Rural America Initiatives
2112 South Valley Drive
Rapid City, SD 57703

Ateyapi Youth Engagement in Sports Program

Final Evaluation Report
2019-22

John J. Usera, Ph.D. & Associates, Inc.
Delta Evaluation Consulting, LLC
Sturgis, SD 57785

Rural America Initiatives
Ateyapi Youth Engagement in Sports (YES) Program
2019-22

Table of Contents

Acknowledgments

The Ateyapi Youth Engagement in Sports Program is supported by a grant (Grant # 1 CPIMP191182-01-00) from the Office of Minority Health, U.S. Department of Health & Human Services, Public Health Services. Rural America Initiatives (RAI) is the administrator of the grant which serves all the public middle schools within the Rapid City Area School District.

The success of the program could not be accomplished without the support of the Rapid City Area School District Board, Dr. Lori J. Simon, and the central office administrators. The middle school principals, teachers, and staff are key contributors to the success of the program which serves all middle school students within the district. The support of the parents and the Lakota community makes the program relevant and meaningful to all the youth that participate in the after-school program.

Special acknowledgment and appreciation are given to the middle school students, the administrators, coaches, and mentors of the program. These include:

Bruce Long Fox ..... RAI Executive Director

Stephanie Eare Savoy ..... Ateyapi Project Coordinator

Lynsey American Horse (2019-21) ..... East Middle School Coach & Mentor

Sabrina Pourer (2019-20) ..... North Middle School Coach & Mentor
William Stewart (2020-21) ..... North Middle School Coach & Mentor
Nicole Prairie Chicken (2021-22) ..... North Middle School Coach & Mentor

Kenneth Taspan (2019-20) ..... West Middle School & Mentor
Maverick Grey Horse (2020-21) ..... West Middle School & Mentor

Tia Trujillo (2020-21) ..... South Middle School Coach & Mentor

Scott Phares ..... East Middle School Principal

Jackie Talley ..... North Middle School Principal

Daniel Conrad ..... West Middle School Principal

Darren Schmidt ..... South Middle School Principal

Introduction

The ***specific aim*** of the Ateyapi Youth Engagement in Sports (YES) Program is to implement an after-school program that promotes healthy lifestyles for American Indian middle school youth. The project will achieve this outcome by helping youth engage in sports activities, daily physical exercises and activities, and learn about what constitutes a healthy nutritional regimen. American Indian youth from small rural communities are exposed to a wide range of risk factors including substance use, poverty, poor nutritional education, and less than normal amounts or sports and physical activities. This program focuses on reaching out to American Indian youth and families who are interested in reversing these negative trends.

The Ateyapi YES Program is a unique initiative because it helps youth apply Lakota values and practices to sports, recreational, and nutritional activities to their everyday lives. Values, as practiced by many Lakota people, include respect, generosity, wisdom, humility, compassion, honesty, and service. Youth participating in well-coached sports teams and recreational activities learn how to apply these values. Coaches and mentors serve as role models for these values in dealing with challenges, behaviors, and environmental barriers as the youth move toward developing healthy lifestyles and making healthy decisions.

The Social Cognitive Theory describes how the interaction between people within specific social environments can contribute to personal development and risk-free behaviors. For example, when a coach models a specific skill or behavior, a young person can learn from the positive interaction with other individuals and guide them in practicing a specific skill themselves. If the young person receives a positive response or is rewarded for applying this newly acquired skill, there is a high probability that the behavior can be a lifelong change.

This program is an attempt to reach out to a larger percentage of American Indian middle school youth (ages 11 to 14) in addressing the lack of physical health factors that contribute to poor health and related adolescent developmental issues. In 2017-18, 29.1% of American Indian youth were identified as obese and 19.8% overweight. This compares with 13.9% of White students who were identified as obese and 15.2% overweight. American Indian middle school youth have a high prevalence of Type 2 diabetes compared to other ethnic and racial groups. Additionally, 15.2% American Indian youth are not physically active for at least

60 minutes per day as compared to 8.8% of White youth. There are similar disparities noted in good nutritional habits and the number of meals (breakfast, lunch and supper) consumed per week.

This evaluation report is guided by ***Office of Minority Health (OMH) Evaluation Planning Guidelines for Grant Applicants (2012)*** which provides research-based approaches to document the success of Youth Engagement in Sports (YES) and for the minority students, the program will serve. The strategic framework focuses on the reduction of racial and ethnic health disparities, the importance of individual social, educational, and emotional development as well as the environmental and system-level contributions to minority youth growth. The purpose of the evaluation process is to assess in a systematic fashion the effectiveness of the YES program in achieving its goals and objectives; facilitate information for continuous improvement of the program; generate new knowledge about the work being done; and ensure movement, both individually and collectively, in the same direction towards a common set of goals and objectives as outlined in the ***Healthy People 2020***.

Program Objectives & Research Questions

The ***objectives*** and ***research questions*** (RQ) for the Ateyapi Youth Engagement in Sports (YES) Program are:

Objective 1.0: At the end of each program year, a minimum of 130 American Indian youth in grades 6-8 will participate fully in six or more months of Ateyapi YES programming resulting in increased physical activity, healthy dietary behaviors, self-esteem, and abstinence from substance use and anti-social behaviors resulting in the development of healthy adolescent lifestyles.

RQ 1.1: What percentage of Ateyapi YES youth participating in physical activities that includes one or more sports will be statistically significant different from a matched comparison group at the 0.05 alpha level over a one-year period as measured by attendance records?

RQ 1.2 Will the participants of Ateyapi YES Program who engage in 60 minutes or more daily of moderate or vigorous activity per week for six months be statistically significant different from a matched comparison group at the 0.05

alpha level over a one-year period as measured by attendance records and self-reporting surveys?

RQ 1.3 Will the participants of Ateyapi YES Program meeting the Physical Activity Guidelines for Americans standard for children and youth will show a statistically significant increase in their mean score on the Physical Literacy Assessment for Youth from pre to post assessment at the 0.05 alpha level?

RQ 1.4 Will the Ateyapi YES Program youth report a statistically significant change in the amount of fresh fruits and dark green, orange, or red vegetables per day from pre to post intervention over a one-year period at the 0.05 alpha level?

RQ 1.5 Will the Ateyapi YES Program youth report a seven day per week consumption of fresh fruits and dark green, orange, or red vegetables daily that differ significantly from the comparison group at the 0.05 alpha level?

RQ 1.6 Will the Ateyapi YES Program middle school participants report a statistically significant change in the number of days per week that they consume sugar sweetened beverages as compared to the matched comparison group at the 0.05 alpha level?

RQ 1.7 Will the Ateyapi YES Program middle school participants report a statistically significant decrease in the level of participation in anti-social and risk behaviors each year as compared to the matched comparison group at the 0.05 alpha level?

Objective 2.0: By the end of each program year, RAI Ateyapi YES program will successfully collaborate with at least two community partners and at least 100 participants' families to support healthy lifestyles and activities at school, home, and community.

RQ 2.1 What number and percentage of family and community partners will report a commitment to continued involvement and support of the Ateyapi YES Project and the participating youth by providing in-kind resources and consultation?

RQ 2.2 What number and percentage American Indian families (parents or guardians) will report satisfaction with the impact of Ateyapi YES on their child as measured by the Ateyapi Parent and Community Survey?

Objective 3.0: By the end of 24 months, RAI will develop new organizational capacity resulting in institutionalizing successful components of the Ateyapi YES.

RQ 3.1 How many sports and participants are made available to the middle school students which have been identified as historically important to American Indians youth?

RQ 3.2 How many staff members completed training aligned with SHAPE America's National Standards for Sport Coaching and the CDC Heads Up to Youth Sports Concussion Training or equivalent?

RQ 3.3 How many RAI staff serving the middle school students (Grade 6, 7, & 8) completed at least 24 hours of training to facilitate on-going positive organization-wide youth development competencies, especially to support American Indian cultural and other positive values, promote social competencies and positive identity among program youth and serve as a role model of good health through exercise and appropriate nutrition?

Evaluation Design & Strategies

The evaluation design is a mixed method quasi-experimental longitudinal pre/post/follow-up design in which the intervention and comparison groups will provide both quantitative and qualitative data in order to obtain process and outcomes data. The process, outcomes, and impact measures are divided into three major levels: (1) individual, (2) environmental and community, and (3) institutional (RAI). The analysis of the data collected in the first year of the program will serve as a baseline and provide information about short-term (one-year) accomplishments while the data collected from the sequential years will provide comparative information about the long-term impact of the Ateyapi YES Program. Through the implementation of a rigorous evaluation process as outlined in this plan the project will use the information and analysis of findings for substantiating changes, impacts, and outcomes compared to compare students that are not interested in participating in the Ateyapi YES Program.

To understand the effects of a program, the evaluator has distinguished the effects caused by the program from effects caused by other factors. This effort typically involves comparing outcomes for two groups – the comparison group the and intervention group. The similarity of the two groups before program services begin is referred to as baseline equivalence. The evaluator will minimize the chance of measured differences between the two

groups by assuring that the two groups are matched by gender, ethnicity, age, and knowledge of some physical and nutritional measures. In a matched comparison group design (MCGD), the evaluation will select participants that are similar to the program (intervention) group as possible to form the comparison group. The matching can be obtained by using the statistical method of propensity score matching (PSM).

It should be noted that the evaluator conducting a MCGD study cannot rule out the possibility that the two groups have unmeasured traits that are not equivalent. For example, although the study participants are the same age, the evaluator does not know if the program group members are more motivated or determined to achieve the goals of the program. If the program and comparison groups differ in unmeasured characteristics—if they are not equivalent at baseline—then the study's estimates of program effectiveness may not be accurate. The lack of baseline equivalence creates bias: erroneously shifting the results in one direction or another. So, in this evaluation plan establishing baseline equivalency will be a priority before any analysis of data is reported.

In the counterfactual analysis, the outcomes of the intervention are compared with the outcomes that would have been achieved if the intervention had not been implemented. The method of counterfactual impact evaluation and research allows identifying which part of the observed actual improvement (e.g. decrease in risk behaviors) is attributable to the impact of the intervention (since such improvement might occur not only due to the intervention but also due to other factors, e.g. family and community support

In this design, each research question will be tested quarterly with additional data being collected to measure the impact of the specific physical activities, nutritional education, and health practices in the achievement the project stated objectives that are in alignment with Office of Minority Health (OMH) and Healthy People 2020 strategic framework.

In this program evaluation report, there were no comparison group data collected and thus there is no comparison analysis. The lack of collecting comparison data was deferred and finally eliminated due to the Covid-19 restrictions and the ability to recruit students to form comparison groups. The restriction was due to the closure of schools and access to students as part of the Rapid City School District Covid-19 pandemic restrictions. The recruitment of

comparison group students was attempted in the second and third quarters of these second year of implementation but was not successful due to the restrictions imposed upon after-school programs in the school district.

Data Collection Methodology

As part of the data collection protocol, attendance was documented for each student participating in the Ateyapi YES Program by the coaches and education staff. An attendance sheet was designed with the student's name, grade level, minutes of engagement in a particular activity (tutoring, recreational activities, sports, nutrition classes, seminars, etc.) and the date and topic of the activity. The coach or staff member entered the data into a web-based file, in which only the student's codes were available to the evaluator and researcher. This provided the evaluator with dosage information per participant and information regarding the nature and type of each activity.

As part of the program's database and information shared with the evaluator, demographic information was collected as part of the input phase of the program. The input data fields include, date of birth, grade level, school, residency, ethnicity, gender, household configuration, number of siblings, and date of a completed active parental consent form. Rural America Initiatives (RAI) has a database system that can store this information with the appropriate coding system. Upon request of the evaluator, the information was transmitted to the evaluator using codes (no names) only.

Additionally, the RAI database system was able to track any referrals of youth to health providers, other coaches, and counselors. As part of the program, students requiring additional intervention and treatment were noted as a factor contributing to the formation of a cohort of students receiving supplemental services that could serve as a threat to the validity of the Ateyapi YES Program. Analysis was performed to determine if there were any supplemental services that provide a measurable improvement in outcomes and impact.

Each participant completed baseline (1st Quarter), 3 months (2nd Quarter), 6 months (3rd Quarter), and 9 months (4th Quarter) assessments during the year which focused on practices, beliefs, and attitudes as part of their social, nutritional education, physical activities knowledge,

and emotional development. Some of the questionnaires were web-based and thus the data was submitted directly to the evaluator for analysis and reporting. Other questionnaires were in a paper format and submitted directly to the coach and evaluator for data mining and analysis. Each questionnaire or assessment tool was coded which created a student record of data that could be matched each quarter for the two years of data collected for each student in both the intervention and comparison groups. The culturally sensitive assessment instrument was designed to ask students about physical exercise practices, beliefs, nutrition, and other knowledge related to risk and protective factors such as substance use (alcohol and drugs), violence, coercive behaviors, cultural values and history, problem-solving skills, and self-efficacy.

The logic model (Appendix A) provides an overview of the project with a list of the outcome objectives, intervention, activities, inputs, outputs, and short and long-term outcomes. The objectives and hypotheses are aligned to the logic model. The data collected throughout the project will be analyzed to test the hypotheses linked to the project objectives and goal.

Instrumentation

The ***Youth Physical Activity and Nutrition Self-Assessment*** is a web-based instrument modeled on the paper-format instruments designed by Zhang & Reicks (2017)[1] and Ammerman et al. (2007). [2] The instrument is divided into three major areas: (1) Eating Habits, (2) Exercise/Physical Activities, and (3) Weight/Body Image. The "Eating Habits" section includes 15 questions on eating time habits (breakfast, lunch, supper, and snacks), fruits & vegetables, milk or milk products, fat and sugary foods, sugar-sweetened drinks, substance use, and eating outside of the home. The "physical exercise/ activities" section includes 7 questions on hours spent on watching TV, play video games, using the internet and cell phone; participation in

[1] Zhang, Y. & Reicks,, M. (2017). Test-test reliability and convergent validity of two brief fruit and vegetable intake questionnaires among school-aged children. Nutrients, 9(707). Doi: 10.3390/nu9077070.
[2] Ammerman, AS, Benjamin, SE, Sommers, JK, Ward, DS. (2007). The nutrition and physical activity self-assessment for childcare: Environmental self-assessment instrument. Raleigh, NC: Division of Public Health, NC DHHS, Center for Health Promotion and Disease Prevention, University of North Carolina at Chapel Hill.

physical education in school; participant in sports and types of sports; the amount of time spent on each physical activity. The "weight/body image" section includes 6 questions on weight control and associated methods for controlling weight; binge eating or vomiting; use of supplements; the self-image of body, and treatment by others (bullying, teasing, etc.).

The ***Ateyapi YES Questionnaires*** (pre, post, and follow-up) are designed for the Ateyapi Youth Engagement in Sports Program to assess sexual behaviors, sexuality-related psychosocial factors, American Indian (Lakota) cultural knowledge, self-efficacy refusal activities, nutrition knowledge, coercive behaviors, and other related risk behaviors (substance use and alcohol use). The normative beliefs focus on the actual number of individuals engaged in the different types of sexual activity, the perception of the popularity of sexual activity, and facts regarding the number of individuals waiting or avoiding sex. The Lakota cultural items ask questions about heritage, ethnic values, environmental influences, normative beliefs, and role models. The coercive behaviors ask questions about being touched by some below the waist unwantedly or someone putting the pressure to have unwanted sex. Engagement of related risk behaviors includes the use of drugs and alcohol and understanding how it impacts the individual psychologically, and physically lowers the resistance to unwanted sexual advances. Questions include items about the use of health providers and the application of the treatment strategies prescribed by the provider to address a particular health issue.

The thirty (30) baseline questionnaire to the forty (40) post items questionnaire which included demographic information, questions developed by Ateyapi YES Program Evaluation Team used to obtain data that tested the research questions. Scrutiny was used to make sure the measures were aligned with the expectations outlined by OMH and Healthy People 2020. Students, coaches, and parents were able to access all questionnaires using a protected password and a personal code on the website.

The ***Physical Literacy Assessment for Youth (PLAY)*** will be used to measure the developmental stages for students participating in the Ateyapi YES Program. The assessment measured five tasks from initial to emerging to competent and proficient levels. The tasks include run there and back, hopping, overhand throw distance, kickball, and balance walk. Students who are active in any physical activity or sports should show improvement in these

tasks over time. The instrument uses a one-hundred-point scoring rubric for the assessment of the five-movement and fitness elements. The instrument was administered by the coach and data was analyzed by the evaluator using relevant statistical techniques to report significant changes by the participants or by the comparison group.[3]

The ***Ateyapi YES Parent Survey*** was administered to all of the parents of the participants in the program at the time of enrollment of their child into the program. This served as the pre-survey data collection point. During the year parents participated in a series of workshops and events that helped them in communicating and working with the child in addressing issues regarding physical activity, nutrition, healthy choices, peer pressure, Lakota culture, and other risk behaviors. The parent pre-survey measured their level of engagement with their child and their own level of knowledge about the selected topics. The post-survey was administered in May and September to measure any changes or improvements of the parent's involvement and communication with their child. Also, at this time the parents were asked to assess the effectiveness of the Ateyapi YES Program on their child.

A focus group composed of the staff and coaches were held in order to ascertain their perspective on their work with the intervention cohort. The discussions items included rating their success with their assigned group of boys and girls in addition to addressing gaps and needs in services. Other items included professional development needs in order for the staff and coach to be more effective in reaching the youth under their care.

Threats to the internal and external validity of this evaluative research design were carefully monitored and reported. Campbell and Stanley (1963),[4] Cook and Campbell (1979),[5] and Borg (1984)[6] provide some direction in documenting threats to experimental and quasi-experimental validity. Factors that can influence the experimental results include time span between measures, subject retention, historical and cultural influences, maturation of subjects,

[3] Sport for Life Society (2018). *Passport for life*. Ontario, Canada: Author. https://play.physicalliteracy.ca

[4] Campbell, D. T., & Stanley, J. C. (1963). Experimental and quasi-experimental designs for research on teaching. In N. L. Gage (Ed.), Handbook of research on teaching (pp. 171–246). Chicago, IL: Rand McNally.

[5] Cook, T. D., & Campbell, D. T. (1979). Quasi- experimentation: Design and analysis issues for field settings. Chicago: Rand-McNally.

[6] Borg, W. (1984). Dealing with threats to internal validity that randomization does not rule out. *Educational Researcher 13(10)*:11-14, DOI: 10.3102/0013189X013010011

test administration, instrumentation design, and random assignment procedures. Additionally, the instruments will be designed for the appropriate reading level with coded identification of the respondent.

Since all of the surveys rely heavily on both subjective judgments and empirical data, consideration was given to construct validity. Since construct validity is complex and cannot be directly observed or isolated, consideration was given to isolated survey items that have been used and tested in previous research endeavors. Additionally, there was sensitivity to ethnic and cultural relevancy of the instrument items. The validity of the three instruments (pre, post, and follow-up) will be substantiated by a team of youth service providers (counselors, program directors, coaches, and parents) who will review each question and align it with other field-tested instruments. The Kuder-Richardson formula (KR-21) will be used to test the reliability of the pre, post and follow-up questionnaires and survey instruments. Application of the KR-21 formula results in an estimate of reliability that is essentially equivalent to the average of split-half reliability computed for all possible halves.[7] This analysis has documented that the instruments are dependable and trustworthy in their measures.

