba Centre for Health Policy. *Journal of the American Informatics Association, 25(3), 224-229.* https://doi.org/10.1093/jamia/ocx078

Data Quality Reports

		Report
	ⓘ	Missing Data
	ⓘ	Missing CDS Event Status
	ⓘ	Unknown CDS Event Status
	ⓘ	Low-Quality Data
	ⓘ	Suspicious Data
	ⓘ	Duplicate First Name and Last Name
	ⓘ	Duplicate DOB
	ⓘ	Duplicate Health Card
	ⓘ	Duplicate Phone Number
	ⓘ	Duplicate Address
	ⓘ	Detailed Client Events
	ⓘ	Client Contact List without Program History
	ⓘ	Client Case Note List without Program History
	ⓘ	Client Case Data List without Program History

	Title ▲
	DQ-01: Duplicates
	DQ-02: Inactive Admissions
	DQ-03: Inactive Program Registrations
	DQ-04: New vs. Carried Over Admissions
	DQ-05: Outgoing Referrals
	DQ-06: Program Registrations & Terminations
	DQ-08: Unknown Postal Codes
	DQ-09: Unknown Values From Admission Required Fields
	DQ-10: Wait List Stats

Sample Data Quality Report

MCRRT Casedata Quality Issues

2022-04-01 to 2023-03-31

8 data quality issues detected.

Casedata	Date	Worker		
▮	2022-04-07	▮	Missing time to hospital	
▮	2022-08-29	▮	Missing time to hospital	
▮	2022-09-22	▮	Teleported to scene.	
▮	2022-10-04	▮	Missing time to hospital	
▮	2022-10-04	▮	Teleported to scene.	On scene < 1 min.
▮	2022-11-22	▮	Missing time to hospital	
▮	2022-12-19	▮	Missing time to hospital	
▮	2023-01-06	▮	Missing time to hospital	

- Teleported to scene - time between dispatch and arrival is zero
- Took the long way - time between dispatch and arrival is over 12 hours.
- On scene 1 minute - time between arrival and departure is zero.
- On scene > 12hr - time between arrival and departure is over 12 hours.
- Missing time to hospital - PIC was taken to hospital, but no hospital arrival and/or departure time entered.
- Drove to hospital without client? - A hospital arrival and/or departure time was entered, but PIC was not taken to hospital.
- Missing taken to hospital reason - PIC was taken to hospital, but primary reason taken to hospital is blank.
- Missing admitted to hospital reason - PIC was admitted to hospital, but primary reason admitted is blank.

Data Quality Checklists

Example created by the Oak Ridge National Laboratory, a United States Department of Energy research facility.

Available at:
https://daac.ornl.gov/submit/qachecklist/

File Structure

- Check file integrity (e.g., checksum, file size, corruption)
- File organization is consistent and appropriate
- File are in a stable, well-documented format and can be opened with multiple applications
- Filenames are descriptive and consistent
- File header information is complete and consistent with documentation
- File properties (e.g., dimensions, grid size) are appropriate for the format

Documentation

- Data descriptions match the submission
- Data are clearly described
- Dimensions, variables, and attributes are well defined and follow standards
- Application of the data is described
- Methods, calibrations, and algorithms are detailed
- Quality assessment and controls are described
- Known issues and data limitations are clearly described
- Statements have in-text citations that match the list of references
- Research paper, preprint, or manuscript describing the data is provided

Data Values

- Value ranges and extremes are valid
- Units are appropriate and defined
- Data can be visualize using a plot or map
- Coded field, data flags, and missing values are defined
- Accuracy and precision is reasonable

Validity

- ☐ **External validity**: The extent to which an instrument or evaluation can generalized to different contexts, such as other populations or samples.
- ☐ **Internal validity**: The extent to which the study or instrument measures a construct accurately and is free of alternative explanations.

Reliability

- ☐ **Internal consistency**: The items in a data source (for example, an assessment) consistently measure the same topic (for example, ratios and proportional reasoning).
- ☐ **Inter-rater reliability**: Processes, such as training on coding interviews or scoring observations, are in place to ensure that data are collected consistently by multiple raters.
- ☐ **Test–retest reliability**: Individuals receive the same score if tested twice on the same assessment.

Timeliness

- ☐ The data are current and collected within an appropriate time frame.
- ☐ The results of data analysis and interpretation are available when needed.

Comprehensiveness

- ☐ The data include sufficient details or contextual information.
- ☐ The data can be meaningfully interpreted.

Trustworthiness

- ☐ The data are free from manipulation or entry error.
- ☐ The data are as free as possible from bias, and known biases are identified.
- ☐ Processes, including training of data collectors, are in place to address potential sources of bias and error.

Completeness

- ☐ The data are collected from all participants in the sample.
- ☐ The data are sufficient to address all evaluation questions.
- ☐ There is a sufficiently small degree of missing data.
- ☐ The results are generalizable to other contexts (for example, other schools, districts, or state education agencies).

Example created by the Institute of Education Sciences, the statistics, research, and evaluation arm of the U.S. Department of Education.

Available at: https://ies.ed.gov/ncee/rel/regions/central/pdf/CE5.3.2-Data-Quality-Checklist.pdf

"If E-QIP developed it, would you use a data quality checklist similar to the ones Derek presented?"

