



Mother and Infant Home Visiting Program Evaluation

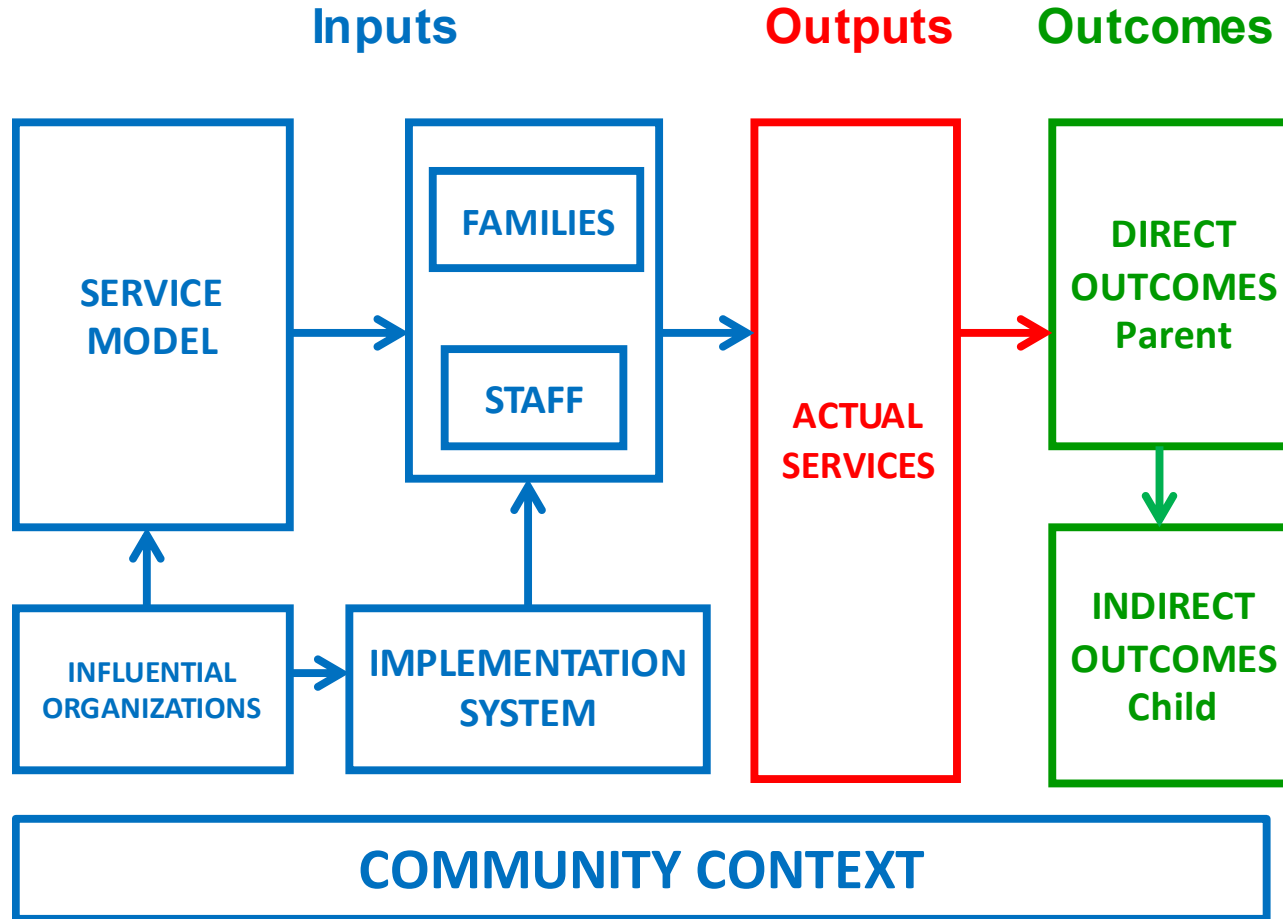
Studying Impact Variation

Research Questions

- Do impacts vary across local programs?
- How are local program features (such as policies for staff selection, or organizational culture) associated with program impacts?
- How are the services that families receive (such as frequency of home visits, or number of referrals) associated with program impacts?



Exhibit 1: MIHOPE Conceptual Framework





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Studying Impact Variation

How much do impacts vary?

How much do impacts vary?

