Association of Afterschool Programs' Contextual Characteristics and Children's Moderate-to-Vigorous Physical Activity and Time Spent Sedentary

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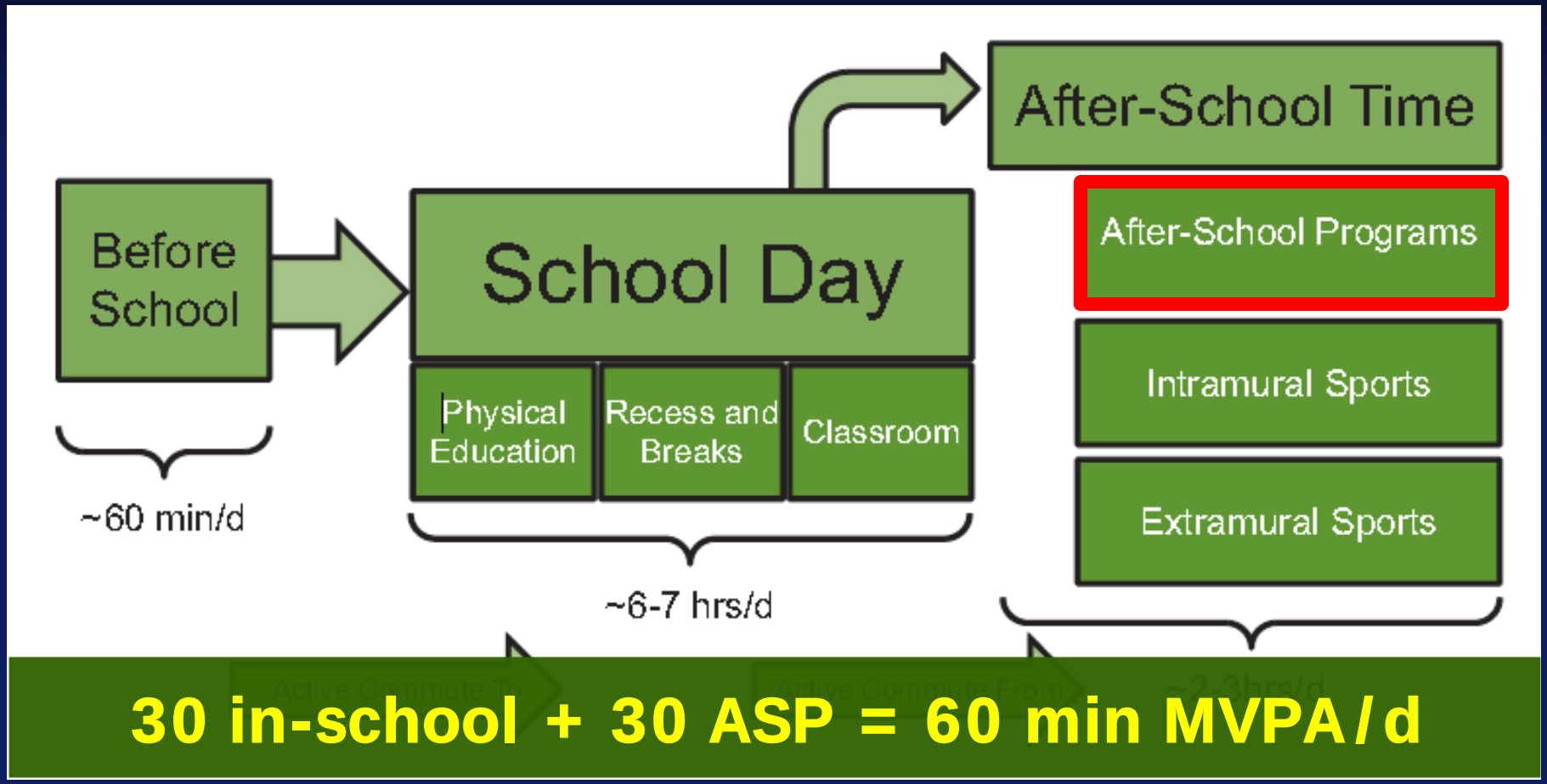
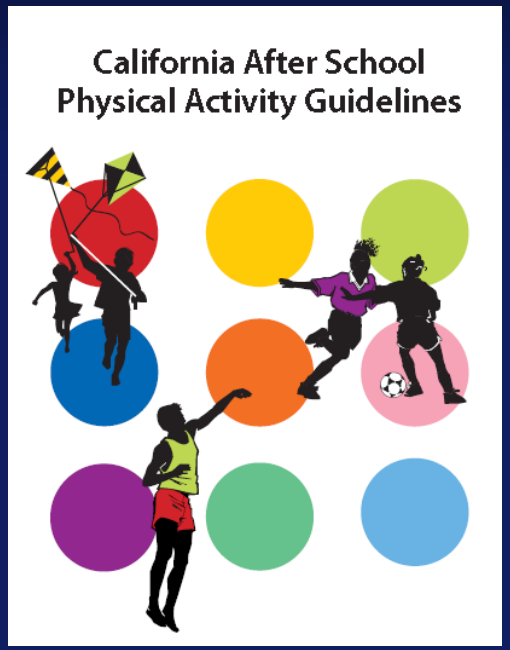
Comprehensive Approach to School-Wide PA Promotion



