Visible changes for a healthy future

Using Geo Mapping and Collaboration to Target Action Addressing Social Determinants of Child Health

Mohan Rao, Children’s Optimal Health
Zachary Wilson, Austin Independent School District
Susan Millea, Ph.D.

ESRI National Health GIS Conference
Denver, Colorado
October 18, 2010
Value Add

- Maps engage community discussion
- Safe harbor for shared data supports collaboration
- Efficient use of scarce resources
- Support to service providers, funders, planners

Focus:
- Improve Operations
- Impact Policy
- Engage Community
- Encourage Research
Are there concentrated areas where AISD Middle School students live?

Middle School students
Population density per sq. mile

- Red: > 250
- Yellow: 150 - 250
- Orange: 100 - 150
- Green: 90 - 130
- Blue: 60 - 90
- Purple: 45 - 60
- Light blue: < 45 (not usable)

AISD 2007 - 2008

Area outside AISD boundary is shaded

AISD Middle Schools
Austin area parks

© 2009 Children's Optimal Health - Refer to Child Health Status Guide Volume 1 for CCH methodology, data limitations, and CCH disclaimers.

Maps produced by Children's Optimal Health depict visual correlations among multiple linked datasets. They do not represent cause and effect relationships.
This map represents 4,337 White AISD middle school students.
This map represents 1,897 African American AISD middle school students.
This map represents 8,450 Hispanic AISD middle school students.
COH’s Multi-Sector Governing Board

- Health Partners
  - Health District, Competing Health Systems,
  - Safety Net Providers (ICC)

- Governmental Entities
  - (City, County, School District)

- University Partners (UT, UTSPH)

- Housing Authority

- Social Service Providers

- Chamber of Commerce
Current Projects

- Childhood Obesity Study
- Prenatal Care
- Access to Health Care
- Child Motor Vehicle Trauma
- Preschool-aged Children
- Student Mobility
- Chronic Absenteeism/Truancy
- Behavioral Health
BASIC SERVICES  health, mental health, housing, transportation, financial

P-20 EDUCATION PIPELINE
PK – 12 System

Early Childhood
Child care Providers

After-school Programs

Civic/ Social/ Work Opportunities

Post Secondary
Social & Strategic Supports

Work & Career
Placement & Coaching

LEARNING & ENGAGEMENT SUPPORTS
GENERAL POPULATION CHANGES 2000-2008

Percentage of Total

Texas | California | Florida | 47 States
--- | --- | --- | ---

- General Population
- Over 65
- Children Under 5

Data Sources: US Census 2000
2006 American Community Survey

CommuniCard, LLC, All Rights Reserved 2008
Concentrations of low income mothers delivering in 2007

Births to low income mothers

Grouped by percentile

- < 30
- 30 - 40
- 40 - 50
- 50 - 60
- 60 - 70
- 70 - 80
- 80 - 90
- 90

Soft hot spots

Austin area towns

This map represents 6,148 births reported by ICC.
Concentration of Economically Disadvantaged Students (EC, PK, KG, and 1st Grade)

Area outside AISD boundary is shaded tan.

AISD 2007 - 2008

Concentration of Students (Grouped by percentiles)
- > 90
- 80 - 90
- 70 - 80
- 60 - 70
- 50 - 60
- 40 - 50
- < 40 (Not visible)

Austin area parks

This map represents 14,220 students.

© 2010 Children's Optimal Health - Refer to Young Children Series Volume 1 for CCH methodology, data limitations, and CCH disclaimers.

ACCESS
Austin Community Collaborative to Enhance Student Success
Last updated on: 4/15/2010
Process Methodology

- Data Sharing Agreement
  - HIPAA, FERPA compliance, Template
- Statement of Information Practices
  - Explains data ownership and use
  - Building partner trust
- Technical Review Committee
  - Identify data limitations, first story line
- Periodic Community Summits
Concentrations of where AISD students live who meet standard for both Math and Reading TAKS tests (grades 3 - 11)
Addressing Apparent Disparity

- Childhood Obesity
- Child Mobility
Childhood Obesity Study
Are there concentrated areas where Overweight and Obese AISD Middle School students live?
This map represents 8,950 AISD middle school students who qualify for free/reduced lunch.
Are there concentrated areas where safety related crimes are reported?

Crime incidence per sq. mile:
- > 3000
- 2000 - 3000
- 1000 - 2000
- 500 - 1000
- 300 - 500
- < 300

Area outside AGG boundary is shaded.

APD 2007

Austin area parks

Map produced by Children's Optimal Health. They do not represent cause and effect relationships.
Symbols Key

- Hospital
- Medical facility
- Pharmacy
- AISD High School
- AISD Middle School
- AISD Elementary school
- Child care center
- Youth Center
- Grocery store
- Food bank
- Convenience store
- Pizza restaurant
- Fast food restaurant
- Soccer field
- Playscape
  - Basketball court
  - Multi-purpose field
- Tennis court
- Workout station
- Swimming pool
- Thrift store
- Bus route (Jan 2009)
- Park
- House of worship

Food environment
Dove Springs
Child Mobility
AISD Mobility and Attendance

Comparing Attendance for Mobile and Non-Mobile Students, SY 08-09

>17,000 school-mobile students, unduplicated
AISD Mobility and Attendance

Average Days Absent by Number of Schools Attended in SY 08-09

Cost of disparity in attendance rate:
>$5 million/year (ADA @ $45/day)
Percentage of Austin ISD Students Classified as Mobile

Area outside of AISD boundary is shaded tan

AISD 2009 - 2010

Percentage of Students (Grouped by percentiles)
- >90 (>17%)
- 80 - 90 (13% - 17%)
- 70 - 80 (11% - 13%)
- 60 - 70 (9% - 11%)
- 50 - 60 (6% - 9%)
- 40 - 50 (6% - 8%)
- 30 - 40 (5% - 6%)
- 20 - 30 (3% - 5%)
- 10 - 20 (0% - 2%)
- <10 (0%)

Austin area parks

© 2010 Children’s Optimal Health and AISD

children's
optimal health

ACCESS
Austin Community Collaborations to Enhance Student Success

Last updated on 10/13/2010
Technical Methodology
### Mapping Methodology

<table>
<thead>
<tr>
<th><strong>Random shift</strong></th>
<th><strong>Rasterization</strong></th>
<th><strong>Redaction</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>De-identification</td>
<td>Aggregation</td>
<td>Removal of small-valued cells</td>
</tr>
<tr>
<td>•Between 100’ to 300’</td>
<td>•Decile rankings</td>
<td>Raster cells with values less than or equal to 5 not shown</td>
</tr>
<tr>
<td>•Random direction</td>
<td>•100 yards X 100 yards cells</td>
<td></td>
</tr>
<tr>
<td></td>
<td>•“Neighborhood statistics” analysis</td>
<td></td>
</tr>
</tbody>
</table>
Mapping Methodology
Random Shift Algorithm
Essential Ingredients

- Rigorous, consistent methods for assuring the accuracy and security of data, and for protecting individual privacy
- Committee of outside experts to review our work
- Offering COH’s collective thoughts about the meaning of every map we produce
Thank You!

- Susan Millea, Ph.D.
  - smillea@childrensoptimalhealth.org

- Mohan Rao
  - mrao@childrensoptimalhealth.org

- Zachary Wilson
  - zachary.wilson@austinisd.org