



ATTITUDES, BARRIERS, & OPPORTUNITIES CONCERNING STEM EDUCATION IN IDAHO



STATEWIDE AND COMMUNITY SURVEY RESULTS

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University of Idaho

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EXECUTIVE SUMMARY

INTRODUCTION

Micron Foundation plays a significant role in the promotion of science, technology, engineering, and math (STEM) education programs in Idaho. The Foundation partners with K-12 and university educators to provide learning opportunities and supports research to further STEM knowledge and training in recognition of the need for a skilled and trained workforce and a scientifically-literate community.

With Micron Foundation's support, the UI-Micron STEM Education Research Initiative seeks to explore STEM attitudes, scientific literacy, and educational outcomes in Idaho. The five-year, longitudinal study will collect and analyze data from parents, students, teachers, and community members across the state. The research will help identify the complex factors that shape interest in STEM at the community level, and STEM learning and academic performance at the K-12 level. Findings will enable partnerships across the state develop and implement innovations that increase academic STEM performance and workforce competitiveness.

RESEARCH ACTIVITIES

Year one of the study focused on conducting focus groups in Idaho communities to develop an understanding of local contexts of STEM education. Twelve communities from different counties in Idaho were selected to provide data on STEM attitudes given the regional differences in economic base, geography, and population demographics (see Appendix I for sampling methodology). In year two a statewide survey was designed and conducted to investigate

- public support for education and STEM education in particular;
- degree of parental engagement and abilities for supporting children's educational success; and
- public attitudes and perceptions about science, scientists, and STEM education.

The results reported here are based on two survey samples. The first survey sample was drawn from the entire state of Idaho through random selection of phone numbers, both from landlines and wireless phones. We randomly sampled 900 household landlines and 1,500 wireless phone numbers. Out of these sampled phone numbers, we completed a total

of 407 telephone interviews across the state, for a response rate of 22.5 percent. The second survey sample was drawn from Idahoans with phone numbers (either landlines or wireless phones) from the counties that the twelve communities selected to participate in this study were located. The number of respondents sampled in each community's county varied depending on the county's population size (for more detail, see methodology section in Appendix I). Of the sampled phone numbers in these counties, we completed a total of 1,661 telephone interviews, with response rates ranging from 19.3 percent to 32.2 percent. Between the two samples, we telephone interviewed 2,068 Idahoans. Given the probability of being selected for the study based on the type of phone service each household had (wireless, landline, or both) and (for the community oversample) the population size of the county, we weighted frequencies which ensures our findings are more representative of Idahoans regardless of where they live or what type of phone service they have. It's also important to note there are general patterned responses for those who agree to participate. The focus of this survey, STEM education, likely led to lower participation rates among some populations, particularly those with lower levels of education. In addition, younger respondents are more likely to decline to participate because they are busy with work and families or are less likely to answer the phone or to agree to participate. As such, caution should be taken when extrapolating findings from our survey samples to all Idahoans due to the age and educational attainment of our respondents. Both of our survey samples had fewer survey respondents from the younger age demographic (18-24) and more from the older age demographic (65-84) than reside in Idaho (see Appendix I for more detail per community). In addition, fewer respondents with a high school diploma or less participated in our survey than expected and more with college degrees, including graduate degrees, than expected (see Appendix I for more detail per community). This report first summarizes data from the statewide sample and then provides survey findings for each of the twelve communities collected in Fall 2011-Spring 2012 (Year Two of research design).



KEY FINDINGS

FINDING 1: IDAHOANS SUPPORT EDUCATION AND HOLD POSITIVE ATTITUDES ABOUT LOCAL SCHOOLS.

- Respondents to the statewide survey view math and science as two of the top four most important subjects taught in schools.
- Local public schools in Idaho are viewed as doing a good job providing students with an education, including STEM education.
- The majority of respondents support efforts to enhance STEM education in their communities.
- State expenditures to support public education, including K-12, higher education, and STEM education, are supported by the public more than expenditures for health and human services, natural resources, and law enforcement.

FINDING 2: PARENTS REPORT HIGH LEVELS OF ENGAGEMENT IN THEIR CHILDREN'S EDUCATION BUT DESIRE MORE RESOURCES AND KNOWLEDGE IN ORDER TO HELP CHILDREN SUCCEED AND PROGRESS IN EDUCATION.

- Parents in the state say their children are performing above average or excellent in math and science.
- Parents say they communicate regularly with their children's teachers and feel very comfortable communicating with schools about their children's educational needs.
- Self-reported behavior of parents indicates significant support for children's home learning environments, including reading regularly to their children when they are young and ensuring there is a set time for children to complete their homework.
- Parents think it is most important to be involved in their children's education when they are in elementary school; importance of involvement diminishes as students progress through middle school and high school.
- More financial security and time were desired by parents to increase their ability to engage in their children's education.
- A significant number of respondents do not know what classes a high school student should take in order to be successful in college, and over a third are unsure how to help someone apply to a four-year college. Almost half also do not know how financial aid works in a four-year college.

FINDING 3: IDAHOANS CHARACTERIZE THEMSELVES AS SCIENTIFICALLY AND TECHNOLOGICALLY LITERATE BUT HOLD CONFLICTING ATTITUDES ABOUT SCIENCE AND SCIENTISTS.

- Most respondents say they are fairly well-informed about science and technology.
- More than half of respondents report scientists have had "very positive" or "positive" influences in their community.
- About a fifth of respondents report scientists have had "both positive and negative" influences in their community.
- Scientists are viewed by respondents as sometimes having a political agenda in their research.
- The fast pace of scientific discovery makes it difficult for half of respondents to know what scientific findings to trust.

- The vast majority of respondents say students should be able to choose what to believe and what not to believe from the scientific knowledge they learn at school.
- Almost half of respondents feel science and religion are often in conflict.
- There was overall support by respondents for teaching both evolution and the human impact on global climate change in traditional public schools.

RECOMMENDATIONS

Survey results from the state and twelve counties provide important insights on contextual factors that influence student educational aspiration and success. A noteworthy finding is the high degree of public support for education, including STEM education and higher education, across the state. We offer the following broad recommendations based on our analysis of data from the statewide and community surveys. Recommendations are contingent on additional findings from future research phases. The following proposals are not listed in order of importance but rather reflect the complex factors that must be addressed if Idaho is to improve STEM education outcomes and STEM literacy among its population.

- Policy makers, educators, and other stakeholders should consider data when implementing future innovations or legislation. The significant body of research literature on STEM, nationwide data, and the rich data we have and will continue to collect for Idaho should inform innovations and legislation.
- Parents, policy makers, and other stakeholders must clearly understand that Idaho's children are underperforming in math and science in Idaho. While it is important to acknowledge when successes occur, accurately communicating about Idaho students' underperformance in math and science is an important first step in creating a sense of urgency regarding the educational challenges facing Idaho.
- The state should devote adequate resources to support education at all levels and expand partnerships beyond higher education and industry to include teachers, K-12 schools, parents, and communities to foster educational success.
- Stakeholders in Idaho must support families in order to increase their engagement and support of students' education. Specific communication and educational campaigns regarding higher education preparation,

application, and financial processes must be a priority. Structural constraints parents face must be addressed through various innovations that are sensitive to local community needs and demographics.

- Researchers and scientists must be more thoughtful on how to effectively communicate their findings in ways that resonate with community needs and values. This includes consideration of and respect for local experiences.
- Increasing the public's scientific literacy must also be a central goal of the state rather than simply focusing on student STEM performance in K-12 and higher education. Improving the public's understanding of scientific knowledge and relationship to scientists in their community will provide a more scientifically and technologically literate citizenry. In turn, this will provide a community context that can positively influence and reinforce students' interest and knowledge of STEM.
- Specific innovations should attend to the local context in which students learn. Analysis of statewide and community responses reveals that rural communities are each unique, as are urban communities. Indeed, we found little urban-rural differences in our survey. As such, while one strategy would be to develop broad-based approaches to improving STEM literacy and STEM education, approaches, where possible, should be adapted locally as data-driven, specific, place-based, targeted innovations for different groups (e.g. parents, teachers, students, industry leaders, the state, policy makers, researchers, etc.).

NEXT STEPS

Year three research efforts will include the collection of student surveys from fourth, seventh, and tenth grades in the same 12 communities to measure students' math and science interest and attitudes, self-reported academic outcomes in math and science, and family and peer support for educational success. Parents of these children will also be surveyed to measure family context and support for educational success. Finally, a statewide survey of teachers in Idaho will be conducted to measure teachers' attitudes, needs, and concerns regarding math and science student educational outcomes. Analysis of all research data will inform innovations implemented by educational, corporate, non-profit, and community stakeholders.

SECTION 1.

INTRODUCTION: UI-MICRON STEM EDUCATION RESEARCH INITIATIVE

YEAR 1

THIRTY-NINE FOCUS GROUPS OF TEACHERS, PARENTS, AND COMMUNITY MEMBERS CONDUCTED IN 12 COUNTIES TO PROVIDE UNDERSTANDING OF LOCAL CONTEXTS FOR STEM EDUCATION.

YEAR 2

A STATEWIDE RANDOM SURVEY WAS CONDUCTED WITH 12 COUNTIES OVERSAMPLED TO MEASURE STEM ATTITUDES, EXPERIENCES, AND SCIENCE ORIENTATIONS

YEAR 3

SURVEYS OF: STUDENTS IN GRADES 4, 7, AND 10 TO MEASURE STEM ATTITUDES, INTERESTS, AND EXPERIENCES; THEIR PARENTS TO MEASURE FAMILY SUPPORT AND STEM KNOWLEDGE; RANDOM SAMPLE OF TEACHERS STATEWIDE TO MEASURE PERCEPTIONS OF STEM OPPORTUNITIES AND BARRIERS.

YEAR 4

BEGINNING OF INNOVATION IMPLEMENTATION IN PARTNERSHIP WITH COMMUNITIES, EDUCATORS, RESEARCHERS, SCHOOL DISTRICTS, AND OTHER STAKEHOLDERS.

YEAR 5

CONTINUED PROGRESS WITH INNOVATION IMPLEMENTATION AND FOLLOW-UP STUDENT/PARENT SURVEYS TO ASSESS CHANGES.

Micron Foundation plays a significant role in the promotion of science, technology, engineering, and math (STEM) education programs in Idaho. The Foundation partners with K-12 and university educators to provide learning opportunities and supports research to further STEM knowledge and training in recognition of the need for a skilled and trained workforce and a scientifically-literate community.

With Micron Foundation's support, the University of Idaho developed a complex research design to explore STEM attitudes, orientations towards science, and educational outcomes in Idaho. The five-year, longitudinal design will collect and analyze data from parents, students, teachers, and community members across the state to inform local community-based innovations.

Twelve communities from different counties in Idaho were selected to provide data given the regional differences in economic base, geography, and population demographics (see Appendix I for sampling methodology).

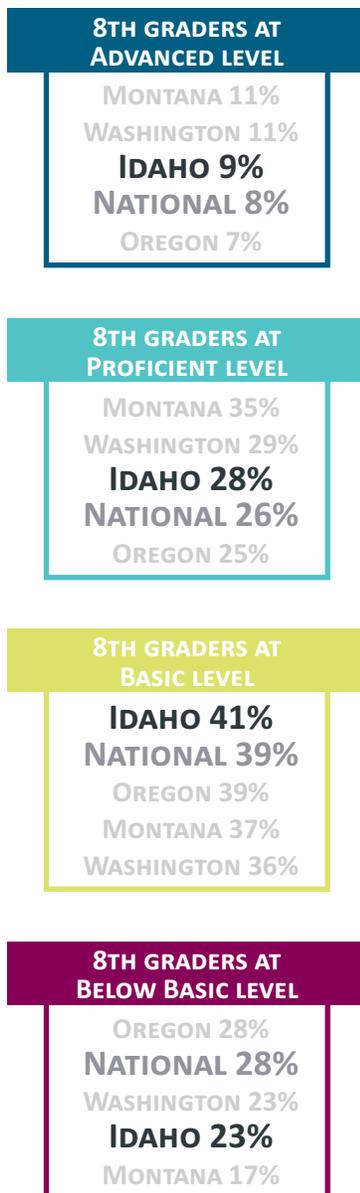
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SECTION 2.

THE PROBLEM: EDUCATIONAL OUTCOMES IN IDAHO

FIGURE 2.1
EIGHTH GRADE MATH
PERFORMANCE



At the national level, leaders have shown great concern over the decline in student preparedness in the STEM fields. The definition of STEM fields varies but typically includes mathematics and statistics, physical sciences and science technologies, engineering and engineering technologies, biological and biomedical sciences, and computer and information sciences.¹ Others include the social and behavioral sciences in STEM definitions which includes the disciplines of psychology, economics, sociology, and political science.² STEM fields share an emphasis and basis of math and science skills and knowledge.

STUDENTS' ACADEMIC PERFORMANCE

Students in Idaho academically underperform in science and math and are not learning the necessary STEM skills to succeed in the global economy of the future. Evidence for students' underperformance includes national data on the high percentage of Idaho eighth graders who do not demonstrate proficiency in math and science. Postsecondary educational attendance is low in Idaho, and students who do attend college take longer to graduate within program time relative to other students in the region. In addition, slightly less than half of Idaho students who take the ACT meet the benchmark in math and only a third meet the benchmark in science. If we are to build the type of worker knowledge and skills necessary for leveraging Idaho's position in the global economy, we must critically assess the factors contributing to Idaho students' academic underperformance.

The National Assessment of Educational Progress assesses the math and science ability of the nation's students. Students are characterized as "below basic," "basic," "proficient," and "advanced" levels of achievement in math and science. The "basic" achievement level denotes "partial mastery of prerequisite knowledge and skills that are fundamental for proficient work at each grade" while "proficient" denotes "solid academ-

¹U.S. Department of Education. "Postsecondary Awards in Science, Technology, Engineering, and Mathematics by State: 2001 and 2009."

²Green, "Science and Engineering Degrees: 1966-2004."

ic performance” demonstrating “competency over challenging subject matter.” Some entities combine the percentage of students who meet “basic” and “proficient” levels of performance together when reporting on the math and science abilities of students in the state. We believe this masks the number of students who achieve the degree of math and science competency necessary to pursue higher education. As such, we focus on “proficiency” measures because this better represents competency. We provide information on Idaho’s eighth graders’ performance – similar patterns in percentages of students in each level of achievement are found in fourth and twelfth graders in Idaho.

EIGHTH GRADE MATH & SCIENCE PERFORMANCE AND GRADUATION RATES

The majority (64%) of Idaho’s eighth graders did not attain “proficiency” in math in 2011, but they slightly outperformed eighth graders nationwide.³

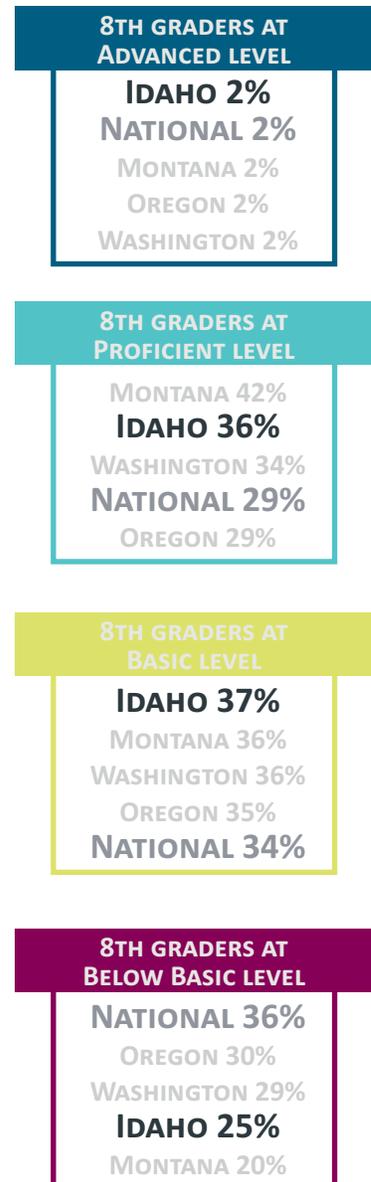
- 23% of Idaho’s eighth graders scored at “below basic” levels of performance, compared to 28% of eighth graders nationwide.
- 41% of Idaho’s eighth graders reached only “basic” levels of performance, compared to 39% of eighth graders nationwide.
- 28% of Idaho’s eighth graders achieved “proficient” levels of performance, compared to 26% of eighth graders nationwide.
- 9% of Idaho’s eighth graders achieved “advanced” levels of performance compared to 8% of eighth graders nationwide.

The majority of Idaho’s students (62%) did not attain demonstrated proficiency in science, yet they still exceeded students throughout the nation, 70% of which did not attain proficiency in science.

- 25% of Idaho’s eighth graders scored at “below basic” levels of performance, compared to 36% of eighth graders nationwide.
- 37% of Idaho’s eighth graders reached only “basic” levels of performance, compared to 34% of eighth graders nationwide.
- 36% of Idaho’s eighth graders achieved “proficient” levels of performance, compared to 29% of eighth graders nationwide

³National Center for Education Statistics, “The Nation’s Report Card; Mathematics 2011” and “The Nation’s Report Card: Science 2011.”

**FIGURE 2.2
EIGHTH GRADE SCIENCE
PERFORMANCE**



- In Idaho and nationwide, 2% of eighth graders achieved “advanced” levels of performance.

Idaho students graduate from high school at a higher rate than the national average. Over three-fourths (78%) of Idaho students graduated from high school in 2009, compared to the U.S. average of 71% in the same year.

A sizeable, but unknown, number of Idaho students are homeschooled without any regulation or monitoring by the State of Idaho. According to the home school packet provided to parents by the Idaho State Department of Education, parents who homeschool their children are not required to have teacher certification, report grades or attendance to the state, or set hours of instruction per day.⁴ Parents are required to teach core topics such as language arts, mathematics, science, and social studies among other subjects. While homeschooled students can participate in statewide assessments, it is not required nor do homeschooled students receive a high school diploma. As such, the unknown number of homeschooled students in Idaho is not reflected in the official state high school graduation rate.

THE LEAKY PIPELINE

Student progression through various levels of the educational system is referred to as the educational pipeline. When students fail to continue their education after high school or drop out of higher education, it’s often metaphorically characterized as a “leaky pipeline.” In other words, the U.S. educational system leaks students at various educational stages, some before they commit to postsecondary education and some after one or two years of college attendance. Outcomes in the educational pipeline in Idaho reveal high school students do not achieve regional and national averages on key measures. Overall, Idaho high school students are less likely to attend college compared to the national average. In addition:

- High school graduates who went to a two-year or four-year college in 2008:
 - Idaho 49%
 - U.S. 63%
- 18-24 year-olds in college in 2009:
 - Idaho 29%
 - U.S. 63%

⁴Idaho State Department of Education, “Home School.”

- Retention of first-year students at four-year higher education institutions in 2010:
 - Idaho 67%
 - U.S. 78%

Idaho high school students who attend college also take longer to graduate compared to other high school students in the region.⁵ In Idaho, it is estimated that 15.7 of Idaho ninth graders out of 100 will graduate from college within the program time. The U.S. rate is 20.5 ninth graders out of 100. States in the region have better graduation rates within program time than Idaho: In Wyoming 25.5 ninth graders out of 100 are estimated to finish within program time, Montana's rate is 16.1, Oregon's rate is 16.2, Utah's rate is 20.8, and Washington's rate is 18.1. According to these estimations, Idaho students are the least likely in the region to graduate from college within program time.

The National Center for Public Policy and Higher Education grades all the states in the nation on a number of educational outcomes. According to their evaluation, Idaho is underperforming in educating its residents.⁶ While the state of Idaho earned a passing grade for preparation and completion, it performed poorly in participation in higher education, and failed in affordability.⁷ Compared to other states, high school students in Idaho have a fairly low chance of enrolling in college. Since the 1990s, the chances of a high school student in Idaho enrolling in college by age of 19 has declined by 9%, while the national rate has increased by 8%.⁸ In terms of affordability, Idaho earned an "F" despite the fact that Idaho is one of the best performing states in terms of the affordability of its community colleges. According to the Western Interstate Commission for Higher Education, the average cost of a four-year higher education degree in Idaho is \$5,642, less than the region's average (\$6276).⁹ The failing grade reflects the fact that Idaho families devote a large share of family income (24%) to attend four-year colleges and universities; for poor and low-income families, the share is

⁵National Center for Higher Education Management Systems (NCHEMS) Information Center for Higher Education Policymaking and Analysis.

⁶National Center for Public Policy and Higher Education, "Measuring Up 2008: The National Report Card on Higher Education."

⁷Comparison data is between 1992 (or the closest year for which reliable data are available) and 2008; comparison is between Idaho and top earning state outcomes in 2008. Idaho earned an "I" or incomplete in learning due to insufficient data to make state-by-state comparisons.

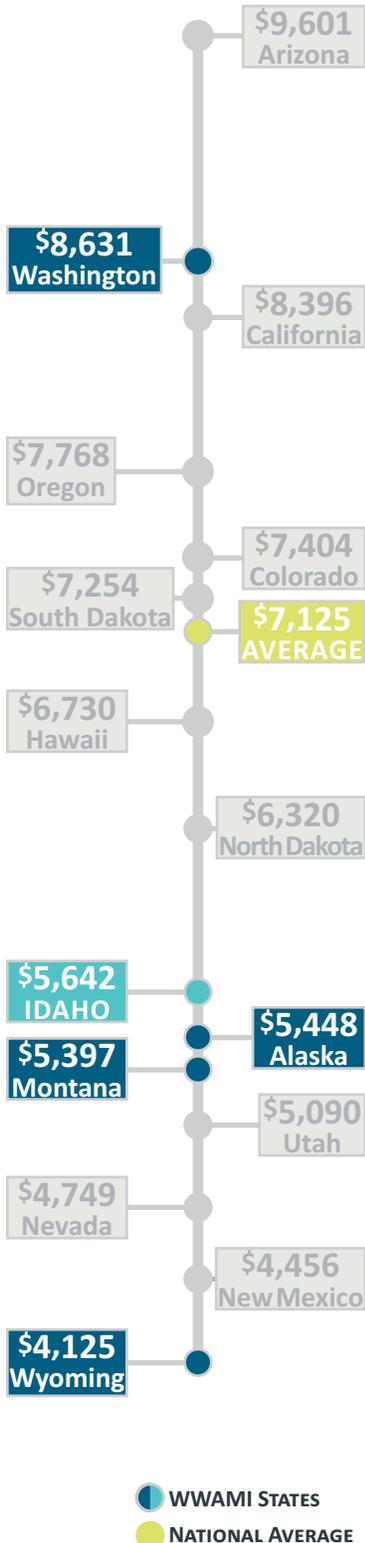
⁸National Center for Higher Education Management Systems (NCHEMS) Information Center for Higher Education Policymaking and Analysis.

⁹Western Interstate Commission for Higher Education, "Tuition and Fees in Public Higher Education in the West, 2011-2012: Detailed Tuition and Fees Tables."

FIGURE 2.3
2008 IDAHO REPORT CARD

SUBJECT	GRADE
Preparation	C
Participation	D
Affordability	F
Completion	C
Benefits	C-
Learning	I

FIGURE 2.4
AVERAGE COST OF 4-YEAR
HIGHER EDUCATION DEGREES
IN DIFFERENT STATES



34%. In addition, the amount of state funded need-based grant aid in Idaho is lower than other states in the region,¹⁰ and “for every dollar in Pell Grant aid to students, Idaho spends only 5 cents.”¹¹

STUDENT STEM PREPAREDNESS¹²

Nationwide, interest and academic ability in STEM are declining among high school graduates.¹³ One measure of student aptitude for STEM subjects and education after high school can be found in students’ standardized college admission test participation and outcomes. The SAT and ACT are standardized tests that predict a student’s readiness for college and are used to determine college admission in the U.S. Only 20% of Idaho’s high school students in 2011 took the SAT, ranking 27th in participation rate in the United States. The average math score for Idaho students taking the SAT in 2011 was 539, ranking 24th in the nation. More high school students in Idaho (64%) take the ACT.¹⁴ ACT identifies a “college readiness benchmark” for science and math which indicates the likelihood of whether a student will earn a passing grade in a typical first-year college course in math and science. The ACT benchmark for math is 22 and the benchmark for science is 24. For 2011 Idaho high school graduates, 47% (compared to 45% nationally) met the ACT benchmark in math, and 32% (compared to 30% nationally) met the ACT science benchmark.

STATE LABOR NEEDS

The focus on STEM fields and degrees is due to the widespread recognition that the changing global economy and problems facing the world require a mathematically and scientifically literate citizenry and workforce. The National Science Board’s (NSB) 2010 report argues there is a pressing need for “STEM innovators...individuals who have developed the expertise to become leading STEM professionals and perhaps the creators of significant breakthroughs or advances in scientific and technological understanding” (2011: 1). Moreover, the NSB argues it is important to improve STEM educational outcomes for both national and individual reasons: Innovations will ensure the long-term economic prosperity for the nation and every stu-

¹⁰Idaho State Board of Education, “Higher Education Fact Book, 2012.”

¹¹National Center for Public Policy and Higher Education, “Measuring Up 2008: The National Report Card on Higher Education.”

¹²Data is based on ACT college admission and placement exam, interest inventory, and math and science assessments. See ACT, “Developing the STEM Education Pipeline.”

¹³ACT, “Developing the STEM Education Pipeline.”

¹⁴ACT, “The Condition of College and Career Readiness 2011.”

dent in the U.S. deserves an opportunity to achieve her or his full potential. This last goal, to ensure all students have an opportunity to achieve their potential, recognizes not all students will pursue a STEM-related occupation. However, because "... personal and societal decisions in the 21st century increasingly require scientific and technological understanding..." STEM literacy ensures citizens can effectively participate in civic and cultural affairs and be economically productive, regardless of their occupation.¹⁵

The national imperative to improve STEM educational outcomes is based on the recognition that human capital in the form of new skills and knowledge is necessary to create and fill new jobs that will maintain the U.S. status in the global labor market. It is expected that 61% (503,000) of all jobs in Idaho will require some postsecondary training beyond high school in 2018,¹⁶ and that 13% of jobs will be in STEM-related occupations (including healthcare) (see Figure 2.5).¹⁷

Evidence that STEM skills will be important nationwide is supported by projected growth in occupations by the U.S. Department of Labor. Employment in professional, scientific, and technical services is projected to grow nationally by 29 percent by 2020 primarily due to new demand for computer network and mobile technologies.¹⁸ Given the changes experts foresee in the state and national economy, it is evident that STEM-related skills are necessary to prepare youth for the future.

