Findings from an Innovative Teen Pregnancy Prevention Program

Evaluation of

Alaska Promoting Health Among Teens, Comprehensive Abstinence and Safer Sex (AKPHAT)
in
Alaska

Final Impact Report for

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EVALUATION OF ALASKA PROMOTING HEALTH AMONG TEENS, COMPREHENSIVE ABSTINENCE AND SAFER SEX (AKPHAT) IN ALASKA: FINDINGS FROM AN INNOVATIVE TEEN PREGNANCY PREVENTION PROGRAM

I. Introduction

A. Introduction and study overview

The President's budget for Fiscal Year (FY) 2010 included a new Teenage Pregnancy Prevention (TPP) initiative to address high teen pregnancy rates by replicating evidence-based models (Tier 1) and producing new evidence by developing, refining, and testing innovative strategies (Tier 2). TPP target populations include at-risk, vulnerable, and culturally underrepresented youth populations, including youth in foster care, homeless youth, youth with HIV/AIDS, pregnant women or mothers who are under 21 years of age and their partners, and youth residing in areas with high birth rates for youth.

Alaska Department of Health and Social Services (DHSS) saw this funding stream as an opportunity to address Alaska's combination of high teen pregnancy rates, high sexually transmitted infection (STI) rates, and lack of access to services. The birth rate for teens 15-19 in Alaska was 42.7 per 1,000 in 2008 (prior to the start of the program) (State of Alaska 2015). Within the state, rates were as high as 109.2 per 1,000 for Alaska Native youth in some rural areas (State of Alaska 2015). These teen birth rates for Alaska compare to 40.2 per 1,000 for the U.S. in the same year (Kost and Henshaw 2012). Alaska ranked first or second in the country in chlamydia rates from 2000-2010 (CDC 2015). Alaska has minimal health education standards, requiring only one credit for health or physical education as a high school graduation requirement (Alaska State Statute 4 AAC 06.075). In remote isolated rural settings, with very small communities (most with populations of a few hundred people), health care workers are related to most community members and fears about confidentiality keep most teens from accessing information and services locally.

Alaska was one of 19 grantees to receive Tier 2 funding from the U.S. Department of Health and Human Services (HHS), Office of Adolescent Health (OAH), to implement an adaptation of Promoting Health Among Teens (PHAT), an evidence-based TPP program (HHS 2015). The Alaska version of the program, called AKPHAT, was adapted to address the unique needs of Alaska.

The goal of AKPHAT was to provide programming in Anchorage and rural areas across the south-central and western parts of the state. AKPHAT in Anchorage reached local youth, as well as many who migrate from rural Alaska and often end up homeless. Programming in rural areas provided services directly where it is needed most. Statewide, the program targeted detention facilities, non-traditional schools, foster care, and mental health service providers. AKPHAT programming took place after school, during holidays, and on weekends. It was delivered in shelter facilities, schools, mental health facilities, community meeting rooms, and conference rooms of non-profit partners.

B. Primary research questions

This report assesses the impact of AKPHAT on measures of sexual activity and sexual risk behaviors. The primary research questions are:

What is the impact of AKPHAT compared to no program on recent sexual intercourse six months after the end of the program?

What is the impact of AKPHAT compared to no program on the recent use of condoms during sexual intercourse six months after the end of the program?

C. Secondary research questions

The secondary research questions focus on the effects of attending the two modules deemed critical by PHAT program developers. The developers assert that attending Modules 10 and 12, which focus on condom use and role-playing, respectively, is essential for behavior to change. The secondary research questions are:

What is the impact of AKPHAT on recent sexual intercourse six months after the end of the program on youth who attended modules 10 and 12 compared to youth who did not attend these two modules (i.e., youth in the control group and youth assigned to AKPHAT who did not attend both modules 10 and 12)?

What is the impact of AKPHAT on the recent use of condoms during sexual intercourse six months after the end of the program on youth who attended modules 10 and 12 compared to youth who did not attend these two modules?

II. Program and control programming

A. Description of program as intended

AKPHAT is the State of Alaska version of the evidence-based program PHAT Comprehensive. PHAT Comprehensive, in turn, is a combination of two existing evidence-based programs: Making Proud Choices!, a safer sex intervention, and PHAT - Abstinence-Only, an abstinence intervention.[1] AKPHAT contains 12 one-hour modules. According to developers, delivery of all 12 modules may be as intensive as over two days or spread out over up to three weeks. Modules teach safer sex and abstinence and include information about STIs, HIV, risky sexual behavior, birth control, and pregnancy. According to developers, attending modules 10 and 12 is essential for behavioral change. Module 10 teaches condom use skills and was designed to use a penis model for demonstration and practice. Module 12 involves role-plays, which allow youth to practice the communication and negotiation skills they learned in the other modules.

Tier 2 funding required testing a major adaptation to the evidence-based program. AKPHAT made several adaptations to PHAT:

[1] Initially, Making Proud Choices! was selected for implementation. However, in April 2011, then-governor Sean Parnell suspended work funded under this cooperative agreement and required an abstinence-primary program to be used instead.

The first was to use peer-educators, rather than adult facilitators, to deliver the program. The four implementing non-profits sought true peers of program participants, ages 16 to 21, and provided training developed by Select Media. The peer educators worked in teams of two to deliver the curriculum to groups of 4 to 10. Adult supervisors kept attendance, timed and monitored module completion, and provided support in case of behavioral issues.

The second adaptation was to implement AKPHAT with rural and at-risk Alaska youth, many of whom are Alaska Native people. PHAT and Making Proud Choices! were originally tested with urban African-American youth in middle schools.

The third adaptation was to implement with older youth. PHAT and Making Proud Choices! were originally designed for and implemented with 11- to 13-year-olds. Because teen pregnancy and STI rates are highest in Alaska among older teens, and program developers noted that PHAT was effective with older teens, Alaska initially identified 11- to 19-year-olds as the target age group. However, the governor ultimately restricted program participation to youth ages 14 years and older.

