Trends in SBCUSD
Chronic Absenteeism Data

If You Build It, Do They Come?

By
Stephen Gervais

Making Hope Happen
Through High Reliability Schools
January 8-9, 2015

http://bit.ly/1zxBpnt
Introduction

Chronic Absenteeism
  * What the research tells us about Chronic Absenteeism

Chronic Absenteeism in SBCUSD
  * District case study

Chronic Absenteeism from a Spatial Perspective
  * A different way to understand our district data
Introduction
Students need to attend school daily to succeed.
Achievement, especially in math, is very sensitive to attendance, and absence of even two weeks during one school year matters.
Attendance also strongly affects standardized test scores and graduation and dropout rates.

Chronic Absenteeism (Balfanz & Byrnes, 2012)
Chronic Absenteeism

Defined as missing 10 percent of a school year for any reason.

California – Chronic Truancy EC 48263.6

Any pupil subject to compulsory full-time education or to compulsory continuation education who is absent from school without a valid excuse for ten percent or more of the school days in one school year, from the date of enrollment to the current date, is deemed a chronic truant...

CDE Truancy Webpage (CDE, 2013)
Chronic Absenteeism 
A Hidden Problem

<table>
<thead>
<tr>
<th>Student #</th>
<th>Days Absent</th>
<th>Overall Attendance Rate</th>
<th>Chronically Absent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0</td>
<td>100%</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>95%</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>5</td>
<td>75%</td>
<td>Yes</td>
</tr>
<tr>
<td>4</td>
<td>2</td>
<td>90%</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>3</td>
<td>85%</td>
<td>Yes</td>
</tr>
<tr>
<td>6</td>
<td>1</td>
<td>95%</td>
<td>Yes</td>
</tr>
<tr>
<td>7</td>
<td>0</td>
<td>100%</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>2</td>
<td>90%</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>3</td>
<td>85%</td>
<td>Yes</td>
</tr>
<tr>
<td>10</td>
<td>3</td>
<td>85%</td>
<td>Yes</td>
</tr>
<tr>
<td>11</td>
<td>4</td>
<td>80%</td>
<td>Yes</td>
</tr>
<tr>
<td>12</td>
<td>1</td>
<td>95%</td>
<td>Yes</td>
</tr>
<tr>
<td>13</td>
<td>1</td>
<td>95%</td>
<td>Yes</td>
</tr>
<tr>
<td>14</td>
<td>3</td>
<td>85%</td>
<td>Yes</td>
</tr>
<tr>
<td>15</td>
<td>4</td>
<td>80%</td>
<td>Yes</td>
</tr>
<tr>
<td>16</td>
<td>0</td>
<td>100%</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>0</td>
<td>100%</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>0</td>
<td>100%</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>3</td>
<td>85%</td>
<td>Yes</td>
</tr>
<tr>
<td>20</td>
<td>4</td>
<td>80%</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Average Daily Attendance Rate: 
90% 90% 90% 90% 90% 90% 90% 90% 90% 90% 90% 90% 90% 90% 90% 90% 90% 90% 90% 90%

Chronic Absenteeism is easily masked by average daily attendance (ADA)

Chronic Absenteeism (Balfanz & Byrnes, 2012)
Chronic Absenteeism

Why should we be concerned?

* Related to increases in achievement gaps at the elementary, middle, and high school levels.

* A strong relationship between sixth-grade attendance and the percentage of students graduating on time or within a year of their expected high school graduation.

_Chronic Absenteeism_ (Balfanz & Byrnes, 2012)
Why should we be concerned?

* Students who are chronically absent in a given year are often chronically absent over a span of years. Researchers found that some students missed 6 months to a year of school over a span of 5 years.

* One of the most effective strategies for providing pathways out of poverty is to do what it takes to get these students in school every day. This alone, even without improvements in the American education system, will drive up achievement, high school graduation, and college attainment rates.

* "Chronic Absenteeism" (Balfanz & Byrnes, 2012)
Why should we be concerned?

* 1 in 10 California elementary students from low income households are chronically absent.

* 1 in 10 California Foster Youth elementary students are chronically absent.

* 1 in 5 California African American elementary students are chronically absent. This is 4 times the rate of all students.

* Significant numbers of elementary students (especially disadvantaged students) who are chronically absent also have large numbers of suspensions.