The state of Idaho is attempting to strengthen its economy through a variety of initiatives, including recruiting new companies and educating a highly skilled workforce.¹⁹ According to Idaho Governor C.L. "Butch" Otter, the way to improve our economic landscape is through partnerships. One such partnership is Idaho Global Entrepreneurial Mission (IGEM) which "involves industry, entrepreneurs, higher education, the Idaho National Laboratory, and the Center for Advanced Energy Studies" working together to "help our existing business grow, nurture the start-up of new business, and create more jobs and opportuni-

¹⁵National Research Council, "Successful K-12 STEM Education: Identifying Effective Approaches in Science, Technology, Engineering, and Mathematics."

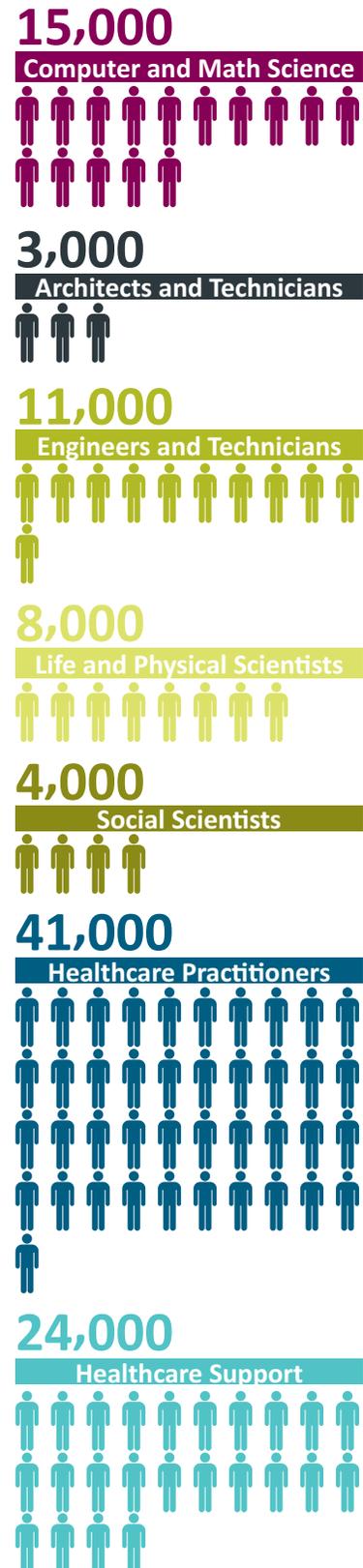
¹⁴Carnevale, Anthony P., Nicole Smith, and Jeff Strohl, "Help Wanted: Projections of Jobs and Education Requirements Through 2018."

¹⁷Carnevale, Anthony P., Nicole Smith, and Jeff Strohl, "Help Wanted: Projections of Jobs and Education Requirements Through 2018."

¹⁸U.S. Department of Labor, Bureau of Labor Statistics, "Occupational Outlook Handbook, 2012-13 Edition, Projections Overview."

¹⁹State of Idaho, "Enhancing Economic Opportunity."

FIGURE 2.5
PROJECTED STEM JOBS IN
IDAHO, 2018



ties for Idaho.”²⁰

The data from our research indicate a need for additional partners -- including communities, K-12 schools and teachers, and parents among others -- to play a visible role in improving STEM educational outcomes for Idaho to be competitive in the global economy.

²⁰State of Idaho, “C.L. ‘Butch’ Otter’s State of the State and Budget Address.”

SECTION 3.

RECOGNIZING COMPLEXITY AND CULTURAL DIMENSIONS

Idaho's commitment to improve science, technology, engineering, and mathematic educational outcomes engages many stakeholders. Education, industry, government, and community-based entities understand STEM skills are central in solving complex social and environmental problems and for supporting Idaho's economic future. At times, stakeholders work collaboratively, but more typically they engage in a number of disparate initiatives ranging from legislated educational reform to industry-funded educational camps, technologies, and activities. Despite such investments, little assessment has been conducted to determine their effectiveness, and it is unclear what information stakeholders use to determine and implement particular courses of action.

Decisions on how to distribute resources and what types of resources are needed can be informed by explicit attention to the multiple factors that shape youth educational aspiration and success. In addition, attention to local and community circumstances and contexts can help create meaningful innovations at the local level to improve STEM educational outcomes. The 2011 report from the National Research Council supports such attention and notes current STEM education research lacks a focus on cultural and contextual factors that shape youth experiences and opportunities.²¹

The UI-Micron STEM Education Research Initiative is designed to attend to the complexity of cultural dimensions that shape STEM educational outcomes with a focus on local contexts. Our findings reveal commonalities across the State of Idaho as well as unique, locally specific conditions that present communities with challenges and opportunities to improve STEM educational outcomes. Such findings provide stakeholders with the opportunity to develop more meaningful data-driven innovations.

In this report we describe key cultural dimensions in the State and selected communities that serve as important contexts for understanding students' experiences and attitudes towards STEM education and education in general. These include

"We at the State Department of Education are determined to create a customer-driven education system that meets the needs of EVERY student in Idaho and prepares our students to live, work and succeed in the 21st century."

—Superintendent
Tom Luna

²¹National Research Council, "Successful K-12 STEM Education: Identifying Effective Approaches in Science, Technology, Engineering, and Mathematics," 33.

educational contexts in the state, family contexts, and beliefs and values. We present statewide findings and community-specific findings for each of our twelve counties.

EDUCATIONAL CONTEXT

IDAHO'S EDUCATIONAL REFORM: "STUDENTS COME FIRST"

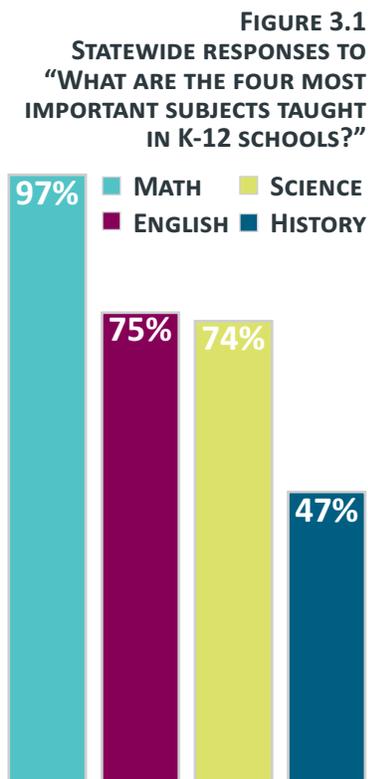
A significant proportion (48.5%) of the budget for the state of Idaho is expended on public education.²² However, the consequences of declining economic conditions and budgetary decisions have resulted in a 14% reduction in Idaho's K-12 budget since 2009.²³ In 2011 the legislature passed the "Students Come First" education reform packet which included a pay-for-performance component linking student achievement to educator salary, bonuses for educators who teach hard-to-fill content areas, the elimination of tenure, the modernization of classrooms through implementing advanced technology and mobile computing devices for high school teachers, and an online course requirement for the Class of 2016 among other components.²⁴

Better than anticipated revenue has led to a modest budget increase for education for 2012-2013 which will be used to help fund two components of the education reform: Idaho's pay-for-performance teacher compensation plan and mobile computing devices including associated professional development for high school teachers.²⁵ While it remains to be seen how the "Students Come First" reform elements will impact STEM educational achievement, the legislation reveals both educational priorities and assumptions.

Budget and governing decisions in the State of Idaho provide an important context and primary revenue for the quality of public education. However, the environment is also shaped by respondents' perceptions and attitudes about school subjects, schools' performance, and financial support for schools.

IMPORTANT SCHOOL SUBJECTS

What academic subjects are seen as important to Idahoans today?



²²Office of Performance Evaluations, Idaho Legislature, "Public Education Funding in Idaho, Evaluation Report," 1.

²³Idaho State Department of Education, "FY13 Budget Request."

²⁴Idaho State Department of Education, "Students Come First, About the Laws."

²⁵Idaho State Department of Education. "FY13 Budget Request."

When asked, “What are the four most important subjects taught in K-12 schools?” 97% of respondents from the state identified math followed by English (75%) and science (74%), with history a distant fourth (47%). The arts and humanities were also recognized as important subjects by many respondents. There was less support for art and music, which 12% of respondents identified as “most important.” Only 4% identified foreign languages as one of the four most important subjects.

Respondents who ranked math as most important were asked why. The most common open-ended response was because of its practical use. Respondents also said math was important because certain careers, like accounting, required mathematics. Less common responses for why math was important included its ability to help develop problem solving and reasoning skills and its ability to enhance citizenship (e.g., “people need math to understand local and national events”).

We also asked respondents who ranked science highly why they identified it as one of the most important subjects for students to learn. Open-ended responses revealed the most common reasons for the importance of learning science in high school was tied to employment, the economy, and the need for science to help solve problems. The following examples are illustrative of the open-ended responses to why science was viewed as important:

- “Most of the jobs are in science.”
- “Science prepares people to learn things we need to step forward in medicine and in many fields.”
- “Because our economy depends on technology and innovation.”
- “To develop inquiring minds and to be able to problem solve.”
- “In this world we are looking for different alternative fuel sources and environmental friendly trends; we need kids who are interested in science for the future.”

PERCEPTIONS OF SCHOOL PERFORMANCE

A number of survey questions were asked to measure Idaho respondents’ attitudes about schools. One question asked respondents what type of school they preferred. Most (60%) Idahoans prefer public schools though a sizeable number also selected private (19%) and charter (14%) schools. Respondents in Bannock, Bonneville, Camas, Caribou, Jefferson, and Nez Perce counties were more likely to support public schools over other

FIGURE 3.2 PERCEPTIONS OF LOCAL SCHOOL PERFORMANCE.

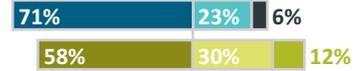
GENERAL SUBJECT AREAS:

■ GOOD ■ FAIR ■ POOR

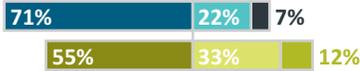
STEM SUBJECT AREAS:

■ GOOD ■ FAIR ■ POOR

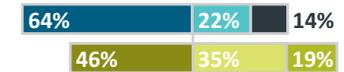
STATEWIDE



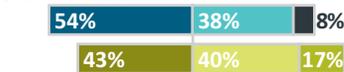
ADA COUNTY



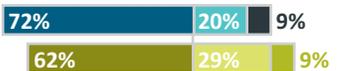
BANNOCK COUNTY



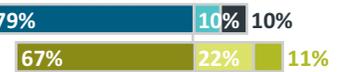
BONNER COUNTY



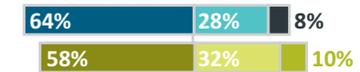
BONNEVILLE COUNTY



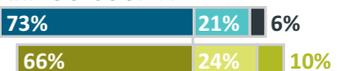
CAMAS COUNTY



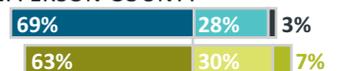
CANYON COUNTY



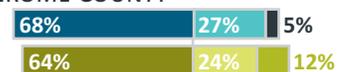
CARIBOU COUNTY



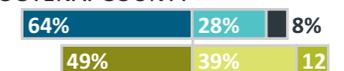
JEFFERSON COUNTY



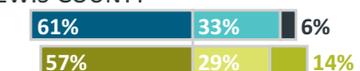
JEROME COUNTY



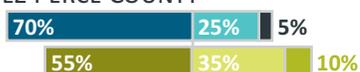
KOOTENAI COUNTY



LEWIS COUNTY

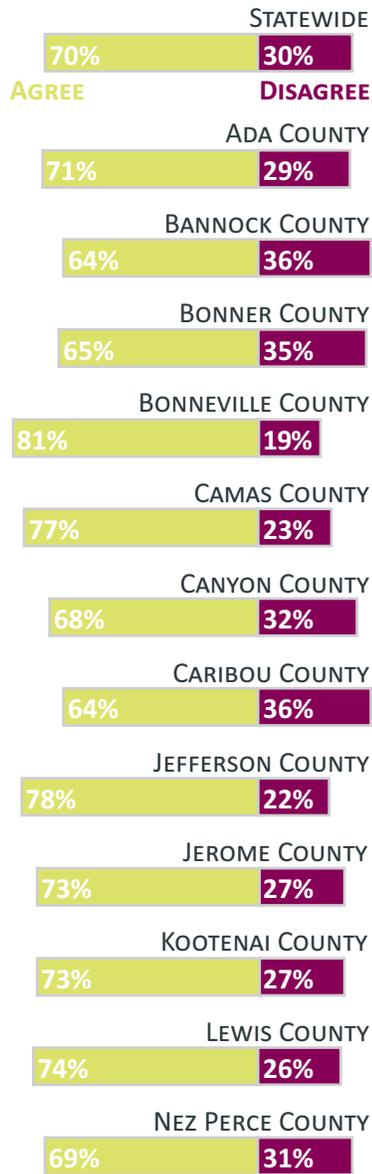


NEZ PERCE COUNTY



Some percentages do not add to 100% due to rounding

FIGURE 3.3
PERCENTAGE OF RESPONDENTS
WHO SAY THEIR COMMUNITY
IS CONCERNED ABOUT THE
QUALITY OF STEM EDUCATION



Some percentages do not add to 100% due to rounding.

schooling options. The counties with the highest percentage of respondents who identified homeschooling as the best type of education for high school students were Canyon County (8%) and Lewis County (9%).

Local public schools in Idaho are regarded favorably across the state; 71% of all respondents rated local schools as “good” or “very good” in terms of the overall quality of education they provide to students. One-fourth (23%) of respondents in the statewide survey rated local public schools as “fair” at educating youth in general and 6% rated local schools as “poor” or “very poor.”

Respondents also generally held favorable attitudes about local school performance on STEM subject areas. Statewide, 58% of respondents rated local schools as “good” or “very good” at educating students in STEM subject areas, with more variation across counties than when evaluating school performance in general. For example, 46% of Bannock respondents, 43% of Bonner respondents, and 49% of Kootenai respondents evaluated their schools as performing “good” or “very good” in STEM education.

In addition, the majority (70%) of respondents said their community was concerned about the quality of STEM education, indicating strong community interest in continual improvement in STEM education.

SUPPORT FOR PUBLIC EDUCATION

The vast majority (90%) of survey respondents support efforts to enhance STEM education in their communities. Half (52%) of respondents across the state, however, also expressed concern that focus on STEM education may reduce attention to other important subjects in local schools.

Strong support for public education is further revealed by respondents’ preferences for budget allocations (see Figure 3.4). When asked whether they would like to see spending increases, decreases, or to keep spending amounts the same for specific budget areas, the majority of respondents from across the state supported increases in spending for K-12 education (77%), higher education (67%), and STEM education (74%). The desire to increase education funding allocation far outpaced the percentages of respondents who expressed the desire for spending increases in other areas such as health and human services (45%), natural resources (42%) and law enforcement/public safety (42%).

Further demonstrating the public’s support for STEM education and its enhancement, the majority of respondents (77%) said they were likely to support local tax levies to improve STEM education in their local schools.

Overall, respondents in the statewide survey support education and find value in the subjects of math and science. Math is seen as important for everyday use, while science is viewed as important for solving societal problems and for future careers. Respondents rate schools positively and support increases to STEM education, indicating some concern that other subjects may be neglected should more attention be given to science technology, engineering, or math. Support for education is also seen in respondents’ willingness to allocate more of the state’s budget to public education.

FAMILY CONTEXT

Families, particularly parents, play an important role in shaping students’ academic interests and achievements. Of respondents who completed the statewide survey, 77% were parents. Most parents’ children (59%) had graduated from high school at the time of the survey, a third (30%) currently had one or more children in the K-12 school system, and only a tenth of parents (10%) had young children not yet old enough to attend school. Of parents with children currently enrolled in K-12, more than 80% attended a traditional public school (see Figure 3.5).

A number of survey questions measured parental perception of their children’s academic performance. Despite official statistics that reveal students in Idaho are underperforming in math and science, the vast majority (78%) of parents with children currently in the K-12 schools report their child’s performance in school in general to be excellent or above average. Likewise, most parents with children currently in the K-12 schools reported their children’s science (74%) and math (76%) performance as above average or excellent. Parents were asked what factors helped explain their child’s math performance (parents could select any number of factors they thought were relevant in explaining their child’s math performance). Parents across the state identified teacher quality (72%), natural ability (69%), math interest (67%), parental help (64%), and math preparation (56%) as the top explanatory factors for their child’s math performance. Peer influence (25%) and math anxiety (18%) were less likely to be identified by parents as key factors in explaining their child’s math performance. Parents in Bannock, Bonner, Jerome, and Kootenai Counties were more likely

FIGURE 3.4
PERCENT OF RESPONDENTS ACROSS THE STATE WHO BELIEVE IDAHO SHOULD CHANGE LEVEL OF FUNDING FOR:

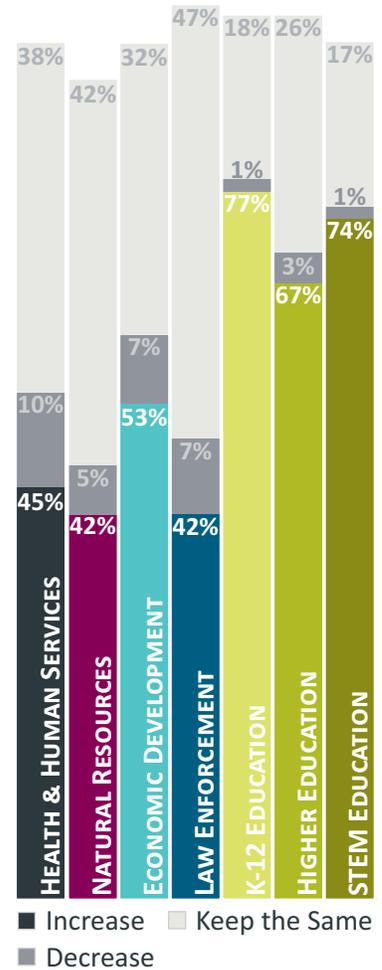
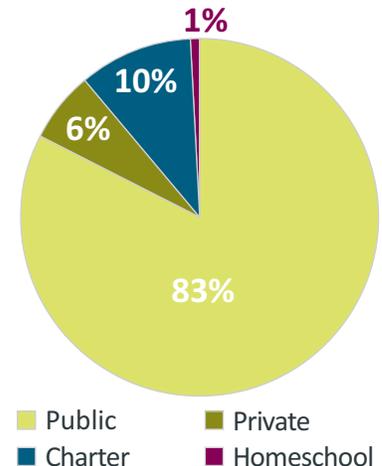


FIGURE 3.5
TYPE OF SCHOOL RESPONDENTS’ CHILDREN ARE ATTENDING

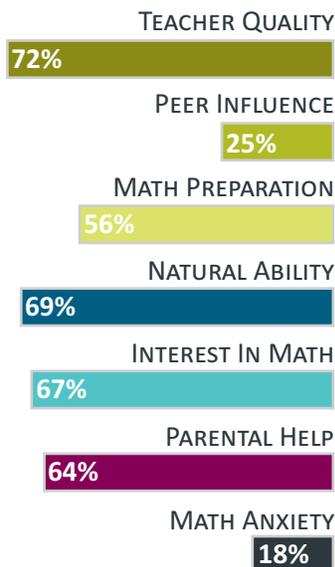


than parents from other counties to identify teacher quality as an important factor in their child's math performance. In addition, parents in Bannock, Bonner, Caribou, Jerome, and Nez Perce were also more likely than parents from other counties to identify natural ability as an important factor in explaining their child's math performance (see Figure 3.7).

FIGURE 3.6 REASONS EXPLAINING CHILD'S MATH PERFORMANCE AS SELECTED BY PARENTS STATEWIDE (MULTIPLE SELECTIONS POSSIBLE)

	TEACHER QUALITY	PEER INFLUENCE	MATH PREPARATION	NATURAL ABILITY	INTEREST IN MATH	PARENTAL HELP	MATH ANXIETY
State	72%	25%	56%	69%	67%	64%	18%
Ada	58%	18%	57%	67%	74%	47%	21%
Bannock	69%	24%	52%	81%	67%	68%	13%
Bonner	79%	21%	86%	82%	79%	75%	10%
Bonneville	62%	24%	51%	67%	58%	55%	14%
Camas	50%	30%	40%	60%	70%	60%	20%
Canyon	65%	24%	60%	64%	62%	53%	16%
Caribou	63%	34%	54%	75%	55%	68%	14%
Jefferson	53%	17%	39%	67%	56%	67%	19%
Jerome	71%	29%	62%	75%	72%	61%	25%
Kootenai	73%	42%	67%	68%	60%	53%	25%
Lewis	63%	23%	57%	66%	74%	66%	14%
Nez Perce	57%	31%	57%	76%	75%	68%	12%

FIGURE 3.7 REASONS EXPLAINING CHILD'S MATH PERFORMANCE AS SELECTED BY PARENTS STATEWIDE (MULTIPLE SELECTIONS POSSIBLE)



To measure parental engagement with schools, we asked parents with children currently in the K-12 school system how often they volunteered at school, how often they talked with teachers, and how often they talked with other parents about schools. Parents reported being highly engaged in schools. Two-thirds of parents said they volunteer at school at least once a year, and almost a third of parents said they volunteer at their child's school five or more times a year. Parents also reported having many conversations with other parents about schools with significant variation across communities. For example, parents from Ada (59%), Bonner (60%), Bonneville (31%), Jefferson (0%), Kootenai (63%) and Nez Perce (68%) counties were less likely to say they talk with other parents five times or more a year about schools than the statewide average (73%). Another measure of engagement is the degree to which parents say they talk with their child's teachers beyond parent-teacher conferences. About a third (29%) of parents reported little (none or once a year) conversations with teachers in the statewide survey. More parents (42%) across the state reported frequent (five times a year or more) discussions with

their child’s teachers beyond parent-teacher conferences. Parents were also asked how comfortable they were in communicating with schools about their child’s learning needs. The vast majority (98%) of parents across the state reported they were comfortable or very comfortable.

Parents with K-12 children were also asked two questions that measured family and home environments for academic success in the statewide survey. The first question asked how often parents read to their child when they were young. The majority (88%) of parents from the statewide survey reported they did so very often or often. In addition, parents were asked how often they had a set time for homework for their children. Similarly, most parents across the state (77%) said they always or usually had a set time for homework. Only 15% of parents across the state said they rarely or never had a set time for homework.

While parents generally reported being engaged in their children’s education, a significant percentage of parents across the state said their own science and math knowledge made it difficult to help their child with math and science homework (see Figure 3.8).

Over 40% of parents in the state said they occasionally, often, or very often found it difficult to help with homework because of their own math and science literacy. The percentage of parents who said they “occasionally,” “often,” or “very often” found it difficult to help their children with homework was over 50% in five counties. Parents reported more difficulty helping their child with math and science homework in high school than in other grades. A related question asked respondents when they thought it was most important to be involved in a child’s education. Across the state, most (60%) respondents said the most important time to be involved in children’s education was when they were in elementary school; the importance diminished as children progress through school, at 19% for middle school and 16% for high school.

While parents with children currently in the K-12 schools reported being fairly engaged with their children’s education, almost half (48%) of parents across the state strongly agreed or agreed that they did not have the time they would like to be involved in their child’s education, with some communities reporting even higher percentages of parents in agreement. For example, around 60% of parents in Ada, Bonner, Caribou, Kootenai, and Nez Perce Counties agreed or strongly agreed that they didn’t have as much time as they would like. One-fourth

FIGURE 3.8
HOW OFTEN DO YOU FEEL YOUR OWN MATH AND SCIENCE KNOWLEDGE MAKES IT DIFFICULT TO HELP YOUR OLDEST CHILD WITH THEIR MATH AND SCIENCE HOMEWORK? (PARENTS ONLY)

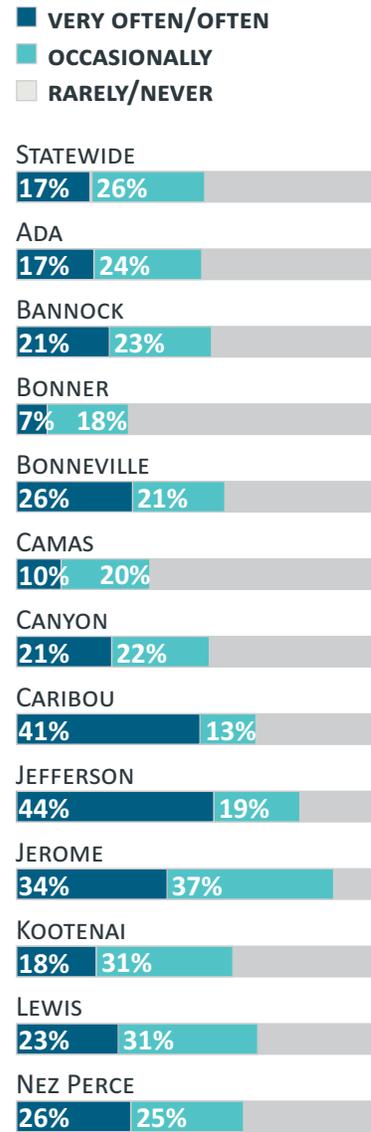
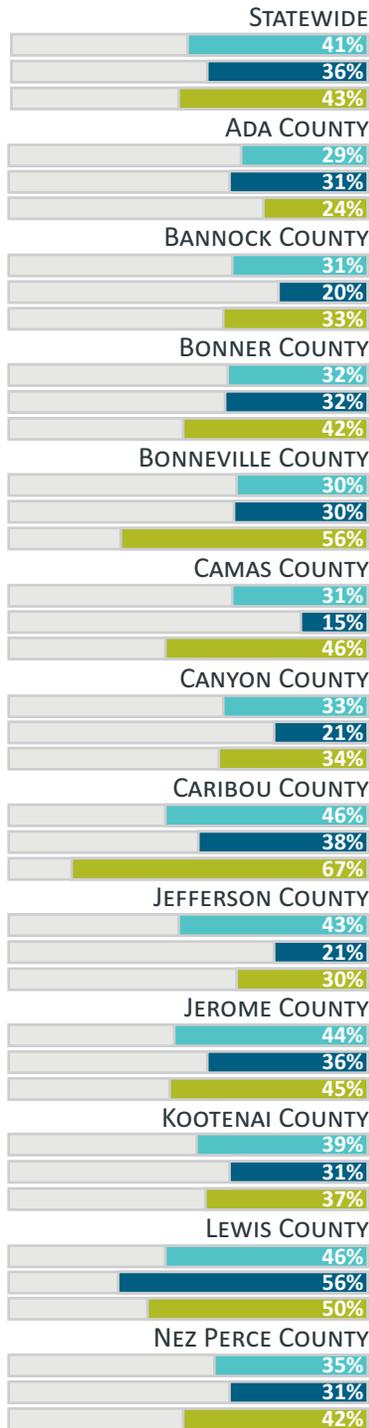


FIGURE 3.9
PARENTS WHO AGREE

I AM UNSURE OF WHAT HIGH SCHOOL CLASSES A STUDENT SHOULD TAKE TO BE SUCCESSFUL IN A FOUR-YEAR COLLEGE

I AM UNSURE OF HOW TO HELP SOMEONE APPLY TO A FOUR-YEAR COLLEGE

I AM UNSURE OF HOW FINANCIAL AID WORKS IN A FOUR-YEAR COLLEGE



(26%) of parents across the state also reported their financial situation made it difficult for them to be as involved in their children’s education as they would like. Even more parents in Bonner (44%), Bonneville (40%), Caribou (39%), and Lewis (37%) Counties “agreed” or “strongly agreed” that their financial situation made it difficult for them to be as involved in their children’s education as they would like.