Curriculum-level adaptations included (1) use of talking circles and talking sticks, and (2) modifications to the condom demonstration module. A talking circle is a Native American ritual used to discuss important issues. Participants sit in a circle to avoid hierarchy. A talking stick is a wooden staff used to identify the speaker and help ensure that everyone is allowed a chance to participate. Only the person with the talking stick may speak, and when done, that person passes the talking stick to the left. AKPHAT also substituted the use of fingers in place of a penis model for the condom demonstration in module 10.

B. Description of counterfactual condition

No program was provided for youth in the control group. Youth in the control group received whatever services were available to them through school or the community.

III. Study design

A. Sample recruitment

Target population. AKPHAT targeted all youth ages 14 and older served by one of four non-profit groups. Alaska Youth Advocates serves homeless and at-risk youth in Anchorage. Cook Inlet Tribal Council serves all Alaska Native youth in Southcentral Alaska and is one of the largest service providers in the state for Alaska Native people.[2] Kachemak Bay Family Planning clinic serves the youth of Homer, Alaska and rural communities on the Kenai Peninsula. Tundra Women's Coalition serves youth (nearly all are Alaska Native peoples) in Bethel and across rural western Alaska. Non-profit staff members recruited using youth outreach workers, who are key nodes in the local at-risk teen population. Non-profit administrators recruited by providing information to leaders of alternative schools, mental health organizations,

[2] Southcentral Foundation, a tribal health organization representing study participants in Anchorage and southcentral Alaska and with whom we have signed a research agreement, requested that publications use 'Alaska Native people' in lieu of 'Alaska Natives'. 'Alaska Native' is a U.S. Census recognized racial category. However, 'Native' has historically unfavorable connotations in Alaska.

Alaska Native tribal organizations, and other community organizations. All non-profits also displayed posters and notifications in local businesses, alternative schools, and mental health and community centers.

Sample formation. Youth recruited through the four non-profits became participants in the evaluation when they and a parent or guardian (in the case of youth under 18) returned signed consent/assent forms, or provided witnessed consent over the telephone. The program was delivered to youth in cohorts, which were defined as the group of youth who were randomized on the same date at the same site. Because AKPHAT targeted at-risk and rural youth who live in small, widely dispersed communities and program implementation was divided among four non-profits statewide, AKPHAT was delivered to 31 cohorts, each comprising 4-10 youth.

Consent process. The consent process was the same for treatment and control groups (it took place before randomization) and was uniform across all non-profits. The process was thoroughly reviewed and refined by the University of Alaska Institutional Research Board (IRB), Alaska Area (Indian Health Service) IRB, and Southcentral Foundation and Yukon Kuskokwim Health Corporation (both tribal health organizations). No incentives were provided for consent or assent. Consent and assent forms were provided to youth and parents or guardians prior to program implementation (as a hard copy and/or via email). Parental consent was obtained in two ways: (1) by returning signed forms, or (2) a member of the program or evaluation staff and a second witness called the parent or guardian, checked that they have received the form, answered any questions from the parent or guardian, and recorded the consent or non-consent.

B. Research design

This study is a randomized control trial with individual-level random assignment within each cohort. The evaluation team conducted randomizations. Youth who provided proof of consent were eligible to be randomized. Randomization occurred while youth took the baseline survey. For each cohort, baseline surveys were administered to the entire group at once.

The randomization method was revised after the first year of implementation. At the beginning of the project, as youth submitted consent forms, a member of the evaluation team entered their names into a Microsoft Excel spreadsheet. The Excel random number function (rand) assigned a random number between 0 and 1 to each person. Youth with random numbers less than 0.5 were assigned to AKPHAT. Youth with random numbers greater than or equal to 0.5 were assigned to the control group. Because cohorts were usually small, assignment of random numbers was repeated until half (or half plus 1 in the case of an odd number of youth in a cohort) were assigned to treatment. This process was amended starting July 25, 2013, because continued assignment of the "extra" person to treatment was creating a treatment sample that was more than half of the total. The process, as revised, was used for cohorts with an odd number of members. Before randomization, a coin toss determined whether the extra person would be assigned to treatment or control. Youth were then randomized according to the process described above.

The analytic approach differs for the two sets of research questions. To address the primary research questions, we use an intent-to-treat (ITT) analysis that compares outcomes for youth randomly assigned to AKPHAT (i.e., the treatment group) to outcomes for youth randomly

assigned to the control group, regardless of the extent of the treatment group's participation in the program. To answer the secondary research questions, we use a treatment-on-the-treated (TOT) analysis. In the TOT analysis, youth who attended the two modules deemed critical by PHAT program developers (Modules 10 and 12) are compared to youth who did not attend these two modules (i.e., youth in the control group and youth assigned to AKPHAT who did not attend both modules 10 and 12).

C. Data collection

1. Impact evaluation

The evaluation team administered survey instruments that built on instruments developed by Select Media for use with PHAT. The original Select Media surveys included questions designed to measure attitudes, beliefs, and knowledge. Surveys for the AKPHAT evaluation had additional questions about sexual intercourse, condom, and birth control use. OAH developed the supplemental questions, which were included in all Tier 2 program evaluations. Youth received a $25 gift certificate for each completed survey. Baseline and end-of-program surveys were in pencil-and-paper format. For follow-up surveys (3, 6, and 12 months after the end of the program), youth chose either paper or online surveys. For follow-up surveys outside of Anchorage, locally based evaluation staff administered surveys or Anchorage-based evaluators traveled to the sites. Anchorage based evaluators administered surveys in Anchorage.

Each cohort was surveyed five times per cohort starting with randomization and ending 12 months later. Youth provided updated contact information prior to each survey. The evaluation team conducted 155 survey rounds—five survey administrations for each of the 31 cohorts. The first round of randomization and baseline surveys (cohort 1) took place on August 7, 2012. The final round of randomization and baseline surveys (cohort 31) took place on July 30, 2014. Six-month follow-up data collection started on February 5, 2013 with cohort 1 and ended January 30, 2015 with cohort 31.

2. Implementation evaluation

The project also collected data to monitor and evaluate AKPHAT adherence to the curriculum and quality of implementations. Peer educators, adult supervisors, program participants, and evaluation staff all provided information. Data were collected using curriculum monitoring logs, program attendance logs, evaluator observation forms, and participant and peer educator debriefs. OAH reviewed and approved all data collection instruments. Information about other programming in the areas where AKPHAT was implemented (context) came from reviewing school district curricula and conversations with staff at Planned Parenthood of the Great Northwest. Appendix A contains a detailed description of implementation evaluation data collection.

