Report on Bike to School Week at James Kennedy Elementary School, Langley, 2024

for HUB Langley
Geraldine Jordan | July 2, 2024

Introduction

Bike to School Week (BTSW) 2021 occurred June 3 – June 7, 2024. James Kennedy Elementary (JKE) School participated in Bike to School Week. JKE is located in north Langley and has a student population of 662 students.

Rates of active commuting during BTSW 2024 were 31.9%, which is an increase from active commuting observation rates in 2021 (28.4%).

In this report, I document the methods and results of our experience in 2024, with the hope of gaining insight into this year's BTSW successes and to inform future BTSW events in Langley. The JKE BTSW 2024 experience was also reported in the Langley Advance Times (Claxton 2024).

Methods

At JKE we used the wristband entry method, which as successful in our JKE 2021 BTSW (Figure 1). Students in my Grade 5/6 class (Division 7) wrote unique numbers on Tyvek wristbands with Sharpie. Students then attached wristbands to informational flyers (Appendix A) and delivered them to all the divisions at JKE.

In the informational flyer to families, students who cycled were instructed to securely attach their event wristband with a unique draw number written on it, to their bike handlebars. When students biked to school during BTSW, they locked up their bike in the school bike racks, and their wristband, which was attached to their handlebars became their de facto way of entering into the prize draw. Students who walked or rolled, such as by skateboard, wheelchair, rollerblades, entered the draw by attaching their wristband to their backpack (or memorizing it), and showing/stating their number at the kiosk. A HUB Langley committee member volunteered at the kiosk, and, along with my help as classroom teacher, trained Division 7 students on collecting the numbers from students who walked/rolled.

Figure 1. Event wristband attached to a bike (2021).

Every day during BTSW, as part of a Math Inquiry, Division 7 students counted the number of bikes in both the primary and intermediate bike racks, and also counted the total number of students who walked/rolled from kiosk tally sheets. Students entered the numbers on data collection sheets, along with the weather for that day (see Appendix B for student worksheets). Each day, as part of the inquiry project, students calculated the percentage of active commuters, as well as the probability of winning one of the three daily prizes. We used a random number generator app on my iPad to select three random numbers from the total number of active commuters, which were then matched into actual unique ID number lists. The three winning numbers were then brought to the office by a couple of students. Ms. Sollows announced the student winners during the school day, and handed out the prizes.

MEC donated approximately $150.00 worth or prizes (4 white bike lights and 3 bells). HUB Langley donated $50.30 in waterbottles from Costco. Velocity donated 800 vinyl stickers with the slogan "Be cool – Bike 2 School," which were distributed to all the students, by division, at the end of the week.

Note: Distribution to all the divisions of the flyers and the vinyl stickers was done collaboratively by students in small groups, who organized sets of flyers/stickers by division using a spreadsheet, bundling, labelling with classroom number and teacher, and then delivering.

Questionnaire

Using a questionnaire which I developed in Microsoft Forms, I surveyed JKE families on Friday afteroon of Bike to School Week. The questionnaire was delivered electronically to all families by Ms. Sollows. After a couple of weeks, I downloaded the data, and compiled the survey results (Appendix C). I derived recommendations and considerations from the survey results, along with direct observations from Bike to School Week.

Results

Results include direct observations (bike rack counts and kiosk entries) and questionnaire results.

Direct observations

For the week, JKE's bike rack count average was 64.2 (9.7%) per day, while the walking/rolling kiosk count average was 147 (22.2%; Figure 2) per day. The daily average of active commuters was 31.9%. Peak bike rack count days were Thursday and Friday. Peak walking/rolling count days were Wednesday and Thursday (Figure 2).