Sampling Methods

The target population for this study is students attending Rapid City School District middle schools. One hundred fifty American Indian students were identified after obtaining the appropriate parental consent forms of self-selected participants in either the intervention or comparison groups. The students were informed of their responsibility and commitment to the Ateyapi YES Program and the data collection process. The parents had the option not to participate in the evaluation process, but still can be part of the program. All the participants agreed to participate in both the program and the evaluation process.

Within this target population the evaluator had to consider the mobility of some students during the one-year time period due to parents moving away to another school district that is not a part of the study, the Covid-19 pandemic social distancing restrictions, or

[7] Kuder, G. F., & Richardson, M. W. (1937). The theory of the estimation of test reliability. Psychometrika, 2(3), 151–160.

for some other reason. The Covid-19 pandemic restrictions contributed to a high lack of access to the students in the third and fourth quarters of this program year. Although mobility rates for the target population were low, attrition rates were considered and contributed to the low participation rate. Attrition that arises completely at random may reduce sample sizes but does not necessarily create bias. The focus of this report was to use a model that took into consideration the relationship between outcomes and attrition in a way that allowed it to be manipulated and reduce any major bias. The model for longitudinal studies proposed by Boys et al. (2003) provides suggestions for the retention of subjects within a study and methods for minimizing the impact of selection bias due to attrition.

Statistical Analyses

Whenever possible this study used a hierarchical logistic regression analysis model to estimate the treatment effects for different factors (gender, dosage levels, and intervention activities), effect sizes were computed for each analytical procedure. Without adjustment for pretest or other covariates, assuming group equivalence on pre-intervention measures achieved through propensity score matching (PSM) assignment follow-up variable means and standard deviations as well as sample sizes for both the intervention group and the comparison group, the effect size was computed using the standard formula for Hedges's g. The analysis of variance was computed for each regression analysis with the anticipated Hedges's g being greater than 1.2 which corresponds to a statistical power of at least 0.80. If the Hedges's g is a smaller value, then the statistical power and significance of the findings will be reported accordingly.[8]

Hierarchical and repeated measures logistic regression models was used to estimate the individual and group treatment effects separately for gender, age, and various intervention strategies. The models' estimates were based on generalized estimating with an unstructured correlation matrix specified to account for the correlation of repeated measurements among the respondents.[9,10] Explanatory variables included in the intervention group were taken into

[8] Hedges, L. & Olkin, I. (1985). Statistical methods for meta-analysis. Boston: Academic Press.
[9] Kung-Yee Liang, K. & Zeger, S. (1986). Longitudinal data analysis using generalized linear models. Biometrika, 73 (1),13-22.
[10] Norton E.C., Bieler G.S., Ennett S.T., Zarkin G.A. (1996). Analysis of prevention program effectiveness with clustered data using generalized estimating equations, Journal of Consulting and Clinical Psychology, 64:919-926.

consideration using categorical time measures, dosage, group by time interactions, and fixed nested effects. Flay et al. (2004) used mixed models for continuous outcomes (anti-social behaviors, attendance, and other behaviors) and generalized estimating equations ordinal outcomes (physical exercise, sports participation, nutritional factors, and substance use).[11] The analysis replicated similar studies using different level models to determine if there were nested effects (school, community, and peer) upon the outcomes (attitude and participation in physical exercise, proper nutrition practices, cultural knowledge and practices, self-discipline, and self-efficacy). Contrasts tested baseline differences between boys and girls and between various conditions (school environment, family support, time in program, etc.). Student t-test, Welch t-test, and Chi Square Goodness of Fit analyses were performed wherever it is necessary to substantiate statistical changes or differences from pre to post or follow-up mean values or between intervention and comparison groups at the 0.05 alpha level. All statistical tests were 2-tailed.[12]

Analyses include a quarterly longitudinal trend presentation of the participants' self-reporting of risk behaviors, cultural knowledge, nutritional practices, and personal physical development achievements. The covariates used to determine significant differences or changes within and between the groups were noted. These additional analyses were used to determine whether group membership affected each measured psychosocial and physical exercise construct assessed at the end of the program period. Assessment of social, emotional, and behavioral practices were measured in three-month intervals (quarterly) in order to obtain sequential longitudinal data sets for each individual participant. These analytical procedures and approaches were applied in this evaluation report to determine if similar results are achieved through the Ateyapi YES Program interventions based on grade levels (sixth grade to eighth grade).

[11] Flay, B. R., Biglan, A., Boruch, R. F., Castro, F. G., Gottfredson, D., Kellam, S. G., Moscicki, E. K., Schinke, S., Valentine, J. C., & Ji, P. (2004). Standards of evidence: Criteria for efficacy, effectiveness and dissemination. Falls Church, VA: Society for Prevention Research. http://www.preventionresearch.org/StandardsofEvidence book.pdf.

[12] Sheskin, D. (2007). Handbook of parametric and nonparametric statistical procedures. Fourth Edition. New York: Chapman & Hall, CRC Press.

Human Protections

The ***Ateyapi Youth Engagement in Sports Program Evaluation Plan*** was designed to measure if each participant has received quality physical and nutritional education and experiences. The process for determining if the goals are being met for this program includes collecting demographic data about the participants, interviewing staff, parents, participants, and community members, and obtaining accurate data from surveys and questionnaires administered in compliance with CFR 45.46 Protection of Human Subjects Code.[13] All evaluation protocol was reviewed and approved by Rural America Initiatives Institutional Review Board (IORC 0010383) on November 19, 2019 for compliance with the protection of human subjects.

Active consent from the parents or caregiver was obtained for all students who received the intervention and completed the assessment instruments designed for this program. If active consent was not received, the student may participate in the intervention, but did not have to complete any surveys or tests required for the evaluation of the project.

[13] Office of Human Protections (2018). 45 CFR 46 of the July 19, 2018 edition of the Federal Regulations. Washington, D.C.: Department of Health & Human Services. www.hhs.gov/ohrp/regulations-and-policy/regulations/revised-common-rule-regulatory-text/index.html.

Findings

Demographics

The program reached 131 middle school students during the implementation periods from 2019 to 2022 (10 quarters). Since some students participated in the program for 6 or more months which resulted in a duplicated headcount of 218 participants over the four quarters of implementation. Each quarter students were asked to complete an online assessment that measured a set of variables which included physical activity, nutrition, risk behaviors, self-efficacy, and Lakota cultural development.

Table 1 shows the distribution of the number and percentage of respondents to the Ateyapi Youth Engagement in Sports Assessments for each quarter by gender and school. In the first quarter of participation, students completed the pre-assessment which served as a baseline for data collection. There were 131 students who completed the baseline assessment over the ten quarters of program implementation. The gender distribution was 58.8% female (n = 77) and 41.2% male (n = 54). North Middle School had the highest participation rate at 55.7% while West Middle School had the lowest participation rate at 6.1%.

In the second quarter, three-month assessments were administered to the participants. There was a total of 105 students who completed the assessment with a gender distribution of 59.1% female (n = 62) and 40.9% male (n = 43). North Middle School had the highest participation rate at 43.8% while West Middle School had the lowest at 6.7%.

In the third quarter, six-month assessments were administered to the participants. There was a total of 78 students who completed the assessment with a gender distribution of 59.0% female (n = 46) and 41.0% male (n = 32). North Middle School had the highest participation rate at 43.6% (n = 34) while West Middle School had the lowest at 6.4% (n = 5).

In the fourth quarter, nine-month assessments were administered to the participants. There was a total of 33 students who completed the assessment with a gender distribution of 45.5% female (n = 15) and 54.5% male (n = 18). North Middle School had the highest participation rate at 57.6% (n = 19) while South Middle School had the lowest at 0%.

Table 1 Gender Distribution By School Based on Quarterly Assessments												
Quarter	Gender	East Middle School		North Middle School		South Middle School		West Middle School		Total		
1st Baseline	Girl	18	23.4%	40	52.0%	17	22.1%	2	2.6%	77	58.8%	131
	Boy	12	22.2%	33	61.1%	3	5.6%	6	11.1%	54	41.2%	
2nd 3 months	Girl	17	27.4%	24	38.7%	18	29.0%	3	4.8%	62	59.1%	105
	Boy	14	32.6%	22	51.2%	3	7.0%	4	9.3%	43	40.9%	
3rd 6 months	Girl	14	30.4%	15	32.6%	15	32.6%	2	4.4%	46	59.0%	78
	Boy	7	21.9%	19	59.4%	3	9.4%	3	9.4%	32	41.0%	
4th 9 months	Girl	5	33.3%	7	46.7%	0	0%	3	20.0%	15	45.5%	33
	Boy	3	16.7%	12	66.7%	0	0%	3	16.7%	18	54.5%	

Table 2 shows that at baseline 78.3% of the participants reported being American Indian while 10.1% reported being White and 11.6% were composed of different races. In the second quarter (three-month assessment), the percentage of American Indian participants was 74.8% and the percentage of White participants was 12.6%. The remaining participants reported being 8.7% Black, 2.9% Asian and 0.9% Pacific Islander.

In the third quarter (six-month assessment), the percentage of American Indian participants was 79.2% and the percentage of White participants was 13.0%. The remaining participants reported being 2.6% Black, 3.9% Asian and 1.3% Pacific Islander.

In the fourth quarter (nine-month assessment), the percentage of American Indian participants was 67.7% and the percentage of White participants was 25.8%. The remaining participants reported being 3.2% Black and 3.2% Pacific Islander.

Table 2 Gender Distribution By Race Based on Quarterly Assessments													
Quarter	Gender	American Indian		Asian		Black		Pacific Islander		White		Total	
1st Baseline	Girl	58	78.9%	1	2.6%	8	10.5%	1	2.6%	7	5.3%	75	129
	Boy	43	79.6%	0	0	5	9.3%	0	0	6	11.1%	54	
2nd 3 months	Girl	48	78.7%	1	1.6%	5	8.2%	1	1.6%	6	9.8%	61	103
	Boy	29	69.1%	2	4.8%	4	9.5%	0	0	7	16.7%	42	
3rd 6 months	Girl	36	80.0%	1	2.2%	0	0	1	2.2%	7	15.6%	45	77
	Boy	25	78.1%	2	6.3%	2	6.3%	0	0	3	9.4%	32	
4th 9 months	Girl	9	56.3%	0	0	0	0	1	6.3%	6	37.5%	16	31
	Boy	12	80.0%	0	0	1	6.7%	0	0	2	13.3%	15	

Nutrition

One major component of the ***Ateyapi Youth Engagement in Sports Program*** was participation in a minimum of ten classes on good nutrition per quarter. The classes were provided one day per week throughout the year. The lessons were developed by the University of California's Department of Nutrition[14] and delivered in Rapid City by the South Dakota State University Extension Office. Each class included background information, healthy activities, physical activities, menu planning, cooking guidelines and experiences, and individual goal setting for developing healthy practices.

Figure 1 shows four quarters of longitudinal response rates on the number of times per day a person eats fruit. By the third quarter (6 months) majority of the respondents eat at least 2 fruits per day. In the beginning of the program (baseline) 11.6% of respondents eat no fruit

[14] Smith, D., Horowitz, M., Neelon, M. et al. (2012). Learning about food and physical activity. Publication 8454. Richmond, CA: University of California, Agriculture and Natural Resources.

per day, but by the fourth quarter 6.1% of the respondents reported eating no fruit per day. A decline and change of -47.4% from baseline to the 9-month assessment period.

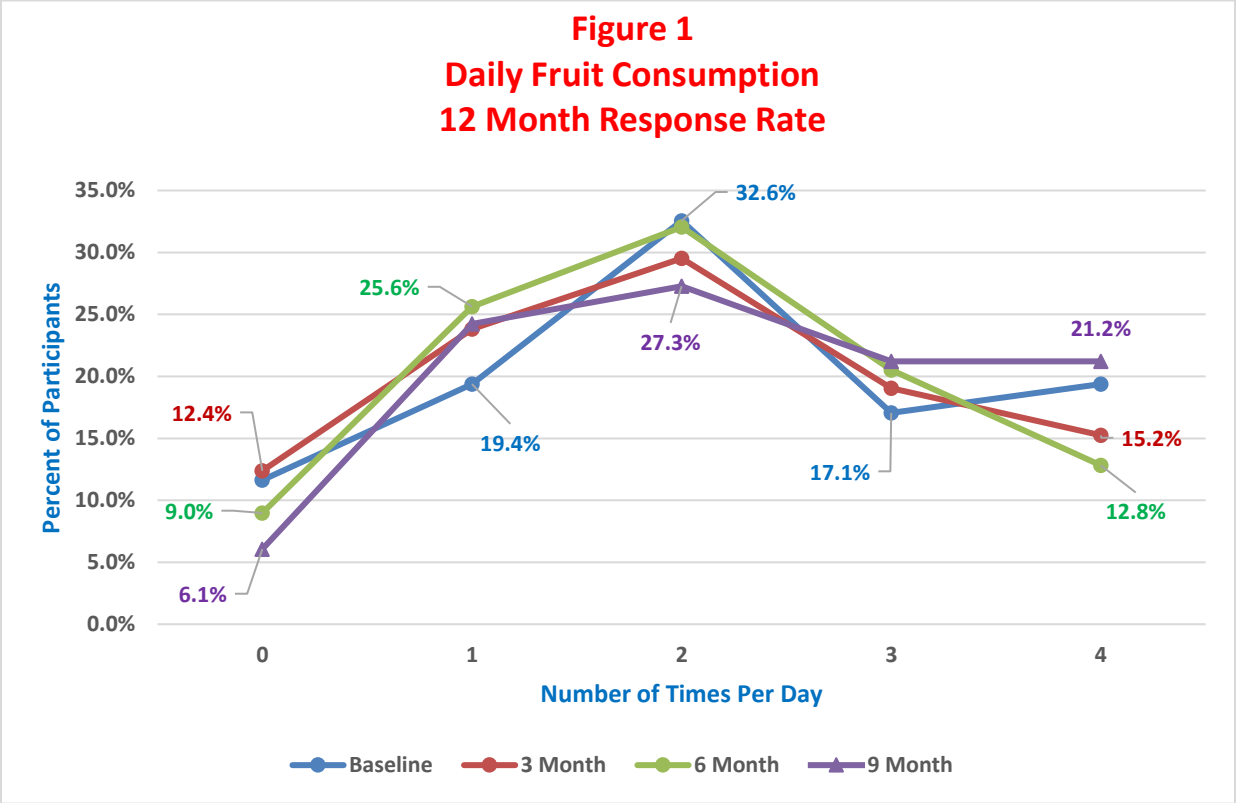


Figure 2 shows four quarters of longitudinal response rates on the number of times per day a person eats vegetables. At the beginning of the program (baseline), 20.0% of respondents eat no vegetables per day, but by the fourth quarter, 9.1% of the respondents eat no vegetables per day, a 49.5% positive change. At baseline, 31.5% of the participants reported eating vegetables twice a day. By the end of the fourth quarter, 36.4% were eating vegetables twice a day with 12.1% reporting eating vegetables four times per day. The highest average consumption of vegetables over the year was two times per day by 32.5% of the respondents.

Figure 3 shows that at baseline 35.7% of the respondents did not drink any pop, with a decline to 24.2% in the fourth quarter. The highest rate of pop use was 42.4% of respondents drinking one pop per day in the fourth quarter. The highest average consumption of pop over the year was one time per day by 34.2% of the respondents.