- Planned analysis:

Impact variation across local programs

- Possible additional analysis:

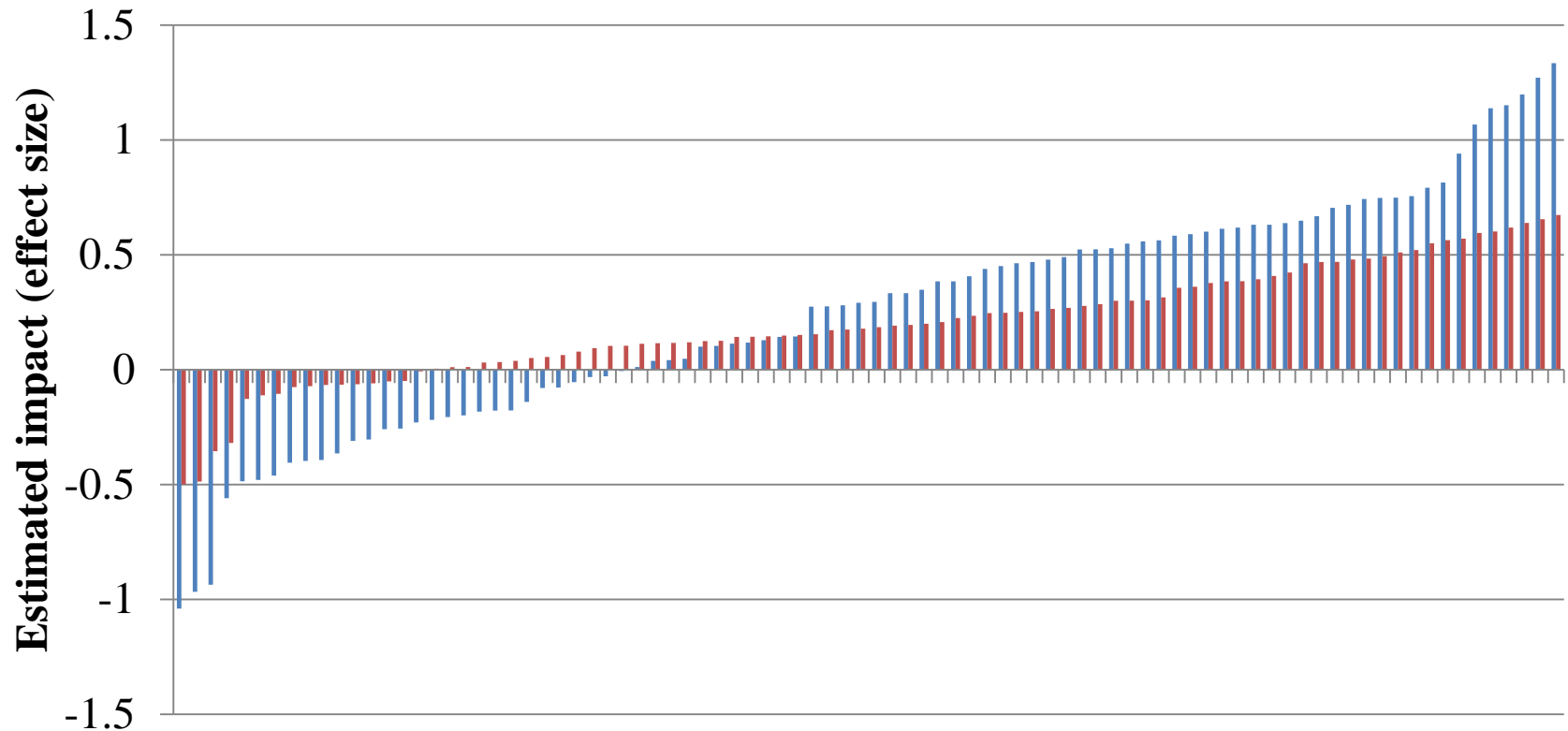
Impact variation across home visitors

- Key:

Do impacts vary beyond what we would expect to see from sampling error alone?



Variation in Program Impacts: 2 Hypothetical Scenarios (88 sites, 60 families each)



RED: No true variation: impact variation is consistent with sampling error

BLUE: True variation: Impact estimates vary beyond sampling error (variance=0.2)



Planned analysis:

How much do impacts vary across local programs?