Given the low percentage of college attendance and persistence in Idaho, the State Board of Education set a recent goal that 60% of adults between the ages of 25 and 34 will have a college degree or certificate by 2020.²⁶ Private industry has also supported this goal through various programs including the J.A. and Kathryn Albertson “Go On” initiative that provides student scholarships, funds an awareness campaign, and provides funding to high schools that increase the number of college-ready students as measured by enrollment in upper-level classes, dual-credit courses, and completion of college admission exams.²⁷ The program does not provide direct support or training to community members on how to apply to a four-year college.

Given the interest in increasing college attendance in the State of Idaho, we asked a series of questions to measure respondents’ knowledge in three aspects of pursuing higher education. Parents were asked to what degree they agreed with statements about whether they were unsure of the classes a high school student should take in preparation for college, unsure of how to help someone apply to a four-year college, and unsure of how financial aid works at a four-year college.

Forty percent of parents in the statewide survey said they were unsure of what classes a high school student should take to be successful in a four-year college (see Figure 3.9). Parents from Caribou, Jerome, and Lewis Counties were more unsure than parents in other counties. While most respondents (58%) from the statewide survey said they knew what high school classes a student should take to be successful in a four-year college, less than half of all high school students (46%) in Idaho enrolled in an upper-level math class in high school and an even smaller percentage (18%) enrolled in an upper-level sci-

²⁶Idaho State Board of Education, “Higher Education Fact Book, 2012.”

²⁷Funded by the J.A. and Kathryn Albertson Foundation. See <http://www.jkaf.org/initiatives/postsecondary-success/go-on-idaho/> for more information.

ence class in high school according to other records.²⁸

While most (62%) parents in the statewide survey said they knew how to help a student apply to a four-year college, over a third of parents (36%) were unsure. There were significant differences across counties with parents from Caribou, Jerome and Lewis Counties reporting the highest levels of being unsure of how to help someone apply to a four-year college (see Figure 3.9). Given that college educated survey respondents were overrepresented in our sample, it is reasonable to assume that even higher percentages of parents are unsure of how to help someone apply to a four-year college. Parental guidance about applying to college is especially important in Idaho schools, because high school counselors who provide such support are highly underrepresented in most high schools.²⁹ The student-to-counselor ratio in Idaho was 447:1 in contrast to the American School Counselor Association's recommendation of 250:1.³⁰

Due to the rising cost of higher education, college is typically not feasible without financial aid. Indeed, higher education has become less affordable for students in Idaho in the last ten years.³¹ Respondents in this survey were asked how sure they were of how financial aid works in a four-year college. Although slightly more than half of parents (57%) from the statewide survey feel confident in how financial aid works in a four-year college, a large percentage of parents (43%) are unsure (see Figure 3.9). Parents in certain counties, including Camas and Jerome, were more likely to say they are unsure of how financial aid works.

Overall, familial support for children's educational success was mixed. While parents of children currently in the K-12 school system in Idaho said their children were performing above average, this pattern of responses likely reflects a desire to meet

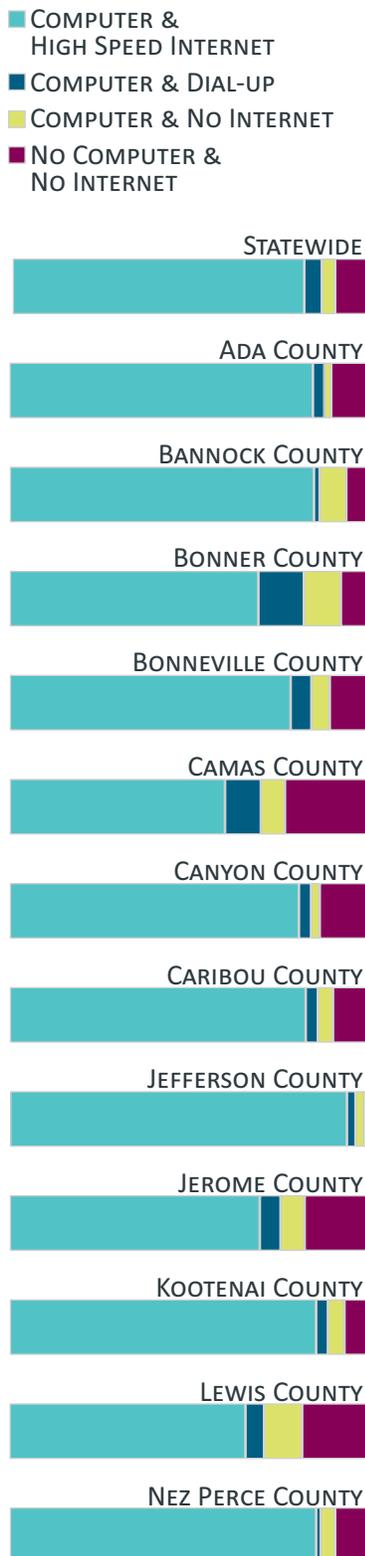
²⁸National Center for Public Policy and Higher Education. "Measuring Up 2008: The National Report Card on Higher Education." Upper-level math courses include geometry, algebra 2, trigonometry, pre-calculus, or calculus. Upper-level science courses include chemistry, physics, second-year biology, AP biology, second-year earth science, or other advanced science courses.

²⁹Researchers have explored the role of high school counselors on college attendance. For example, Bryan et. al (2011) found the number of school counselors in a school and student-counselor contact (particularly by or in the 10th grade) affects college application rates.

³⁰Office of Performance Evaluations, Idaho Legislature, "Reducing Barriers to Postsecondary Education."

³¹According to the National Center for Public Policy and Higher Education in "Measuring Up 2008: The National Report Card on Higher Education," the share of family income, even after financial aid, needed to pay for college is less in Idaho than the U.S. average, but still more than those in the best-performing states and has risen substantially in Idaho between 1990-2000 and 2007-2008.

FIGURE 3.10
COMPUTER AND
INTERNET ACCESS.



social expectations to give positive self-descriptions.³² We suspect this, since statewide and national evidence suggests that Idaho students are underperforming academically, particularly in math and science. Parents also self-reported that they were highly engaged in their children’s education through volunteering and communicating with teachers, though respondents in the statewide survey revealed lower levels of overall engagement in schools than was reflected in community-level surveys. Respondents also reported that time and money limited how much they could engage in their children’s education. Evidence also suggests a need to increase respondents’ “college literacy,” knowledge that would assist children’s success in pursuing postsecondary education including information on how financial aid works, what classes to take in high school to prepare for college, and how to apply to college. Given the overrepresentation of respondents who have a college degree in our surveys, it is likely the “college literacy” is even lower than we report here.

BELIEFS & VALUES: CULTURE OF SCIENCE

Support for education, and STEM education in particular, is influenced by the general public’s scientific literacy and perspectives on science. The concept of “scientific literacy” was coined in the 1950s and generally refers to the public understanding of science, though recently this has been characterized by multiple definitions and interpretations.³³ We employ a broader concept, “culture of science,” to include the public’s orientation toward science including the understanding of and attitudes toward science and scientific knowledge, where people gain such knowledge and the sense of trust of and support for scientists and scientific knowledge.

UNDERSTANDING SCIENTIFIC KNOWLEDGE

Respondents generally reported high levels of confidence in their understanding of science and technology in the statewide survey. Over one-fifth (21%) of respondents from the statewide survey reported they are “very informed” in the areas of science and technology while most (59%) reported they are “somewhat informed.” About one-fifth (19%) of respondents said they were “somewhat uninformed” or “very uninformed” in the areas of science and technology.

We wondered where respondents received information about science. Over a quarter of respondents in the statewide survey (27%) said they found most of their information

³²Paulhus, “Socially Desirable Responding: The Evolution of a Construct.”

³³Laugksch, “Scientific Literacy: A Conceptual Overview.”

about science on the Internet. Most respondents (81%) in the statewide survey reported having access to a computer and high-speed Internet and another 5% said they had access to a computer and a slower dial-up connection (See Figure 3.10). Almost one-tenth (9%) of respondents still did not have a computer and Internet service. Nearly 4% had a computer, but no Internet service.

Sixty-nine percent of respondents in any of participating counties reported having a computer with some form of Internet connection. Many of these rates fall below national averages of 75% in rural areas and 89% in urban areas.³⁴ Respondents in Bonner, Camas, Jerome, and Lewis Counties said they have less access to computers and high speed Internet than the rest of the counties studied (60-70%). Jerome County, defined as urban in this study, had nearly 20% of its respondents report having no computer and no Internet.

Television and newspapers/magazines are additional sources of science and technology information. Over 30% of Jefferson County respondents reported newspapers and magazines as the most common place they seek information, and no less than 20% of respondents in other counties said this is where they get most of their information about science. In most counties, 11% to 20% reported television as their most common source of information on science. Lewis County respondents rely more heavily on television for science information, with 30% indicating they received science information on television.

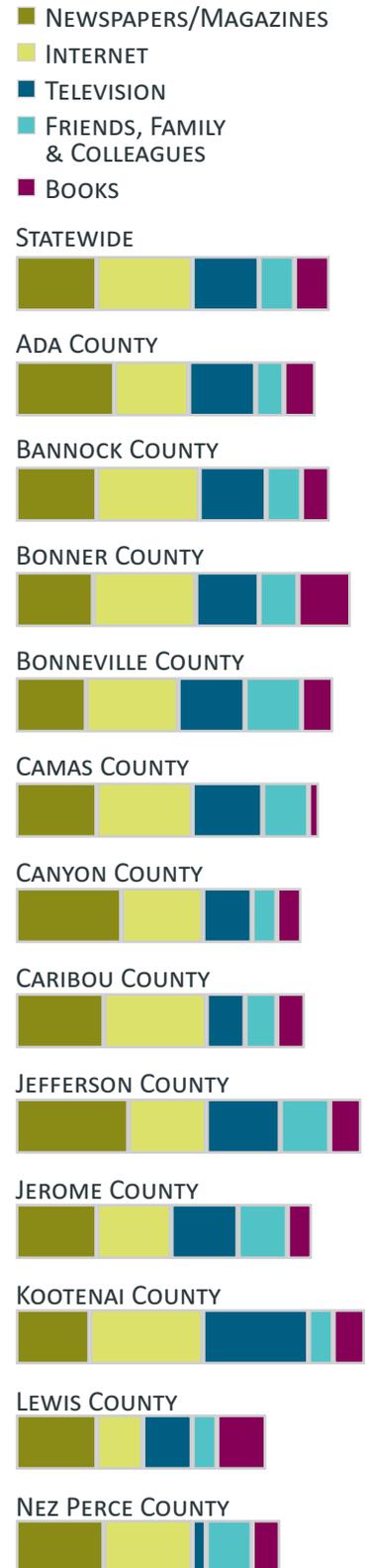
In places like Bonneville, Jefferson, Jerome, and Nez Perce Counties, 13% to 16% of respondents said they use family and friends or colleagues (instead of the Internet, newspapers/magazines, television, or books) to obtain science information. Books were among the less common channels for information in all counties.

SCIENCE EVALUATION AND TRUST

Central components to the “culture of science” are the degree to which members of the public evaluate and trust science and scientists. A number of survey questions measured both evaluation and trust. For example, respondents were asked, “Do you think scientists have had a positive or negative influence in your community?” (see Figure 3.12). Except for Lewis County, more than half (55-73%) of respondents across counties said scientists had a “positive” or “very positive” influence in their communities. There was significant variation across counties in

³⁴Internet World Stats, 2012.

FIGURE 3.11
SOURCES OF INFORMATION
ABOUT SCIENCE AND
TECHNOLOGY.



terms of sentiments reflecting dissatisfaction (“negative” and “very negative” influences) with scientists’ influence in their communities. Whereas only 4% of respondents in Bonneville County and 3% of Camas County respondents said scientists had a “negative” or “very negative” influence, 20% of Lewis County respondents felt this way.

FIGURE 3.12
DO YOU THINK SCIENTISTS HAVE HAD A POSITIVE OR NEGATIVE INFLUENCE IN YOUR COMMUNITY?

	POSITIVE	BOTH POSITIVE & NEGATIVE	NEGATIVE	I DON'T KNOW
STATEWIDE	60%	22%	7%	10%
ADA	62%	23%	7%	8%
BANNOCK	71%	16%	4%	8%
BONNER	60%	24%	7%	9%
BONNEVILLE	73%	18%	4%	5%
CAMAS	60%	20%	4%	17%
CANYON	66%	20%	7%	7%
CARIBOU	59%	25%	9%	7%
JEFFERSON	63%	17%	5%	15%
JEROME	67%	16%	8%	9%
KOOTENAI	65%	20%	5%	11%
LEWIS	46%	31%	20%	3%
NEZ PERCE	60%	20%	9%	11%

Percentages may not add up to 100% due to rounding.

Equally telling was the number of individuals who did not have an impression either way about scientists, answering “I don’t know” to the question concerning scientists’ influence on their community. Ten percent or more of respondents statewide and in Camas (17%), Jefferson (15%), Kootenai (11%), and Nez Perce Counties (11%) did not appear aware of scientists’ influence in their communities. Holding particular impressions of scientists’ influence in one’s community can be an outcome of exposure to certain sources of information. Having no idea about their influence suggests one is not aware of scientists’ work in the area.

Another measure of scientific evaluation and trust was measured by the survey question, “To what extent do you feel scientists have a political agenda with their research?” As the distribution of responses reveals in Figure 3.13, respondents generally felt that scientists are, at least somewhat, guided by political agendas.

FIGURE 3.13

TO WHAT EXTENT DO YOU FEEL SCIENTISTS HAVE A POLITICAL AGENDA WITH THEIR RESEARCH?

A GREAT DEAL	SOMEWHAT	A LITTLE BIT	NOT AT ALL	I DON'T KNOW	
18%	41%	22%	11%	8%	STATEWIDE
15%	42%	20%	14%	9%	ADA
16%	43%	26%	11%	4%	BANNOCK
21%	49%	14%	12%	4%	BONNER
20%	46%	21%	9%	4%	BONNEVILLE
23%	40%	23%	7%	7%	CAMAS
20%	38%	25%	10%	7%	CANYON
24%	45%	19%	6%	6%	CARIBOU
26%	52%	17%	1%	4%	JEFFERSON
26%	44%	13%	7%	10%	JEROME
15%	45%	24%	10%	6%	KOOTENAI
41%	41%	7%	6%	5%	LEWIS
20%	47%	18%	9%	5%	NEZ PERCE

Percentages may not add up to 100% due to rounding.

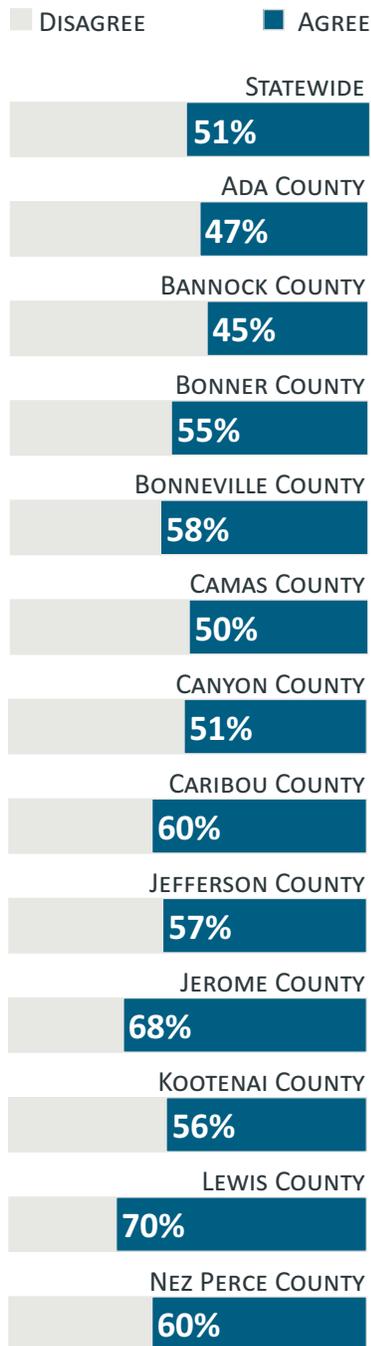
A follow-up question asked respondents to explain what types of political agendas they believed scientists hold. The following are examples of the type of agendas respondents identified:

- “They want to take the government’s money and they don’t want to look at everyone’s perspective, just their own.”
- “[They] use ‘the science thing’ to prove that the dams shouldn’t be there, the fish should run wild, and that people should stay off the land to protect the water.”
- “It’s alright if they give the facts, but leave it to that. [They] don’t need to get on a high horse and press their agenda on others.”

Preliminary analysis of these qualitative survey responses revealed that a large number of respondents were concerned about the funding process for research, most of which they feel is from the government. Some respondents mentioned funding from private entities as also problematic. Some reported concerns that scientists use research to impose their conservation and environmental values onto communities, values could risk local economy or ways of life (e.g. hunting).

Another survey question revealed the public’s trust in scientific knowledge was low because of the perceived fast pace of change in scientific knowledge. When asked to what extent

FIGURE 3.14
SCIENTIFIC KNOWLEDGE
CHANGES SO RAPIDLY THAT IT IS
HARD TO KNOW WHAT TO TRUST



they agreed with the statement, “Scientific knowledge changes so rapidly it is hard to know what to trust,” half (51%) of respondents across the state “agreed” or “strongly agreed.” About 70% of respondents in Jerome and Lewis Counties agreed with the statement (see Figure 3.14).

SCIENCE & BELIEFS

We also explored how respondents’ negotiated science and science knowledge relative to their overall cultural worldview which includes beliefs and values. We first explored the degree to which respondents understood the scientific method. We asked respondents their degree of agreement on the following question: “Science is a process for collecting and explaining facts, not a matter of belief.” Respondents from statewide and community-level results overwhelmingly agreed (a range of 87% to 96%) with this statement. However, more than 70% of respondents also agreed with the statement, “students should choose what to believe and what not to believe from the scientific claims they learn in school.” These results suggest most respondents understand the scientific method but believe they should choose whether or not to believe scientific claims derived from such methods.

We also asked the degree to which respondents feel science comes into conflict with their religious beliefs. Almost half (47%) of the respondents in the statewide survey said that science can be in conflict with their religious beliefs (see Figure 3.15).

Despite the finding that almost half of respondents across the state felt science and their religious beliefs were often in conflict, the majority (78%) “agreed” or “strongly agreed” that students should be taught evolution in school. Although there is a little variation among communities, the statewide survey frequencies capture the general pattern of responses (see Figure 3.15).

Likewise, most respondents (generally more than 80%) supported teaching in schools about humans’ impact on global climate change—a hotly contested issue as reported by the national media.

The support for teaching evolution and the human impact on global climate change in public schools is consistent with respondents’ agreement that students should be able to choose what to believe from what they learn at schools. One possible interpretation of these findings is that respondents felt confident that students will make appropriate choices in what to believe that will be consistent with the worldview regarding “culture of science” in their family and/or community.

FIGURE 3.15

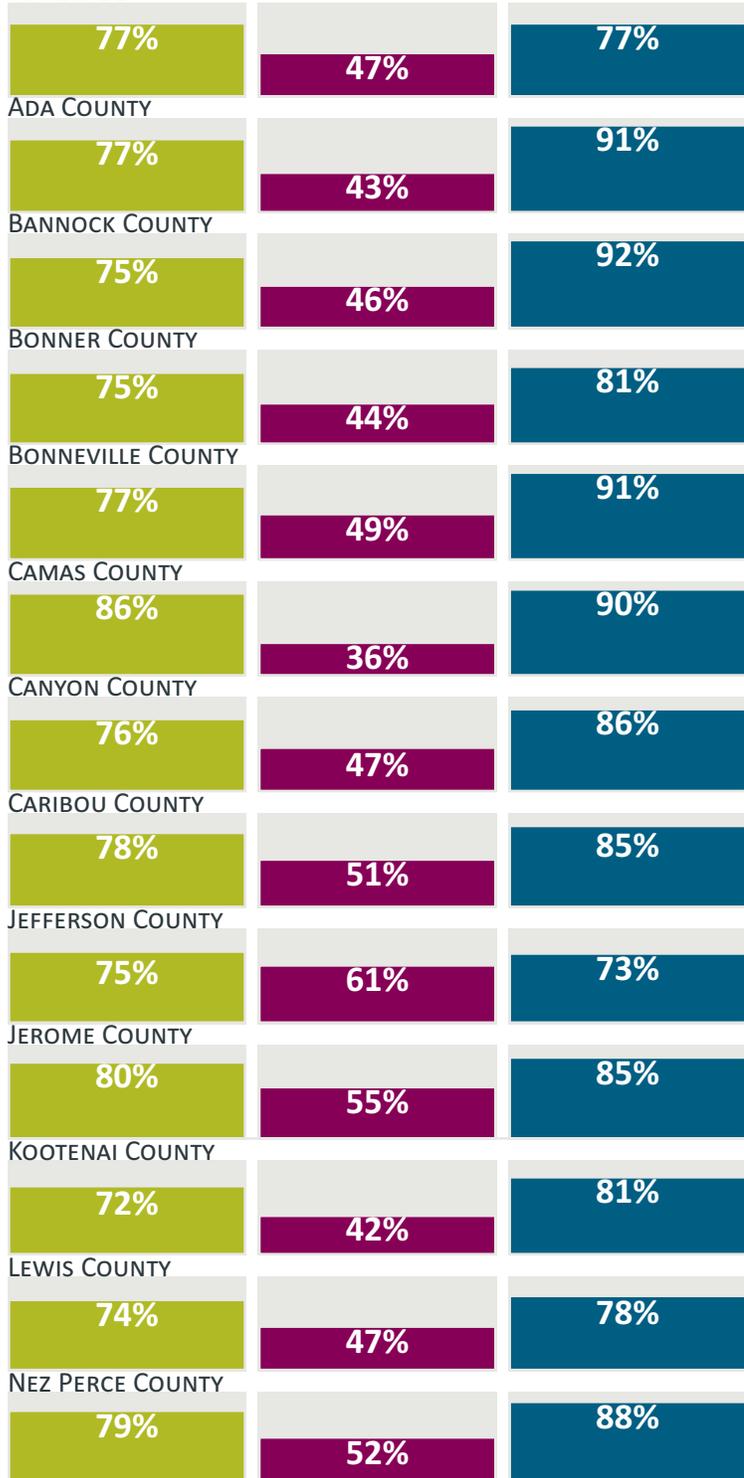
RESPONDENTS WHO AGREE

STUDENTS SHOULD CHOOSE WHAT TO BELIEVE AND WHAT NOT TO BELIEVE FROM THE SCIENTIFIC CLAIMS THEY LEARN IN SCHOOL

SCIENCE CAN BE IN CONFLICT WITH MY RELIGIOUS BELIEFS

SCHOOLS SHOULD TEACH STUDENTS ABOUT EVOLUTION

STATEWIDE



SECTION 4.

SUMMARY OF STATEWIDE SURVEY RESULTS

Our findings reveal commonalities across the state of Idaho as well as unique, locally specific conditions that present communities with challenges and opportunities to improve STEM educational outcomes. In particular, significant differences found in this research among rural communities and among urban communities (in contrast to differences we conventionally assume to exist between rural and urban experiences) support the need to attend to locally-specific contexts. These kinds of findings provide stakeholders with the opportunity to develop meaningful data-driven innovations.

Cultural dimensions in the state and selected communities are important contexts for understanding students' experiences and attitudes towards STEM education and education in general. In this study we find educational environments, family conditions, and orientations toward science and scientists throughout Idaho play a significant part in the contexts youth navigate as they determine their interests and abilities, especially in STEM-related activities. The analysis so far has demonstrated that Idahoans and Idaho communities value education and STEM education, yet at the same time a large number of these individuals are unsure about their abilities to support students' STEM learning and college preparation. Further, results from the statewide and community-level surveys reveal that people throughout Idaho value the contributions of science, but at the same time question the motivations behind science and its application. This latter dynamic is expressed more commonly in some communities than in others, which supports our primary concern that innovations for STEM education enhancement must be addressed both at a state-level and with locally-specific initiatives. We summarize some of the community-specific survey findings in the next section of this report.

SECTION 5.

PROFILES FOR THE TWELVE TARGET COMMUNITIES

Schools, families, and community cultural values and beliefs are important contexts that students navigate as educational interests, attitudes, and abilities are developed. Given the geographic and demographic differences in communities across the state, our research design explores the unique circumstances, opportunities, and cultural values of each of the twelve communities in which we collected data. Analyses from these twelve different communities provide direction for state-wide and community-specific innovations that can enhance student STEM education interest and opportunities. The following section offers demographic and school district data from U.S. Census and Idaho Department of Education for each of the twelve communities we studied.³⁵ In addition, we summarize some of the more noteworthy survey findings for each community.

³⁵ Note: All statistics cited in this report for city/county population size, median age, median income, owner-occupied housing, 2006-2010, have been obtained via the U.S. Census Bureau's "American Fact Finder," which include the 2010 Census statistics and the American Community Survey (ACS) statistics. All unemployment rates are county level and are acquired from the Federal Reserve of St. Louis (FRED) website. References are listed at the end of this report. All statistics for school districts have been acquired from the Idaho Department of Education website.

