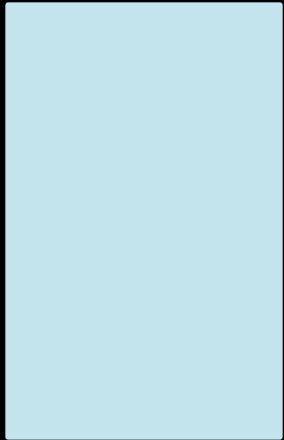
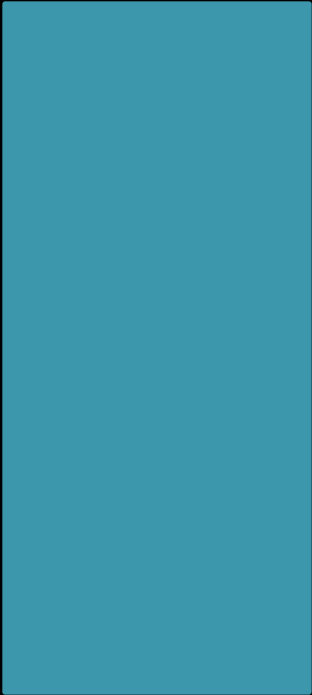
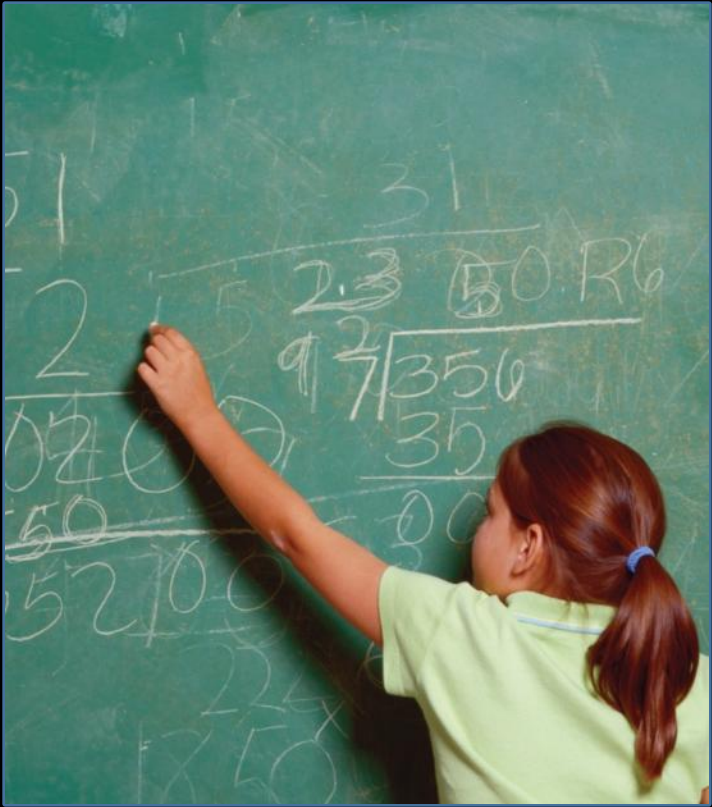


Frontiers and Challenges of Early Childhood Research



Frontiers and Challenges of Early Childhood Research

Deborah A. Phillips, Ph.D.

Georgetown University

STEM Smart Presentation/National Science Foundation

December 3, 2013

Perfect Storm

- NSF funding has driven cutting-edge research in early learning
- Early science learning propels curiosity, achievement, and careers in science
- Early math learning predicts both math and reading achievement, perhaps more so than early reading
- STEM teaching in preschool is rare
- American students lag behind
- Large and growing disparities in STEM achievement within US
- Disparities emerge by age 4-5 years (preschool!)
- How to use what we know to change this scenario?

