

# Idaho Students' STEM Education Experiences

Micron STEM Education Research Initiative

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# Introduction

Current world problems and the global economy require a more science and math literate citizenry and workforce. Unfortunately, students across the nation have low levels of interest in science, technology, engineering, and math (STEM). In addition, students' performance in math and science generally proves inadequate for their success in a STEM major in college. This is also true for students in Idaho. Only 28% of Idaho eighth graders are proficient in math and 36% are proficient in science (NCES 2011). In addition, Idaho has a significantly lower percentage (29.5%) of 18-24 year olds in college compared to 36.5% enrolled in the nation as a whole (NCHEMS 2009). To identify the multiple factors that help explain Idaho's STEM educational outcomes, a Micron funded five-year research project explores community and statewide factors. This report summarizes key findings from surveys collected from students in 4<sup>th</sup>, 7<sup>th</sup>, and 10<sup>th</sup> grades residing in twelve different communities across Idaho.

\* For more information about this project, refer to the following web address:  
<http://www.uidaho.edu/research/stem/micronstemed>

# Executive Summary: Idaho Students' Experiences

1. Students' positive experiences with, and attitudes toward, math and science significantly decline as they progress in grade level.
2. The majority of students in these grades aspired to earn a degree in a 4-year college or professional/graduate degrees. Students' expectations exceeded what they believed their parents expected of them and the Idaho State Board of Education 2020 goal to increase the number of higher education degree-holding adults in Idaho.
3. Although students aspired to earn higher education degrees, and were aware that their academic performance, ACT/SAT performance, and financial aid access were important factors in their ability to go to college, a large number of tenth graders felt unprepared in these areas.
4. Most fourth, seventh, and tenth graders were not interested in jobs that use a lot of math and did not want to be scientists.
  - Yet, they are interested in STEM-related fields. When asked what career they were interested in, specifically, a large number of students listed jobs in medical-, engineering- and technology-related fields.
5. A majority of seventh and tenth graders said that money and working with their hands/physical work were important considerations when thinking about the type of jobs they wanted to pursue as adults.

## Executive Summary: Idaho Students' Experiences

6. Parental education positively influences children's attitudes toward, and experiences with, math and science.
  - Children whose parents had a college degree reported higher levels of support and interest from adults in their family than children with parents who did not have college degrees. These outcomes tested statistically significant.
7. Girls' responses indicated a dramatic decline in their positive attitudes toward, and experiences with, math and science between seventh and tenth grades.
  - Seventh-grade girls liked math and science more than boys, even though they did not perform as well in the survey's Scientific Fact Index.
  - Tenth-grade girls were less positive than boys about both math and science and less interested in jobs related to these subjects. These outcomes were statistically significant.
8. Students from various ethnic backgrounds also had different experiences with science and math.
  - For several questions, Hispanic students (in seventh and tenth grades) were statistically less likely to have positive experiences with, and hold positive attitudes toward, math and science.
9. Rural and urban students did not differ nearly as much as might be expected.
  - Attitudes toward science were more positive for rural students, but other possible differences in math and science experiences were not statistically significant.

## General Survey Findings

In this section we summarize fourth, seventh, and tenth graders' educational experiences, attitudes, and performance especially in relation to science and math. We also examine their educational aspirations, level of preparation for college, and career aspirations.

## Student Sample Demographics

Demographic Groups	4 <sup>th</sup> Graders (n=426)	7 <sup>th</sup> Graders (n=995)	10 <sup>th</sup> Graders (n=1179)
<b>Gender</b>			
Girl	49% (207)	49% (455)	52% (600)
Boy	51% (217)	51% (483)	48% (554)
<b>Ethnicity*</b>			
White	--	71% (662)	80% (932)
Hispanic	--	17% (161)	17% (195)
American Indian or Alaskan Native	--	7% (66)	4% (47)
Black or African American, Asian American, or Other	--	15% (138)	9% (90)
<b>Geographic Residence</b>			
Rural	32% (135)	14% (143)	12% (141)
Urban	68% (291)	86% (852)	88% (1038)
<b>Parents' Educational Level</b>			
One or more parents with college degree	--	50% (454)	52% (601)
Neither parent has a college degree	--	19% (170)	35% (400)
Don't know	--	31% (279)	13% (146)

The proportion of boys and girls in our sample is similar to the state population. According to National Center for Educational Statistics, boys comprised 51.5% and girls 48.5% of Idaho's K-12 school population (2010-11).

The ethnic distribution of the sample is similar to the state population. National Center for Educational Statistics reports white students comprise 78.5% of Idaho's K-12 school population. Hispanic students represent 15.9% while other minority populations (including American Indians, African-Americans, and Asian-Americans) are 5.6% of the student population (2010-11).

Students in our survey reported having more highly educated parents than is typical among adults in Idaho (34% of Idahoans 25 years or older had an associate's degree or higher in 2011).

A large number of students in our sample did not know if their parents' had college degrees.

\*Students could identify with more than one ethnicity, thus percentages do not total 100. Fourth graders were not asked this question.

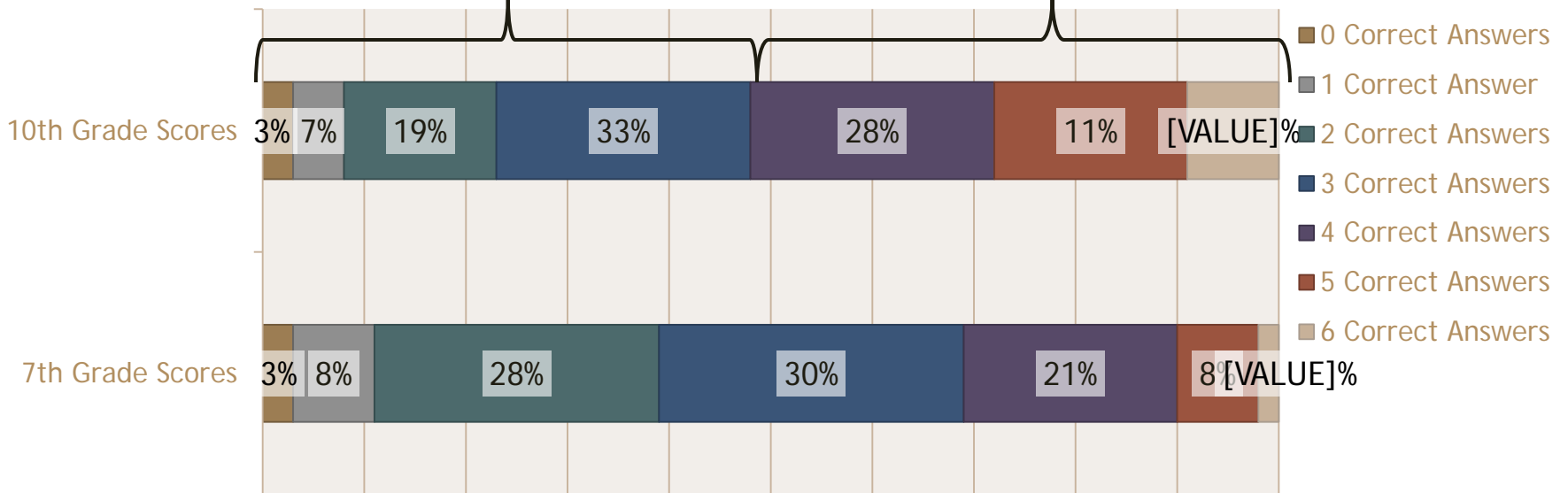
**Note:** Frequencies are listed in parentheses.

## Seventh and Tenth Graders' Scientific Fact Index Scores

Because student grades in science and math were not available, the survey included a scientific fact index comprising six questions to measure students' science knowledge. The same set of questions were given to both seventh and tenth graders. Students were also asked to report the typical grades they earned in math and science.

Almost half of all tenth graders answered three or less questions correctly, averaging 3.5.

As expected, tenth graders scored better than seventh graders on the same science index.



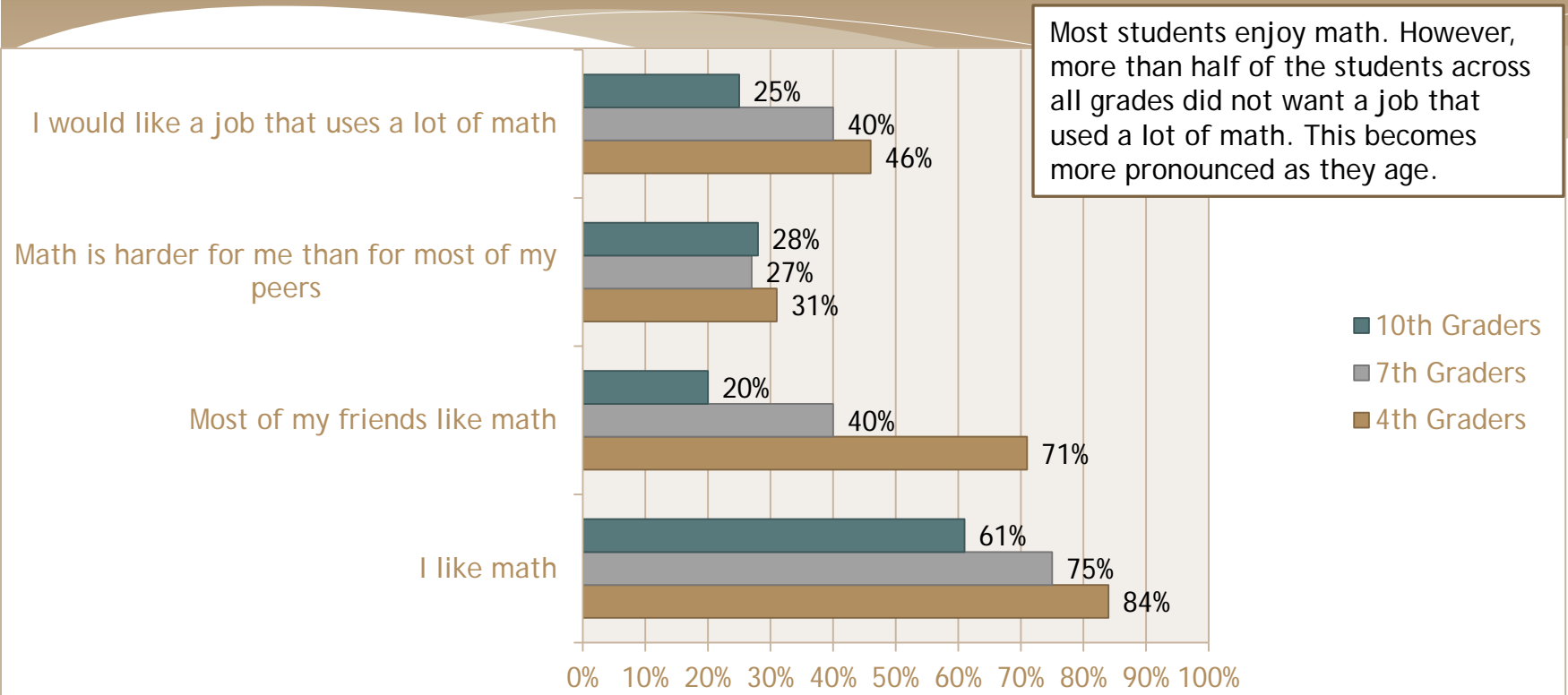
Students who reported earning A's and B's in math and science were more likely than students with other grades to get the most index answers correct. This suggests students' math and science school grades are aligned with this scientific fact index.





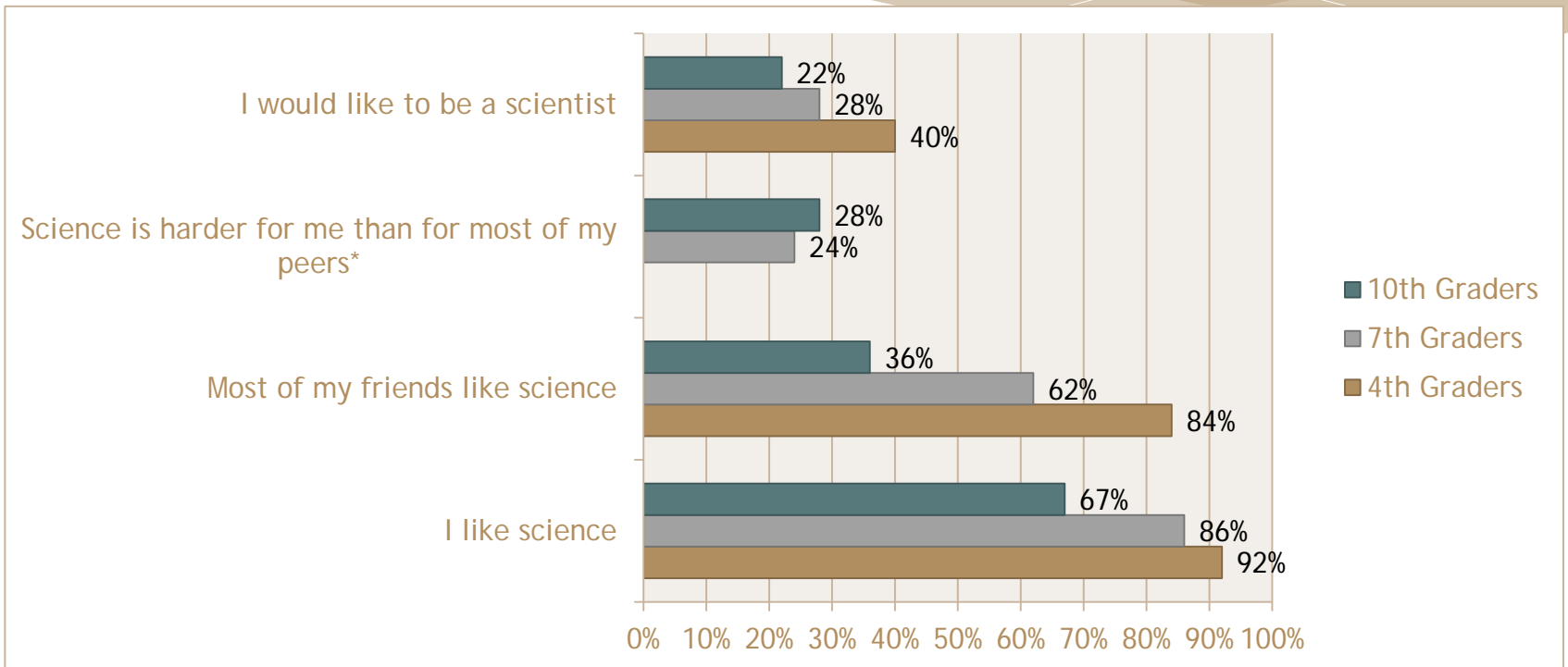
## Math Attitudes

Although most fourth, seventh, and tenth graders indicated they like math and found it no harder for them than it was for most of their peers, students' interest in jobs that use a lot of math declines as they advance through the school system.



