

## MISSOURI 4-H AND THE 4-H STUDY OF POSITIVE YOUTH DEVELOPMENT

### Report of Wave 6 (2008) Findings

University of Missouri 4-H Center for Youth Development

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In 2007, Missouri 4-H joined the national 4-H Study of Positive Youth Development. Funded by National 4-H Council and lead by researchers at Tufts University, this longitudinal study began with fifth graders. By the end of 2008, data have been collected from 6,120 adolescents and 3,084 of their parents in 41 states. Plans are to continue surveying these youth through high school and into college. Although funded by 4-H, the participants are diverse adolescents who may or may not be 4-H members.

The 4-H Study of Positive Youth Development is a landmark investigation, because of its size, sophisticated methodology, and the commitment to study adolescent development over a number of years. It is helping parents, educators, and researchers better understand the factors that lead to positive growth and decreased risk during adolescence. The study also examines the impact of “out of school” time activities such as 4-H.

Between March and August of 2007, 338 adolescents from Missouri participated in Wave 5 of the 4-H Study of Positive Youth Development. In 2008, 296 Missouri adolescents were surveyed. One hundred, sixty-five of those youth were new to the study and 131 were students who had been surveyed in 2007. The students were from 26 sites in Missouri. (See Appendix A for sites.) Four-H Youth Development Specialists from the University of Missouri and Lincoln University recruited students in grades 6 to 12 to complete a written survey. Parents could also complete an optional survey. Since one of the Missouri sites was a residential facility for adolescents (n=74), those young people are not included in the results reported here.

#### **National Findings:**

Findings from the first five years of the national study can be found at <http://4-h.org/d/Pages/Layouts/GroupPageedc5.html> Key findings to date included:

- Positive Youth Development (PYD) is made up of the “Five Cs”: Competence, Confidence, Connection, Character, and Caring.
- When PYD is present, we can expect to find a sixth C: Contribution to self, family, and community.
- High PYD scores in earlier grades are good predictors in later grades of higher contribution and lower rates of unhealthy behaviors such as smoking, drinking, and bullying.

In addition, researchers are also studying the impact of 4-H participation. The large national sample of teens permits researchers to compare 4-H and non-4-H participants. The groups are matched on key factors such as gender, race/ethnicity, community type, number of parents in the home, family per capita income, and mother’s education. The matched groups are also similar in their level of participation in out-of-school time programs. All students in the matched samples participated at least two times per month in 4-H or a similar youth development program.

When compared at the time they were 9<sup>th</sup> graders, researchers found that 4-H participants had significantly higher scores on:

- Positive Youth Development
- Contribution
- SOC – a measure of goal setting and goal management skills

4-H participants also had significantly lower scores on measures of depression and risky behaviors. Plus, 4-H participants were significantly more likely to report that they expected to go to college.

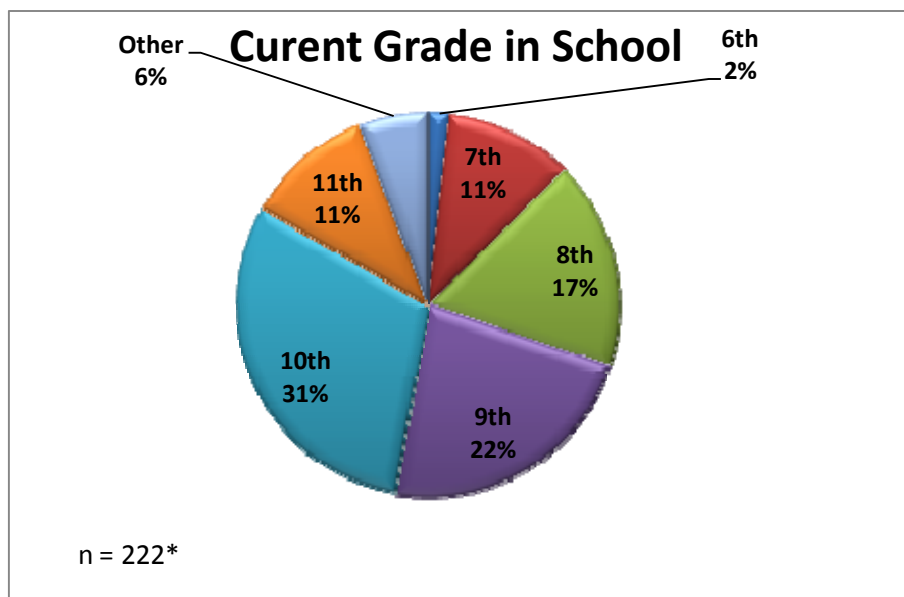
The longitudinal findings are also exciting. Using data from multiple years, researchers created models that show trajectories or patterns of change over time. They identified desirable, undesirable, and intermediate patterns. Then, they compared matched samples of youth. For youth who had participated in 4-H at some point during 5-9<sup>th</sup> grades, they found:

- 4-H Youth were 2.5 times more likely to be in the highest Contribution group
- 4-H Youth were 1.1 times more likely to be in the highest PYD group
- 4-H Youth were 1.76 times more likely to report better grades
- 4-H Youth were 1.7 times more likely to report that they expected to go to college