*In School + On Track 2014 (Harris, 2014)*
AB 1866 (Bocanegra) would have required additional reporting in CALPADS to track chronic absenteeism and truancy. Vetoed by the Governor Brown (9/30/2014).

In his veto message, the Governor said,

“Districts already have the ability to collect attendance and truancy data, and must address school attendance and chronic absenteeism under the Local Control Funding Formula.

The Local Control Funding Formula was created because local education agencies are the ones best suited to set goals and guidelines for their students. In the same vein, efforts to combat truancy are best exercised at the school level among teachers, principals and local school officials. “

AB 1866 Summary (LegTrack, 2014)
Questions to Answer

• How extensive a problem is chronic absenteeism within SBCUSD?
  • By Grade
  • By Levels (Elementary, Middle, High)
  • By Subgroups (Attributes)
  • Over multiple years
  • Spatially by Neighborhood

• Are outcomes for chronically absent SBCUSD students consistent with published research?

• We should be identifying at-risk students earlier. Can we suggest a cut point?

• Looking backward over past school years, if evidence of spatial autocorrelation is found, is the clustering stable over time?

• Looking forward, how will we know if we’ve improved? Can we predict neighborhood attendance rates?
SBCUSD – Where is it?
SBCUSD -- Demographics

CDE/Data Quest/CALAPDS

9th Largest District in CA
53785 (CBEDS 2013)

28% English Learners

74% Hispanic
14% African American
7% White

2,189 Homeless Students
93.6% NSLP

US Census Bureau (ACS 2008-2012)

Unemployment Rate
SB City 16.9%
SB County 14.1%
California 11.0%

Poverty Level – Families with Children Under 18
SB City 33.2%
SB County 19.5%
California 17.0%
SBCUSD -- Enrollment Trends

Legend
- Streets
- 1 Std Deviation Directional Ellipse

Race/Ethnicity Group
- Native American
- Asian
- Pacific Islander
- Filipino
- Hispanic
- African American
- White

SBCUSD Study Area

SBCUSD Boundaries

*These ellipses show 1 standard deviation of the enrollment from the geographic center of the given population. Approximately 67 percent of students in each group live inside boundaries of the colored ellipses.

For most student groups, the ellipses overlap indicating that the groups are interspersed. By race/ethnicity, White student enrollment differs significantly in that more students live toward the north of the city and along the hillside than other student groups.

Data Sources: SBCUSD Student Enrollment CBEDS 2014 (Accountability) SBCUSD Boundary Lines (Facilities)
SBCUSD Chronically Absent Students By Grade