Challenges & Opportunities

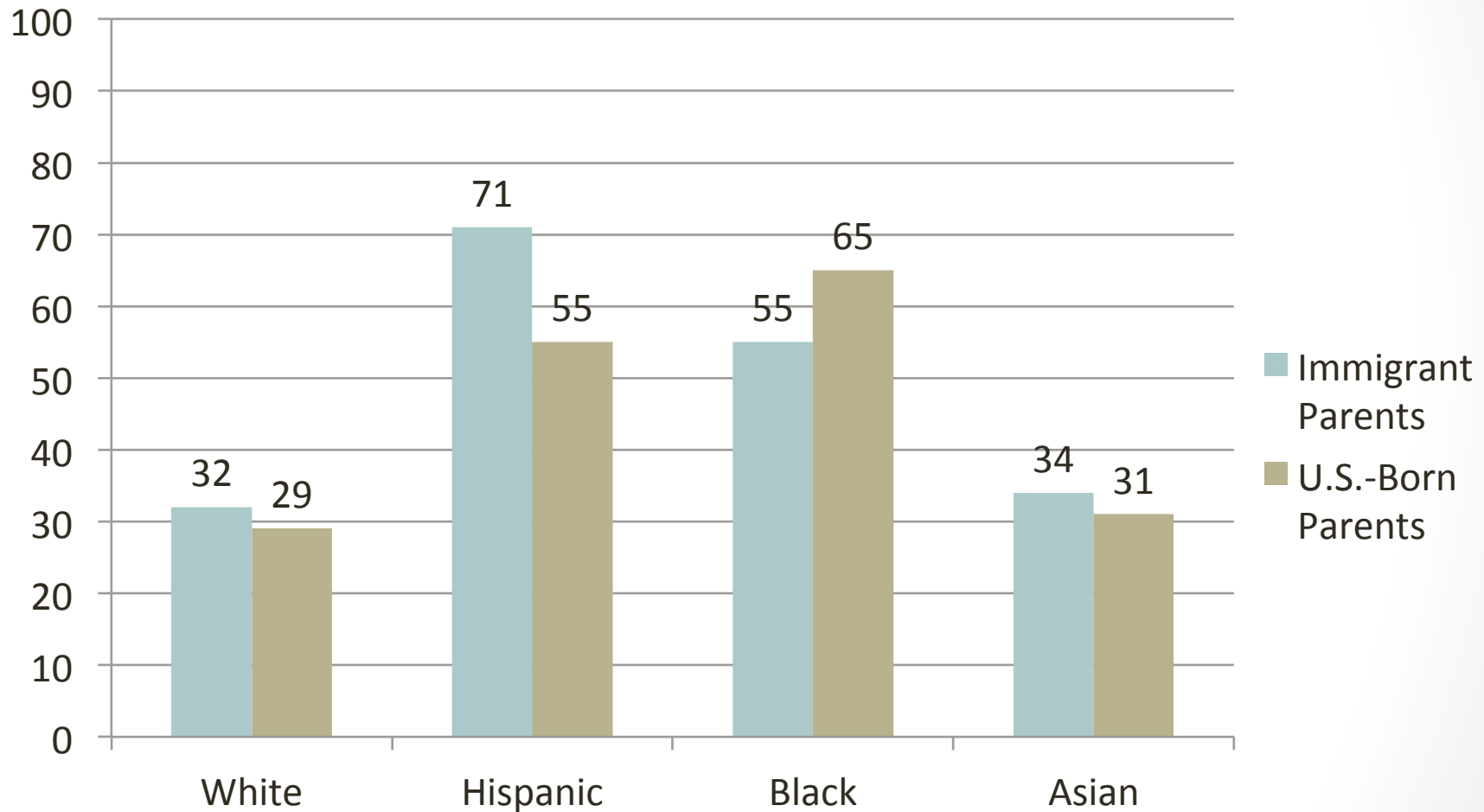
- Rethinking what it means to provide enriched learning opportunities
- Integrated/sequenced curricula and place of regulatory/EF skills
- How to effectively translate, package, disseminate, and implement proven models given ECE realities
- ECE to K-12 articulation
- Effective models for DLLs and children with special needs
- Re-calculating success