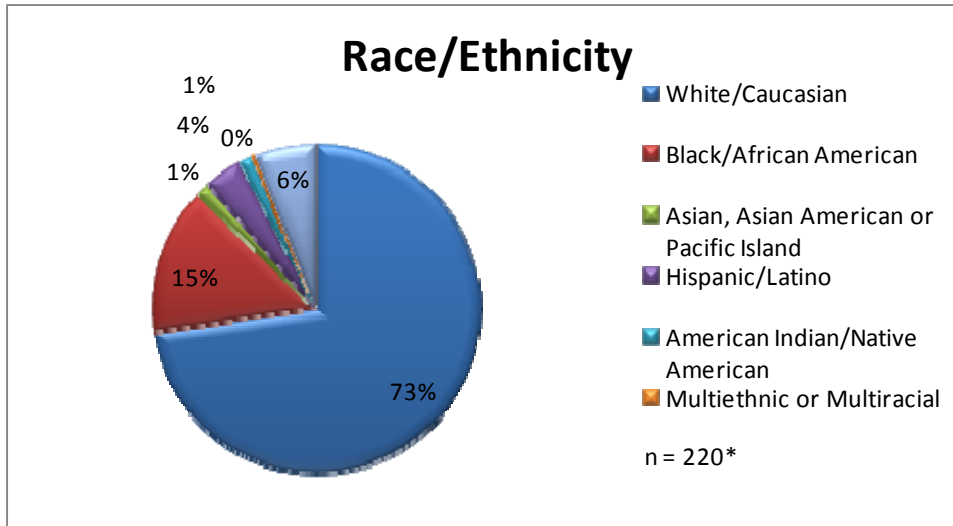
**Missouri Findings:**

Missouri 4-H findings are similar to the national results. Graphs 1 and 2 show some of the characteristics of Missouri students surveyed in Wave 6, which is data collected in 2008.

**Graph 1** Wave 6 Missouri Sample – Current Grade in School



**Graph 2 Wave 6 Missouri Sample – Race or Ethnicity**



\*Some students skipped items or gave incomplete answers.

In addition to contributing to the national study, we particularly wanted to know about the value of Missouri 4-H participation. In order to explore this, we grouped Missouri students based on their self-reported 4-H participation in the past year. Groups were:

- Non-4-H – Never participated in a 4-H club
- 4-H – Participated in a 4-H club at least once a month

Tables 1, 2, and 3 describe the two groups:

**Table 1 – Wave 6 Missouri Sample – Gender and 4-H Participation**

	Non 4-H	4-H	Total
<b>Male</b>	33 (48.5%)	47 (37%)	80 (41%)
<b>Female</b>	35 (51.5%)	79 (63%)	114 (59%)
<b>Total</b>	68	126	194**

**Table 2 – Wave 6 Missouri Sample – Grade Level and 4-H Participation**

	Non 4-H	4-H	Total
<b>6<sup>th</sup> Grade</b>	0	2 (2%)	2 (1%)
<b>7<sup>th</sup> Grade</b>	0	23 (18%)	23 (12%)
<b>8<sup>th</sup> Grade</b>	11 (16%)	23 (18%)	34 (17.5%)
<b>9<sup>th</sup> Grade</b>	20 (29%)	23 (18%)	43 (22%)
<b>10<sup>th</sup> Grade</b>	27 (40%)	32 (25%)	59 (30%)
<b>11<sup>th</sup> Grade</b>	8 (12%)	13 (10%)	21 (11%)
<b>Other</b>	2 (3%)	10 (8%)	12 (6%)
<b>Total</b>	68	126	194**

**Table 3 – Wave 6 Missouri Sample – Race/Ethnicity and 4-H Participation**

	<b>Non 4-H</b>	<b>4-H</b>	<b>Total</b>
<b>White, Caucasian, Not Hispanic</b>	56 (82%)	87 (70%)	143 (74.5%)
<b>Black or African American</b>	2 (3%)	21 (17%)	23 (12%)
<b>Hispanic or Latino</b>	3 (4%)	3 (2%)	6 (3%)
<b>Asian, Asian American or Pacific Islander</b>	1 (1.5%)	2 (2%)	3 (2%)
<b>American Indian/Native American</b>	3 (4%)	0	3 (2%)
<b>Multiethnic or multiracial</b>	1 (1.5%)	0	1 (.5%)
<b>Other</b>	2 (3%)	11 (9%)	13 (7%)
<b>Total</b>	68	124	192**

\*\*Some students skipped or gave incomplete answers on the questions on 4-H Participation. Therefore, they could not be included in these analyses.

We then decided to focus the Missouri 4-H analysis on more homogeneous developmental groups. The data were separated into two groups, 8<sup>th</sup> and 9<sup>th</sup> graders and 10<sup>th</sup> and 11<sup>th</sup> graders. Table 4 breaks the participants out by 4-H participation and grade groups.

**Table 4 - Wave 6 Missouri Sample – Condensed Grade Level and 4-H Participation**

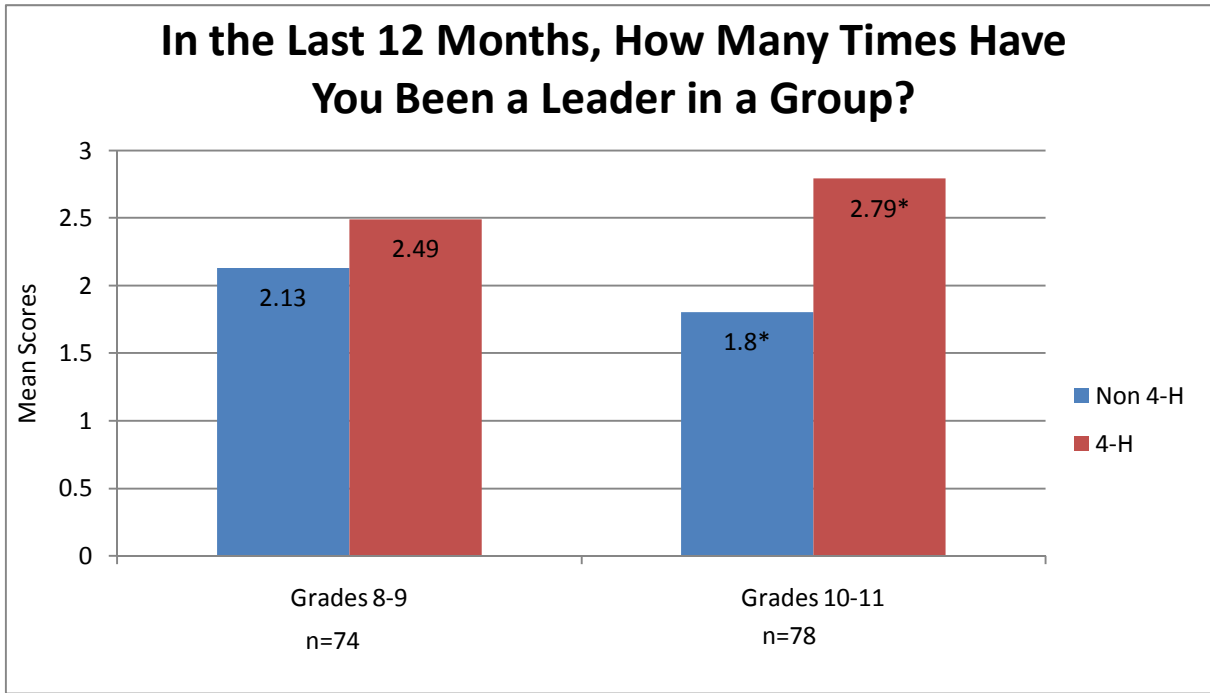
	<b>8<sup>th</sup> and 9<sup>th</sup> Grade</b>	<b>10<sup>th</sup> and 11<sup>th</sup> Grade</b>	<b>Total</b>
<b>Non-4-H</b>	31 (40%)	35 (44%)	66 (42%)
<b>4-H Participant</b>	46 (60%)	45 (56%)	91 (58%)
<b>Total</b>	77	80	157