All Students Served Within Study Area 2013-14

<table>
<thead>
<tr>
<th>Grade Level</th>
<th>K</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>All</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number at Grade Level</td>
<td>4,862</td>
<td>4,383</td>
<td>4,546</td>
<td>4,530</td>
<td>4,270</td>
<td>4,290</td>
<td>4,016</td>
<td>3,827</td>
<td>3,709</td>
<td>3,827</td>
<td>3,645</td>
<td>3,498</td>
<td>4,038</td>
<td>54,194</td>
</tr>
<tr>
<td>Number of Students Chronically Absent at Grade Level</td>
<td>580</td>
<td>432</td>
<td>321</td>
<td>278</td>
<td>251</td>
<td>265</td>
<td>290</td>
<td>380</td>
<td>444</td>
<td>540</td>
<td>555</td>
<td>552</td>
<td>882</td>
<td>5,770</td>
</tr>
<tr>
<td>Percent of Students Chronically Absent at Grade Level</td>
<td>12%</td>
<td>9%</td>
<td>7%</td>
<td>6%</td>
<td>6%</td>
<td>6%</td>
<td>7%</td>
<td>10%</td>
<td>12%</td>
<td>14%</td>
<td>15%</td>
<td>16%</td>
<td>22%</td>
<td>11%</td>
</tr>
<tr>
<td>School Level</td>
<td>All Students</td>
<td>Other Subgroups by Percent</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---------------</td>
<td>--------------</td>
<td>----------------------------</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>Male</td>
<td>Female</td>
<td>Hispanic</td>
<td>Afr Am</td>
<td>White</td>
<td>SWD</td>
<td>EL</td>
<td>SDS</td>
<td>SUSP 1213</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alternative</td>
<td>126</td>
<td>22%</td>
<td>29%</td>
<td>15%</td>
<td>24%</td>
<td>27%</td>
<td>15%</td>
<td>13%</td>
<td>19%</td>
<td>25%</td>
<td>33%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Special Ed</td>
<td>232</td>
<td>49%</td>
<td>46%</td>
<td>56%</td>
<td>48%</td>
<td>51%</td>
<td>44%</td>
<td>49%</td>
<td>46%</td>
<td>49%</td>
<td>67%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Special Program</td>
<td>207</td>
<td>45%</td>
<td>41%</td>
<td>49%</td>
<td>44%</td>
<td>44%</td>
<td>57%</td>
<td>53%</td>
<td>33%</td>
<td>50%</td>
<td>58%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elementary</td>
<td>30,011</td>
<td>7%</td>
<td>7%</td>
<td>7%</td>
<td>7%</td>
<td>11%</td>
<td>8%</td>
<td>13%</td>
<td>5%</td>
<td>8%</td>
<td>14%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Middle</td>
<td>8,982</td>
<td>10%</td>
<td>11%</td>
<td>10%</td>
<td>10%</td>
<td>13%</td>
<td>11%</td>
<td>19%</td>
<td>11%</td>
<td>10%</td>
<td>28%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>14,636</td>
<td>16%</td>
<td>17%</td>
<td>16%</td>
<td>16%</td>
<td>21%</td>
<td>17%</td>
<td>26%</td>
<td>22%</td>
<td>17%</td>
<td>37%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>54,194</td>
<td>11%</td>
<td>11%</td>
<td>10%</td>
<td>10%</td>
<td>15%</td>
<td>12%</td>
<td>19%</td>
<td>9%</td>
<td>11%</td>
<td>31%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>K</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td>10</td>
<td>11</td>
<td>12</td>
<td>All</td>
<td></td>
</tr>
<tr>
<td>----</td>
<td>----</td>
<td>----</td>
<td>----</td>
<td>----</td>
<td>----</td>
<td>----</td>
<td>----</td>
<td>----</td>
<td>----</td>
<td>----</td>
<td>----</td>
<td>----</td>
<td>-----</td>
<td></td>
</tr>
<tr>
<td>Number at Grade Level</td>
<td>642</td>
<td>642</td>
<td>644</td>
<td>620</td>
<td>564</td>
<td>568</td>
<td>549</td>
<td>550</td>
<td>553</td>
<td>544</td>
<td>526</td>
<td>549</td>
<td>632</td>
<td>7,583</td>
</tr>
<tr>
<td>Number of Students Chronically Absent at Grade Level</td>
<td>102</td>
<td>70</td>
<td>68</td>
<td>53</td>
<td>57</td>
<td>53</td>
<td>54</td>
<td>82</td>
<td>72</td>
<td>103</td>
<td>109</td>
<td>109</td>
<td>168</td>
<td>1,100</td>
</tr>
<tr>
<td>Percent of Students Chronically Absent at Grade Level</td>
<td>16%</td>
<td>11%</td>
<td>11%</td>
<td>9%</td>
<td>10%</td>
<td>9%</td>
<td>10%</td>
<td>15%</td>
<td>13%</td>
<td>19%</td>
<td>21%</td>
<td>20%</td>
<td>27%</td>
<td>15%</td>
</tr>
</tbody>
</table>

SBCUSD Chronically Absent African American Students By Grade

African American Students Served Within Study Area 2013-14
Students with Disabilities Served Within Study Area 2013-14

<table>
<thead>
<tr>
<th>Grade Level</th>
<th>K</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>All</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number at Grade Level</td>
<td>249</td>
<td>329</td>
<td>353</td>
<td>410</td>
<td>443</td>
<td>496</td>
<td>411</td>
<td>380</td>
<td>394</td>
<td>394</td>
<td>400</td>
<td>328</td>
<td>196</td>
<td>4,783</td>
</tr>
<tr>
<td>Number of Students Chronically Absent at Grade Level</td>
<td>42</td>
<td>52</td>
<td>34</td>
<td>67</td>
<td>53</td>
<td>74</td>
<td>50</td>
<td>83</td>
<td>79</td>
<td>105</td>
<td>96</td>
<td>76</td>
<td>93</td>
<td>904</td>
</tr>
<tr>
<td>Percent of Students Chronically Absent at Grade Level</td>
<td>17%</td>
<td>16%</td>
<td>10%</td>
<td>16%</td>
<td>12%</td>
<td>15%</td>
<td>12%</td>
<td>22%</td>
<td>20%</td>
<td>27%</td>
<td>24%</td>
<td>23%</td>
<td>47%</td>
<td>19%</td>
</tr>
</tbody>
</table>
### SBCUSD Chronically Absent Students By Grade Level