Data Literacy Definition

Component #4: Apply

- Ability to examine data that has been presented with a healthy skepticism, and use it to inform data-driven decision making

- Begins to get at the "so what?" question and how we will use the information
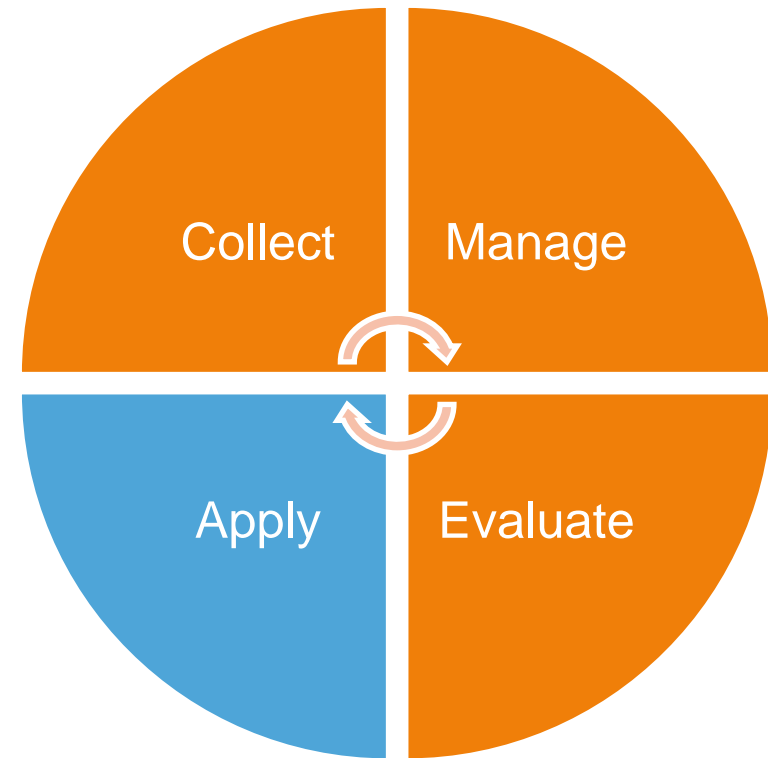
Steps in Data Analysis and Interpretation

What do you know already?

What is your analytical question?

Assess the quality of your data

Perform the analysis

Summarize your findings

Disseminate your findings

Summarize your Findings:
Data Presentation and Visualization

- Primary purpose is to tell the story – the story of the questions you asked, data you collected, and conclusions you drew from your analysis

- Presenting information visually can be efficient, effective, and impactful, but it isn't always necessary

- Choosing the right visualization depends on the type of data you are presenting, its characteristics, and how those interact when converting data into visual form

- When assessing data, a visual format can help but needs to be based on underlying question

Ways of Presenting Data

Method	Description
Text	Written material that describes numerical content
Table	Provides the same information, but allows the reader to focus solely on the numbers and interpret the information without having to read through a lot of text
Visual	Charts, graphs, maps, infographics, and dashboards are just some examples of how information can be displayed with very little text at all