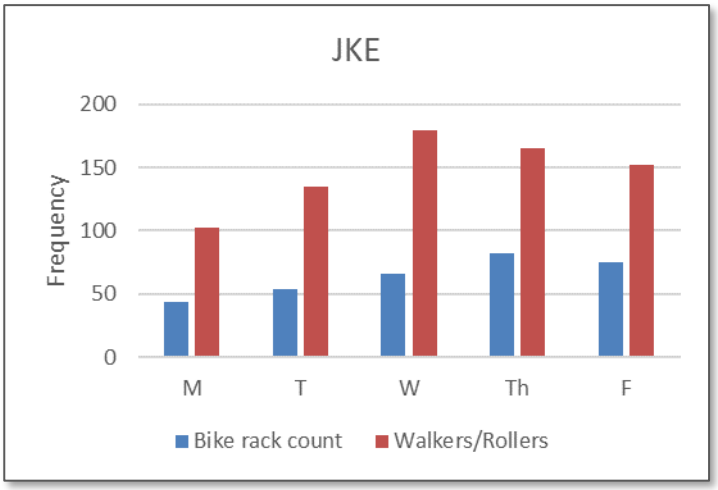


Figure 2. Participation rates at JKE

Questionnaire

Twenty-three respondents filled in the survey for JKE (Appendix C). For factors that encouraged families to participate in Bike to School Week, proximity to home was a top factor (57%). Other top-scoring factors included the weather (48%), active form of transportation (physical activity; 39%) and family encouragement (30%). In the open-ended questions, respondents' aggregated qualitative results include that Bike to School Week was very successful, and that there was a lot of family and community support. Recommendations included more prizes, a bike-decorating day, end-of-week ice cream

celebration, more events like this, and encouragement for families to view active commuting as a way to decrease congestion.

Recommendations and Considerations

- ☐ **Host Bike to School Week more frequently.** Consider a Fall Bike to School Day, as well as Walking Wednesday initiatives.
- ☐ **Building into school curriculum:** In the JKE BTSW 2021 Report, one consideration was to build BTSW into curriculum. This year, in Division 7, students undertook a Grade 5/6 math inquiry based on BTSW (Appendix B). In their inquiry, students collected and analyzed data about active commuters, doing the real hands-on research of urban and transportation geographers by determining rates of active commuting, and the factors that affect them. Students gained skills of data collection and analysis (including mean, median, percentage and probabilities), as well as representing and communicating their findings through graphing and writing. The inquiry worksheets were organized graphically to help students work through mathematical equations, and scaffolded them over the course of the five days until their work could be independently completed.
- ☐ **Comparison with 2021 data.** The comparison of the 2024 data with the 2021 data is interesting, because compared to cycling (Figure 3a), substantially more students chose walking/rolling as their mode choice in 2024 compared to 2021 (Figure 3b). In their Math Inquiry project, Division 7 students considered some reasons for these differences. The total rate of active commuting increased in 2024 at 31.9% compared to 28.4% in 2021.