Numbers in the figure reflect the percent of students who agreed or strongly agreed with each listed statement.

Fourth, seventh, and tenth graders liked science at higher rates than for math, both in reference to themselves and to their peers. However, students from all three grades indicated lower interest in being a scientist than having a job that used a lot of math.



\* This question was not included in the 4<sup>th</sup> grade student survey.  
 Numbers in the figure reflect the percent of students who agreed or strongly agreed with each listed statement.

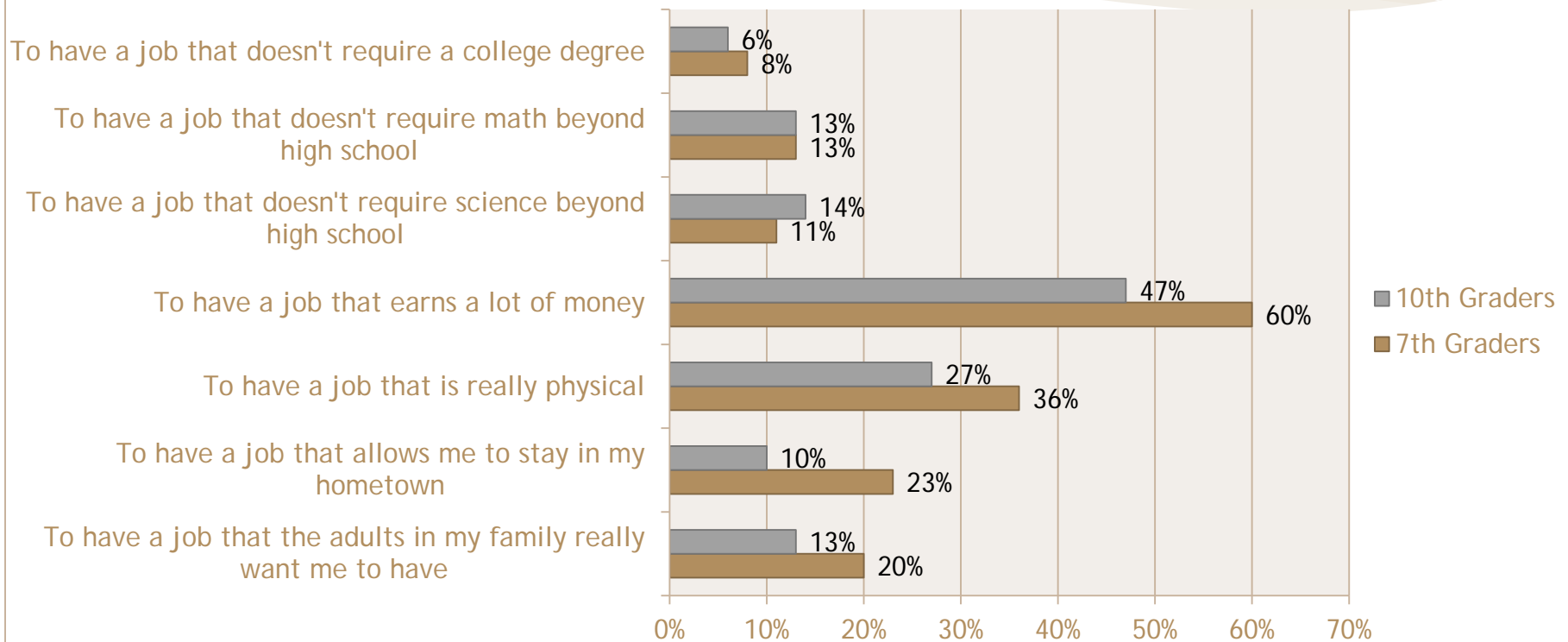
While less than half of students wanted a career that used a lot of math or a science career, many of their responses to what type of career they would like to have when an adult are related to STEM fields. This incongruence suggests students do not know what type of education or skill such jobs require. In this word cloud, the larger the font, the more likely the item was listed as an ideal career choice by students.



## Important Job Characteristics

Tenth graders were less focused on earning a lot of money than seventh graders. They were also less interested than seventh graders in pursuing jobs that allowed them to stay in their hometown, that adults in their family wanted them to have, and that were "really physical." More tenth graders did not want a job that required science beyond high school.

How important are each of the following to you when considering your job options when you are an adult?



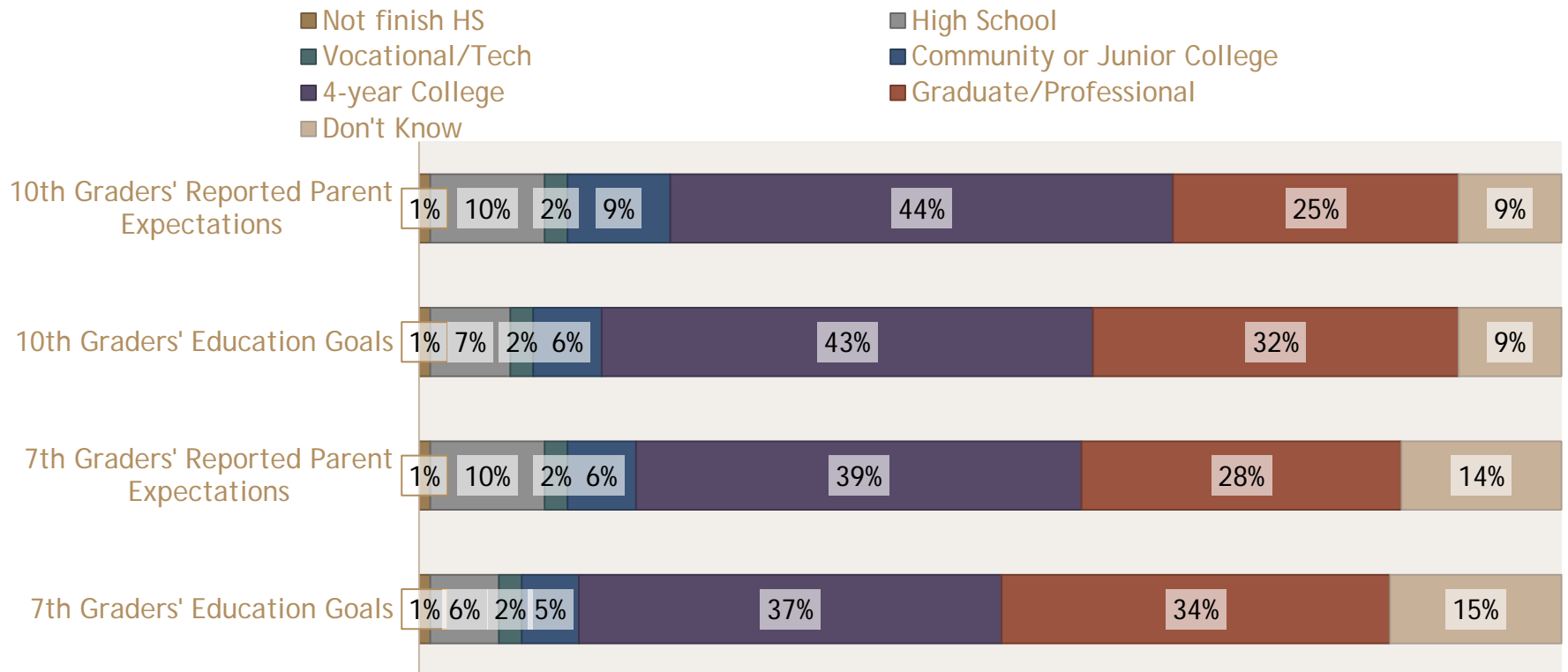
Note: Numbers reflect the percent of students who said these job attributes were extremely important.



## Future Educational Aspirations

Students' educational goals were higher than what they thought their parents expected of them. Most students wanted to earn a post-secondary degree. Their expectations were higher than the Idaho State Board of Education 2020 goal, which is to have 60% of Idahoans age 25-34 earn some form of post-secondary credential. This suggests student interest is not a barrier to this goal.

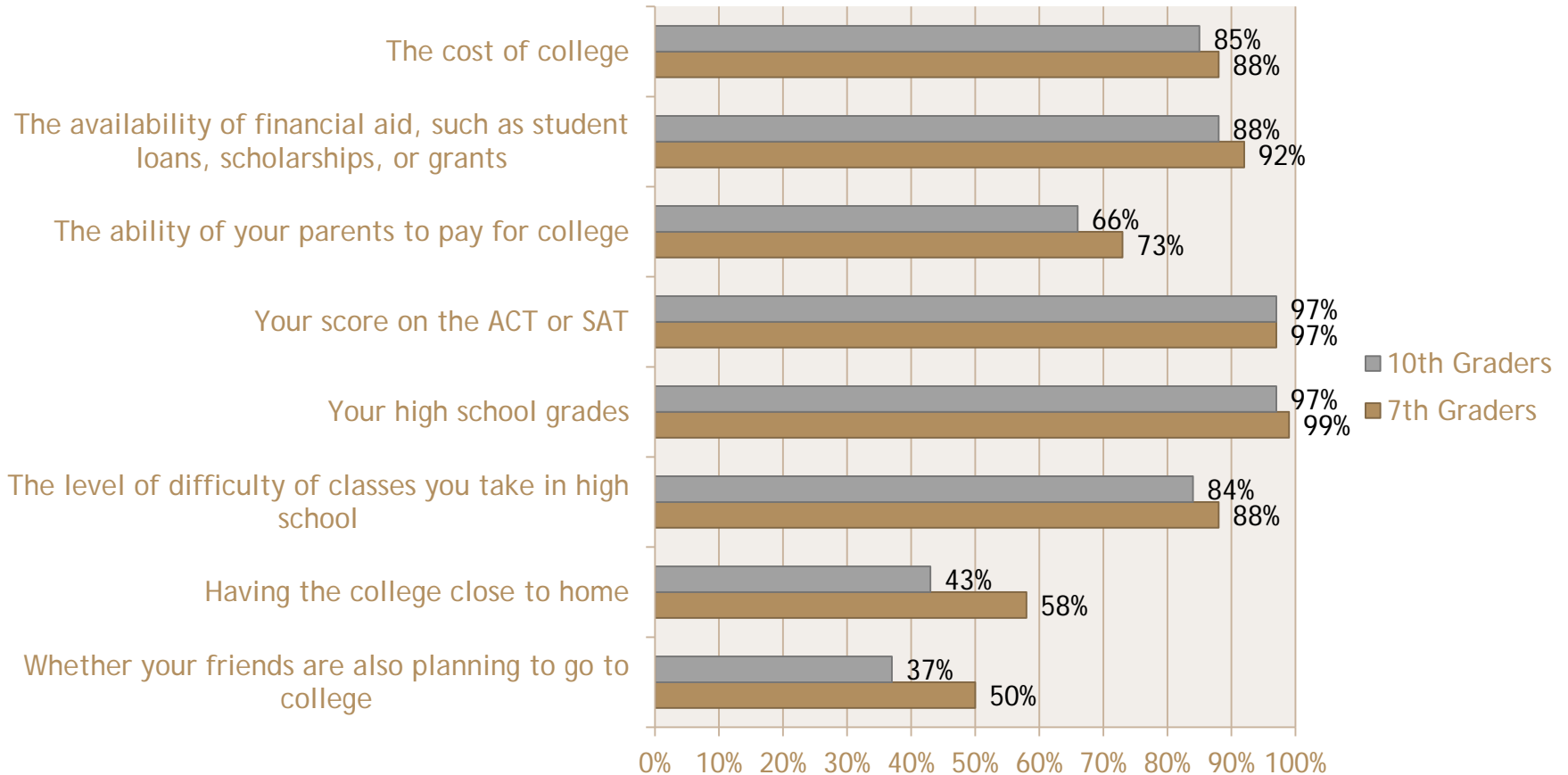
### Students' expectations and perceptions of their parents' expectations (%)



Most fourth graders had college aspirations: 73% of fourth graders said they think they will go to college, and 74% said their parents want them to go to college. The remainder of fourth graders said they did not know how far they would go.

## Important Factors in Considering College

High school grades and test scores figured most prominently in what students said shaped their decisions to attend college. The cost of college and availability of financial aid were also very important to students.



Numbers reflect the percent of students who answered extremely important or fairly important to the question: "How important will each of the following be to you when considering whether to attend college?"

## Seventh and Tenth Graders' Levels of College Preparation

Close to one-third (29%) of 10<sup>th</sup> graders do not know what classes they should take in high school to help them be successful in college. Even though seventh and tenth graders said the availability of financial aid was very important in their decisions to attend college, less than a third of tenth graders said they knew how to apply for financial aid.

	Strongly Agree	Agree	Disagree	Strongly Disagree	Total
I know what high school classes I need to take to be successful in college.					
10 <sup>th</sup> Graders	23%	48%	24%	5%	100%
7 <sup>th</sup> Graders	22%	39%	35%	4%	100%
I know how to apply for college.					
10 <sup>th</sup> Graders	10%	32%	48%	10%	100%
I know how to apply for financial aid to attend college.					
10 <sup>th</sup> Graders	8%	21%	56%	15%	100%



## Fourth, Seventh, and Tenth Graders' Experiences at School

Most students in all three grades reported being able to get academic help outside of regular class time and feel comfortable asking questions in class. This still leaves 20% of students who felt they could not get help outside of class or who did not feel comfortable asking questions in class. Only half of seventh and tenth graders thought they would be successful taking online courses. Over a third of tenth graders said they do not receive sufficient career guidance.