- First...who, where and why of early childhood education

Who? The children

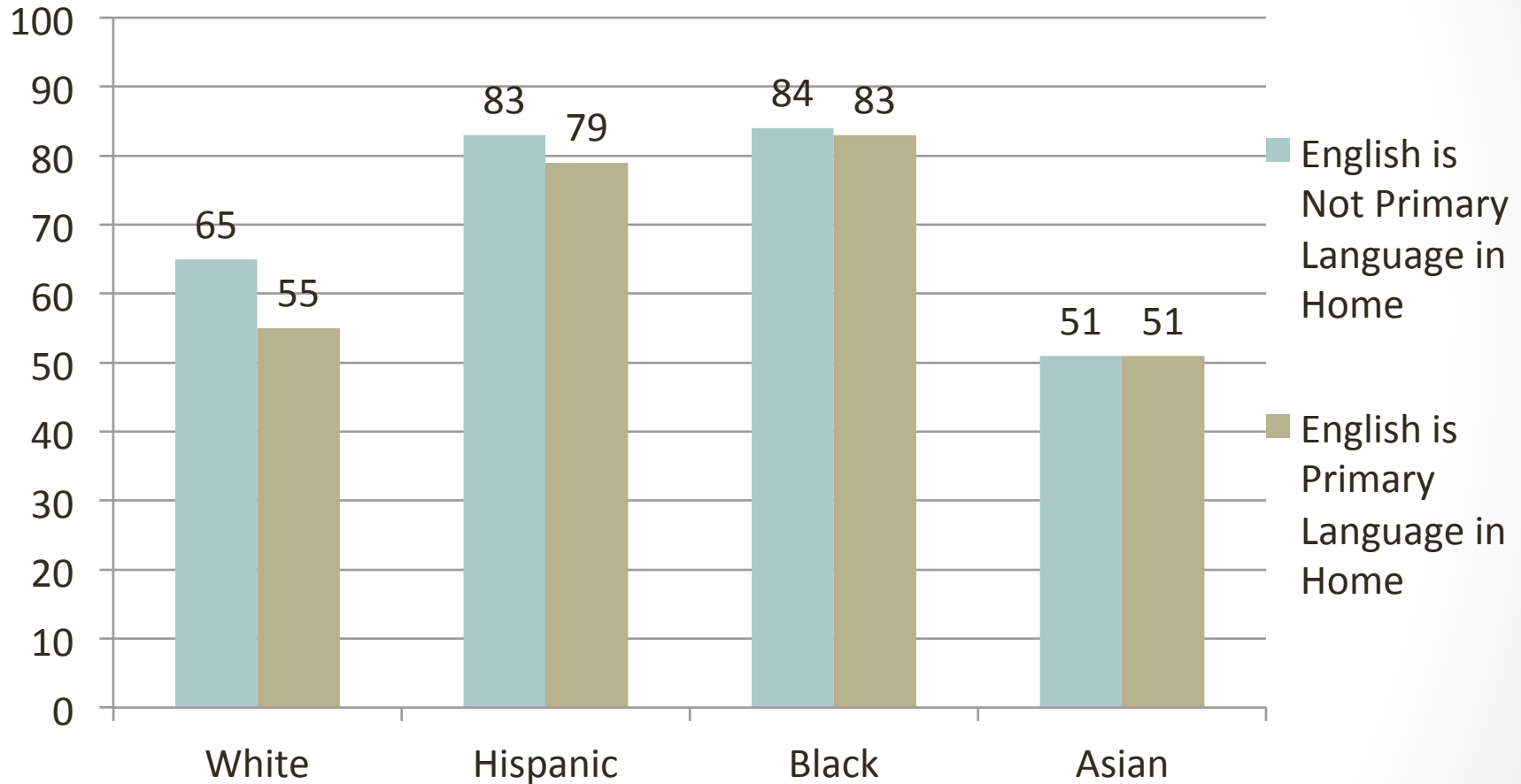
- Non-majority generation
- Immigrant status layered on to race-ethnic diversity
- ...layered onto poverty
- ...layered onto Pre-K enrollment
- ...layered onto disparities in educational outcomes

Percent children in or near poverty, 2010



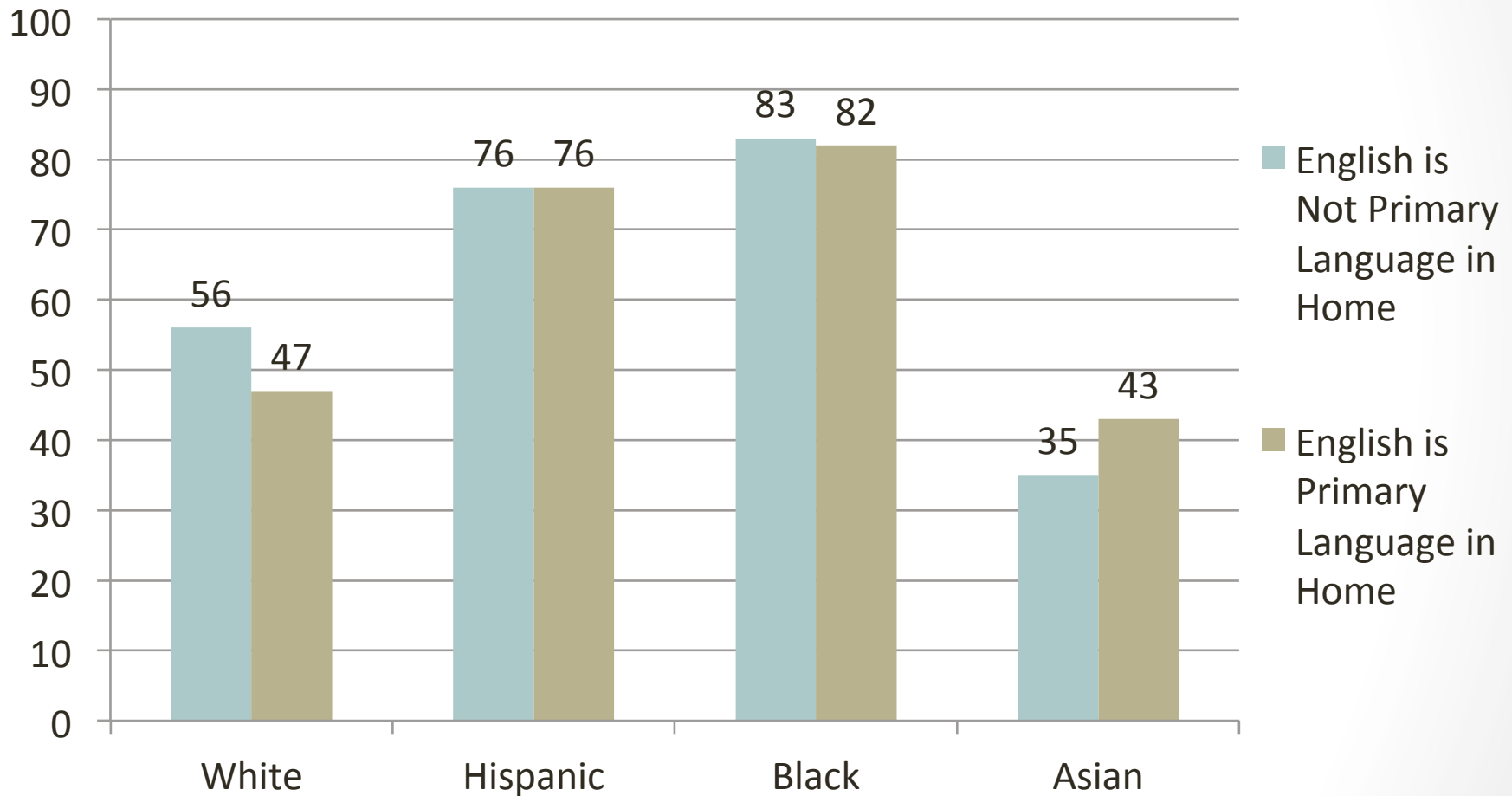
Source: Hernandez and Napierala (2013)

