Space To Grow
Health & Wellness Evaluation
NPI Brown Bag
October 23, 2017

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Overview

• Provide brief explanation of built environment inequities & their association with health inequities
• Introduce Space To Grow (STG)
• Identify five adapted RE-AIM dimensions for built environment interventions
• Detail STG health & wellness evaluation plan
• Share project timeline and products
Background: Urbanicity

Inequities in built environment (identified as density, functional mix and public spaces & services) associated with Health Disparities/Social Injustice.

- Climate characteristics, soil and water pollution
- Food desserts
- Lack of traffic calming, sidewalks, bike lanes (less opportunities for active transport)
- Fewer parks (less opportunities for PA)
Specific Need in Chicago

• Residents of Chicago’s low-income, urban neighborhoods face *numerous stressors*
  – Flooding
  – High crime
  – Limited access to safe places for youth & community members to congregate & be physically active
  – Minimal exposure to green space
Donald Morrill Math & Science Elementary School

Pre-transformation
Donald Morrill Math & Science Elementary School

Post-transformation
Virgil Grissom Elementary School

Pre-transformation
Virgil Grissom Elementary School

Post-transformation
STG Schoolyard Renovations

• Prioritize PA, Play, Learning, Exploration & Community Engagement.

• Incorporates landscape features that capture significant amount of rainfall – helping keep the city’s water resources clean & resulting in less neighborhood flooding (Water Management).
STG Initiative

- Focused selection criteria to identify schools (sig neighborhood flooding & most urgent need for outdoor space)
- Engages community in design process with multiple events & marketing during planning phase
- Community events & workshops post-transformation
How might renovated schoolyard in an Urban area impact individuals & community?

- Improve Cognitive Function (Dadvand 2015)
- Improve Recovery from Stress (Van den Berg 2007)
- Improve Mental Wellbeing (e.g., Chawla 2014)
- Provide Community Benefits (e.g., collective efficacy, community connectedness) (Weinstein 2015)
- Provides Opportunity for PA (Cohen 2015; Tester 2009)
- Opportunity for Beneficial Play (Dyment & Bell 2008)
- Increase Social Emotional Skills (Chawla 2014)
- Provide Nutrition Education & Environmental Literacy
Assess the impact of the STG schoolyard transformations via examination of four aims:

1. Utilization and characteristics of person’s using schoolyards
2. Students’ physical activity, well-being, & academic outcomes
3. Community engagement and cohesion
4. School environment
RE-AIM Framework Adapted for Built Environment Intervention (King 2015)

**Reach:** Representativeness of those affected by environmental change

**Effectiveness:** Behavior change

**Adoption:** Characteristics of institution that adopt or decline intervention

**Implementation:** Aligned with community needs

**Maintenance:** Long-term usage (& integrity) of space & impact on health
Multi-method Assessment Strategy

• Using complementary methods to improve accuracy by collecting different kinds of data bearing on same phenomenon.

• Will allow us to flesh out important info that may not be captured solely by a single method.
Participating Schools

• Post-renovation outcomes evaluated at 3 transformed Chicago Public School (CPS) schoolyards: **May-June 2016**
  – 2 schools (Morrill & Grissom) transformed in summer 2014 (Round 1; R1 – 18mo post-transformation)
  – 1 school (Cather) transformed in summer 2015 (Round 2; R2 – 6mo post-transformation)

• Baseline data collection at 2 schools **May-June 2017; Follow-up data collection TBD**
Behavior Mapping (Cosco, Moore & Islam 2010)

Observational methodology designed to capture:

- Schoolyard Utilization & characteristics of persons on schoolyard (gender, age range & race/ethnicity) - Reach

- Level of Physical Activity (e.g. Sedentary, Light, Moderate-to-Vigorous) - Effectiveness & Maintenance

- Type of Social Interactions – Effectiveness

- Interaction between built environment & individuals’ behaviors (physical activity & social interactions) – Effectiveness
Aerial maps of transformed schoolyards (divided into zones for observational data collection)
Grissom, afterschool, Post-transformation

Key:
- Red = Stationary | Motionless
- Brown = Stationary with some movement
- Yellow = Walking (slow pace)
- Orange = Jogging (moderate pace)
- Green = Running (strenuous/very fast pace)

The map illustrates the movement pattern of individuals in Grissom afterschool post-transformation.
Schoolyard Checklist (adapted from BTG 2012)

Objective data capturing components/features of each schoolyard and their condition, as well as presence/absence of incivilities – Implementation & Maintenance

C. SCHOOLYARD FEATURES AND AMENITIES

<table>
<thead>
<tr>
<th>Feature Description</th>
<th>C1 Is Feature Present?</th>
<th>C2 Condition of Feature or Surface</th>
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<tbody>
<tr>
<td>a. Green Space</td>
<td></td>
<td></td>
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<tr>
<td>b. Shelters/Shade</td>
<td></td>
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<tr>
<td>c. Picnic Tables</td>
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<td></td>
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<tr>
<td>d. Seating – Benches</td>
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<td></td>
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<tr>
<td>e. Seating – Natural</td>
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<td>f. Drinking Fountains</td>
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<td>g. Decorative Fountains</td>
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<tr>
<td>h. Trash Containers</td>
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<tr>
<td>i. Grills/Fire Pits</td>
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<td></td>
</tr>
<tr>
<td>j. Fruit/Vegetable Beds/Garden Area</td>
<td></td>
<td></td>
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<tr>
<td>k. Educational Signage</td>
<td></td>
<td></td>
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<tr>
<td>l. Art Feature</td>
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</tbody>
</table>