BANCROFT, CARIBOU COUNTY

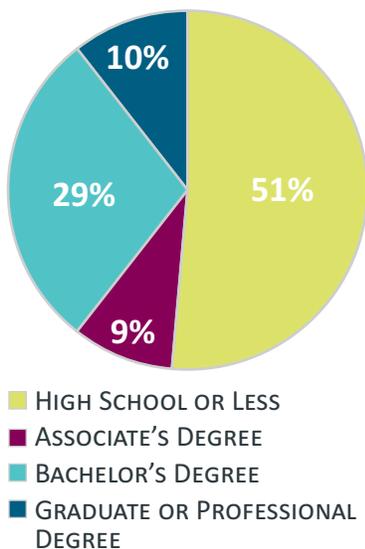
POPULATION: 422
 MEDIAN AGE: 38
 UNEMPLOYMENT, 2012: 7%
 OWNER OCCUPIED
 HOUSING: 92%
 MEDIAN INCOME,
 2010: \$44,958
 NORTH GEM SCHOOL DISTRICT
 149 STUDENT POPULATION,
 2009-10: 205
 SPENDING PER PUPIL,
 2010: \$8,978
 LOW INCOME STUDENTS,
 2010-11: 60%
 ISAT 10TH GRADE
 PROFICIENCY, 2010:
 MATH 77% SCIENCE 62%



COMMUNITY DESCRIPTION³⁶

Bancroft, located in southeast Idaho, is situated in a valley at the base of the Fish Creek Mountain Range, an area that saw early pioneer travel through southern Idaho.³⁷ The town consists of a centralized cluster of houses with little commercial activity on its central streets. The two new buildings are North Gem School, which serves all grade levels, and the Church of Jesus Christ of Latter-day Saints situated across the street from the school. There is no place in Bancroft to purchase groceries or gasoline, and residents travel 16 miles to Soda Springs (population 3,058), the county seat and closest town providing basic services. The town is surrounded by farmland and approximately half of the Caribou County workforce is employed in the production of fertilizer, phosphorous and weed killer.³⁸ Within Bancroft, the construction industry is the highest employment sector.³⁹

FIGURE 5.1
EDUCATIONAL ATTAINMENT
FOR CARIBOU COUNTY SAMPLE



EDUCATIONAL CONTEXT

Although Caribou County is not densely populated, we obtained a robust sample size (n=145) of completed surveys. The gender distribution of our respondents resembled U.S. Census

³⁶Photo, Leontina Hormel.

³⁷Untraveled Road, Bancroft, Idaho, and State of Idaho Official Website, Caribou County.

³⁸Idaho Department of Labor, "Work Force Trend Profiles."

³⁹U.S. Census Website, "American FactFinder."

calculations, with 52% male respondents and 48% female respondents. One significant finding for which gender emerged was the rate of respondents' participation in schools (outside of sporting events). Of the Caribou County respondents, 84% of women and 59% of men said they participated in schools in some capacity, excluding sports events. Caribou County respondents' educational attainment levels overrepresented bachelor's and graduate and professional degrees when compared to U.S. Census calculations in 2010. The survey sample comprised over twice as many individuals with bachelor's degrees and over three times as many individuals with graduate or professional degrees than the overall population in the county. This may be a result of the STEM focus of the study, which may have led those with postsecondary education to respond to the survey at higher rates than those with lower levels of postsecondary education.

When asked if they would support or oppose efforts to enhance STEM education in their community, over 87% of Caribou County respondents said they would "somewhat support" or "strongly support" such endeavors. Just over two-thirds said they felt their local schools' performance was "good" or "very good" in STEM subjects, and 78% said they were "likely" or "very likely" to support local tax levies to improve STEM education in their local schools.

FAMILY CONTEXT

In the Caribou County survey a relatively small number of respondents (10%) reported having at least one child in K-12 education, and another 5% said they had children not yet in school. Of the K-12 parents participating in the survey, none were homeschooling their children, so the vast majority had their children in public schools. Nearly 72% of Caribou County parents reported volunteering at their local schools.

Caribou County parents were asked how often they felt their financial situations and time availability interfered with supporting their children's education. Almost 40% reported that their financial situation made it difficult to support their child's education, and 60% said they felt they didn't have sufficient time to be as involved as they would like in their child's education.

Parents' time and financial constraints may help explain Bancroft teachers' 2011 focus group observations that parents rarely spoke with them directly about their children's performance in school. During focus group conversations, teachers remarked that few parents attended parent-teacher conferenc-

"We used to think (tongue in cheek) that if you couldn't do anything else you could come home to farm. If you didn't want to go to school, you could come home to the farm. If you didn't want to pursue a vocation outside of your hometown, you could always come home and farm. Not anymore. If you come home to farm, you better have a big bankroll, and you better have good education. In all of this science, technology, math, even chemistry is very vital to your success as a farmer in today's world. I think preparations for whatever we expect or want our kids to aspire to is going to require a good education in these basic STEM disciplines."

—Community member
Focus group participant
in Bancroft

FIGURE 5.2
MY FINANCIAL SITUATION MAKES IT DIFFICULT FOR ME TO BE AS INVOLVED IN MY OLDEST CHILD'S EDUCATION AS I WOULD LIKE



FIGURE 5.3
I DO NOT HAVE AS MUCH TIME AS I WOULD LIKE TO BE INVOLVED IN MY OLDEST CHILD'S EDUCATION.



BANCROFT PARENT 1:

Because of mining, there's a lot of science that goes on here in this county. Like that hill, when I was a kid and they stopped crushing that hill, the luminous dials had more radiation per cubic foot or whatever. Everybody in Caribou County understands that. That was a political move. I think we kind of understand a little bit of that because we're in a unique county...

BANCROFT PARENT 2: I

*agree with you. There's a lot of political interest. You take a look at our mining industry and the forest service. We believe that some of [the selenium] levels are high because of the mining operations that occur there. There's also interest groups that fudged their numbers. I have a book at home, called *How to Lie with Statistics*. You can take numbers and do whatever you want with a number. I think a lot of it falls into politics. The rivers that we've got, there's a science of whether it's good to open up. We've got the Bear River that flows through Caribou County. We have a couple of hydroelectric plants along the river. Every so often they have to open that up.*

—Conversation during the parent focus group in Bancroft

es beyond the beginning of the school year, and conversations they had with parents seemed to gravitate more toward children's involvement in sports rather than their academics. It is evident that most parents in the survey revealed they wanted, but felt unable, to dedicate more time to support their children's education.

BELIEFS AND VALUES

Over 58% of Caribou County respondents said they held "conservative" (45%) or "very conservative" (14%) political views. Another 37% of county respondents reported being "moderate" politically, while 5% said they were "liberal" or "very liberal." Consistent with U.S. Census 2010 reports, a majority of Caribou County survey respondents (65-70%) said they were members of the Church of Jesus Christ of Latter-day Saints.⁴⁰ The second largest religious affiliation in the survey sample comprised members of Protestant denominations (16%), with a smaller percentage (5%) identifying as Catholic. The remaining respondents were either Atheist, Agnostic, or did not state any religious affiliation.

When asked how informed they felt they were in the areas of science and technology, 84% of Caribou County respondents said they were "informed." Yet, gender did differentiate these answers significantly, as 24% of women (in contrast to 10% of men) in the county survey said they were "somewhat uninformed" or "very uninformed" in the areas of science and technology. The overall degree of confidence in scientific knowledge that respondents expressed in this community may result from the broadly discussed issues surrounding natural resource use that have historically dominated economic activities in the region. One Bancroft parent during a 2011 focus group discussion described the county as "unique" because of the extensive amount of mining occurring there (see passage right). Many survey respondents (70%) who lived in this community felt scientists have at least somewhat of a political agenda with their research, yet almost 60% believing scientists' influence to be positive. Again, significant gender differences existed. Women (69%) were less likely to feel that scientists' research involved a political agenda than men (77%). Men's higher level of distrust in science was further shown in results to the question, "Scientific knowledge changes so rapidly that it is hard to know what to trust." Significantly more men (74%) agreed with this statement than women (46%).

⁴⁰Association of Religious Data Archives.

BOISE, ADA COUNTY



COMMUNITY DESCRIPTION¹

Boise, the largest city in Idaho, is the state's capital and the county seat for Ada County. The city originated as a U.S. Army fort on the Oregon Trail and has developed into a major center for commerce and higher education. Micron Technology Incorporated is located in Boise and is part of the growing high-tech industry that is a significant force in the economic momentum of the city. In addition to the commercial and government sectors, Boise is home to several higher education institutions, including Boise State University and University of Idaho and Idaho State University satellite campuses. Just over 35% of residents 25 years or older have earned a bachelor's degree or higher, a percentage exceeding both state (24%) and national (28%) averages.² The Hispanic population in Ada County has grown from 4% in 2000 to 7% in 2010.³ The individuals and families with refugee status add to the county's diversity. They were first welcomed to the city in 1975⁴ when Boise and Twin Falls were established as refugee resettlement sites. From 2009 to 2010, 1,153 refugees moved to Idaho, joining the 5,567 refugees who resettled in Idaho between 2000-2009.⁵ Because of the population's diversity, and the rich political and economic fabric of the

¹Photo, Courtesy of Idaho Tourism" (Peg Owens donated her photos to the organization.)

²U.S. Census Website, "American FactFinder."

³U.S. Census Website, "Census Viewer."

⁴Idaho Office of Refugees Website, "About Refugees in Idaho."

⁵Idaho Office of Refugees Website, "Population Information."

POPULATION: 202,703

MEDIAN AGE: 33

UNEMPLOYMENT, 2012: 7%

**OWNER OCCUPIED
HOUSING: 62%**

**MEDIAN INCOME,
2010: \$50,612**

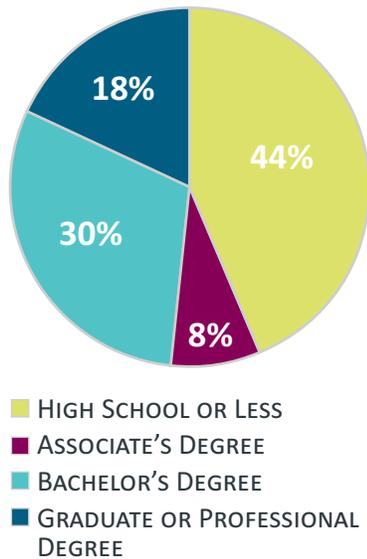
**BOISE INDEPENDENT DISTRICT
001 STUDENT POPULATION,
2009-10: 25,205**

**SPENDING PER PUPIL,
2010: \$8,186**

**LOW INCOME STUDENTS,
2010-11: 43%**

**ISAT 10TH GRADE
PROFICIENCY, 2010:
MATH 78% SCIENCE 73%**

FIGURE 5.4
EDUCATIONAL ATTAINMENT
FOR ADA COUNTY SAMPLE



city, conducting research in Boise provides an opportunity to understand the complex cultural factors shaping STEM education experiences for youth.

EDUCATIONAL CONTEXT

Ada County's survey sample (n=191) slightly overrepresented women (53%) when compared to the U.S. Census (50%). And, like several other community samples in our study, educational levels tended toward higher degrees (see Figure 5.4).

In general, individuals in Ada County tend to have higher levels of education than the state average, and the STEM education focus of the survey amplifies the effect. One significant result arose when comparing the effect of educational attainment on Ada County respondents' answer to a question on financial aid. When asked to what extent they understood how financial aid works in higher education, just over 50% of respondents with a high school degree or less indicated they were not sure how financial aid works, whereas, by contrast, over 95% of individuals with associate's degrees were more certain.

The survey asked respondents to rank their local schools' performance generally and in STEM education. Ada County respondents ranked local schools positively (71%) for general performance, with lower positive evaluations (51%) for school performance in STEM subject areas. However, because these evaluations are not tied to a specific school, it is difficult to know if this response holds for all schools in Ada County. Parent and community member focus group participants in Boise in 2011 discussed the wealth of opportunities Boise and the surrounding area have for teaching STEM subjects, pointing to the watershed system and locally situated companies as examples. A large proportion of Ada County respondents in the survey support STEM innovations in their communities (90%) and support state budget increases for STEM education (69%).

FAMILY CONTEXT

In the Ada County survey 39% of the respondents had at least one child in K-12 education, and another 5% had children not yet in K-12. Of those with children in K-12 schools, approximately 82% said their children were attending traditional public schools, 10% had children in charter schools, and 6% were sending children to private schools. None of the surveyed parents in the Ada County sample reported homeschooling their children. Nearly two-thirds of the parents (65%) in the sample said they volunteer at least once a year at their children's school.

When asked how often they felt their own math and science knowledge made it difficult to help their child with homework in these subjects, 42% of Ada County parents said this was the case at least “occasionally.” A substantial number of parents (57%) felt they didn’t have enough time to be involved in their child’s education, and almost a quarter of parents (24%) felt that their financial situation made it difficult to be involved.

Although Ada County has a diverse ethnic population, the statewide survey did not capture a representative number of individuals from these different groups for analysis. However, the 2011 focus group discussions with parents from refugee parents and Latino parents in Boise offered important insights into the varying experiences they have with Boise’s school system and with their children’s educational experiences in STEM subject areas. As one refugee parent pointed out, she follows her children’s math education carefully, but each of their experiences differed as a consequence of their age during resettlement in Ada County. In her experience, the more advanced her child was in age and education level when she entered the system, the more difficulty the child faced in learning in a new school environment (see passage left). Refugee parents in this focus group generally expressed delight with the open education system in the United States and were especially interested in areas of math and engineering. However, refugee parents found it challenging to follow their children’s progress in local schools due to language barriers, lack of transportation, and uncertainty on how the educational system works in the U.S. Developing further understanding of these experiences is essential in efforts to make STEM education more accessible and relevant for all youth.

BELIEFS AND VALUES

Of Ada County respondents, slightly over 47% said they held “conservative” (37%) or “very conservative” (10%) views. Nearly 33% said they were politically “moderate,” while 13% were “liberal” and 2.7% were “very liberal” in their views. The largest percentage (45%) of Ada County respondents said they are Protestant. The second largest group (18%) comprised individuals identifying as Atheist or Agnostic. Catholics were the third largest group (12%), with members of the Church of Jesus Christ of Latter-day Saints representing 12% of sample respondents. The remaining respondents (12%) did not indicate their religious affiliation.

“Culture of science” questions tested significant when examined for gender and educational attainment effects. For in-

“They [my children] do great because their teacher encourages them. I think it’s different [for each of them, though]... With my oldest daughter, when we arrived, she was 14. She’s very smart, but the difficulty with the language is a big issue, especially with the math. In Arabic, we read it right to the left. With the math it’s the same process. It’s different just from the right to the left to the left to the right. That’s confusing for her. My son and my youngest daughter, it’s easy because they were 9 and 4 when we arrived. They’re [math problems] very easy for them, but for my oldest daughter it is very, very difficult. I try to help her as much I can, but it’s tough.”

—Refugee parent
Participant in Boise

FIGURE 5.5
PERCENT OF ADA COUNTY
RESPONDENTS BY POLITICAL
PERSPECTIVES

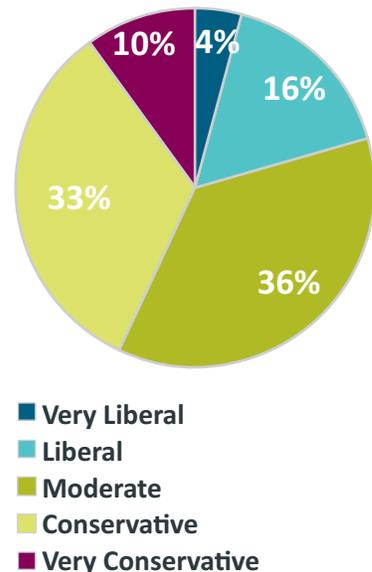
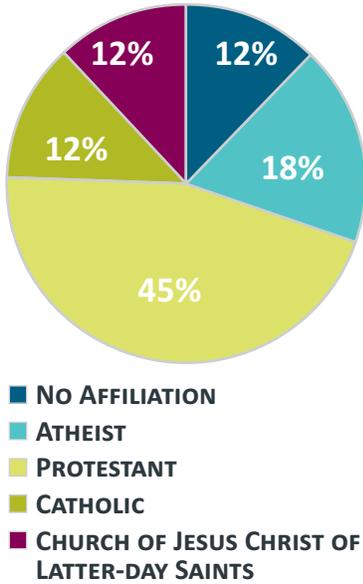


FIGURE 5.6
PERCENT OF ADA COUNTY
RESPONDENTS BY RELIGIOUS
AFFILIATION

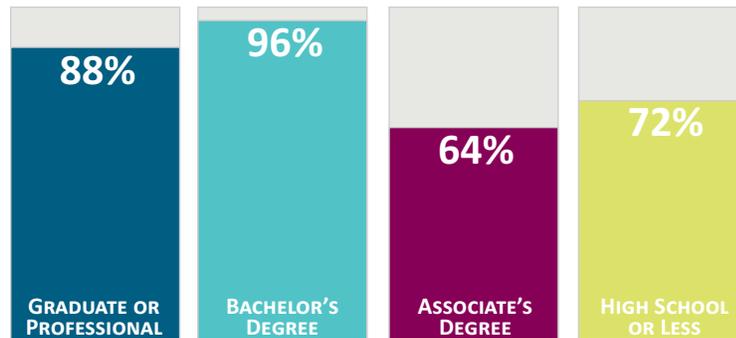


stance, 48% of women in Ada County felt that science came into conflict with their religious beliefs, compared to 35% of the men. This gender difference, interestingly, was not significant when all counties were combined together. Even though a majority of Ada County respondents agreed schools should teach evolution to students, women were also less likely (77%) than men (85%) to agree.

Educational attainment also had significant effects for some of the “culture of science” questions in the survey. The response patterns shown in Figure 5.7 demonstrate that trust in science and scientific knowledge tend to increase with higher educational attainment. In addition, individuals with lower levels of education were more likely to agree that “people in my community rely too much on science and not enough on religion.”

FIGURE 5.7
PARTICIPANT AGREEMENT WITH “CULTURE OF SCIENCE”
QUESTIONS BY EDUCATIONAL ATTAINMENT

SCHOOLS SHOULD TEACH EVOLUTION TO STUDENTS



PEOPLE IN MY COMMUNITY RELY TOO MUCH ON SCIENCE AND NOT ENOUGH ON RELIGION



FAIRFIELD, CAMAS COUNTY



COMMUNITY DESCRIPTION⁴¹

Fairfield is the county seat for Camas County. It is located 60 miles east of Mountain Home, in southcentral Idaho, and is one of the smallest towns to participate in our STEM education project. Situated on a high elevation plateau surrounded by mountain ranges, the region was a summer camping site for the Bannock Indians.⁴² Economic activities now encompass hay, dry land wheat and barley cultivation, and cattle and sheep ranching. In April 2012, Camas County’s unemployment rate⁴³ of 10.1% was higher than the state’s rate of 7.8%. Fairfield’s website boasts itself as “Idaho’s best ‘undiscovered’ small ski town.” Focus group participants frequently discussed the challenges of Fairfield’s remote location while at the same time expressing their pride in rugged, healthy living.

Fairfield is situated in Camas County that hosts an overall population of 1,117 according to the 2010 U.S. Census. Its small population size delivered some challenges to how the telephone survey sampling could be conducted, and we were limited to landline telephones. As a result, the sample size is quite small (n=30) when compared to the other counties in the study. The small sample size minimizes our ability to test for significant effects of demographic factors, like gender, income, and

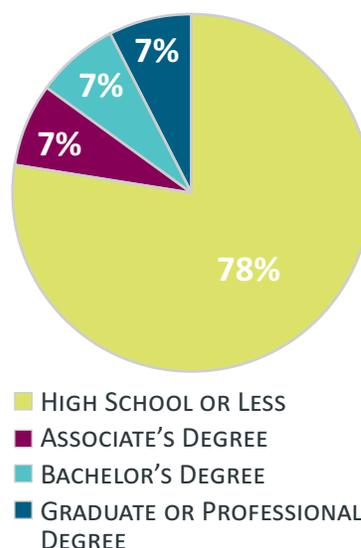
⁴¹Idaho Office of Refugees Website, “Population Information.” Photo, Leontina Hormel.

⁴²Fairfield, Camas County, Idaho Website, “Welcome to Fairfield.”

⁴³Federal Reserve Bank of St. Louis (FRED) Website, “Camas County.”

POPULATION: 431
MEDIAN AGE: 42
UNEMPLOYMENT, 2012: 10%
OWNER OCCUPIED HOUSING: 78%
MEDIAN INCOME, 2010: \$44,145
CAMAS COUNTY SCHOOL DISTRICT 121 STUDENT POPULATION, 2009-10: 160
SPENDING PER PUPIL, 2010: \$11,247
LOW INCOME STUDENTS, 2010-11: 55%
ISAT 10TH GRADE PROFICIENCY, 2010: MATH 92% SCIENCE 92%

FIGURE 5.8
EDUCATIONAL ATTAINMENT FOR CAMAS COUNTY SAMPLE



“As parents and as teachers and educators we need to be looking for, “What does this kid want to do? Does this kid want to be a machinist?” Well, he’s going to need some mathematics. He’s going to need some technology... If the kid wants to be a ski bum, well he’s going to need some mathematics to know what width of skis he needs to go down the fastest.”

—Parent focus group participant in Fairfield

educational attainment. Thus, to explore community-level dynamics we draw upon statistics that reveal how Camas County respondents’ answers were distributed for key questions and how these answers compare to statewide results.

EDUCATIONAL CONTEXT

The level of educational attainment in our sample was slightly lower than calculated in U.S. Census statistics. In the sample, 7% of Camas County respondents had earned a bachelor’s degree and none reported having a graduate degree. For comparison, the U.S. Census calculates that 22% of Camas County residents have a bachelor’s degree or higher. The sample was slightly older, as well, which is partly a result of relying upon landline telephones. Twenty-three percent of respondents were 65 years of age or older, while U.S. Census calculates this group comprises 16% in the county. Women were also slightly overrepresented, comprising 60% of respondents compared to 48% reported by U.S. Census. These differences can be attributed to the sampling limitations for this county (see methodology section in the appendix for a detailed discussion).

In terms of college literacy, nearly half (48%) of Camas County respondents said they were unsure of what high school classes a student should take to be successful in a four-year college. More than a third (37%) of respondents said they were unsure of how to help someone apply to a four-year college. Gender was significant on ability to help someone apply to college with over 77% of women in the Camas County survey reporting they felt confident in their ability to help compared to 48% of men.

Overall, Camas County respondents felt their schools performed well at educating youth, for which 79% reported the performance was “good” or “very good,” 10% said it was “fair,” and only 10% felt it was “poor” or “very poor.” These ratings declined slightly when asked more specifically about school performance in STEM subject areas; 67% of respondents said it was “good” or “very good,” 22% said it was “fair,” and the remaining 11% said it was “poor” or “very poor.” Stories from 2011 focus group participants also drew a complex picture regarding education for youth in Fairfield. It was evident that focus group participants were highly supportive of the schools, yet at the same time they were aware of parents’ concerns that students were not exposed to the best STEM curriculum in the state. It is likely these experiences explain why 70% of Camas County respondents supported increasing K-12 education

and STEM education funding in the state. Further, none of the Camas County respondents in the survey wished to decrease STEM education funding. And, over 86% of respondents said they supported STEM education enhancements in their community.

FAMILY CONTEXT

In the Camas County survey 42% of the respondents had at least one child in K-12 education. Most parents (90%) sent their children to public schools, and 10% homeschooled their child, the second highest rate next to Kamiah in Lewis County. Eighty percent of the Camas County parents reported volunteering at school.

When asked how often they felt their own math and science skills made it difficult to help their child with homework in these subjects, 30% of Camas County parents said this happened at least “occasionally.” The level of parents’ confidence in their abilities to help their child in these subject areas is a bit higher than in any of the other communities in this study. Coupled with the strong proficiency results in their ISATs, in which 92% of Camas County 10th graders showed at least proficiency in both math and science, it appears parent support in these areas is strong.

Spring 2012 unemployment statistics show that the county has one of the highest unemployment rates in the state, which could be related to the remoteness of the community. Indeed, 2011 focus group participants acknowledged that significant challenges to families and children’s educational experiences existed because of its distance from technological support and the school’s limited curriculum. Families often need to pursue jobs distant from their homes. Time constraints were acknowledged among Camas County parents in the survey, with 40% reporting they did not have as much time as they would like to be involved in their child’s education. In addition, 30% of parents said their financial situation interfered with their ability to be involved in their child’s education.

BELIEFS AND VALUES

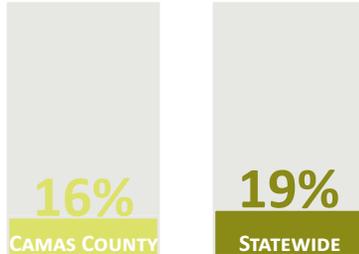
Slightly over 39% of Camas County respondents said they held “conservative” or “very conservative” views, another 46% said they were “politically moderate,” and the remaining 14% said their views were “liberal” (none reported being “very liberal”). The largest percentage (56%) of Camas County respondents said they are Protestant. The second largest group (19%) comprised individuals identifying as Atheist or Agnostic. Catho-

“...when I first started there was more... if I called home, the parent was home or at work in town and, if there was a problem, they could come get them. Anymore, it’s becoming the majority of our kids, the parents work in the valley, in Sun Valley area and Haley over there. They aren’t getting home until...7 o’clock at night. If they do need their parents, their parent isn’t here and they text their parents or their friends. They go to friends’ houses. They’re not having the support of parents because parents aren’t getting home until 6 or 7 because they’re driving from the valley.. .”

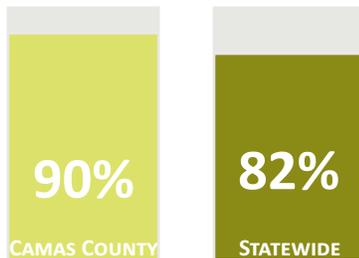
—Teacher focus group participant in Fairfield

FIGURE 5.9
PARTICIPANT AGREEMENT
WITH “CULTURE OF SCIENCE”
QUESTIONS BY POPULATION

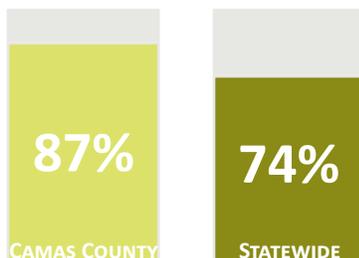
PEOPLE IN MY COMMUNITY RELY
 TOO MUCH ON SCIENCE AND
 NOT ENOUGH ON RELIGION.



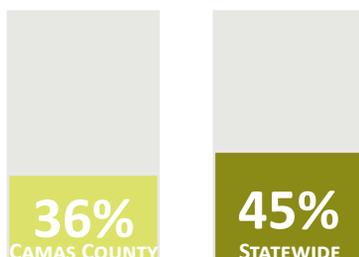
SCHOOLS SHOULD TEACH
 STUDENTS ABOUT HUMANS’
 IMPACT ON GLOBAL CLIMATE
 CHANGE.



