Seattle Department of Transportation

2015 STUDENT TRAVEL SURVEY REPORT

September 2016

Seattle
Department of
Transportation

INTRODUCTION

Since 2005, teachers and staff at Seattle Public Schools (SPS) have asked students how they travel to and from school. This citywide effort has helped our Safe Routes to School (SRTS) program better understand student transportation behavior and see how school travel changes year-over-year. This 2015 Student Travel Survey Report is our first time publishing and distributing the data from the survey to a wider audience.

METHODOLOGY

The annual student travel survey is administered by teachers in schools across the SPS system. Students surveyed are in kindergarten through fifth grade and attend either an elementary or K-8 school. Teachers ask students to raise their hands to show how they arrived at school that day and how they plan to get home. The survey is administered in June to capture the travel patterns that families have established through the year and to avoid months with special walk or bike to school campaigns.

The answer choices to the question include: walk, bike, school bus, car, carpool, transit, and other. Each student is told to raise his or her hand only once for each question. The teacher records the results of the survey for each classroom and the data is then sent back to SDOT for analysis.

For our mode share findings below, the reported number each way students travel represents the percentage of all trips done that way – not the percentage of students. This means students who travel to and from school using different travel modes for each trip don't have to decide on a single answer. For example, a student who walked to school and is expecting to be picked up after school in a carpool would provide information about each trip instead of having to choose one mode choice to fit both trips. The student would raise his or her hand once for "walk" arrival and once for "carpool" departure.

Additional data collected beyond travel mode includes the number of students who participated in the survey and the grade level of participating students.

Over the past decade, participation in the student travel survey has varied by how many and which schools send us results, as well as the number of students that participated at each school. The Seattle School Traffic Safety Committee and SPS have partnered with us to find ways to increase participation in the survey moving forward.

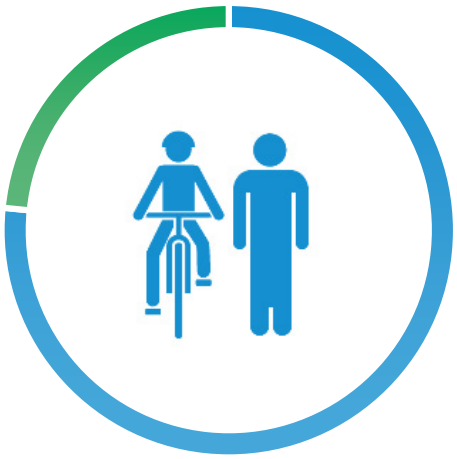
PARTICIPATION

In 2015, 43 out of 70 elementary and K-8 schools participated in this effort, collecting data on one day between June 2-4. In all schools, 1,228 classrooms with about 13,020 students were surveyed, resulting in information about 27,011 trips. Of the 43 participating schools, 35 of them had student participation rates above 70%. This represents about half of the total number of kindergarteners through fifth graders across the district.

MODE SHARE

Overall findings

Walk and bike trips, which we consider "active transportation" modes, together accounted for 24% of trips. This represented more than 6,300 active trips.



24% ACTIVE | 76% NON ACTIVE

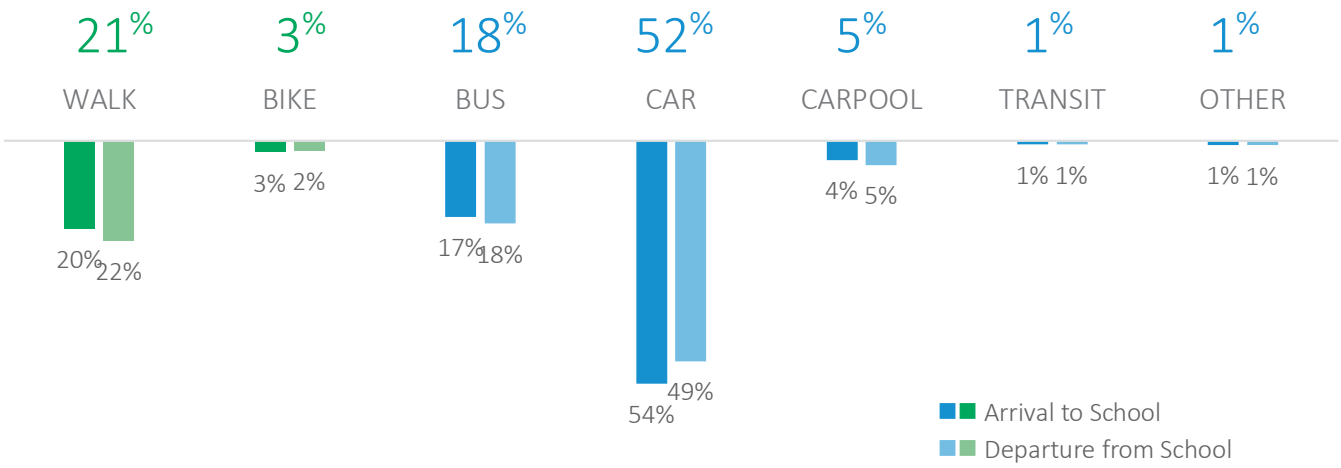


FIGURE 2: 2015 Mode Share Survey results

We found that the top three modes of travel for trips to and from school by students were car (52%), walk (21%), and school bus (18%), which together accounted for 91% of all trips (see Figure 2). The next most common modes were carpool (5%), bike (3%), transit (1%), and other (1%).