Figure 2
Vegetable Consumption
12 Month Response Rate

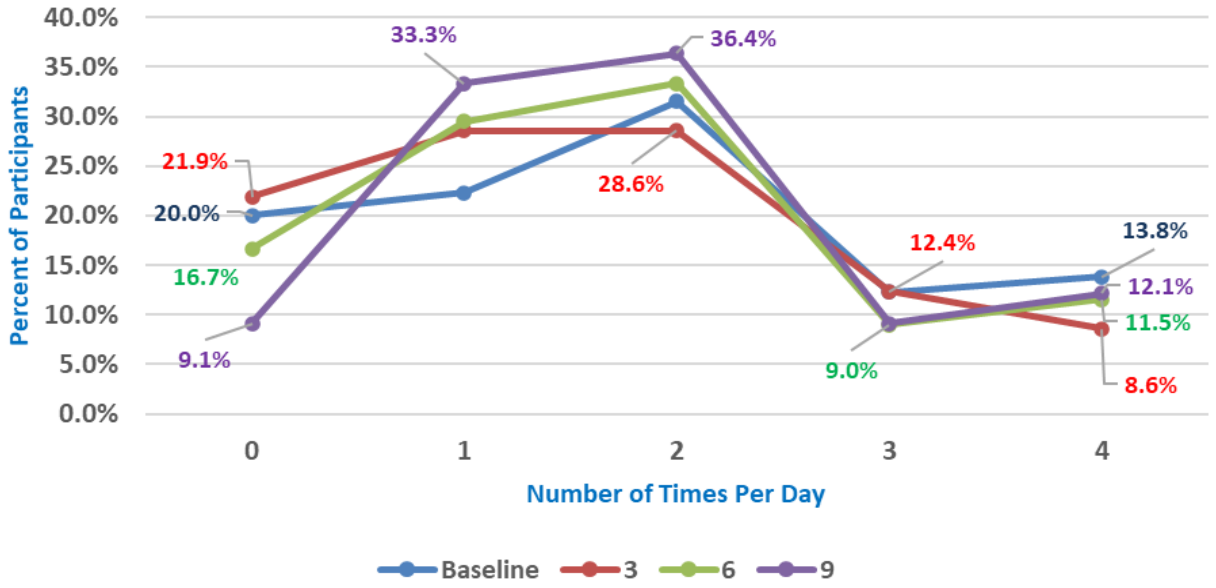
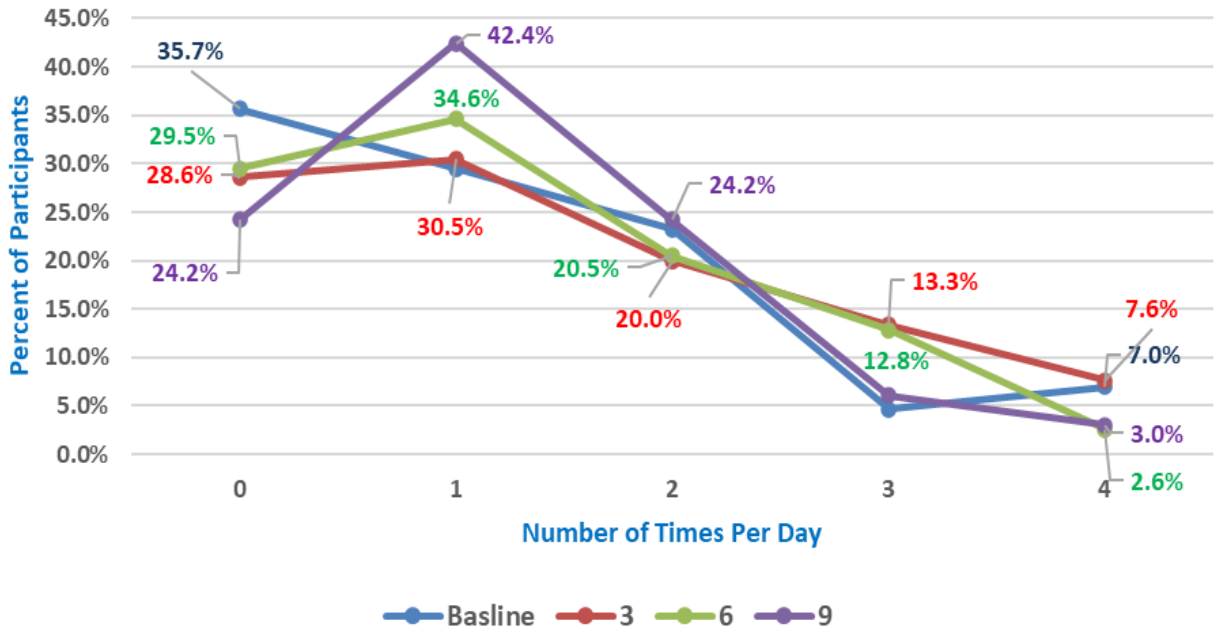
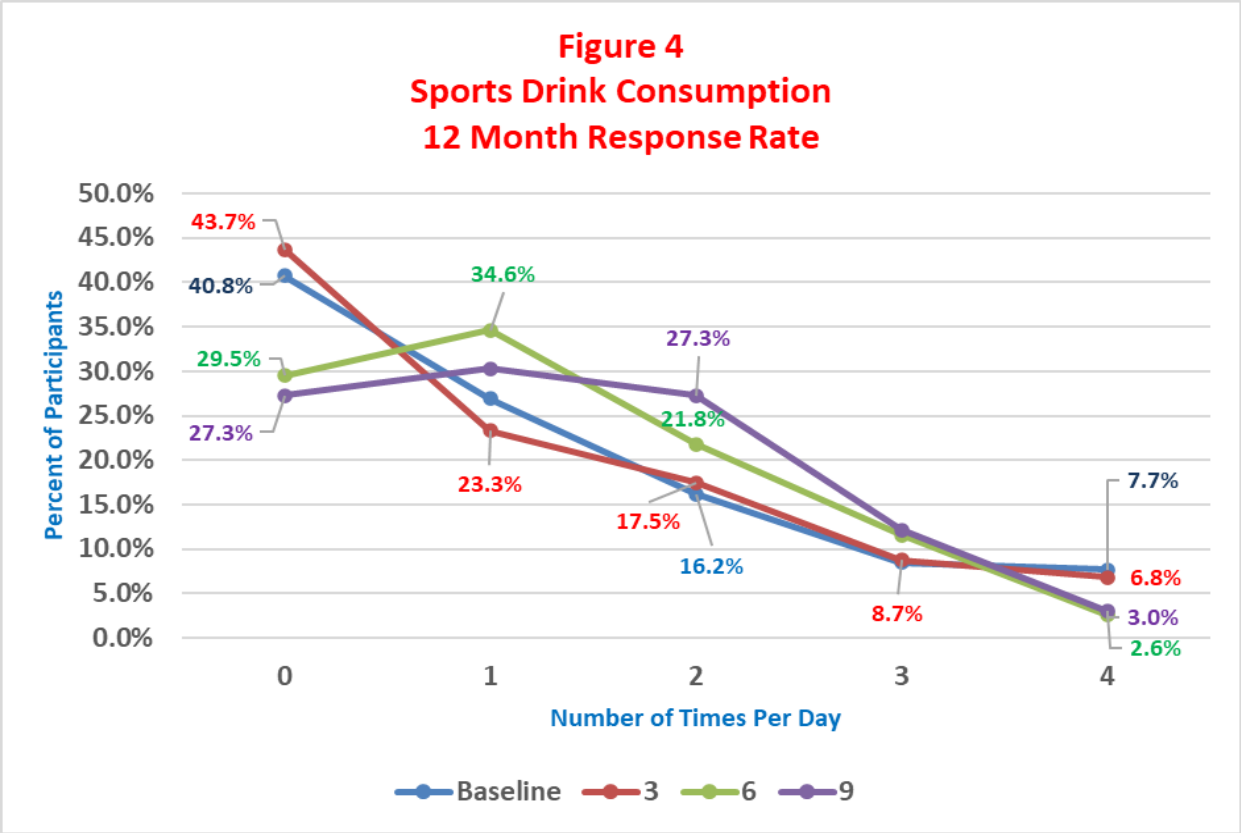


Figure 3
Pop Consumption
12 Month Response Rate



In Figure 4 at baseline 40.8% of the respondents did not report drinking any sports drink or fruit juice. This dropped down to 3.0% in the fourth quarter (10-12 months). In the second quarter (4-6 months) 34.6% of the respondents drank at least one sports drink or fruit juice per day. On average over the year two-thirds of the respondents (64.7%) drank one or more sports drinks per day.



Over the annual implementation of the YES program 40.8% of the respondents reported having no milk products or milk per day. In the fourth quarter (10 to 12 months) 27.3% of the respondents reported not eating or drinking any milk products. On average over the year two-thirds of the respondents (64.7%) drank milk or milk products per day. (Figure 5)

At the baseline, 23.6% of the respondents reported not consuming any whole wheat or grain food products per day. This nonconsumption increased to 33.3% of the respondents in the fourth quarter. The highest consumption of at least one product per day was reported by 53.8% of the participants in the third quarter. On average over the year the highest rate of 43.3% of the respondents consumed one-grain product per day. (Figure 6)

Figure 5
Milk or Milk Products Consumption
12 Month Response Rate

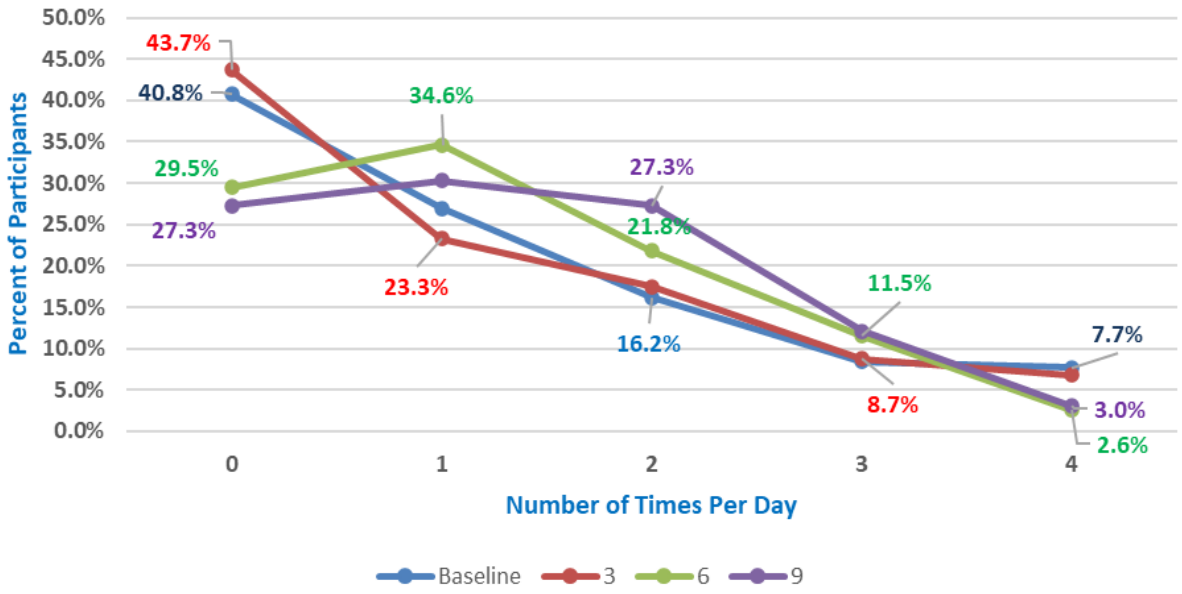
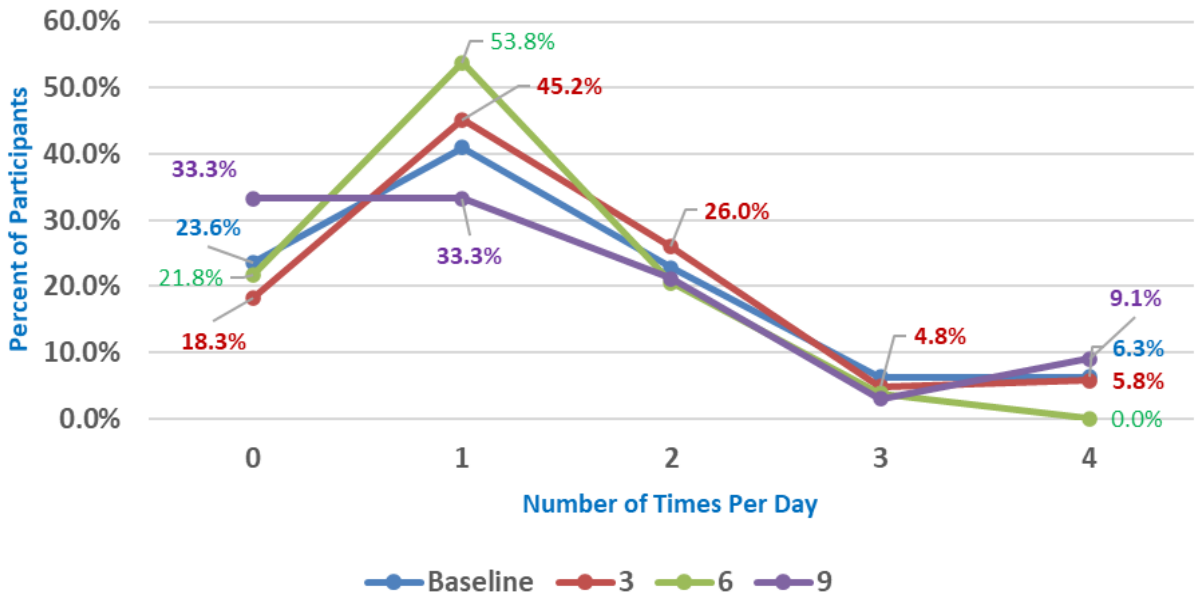


Figure 6
Whole Grain Foods Consumption
12 Month Response Rate



At baseline, 20.5% of the respondents report not eating any junk foods. In the fourth quarter, 57.6% of the respondents reported consuming junk food at least one time per day. Junk food included candy, potato chips, and food with low nutritional levels. On an average, over the year 42.1% of the participants consumed junk food at least one time per day while 23.9% reported eating junk food two times per day. (Figure 7)

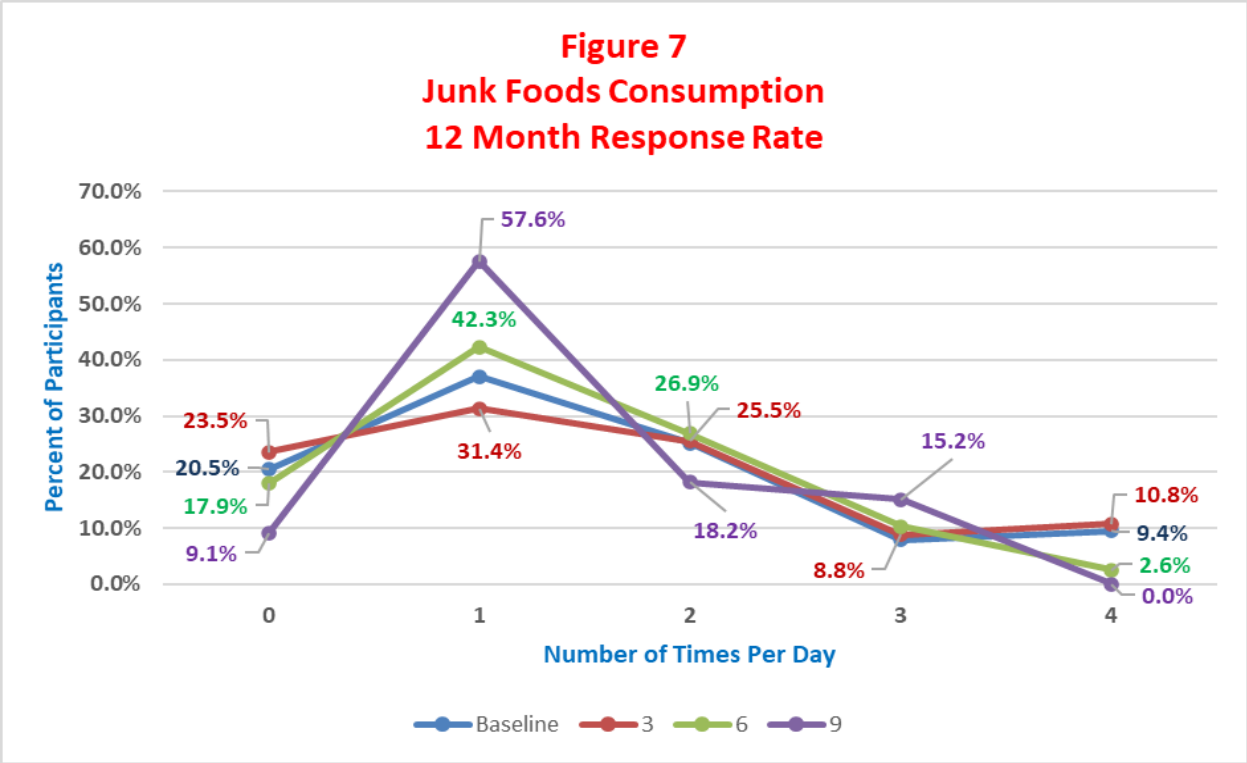


Figure 8 shows that a high percentage of the respondents eat at least one type of fried food per day was noted in the fourth quarter (46.9%). This range was matched by the 34.1% of respondents at baseline who did not eat any fried foods each day. Fried foods included French fries, fried chicken, fried bread, fried rice, etc. In the second quarter of the program, 35.9% of the respondents reported eating no fried foods each day, while at the end of the program year 3.9% of the respondents reported not eating any fried foods each day.

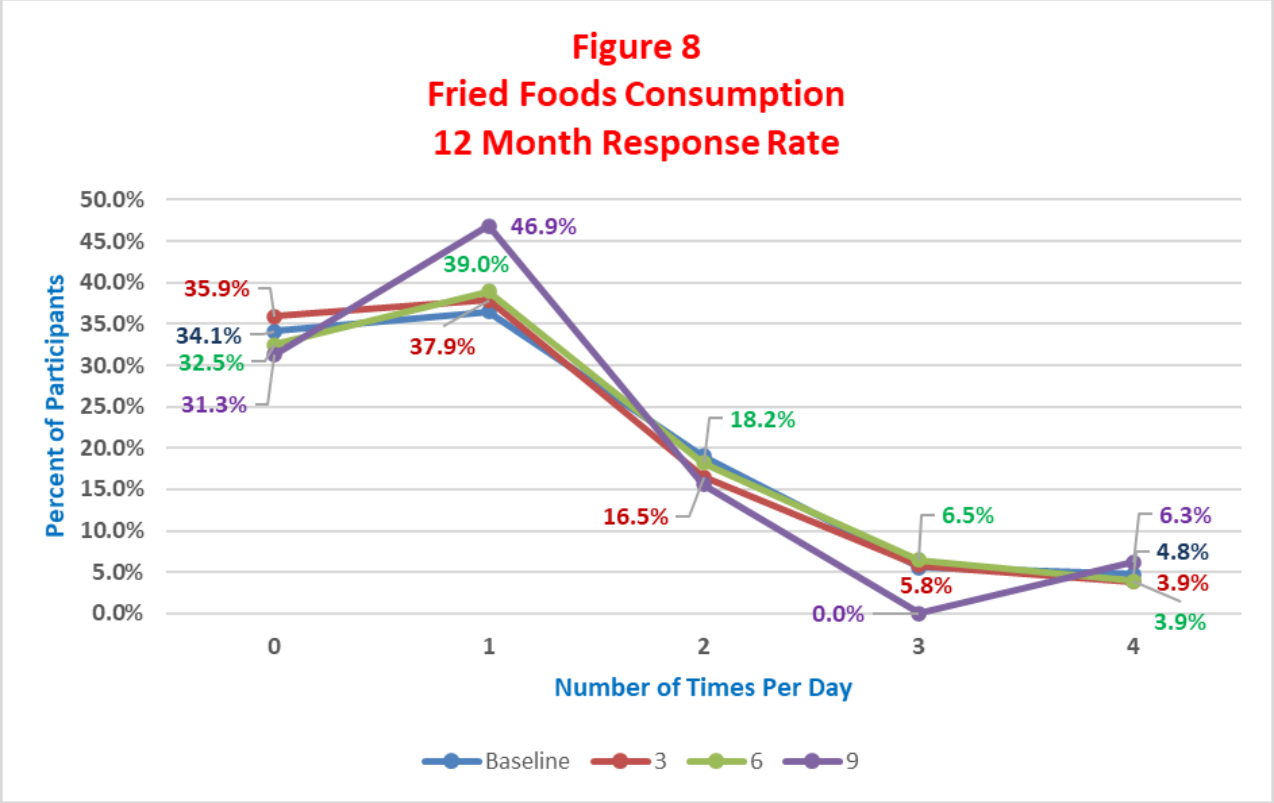


Figure 9 shows that from 17.7% of the respondents did not eat any breakfast during the week at baseline. At the six-month assessment, 11.6% reported not eating any breakfast which was the lowest rate for the year. At the three-month assessment 40.0% of the respondents reported eating breakfast six times per week. Over the period of one year 45.0% of the participants had breakfast zero to two times per week and 45.3% of the participants had breakfast four to six times per week. A regression model in which the dependent variable (Y) was identified as the number of breakfasts consumed per week with the number of months in the program as the predictor variable (β_1) was found to be $Y = -0.137\ \beta_1 + 6.728$ ($t_{intercept} = 19.038$, $p < 0.001$). The coefficient of determination (R^2) for this model was calculated to be 0.0106 ($F = 3.697$, $p < 0.0553$).

Figure 10 shows that 3.8% at baseline (1st Quarter) eat no lunch while 43.1% each lunch six times per week. After three months of intervention, 45.2% of the respondents eat at least 6 lunches per week. Over the period of one year 26.2% of the participants had lunch zero to two times per week and 60.9% of the participants had lunch four to six times per week. A regression model in which the dependent variable (Y) was identified as the number of

breakfasts consumed per week with the number of months in the program as the predictor variable (β_1) was found to be Y = -0.1834 β_1+ 7.053 (t_{slope} = -2.269, p < 0.0239). The coefficient of determination (R^2) for this model was calculated to be 0.0148 (F =5.148, p < 0.0239).

