
Finding Credible Program Impacts

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Striving for the “Gold Standard”

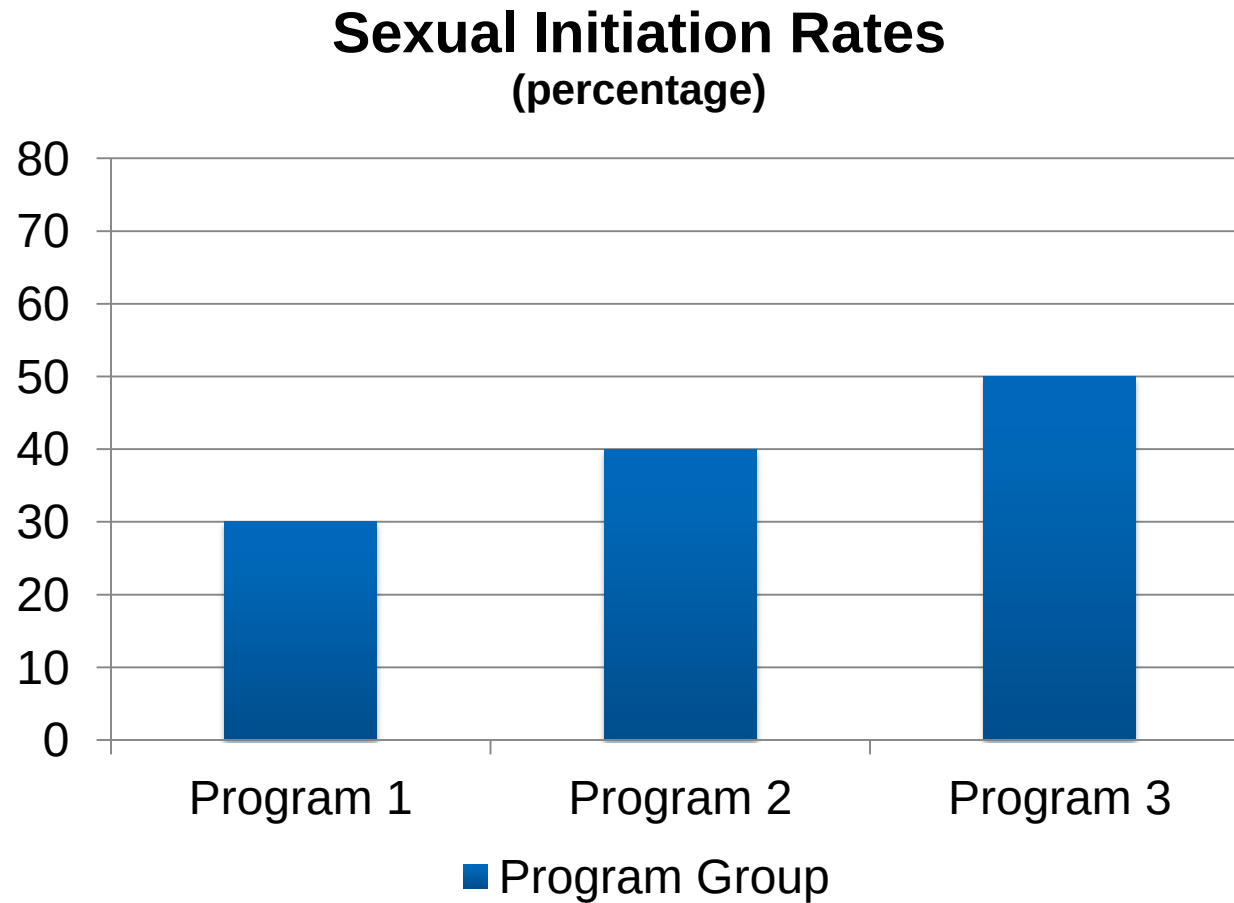
- Studies based on **RANDOM ASSIGNMENT** can produce highly credible, persuasive evidence of a program’s effectiveness
- Not automatic – both **program** implementation and **evaluation** implementation are keys to success, and both types of implementation rely on program staff
- Two key objectives: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

