PE-Nut (Physical Education and Nutrition Working Together)

This report summarizes results from surveys completed by youth participating in the PE-Nut intervention during FY 2024. PE-Nut is a school-wide intervention that surrounds youth (PreK-grade 5) with information and encouragement to improve food and physical activity behaviors. The classroom component of PE-Nut uses the Healthy Schools, Healthy Communities (HSHC) intervention. HSHC lessons include at least one activity, a food tasting, and a physical activity (FitBits). Additionally, PE-Nut includes take-home activities, school-wide messaging, school-wide events, and use of a standards-based PE curriculum including nutrition reinforcing activities.

Evaluation of PE-Nut was accomplished using three surveys. The food-related outcome measure was *That's Me: My Choices,* a validated 13-item survey using a post/retrospective pre-test format. This survey was completed by 1,797 youths in grades 3-5 from seven local SNAP-Ed organizations, the average age of respondents was 9.6 years. A process evaluation survey, Program Evaluation (Youth), *w*as completed by 1,868 youth from seven organizations. A physical activity outcome survey, Physical Activity Screener for Youth, was completed by 489 students from five organizations.

The total counts, and counts by organization, are provided first (pages 1-2) followed by key findings from both surveys (page 2-3), detailed data tables/figures for each survey (pages 3-11) and results of the data analyses to establish an evidence base for this intervention (pages 11-19) and summarized in the next paragraphs. Conclusions, including implications, considerations, and next steps are provided last.

Evidence Base Results: Food Behavior Change. There was a statistically-significant increase between pre and post for all survey items, suggesting children in grades 3-5 that completed the intervention and outcome survey were performing all behaviors assessed more frequently after participating in PE-Nut.

Evidence Base Results: Physical Activity. There *was a significant increase* between pre and post results for after-school activity suggesting children were active more frequently after participating in PE-Nut. There was *no significant change* in activity during PE/gym class, lunch time, on weekends, days active at least 60 minutes, or hours watching TV or playing video/computer games on an average school day.

Counts: That's Me: My Choices

Local SNAP-Ed organization	Number of surveys
Detroit Public Schools Community District	120
Marquette Alger RESA	114
National Kidney Foundation of Michigan	131
Project Healthy Community	181
Traverse City Area Public Schools	137
Tuscola ISD	183
Van Buren Intermediate School District	931

Local SNAP-Ed organization	Number of surveys
Total	**1,797**

Counts: Physical Activity Screener for Youth

Local SNAP-Ed organization	Number of surveys
Detroit Public Schools Community District	40
Marquette Alger RESA	97
National Kidney Foundation of Michigan	129
Project Healthy Community	84
Traverse City Area Public Schools	139
Total	**489**

Counts: Program Evaluation (Youth)

Local SNAP-Ed organization	Number of surveys
Detroit Public Schools Community District	369
Marquette Alger RESA	201
National Kidney Foundation of Michigan	220
Project Healthy Community	250
Traverse City Area Public Schools	124
Tuscola ISD	154
Van Buren Intermediate School District	550
Total	**1,868**

Key Findings

That's Me: My Choices

- Of youth with room to improve, more than half improved for t**rying and liking to try new foods, eating a variety of foods, washing hands before eating, choosing water and other healthy drinks, and eating healthy foods.** Forty to forty-nine percent increased frequency **liking to eat healthy foods, eating fruit, liking fruit, liking vegetables,** and **asking someone at home to buy healthy foods.**

Physical Activity Screener for Youth

- 46% increased number of days they were active at least 60 minutes the week before completing the survey.
- 41% **increased general weekly activity** and 37% **increased weekend activity.**
- Slightly **more students** (41%) **decreased screen time than increased** it (39%).

Program Evaluation – Youth

- At least half of the respondents were e**ating more fruit** and **drinking more water** at the end of the program, because of the program.
- Additionally, youth were **eating more vegetables** (46%), **doing more physical activity** (43%), and **eating different fruits and vegetables** (39%).
- 96% of youth ***enjoyed some, most, or all lessons***, and **found some, most, or all of them to be interesting.**
- 80% of the respondents **rated the lessons as good or great.**
- 60% **enjoyed most or all of the physical activity** and 45% **enjoyed a lot of the food they tried.**
- Behaviors with the greatest change, *due to the program,* were **eating more fruit** (73% increased frequency of eating), **drinking more water** (73% increased), and **doing more physical activity** (62% increased).
- More than half (57%) of the youth were eating different fruits and more vegetables at the end of the lessons, due to the program.

Detailed Results: That's Me: My Choices Survey

Demographic Data

Figure 1. **Gender** (n=1,704)

How would you describe yourself?	Number	Percent
Boy	757	44%
Girl	735	43%
Prefer not to answer	132	8%
Not listed	80	5%

Figure 2. **Grade** (n=1,672)

The average age of participants was 9.6 years.

What grade are you in?	Number	Percent
3rd	345	20%
4th	790	47%
5th	537	32%

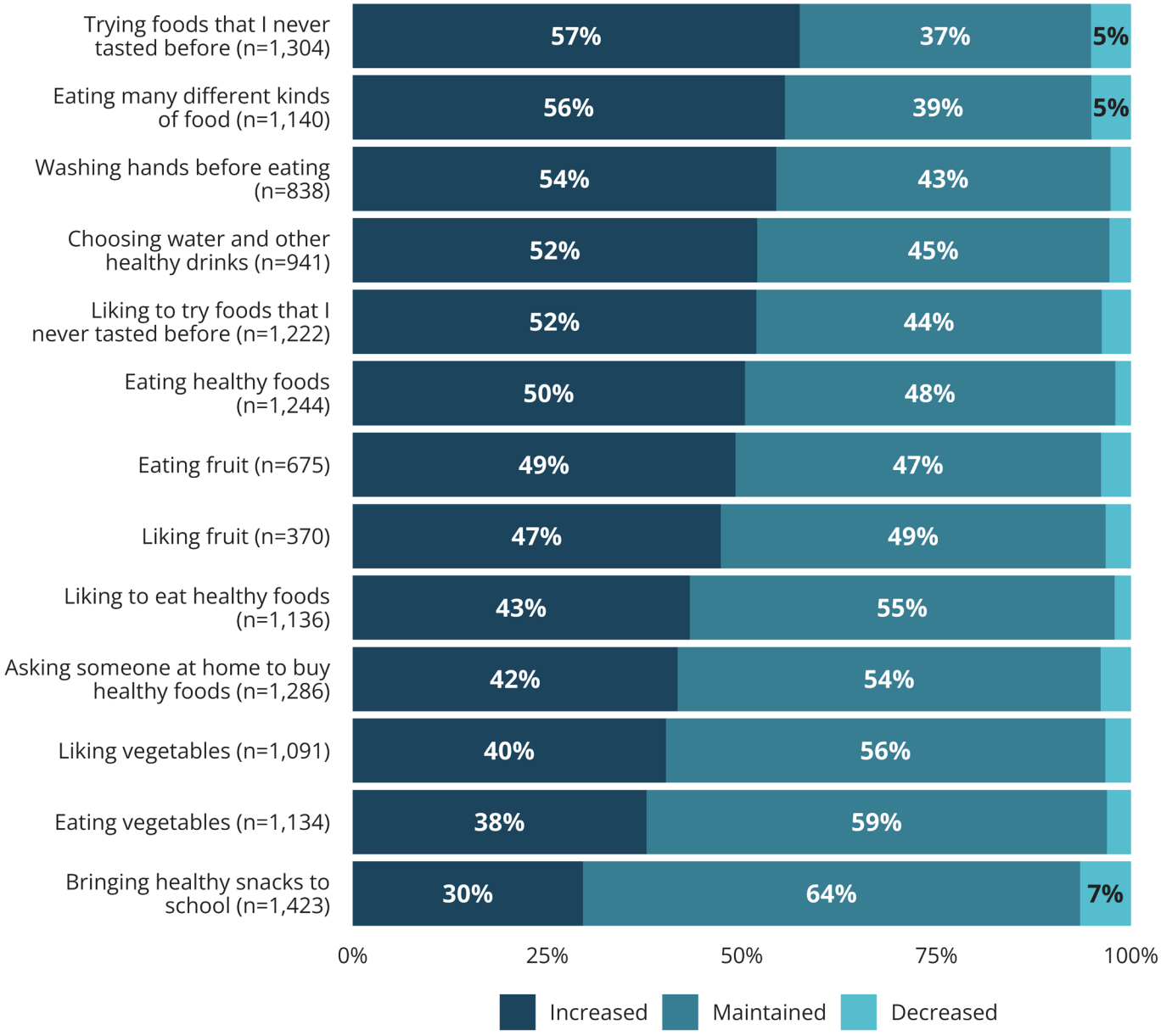
Note: Responses selected by fewer than 1% of the respondents are not displayed.

