SUMMARY
During the past four school years, researchers from UC Berkeley have assessed how students in grades K, 5, 6, and 9 commute to and from school in the San Francisco Unified School District (SFUSD). San Francisco’s Municipal Transportation Agency (SFMTA) and Department of Public Health (SFDPH) have used these data to identify schools in need of educational programs and infrastructure projects that support active commuting and increase pedestrian and bicyclist safety. SFMTA and SFDPH have also used the data to seek funding for such projects and evaluate their impact. SFUSD has used commute data to develop targets for active commuting at each elementary school, in accordance with SFUSD’s goal of increasing the number of students who walk or bike to school. At the request of SFUSD and SFDPH, UC Berkeley will continue to assess commute patterns annually through the 2015-16 school year.

This report summarizes student commute data for the 2010-11 through 2013-14 school years. Each year, researchers collected data on approximately 12,500 students in grades K, 5, 6, and 9. Since 2010, rates of active commuting have remained relatively stable, with approximately 28% of kindergarten students, 24% of 5th grade students, 14% of 6th grade students, and 12% of high school students walking or biking to school. This report also presents data on the proportion of K, 5, 6, and 9 students who lived within one-half and one mile of their school each year.
**BACKGROUND**

Data on student commute patterns have the potential to inform a range of policy issues. From a child health perspective, active commuting (walking or biking to school) serves as one possible mechanism for increasing physical activity among youth, a cornerstone for reducing pediatric obesity and improving attention in class. From an environmental perspective, active commuting and increased carpooling could reduce CO₂ emissions, improve air quality, and reduce traffic congestion during peak commute hours.

SFUSD has prioritized increased active commuting as one of its goals related to sustainability. To support this goal, researchers from UC Berkeley have assessed how students in grades K, 5, 6, and 9 commute to and from school since 2010. Data collected from this evaluation have allowed SFUSD to monitor the impact of relevant programs, policies, and infrastructure changes on rates of active commuting. Notably, this evaluation demonstrated that SFUSD’s modified school assignment policy (implemented during the 2011-12 school year) did not increase rates of active commuting, largely because it did not result in a significant number of students attending a school closer to their home. (Distance a child lives from their school is the strongest predictor of active commuting.) Commute data have also aided city agencies in obtaining funding for infrastructure and educational projects to support walking and biking to school.

**METHODS**

Commute patterns for students in grades K, 5, 6 and 9 were assessed using a validated survey instrument called the Student Travel Tally. To conduct the Student Travel Tally, a researcher or teacher asks a classroom of students, “How did you arrive at school this morning?” The adult then reads a list of seven possible commute options (e.g., walk, public transportation, family car) and students raise their hands to indicate their mode of transport. The adult administering the survey records the number of students raising their hands for each option. The adult then asks, “How do you plan to leave school this afternoon?” and repeats the process of tallying the number of hands raised. To assess distance lived from school for students in grades K, 5, 6 and 9, researchers used anonymous student addresses to calculate the driving distance in miles from students’ homes to their schools using a mapping software.

During the 2010-2011 school year, data collection for kindergarten and 5th grade students took place in October; data collection for 6th and 9th grade students took place in May. During the 2011-2012 through 2013-14 school years, data collection for all grades took place during the fall (September – November). Prior to the 2013-14 school year, kindergarten and 5th grade classroom teachers had the option of conducting the Student Travel Tally themselves or having a trained data collector conduct it. During the 2013-14 school year, classroom teachers conducted the tallies themselves. Each year, researchers sought to obtain two days of commute data for each class, though research has demonstrated the adequacy of only one day. Across all years, 6th and 9th grade teachers conducted the Student Travel Tally themselves and reported only one day of data. The Travel Tally was not conducted on days when it rained.
The Student Travel Tally was administered in all non-split-grade kindergarten and 5th grade classes in all SFUSD elementary schools. At the middle and high school level, researchers surveyed all classes with 6th or 9th grade students, instructing only 6th or 9th grade students to respond in split-grade classes. Table 1 presents enrollment and participation data for each school type, by year.

Table 1. Number of schools and students participating in the Student Commute Study by year.