D. Outcomes for impact analyses

The two behavioral outcomes are (1) recent sexual intercourse, measured as sexual intercourse in the past 3 months, and (2) recent unsafe sex, measured as not using a condom during sexual intercourse in the past 3 months. Behavioral outcomes for primary and secondary

research questions are computed from baseline and six-month follow-up survey data. Table III.1 describes the outcome measures.

Table III.1. Behavioral outcomes used for primary and secondary impact analyses research questions

Outcome name	Description of outcome	Timing of measure relative to program
Sexual intercourse in the past 3 months	The variable is a yes/no measure of whether a person has had sexual intercourse during the 3 months prior to the survey. The measure is taken directly from the survey question: In the past 3 months, have you had sexual intercourse, even once? The variable is constructed as a dummy variable where 'yes' responses are coded as 1 and 'no' responses are coded as 0.	Six months after program ends
Unsafe sex in the past 3 months	The variable is a measure of condom use. It comes from two survey questions: In the past 3 months, have you had sexual intercourse without you or your partner using a condom?" In the past 3 months, have you had sexual intercourse, even once? The variable is constructed as a dummy variable. 'Yes' responses to the first question are coded as 1 and 'no' responses to the first question are coded as 0. Where data for the first question are missing, 'no' responses to the second question are coded as 0.	Six months after program ends

E. Study sample

We planned to recruit 605 youth each for treatment and control groups and estimated an attrition rate of 25% between baseline and six-month follow-up. The resulting 464 in each group would have provided sufficient statistical power to detect a difference of about 9 percentage points between the treatment and control groups in the proportion reporting sexual intercourse, given a baseline proportion of 35 percent (as reported on baseline surveys). Due to several unforeseen events, our final sample sizes were much smaller. Of 302 total randomly assigned youth, 155 were assigned to AKPHAT and 147 were assigned to the control group. About 40% of each group provided both baseline and six-month follow-up surveys (70 treatment students, 54 control). The overall attrition rate is 59%. Appendix B presents the sample flow from randomization through six-month follow-up.

Analytic samples were even smaller: 105 youth (59 treatment and 46 control) provided responses to the sexual intercourse outcome question in baseline and six-month follow-up surveys; 86 youth (50 treatment and 36 control) provided responses to the unsafe sex question in both surveys.

Most of the limitations to reaching our target population came from outside the study and were in the form of restricting the eligible population. The first limitation was a federal HHS

regulation restricting implementation in detention facilities, the original target setting, unless specific conditions are met for the study.[3] Program eligibility was further curtailed by the then-governor. Besides requiring a program with promoting abstinence as the main objective, he limited the eligible population to youth 14 and older, excluding 11- to 13-year-olds. Later in the project, a suspension from the Alaska Area Institutional Review Board (AAIRB) due to complications around an adverse event[4] halted all recruitment and implementation activity for 14 weeks from November 19, 2013 to February 28, 2014.

Recruitment in small rural communities, many with fewer than 20 youth ages 14-19, was difficult for several reasons. In post-implementation interviews with tribal council members, rural implementation staff, and administrators at tribal non-profits, several people told us that tribal organizations were reluctant to implement a randomized study[5]. They felt that dividing youth into treatment and control groups could be perceived by their constituents as denying services to some of the population. The combination of randomization and a sensitive topic caused many tribal leaders to decline. In some places AKPHAT was not well received because of the long history of studying and providing programming for Alaska Native people. Alaska Native people reportedly were tired of being research subjects. Recruiting was also problematic because we did not offer programs for both treatment and control groups. In small communities, with few teenagers, everyone usually participates in all activities. Delivering AKPHAT after school, and replacing an activity like basketball, meant that half of the youth had nothing to do. AKPHAT also saw a sharp increase in participation among villages after randomization was completed. Tribal council members and tribal non-profit administrators and staff said that many youth decided not to participate when they learned that they could be in the control group, especially when it meant being separated from a friend.

Several factors affected attrition. For some youth, assignment to the control group was emotionally upsetting. Even though they signed consent forms, some cried when they heard their assignment. This could be one reason why attrition was higher for youth in the control group

[3] In late August 2012 following their initial review and approval, University of Alaska Institutional Review Board (UAAIRB) found they had not adequately considered federal HHS regulations pertaining to incarcerated youth and that AKPHAT was out of compliance with federal regulations because it was not providing a comparable program to the control group. HHS regulation 45 CFR 45 Subpart C, para 46.306(iv) requires that the control group benefit from the research, and if that is not the case, an exception needs to be listed in the federal register and the Secretary must approve the research. Alaska DHSS staff and evaluation team members worked with non-profits to identify possible programs, staff and training needs, and to develop estimates of increased youth served. For the purposes of the evaluation, the same alternative program would have to have been provided in all sites. After several rounds of discussion among the evaluation team, non-profit providers, Alaska DHSS, the HHS Office of Adolescent Health, and Mathematica (the evaluation technical assistance provider for the grant), detained and incarcerated populations were removed from the eligible pool. Staff training, funding, and space constraints were among the concerns of non-profit providers.

[4] In November 2013, AKPHAT was awaiting renewal of AAIRB approval. At that time the project was implementing with two of the four non-profits, two that were under the jurisdiction of the UAAIRB, and AKPHAT was not being implemented with tribal non-profits. In December 2013 a breach of confidentiality occurred during an implementation. The evaluation team immediately notified both the UAAIRB and AAIRB. The AAIRB immediately suspended all implementations, saying that AKPHAT was out of compliance regardless of the fact that they were not implementing with any tribal non-profits at the time. The AAIRB understood their jurisdiction to be any agency that serves Alaska Native people and the project should not have been operating at all while waiting for an annual renewal.

[5] Tribal approval is required before AKPHAT can be implemented in small rural villages. In Alaska, nearly every village has tribal status.

than in AKPHAT. Cohorts that were due for follow-up surveys during the Alaska Area IRB suspension were not surveyed or, if surveyed, their data were destroyed. All data, including contact information, were destroyed for two cohorts that were randomized and completed baseline surveys during the suspension. Baseline data were destroyed and no follow-ups were conducted for the implementation in a detention facility. However, the biggest factor in attrition was inability to reach youth. Despite collecting detailed and extensive contact information at baseline, in many cases, neither youth nor any of their contacts could be reached for follow-up.