Percent 4th grade students NOT proficient in reading: 2011



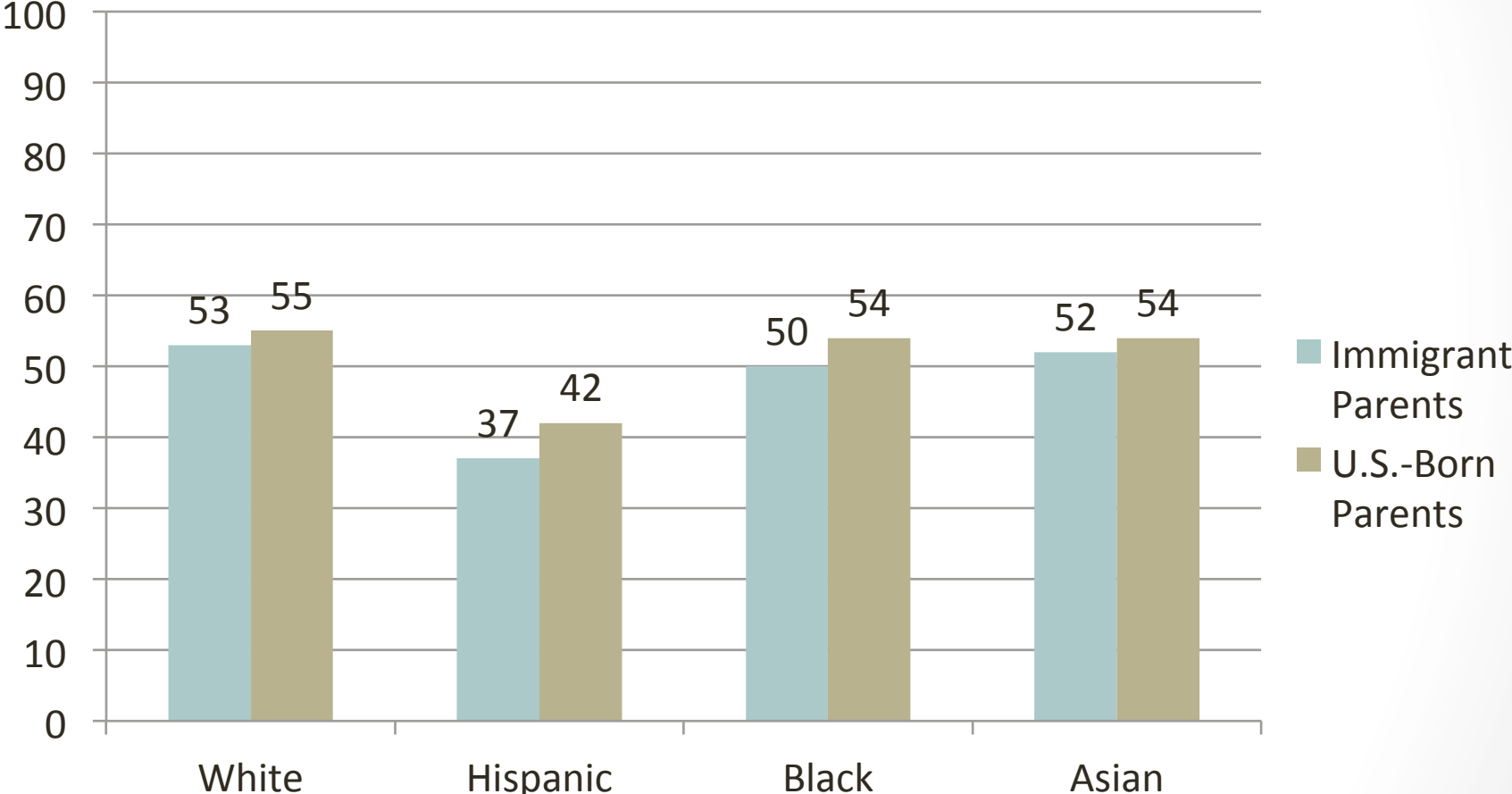
Source: Hernandez and Napierala (2013)

