

Moderation: How program participation, site characteristics, and neighborhood context can inform our understanding of what works

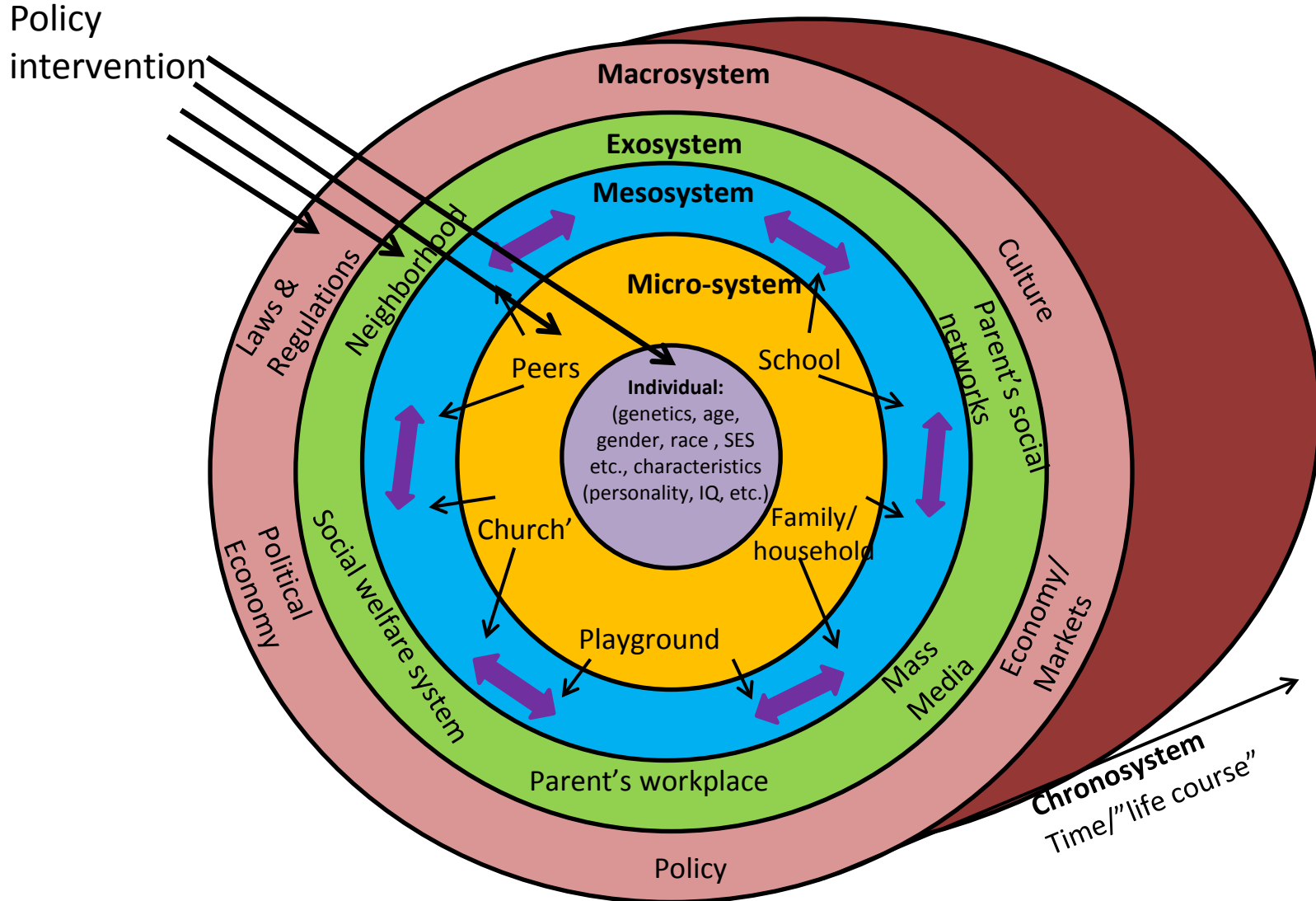