Then we tested whether the average (mean) scores were statistically different for some of the factors measured in the 4-H Study. For Missouri 10<sup>th</sup> and 11<sup>th</sup> grade students in Wave 6, we found significant differences between the 4-H and non-4-H groups on:

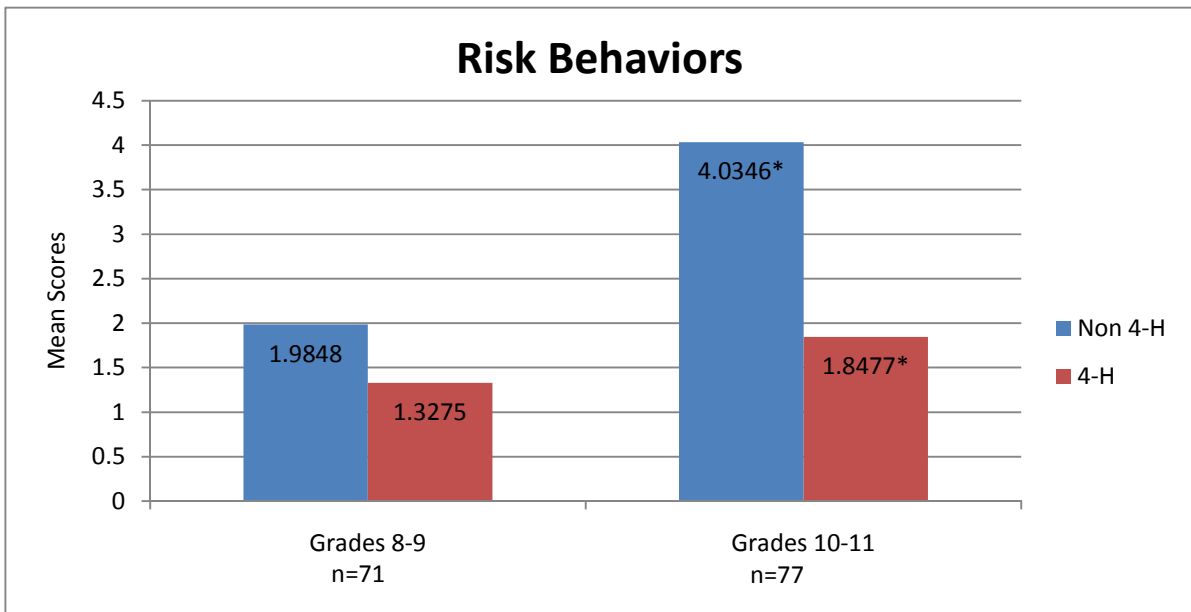
- Number of leadership experiences
- Number of risk behaviors
- Number who expect to go to college
- Number who want to go to college
- Number who said science, engineering and computer technology programs increase interest in science

Graphs 3 to 7 highlight these findings.

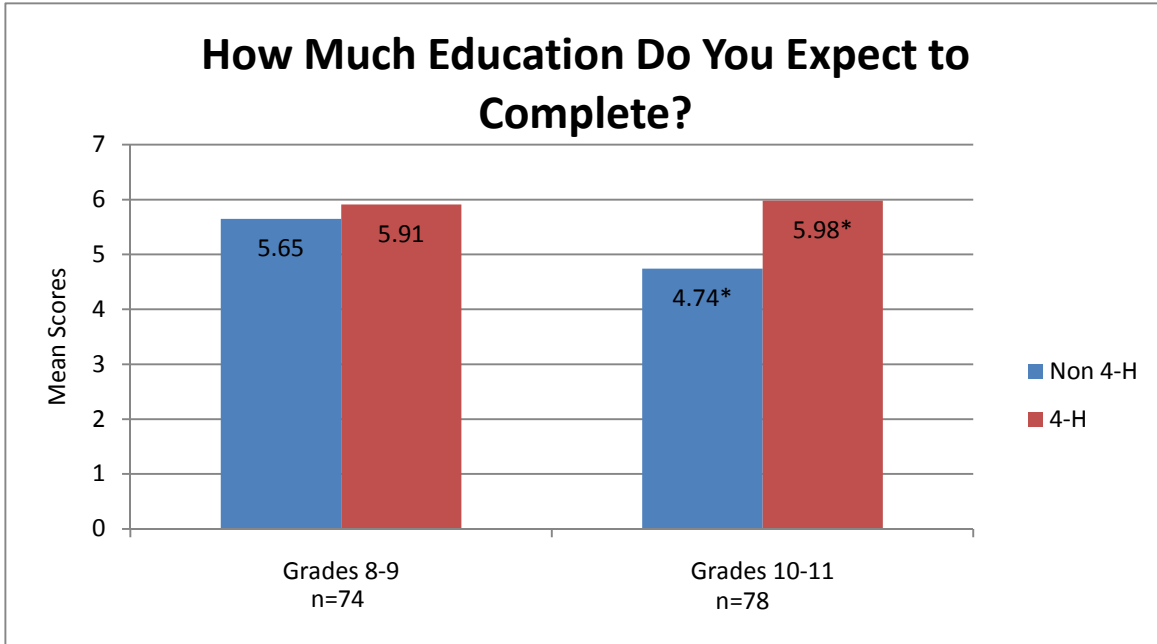
Graph 3 – Wave 6 Missouri Sample – Number of Leadership Experiences