	Strongly Agree	Agree	Disagree	Strongly Disagree	Total
<b>I feel comfortable asking questions in most of my classes.</b>					
4 <sup>th</sup> Graders	37%	41%	15%	7%	100%
7 <sup>th</sup> Graders	25%	54%	15%	6%	100%
10 <sup>th</sup> Graders	20%	59%	16%	5%	100%
<b>I am able to get help outside of regular class time if I need help.</b>					
4 <sup>th</sup> Graders	35%	41%	15%	9%	100%
<b>I am able to get help outside of regular class time if I need extra help with math or science.</b>					
7 <sup>th</sup> Graders	28%	54%	14%	4%	100%
10 <sup>th</sup> Graders	21%	61%	14%	4%	100%
<b>I think I would be successful in taking online courses (when I am) in high school.</b>					
7 <sup>th</sup> Graders	12%	41%	33%	14%	100%
10 <sup>th</sup> Graders	12%	38%	31%	19%	100%
<b>I get enough guidance and information about what specific careers require in terms of education and what the work involves.</b>					
10 <sup>th</sup> Graders (only)	8%	54%	32%	6%	100%

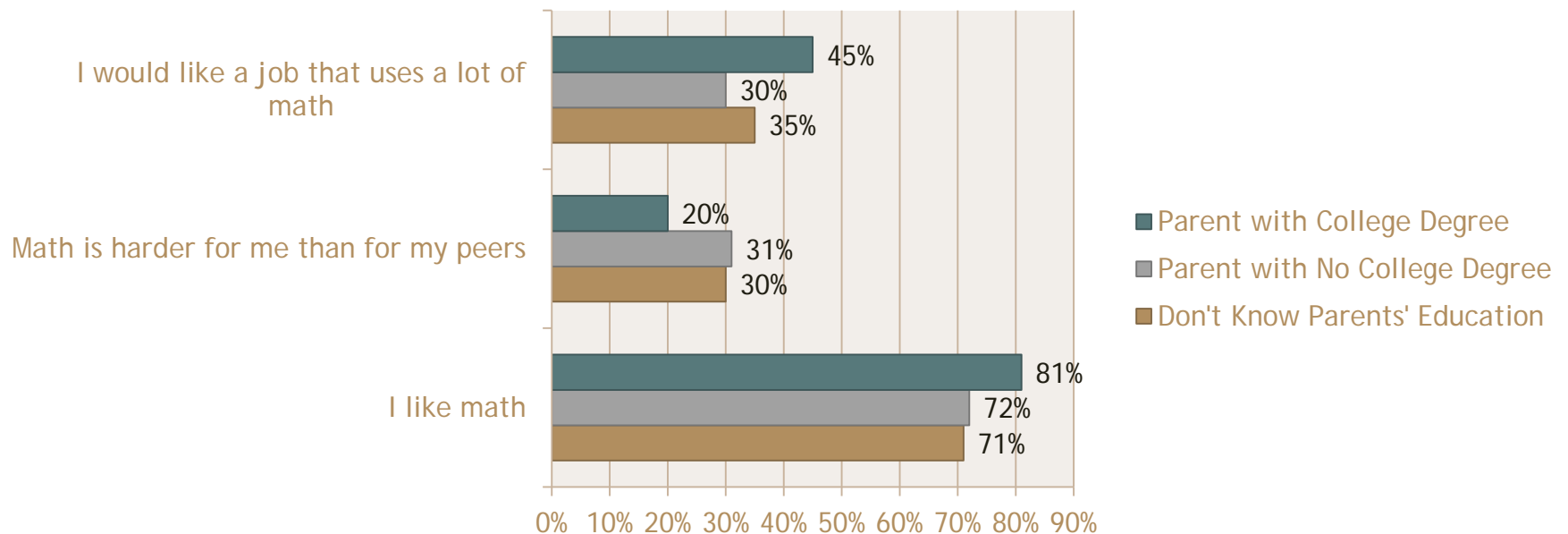
## Effects of Parents' Education Attainment

This section explores the effects parents' education attainment has on students' science and math experiences and attitudes. Students were asked if at least one of their parents had a college degree (a two-year degree or higher). Compared to students whose parents did not have a college degree or those who did not know their parents' educational backgrounds, seventh and tenth graders who had at least one parent with a college degree had more positive attitudes about science and math and were more likely to say they can get support for their school work when they need it. They were also more likely to say the adults in their family are interested in what they learn. These results reveal a strong relationship between the level of parents' education attainment and youth learning experiences.

## Parents' Education Attainment and 7<sup>th</sup> Graders' Math Experiences

A majority of seventh graders said they like math. Seventh graders who had at least one parent with a college degree were more likely to like math, more likely to find math easier than their friends, and more likely to want a job that uses a lot of math.

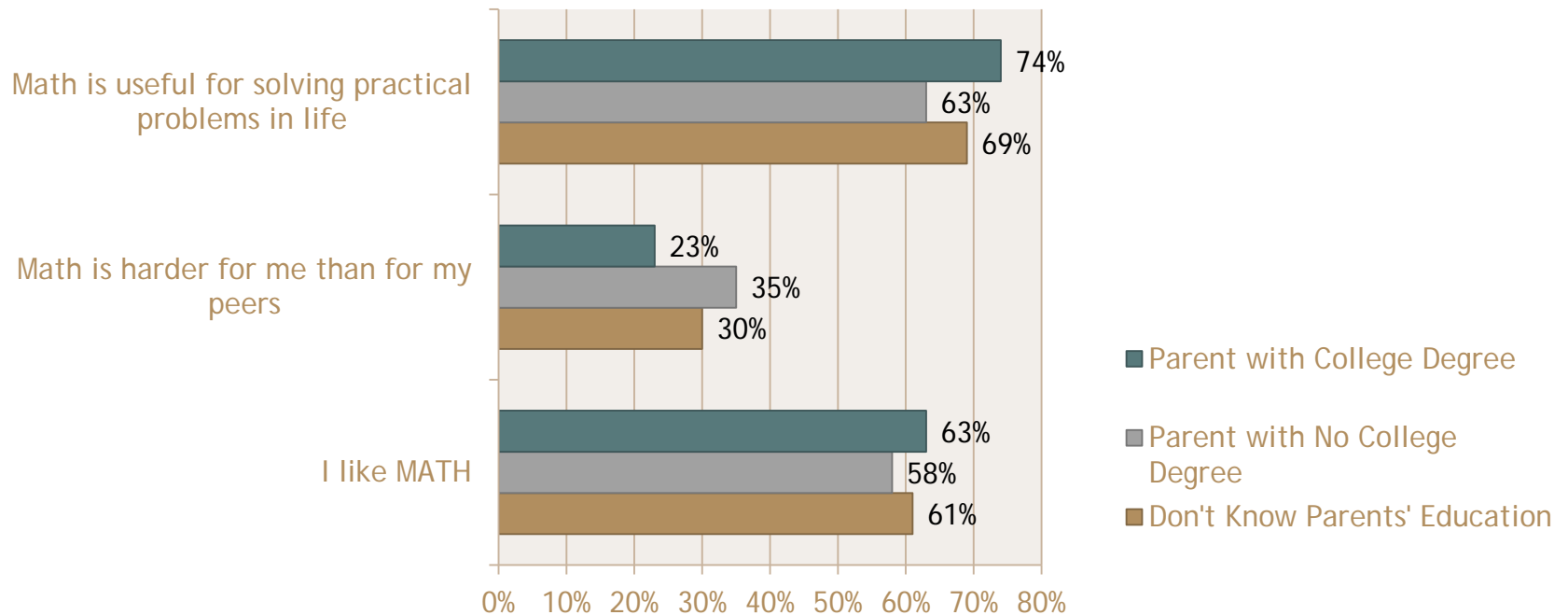
### 7<sup>th</sup> Graders' Math Experiences by Parents' Education



Numbers reflect the percent of students who answered strongly agree and agree for each topic. All questions tested significant in cross-tabulations.

Tenth graders' positive attitudes about math were lower than seventh graders'. Tenth graders whose parents did not have a college degree were the least likely to like math and, consistent with this, perceived it is harder for them than for their peers. Students whose parents did not have a college degree were more likely than students who had a parent with a college degree to think math was useful for solving practical problems in life.

### 10th Graders' Math Experiences by Parents' Education

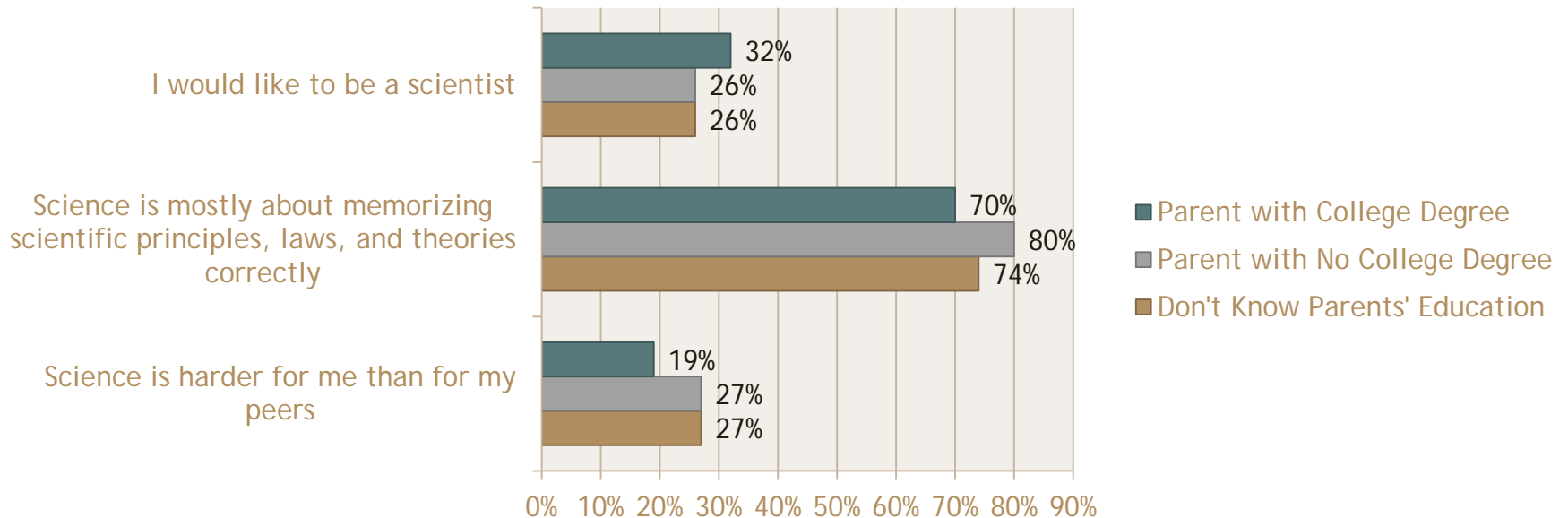


Numbers reflect the percent of students who answered strongly agree and agree for each topic. All questions tested significant in cross-tabulations.

## Parents' Education Attainment and 7<sup>th</sup> Graders' Science Experiences

Seventh graders who had a parent with a college degree showed more interest in being a scientist. This group of seventh graders was also less likely to say science was harder for them than for their peers and less likely to think science was mostly about memorization.

### 7<sup>th</sup> Graders' Science Experiences by Parents' Education

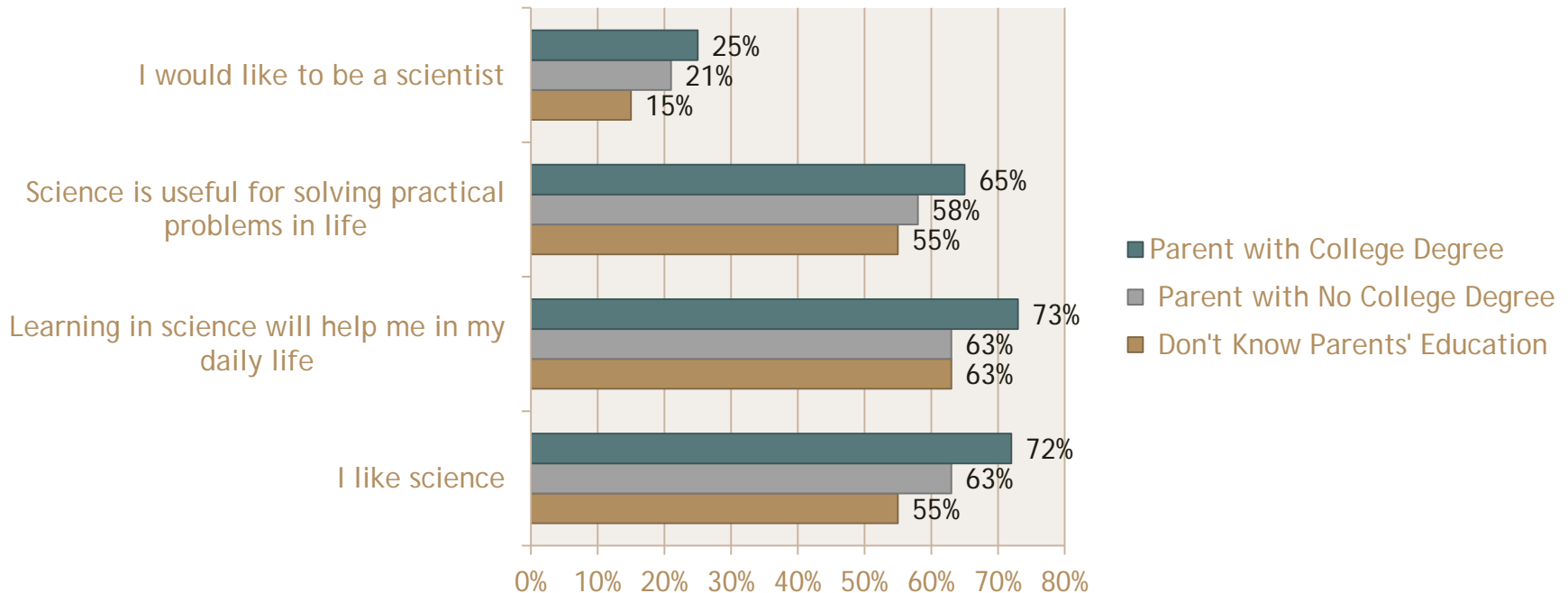


Numbers reflect the percent of students who answered strongly agree and agree for each topic. All questions tested significant in cross-tabulations.

## Parents' Education Attainment and 10<sup>th</sup> Graders' Science Experiences

Parents' education attainment shaped tenth graders perceptions of science. Tenth graders who had a parent with a college degree showed more interest in science and were more likely to want to be scientists. They were also more likely to think science would help them in their daily life and was useful for solving practical problems.