- *Why* might impacts vary across local programs?
 - Different local programs use different national models, serve different types of families, have different counterfactuals
 - Some local programs may
 - Have more effective policies and procedures, organizational cultures, home visitors, or management
 - Have more effective service dosage, content, quality, and family responsiveness



Possible additional analysis:

How do impacts vary across home visitors?

- *Why* might impacts vary by home visitor?
 - Experience, education, expectations, attitudes, burnout
- Prior to random assignment, programs indicated which home visitor would serve the family: allows estimation of impacts by home visitor
- Limitations of this analysis
 - Home visitor pre-specification not available for all families
 - In some cases, the home visitor who actually provided services was not the home visitor who was pre-specified





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How are local program
features associated with
impacts?

Empirical Strategy

- Multivariate regression
- Proceed in stages, adding X s sequentially from most exogenous to least exogenous
 - National model indicators
 - Family characteristics
 - Community characteristics
 - Local program service model and implementation system characteristics
 - Home visitor characteristics (possibly, depending on model)



Questions for the Committee: #1

- Model assumption: no correlation between explanatory variables and omitted factors (for example, maternal motivation)
- Some program features likely violate the standard assumptions underlying regression analysis.
- In the Committee's view, which types of program features are most likely to be exogenous predictors of impacts?





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How are services received
associated with impacts?

Why service receipt is different

- Services offered and received will vary by families' specific situations and characteristics
- Likely to be endogenous, therefore inappropriate for regression
 - Example: more motivated mothers receive more visits, and have better effects because they are motivated
 - Example: depressed mothers may receive fewer visits or be less engaged, and have worse effects because of their depression



Three methods being considered

	Instrumental variables	Causal mediation	Principal stratification
What is estimated?	Relationship between local program average service receipt and impacts	Relationship between actual service receipt and impacts, plus direct effect of being assigned to the program	Effect of moving from one group to another (e.g., from no home visiting to high dosage of home visiting)
Basic estimation method	Compare local program impacts on outcomes to impacts on service receipt	Include measures of service receipt as covariates in a regression	Predict stratum membership using family characteristics and outcomes
Key assumptions	All impacts flow through service receipt	Service receipt is an acceptable regression covariate; service receipt is exogenous	No effect if predicted stratum is actual stratum; effects due to change in stratum, not differences in family characteristics



Question for the Committee: #2

- Each method for the mediation analysis is based on statistical assumptions that are difficult to test and may be implausible in the context of home visiting.
- When we report findings, we will emphasize that the results should be interpreted with caution.
- Does the Committee agree that we should proceed with the analysis as described, despite concerns about some of the methods?





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Next steps

Choosing program features

- Look for substantial variation across programs
 - Cannot explore role of program features or services without this variation
- Reduce number of explanatory variables in models
 - Use theory and prior evidence to identify most important constructs for each outcome's model
 - Reduce number of measures if possible
 - Scales or indexes (for example, of quality)
 - Factor analysis



Choosing outcomes

- Analyses would be conducted for all confirmatory outcomes
- Might analyze exploratory outcomes
 - Even if overall impacts are not large, they may vary across local programs
 - Example: maternal mental health



Questions for the Committee: #3

- We may conduct this analysis for exploratory outcomes where there is empirical variation in program features, community characteristics, or service delivery that are likely to be tied to impacts.
- In the Committee's view, is this approach appropriate?
- Does the Committee agree that the analysis should be conducted with all confirmatory outcomes?
- Does the Committee have recommendations regarding exploratory outcomes we should include in the analysis?



Choosing mediators for IV and causal mediation analysis

- Examples of possible mediators
 - Number of home visits, minutes in home visiting
 - Number or percentage of visits where outcome area was discussed
 - Whether referrals were made in outcome area
 - Use of other relevant services in the community
- Need to keep number of mediators low to maintain statistical power (note: relationships may be nonlinear)



Questions for the Committee: #4

- Service receipt can be defined in many different ways
 - Does the Committee have recommendations regarding which aspects of service receipt should be the focus of our analysis linking service receipt to program impacts?



Questions for the Committee: #5

- Does the Committee have suggestions or recommendations of ways to investigate the links between program features and impacts, and between service receipt and impacts, that were not discussed?

