Finding Credible Program Impacts

June 23, 2011

Webinar for OAH & ACYF Teenage Pregnancy Prevention Grantees

John Deke

MATHEMATICA
Policy Research, Inc.

Striving for the "Gold Standard"

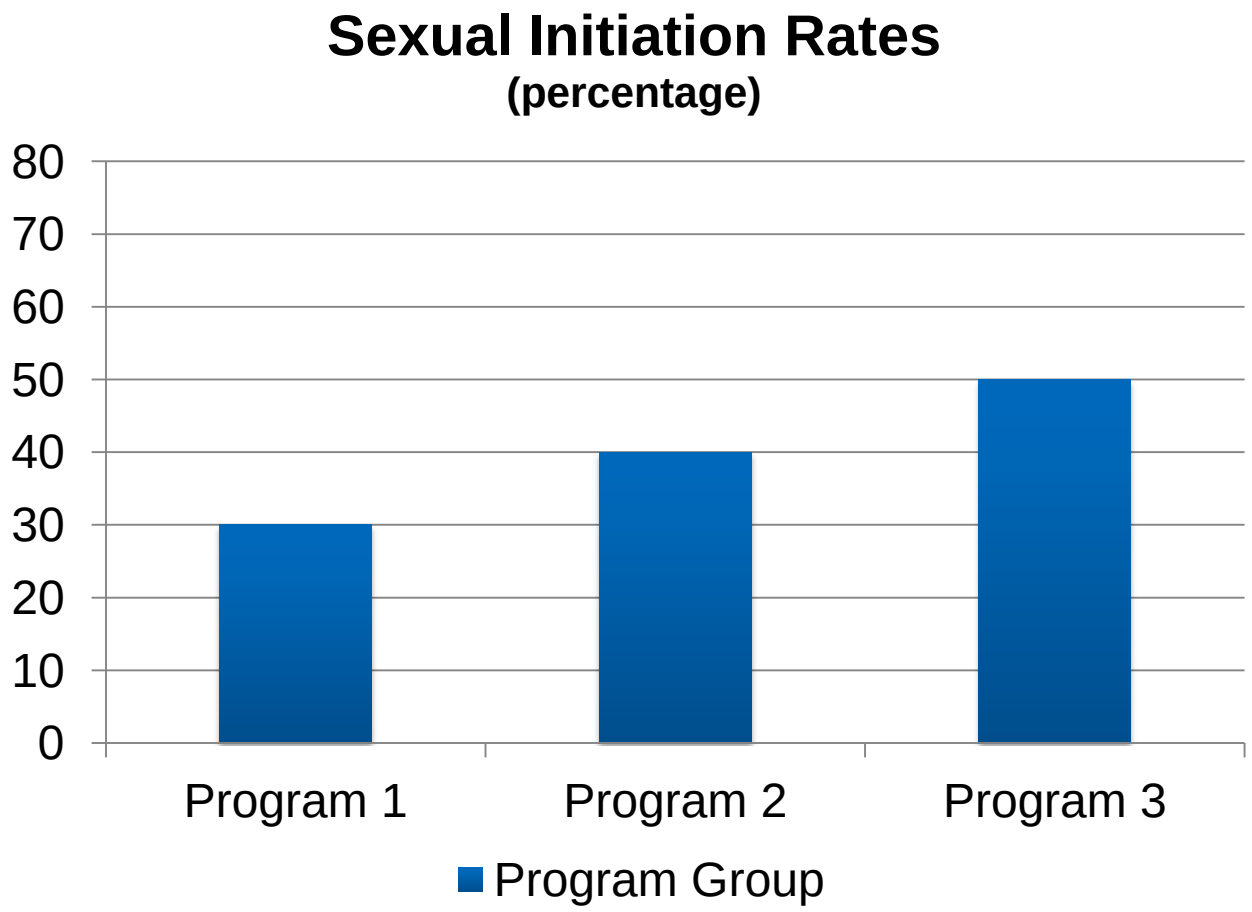
- Studies based on RANDOM ASSIGNMENT can produce highly credible, persuasive evidence of a program's effectiveness
- Not automatic – both program implementation and evaluation implementation are keys to success, and both types of implementation rely on program staff
- Two key objectives:
  - Program implementation: maintain the contrast between the treatment and control groups
  - Evaluation implementation: preserve the integrity of random assignment

