Introduction to Evaluation Research

• **Definition**: Evaluation research, or program evaluation, refers to the kind of applied social research that attempts to evaluate the effectiveness of social programs.
• Evaluation research is not a methodology, but a class of research with a common feature of evaluating programs.
• Example of Head Start.

Simple Comparisons

• One simple way is to compare units of analysis affected by the program to those unaffected by the program.
• Say in a community, \( N_1 \) children attended Head Start, and \( N_2 \) did not. 25 years later, measure the educational attainment of the two groups, \( y_1 \) (those who attended Head Start) and \( y_2 \) (those who did not attend Head Start).

Simple Comparisons

• We compute \( y_1 - y_2 = 13 - 14 = -1 \).
• Should we conclude from this that Head Start has a negative effect on educational attainment?
• The Westinghouse report in the late 60s.
• The appropriate research question is not to compare observed \( y_1 \) and observed \( y_2 \).
• Rather, it should ask the counter-factual question, for those who attended Head Start, what would have happened to them if they hadn't attended?
  – Or, \( y_{1t} - y_{1c} \) (t denoting treatment; c denoting control)
  – Note that \( y_{1t} \) is observed, but \( y_{1c} \) is not.

• For those who did not attend Head Start, what would have happened to them if they had attended?
  – Or, \( y_{2t} - y_{2c} \) (t denoting treatment; c denoting control)
  – Note that \( y_{2c} \) is observed, but \( y_{2t} \) is not.

• The problem is one of missing data.

• If \( N_1 \) children are comparable to \( N_2 \) children, we can assume away the problem by
  • \( y_{1c} = y_{2c}, \quad y_{1t} = y_{2t} \)
  • In that case, \( y_{1t} - y_{1c} = y_{2t} - y_{2c} = y_{1t} - y_{2c} \)
  • i.e, simple comparison
Selectivity Bias

1. Observable Selectivity
   - If subjects who receive social intervention and those who do not are different in observed characteristics, this type of selectivity is called observable selectivity.
   - This problem can be handled by statistical controls in multivariate analyses to make the two groups comparable.

Unobservable Selectivity

- The more difficult problem is to deal with selectivity in unmeasured characteristics.
- This problem is also called "endogeneity problem": program participation is endogenous to the outcome variables being evaluated.
- Difficult to handle. Statistical models require strong and implausible assumptions.

Experimental Approach

- Experimental design eliminates both types of problems.
- Example: the well-known High/Scope Perry Preschool study conducted in Ypsilanti.
- Experimental designs suffer from shortcomings that are often overlooked.
- Understanding the experimental approach as "reduced-form."
Shortcomings of Experimental Approach

- We cannot always extrapolate results from an experimental setting to natural setting.
- Thus, we have strong criticism of experimental designs:
  "In fact, reduced-form experimental evaluation actually requires that a highly specific and suspect structural assumption hold: Individuals and organizations must respond in the same way to the experimental version of a program as they would to the actual version." (p.17 – Manski and Garfinkel)
- i.e., lacking "external validity."

Structural Approach

- A "structural" approach as an alternative.
- Definition: structural approach refers to statistical methods that model causal processes based on observational data.
- Head Start example: control on SES, parental involvement, etc.

Definitions of Exogenous variables and Endogenous variables

- Definition: Exogenous variables are variables that are used only as independent variables in all equations.
- Endogenous variables are variables that are used as dependent variables in some equations and may be used as independent variables in other equations.
Simple Example

Mother’s Labor Force Status (e.g. hours worked)

Success in program

Marital Status

Family Structure

Mother’s Hours Worked

Structural vs. Reduced-Form Equations

• 1. Structural Equations
   Structural equations are theoretically derived equations that often have endogenous variables as independent variables.

• 2. Reduced-Form Equations
   Reduced-form equations are equations in which all independent variables are exogenous variables. i.e, in reduced-form equations, we purposely ignore intermediate variables.

Comparison of the two Approaches

Advantage of Structural Approach:
• Since it is conducted in a natural setting, its findings are directly relevant to the whole population. In contrast, results from an experimental design need to be extrapolated.
• It is less costly. In contrast, experimental research is very expensive.
• It builds upon and contributes to theory. In contrast, the reduced-form approach only yield simple answers to simple questions.
Advantage of Reduced-form Approach

- Endogeneity bias can be eliminated through randomization.
- It requires fewer assumptions.
- It does not require complicated statistical models that the public and government officials have difficulty understanding.