We also found that there is some variation between the way students travel to and from school. The percentage of trips by car to school in the morning is about five points higher than the percentage of trips by car from school in the afternoon. The trip numbers appear to shift from car to walk, carpool, and school bus in the afternoon. Trips by bike decrease by one percentage point in the afternoon.

Mode Share by Grade

When reviewing the data by grade, we found that mode share shifted as students got older (see Figure 3). The percentage of walk trips increased from a low of 18% in first grade to a high of 26%

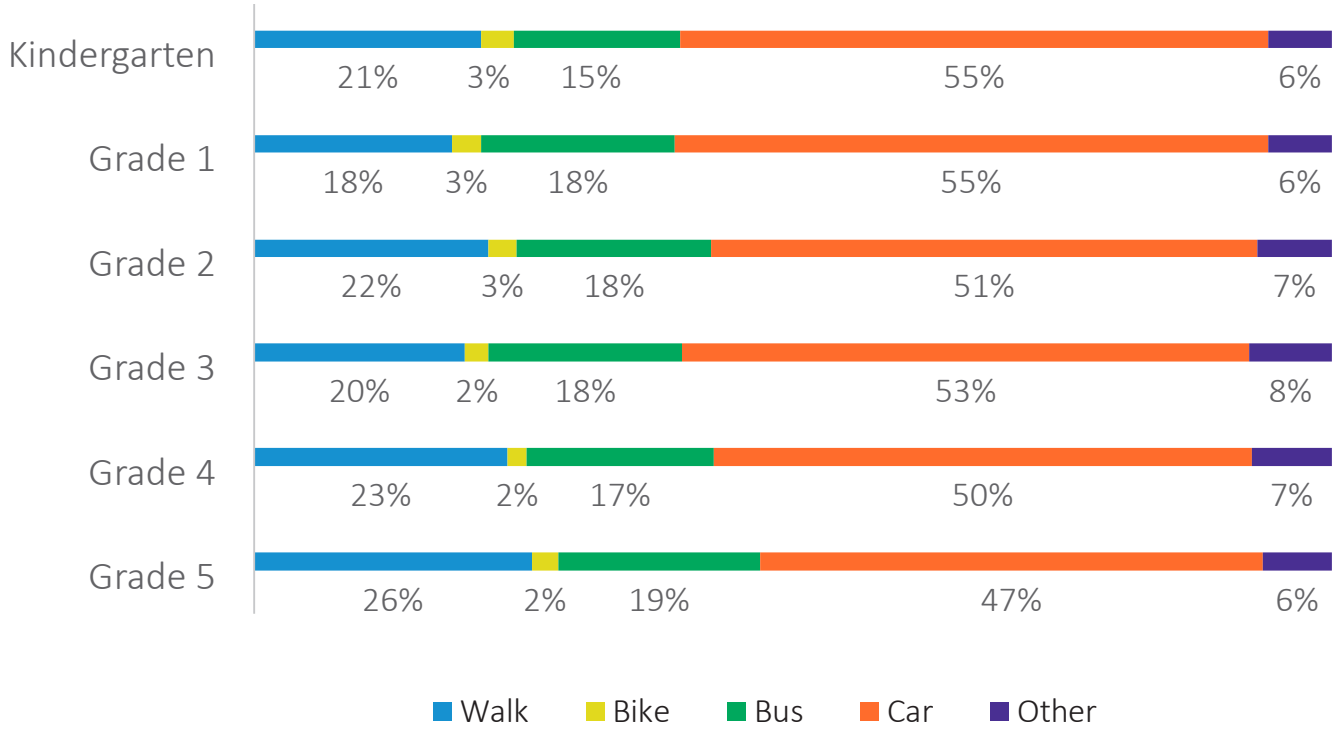


FIGURE 3: Mode share by grade

in fifth grade. The percentage of school bus trips increased from a low of 15% in kindergarten to a high of 19% in fifth grade. The percentage of school trips by car decreased from a high of 55% in both kindergarten and first grade to a low of 47% in fifth grade. Percentages for bike, carpool, transit, and other trips didn't show as much of a directional trend, with shifts in one to two percentage points over the six grade levels surveyed.

