CRISP Lessons from the Field: Community Outreach - Obesity Prevention Trial CO-OPT

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University Physicians, Inc. (UPI) Building

13199 East Montview Blvd,

Lilly Marks Board Room, 1st floor
Outline

• Background
• Community Outreach – Obesity Prevention Trial (CO-OPT)
• Colorado Health Observation Regional Data Service (CHORDS)
• Lessons learned
• Discussion
*Represents statistically significant annual decrease or increase in obesity.

CDC Vital Signs, August 2013
Children entering kindergarten (mean age, 5.6 years):
- 12.4% obese, 14.9% overweight
Eighth grade (mean age, 14.1 years)
- 20.8% obese, 17.0% overweight
9-year likelihood of becoming obese from 5-year old baseline:
- 31.8% among overweight, 7.9% among normal weight
Among those who became obese between ages 5-14 years:
- ~50% overweight at baseline, 75% had been above the 70th percentile for BMI at baseline.

How we got here

• **CDC announcement** (2011)
  – Community health workers/patient navigators
  – Focus on kids 2-12 years old
  – 5-year intervention

• **AHRQ announcement** (2011)
  – Center for Research in Implementation Science and Prevention
  – 1 of 3 major projects (IZ, CVD risk reduction, childhood obesity)
  – 3-year intervention
Designing a Childhood Obesity Intervention
Evidence-based Review

Constraints/Requirements:
• no pharmacologic intervention
• include patient navigators
• pragmatic community-based trial

Systematic Review*:
• 4 to 18 years old subjects
• comprehensive behavioral interventions of medium (>25 hrs) -to-high intensity (<75 hrs) were the most effective approach
• 1.9 to 3.3 kg/m2 difference favoring intervention groups at 12 months.
• limited evidence suggests improvements >12 mo treatments
• few (if any) harms with behavioral interventions.

*Whitlock E et al, Pediatrics 2010;125;e396-e418;
CO-OPT: Childhood Obesity Intervention
Specific Aims

1. To determine the effect of a patient navigator mediated program with families on BMI z-score change in overweight and obese children aged 2-6 years

2. To determine the effect of the intervention on physical activity and eating behaviors for the index child as summarized in “5-2-1-0” daily targets (i.e., 5 fruits and vegetables, less than 2 hours screen time, 1 hour of exercise and 0 sweetened drinks)

3. To evaluate the use of technologies (e.g., text messaging and patient relationship manager [PRM]) as an aid to patient navigators working with an overweight/obese child and his/her family.

4. To implement obesity registry functionality within an integrated safety-net healthcare system to measure primary obesity outcomes in a low-income population

Whitlock E et al, Pediatrics 2010;125;e396-e418;
• **Body mass index (BMI):** measure of weight adjusted for height. BMI = weight (kg)/height (m)^2

• **BMI Percentile:** measure that adjusts and compares similar age and gender children using CDC charts

<table>
<thead>
<tr>
<th>Weight Status Category</th>
<th>Percentile Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Underweight</td>
<td>Less than the 5th percentile</td>
</tr>
<tr>
<td>Healthy weight</td>
<td>5th percentile to less than the 85th percentile</td>
</tr>
<tr>
<td>Overweight</td>
<td>85th to less than the 95th percentile</td>
</tr>
<tr>
<td>Obese</td>
<td>Equal to or greater than the 95th percentile</td>
</tr>
</tbody>
</table>

• **BMI z-scores:** normalizes the child’s weight/height measures relative to age and gender using an external reference
A 10-year-old boy with a BMI of 23 would be in the obese category (95th percentile or greater).

A 10-year-old boy with a BMI of 21 would be in the overweight category (85th to less than 95th percentile).

A 10-year-old boy with a BMI of 18 would be in the healthy weight category (5th percentile to less than 85th percentile).

A 10-year-old boy with a BMI of 13 would be in the underweight category (less than 5th percentile).
An example of the curve produced by fitting a cubic polynomial in age to the natural log of the available observed BMI values (+) for one subject.