#### Previously Suspended Students Served Within Study Area 2013-14

<table>
<thead>
<tr>
<th></th>
<th>K</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>All</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number at Grade Level</td>
<td>*</td>
<td>*</td>
<td>68</td>
<td>81</td>
<td>125</td>
<td>183</td>
<td>223</td>
<td>389</td>
<td>545</td>
<td>645</td>
<td>602</td>
<td>458</td>
<td>438</td>
<td>3,787</td>
</tr>
<tr>
<td>Number of Students Chronically Absent at Grade Level</td>
<td>*</td>
<td>*</td>
<td>9</td>
<td>12</td>
<td>24</td>
<td>26</td>
<td>48</td>
<td>110</td>
<td>149</td>
<td>216</td>
<td>219</td>
<td>177</td>
<td>184</td>
<td>1,175</td>
</tr>
<tr>
<td>Percent of Students Chronically Absent at Grade Level</td>
<td>*</td>
<td>*</td>
<td>13%</td>
<td>15%</td>
<td>19%</td>
<td>14%</td>
<td>22%</td>
<td>28%</td>
<td>27%</td>
<td>33%</td>
<td>36%</td>
<td>39%</td>
<td>42%</td>
<td>31%</td>
</tr>
</tbody>
</table>

* Results not reported - less than 25 students in group at this grade level
## Percent of Students 10+ Days Absent 2013-14

### All Students Served Within Study Area 2013-14

<table>
<thead>
<tr>
<th>School Level</th>
<th>N Students</th>
<th>Days Absent Group</th>
<th>Percent of Students 10+ Days Absent</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>0-4</td>
<td>5-9</td>
</tr>
<tr>
<td>Alternative</td>
<td>126</td>
<td>49%</td>
<td>11%</td>
</tr>
<tr>
<td>Special Ed</td>
<td>232</td>
<td>13%</td>
<td>18%</td>
</tr>
<tr>
<td>Special Program</td>
<td>207</td>
<td>32%</td>
<td>10%</td>
</tr>
<tr>
<td>Elementary</td>
<td>30,011</td>
<td>49%</td>
<td>27%</td>
</tr>
<tr>
<td>Middle</td>
<td>8,982</td>
<td>51%</td>
<td>23%</td>
</tr>
<tr>
<td>High</td>
<td>14,636</td>
<td>47%</td>
<td>22%</td>
</tr>
<tr>
<td>Total</td>
<td>54,194</td>
<td>48%</td>
<td>25%</td>
</tr>
</tbody>
</table>
Some negative correlation between API Growth Scores and a school’s percentage of chronic absenteeism (correlation coefficient $r = -0.687$)
### SBCUSD Graduates – Class of 2013

#### All Students

<table>
<thead>
<tr>
<th>Class of 2013 Students Enrolled in Grade 8 and Chronically Absent</th>
<th>N Students</th>
<th>Class of 2013 Status</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Grads</td>
</tr>
<tr>
<td>No</td>
<td>2561</td>
<td>82.1%</td>
</tr>
<tr>
<td>Yes</td>
<td>457</td>
<td>52.3%</td>
</tr>
<tr>
<td>Total</td>
<td>3018</td>
<td>77.6%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Class of 2013 Students Enrolled in Grade 8 and 10 days or more absent</th>
<th>N Students</th>
<th>Class of 2013 Status</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Grads</td>
</tr>
<tr>
<td>No</td>
<td>2072</td>
<td>83.8%</td>
</tr>
<tr>
<td>Yes</td>
<td>946</td>
<td>64.0%</td>
</tr>
<tr>
<td>Total</td>
<td>3018</td>
<td>77.6%</td>
</tr>
</tbody>
</table>
### SBCUSD Graduates – Class of 2013 African American Students