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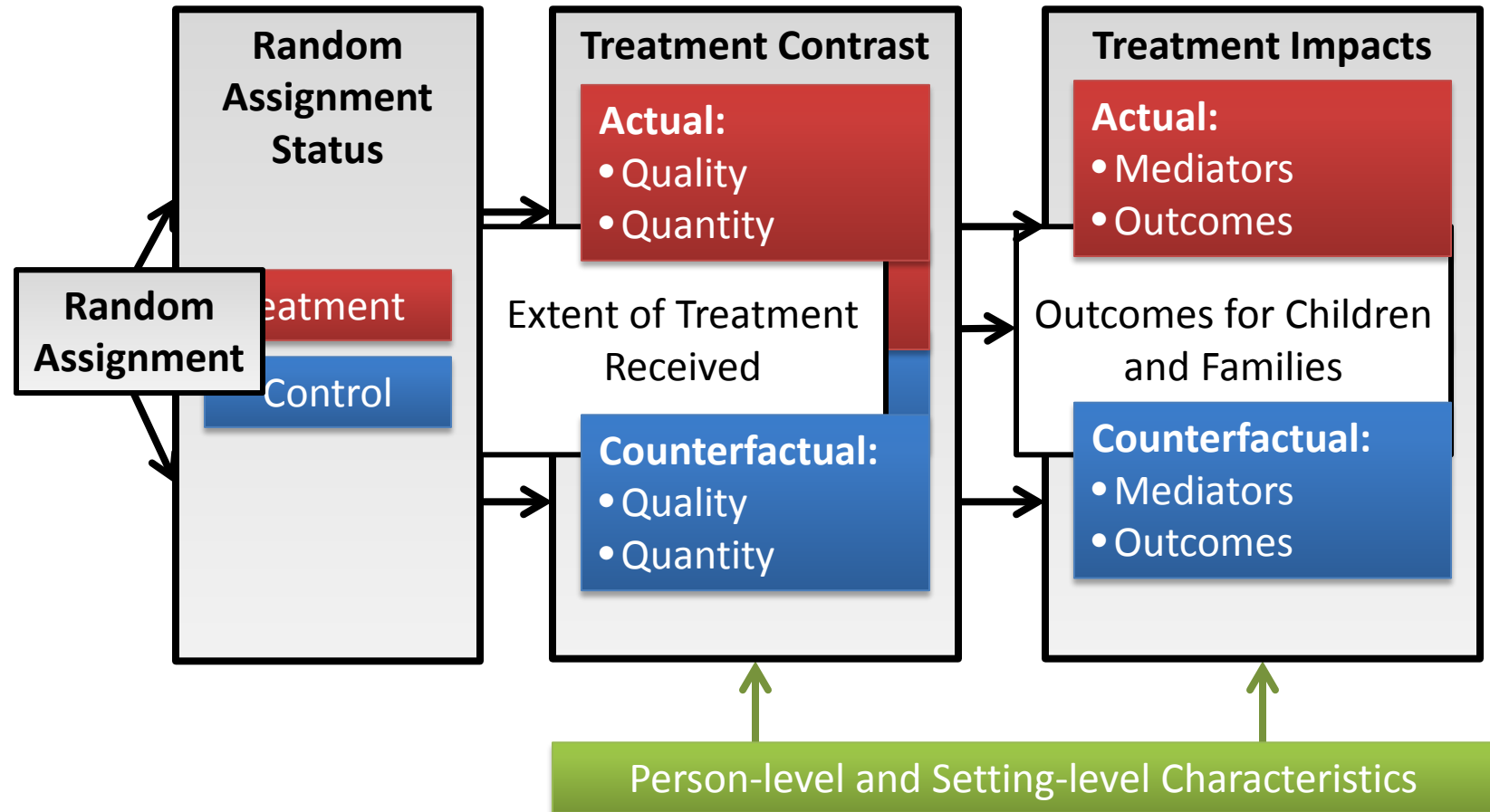
Primary Focus of Moderation Analyses in Experiments to Date