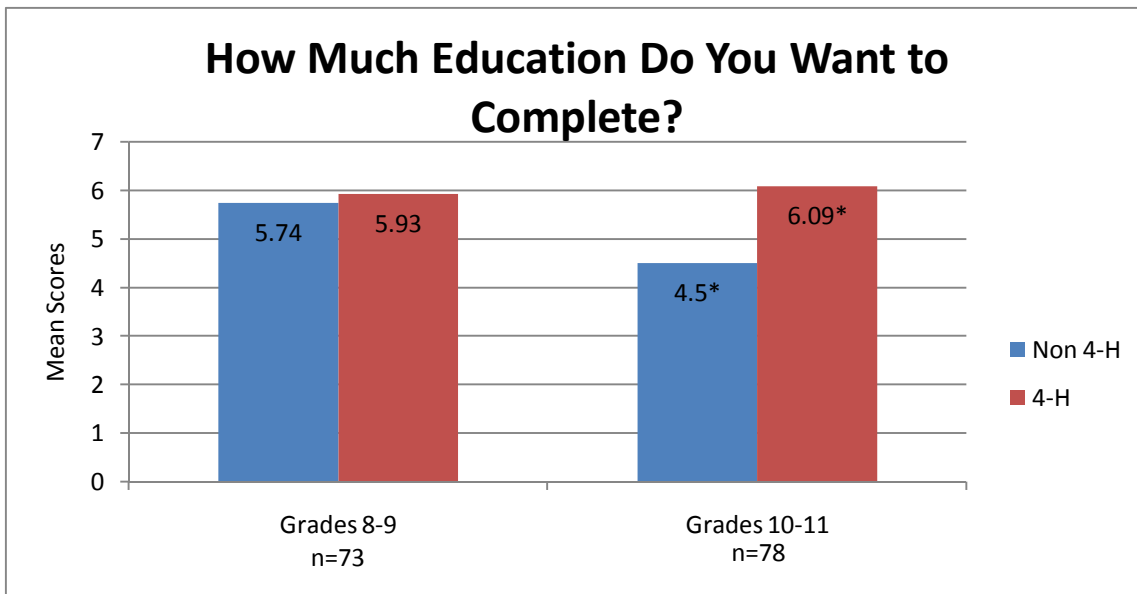
Graph 4 – Wave 6 Missouri Sample – Risk Behaviors



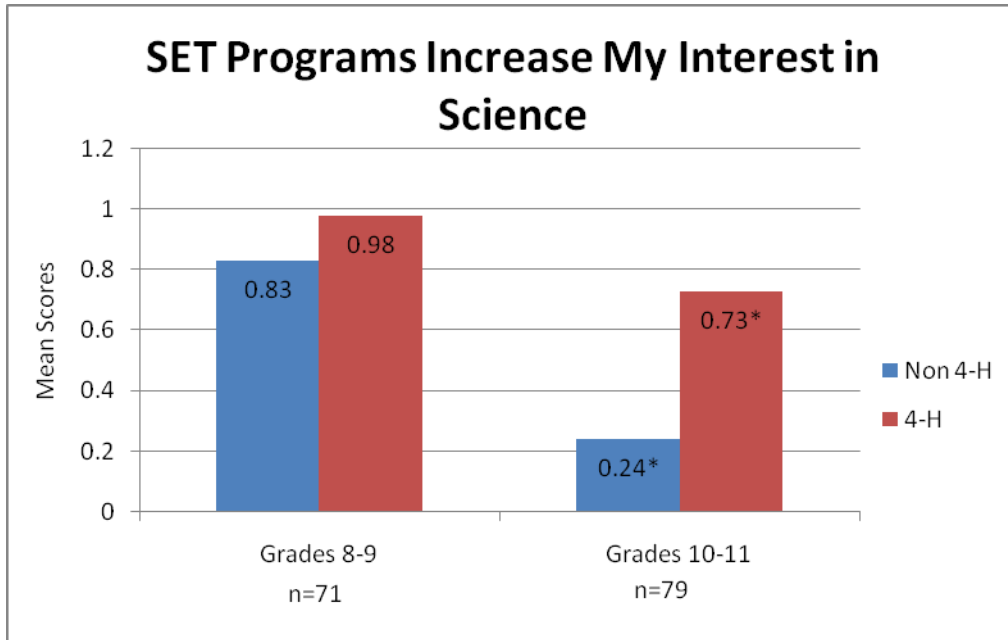
Graph 5 – Wave 6 Missouri Sample – Education Expect to Complete



Graph 6 - Wave 6 Missouri Sample – Education Wanting to Complete



**Graph 7 – Wave 6 Missouri Sample – SET Programs Increase Interest in Science**



These findings were mostly consistent with the national sample and the longitudinal data. These data suggest that young people who are active in 4-H are likely to report more positive behaviors and fewer negative behaviors.