<table>
<thead>
<tr>
<th>Class of 2013 Students Enrolled in Grade 8 and Chronically Absent</th>
<th>N Students</th>
<th>Class of 2013 Status</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Grads</td>
</tr>
<tr>
<td>No</td>
<td>383</td>
<td>74.4%</td>
</tr>
<tr>
<td>Yes</td>
<td>85</td>
<td>44.7%</td>
</tr>
<tr>
<td>Total</td>
<td>468</td>
<td>69.0%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Class of 2013 Students Enrolled in Grade 8 and 10 days or more absent</th>
<th>N Students</th>
<th>Class of 2013 Status</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Grads</td>
</tr>
<tr>
<td>No</td>
<td>310</td>
<td>76.1%</td>
</tr>
<tr>
<td>Yes</td>
<td>158</td>
<td>55.1%</td>
</tr>
<tr>
<td>Total</td>
<td>468</td>
<td>69.0%</td>
</tr>
</tbody>
</table>
## SBCUSD Grade 3 - 2013 STAR CST ELA All Students

<table>
<thead>
<tr>
<th>Enrolled Since Grade K 2013 Grade 3 and Chronically Absent</th>
<th>N Students</th>
<th>2013 STAR CST ELA Performance Level</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>FBB</td>
</tr>
<tr>
<td>No</td>
<td>2834</td>
<td>13%</td>
</tr>
<tr>
<td>Yes</td>
<td>161</td>
<td>25%</td>
</tr>
<tr>
<td>Total</td>
<td>2995</td>
<td>13%</td>
</tr>
</tbody>
</table>
### SBCUSD Grade 3 - 2013 STAR CST ELA All Students

<table>
<thead>
<tr>
<th>Enrolled Since Grade K 2013 Grade 3 and Chronically Absent</th>
<th>N Students</th>
<th>2013 STAR CST ELA Performance Level</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>FBB</td>
</tr>
<tr>
<td>0 Years</td>
<td>2418</td>
<td>12%</td>
</tr>
<tr>
<td>1 Year</td>
<td>343</td>
<td>19%</td>
</tr>
<tr>
<td>2 Years</td>
<td>140</td>
<td>15%</td>
</tr>
<tr>
<td>3 Years</td>
<td>68</td>
<td>29%</td>
</tr>
<tr>
<td>4 Years</td>
<td>26</td>
<td>19%</td>
</tr>
<tr>
<td>Total</td>
<td>2995</td>
<td>13%</td>
</tr>
<tr>
<td>Enrolled Since Grade K 2013 Grade 3 and Chronically Absent</td>
<td>N Students</td>
<td>2013 STAR CST Math Performance Level</td>
</tr>
<tr>
<td>-----------------------------------------------------------</td>
<td>------------</td>
<td>--------------------------------------</td>
</tr>
<tr>
<td></td>
<td></td>
<td>FBB</td>
</tr>
<tr>
<td>No</td>
<td>2846</td>
<td>3%</td>
</tr>
<tr>
<td>Yes</td>
<td>163</td>
<td>13%</td>
</tr>
<tr>
<td>Total</td>
<td>3009</td>
<td>3%</td>
</tr>
</tbody>
</table>
## SBCUSD Grade 3 - 2013 STAR CST Math
### All Students

<table>
<thead>
<tr>
<th>Enrolled Since Grade K 2013 Grade 3 and Chronically Absent</th>
<th>N Students</th>
<th>2013 STAR CST Math Performance Level</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>FBB</td>
</tr>
<tr>
<td>0 Years</td>
<td>2428</td>
<td>2%</td>
</tr>
<tr>
<td>1 Year</td>
<td>345</td>
<td>6%</td>
</tr>
<tr>
<td>2 Years</td>
<td>139</td>
<td>9%</td>
</tr>
<tr>
<td>3 Years</td>
<td>71</td>
<td>7%</td>
</tr>
<tr>
<td>4 Years</td>
<td>26</td>
<td>27%</td>
</tr>
<tr>
<td>Total</td>
<td>3009</td>
<td>3%</td>
</tr>
</tbody>
</table>
And Now For Something Completely Different
GIS: Geographic Information System

- What’s the quickest route to get to Monterey?
- Let’s get sushi! Where should we go?
- Where can we take the kids?
- Where is 17 Mile Drive? Take a virtual tour!
GIS: Geographic Information Science

WHAT

WHERE & WHEN
GIS: Geographic Information Science

GI Systems and Tools

* Route Finding
* Locative Services
* Geographic Positioning System (GPS)
* Spatial Databases
* Remote Sensing
* Geoweb Services
* Surveys/Geolocation
* Specialized Geotools (Administrative Boundaries)
* and more...