Beets. M. Before- and After-school Physical Activity Programs Including Intra- and Extramural Sports :Opportunities and Challenges – IOM, September 20th 2012
Beets, M. et al. (in press). Physical Activity in Afterschool Programs: Comparison to Physical Activity Policies. Journal of Physical Activity & Health.
Beets, M., et al. (2010). Evaluation of policies to promote physical activity in afterschool programs: are we meeting current benchmarks? Prev Med, 51(3-4), 299-301

PA Recommendations for Afterschool Programs (ASPs)

- Children engage in MVPA for **30 minutes**
- Play **outdoors** whenever possible
- Not all ASPs have adequate outdoor facilities



Defining ASPs

- **Characteristics:**
  - **Time offered:**
    - M-F, 3-6pm, throughout the school year
    - Avg. 8.1 hours/week
  - **Schedule:**
    - homework time, snack, enrichment activities (crafts, arts, music), and PA opportunities
  - **Location:**
    - Varies (schools, community organizations, recreation facilities, churches, etc.)

Beets, M., et al. (2010). Defining standards and policies for promoting PAin afterschool programs. Journal of School Health, 80(8), 411-417.
Beets, M. W. (2012). Enhancing the translation of physical activity interventions in afterschool programs. American Journal of Lifestyle Medicine, 6(4), 328-341.

ASP Setting

- Ideal setting to promote PA
  - 8.4 million youth
    - Age 5-18 years old (K-12)
    - Predominantly elementary age
    - 40% low-income schools
- Most youth are not meeting PA recommendations in the ASP setting

Afterschool Alliance. *America After 3 pm: A Household Survey on Afterschool in America;* 2009.

ASP Setting

- Little is known about this setting and its **influence** on MVPA and sedentary behavior

- Most conclusions have been drawn from **self-report** data

    - Lack of **objective measurements** in the ASP setting

Purpose

- To examine the association between ASP contextual characteristics and children's activity levels (MVPA and time spent sedentary) while attending an ASP

- Contextual characteristics of interest:
  - Activity Location: Indoor vs. Outdoor
  - Activity Structure: Organized vs. Free Play

Methods

Methods: Sample

- Results presented are baseline data as part of a larger group RCT

- 20 ASPs across South Carolina
  - Diverse sample:
    - Faith-based, Parks and Recs, School-based, Community-based
  - Serving 1,800+ youth

Methods: Data Collection

- **Program Demographics**
  - Avg enrollment: 88 kids (30-162 kids)
  - Avg Scheduled PA Time: 66 min/d
  - Avg ASP Length: 204 min/d

- **Child Demographics**
  - 5-12yrs, 50% girls, 55%W, 37%AA
  - Measured **1,365** children via accelerometry
    - (75% of children enrolled)

Methods: Measures

- **Physical Activity Levels:** MVPA and Sedentary
  - Accelerometry (Evenson and Matthews cutpoints)
  - Time on and off recorded
- **Activity Location:** Indoor vs. Outdoor
  - ActiGraph GT3X+ - Ambient Light Sensor
    - LUX value 32 under clothing (5sec epoch)
    - ROC Curve – AUC 0.93, Sens 92.7, Spec 92.6
- **Activity Structure:** Free vs. Organized Play
  - Direct Observation using SOSPAN
  - High Frequency Momentary Time Sampling

Matthews, CE, et al. Amount of time spent in sedentary behaviors in the US 2003-2004. American Journal of Epidemiology. 2008; 167(7): 875-881.
Evenson, KR, et al. Calibration of two objective measures of physical activity for children. J Sports Sci. 2008;26(14): 1557-1565.
Flynn JJ et al. Detecting Indoor and Outdoor Environments Using the ActiGraph GT3X+ Light Sensor in Children. Med Sci Sports Exer. 2013.
Weaver, RG, et al.(2013). System for Observing Staff Promotion of Activity and Nutrition (SOSPAN). *Journal of physical activity & health*.

