Using an Individual Activity Prescription and Community Resource Map to Encourage Physical Activity

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Denver Public Health Department
Introduction:
The Obesity Epidemic

Prevalence* of Self-Reported Obesity Among U.S. Adults by State and Territory, BRFSS, 2013


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Introduction:
The Obesity Epidemic

Many states and US territories are showing decreases in childhood obesity


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Introduction: The Obesity Epidemic

Percentage of Student BMI Measures at an Excessive Weight Over Time* (n=199,530)
Includes ages 3-18

- Overweight
- Obese

<table>
<thead>
<tr>
<th>Year Pair</th>
<th>Overweight</th>
<th>Obese</th>
</tr>
</thead>
<tbody>
<tr>
<td>F07/S08</td>
<td>15% (18%)</td>
<td></td>
</tr>
<tr>
<td>F08/S09</td>
<td>14% (16%)</td>
<td></td>
</tr>
<tr>
<td>F09/S10</td>
<td>15% (16%)</td>
<td></td>
</tr>
<tr>
<td>F10/S11</td>
<td>15% (16%)</td>
<td></td>
</tr>
<tr>
<td>F11/S12</td>
<td>15% (16%)</td>
<td></td>
</tr>
<tr>
<td>F12/S13</td>
<td>15% (16%)</td>
<td></td>
</tr>
</tbody>
</table>

Introduction:
Denver’s Initiatives

Healthy Eating and Active Living (HEAL)

• 5-year goal: increase the % of kids at a healthy weight by 5 percentage points by 12/2018
## Level 1a: Healthy Eating, Active Living (HEAL) Surveillance

### Measured BMI Summary

<table>
<thead>
<tr>
<th>BMI Registry</th>
<th>N (%)</th>
<th>Mean BMI (% for kids)</th>
<th>Mean zBMI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population covered</td>
<td>30,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>15,000(50)</td>
<td></td>
<td>0.64+- .03</td>
</tr>
<tr>
<td>Male</td>
<td>15,000(50)</td>
<td></td>
<td>0.64+- .03</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DPS BMI</th>
<th>N (%)</th>
<th>Mean BMI %</th>
<th>Mean zBMI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population covered</td>
<td>3000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>1700 (56.7)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>1300 (43.3)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Self-Reported BMI Summary

<table>
<thead>
<tr>
<th>Healthy Kids Colorado Survey</th>
<th>N (%)</th>
<th>Mean BMI</th>
<th>Mean zBMI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Respondents</td>
<td>5,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>2,500 (50)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>2,500 (50)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BRFSS</th>
<th>N (%)</th>
<th>Mean BMI</th>
<th>Mean zBMI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Respondents</td>
<td>10,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>5,000 (50)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>5,000 (50)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Behavioral Summary

**DH/Kaiser - Behavioral Summary (5-2-1-0)**

<table>
<thead>
<tr>
<th>N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Completed 5210 form</td>
</tr>
<tr>
<td>5210 Adherent (defined as Yes to 3+ items)</td>
</tr>
<tr>
<td>5 fruits/vegetables</td>
</tr>
<tr>
<td>2 hrs or less of screen time</td>
</tr>
<tr>
<td>1 hr or more of exercise</td>
</tr>
<tr>
<td>0 sugary beverage</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Completed survey</td>
</tr>
<tr>
<td>5210 Adherent (defined as Yes to 3+ items)</td>
</tr>
<tr>
<td>5 fruits/vegetables (combine fruits and veggies ?’s)</td>
</tr>
<tr>
<td>2 hrs or less of screen time (TV and computer time)</td>
</tr>
<tr>
<td>1 hr or more of exercise</td>
</tr>
<tr>
<td>0 sugary beverage</td>
</tr>
</tbody>
</table>
Level 2a: Measured BMI: DPS

<table>
<thead>
<tr>
<th>Weight Status of Students by Race/Ethnicity (Date Range)</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
</tr>
<tr>
<td>17%</td>
</tr>
<tr>
<td>25%</td>
</tr>
<tr>
<td>58%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Change in Mean BMI/zBMI over time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year</td>
</tr>
<tr>
<td>0%</td>
</tr>
<tr>
<td>17%</td>
</tr>
<tr>
<td>25%</td>
</tr>
<tr>
<td>58%</td>
</tr>
</tbody>
</table>

Population covered: 30,000
Female: 15,000 (50) Mean BMI (% kids): 85% Mean zBMI: 0.64+- .03
Male: 15,000 (50) Mean BMI (% kids): 85% Mean zBMI: 0.64+- .03