Behavior Change Outcomes

Figure 3. Behavior change among respondents with room to improve

Respondents are asked to report behavior frequency from before and after the SNAP-Ed intervention. This figure displays the percent of respondents who increased, maintained, or decreased the frequency of each behavior between the start and end of the intervention.

Of respondents with room to improve, **49%** increased frequency of **fruit** consumption and **38%** increased frequency of **vegetable** consumption.



Note: This figure excludes respondents that reported performing the behavior with the highest frequency ("most or all of the time") before participating in the intervention.

Detailed Results: Physical Activity Screener for Youth

Demographic Data

Gender (n=488)

How would you describe yourself?	Number	Percent
Female	239	49%
Male	222	45%
Not listed	16	3%
Prefer not to answer	11	2%

Figure 4. **Grade** (n=489)

The average age of participants was 10.3 years.

What grade are you in?	Number	Percent
4th	155	32%
5th	334	68%

Figure 5. **Race** (n=489)

How would you describe yourself?	Number	Percent
White	243	50%
Black or African American	150	31%
Not listed	74	15%
Prefer not to answer	39	8%
Mexican American	30	6%
American Indian or Alaska Native	29	6%
Asian	21	4%
Native Hawaiian or Other Pacific Islander	11	2%
Arab-American	4	1%

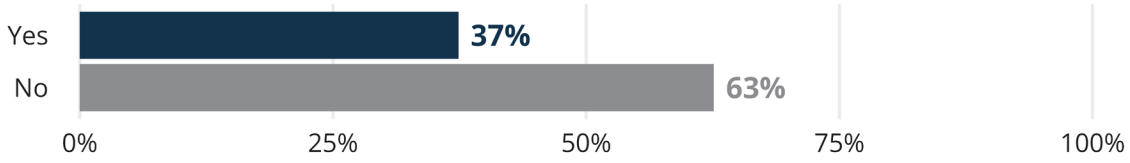
Figure 6. Ethnicity (n=486)

How would you describe yourself?	Number	Percent
Non-Hispanic/Latino	294	60%
Prefer not to answer	127	26%
Hispanic/Latino	65	13%

Figure 7. Sickness or activity limitation in past week (n=476)

Respondents were asked, "Were you sick last week, or did anything prevent you from doing your normal physical activities?"

37% of youth reported **being sick or having an activity limitation** in the week that they completed either the pre or post survey.

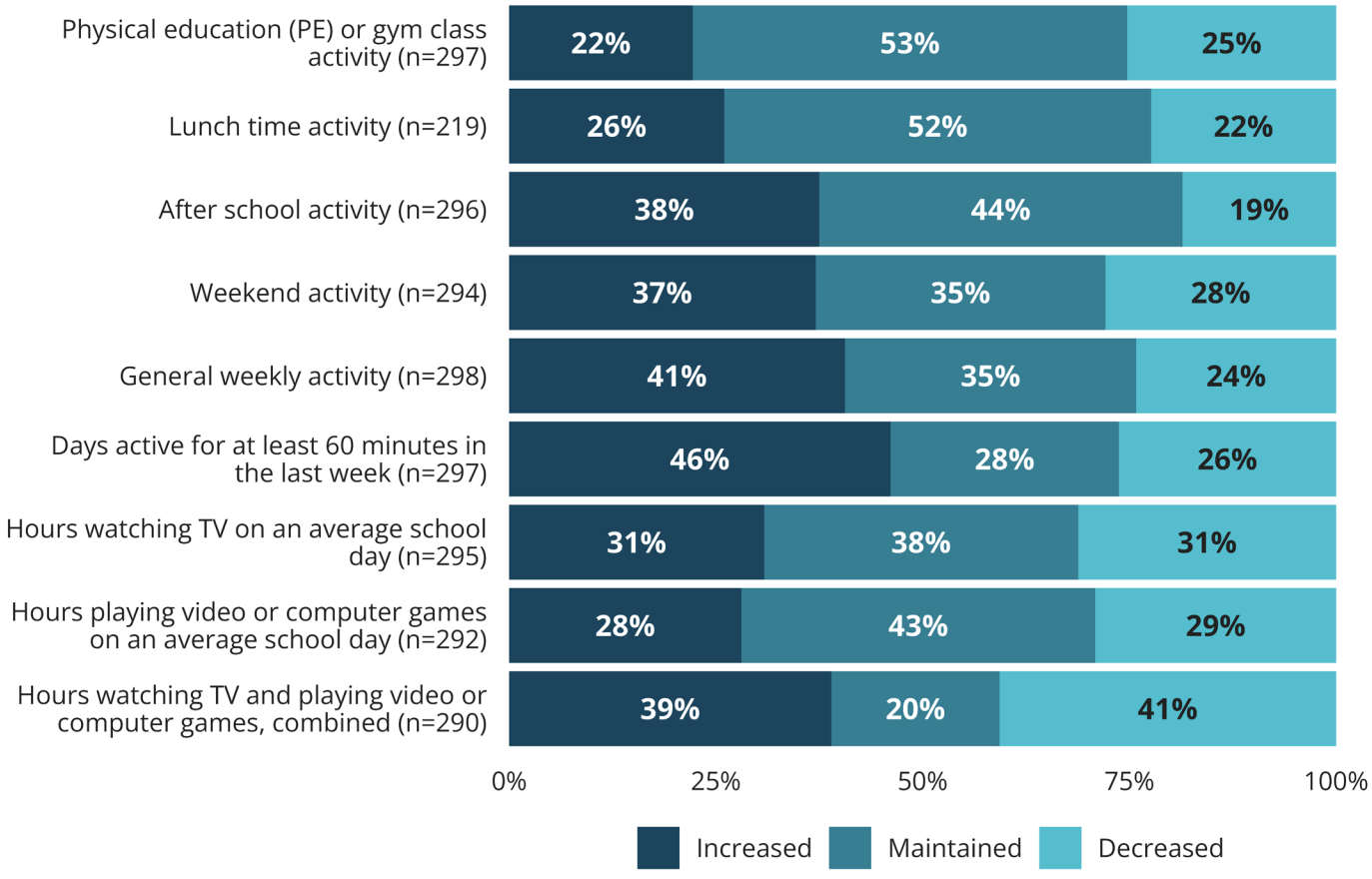


Behavior Change Outcomes

Figure 8. Behavior change

Respondents were asked to recall their level of physical activity during the previous seven days or their screen time on an average school day. This figure displays the percent of respondents who increased, maintained, or decreased the frequency of each behavior between the start and end of the intervention.

At the end of this intervention, **46%** of respondents had increased their **number of days active for at least 60 minutes** and **41%** had decreased their average daily **screen time**.

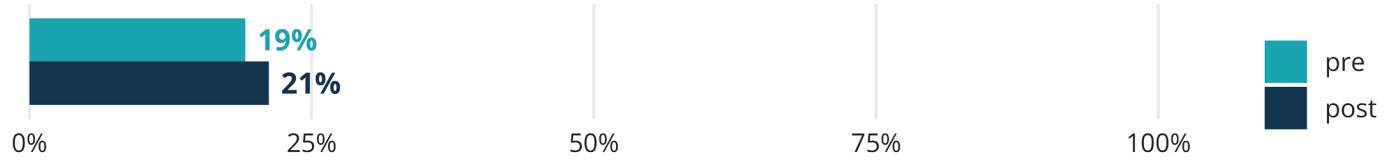


Note: Respondents reporting sickness or activity limitation on the pre or post survey were excluded from this figure.