Percent 4th grade students NOT proficient in mathematics: 2011



Source: Hernandez and Napierala (2013)

Percent 3-4 year olds enrolled in Pre-K: 2010



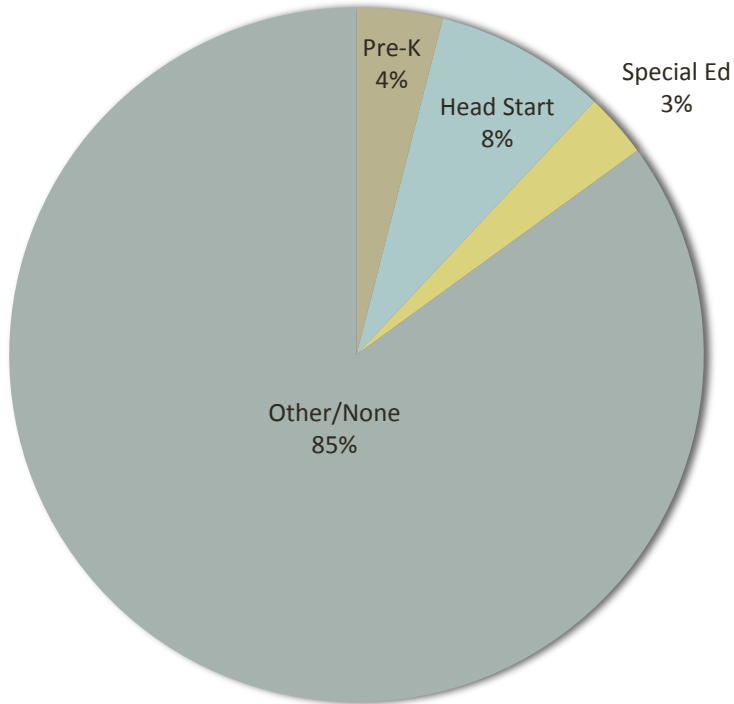
Source: Hernandez and Napierala (2013)

Who? The Children

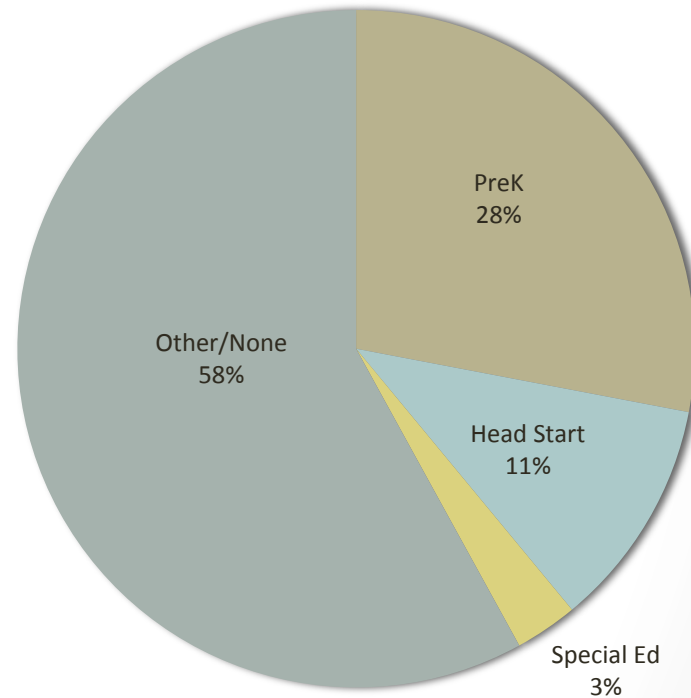
- Implications
 - Must attend to DLLs/ELLs in all research (generalizability)
 - Access to Pre-K is big issue re: equity/gaps in achievement
 - Stress/Adversity/Trauma as part of what needs to guide ECE vision