Mode Share over Time

When comparing mode share between 2005 and 2015, several significant changes can be seen (Figure 4). Walk rate increased from 14% to 21%, bike rate increased from 1% to 3%, and car rate increased from 48% to 52%. School bus rate decreased from 34% to 18%. The 'other' rate increased from 2% to 7%, but comparing 2005 to 2015 for that answer category is problematic

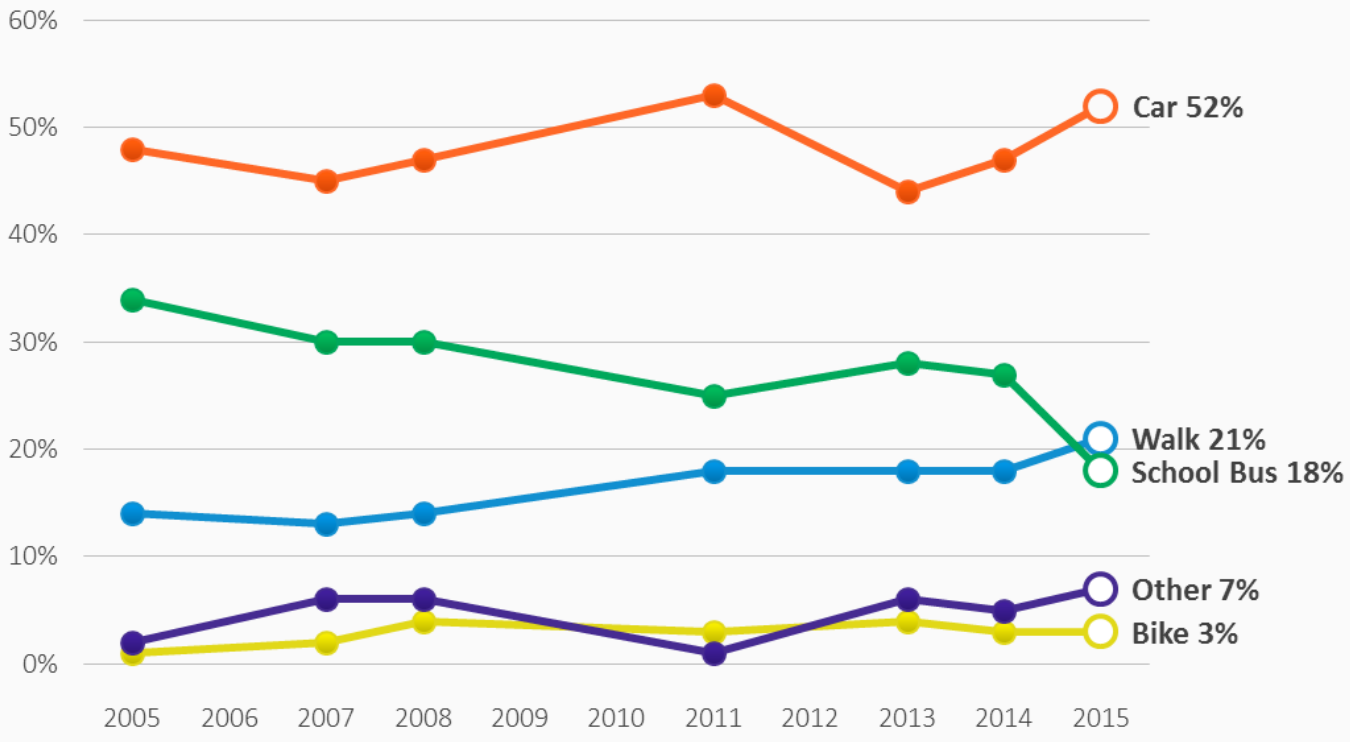


FIGURE 4: Mode share changes over time

Note that in 2005 both transit and carpool were included in the "other" category. For comparison, this graph does the same for 2015.

No data were collected in 2006, 2009, 2010, and 2011.

because the definitions are different. Carpool and transit modes were added to the survey in recent years. For the purpose of comparison, the "other" category in 2015 is the sum of the percentage of trips made by carpool, transit, and other, whereas the "other" category in 2005 is simply the percentage of trips categorized as 'other.

When evaluating year to year changes, it is important to note that which schools participated and the participation rates at each school varied greatly each year that data was collected. Further, no data was collected in 2006, 2009, 2010, and 2012.

The most significant percentage point change over this period was for school bus trips, which we believe reflects a change in SPS policy. In the past, parents could choose to send their students to any elementary in the school district, as long as space was available. In 2009, SPS approved a new student assignment plan, which assigned students to their neighborhood school based on home location. Each school attendance area has a designated "walk zone" where most students are not eligible for SPS-provided transportation services.

For elementary students, the typical walk zone extends 1 mile from the school. This new plan was phased in, resulting in a steady decline in trips by school bus after 2009.

Over the last decade, active transportation – bike and walk trips – has grown significantly, increasing from 15% to 24% of mode share.

Mode Share by School

Mode shares are calculated for each individual school participating in the survey. Schools are then ranked by active transportation mode share (see Table 1) to learn where students are logging the most walk and bike trips. Coe Elementary (41%), Greenwood Elementary (38%), Loyal Heights Elementary (37%), Beacon Hill Elementary (36%), and Concord Elementary (36%) had the highest rates of active transportation in 2015.