Figure 9
Number of Times I Eat Breakfast Per Week
12 Month Response Rate

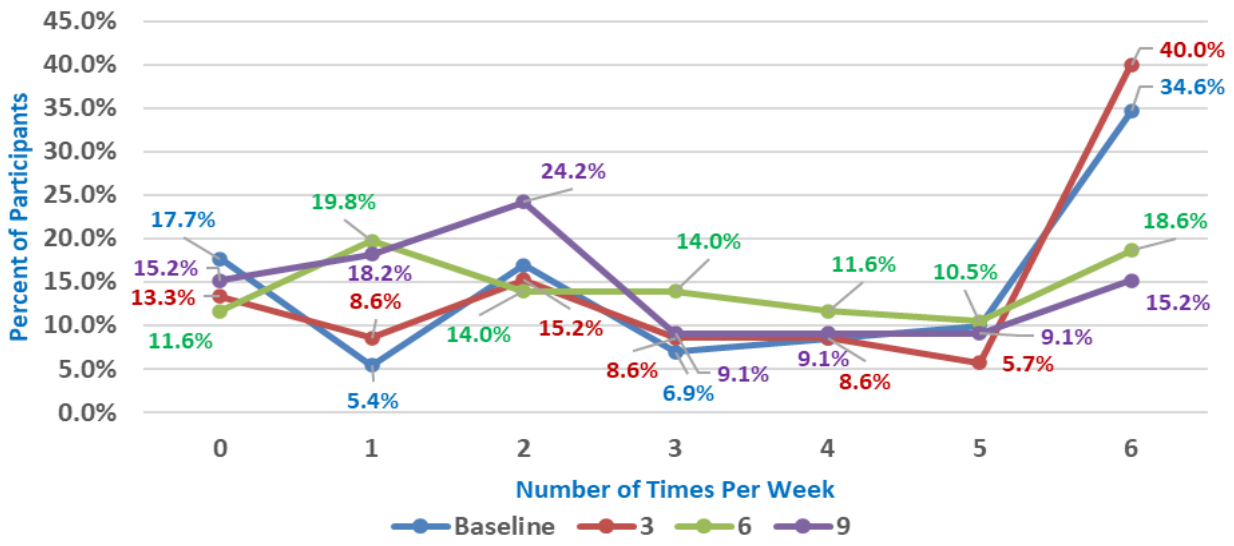


Figure 10
Number of Times I Eat Lunch Per Week
12 Month Response Rate

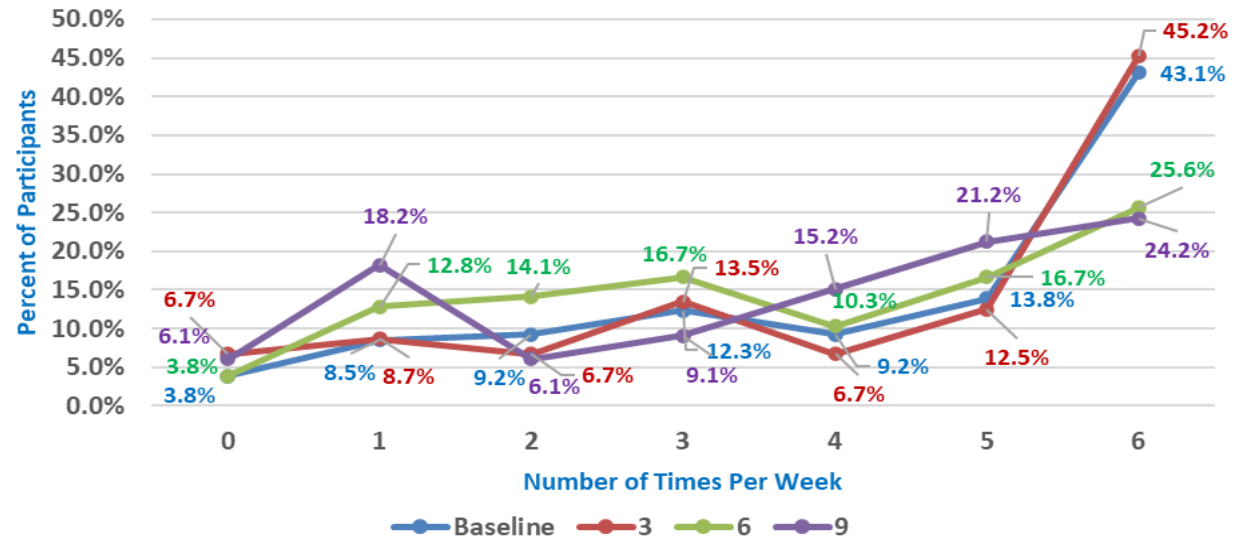


Figure 11 shows that from 2.3 % of the respondents did not eat any supper during the week at baseline. At the nine-month assessment, 3.1% reported not eating any supper during the week which was the highest rate for the year. At the baseline assessment 62.8% of the respondents reported eating supper six times per week which decreased to 40.6% at the nine-month assessment. Over the period of one year 22.8% of the participants had supper zero to two times per week and 71.3% of the participants had supper four to six times per week. A regression model in which the dependent variable (Y) was identified as the number of breakfasts consumed per week with the number of months in the program as the predictor variable (β_1) was found to be $Y = -0.1789\ \beta_1 + 7.121$ ($t_{slope} = -2.141$, $p < 0.0330$). The coefficient of determination (R^2) for this model was calculated to be 0.0134 ($F = 4.586$, $p < 0.0330$).

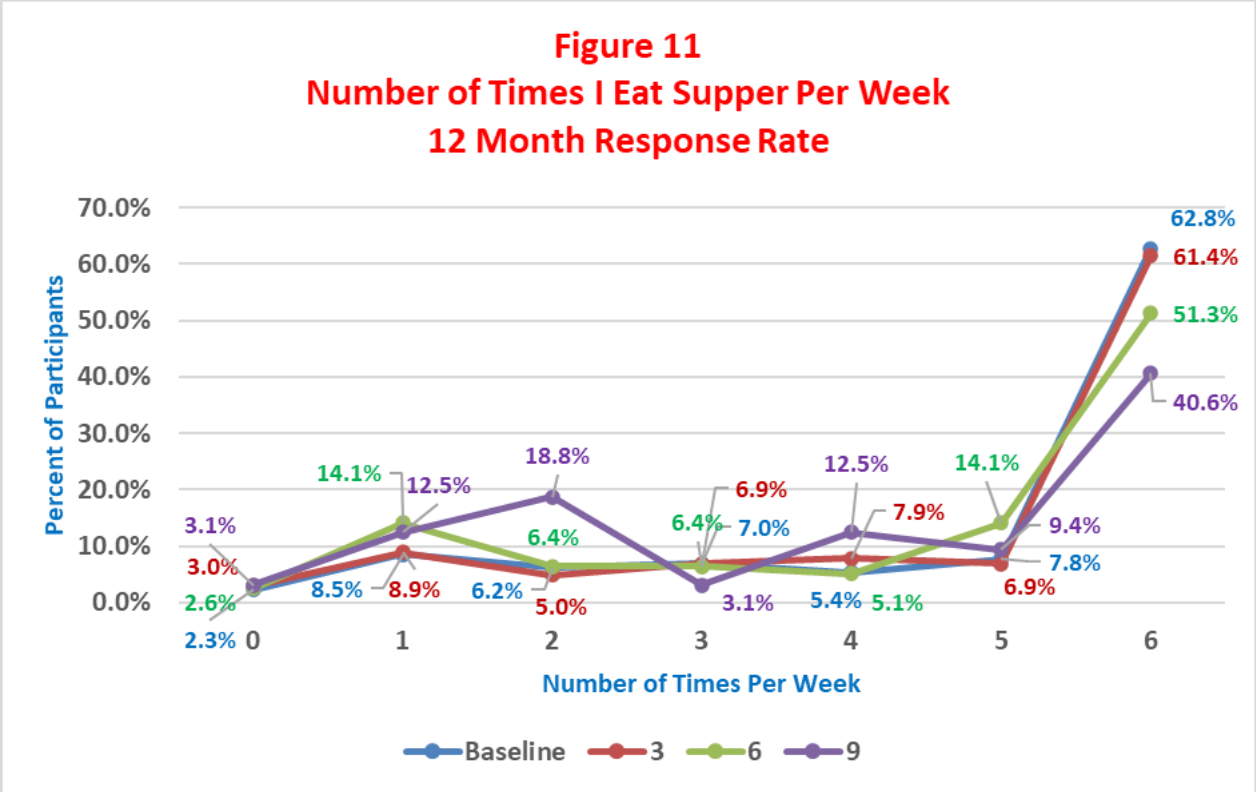


Figure 12 shows that at baseline (1st Quarter) 33.8% of the respondents reported not eating outside of the home (restaurant, community meal, or other out-of-home eating experience). In the 4th Quarter 27.3% of the respondent report not eating outside of the home. At baseline (1st Quarter) 33.3% of the respondent eat at least one meal outside of the home

each week, while at the end of the program year 72.7% report eating 1 to 6 meals outside of the home. Over the period of one year, 69.3% of the participants eat out zero to two times per week and 20.8% of the participants eat out four to six times per week. A regression model in which the dependent variable (Y) was identified as the number of times the participant eat outside of home per week with the number of months in the program as the predictor variable (β_1) was found to be Y = 0.0372 β_1+ 6.0134 ($t_{intercept}$ = 21.26, p < 0.0001). The coefficient of determination (R^2) for this model was calculated to be 0.001 (F = 0.217, p < 0.642).

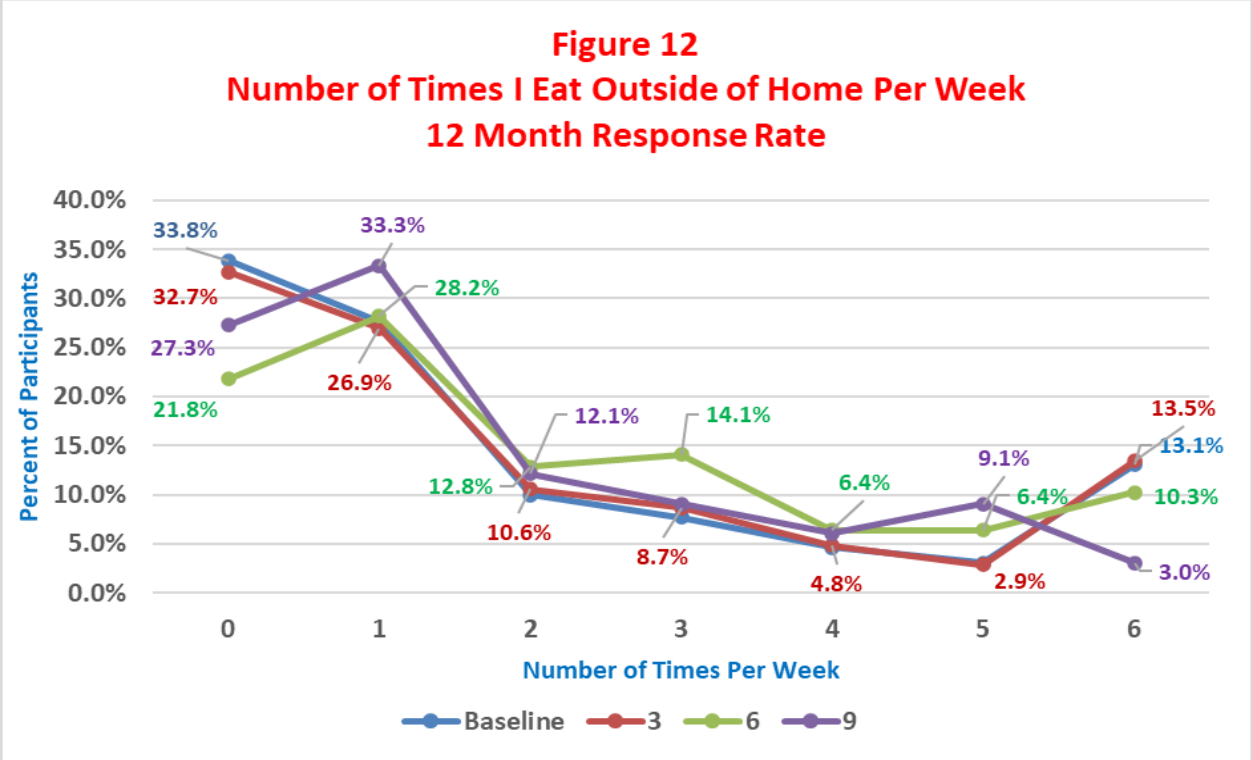
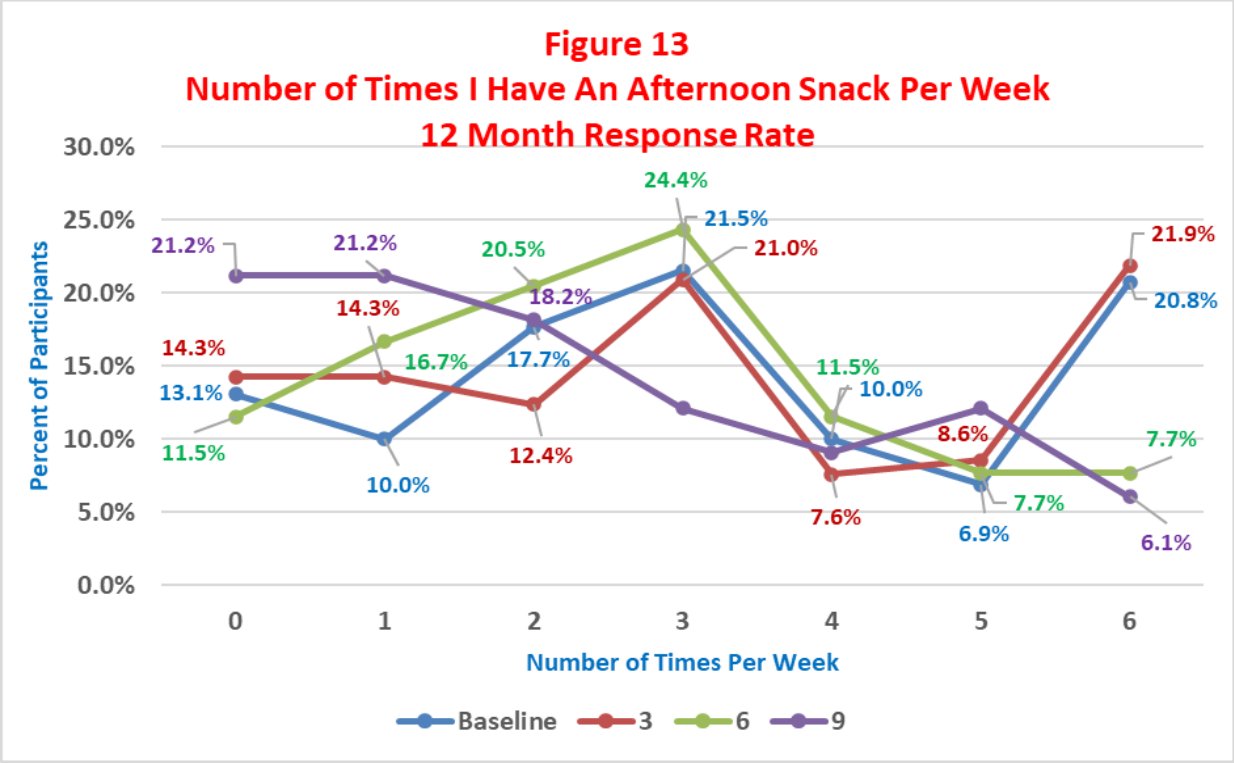


Figure 13 shows that at baseline (1st Quarter) 13.1% of the respondents reported not eating an afternoon snack. In the 4th Quarter, 21.2% of the respondent report not eating an afternoon snack which was a 61.8% improvement over a one-year period. At baseline (1st Quarter) 20.8% of the respondent eat six-afternoon snacks weekly, while at the end of the program year 6.1% of the participants reported six junk foods per week. Over the period of one year 47.8% of the participants eat afternoon snacks zero to two times per week and 32.5% of the participants eat afternoon snacks four to six times per week. A regression model in which the dependent variable (Y) was identified as the number of snacks consumed per week

with the number of months in the program as the predictor variable (β_1) was found to be Y = -0.1975 β_1+ 6.892 (t_{slope} = -2.452, p < 0.0147). The coefficient of determination (R^2) for this model was calculated to be 0.0172 (F = 6.014, p < 0.0147).



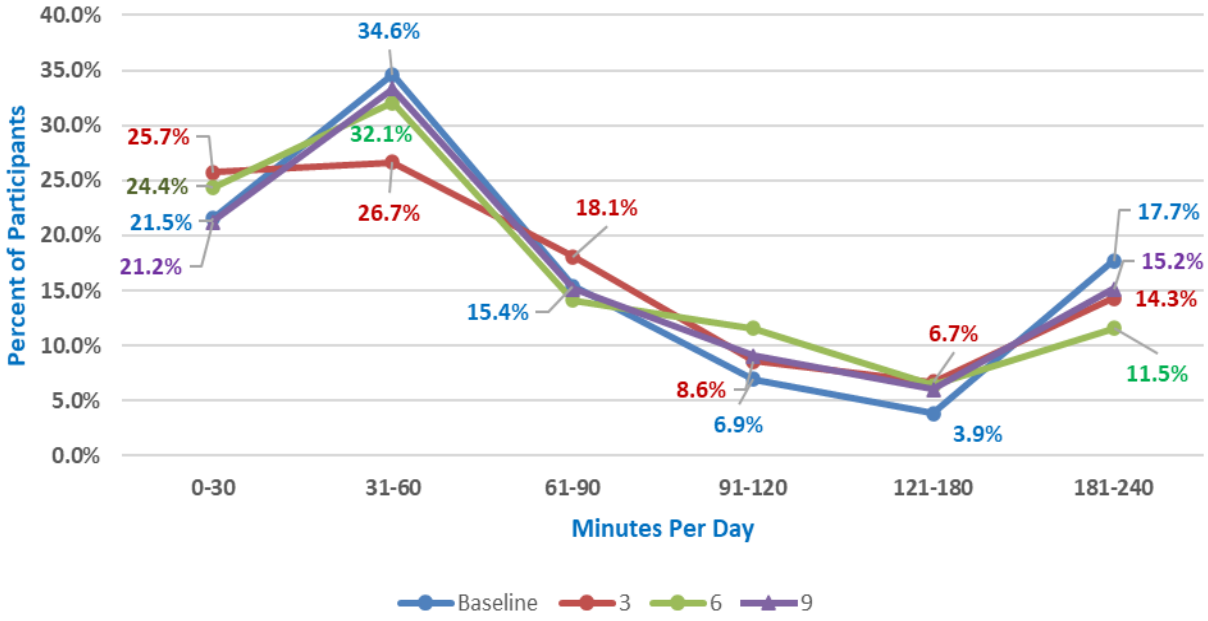
Physical Activities & Sports

A major goal of the Ateyapi Youth Engagement in Sports Program is for youth to participate in at least 60 minutes per day in some form of physical activity or sport. This can include one of the three sports available to the participant, recreational activity (free play), or some other form of structured physical activity such as physical education normally offered at school. The sources of data for this section were obtained through self-reporting by the participants and documentation by the coaches when participants were involved in organized sports or recreational activities.

