



Linking Lessons - Schools

Linking Lessons – Schools (LL-S) is a ten-lesson intervention that SNAP-Ed educators use with middle and high school students; five lessons are required for program fidelity. Lessons lead youth through behavior change by identifying current patterns, identifying ways to improve them, and implementing “healthy homework” to practice positive food behaviors. This report summarizes results from surveys completed by LL-S participants during FY 2024. LL-S was evaluated using two surveys, the Fruit and Vegetable Screener for Youth (Screener) and the Program Evaluation (Youth). A total of 787 youth in grades 6-12 from seven local SNAP-Ed organizations submitted the Screener (range=24 to 396). Most respondents were in grades 6 and 9. Program Evaluation (Youth) was completed by 1,107 participants from eight organizations (range=33 to 297). Total and organization counts are provided on page 1, followed by key findings (page 2), and data tables/figures for each survey (pages 2-9). Detailed results of the data analyses to assess evidence base for this intervention are reported on pages 10-12. Conclusions, including implications, considerations, and next steps, are provided at the end of this report.

Evidence Base Results. There was a significant increase between pre and post results (Fruit and Vegetable Screener) for 100% fruit juice, fruit, vegetables (overall), salad, and potatoes suggesting youth performed these behaviors more frequently after participating in the LL-S intervention. There was no significant change for eating carrots, other vegetables, soda/pop, milk, or breakfast.

Survey Count: Fruit and Vegetable Screener for Youth

Local SNAP-Ed organization	Number of surveys
Bronson Health Foundation	24
Crim Fitness Foundation	28
Gratiot-Isabella Regional Education Service District	33
Henry Ford Health	59
Project Healthy Community	46
Van Buren Intermediate School District	201
Wayne State University	396
Total	787

Survey Count: Program Evaluation (Youth)

Local SNAP-Ed organization	Number of surveys
Bronson Health Foundation	146
Crim Fitness Foundation	81
Gratiot-Isabella Regional Education Service District	103
Henry Ford Health	107
Project Healthy Community	71
Van Buren Intermediate School District	297
Wayne State University	269
YMCA of Greater Grand Rapids	33

Local SNAP-Ed organization	Number of surveys
Total	1,107

Key Findings

Fruit and Vegetable Screener:

- Greatest change in food behaviors occurred for eating vegetables (overall) with 52% of the youth increasing frequency of intake, 49% increased fruit/juice, and 30% decreased pop consumption.
- There was also an increase, from 61% to 72% for participants that were eating fruit at least once per day when the program started. For youth that were eating fruit less than once per day at the time of the pretest, 52% increased their consumption according to posttest results.
- Regarding vegetables, there was an increase from 58% to 68% on the posttest for youth that were eating vegetables at least once per day when the program started. For youth eating vegetables less than once per day, 67% increased their consumption.

Program Evaluation (Youth)

- 96% of the youth enjoyed some, most, or all lessons, 69% understood most or all of the information.
- 90% enjoyed some or a lot of the foods they tasted.
- The top two behaviors that most youth indicated they were doing at the end of the program, because of the program, were drinking more water and eating more fruit.

Detailed Results: Fruit and Vegetable Screener for Youth

Demographic Data

Figure 1. **Gender** (n=787)

How would you describe yourself?	Number	Percent
Female	419	53%
Male	345	44%
Prefer not to answer	13	2%
Not listed	10	1%

Figure 2. **Grade** (n=787)

The average age of participants was 13.9 years.

What grade are you in?	Number	Percent
6th	249	32%
7th	25	3%
8th	79	10%
9th	200	25%
10th	91	12%
11th	50	6%
12th	93	12%

Note: Responses selected by fewer than 1% of the respondents are not displayed.

Figure 3. **Race** (n=774)

How would you describe yourself?	Number	Percent
Black or African American	375	49%
White	233	30%
Not listed	108	14%
Prefer not to answer	77	10%
American Indian or Alaska Native	34	4%
Asian	30	4%
Native Hawaiian or Other Pacific Islander	1	0%
Multiracial	0	0%

Figure 4. Ethnicity (n=771)