Weight Status and Community Resources by Geographic Unit

<table>
<thead>
<tr>
<th>MAP VIEWS (select one)</th>
</tr>
</thead>
<tbody>
<tr>
<td>% population underweight</td>
</tr>
<tr>
<td>% population normal weight (BMI &lt;85% for children, below 18.5-24.9 for adults)</td>
</tr>
<tr>
<td>% population overweight (&gt;85% for children, between 25-29.9 for adults)</td>
</tr>
<tr>
<td>% population obese (BMI&gt;95% for children, 30+ for adults)</td>
</tr>
</tbody>
</table>

HEAL-related LAYERS (select one or more)

Roads
Schools
Recreation centers (includes indoor pools)
Outdoor pools
Parks
Bike paths
Grocery stores
Community gardens

Parameters not applicable will be disabled
Conduct a pilot project to assess the usefulness and feasibility of an individual activity prescription and community resource map to encourage families to engage in physical activity.
Outline

• Background

• Methods

• Results

• Limitations/Next Steps
Background

Denver Health and Hospital Authority (DHHA)

• Largest safety net institution in Colorado
  • Hospital, community/school-based clinics, public health, EMS, poison control center, Community STD Clinic

• Serves over 25% of Denver’s population
  • Over 60% of services are Medicaid or uninsured individuals
• Denver Health Community Outreach – Obesity Prevention Trial (CO-OPT)
  » Overweight/obese toddlers and families identified
  » Patient navigators used to deliver education

• Pediatric/Teen Weight Management Clinic (Healthy Lifestyle Clinic)
  » Overweight children/teens with co-morbidities
  » Multidisciplinary approach to healthcare
METHODOLOGY
Methods

Families identified and customized activity and community resource map were created for each family’s address

- **Google Maps:**
  
  Route, distance and text-based directions to recreation center(s) identified

- **MapMyFitness:**
  
  Activity loops of varying distances identified
Methods:

- Total of 36 activity plans created
- Each plan involved 3 individuals to complete:
  - PN/Health coach
  - GIS Analyst
  - Activity plan coordinator
- Average time to create activity plan: 6 hours
Activity Plan

- Briskly walk around one of the activity loops, 3-5 times per week.
- Harvey Park Recreation Center (2120 S. Tennyson Way, 720-865-0550), 1 mile from your home.
  - Fitness equipment and classes, MyDenver activities (free for kids ages 5-18 years).

Directions to Harvey Park Recreation Center

Start: S Xavier St, Denver, CO 80219

1. Head south on S Xavier St toward W Oregon Pl
2. Turn left onto W Jewell Ave
3. Turn right onto S Tennyson St

Recreation Center will be on the left

End: 2120 S Tennyson Way, Denver, CO 80219
Activity Plan

MY GOALS:
1.
2.
3.

St. Charles Recreation Center
3777 Lafayette St., Denver, CO 80205
303-295-4462
- Free access with a My Denver card
- My Denver activities (4:00-6:30pm)
- Open gym, fitness equipment

Walking Directions
Start: Race St., Denver, CO 80205
1. Head north on Race St toward E 33rd Ave (0.1 mi)
2. Turn left onto Bruce Randolph (0.4 mi)
3. Turn right onto Lafayette St (0.3 mi)
End: 3777 Lafayette St., Denver, CO 80205

Glenarm Recreation Center
2800 Glenarm Pl., Denver, CO 80205
720-865-3380
- Free access with a My Denver card
- My Denver activities (3:00-7:00pm)
- Indoor pool (open swim, lessons)
- Open gym, fitness equipment

Walking Directions
Start: Race St., Denver, CO 80205
1. Head south on Race St toward Martin Luther King Jr (0.4 mi)
2. Turn right onto 28th Ave (0.5 mi)
3. Cross Downing (56 ft)
4. Turn left onto Glenarm Place (0.1m)
End: 2800 Glenarm Pl., Denver, CO 80205
Activity Plan

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RESULTS
Results:

- 70% of patients and families identified for intervention received a customized map
  - Over 80% families Hispanic
  - CO-OPT: Over 75% single mothers
Results

• Survey administered by PN or Health Coach

  – Map was useful: Yes (94%)
  – Map was easy to understand: Yes (88%)
  – Resources were easy to find: Yes (100%)
  – Activity routes were easy to follow: Yes (100%)
  – Activity plan helped to find new resources: Yes (71%)
  – PN accompanied me to resource: Yes (63%)
Results

• Survey administered by PN or Health Coach

  – Worried about safety on activity routes: No (<1%)

  – Would use a resource like this on my smartphone: Yes (100%)

  – Used routes and resources on map: Yes (50%)

  – Exercised more as a result of activity plan: Yes (29%)
LIMITATIONS
Limitations

• Time required to develop individualized plan

• Resources limited to:
  • Denver County
  • Publically available resource layers already created

• Unreliable resources had to be excluded
  • After school program too broad
NEXT STEPS
Next Steps: Automation

• Round 3?
Next Steps: Automation

• Round 3?

• Automation
Acknowledgements

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Thank you!

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