**Gender Differences:**

Earlier analyses had suggested that 4-H impacts might differ by gender. Therefore, we analyzed our Missouri 4-H Wave 6 sample by gender. We found significant differences between 4-H girls and non-4-H girls on three items, but not for 4-H boys and non-4-H boys:

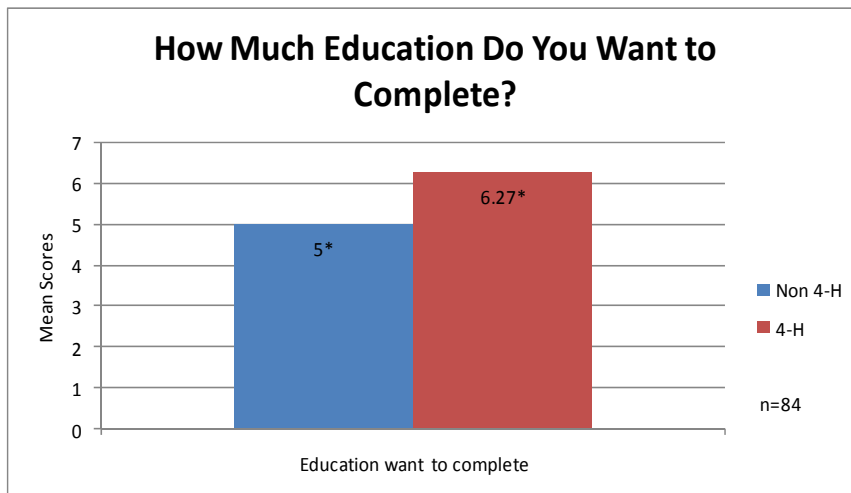
- Girls in 4-H were more often group leaders than those not in 4-H.
- Girls in 4-H wanted to finish a higher level of education than those not in 4-H.
- Girls in 4-H expected to complete a high level of education than those not in 4-H.

Graphs 8-10 illustrate these findings.

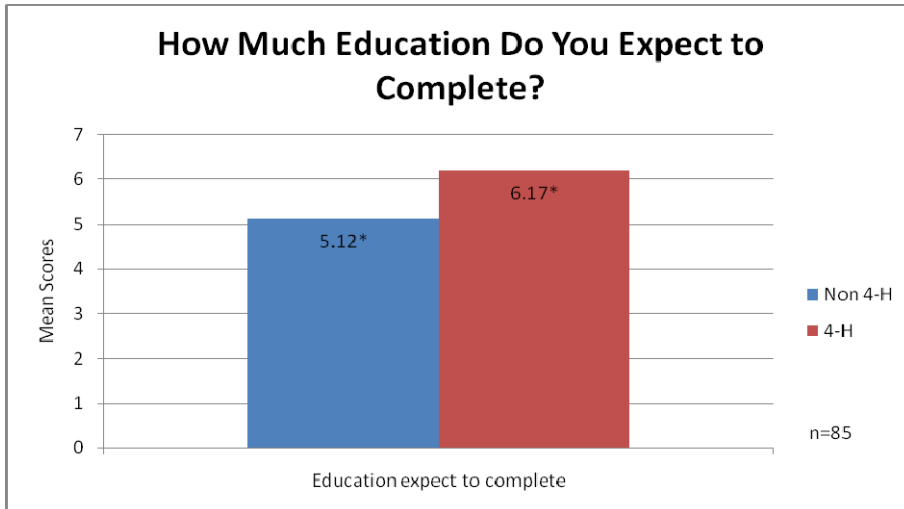
**Graph 8– Wave 6 Missouri Sample – Girls: Leader of a Group**



**Graph 9 – Wave 6 Missouri Sample – Girls: Completing Education - Want**



**Graph 10 – Wave 6 Missouri Sample – Completing Education -**



### **Attitudes toward Science, Engineering, and Computer Technology**

Beginning in Wave 5, Missouri 4-H has examined young people’s attitudes and interest in science, engineering, and technology. In Wave 6, similar questions were added to the national survey that measured factors that shown to be related to students’ attitudes toward science and computer technology. Analysis of the national Wave 6 data showed the following significant differences:

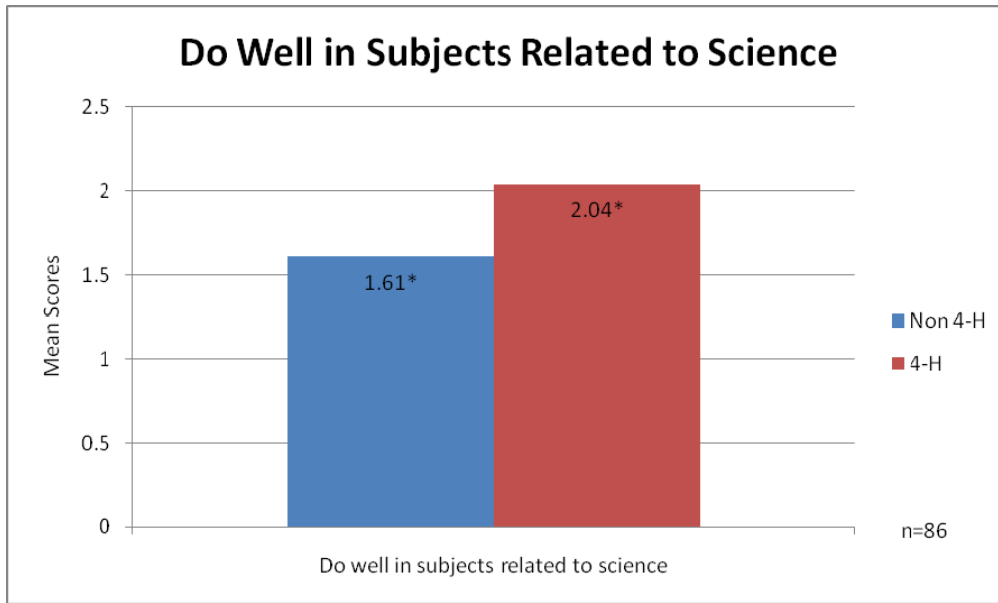
- 4-H participants were more likely to report they do well in subjects related to science, engineering, and computer technology.
- 4-H participants were more likely to report they plan to take courses related to science, engineering, and computer technology after high school;
- 4-H participants were more likely to report that they plan to pursue a career in science, engineering, or computer technology.