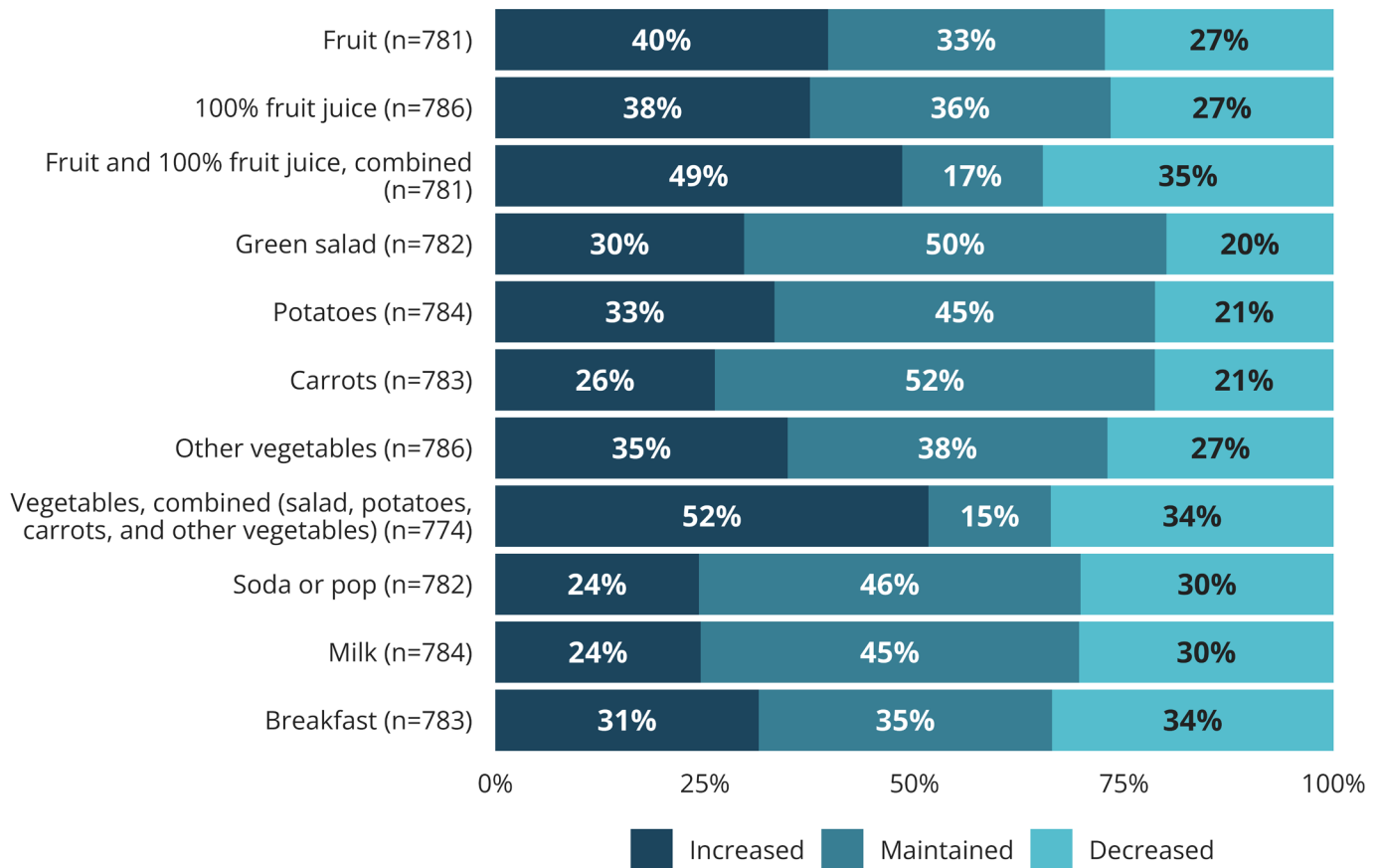
How would you describe yourself?	Number	Percent
Non-Hispanic/Latino	480	62%
Hispanic/Latino	167	22%
Prefer not to answer	124	16%

Behavior Change Outcomes

Figure 5. Behavior change

Respondents were asked to recall their food/beverage intake during the previous seven days. This figure displays the percent of respondents who increased, maintained, or decreased the frequency of consuming each item between the start and end of the intervention.

On the post-test, **40%** of youth were eating **fruit** more often, **52%** were eating **vegetables** more often.



Note: A positive change for soda or pop would be a *decrease* in consumption.

Figure 6. Daily fruit and vegetable consumption

Fruit and vegetable consumption frequency was categorized as either one or more times per day (Figure 6) or less than once per day (Figure 7).

The percent of respondents having fruit and/or 100% fruit juice at least once per day **increased by 11%** and vegetables at least once per day **increased by 10%**.

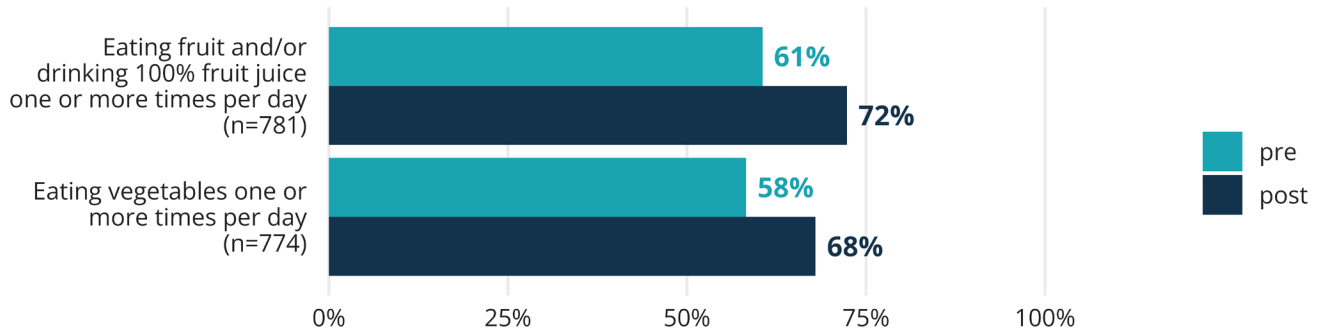
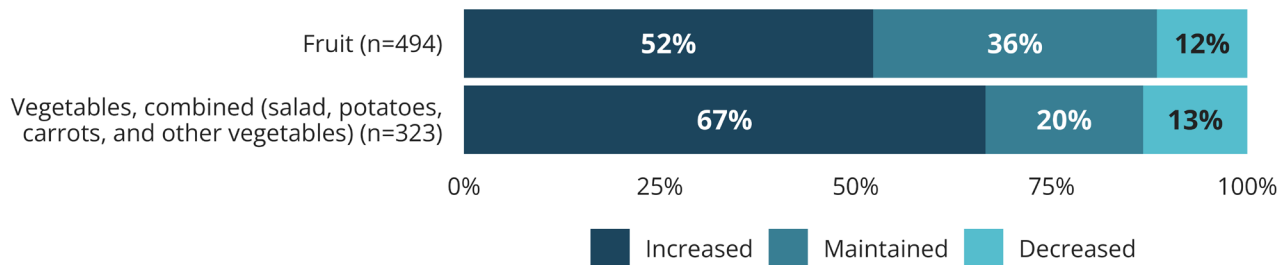


Figure 7. Fruit and vegetable consumption: Respondents with room to improve

Of respondents that consumed fruits or vegetables **less than once per day** before the intervention, **52%** increased frequency of **fruit** consumption and **67%** increased frequency of **vegetable** consumption.