©1998 by American Academy of Pediatrics
Conceptual Model

Obesity Care Model

Environment
- Family
- School
- Work site
- Community

PN

Patient/family

PN

Medical systems
- Decision supports
- Self-management supports
- Delivery system design
- Information systems

PN

Self-management

PN

Improve health outcomes

PN = Patient navigator

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Most recent visit for children 2-6 years old seen at DH-CHS (N=63,193) *pulled March 1, 2012

BMI >= 85% (n=17,348)

In care at DH-CHS > 12 months, had >= 2 visits, most recent visit within 18 months (N=2057)

Randomized order (N=2057)

Phone recruitment and consent process

Stepped Wedge Engagement with PN

PN-mediated Intervention

Follow up measures by research assistant
Patient Navigator-based Intervention

Content:

• Based on successful RCT* (decreased z-BMI 6 and 12 months), 10 telephone-based interventions, 8-12 year olds for KP members

• Adapted to ongoing UCD in community center-based intervention 3-16 year old – 12*2-hr sessions (Haemer) - community health workers

• Adapted for home-based intervention in 3-6 year old – 16 sessions, 25 hours/family (Davidson) - patient navigators

<table>
<thead>
<tr>
<th>Session</th>
<th>Learning Objectives</th>
</tr>
</thead>
</table>
| Develop Rapport, Baseline Measurement; Explain 5-2-1-0 and Track Behaviors | Create rapport between family and navigator  
  Family will be able to explain the study process and purpose  
  Collect Baseline Data (Baseline measures)  
  Explain 5-2-1-0 concepts  
  Describe reasons for children’s growth patterns  
  Describe your own family health behaviors  
  Demonstrate how to keep track of behaviors and set goals |
| Nutrition: Focusing on family meals                                    | Explain the structure for visits  
  Explain 5-2-1-0: focus on 5  
  Describe 2 strategies for improving fruit and vegetable consumption  
  Demonstrate rule setting around eating and food choices  
  List a specific family challenge  
  Describe how to keep track of behaviors and set goals |
| Physical Activity: Introduction                                        | Explain “5-2-1-0”: one hour or more of physical activity every day  
  Explain “5-2-1-0”: two hours or less recreational screen time per day |
| Being in charge and making changes                                     | Describe a parent’s role during meal times  
  Explain concept of food neophobia  
  Describe use of differential attention (praising/ignoring) |
| Being a good judge of home health                                      | Explain “5-2-1-0”: zero sugary drinks every day  
  Explain why a home health assessment is valuable  
  Compare PN and parent home health assessment results |
| Being focused on choices                                               | Explain how to read food labels  
  Describe whole grains, fiber  
  Compare nutritional value of selected foods  
  Explain what lean protein means and what foods contain them  
  Describe low-fat dairy products and how to include in your meal planning |
| Grocery Store Outing                                                   | Demonstrate reading food labels  
  Demonstrate comparison shopping and calculate unit pricing  
  Describe ways to buy fruits and vegetables on a limited budget |
<table>
<thead>
<tr>
<th>Session</th>
<th>Learning Objectives:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cooking Demonstration</strong></td>
<td>Describe the method of preparing a new food or recipe(s)</td>
</tr>
<tr>
<td></td>
<td>List beneficial factors from new recipe(s)</td>
</tr>
<tr>
<td></td>
<td>Compare this recipes nutritional value to a similar but less nutritious form</td>
</tr>
<tr>
<td></td>
<td>Demonstrate kitchen skills required to prepare the recipe(s)</td>
</tr>
<tr>
<td></td>
<td>Plan a meal considering food preferences</td>
</tr>
<tr>
<td><strong>Identifying barriers and Staying Motivated</strong></td>
<td>Demonstrate exercising while delivering other objectives (walk during session)</td>
</tr>
<tr>
<td></td>
<td>Describe the common barriers to regular exercise</td>
</tr>
<tr>
<td></td>
<td>Describe the process of building motivation for physical activity</td>
</tr>
<tr>
<td><strong>Creating a healthy home and effective directions</strong></td>
<td>Describe how to set a home for success, eliminating food with little nutritious value, putting foods out of site</td>
</tr>
<tr>
<td></td>
<td>Explain how to give effective directions to your child</td>
</tr>
<tr>
<td><strong>Family Support: Promoting healthy body image and discipline</strong></td>
<td>Explain how we talk promotes and affects a healthy body image</td>
</tr>
<tr>
<td></td>
<td>Describe the use of time out and other discipline techniques</td>
</tr>
<tr>
<td><strong>Nutrition: Fruits, Vegetables and Portion Control</strong></td>
<td>Describe the importance of promoting fruits and vegetables with every meal</td>
</tr>
<tr>
<td></td>
<td>Explain the value of snacks and nutritional goals</td>
</tr>
<tr>
<td></td>
<td>Explain how to prepare healthy affordable meals</td>
</tr>
<tr>
<td></td>
<td>Demonstrate ability to prepare healthy affordable meals</td>
</tr>
<tr>
<td><strong>Physical Activity: Overcoming Burnout or Motivating Self or PA</strong></td>
<td>Explain what burnout means and how it can be avoided</td>
</tr>
<tr>
<td></td>
<td>Explain the importance of dealing with changing schedules</td>
</tr>
<tr>
<td></td>
<td>Describe ways to maintain focus but be flexible</td>
</tr>
<tr>
<td><strong>Family Support: Finding support and putting it all together</strong></td>
<td>List ways to include other family and friends</td>
</tr>
<tr>
<td></td>
<td>Demonstrate ability to blend all learned skills</td>
</tr>
<tr>
<td><strong>Family Support: Planning Ahead and Problem Solving</strong></td>
<td>Describe the home change experience</td>
</tr>
<tr>
<td></td>
<td>Explain efforts for home change</td>
</tr>
<tr>
<td></td>
<td>Describe methods to plan ahead for challenges</td>
</tr>
<tr>
<td></td>
<td>Describe problem solving skills and their use</td>
</tr>
<tr>
<td><strong>Final Measures</strong></td>
<td>Celebrate Success, Allow for Review and Reflection</td>
</tr>
</tbody>
</table>
CO-OPT – Preliminary Results
Family Recruitment/Engagement Status