Figure 9. Meeting physical activity guidelines (n=297)

The Physical Activity Guidelines for Americans recommend that youth should have at least 60 minutes of moderate-vigorous physical activity every day.

The percentage of youth meeting the Physical Activity Guidelines for Americans **increased by 2%**.



Note: Respondents reporting sickness or activity limitation on the pre or post survey were excluded from this figure.

Detailed Results: Program Evaluation (Youth)

Demographic Data

Figure 10. **Grade** (n=1,821)

What grade are you in? If it's summer, what grade did you just finish?	Number	Percent
3rd	653	36%
4th	620	34%
5th	548	30%

Participant Feedback

Figure 11. Enjoyment of lessons (n=1,839)

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

59% of respondents **enjoyed lessons** about food and healthy eating **a lot**.

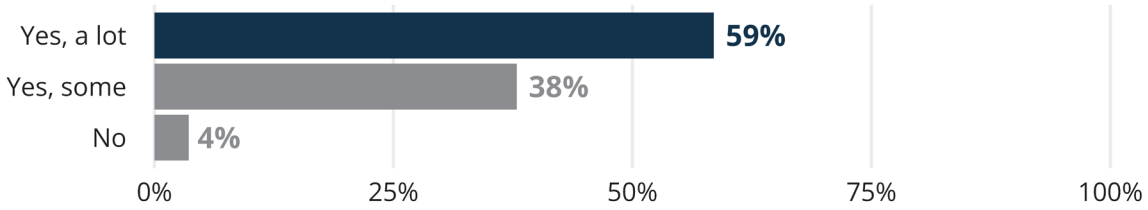


Figure 12. Lesson interest (n=1,854)

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

51% of respondents thought **most or all** of the lessons were **interesting**.

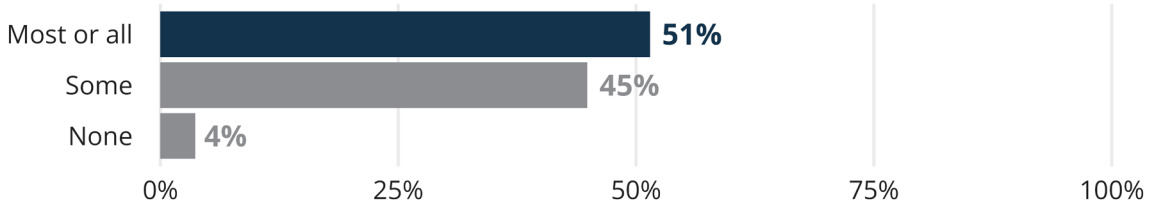


Figure 13. Lesson topics (n=1,853)

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

The most common topics were fruit, vegetables, and MyPlate.

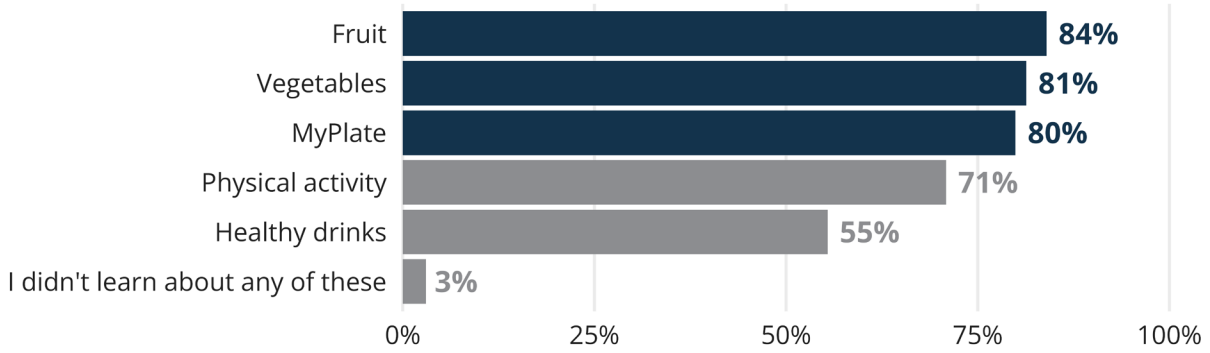


Figure 14. Previous knowledge of lesson information (n=1,846)

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

Some or all of the information was new to **74%** of respondents.

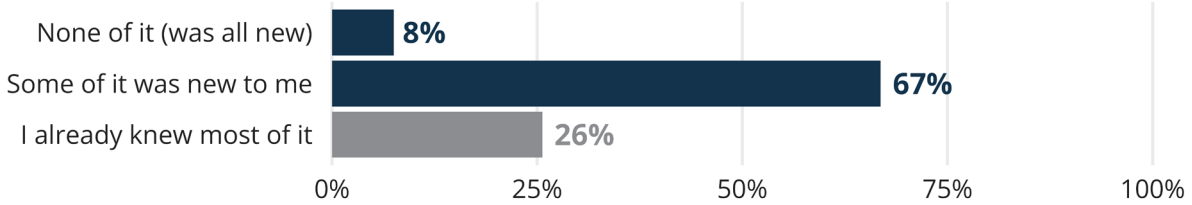


Figure 15. Overall rating (n=1,846)

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

80% of youth rated the lessons as either **good or great**.

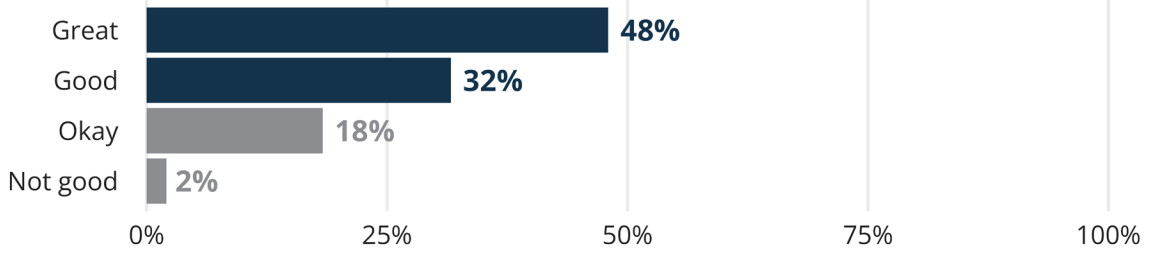


Figure 16. Level of understanding (n=1,847)

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

62% of respondents understood **most or all** of the information.

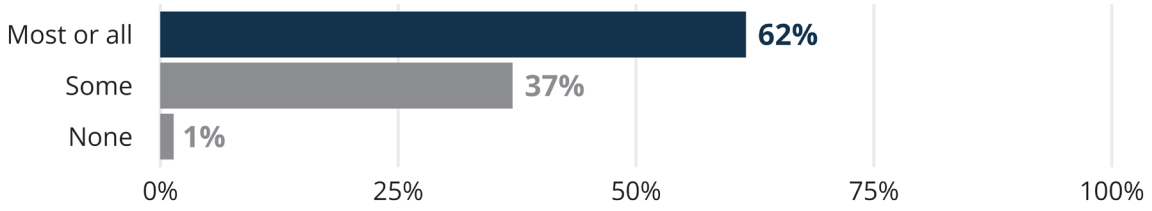
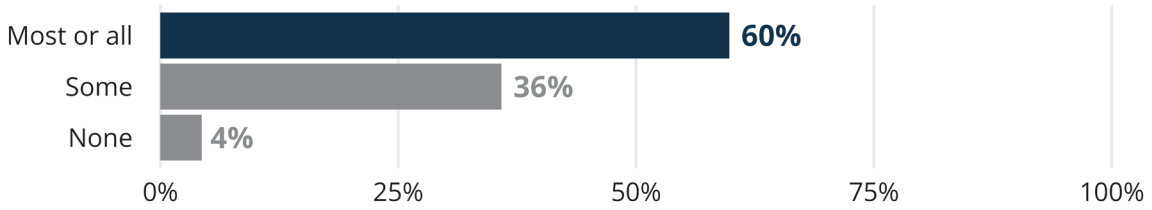


Figure 17. Physical activity enjoyment (n=1,794)

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

60% of respondents enjoyed **most or all** of the physical activity.