- By person-level characteristics, not setting-level
- “Measured”, rather than unmeasured
- Assessed pre-random-assignment (to preserve experiment), rather than post-RA
 - As a result, very little focus on setting-level differences in impacts OR on characteristics that are best (or only able to be) assessed post-RA

“What” settings might moderate intervention impacts?



Unpacking impacts into “actual” and “counterfactual” experiences and outcomes



- Characteristics may moderate impacts through their role in affecting either the *treatment* (actual) or the *control* condition (counterfactual), and by affecting either the *treatment contrast* or the *treatment impact*

Some examples of moderation due to effects on the treatment “offer”

At the “person level”:

- A person’s characteristic may affect how individuals experience an employment program:
 - In the study of New Hope financial incentives, those individuals with *moderate* barriers to employment saw the greatest economic gains from the program (Bos et al., 1999).

At the “setting level”:

- The office setting may affect how welfare clients experience the treatment:
 - In a study of a large number of welfare programs, those welfare offices that had the most emphasis on “quick job entry” had the largest impacts on participants’ earnings (Bloom, Hill, & Riccio, 2003).

Table 2. The effects of program implementation, activities, and environment on program impacts.

Program Characteristic	Regression Coefficient	Partially Standardized Regression Coefficient	Statistical Significance (<i>p</i> -value)	Standard Error
Program Implementation				
Emphasis on quick job entry	\$ 720***	\$ 720***	2 x 10 ⁻⁶	\$134
Emphasis on personalized service	428***	428***	0.0002	107
Closeness of monitoring	- 197	- 197	0.110	121
Staff caseload size	- 4***	- 268***	0.003	1
Staff disagreement	124	124	0.141	83
Staff/supervisor disagreement	- 159 *	- 159*	0.102	96
Program Activities				
Basic education	- 16 **	- 208 **	0.017	6
Job search assistance	1	12	0.899	9
Vocational training	7	71	0.503	11
Economic Environment				
Unemployment rate	- 94 ***	- 291***	0.004	30

Regression coefficients are reported in 1996 dollars per unit change in each independent variable. Partially standardized regression coefficients are reported in 1996 dollars per standard deviation change in each independent variable. These coefficients are estimated simultaneously with those reported in Table 3. The grand mean impact is \$879 or 18 percent of the counterfactual. Statistical significance is indicated by * for the 0.10-level, ** for the 0.05-level and *** for the 0.01-level.

Some examples of moderation due to effects on the counterfactual “offer”