Detailed Results: Program Evaluation (Youth)

Demographic Data

Figure 8. **Grade** (n=1,034)

What grade are you in?	Number	Percent
5th	16	2%
6th	412	39%
7th	32	3%
8th	158	15%
9th	367	35%
10th	22	2%
11th	27	3%

Participant Feedback

Figure 9. Enjoyment of lessons (n=1,091)

Respondents were asked, "Did you enjoy the lessons about food and healthy eating?"

45% of respondents **enjoyed lessons** about food and healthy eating **a lot**.

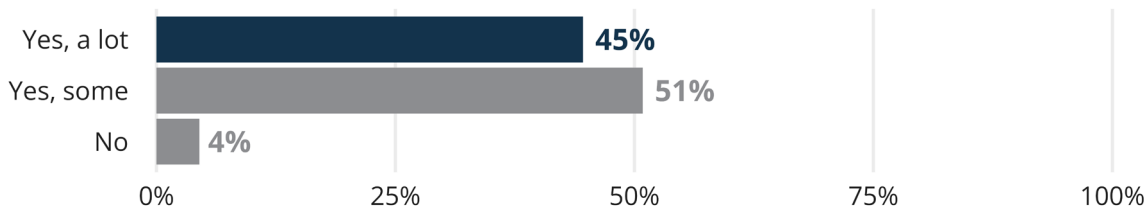


Figure 10. Lesson interest (n=1,091)

Respondents were asked, "How many food and healthy eating lessons were interesting?"

43% of respondents thought **most or all** of the lessons were **interesting**.

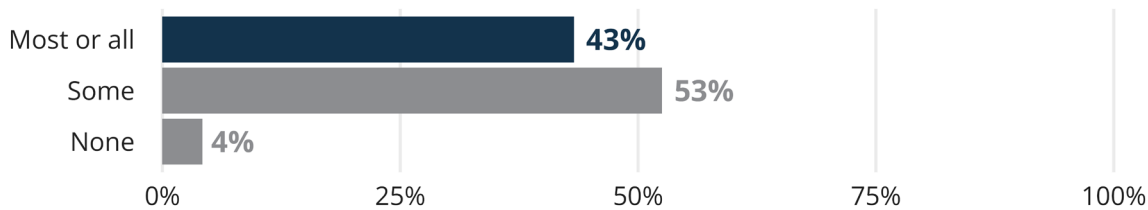


Figure 11. Lesson topics (n=1,090)

Respondents were asked to mark topics that they learned about in the lessons.

The most common topics were fruit, healthy drinks, and MyPlate.

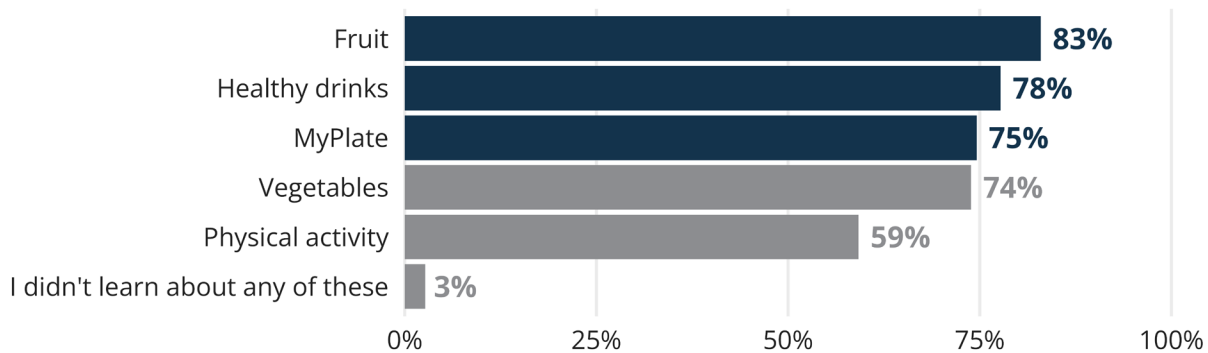


Figure 12. Previous knowledge of lesson information (n=1,080)

Respondents were asked, "How much of the information in the lessons did you already know?"

Some or all of the information was new to **68%** of respondents.

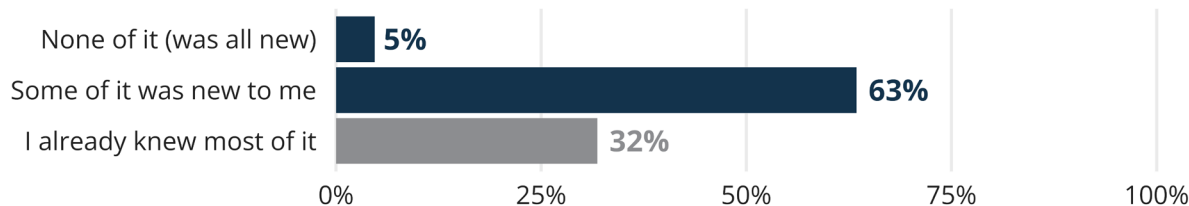


Figure 13. Overall rating (n=1,079)

Respondents were asked, "How would you rate the food and healthy eating lessons?"

75% of youth rated the lessons as either **good or great**.