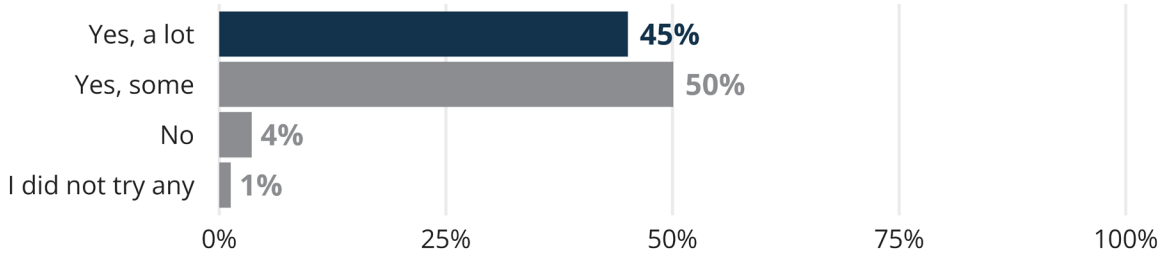


Note: 3% (51) of respondents selected "There was no physical activity". These responses were not included in the data analysis.

Figure 18. Food enjoyment (n=1,813)

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

45% of respondents enjoyed **a lot** of the food they tried.



Note: 1% (n=10) of respondents selected "There were no foods to try". These responses were not included in the data analysis.

Behavior Change Outcomes

Figure 19. Self-reported behavior change (n=1,847)

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

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

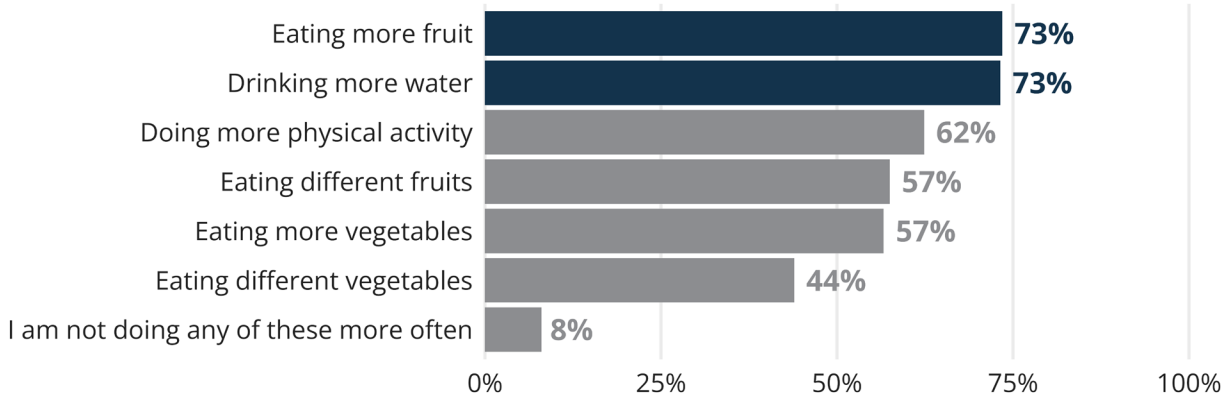
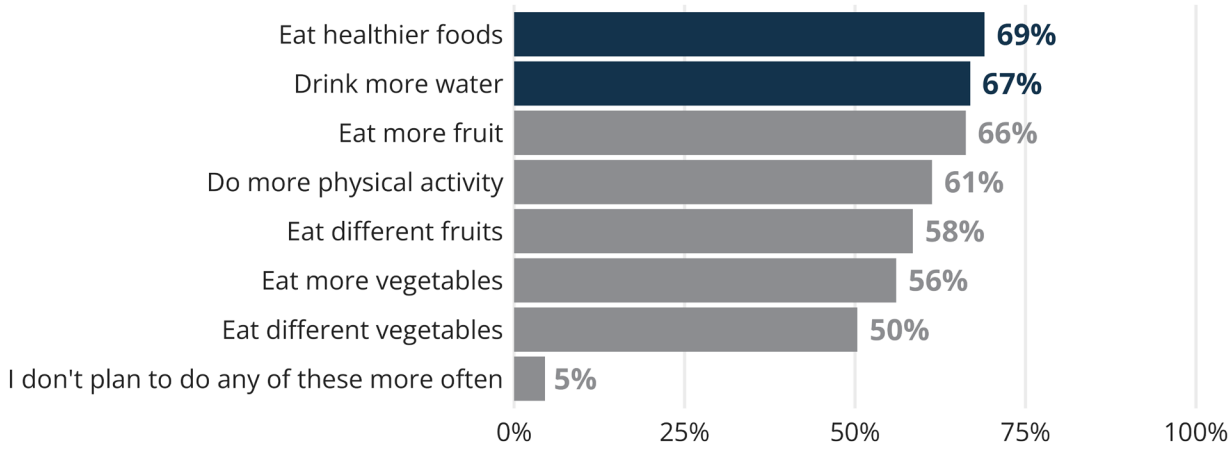


Figure 20. Planned behavior change (n=1,845)

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 (PE-Nut, FY 2024)

Methodology: Paired Wilcoxon Signed-Rank Tests were conducted to identify statistically significant differences related to frequency of healthy behaviors before and after participation in the PE-Nut intervention. This is a non-parametric test that compares two dependent groups, where each participant is compared to themselves to control for individual variability. Analyses was conducted on two outcome surveys, one related to food behaviors --That's Me: My Choices survey for children in grades 3-5 (n=1,797) (pages 12-15). The other related to change in physical activity -- Physical Activity Screener for Youth in grades 4-5, n=489 (pages (15-17).

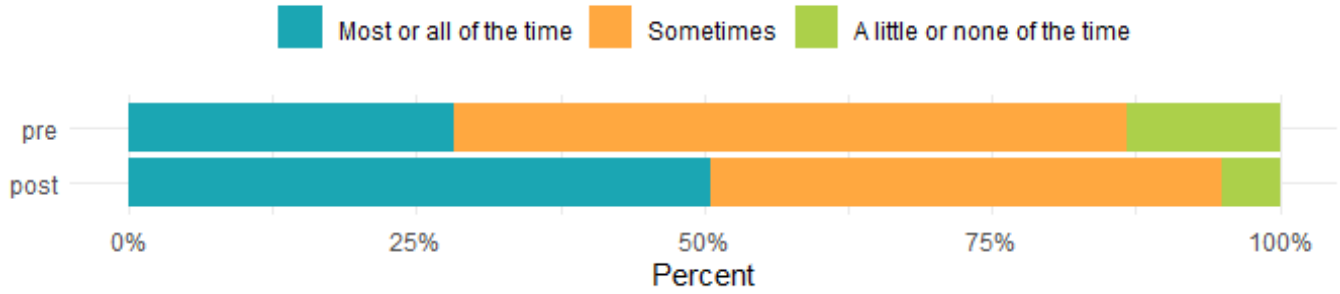
To address an increased risk of Type I errors when conducting multiple statistical comparisons, a Bonferroni adjustment was applied to p-values. Since multiple statistical tests were run on the same sample this adjustment ensures the overall probability of making a Type 1 error is minimized while ensuring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

Evidence Base Results: Food Behaviors. There was a significant increase between pre and post results for all survey items, suggesting children were performing all behaviors more frequently after participating in the PE-Nut intervention. Findings provide evidence that PE-Nut results in statistically significant change in all health behaviors assessed for children in grades 3-5 that completed the outcome evaluation (That's Me).