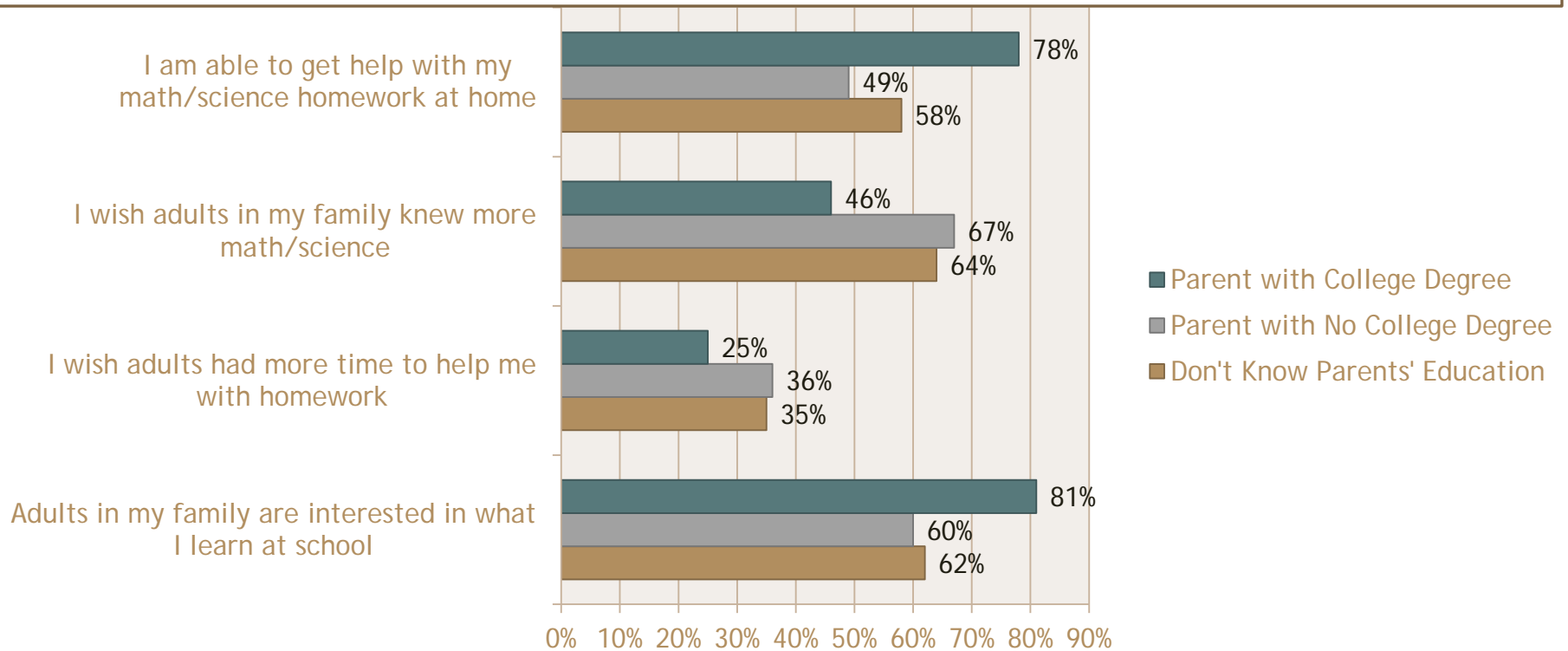
### 10<sup>th</sup> Graders' Science Experiences by Parents' Education



Numbers reflect the percent of students who answered strongly agree and agree for each topic. All questions tested significant in cross-tabulations. The same patterns above existed for seventh graders.

## Parents' Education Attainment and Sense of Learning Support

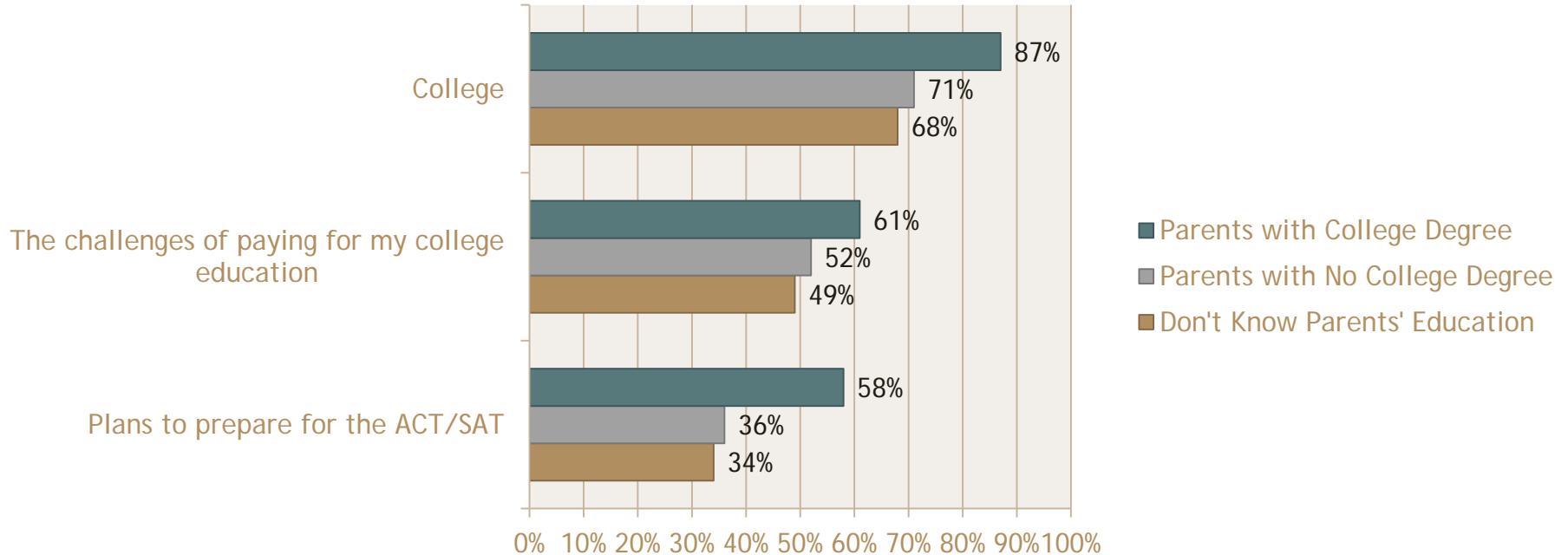
Tenth graders who had a parent with a college degree were more likely to say they were able to get help at home with math/science homework. Students whose parents did not have a college degree or who did not know their parents' educational levels were more likely to wish adults in their family knew more math and science and had more time to help with homework. Students who had a parent with a college degree said the adults in their family were interested in what they learn and were less likely to wish adults in their home had more time to help with homework.



Numbers reflect the percent of students who answered strongly agree and agree for each topic. All of these questions tested significant in cross-tabulations.

Students who had a parent with a college degree were much more likely to have conversations with their family about preparing for the ACT/SAT. The majority of tenth graders reported talking with their family about college.

## My family talks with me about...(10<sup>th</sup> Grade)



Numbers reflect the percent of students who answered often and sometimes for each topic. Seventh graders' responses by parents' education also tested significant. Seventh grade students whose parents had a college degree said conversations happened more often about college and preparation for it.

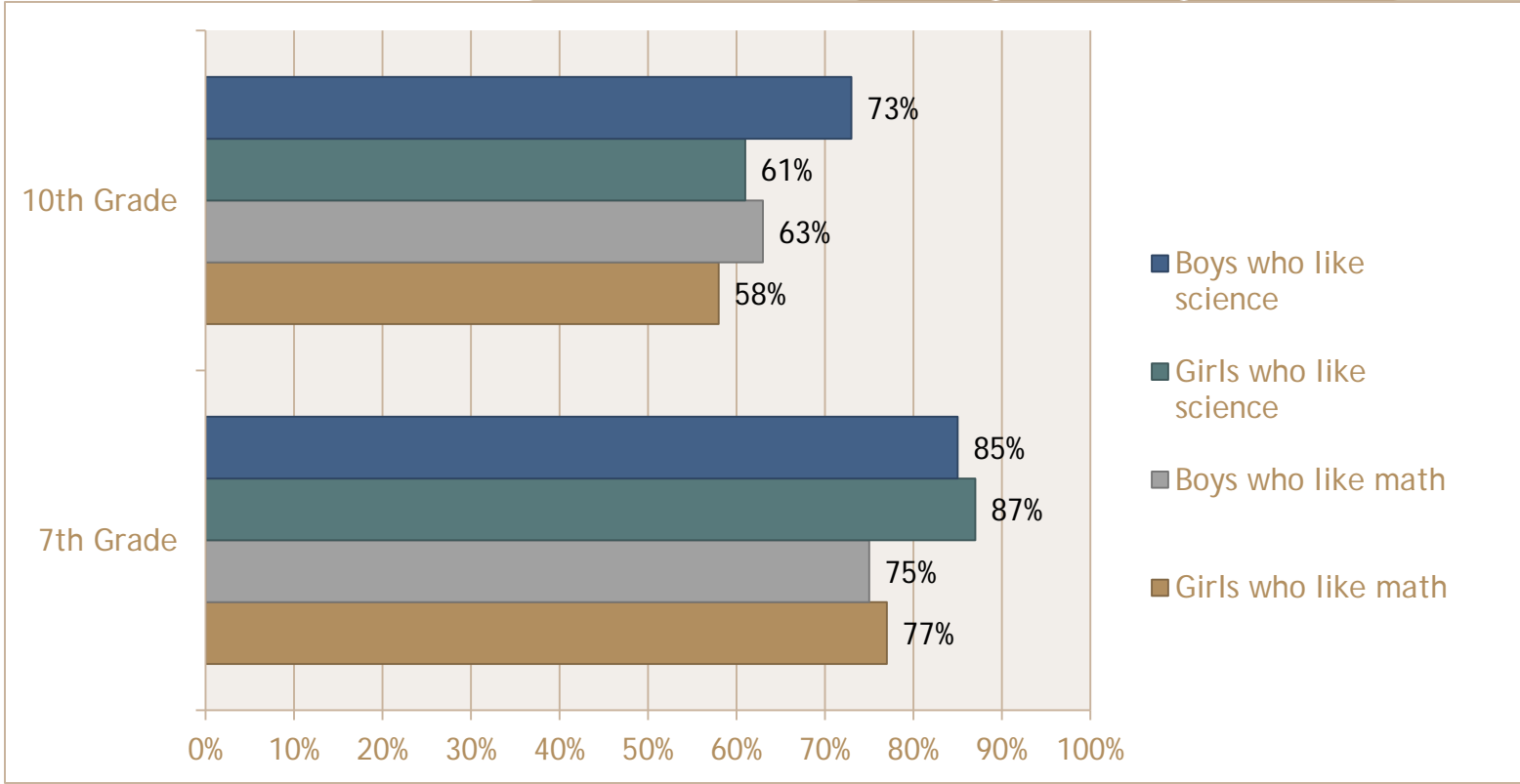


## Gender Differences

Our survey identified significant differences between girls and boys on a number of items. For example, while seventh grade girls reported liking both math and science at slightly higher rates than boys in the same grade, tenth grade girls liked these subjects less than seventh grade girls and tenth grade boys. Seventh and tenth grade girls performed worse than boys on the scientific fact index and desired more homework support from adults in their family than boys did. Nonetheless, when asked their educational aspirations, girls were more likely to aim for higher educational degrees.

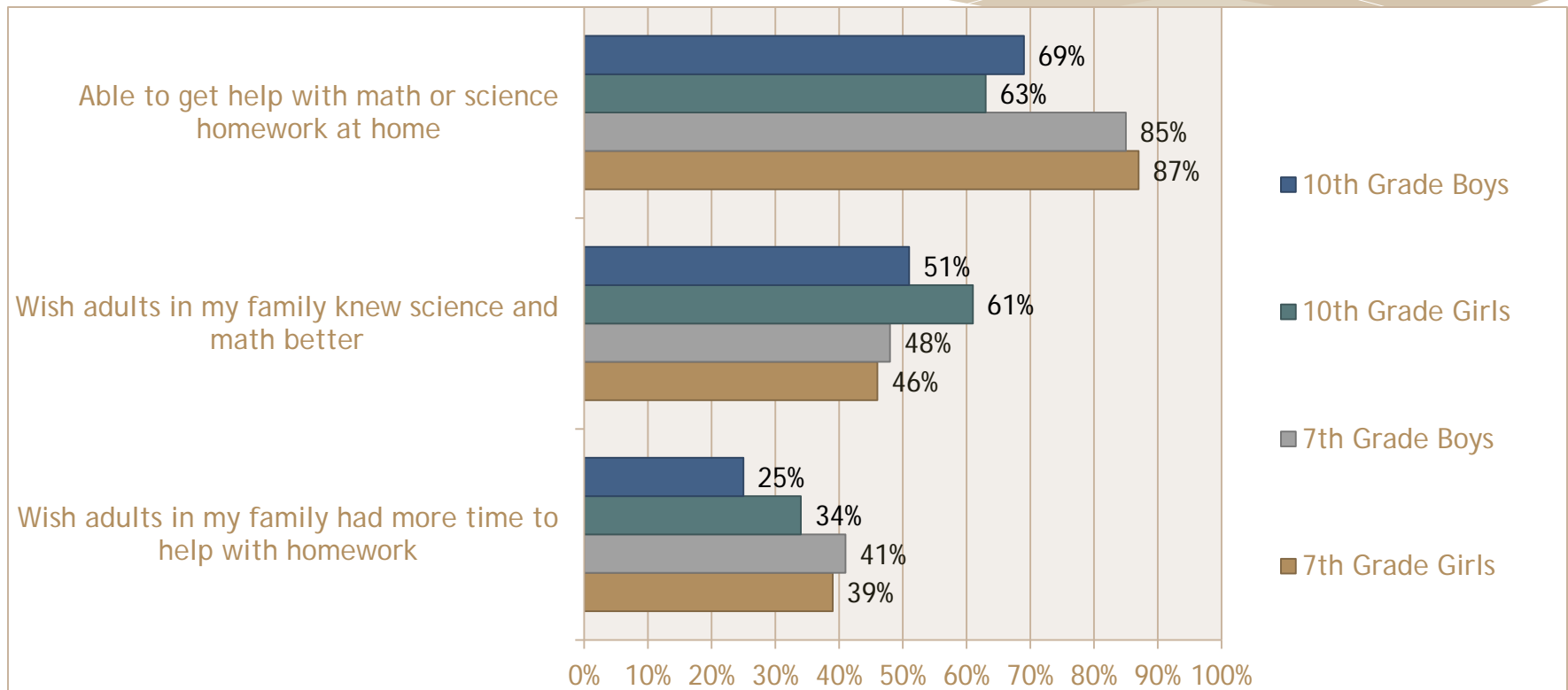
# Gender Differences and Attitudes about Math and Science

While positive attitudes toward math and science declined for both boys and girls between seventh and tenth grades, girls' attitudes diminished at a far more substantial rate than for boys.