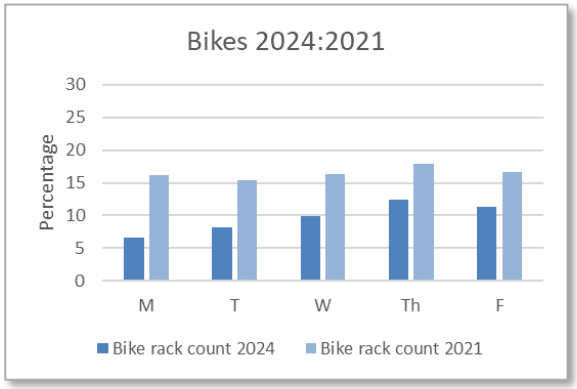


Figure 3a. Bike rack count comparison between 2024 and 2021

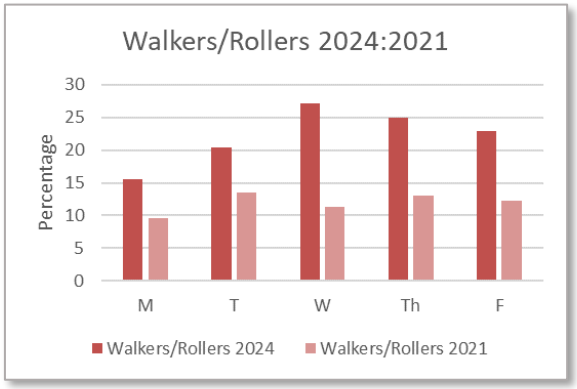


Figure 3a. Walker/roller count comparison between 2024 and 2021

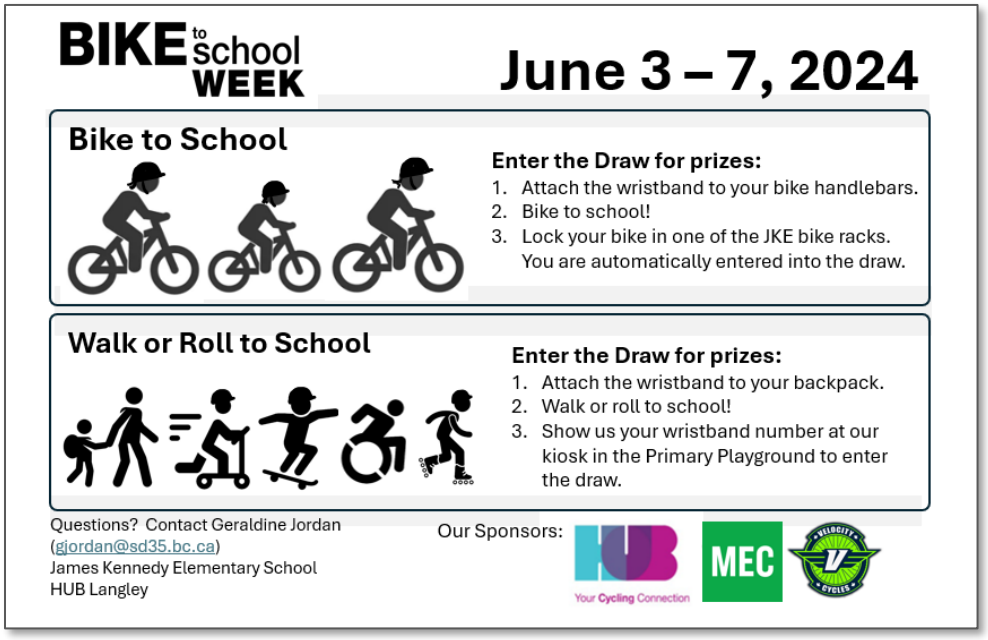
Conclusion

Bike to School Week 2024 was successful with an average of 31.9% of students actively commuting each day, as well as building the experience into curriculum.

References

Claxton, M. (June 13, 2024) "Langley elementary gets kids moving on Bike to School Week" [online URL: https://www.langleyadvancetimes.com/local-news/langley-elementary-gets-kids-moving-on-bike-to-school-week-7375218) Accessed July 2, 2024.

APPENDIX A: BIKE TO SCHOOL WEEK FLYERS



APPENDIX B: MATH INQUIRY

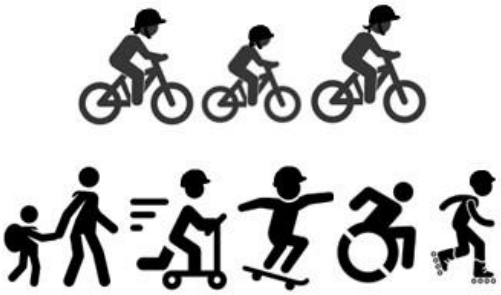
Math 5/6

Name: _____

Date: _____

Active Commuting to School:

Counts, Percentages, and Probabilities
Mean, Median, and Double Bar Graphs



Math Inquiry Project

Page 1

Math 5/6

Name: _____

Date: _____

Math Inquiry Competencies

Understanding and Solving

Emerging	Developing	Proficient	Extending
Can identify a strategy that may lead to a solution	Can apply a strategy to solve problems	Can apply a strategy to accurately solve problems with growing complexity	Can show deep understanding by applying effective and/or efficient strategies to accurately solve complex problems