Due to their under-representation in the science, engineering, and technology fields, we particularly examined the impact of 4-H participation on girls. In the national Wave 6 sample, 4-H girls were significantly more positive on all the measures related to science. For Missouri girls in Wave 6, we found these significant differences:

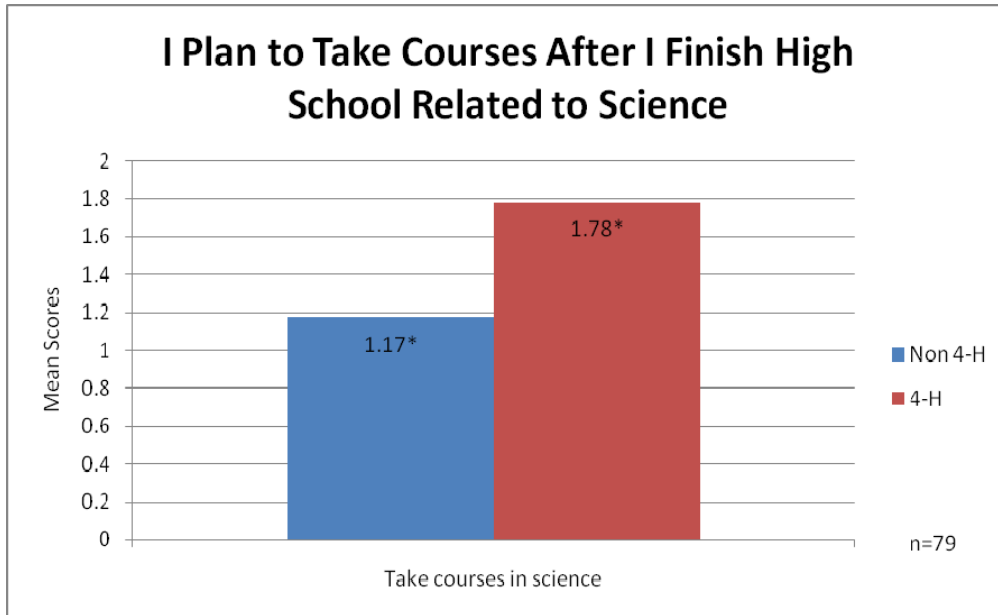
- Girls in 4-H were more likely to report that they do well in subjects related to science.
- Girls in 4-H were more likely to report planning to take courses related to science and technology after high school.

Graphs 11-13 illustrate these differences for girls in the Missouri sample, grades 8 to 11.

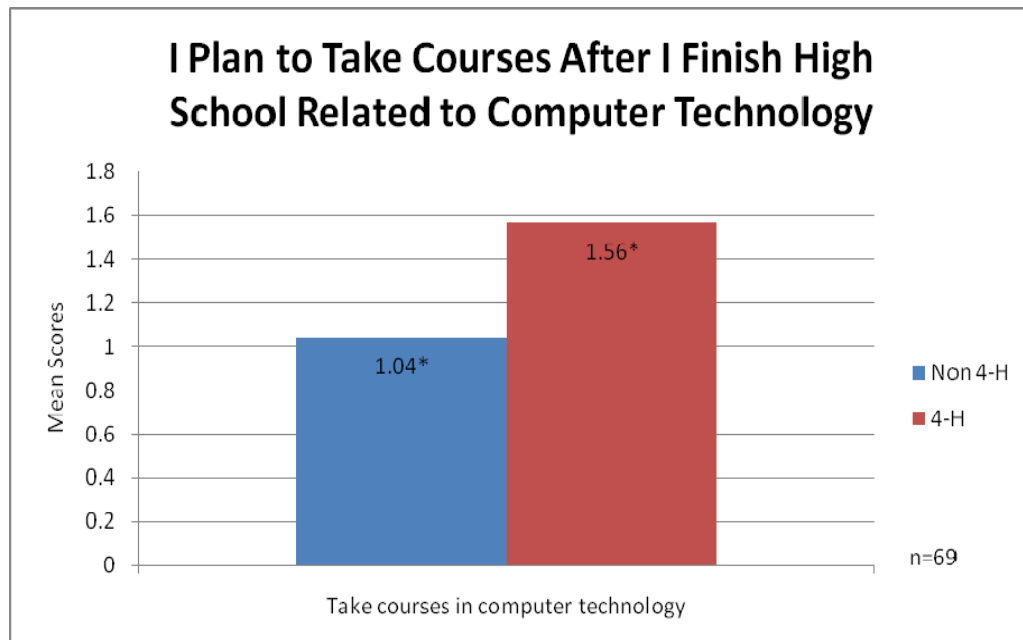
**Graph 11 – Wave 6 Missouri Sample – Girls: Do Well in Science**



**Graph 12 – Wave 6 Missouri Sample – Girls: Science Courses after High School**



**Graph 13 – Wave 6 Missouri Sample – Girls: Technology Courses after High School**



**Discussion and Recommendations:**

As with the Missouri Wave 5 results, we are pleased that our findings are relatively consistent with the national study. However, we must be careful in making comparisons or drawing conclusions. Missouri Wave 6 data is “cross-sectional,” rather than longitudinal. It only tells us about a non-random sample of Missouri youth at one point in time. The most powerful national results are based on examining patterns of change over time. Further, the Missouri parent sample is too small to create matched samples of 4-H and non-4-H participants that parallel the national analysis. Since the parent data provide information on family income, parent education, and family structure, we cannot control for the influence of these important factors in our Missouri analyses. Thus, we must use caution in comparing results and making generalizations.