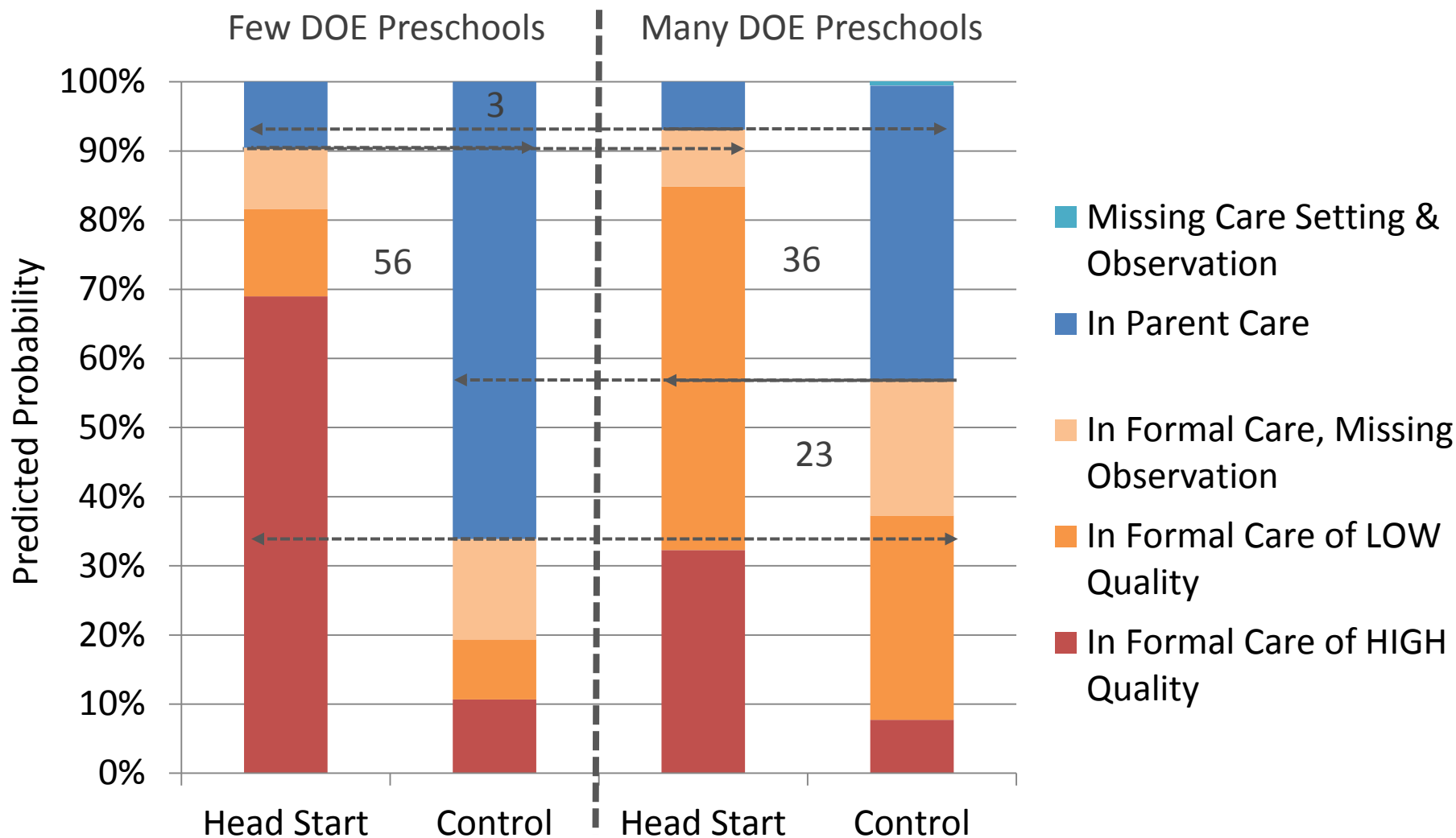
At the “person level”

- The person characteristics may affect the services they receive when assigned to the control group:
 - In the Head Start Impact Study, those families who sought similar center-based care services saw fewer impacts (Page, et al., in prep)

At the “setting level”:

- The neighborhood may define what “business as usual” options there are for the control group:
 - In the HSIS, there were smaller impacts on use of formal care for children living in “child care rich” neighborhoods (Connors, Morris, McCoy, et al., in prep)

Predicted Probabilities of Care Type and Quality by Number of DOE-Funded Preschools