Charts & Graphs
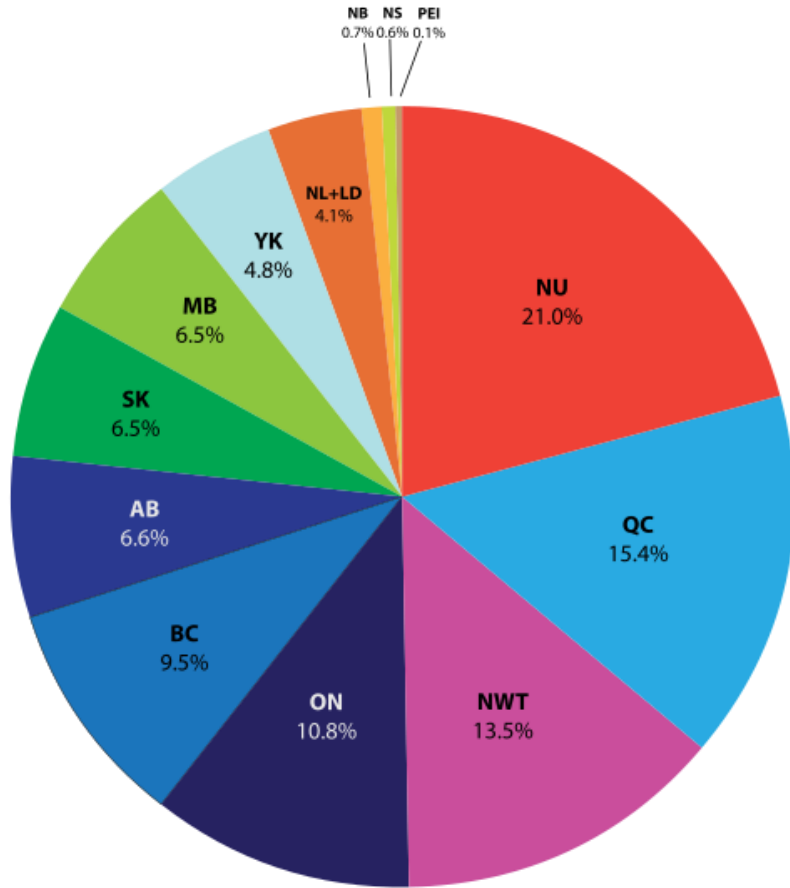
UK Prevalence of Common Mental Health Disorders (2016)
https://ourworldindata.org/mental-health
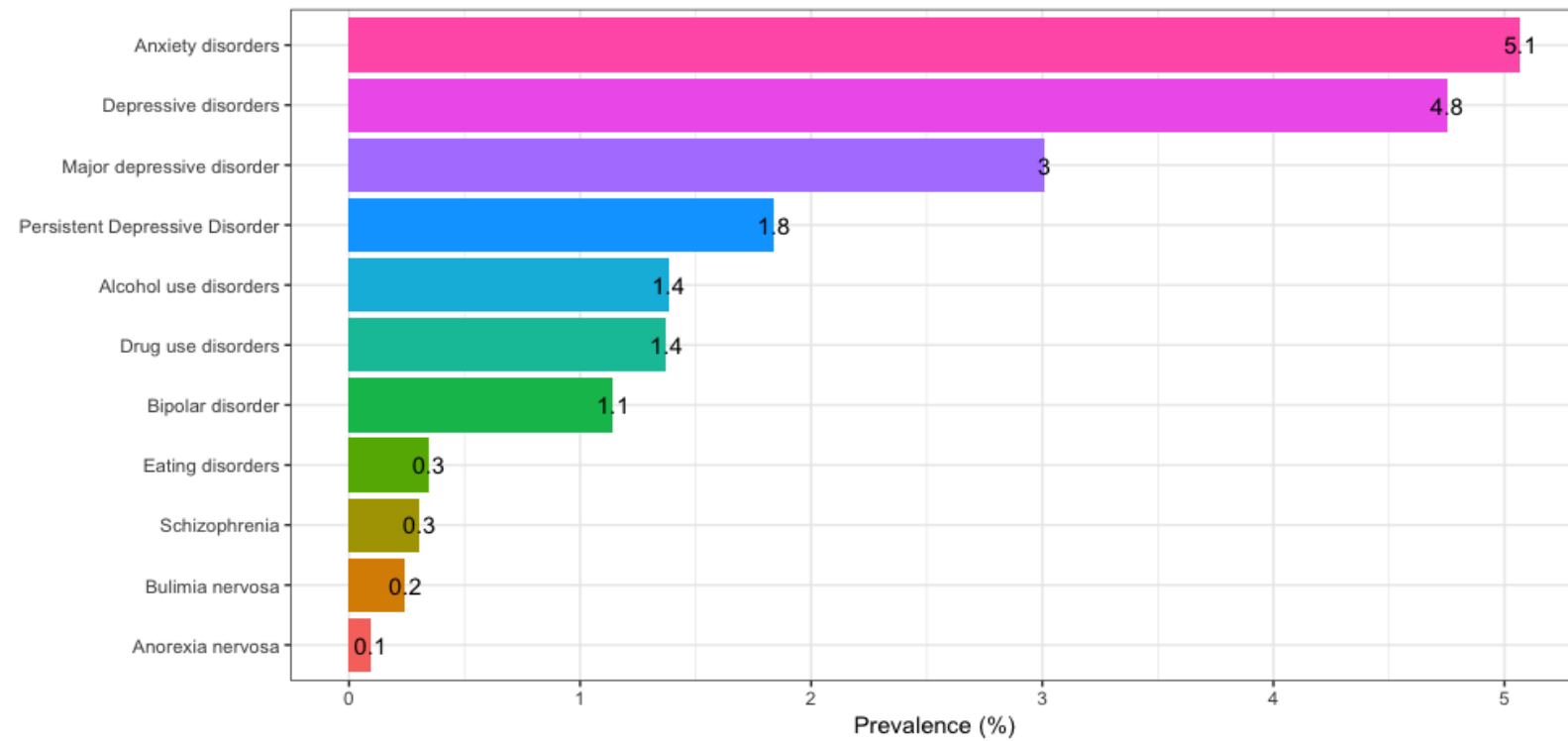
Infographic & Dashboard

- An **infographic or a dashboard** is a collection of images, charts, and text that gives an easily understandable overview of a topic

- They communicate information quickly and clearly by combining data and visual appeal

- Example of a template used for progress and outcome monitoring

CLINICAL FACTORS

Outlining goals, relationships, and progress between you and your treatment team. Percentages refer to ratings of completely agree or very much agree.

Within Treatment 45%

Discharge 85%
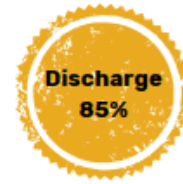
FREQUENCY OF SUBSTANCE USE WITHIN THE PAST 30 DAYS

Alcohol ■ Cocaine ■ Cannabis

Admission | Discharge | 1-Month | 6-Month
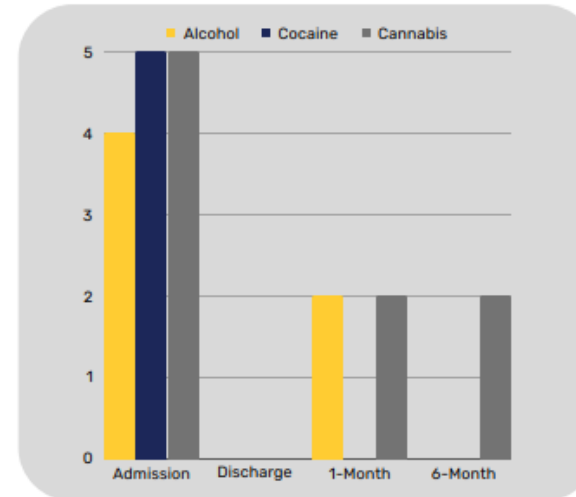
SEVERITY OF SUBSTANCE USE

Alcohol- Admission | Cannabis- Admission | Other Substances- Admission

Alcohol- 6-Month | Cannabis- 6-Month | Other Substances- 6-Month

HOPE
You reported a 70% increase in how hopeful you are about your life.

Mental Health
Your mental health rating remained the same.

Physical Health
You reported a 50% increase in your overall physical health.

Global Functioning and Quality of Life
Your difficulty ratings dropped by 75%. You still report ongoing difficulty with concentration.