F. Baseline equivalence

Analytic samples for baseline equivalence are baseline data for youth who provided responses to sexual behavior questions on baseline and 6-month follow-up surveys.

To assess baseline equivalence of treatment and control groups we regressed demographic variables (age, gender, and race) and the baseline measures of outcome variables (sexual intercourse during the past 3 months and unsafe sex during the past 3 months) on dummy variables for treatment and cohort. Racial categories are white, Alaska Native, and other. Alaska Native includes youth reporting their race as Alaska Native alone, or in combination with one or more other races.

The treatment dummy variable differs between the ITT analysis used to address the primary research questions and the TOT analysis used to address the secondary research questions. For the ITT analysis, the treatment dummy equals one if the youth was randomly assigned to the AKPHAT group and zero if the youth was randomly assigned to the control group. For the TOT analysis, the treatment dummy equals one if the youth attended AKPHAT modules 10 and 12 and zero if the youth did not attend these modules; thus, both youth randomly assigned to the control group and youth randomly assigned to the AKPHAT group who did not attend both modules 10 and 12 are coded as zero.

As noted earlier, randomization occurred within cohort (i.e., each cohort is a stratum). The probability of random assignment (for cohorts randomized before July 25, 2013) varied slightly because of how the odd number in a cohort was treated (with the "extra" always being assigned to treatment). We adjusted for this in the baseline equivalence and impact analyses by including dummy variables for cohort as independent variables.

For all equations, we used the STATA Regress command to run the following ordinary least squares (OLS) regression models:

$$P(Y=1) = \beta_0 + \beta_1 * T + C_j + u \text{ for dichotomous variables } Y = \beta_0 + \beta_1 * T + C_j + u$$

for continuous variables

Where,

In the case of dichotomous variables (female, race indicators, and baseline measures of outcome variables), $P(Y = 1)$ is the probability that variable $Y = 1$; for a continuous variable (age), Y is a measure of the variable (age in years).

β_0 is the intercept.

T is a dummy variable for treatment (for ITT analysis, *T = 1* if randomly assigned to AKPHAT, T = 0 if randomly assigned to control; for TOT analysis, *T = 1* if attended AKPHAT modules 10 and 12, *T = 0* if did not attend AKPHAT modules 10 and 12).

C_j is a set of cohort dummy variables.

u is a disturbance term.

We ran four rounds of estimation equations to assess baseline equivalence, one round for each of the primary and secondary research questions. Each round contained six equations, one for each baseline characteristic. We did not adjust for multiple comparisons because adjustments increase the probability of a Type II error (mistakenly finding no difference between treatment and control groups).[6] Tables III.2 through III.5 show that despite high attrition rates, the data do not show statistically significant differences between treatment and control groups on baseline measures. However, in the analytic sample for estimating recent sexual intercourse in the ITT analysis, there is a notable difference in the proportion of females in treatment and control groups. The analysis controls for this statistically by including female as a covariate in the regression equations.

Table III.2. Summary statistics of key baseline measures for youth completing sexual intercourse questions in AKPHAT baseline and 6-month follow-up surveys, Intent-to-treat analysis

Baseline measure	Treatment mean or % (standard deviation)	Control mean or % (standard deviation)	Treatment versus control mean difference	Treatment versus control *p*-value of difference
Age	16.64 (1.15)	16.79 (1.16)	-0.15	0.510
Female	62.57	74.09	-11.52	0.238
Race				
White	39.26	36.60	2.65	0.759
Alaska Native (alone or in combination with another race)	44.84	51.18	-6.33	0.415
Other	15.90	12.21	3.69	0.592
Sexual intercourse in past 3 months	34.14	32.30	1.84	0.851
Sample size	59	46	105	

[6] Cole et al., 2013.

Table III.3. Summary statistics of key baseline measures for youth providing valid data for unsafe sex questions in AKPHAT baseline and 6-month follow-up surveys, Intent-to-treat analysis

Baseline measure	Treatment mean or % (standard deviation)	Control mean or % (standard deviation)	Treatment versus control mean difference	Treatment versus control *p*-value of difference
Age	16.64 (1.19)	16.59 (1.20)	0.05	0.867
Female	63.80	69.73	-5.93	0.590
Race				
White	42.46	35.47	6.98	0.485
Alaska Native (alone or in combination with another race)	47.70	50.41	-2.71	0.758
Other	9.83	14.11	-4.27	0.546
Sex without a condom in past 3 months	25.32	20.38	4.95	0.629
Sample size	50	36	86	

Table III.4. Summary statistics of key baseline measures for youth completing sexual intercourse questions in AKPHAT baseline and 6-month follow-up surveys, treatment-on-treated analysis

Baseline measure	Treatment mean or % (standard deviation)	Control mean or % (standard deviation)	Treatment versus control mean difference	Treatment versus control *p*-value of difference
Age	16.66 (0.021)	16.75 (0.024)	-0.08	0.725
Female	64.76	70.77	-6.01	0.547
Race				
White	39.23	36.85	2.38	0.787
Alaska Native (alone or in combination with another race)	45.55	49.90	-4.35	0.584
Other	15.22	13.26	1.97	0.799
Sexual intercourse in past 3 months	34.36	32.87	1.49	0.893
Sample size	55	50	105	

Source: AKPHAT, 2015. Baseline and six-month follow-up surveys, and attendance records.

Table III.5. Summary statistics of key baseline measures for youth providing valid data for unsafe sex questions in AKPHAT baseline and 6-month follow-up surveys, treatment-on-treated analysis

Baseline measure	Treatment mean or % (standard deviation)	Control mean or % (standard deviation)	Treatment versus control mean difference	Treatment versus comparison *p*-value of difference
Age	16.71	16.51	0.20	0.471
Female	68.02	64.27	3.75	0.740
Race				
White	42.48	36.14	6.34	0.537
Alaska Native (alone or in combination with another race)	48.23	49.37	-1.14	0.899
Other	8.15	15.63	-7.48	0.301
Unsafe sex in past 3 months	24.75	21.54	3.21	0.760
Sample size	46	40	86	

Source: AKPHAT, 2015. Baseline and six-month follow-up surveys, and attendance records.

