

participate in 4-H were more likely than other youth to report being interested in science, doing well in science at school, and having college and career plans involving science, engineering, or technology.

In 2008, California contributed 285 youth from 14 counties to the 4-H Study of Positive Youth Development. Of these youth, 200 (70 percent) were current 4-H participants, whether in clubs, after school programs, and/or camps.

Demographics

The majority of survey participants in the California sample of the 4-H Study of Positive Youth Development were female (62 percent). The survey sample included both 4-H and non-4-H youth; 4-H youth comprised the majority at 70

percent. Although the sampling included youth in grades 6 – 12, those in the 9th and 10th grades were the largest group who participated.

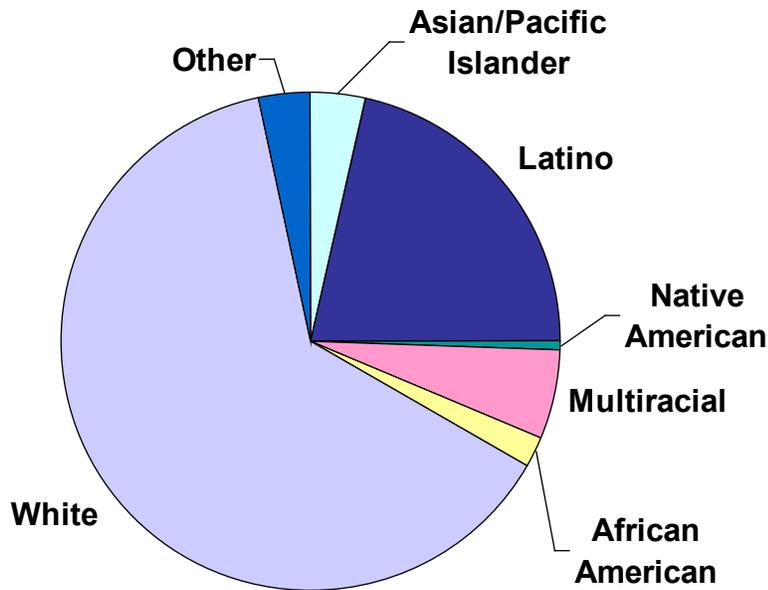
Most youth who participated in the survey were either white (62 percent) or Latino (21 percent). The 4-H sample in the study was also primarily white (74 percent), with 13 percent being Latino, 5 percent being multiracial, and 3 percent being Asian or Pacific Islander. The non-4-H sample was a closer representation of youth in California, with 41 percent being Latino, 38 percent white, 6 percent Asian or Pacific Islander and 7 percent multi-racial. About 2 percent of each group were African American. About 5 percent of the 4-H surveyed youth did not speak English at home, while 18 percent of the non-4-H respondents spoke another language at home.

A Statistical Note-

This report includes results of statistical tests, including p-values and odds ratios. Statistical analyses of a sample of people typically attempt to provide information that may be extrapolated to a wider group. This report uses data from a sample of 4-H members and other California youth. It is possible that if we surveyed all California 4-H members and other youth, some of the results would be different. The p-values presented here represent the probability that an association we have found is due to chance. Smaller p-values indicate that there is a lower probability that the association is accidental. With a smaller p-value, it is more likely that if the entire population were measured, the same association (such as an association between 4-H membership and interest in science) would be observed. P-values of less than .05 (or less than 5 percent) are typically considered statistically significant. For example, a p-value of .03 (“p = .03”) means that only about 3 percent of the time would such a relationship be observed because of chance.

Odds ratios, which are shown in tables in this report, denote a comparison between 4-H youth and other youth in the sample. Odds ratios above 1 indicate that 4-H youth had a higher probability of the outcome, while odds ratios below 1 indicate that 4-H youth were less likely to demonstrate the outcome than other young people. An odds ratio of 2.0 would suggest that 4-H youth were twice as likely as other youth to exhibit the outcome, while an odds ratio of 0.5 would indicate that 4-H youth were only half as likely as non-4-H youth to exhibit it. The confidence interval associated with the odds ratio provides a range of values that contains the true value for the larger population with a certain degree of confidence. A 95% confidence interval is used in this report. To illustrate, the odds ratio for overweight in this sample was 0.83 and the 95% confidence interval was 0.45 to 1.53. The odds ratio indicates that youth in the sample were 0.83 times as likely to be overweight as non-4-H youth (in other words, about 17 percent less likely) and the confidence interval indicates that we are 95% sure that the true population value falls somewhere between 0.45 to 1.53. This interval tells us that there may be no real difference in overweight in the population as a whole, since the true odds could be 1.0, indicating no difference between the two groups.