The findings do raise some interesting questions. Consistent with the national findings, Missouri youth who participated in 4-H were more likely to indicate that they planned to attend college. But, when younger Missouri adolescents (8<sup>th</sup> and 9<sup>th</sup> graders) were compared with older adolescents (10<sup>th</sup> and 11<sup>th</sup> graders), the differences were only significant for the older group (Graphs 5 and 6). We believe that this finding may illustrate a key developmental shift, as older teens assess their college prospects. Research sponsored by the Missouri Higher Education Loan Authority suggests that college aspirations decline over time. Among 7<sup>th</sup> graders, 98% believed they would attend college. By 9<sup>th</sup> grade, the percentage dropped to 89% and to 83% by the 11<sup>th</sup> grade. (Swail, W.S. and Hosford, S. 2006) If youths in the 10<sup>th</sup> and 11<sup>th</sup> grade who participate in 4-H remain more positive about their college prospects, we may hypothesize that 4-H experiences are successful in helping young people perceive college as an attainable goal. If this positive attitude persists across high school years, this may be an important outcome of 4-H participation that will be of interest to parent, educators, and policy-makers.

On the SET items, Missouri students' results were not consistent with the national findings. In the national Wave 6 analyses, the differences between 4-H and non-4-H participants on the SET items were significant for both girls and boys. In the Missouri sample, the differences were only significant for girls on selected items. Similarly, Missouri 4-H girls reported more leadership experiences and greater interest in higher education. Missouri 4-H boys were not significantly different than other Missouri boys who completed the Wave 6 survey. Since females are often under-represented in science and technical fields or in leadership roles, we are pleased that 4-H girls are doing well since 4-H appears to have a positive impact on young women. However, these gender differences raise questions for the Missouri 4-H program. Are Missouri 4-H programs more slanted to the developmental interests and needs of young women? Are there development differences between boys and girls that may be erased over time, but that are particularly notable for this age cohort? These and other questions are worthy of reflection as we work to make 4-H programs responsive to diverse youth.

Although not discussed here, the comparisons between Missouri youth and the national sample also warrant further study. For example, on the item asking "How often have you been bullied?" Missouri youth had an average score of 0.75 on a scale of zero to five. The national sample for Wave 5 had a lower average score of 0.39. Similarly our Missouri youth were more likely to report smoking cigarettes than the national sample (0.34 average score for Missouri youth and 0.29 average score for the national sample). On the positive side, the percent of Missouri youth reporting a positive relationship with a significant adult than a parent was 63.51% vs. 59.60% for the national sample. Clearly, we have not tested these means to determine if differences are significant. However, the notable differences merit both discussion and further analyses. (See web link below-Missouri site summary of Wave 6 mean scores.)

In all of these cases, we will do further analyses and research to try to understand the reasons for these differences. One goal will be to use this research to identify implications for parents, schools, and communities as we strive to provide the best environments for children and teens. We are grateful to the Missouri youth, parents, educators, 4-H faculty, and other who have contributed to this research and to a better understanding of meeting the needs of young people as they grow and develop.