G. Methods

1. Impact evaluation

The analytic samples for each of the primary research questions include youth who have 6-month follow-up survey data with valid responses to outcome questions and corresponding baseline data. The analysis data sets contain data for all sites and cohorts. The benchmark analysis is a complete case analysis, where youth who are missing data on outcome variables or covariates are omitted. As a sensitivity analysis, we also conducted multiple imputations to adjust for attrition, and results were similar. Those results are presented in Appendix D.

We used the STATA Regress command to run OLS to estimate linear probability models. Models to address the primary and secondary research questions are the same, except the treatment variable is defined differently. As discussed in the preceding section, the ITT analysis addressing the primary research questions defines treatment based on random assignment. The TOT analysis addressing the secondary research questions defines treatment based solely on attendance of the AKPHAT modules 10 and 12. The models are structured as follows:

Outcome variables (Y)
Sexual intercourse = sexual intercourse in past three months (1 = yes, 0 = no)
Unsafe sex = sexual intercourse without a condom past three months (1 = yes, 0 = no)

$$P(Y=1) = \beta_0 + \beta_1 * T + \Sigma\beta_k * X_k + C_j + u$$

Where,

Y is the outcome variable, either sexual intercourse or unsafe sex

$P(Y=1)$ is the probability that variable $Y = 1$

β_0 is the intercept

T is a dummy variable for treatment (for ITT analysis, $T = 1$ if assigned to AKPHAT, $T = 0$ if randomly assigned to control; for TOT analysis, $T = 1$ if attended AKPHAT modules 10 and 12, $T = 0$ if did not attend AKPHAT modules 10 and 12).

C_j is a set of cohort dummy variables

β_k are coefficients

X_k is a set of demographic characteristics (age, race, and gender) and baseline value of the outcome variable

u is a disturbance term.

2. Implementation evaluation

The implementation evaluation summarizes fidelity monitoring in order to provide context for impact findings. AKPHAT collected data to measure adherence to the program as it was designed, quality of implementations, the counterfactual, and the context in which AKPHAT operated, with special attention to elements that program designers deemed essential for success. Information about context and the counterfactual came from personal conversations and school district websites. Appendix C describes implementation data elements in detail.

Adult supervisors monitored adherence. Every implementation had an adult supervisor in attendance. Adult supervisors timed sections within each module and monitored how well peer educators completed required activities for each module. They also kept attendance records.

Measures of implementation quality come from evaluator program observations and participant debriefs. Four indices measure program quality. For the first index, evaluators rated peer educators on their rapport and communication with participants. Data for the other three indices come from participant debriefs. For the second index participants reported their perceptions of peer educator qualifications and credibility. The third index is participants' reported engagement with the program. The fourth is participants' reported comfort level with the program.

IV. Study findings

A. Implementation study findings

Adherence. Peer educators implemented AKPHAT with 31 cohorts. Of the 31 cohorts, implementation data were collected for 29 cohorts. Data were destroyed for the other two in accordance with IRB instructions. Attendance records show that all youth assigned to AKPHAT attended at least one module. About two-thirds (68%) attended all 12 modules, 79% attended 75% or more, and 84% and 82% attended modules 10 and 12, respectively.

In terms of duration, except for module 12, the implementation adhered to the program design. Each module was designed to last 60 minutes. The average duration was 53 minutes. Module 12 took longer, averaging 77 minutes. All modules were implemented as designed with two peer educators and within the recommended number of days. Of the 29 cohorts, more than half (17) were delivered over 3 days, 7 were delivered over 4 days, 3 over 5 days, and 1 over 3 weeks.

Overall, 90% of the modules were completed, either as designed or with adaptations. Ten percent of modules were flagged as 'incomplete'. An 'incomplete' designation means activities were omitted. This happened most often when multiple modules were delivered in one meeting. Every module starts and ends with a talking circle. Peer educators dropped talking circles when they would have taken place in the middle of a meeting. For example if modules 4 and 5 were delivered sequentially in one meeting, talking circles at the end of module 4 and the beginning of module 5 were omitted. The same was true for reviewing homework. If homework was assigned in module 4, and modules 4 and 5 were delivered together, discussion of homework was moved to the start of the next meeting. Adaptation rates were highest for modules 4, 12, and 8. Within module 4, seven implementations skipped the last role-play due to lack of time. Within module 12, in 5 implementations, youth refused to do unscripted role-plays at the end of the module. Peer educators reported that youth felt they had done enough role-plays. Within module 8, four peer educations modified a basketball-like game where teams score points for correct answers. Adaptations were changes to scoring and using a waste-basket as a basketball hoop. In cases where modules took longer than 60 minutes to implement, the most common adaptation was to extend the length of time for the activity, or to complete the activity at the start of the next meeting.

Quality. Quality of AKPHAT implementations has two components: quality of peer educator-participant interactions, and quality of youth engagement with the program. Two indices measure each component.

The first index measuring the quality of peer educator-participant interactions used data from participant debriefs. Questions asked about whether peer educators know about what they are teaching, are good role models, well prepared, and so forth (questions are listed in Appendix A). The response scale ranged from 1 (disagree strongly) to 5 (agree strongly). Peer educators averaged 4.5 out of 5. The second index measuring the quality of peer educator-participant interactions used data from evaluator observation forms. Evaluators ranked peer educators' 'rapport and communication with participants' on a scale from 1 (doesn't remember names, doesn't connect with participants, acts distant) to 5 (gets participants very excited, very friendly, uses people's names when appropriate, seems to understand the community and its needs). Peer educators averaged 4.2 out of 5.

Both indices measuring the quality of youth engagement with the program used data from participant debriefs. The first index measured participant engagement with the program on a scale from 1 (not at all) to 4 (very much). Peer educators averaged 3.5 out of 4. The second index measured participant comfort with the program, using a scale from 1 (very uncomfortable) to 5 (very comfortable). Participants rated their comfort with the program as 4.1.