Considerations when Presenting and Sharing Data

- Governing legislation and permitted uses depending on type of data and its purpose

- In Ontario, every organization must designate a "contact person" (privacy officer) to facilitate compliance with the *Personal Health Information Protection Act* (PHIPA)

- Informed consent regarding use and disclosure

- Business operation considerations (e.g., proprietary ownership of information and reputation)

- Resources from the Information and Privacy Commissioner of Ontario at https://www.ipc.on.ca/

Data Quality & Lessons Learned at Pine River Institute

Dr. Laura Mills, Ph.D. (QM)

Director, Research & Evaluation

PINE RIVER INSTITUTE

OLE students camp in Algonquin provincial park in the summer months

Jake, the clinician for our OLE program talks to some new students

The OLE program runs through all seasons, each one bringing its own unique challenges and triumphs.

DEMONSTRATING IMPACT WITH DATA

Mental Health Outcomes

Anxiety, Depression, & Somatic Symptoms by Completion & Time: Caregiver Report
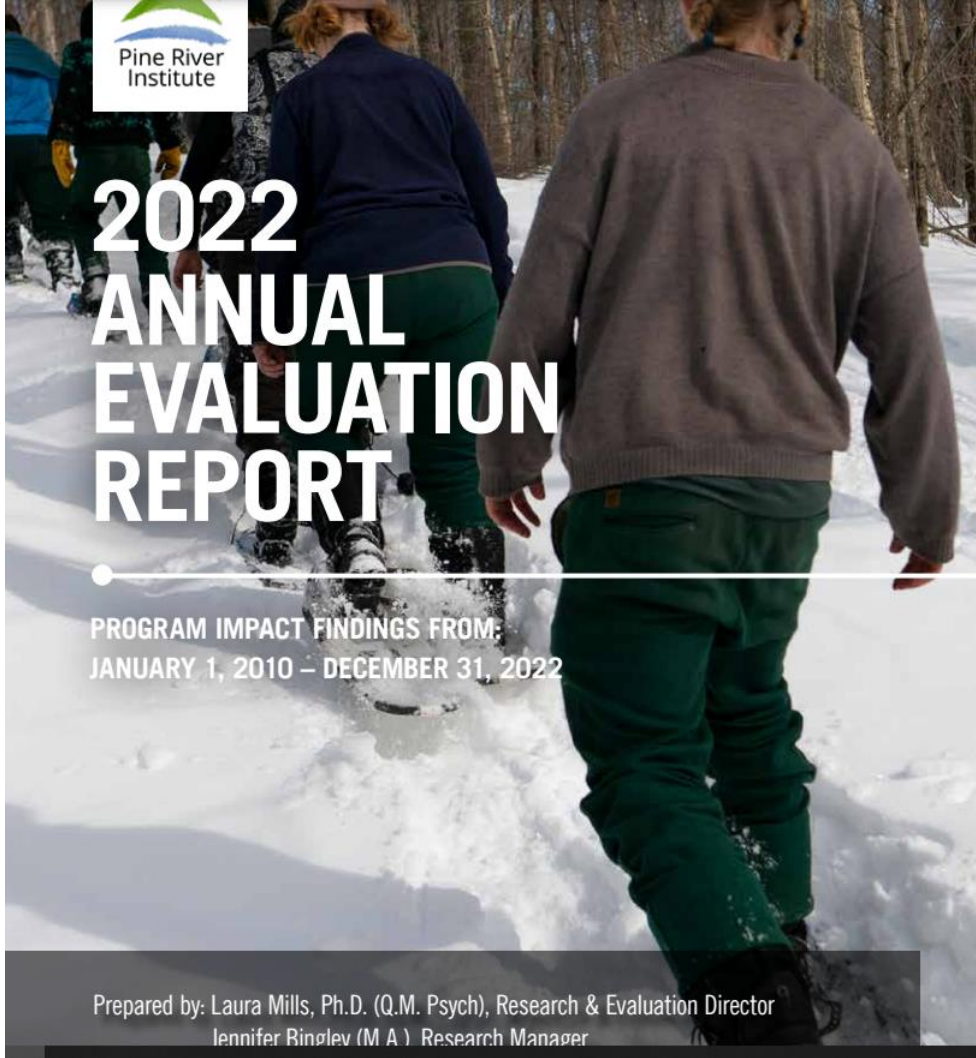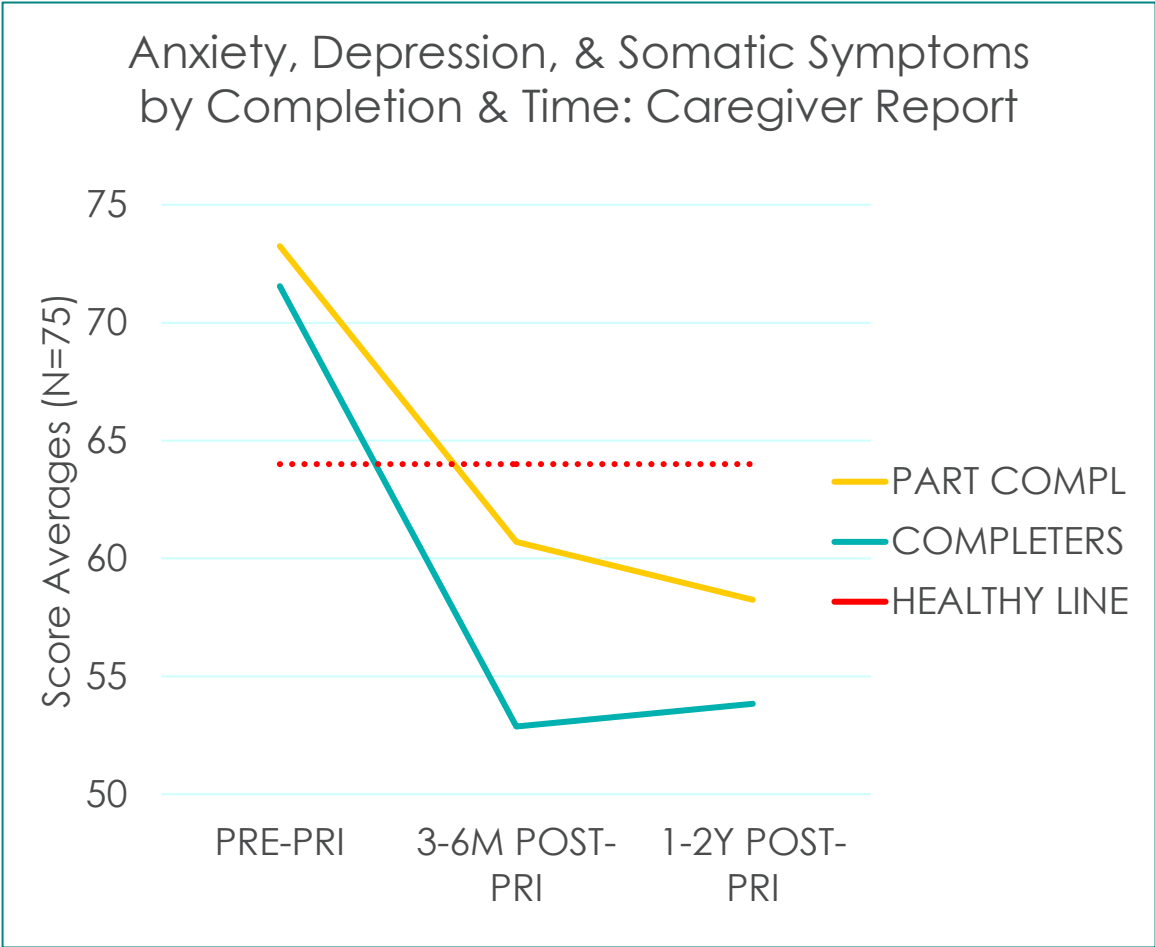
We use the Achenbach System of Empirically Based Measurement (ASEBA) to understand youth mental health and behaviour. This is a symptom scale, and symptom scores of **64 and over** indicate Clinically Problematic Functioning. Reduced scores indicate improved health (fewer symptoms).