Communicating and Representing

Emerging	Developing	Proficient	Extending
Can show mathematical ideas in concrete, pictorial, or symbolic forms to represent part(s) of a problem	Can show mathematical ideas in concrete, pictorial, or symbolic form to represent and solve a problem	Can accurately represent mathematical ideas in concrete, pictorial, or symbolic forms to explain and/or reason in a problem	Can accurately represent complex mathematical ideas in concrete, pictorial, and symbolic forms to explain and/or reason in a problem

Connecting and Reflecting

Emerging	Developing	Proficient	Extending
Can identify that mathematical concepts can be connected	Can make connections between mathematical concepts	Can accurately make connections between mathematical concepts	Can make multi-faceted connections between mathematical concepts
Can identify where math happens in daily activities, other areas of study or the world	Can make general connections from mathematical concepts to daily activities, other areas of study or the world	Can make specific connections from mathematical concepts to daily activities, other areas of study or the world	Can make specific, complex connections from mathematical concepts to the daily activities, other areas of study or the world and justify using mathematical evidence
Can check solutions	Can check solutions and identify errors	Can check solutions to problems, find and revise errors	Can check solutions to problems, find and revise errors and apply learning to other problems

Student evaluation ☐

Teacher evaluation ☐

Page 2

Math Inquiry Project: PART 1

Student names

Research Objectives

1. For each day of the week in Bike to School Week, our objectives are:

a) To count number of students who biked.
b) To calculate the total number of students who biked, walked and rolled. These methods of transportation are called ***actively commuting***.
c) To calculate percentage of students who actively commuted.
d) To calculate the probabilities of winning a prize each day.
e) To use random number generation to draw three prize winners each day.

2. For the whole week, our objectives are:

a) To calculate the average (mean) and median for the week for students who bicycle, walk, and roll.
b) To graph the total number of students who actively commuted on a double bar graph (bicycling and walking/rolling).
c) To compare the results with data from 2021.
d) To consider factors which affect rates of active commuting.

Background

Active Commuting means: _____

_____

_____

Active Commuting is important because:

_____

_____

_____

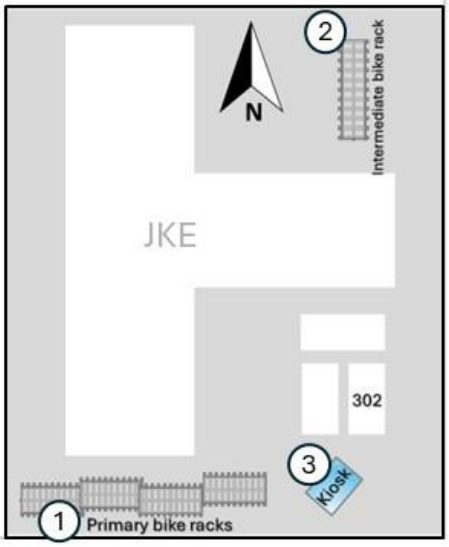
_____

_____

Data

Our data will come from three places:

1. _____
2. _____
3. _____



Page 3

Monday June 3, 2024. Weather: _____

1a) Total number of bikes:

1. Walk along the primary bike rack and count how many bikes are in the rack.

2. Walk along the intermediate bike rack and count how many bikes are in the rack.

3. Add the primary and intermediate bike rack counts together.

☐ + ☐ = ☐

b) Total number of active commuters

Number of students who walked or rolled (from the kiosk count).		Total number of bikes		Add the numbers together
☐	+	☐	=	☐

c) What is the percentage of active commuters today?

Divide the total number of active commuters by the number of students in the school and multiply by 100.

$$\frac{\square}{662} \times 100\% = \square\,\%$$

d) What is the probability of winning a prize today?

Divide the number of prizes by active commuters and multiply by 100.

$$\frac{3}{\square} \times 100\% = \square\,\%$$

e) Prize winners.

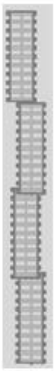
With the class, use the random number generator to determine 3 numbers between 1 and the total number of active commuters. With your teacher's help, find the winning numbers in the count.