Evidence Base Results: Physical Activity. There was a significant increase between pre and post results for all survey items, suggesting children were performing all behaviors more frequently after participating in the PE-Nut intervention. Findings provide evidence that PE-Nut results in statistically significant change in all health behaviors assessed for children in grades 3-5 that completed the outcome evaluation (That's Me).

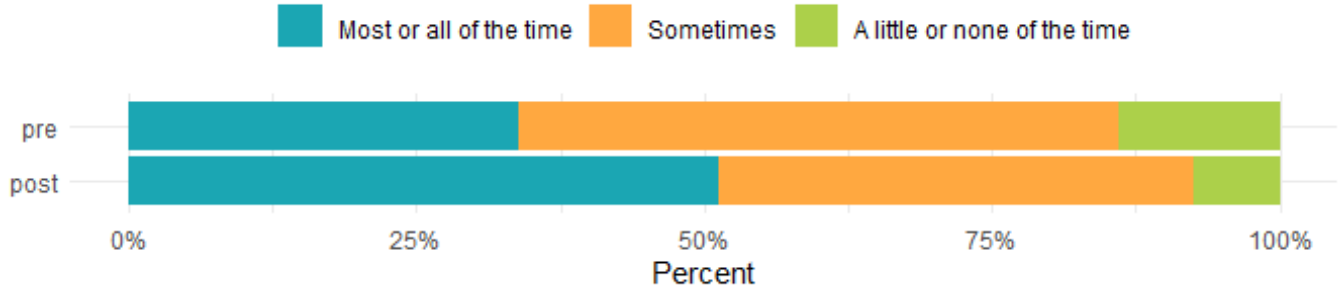
Results: Food behaviors (That's Me: My Choices)

Eating healthy foods



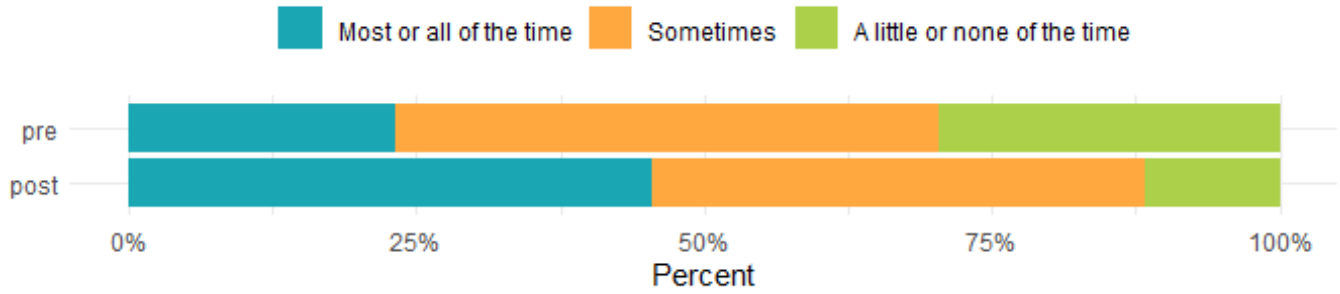
Findings: There *was* a statistically significant increase from pre to post. This suggests that participants were eating healthy foods more frequently after participating in the PE-Nut program (V=42597, **p < 0.001**).

Liking to eat healthy foods



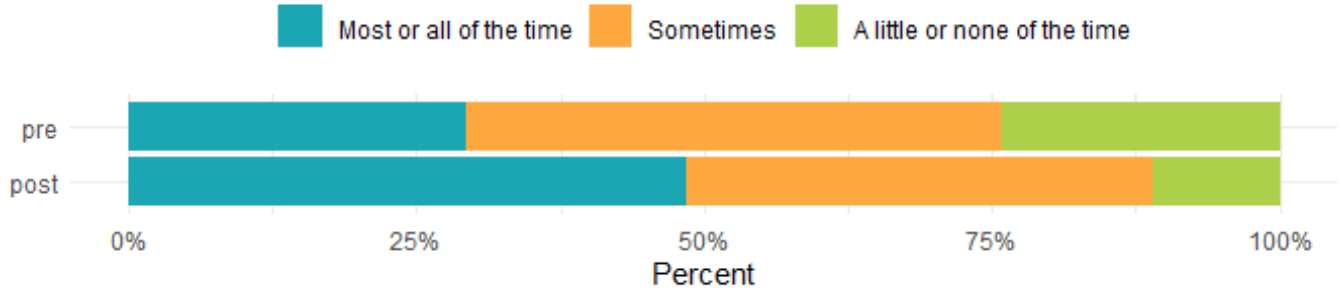
Findings: There *was* a statistically significant increase from pre to post. This suggests that participants liked eating healthy foods more frequently after participating in the PE-Nut program (V =28603, **p < 0.001**).

Trying foods that I never tasted before



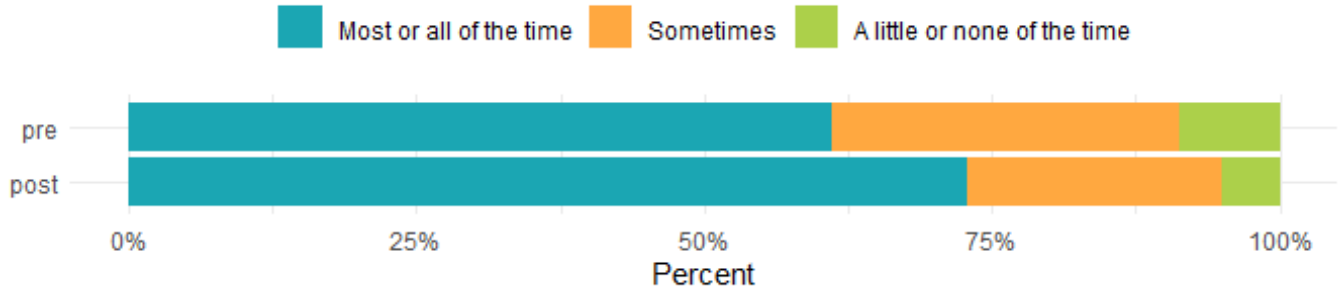
Findings: There *was* a statistically significant increase from pre to post. This suggests that participants tried new foods more frequently after participating in the PE-Nut program (V =74500, **p < 0.001**).

Liking to try new foods that I never tasted before



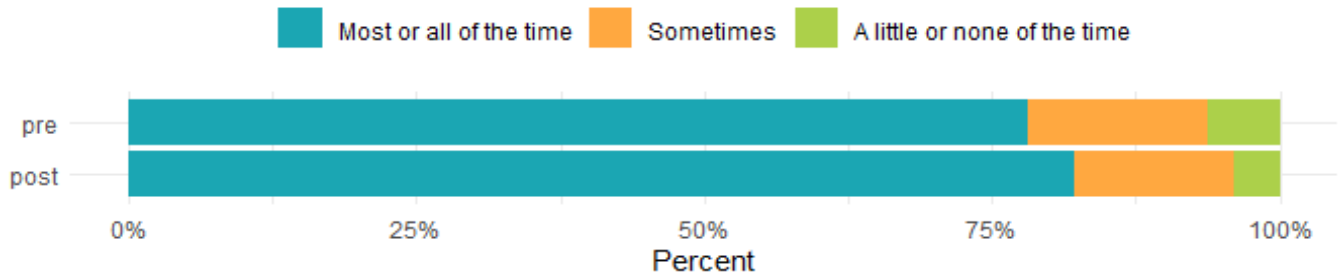
Findings: There *was* a statistically significant increase from pre to post. This suggests that participants liked to try new foods more frequently after participating in the PE-Nut program (V =47654, **p < 0.001**).