Methods: Analyses

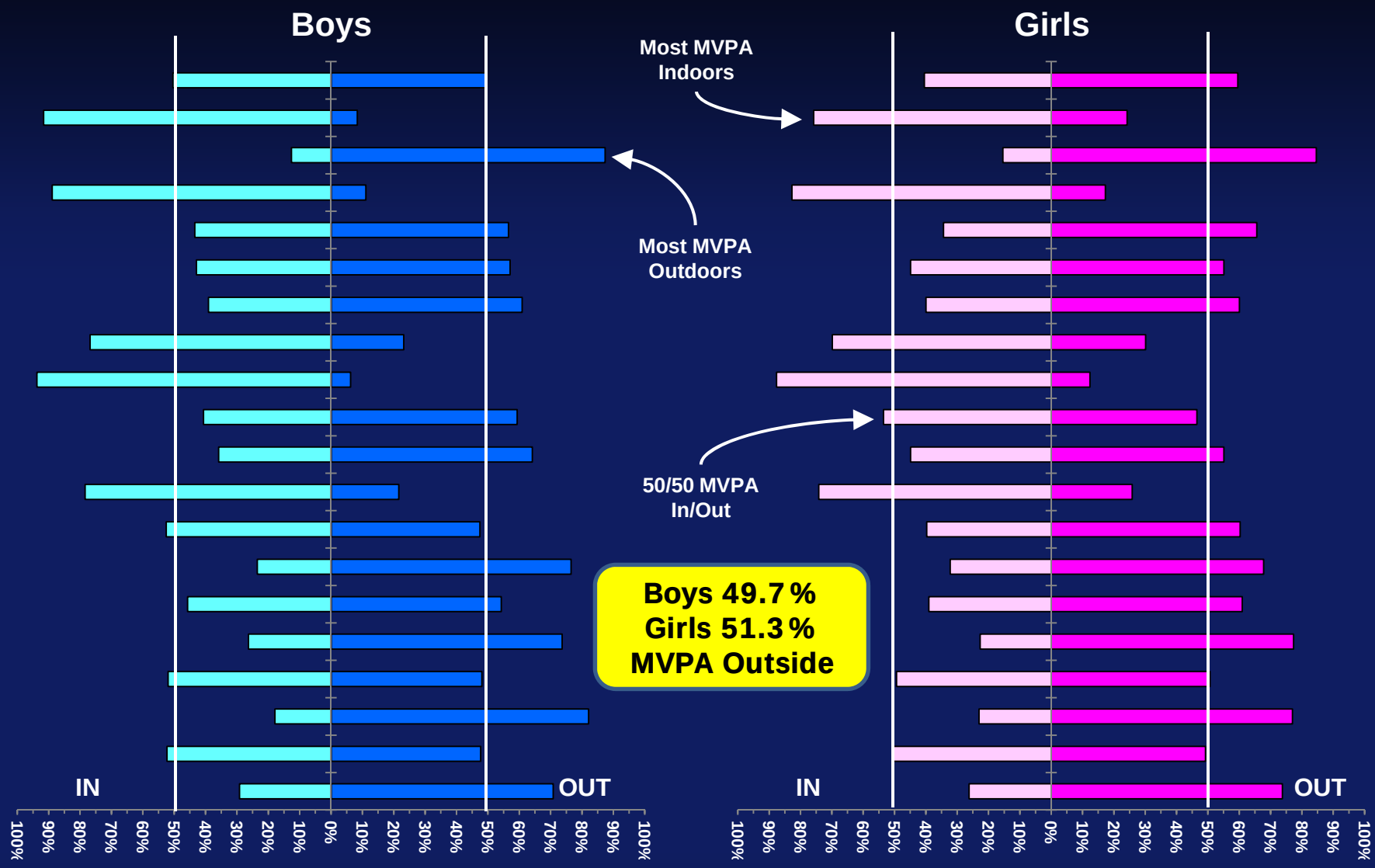
- Mixed Model Regression
  - Multiple Days nested within Children nested within ASPs