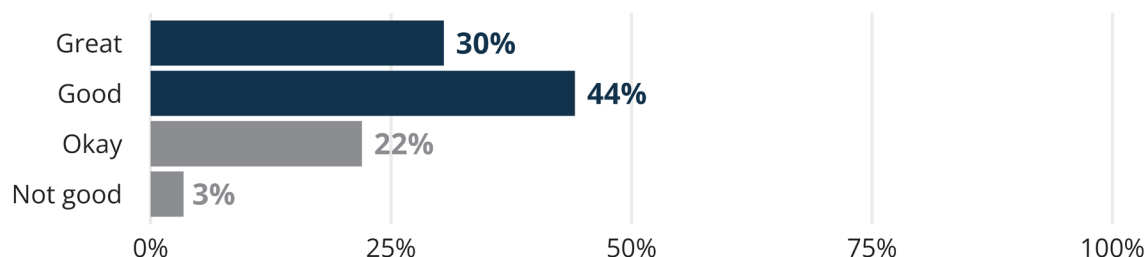


Figure 14. Level of understanding (n=1,079)

Respondents were asked, "How much of the information did you understand?"

69% of respondents understood **most or all** of the information.

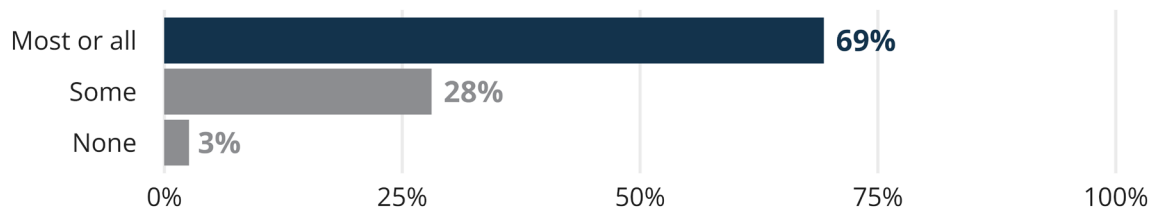
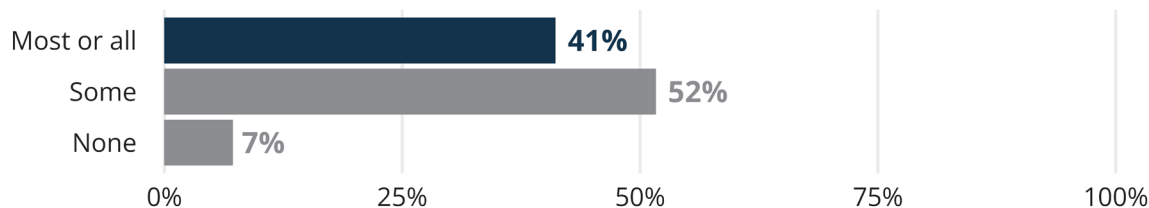


Figure 15. Physical activity enjoyment (n=873)

Respondents were asked, "If lessons had physical activity, how much of it did you enjoy?"

41% of respondents enjoyed **most or all** of the physical activity.

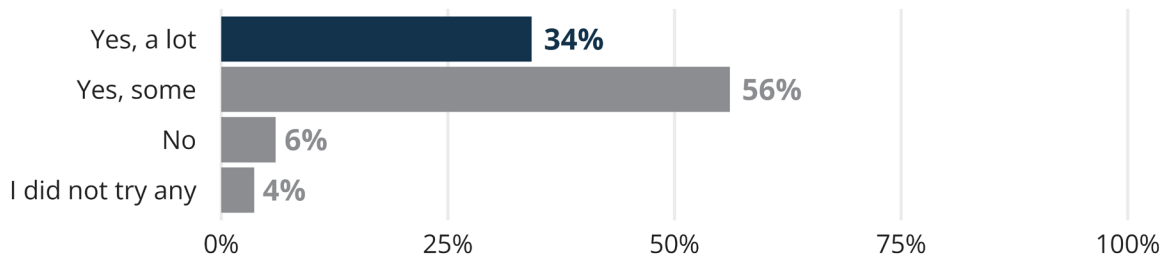


Note: 18% (198) of respondents selected "There was no physical activity", their responses were not included in the data analysis.

Figure 16. Food enjoyment (n=1,048)

Respondents were asked, "If you tasted foods in the lessons, did you enjoy them?"

34% of respondents enjoyed **a lot** of the food they tried.



Note: 1% (n=11) of respondents selected "There were no foods to try". These responses were not included in the data analysis.

Behavior Change Outcomes

Figure 17. Self-reported behavior change (n=1,066)

Respondents were asked to mark all behaviors that they are doing because of the lessons.

The greatest percentages of youth are **drinking more water or eating more fruit** because of the program.