Each SPS high school is made up of a cluster of elementary, K-8, and middle schools with enrollment areas that fall within the high school's enrollment area. To learn more about how the active transportation mode share by school compares across the district, we grouped the participating elementary and K-8 schools according to which high school they feed. We then ordered the schools within the high school clusters from the highest active transportation mode share to the lowest (see Figure 5). The dotted yellow line in Figure 5 represents the average active transportation rate across all schools (24%).

The Ballard and Roosevelt high school clusters had the highest percentage of schools with active transportation rates above the district-wide average. In the Ballard cluster, seven of eight schools were above average and in the Roosevelt cluster seven of nine were above average. The Garfield, Nathan Hale, Rainier Beach, and West Seattle high school clusters did not have any schools with above-average rates of active transportation. The Ingraham, Franklin, and Chief Sealth high school clusters had mixed results, with at least one school above average.

Rank	School	Active Rate
1	Coe	44%
2	MLK	41%
3	Greenwood	38%
4	Loyal Heights	37%
5	Beacon Hill	36%

Rank	School	Active Rate
41	Northgate	10%
42	Thurgood Marshall	9%
43	Viewlands	9%
44	Hazel Wolf	6%
45	K-5 Stem	3%

TABLE 1: Top 5 and bottom 5 schools ranked by active transportation mode share

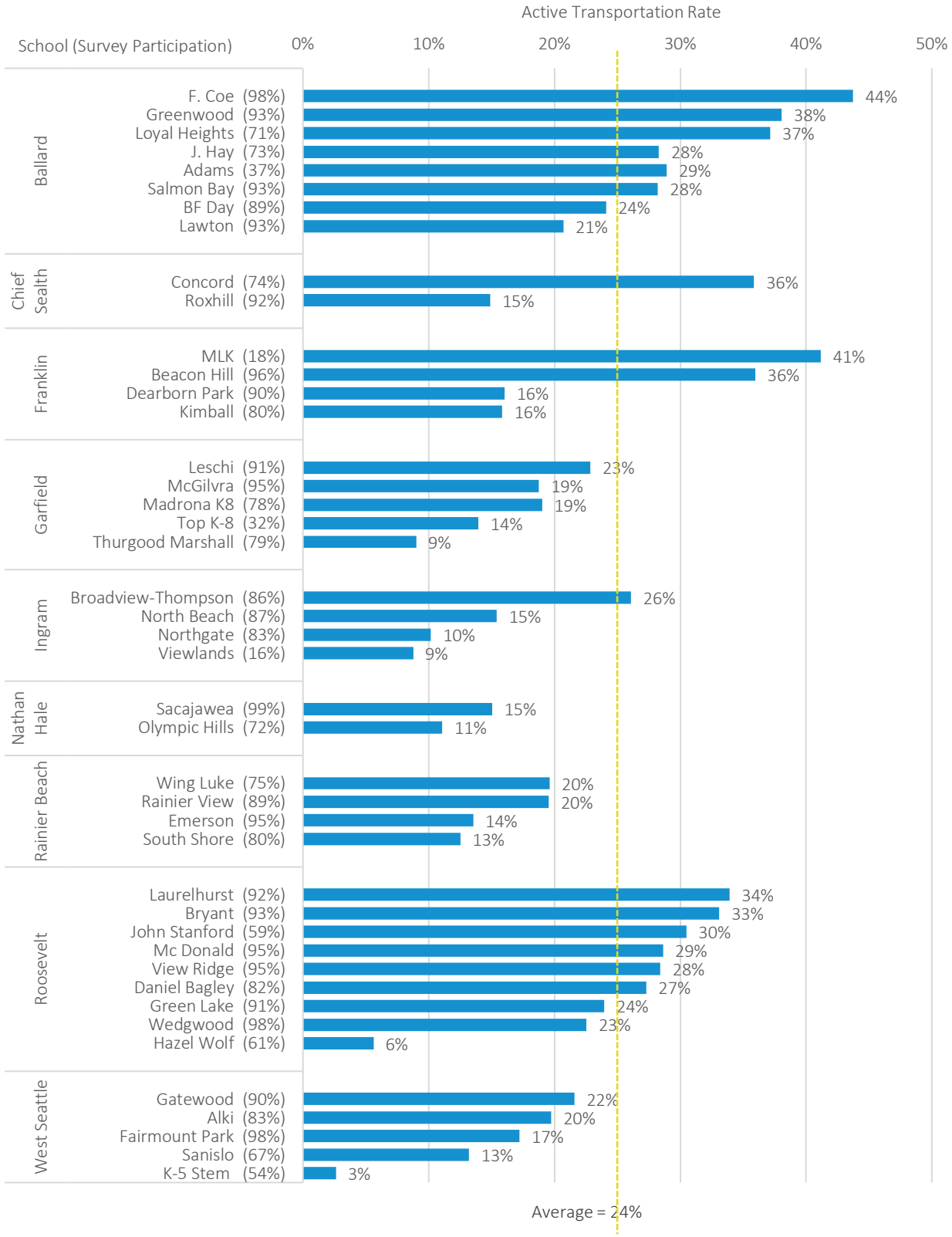


FIGURE 5: Active transportation rate by school, sorted by high school clusters

Note: In 2014, Jane Addams K-8 moved from the Nathan Hale cluster to the Roosevelt cluster and changed name to Hazel Wolf.