Random number:	☐	☐	☐
Tyvek number:	☐	☐	☐

Page 4

Tuesday June 4, 2024. Weather: _____

1a) Total number of bikes:



1. Walk along the primary bike rack and count how many bikes are in the rack.

2. Walk along the intermediate bike rack and count how many bikes are in the rack.

3. Add the primary and intermediate bike rack counts together.

☐ + ☐ = ☐

b) Total number of active commuters

Number of students who walked or rolled (from the kiosk count).		Total number of bikes		Add the numbers together
☐	+	☐	=	☐

c) What is the percentage of active commuters today?

Divide the total number of active commuters by the number of students in the school and multiply by 100.

$$\frac{\square}{662} \times 100\% = \square\,\%$$

d) What is the probability of winning a prize today?

Divide the number of prizes by active commuters and multiply by 100.

$$\frac{3}{\square} \times 100\% = \square\,\%$$

e) Prize winners. With the class, use the random number generator to determine 3 numbers between 1 and the total number of active commuters. With your teacher's help, find the winning numbers in the count.

Random number:	☐	☐	☐
Tyvek number:	☐	☐	☐

Page 5

Wednesday June 5, 2024. Weather: _____

1a) Total number of bikes:

1. Walk along the primary bike rack and count how many bikes are in the rack.

2. Walk along the intermediate bike rack and count how many bikes are in the rack.

3. Add the primary and intermediate bike rack counts together.

☐ + ☐ = ☐

b) Total number of active commuters

Number of students who walked or rolled (from the kiosk count).		Total number of bikes		Add the numbers together
☐	+	☐	=	☐

c) What is the percentage of active commuters today?

Divide the total number of active commuters by the number of students in the school and multiply by 100.

$$\frac{\square}{662} \times 100\% = \square\,\%$$

d) What is the probability of winning a prize today?

Divide the number of prizes by active commuters and multiply by 100.

$$\frac{3}{\square} \times 100\% = \square\,\%$$

e) Prize winners.

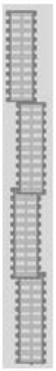
With the class, use the random number generator to determine 3 numbers between 1 and the total number of active commuters. With your teacher's help, find the winning numbers in the count.

Random number:	☐	☐	☐
Tyvek number:	☐	☐	☐

Page 6

Thursday June 6, 2024. Weather: _____

1a) Total number of bikes:



1. Walk along the primary bike rack and count how many bikes are in the rack.

2. Walk along the intermediate bike rack and count how many bikes are in the rack.

3. Add the primary and intermediate bike rack counts together.

b) Total number of active commuters

Number of students who walked or rolled (from the kiosk count).		Total number of bikes		Add the numbers together

c) What is the percentage of active commuters today?

Divide the total number of active commuters by the number of students in the school and multiply by 100.

%

d) What is the probability of winning a prize today?

Divide the number of prizes by active commuters and multiply by 100.

%

e) Prize winners.

With the class, use the random number generator to determine 3 numbers between 1 and the total number of active commuters. With your teacher's help, find the winning numbers in the count.

Random number:			
Tyvek number:			

Page 7

Friday June 7, 2024. Weather: _____

1a) Total number of bikes:

1. Walk along the primary bike rack and count how many bikes are in the rack.

2. Walk along the intermediate bike rack and count how many bikes are in the rack.

3. Add the primary and intermediate bike rack counts together.

b) Total number of active commuters

Number of students who walked or rolled (from the kiosk count).	Total number of bikes	Add the numbers together

c) What is the percentage of active commuters today?

Divide the total number of active commuters by the number of students in the school and multiply by 100.

%

d) What is the probability of winning a prize today?

Divide the number of prizes by active commuters and multiply by 100.

%

e) Prize winners.

With the class, use the random number generator to determine 3 numbers between 1 and the total number of active commuters. With your teacher's help, find the winning numbers in the count.