Participants were asked how much time they spend in moderate physical activity per day. At baseline 21.5% of the respondents spent less than 30 minutes per day in any form of moderate physical activity while 34.6% of the participants reported spending between 30 and

60 minutes in moderate physical activity. Depending upon the reporting period from 43.9% to 47.6% spent over 60 minutes per day in moderate physical activity while 11.5% to 17.7% of the respondents reported spending 181 to 240 minutes per day in some form of moderate activity physical. A regression model included a dependent variable (Y) identified as the amount of time the participant spent in the program while the amount of moderate physical activity per day served as the predictor variable (β_1). The model was found to be Y = -0.00795 β_1+ 2.913 ($t_{intercept}$ = 13.87, p < 0.0001). The coefficient of determination (R^2) for this model was calculated to be 0.002 (F = 0.0664, p < 0.797). (Figure 14)

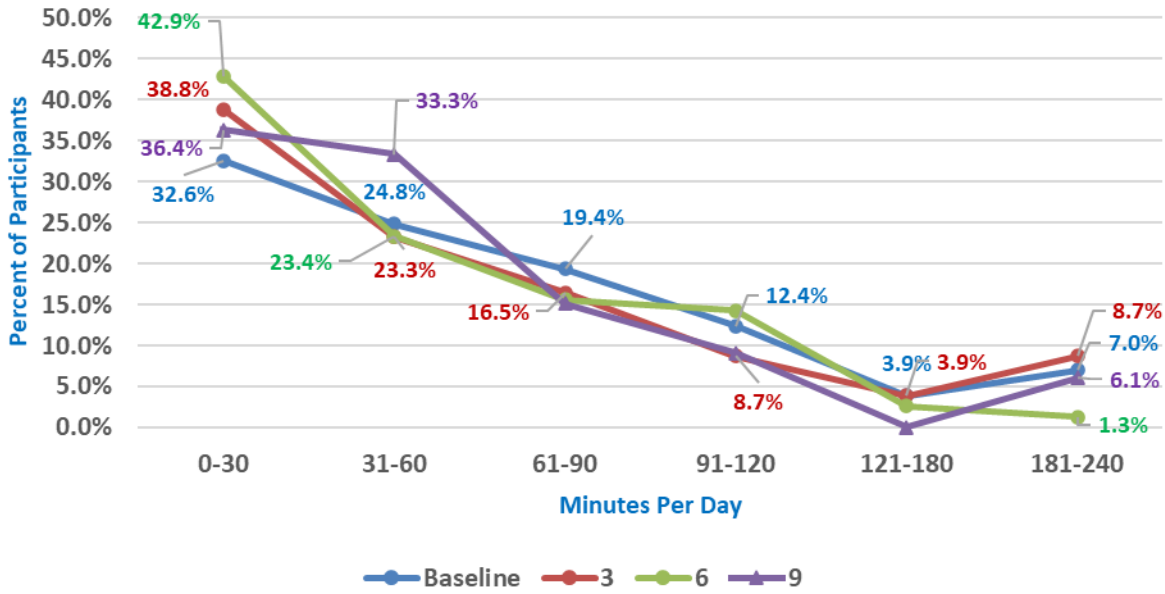
Figure 14
Daily Moderate Physical Activity
(Walking, Biking, Golfing, etc.)



When the participants were asked how much time per day they spend in some form of intense physical activity which resulted in sweating and increased cardiovascular action over one-third of the respondents (Mean = 37.7%) spent at least 30 minutes per day while a mean of 26.2% of the participants spent 31 to 60 minutes in intense physical activity. A range from 42.7% at baseline (1st Quarter) to 31.3% in the 4th Quarter of the respondents reported

spending over 60 minutes in some form of intense physical activity. A regression model included a dependent variable (Y) identified as the amount of time the participant spent in the program while the amount of intensive physical activity per day served as the predictor variable (β_1). The model was found to be $Y = -0.00456\ \beta_1 + 2.651$ ($t_{intercept} = 14.71$, $p < 0.0001$). The coefficient of determination (R^2) for this model was calculated to be 0.0087 ($F = 2.972$, $p < 0.0856$). (Figure 15)

Figure 15
Daily Intense Physical Activity
(Results in Sweating & High Cardiovascular Activities)

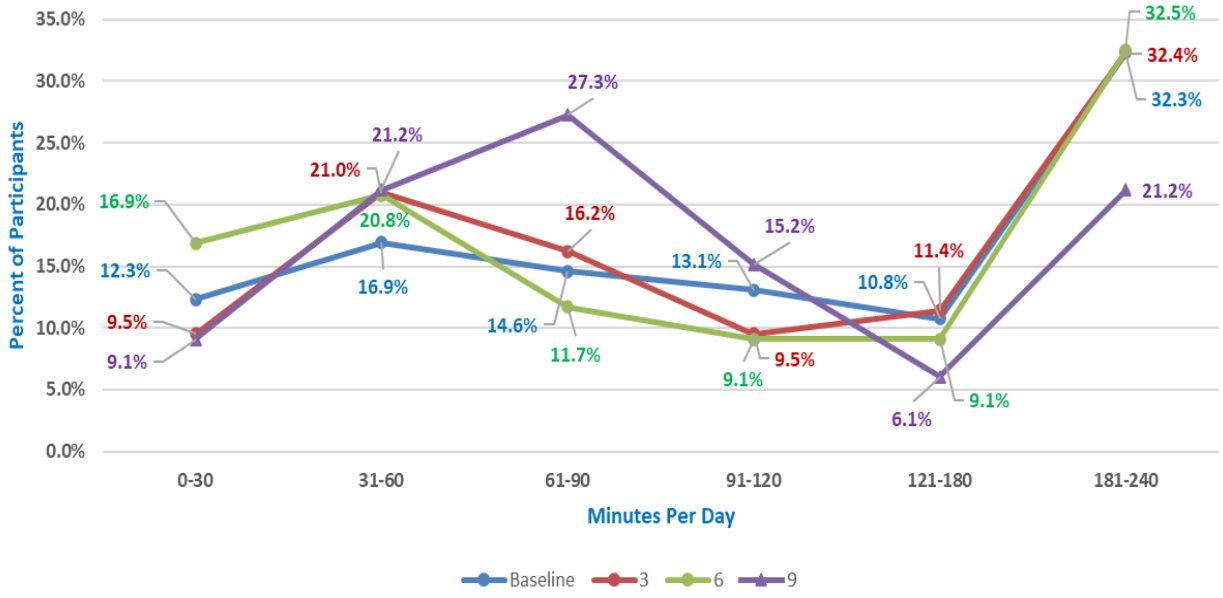


It was interesting to note how much time many of the participants reported on screen time (video games, cell phones, tablets, television, etc.) outside of school. The majority of the respondents (Mean = 41.4%) spend at least 2.0 or more hours viewing or using a variety of media sources. Studies show that a large percentage of children today, ages 8–18, spend over 7½ hours a day, seven days a week using media outside of school.[15] In this study, there were

[15] Rideout, V., Foehr, U., & Roberts, D. (2010). *Generation M2: Media in the lives of 8–18 year-olds*. **Menlo Park, CA:** Kaiser Family Foundation.

56.2% of the middle school respondents in the 1st Quarter to 42.5% of the respondents in the 4th Quarter reported using media (screen time) more than 1.5 hours per day. A regression model included a dependent variable (Y) identified as the amount of time the participant spent in the program while the amount of screen time per day served as the predictor variable (β_1). The model was found to be Y = -0.0390 β_1+ 4.056 ($t_{intercept}$ = 17.98, p < 0.0001). The coefficient of determination (R^2) for this model was calculated to be 0.004 (F = 1.3825, p < 0.2405).

Figure 16
Screen Time Outside of School
(TV, Video Games, iPhone, etc.)



The ***Physical Literacy Assessment for Youth (PLAY)*** is administered to each participant each quarter. The assessment measures the participant's level of competence and proficiency in performing a set of five physical activities. The coach provides instruction for each task and then scores the participant from 1 to 100. A score from 1 to 25 is identified as a developing initial score. A score from 26 to 50 is identified as a developing emerging score. A score of 51 to 75 is identified as an acquired competent score. A score of 76 to 100 is identified as an acquired proficient score.

Table 3 shows the mean scores for each task completed at baseline (0 to 3 months), 3 to 5 months and at 6 to 9 months. There were significant positive changes noted for the

participants completing the PLAY assessment from the baseline assessment to the third and sixth months assessments. For the run there and back task, there was a statistically significant change in the mean scores of 7.66 at 3-months [$t = 6.31$, $p < 0.001$]. For the hop task, there was a statistically significant change in the mean scores of 11.5 at 3-months [$t = 9.94$, $p < 0.001$]. For the overhand throw task, there was a statistically significant change in the mean scores of 9.48 at 3-months [$t = 7.54$, $p < 0.001$]. For the kickball task, there was a statistically significant change in the mean scores of 8.89 at 3-months [$t = 7.45$, $p < 0.001$]. For the balance walk backward there was a statistically significant change in the mean scores of 11.84 at 3-months [$t = 11.08$, $p < 0.001$]. All of the tasks at both the 3-month and 6-month assessment period had positive changes and were statistically significant at the 0.001 alpha level.

Table 3

Physical Literacy Assessment for Youth (PLAY)

Mean Scores

	n	Run & Back	Hop	Throw	Kickball	Walk
Baseline	355	27.61	24.69	27.77	28.79	25.08
3-Month	182	35.27	36.19	37.25	37.68	36.92
Difference Between Baseline & 3 month		7.66	11.5	9.48	8.89	11.84
Student-t		6.31	9.94	7.54	7.45	11.08
p		0.001	0.001	0.001	0.001	0.001
6-Month	75	46.19	44.36	46.2	49.93	43.41
Difference Between Baseline & 6 month		18.58	19.67	18.43	21.14	18.33
Student-t		10.41	12.03	9.91	12.53	12.99
p		0.001	0.001	0.001	0.001	0.001

Cultural Enrichment

The Ateyapi Youth Engagement in Sports Program is age-appropriate, culturally sensitive, and focused on the development of good physical health. It focuses on building skills, self-efficacy, self-esteem, and an internal locus of control as well as other needed foundations from which healthy choices are made based on the ***Lakota Way of Life***.

The ***Lakota Way of Life*** is built into the program by incorporating Lakota games, history, traditions, and practices. One of the major aspects of the Lakota people is kinship and a system of values. Kinship and family relationships are central to the Lakota way of life. Courage, fortitude, wisdom, and generosity are among the most celebrated values. The Lakota youth learn these traits from their elders, coaches, and teachers who use them in their daily lives. Every act and judgment are considered in terms of its duty and benefit to the extended family and other people in their lives. In this program, the coaches and mentors provide the stories, the environment, background, and examples of how Lakota values are important in making day-to-day decisions and choices about personal health, relationships, and achievement of goals.

The implementation of Lakota values is based on having pride in being Lakota. Figure 17 shows how the respondents increased in the level of being proud to be Lakota from 78.2% in the first quarter to 87.9% in the fourth quarter. Only the youth who identified themselves as American Indian responded to this question. The 9.7% change was not statistically significant at the 0.05 alpha level [$Z = 1.262$, $p < 0.208$] and had a medium effect size [Hedge's $g = 0.602$].

Participants were asked if they were active in their Lakota practices and traditions. This included attending pow wows and Lakota celebrations, creating crafts and clothing, studying Lakota history and language. In the first quarter 52.7% of the respondents agreed that they had been active, but it decrease to 42.1% in the fourth quarter. This can be attributed to imposition of the social distancing rules as a result of the Coronavirus Pandemic Restrictions. The decrease of 10.6% in the response rate was not statistically significant at the 0.05 alpha level [$Z = -0.169$, $p < 0.865$] and had a small effect size [Hedge's $g = -0.349$]. (Figure 18)

Figure 17
I Am Proud To Be Lakota

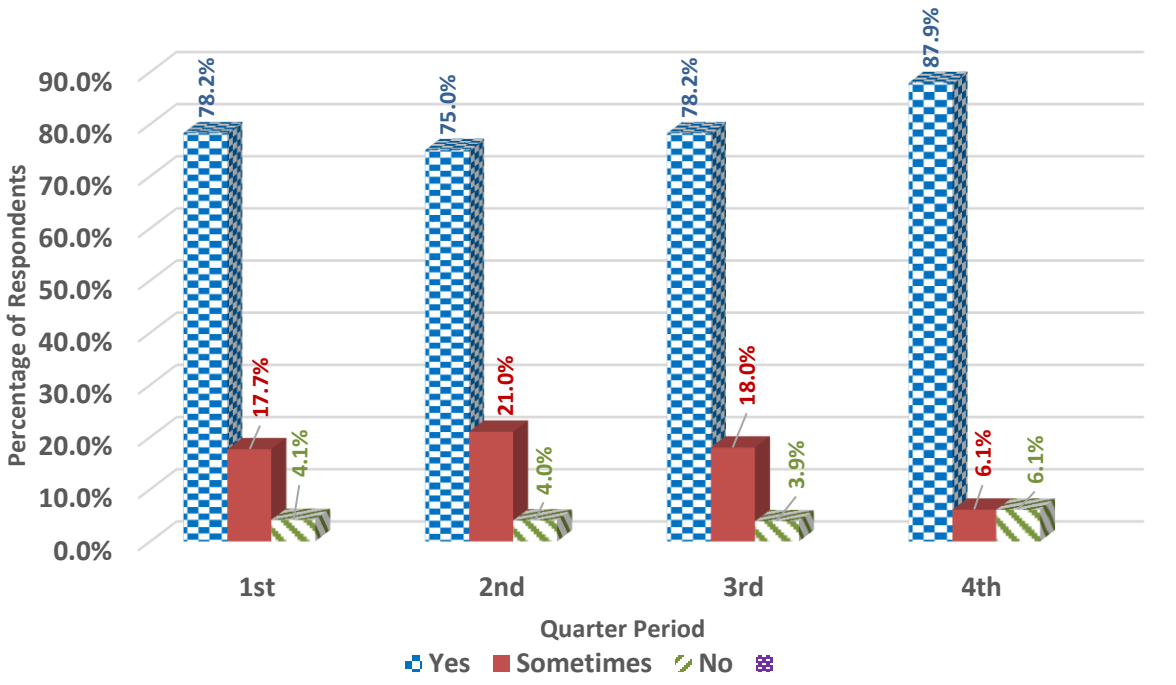


Figure 18
I Am An Active Participant In Some Of The Lakota Practices & Traditions.

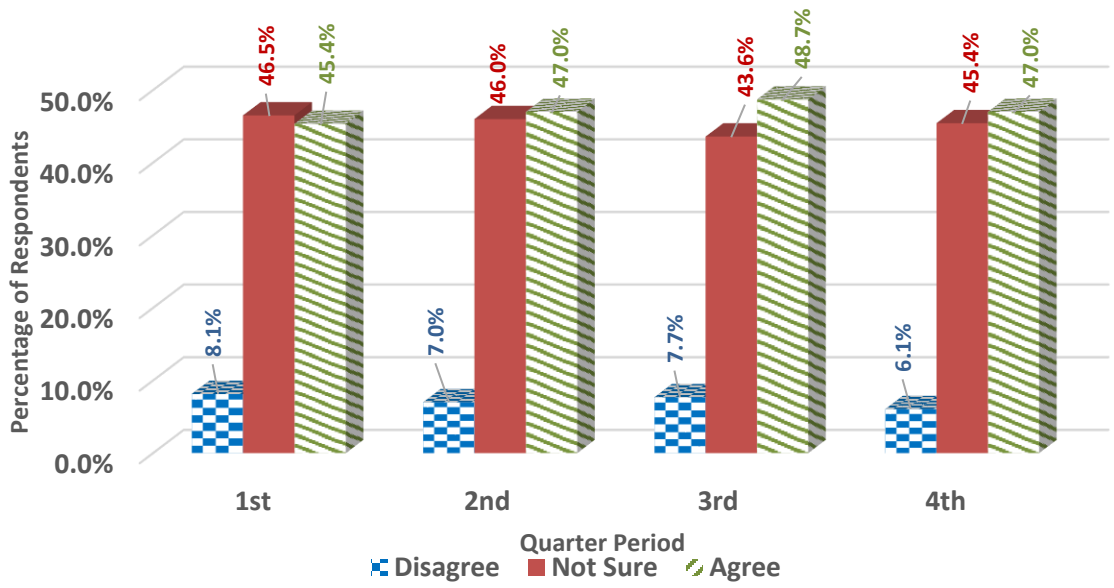
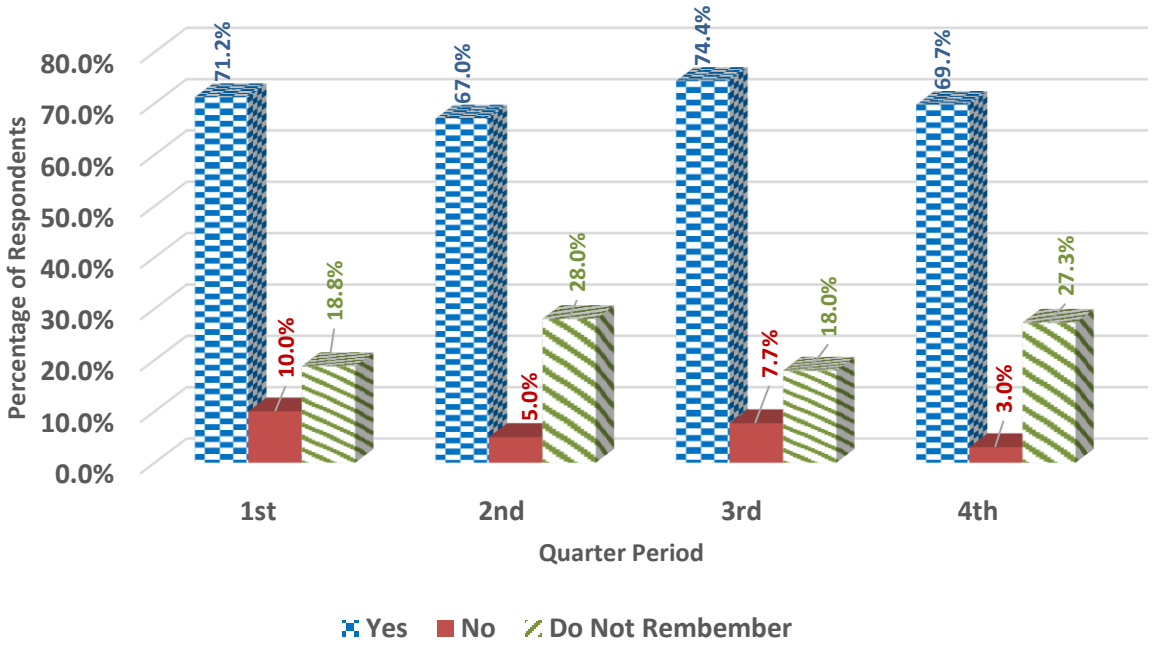


Figure 19 presents the percentage of respondents who remember anyone who talked to them about Lakota culture, traditions, or language. Overall, two-thirds of the respondents (67.0% to 74.4%) reported having someone talk them about their Lakota heritage. The change from 71.2% in the first quarter to a low of 69.7% in the third was not statistically significant at the 0.05 alpha level [Z = 0.171, p < 0.865]. The change had a small effect size of -0.218 [Hedge's g].