Ethnicity of respondents



Physical and Mental Health

Youth self-reported their weights and heights. Based on these data, the respondents were categorized into weight groups according to the overweight guidelines published by the Centers for Disease Control and Prevention (2000). Results showed that two-thirds of respondents were at a healthy weight, while about 7 percent were underweight, 15 percent

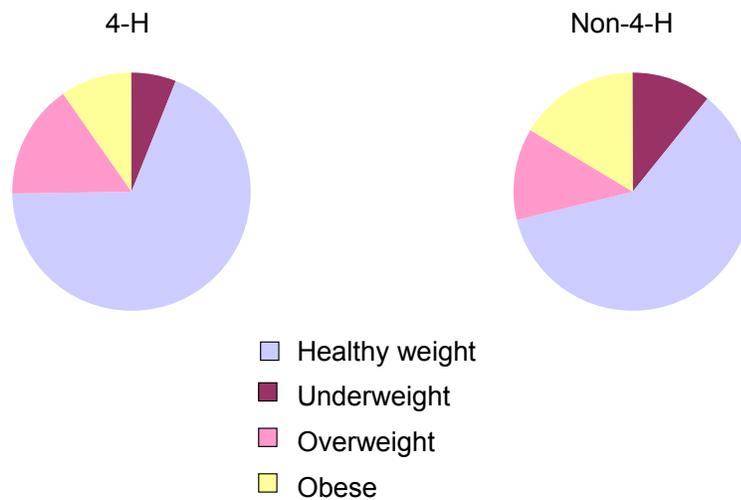
were overweight but not obese, and 12 percent were obese. These numbers for overweight compare with a national figure of 15 percent overweight for adolescents 12-19 in 1999-2002, and 16.1 percent for obesity (Hedley, Ogden, Johnson et al., 2004). There were no statistically significant differences between 4-H and non-4-H youth on weight status. See Table 1 for the odds ratios for health measures.

Table 1. Odds ratios for physical and mental health measures; 4-H youth compared with other young people

Odds lower than 1.0 and $p < .05$ mean 4-H youth have a significantly lower rate compared to other youth. Odds greater than 1.0 and $p < .05$ mean 4-H youth have a significantly higher rate compared to other youth. Where $p > .05$, there was no significant difference between 4-H and non-4-H youth.

Measure	Odds ratio	Confidence interval		p-value
		Lower	Upper	
<i>Physical and mental health</i>				
Overweight	0.83	0.45	1.53	.2769
Seen a doctor in the past year	2.60	1.41	4.82	<.0001
Seen a dentist in the past year	3.43	1.90	6.20	<.0001
Depression (CESD score ≥ 16)	0.85	0.48	1.51	.2057

Body mass index



Youth described their own weight (very or slightly underweight, about the right weight, or slightly or very overweight) and these descriptions correlated strongly ($p < .0001$), although not perfectly, with the CDC weight classifications. When asked what they were trying to do about their weight – lose weight, gain, stay the same, or not trying to do anything – results showed that about one-third of healthy-weight youth were trying to lose weight, while 56 percent were not trying to lose or gain weight. About 11 percent of underweight youth were trying to lose weight, while 73 percent of overweight or obese youth said they were trying to lose weight. Body dissatisfaction levels increased stepwise with weight: they were lowest among the underweight youth and highest among the obese.

Respondents were asked how recently they had seen a doctor or a dentist. 4-H youth were significantly more likely than other youth to have seen a doctor or a dentist in the past 12 months (see Table 1). About 86 percent of 4-H members had seen a doctor in the past year, compared with 70 percent of non-4-H youth; 85 percent of 4-H youth had seen a dentist in the past 12 months compared with 63 percent of

non-4-H youth.

Youth were asked about sleep; there were no significant differences between 4-H and non-4-H youth in the hours of sleep per night youth reported getting. Most youth reported getting either 6-7 hours per night (43 percent) or 8-9 hours per night (49 percent).