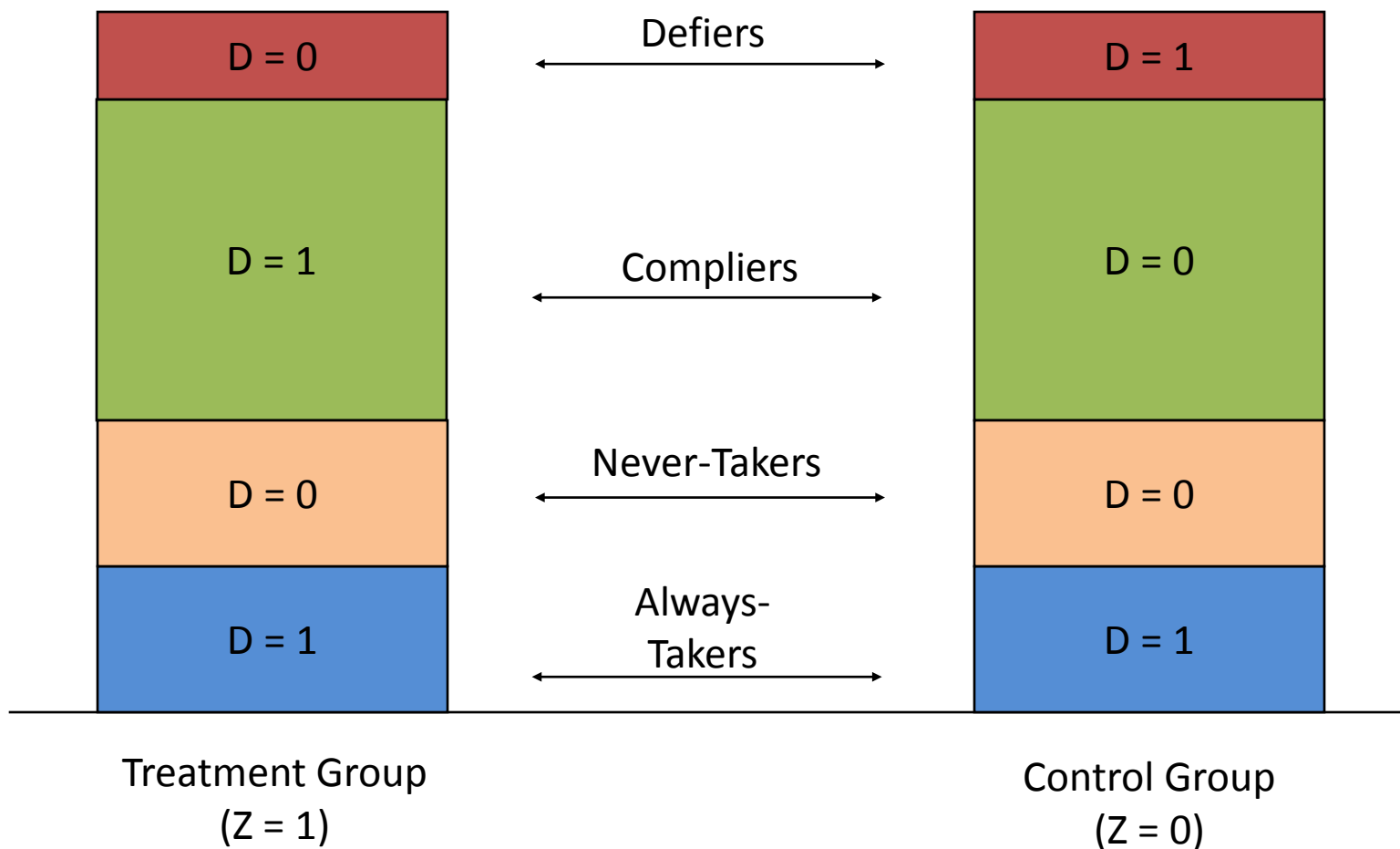
But variation by person- and setting-level characteristics can occur in other ways as well

- Variation in *mediators* may result in differences in impacts on outcomes:
 - E.g., in New Hope, impacts were strongest for boys because parents used the additional resources in the program to put their boys in after-school environments
- Variation in “sensitivity” to treatment:
 - E.g., in many preschool programs, impacts are strongest for boys because they are more *sensitive* to environmental influences (even if they received the identical treatment)

Three major challenges

1. Identifying the subgroup in *both* the treatment and control group (and doing so with equivalent (un)certainty)
 - Approaches used by Peck and Page are intended to address this challenge: use information to predict those groups