Random number:			
Tyvek number:			

Page 8

PART 2: The Whole Week

Student names

Data Table

Transfer your data from the week into this data table:

	Mon	Tues	Wed	Thurs	Fri
Biked					
Walked/ Rolled					

2a) Mean for Biking

The mean is also called an average.
Calculate the average per day (mean) of students who **biked**:

$$\square + \square + \square + \square + \square = \square$$

$$\frac{\square}{5} = \square$$

∴ The average number of students who biked per day was: _____

Median for Biking

The median is the middle number of a set of data. Calculate the median by sorting the daily values from smallest to largest, and picking the middle number.

$$\square < \square < \square < \square < \square$$

Median

∴ The median number of students who biked this week was: _____ .

Is the mean different from the median? Why or why not? Explain.

_____

_____

Page 9

Mean for Walkers/Rollers

Calculate the average per day (mean) of students who **walked/rolled**:

☐ + ☐ + ☐ + ☐ + ☐ = ☐

☐ / 5 = ☐

∴ The average number of students who walked/rolled per day was: _____.

Median for Walkers/Rollers

Calculate the median of walkers/rollers:

☐ < ☐ < ☐ < ☐ < ☐

∴ The median number of students who walked/rolled this week was: _____ .

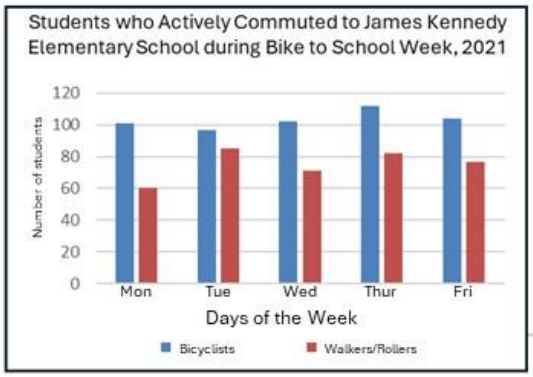
2b) Double Bar Graph

On the next page, make a double bar graph of students who cycled each day and students who walked/rolled each day.

Graphs like this should always have:

- ☐ Bars in the graph paper area.
- ☐ Values on the x-axis, for example, Mon, Tue, Wed, Thur, and Fri.
- ☐ A label for the x-axis, for example, Days of the Week.
- ☐ Values on the y-axis, for example, 10, 20, 30, 40 etc.
- ☐ A label for the y-axis, for example, Number of Students.
- ☐ A legend to tell us what the colours mean.
- ☐ A title for the graph which tells us: What, Where, and When about the graph.

Example from Bike to School Week 2021:



Page10

2c) Comparing Results

Take a look at the graph on Page 10, which shows data from Bike to School Week in 2021. How do your results from 2024 compare?

Page 11

2d) Factors Affecting Active Commuting

i) What day of the week had the highest number of students who cycled in 2024? Why do you think this is?

ii) What day had the lowest number of students who cycled? Why do you think this is?

iii) What day had the highest number of students who walked/rolled? Why do you think this is?

iv) What day had the lowest number of students who walked/rolled? Why do you think this is?

v) In general, were there more students who cycled than walked/rolled, or other way around? Why do you think this is?

Page 12

vi) What other factors affect how you, and other students, choose to get to school?

vii) Why is active transportation a beneficial way of getting to school (or anywhere)? Give at least 5 reasons.

Some Extending Ideas

1) On a separate piece of graph paper:
   a) Make a neatly drawn single bar graph of the percentage of active commuters for Mon, Tue, Wed, Thur, and Fri.
   b) Make another neatly drawn single bar graph of the probability of winning a prize for Mon, Tue, Wed, Thur, and Fri.
   c) Below the graphs, answer the questions: What is the pattern (or relationship) between the two graphs? Why does this pattern (or relationship) exist?