## Gender Differences and Sense of Parental Support

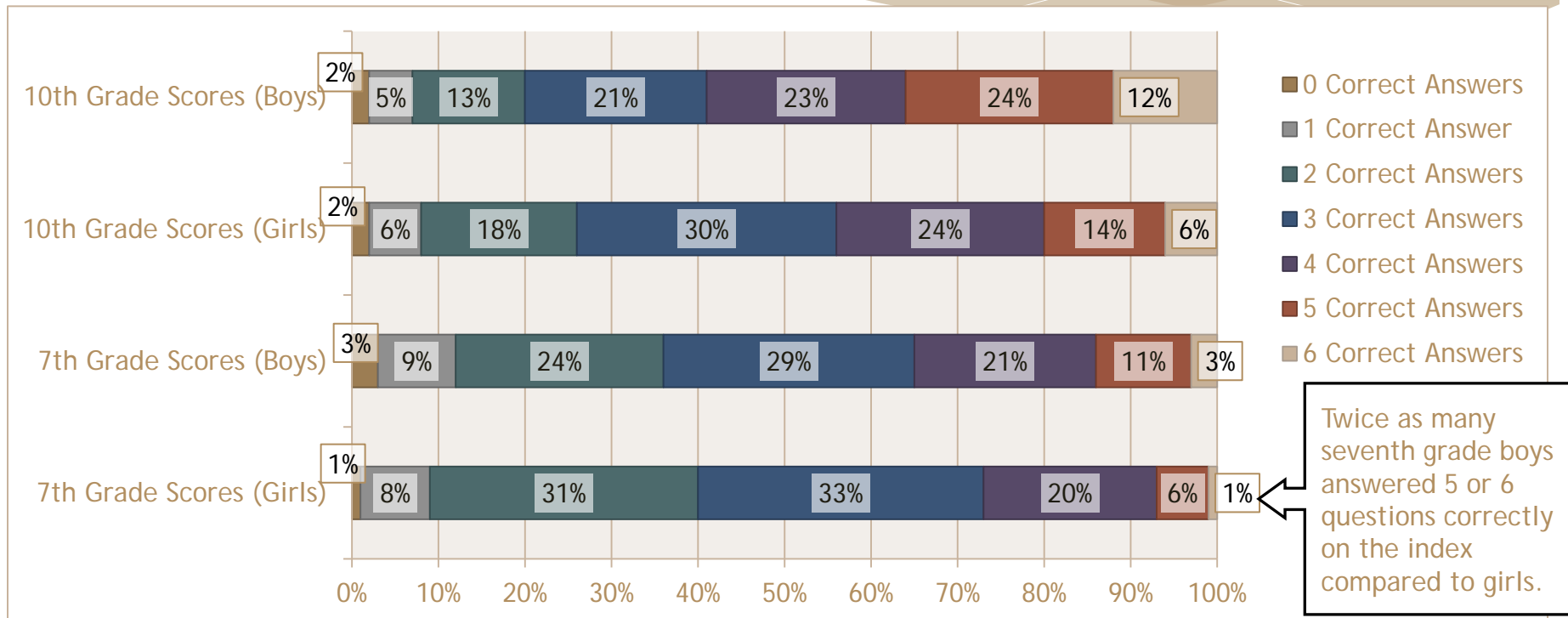
Tenth graders' responses suggest in general that they have less support for math or science at home than seventh graders. In seventh grade, boys and girls reported similar levels of support. Their sense of support differed more in tenth grade as a higher percentage of girls said they wished adults had more time to help with homework and wished adults in their family knew science and math better.



Numbers reflect the percent of students who answered agree or strongly agree for each question. None of the seventh grade responses to this series of questions about support tested significant when cross-tabulated by gender. All three, however, among tenth graders tested significant.

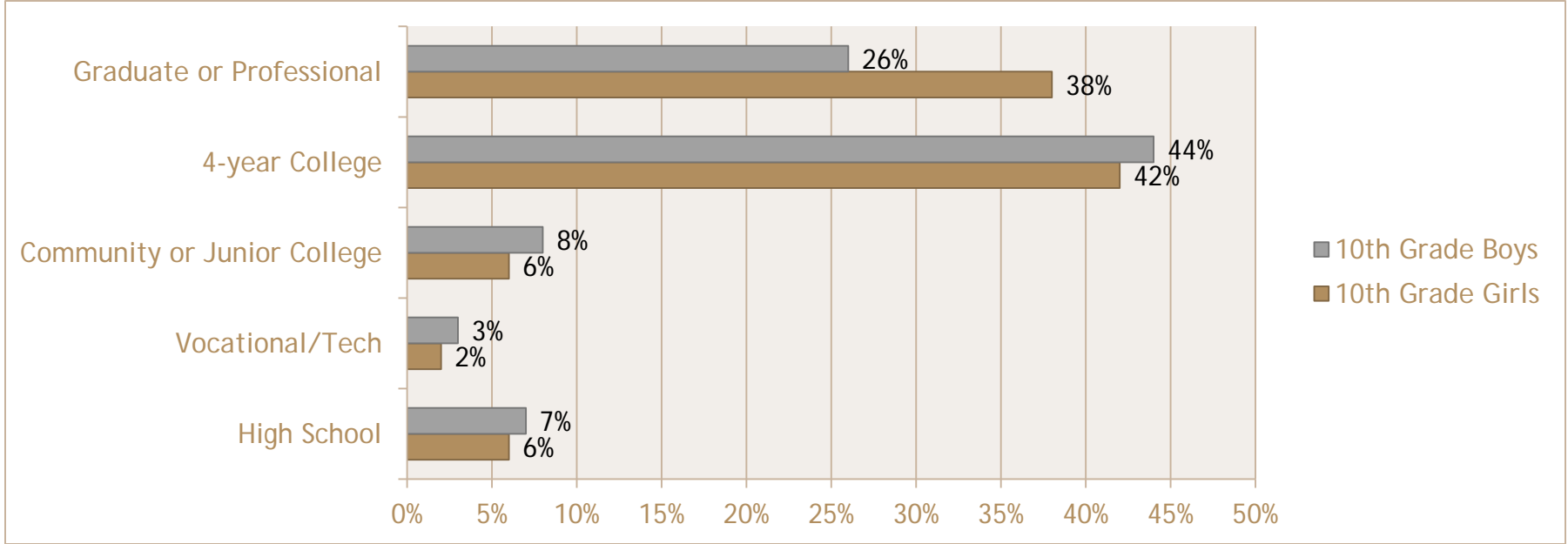
## Gender Differences and Scientific Fact Index Scores

Tenth graders earned higher scores on the scientific fact index than seventh graders, in general. Twice as many tenth grade boys than girls correctly answered all six index questions. Only 20% of tenth grade girls correctly answered 5 or 6 questions on the index compared to 36% of tenth grade boys.



# Gender Differences and Education Aspirations

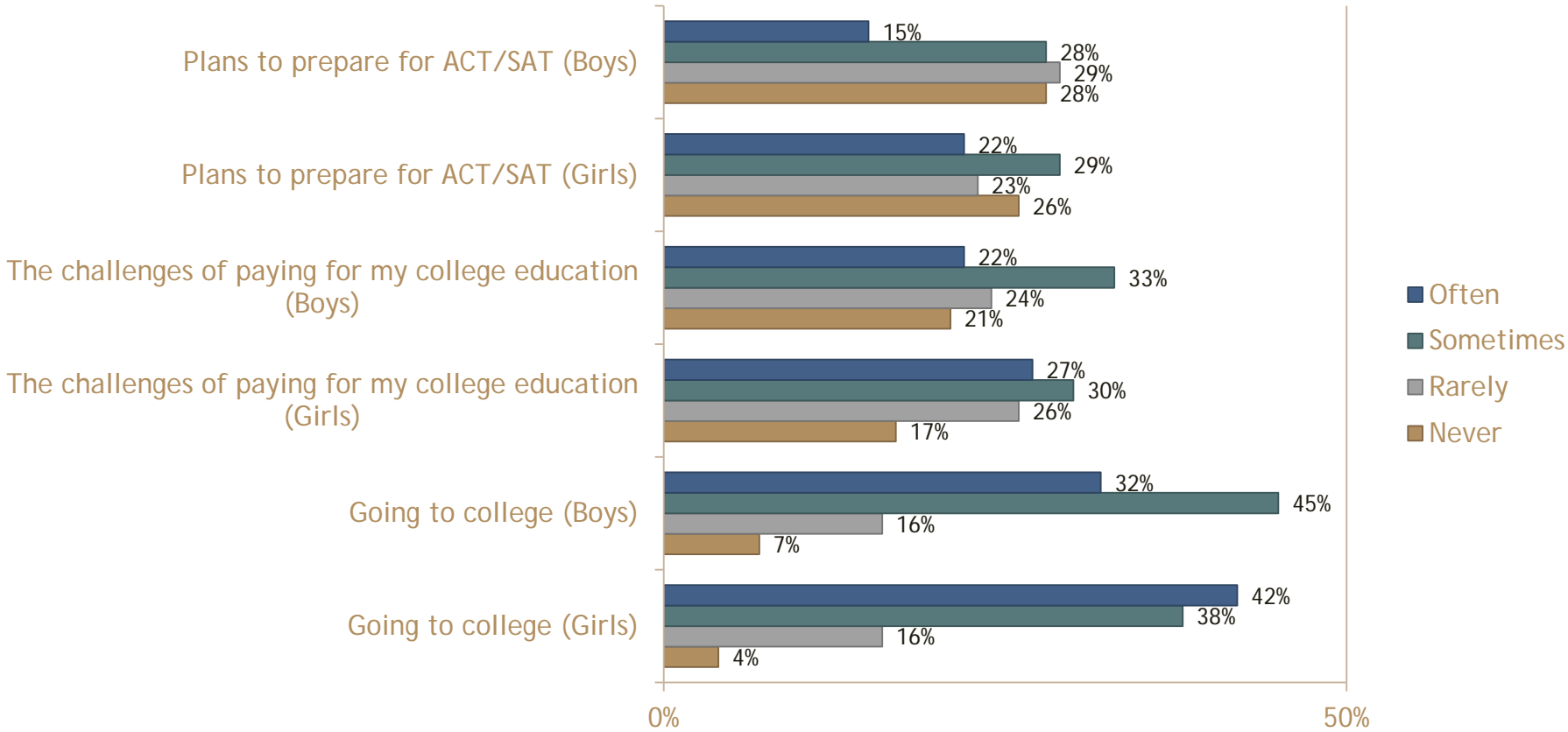
A majority of tenth grade boys and girls aspired to earn higher education degrees, although tenth grade girls had higher educational aspirations than boys.



Seventh grade responses to these questions by gender also tested significant in cross-tabulations and show the same pattern as illustrated for tenth graders.

In both grades, boys were more likely than girls to say family conversations about college took place less frequently, although this pattern is more pronounced for tenth graders.

My family talks with me about.... (10<sup>th</sup> graders)



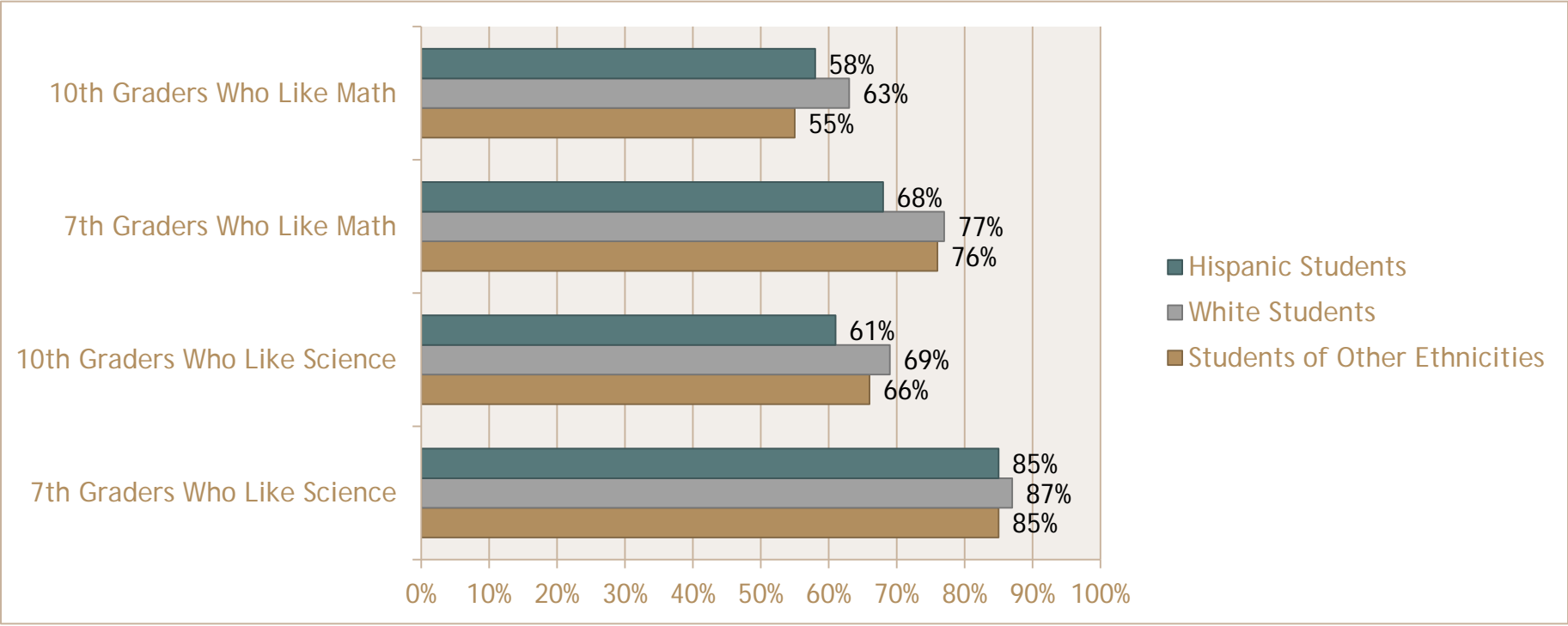
Seventh grader responses to these questions by gender did not test significant in cross-tabulations. However, all three questions about family conversations tested significant for gender differences among tenth graders.

## Differences by Racial-Ethnic Groups

In this section we show how different ethnic-racial backgrounds affected seventh and tenth graders' experiences and performance in math and science. Consistently, white students reported more positive experiences with math and science and performed better on the scientific fact index than Hispanic students and students of other ethnicities (this latter group includes students who identified as American Indian, Asian American, African American, and "other"). In general, tenth graders reported a greater desire for math and science support than seventh graders did. However, tenth grade Hispanic students and students of other ethnic-racial backgrounds more often reported wanting such support than white tenth graders.

# Racial-Ethnic Differences and Attitudes about Math and Science

White students reported liking math and science more than Hispanic students in both seventh and tenth grades.



