Panel 3
Institutional & Student Data

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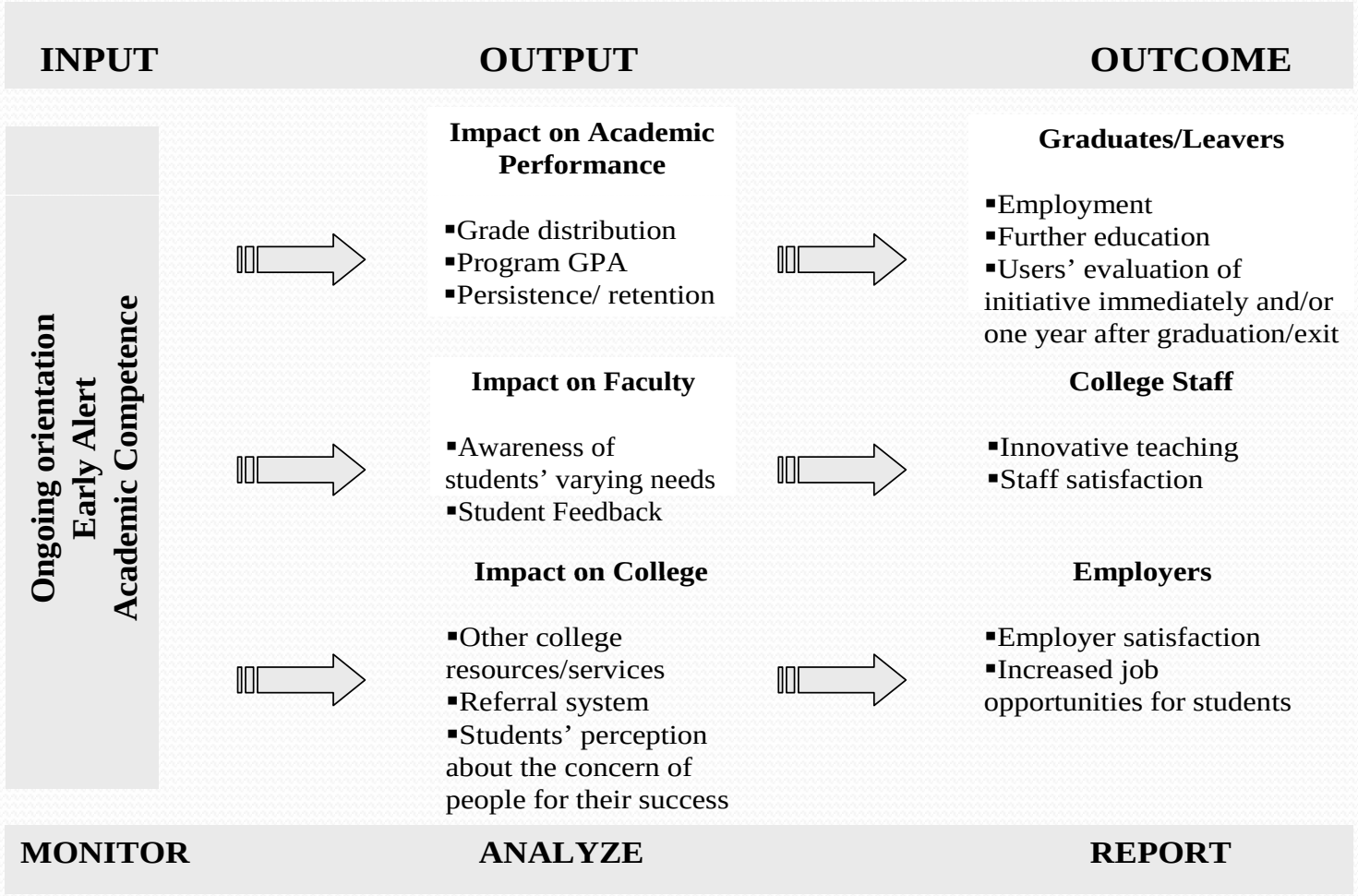
Gathering data/variables

- Student number, name
- Duration of intervention
- Date
- Time
- Frequency

Database Creation / Maintenance

- Avoid paper copies
- Online data gathering
- Multiple entries/variables

Student Success Program Research Framework (preliminary)



Data Collection Challenges Impacting Research

COLLEGE

- Student Information System
  - Limited reporting capacity
  - Multiple stakeholders entering and storing data - Data errors