- Total Calls: 4,817  ~25 calls/recruit
- Recruited: 195
- Completed intervention: 48 (25%)
- Not completed: 74 (38%)
  - Opt Out: 15
  - Declined: 36
  - Terminated: 23
- Active: 26 (13%)
- Waiting: 47 (24%)
CO-OPT – Preliminary Results

BMI z-score Change: Baseline to Follow-up

- N=95
- N=44
- N=11

p<.001  p<.04

Average BMI z-score

- Randomized
- Recruited
- Enrolled - completed
- Opted-out

Baseline  Follow-up

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CO-OPT – Preliminary Results

5-2-1-0 Change: Baseline to Follow-up

<table>
<thead>
<tr>
<th></th>
<th>Baseline (N=193)</th>
<th>Post-Intervention (N=45)</th>
<th>6-mo Post Intervention (N=10)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weekly Sugar Sweetened Beverages</td>
<td>5</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>Weekly Fruits/Vegetables</td>
<td>20</td>
<td>25</td>
<td>27</td>
</tr>
<tr>
<td>Weekly screen time (hrs)</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>Weekly activity (hrs)</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

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Perspectives - PN

- Home visits are convenient for families to participate.
- PN role allows me to have unique experiences and interactions with families. I see first-hand families making changes. At the first visit, TV is on the entire session and often candies are on the counter; by 3rd session, begin to see changes - TV off before I arrive and families stop buying candies and chips.
- What I enjoy most about my job is giving families valuable tools regarding family support, nutrition, and physical activity, unavailable to everyone at Denver Health; hopefully they will use for the rest of their lives.
- We create awareness and help people understand the importance of nutrition and physical activity.
- Wonderful experience to meet families and interact with them not only professionally but emotionally as they change bad habits to good ones and encourage them to keep motivated.
- Proud to be part of this study because it helps families prevent diabetes and they really appreciate our care.
CO-OPT - Preliminary Results
Racial/Ethnic Distribution