Eating fruit



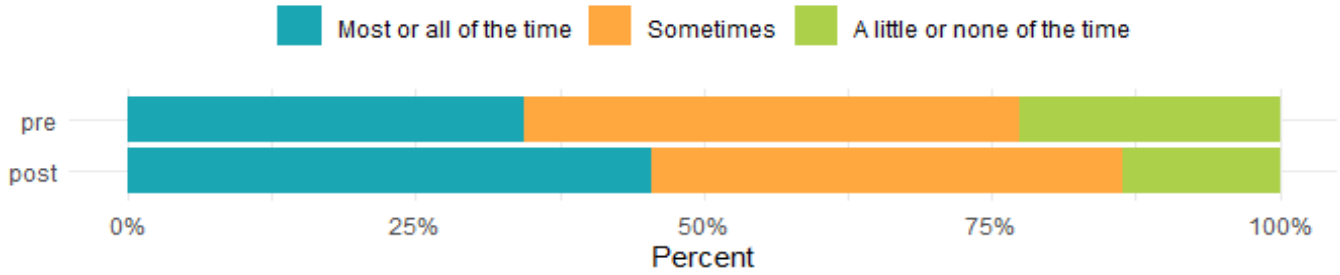
Findings: There *was* a statistically significant increase from pre to post. This suggests that participants ate fruit more frequently after participating in the PE-Nut program (V =17846, p **< 0.001**).

Liking fruit



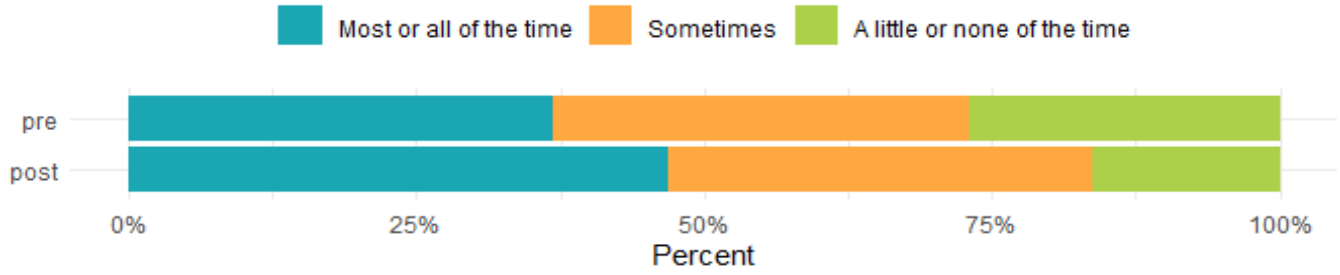
Findings: There *was* a statistically significant increase from pre to post. This suggests that participants liked fruit more frequently after participating in the PE-Nut program (V =9971.5, **p < 0.001**).

Eating vegetables



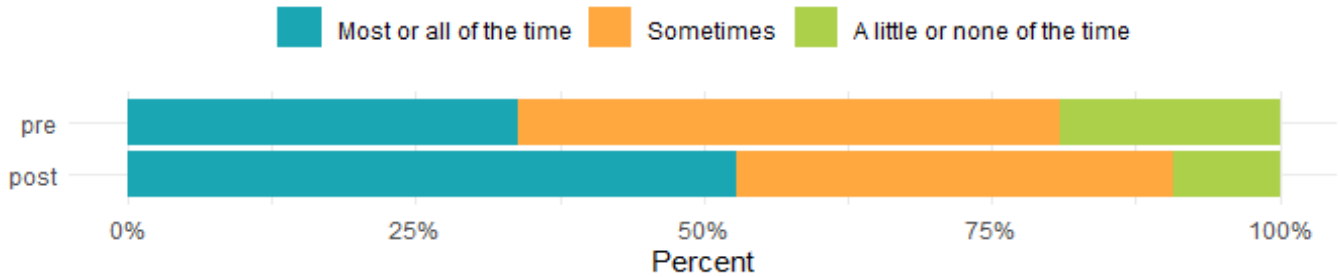
Findings: There *was* a statistically significant increase from pre to post. This suggests that participants ate vegetables more frequently after participating in the PE-Nut program (V =24935, **p < 0.001**).

Liking vegetables



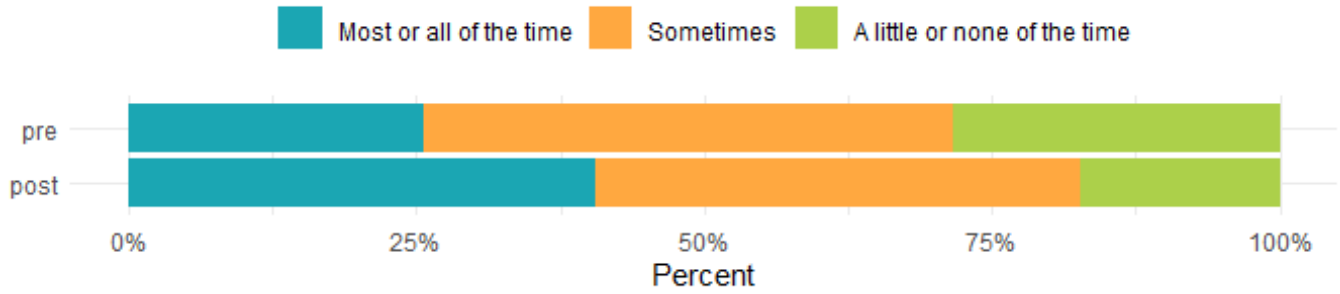
Findings: There *was* a statistically significant increase from pre to post. This suggests that participants liked vegetables more frequently after participating in the PE-Nut program (V =27014.5, **p < 0.001**).

Eating many different kinds of food



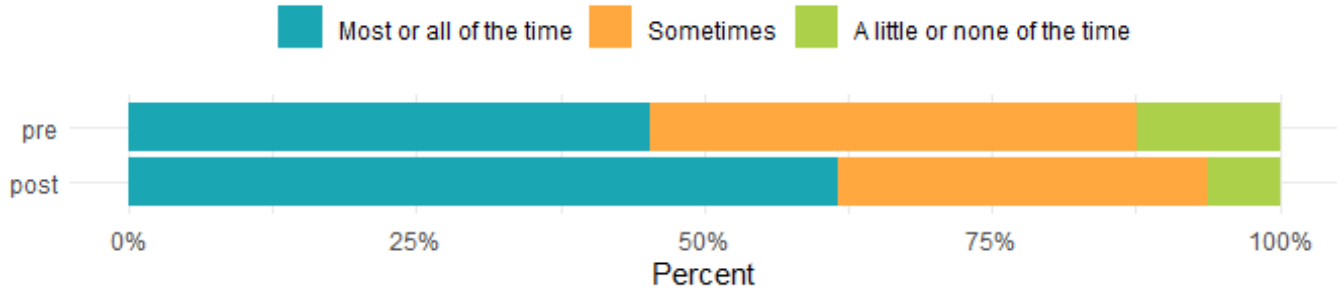
Findings: There *was* a statistically significant increase from pre to post. This suggests that participants ate many different kinds of food more frequently after participating in the PE-Nut program (V =76915.5, p **< 0.001**).

Asking someone at home to buy healthy foods



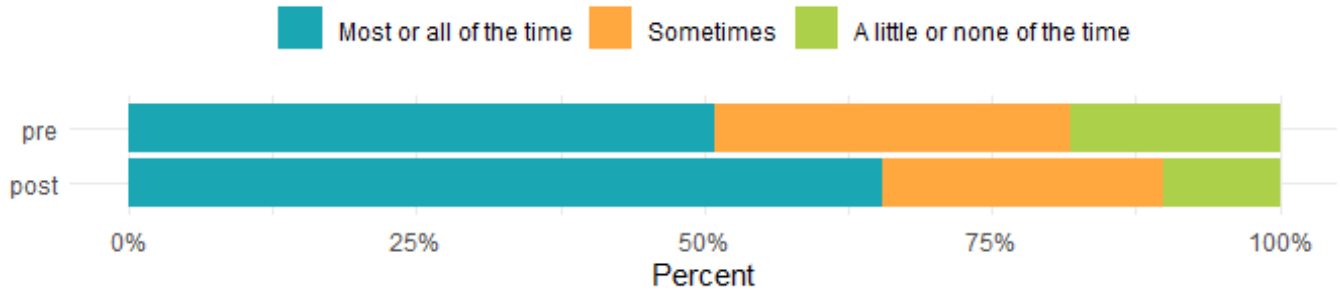
Findings: There *was* a statistically significant increase from pre to post. This suggests that participants asked someone at home to buy healthy foods more frequently after participating in PE-Nut (V =42940.5, **p < 0.001**).