Youth completed the 20-item Center for Epidemiologic Studies Depression Scale (CES-D). Higher values represent a higher level of depression, and the value of 16 is frequently used as a cutpoint measure for depression (Radloff, 1977). Using this measure, 27 percent of 4-H members and 30 percent of non-4-H youth were depressed. This difference was not statistically significant. These numbers are similar to the 28 percent of youth in the Add Health study with a CES-D score of 16 or higher (Rushton, Forcier, & Schectman, 2002); among these youth, about two-thirds had mild depression, while a total of 9 percent were categorized as moderately or severely depressed ($CES-D > 24$). In the California 4-H Study of Positive Youth Development results, about 13 percent of respondents were moderately or severely depressed based on the cutpoint of $CESD > 24$.

Positive Youth Development Measures

The 4HSPYD includes numerous items allowing the assessment of the Five Cs of Positive Youth Development – Competence, Caring, Connections, Confidence, and Character – as well as the sixth C, Contribution, to which these Five Cs are theorized to lead (Pittman et al., 2000). These items measure aspects of development and have been demonstrated to be associated with a range of positive outcomes for youth, such as academic success and reduced levels of risk behaviors. For most measures in this survey, youth in 4-H had significantly higher values on positive youth development measures than did other young people.

Competence was measured using Harter’s Perceived Competence Scale for Children (1982). 4-H youth in the California sample had a significantly higher value on Competence than did non-4-H youth ($p = .0001$); see Table 2 for values.

Competence was broken into several subtypes. Academic competence for California 4-H members (3.09, measured on a scale of 1 to 4) was almost identical to the results for the national 4HSPYD sample (3.06). Academic competence was significantly lower for non-4-H youth (at 2.76) than for 4-H members. Social acceptance, measuring items related

to the number of friends respondents had and their perceived acceptance by peers, was similar for 4-H and non-4-H youth. Self-perceived athletic competence was also similar for 4-H and non-4-H youth. However, 4-H youth had higher levels of job competence than non-4-H youth; job competence measures self-confidence in the ability to obtain and handle a part time job.

Statistically significant differences between 4-H and non-4-H youth in the sample appeared for all of the Five Cs measures. The mean of the confidence measure was significantly higher for 4-H youth than for others in the sample. Connections, reflecting relationships with family, peers, and other adults, were significantly higher for 4-H youth than for non-4-H members. Mean values for caring and character were also significantly higher for 4-H youth. However, contribution, theorized to be the “sixth C,” which includes leadership, helping others, and service activities, did not differ significantly between 4-H and non-4-H youth in the California sample, which paralleled the findings in the national 4-H Study of Positive Youth Development data. Finally, the summary measure for the overall level of positive youth development were significantly higher for youth who participated in 4-H than for other youth in the sample.

Positive youth development measures

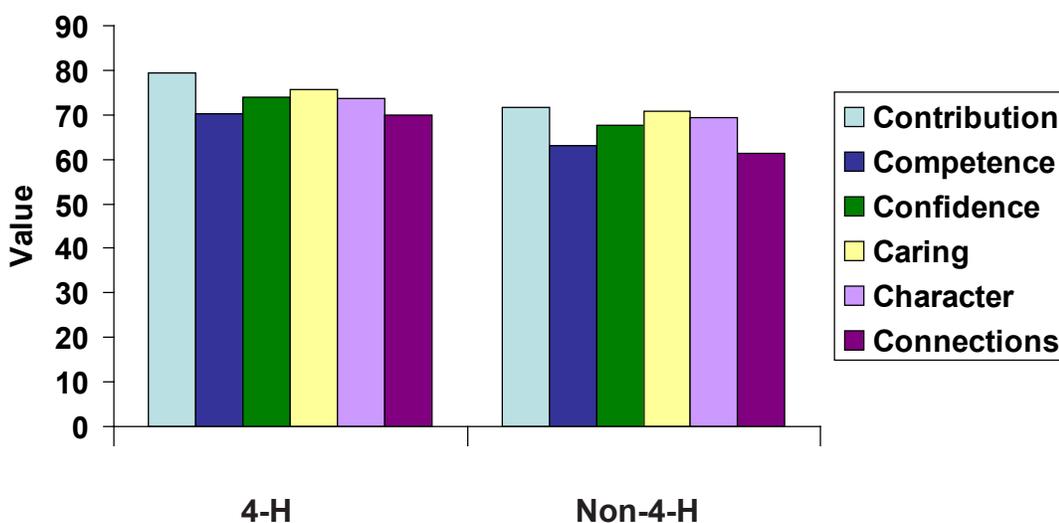


Table 2. Means for positive youth development measures; 4-H youth compared with other young people