Mode Share and Equity

As our findings show, active transportation mode share varies significantly from school to school. The City of Seattle Race and Social Justice Initiative asks departments like ours to consider how City actions further the goal of racial equity. In order to learn more about how our work can further racial equity, we looked at the data using two equity metrics.

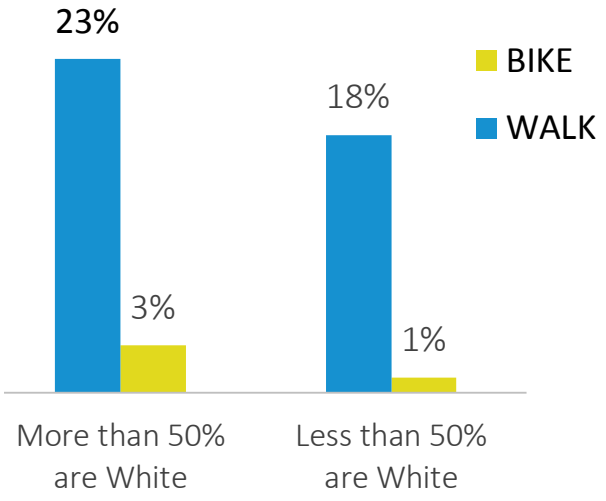


FIGURE 6: Bike and walk mode share by race

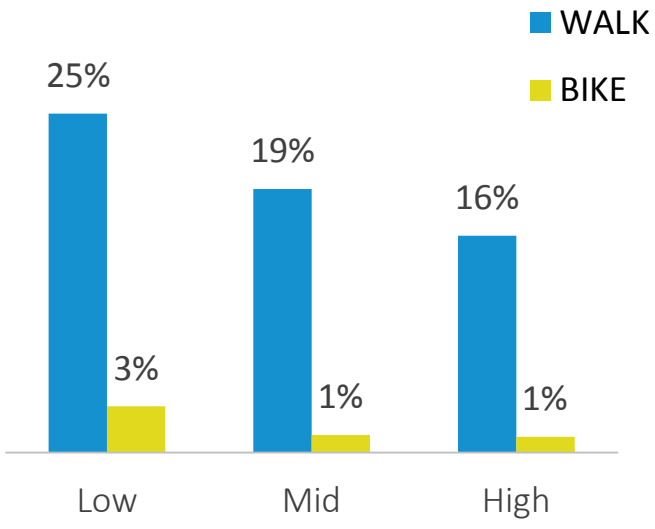


FIGURE 7: Bike and walk mode share by percentage of students qualifying for free or reduced price meals. Categories include low (0-20%), mid (21%-70%), and high (71-100%).

For the first metric, schools were categorized as either having a white student population above or below 50%. We then looked at the mode share for walk and bike trips for each category, finding that schools where less than 50% of the student population is white have lower active transportation rates (see Figure 6).

For the second metric, schools were divided into three categories – low, mid, and high – according to the percentage of students qualifying for free or reduced priced school meals. We chose this metric because students qualifying for this program are from households with lower income levels. During the 2015-2016 school year, a household of 4 would qualify for free or reduced-price meals if their income was less than $44,863. Low schools had 0-20% qualifying, mid schools had 21-70% qualifying, and high schools had 71-100% qualifying.

We then compared schools in the three categories according to active transportation rate (see Figure 7.) Schools with a lower percentage of students qualifying for the reduced price meal program had a higher rate of walk and bike trips, and schools with a higher percentage of students qualifying had lower rates of active transportation.

Mode Share by Pedestrian Environment

Another way we looked at variation between schools is from the perspective of walking infrastructure; sidewalks, traffic volumes, speed limit, and slope all affect a person's walking experience. In SDOT's Pedestrian Master Plan, a "Walking Along the Roadway" (ATR) score was created for each street. The scores indicate how comfortable it is to walk along the street based on whether a sidewalk and curb is present, how fast cars are traveling, and how many cars are on the street. This score was used to evaluate each participating school's walk zone and to categorize the school's pedestrian environment. We used five score categories and color-coded each school, comparing the ATR score to the active transportation rate (see Figure 8).