Mental Health Symptoms. Caregiver reports indicate that, on average, youths enter PRI with clinically problematic anxiety, depression, and somatic issues (aches, pains, illness without medical reason). These symptoms reduce to healthy levels after PRI and these improvements are maintained 1-2 years post-program. The change over time is significant for completers and partial completers, however, for scores at the 3-6M post-treatment time, completers are healthier than partial completers.

Achenbach, T. M., & Rescorla, L. A. (2001). *Manual for the ASEBA School-Age Forms & Profiles*. Burlington, VT: University of Vermont, Research Center for Children, Youths, & Families.

Change over time is significant ($F_{(74)}$ = 115.7, p < .001, with large effect size η^2 = .61)
Groups do not change differently over time ($F_{(74)}$ = .8, p = .38, η^2 = .04)
Cs healthier than PCs at 3-6M Post-PRI ($F_{(74)}$ = 5.3, p = .02)

Rule Breaking Outcomes

Aggression & Rule-Breaking by Completion & Time: Caregiver Report

Score Averages (N=75)

PART COMPL
COMPLETERS
HEALTHY LINE

PRE-PRI   3-6M POST-PRI   1-2Y POST-PRI
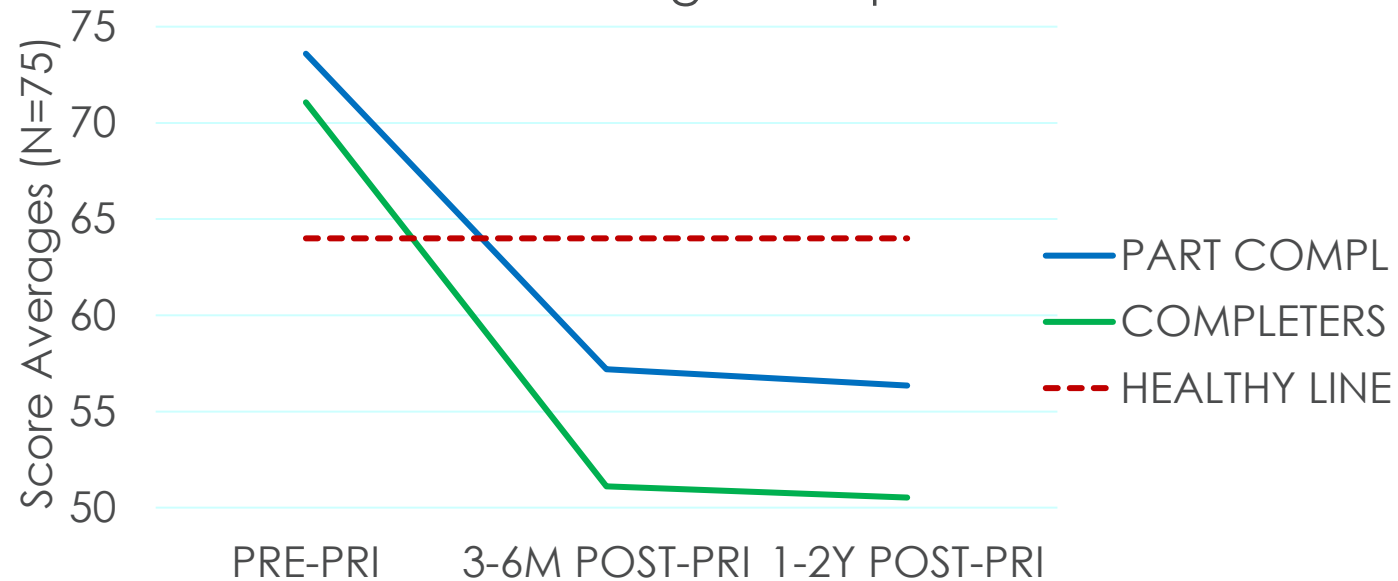
During the program, what helped you feel supported?