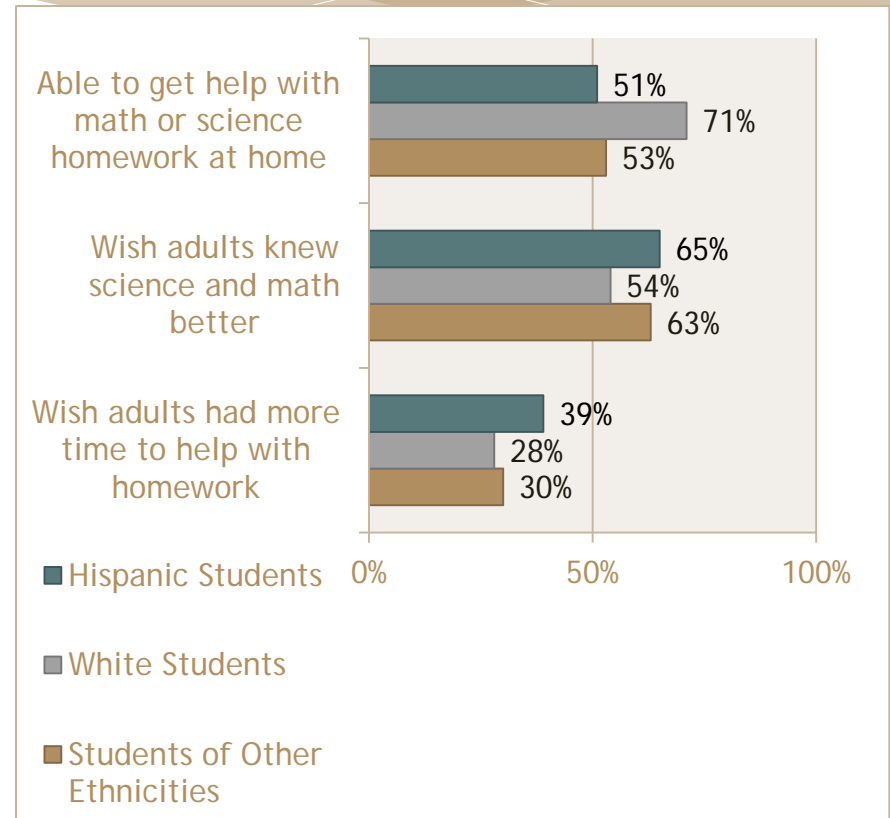
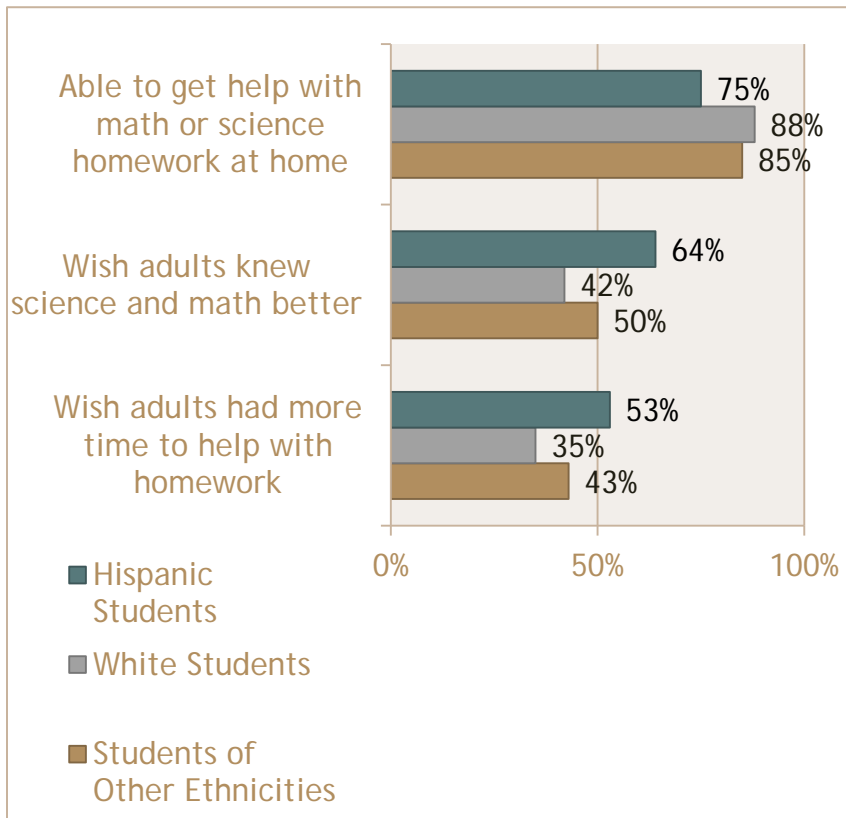


## Racial-Ethnic Differences and Sense of Parental Support

In seventh and tenth grades, Hispanic students and students of other racial-ethnic backgrounds wished they had more support with homework than white students, and wished adults in their family had more math and science knowledge. Tenth graders wished adults in their family knew science and math better in comparison to seventh graders.

7<sup>th</sup> Graders

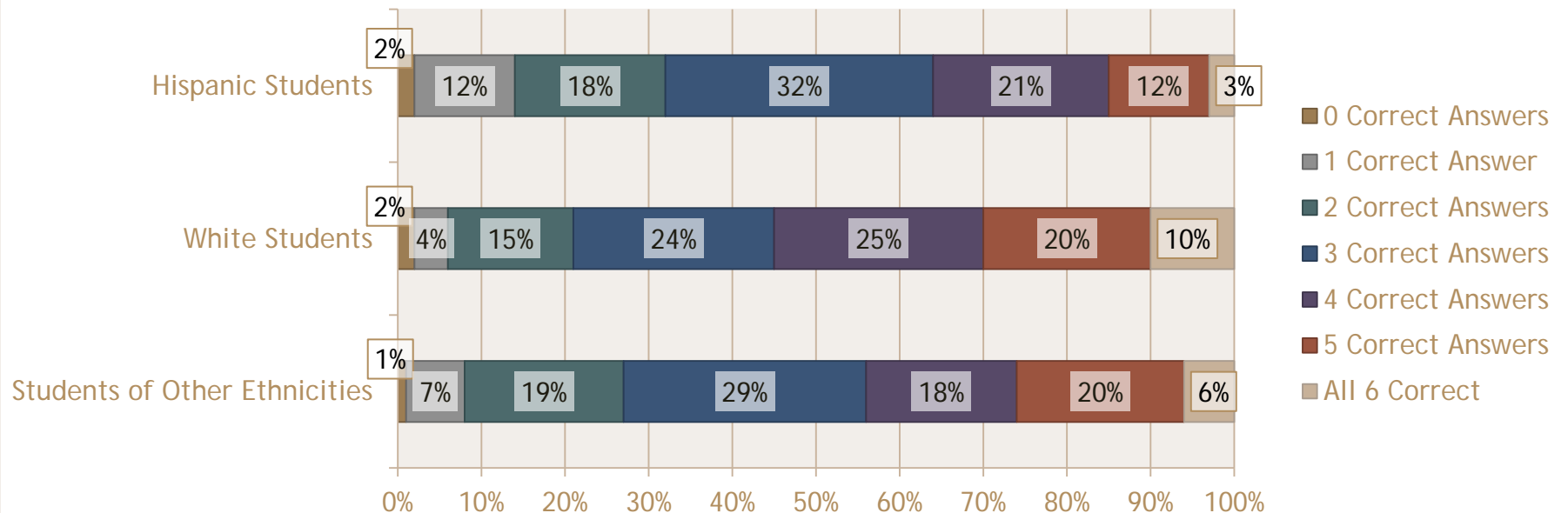
10<sup>th</sup> Graders



## Racial-Ethnic Differences and Scientific Fact Index Scores

Hispanic students' lower performance in the survey's scientific index validates their expressed need for more academic support. Even though white tenth graders performed better, less than a third answered 5 or 6 questions correctly.

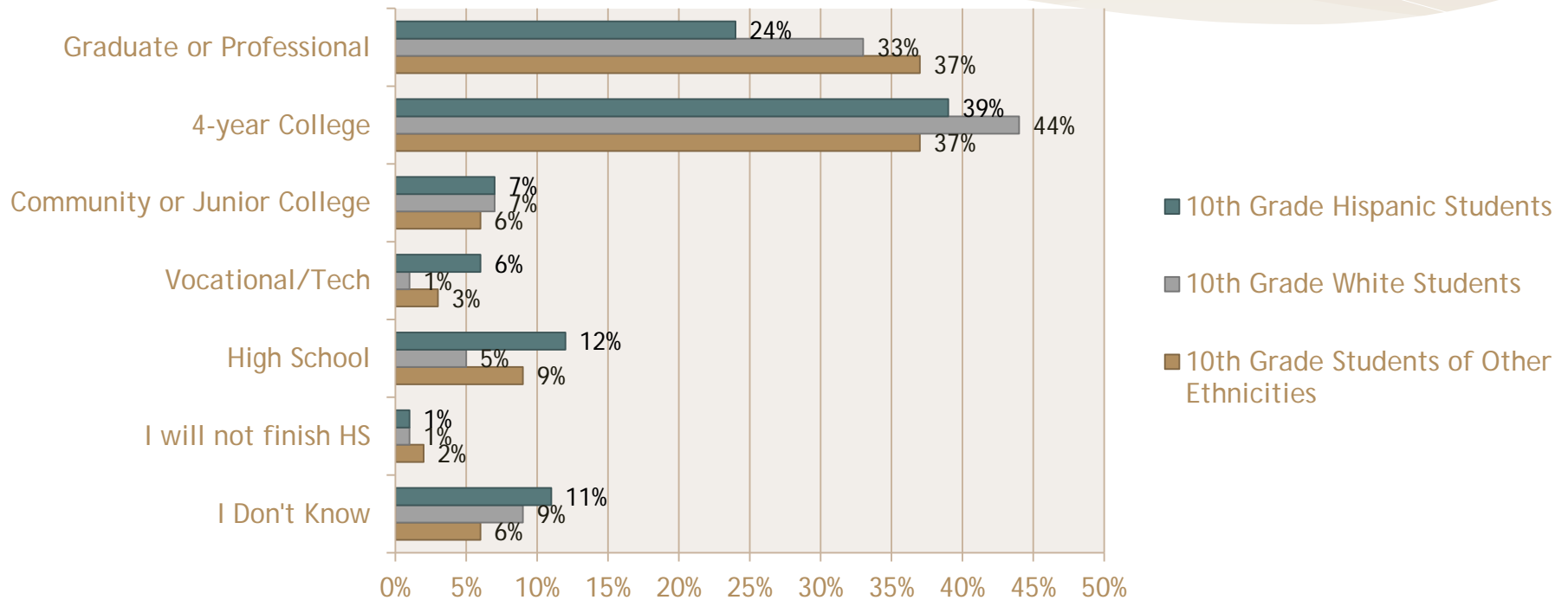
### 10<sup>th</sup> Graders' Scores by Ethnicity



The performance for different racial-ethnic groups among seventh graders is similar to the tenth graders illustrated above. However, no Hispanic seventh graders answered all 6 questions correctly.

White students in the tenth grade had higher educational aspirations than the other two groups, except more students of other ethnicities said they wanted to pursue a graduate or professional degree. Over 10% of Hispanic students said they only want a high school diploma.

### Tenth Graders' Educational Expectations

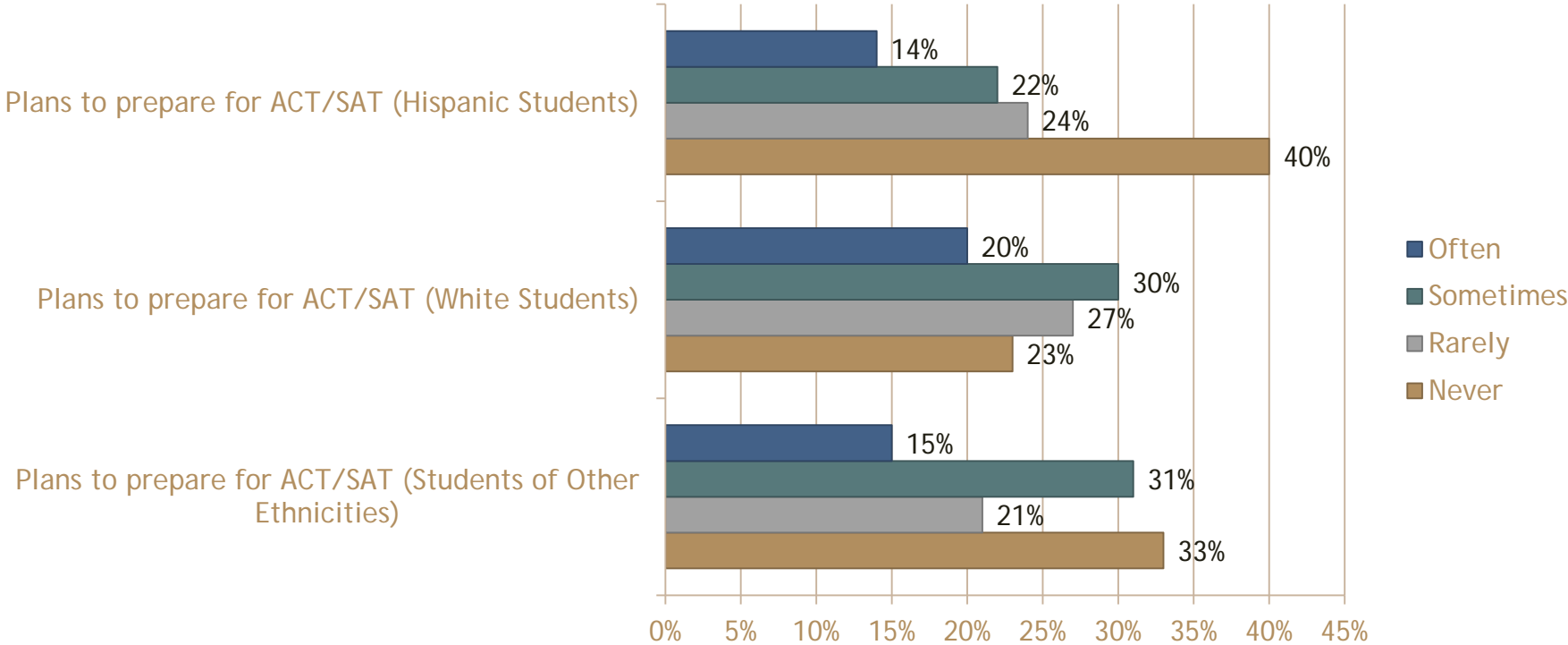


Differences between different ethnic groups in the 7<sup>th</sup> grade also tested significant and follow the same pattern as illustrated for the tenth graders above. More Hispanic seventh graders than tenth graders, though, said they expected to go for a high school diploma only (14%) or not finish high school (2%).

White students compared to other racial-ethnic groups reported having more conversations with adults in their family about preparing for college entrance exams. No significant differences existed between ethnic groups regarding family conversations about college or the challenges of paying for it.