SCHOOLS SHOULD TEACH
 STUDENTS ABOUT EVOLUTION.



SCIENCE CAN BE IN CONFLICT
 WITH MY RELIGIOUS BELIEFS.



lics were the third largest group (11%), with members of the Church of Jesus Christ of Latter-day Saints representing 4% of sample respondents. The remaining respondents (11%) did not indicate their religious affiliation.

Camas County respondents tended to see less conflict than other counties between their religious beliefs and science, with slightly over a third agreeing this conflict sometimes existed. Their responses to additional “culture of science” questions tended to be consistent with this perspective, with 87% saying that schools should teach students about evolution and 90% agreeing that schools should teach about humans’ impact on global climate change. Only 16% of Camas County respondents felt that people in their community relied too much on science and not enough on religion. A majority of Camas County respondents (63%) felt that scientists had at least somewhat of a political agenda with their research. An equally large number of respondents (60%) felt that scientists have had a “positive” or “very positive” influence in their community. The majority (90%) of respondents felt at least somewhat informed in science and technology. When comparing Camas County “culture of science” results to the statewide survey (Figures 5.9), respondents are more comfortable with science and the various issues and areas that scientific fields touch upon than Idahoans on average. Respondents’ level of trust in science was nearly the same as the level reflected in the statewide survey. About 50% of Idahoans and Camas County respondents agreed with the statement, “Scientific knowledge changes so rapidly that it is hard to know what to trust.”

Overall, Fairfield’s schools enjoy community support and have performed well in light of the geographical constraints faced with the town’s remote location. There is some indication that families experience pressure between employment opportunities that are available some distance from their community and maximizing their children’s opportunities for learning. This likely explains why 70% of Camas County respondents felt the new Idaho policy to require high school students to take two online courses to meet graduation requirements was a good thing. This was the most positive response compared to the other eleven communities participating in this study. Camas County respondents were more likely than the other rural communities in this study to “strongly agree” with the statement, “I am unsure what classes a student should take to be successful in a four-year college.”

IDAHO FALLS, BONNEVILLE COUNTY



POPULATION: 56,813
MEDIAN AGE: 32
UNEMPLOYMENT, 2012: 7%
OWNER OCCUPIED HOUSING: 68%
MEDIAN INCOME, 2010: \$46,161
IDAHO FALLS SCHOOL DISTRICT 091 STUDENT POPULATION, 2009-10: 10,492
SPENDING PER PUPIL, 2010: \$5,769
LOW INCOME STUDENTS, 2010-11: 43%
ISAT 10TH GRADE PROFICIENCY, 2010: MATH 76% SCIENCE 62%

COMMUNITY DESCRIPTION⁴⁴

Idaho Falls is the county seat for Bonneville County. An early site for a bridge over the Snake River, it was a key transportation site for settlers, miners and goods between Idaho and Montana in the 19th century.⁴⁵ Today Idaho Falls is well known as the home of the Idaho National Laboratory (INL). Many Idaho Falls 2011 focus group participants were highly educated and several of them were associated with INL. Moreover, people identified INL with positive efforts to provide local youth with STEM education experiences. Idaho Falls is also the commercial center for southern Idaho and western Wyoming. In 2010, the city was listed as one of the “Best Places to Raise Kids” by Business Week, one of the “Best Small Places for Business and Careers” by Forbes.com, and one of the “100 Best Adventure Towns” by the National Geographic Society.⁴⁶

“INL offers programs to high school students, and summer mentoring, too, where you can go up there and work at INL. They really encourage kids and they still do that I know. It’s a good way for some of them to get their feet wet and find out if this is where their heart lies.”

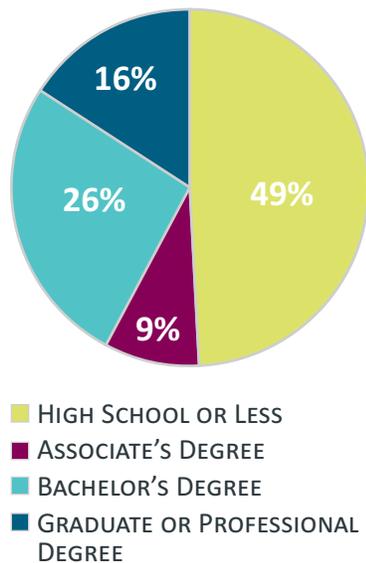
—Community member focus group participant in Idaho Falls

⁴⁴Photo, Leontina Hormel

⁴⁵Idaho Falls Convention and Visitors Bureau Website, “Frequently Asked Questions, “What is the history of Idaho Falls?”

⁴⁶Bloomberg Business Week Website, “Best Places To Raise Your Kids 2010”; Forbes.com, “Best Small Places for Businesses and Careers”; National Geographic Adventure Website, “Best Adventure Towns List”; and Idaho Falls Chamber of Commerce Website.

FIGURE 5.10
EDUCATIONAL ATTAINMENT FOR
BONNEVILLE COUNTY SAMPLE



TEACHER 1: *...so you're looking upwards of 150 kids per day. Not all of the science classes are so overloaded. We ended up with 30 in some of the classes, which means that it's not only bad that way, but we're violating all sorts of safety codes to have that many kids in a lab. You've got real problems there.*

MODERATOR: *So you're beyond capacity in your rooms, I'm guessing?*

TEACHER 2: *I have kids sitting on the floor.*

—Teacher focus group discussion in Idaho Falls

EDUCATIONAL CONTEXT

Bonneville County's population was 104,592 in the 2010 U.S. Census. The number of women (51%) participating in the survey (n=161) was only slightly higher than U.S. Census calculation (50%). Gender tested significant for the question in which respondents were asked to what extent they agreed or disagreed with the statement, "It is good that a new Idaho education regulation requires high school students to take two on-line courses in order to graduate from high school." Men were significantly more likely (65%) than women (42%) to agree.

The educational attainment for Bonneville County was overrepresented by individuals with bachelor's degrees (26%) and graduate and professional degrees (16%).⁴⁷ Because INL is a major employer in the area, the county and the city of Idaho Falls tend to have more residents with these higher education degrees, yet the sample reflects even higher representation of these two groups (see Figure 5.10). The U.S. Census reports that 17% of county residents have a bachelor's degree and 9% have a graduate or professional degree.

A common theme that emerged from focus groups conducted in Idaho Falls in 2011 was the overcrowding of classrooms in local schools. One teacher noted overcrowding and recognized that science classes were not as large as others (see excerpt below). Given the need for experiential learning through lab work, growing class size was seen as a significant impediment to STEM learning for students. The survey asked respondents how they felt their schools were performing in Bonneville County. The vast majority of respondents (72%) said their schools were generally performing "good" (54%) or "very good" (18%). As was the case in other community surveys, ratings slightly declined when respondents were asked more specifically about schools' performance in STEM subject areas. Slightly over 62% of respondents in Idaho Falls felt schools' performance was "good" (52%) or "very good" (10%), another 29% felt it was "fair," and another 9% felt it was "poor" (7%) or "very poor" (2%). Nearly half of respondents, in other words, did not positively evaluate local school performance in STEM education. Respondents demonstrated overwhelming support for enhancing STEM education in their community with 89% saying they "somewhat support" (22%) or "strongly support" (68%) such efforts. Bonneville County respondents showed the highest level of support (82%) for increasing the state budget for STEM education compared to the other target communities

⁴⁷City of Idaho Falls Website, "Social and Economic Profile of Idaho Falls and Bonneville County."

participating in this study.

FAMILY CONTEXT

Nearly 38% of Bonneville County respondents had one or more children in K-12 education and another 6% had children that were not yet in K-12 schools. Of the K-12 parents, 90% said their children attended public schools, another 4% were attending private schools, and 5% were homeschooled. Over 68% of K-12 parents said they volunteered at least once a year (31% reported volunteering “five or more times”), yet a significant number of parents (31%) reported they “never” volunteered at school.

About half (52%) of K-12 parents said they did not have as much time as they would like to be involved in their child’s education, and over a third (40%) said their financial situation made it difficult to be as involved in their child’s education as they would like to be. Sixty-two percent of Bonneville County parents indicated their children were “above average” performers in math, or better. One series of questions in the survey asked Bonneville County parents what factors seemed to explain their children’s performance in math.

BELIEFS AND VALUES

Nearly 58% of Bonneville County respondents said they were “conservative” (51%) or “very conservative” (7%). Another 33% considered themselves politically “moderate,” and the remaining 9% were “liberal” (8%) or “very liberal” (1%). The Idaho Falls Idaho Temple for the Church of Jesus Christ of Latter-day Saints was dedicated in 1940 and symbolizes the strong presence of this denomination in the city, with the county’s membership calculated at 71% in 2000,⁴⁸ compared to 50% of respondents who identified as members of this denomination; nevertheless, this was the largest group represented in the survey sample. The second largest religious affiliation in the survey sample comprised members of Protestant denominations (27%), with a smaller percentage (10%) identifying as Catholic. The remaining respondents were either Atheist, Agnostic, or did not state any religious affiliation (7% and 5% respectively).

During 2011 focus group discussion with teachers, one teacher pointed out how students who were members of the Church of Jesus Christ of Latter-day Saints faced challenges with high school course scheduling because they work to complete seminary. This, as the teacher and other focus group members

TEACHER: *The one area that the religion does play a part when it comes to science is that they [LDS students] take seminary. It does limit the amount, often times, of the science that they can take... You have the non-LDS with a full schedule and therefore taking more math and science and often ending up in the AP classes like AP physics and AP chemistry because they can fit it in where the LDS [students] can't."*

MODERATOR: *...so basically [the] structure of it has made it hard.*

TEACHER: *It's a structural thing. It's not... ideological. It's not... theological. It's structural.*

—Teacher Focus Group Participant in Idaho Falls

⁴⁸Association of Religious Data Archives (ARDA) Website. “Bonneville County, Idaho.”

observed, interfered at times with these students' ability to stay on course with STEM subjects. Such experiences demonstrate the unique challenges to making STEM innovations accessible to all students.

We found no significant statistical findings on "culture of science" questions when cross-tabulated with gender, religion, or political perspective. In other words, answers given by individuals representing different groups within these variables did not significantly differ from one another. However, when asked to what extent they agreed or disagreed with the statement, "Science can be in conflict with my religious beliefs," Bonneville County respondents were the least likely among the urban communities in this study to "strongly agree." This finding is consistent with the 2011 focus group discussions in Bonneville County that characterized community residents as quite literate in science. The finding that Bonneville County respondents do not feel significant conflict between science and their religious beliefs reflects the overrepresentation of individuals with higher education degrees in our sample, groups of people who – according to our statistical tests conducted that combined all communities - tend to have more trusting views about science issues.

JEROME, JEROME COUNTY



POPULATION: 10,890
MEDIAN AGE: 29
UNEMPLOYMENT, 2012: 7%
OWNER OCCUPIED HOUSING: 60%
MEDIAN INCOME, 2010: \$32,635
JEROME JOINT SCHOOL DISTRICT 261 STUDENT POPULATION, 2009-10: 3,613
SPENDING PER PUPIL, 2010: \$5,359
LOW INCOME STUDENTS, 2010-11: 69%
ISAT 10TH GRADE PROFICIENCY, 2010: MATH 73% SCIENCE 55%

COMMUNITY DESCRIPTION⁴⁹

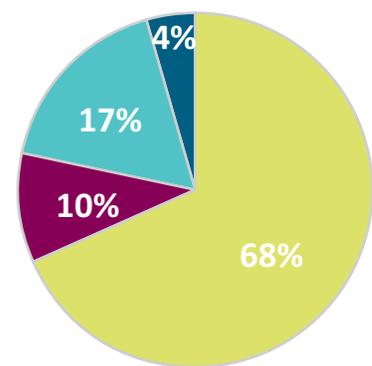
Jerome is a moderately sized, yet fast-growing, community in south central Idaho. The city is the county seat for Jerome County, and its history is intimately connected to Twin Falls, a community of 44,125 about eight miles away. Both cities were developed as planned communities by the North Side Twin Falls Canal Company, in 1904 and 1907, as a result of the Federal Carey Act, designed to promote large irrigation system development.⁵⁰ The Twin Falls Canal Company is still in business today and is involved in state water rights issues. Farming and agriculture are leaders in the economic base of Jerome. The dairy and associated businesses are the primary industries in the area, with plans to increase poultry farming. Hispanics comprise 34.3% of the total population in Jerome County, which has increased by 40% from 2000.⁵¹ This significant change to the city’s ethnic composition has been coupled with a lowering of the median age, a trend that adds complexity to understanding cultural factors in youth STEM education experiences. With an economy defined by dairy and agriculture, and a diversifying population, Jerome is an important community to study.

⁴⁹Photo, Leontina Hormel

⁵⁰SIEDO Website, “Twin Falls Profile.”

⁵¹U.S. Census Website, “Census Viewer” and “State and County Quick Facts, Jerome”; Spokesman Review 2010 Census Website.

**FIGURE 5.11
EDUCATIONAL ATTAINMENT
FOR JEROME COUNTY SAMPLE**



- HIGH SCHOOL OR LESS
- ASSOCIATE’S DEGREE
- BACHELOR’S DEGREE
- GRADUATE OR PROFESSIONAL DEGREE

“Micron did this, and I know from living in Boise that Micron throws a lot of money at science and math in the high schools and things like that, but we don’t get the money here. We have milk here. We have corn. We don’t have the INL here. That’s over in Idaho Falls. I know for a fact there’s hands-on learning and things like that there at the high schools at that level. And in Boise that’s going on over there, but here we don’t have a lot of that. The kids in the schools don’t see direct input into what’s available.”

—Community member
focus group participant
in Jerome

“Sometimes it’s hard [to support your children in school] because a lot of parents do not speak English, or teachers don’t speak Spanish. But one should keep an eye and educate their children. If your child likes math, or likes another course, in whatever they like, even if it costs you time (it is hard) or costs money you have to do it for your child and find a way to help them.”

—Latino parent focus group
discussion in Jerome

EDUCATIONAL CONTEXT

In our sample from Jerome County (n=208) women were significantly overrepresented, with 65% of county respondents being women when compared to 2010 U.S. Census statistics (50%). Hispanics in the survey were underrepresented, comprising 2% of the Jerome County survey sample, compared to 34% of the population. This was the highest percentage of Hispanics participating in the county surveys across the state in this study.

Jerome County’s sample is skewed toward higher education levels, especially those individuals having an associate’s degree and those having a bachelor’s degree (both groups are nearly twice the size of those reported by the U.S. Census).⁵² Nearly 92% of Jerome County respondents said they supported STEM education enhancement in their community, a sentiment clearly expressed in the 2011 Jerome focus group discussions. Similar to many of the other counties in the study, a majority of Jerome County respondents felt their schools performed well generally and in STEM subjects, although the number of positive assessments to the latter were slightly lower. There was a shared sentiment that local schools were not keeping up with the changes and, as one of the community members explained in a 2011 focus group, residents feel agricultural communities like Jerome get left out when innovations are implemented in schools.

FAMILY CONTEXT

Almost 30% of Jerome County respondents had one or more children in K-12 education, and another 4% had children who were not yet in the K-12 system. Of these parents, 86% were sending their children to traditional public schools, 7% had children in private schools, a small number (2%) had children in a charter school, and the remaining 5% of parents were homeschooling their children. Over 73% of K-12 parents said they volunteered at least once a year at their schools. Our 2011 focus group with Latino parents revealed their commitment to their children’s education though they struggled with how to support their children academically due to language and cultural barriers.

A large number of K-12 Jerome County parents (77%) felt they had the appropriate skills to help their children with homework in general, yet almost as many (71%) said that they at least occasionally felt their math and science knowledge made it difficult to help their children with math and science

⁵²U.S. Census Bureau, “ACS 2006-2010 5-year Estimates, Jerome County.”

homework. About half of the parents (53%) did not have as much time as they would like to be involved with their children’s education. More than a fourth of parents (27%) in Jerome said their financial situation interfered with their ability to be engaged in their child’s education. Even though a good number of parents wished they could do more to support their children’s education, a large number of them (79%) said their children performed “above average” or “excellent” in math.

Jerome County was among the rural communities where individuals were less knowledgeable about college preparation. Most notably, Jerome County respondents were less confident than respondents from other counties on which classes a student should take to be successful in college and less sure of how to help someone apply to a four-year college.

BELIEFS AND VALUES

Close to 60% of Jerome County respondents said they held “conservative” (46%) or “very conservative” (14%) political views, while 32% held “moderate” views, and the remaining 8% held “liberal”(6%) or “very liberal” (2%) views. The largest percentage (42%) of Jerome County respondents said they are Protestant. The second largest group (20%) comprised members of the Church of Jesus Christ of Latter-day Saints. Catholics were the third largest group (20%), with individuals identifying as Atheist or Agnostic representing 12% of sample respondents. The remaining respondents (6%) did not indicate their religious affiliation.

When examining the effects of respondent type (those with no children, those whose children are not yet in school, those with K-12 children, and those whose children completed K-12 education), one question tested significant in Jerome County. Jerome County respondents were asked to agree or disagree with the statement, “Science can come into conflict with my religious beliefs.” Of the respondent types, 88% of those with no children and 63% of those with children not yet in school were more likely to disagree with this statement. Parents with K-12 children (62%) and parents whose children completed K-12 (54%) were more likely to agree with the statement.

When tested with the “culture of science” questions, gender proved to have a significant effect on two of the “culture of science” questions (see Figure 5.12). Men held less trust in science, were less likely to support schools’ discussing humans’ impact on global climate change, and were more likely to agree that community members rely too much on science and not enough on religion.

FIGURE 5.12
"CULTURE OF SCIENCE"
QUESTIONS BY GENDER

PEOPLE IN MY COMMUNITY RELY TOO MUCH ON SCIENCE AND NOT ENOUGH ON RELIGION.



SCHOOLS SHOULD TEACH STUDENTS ABOUT HUMANS' IMPACT ON GLOBAL CLIMATE CHANGE.



When Jerome County respondents were asked to what extent they agreed or disagreed with the statement, “Scientific knowledge changes so rapidly, it is hard to know what to trust,” a majority (68%) agreed. Lewis County respondents were the only sample with more individuals agreeing with this statement (70%).

Given the fact that Jerome County parents with children K-12 or older tended to feel more conflict between science and their religious beliefs and that a large percentage of the sample indicated a certain degree of distrust in scientific knowledge, it will be important to investigate further what aspects of scientific knowledge seem most at odds with their beliefs and values.

KAMIAH, LEWIS COUNTY



COMMUNITY DESCRIPTION⁵³

With a population of 1,294 residents, Kamiah is one of the smaller communities included in this project. Because of its location next to the Clearwater River and on the edge of the vast Clearwater National Forest, the community has an extensive history with the timber industry and natural resources management. In fact, during 2011 focus group discussions, participants argued Kamiah was not just a rural community, but characterized it as a “frontier town.” Lewiston (the closest urban settlement, pop. 31,559) is nearly an hour and a half away, and such things as cell phone service are not easily accessible in areas served by the school district. Kamiah’s residents have a median age of 47, compared to Idaho’s median age of 34, and a lower unemployment rate than the state’s – 6.1% compared to 7.8%. Located within the Nez Perce Indian Reservation, Kamiah is unique among the project’s sampled communities since it comprises a relatively large tribal population of 6.3%.⁵⁴

EDUCATIONAL CONTEXT

Lewis County’s spending per pupil (\$7,600) is \$500 higher than that of the State average (\$7,106). Over two-thirds of the students in Kamiah School District are from low-income fami-

⁵³Photo, Leontina Hormel

⁵⁴U.S. Census Website, “American FactFinder.”

POPULATION: 1,294

MEDIAN AGE: 47

UNEMPLOYMENT, 2012: 6%

OWNER OCCUPIED HOUSING: 57%

MEDIAN INCOME, 2010: \$35,808

**KAMIAH JOINT SCHOOL DISTRICT
304 STUDENT POPULATION,
2009-10: 541**

**SPENDING PER PUPIL,
2010: \$7,600**

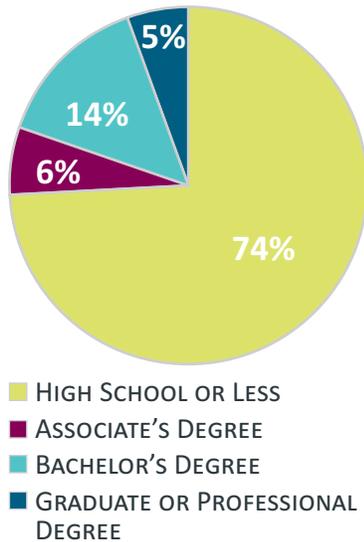
**LOW INCOME STUDENTS,
2010-11: 68%**

**ISAT 10TH GRADE
PROFICIENCY, 2010:
MATH 77% SCIENCE 72%**

“...there’re so many programs around here, like with the tribe. You’ve got natural resources, water resources, fish commission, and just other entities around here that they should utilize... so the kids can learn what is in this area in science, math, and technology. [It is] generally a worldwide thing, but localize it as well as us[e] the resources we have right here. Show them that this is where I live, and this is how it’s affected, and this is how it can be used right here where I live.”

—Parent focus group participant in Kamiah

FIGURE 5.13
EDUCATIONAL ATTAINMENT
FOR LEWIS COUNTY SAMPLE



lies. Although spending is a bit higher than the state average, teachers in a 2011 focus group in Kamiah told us that programs were continually being cut in recent years.

The community-level survey sample of Lewis County respondents ($n = 136$) closely reflected the county population's educational attainment, with slightly fewer individuals with associate's degrees and slightly more individuals with graduate or professional degrees. Of the significant findings for Lewis County regarding education, two were affected by one's educational background. In the first significant finding, Lewis County respondents with high school degrees or less and those with bachelor's degrees were more likely than other educational attainment groups to support the new state education policy requiring online courses in high school curriculum. The other significant association was when asked if respondents were aware of what classes a student needed to take to prepare for college, almost 65% of those with a high school degree or less indicated they were unsure. The finding from this second question may be a challenge for families aspiring to have their children earn college degrees, since nearly three quarters of Lewis County residents have earned no more than a high school degree.

Lewis County respondents were asked to what extent they supported or opposed efforts to enhance STEM education in their community, to which an overwhelming 93% answered they were at least "somewhat supportive" (75% said they "strongly supported" such enhancements). When asked how well they would rate Kamiah schools' performance in STEM subject areas, over 57% of Lewis County respondents felt they were "good" or "very good" in these teaching areas. This is one question for which men and women answered differently. Two-thirds of women respondents felt school performance was "good" (61%) or "very good" (6%), with the remaining one-third of women answering they were "not sure." Only 49% of men described the performance in the STEM subjects as "good" or "very good."

FAMILY CONTEXT

Twenty-one percent of the respondents had at least one child in K-12 education and another 7% had children not yet in K-12. The remaining 72% of respondents said their children had already graduated from high school, or they had no children. Although 86% of respondents' school-age children are attending public schools, 11% of Lewis County parents said they homeschooled their children, the highest number of homeschooled children in any of the counties in the study. Nearly

two-thirds of Lewis County parents reported volunteering at least once a year at school.

When asked how often they felt their own math and science skills made it difficult to help their child with math and science homework, 54% of Lewis County parents said this happened at least occasionally, compared to 43% of respondents in the statewide survey. Alongside these difficulties, 46% of Lewis County respondents experienced time constraints and 37% encountered financial constraints when trying to support their child’s education.

As was discussed in the early part of this report, a series of three questions sought to understand the extent to which survey respondents felt they could assist students in preparing for college. A large proportion of Lewis County respondents felt unsure about their abilities to support students’ postsecondary education as measured by these questions. Two of these questions tested significant when gender was factored (see Figure 5.14). In Lewis County, women respondents were more confident in how to apply for college and were over twice as likely as men to feel they understood how financial aid works in higher education. When compared to the other five rural communities, Lewis County respondents were more likely than other rural community respondents to “strongly agree” and “agree” with the statement “I am unsure which class a student should take to be successful in college,” and they were more likely to “strongly agree” with the statement, “I am unsure of how to help someone apply to a four-year college.”

BELIEFS AND VALUES

Nearly 63% of Lewis County respondents said they were “conservative” or “very conservative.” Another 30% considered themselves politically “moderate,” and the remaining 7% were “liberal” or “very liberal.” The largest percentage (59%) of Lewis County respondents said they are Protestant. The second largest group (16%) comprised individuals identifying as Atheist or Agnostic. Catholics were the third largest group (5%), with members of the Church of Jesus Christ of Latter-day Saints representing 4% of sample respondents. The remaining respondents (16%) did not indicate their religious affiliation.

Compared to the other communities in this study, Lewis County respondents tended to hold strong views in the series of “culture of science” questions. For instance, 82% felt that scientists were guided at least somewhat by a political agenda and 20% felt scientists had a “negative” or “very negative” influence in their community, a higher percentage than any other

“There’s varying views in our community and I think there’s a segment of the community that is very distrustful of many things, including science, and it largely depends on the source of the science. In other words, a fish and game biologist has a different level of trust than a family doctor or a government scientist or etcetera. It boils down more to not the information presented but the core values of the person. I see that a lot.”

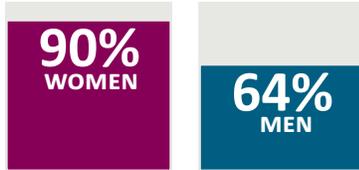
—Parent focus group participant in Kamiah

FIGURE 5.14
LEWIS COUNTY ABILITIES TO ASSIST YOUTH WITH COLLEGE PREPARATION BY GENDER



FIGURE 5.15
CULTURE OF SCIENCE
QUESTIONS BY GENDER

HUMANS' IMPACT ON THE
GLOBAL CLIMATE CHANGES
SHOULD BE TAUGHT.



SCIENCE SOMETIMES CONFLICTS
WITH MY RELIGIOUS BELIEFS.



I FEEL INFORMED ABOUT SCIENCE.



county. About two-thirds agreed that schools should teach students about evolution, slightly lower than those who agreed with this statement in the statewide survey. Gender tests of significance revealed interesting patterns for the “culture of science” questions, three of which tested significantly (see Figure 5.15).

Consistent with statewide survey results, men are more likely than women in Lewis County to feel informed about science issues. Also in line with statewide results is the finding that women in Lewis County are more likely than men to support students learning about humans’ impact on global climate change. Yet, the fact that women in Lewis County were more likely than men to feel that science conflicted with their religious beliefs is an outcome different from statewide results.

The responses from Lewis County reveals a great level of distrust in science and scientists’ motivations in this locale though it is clear that respondents wish to see youth education in STEM fields enhanced in their school system. As a parent in a 2011 Kamiah focus group pointed out, “People [in Kamiah] are not afraid of science...they understand a lot...They just don’t like the application and who applies it.” This is likely connected to the rich natural resource history in the area and the culture of being a “frontier town.”