Having a staff team and peers who are attuned to me has really helped me feel supported. Going into therapy sessions where I felt safe and seen also really helped me feel supported. I think overall just having that small container to hold me while I figured my stuff out really helped.

SUBSTANCE USE

Caregiver-Reported Hospital Visits in Past Three Months by Time and PRI Completion

	Pre-PRI	3-6M Post-PRI		1-2Y Post-PRI		3-4Y Post-PRI	
	N=241	C (N=97)	PC (N=45)	C (N=73)	PC (N=25)	C (N=49)	PC (N=15)
Substance Use	19%	2%	18%	0%	13%	4%	13%
Mental Health	24%	5%	22%	4%	16%	14%	17%
Other	13%	4%	9%	7%	10%	6%	0%

Tell us a program experience that stood out for you as a 'moment of change' or 'turning point'?
In process group I had a new pattern of thinking come up and I truly felt open to feedback for the first time.

Youth, end of program

[1]The reasons for hospitalization are complicated; 'overdose, injury, or accidents' might be indicative of substance use and/or mental health issues. Respondents may indicate mental health and addiction issues for the same hospital visit.

LESSONS LEARNED: PLAN YOUR QUESTIONS!!!

Caregiver-Reported SU Hospital Visits

OLD QUESTION:
'In the past 3 months, has your child visited a hospital for substance use reasons'

YES
NO
Don't Know

NEW QUESTION:
'When was the last time, if ever, your child visited a hospital for substance use reasons'

LAST MONTH
2-3 MONTHS AGO
4-12 MONTHS AGO
1+ YEAR AGO
NEVER
DON'T KNOW

STANDARIZED TOOLS
McMaster Family Functioning Device, General Functioning Sub-Scale

Ratings of Family Functioning by Moms (n=87)
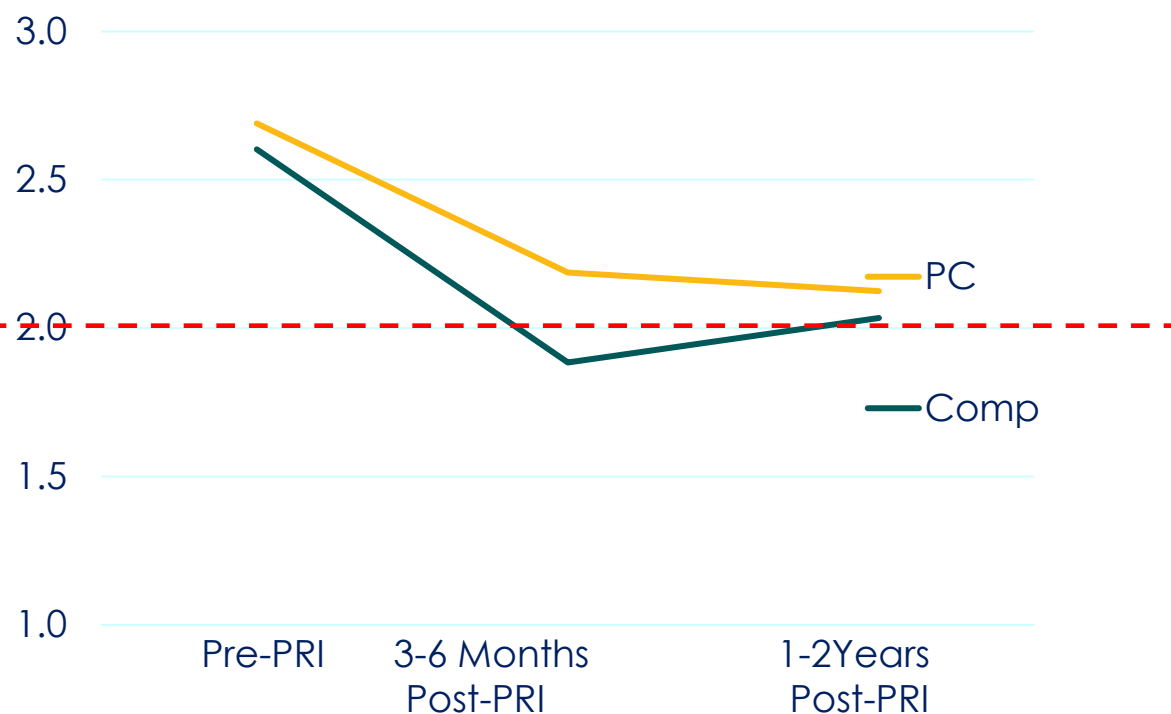
Ratings of Family Functioning by Youths (n = 26)

EQUITY, DIVERSITY, INCLUSION TRUMPS 'CLEAN' DATA NEEDS

RELATIONSHIP STRUCTURES QUESTIONNAIRE FOR STUDENT

These questions are designed to assess the way in which you mentally represent important people in your life. Please indicate the extent to which you agree or disagree with each statement by circling a number for each item.