Student Success Program Evaluation

- Determine what data will tell us what we want to know
- Decentralized
- Lack of ability to control the variables, don't control the program
- Not a consistent prescribed program
- Lack of policies and documentation:
  - Naming conventions for Student Success Program activities (program-specific service/activity vs college-service)

Data Availability in Ontario

- Wealth of data exists
  - Within PSE institutions
    - Student level
      - Admissions, performance, use of student services, financial need/scholarships
    - Program/Institutional level
      - Policies, requirements for graduation, instructional support
  - Other Organizations
    - Application Centres/ Student Aid Organizations
    - High schools/ school boards/ ministry of education

Issues in Using These Data

- Gaining Access
  - Privacy, technological, political issues
- Can one data source be used in isolation?
  - **NO** (most cases)
    - Source is incomplete
- Administrative v. Research-Ready Data
  - **NOT** the same

Gaining Access

- Political Considerations
  - Provincial
  - College v. University wariness
    - University 1 v. University 2 wariness
      - College 1 v. College 2 wariness
  - Often results in providing access project x project basis
    - Results in efficiency issues and potentially limits research
- Privacy Issues
  - Finding that needle in the haystack concern
    - Is this a lack of understanding research or a valid concern?

Is One Data Base Sufficient?

- Example – Applications to PSE
  - High school grades
    - Program Choices
    - PSE Institution Choices
    - Registration Decision
  - No Information
    - High School Characteristics
    - PSE tuition changes,
    - Other polices that may affect PSE applications
  - Limited Information
    - Student Background Characteristics
  - Use of other sources
    - Not perfect – but immensely improves data for research projects

Administrative Data v. Research-Ready

- Common pitfall
  - Take data as is and not consider data quality/missing data issues
- Simple Problems
  - Missing Gender
  - Miscoding of information in one format but not the other
- More intricate Problems
  - Multiple grades for same course
  - Census data suppressed for neighbourhood
  - Not having all required courses needed for admission
  - Changes in high school course curriculum
  - Synthesizing similar information across institutions

Research-Ready: Is there only one way?

- Simple Answer: No
- Project v. Universal Approach
  - Bigger issues are encountered by all projects
    - Currently, there is a bit of re-inventing the wheel for each project
      - And the wheel does not always look the same
- From a technological & practical perspective
  - Build a single research-ready data set
    - Accessible by all researchers
      - Contains documentation and allows each researcher to make his/her own judgment call
      - Continually updated to provide the most recent data that are available

The Causal Effects of Student Services Projects

"Teenage Boys Who Eat Fish At Least Once A Week Achieve Higher Intelligence Score"
***Science Daily* (Mar. 10, 2009)**

- Make students at your school eat fish. It will improve their academic performance.

The Causal Effects of Student Services Projects

- 1: "Boys who eat fish are smarter than boys who don't"

  is not the same statement as

- 2: "Making boys eat fish will make them smarter"

- Statement 2 implies causality, while Statement 1 only implies association.

- Using data to evaluate a treatment produces 1, not 2.

The Causal Effects of Student Services Projects

- Will your intervention cause improvements in outcomes? How can we use data to evaluate the intervention?
- The ideal evaluation of causality: observe your participants with and without the intervention.
- The "Missing Counterfactual Problem"
  - We are forced to compare two different groups of people: those who participated and those who did not.

The Causal Effects of Student Services Projects

- Fundamental Problem: individuals and/or institutions choose which group to be in.
- If these groups differ in ways that affect the outcome being measured (besides participation), we have a problem.
- Critical that we understand the selection process.

The Causal Effects of Student Services Projects

- But wait! We can use the participants as their own controls … just observe them before the intervention. The counterfactual isn't missing after all!

- Maybe.
  - data requirements are greater.
  - participation decision may still be endogenous.
  - still need to be careful: difference-in-differences.

The Causal Effects of Student Services Projects

- What is the solution?

- Randomized assignment in a controlled experiment is the gold standard of evaluation.
  - Control and treatment groups will not differ in any systematic way except the treatment.
  - Usually not possible or desirable.

The Causal Effects of Student Services Projects

- Without randomized experiment there is no definitive solution, just attempts at getting better answers.
  - Regression
    - We have moved on from OLS, controls can never be complete.
  - Newer Approaches
    - Natural Experiments/Instrumental Variables
    - Regression Discontinuity Design
      - Need a bit of luck

The Causal Effects of Student Services Projects

So what can you do in your evaluations?

1. Keep the issue in mind
   - Don't make naïve comparisons.
2. Anticipate the need to evaluate from the outset.
3. Try to understand the selection process
4. Understand possible solutions
5. Call a doctor.

Thank You

Questions