**FOR MISSOURI W6 SITE SUMMARY :**

<http://4h.missouri.edu/resources/evaluation/pydstudy.htm>

**FOR MISSOURI WAVE 5 RESULTS:**

<http://4h.missouri.edu/resources/evaluation/pydstudy.htm>

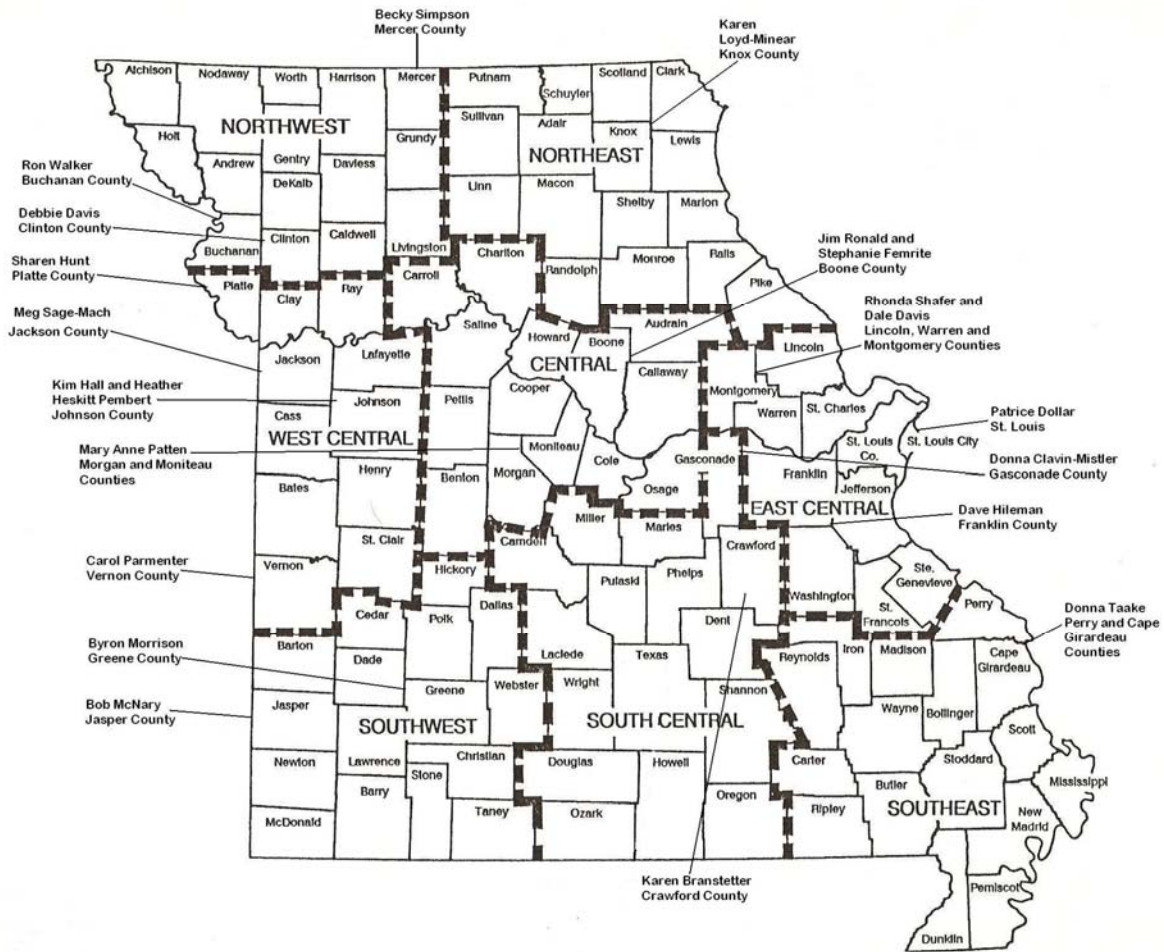
**References:**

Lerner, Richard M., Lerner, Jacqueline V., and Phelps, Erin. (2009) Waves of the Future: The first five years of the 4-H Study of Positive Youth Development. Available at: <http://4-h.org/d/Pages/Layouts/GroupPageedc5.html>

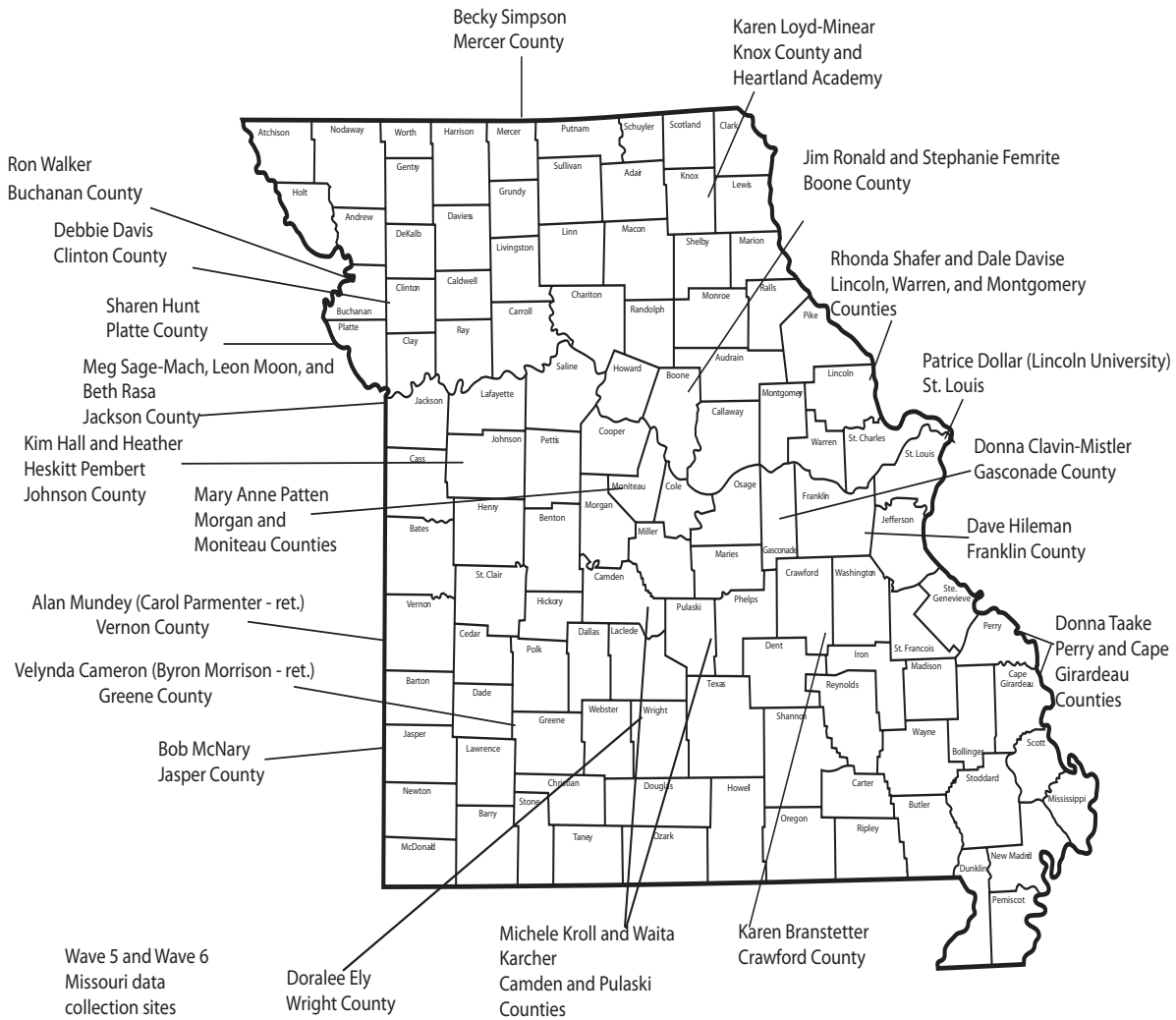
Swail, W.S. and Hosford, S. (2006) EPI Report: Missouri Students and the Pathways to College. Missouri Higher Education Loan Authority. Available at: <https://mohela.com/AccessForSuccess/default.aspx>

**APPENDIX A:**

**WAVE 5 MAP OF DATA COLLECTORS AND DATA COLLECTION SITES**



# WAVE 6 MAP OF DATA COLLECTORS AND DATA COLLECTION SITES



LINK TO MISSOURI W6 SITE SUMMARY

<http://4h.missouri.edu/resources/evaluation/pydstudy.htm>