- Separate models for Indoor and Outdoor MVPA and Sedentary

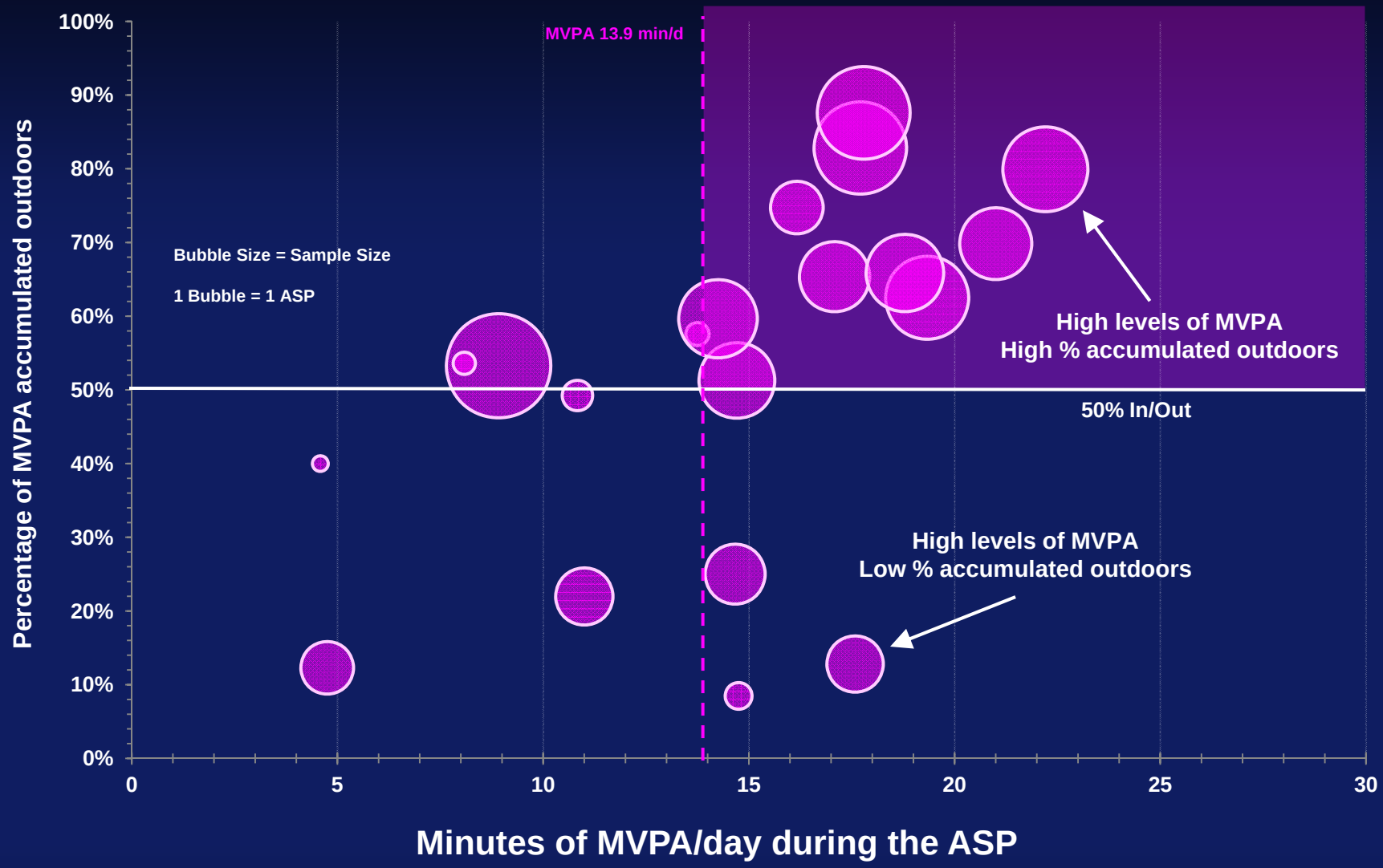
Results

Proportion of MVPA Spent Inside and Outside by ASP

One BAR Represents One ASP



Modest association with total MVPA and % accumulated Outdoors - Girls



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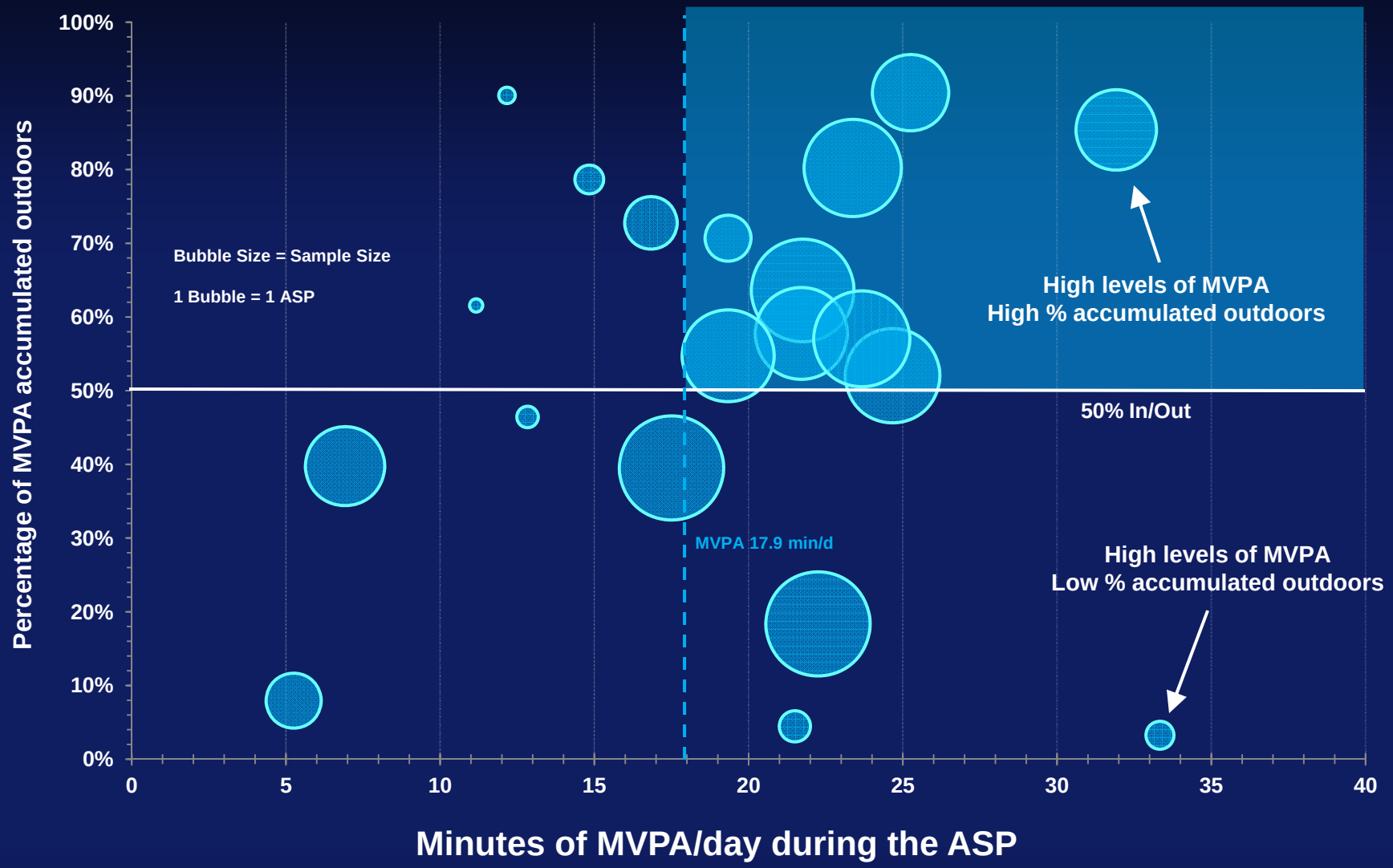
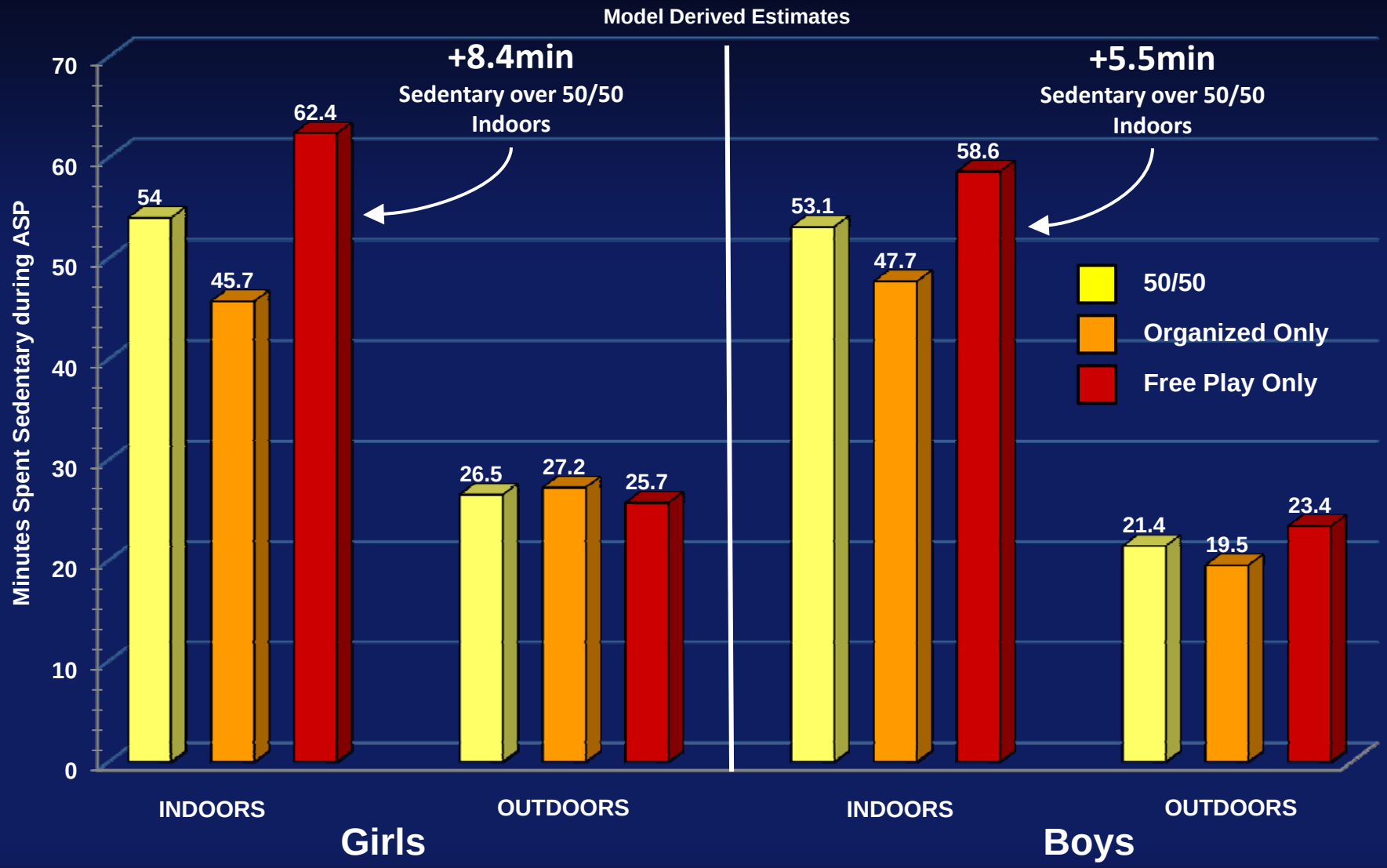