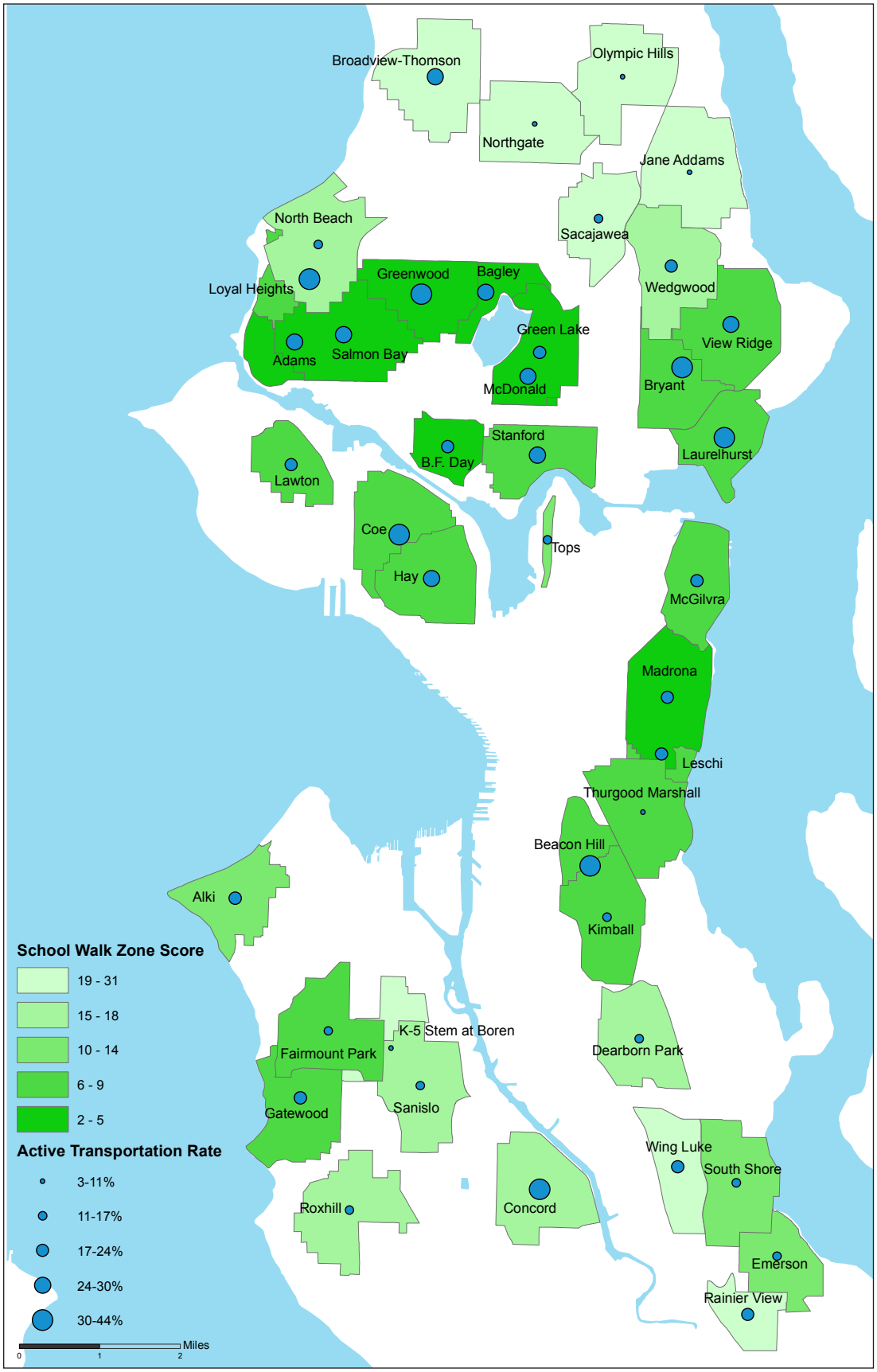


FIGURE 8: School walk zone scores and active transportation rates

North and southwest Seattle have less pedestrian infrastructure in general, which means lower comfort for pedestrians. Areas in the central city and other neighborhoods such as Queen Anne and Ballard have a more complete walking network. When comparing ATR scores and active transportation rates, we see some areas of correlation such as the lower active transportation rate in outer northeast Seattle schools such as Olympic Hills and Jane Addams where there are less sidewalks. We also see correspondence with higher walk and bike rates at schools such as Greenwood and Coe where the sidewalk network is more complete. However, there are also schools where there is not a correlation; Broadview-Thomson K-8 has a relatively high active transportation rate despite having many blocks of missing sidewalks around the school and Thurgood Marshall has a lower active transportation rate even though there is a robust pedestrian network.