Please answer the following questions about your MOTHER or a MOTHER-LIKE figure.	Strongly Disagree					Strongly Agree	
It helps to turn to this person in times of need.	1	2	3	4	5	6	7
I usually discuss my problems and concerns with this person.	1	2	3	4	5	6	7
I talk things over with this person.	1	2	3	4	5	6	7
I find it easy to depend on this person.	1	2	3	4	5	6	7
I don't feel comfortable opening up to this person.	1	2	3	4	5	6	7
I prefer not to show this person how I feel deep down.	1	2	3	4	5	6	7
I often worry that this person doesn't really care for me.	1	2	3	4	5	6	7
I'm afraid that this person may abandon me.	1	2	3	4	5	6	7
I worry that this person won't care about me as much as I care about him or her.	1	2	3	4	5	6	7

Please answer the following questions about your FATHER or a FATHER-LIKE figure.	Strongly Disagree					Strongly Agree	
It helps to turn to this person in times of need.	1	2	3	4	5	6	7
I usually discuss my problems and concerns with this person.	1	2	3	4	5	6	7
I talk things over with this person.	1	2	3	4	5	6	7

	Disagree					Agree	
It helps to turn to this person in times of need.	1	2	3	4	5	6	7
I usually discuss my problems and concerns with this person.	1	2	3	4	5	6	7

THINK THROUGH HOW THE DATA MAY UNDER OR OVER-ESTIMATE THE TRUTH

Caregiver Missed Work. In Ontario, working adults miss about 5% of their work time (3 days every 3 months). Before coming to PRI, caregivers missed up to three times this, <u>to support their youth</u>, excluding time they took of for other reasons.

Missed Number of Days' Work in Recent 3 Months for Parents Post-PRI by Time and PRI Completion

	Pre-PRI	3-6M Post-PRI		1-2Y Post-PRI		3-4Y Post-PRI	
		C	PC	C	PC	C	PC
N (moms) / (dads)	250 / 216	116 / 95	54 / 45	74 / 57	28 / 24	53 / 46	28 / 18
Moms avg days missed work	16%	<1%	4%	2%	2%	<1%	1%
Dads avg days missed work	8%	2%	2%	<1%	<1%	<1%	1%

*Note 1: 'Missed work' may be conceptualized differently since the COVID-19 pandemic
*Note 2: Some indicate they have had to leave their jobs to support family and thus have not 'missed work'. This indicator, therefor, may be underestimated.
*Note 3: Some respondents indicate that they may not miss entire days to support their child but may leave early or be unable to work effectively

[1] *For moms, difference in missed work between completers and partial completers is significant, but the magnitude of the difference is small ($F_{(168)} = 5.0$, $p = .03$, $\eta^2 = .03$).*