Four hypothetical groups in a randomized experiment

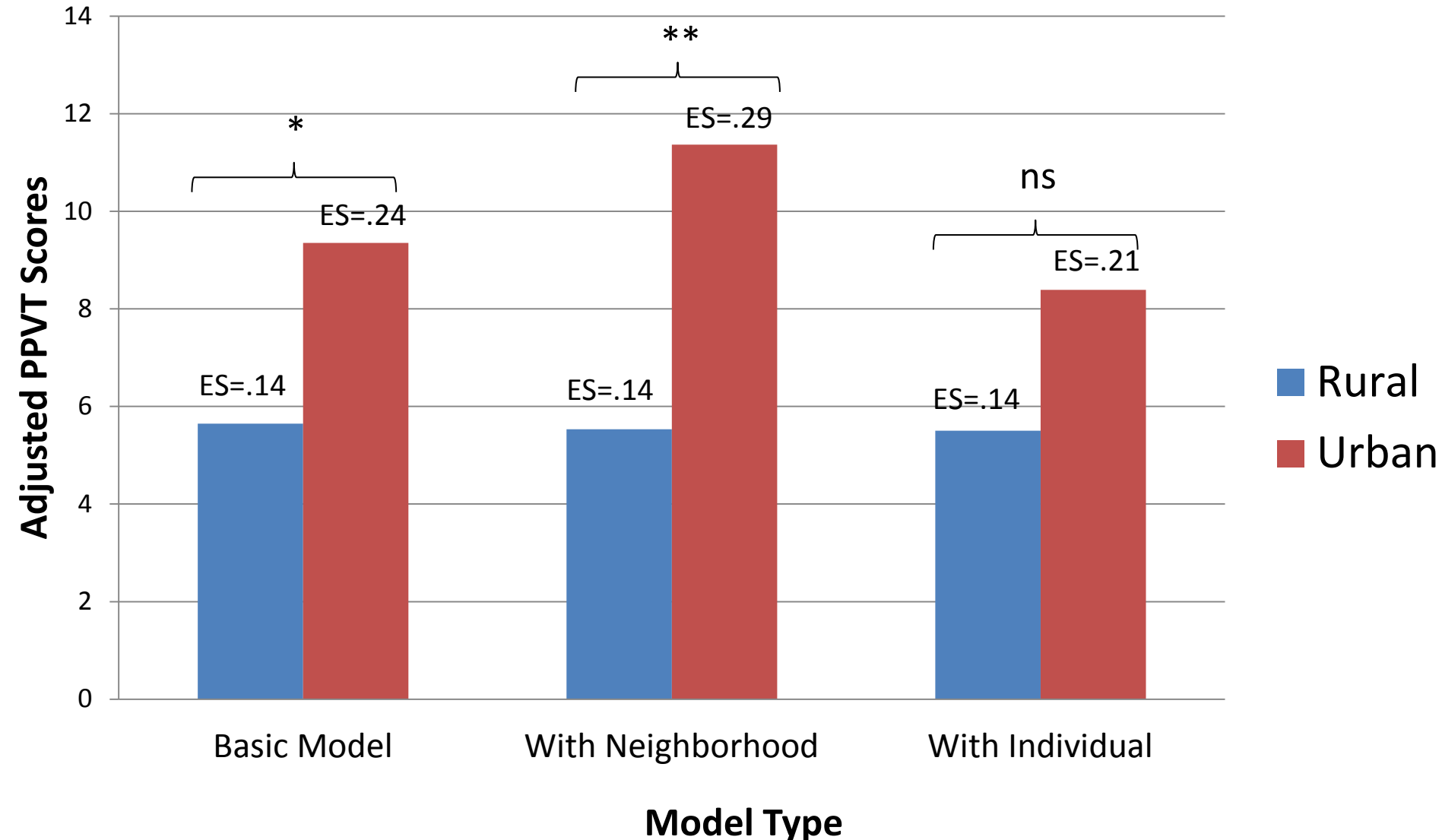


Note: D equals 1 if the treatment would be received and 0 otherwise

Three major challenges

1. Identifying the subgroup in *both* the treatment and control group (and doing so with equivalent (un)certainty)
 - Approaches used by Peck and Page are intended to address this challenge: use information to predict those groups
2. Attributing moderation to the correct “level”
 - Moderation at the “setting” level may actually be due to moderation at the “person” level

Attributing “urbanicity” moderation to neighborhoods: An example from the HSIS



Three major challenges

1. Identifying the subgroup in *both* the treatment and control group (and doing so with equivalent (un)certainty)
 - Approaches used by Peck and Page are intended to address this challenge: use information to predict those groups
2. Attributing moderation to the correct “level”
 - Moderation at the “setting” level may actually be due to moderation at the “person” level
3. Attributing causality to moderation analyses
 - While *within* a subgroup, the experiment is maintained, the same is not true *across* groups
 - Only way to address is to design new randomized experiments with multiple groups

Conclusions

- Impact estimates provide only a *single average* estimate of how effective a program is across all individuals in all settings.
- Moderators can exist on different ecological levels (and at the person- or setting-level), regardless of the setting targeted for intervention.
- Moderation can occur because of differences in the treatment or counterfactual *offer* (contrast) or because of differences in treatment or counterfactual *outcomes* (impact).
- There are a number of challenges to conducting this work that are important to doing it “right”.
- Conducting this work is critical to understanding variation in treatment impact to best design interventions