LEWISTON, NEZ PERCE COUNTY



POPULATION: 31,894
MEDIAN AGE: 40
UNEMPLOYMENT, 2012: 6%
OWNER OCCUPIED HOUSING: 66%
MEDIAN INCOME, 2010: \$44,223
LEWISTON INDEPENDENT DISTRICT 340 STUDENT POPULATION, 2009-10: 4,963
SPENDING PER PUPIL, 2010: \$7,974
LOW INCOME STUDENTS, 2010-11: 41%
ISAT 10TH GRADE PROFICIENCY, 2010: MATH 79% SCIENCE 68%

COMMUNITY DESCRIPTION⁵⁵

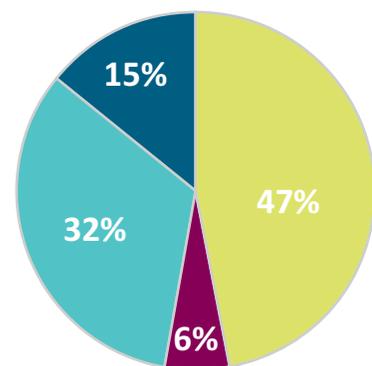
Situated at the confluence of the Snake and Clearwater Rivers, Lewiston is the most inland seaport for the west coast of the United States and has the lowest elevation in Idaho (745'). Nez Perce met and wintered in this sheltered canyon, and now tribal headquarters are located fourteen miles from Lewiston in Lapwai, Idaho. The historic Lewis and Clark Expedition visited and camped in the area in 1805 en route to the Pacific Ocean. Lewiston was the first territorial capital of Idaho (1863-1865). It was a stopping point for gold miners traveling along the Columbia and Snake Rivers and the Clearwater and for settlers passing through via steam ships. The site for the Potlatch paper mill was opened in 1927, and Clearwater Paper is the corporation's spin-off. The mill is the county's largest employer, manufacturing lumber and paper products. As the county seat for Nez Perce County, retail and other services are important economic contributors as well. Lewiston is home to Lewis-Clark State College, which started in 1893 as Lewiston State Normal School and became a four-year college in 1971.

EDUCATIONAL CONTEXT

Lewiston School District spent \$7,973 per pupil in 2010,

⁵⁵"Photo, Courtesy of Idaho Tourism" (Peg Owens donated her photos to the organization.)

**FIGURE 5.16
EDUCATIONAL ATTAINMENT
FOR NEZ PERCE COUNTY
SAMPLE**



■ HIGH SCHOOL OR LESS
 ■ ASSOCIATE'S DEGREE
 ■ BACHELOR'S DEGREE
 ■ GRADUATE OR PROFESSIONAL DEGREE

TEACHER 1: *I think our elementary school is letting [another school] have the STAR lab... I, as a young person, never got to experience anything like that. I think there...we have all these fears, but there are some things that are currently happening that this district is able to bring to our students that are helping with [STEM education].*

MODERATOR: *What's the STAR lab?*

TEACHER 2: *It's a mini planetarium. It just blows up with a fan and the projector sits in the middle. We do a lot of storytelling in there along with the science piece of it. We incorporate all the language arts in with it as well, but then we also take the kids out to an overnight camp so before we go out there we look in here so we can spot things in the sky as well.*

[general agreement expressed that that is cool]

TEACHER 1: *And I know that we have a science teacher who has used things...he's gotten stuff that different engineering labs don't use anymore. It's their outdated stuff, but he's got it, and he's using it in his classroom. Even though it's outdated, it's better than what we have now, which would be nothing.*

—Teacher focus group discussion in Lewiston

compared to the State average of \$7,106. Just over 41% of the students in the School District are from low-income families, which is lower than most districts in this study. The community-level survey sample of Nez Perce County respondents (n = 273) overrepresented those with bachelor's degrees (32%) and graduate or professional degrees (15%), which U.S. Census 2010 statistics calculate at 13% and 5% respectively. This skew toward more highly educated groups was common in most of the community samples.

Discussion during a 2011 focus group with teachers in Lewiston indicated that the district and teachers were developing opportunities to enhance student learning in STEM subject areas (see focus group passage provided).

When asked how well they felt Lewiston schools performed in STEM subject areas, over 55% felt they were "good" or "very good." This same question tested significant when considering gender effects, with men more likely than women to say that schools' performance in STEM was "very good."

FAMILY CONTEXT

In the Nez Perce County survey 32% of the respondents had at least one child in K-12 education and another 8% had children not yet in K-12. The remaining 61% either had no children, or their children were no longer in K-12. Almost 86% of K-12 parents' children were in public schools, another 9% sent their children to private schools, and the remaining 5% homeschooled their children. Seventy-two percent of parents said they volunteered at least once a year at a local school. Over half (52%) of Nez Perce county respondents said they had participated in school activities aside from athletic events. This same question tested significant when examining gender effects, which found that women (64%) were more likely than men (39%) to participate in school events outside of sports. This effect tested significant in only one other community (Caribou County).

When asked how often they felt their own math and science skills made it difficult to help their child with math and science homework, over half of the K-12 parents (54%) said this happened at least "occasionally." Alongside these difficulties, 59% of Nez Perce County parents said they did not have as much time as they would like to be involved in their children's education, and 31% said financial constraints interfered with supporting their children's education to their liking.

A series of three questions sought to understand the ex-

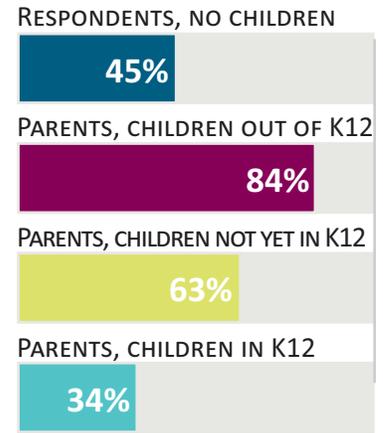
tent to which survey respondents felt they could assist students in preparing for college. Over 47% of Nez Perce County respondents were unsure what high school classes a student should take to be successful in a four-year college, 40% were uncertain how to help someone apply to a four-year college, and 46% were not sure how financial aid worked. In fact, compared to the other urban counties surveyed for this project, Nez Perce County respondents were more likely to report they were unsure how financial aid worked. One of these questions tested significant when the type of parent was factored (see Figure 5.17). Results show that although parents with children in K-12 were more likely to feel they knew which high school classes a young person should take to be successful in college, a third of them still were not sure. Those with children not yet in K-12 were among the least sure groups, second only to parents whose children were out of K-12, with almost three-quarters (74%) reporting they were not sure.

BELIEFS AND VALUES

Relative to the other community samples, fewer Nez Perce County respondents said they had “conservative” (34%) or “very conservative” (7%) views. The largest portion said they held politically “moderate” views (40%) and the remaining 20% said they were “liberal” (17%) or “very liberal” (3%). The largest percentage (53%) of Nez Perce County respondents said they are Protestant. The second largest group (16%) comprised individuals identifying as Atheist or Agnostic. Catholics were the third largest group (16%), with members of the Church of Jesus Christ of Latter-day Saints representing 3% of sample respondents. The remaining respondents (12%) did not indicate their religious affiliation.

Over 80% of Nez Perce County respondents said schools should teach students about evolution, and 88% said schools should teach students about humans’ impact on global climate change. When compared to the other five urban communities, Nez Perce County respondents were among the most likely individuals to support schools teaching about humans’ impact on global climate change. Nez Perce County respondents were also more likely than other urban county respondents to “strongly agree” and “agree” with the statement, “Science can be in conflict with my religion.” Less than 20% of respondents felt people rely too much on science and not enough on religion, which suggests a certain level of trust in science. Yet 59% of county respondents agreed that scientific knowledge changes so rapidly that it is hard to know what to trust. Gender tested significant for two of the “culture of science” questions,

FIGURE 5.17
I AM UNSURE OF WHAT HIGH SCHOOL CLASSES A STUDENT SHOULD TAKE TO BE SUCCESSFUL IN A FOUR-YEAR COLLEGE



with women being less certain about scientific knowledge than men. For instance, women were more likely (25%) than men (14%) to feel they were “somewhat” or “very” uninformed in science and technology. Women were also more likely (68%) than men (57%) to feel that the rapid pace at which scientific knowledge changes makes it hard for them to know what to trust.

MELBA, CANYON COUNTY



POPULATION: 513
MEDIAN AGE: 33
UNEMPLOYMENT, 2012: 9%
OWNER OCCUPIED HOUSING: 68%
MEDIAN INCOME, 2010: \$41,125
MELBA JOINT SCHOOL DISTRICT 261 STUDENT POPULATION, 2009-10: 713
SPENDING PER PUPIL, 2010: \$6,293
LOW INCOME STUDENTS, 2010-11: 52%
ISAT 10TH GRADE PROFICIENCY, 2010: MATH 72% SCIENCE 74%

COMMUNITY DESCRIPTION⁵⁶

Melba is a small farming community outside of Nampa, Idaho. The town was formed in the early 1900’s to support the growing agricultural industry in an area without nearby access to city services.⁵⁷ Melba, like Jerome and Mud Lake/Terreton, is a rural town with a diverse population. As the town’s website explains, “Even though Melba is on the road to nowhere, it is where a lot of people want to be – at the end of the road.” Many Melba area residents must commute 14-30 miles to Nampa, Boise, and Kuna for employment. Over 31% of Melba’s residents are Hispanic, a larger percentage than in Canyon County itself, which is 23% Hispanic. Surrounded by agricultural lands, the area is known as the “Seed Heart of America” and specializes in vegetable and grass seed crops. While its agricultural heritage may be considered similar to many rural towns in Idaho, its location is relatively close to some of the largest cities in the state, and it is seen by some as a “bedroom community.”

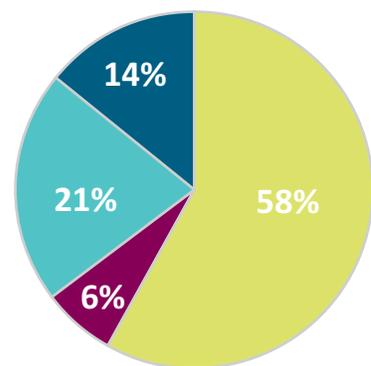
EDUCATIONAL CONTEXT

In 2010 Melba School District’s spent \$6,293, compared to \$7,106 by the State. Over 50% of the students in the school dis-

⁵⁶Photo, Leontina Hormel.

⁵⁷City of Melba Idaho, “History of Melba.”

FIGURE 5.18
EDUCATIONAL ATTAINMENT FOR CANYON COUNTY SAMPLE



- HIGH SCHOOL OR LESS
- ASSOCIATE’S DEGREE
- BACHELOR’S DEGREE
- GRADUATE OR PROFESSIONAL DEGREE

“I’m excited about STEM... The funny thing is the only reason I’m excited about it is because I comprehend that it’s important. I didn’t used to feel the need or desire or understand necessarily how it fit into my life. All of a sudden I want to know. Now in my 40s I finally get school and I have a desire.”

—Parent focus group participant in Melba

trict are from low-income families. The community-level survey sample of Canyon County respondents (n = 191) includes individuals from Caldwell and Nampa, making the results from this specific community-level survey more difficult to interpret. For this reason, survey findings reflect a larger geographic area of Canyon County. When examining respondents’ educational attainment, the sample overrepresented those with bachelor’s degrees (21%) and graduate or professional degrees (14%), which U.S. Census 2010 statistics report at 12% and 5% respectively for the county. The sample included 58% of respondents who reported having a high school diploma or less, lower than the 86% reported by the U.S. Census.

Nearly 88% of Canyon County respondents said they supported STEM education enhancement in their community. A majority of Canyon County respondents (64%) felt their schools generally performed well. Positive responses declined to 58% when asked about schools’ performance in STEM subjects. Although well over half of Canyon County respondents said their schools’ performance was positive in both areas, these are lower levels than observed in most other communities in our study. When asked if respondents would support local tax levies to improve STEM education in their schools, over three-quarters said they “likely” (52%) or “very likely” (25%) would, and 71% supported increasing the state budget for STEM education.

Forty-six percent of county respondents were unsure what high school classes a student should take to be successful in a four-year college, 32% were uncertain how to help someone apply to a four-year college, and 42% were not sure how financial aid worked. As noted earlier in this section, Melba’s residents have a lower level of educational attainment than reflected in our sample. Given the underrepresentation in the sample of lower educational levels, it’s reasonable to assume that a much greater portion of Melba’s town residents are much less certain about college preparation.

FAMILY CONTEXT

In the Canyon County survey 33% of the respondents had at least one child in K-12 education and another 5% had children not yet in K-12. The remaining 62% either had no children, or their children were no longer in K-12. Canyon County respondents reported the lowest rate of public school enrollment, sending only 69% of their children to traditional public schools. A significant number (20%) sent children to charter schools and another 5% sent children to private schools. The remaining 6%

of K-12 parents homeschooled their children. Of K-12 parents, 79% said they volunteered at least once a year at a local school. The majority of respondents (52%) said they participated in school activities outside of athletic events. Higher educational attainment increased the likelihood of participation. While 63% of Canyon County respondents participated in school activities outside of sports, only 42% of parents with high school education or less participated.

When asked how often they felt their own math and science skills made it difficult to help their child with math and science homework, 43% of the K-12 parents said this happened at least occasionally. Alongside these difficulties, 53% of Canyon County parents said they did not have as much time as they would like to be involved in their children's education, and 31% felt financial constraints interfered with supporting their children's education. Even though a good number of parents wished they could do more to support their children's education, 69% felt their children performed "above average" or "excellent" in math. The top three reasons they felt explained their children's math performance were "teacher quality" (17%), "natural ability" (17%), and their child's "interest in math" (16%).

As was discussed in the early part of this report, a series of three questions sought to understand the extent to which survey respondents felt they could assist students in preparing for college. A large proportion of Canyon County respondents felt unsure about their abilities to assist students in preparing for college. Forty-six percent were unsure what high school classes a student should take to be successful in a four-year college, 32% were uncertain how to help someone apply to a four-year college, and 42% were not sure how financial aid worked.

BELIEFS AND VALUES

A slight majority of Canyon County respondents said they had "conservative" (43%) or "very conservative" (8%) political views, another 33% held "moderate" views, and the remaining 16% said they were "liberal" (15%) or "very liberal" (1%). Fifty-one percent of Canyon County respondents said they are Protestant. The second largest group (16%) comprised members of the Church of Jesus Christ of Latter-day Saints. Atheists and Agnostics were the third largest group (14%), with members of the Catholic Church representing 12% of sample respondents. The remaining respondents (7%) did not indicate their religious membership.

Seventy-three percent of Canyon County respondents felt schools should teach students about evolution, and 86% felt

schools should teach students about humans' impact on global climate change. A little over 25% felt people rely too much on science and not enough on religion, which suggests a moderate level of trust in science. Yet over 51% of county respondents felt that scientific knowledge changes so rapidly that it is hard to know what to trust.

POCATELLO, BANNOCK COUNTY



POPULATION: 54,255
MEDIAN AGE: 29
UNEMPLOYMENT, 2012: 7%
OWNER OCCUPIED HOUSING: 66%
MEDIAN INCOME, 2010: \$41,564
POCATELLO/CHUBBUCK DISTRICT 025 STUDENT POPULATION, 2009-10: 12,122
SPENDING PER PUPIL, 2010: \$5,615
LOW INCOME STUDENTS, 2010-11: 48%
ISAT 10TH GRADE PROFICIENCY, 2010: MATH 74% SCIENCE 73%

COMMUNITY DESCRIPTION⁵⁸

Known as the “Gateway to the Northwest,” Pocatello is a major transportation and retail core at the intersection of I-15 and I-86 in southeastern Idaho. Historically, Pocatello was located on the Oregon Trail and was home to early railroad transportation into Idaho during the Gold Rush. The Pocatello area remains an important transportation corridor today and houses several international companies and Idaho State University. An economically diverse area, Pocatello’s economic base is comprised of manufacturing, mining, transportation, agriculture, medical products, processing of agricultural products, high-tech and nuclear research, recreation and tourism, and government services. However, according to the Idaho Department of Labor, trade and service industries provide nearly half the jobs in Bannock County.⁵⁹ This is consistent with the 2011 focus groups in which members described their community as “working class.”

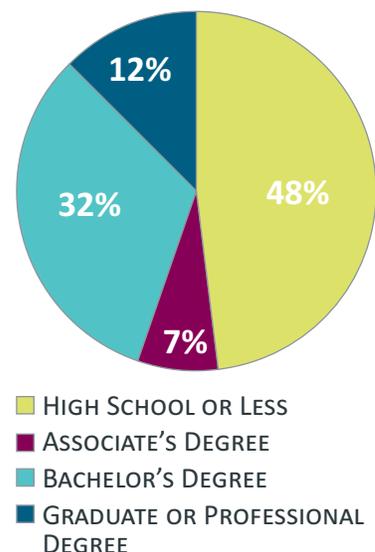
EDUCATIONAL CONTEXT

In 2010, the Pocatello/Chubbuck School District’s spent \$5,615 per pupil, compared to \$7,106 by the State. Almost 48% of the students in the School District are from low-income fam-

⁵⁸Photo, Leontina Hormel.

⁵⁹Idaho Department of Labor. “Work Force Trend Profiles, Bannock County.”

**FIGURE 5.19
EDUCATIONAL ATTAINMENT FOR
BANNOCK COUNTY SAMPLE**



“I think we are extremely lucky in Pocatello. We have a university here. I view us as extremely lucky. We have opportunities to be connected to people who promote academics. They need to do a better job of getting into the community and beyond just certain levels so that it doesn’t seem as scary, so kids know the university is right over there. I used to teach the GED program...to kids that dropped out. Many of them had never even been close to campus.”

—Parent focus group discussion in Pocatello

ilies. The community-level survey sample of Bannock County respondents (n = 149) represented higher levels of educational attainment than U.S. Census Bureau calculations for Pocatello residents. U.S. Census statistics show that 62% of Pocatello’s population has earned a high school degree or less, 8% earned an associate’s degree, and 30% had a bachelor’s degree or higher. Almost 45% of Bannock County survey respondents, however, had a bachelor’s degree or higher. This overrepresentation of highly educated respondents was common for this survey.

Bannock County respondents supported efforts to enhance STEM education in their community. When asked how well they felt local schools performed in STEM subject areas, over 46% of Bannock County respondents felt the performance was “good” or “very good,” the lowest level of positive response in the 12 community surveys conducted.

FAMILY CONTEXT

In the Bannock County survey 38% of the respondents had at least one child in K-12 education and another 8% had children not yet in K-12. The remaining 55% either had no children, or their children were no longer in K-12. The majority (88%) of Bannock County respondents reported sending their children to traditional public schools. Almost 6% sent children to charter schools and another 6% sent children to private schools. None of the K-12 parents homeschooled their children. Of K-12 parents, 82% said they volunteered at least once a year at a local school. Slightly over half of Bannock County survey respondents, including those without children in school, said they participated in school activities other than athletic events. Higher educational attainment increased the likelihood of participation. While 56% of Bannock County respondents participated in school activities outside of sports, 48% of with high school education or less participated, and 31% of respondents with an associate’s degree participated. In contrast, 65% of respondents with a graduate or professional degree and 70% of respondents with bachelor’s degrees said they participated in schools.

Educational attainment levels significantly impacted the way in which Bannock County respondents viewed the critical times in a child’s life for parents to be involved in their schooling. This was not the case in most other communities. When asked the question, “When do you think it is most important for parents to be involved in their children’s educational experience and decision making?”, over 80% of those having a

bachelor's degree or higher said that elementary school was the most important time, while 62% of respondents with a high school degree or less indicated that elementary school was the most important. Respondents with associate's degrees differed significantly from the other groups described above, with a majority (54%) answering that middle/junior high was the most important time, followed by elementary and high school respectively.

When asked how often they felt their own math and science skills made it difficult to help their child with math and science homework, 44% of Bannock County parents said this happened at least occasionally (close to the 43% of respondents in the statewide survey). Alongside these difficulties, 44% of Bannock County respondents experienced time constraints, and 21% encountered financial constraints when trying to support their child's education.

A series of three questions sought to understand the extent to which survey respondents felt they could assist students in preparing for college. A large proportion of Bannock County respondents felt unsure about their abilities to support students' postsecondary education. Focus group discussions revealed the educational resources that existed in the community, particularly the presence of a university, which could encourage student college aspirations.

One of the survey questions tested significant when gender was factored. Men in Bannock County were more likely (47%) than women (33%) to respond "agree" and "strongly" agree to the question, "I am unsure of how financial aid works." Women's greater confidence in college preparation is, in fact, a pattern observed in the survey results for several communities in this study.

BELIEFS AND VALUES

Compared to the other community samples, Bannock County respondents tended to be the least politically conservative, with 32% identifying themselves as "conservative" and 7% as "very conservative." The largest portion characterized themselves as politically "moderate" (46%) and the remaining 16% said they were "liberal" (10%) or "very liberal" (6%). Forty-three percent of Bannock County respondents said they are members of the Church of Jesus Christ of Latter-day Saints. The second largest group (23%) comprised individuals identifying as Protestant. Atheists and Agnostics were the third largest group (18%), with members of the Catholic Church representing 8% of sample respondents. The remaining respondents (8%) did

not indicate their religious membership.

The survey included a sequence of “culture of science” questions designed to gauge the level of trust individuals had in science and scientists. Eighty percent of Bannock County respondents said schools should teach students about evolution, and 92% said schools should teach students about humans’ impact on global climate change. For both of these “culture of science” questions, Bannock County respondents were more likely than most of the other urban county respondents to support schools teaching about evolution and humans’ impact on global climate change to students. Slightly less than 12% of respondents felt people rely too much on science and not enough on religion, which suggests a strong level of trust in science. Yet, close half of county respondents (45%) felt that scientific knowledge changes so rapidly that it is hard to know what to trust. This last survey question tested significant for gender differences. Women indicated less trust than men, as 57% either “agreed” or “strongly agreed” that scientific knowledge changes so rapidly that it is hard to know what to trust. In comparison, only 30% of men “agreed” or “strongly agreed” with this statement.

POST FALLS, KOOTENAI COUNTY

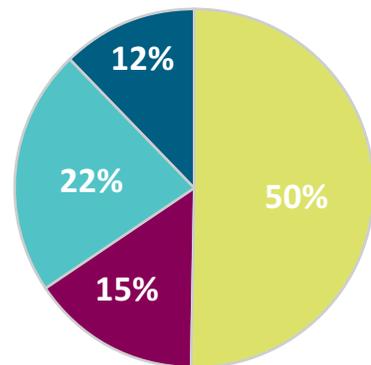


POPULATION: 27,574
MEDIAN AGE: 33
UNEMPLOYMENT, 2012: 9%
OWNER OCCUPIED HOUSING: 69%
MEDIAN INCOME, 2010: \$45,336
POST FALLS SCHOOL DISTRICT 273 STUDENT POPULATION, 2009-10: 5,582
SPENDING PER PUPIL, 2010: \$5,294
LOW INCOME STUDENTS, 2010-11: 55%
ISAT 10TH GRADE PROFICIENCY, 2010: MATH 72% SCIENCE 71%

COMMUNITY DESCRIPTION⁶⁰

Post Falls is a “connector” community between the Spokane Valley, Washington and Coeur d’Alene, Idaho. The city sits on the I-90 corridor between the two larger communities and provides both services and a workforce to Spokane and Coeur d’Alene. Traditionally a timber/lumber town, Post Falls was developed to serve the first commercial sawmill built on the Spokane River in the 1870’s.⁶¹ The timber industry has declined significantly in northern Idaho, and Post Falls has actively recruited companies to increase its manufacturing sector. The many new manufacturing and commercial businesses, the recent housing boom, and numerous recreational opportunities have contributed to rapid growth in the Post Falls area. Between 2000 and 2010, the population grew from 17,247 to 27,574 residents, an almost 60% increase. Sustaining and enhancing educational services to address the rapid growth has been a challenge for Post Falls.⁶² A \$9.5 million levy passed in spring 2011 to fund a new professional-technical high school, the Kootenai Technical Education Campus.⁶³

FIGURE 5.20
EDUCATIONAL ATTAINMENT FOR
KOOTENAI COUNTY SAMPLE



■ HIGH SCHOOL OR LESS
 ■ ASSOCIATE’S DEGREE
 ■ BACHELOR’S DEGREE
 ■ GRADUATE OR PROFESSIONAL DEGREE

⁶⁰Photo, Leontina Hormel.

⁶¹The Post Falls History Walk, “Frederick Post: Founder of Post Falls.”

⁶²Spokesman Review.com, “Bond Levies Respond to Growth.”

⁶³Coeur d’Alene KXLY.com, “Kootenai Tech Center Clears Another Hurdle.”

EDUCATIONAL CONTEXT

Kootenai County's survey sample (n=167) overrepresented men (56%) when compared to the 2010 U.S. Census (49%). Also, educational levels overrepresented individuals with higher levels of education than U.S. Census Bureau calculations for Post Falls (See Figure 5.20).

Educational attainment of respondents had a positive association with questions regarding their level of participation in schools (outside of athletic events) and their knowledge about college preparation. When asked, "Have you been involved in your local schools outside of attending or supporting athletic events?" 42% of Kootenai County respondents said "yes." Answers varied, though, by educational attainment, with a significantly reduced level of participation among those with a high school diploma or less (35%). Respondents with a graduate or professional degree, in contrast, were more likely to say they participated in school events (72%). Respondents were also asked to what extent they agreed or disagreed with the statement, "I am unsure how to apply to college." To this statement, 52% of respondents with high school diplomas or less "strongly agreed" (16%) or "agreed" (36%) and 46% of respondents with associate's degrees "strongly agreed" (5%) or "agreed" (41%). Respondents with a bachelor's degree were more confident in their knowledge of how to apply to college, with only 15% responding "strongly agree" (4%) or "agree" (11%) with the statement.

Almost half (48%) of respondents rated their schools' performance in STEM subject areas as "good" or "very good." Respondents "somewhat supported" (24%) or "strongly supported" (68%) efforts to enhance STEM education in their community.

FAMILY CONTEXT

In the Kootenai County survey 25% of the respondents had at least one child in K-12 education, and another 7% had children not yet in K-12. Over 88% said their children were attending public schools, 2% had children in charter schools, over 6% were sending children to private schools, and another 2% said they were homeschooling their children. About half (56%) of the parents in the sample said they volunteered at least once a year at their children's school. The rate of volunteering among K-12 parents in Kootenai County was the lowest when compared to the other eleven communities in this study.