## Racial-Ethnic Differences and Family Conversations about College

My family talks with me about....(10th graders)

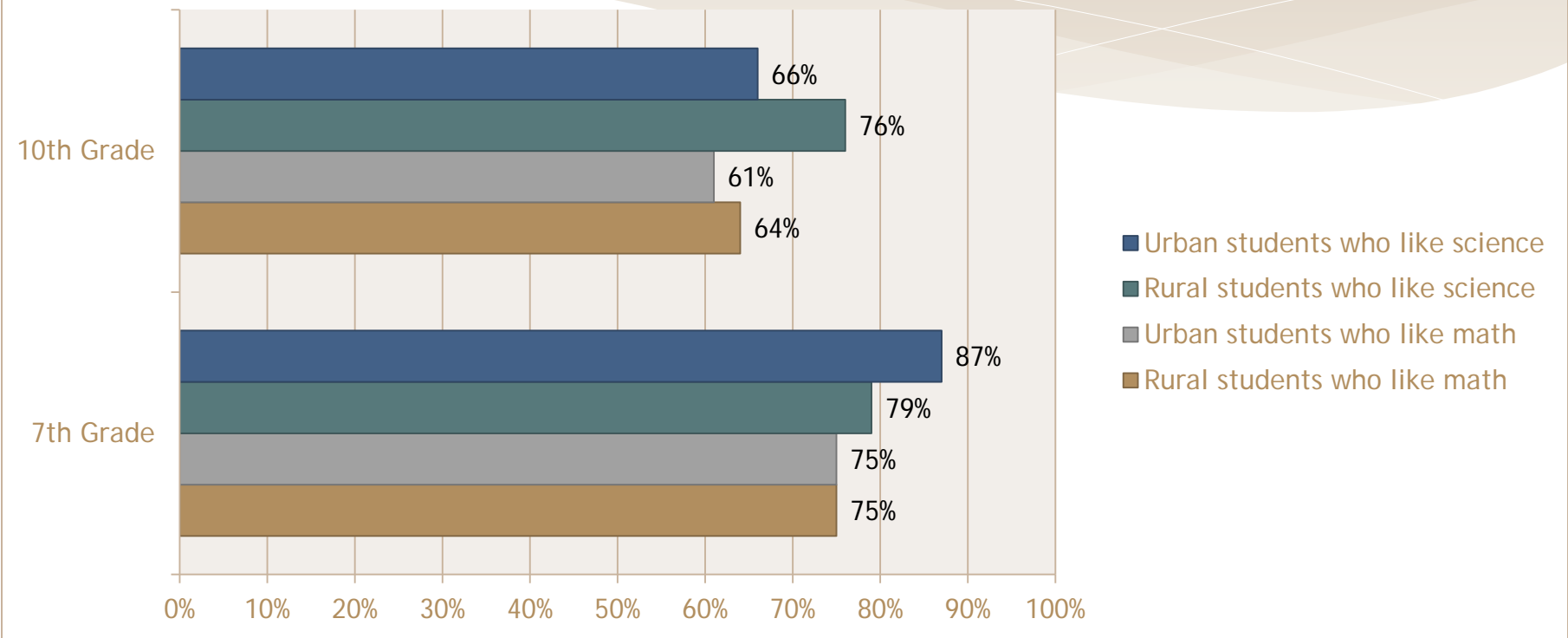


## Rural-Urban Differences

We conducted tests to explore any differences between students in rural schools and urban schools. Rural students are those who attend schools in Bancroft, Fairfield, Kamiah, Melba, Priest River, or Terreton; and urban students are those who attend schools in Boise, Idaho Falls, Jerome, Lewiston, Pocatello, and Post Falls. Very few differences in responses to survey questions existed between these two groups of students. It may be the case that differences are more pronounced within rural communities and within urban communities which will be explored in future analyses.

# Rural-Urban Differences and Attitudes about Math and Science

Rural tenth graders indicated they liked science more than their urban peers. This rural-urban difference in science attitudes was reversed among seventh graders. Math attitudes were similar for both rural and urban students.

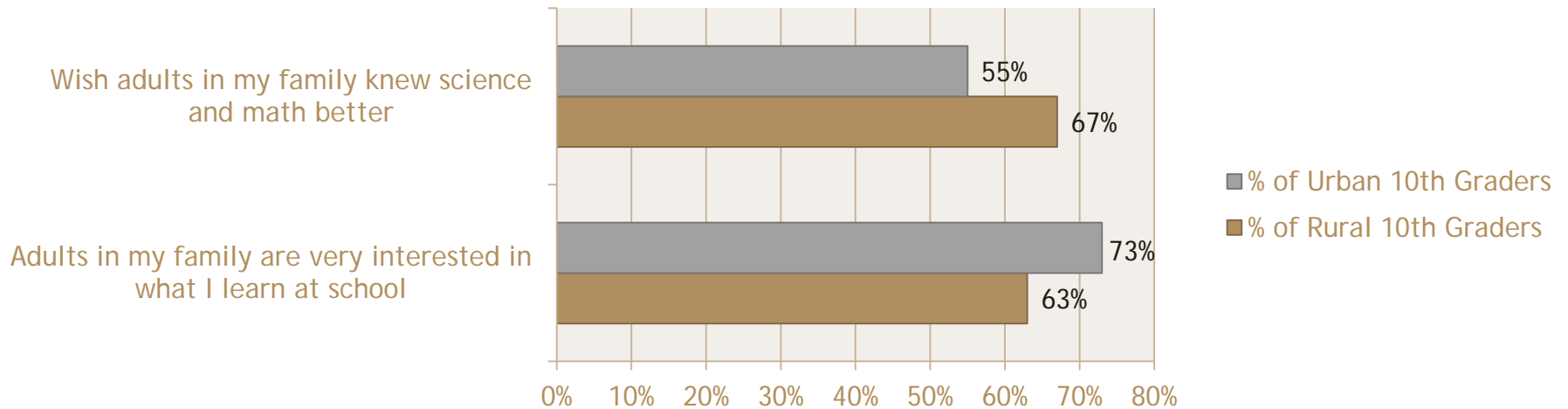


Percentages reflect the number of students who answered strongly agree or agree to the statements, "I like math" or "I like science."

## Rural-Urban Differences and Sense of Parental Support

Compared to urban tenth grade students, rural students indicated a lower sense of support from their parents in terms of interest in their studies and parental science/math knowledge.

### How much do you agree or disagree with each statement? (10<sup>th</sup> graders)



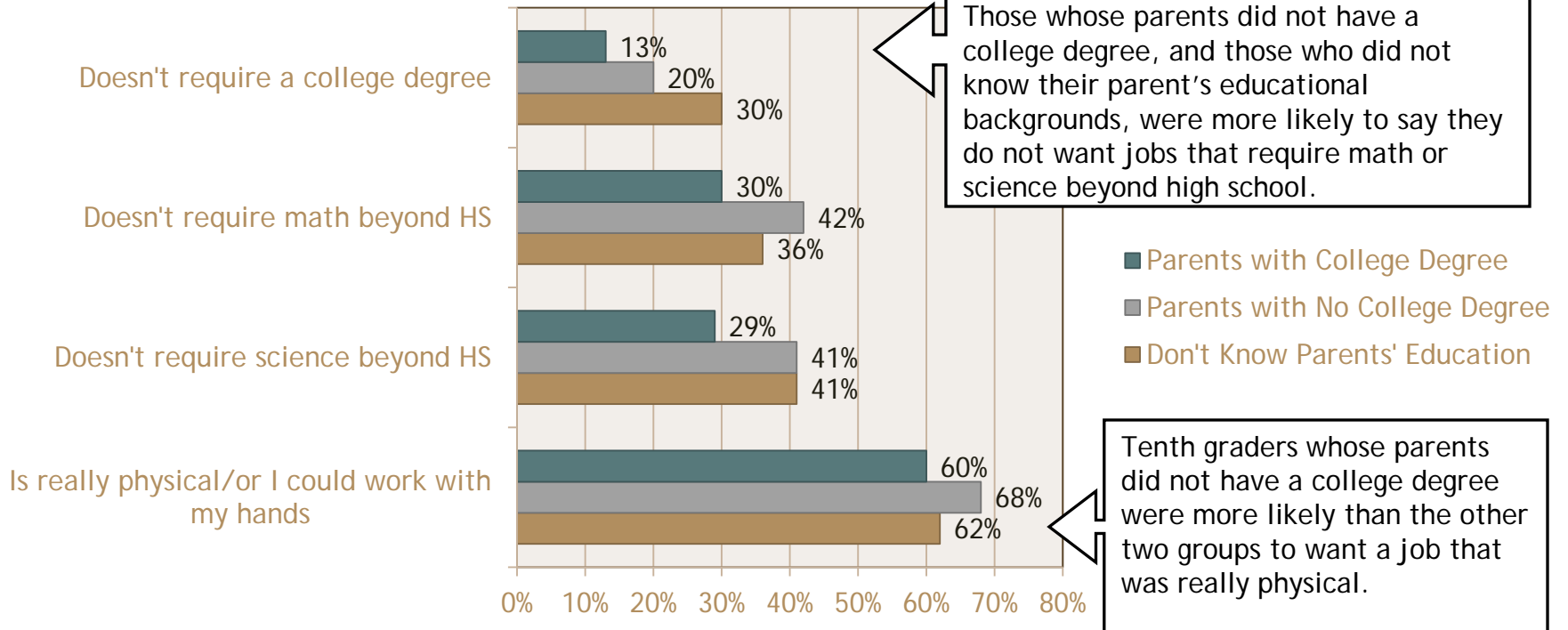
Numbers reflect the percent of tenth graders who strongly agreed or agreed with these statements. Among seventh graders, level of adults' interest for rural students (77%) was the only difference from urban students' (84%) responses that tested significant.

## Future Career Aspirations

Students in seventh and tenth grades were asked how important different job attributes were in determining their future career choices. The following charts reveal interesting differences in responses, shaped by parents' education, gender differences, differences by ethnicity, and rural-urban location. Students who had parents without a college degree, Hispanic students, and rural tenth-grade students were more likely to say jobs that do not require a college degree and jobs that do not require math or science beyond high school were important in their career decision making.



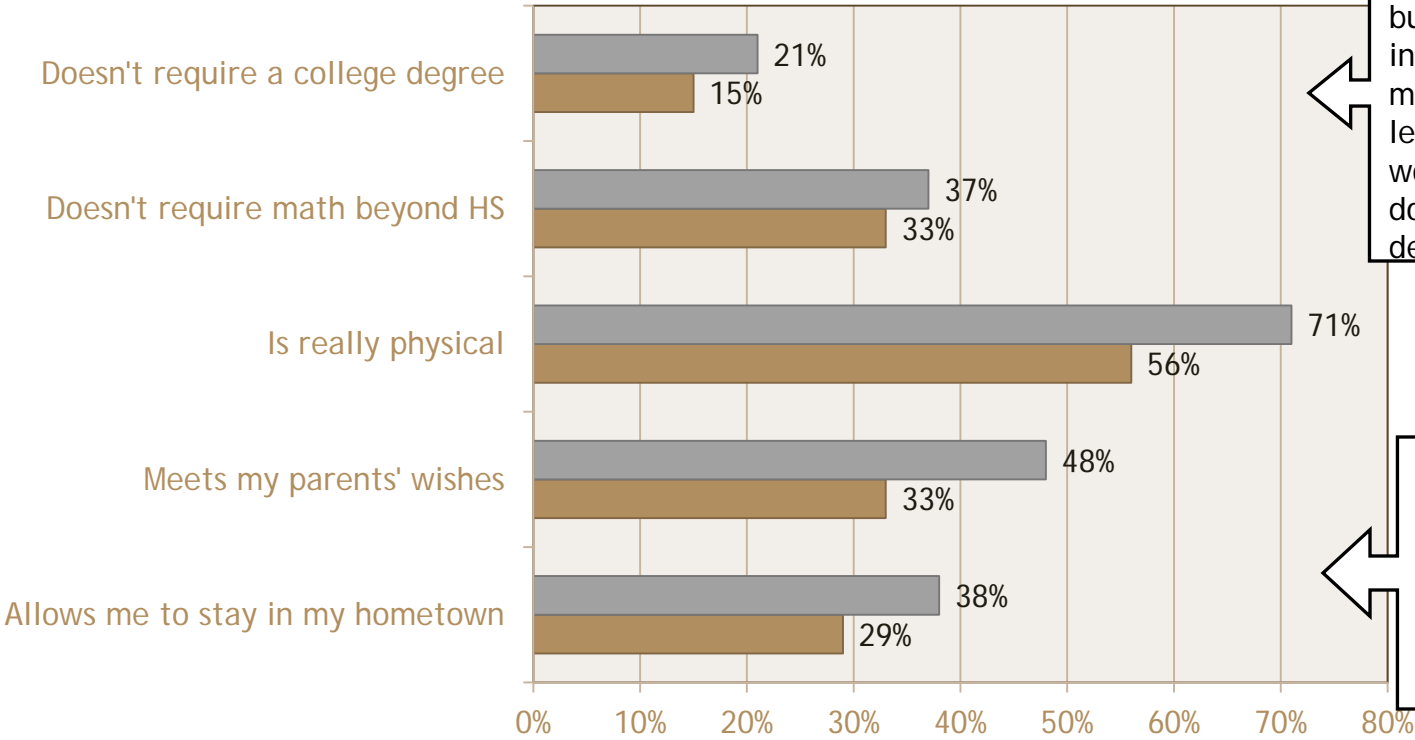
"I would like a job that..." (10<sup>th</sup> graders)



Numbers in the bars indicate the percent of student responses that strongly agreed or agreed these career attributes were important. These four attributes tested significant in cross-tabulations for tenth graders by their parents' education. Seventh graders whose parents did not have a college degree were more likely to say jobs that make a lot of money, but that do not require a college degree or math and science beyond a high school level, were extremely important.

# Preferred Characteristics of Careers: Gender Differences

"I would like a job that..." (10<sup>th</sup> graders)



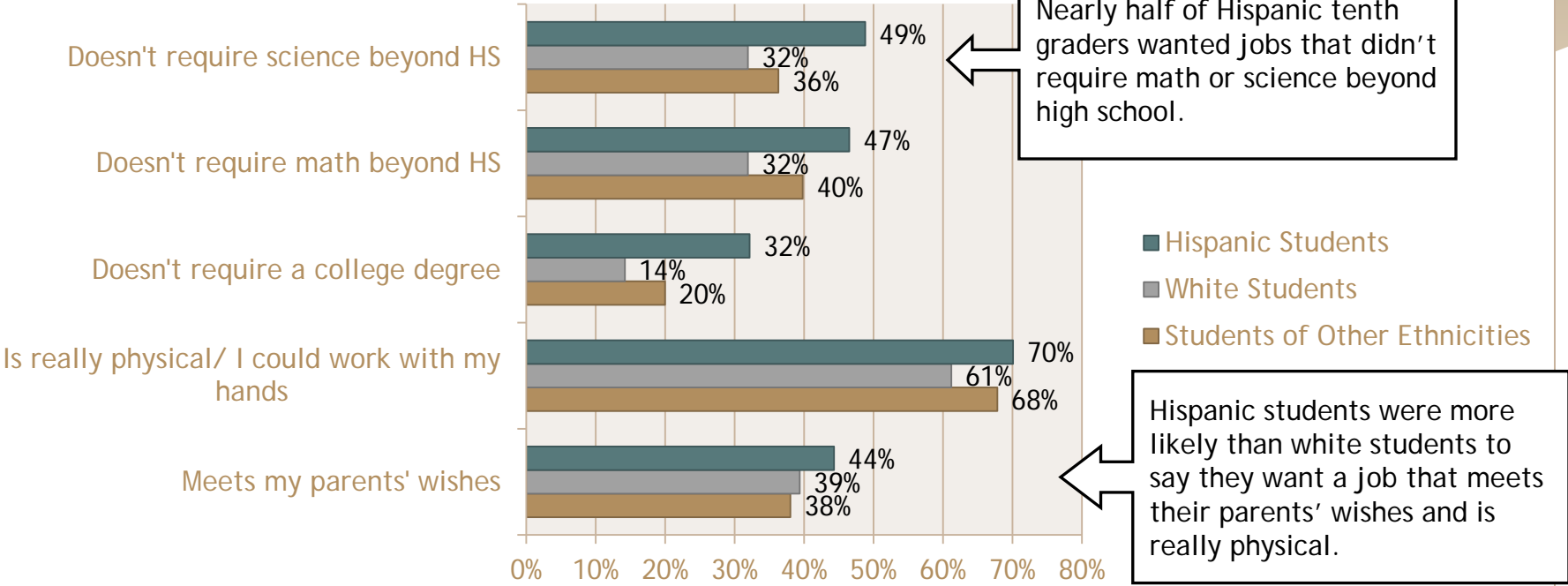
Boys said they like math more often than girls did, but boys were less interested in jobs requiring math beyond high school level. Over a fifth of boys would like a job that doesn't require a college degree.