Choosing water and other healthy drinks



Findings: There *was* a statistically significant increase from pre to post. This suggests that participants chose water and other healthy drinks more frequently after participating in the PE-Nut program (V =41757, **p < 0.001**).

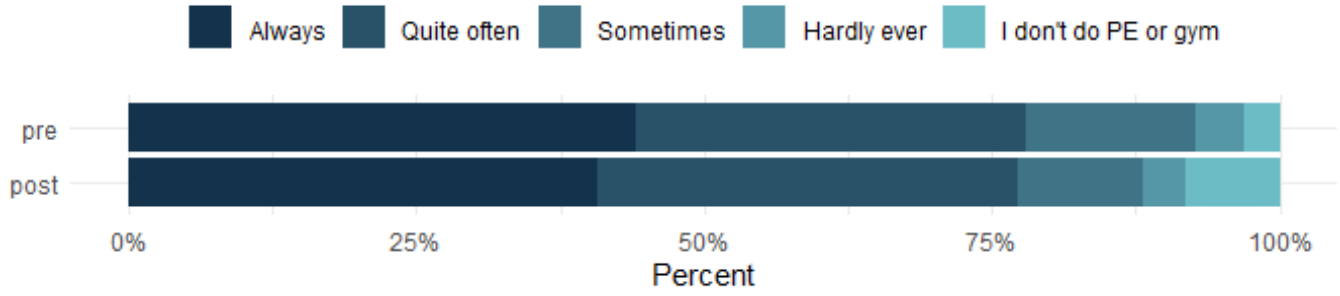
Washing hands before eating



Findings: There *was* a statistically significant increase from pre to post. This suggests that participants washed their hands before eating more frequently after participating in the PE-Nut program (V =32913.5, **p < 0.001**).

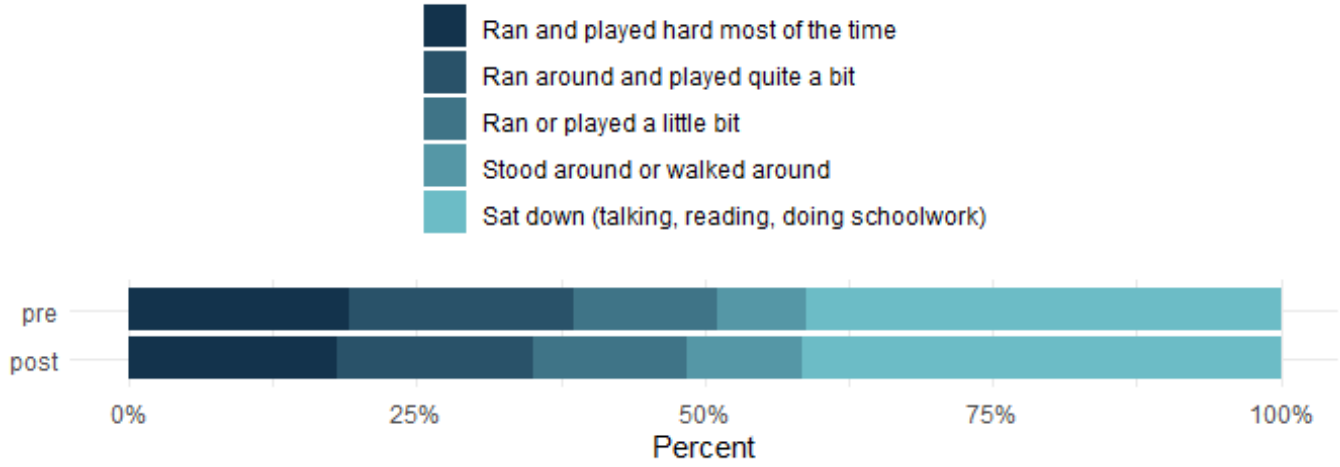
Results: Physical Activity (Physical Activity Screener-Youth)

Physical education (PE) or gym class activity



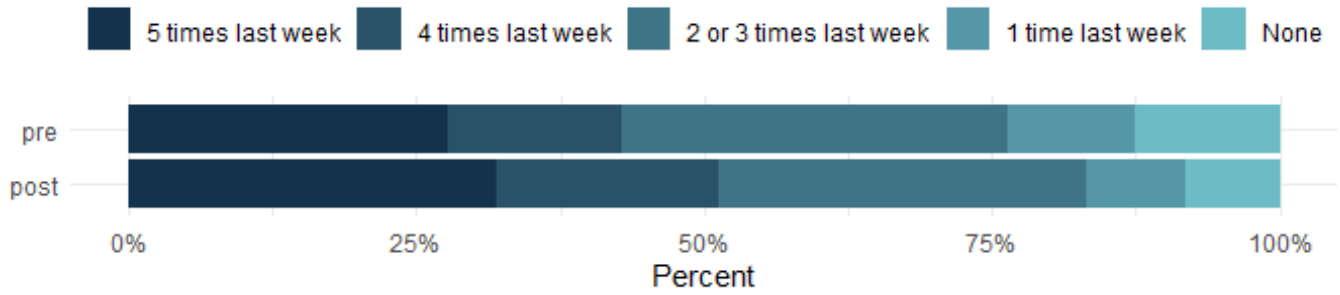
Finding: There was no statistically significant change from pre to post. This suggests participants were active during PE with about the same frequency before and after participating in the PE-Nut program (V =18332, **p = 0.157**).

Lunch time activity



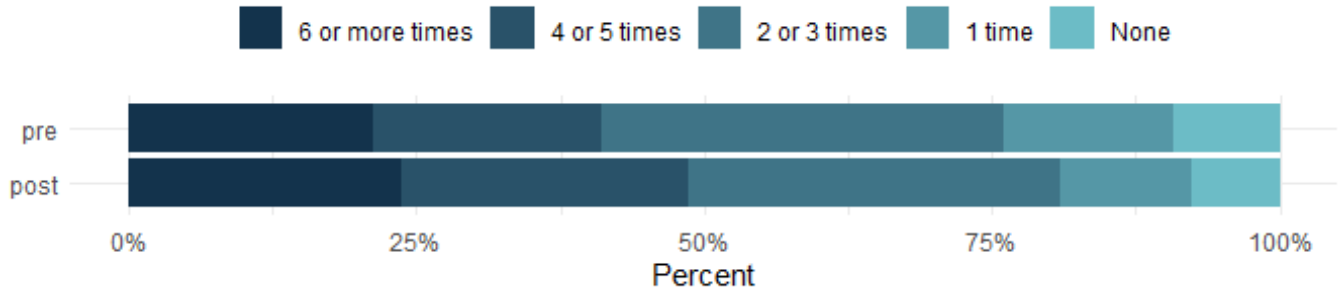
Finding: There was no statistically significant change from pre to post. This suggests that participants were active during lunch with about the same frequency before and after participating in the PE-Nut program (V =7464, **p = 1**).