Theory

* Spatial Analysis
* Spatial Statistics
* Spatial Processes
* Spatial/Temporal Relationships
* Geovisualization and Cartography
* and more...
DataQuest, CALPADS, CALPASS, local data warehouses, ...
We have more and better access to data than ever before.
What are we missing? Is “spatial” even important to consider?
Where and When Problems

* Understanding Neighborhoods and Schools
  * Find safe routes for students walking to school
  * Understanding student mobility (inter-district/intra-district)
  * Neighborhoods and factors that influence them
  * Crime near schools
  * Relationships between eater and feeder schools
  * Hotspots for attendance/suspensions
  * Identify available community resources

* Understanding on a Regional, Statewide and National Scale
  * Urban/suburban/rural relationships (districts, communities)
  * Visualizing poverty, mobility, suspensions, achievement gap, ...
  * Changes over time – subgroups, programs, performance, ...
Tobler’s First Law of Geography

“Everything is related to everything else, but near things are more related than distant things.”

– Waldo Tobler, Dept of Geography, UCSB
When point based measures are aggregated into districts, the resulting summary values are influenced by the choice of district boundaries.
When point based measures are aggregated into districts, the resulting summary values are influenced by the choice of district boundaries.
In the case of our recent election results, a cartogram helps to improve the visualization by showing the relative weight of each county’s vote in addition to the outcome.
Ecological Fallacy

The ecological fallacy occurs where an analysis of group data is used to draw conclusions about an individual.
Trends in SBCUSD Chronic Absenteeism Case Study

GIS Features
• Extends aspatial data analysis possible with data directly from the SIS
• Allows visualization of data over multiple years
• Maps attendance to home neighborhoods (census blocks/elementary schools)
• Focus on all students though analysis can be filtered for significant subgroups.

Initial Steps
• Defining study area – spatial analysis can be influenced by empty zones (mountains, river wash, airport) in features
• Defining student location rules (addresses mobility)
• Geocode all students within boundaries
• Data “Projected” using CA State Plane V (flattens surface of earth to a plane)
• Matching students attributes from the SIS
• Spatial joins used to summarize and count students
• Spatial autocorrelation (clustering) confirmed
Students at each elementary, middle and high school are mapped to their home neighborhood. Neighborhoods are defined by census block groups contained within each elementary school boundary.
Percent of Students 18+ Days Absent
2013-14 School Year

(Choropleth Map – Equal Interval Method Classification)
Percent of Students 18+ Days Absent
2013-14 School Year

Percent of Students
In Census Block Group
With 18+ Days Absent

(Choropleth Map – Natural Breaks-Jenks Method Classification)
Hot Spot Analysis 18+ Days Absent
2013-14 School Year – All Students

(Hot Spot Map – Statistically Significant Clustering)
Z-Scores & P-Values
Hot Spot Analysis 18+ Days Absent
2013-14 School Year – African American

Hot Spot Analysis
Census Block Group
With 18+ Days Absent

Hot Spot Map – Statistically Significant Clustering
Hot Spot Analysis 18+ Days Absent
2013-14 School Year – Hispanic

Hot Spot Analysis
Census Block Group
With 18+ Days Absent

(Hot Spot Map – Statistically Significant Clustering)
Hot Spot Analysis 18+ Days Absent 2013-14 School Year – SWD

(Hot Spot Map – Statistically Significant Clustering)
Hot Spot Analysis 18+ Days Absent
2013-14 School Year – Suspensions 1213

Hot Spot Analysis
Census Block Group
With 18+ Days Absent

(Hot Spot Map – Statistically Significant Clustering)
Hot Spot Analysis 18+ Days Absent
2011-12 School Year – All Students

Hot Spot Analysis
Census Block Group
With 18+ Days Absent

(Hot Spot Map – Statistically Significant Clustering)
Hot Spot Analysis 18+ Days Absent 2012-13 School Year – All Students

Hot Spot Analysis Census Block Group With 18+ Days Absent

(Hot Spot Map – Statistically Significant Clustering)
Hot Spot Analysis 18+ Days Absent
2013-14 School Year – All Students

Hot Spot Analysis
Census Block Group
With 18+ Days Absent

(Hot Spot Map – Statistically Significant Clustering)
Hot Spot Analysis 18+ Days Absent

2013-14 School Year – All Students

Hot Spot Analysis
Census Block Group
With 10+ Days Absent

School 158 – Boomburbs
Within 1 mile...