■ % of 10th Grade Boys  
■ % of 10th Grade Girls

Tenth grade boys were more likely than girls to indicate they would like a job that meets their parents' wishes and allows them to stay in their hometowns.

Numbers indicate the percent of student responses that strongly agreed or agreed these career attributes were important. These five attributes tested significant in cross-tabulations by gender for tenth graders. Only one attribute, that a job be really physical, tested significant for seventh graders. Seventh grade boys were more likely than girls to want such a job.

“I would like a job that....” (10<sup>th</sup> Graders)

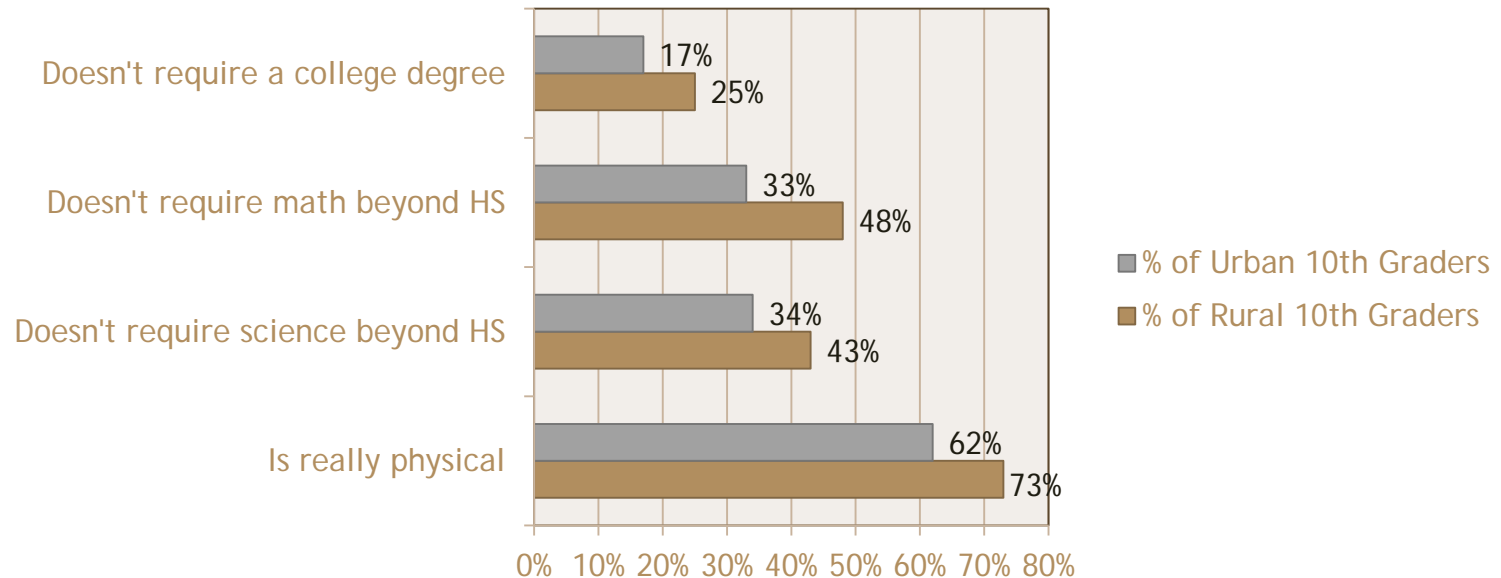


Numbers indicate the percent of student responses that strongly agreed or agreed that these career attributes were important. These five attributes tested significant in cross-tabulations by ethnicity for tenth graders.

## Preferred Characteristics of Careers: Rural-Urban Differences

Even though rural tenth graders said they liked science more often than urban students did, they were less interested in jobs requiring science beyond high school levels, as well as math. One-fourth of rural tenth graders said they would like a job that doesn't require a college degree. A majority of all tenth graders said they preferred a job that is really physical. Rural tenth graders were more likely to desire this in future jobs than urban tenth graders.

"I would like a job that..." (10<sup>th</sup> graders)



Numbers indicate the percent of student responses that strongly agreed or agreed these career attributes were important. These four attributes tested significant in cross-tabulations by rural-urban for tenth graders. Only two attributes tested significant for seventh graders in rural and urban groups. Rural students said money was less important to them than urban students. Also, rural seventh graders said they were less interested in jobs near their hometowns.

## Orientation to Science and Scientists

Students were asked a series of questions to measure their orientation toward science and scientists. Students from all three grade levels were asked about the kinds of characteristics they attribute to scientists. Only seventh and tenth graders were asked another series of questions that gauged more closely the role they feel science plays in society and how much confidence they have in leaders from the scientific community.

## Students' Perceptions of Scientists

Students' positive perceptions of scientists declined between fourth, seventh, and tenth grades. Even though fourth graders held more positive attitudes toward scientists and their work, most do not want to be a scientist.

	Strongly Agree	Agree	Disagree	Strongly Disagree	TOTAL
<b>Scientists are smart.</b>					
4 <sup>th</sup> Graders	75%	23%	1%	1%	100%
7 <sup>th</sup> Graders	54%	44%	2%	0%	100%
10 <sup>th</sup> Graders	43%	53%	3%	1%	100%
<b>Scientific work is dangerous.</b>					
4 <sup>th</sup> Graders	27%	50%	16%	7%	100%
7 <sup>th</sup> Graders	17%	57%	25%	1%	100%
10 <sup>th</sup> Graders	9%	57%	32%	2%	100%
<b>Scientific work is exciting.</b>					
4 <sup>th</sup> Graders	56%	35%	7%	2%	100%
7 <sup>th</sup> Graders	35%	51%	12%	2%	100%
10 <sup>th</sup> Graders	18%	55%	22%	5%	100%
<b>Scientists are as cool as other people.</b>					
4 <sup>th</sup> Graders	31%	40%	20%	9%	100%
7 <sup>th</sup> Graders	20%	58%	18%	4%	100%
10 <sup>th</sup> Graders	13%	63%	19%	5%	100%
<b>I would like to be a scientist.</b>					
4 <sup>th</sup> Graders	22%	18%	30%	30%	100%
7 <sup>th</sup> Graders	9%	19%	47%	25%	100%
10 <sup>th</sup> Graders	7%	15%	47%	31%	100%

## Students' Perspectives on Science

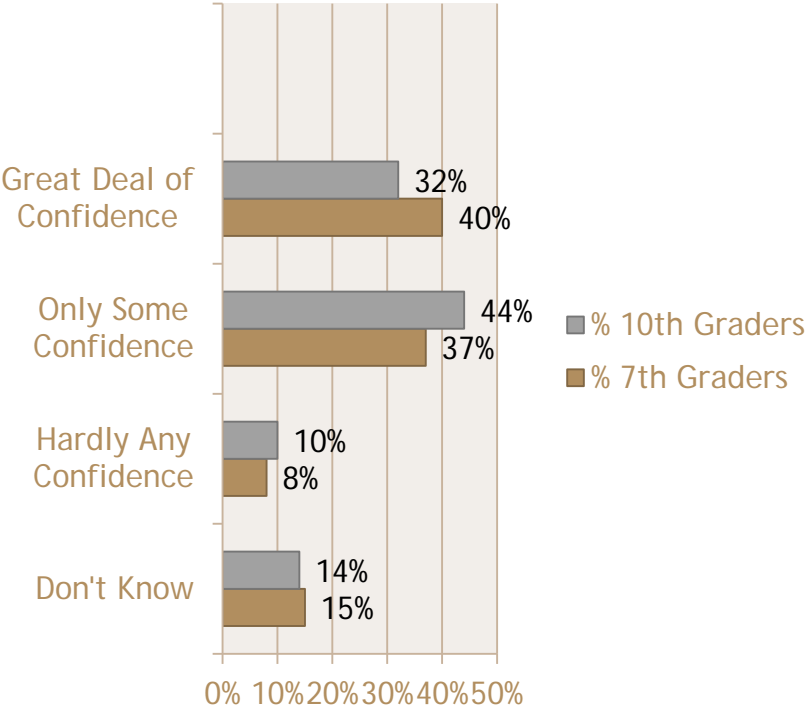
Over half of seventh and tenth graders find it hard to know what to trust because science is always changing. Approximately half of all students agreed that Idaho needs more scientists to improve the state.

	Strongly Agree	Agree	Disagree	Strongly Disagree	TOTAL
<b>I should be able to choose what to believe and what not to believe from science.</b>					
7 <sup>th</sup> Graders	19%	54%	23%	4%	100%
10 <sup>th</sup> Graders	21%	51%	24%	4%	100%
<b>I find it hard to know what to trust about science because science is always changing.</b>					
7 <sup>th</sup> Graders	10%	46%	39%	5%	100%
10 <sup>th</sup> Graders	10%	47%	38%	5%	100%
<b>Idaho needs more scientists to help improve things for our state.</b>					
7 <sup>th</sup> Graders	12%	38%	45%	5%	100%
10 <sup>th</sup> Graders	9%	42%	45%	4%	100%

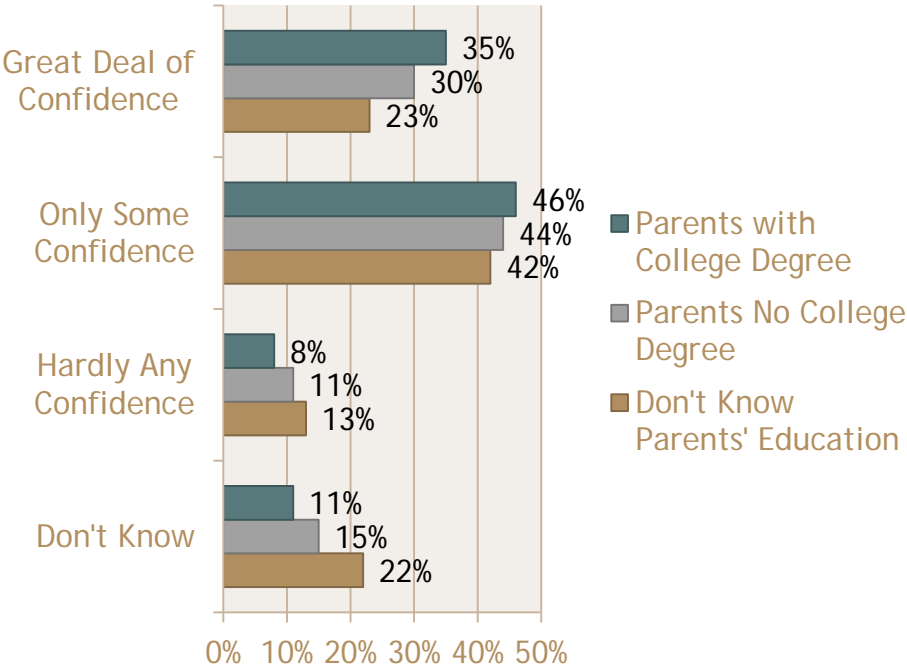
# Students' Confidence in the Scientific Community

In response to the question, "How much confidence do you have in the people who run the scientific community?" tenth graders reported lower confidence than seventh graders. Among tenth graders, those who had at least one parent with a college degree said they had significantly more confidence than those whose parents did not have a college degree or who did not know if any of their parents had a college degree.

### 7<sup>th</sup> and 10<sup>th</sup> Graders' Level of Confidence in Scientific Community



### 10<sup>th</sup> Graders' Level of Confidence in Scientific Community by Parents' Education





Surveys were conducted by the research team in each of the twelve districts with children in grades four, seven, and ten. Within each school district, a nested cluster sample design was used. To select schools (the first level of the cluster sample), we randomly selected a high school in each district from the available mainstream/non-charter schools. Next, a middle school/junior high which was a feeder school to the selected high school was randomly selected from the available feeder schools for the seventh grade sample. Finally, we selected an elementary school from the available feeder schools for that middle school for the fourth grade sample. Some districts have only one school at each level, in which case that school was selected by default. Once the schools were selected, the second level of cluster sampling were classrooms within schools. In order to facilitate survey administration logistics, this level of selection was not purely random. In the smaller districts (with less than 250 students), the three grade levels were censused (that is, every student who consented and was present that day was administered a survey). In the larger districts, surveys were administered during classes that were required of all students in that grade level. The content area was decided by the survey team in conjunction with the school principal. English classes were the most common with a stratified design in the larger schools to have a proportional representative sample of accelerated, regular, and modified students as best we could with scheduling constraints. Biology classes were also used in some districts for tenth grade, as was earth science in seventh grade.

- \* National Center for Education Statistics (NCES). 2010-2011. Public Elementary and Secondary School Student Enrollment and Staff Counts From the Common Core of Data: School Year 2010-11. Washington, D.C.: U.S. Department of Education.
- \* National Center for Education Statistics, "The Nation's Report Card; Mathematics 2011." Accessed March 26, 2013. <http://nces.ed.gov/nationsreportcard/pdf/main2011/2012458.pdf>
- \* ----- . "The Nation's Report Card: Science 2011." Accessed March 26, 2013. <http://nces.ed.gov/nationsreportcard/pdf/main2011/2012465.pdf>
- \* National Center for Higher Education Management Systems (NCHEMS) Information Center for Higher Education Policymaking and Analysis. Accessed March 26, 2013. <http://www.higheredinfo.org/>
- \* Complete College America. 2011. "IDAHO 2011." Accessed February 28, 2013, <http://www.completecollege.org/docs/Idaho.pdf>