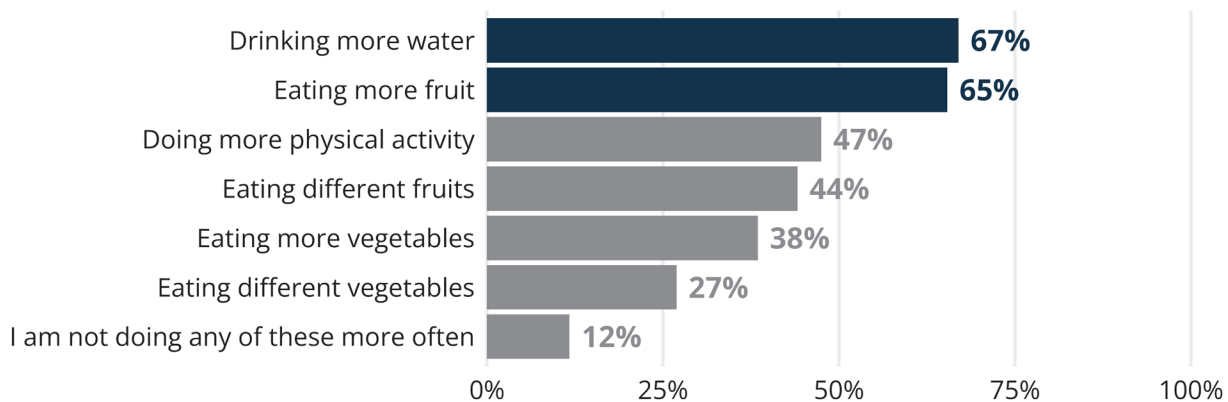
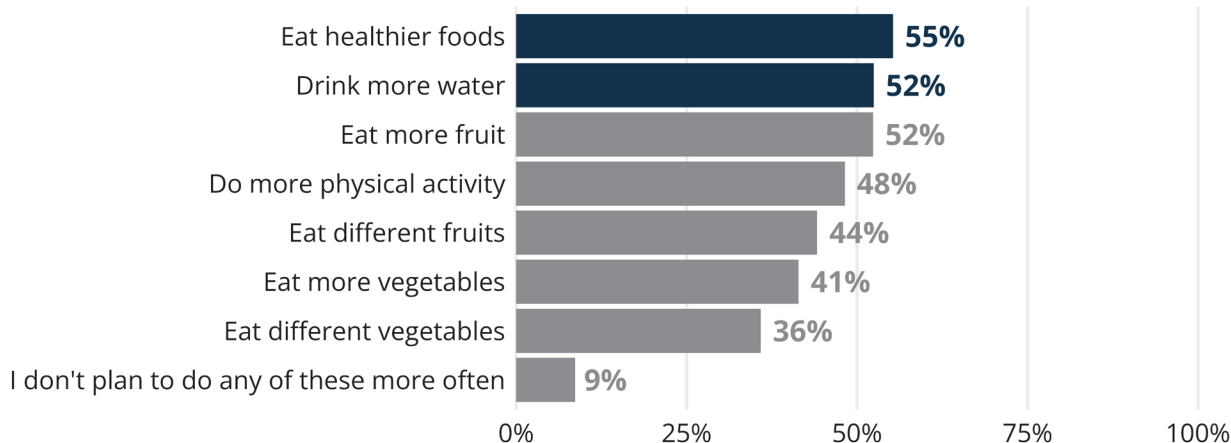


Figure 18. Planned behavior change (n=1,062)

Respondents were asked to mark all behaviors that they plan to do more often because of the lessons.

The greatest percentages of youth plan to **eat healthier foods or drink more water** because of the program.



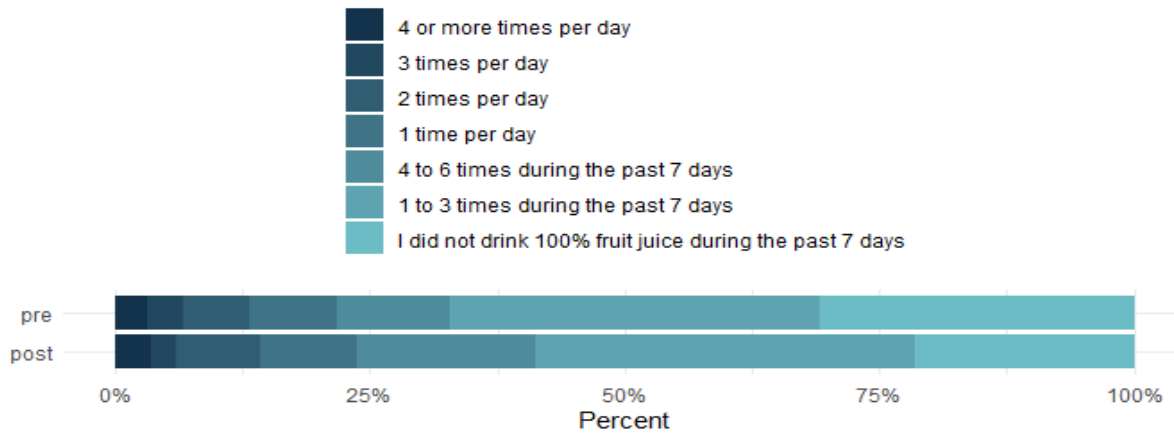
Statistical analysis for evidence base

Methodology: Paired Wilcoxon Signed-Rank Tests were conducted to identify statistically significant differences related to frequency of healthy behaviors before and after participation in Linking Lessons - Schools. This is a non-parametric test that compares two dependent groups, where each participant is compared to themselves to control for individual variability. Data for this analysis comes from the Fruit and Vegetable Screener for Youth completed by participants in grades 6-12 with the average age of 13.9 years (n=787).

To address the increased risk of Type I errors when conducting multiple statistical comparisons, a Bonferroni adjustment was applied to p-values. Since multiple statistical tests were run on the same sample this adjustment ensures the overall probability of making a Type 1 error is minimized while ensuring findings are robust.