Measure	Mean for 4-H	Mean for non-4-H	p-value
<i>Positive youth development</i>			
Confidence	73.8	67.5	.0056
Competence	70.3	63.0	.0001
Connections	70.1	61.4	<.0001
Character	73.7	69.5	.0232
Caring	75.8	70.7	.0369
Contribution	79.3	71.8	.1573
Overall Positive Youth Development	72.7	66.4	<.0001

School Engagement

Measures of school engagement tended to be higher for the 4-H youth in this sample than for the non-4-H members. School engagement measures were calculated on a scale from 0 to 3. Behavioral school engagement, measuring behaviors such as skipping class, participating in class discussions, and coming to class prepared was significantly higher for 4-H youth than for the other respondents as well. Emotional school engagement, measuring the youth’s emotional connection to school such as reporting being happy to be at school and enjoying the classes, was significantly higher for 4-H youth at 2.05 compared with 1.73 for non-4-H youth. Cognitive school engagement, which measured items related to interest in learning, was also higher for 4-H youth (2.37 vs. 2.17).

Science, Engineering, and Technology

The California data from the 4-H Study of Positive Youth Development indicate that 4-H members had higher levels of engagement and success in the areas of science, engineering, and technology (SET). Thirty-seven percent of 4-H members indicated that their program increased their interest in science compared to about 12 percent of non-4-H members. Over 80 percent of 4-H members felt that they do well in science-related courses at school,

compared with fewer than 65 percent of non-4-H youth. About 62 percent of 4-H youth indicate that they will take science courses after they finish high school. About half of 4-H members indicate that they plan to pursue a career in science, compared with about 30 percent of non-4-H youth. As shown in Table 3, 4-H youth were about 2.5 times as likely as non-4-H youth in the sample to report these positive outcomes of increased interest and achievement in science, as well as intentions to take classes and pursue a career in science.

Youth in the survey were asked about their interest and participation in the area of engineering. Almost one-quarter of 4-H members indicated that their program participation increased their interest in engineering, and 4-H youth were over twice as likely as non-4-H youth to report this. More than half of 4-H members indicated that they did well in engineering subjects. In comparison to non-4-H participants, 4-H members were significantly more likely to report an intention to take engineering courses after high school or to pursue an engineering career (see Table 3).

In addition to the impacts on science and engineering interest, results indicated that the 4-H program provided opportunities for youth to increase their facility with technology. Almost 30 percent of 4-H members say that the programs they participate in increased their interest in technology, and about 72 percent of 4-H members reported

I intend to pursue a career in science, engineering, or technology.