Counterfactual. AKPHAT did not provide a program for the control group. Data from participants indicate that some control group members received AKPHAT information. Spillovers were difficult to avoid because we were working in small communities and within close-knit groups. Among AKPHAT participants who completed program debrief surveys, 34% reported that they talked with 'someone else who was recruited but not in the program about what they learned'. Of those, most reported that they talked about condom use, STI and pregnancy prevention. A similar share, 34%, reported that someone else in their household was in the program, either as a control or treatment, and 20% reported that they had a relative in the program.

Context. To evaluate context we used information from Anchorage, Kenai, Bethel, and Yupiit school district websites and conversations with other agencies implementing programs in the same geographic areas in which AKPHAT operated**.** During the 2013-2014 and 2014-2015 school years, one high school in Anchorage had a pilot elective course, "Healthy Relationships/Sexuality Education." No other services were offered through the schools. Planned Parenthood of the Great Northwest was implementing an evidence-based TPP program, the Teen Outreach Program, in Anchorage. In the 2013-14 school year, 52 students were enrolled. In 2014-2015, 44 students were enrolled. We do not know if any AKPHAT youth also participated in the Teen Outreach Program (Personal communication with Lacey Moran, Alaska Education Coordinator, Planned Parenthood of the Great Northwest).

B. Impact study findings

Our research showed that results appear to be trending in the right direction, but are not statistically significant. The data failed to show a statistically significant difference between treatment and control groups on either outcome measure.

Table IV.1. Post-treatment estimated effects using data from AKPHAT to address the primary research questions, intent-to-treat analysis

Outcome measure	Treatment %	Control %	Treatment compared to controls difference (*p*-value of difference)
Sexual intercourse in past three months (n=105)	39.03	43.42	-4.38 (0.633)
Unsafe sex in past three months (n=86)	24.14	24.80	-0.66 (0.938)

Source: AKPHAT, 2015. Baseline and six-month follow-up surveys.

Notes: The intent-to-treat analysis compares outcomes for youth randomly assigned to AKPHAT (the treatment group) versus youth randomly assigned to the control group regardless of the extent of the treatment group's participation in the program. See Table III.1 for a more detailed description of each measure and Section III for a description of the impact estimation methods.

Secondary research questions allow us to address one of the assertions of the program developers—that attendance at modules 10 and 12 sessions is essential for behavior change. Our study failed to show that among youth who attended modules 10 and 12, AKPHAT was effective in reducing sexual intercourse or unsafe sex (Table IV.2).

Table IV.2. Post-intervention estimated effects using data from AKPHAT to address the secondary research questions, treatment-on-treated analysis

Outcome measure	Treatment %	Control %	Treatment compared to control difference (*p*-value of difference)
Sexual intercourse in past three months (n=105)	38.24	43.94	-5.70 (0.537)
Unsafe sex in past three months (n=86)	24.58	24.24	-0.34 (0.969)

Source: AKPHAT, 2015. Baseline and six-month follow-up surveys.

Notes: The treatment-on-treated analysis compares outcomes for youth who attended AKPHAT modules 10 and 12 versus youth who did not attend both of these modules, regardless of the group to which the youth were randomly assigned. See Table III.1 for a more detailed description of each measure and Section III for a description of the impact estimation methods

V. Conclusion

AKPHAT failed to demonstrate an effect on sexual intercourse or condom use. The study sample was much smaller than expected, and political issues altered intended plans. Unfortunately, we cannot explain why the program did not produce a measurable effect.

AKPHAT adaptations to PHAT were: to use peer educators to deliver the program, to implement with 14- to 19-year-olds instead of 11- to 13-year-olds, and to implement with rural and at-risk youth in Alaska. The curriculum was modified to use talking circles and talking sticks and to demonstrate condom use without a penis model. The combination of low recruitment and high attrition limited our sample size, and thus statistical power. Delays and suspensions were the major reason for the small sample. The combination of delays and suspensions meant 10 months when we could not recruit, 61 surveys that were destroyed, and close to 200 surveys that were destroyed or could not be administered.

The AKPHAT design and the decision to not provide programming for control group members also limited our ability to work in small communities, and reach our recruitment goals.

Disallowing the use of a penis model in training, which was deemed essential by program developers, may have lowered the AKPHAT effectiveness. We also do not know if the program did not have an effect because it was not implemented with 11- to 13-year-olds. These two factors became unintended program adaptations.

VI. References

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Appendix A: Implementation evaluation data collection

Table A.1. Data used to address implementation research questions

Implementation element	Types of data used to assess whether the element of the intervention was implemented as intended	Frequency/sampling of data collection	Party responsible for data collection
Adherence: How often were sessions offered? How many were offered?	Total number of cohorts provides background information on program implementation.	Every cohort is reported in MIS.	Adult supervisors
	Length in minutes of each module is reported in curriculum monitoring logs. This provides further descriptive information and is used to compare AKPHAT implementation to the program as it was designed.	Adult supervisors[1] complete curriculum-monitoring logs at the end of each cohort.	
	These data also describe variation in delivery. According to program developers, implementations could range from 2 days to several weeks.	Adult supervisors record delivery time for each module	
Adherence: What and how much was received?	Session-level attendance from the program attendance log. The evaluation used the same data to report the percentage of youth assigned to AKPHAT who attended 100% of sessions, and the percentage of youth assigned to AKPHAT who attended the session containing modules 10 and 12. Program developers identified attending Modules 10 and 12 as essential for behavior change.	Attendance is reported for every module.	Adult supervisors.
Adherence: What content was delivered to youth?	The analysis provides descriptions of peer educators' ability to complete modules on time, deliver modules within the intended amount of time, and make adaptations to modules, as well as peer educator perceptions of which modules were the most and least successful. This information comes from curriculum monitoring logs. The logs contain a list of modules and for each module the list of required activities.	Reports for each module on activities completed. Reports are completed at the end of each session.	Adult supervisors

[1] Sessions are led by peers, but an adult supervisor attends each peer-led session.