Figure 19
Someone Has Talked To Me About Lakota Culture and Traditions



One of the Lakota traditions and practices is the Vision Quest (*Hanblecheyapi*).[16] Students were asked if they knew anything about this particular practice. It was interesting to note that in first quarter (baseline) 53.8% were not sure about what the Vision Quest was as

[16] The Vision Quest is one of the seven major Lakota rites. Preparations and implementation of the rite involves a time of fasting, the guidance of a tribal Medicine Man and sometimes ingestion of natural entheogens; this quest is undertaken for the first time in the early teenage years.

compared to 78.8% in the fourth quarter. The change of 25.0% in the response rate was statistically significant at the 0.05 alpha level [Z = 2.662, p < 0.0078] and had a medium effect size [Hedge's g = 0.798]. (Figure 19)

Figure 20
The Vision Quest Is One Way For An Individual To Discover Exactly Who He/She Is Created To Be.

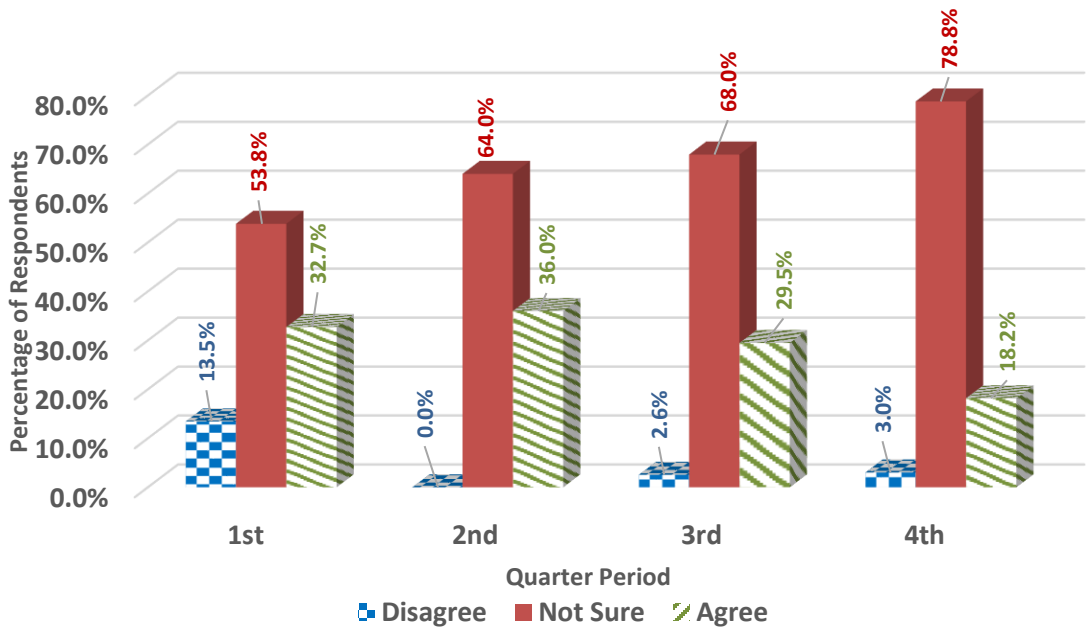
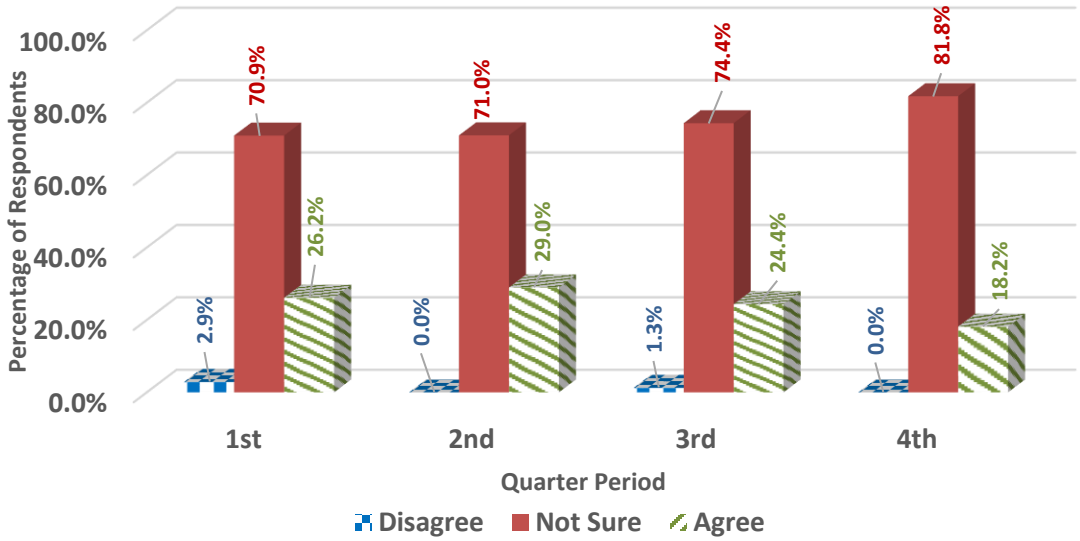


Figure 21 asked the participants if they recognized generosity (*wacantognaka*) as a Lakota value. In the first three-quarters of the program implementation over one-fourth of the respondents agreed with the statement, but three-fourths were not sure. The response rate change from 26.2% in the first quarter to 18.2% in the fourth quarter was not statistically significant at the 0.05 alpha level [Z = 0.973, p < 0.332] and had a medium effect size [Hedge's g = -0.319].

Figure 21
The Lakota Word For Generosity Is Wacantognaka.



Risk Behaviors

Although the Ateyapi Youth Engagement in Sports Program did not identify itself as a risk prevention program, it did set an objective to help students reduce risk behaviors and anti-social behaviors. Neison and Larsen (2006) showed that middle school youth that was not physically active or engaged in a high level of sedentary behavior were likely to participate in a wide range of risk behaviors (smoking, substance use, alcohol use, and other anti-social behaviors).[17] This study showed that adolescents in clusters characterized by skating and video gaming, high overall sports and sports participation, using neighborhood recreation centers, strict parental control of TV, reporting few activities overall, and being active in school were less likely to participate in a range of risky behaviors.

[17] Nelson, M. & Gordon-Larsen, P. (2006) Physical activity and sedentary behavior patterns are associated with selected adolescent health risk behaviors. *Pediatrics, 117* (4), 1281-1290. DOI: https://doi.org/10.1542/peds.2005-1692.

In Figures 22 and 23, the sixth-grade respondents reported not smoking or using alcohol throughout the year (1st Quarter to 4th Quarter). Over six percent (6.3%) of the seventh and eighth graders reported smoking in past 30 days in the 1st Quarter of their respective program year and 12.5% in the second quarter. In the 3rd and 4th Quarters the sixth and seventh graders reported no smoking while 2.6% of the eighth-graders reported smoking in the third 3rd Quarter.

In the 1st Quarter 5.8% of the seventh graders and 5.5% of the eighth graders reported using alcohol in the past 30 days. About 5% of the seventh and eighth graders reported using alcohol in the 2nd and 3rd Quarters. All respondents reported not drinking or using alcohol in the past 30 days in the 4th Quarter.

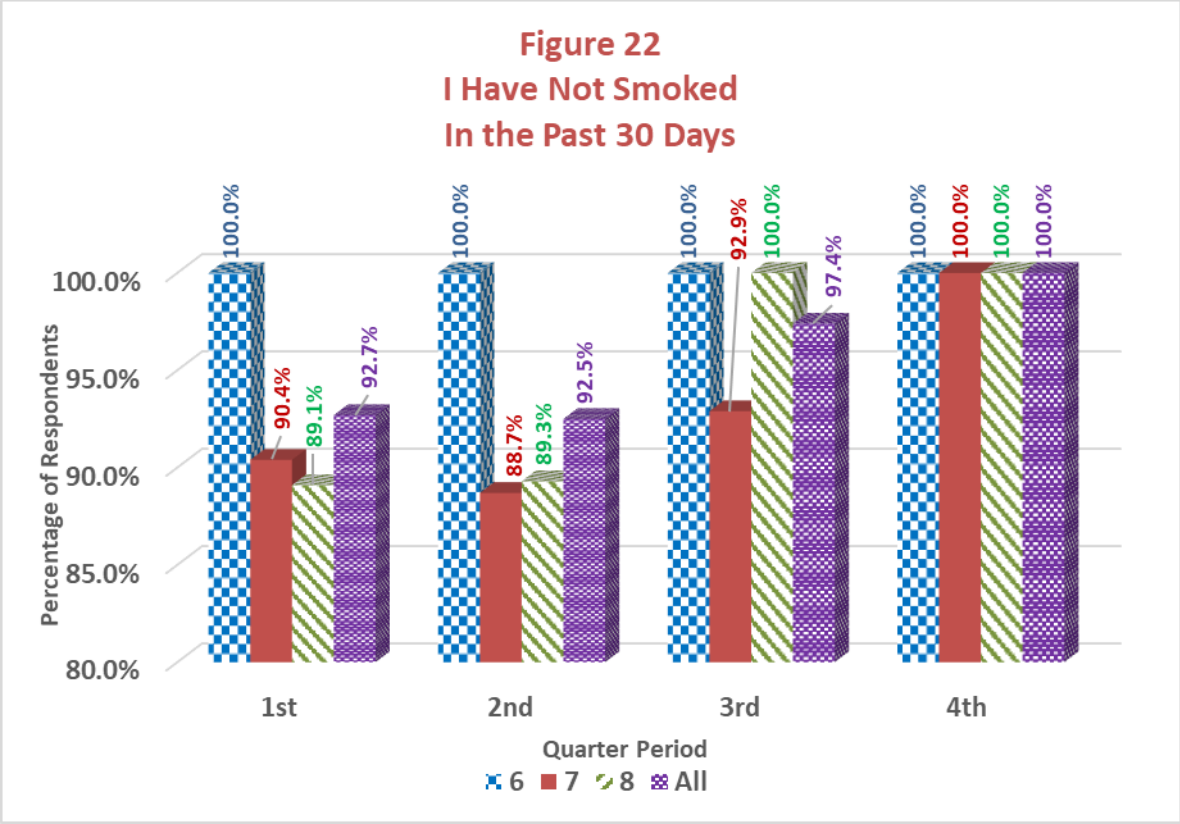


Figure 23
I Have Not Drank Any Alcoholic Products In the Past 30 Days

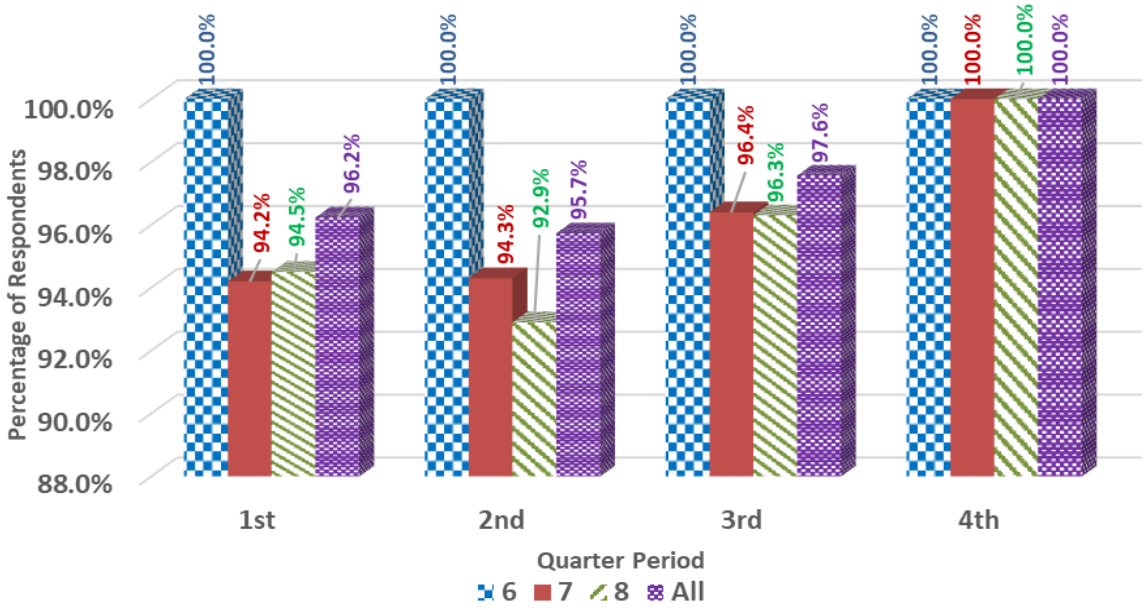


Figure 24
I Have Not Used Any Illegal Drugs In the Past 30 Days

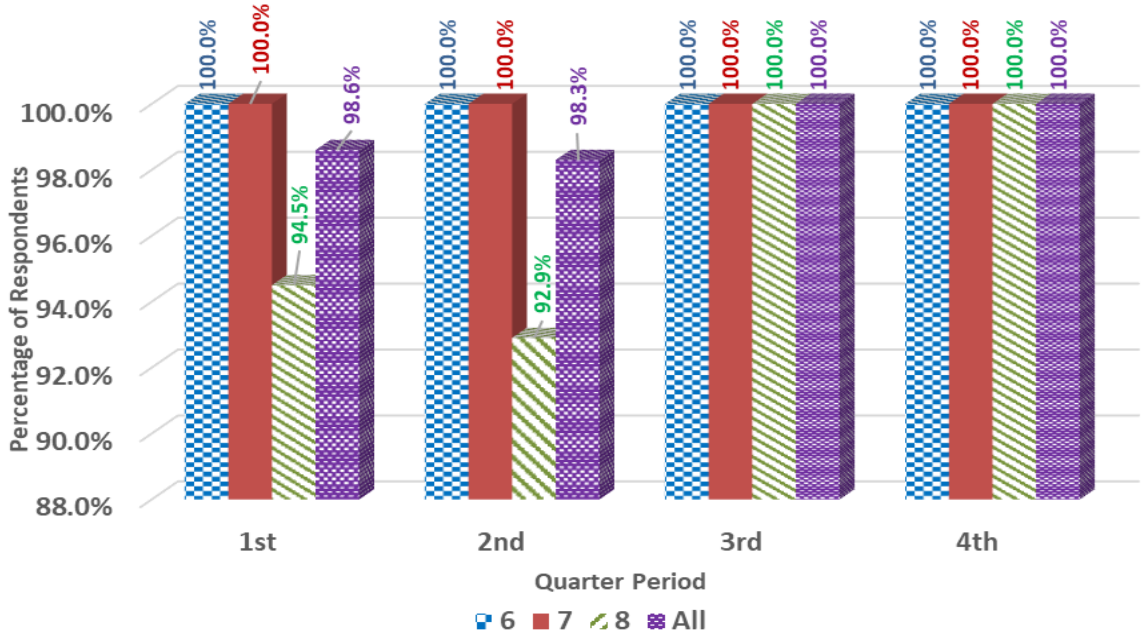
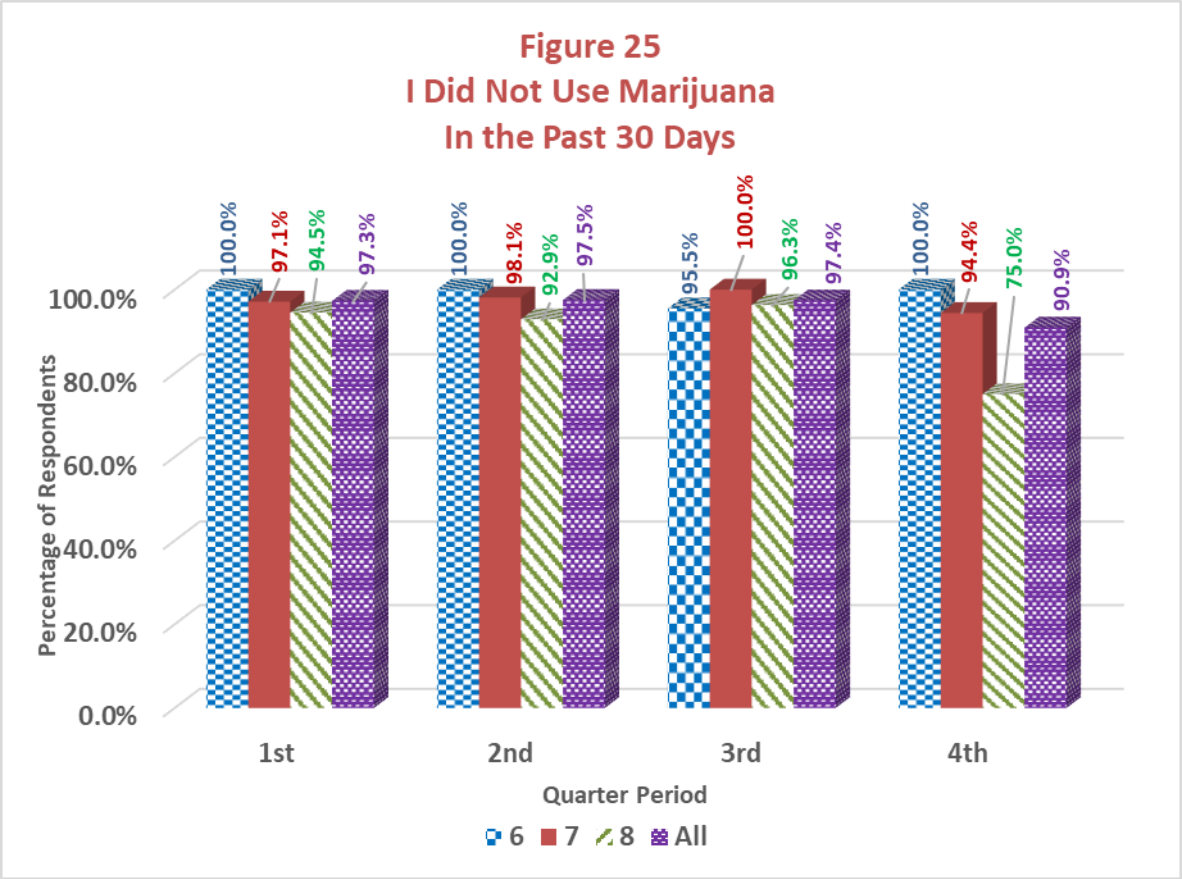


Figure 24 shows that 5.5% of the eighth graders reported using some form of illegal drugs in the past 30 days in the 1st and 7.1% used some form of illegal drugs in the 2nd Quarter. Otherwise, the sixth and seventh graders reported no use of drugs throughout the whole program year. In Figure 25, 2.9% to 5.6% of the seventh and 5.5% to 9.1% of the eighth-graders report using marijuana in during the program year. The sixth graders reported no use of marijuana for the whole program year.