- Population: 2,569
- Median Age: 32.6
- Avg Household Income: $92,053
- College Educated: 32%
- Unemployment Rate: 12%
- Homeowners: 77%
- Retail Spending Per Month: $2,568

School 104 – Industrious Urban Fringe
Within 1 mile...

- Population: 16,442
- Median Age: 29
- Avg Household Income: $51,837
- College Educated: 15%
- Unemployment Rate: 22%
- Homeowners: 56%
- Retail Spending Per Month: $1,470

School 126 – Industrious Urban Fringe
Within 1 mile...

- Population: 22,543
- Median Age: 26
- Avg Household Income: $41,599
- College Educated: 7%
- Unemployment Rate: 26%
- Homeowners: 38%
- Retail Spending Per Month: $1,188

(Hot Spot Map – Statistically Significant Clustering)
Grouping Analysis 18+ Days Absent
2013-14 School Year – All Students

Check chronically absent students for prior 2012-13 suspensions

Only 93 out of 876 students are chronically absent
Grouping Analysis 18+ Days Absent
2013-14 School Year – All Students

- 0-4 Suspensions
- 5-7 Suspensions
- 8-12 Suspensions
- 13+ Suspensions or more
Following up with District Admin about the next steps including using 10 days of absence as a cut-point for identification of those at risk.

GIS can be used to

- Produce neighborhood attendance maps for 2014-15 by week/month or by school or other factor
- Targeted lists of students in high risk neighborhoods
- Plan neighborhood walk routes for family follow-up
- Develop regression model to predict chronic absenteeism
Modeling 2013-14 Chronic Absenteeism

Ordinary Least Squares (OLS) Regression Model

Simple Model – based on 2013-14 data available at CBEDS
- Previous Year N Days Suspended
- N Days Absent as of CBEDS

Specified to reduce variable redundancy

OLS Adjusted $R^2 = 0.877$

Residuals indicate some Heteroskedasticity.

Geographically Weighted (GW) Regression Indicated
Checking GWR Model Against 2012-13 Chronic Absenteeism

2013-14 GWR Model: Adjusted $R^2 = 0.896$

Predicted 2012-13 Total

Actual 2012-13 Total

Number of Students Chronically Absent

- 0 - 9
- 10 - 18
- 19 - 25
- 26 - 34
- 35 - 46
- 47 - 61
- 62 - 78
- 79 - 143
Predicting 2014-15 Chronic Absenteeism

Predicted 2014-15 Total

October CBEDS 2014

Number of Students Chronically Absent

- 0 - 9
- 10 - 18
- 19 - 25
- 26 - 34
- 35 - 46
- 47 - 61
- 62 - 78
- 79 - 143
Predicting 2014-15 Chronic Absenteeism

Predicted 2014-15 Total

December 2014

Number of Students Chronically Absent

- 0 - 9
- 10 - 18
- 19 - 25
- 26 - 34
- 35 - 46
- 47 - 61
- 62 - 78
- 79 - 143
New Perspective On Data

Painting by Giuseppe Arcimboldo http://www.wga.hu/frames-e.html?/html/a/arcimbol/index.html
Questions

Presentation Powerpoint
http://bit.ly/1zxBpnt

Contact Information
Stephen Gervais
Program Specialist
Accountability and Educational Technology
San Bernardino City USD

Email: stephen.gervais@sbcusd.k12.ca.us
References

Absenteism
- CDE 2013 California Department of Education – Truancy Definition http://www.cde.ca.gov/ls/ai/tr/

Impact of Chronic Absenteeism on Reading

SBCUSD Out-of-School Suspensions Study

US Census Bureau
- http://factfinder2.census.gov/faces/nav/jsf/pages/index.xhtml
- http://quickfacts.census.gov/qfd/index.html

GIScience
- http://www.nga.ucsb.edu/giscc/units/u002/

Pictures
- Boys, Woodley wonderworks – creative commons licenses http://www.flickr.com/photos/73645804@N00
- Chairs, dcJohn – creative commons license http://www.flickr.com/photos/44017720@N00
- Election results Cartogram, http://www.personal.umich.edu/~mejn/election/2012/ (Image)