<table>
<thead>
<tr>
<th>Year</th>
<th>Elementary Schools</th>
<th>Middle Schools</th>
<th>High Schools</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number of schools</td>
<td>KINDER STUDENTS</td>
<td>5TH GRADE STUDENTS</td>
</tr>
<tr>
<td>2010-11</td>
<td>72</td>
<td>4,125 (89%)</td>
<td>2,955 (77%)</td>
</tr>
<tr>
<td>2011-12</td>
<td>73</td>
<td>4,310 (93%)</td>
<td>3,141 (82%)</td>
</tr>
<tr>
<td>2012-13</td>
<td>73</td>
<td>4,142 (91%)</td>
<td>3,130 (80%)</td>
</tr>
<tr>
<td>2013-14</td>
<td>74</td>
<td>4,010 (83%)</td>
<td>3,437 (82%)</td>
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</tbody>
</table>

International Studies Academy (ISA) is not included in Number of schools, but ISA data are included in 6th and 9th grade results.

During the 2011-12 and 2012-13 school years, data collected in one school came from 4th/5th split-grade classes. During the 2013-14 school year, data collected in two schools came from 4th/5th split classes.

Commute Modes

Elementary School

Figures 1 and 2 present morning and afternoon commute patterns for kindergarten and 5th grade students, respectively, over the past 4 years. As depicted, over half of elementary school children commute by family car. Approximately one quarter of students walk to and from school, with more kindergarten students actively commuting than 5th grade students. Transportation by school bus has declined for both grades during the past 4 years, while commute by public transit has remained relatively constant. Very few students bike or carpool to school.

Figure 1. Commute patterns by year for kindergarten students.

Kindergarten students may not reliably distinguish between school bus vs. public transportation and between family car vs. carpool. Therefore, the categories of any bus and any car are likely more accurate than the subcategories.
Middle and High School
Middle and high school students walk to and from school at much lower rates than elementary school students. This is largely due to the fact that fewer middle and high school students live within one mile of their school. Middle and high school students use public transportation far more frequently than elementary school students, with over half of high school students taking public transportation home from school. Rates of carpooling and biking remain low. Commute patterns for 6th and 9th grade students are provided in Figures 3 and 4, respectively.
Active Commuting
Figure 5 presents rates of active commuting to school and from school for each grade. Kindergarten students actively commute at similar rates in the morning and afternoon, while 5\textsuperscript{th} grade students are more likely to actively commute in the afternoon. For 6\textsuperscript{th} and 9\textsuperscript{th} grade students, less than 15\% of middle and high school students actively commute to or from school. Students in 9\textsuperscript{th} grade are more likely to actively commute in the afternoon compared to the morning.

DISTANCE LIVED FROM SCHOOL
On average, elementary school students live a little over one mile from their schools (Table 2). Middle and high school students live approximately two and three miles from their schools, respectively.

Table 2. Median distance lived from school for students by grade (miles).

<table>
<thead>
<tr>
<th></th>
<th>Kindergarten</th>
<th>5\textsuperscript{th} grade</th>
<th>6\textsuperscript{th} grade</th>
<th>9\textsuperscript{th} grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010-11</td>
<td>1.2</td>
<td>1.2</td>
<td>2.2</td>
<td>2.9</td>
</tr>
<tr>
<td>2011-12</td>
<td>1.0</td>
<td>1.2</td>
<td>2.3</td>
<td>2.9</td>
</tr>
<tr>
<td>2012-13</td>
<td>1.1</td>
<td>1.2</td>
<td>2.1</td>
<td>2.9</td>
</tr>
<tr>
<td>2013-14</td>
<td>1.2</td>
<td>1.3</td>
<td>2.1</td>
<td>3.0</td>
</tr>
</tbody>
</table>

Approximately 25\% of elementary school students live within one-half mile of the school they attend, and over 40\% live within one mile (Figure 6, next page). Fewer middle and high school students live within one-half and one mile from their school given the reduced number of middle and high schools in
Across years, less than 25% of middle school students and less than 15% of high school students lived within one mile of their schools (Figure 7).

**Figure 6. Percent of kindergarten and 5th grade students living within one-half mile and one mile of their school.**

**Figure 7. Percent of 6th and 9th grade students living within one-half mile and one mile of their school.**

Please contact Jenny Linchey at jlinchey@berkeley.edu or Kristine Madsen at madsenk@berkeley.edu with questions about this report. School-level reports have been distributed to principals of participating schools. SFUSD’s Research Department and UC Berkeley’s Committee on Human Research approved this research.

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