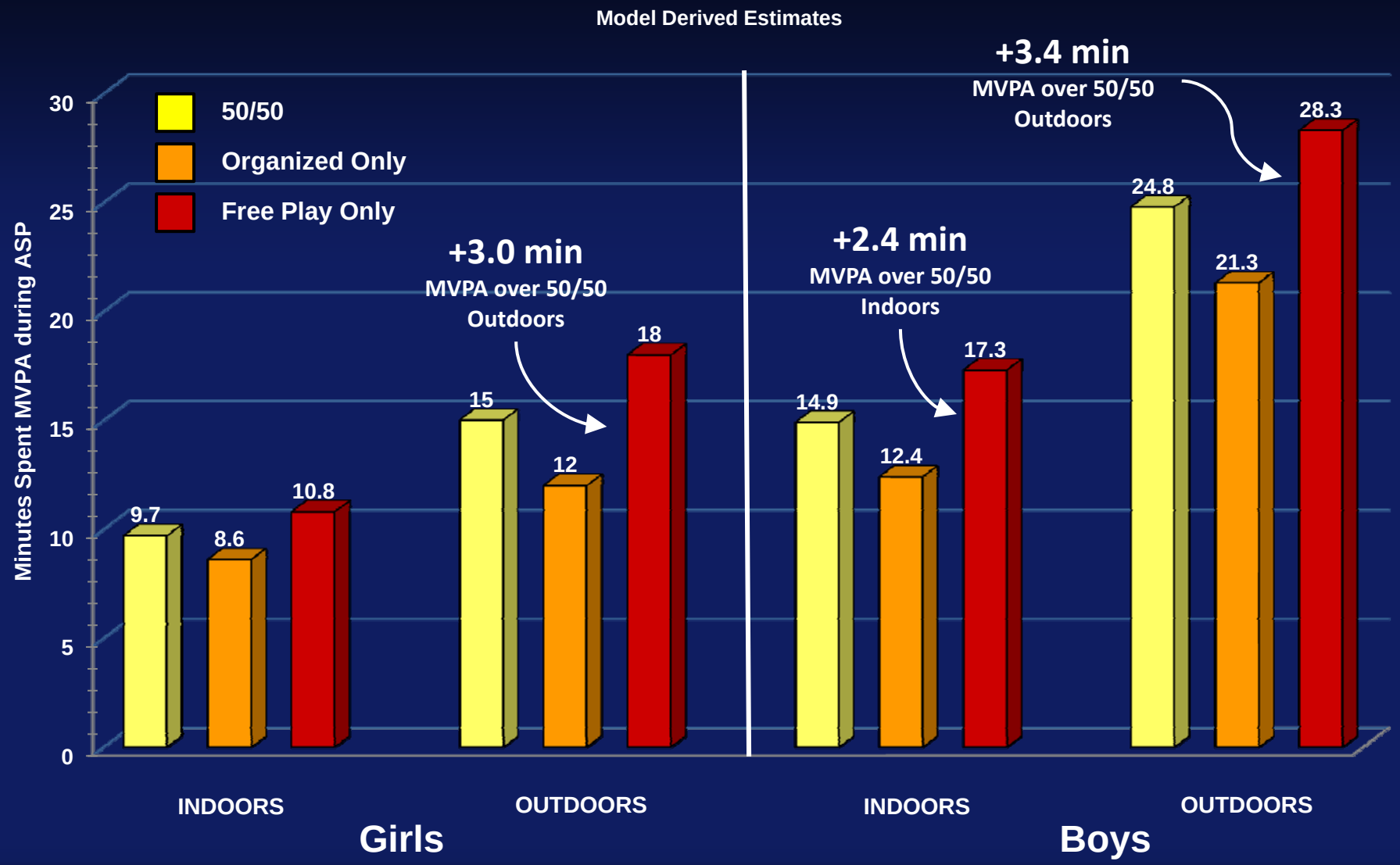


Higher Free Play to Organized Ratio Associated with Greater Time Sedentary Indoors



Higher Free Play to Organized Ratio Associated with Greater Time MVPA Indoors and Outdoors



Conclusions and Implications

Conclusions and Implications

- Current policies support outdoor play as much as possible
  - A **modest relationship** between MVPA minutes and % of time spent outdoors
  - Playing outdoors may not be an **option** for some ASPs
    - Maximize PA within **available** resources
      - (i.e. indoor and outdoor PA spaces)

Conclusions and Implications

- **Play structure:**
  - **Free play can only provide so much to daily activity levels**
  - **Developing strategies to improve the quality of organized games**
  - **Increase staff skills in facilitating organized play opportunities**

Conclusions and Implications

- **Higher Sedentary Indoors during Free Play**
  - More **non-active** options
    - Computers, Chairs, Tables, Games
    - Girls observed choosing non-active options

- **Higher MVPA Outdoors during Free Play**
  - **Organized PA poorly organized**
    - Associated with increased lines, elimination, idle time, and less activity equipment
    - Limits activity levels – **LET US Play**

Questions