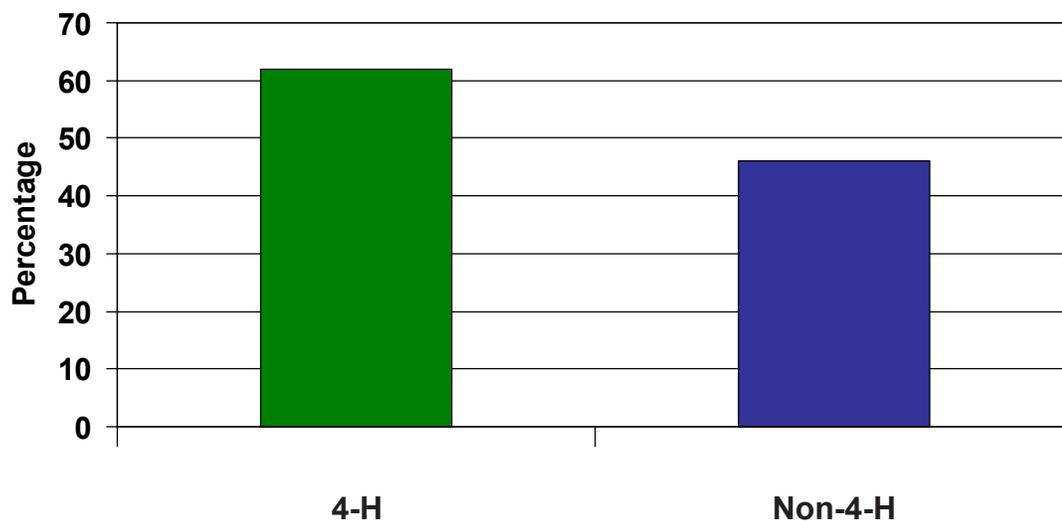
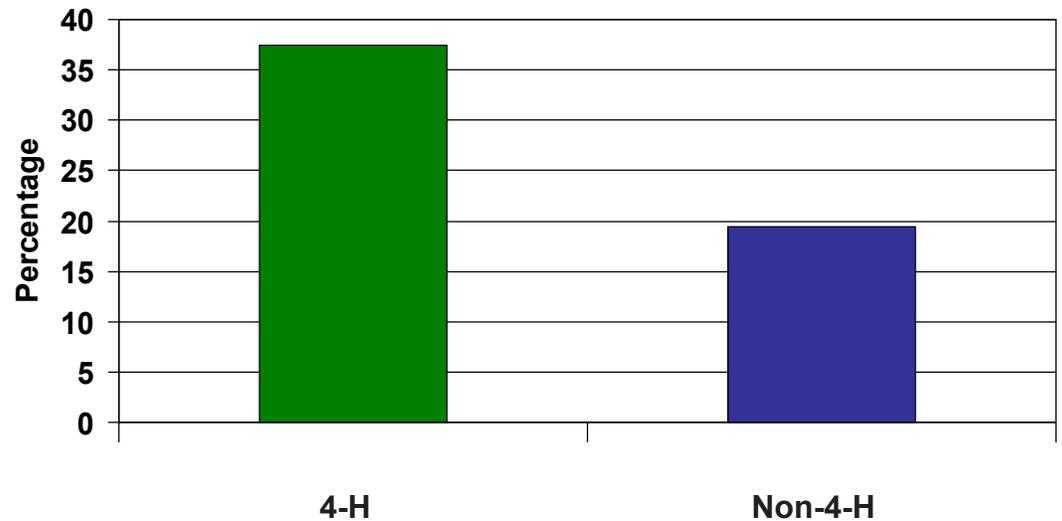


Table 3. Odds ratios for science, engineering, and technology measures; 4-H youth compared with other young people

Measure	Odds ratio	Confidence interval		p-value
		Lower	Upper	
The programs I participate in after school and in the summer include...				
Science.	3.15	1.47	6.75	<.0001
Engineering.	2.31	0.92	5.80	.0069
Technology.	1.17	0.60	2.26	.0622
The programs I participate in after school and in the summer increase my interest in...				
Science.	2.47	1.31	4.68	<.0001
Engineering.	2.75	1.23	6.16	.0004
Technology.	1.56	0.83	2.94	.0049
I do well in subjects related to...				
Science.	2.35	1.30	4.25	<.0001
Engineering.	2.40	1.38	4.17	<.0001
Technology.	1.66	0.95	2.91	<.0001
I plan to take ... courses after I finish high school.				
Science	2.41	1.42	4.10	<.0001
Engineering	1.22	0.68	2.21	.0214
Technology	1.07	0.63	1.83	.0289
I plan to pursue a career in ...				
Science.	2.37	1.36	4.13	<.0001
Engineering.	1.31	0.66	2.61	.0334
Technology.	0.77	0.42	1.41	.4146

The programs that I participate in after school and in the summer increase my interest in science.



that they do well in technology subjects. Almost 40 percent of 4-H members also indicate that they plan to take technology courses after high school, while about 22 percent reported that they plan to pursue a technology career.

4-H members reported that, due to their program participation, their interest in science, engineering, and technology increased. Furthermore, 4-H members are more likely than other youth to feel that they do well in subjects related to science, engineering, and technology and 73 percent plan to take science, engineering, and technology courses after they are finished with high school. Overall, about 62 percent of 4-H members in this survey intended to pursue a career in either science, engineering, or technology, compared with 46 percent of non-4-H youth. These results demonstrate the impact of the 4-H program in providing positive opportunities to youth in the areas of science, engineering, and technology.

Activities

Youth today have an unprecedented array of sports, clubs, activities, youth development programs and entertainment options to choose from in their free time. For many youth these

activities will provide the foundation on which to develop their personalities and life skills. Research shows that young people who choose to be a part of a 4-H program are more likely to be educationally motivated, exhibit higher self-esteem and communicate positively with their peers.