Where? The Settings

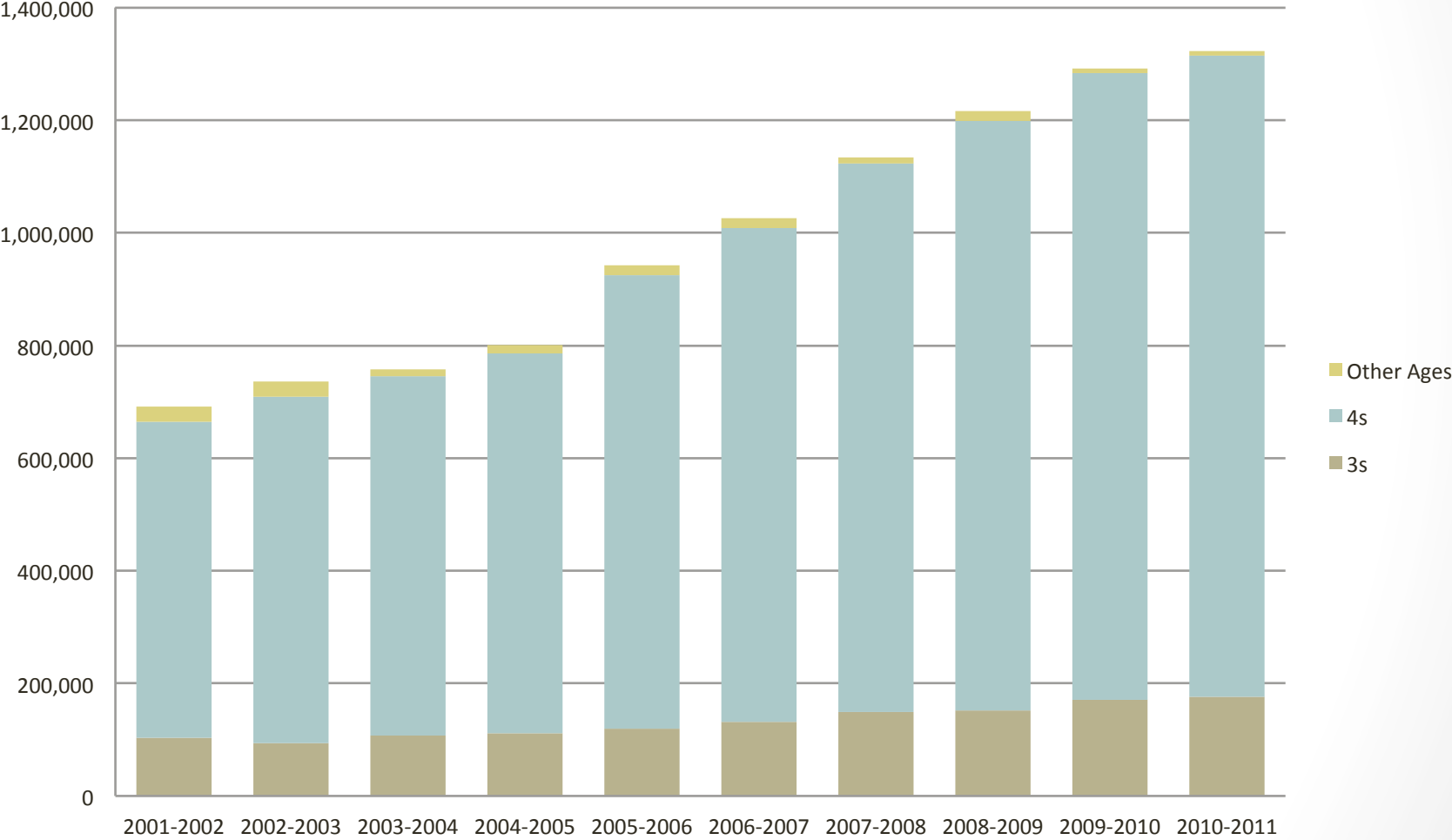
3-year olds



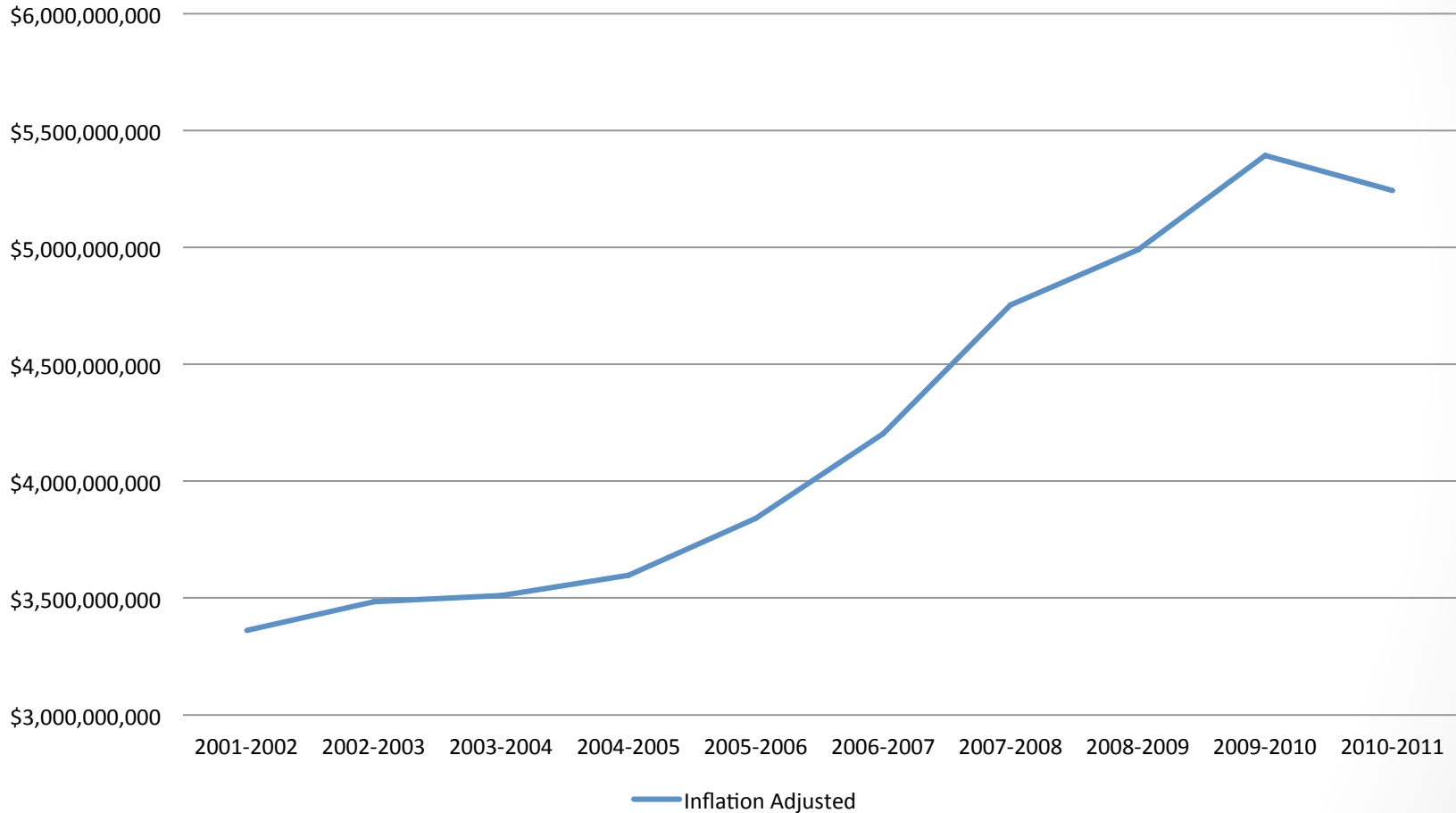
4-year Olds



Enrollment Growth by Age



State Spending on Prek-K



Where? The settings

- Implications
 - Mixed delivery system is the norm
 - Vast variation in the quality of care and education
 - Much of what is funded is justified as a work support for low-income families, not as an educational program for children
 - Growing special education population in pre-k
 - Challenge for generalizability & scale-up
 - Especially regarding workforce

Center Workforce (3-5 year olds) NSECE (2012)

- 13% HS or less; 24% college, no degree; 17% AA; 45% BA+
- Median hourly wage: \$11.90 (\$15.50 for BA)
 - \$28,210 annually (BA) vs. \$53,030 for kindergarten teachers
 - 2013 poverty line for family of 4: \$23,550
- Almost 60% in centers without school sponsorship or Head Start or Pre-K funded children
- Median hourly wage for BA-level teachers in these centers was \$13.90 (vs. \$20.60 in school-sponsored)

Reasons for Hope?

- Ed reform agenda extended to preschool
 - E.g., Race to the Top, Preschool for All
- Economic arguments
- Neurobiology of learning
- Pre-K evidence
 - Developmental science of early learning fueling knowledge about effective teaching and curriculum development (today: STEM)

Neurobiology of Learning

- Developing brains seize experience
- Biological embedding of early life adversity
- What goes off-line?
 - Essential capacities for STEM learning
- Classrooms as sites for stimulating minds, but also protecting brains to support learning
 - Self-regulation and executive functioning
 - Supportive, predictable, low-stress classroom/school environments

Executive Functions

Inhibitory Control — filter thoughts and impulses to resist temptations and distractions



Working Memory — hold and manipulate information in our heads over short periods of time

Attention/Mental flexibility — Control/shift attention; focus but adjust to changed demands, priorities, or perspectives



Neurobiology of Learning

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Investing in Our Future: The Evidence Base on Preschool Education

Hirokazu Yoshikawa, Christina Weiland, Jeanne Brooks-Gunn, Margaret R. Burchinal, Linda M. Espinosa, William T. Gormley, Jens Ludwig, Katherine A. Magnuson, Deborah Phillips, Martha J. Zaslow