A variety of questions in the community level survey mea-

sured parents’ confidence in their math and science abilities and the extent to which they felt involved in their children’s education. When asked how often they felt their own math and science knowledge made it difficult to help their child with homework in these subjects, 49% of Kootenai County parents said this was the case at least “occasionally.” Gender tested significant when respondents were asked how informed they were in the areas of science and technology. Men were more likely (27%) than women (6%) to feel “very informed” in these areas. With regard to parent involvement, over half of parents (58%) felt they didn’t have enough time to be involved in their child’s education, and over a third of parents (34%) felt that their financial situation made it difficult to be involved.

Respondents were also asked about their level of confidence in helping children prepare for college. At least 40% of Kootenai County respondents in this series of questions were unsure about different aspects of college preparation. When testing gender effects, women in Kootenai County were more likely than men to “agree” (34%) or “strongly agree” (17%) with the statement, “I am unsure of what high school classes a student should take to be successful in a four-year college.” This gender pattern differs from other communities where women tend to be more confident than men in knowing what classes students should take to prepare for college success. When compared to the other urban counties in this study, Kootenai County respondents were among the most likely to report uncertainty with how financial aid works.

BELIEFS AND VALUES

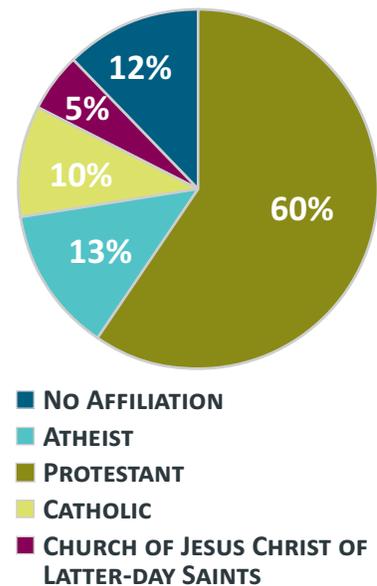
When asked to describe their political views, 13% of Kootenai County respondents said they were “very conservative,” 32% said they were “conservative,” 38% said they were “moderate,” 14% said they were “liberal,” and 3% said they were “very liberal.” The largest percentage (60%) of Kootenai County respondents said they are Protestant. The second largest group (13%) comprised individuals identifying as Atheist or Agnostic. Catholics were the third largest group (10%), with members of the Church of Jesus Christ of Latter-day Saints representing 5% of sample respondents. The remaining respondents (12%) did not indicate their religious membership.

Gender had an effect on results to one of the community level survey’s questions, which asked them to what extent they agreed or disagreed with the statement, “People in my community rely too much on science and not enough on religion.” Men and women both tended to share the same levels

“.....I’ve heard from parents that they feel really stressed that they don’t have time to help their kids with their homework....They said they wish that they could have some quality time with their kids.”

—Community member focus group in Post Falls

FIGURE 5.21
RELIGIOUS AFFILIATION FOR KOOTENAI COUNTY SAMPLE



of agreement, for which 2% of men and 4% of women “strongly agreed” and 21% of men and 20% of women “agreed.” However, women were more likely to “strongly disagree” (29%) than men (8%) with this statement.

Educational attainment levels had a significant effect for one of the “culture of science” questions in the community level survey. Kootenai County respondents were asked to state the degree to which they agreed or disagreed with the statement, “Schools should teach students about evolution.” Those respondents with high school education or less and with associate’s degrees were more likely to “disagree” (20% and 17% respectively) or “strongly disagree” (16% and 15% respectively). Kootenai County respondents with a bachelor’s degree were the most likely to “agree” (57%) or “strongly agree” (36%) that schools should teach students about evolution.

PRIEST RIVER, BONNER COUNTY



POPULATION: 1,751
MEDIAN AGE: 37
UNEMPLOYMENT, 2012: 12%
OWNER OCCUPIED HOUSING: 68%
MEDIAN INCOME, 2010: \$32,429
WEST BONNER COUNTY SCHOOL DISTRICT 261 STUDENT POPULATION, 2009-10: 1,402
SPENDING PER PUPIL, 2010: \$7,026
LOW INCOME STUDENTS, 2010-11: 65%
ISAT 10TH GRADE PROFICIENCY, 2010: MATH 89% SCIENCE 61%

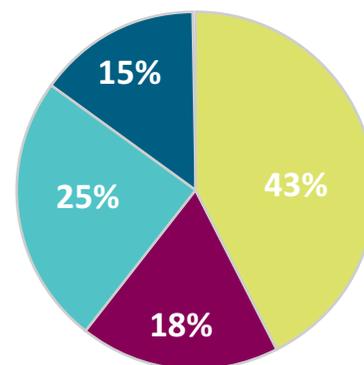
COMMUNITY DESCRIPTION⁶⁴

Located in the most northern county in the state, Priest River is a small logging community. It is remotely situated near the Idaho-Washington-Canada border in a mountainous region of Idaho, with two large lakes and three rivers. In the early 1900's, Priest River was the most rapidly growing town in north Idaho, fulfilling timber needs for constructing the Great Northern Railroad.⁶⁵ Recently, the timber industry has shrunk in Idaho. For example, the Priest River Sawmill lost 650 jobs in the last five years.⁶⁶ As a consequence the 12% unemployment rate is among the highest for the twelve communities in this study. Despite or possibly because of this challenging economic environment, the community continues to be supportive of K-12 education and successfully passed a school levy in spring 2011.⁶⁷

EDUCATIONAL CONTEXT

In our sample for Bonner County (n=146) men were slightly overrepresented (53%) compared to 2010 U.S. Census (50%).

FIGURE 5.22
EDUCATIONAL ATTAINMENT FOR BONNER COUNTY SAMPLE



- HIGH SCHOOL OR LESS
- ASSOCIATE'S DEGREE
- BACHELOR'S DEGREE
- GRADUATE OR PROFESSIONAL DEGREE

⁶⁴Photo, City of Priest River, Idaho (<http://priestriver-id.gov/>)

⁶⁵City of Priest River

⁶⁶Idaho Department of Labor, "Work Force Trend Profiles, Bonner County."

⁶⁷The Priest River Times Online, "School Levy Passes."

“[T]here’s a lot of things we can do to create greater interest into these fields by bringing in medical people, by bringing in engineers. We have people [in Priest River] retired from these fields. If we searched our community, we have some people who have worked in nuclear science, to the medical fields, to...you name it. They can all be drawn on. They’re willing to do things. We...would like to set up an after school math program for tutoring...There’s a lot we can do...I think we need to talk about some new ways to create interest. We can do that by bringing people in and getting experiences and hands-on things for the students to do.”

—Teacher focus group discussion in Priest River

Bonner County’s sample is skewed toward higher education levels, as was common for most of the community level survey samples (see Figure 5.22).

While 44% of Bonner County respondents rated their schools’ performance in STEM education as “good” or “very good,” 20% rated schools’ performance as “poor” or “very poor.” Almost 90% of Bonner County respondents said they “somewhat supported” (27%) or “strongly supported” (62%) efforts to enhance STEM education in their community. This level of support for STEM education was evident in the 2011 focus group discussions with teachers, parents, and community members in Priest River. In both the teacher and community member focus group discussions, serious conversation arose that considered the role that retired community members could play in offering students learning opportunities in STEM education (see passage right).

FAMILY CONTEXT

Slightly more than 21% of the Bonner County respondents had at least one child in K-12 education, while another 12% had a child not yet in school. The remaining two-thirds of respondents no longer had children in K-12, or had no children. Of the K-12 parents, 73% sent their children to traditional public schools, 12% sent their children to charter schools, 12% sent their children to private schools, and 4% homeschooled their children. Fifty-seven percent of parents reported they volunteered at school two or more times per year, yet a significant number of K-12 parents (43%) said they never volunteered at school. Except for Kootenai County K-12 parent respondents, this was the highest number of parents who reported not volunteering at their child’s school. The low number of parental volunteers was discussed in the Priest River focus groups conducted in 2011. During one of the discussions, a parent expressed frustration with the apparent lack of support for their children’s education other parents of K-12 children exhibited (see passage top opposite page). Some attributed low parental engagement with schools to be a consequence of high levels of unemployment and poverty rather than parental disregard for education. This may be the case given the success of the school levy passing shortly after these focus groups were conducted in the community in spring 2011.

Thirty-nine percent of Bonner County K-12 parent respondents “agreed” and 22% “strongly agreed” that they did not have as much time as they would like to be involved in their child’s education. Of the K-12 parent respondents 33% “agreed” with

the statement and another 11% “strongly agreed” that their financial situation made it difficult for them to be as involved in their child’s education as they would like. These indications of time and financial constraints in Bonner County are among the higher rates in the twelve communities in this study.

Compared to other communities, parents in this county were most confident about their abilities to help their children with math and science homework. When asked how often they felt that their own math and science knowledge made it difficult to help their oldest child with math and science homework, about 7% “very often” and 18% “occasionally.” In contrast, 49% of nearby Kootenai County K-12 parents said this difficulty arose at least “occasionally.”

Gender played a significant role in how uninformed respondents felt they were in science and technology. Women were more likely than men to feel “slightly uninformed” (24%) or “very uninformed” (3%) in the areas of science and technology.

BELIEFS AND VALUES

In the community level survey, 12% reported holding “very conservative” political views, 43% said they held “conservative” views, 31% held “moderate” views, 11% held “liberal” views, and 3% said they held “very liberal” views. Over 50% of respondents identified as Protestant (54%), with Atheists and Agnostics representing the next largest group at 18% in the community level survey sample. Catholics were the third largest group (9%), with members of the Church of Jesus Christ of Latter-day Saints representing 4% of sample respondents. The remaining respondents (16%) did not indicate their religious affiliation.

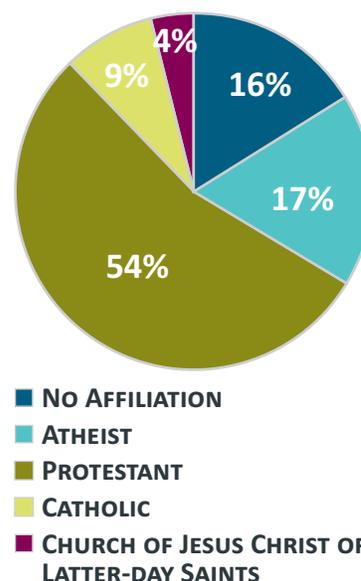
Almost 70% felt that scientists had a political agenda with their research, with 49% answering “somewhat” (49%) and 21% a “great deal.” However, education makes a difference in perceptions of scientists’ political agendas. Respondents with a high school diploma or less (24%) and those with a bachelor’s degree (31%) were the most likely to think that scientists were motivated by a “great deal” by political agendas.

Men and women responded differently to the statement, “Schools should teach students about humans’ impact on global climate change.” Women were significantly more likely to “agree” or “strongly agree” (88%) with this statement compared to men, of whom 75% “agreed” or “strongly agreed.” In fact, women tended to be more supportive than men of schools teaching human impacts on global climate change in several other communities in this study.

“There’s a lot of communication between the teachers, parents, and the kids, if the parents will participate. Not a whole lot of them do.”

—Participant in parent focus group in Priest River

FIGURE 5.23
RELIGIOUS AFFILIATION FOR BONNER COUNTY SURVEY SAMPLE



TERRETON, JEFFERSON COUNTY

POPULATION: 358
 MEDIAN AGE: 22
 UNEMPLOYMENT, 2012: 6%
 OWNER OCCUPIED HOUSING: 76%
 MEDIAN INCOME, 2010: \$36,094
 WEST JEFFERSON DISTRICT 253 STUDENT POPULATION, 2009-10: 613
 SPENDING PER PUPIL, 2010: \$7,395
 LOW INCOME STUDENTS, 2010-11: 72%
 ISAT 10TH GRADE PROFICIENCY, 2010: MATH 78% SCIENCE 79%

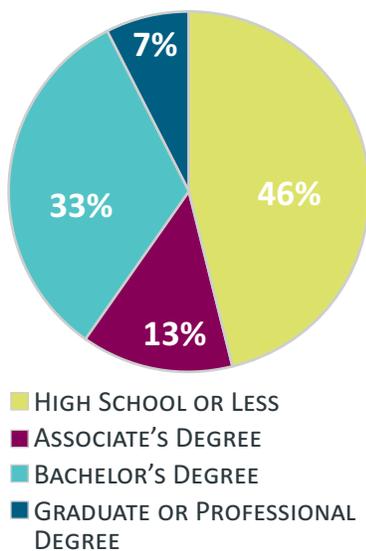


COMMUNITY DESCRIPTION⁶⁸

Terreton is an unincorporated area near Mud Lake in Jefferson County. The two communities are very small and are situated side by side along Highway 33, about thirty-five miles northwest of Idaho Falls and thirty-five miles northeast of the Idaho National Laboratory. The area is surrounded by farmland, with large landowner farms.

In the early 1900's Terreton/Mud Lake was organized by the Church of Jesus Christ of Latter-day Saints into a branch, a district too small to be a ward.⁶⁹ Over 97% of Jefferson County's population were adherents to the Church of Jesus Christ of Latter-day Saints in 2009. The next largest group comprised adherents of Catholicism (less than 1%).⁷⁰ The area had the youngest median age of the STEM communities and the state, at 26 years, more than 8 years younger than the state median age of 34. It has the highest owner occupied housing rates in the state at 98%. The Hispanic population in all of Jefferson County was 10% in the 2010 U.S. Census (representing an 11% growth from 2000).⁷¹ Yet in Mud Lake (a small town situated near the North

FIGURE 5.24
 EDUCATIONAL ATTAINMENT
 FOR JEFFERSON COUNTY
 SAMPLE



⁶⁸Census statistics are available for Mud Lake which is adjacent to Terreton. Photo, Leontina Hormel.

⁶⁹Jenson, *Encyclopedic History of the Church*, 554.

⁷⁰Association of Religion Data Archives, "Jefferson County."

⁷¹U.S. Census 2010, "Jefferson County, Idaho."

Gem schools), Hispanics comprise 44% suggesting a higher level of ethnic diversity in the North Gem School District area than in the rest of Jefferson County.⁷² The only other STEM Education Research Initiative communities to have sizeable non-white populations are Melba and Jerome.

EDUCATIONAL CONTEXT

In 2010 West Jefferson School District's spent \$7,394 per pupil, compared to the State's average of \$7,106. Nearly three-quarters of the students in West Jefferson School District are from low-income families. Although spending is a bit higher than the state average, the 2011 focus groups with teachers and parents expressed discontent with the availability of qualified teachers in the district.

The community-level survey sample of Jefferson County respondents (n = 82) was heavily overrepresented by those with higher educational attainment levels (see Figure 5.24), but the number of residents having less than a 9th grade education is over five times as high in Mud Lake than in Jefferson County generally. The number of Hispanic residents has grown considerably in the area surrounding Mud Lake over the past ten years, as is described above. These differences need to be considered when assessing the responses from Jefferson County respondents in the community level survey results.

In general, 94% of Jefferson County respondents said they "somewhat support" (27%) or "strongly support" (67%) efforts to enhance STEM education in their communities. This is one of the highest levels of support expressed when compared to the other 11 communities in the study. Gender tested significant when respondents in Jefferson County were asked to what extent people in their community were concerned about STEM education. Women were more likely than men to answer "somewhat concerned" (87%) or "very concerned" (2%). Yet, when asked to what extent Jefferson County respondents were concerned that STEM education improvements may reduce attention given to other subjects in their local schools, 52% said they were "somewhat concerned" and 10% said they were "very concerned." This was one of the higher rates of concern expressed in the community level surveys.

Forty-four percent of county respondents were unsure what high school classes a student should take to be successful in a four-year college, 28% were uncertain how to help someone apply to a four-year college, and 37% were not sure how fi-

TEACHER 1: *It seems like to me and some of these others...you get a young teacher, it's going take them 5 or 6 years to figure out how to even teach math. It seems a lot of times we get teachers that are fresh out of college. We take the brunt of the...*

TEACHER 2: *Teaching them how to teach.*

TEACHER 3: *Because they're the ones who are willing to come out here and teach. They're willing to live in town, and they're willing to drive out.*

TEACHER 4: *Math teachers are tough to come by.*

—Discussion during parent focus group in Terreton/Mud Lake

⁷²U.S. Census Bureau. "ACS 2006-2010 5-year estimates for Mud Lake City, Idaho."

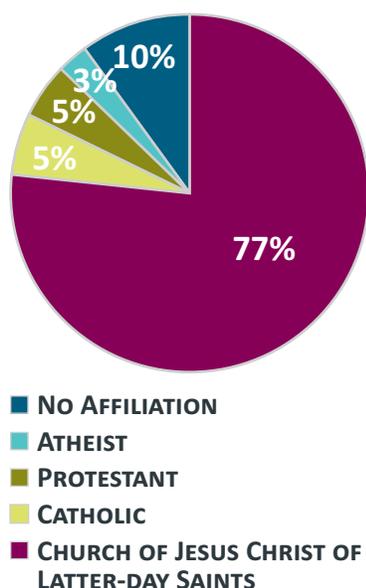
nancial aid worked. Mud Lake (the town closest to West Jefferson School District) has a lower level of educational attainment than is reflected in our sample. Given the underrepresentation in the sample of individuals with lower educational levels as well as individuals who identify as Hispanic, it's reasonable to assume that a much greater portion of Mud Lake's town residents are much less certain about college preparation.

FAMILY CONTEXT

In the Jefferson County survey 47% of the respondents had at least one child in K-12 education and another 3% had children not yet in K-12. The remaining 51% either had no children, or their children were no longer in K-12. Of Jefferson County K-12 parent respondents, 81% reported sending their children to public school, 14% sent children to charter schools, and another 6% sent children to private schools. None of the K-12 parents in the Jefferson County sample homeschooled their children. Of K-12 parents, 82% said they volunteered at least once a year at a local school. The majority of Jefferson County respondents in general (68%) said they participated in school activities outside of athletic events.

When asked how often they felt their own math and science skills made it difficult to help their child with math and science homework, 44% of the K-12 parents said this happened at least "occasionally." Alongside these difficulties, half of Jefferson County parents said they did not have as much time as they would like to be involved in their children's education, and 28% reported financial constraints interfered with their ability to support their children's education. Even though a good number of parents wished they could do more to support their children's education, over half of them (58%) said their children performed "above average" or "excellent" in math.

FIGURE 5.25
RELIGIOUS AFFILIATION FOR
JEFFERSON COUNTY SAMPLE



BELIEFS AND VALUES

Slightly over 72% of Jefferson County respondents said they were "conservative" (57%) or "very conservative" (15%). Another 23% considered themselves politically "moderate," and the remaining respondents were "liberal" (4%) or "very liberal" (1%). Members of the Church of Jesus Christ of Latter-day Saints represent a majority of religious adherents in Jefferson County. The 2000 estimates by the Association of Religious Data Archives for members of this faith in the county is over 97%.⁷³ In our survey sample, respondents identifying as members of this faith were slightly overrepresented at 77%. The next larg-

⁷³Association of Religious Data Archives (ARDA) Website, "Jefferson County, Idaho."

est religious groups represented in our sample were individuals identifying as Protestant (5%) and Catholic (5%). Another 3% identified as Atheist or Agnostic.

We found no significant statistical findings on “culture of science” questions when cross-tabulated with gender, religion, or political perspective. In other words, answers given by individuals representing different groups within each of these independent variables did not significantly differ. This may reflect the fact that such a large number of Jefferson County respondents shared conservative political perspectives, with a majority being members of the Church of Jesus Christ of Latter-day Saints. Sharing common beliefs and values may diminish the variation in this sample’s responses for the community level survey. We did, however, find that Jefferson County respondents were more likely than respondents in the other five rural communities to “strongly agree” (13%) and “agree” (48%) with the statement, “Science can come into conflict with my religion.”

SECTION 6.

CONCLUSIONS AND RECOMMENDATIONS

Survey results from the state and twelve counties provide important insights on contextual factors that influence student educational aspiration and success. A noteworthy finding is the high degree of public support for education, including STEM education and higher education, across the state. We offer seven broad recommendations based on our analysis of data from the statewide and community surveys. Recommendations are contingent on additional findings from planned data collection in Fall 2012-Spring 2013 that will include surveys of fourth-, seventh-, and tenth-grade students in selected schools and their parents. In addition, findings from the teacher survey planned for 2013 will also provide important data that will shape more specific innovations. The following proposals are not listed in order of importance but rather reflect the complex factors that must be addressed if Idaho is to improve STEM education outcomes and STEM literacy among its population.

- Policy makers, educators, and other stakeholders should consider data when implementing future innovations or legislation. The significant body of research literature on STEM, nationwide data, and the rich data we have and will continue to collect for Idaho should inform innovations and legislation.
- Parents, policy makers, and other stakeholders must clearly understand that Idaho's children are underperforming in math and science in Idaho. While it is important to acknowledge when successes occur, accurately communicating Idaho students' underperformance in math and science is an important first step in creating a sense of urgency regarding the educational challenges facing Idaho.
- The state should devote adequate resources to support education at all levels and expand partnerships beyond higher education and industry to include teachers, K-12 schools, parents, and communities to foster educational success.
- Stakeholders in Idaho must support families in order to increase their engagement and support of students' education. Specific communication and educational campaigns regarding higher education preparation,

application, and financial processes must be a priority. Structural constraints parents face must be addressed through various innovations that are sensitive to local community needs and demographics.

- Researchers and scientists must be more thoughtful on how to effectively communicate their findings in ways that resonate with community needs and values. This includes consideration of and respect for local experiences.
- Increasing the public's scientific literacy must also be a central goal of the state rather than simply focusing on student STEM performance in K-12 and higher education. Improving the public's understanding of scientific knowledge and relationship to scientists in their community will provide a more scientifically and technologically literate citizenry. In turn, this will provide a community context that can positively influence and reinforce students' interest and knowledge of STEM.
- Specific innovations should attend to the local context in which students learn. Analysis of statewide and community responses reveals that rural communities are each unique, as are urban communities. Indeed, we found little urban-rural differences in our survey. As such, while one strategy would be to develop broad-based approaches to improving STEM literacy and STEM education, approaches, where possible, should be adapted locally as data-driven, specific, place-based, targeted innovations for different groups (e.g. parents, teachers, students, industry leaders, the state, policy makers, researchers, etc.).

SECTION 7.

APPENDIXES

APPENDIX I: GENERAL POPULATION TELEPHONE SURVEY METHODOLOGY

PILOT TEST

In order to test the validity and usefulness of questions on the survey instrument, a pilot test was conducted using a representative random sample of household landlines (n = 200).

After pilot testing, the survey instrument was revised slightly. Some questions were deleted, and others were modified to improve clarity and minimize measurement error. The complete text to the survey can be found in Appendix II. The survey took 22 minutes on average to complete and was approved for human subjects research by the University of Idaho Institutional Review Board, protocol number 10-059. All interviewers completed an online National Institutes of Health training course in human subjects research in addition to training in survey data collection procedures and telephone etiquette. Interviewers were monitored during each calling session by trained supervisors.

STATEWIDE SURVEY

The statewide telephone survey used a dual-frame survey methodology, with samples drawn from household landlines in Idaho (n = 900), and a random digit dial sample of wireless phone numbers with an Idaho (208) area code (n = 1,500).

To increase the telephone survey response rate, a pre-calling postcard was sent to all landline respondents the week prior to the telephone calls. The postcard stated the SSRU would be contacting the household within the next week, the purpose of the survey, and provided a toll-free number to call the SSRU if they had any questions or concerns regarding the study. Calls began 13 October 2011 and continued until 2 December 2011. Each number in the sample was called at least eight times in attempt to complete an interview. Interviewers made calls during the work week in the mornings, afternoons, evenings, as well as on Saturdays 10:00 a.m. – 2:00 p.m. PST in an attempt to reach as many potential respondents for this project as possible. The SSRU employed a Spanish-language speaking interviewer. Twelve interviews were completed in Spanish. Data

were collected on Wincati version 5.0⁷⁴.

Final survey dispositions in the two frames include 407 completed interviews, 499 disconnected or non-working numbers, 95 ineligible households (respondents who were too young to complete the survey, lines used only for business purposes, or individuals that did not live in Idaho but had an Idaho), and 262 refusals. 1,099 households were not able to be contacted for the survey. The final response rate is 22.5 percent (AAPOR2), the cooperation rate (the proportion of interviews conducted from all eligible units actually contacted) is 59.2 percent, and the refusal rate is 14.5 percent⁷⁵.

Survey weights were calculated to account for the complex survey design using SAS, Version 9.2⁷⁶. Weighted frequencies were used because in the dual-frame methodology, households have different probabilities of selection for the study depending on whether they are mobile phone-only, landline only, or both. The weighting process is explained in detail in the following section, and results presented in the comparison to Census data are based on weighted frequencies.

COMMUNITY OVERSAMPLE

A second telephone survey was conducted in each of the twelve communities selected to participate in this study. The survey instrument and calling procedure used in the community oversample were the same as for the statewide survey, with the following exceptions. In two counties (Jerome and Camas), no wireless numbers are assigned (i.e. there is no wireless providers whose business is located in those counties). Thus, those two samples included only household landline numbers. In Camas county, so few landline numbers exist that the entire population of landline RDD telephone numbers was censused. We targeted 200 completed interviews per county, including those from the statewide survey. The sample sizes for both frame types by county are listed in Table 1. Sample sizes varied due to population size of the county (smaller counties were more heavily oversampled, due to their low representation in the statewide telephone survey). Calls began on 24 October 2011 and continued until 25 February 2012.

⁷⁴ Sawtooth Technologies, Inc. 2012. Northbrook, IL.

⁷⁵ The American Association for Public Opinion Research (AAPOR). 2006. Standards Definitions: Final Disposition of Case Codes and Outcome Rates for Surveys, 4th Edition. Lenexa, KS: AAPOR. Available at: http://www.aapor.org/pdfs/standarddefs_4.pdf

⁷⁶ SAS, Version 9.2. 2009. SAS Institute, Inc. Cary, N.C

TABLE 1: SAMPLE SIZES IN EACH COUNTY FOR COMMUNITY TELEPHONE SURVEY

DISTRICT	COUNTY	CELL SAMPLE	LANDLINE SAMPLE
Boise	Ada	600	100
Pocatello	Bannock	600	300
Priest River	Bonner	600	300
Idaho Falls	Bonneville	600	300
Fairfield	Camas	0	500
Melba	Canyon	1,600	300
Bancroft	Caribou	600	300
Terreton	Jefferson	600	300
Jerome	Jerome	0	800
Post Falls	Kootenai	600	300
Kamiah	Lewis	600	300
Lewiston	Nez Perce	1,350	550

Response rates varied by county, ranging from a low of 19.5 percent in Ada County to a high of 32.2 percent in Jerome County (Tables 2a, 2b). Part of the variation in response rate can be attributed to differences in the proportion of wireless numbers as a fraction of the total sample; wireless numbers typically have lower response rates than landline numbers.