- Great majority of families who completed training are Hispanic
- Research associate and both PN are bilingual and bicultural

<table>
<thead>
<tr>
<th>Race</th>
<th>Randomized (N=2057)</th>
<th>Recruited (N=193)</th>
<th>Completed (N=44)</th>
<th>Study Exit* (N=80)</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>110 (5.5)</td>
<td>7 (3.6)</td>
<td>5 (11.4)</td>
<td>1 (1.35)</td>
</tr>
<tr>
<td>Black</td>
<td>189 (9.2)</td>
<td>2 (1.0)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Hispanic</td>
<td>1725 (84.0)</td>
<td>182 (94.3)</td>
<td>38 (86.4)</td>
<td>78 (97.5)</td>
</tr>
<tr>
<td>Asian/Other</td>
<td>33 (1.6)</td>
<td>2 (1.0)</td>
<td>1 (2.4)</td>
<td>1 (1.3)</td>
</tr>
</tbody>
</table>

*Study Exit: Opt/out, Declined, Terminated
Family Organization *(Confusion, Hubbub, and Order Scale [CHAOS])*

- Often observed in families
- Using survey to monitor families, address issues and find viable solutions
- PN journal observes home environment, family dynamics (e.g., family members who challenge program goals and interfere with child’s diet)

Home Food and Activity *(Home Health Survey)*

- Little known about low resource, minority families.
- Most previous studies have been descriptive in design
- Survey previously used with preschoolers from higher SES families and white racial groups
- Novel opportunity for before/after intervention comparison among a unique demographic
- Preliminary data suggest minimally changed environment - interventions aimed at improving the physical environment may require greater intensity
- Assessment may benefit from tailoring to low-income, minority families
Text messaging

- content not immediately available and easily integrated into the EHR – discarded as goal

Patient Relationship Management (PRM) tool:

- available to patient navigators via iPad mobile application
  
  • Timely collection of information about families’ learning goals and objectives
  
  • Provide automated feedback to care providers about families’ progress and goals
  
  • Improved communication among team members
CO-OPT – Preliminary Results

Technology

Informatics Perspective

- PNs utilize Patient Relationship Management (PRM) tool to:
  - schedule, manage and document their family interactions
  - enter study-related data.
- PRM provides grant members real-time access to study patient status and data and facilitates report generation.
- Use iPads to supplement study curriculum with interactive nutrition and fitness apps geared towards kids and families.
- Early development stages for patient-specific resource maps of healthy resources (e.g., walking loops, bike paths, playgrounds, parks, recreation centers, farmer's markets and community gardens) to promote healthy eating and active living.
  - piloted with several families for qualitative assessment
  - consider tool as interactive web-based application.
USPSTF Recommendations

• Recommended clinicians screen:
  – children aged 6 years and older for obesity and
  – offer or refer them to comprehensive, intensive behavioral interventions to promote improvement in weight status.

Meaningful Use Incentives (Certified Electronic Health Records)

• Record height and weight
BMI Category at Last Visit by Race/Ethnicity for Children Seen at Denver Health, 2005-2012

<table>
<thead>
<tr>
<th></th>
<th>Obese</th>
<th>Overweight</th>
<th>Not overweight</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOTAL</td>
<td>0%</td>
<td>10%</td>
<td>90%</td>
</tr>
<tr>
<td>Black</td>
<td>0%</td>
<td>10%</td>
<td>90%</td>
</tr>
<tr>
<td>Hispanic</td>
<td>0%</td>
<td>10%</td>
<td>90%</td>
</tr>
<tr>
<td>White</td>
<td>0%</td>
<td>10%</td>
<td>90%</td>
</tr>
<tr>
<td>Other</td>
<td>0%</td>
<td>10%</td>
<td>90%</td>
</tr>
</tbody>
</table>