Inhaling is commonly called "huffing" of chemical vapors to attain a mental "high" or euphoric effect. In Figure 26 5.5% of the eighth-graders reported Inhaling in the past 30 days in the 1st Quarter and 7.1% in the 2nd Quarter during the program year. The sixth and seventh graders reported no inhaling or huffing during the program.

Figure 26
I Have Inhaled Any Substances In the Past 30 Days

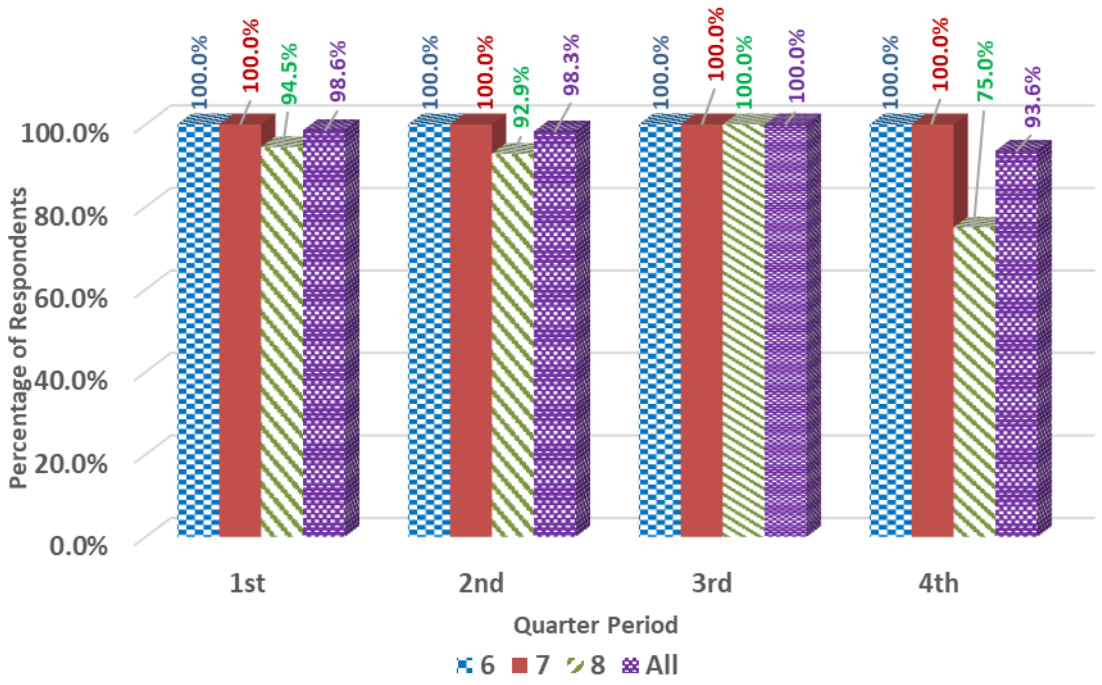
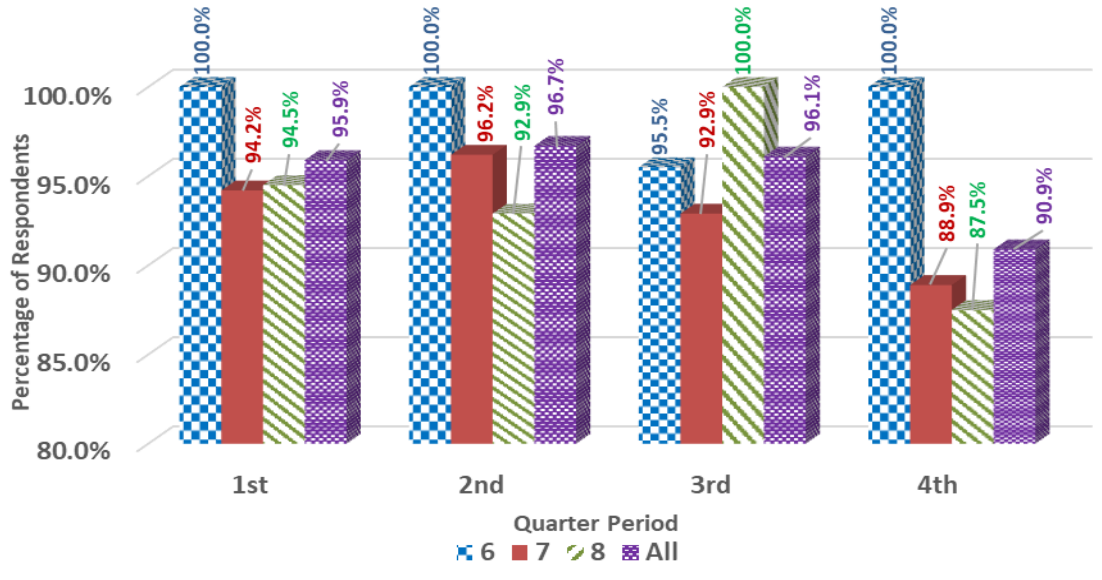


Figure 27
I Did Not Smoke e-Cigarettes (Vaping) In the Past 30 Days



In Figure 27 5.8% of the seventh graders and 5.5% of the eighth-graders reported vaping in the past 30 day in the 1st and 2nd Quarter of the program year. The seventh graders increased in their level of vaping to 11.1% in the 4th Quarter while the eight-graders increased their vaping rate to 12.%%. The sixth graders reported no vaping over the program year. While the participants in this program showed a very high rate of vaping, the social pressure to vape versus smoke cigarettes is high. Adolescent use of e-cigarettes and vaping products is at epidemic proportions in some middle schools, yet the adverse health effects are understudied, with almost no data on younger patients. The problem is sizable as youth start vaping at a younger and younger age. Recent estimates show that 9.6% of eighth-graders vape nicotine or THC (tetrahydrocannabinol, the main active ingredient of cannabis).[18]

Anti-social Behaviors

As noted in the risk behavior section in this report, students who are not physically active or who engage in sedentary behaviors (video games, screen time, etc.) are more likely to be involved in antisocial behaviors. Rutten et al. (2007) study "suggested that coaches who maintain good relationships with their athletes reduce antisocial behavior and expose youth to relatively high levels of sociomoral reasoning within the immediate context of sporting activities promote good prosocial behavior" to their participants.[19] Antisocial behaviors included fighting, cyberbullying, face-to-face bullying and other aggressive actions. It is the goal of this project to provide models, examples, and skills on how to interact with other people in a friendly and socially appropriate manner. Being part of a team and competing with others requires self-control and respect on all levels. Not only is it a quality of sportsmanship, but an important aspect of any healthy relationship with others – peers and adults.

Figure 28 shows the percentage of students who did not get into a fight with another person in the past 30 days. In the 1st and 2nd Quarters about 22% of the respondents reported

[18] Bandi, P. et al. (2020). Trends in E-Cigarette use by age group and combustible cigarette smoking histories, 2014–2018. *American Journal of Preventive Medicine*, 59(4). DOI: 10.1016/j.amepre.2020.07.026

[19] Rutten, E., Stams, G., Biesta, G. *et al.* (2007). The contribution of organized youth sport to antisocial and prosocial behavior in adolescent athletes. *J Youth Adolescence* **36,** 255–264). https://doi.org/10.1007/s10964-006-9085-y

getting into a fight in the past 30 days. By the 4th Quarter 18.2% of the respondents reported getting into a fight in the past 30 days. The 8th graders reported the highest rates of getting into fights while the 6th graders had the lowest rate. The overall change of +2.7% from the 1st Quarter to the 4th Quarter in not getting into a fight in the past 30 days was not statistically significant at 0.05 alpha level [Z = 0.358, p < 0.719]. This change had a small effect size [Hedge's g = 0.198].

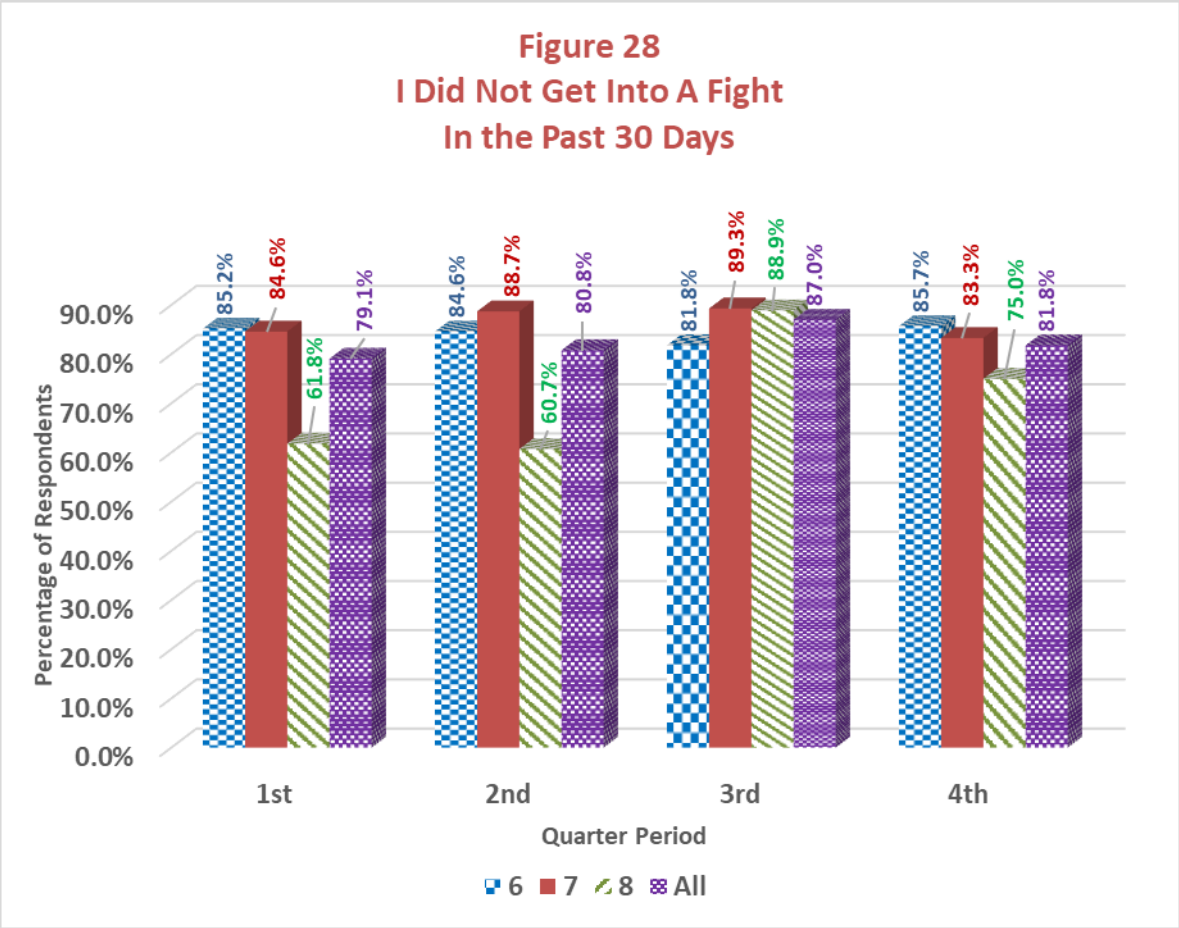


Figure 29 shows that a common form of antisocial behavior is bullying. The participants were asked if they were bullied in the past 30 days. For each quarter at least one-fourth of the respondents reported being bullied in the past 30 days. Overall, three-fourths of the respondents report not being bullied face-to-face. The trend varied for each grade level. The sixth graders improved in non-bullying from 72.1% in the 1st Quarter to 71.4% in the 4th Quarter. The seventh graders increased in non-bullying from 78.8% in the 1st Quarter to 100%

in the 4th Quarter. The eighth graders increased in non-bullying from 60.0% in the 1st Quarter to 75.0% in the 4th Quarter. The overall 15.6% positive change from 1st Quarter to 4th Quarter was statistically significant at the 0.10 alpha level [Z = 1.913, p < 0.0561].

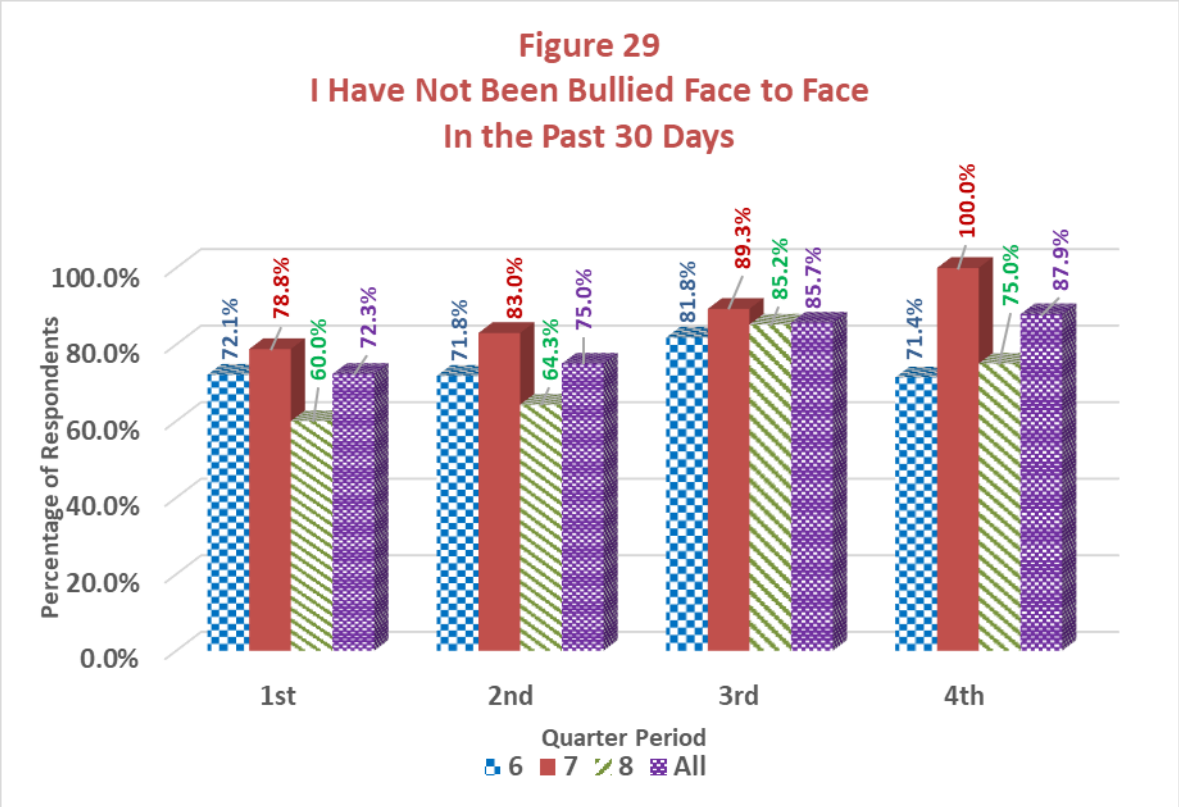
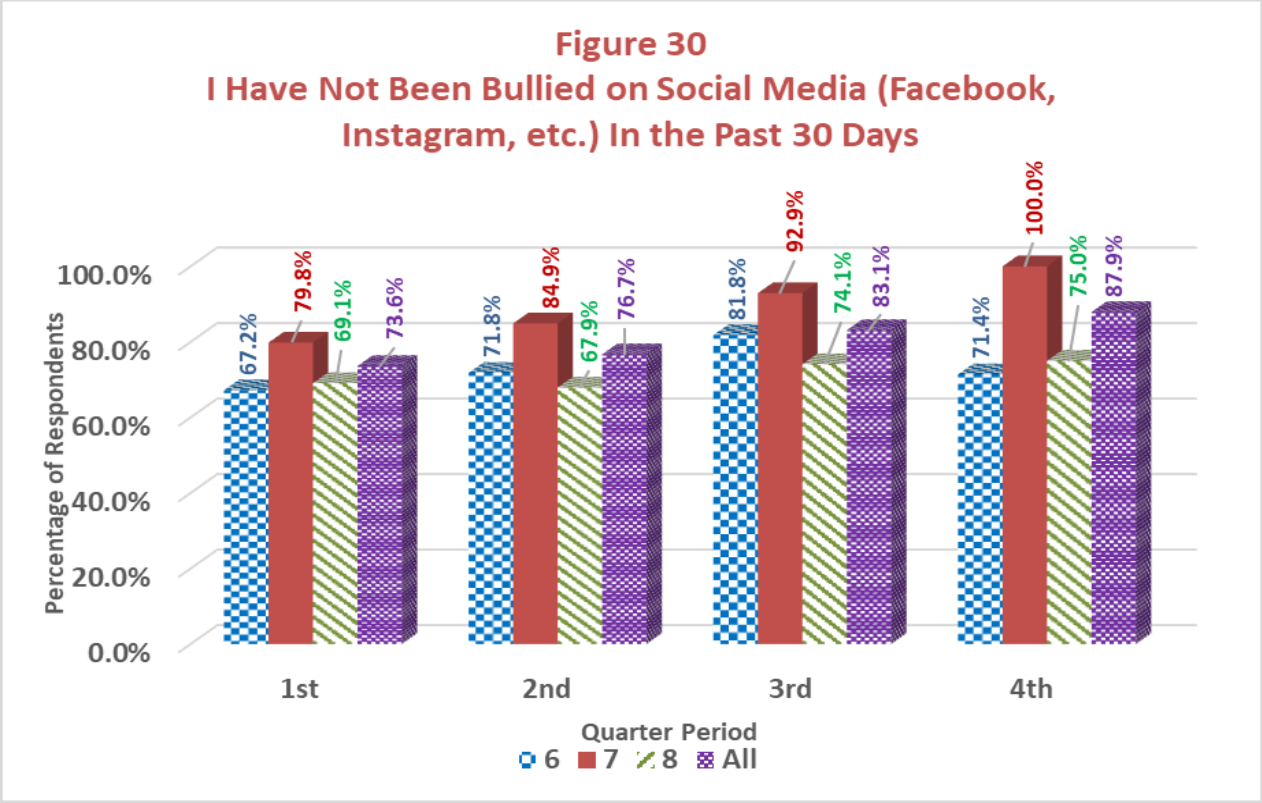


Figure 30 shows the percentage rate of respondents who were not cyberbullied during the year. Overall, for each quarter at least two-thirds of the participants reported not being cyberbullied in the past 30 days. The sixth graders improved in non-cyber bullying from 67.2% in the 1st Quarter to 71.4% in the 4th Quarter. The seventh graders increased in non-cyber bullying from 79.8% in the 1st Quarter to 100% in the 4th Quarter. The eighth-graders increased in non-cyber bullying from 69.1% in the 1st Quarter to 75.0% in the 4th Quarter. The overall +14.3% change from 1st Quarter to 4th Quarter was statistically significant at the 0.10 alpha level [Z = 1.780, p < 0.0751].



