Innovations in Evaluation Design and Analysis, from the HPOG Impact Study

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Presentation Outline

- HPOG context
  - Sources of variation
  - Research questions
- Site-level analyses
- Individual-level analyses
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- **HPOG context**
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- Site-level analyses

- Individual-level analyses
HPOG Impact Study

- HPOG-Impact includes 20 grantees serving TANF and low-income individuals in over 100 locations

- Planned variation, across sites:
  - Evaluation establishes enhancements (peer support groups, emergency assistance, non-cash incentives) in some locations for an experimental test

- Natural variation, across sites & individuals:
  - Programs vary but also overlap in: program components (including the three, above), implementation strategies, target populations
  - Individuals vary in their experience/receipt of program elements
Research Questions

HPOG-Impact will address the following questions:

1. What impacts do the HPOG programs as a group have on the outcomes of participants and their families?

2. To what extent do those impacts vary across selected subpopulations?

3. Which locally-adopted program components influence average impacts?

4. To what extent does participation in a particular component (or components) change the impacts experienced by individual trainees?
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Site-level Analysis Overview

- **Goal** = estimate impact of *offering* a specific program component: Is the *average impact* in a site changed by adding a component to the HPOG “package”?

- **Opportunity** = isolating contribution of particular components depends on their availability across sites (natural variation) and for different random assignment groups within a site (planned variation)

- **Bonus** = use experimental evidence from 3-arm sites to strengthen methods for measuring component impacts through cross-site comparisons of 2-arm sites
Dispersion of Intervention Components Across Sites

- Four possible configurations = components are present in:
  - all sites (e.g., component F)
  - some but not all sites – natural variation (G)
  - some but not all sites – induced variation (H)
  - some but not all sites – both natural and induced (E)

- Each offers different opportunities for inferring the influence of the component on impact magnitude
Outcomes for individual sample members will be determined by:

- services to which an individual has access in the community (A, B, C, D or L, depending on the site)
- HPOG intervention components offered (E, F, G or H, depending on the site)

\[ Y_i = (b_0 A + b_1 B + b_2 C + b_3 D + b_8 L) + b_4 E + b_5 F + b_6 G + b_7 H \]

**Note:**
- Specification does not allow interactions among components
- Site-level characteristics used as covariates not shown
Issues with Not Purely Experimental Impact Estimates

- Experiment will measure effect of “package” of components that constitutes the full program in a 2-arm or 3-arm site
- Individual component effects are harder to isolate
- What if component G is always combined with F?
- Subtract out F’s effect as measured in other sites, as long as there are sites where F can be isolated experimentally
Some Component Effects can be Estimated using *Multiple* Strategies

- Effect of enhancement E:
  \[ b^X = ub_1 + (1-u)b_2 \quad (\text{experimental}) \]
  \[ b^M = vb_1 + wb_2 + (1-v-w)b_3 \quad (\text{mixed}) \]

- Test whether to trust non-experimental component of mixed evidence, \( b_3 \)

- Effect of components common to all sites, F; no test of non-experimental piece, so use only experimental evidence
What to trust?

- Third arm of the experiment allows us to assess the reliability of cross-site non-experimental estimates.
- Use experimental benchmark to quantify bias in non-experimental estimate of enhancement effect.
- Bias in other cross-site comparisons = multiple of bias in enhancement effect.
- Look for ways to change model specification to reduce enhancement bias – and therefore all bias.
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Individual-level Analyses

- Analysis of Symmetrically-Predicted Endogenous Subgroups
  - Use baseline characteristics to predict program experience
  - Compare T & C groups according to predicted program experience [experimental/unbiased estimate of impact]
  - Interpret results for those who actually had selected program experience, by assumption

- Will consider each main component/impact driver; may consider selected combinations of components as identified through implementation research as relevant, specifically [see next slide] …
Individual-level Analyses (cont.)

- Participation in various program components, including extent of participation, such as:
  - Used emergency support/assistance, used specific academic supports, used child care support/services, accessed majority of available service supports

- Achieved selected outcomes (mediators), such as:
  - Matched education/training with healthcare job
  - Found healthcare job in absence of HPOG
Analytic Challenges

- Choose appropriate model to predict membership:
  use predictors that
  - Strongly correlate with membership
  - Do not affect impacts through any other channel (i.e., find “instruments” that predict membership but not impact)

- Extend method to incorporate multiple mediators simultaneously (under development)
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