N=33,542
N=4,021
N=26,291
N=2,107
N=1,123
A BMI z-score of 0 is equivalent to the 50th BMI percentile; BMI z-score of 1 is approximately the 85th BMI percentile; and, BMI z-score of 1.5 is approximately the 95th BMI percentile.
A BMI z-score of 0 is equivalent to the 50th BMI percentile; BMI z-score of 1 is approximately the 85th BMI percentile; and, BMI z-score of 1.5 is approximately the 95th BMI percentile.
A BMI z-score of 0 is equivalent to the 50th BMI percentile; BMI z-score of 1 is approximately the 85th BMI percentile; and, BMI z-score of 1.5 is approximately the 95th BMI percentile.
Change in BMI z-score per Observation Year by Age of Observation Onset
Denver Health 2005-2012, (N=33,542)
## Multivariate analysis:
### Risk of obese weight status at last visit
Denver Health, 2005-2012 (N=33,542)

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Odds Ratio*</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Unadjusted</td>
<td>Adjusted</td>
</tr>
<tr>
<td><strong>Gender</strong> Male (ref)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>0.73 (0.69-0.77)</td>
<td>0.75 (0.70-0.81)</td>
</tr>
<tr>
<td><strong>Race</strong> White (ref)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hispanic</td>
<td>1.56 (1.37-1.77)</td>
<td>1.33 (1.14-1.55)</td>
</tr>
<tr>
<td>Black</td>
<td>0.96 (0.82-1.12)</td>
<td>0.97 (0.81-1.16)</td>
</tr>
<tr>
<td>Other</td>
<td>1.12 (0.9-1.4)</td>
<td>1.19 (0.9-1.5)</td>
</tr>
<tr>
<td><strong>Obese weight status at baseline</strong></td>
<td>27.8 (25.7-30.0)</td>
<td>27.8 (25.6-30.2)</td>
</tr>
<tr>
<td><strong>Age at baseline</strong></td>
<td>1.10 (1.09-1.11)</td>
<td>1.03 (1.01-1.04)</td>
</tr>
<tr>
<td><strong>Person-years of observation</strong></td>
<td>1.11 (1.10-1.13)</td>
<td>1.18 (1.16-1.21)</td>
</tr>
</tbody>
</table>
Registries -> Harmonized Surveillance Systems

Advantages:

• Public health/clinicians reuse a common infrastructure/knowledge
• Links clinical, socioeconomic and environmental data across delivery systems
  ▪ Aggregated data provide larger total number, broader representation, and allows focus on vulnerable subpopulations
  ▪ Geocoded (patient address) maps of risk factors or health conditions can identify “hot spots” of higher prevalence
  ▪ Linkage with other “big data” sources can identify associated/contributory socioeconomic and/or environmental factors
  ▪ Permit targeted “place-based” interventions (e.g., social marketing, community resource development, and policy initiatives)
Infrastructure: Colorado Health Observation Regional Data Service (CHORDS)

Approach: Distributed research network

Components:

- **Current data partners** (Denver Health, Kaiser Permanente of Colorado, Children’s Hospital of Colorado)
  - CHORDS current reach is >700,000 individuals
- **Common data model** (virtual data warehouse)
- **Common secure query tool** (PopMedNet platform)
- **Local control**: Data remain behind institutional firewalls and approval required for release of query data response
<table>
<thead>
<tr>
<th>Project</th>
<th>Source</th>
<th>Years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colorado Clinical Translational Science Institute focused on regional</td>
<td>NIH</td>
<td>2008-2018</td>
</tr>
<tr>
<td>informatics infrastructure for research; existing Cancer Center</td>
<td></td>
<td></td>
</tr>
<tr>
<td>informatics expertise</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SPAN grant allowed initiation of virtual data warehouse (VDW) at DH,</td>
<td>AHRQ</td>
<td>2010-2012</td>
</tr>
<tr>
<td>development of local expertise</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Evaluation resulted in selection of Mini-sentinel PopMedNet model used</td>
<td></td>
<td>2012-2013</td>
</tr>
<tr>
<td>FDA post-marketing surveillance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BMI monitoring including environmental and socioeconomic data</td>
<td>TCHF</td>
<td>2011-2013</td>
</tr>
<tr>
<td></td>
<td>KP-CB</td>
<td></td>
</tr>
<tr>
<td>Cardiovascular risk reduction - Community Transformation Grant</td>
<td>CDC</td>
<td>2011-2016</td>
</tr>
<tr>
<td>Tobacco use, second hand smoke exposure and cessation</td>
<td>CDPHE</td>
<td>2012-2015</td>
</tr>
<tr>
<td>Mental health and substance use</td>
<td>AHRQ</td>
<td>2013-2017</td>
</tr>
</tbody>
</table>
CHORDS Registries