Maintaining the Contrast

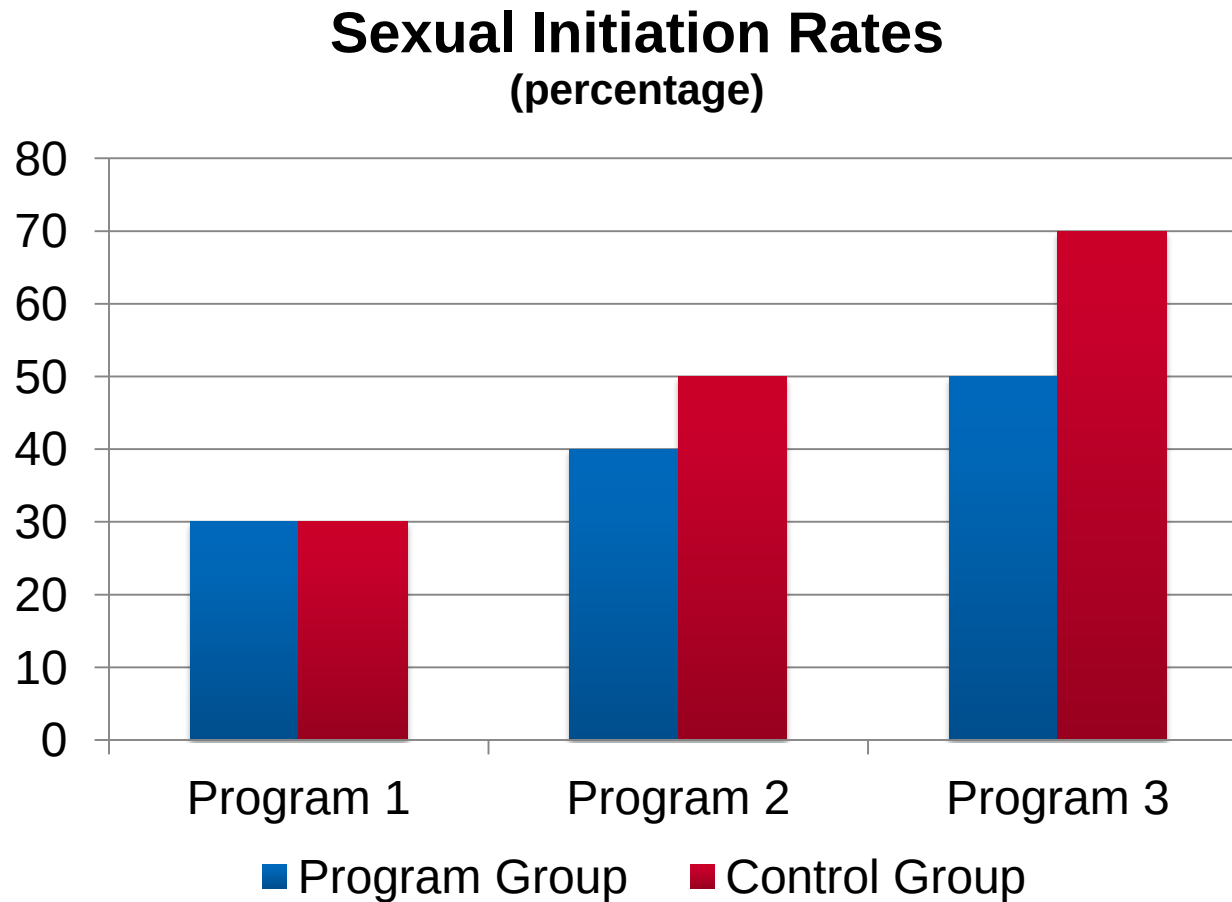
Where Impacts Come From

- **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**
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