If Yes to l. Art Feature, please describe:

D. INCIVILITIES

<table>
<thead>
<tr>
<th>Incivility Description</th>
<th>NONE</th>
<th>A LITTLE</th>
<th>SOME</th>
<th>A LOT</th>
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</thead>
<tbody>
<tr>
<td>a. Garbage/Litter</td>
<td></td>
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<tr>
<td>b. Broken Glass</td>
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<tr>
<td>c. Graffiti/Tagging</td>
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<tr>
<td>d. Evidence of Alcohol Use</td>
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<tr>
<td>e. Evidence of Substance Abuse</td>
<td></td>
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<td>f. Sex Paraphernalia</td>
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<tr>
<td>g. Other Evidence of Vandalism or Trespassing. Please describe:</td>
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Surveys

- Three versions (caregiver, teacher, community)
- Assessed current perceptions and changes:
  - Schoolyard utilization
  - Neighborhood environment
    - Social Cohesion and Trust Subscale of Collective Efficacy (Sampson, Raudenbush, & Earls, 1997)
    - Neighborhood Cohesion Instrument (items assessing mobility; Buckner, 1988)
    - Perceptions of Neighborhood Safety (Janssen, 2014)
  - School environment
    - Delaware School Climate Survey (Bear 2014)
    - Morale Subscale of the School Organizational Health Questionnaire (Hart 2000)
  - Student health and wellbeing (e.g., bullying, injuries)
  - School-community relations
Baseline Stakeholder Interviews

• Identify community contextual variables (e.g., community assets & priorities) in which STG initiative was being implemented & utilization of the outdoor space as well as the barriers and facilitators to its use - Reach & Adoption
Process Evaluation: Planning Event Surveys

• Assess community engagement process the intervention team followed -- were school staff, families and community members appropriately involved in the planning, design and maintenance phase? (Conger, 1984; Melby & Conger, 2001; O’Malley et al., 2003; Ryu & Lombardi, 2015) – Implementation
Process Evaluation:
STG Process Checklist

• Assess *strengths & barriers of STG initiative implementation* at each phase of the schoolyard transformation, while collecting descriptive information about the process to inform the findings with more detail - Implementation
Neighborhood Park & Playground Audits

- ½ mile radius around school, using ArcGIS database to identify green spaces & verify with groundtruthing
- Research has demonstrated that playground structures are most used park features & areas where children are observed in MVPA compared to other park activity areas - Effectiveness
Secondary Data

• Publicly available CPS school-level data
  Compiled academic & behavioral outcomes for two school years surrounding the schoolyard transformation - Effectiveness

• Aggregate community-level data
  Compiled from the City of Chicago website for two years surrounding the schoolyard transformation - Effectiveness
  • Crime statistics
  • Real estate values
Findings from 3 schools post-transformation

• STG schoolyards were *highly utilized post-transformation* by students, teachers, and community members alike.
  – Reported to be highly utilized at all times & more than prior to transformation
  – Greater observed utilization on schooldays than weekends

• STG schoolyards were observed to be a *safe place* for children to *play*, have *positive social interactions* and *engage in physical activity*.
  – Supported by objective schoolyard observations & survey reports

• Schoolyards were *well maintained* with only minor incivilities (trash, graffiti)
Changes in students’ health, well-being, and academic outcomes

• Based on survey data:
  – Caregivers & teachers reported **fewer injuries, less teasing/bullying, and less gang activity** on schoolyards post-transformation.
  – Teachers reported using the new schoolyard as an **extension of the classroom** for a wide variety of lessons and activities.

“I have brought my students outside more since the playground was renovated”

“I use the outdoor classroom for social-emotional learning”

“It is a tool for observation, a lab for experimentation and growth, and a space to feel connected to earth”
Changes in school-community engagement and cohesion

- All schools were reported to have a **good relationship** with neighbors in the community
  - 50% of caregivers, 65% of teachers & 37% of community members thought that relations between school & community **changed** following schoolyard transformation.
  - Respondents reporting change cited better **communication**, more **community involvement**, greater **community use of the playground**, & increased **neighborhood pride** as reasons for increased school-community relations.

“Better communication between teachers and parents!”

“School has become a place for the community”

“People travel to the school because it is beautiful”
Changes in school-community engagement & cohesion

• Based on City of Chicago secondary data:
  While overall crime decreased, there was an uptick in violent crime at Morrill and Cather.
Future Directions

- **Maintenance of effects** at R1 & R2 schools
- Capture *pre-transformation planning process*
  - Checklists & surveys at planning meetings
  - Interviews with key stakeholders
- *Pre- and post*-transformation data
  - 2017-18: 2 schools
- **Policy brief** to make the case for public investment in schoolyard transformations, particularly in low-income, urban communities