Current registry efforts
- Body mass index
- Cardiovascular disease risk
- Tobacco use and second-hand smoke exposure
- Mental health

Secure federated query

Standard Data Warehouse

Query Service

Secure Portal

Standard Data Warehouse
Public Health Surveillance Network Diagram: Federated Query

Data Recipients
- Denver Public Health

Federated Query Service (PMN)

1. Denver Health FQHC
2. CAHEP
3. DH Virtual Data Warehouse (VDW)
4. PMN Client
5. Virtual Data Warehouse (VDW)

Legend:
- Data Recipient
- Extract, Transform and Load
- Partner Site EHR
- Virtual Data Warehouse
- Aggregator
Current state of public health weight status surveillance:
• BRFSS self-reported demographic, weight data
• ~12,000 surveys/year/state = 700/year/Denver
• Allows county-level estimates only

BMI project:
• Combine measured BMI data from multiple institutions
• Include demographic data, location of residence
• Link BMI data, aggregated to meaningful geographic area (e.g. census tract), with built and social environment data
• Pilot a number of features of local data sharing network
Combined Multi-Site BMI Data

Denver Population
- all ages: 184,644 (31%)
- adults: 119,075 (26%)
- children: 64,606 (51%)

BMI Mapping Site-by-Site Comparisons

<table>
<thead>
<tr>
<th>Total Sample Size by Site</th>
<th>KPCO</th>
<th>DHHA</th>
<th>CHCO</th>
<th>CACHIE</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Children &lt; 18</td>
<td>80,813</td>
<td>54,836</td>
<td>207,770</td>
<td>2,337</td>
<td>345,756</td>
</tr>
<tr>
<td>Adults 18+</td>
<td>275,473</td>
<td>66,312</td>
<td>16,273</td>
<td>6,831</td>
<td>364,889</td>
</tr>
<tr>
<td>Total</td>
<td>356,286</td>
<td>121,148</td>
<td>224,043</td>
<td>9,168</td>
<td>710,645</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Median BMI, Adults 18+</th>
<th>KPCO</th>
<th>DHHA</th>
<th>CHCO</th>
<th>CACHIE</th>
<th>Median</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>26.45</td>
<td>26.98</td>
<td>23.81</td>
<td>27.46</td>
<td>26.47</td>
</tr>
<tr>
<td>2011</td>
<td>27.01</td>
<td>28.02</td>
<td>23.92</td>
<td>28.42</td>
<td>27.12</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Median BMI %, Children &lt; 18</th>
<th>KPCO</th>
<th>DHHA</th>
<th>CHCO</th>
<th>CACHIE</th>
<th>Median</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>59.18</td>
<td>69.58</td>
<td>61.52</td>
<td>70.25</td>
<td>62.85</td>
</tr>
<tr>
<td>2010</td>
<td>59.77</td>
<td>71.63</td>
<td>63.57</td>
<td>74.49</td>
<td>64.40</td>
</tr>
<tr>
<td>2011</td>
<td>58.38</td>
<td>71.87</td>
<td>67.69</td>
<td>74.31</td>
<td>65.35</td>
</tr>
</tbody>
</table>
Proportion of Children with a Valid BMI, Denver