To further demonstrate this relationship, active transportation rate and ATR score are compared directly for each of the surveyed schools (see Figure 9). The data show a positive relationship

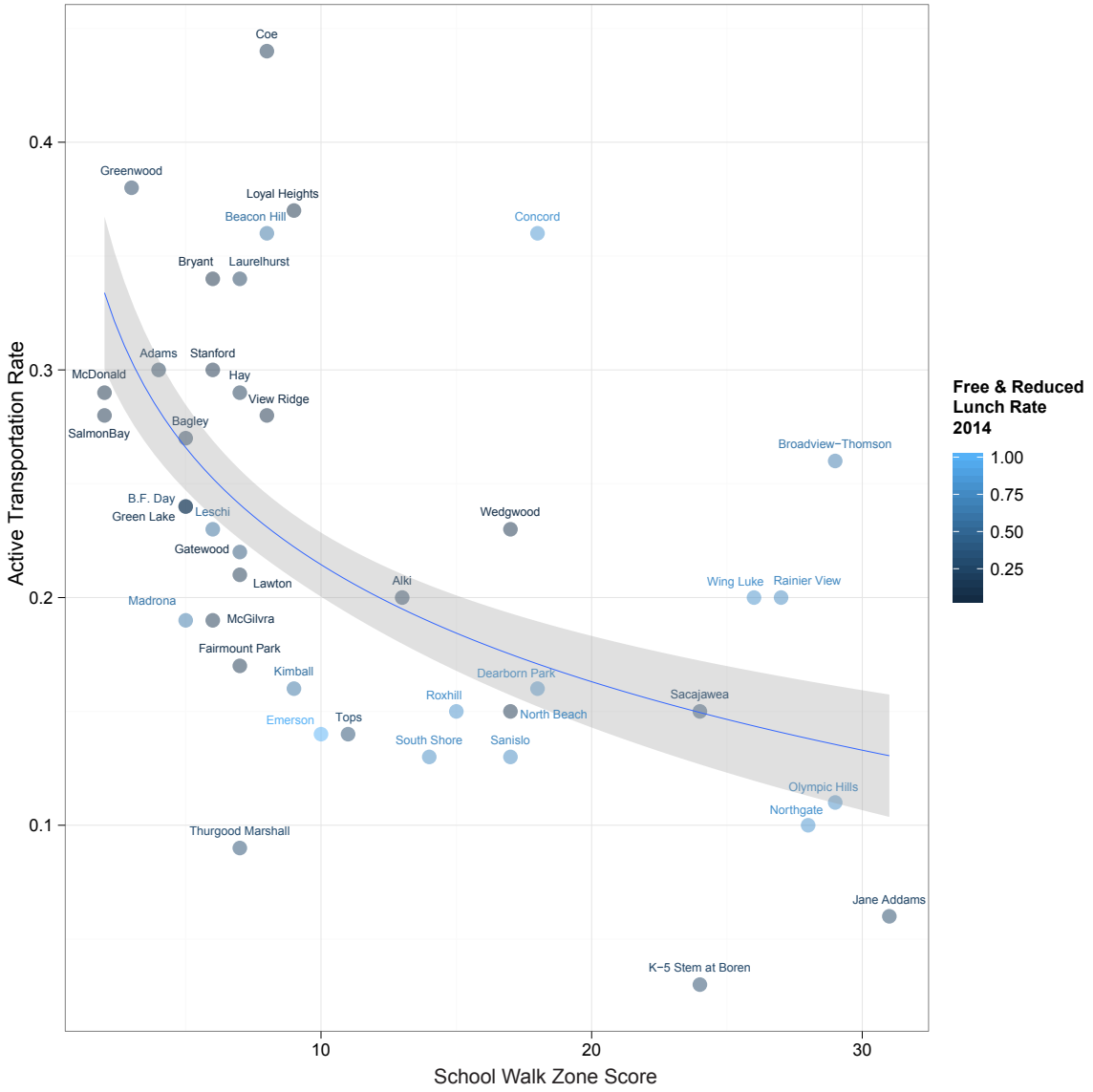


FIGURE 9: Relationship between active transportation rate and walk zone score, with household income information

between a more comfortable pedestrian environment and higher active transportation rates. Still, walkability does not explain all the variation among schools, as shown in the examples above.

In addition to walk score and active transportation rate, Figure 9 also includes a third element: household income. Schools with higher levels of free and reduced-price lunch eligibility, represented with circles in lighter shades of blue, tend to have both lower walkability scores and lower active transportation rates.

2015 CONCLUSIONS

- 43 out of 70 elementary and K-8 schools participated in this effort, including 1,228 classrooms with about 13,500 students
- Mode share was car (52%), walk (21%), school bus (18%), carpool (5%), bike (3%), transit (1%), and other (1%)
- Active transportation accounted for 24% of trips
- There is a slight variation in mode share by time of day, with more car trips in the morning than afternoon and more walk trips in the afternoon than morning
- Mode share changes as students get older; the rate of walk and school bus trips increases with age and the rate of car trips decreases with age
- Between 2005 and 2015 walk, bike, and car rates increased and the school bus rate decreased
- The Ballard and Roosevelt school clusters had the highest number of above-average active transportation schools, and Garfield, Nathan Hale, Rainier Beach, and West Seattle school clusters did not have any schools with above-average active transportation rates
- Equity analysis showed that schools where the student population is less than 50% white have lower active transportation rates, and that schools with a higher percentages of students qualifying for the discounted meal program based on household income had lower active transportation rates
- Schools with a more comfortable pedestrian environment as determined by the Along the Roadway score have higher active transportation rates, however, walkability does not explain all the variation among schools

We use these findings to help guide our program investments in walking and biking infrastructure and programs to encourage families to choose walking and biking to school. Schools surrounded by more fully developed walking infrastructure can benefit from programs to encourage walking and biking, whereas schools located in areas lacking pedestrian infrastructure can benefit from both infrastructure investments and encouragement programs. Additionally, schools that have a larger proportion of students from communities of color and that qualify for free or reduced price lunch may need additional support to increase their rates of walking and biking to school.