Participant Feedback

Table 4 provides feedback from the participants for each quarter of participation in the program. There were five questions regarding the program. For each question the majority of the participants agreed with the statements presented in the assessment instrument.

Overall, 82.6% of the respondents enjoyed the Ateyapi YES Program activities. The highest positive response rate was in the fourth quarter, which was in late spring and early summer. When asked if they wish the program was longer or if they could spend more time enjoying the program overall there was an 78.1% positive response rate. Normally, the participants spend about 2 to 3 hours per day in the program.

Almost all of the participants found the coaches very helpful (91.6%). This factor and the enjoyment of the activities provided an 85.3% response rate that they would recommend the program to their friend with an 85.3% retention or return rate in the program.

Table 4 Participant Feedback							
	Quarter	Agree		No Opinion		Disagree	
		n	%	n	%	n	%
I have enjoyed all of the YES activities.	1	47	85.5	7	12.7	1	1.8
	2	80	80.0	15	15.0	5	5.0
	3	63	81.2	12	15.6	2	2.6
	4	29	88.9	3	9.1	1	3.0
	Total	**219**	**82.6**	**37**	**14.0**	**9**	**3.4**
I have the coach to be very helpful.	1	53	98.2	1	1.8	0	0
	2	90	90.9	6	6.1	3	3.0
	3	68	89.5	6	7.9	2	2.6
	4	29	88.9	3	9.1	1	3.0
	Total	**240**	**91.6**	**16**	**6.1**	**6**	**2.3**
I wish the program was longer.	1	46	83.6	9	16.4	0	0
	2	73	73.0	23	23.0	4	4.0
	3	62	80.5	12	15.6	3	3.9
	4	26	78.8	5	15.2	2	6.1
	Total	**207**	**78.1**	**49**	**18.5**	**9**	**3.4**
I would recommend the YES program to my friends.	1	51	92.7	4	7.3	0	0
	2	85	85.0	11	11.0	4	4.0
	3	59	76.6	14	18.2	4	5.2
	4	31	93.9	2	6.1	0	0
	Total	**226**	**85.3**	**31**	**11.7**	**8**	**3.0**
I will continue to participate in the program for as long as it is possible.	1	49	89.1	6	10.9	0	0
	2	83	83.0	14	14.0	3	3.0
	3	63	81.8	11	14.3	3	3.9
	4	31	93.9	2	3.1	0	0
	Total	**226**	**85.3**	**33**	**12.6**	**6**	**2.3**

Conclusion

In the first quarter of program implementation first year, the majority of the time was spent in recruiting and training of the coaches, acquiring Institution Review Board approval of the evaluation research strategies, identification of an off-school site gymnasium facility, and development of data collection instruments and protocols. As soon as the coaches were in place there were efforts to recruit participants into the program after the IRB approval at the end of November 2019. Recruitment of the majority of the intervention group was in place by the end of the second quarter of the first year of implementation. Participants were required to complete a baseline Ateyapi YES Program assessment online and to complete the PLAY assessment as part of the data collection protocol whenever they completed all the required intake forms and had approval from their parents to participate in the program.

In the third and fourth quarters (April to September) of the first year the Coronavirus Pandemic was identified and thus social distancing, school and gym closures, and modifications on how to serve and reach the participants were put into action. This resulted in the inability to recruit a comparison group which was planned for the third and fourth quarters of the program. It also limited the amount of face-to-face contact and participation in any sports program by the intervention group. With these limitations, the coaches were able to meet with the student at their homes at least two times per week and provide physical education and nutritional education using social media and ZOOM. There was some success with this approach, but outreach to whole group was scaled back because of parental concerns, participant dropout, and lack of recruitment of new participants. In the third and fourth quarters of the second year, many of the restrictions were reduced and full implementation was possible.

The results of this study showed some success and some ability to address the research questions outlined at the beginning of this report. Many of the questions had a comparison group requirement, but at best the intervention group data was collected and showed some good results. The effect sizes and statistical power were good in the majority of the quarters but declined in the third and fourth quarters of the first year of implementation which was due to the reduced sample sizes (membership in the intervention group).

Here are some key findings linked to specific research questions.

RQ 1.1: What percentage of Ateyapi YES youth participating in physical activities that includes one or more sports will be statistically significant different from a matched comparison group at the 0.05 alpha level over a one-year period as measured by attendance records?

There were three sports identified by the program – Lacrosse, Crossfit, and Dance. As posted in the attendance records the coaches were able to recruit 65% of the participants into one or more of the sports. Due to the Coronavirus Pandemic Restrictions (social distancing and no large group activities) full implementation of the sports was limited only to learning the rules, structure, and fundamental attributes for each sport. There was no comparison group was recruited or formed for this study due to the Coronavirus Pandemic Restrictions imposed by the school district.

RQ 1.2 Will the participants of Ateyapi YES Program who engage in 60 minutes or more daily of moderate or vigorous activity per week for six months be statistically significant different from baseline at the 0.05 alpha level over a one-year period as measured by attendance records and self-reporting surveys?

As self-reported in the quarterly assessments and by the attendance records, 55.7% of the participants reported being moderately active for at least 60 minutes three or more days at baseline. After 6 or more months of participating in the program, 57.6% reported being moderately active for at least 60 minutes per day. Moderately activity including walking, cycling, and other low stressful physical activities. [$Z = 0.225$, $p < 0.818$]

At baseline, 62.9% of the participants reported spending at least 60 or more minutes in intensive physical activities at least four days per week. After 6 or more months of program participation 65.9% reporting at least 60 or more minutes of intensive physical activity per day. Intensive physical activity resulted in sweating, high cardiovascular response, and stress on the muscular system. [$Z = 0.366$, $p < 0.771$]

RQ 1.3 Will the participants of Ateyapi YES Program meeting the Physical Activity Guidelines for Americans standard for children and youth will show a statistically significant increase in their mean score on the Physical Literacy Assessment for Youth (PLAY) from pre to post-assessment at the 0.05 alpha level?

For the run there and back task there was a statistically significant mean score improvement of 18.58 from baseline to the sixth-month post-assessment at the 0.01 alpha level [$t = 10.41$, $p < 0.001$]. For the overhand throw task, there was a statistically significant positive mean score change of 18.43 from baseline to the sixth-month post-assessment at the 0.1 alpha level [$t = 9.91$, $p < 0.001$]. For the hop requirement, there was a positive mean score change of 19.67 from baseline to the sixth-month post-

assessment which was statistically significant at the 0.01 alpha level [t = 12.03, p < 0.001]. For the kickball task, there was a mean score improvement of 21.14 from baseline to the post-assessment which was statistically significant at the 0.01 alpha level [t = 12.53, p < 0.001]. For the balance walk task there was a mean score improvement from baseline to the sixth-month post-assessment of 18.33 which was statistically significant at the 0.01 alpha level [t = 12.99, p < 0.001].

RQ 1.4 Will the Ateyapi YES Program youth report a statistically significant change in the amount of fresh fruits and dark green, orange, or red vegetables per day from pre to post intervention over a one-year period at the 0.05 alpha level?

In the beginning of the program (baseline) 12.2% of respondents eat no fruit per day, but by the fourth quarter 6.1% of the respondents eat no fruit per day. Therefore, there was a 6.1% increase in the consumption of at least one or more fruit per day which was not statistically significant at the 0.05 alpha level [Z = 0.744, p < 0.459].

In the beginning of the program (baseline) 20.0% of respondents eat no vegetables per day, but by the fourth quarter, 9.1% of the respondents eat no vegetables per day. This translated into a 10.9% increase in the consumption of at least one or more vegetables per day which was not statistically significant at the 0.05 alpha level [Z = 1.085, p < 0.276].

RQ 1.5 Will the Ateyapi YES Program youth report a seven-day per week consumption of fresh fruits and dark green, orange, or red vegetables daily that differ significantly from baseline to the sixth-month post-assessment at the 0.05 alpha level?

At baseline, 87.3% of the respondents reported eating at least one fresh fruit daily. At sixth-month post-intervention 87.5% of the respondents reported eating at least one fresh fruit daily within a week. [Z = 0.0271, p < 0.976]

At baseline, 76.4% of the respondents reported eating at least one green, orange or red vegetable daily. At the sixth-month post-intervention 81.2% of the respondents reported eating at least one vegetable per day throughout the week. [Z = 0.523, p < 0.603]

RQ 1.6 Will the Ateyapi YES Program middle school participants report a statistically significant change in the number of days per week that they consume sugar sweetened beverages as compared to the matched comparison group at the 0.05 alpha level?

At baseline 38.2% of respondents drank no pop, but in the fourth quarter 26.3% of the respondents reported drinking no sweetened beverages (e.g., pop). There was no statistically significant increase in the consumption of sweetened beverages from

baseline to post-intervention of 11.9% at the 0.05 alpha level [Z = 0.937, p < 0.347].

RQ 1.7 Will the Ateyapi YES Program middle school participants report a statistically significant decrease in the level of participation in anti-social and risk behaviors each year as compared to the matched comparison group at the 0.05 alpha level?

There were three major anti-social behaviors reported in this study – fighting, bullying, and cyberbullying. At baseline 79.1% of the respondents reported not getting into a fight with another person in the past 30 days. This increased to 87.0% in the 3rd Quarter post-intervention assessment. The +7.9% change was not statistically significant at the 0.05 alpha level [Z = 1.41, p < 0.159].

At baseline 72.3% of the respondents reported not being bullied face to face in the past 30 days. This increased to 85.7% in the 3rd Quarter post-intervention assessment. The 13.4% positive change was statistically significant at the 0.05 alpha level [Z = 2.15, p < 0.0316].

At baseline 73.6% of the respondents reported not being cyberbullied in the past 30 days. This increased to 83.1% in the 3rd Quarter post-intervention assessment. The 9.5% increase was not statistically significant at the 0.05 alpha level [Z = 1.51, p < 0.131].

The sixth graders reported being abstinent from all chemical substances (tobacco, alcohol, drugs, marijuana, inhalants, and e-cigarettes) during the whole year of program implementation from pre to post-intervention. At baseline 90.4% of the seventh graders and 89.1% of the eighth-graders reported not smoking or using any tobacco products. At the 3rd Quarter post-intervention, 100% of the respondents in the sixth and eighth grades reported not using any tobacco products in the past 30 days. The overall change was not statistically significant at the 0.05 alpha level [Z = 1.461, p < 0.144].

At baseline 94.2% of the seventh graders and 94.5% of the eighth-graders reported not drinking alcohol or using any alcoholic products. At the 3rd Quarter post-intervention, 96.4% of the seventh graders and 96.3% of the eighth-graders reported not drinking any alcohol in the past 30 days. The sixth graders reported not drinking at both the baseline and 3rd Quarter assessments. The overall change was not statistically significant at the 0.05 alpha level [Z = 1.096, p < 0.271].

At baseline 94.5% of the eighth-graders reported not using any illegal drugs while 100% of the sixth and seventh graders reported not using any illegal drugs in the past 30 days. At post intervention 100% of the respondents in all three grade levels reported not using any illegal drugs in the past 30 days. The overall change was not statistically significant at the 0.05 alpha level [Z = 0.267, p < 0.787].

At baseline 97.1% of the seventh graders and 94.5% of the eighth-graders reported using marijuana in the past 30 days. At the 3rd Quarter post-intervention 100% of the seventh graders, 95.5% of the sixth graders, and 96.3% of the eighth-graders reported not using marijuana in the past 30 days. The overall change was not statistically significant at the 0.05 alpha level [Z = 0.0462, p < 0.960].

At baseline 100% of the sixth and seventh graders and 94.5% of the eighth graders reported inhaling chemical substances in the past 30 days. At post-intervention 100% of all the respondents in the three grade levels reported not huffing or inhaling any chemical substances in the past 30 days. The overall change was not statistically significant at the 0.05 alpha level [Z = 0.957, p < 0.337].

At baseline 94.2% of the seventh graders and 94.5% of the eighth-graders reported vaping in the past 30 days. At the 3rd Quarter post intervention 100% of the eight graders, 95.5% of the sixth graders, and 92.9% of the seventh graders reported not vaping in the past 30 days. The overall change was not statistically significant at the 0.05 alpha level [Z = 0.0751, p < 0.936].

RQ 2.1 What number and percentage of family and community partners will report a commitment to continued involvement and support of the Ateyapi YES Project and the participating youth by providing in-kind resources and consultation?

The Ateyapi Youth Engagement in Sports Program has five major partners that serve the community and at least 75% of the families. These partners include the Rapid City School District, South Dakota State University Department of Nursing, Rapid Skillz Sports Complex, Indian Health Service, and Black Hills State University.

RQ 2.2 What number and percentage American Indian families (parents or guardians) will report satisfaction with the impact of Ateyapi YES on their child as measured by the Ateyapi Parent and Community Survey?

There were 217 parents who completed all the required applications, consent forms, and permission forms. With a 42% response rate of the Parent Ateyapi YES Questionnaire, 92% reported satisfaction with program and its impact and influence on their child.

RQ 3.1 How many sports and participants are made available to the middle school students which have been identified as historically important to American Indians youth?

The Rapid City Middle Schools offer the following sports to all of students: football, cross-country, volleyball, basketball, wrestling, and track. The data for the exact number of students participating in each sport by middle was not available at this report time due to the limitations imposed by Coronavirus restrictions of group activities. Although is a percentage of American Indian youth that participate in each of the sports'

offerings, many are not able to participate because of cost, disabilities, and other family responsibilities.

Rapid City Middle Schools provide a supervised program of athletic activity for sixth graders. It takes into consideration their level of physical maturation and interest in athletic or interschool participation. There is an effort to make the sports offerings appropriate so that this program be of an intramural nature, except for the individual sports of cross-country, track and wrestling which might inter-school or interscholastic. An effort will be made to provide interschool play days for volleyball and basketball.

Rapid City Middle Schools provide a supervised program of athletic activity for seventh and eighth-graders. Just as with the sixth graders it takes into consideration their level of physical maturation and interest in athletic participation This program is an interschool activity except for the individual sports of cross-country, track and wrestling which would be interscholastic.

RQ 3.2 How many staff members completed training aligned with SHAPE America's National Standards for Sport Coaching and the CDC Heads Up to Youth Sports Concussion Training or equivalent?

All of the staff members completed coach training provided by the Black Hill State University Department of Physical Education. The training was aligned with National Standards for Sport Coaching. As part of the training the lessons included CDC Heads Up information, reporting protocol, and first aid strategies to address any major type of athletic injuries.

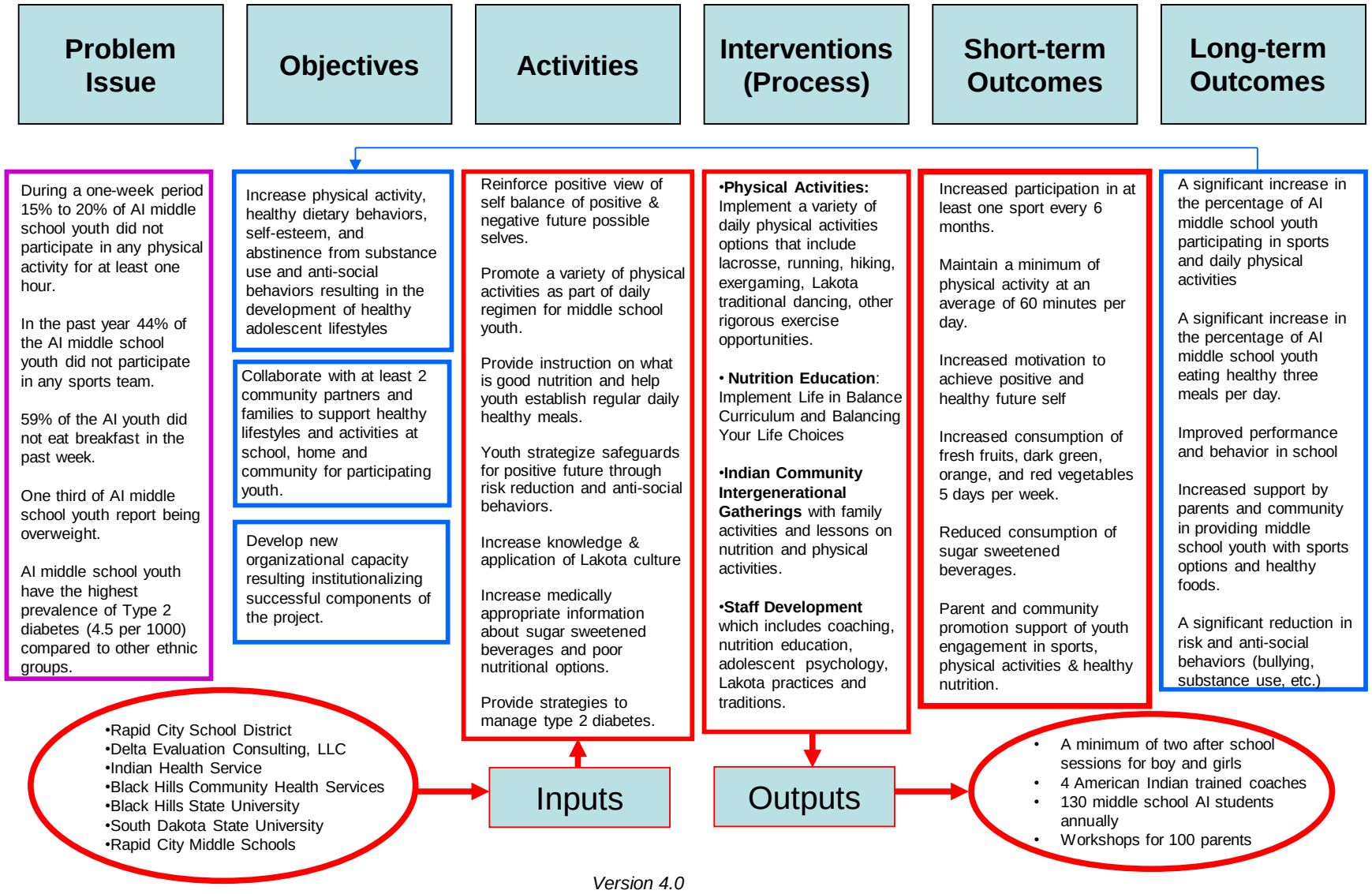
RQ 3.3 How many RAI staff serving the middle school students (Grade 6, 7, & 8) completed at least 24 hours of training to facilitate on-going positive organization-wide youth development competencies, especially to support American Indian cultural and other positive values, promote social competencies and positive identity among program youth and serve as a role model of good health through exercise and appropriate nutrition?

As part of Rural America Initiatives' staff professional development plan and expectations, all of the staff serving the middle school students completed a minimum of 24 hours in American Indian cultural, historical, and language training. It was supplemented with training on how to be an effective mentor and promote positive adolescent self-image development. The training incorporated early adolescent psychology for youth experiencing puberty and socialization challenges.

Appendix A

Logic Model

Ateyapi Youth Engagement In Sports (YES) Project
Logic Model



Version 4.0