Percent Valid Child
- 1.86 - 17.41
- 17.42 - 26.22
- 26.23 - 40.00
- 40.01 - 56.52
- 56.53 - 192.00
Proportion of Adults with a Valid BMI, Denver
Proportion of Children with Obesity, Denver
# Types and Sources of Geo-coded Social and Environmental Data for Mapping

<table>
<thead>
<tr>
<th>Data</th>
<th>Source</th>
<th>Data type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grocery stores</td>
<td>Reference USA</td>
<td>Points, aggregated into census tracts</td>
</tr>
<tr>
<td>Restaurants</td>
<td>Reference USA</td>
<td>Points, aggregated into census tracts</td>
</tr>
<tr>
<td><strong>Food Deserts</strong> (USDA definition)</td>
<td>USDA Economic Research Council</td>
<td>At census tract level</td>
</tr>
<tr>
<td>Walkability (based on number of street intersections per unit area)</td>
<td>Streetmap USA/ ESRI web distribution</td>
<td>Points, aggregated into census tracts</td>
</tr>
<tr>
<td>Green space/parks</td>
<td>From wide variety of sources</td>
<td>Polygons (areas), with points of park entrance</td>
</tr>
<tr>
<td>Poverty</td>
<td>American Community Survey</td>
<td>Polygons (areas), aggregated into census tracts</td>
</tr>
</tbody>
</table>
Percent of Children Overweight + Percent of Families in Poverty
Activity Plan para la Familia

- Briskly walk around the 1 mile loop, 3 times per week.
- Take a Zumba class at Barnum Recreation Center (360 N Hooker St., 303-937-4659) on Mondays from 5:30-6:30pm.
What next?

- Expand range of stakeholders and use cases
  - Public health entities (surveillance, community interventions)
  - Researchers (clinical interventions, care delivery interventions, community interventions, studies of social and environmental influences on health)
  - Community organizations (advocacy groups and foundations)
  - Delivery systems (integrated environmental information into decisions) – point of care reports
- Potential new domains: asthma, alcohol/substance dependency, injuries
Sustainability strategy

- Create “condition agnostic” distributed surveillance/research network
- Facilitate incorporation of new social/environmental data (barriers and assets)
- Standardize approach to geocoding, data reporting to a range of stakeholders
- Target outreach and community-based interventions to those who need them, not only those who seek them
- Reduce health disparities
- Develop cadre of applied researchers and methods
Earlier childhood obesity intervention is desirable, yet measuring effect in the 2-6 year old is **methodologically challenging**.

Recruitment and sustaining family engagement has been **operationally challenging** – high call/recruit ratio; poor retention in cohort; poor completion and adherence to protocol.

Integration of home-based experience and outcomes with clinical care is **technically challenging**. Contrary to usual pattern (e.g., clinicians control patient referral); RCT/PCT prohibited referrals.

**Provider leadership perspective:**

- Tight interaction between public health, community health (and academia) key for success.
- Keys to success are engaged bilingual family navigators.
- Concern about program sustainability given intensity and cost of intervention.
CRISP Implementation Science – *Key Points*

- Understand **barriers/facilitators** that influence successful implementation of effective interventions. How an intervention is implemented can impact the outcomes in ways the researcher never intended.
- **Translate** complex process that involves: disseminating the information to clinicians, clinicians adopting the program and successfully implementing it into their setting, and the sustainability of the intervention.
- Enhance the **generalizability, representativeness, and comprehensiveness** to increase public health impact.
- Need partnerships to share knowledge and expertise to **increase the number of evidence-based interventions implemented** in real-world practices.
- Need creative and rigorous **dissemination efforts**, beyond journal publications and meeting presentations, to increase the number of evidence-based interventions implemented in real-world practices.

http://www.ucdenver.edu/academics/colleges/medicalschool/programs/crisp/about/Pages/About-Dissemination-and-Implementation-Science.aspx

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Discussion/Questions?