Implementation element	Types of data used to assess whether the element of the intervention was implemented as intended	Frequency/sampling of data collection	Party responsible for data collection
Adherence: Who delivered material to youth?	AKPHAT was delivered by peer educators with oversight by adult supervisors. Information about which peer educator delivered each module comes from the curriculum monitoring logs. Information about qualifications of peer educators and adult supervisors comes from program documentation and quarterly reports. Each peer educator is required to fulfill training obligations prior to implementing, and to receive ongoing enrichment training applicable to population. Data on all staff members are available to program staff.	Data are collected every time a peer education is hired. Data are also collected every time a peer educator completes Collaborative Institutional Training Initiative (CITI) human subjects protection training.	Program staff
Quality: Quality of peer educator-participant interactions	This measure is an index from seven questions from the participant debrief. All are scored 1 to 5, disagree strongly to agree strongly. 1. My peer educator really knows what he or she is teaching 2. My peer educator is a good role model for me. 3. My peer educator really understands youth my age. 4. My peer educator shows respect for the group's feelings. 5. My peer educator is very friendly. 6. My peer educator was well prepared. 7. My peer educator knows a lot about life. All participants who attend the final day of the program complete the survey. A limitation is that only youth who attended the final module complete the survey.	After completion of Module 12 for each cohort	Adult supervisors collect data from program participants

Implementation element	Types of data used to assess whether the element of the intervention was implemented as intended	Frequency/sampling of data collection	Party responsible for data collection
	Data come from program observation forms. Rank peer educators' 'rapport and communication with participants'. Responses categories are 1-5, where 1 = poor, 3 = average, 5 = excellent. Examples of 'poor' and 'excellent': 1 Doesn't remember names; does not "connect" with participants; acts distant or unfriendly. 5 Gets participants talking and excited; very friendly; uses people's names when appropriate; seems to understand the community and its needs.	Reports from classroom observations (10% convenience sample of sessions)	Evaluation staff
Quality: Quality of youth engagement with program	Data come from participant debrief surveys. Participants report on their engagement with the material, and on their reactions to the peer educators and to the curriculum. The response scale is 1 to 4, from 'not at all' to 'very much'. • How much did you get into the group activities? • How much did you talk and share your thoughts in the group? Participant debriefs also ask youth to rate their comfort with the program. The response scale is 1 to 5 very uncomfortable) to 5 very comfortable. • How comfortable did you feel talking and sharing your thoughts in the group? • How comfortable did you feel during the exercises, games, and role-playing?	Participant debrief surveys are at end of every cohort, all youth in attendance complete surveys.	Adult supervisors collect data from program participants
Counterfactual: Experiences of control condition	Business as usual is the counterfactual condition of AKPHAT. AKPHAT did not provide any program to the control group. Surveys do not ask about other programming. Generally, there is no sex education programming in Alaska. Information from participant debrief surveys about communication between participants in the AKPHAT program and the control group.	Participant debrief surveys are at end of every cohort, all youth in attendance complete surveys.	Adult supervisors collect data from program participants

Implementation element	Types of data used to assess whether the element of the intervention was implemented as intended	Frequency/sampling of data collection	Party responsible for data collection
Context: Other TPP programming available or offered to study participants (both treatment and control)	Descriptions of programming offered in schools and by other programs similar to AKPHAT, obtained from Planned Parenthood staff and school district websites.	Once per year	Evaluation staff
Context: External events affecting implementation	Minutes from teleconferences and IRBnet (online IRB document management system). Local provider staff, evaluation, staff, and state project administrators attend all teleconferences. Evaluators and the rest of the implementation team learn about external events from provider staff during via bi-weekly meetings. Events affecting implementation are highly idiosyncratic, such as the death of a relative of a peer educator. Information about these events is through word of mouth and not usual media sources. AKPHAT implemented in small settings instead of schools, so information comes from implementing partners. IRBnet provides dates of IRB related suspensions and instructions to destroy data.	Bi-weekly minutes, IRBnet irregular intervals	Program staff, evaluation staff
Context: Substantial unplanned adaptation(s)	Curriculum monitoring log, work plan, six-month progress report, annual progress report	Twice a year	Program staff, project director, evaluation staff

AKPHAT = Alaska Promoting Health Among Teens. MIS = Management Information System. TPP = Teen Pregnancy Prevention.

Appendix B: Study sample

Table B.1 Youth sample sizes by Treatment status

.	Time Period	Total sample size	Treatment sample size	Control sample size	Total response rate	Treatment response rate	Control response rate
Number of Youth	.	.	.	.	.	.	.
1. Assigned to condition	07-Aug-2012 to 29-Jul-2014	302	155	147			
2. Contributed a baseline survey	07-Aug-2012 to 29-Jul-2014	302	155	147	1	1	1
3. Contributed a follow-up survey	Immediately post-programming[a]	na	122	na	na	.787	na
4. Contributed a follow-up survey	3-months post-programming	155	79	76	.513	.510	.517
5. Contributed a follow-up survey	6-months post-programming	124	70	54	.411	.452	.367

na = not applicable.

[a] The immediately post-programming survey was administered only to the treatment group.

Appendix C: Implementation evaluation methods

Table C.1. Methods used to address implementation research questions.

Implementation element	Methods used to address each implementation element
Adherence	
How often were sessions offered? How many were offered?	Sum of the cohorts captured in the MIS. Each cohort received 12 modules. Average module duration is the average of module length (12 modules per cohort) measured in minutes.
What and how much was received?	Average attendance per session. The percentage of youth attending 100% of sessions (12 modules) equals the number of youth assigned to AKPHAT attending all sessions divided by the total number of youth assigned to AKPHAT. *A limitation is that a session can contain 1 or more modules. We did not keep track of tardiness or participants leaving before the end of a module. Our estimates may overstate how much program content was received.* The percentage of youth attending module 12. This is equal to the number of youth assigned to AKPHAT who attended module 12 divided by the total number of youth assigned to AKPHAT.
What content was delivered to youth?	The percentage of modules completed equals the number of modules completed divided by the total number of modules delivered. 'Completed' includes 'completed as designed', and 'completed with adaptations'. Within module completion rates: For each module, total activities completed divided by total activities in the module. Module adaptation rates: For each module, total activities completed with changes divided by total activities in the module. We reviewed data and summarized completion rates by type of activity such as homework, role-plays, and information. *A possible limitation of these data is that they are self-reported by peer educators and descriptions may not be standard across all peer educators*
Who delivered material to youth?	Total number of peer educators delivering the program is count of peer educators implementing the program.
Quality	