Maintaining the Contrast

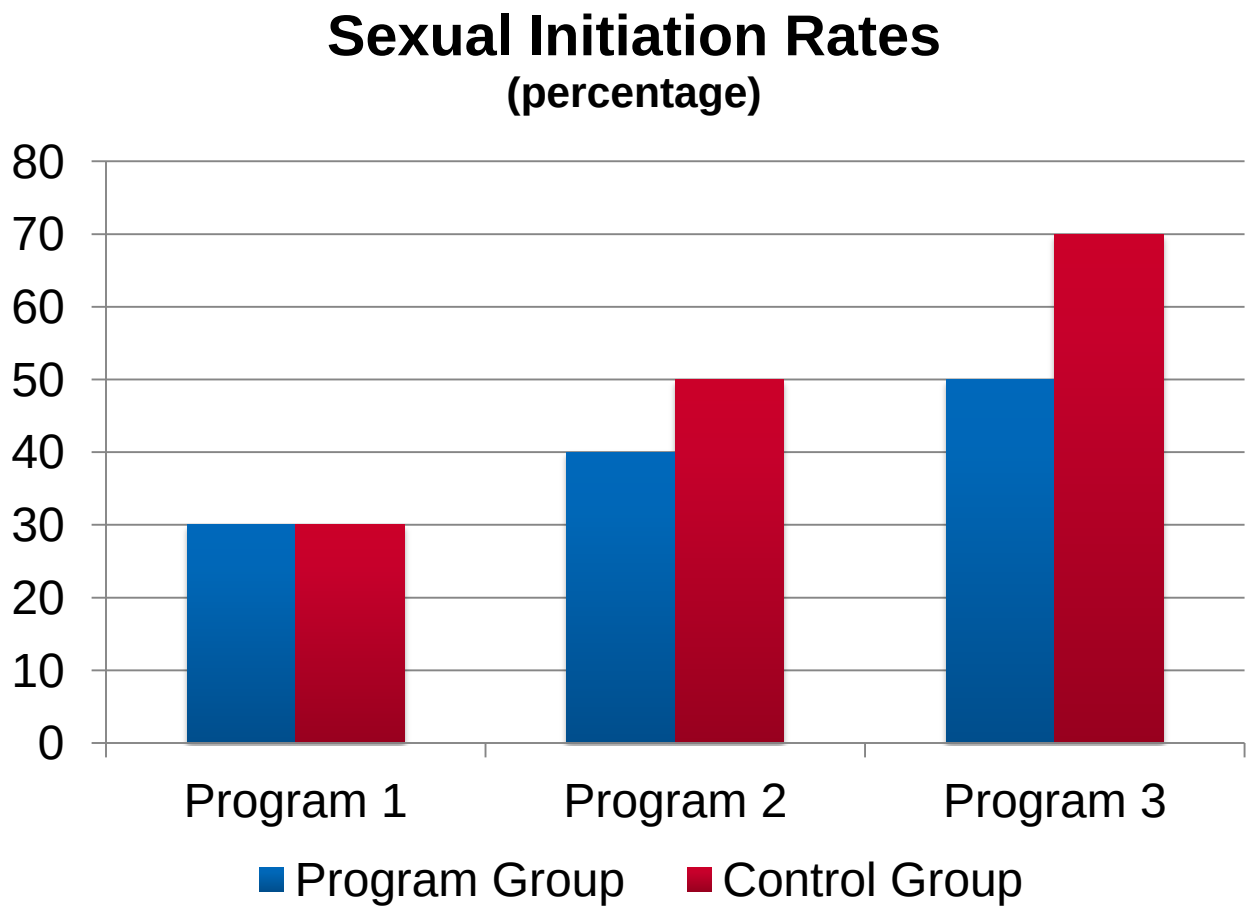
Where Impacts Come From

- An impact is the difference in average outcome between the treatment and control groups
- A difference in outcomes results from a difference in experiences
- No difference in experiences, no impact

Impacts Example



Impacts Example: +Control Group



Maintaining the Contrast

- **Program must be implemented as intended**
- **Students in the treatment group must actually participate**
- **Students in the control group must NOT participate in the program being studied**

Once Randomized, Always Analyzed

- Students in the treatment group who do not participate ("no-shows") cannot just be "thrown out"
- Same for students in the control group who do participate ("cross-overs")

Preserving the Integrity of Random Assignment

Perspective of a Skeptic

- Important research will be carefully scrutinized
- Must convince the “reasonable skeptic”
- The burden of proof rests with the evaluator, not the skeptic

Threats to Integrity

- **Assignment becomes purposeful, not random**
- **Missing data, for non-random reasons**

Assignment Must be Random

- **If assignment to treatment is not random, then we do not know that the treatment and control groups are identical**
- **Anything that changes who is in the treatment and control groups could introduce bias**
- **HOWEVER – selection for the study does not have to be random**

Purposeful Assignment: Example

- Schools are selected for the study
- Schools are RANDOMLY ASSIGNED to treatment and control groups
- Principals select one section of a health class in each school to participate in the study

Preventing Purposeful Assignment

- **Limit changes in teacher/student assignments after randomization (as feasible)**
  - **Conduct random assignment as late as possible**
- **Understand special issues before randomization**
  - **example, some teachers might be excluded from the study**
- **Monitor changes in teaching assignments and student rosters between random assignment and follow-up data collection**

Fixing the Example

- Schools are selected for the study
- Principals select one section of a health class in each school to participate in the study
- Schools are RANDOMLY ASSIGNED to treatment and control groups

Missing Data Bias

- Equivalence of the treatment and control groups is the key advantage of random assignment
- This equivalence can be lost if outcome data are not available for all individuals in the study
- Analogous to purposeful assignment – individuals are selectively removing themselves from the study

Nonrandom Missing Data: Example

- Random assignment of schools
- Some schools, teachers, or students dislike the program, stop using/attending
- Researchers halt data collection
  - in the schools or classrooms that stopped using the program, OR
  - for students who stopped using/attending the program

Avoiding Missing Data

- **Once Randomized, Always Analyzed**
- **Data needed for all schools, teachers, or students that were randomly assigned**
- **Analyze data using original treatment assignment**

Fixing the Example

- **Random assignment of schools**
- **Some schools, teachers, or students dislike the program, stop using/attending**
- **Researchers continue data collection for all schools, classrooms, and students regardless of their program use/attendance**
- **Calculate intent-to-treat (ITT) impact**

Finding Credible Program Impacts

- There must be an impact to find
  - Implement program as intended
  - High participation rate for the treatment group
  - Low program exposure for the control group
- That impact must be credible
  - Random, not purposeful, assignment/selection
  - Once randomized, always analyzed

For More Information

- **TPP Eval TA**
  - **TPPEvalTA@mathematica-mpr.com**
  - **1-866-336-3880**