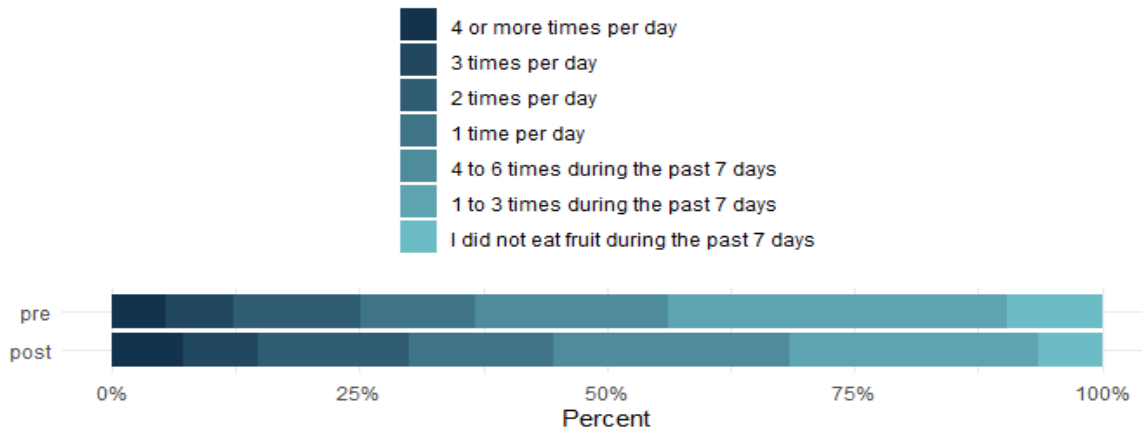
Results: Change between pre-post results *was statistically significant* for 100% fruit juice, fruit, vegetables (overall), salad, and potatoes. There was *no significant change* for carrots, other vegetables, soda/pop, milk, or breakfast.

100% fruit juice



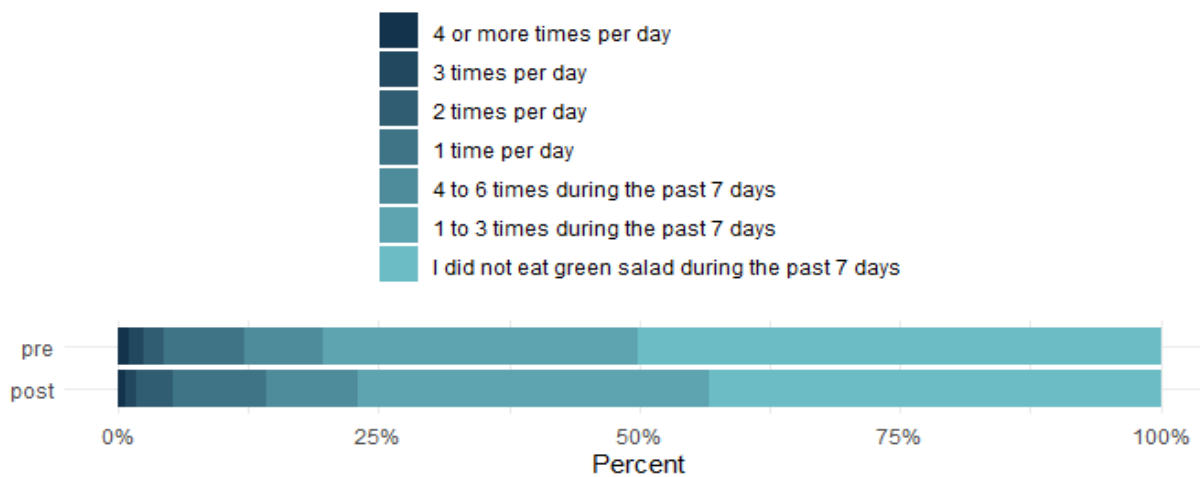
Finding: There *was* a statistically significant increase from pre to post. This suggests that participants drank fruit juice more frequently after participating in the Linking Lessons - Schools intervention (V =53611, **p = 0.016**).

Fruit



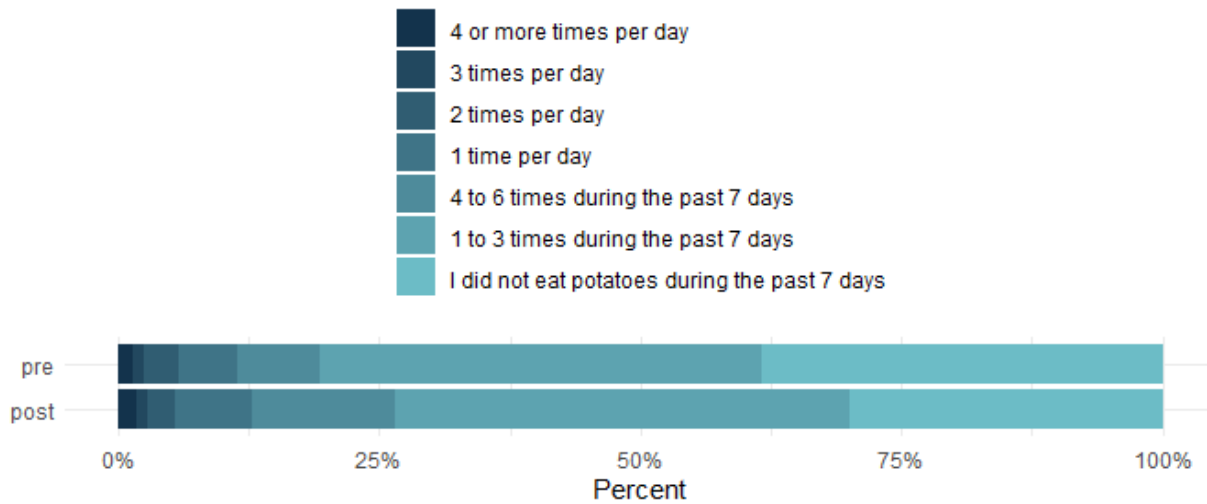
Finding: There *was* a statistically significant increase from pre to post. This suggests that participants ate fruit more frequently after participating in the Linking Lessons - Schools intervention (V =52207, **p < 0.001**).