Implementation element	Methods used to address each implementation element
Quality of peer-educator-participant interactions	The first measure is the mean of responses to seven questions from the participant debrief. All are scored 1 to 5, disagree strongly to agree strongly. 1. My peer educator really knows what he or she is teaching 2. My peer educator is a good role model for me. 3. My peer educator really understands youth my age. 4. My peer educator shows respect for the group's feelings. 5. My peer educator is very friendly. 6. My peer educator was well prepared. 7. My peer educator knows a lot about life. The second measure is the mean of responses to question 6d in the evaluator observation report. Evaluators are asked to rank peer educators' 'rapport and communication with participants'. Responses categories are 1-5, where 1=poor, 3=average, 5=excellent. **1.** Doesn't remember names; does not "connect" with participants; acts distant or unfriendly. **2.** Gets participants talking and excited; very friendly; uses people's names when appropriate; seems to understand the community and its needs. *A limitation is that this is a convenience sample and may not be representative[2].*
Quality of youth engagement with program	The first measure is of youth engagement. It is the mean of responses 1 to 4 (not at all to very much) to the following questions: **1.** How much did you get into the group activities? **2.** How much did <u>you</u> talk and share your thoughts in the group? The second measure assesses participant comfort with the program. It the mean of scores (1 to 5, very uncomfortable to very comfortable). Index is the mean of scores. **1.** How comfortable did you feel talking and sharing your thoughts in the group? **2.** How comfortable did you feel during the exercises, games, and role-playing?
Counterfactual	

[2] Evaluators developed decision rules about sessions to observe based on whether travel to the site was involved. If travel was involved and evaluators were only in town for baseline surveys, randomization, and the initial session, then they observed the initial session. If travel was involved and evaluators were in town for first and last sessions, then they observed the last session. If travel was not involved (all sessions in Anchorage), neither the first nor last session was observed. Selection also depended on evaluators' schedules and availability.

Implementation element	Methods used to address each implementation element
Experiences of counterfactual condition	We did not provide any program for the control group. Because we are implementing outside of schools, the control group did not receive any instruction or activity during AKPHAT implementation. Additionally, we did not survey the control group at the end of the program. No data were collected on the control group until 3 months after the baseline. We do not ask about exposure to programs with similar content. Across our program areas, there is one elective program that covers content similar to that in AKPHAT in one Anchorage high school. Youth in AKPHAT may have been exposed to this program, but we have no way of knowing if that was the case. However we did ask participants (treatment) if they had discussed the program with any members of the control group. Spillover effects: Percentage responding 'yes' to question 22 from the participant debrief: Have you discussed the program with a teenager who was in a group that was recruited but did not take the curriculum? *One limitation of these data is that we cannot link the respondent to the person they talked to. The second is that it was asked at the end of the program—a narrow time frame.* Summary of qualitative responses to question 23: If you have discussed the program with a teenager who was in a group that was recruited but did not take the curriculum, what did you tell them you learned? *One limitation of these data is that we cannot link the respondent to the person they talked to. The second is that it was asked at the end of the program—a narrow time frame* Summary of qualitative responses to question 24: If you have discussed the program with a teenager who was in a group that was recruited but did not take the curriculum, what did they tell you? *One limitation of these data is that we cannot link the respondent to the person they talked to. The second is that it was asked at the end of the program—a narrow time frame*
Context	
Other TPP programming available or offered to study participants (both Treatment and counterfactual)	All of the TPP programming available in areas where AKPHAT was implemented was obtained from discussions with Planned Parenthood of the Great Northwest and from participant debriefs. *A limitation is that we don't know whether anyone in AKPHAT participated.*
External events affecting implementation	The number of days lost due to external influences (AAIRB, UAAIRB and government shutdowns)

Implementation element	Methods used to address each implementation element
Substantial unplanned adaptation(s)	Summary of restrictions from the Governor's office which became unplanned adaptations.
	The number of cohorts that were conducted with one peer educator as opposed to two (as intended).
	The number of unplanned changes in curriculum implementation.

AAIRB = Alaska Area Institutional Review Board. AKPHAT = Alaska Promoting Health Among Teens. UAAIRB=University of Alaska Institutional Review Board. TPP = Teen Pregnancy Prevention.

Appendix D: Sensitivity analyses

Table D.1 presents sensitivity analysis done to address missing data issues in addressing the primary research questions (ITT analysis). Multiple imputations compensate for missing response data from six month follow-up surveys. The imputation model included the same covariates as the impact estimation models. Missing outcome data were imputed separately for the treatment and control groups. Logit models were used for imputations. For the first outcome variable, 'sexual intercourse in the past three months', 77 values were imputed. The benchmark approach included 105 observations. The multiple imputations approach included 182 observations. For the second outcome, the baseline analysis included 86 observations. The multiple imputations approach included 138 observations, 52 values were imputed. There were no statistically significant differences on any baseline variables when analyzed using the multiply imputed data (results available from the author by request). In estimating the effect of AKPHAT on sexual intercourse and unsafe sex, the two methods for addressing missing data produce nearly identical results. Results are not statistically significant using either method.

Table D.1. Sensitivity of impact analyses using data from AKPHAT to address missing data the primary research questions, intent-to-treat analysis

	Benchmark approach, Complete case analysis		Multiple Imputation	
	Diff.	*p*-value	Diff.	*p*-value
Treatment compared with Control				
Sexual intercourse in past three months	-4.38	0.633	-.5.37	0.496
Unsafe sex in past three months	-0.66	0.938	0.61	0.922

Source: AKPHAT, 2015. Baseline and six-month follow-up surveys.

Notes: The intent-to-treat analysis compares outcomes for youth randomly assigned to AKPHAT (the treatment group) versus youth randomly assigned to the control group regardless of the extent of the treatment group's participation in the program. For the first outcome variable, 'sexual intercourse in the past three months', the benchmark approach included 105 observations and the multiple imputations approach included 182 observations (77 values were imputed). For the second outcome, the baseline analysis included 86 observations, the multiple imputations approach included 138 observations (52 values were computed). See Table III.1 for a more detailed description of each measure and Section III for a description of the impact estimation methods.

AKPHAT = Alaska Promoting Health Among Teens.