EXECUTIVE SUMMARY

OCTOBER 2013



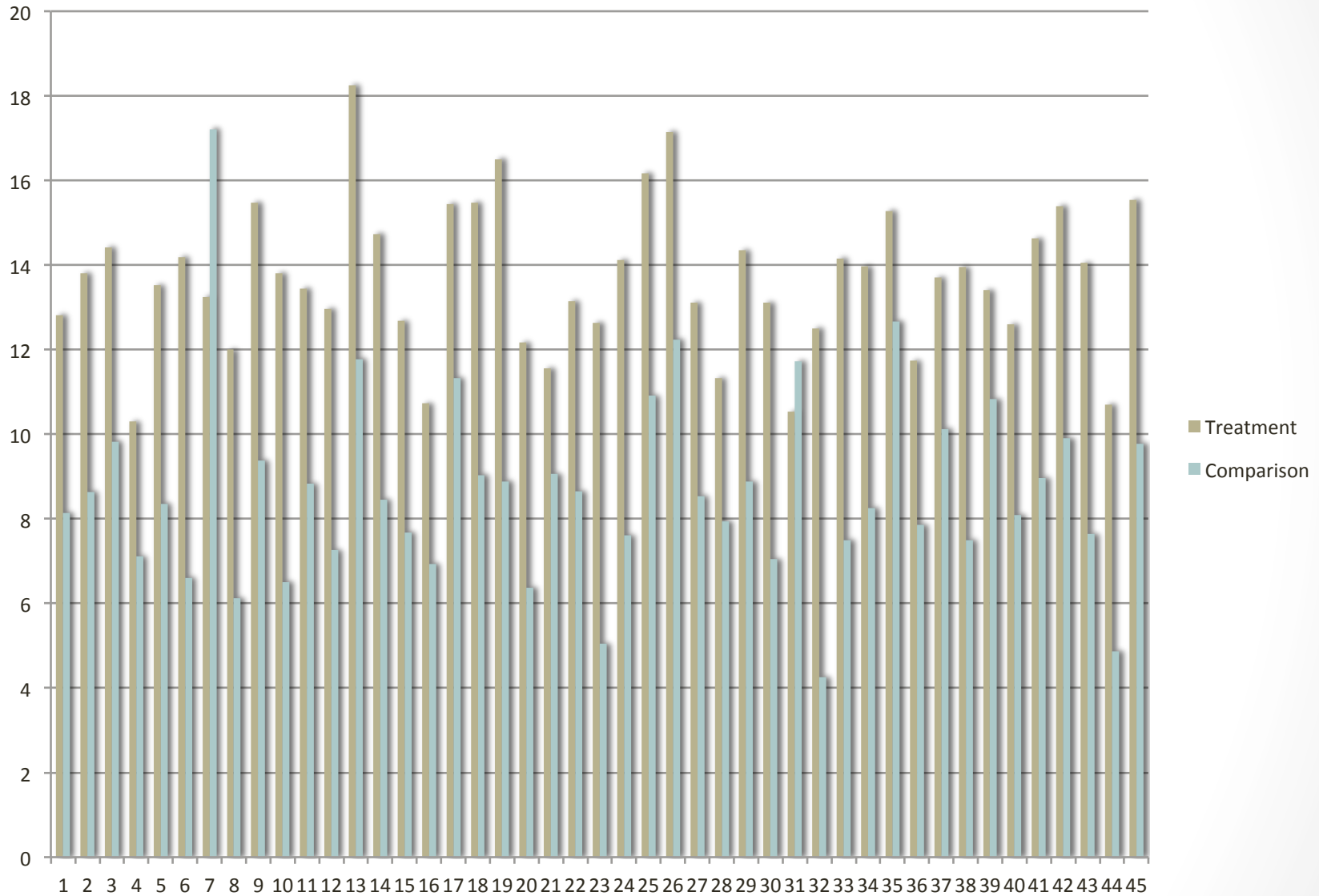
Society for Research in Child Development

FOUNDATION FOR CHILD DEVELOPMENT

New Pre-K Evidence

- Quality at-scale preschool education is a profitable investment
- Impacts are strong
- Larger impacts when quality is higher
 - Structural aspects create conditions for effective early education but do NOT ensure it will occur
 - Warm, responsive teacher-child interactions
 - “Serve-and-return” conversation
 - High quality interactions and activities to foster learning

Figure 1. By school treatment and comparison means on the Woodcock Johnson applied math subscale.



New Pre-K Evidence, cont'd

- Developmentally focused and sequenced instruction/curricula (focused on particular set of skills, e.g., language/literacy, math, socio-emotional skills)
- Intensive/embedded on-site or video-based professional development (mentoring/coaching)
- Regular monitoring of child progress that is not high stakes, but informs teachers' practice with individual children
- Strong set of recent examples involving packages of curricula, PD, and assessment, including some at scale
- Early work on integrated curricula (e.g., language or math + socio-emotional)

New Pre-K Evidence, cont'd

- Positive effects for different subgroups?
 - Socio-economic status
 - Race/ethnicity
 - Dual-language learners and children of immigrants
 - Children with special needs

Challenges & Opportunities

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- Recalculating success

Thank you

- William Gormley
- Anna Johnson and Anna Markowitz
- Doug Clements
- Marcy Whitebook
- Deborah Stipek
- Stephanie Jones