For that reason, over the next five years we plan to make larger infrastructure investments around schools like Rainier View Elementary, Broadview-Thomson K-8, Wing Luke Elementary, and Northgate Elementary, for example.

APPENDIX

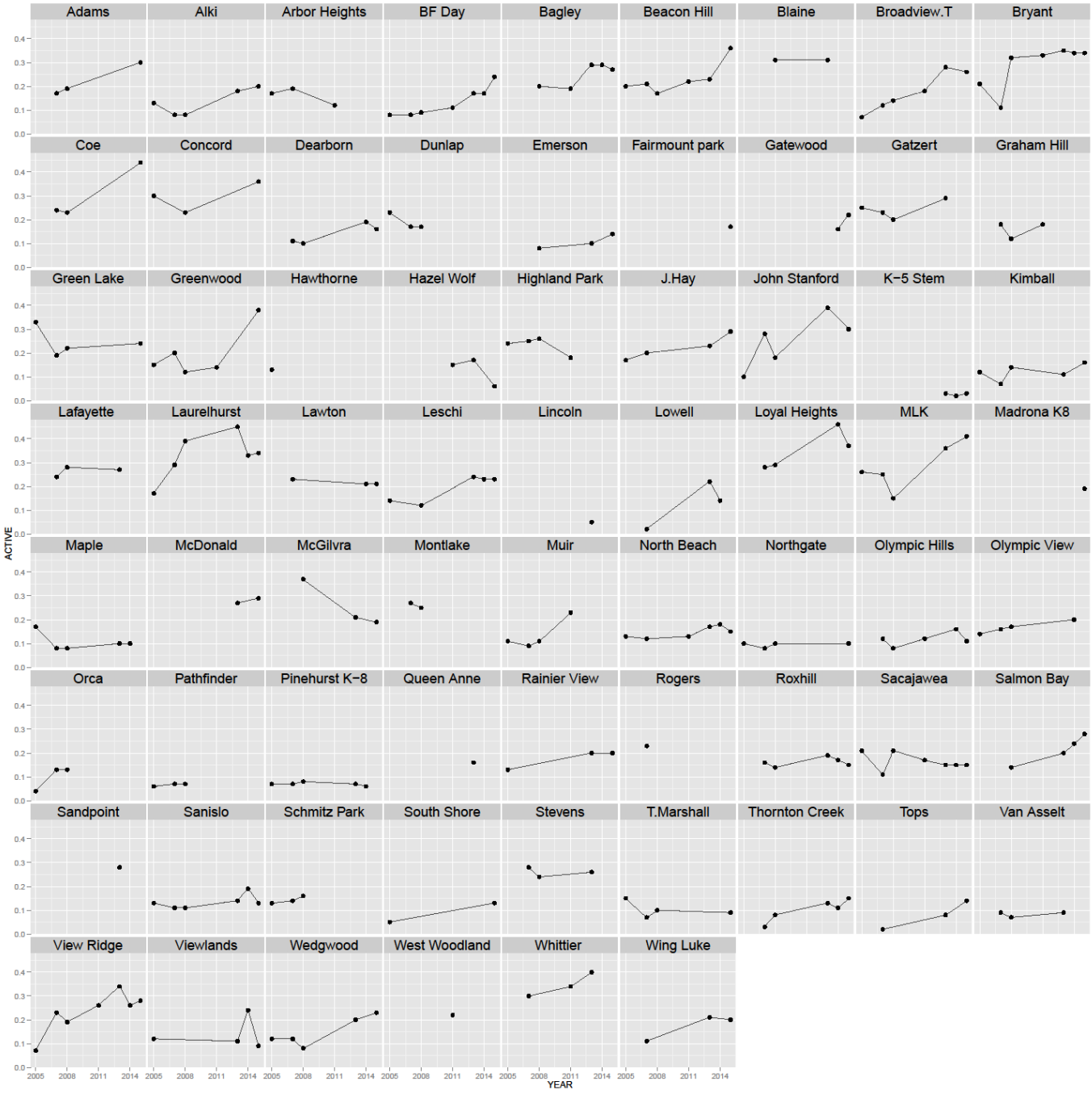


FIGURE 10: Historic active transportation rates for each school from 2005 to 2015. Each point represents participation for that year.

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