Youth in the 4-H Study of Positive Youth Development were surveyed regarding their participation in a variety of youth development programs and other activities. Findings indicate a broad array of enrichment opportunities including dance, music art, sports and other organized youth programs. Many of these activities include both cognitive and personal enrichment and building strong connections to the local community.

The results suggest that there is a positive relationship between youth who participate in 4-H and in other types of activities, such as student governments, bands, chorus, sports and school clubs. In addition, 4-H member participation in sports, both inside and outside of school, was higher (66 percent) than those not involved in 4-H (56 percent). 4-H and non-4-H youth were about equally likely to participate in music and art activities (about 46 percent in each group).

Civic Engagement and Civic Values

Most California youth in this sample were engaged with their communities. The vast majority of youth in this survey (87 percent) said they felt it was “quite” or “extremely” important to them to help other people, and 80 percent felt it was quite or extremely important to make the world a better place in which to live. 4-H youth were particularly likely to feel this way. About 84 percent of respondents felt it was very important to speak up for equality, and 86 percent felt it was important to stand up for their own beliefs, even when unpopular.

About 60 percent of youth in this sample said that they volunteered or engaged in other community service activities that were not required by their schools. However, there was significant variation according to 4-H membership. Over 73 percent of 4-H youth reported volunteering, compared with 50 percent of non-4-H youth. 4-H youth were also more likely than non-4-H youth to report mentoring or peer advising (39 percent vs. 19 percent) or tutoring (38 vs. 21 percent). These differences were statistically significant; odds ratios are presented in Table 4.

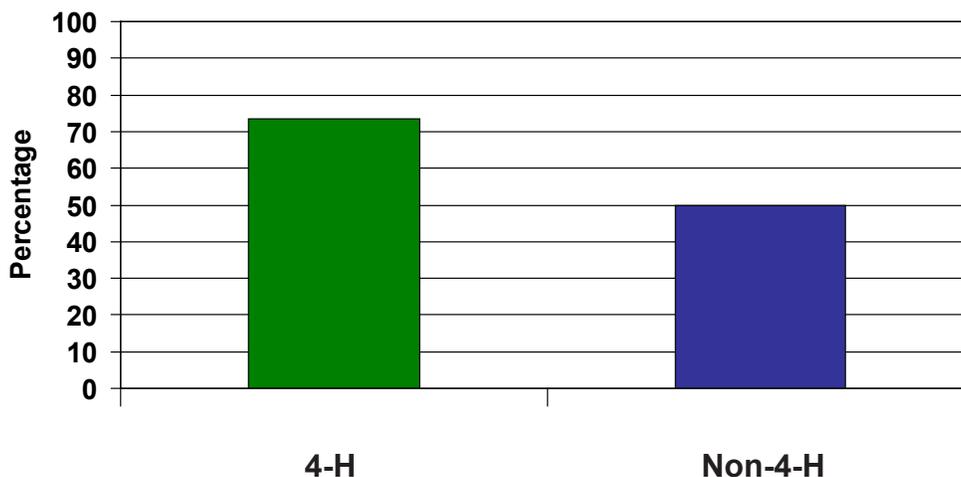
4-H youth were also significantly more likely than non-4-H youth to believe they could make a difference in their communities. Almost 79 percent of 4-H youth believed they could make things better by working with other

community members, while about 53 percent of non-4-H youth felt this way. 4-Hers were also significantly more likely to believe that they could help influence political decisions (45 percent vs. 31 percent).

Communication with parents and peers about politics was more common among 4-H members than other youth. 4-H members were more likely than other youth to report that they talked to their parents (56 percent vs. 37 percent) and their friends (46 percent vs. 34 percent) about politics. They were more likely to report being interested in their parents’ and friends’ political opinions, and to feel that their parents and friends encouraged them to express their own views. 4-H youth were somewhat more likely than non-4-H youth to report accessing media on a regular basis to obtain information about current events (70 percent vs. 53 percent).

In comparison to non-4-H participants, 4-H members were significantly more likely than other youth to have confidence in their ability to express their views on political issues to others (see Table 4). However, fewer than half of 4-H and other youth felt they could contact an elected official about a problem (43 percent of 4-H members and 25 percent of non-4-H youth). A little over half (53 percent) of 4-H youth felt they could contact a newspaper, radio, or TV talk show to express an opinion on an issue, compared with just 33 percent of non-4-H youth.