2) On a separate piece of lined paper,
   a) Describe the community around JKE in terms of demographics. How do you think the people who live in this area (place-based) make choices about how to commute (car, bike, walk)?
   b) When is the median a better measure of "the middle" of a data set than the mean? Give an example of when people might use it.
   c) What changes could be made at JKE to increase the rates of active commuting every day, for the whole school year?
   d) How can transportation infrastructure at schools, and in the surrounding neighbourhoods, be improved to encourage more active commuting?

Self-reflection

This inquiry was meaningful because:

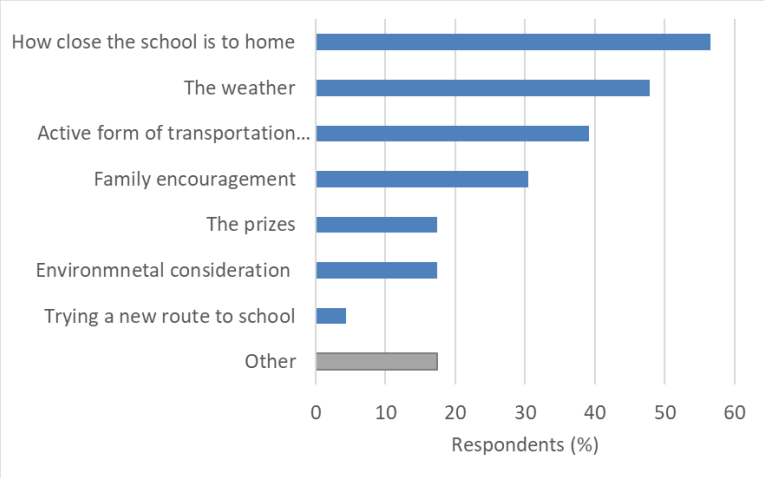
I participated meaningfully as a group and class member in the following ways:

Page 14

APPENDIX C: JKE FAMILY SURVEY RESULTS

A survey was sent out to JKE families at the end of Bike to School Week 2024. There were 23 respondents. For the first question, "**Did your child(ren) bike, walk or roll to school at least once during Bike to School Week?"**, there were 23 respondents who answered **"YES"** and followed through with these branched-survey questions:

What factors encouraged your child(ren) to bike, walk or roll to school this week? (N = 23)



Other

- It is easier than driving as dropoff takes longer than biking does
- encouragement from school
- Friends
- Everyone else was doing it and good marketing from the school

What did you like best about Bike to School Week at JKE?

- The buzz of activity before and after school
- I think this is environmentally friendly.
- Well organized
- Doing something together with friends
- Everything
- Amazing
- children's motivation when cycling
- Having their number put into a draw each day, the stickers and having a visual wall of stickers
- my daughter always walks to school. when there is a special event like this, more people walk to school. it feels good so many other people walk with you.
- See JKE community riding to school
- I got to ride my bike and take my kid to school.
- Smile and energy of the children
- It was good

- the sticker to encourage them
- It was great seeing the children/parents finding a different way to get to school.
- Seeing people using their bikes. Too bad it drops down to >10 people for the rest of the year
- physical activity

Do you have any suggestions for our future Bike to School Week events at JKE?

- Just did not know much about the prizes so I felt like I let my kid down because we didn't hand in our band in time. Also, the station was only there in the morning and we had to drive in the mornings to take our other kid to preschool after. So it would have been better to have the station more available. (I don't know that I understood the station well so I might be getting it wrong).
- Do this activity more often.
- Classroom competition for most participants.
- Decorate bike/scooter/yourself one day
- Do more!
- More prizes given out each day
- Yes, at the end of the week they celebrate with an ice cream for example
- N/A
- More activity like this
- No
- more events like this
- Market how it is quicker than driving to convince parents to not drive and bring down the congestion. Granted that sucks in the winter.

For the first survey question, "**Did your child(ren) bike, walk or roll to school at least once during Bike to School Week?"**, there were no participants who answered **"NO"** and followed through with these branched-survey questions:

What do you think HUB Langley could do to help your family participate in Bike to School Week next time?

What was/were reason(s) that you weren't able to participate in Bike to School Week at JKE?

[No respondents indicated that they did not participate in in BTSW.]