DISPLAY WITH INTEGRITY!
Example: Treatment Progression Rates
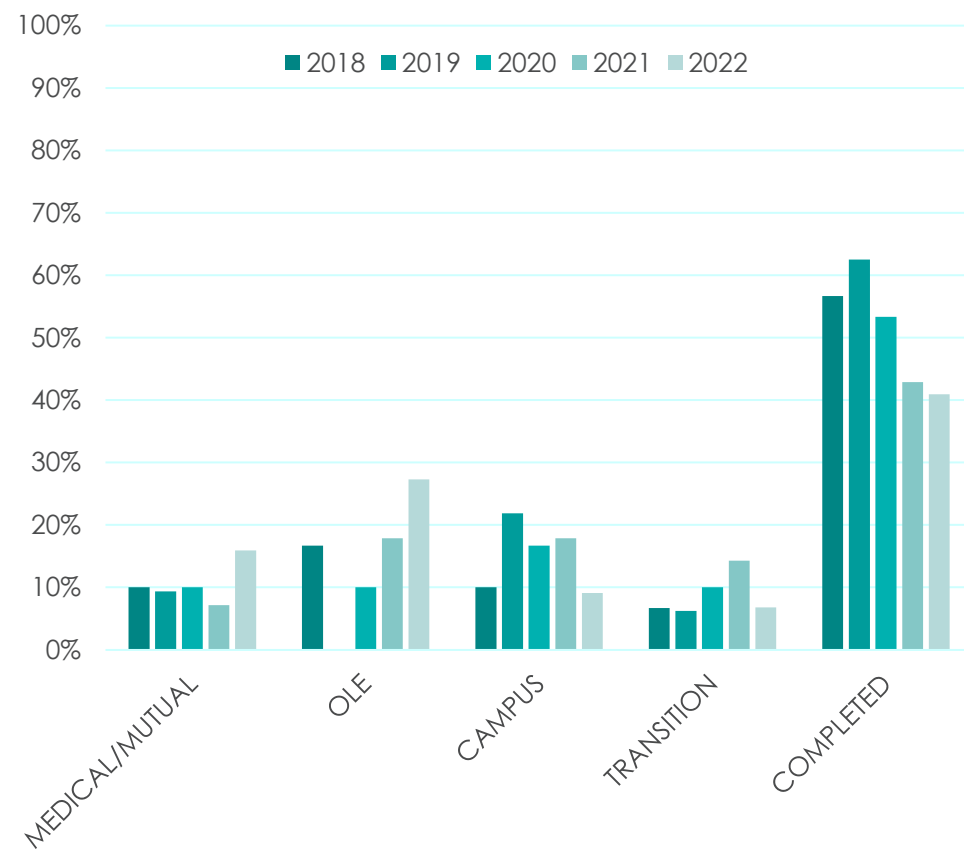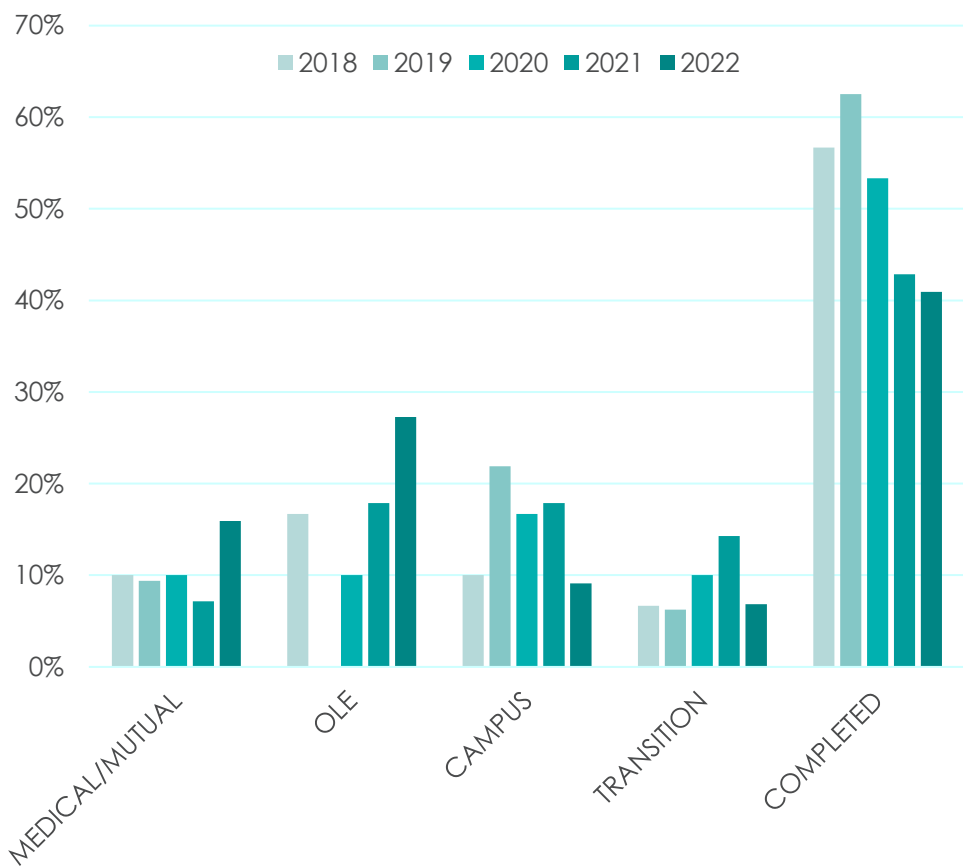
What was your greatest accomplishment during the program?

I am now happy and confident in myself and I am ready to take responsibility in living a healthy lifestyle. I was also able to get my high school diploma and I am starting college in September.

Youth, end of program

SOME OF THE QUESTIONS WHOSE ANSWER IS **ALWAYS** – YOU NEED TO UNDERSTAND WHAT WILL WORK FOR YOU!

What software should I use?
(@ PRI, we use BestNotes & OutcomeTools –link client records to outcomes data)

What tool should I use?
This is the BEST place to start to get engagement across your agency / business. ASK the stakeholders who know WHAT CHANGES, WHEN.

How long before we can have an evaluation report?
Start as soon as you have honest data that tells your story from as unbiased a perspective as possible.

What will it cost to DO ongoing evaluation?
It's expensive. It's a LOT of work. It takes special skillset. It's worth it.
We should not expect the trust of our clients, families, funders if we can't demonstrate our impact. That takes a dedication to quality data.

"What data collection tools is your organization using to assess your clients' clinical conditions and service needs?"

"Are these tools standardized or developed in-house?"

Questions and Curiosities

Please provide your feedback!

Unlock the Power of Data

Elevate your Data Literacy with the Excellence Through Quality Improvement's Webinar Series

We are excited to launch the third webinar for E-QIP's Data Literacy series. Join us as we continue the journey into the world of data literacy, tailored specifically for community Mental Health and Addiction (MHA) service providers. This webinar series is meticulously crafted to 'E-QIP' you to harness the full power of data, to make informed decisions and optimize service delivery.
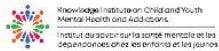
Webinar #3: Unlocking the Power of Data 103

SAVE THE DATE!

April 4ᵗʰ 2024

Governance and Leadership Training

Our governance and leadership training on quality improvement (QI) and measurement is delivered to senior leaders and/or the board of directors of an organization. We provide a general overview of QI, data-driven decision making and how these areas can support organizational and strategic priorities. We focus on the role of senior leaders in championing, guiding and building a quality culture. The training is customized to your organization's needs based on your objectives and where you are in QI culture and in performance management

Booking well into 2024!

To schedule a training session or If you would like more information about Governance and Leadership training options, please contact

The E-QIP team quality@e-qip.ca

e-QIP

Excellence through Quality
Improvement Project

Foundations to QI (IDEAS) e-Course

- ✓ Self-guided curriculum based on the Model for Improvement
- ✓ Incorporates a variety of learning tools including an MHA-based case study, videos, learning activities and knowledge checks
- ✓ Document your learnings in your personal course workbook
- ✓ 8-12 hours to complete
- ✓ Easy to enroll
- ✓ FREE!

CLICK HERE TO REGISTER!

NOW AVAILABLE IN FRENCH!