Percentage of youth who report volunteering in the past 12 months



I can make a difference in my community.

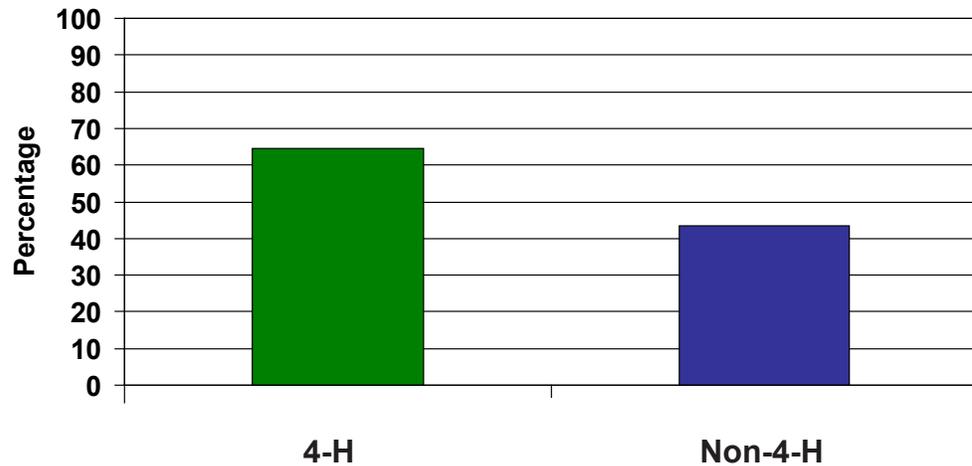


Table 4. Odds ratios for civic engagement measures; 4-H youth compared with other young people

Measure	Odds ratio	Confidence interval		p-value
		Lower	Upper	
<i>Ever participate in...</i>				
Volunteering	2.75	1.59	4.75	<.0001
Mentoring or peer advising	2.66	1.41	5.02	.0024
Tutoring	2.36	1.27	4.39	.0069
<i>Sometimes, often, or very often ...</i>				
Help out at school (not required)	1.53	0.90	2.61	.1144
Help a friend	1.77	0.65	4.82	.2649
Help make your city or town a better place to live	2.93	1.71	5.00	<.0001
<i>Agree or strongly agree...</i>				
I can make a difference in my community.	2.35	1.38	4.01	.0017
By working with others in the community, I can help make things better.	3.22	1.83	5.65	<.0001
People like me and my family can influence political decisions.	1.83	1.05	3.20	.0330
I talk to my parents/guardians about politics.	2.13	1.24	3.65	.0062
I talk to my friends about politics.	1.67	0.96	2.89	.0689
<i>Probably or definitely...</i>				
I can express my views in front of a group of people.	2.82	1.64	4.83	.0002
I can write an opinion letter to a local newspaper.	1.86	1.09	3.15	.0220
I can call someone on the phone that I have never met before to get help with a problem.	1.84	1.04	3.25	.0366
I can contact an elected official about a problem.	2.30	1.27	4.14	.0057

Risk Behaviors

Youth reported on the frequency of tobacco use (cigarettes, chewing tobacco, or snuff), alcohol use, and other substance use (sniffed glues, sprays, or gasses, marijuana or hashish, illicit drug use, and steroids) during the past 12 months. The majority of the sample did not use any of these substances. Overall, fewer than 15 percent of the sample used tobacco, 33 percent used alcohol, and 19 percent used other substances such as marijuana, ecstasy, cocaine, or nonprescription steroids.

The percentage of youth who reported using tobacco (whether cigarettes, chewing tobacco, or snuff) was significantly lower for youth who participated in 4-H (10 percent) than for other youth in the sample (25 percent). Likewise, 4-H youth were less likely to have used alcohol (29 percent) than were non-4-H youth (42 percent). Other substance use was also more common for non-4-H youth, almost 30 percent of whom reported the use of other substances, compared with 15 percent of 4-H youth.

Youth also reported on their delinquent behavior during the past 12

months, which included stealing, getting in trouble with the police, fighting, damaging property for fun, and carrying a weapon. Slightly less than half of the sample (45 percent) reported engaging in any of these behaviors. Overall, about 40 percent of 4-H youth reported at least one delinquent behavior compared with 56 percent of non-4-H youth.