After school activity



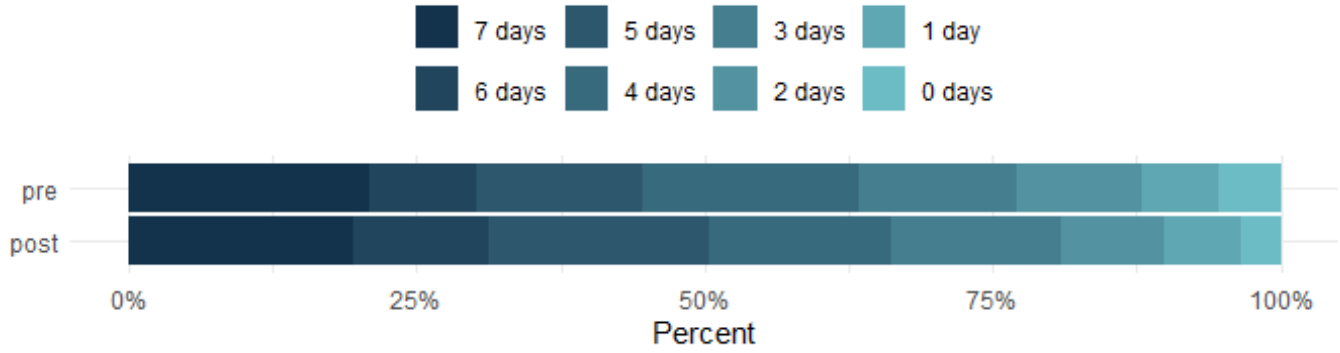
Finding: There *was* a statistically significant increase from pre to post. This suggests that participants were active after school more frequently after participating in the PE-Nut program (V =16025, **p = 0.002**).

Weekend activity



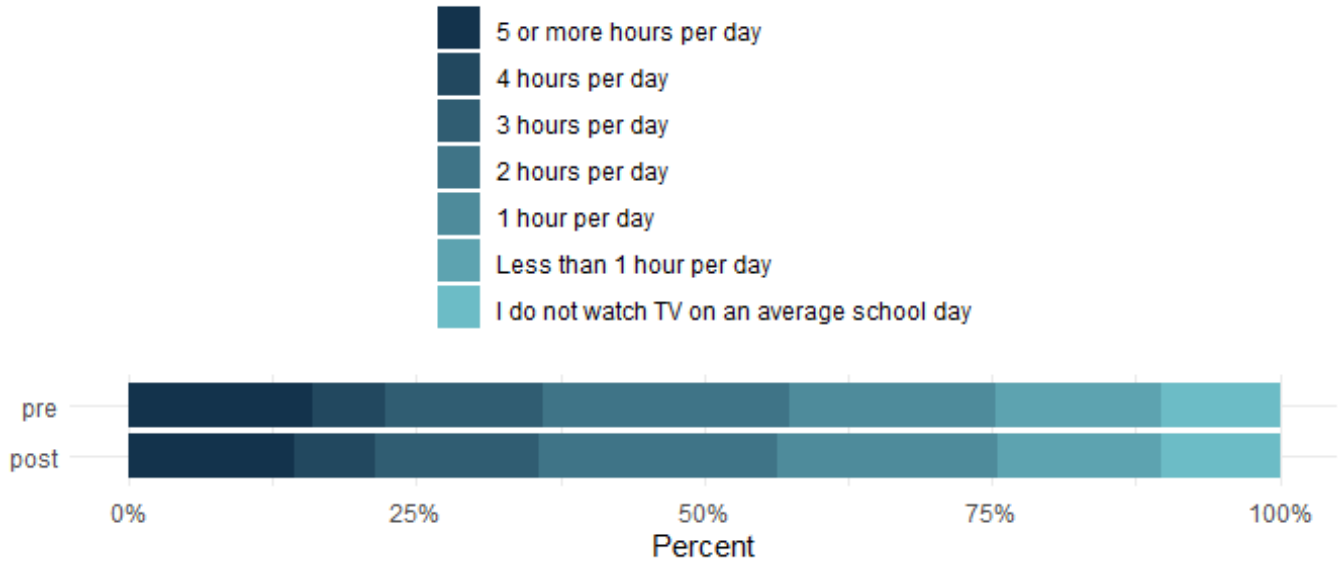
Finding: There was no statistically significant change from pre to post. This suggests participants were active during the weekend with about the same frequency before and after participating in PE-Nut (V =21395.5, **p = 0.067**).

Days active for at least 60 minutes in the last week



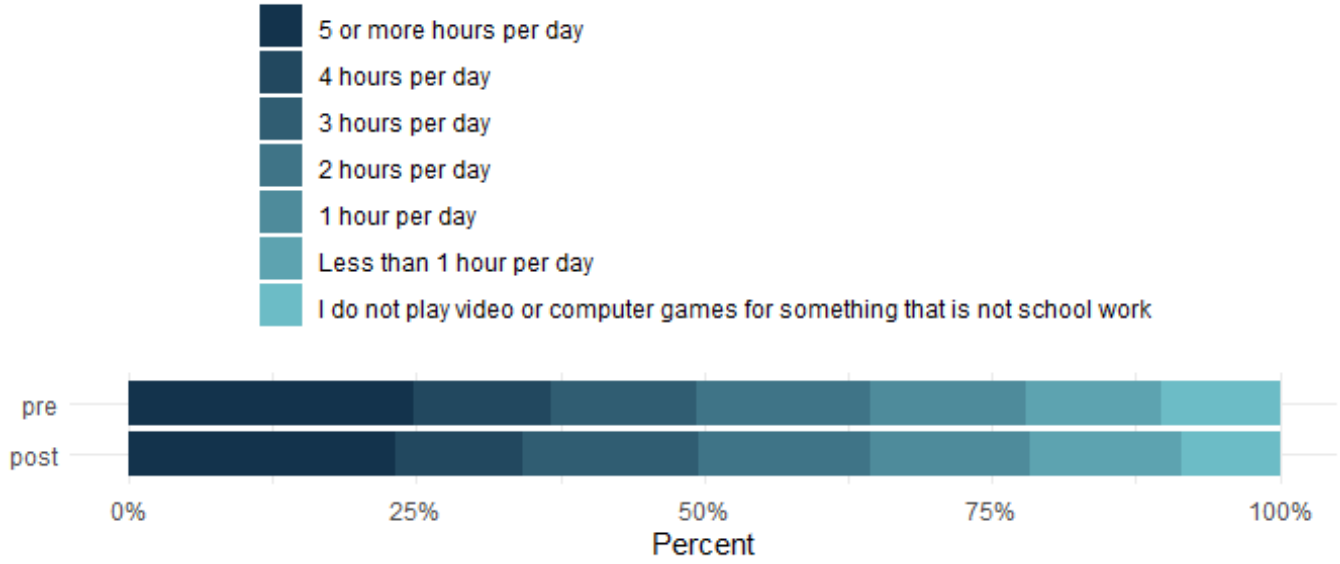
Finding: There was no statistically significant change from pre to post suggesting participants were active for at least 60 minutes per day at about the same frequency before and after participating in PE-Nut (V=27253, **p=0.451**).

Hours watching TV on an average school day



Finding: there was no statistically significant change from pre to post. This suggests that participants spent about the same amount of time watching TV before and after participating in the PE-Nut program (V =25475, **p = 1**).

Hours playing video or computer games on an average school day



Finding: There was no statistically significant change from pre to post suggesting participants spent about the same amount of time playing video or computer games before and after participating in PE-Nut (V =21507, **p = 1**).

Conclusions

Implications: Data analysis on surveys completed by children in grades 3-5 that participated in the PE-Nut intervention indicated that statistically significant changes occurred for all food-related behaviors assessed. Survey items related to washing hands, trying new foods, eating vegetables and fruits, healthy foods, and a variety of foods, and asking someone at home to buy healthy foods. These results provide an evidence base for all behaviors when this intervention is used with fidelity. Findings from process evaluation were also positive and indicated youth enjoyed lessons, food tastings, and physical activity; understood the information, and thought lessons were interesting.

Considerations: Although evaluation provides strong evidence of behavior change and student enjoyment, it would be interesting to dive into analyzing results with more detail to understand: how outcomes varied across grades, lesson frequency (weekly vs. monthly), and related to the frequency of the physical education teacher providing the nutrition-theme reinforcing activities.

Next Steps: Evaluation (data analysis) of FY25data will continue to monitor evidence base and explore if the outcomes varied across grades, related to frequency of lesson delivery, or involvement of the PE teachers.