Salad



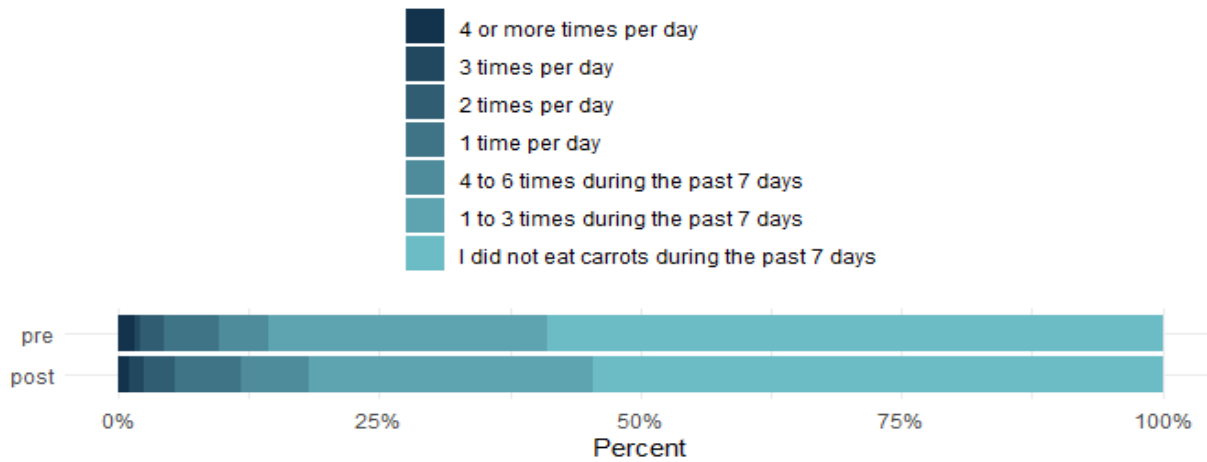
Finding: There *was* a statistically significant increase from pre to post. This suggests that participants ate salad more frequently after participating in the Linking Lessons - Schools program (V =31401, **p = 0.028**).

Potatoes



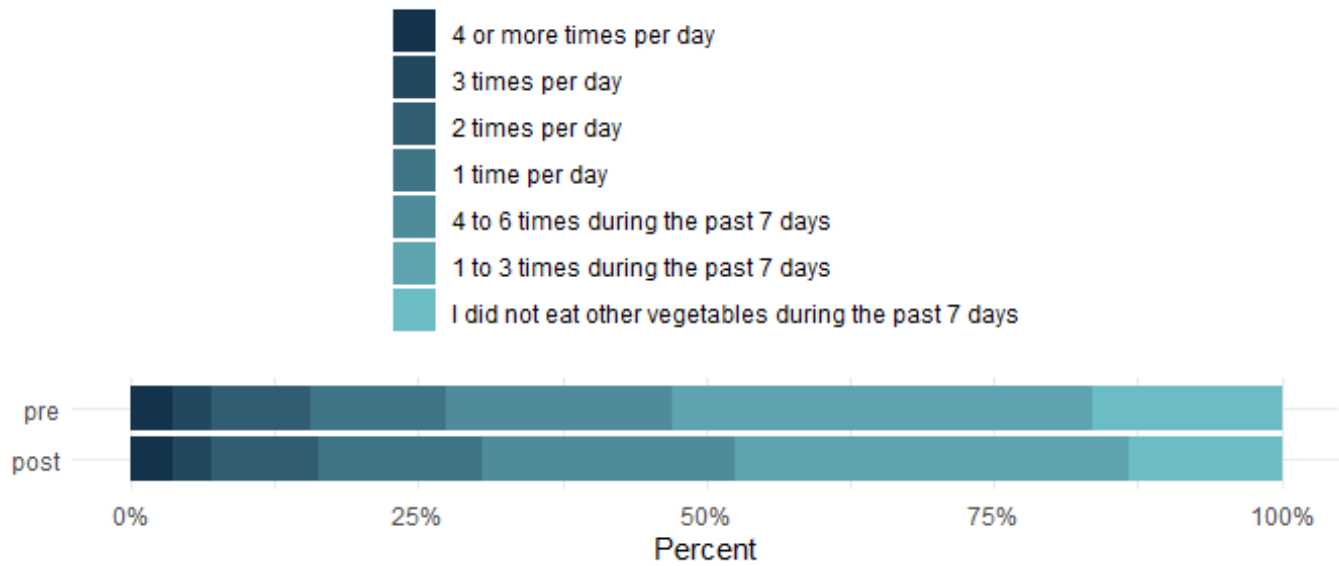
Finding: There *was* a statistically significant increase from pre to post. This suggests that participants ate potatoes more frequently after participating in the Linking Lessons - Schools program (V =36954, **p = 0.003**).

Carrots



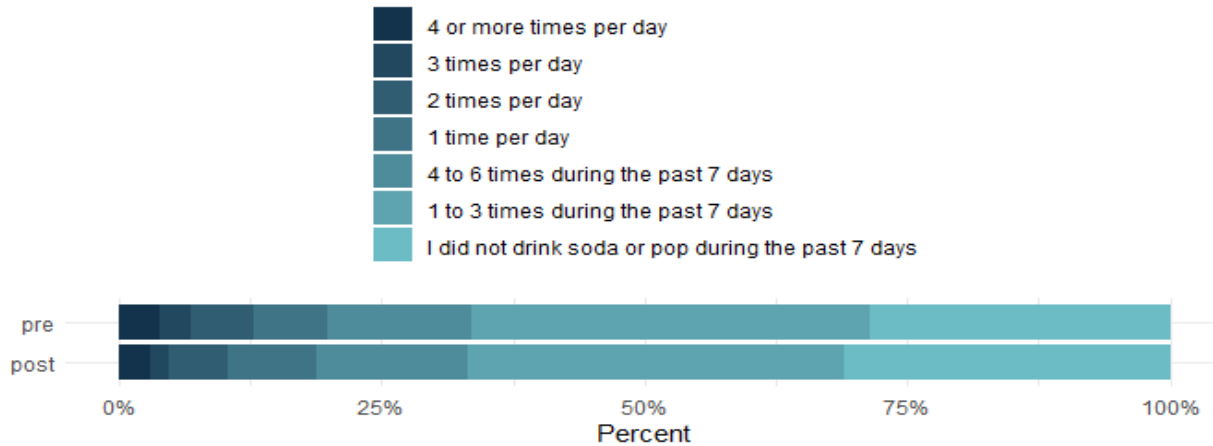
Finding: There was no statistically significant change from pre to post. This suggests that participants ate carrots with about the same frequency before and after participating in Linking Lessons - Schools (V =30430, *p = 0.302*).