Finally, youth reported on whether they had ever engaged in sexual intercourse. Those who reported they were sexually active answered a question about whether they used contraception at intercourse. The vast majority of the sample reported that they had never had sexual intercourse. More specifically, 90 percent of the 4-H youth in the sample reported that they had never engaged in sexual intercourse versus 69 percent of non-4-H youth. Of those youth who were sexually active, 84 percent of the 4-H youth reported that they always used contraception compared to 43 percent of non-4-H youth in the sample.

Overall, 4-H youth were less likely than other youth in the sample to engage in the risk behaviors identified here. As illustrated in Table 5, the odds ratios fell below 1 (see Table 5).

Substance use in past 12 months

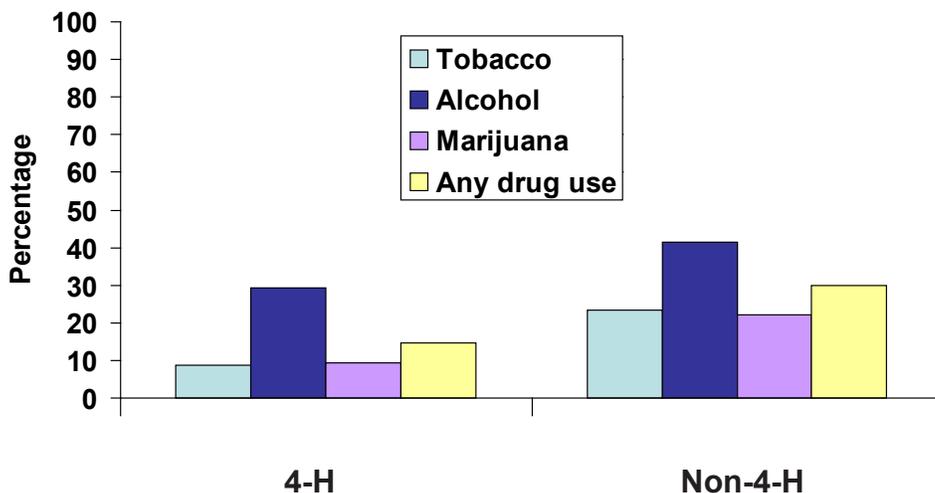


Table 5. Odds ratios for risk behavior measures; 4-H youth compared with other young people

Measure	Odds ratio	Confidence interval		p-value
		Lower	Upper	
<i>Substance use, past 12 months</i>				
Tobacco	0.36	0.18	0.71	.0035
Alcohol	0.58	0.34	1.01	.0003
Any other substance use (marijuana, glue, ecstasy, cocaine, steroids, or other drugs)	0.40	0.21	0.75	<.0001
<i>Sexual intercourse and contraception</i>				
Ever had sexual intercourse	0.26	0.13	0.52	<.0001
Among those who have had sex, only sometimes or never use contraception	0.14	0.03	0.63	.0064
<i>Delinquent behavior, past 12 months</i>				
Any delinquent behavior	0.53	0.31	0.91	.0064
Stole something from a store	0.58	0.30	1.12	<.0001
Got in trouble with the police	0.35	0.19	0.67	<.0001
Hit or beat up someone	0.33	0.18	0.58	<.0001
Damaged property for fun	0.49	0.24	1.00	<.0001
Carried a weapon (gun, knife, etc.)	0.63	0.34	1.16	<.0001
Taken part in bullying another child, past 2 months	0.89	0.48	1.68	.0012

Discussion

The 4-H Study of Positive Youth Development provided new data on the impacts of the 4-H program for 285 youth sampled from 14 California counties. Results for California were in line with results that have been published from the national data. Youth who participate in the 4-H program have more positive outcomes on a range of measures, including positive youth development indicators, academic engagement, risk behaviors, civic engagement, and interest and participation in science, engineering, and technology programming. 4-H youth development programming

cultivates growth in a number of areas, including youth development measures such as confidence, competence, and connections; these results demonstrate the impact of that intentional programming. 4-H also has many projects that allow young people to participate in science, engineering, and technology related projects as well as service learning projects to better their communities. These results demonstrate the impacts of participation in the 4-H youth development program. 4-H programs foster growth and development, particularly around the areas of science and citizenship.

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