Other vegetables



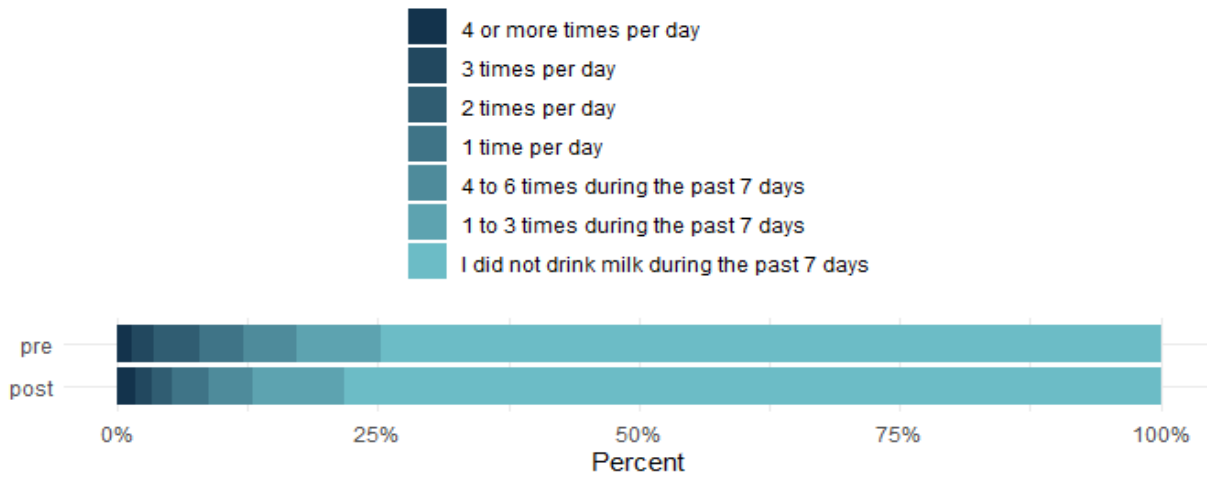
Finding: There was no statistically significant change from pre to post suggesting participants ate other vegetables with about the same frequency before and after participating in Linking Lessons-Schools (V=52424, **p=0.231**).

Soda or pop



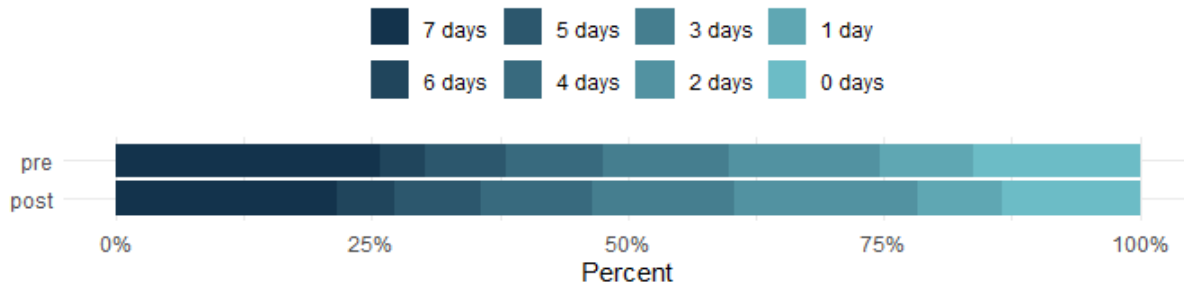
Finding: There was no statistically significant change from pre to post suggesting participants drank soda or pop with about the same frequency before and after participating in Linking Lessons - Schools (V =49786.5, **p = 0.731**).

Milk



Finding: There was no statistically significant change from pre to post suggesting participants drank milk with about the same frequency before and after participating in the Linking Lessons - Schools program (V =1528, **p = 0.453**).

Breakfast



Finding: There was no statistically significant change from pre to post suggesting participants ate breakfast with about the same frequency before and after participating in Linking Lessons - Schools (V =66949.5, **p = 1**).

Conclusions

Implications: Data analysis on outcome surveys completed by youth in grades 6-12 that completed the Linking Lessons – Schools program indicated that statistically significant changes occurred for several food-related behaviors: 100% fruit juice and fruit, vegetables (overall), salad, and potatoes. This provides an evidence base for this intervention for those behaviors.

Considerations: If sample size is large enough in FY25, it is recommended that results be analyzed by grade to learn whether outcomes vary for students in middle vs. high school.

Next Steps: When FY25 surveys have been submitted and analyzed, the evidence base should be examined to see if behavior change remained statistically significant for those identified in FY24, and if significant differences occurred for other behaviors assessed such as drinking soda/pop, milk, or breakfast. It is anticipated that this intervention will be revised in FY25 and the needs assessment (topics, lesson length, tastings) will include youth as well as educator.