TABLE 2A: COMPLETED INTERVIEWS AND RESPONSE RATE BY COUNTY, COMMUNITY OVERSAMPLE

	ADA	BANNOCK	BONNER	BONNEVILLE	CAMAS	CANYON
Complete	102	127	129	135	31	155
Response Rate	19.5%	23.0%	20.5%	22.0%	30.7%	19.3%
Cooperation Rate	39.7%	43.1%	42.2%	42.5%	66.0%	41.1%
Refusal Rate	28.8%	29.5%	27.2%	28.2%	15.8%	26.2%

TABLE 2B: COMPLETED INTERVIEWS AND RESPONSE RATE BY COUNTY, COMMUNITY OVERSAMPLE

	CARIBOU	JEFFERSON	JEROME	KOOTENAI	LEWIS	NEZ PERCE
Complete	145	82	206	135	136	278
Response Rate	24.8%	22.8%	32.2%	20.5%	28.9%	22.4%
Cooperation Rate	45.7%	56.9%	54.1%	41.3%	56.9%	45.6%
Refusal Rate	28.4%	16.1%	26.1%	28.2%	21.1%	25.7%

ESTIMATION USING DUAL FRAME METHODOLOGY

Survey weights were calculated in order that the data to account for the complex survey design. Households had differing probabilities of inclusion in the study based on whether

they lived in an urban or rural county (because rural counties were oversampled to allow for an adequate sample size in that demographic) and based on whether respondents live in a household with both wireless and landline telephones, only landlines, or only wireless phones. Data from national surveys conducted by the U.S. Department of Health and Human Services (HHS) estimates the fraction of adults living in wireless-only, landline-only, mixed, or no-telephone households within the state. Of all Idaho households, 98.8 percent are estimated to have a telephone of some sort (including wireless), 31.7 percent live in wireless-only households, 9.5 percent live in landline only households, and the remainder (57.6 percent) live in households with both a landline and wireless telephones.⁷⁷ Weights for the statewide survey sample and for each county in the oversample were then calculated from the inverse probability of selection given the sample size and population size.

For the bivariate analysis (cross-tabulations) and logistic regression analyses, where data from all counties included in the oversample were pooled, we used an iterative re-weighting process to calculate survey weights that took into account both the dual-frame methodology and the sampling design, in order to have each observation included in proportion to its actual representation in the population. Briefly, base weights were calculated from the inverse probability of selection given the sample size and population size for the different counties.⁷⁸ Weighted frequencies were calculated with these weights, and new weights were generated for household type using the weighted frequencies. These steps were then repeated through one more complete iteration (using the strata, then household type) at which point the weighted frequencies for both the strata variable and the household type matched published data (Census Bureau data for southern Idaho counties and Health and Human Services data for household telephone status). Because no county level estimates of household telephone status exist, we made the assumption that households in each county in Idaho are similar to the state as a whole. This assumption is likely not entirely true, as counties in northern Idaho tend to have a lower proportion of cell-phone only households (SSRU, unpublished data), but the HHS estimates for the state are still the best and only data for Idaho.

⁷⁷ Blumberg, S.J. and J.V. Luke. 2011. Wireless substitution: State-level estimates from the National Health Interview Survey, January 2001-June 2010. National Health Statistics Report, #39. U.S. Department of Health and Human Services, Center for Disease Control and Prevention. April 20, 2011.

⁷⁸ Brick, M.J., S. Dipko, S. Presser, C. Tucker, and Y. Yuan. 2005. Estimation issues in dual frame sample of cell and landline numbers. Proceedings of the Survey Research Methods Section of the American Statistical Association. P. 2794-2798.

DEMOGRAPHIC PROFILE OF RESPONDENTS AND COMPARISON TO CENSUS DATA

We compared the age distribution of respondents in this study to recent Census Bureau estimates of Idaho's adult population.⁷⁹ Typically, survey respondents show underrepresentation in lower age groups and overrepresentation in older age groups as younger respondents are more mobile, busier with work and/or young families, and are less likely to have a land-line. Using the dual frame methodology in this study (including cell phones in the sample) moderates this effect, and although this sample slightly under-represents the lowest age demographics (less than 20 years) and slightly over-represents those over 74 years, the differences are not large.

TABLE 3: ADA COUNTY SAMPLE AGE DISTRIBUTION COMPARED TO 2010 CENSUS

AGE CATEGORY	CENSUS	THIS STUDY	LOWER 95% CL	UPPER 95% CL
18-24 years old	12.4%	4.5%	1.4%	7.6%
25-34 years old	20.0%	17.4%	11.9%	23.0%
35-44 years old	19.3%	18.9%	13.3%	24.6%
45-54 years old	19.1%	16.6%	11.2%	22.0%
55-64 years old	15.0%	19.4%	13.7%	25.2%
65-74 years old	7.9%	13.6%	8.7%	18.5%
75-84 years old	4.3%	6.7%	2.8%	10.6%
85+ years old	2.0%	2.8%	0.0%	5.8%

TABLE 4: BANNOCK COUNTY SAMPLE AGE DISTRIBUTION COMPARED TO 2010 CENSUS

AGE CATEGORY	CENSUS	THIS STUDY	LOWER 95% CL	UPPER 95% CL
18-24 years old	16.8%	7.6%	2.9%	12.2%
25-34 years old	21.1%	12.3%	6.5%	18.1%
35-44 years old	15.2%	17.1%	10.9%	23.4%
45-54 years old	16.4%	14.4%	8.2%	20.6%
55-64 years old	15.2%	17.2%	11.2%	23.3%
65-74 years old	8.3%	20.7%	14.0%	27.4%
75-84 years old	5.0%	7.9%	3.1%	12.6%
85+ years old	2.1%	2.8%	0.0%	5.7%

⁷⁹U.S. Census Bureau. 2010 Census. Available at www.census.gov

**TABLE 5: BONNER COUNTY SAMPLE AGE DISTRIBUTION
COMPARED TO 2010 CENSUS**

Age Category	Census	This Study	Lower 95% CL	Upper 95% CL
18-24 years old	7.9%	7.1%	2.3%	12.0%
25-34 years old	12.5%	11.9%	6.1%	17.7%
35-44 years old	14.4%	7.4%	3.0%	11.8%
45-54 years old	20.8%	13.4%	7.7%	19.0%
55-64 years old	22.5%	33.6%	25.7%	41.5%
65-74 years old	13.6%	16.6%	10.6%	22.6%
75-84 years old	6.0%	8.2%	3.2%	13.2%
85+ years old	2.3%	1.8%	0.0%	4.4%

**TABLE 6: BONNEVILLE COUNTY SAMPLE AGE DISTRIBUTION
COMPARED TO 2010 CENSUS**

AGE CATEGORY	CENSUS	THIS STUDY	LOWER 95% CL	UPPER 95% CL
18-24 years old	12.4%	8.8%	4.1%	13.5%
25-34 years old	21.4%	14.8%	8.9%	20.6%
35-44 years old	16.8%	13.4%	7.9%	18.8%
45-54 years old	18.5%	19.4%	13.3%	25.6%
55-64 years old	15.1%	17.0%	11.1%	22.9%
65-74 years old	8.6%	16.3%	10.5%	22.2%
75-84 years old	5.1%	7.4%	3.3%	11.4%
85+ years old	2.2%	1.9%	0.0%	4.1%

**TABLE 7: CAMAS COUNTY SAMPLE AGE DISTRIBUTION
COMPARED TO 2010 CENSUS**

AGE CATEGORY	CENSUS	THIS STUDY	LOWER 95% CL	UPPER 95% CL
18-24 years old	6.3%	5.5%	0.0%	13.4%
25-34 years old	16.4%	5.5%	0.0%	13.4%
35-44 years old	14.5%	16.5%	3.2%	29.7%
45-54 years old	22.6%	22.3%	4.8%	39.9%
55-64 years old	20.0%	28.0%	8.8%	47.2%
65-74 years old	13.9%	13.7%	1.5%	26.0%
75-84 years old	3.8%	2.7%	0.0%	8.4%
85+ years old	2.6%	5.7%	0.0%	17.0%

**TABLE 8: CANYON COUNTY SAMPLE AGE DISTRIBUTION
COMPARED TO 2010 CENSUS**

AGE CATEGORY	CENSUS	THIS STUDY	LOWER 95% CL	UPPER 95% CL
18-24 years old	13.7%	9.9%	5.4%	14.4%
25-34 years old	20.3%	9.4%	5.0%	13.9%
35-44 years old	18.8%	17.2%	11.5%	22.8%
45-54 years old	17.3%	15.2%	9.7%	20.7%
55-64 years old	14.2%	24.0%	17.6%	30.4%
65-74 years old	8.9%	15.0%	10.1%	20.0%
75-84 years old	4.7%	5.7%	2.3%	9.2%
85+ years old	2.1%	3.5%	0.3%	6.7%

**TABLE 9: CARIBOU COUNTY SAMPLE AGE DISTRIBUTION
COMPARED TO 2010 CENSUS**

AGE CATEGORY	CENSUS	THIS STUDY	LOWER 95% CL	UPPER 95% CL
18-24 years old	8.9%	7.2%	2.5%	11.9%
25-34 years old	16.8%	16.7%	10.2%	23.2%
35-44 years old	15.0%	15.4%	9.5%	21.3%
45-54 years old	19.6%	18.9%	12.2%	25.5%
55-64 years old	17.4%	16.8%	10.6%	23.0%
65-74 years old	12.4%	14.6%	8.6%	20.7%
75-84 years old	7.1%	9.9%	4.5%	15.3%
85+ years old	2.8%	0.6%	0.0%	1.7%

**TABLE 10: JEFFERSON COUNTY SAMPLE AGE DISTRIBUTION
COMPARED TO 2010 CENSUS**

AGE CATEGORY	CENSUS	THIS STUDY	LOWER 95% CL	UPPER 95% CL
18-24 years old	12.2%	4.8%	0.1%	9.6%
25-34 years old	21.5%	9.7%	3.2%	16.2%
35-44 years old	18.1%	20.6%	11.7%	29.5%
45-54 years old	19.0%	23.0%	13.7%	32.3%
55-64 years old	14.4%	15.7%	7.7%	23.8%
65-74 years old	8.8%	18.9%	10.1%	27.7%
75-84 years old	4.6%	6.1%	0.8%	11.3%
85+ years old	1.5%	1.2%	0.0%	3.6%

**TABLE 11: JEROME COUNTY SAMPLE AGE DISTRIBUTION
COMPARED TO 2010 CENSUS**

AGE CATEGORY	CENSUS	THIS STUDY	LOWER 95% CL	UPPER 95% CL
18-24 years old	13.7%	2.6%	0.8%	4.5%
25-34 years old	20.0%	8.8%	5.2%	12.5%
35-44 years old	17.0%	12.9%	8.9%	16.9%
45-54 years old	18.2%	18.3%	13.4%	23.1%
55-64 years old	14.8%	18.2%	13.5%	23.0%
65-74 years old	9.1%	20.2%	15.4%	25.0%
75-84 years old	5.4%	14.2%	10.0%	18.5%
85+ years old	1.8%	4.7%	1.7%	7.7%

**TABLE 12: KOOTENAI COUNTY SAMPLE AGE DISTRIBUTION
COMPARED TO 2010 CENSUS**

AGE CATEGORY	CENSUS	THIS STUDY	LOWER 95% CL	UPPER 95% CL
18-24 years old	11.5%	10.2%	5.2%	15.3%
25-34 years old	16.1%	11.0%	5.8%	16.2%
35-44 years old	16.5%	13.1%	7.7%	18.6%
45-54 years old	19.1%	19.2%	13.0%	25.3%
55-64 years old	17.6%	17.7%	11.7%	23.6%
65-74 years old	11.0%	16.3%	10.6%	22.0%
75-84 years old	5.9%	9.5%	5.1%	13.8%
85+ years old	2.3%	3.0%	0.0%	6.2%

**TABLE 13: LEWIS COUNTY SAMPLE AGE DISTRIBUTION
COMPARED TO 2010 CENSUS**

AGE CATEGORY	CENSUS	THIS STUDY	LOWER 95% CL	UPPER 95% CL
18-24 years old	7.6%	6.4%	2.2%	10.6%
25-34 years old	11.6%	6.3%	2.1%	10.5%
35-44 years old	11.6%	6.9%	2.0%	10.9%
45-54 years old	21.0%	21.6%	14.2%	29.0%
55-64 years old	20.2%	20.8%	13.7%	27.8%
65-74 years old	16.4%	27.0%	18.8%	35.2%
75-84 years old	8.5%	10.5%	4.7%	16.3%
85+ years old	3.1%	0.6%	0.0%	1.9%

TABLE 14: NEZ PERCE COUNTY SAMPLE AGE DISTRIBUTION COMPARED TO 2010 CENSUS

AGE CATEGORY	CENSUS	THIS STUDY	LOWER 95% CL	UPPER 95% CL
18-24 years old	12.8%	6.6%	3.8%	9.4%
25-34 years old	15.1%	11.6%	8.0%	15.1%
35-44 years old	14.7%	13.7%	10.3%	17.1%
45-54 years old	18.0%	20.6%	16.4%	24.8%
55-64 years old	16.5%	21.3%	17.2%	25.5%
65-74 years old	11.3%	14.4%	11.1%	17.6%
75-84 years old	7.8%	8.8%	6.1%	11.4%
85+ years old	4.0%	3.1%	1.4%	4.7%

We also compared the educational attainment of all respondents to Census Bureau estimates of educational attainment of Idaho adults over the age of 25 (note that these are statewide Census Bureau estimates, and include residents of counties not included in this survey). Respondents in this study tended to be better educated than Idaho residents in general, as this study underrepresented those with a high school diploma or less education and over represented those with college degrees (Tables 15-27)⁸⁰.

TABLE 15: ADA COUNTY SAMPLE EDUCATIONAL ATTAINMENT COMPARED TO ACE 2006-2010 5-YEAR ESTIMATES

EDUCATION	ACS	THIS STUDY	LOWER 95% CL	UPPER 95% CL
Eighth grade or less	1.9%	1.0%	0.0%	2.4%
9th-12th grade, no diploma	5.2%	2.6%	0.3%	4.8%
High school graduate/GED	23.0%	14.1%	7.7%	20.4%
Some college (no degree)	26.9%	24.3%	17.7%	30.9%
Associate's degree	8.1%	7.9%	3.9%	11.8%
Bachelor's degree	23.9%	32.0%	24.2%	27.8%
Graduate or professional degree	11.1%	19.1%	13.3%	25.0%

⁸⁰ U.S. Census Bureau. American Community Survey 2006-2010 5-Year Estimates. Available at www.census.gov

TABLE 16: BANNOCK COUNTY SAMPLE EDUCATIONAL ATTAINMENT COMPARED TO ACE 2006-2010 5-YEAR ESTIMATES

EDUCATION	ACS	THIS STUDY	LOWER 95% CL	UPPER 95% CL
Eighth grade or less	2.2%	0.0%	0.0%	0.0%
9th-12thgrade,nodiploma	7.3%	4.6%	0.8%	8.4%
Highschoolgraduate/GED	26.0%	16.5%	9.6%	23.3%
Somecollege(nodegree)	28.6%	24.7%	16.9%	32.5%
Associates' degree	8.6%	5.4%	1.2%	9.6%
Bachelor's degree	18.4%	32.2%	26.9%	43.6%
Graduate or professional degree	8.9%	13.6%	8.1%	19.1%

Table 17: Bonner County Sample Educational Attainment Compared to ACE 2006-2010 5-Year Estimates

Education	ACS	This Study	Lower 95% CL	Upper 95% CL
Eighth grade or less	1.5%	0.0%	0.0%	0.0%
9th-12thgrade,nodiploma	7.5%	3.0%	0.0%	6.2%
Highschoolgraduate/GED	32.9%	20.2%	12.8%	27.6%
Somecollege(nodegree)	26.6%	16.4%	10.5%	22.2%
Associate's degree	9.0%	17.3%	10.5%	24.1%
Bachelor's degree	14.9%	26.9%	18.7%	35.1%
Graduate or professional degree	7.6%	16.2%	9.4%	23.0%

TABLE 18: BONNEVILLE COUNTY SAMPLE EDUCATIONAL ATTAINMENT COMPARED TO ACE 2006-2010 5-YEAR ESTIMATES

EDUCATION	ACS	THIS STUDY	LOWER 95% CL	UPPER 95% CL
Eighth grade or less	3.2%	3.1%	0.0%	6.8%
9th-12thgrade,nodiploma	6.2%	4.1%	0.2%	8.0%
Highschoolgraduate/GED	28.0%	16.0%	9.2%	22.9%
Somecollege(nodegree)	26.9%	24.1%	16.1%	32.0%
Associate's degree	9.6%	8.5%	3.3%	13.6%
Bachelor's degree	18.1%	27.1%	19.6%	34.5%
Graduate or professional degree	8.1%	17.2%	10.8%	23.5%

TABLE 19: CAMAS COUNTY SAMPLE EDUCATIONAL ATTAINMENT COMPARED TO ACE 2006-2010 5-YEAR ESTIMATES

EDUCATION	ACS	THIS STUDY	LOWER 95% CL	UPPER 95% CL
Eighth grade or less	4.4%	0.0%	0.0%	0.0%
9th-12thgrade,nodiploma	13.7%	11.1%	0.0%	23.0%
Highschoolgraduate/GED	30.2%	33.3%	14.3%	52.3%
Somecollege(nodegree)	23.6%	33.3%	14.3%	52.3%
Associate's degree	5.4%	7.4%	0.0%	17.9%
Bachelor's degree	16.7%	7.4%	0.0%	17.9%
Graduate or professional degree	5.9%	7.4%	0.0%	17.9%

TABLE 20: CANYON COUNTY SAMPLE EDUCATIONAL ATTAINMENT COMPARED TO ACE 2006-2010 5-YEAR ESTIMATES

Education	ACS	T h i s Study	Lower 95% CL	Upper 95% CL
Eighth grade or less	8.2%	2.1%	0.0%	4.3%
9th-12thgrade,nodiploma	9.8%	2.8%	0.0%	5.3%
Highschoolgraduate/GED	32.2%	18.2%	11.8%	24.7%
Somecollege(nodegree)	26.0%	30.3%	22.9%	37.7%
Associate's degree	7.2%	6.9%	3.0%	10.7%
Bachelor's degree	11.9%	23.9%	17.1%	30.7%
Graduate or professional degree	4.8%	15.8%	10.0%	21.5%

TABLE 21: CARIBOU COUNTY SAMPLE EDUCATIONAL ATTAINMENT COMPARED TO ACE 2006-2010 5-YEAR ESTIMATES

EDUCATION	ACS	THIS STUDY	LOWER 95% CL	UPPER 95% CL
Eighth grade or less	2.4%	0.6%	0.0%	4.3%
9th-12thgrade,nodiploma	9.7%	1.6%	0.2%	5.3%
Highschoolgraduate/GED	36.3%	24.8%	11.8%	24.7%
Somecollege(nodegree)	24.1%	22.5%	23.0%	37.7%
Associate's degree	11.4%	8.4%	3.0%	10.7%
Bachelor's degree	12.8%	30.8%	17.1%	30.7%
Graduate or professional degree	3.3%	11.3%	10.0%	21.5%

TABLE 22: JEFFERSON COUNTY SAMPLE EDUCATIONAL ATTAINMENT COMPARED TO ACE 2006-2010 5-YEAR ESTIMATES

EDUCATION	ACS	THIS STUDY	LOWER 95% CL	UPPER 95% CL
Eighth grade or less	5.1%	1.3%	0.0%	3.8%
9th-12thgrade,nodiploma	9.1%	1.3%	0.0%	3.8%
Highschoolgraduate/GED	29.3%	11.5%	4.3%	18.8%
Somecollege(nodegree)	28.2%	30.7%	20.3%	41.2%
Associate's degree	10.4%	14.1%	6.2%	22.0%
Bachelor's degree	12.7%	33.3%	22.6%	44.0%
Graduate or professional degree	5.2%	7.7%	1.6%	13.7%

TABLE 23: JEROME COUNTY SAMPLE EDUCATIONAL ATTAINMENT COMPARED TO ACE 2006-2010 5-YEAR ESTIMATES

EDUCATION	ACS	THIS STUDY	LOWER 95% CL	UPPER 95% CL
Eighth grade or less	13.1%	6.9%	1.9%	12.0%
9th-12thgrade,nodiploma	15.2%	10.8%	5.1%	16.5%
Highschoolgraduate/GED	30.1%	19.9%	12.9%	26.8%
Somecollege(nodegree)	24.0%	30.5%	22.4%	38.5%
Associate's degree	5.4%	10.3%	5.0%	15.7%
Bachelor's degree	8.9%	17.5%	10.9%	24.2%
Graduate or professional degree	3.2%	4.1%	0.8%	7.3%

TABLE 24: KOOTENAI COUNTY SAMPLE EDUCATIONAL ATTAINMENT COMPARED TO ACE 2006-2010 5-YEAR ESTIMATES

EDUCATION	ACS	THIS STUDY	LOWER 95% CL	UPPER 95% CL
Eighth grade or less	2.0%	0.6%	0.0%	1.6%
9th-12thgrade,nodiploma	6.6%	4.3%	0.7%	7.9%
Highschoolgraduate/GED	29.5%	12.1%	6.7%	17.5%
Somecollege(nodegree)	28.3%	30.1%	22.4%	37.8%
Associate's degree	10.4%	14.5%	8.3%	20.8%
Bachelor's degree	16.6%	24.7%	17.7%	31.7%
Graduate or professional degree	6.6%	13.7%	8.1%	19.4%

TABLE 25: LEWIS COUNTY SAMPLE EDUCATIONAL ATTAINMENT COMPARED TO ACE 2006-2010 5-YEAR ESTIMATES

EDUCATION	ACS	THIS STUDY	LOWER 95% CL	UPPER 95% CL
Eighth grade or less	3.3%	0.0%	0.0%	0.0%
9th-12thgrade,nodiploma	6.5%	11.7%	0.0%	23.5%
Highschoolgraduate/GED	36.4%	24.6%	12.4%	36.8%
Somecollege(nodegree)	27.3%	35.0%	20.6%	49.4%
Associate's degree	11.0%	6.7%	2.5%	10.9%
Bachelor's degree	13.0%	15.9%	9.1%	22.7%
Graduate or professional degree	2.5%	6.1%	2.1%	10.1%

TABLE 26: NEZ PERCE COUNTY SAMPLE EDUCATIONAL ATTAINMENT COMPARED TO ACE 2006-2010 5-YEAR ESTIMATES

EDUCATION	ACS	THIS STUDY	LOWER 95% CL	UPPER 95% CL
Eighth grade or less	3.30%	0.63%	0%	1.52%
9th-12thgrade,nodiploma	7.00%	4%	1.56%	6.44%
Highschoolgraduate/GED	35.30%	20.85%	15.61%	26.08%
Somecollege(nodegree)	25.90%	21.75%	15.13%	28.37%
Associate's degree	10.30%	7.44%	4.21%	10.67%
Bachelor's degree	13.00%	31.06%	24.99%	37.14%
Graduate or professional degree	5.20%	14.24%	9.77%	18.70%

APPENDIX II: SURVEY INSTRUMENT

TELEPHONE SURVEY, COMPLETE QUESTIONNAIRE

The following instrument was used to survey respondents. Answer categories of “don’t know” or “refused” were not read to respondents but were coded as such if they responded as such to any question.

Hello my name is ____ and I am calling from the Social Science Research Unit at the University of Idaho.

We are conducting a statewide survey of Idaho residents to understand Idahoans perspectives on issues related to science, technology, engineering, and mathematics or what is sometimes called STEM. We want to know your perspective on issues related to STEM. This study has been funded by the Micron Foundation and approved by the Institutional Review Board at the University of Idaho.

This interview takes about 20 minutes, and your participation is voluntary. If I come to any question you’d prefer not to answer, just let me know and I’ll skip over it. I’d like to assure you that your answers will be kept strictly confidential. Do you have any questions before we begin?

Q1: What are the FOUR most important subjects taught in K-12 schools?

1. English
2. Math
3. Science (Why is it important, open ended)
4. History
5. Government
6. Art
7. Music
8. Vocational courses
9. Computer science
10. Physical education
11. Health
12. Foreign languages
13. Other (specify)

Q1a: Why is math important?

1. Everyday uses: Math is useful and practically important for most people everyday (e.g. balancing checkbook)
2. Career: Math is important for jobs like engineers and accountants; math should be taught to allow access to jobs
3. Reasoning Skills: Math is important because it trains you to reason and solve problems
4. Rigor/Perseverance: Math is difficult, requires hard work, builds tenacity
5. Citizen literacy: People need math to be good citizens and understand events in their country and world
6. Cultural literacy: Math, like philosophy, is a significant product of civilization
7. Aesthetic: Math is beautiful, exciting, fun

Q2: To what degree do you support or oppose efforts to enhance STEM education in your community (that is, science, technology, engineering, and mathematics)?

1. Strongly support
2. Somewhat support
3. Neither support nor oppose
4. Somewhat oppose
5. Strongly oppose

Q3: How concerned are you that improvements to STEM education may reduce attention given to other subjects in your local schools?

1. Very concerned
2. Somewhat concerned
3. Unconcerned
4. Not at all concerned

Q4: Are you a parent?

1. Yes Skip to Q4a
2. No Skip to Q36

Q4a: Are any of your children currently in K-12?

1. My oldest child is not yet in K-12 education. Skip to Q36
2. I have one or more children in K-12. Skip to Q4b
3. All of my children have completed K-12 (are out of school). Skip to Q20

Q4b:What is your oldest child’s current grade level?

Q5:Is your oldest child who is in K-12 attending...

1. Homeschool
2. A charter school
3. A private school
4. A public school

Q6:How well does your oldest child usually perform in science?

1. Excellent
2. Above average
3. Average
4. Below average
5. Failing

Q7: How well does your oldest child usually perform in math?

1. Excellent
2. Above average
3. Average
4. Below average
5. Failing

Q8: Please tell me if any of the following reasons helps explain your oldest child’s level of math performance.

1. Teacher quality
2. Peer influence
3. Math preparation in elementary school
4. Their natural ability in math
5. Their interest in math
6. Their parents’ ability to help
7. Math anxiety

Q9: Overall, how well does your oldest child usually perform in school?

1. Excellent
2. Above average
3. Average
4. Below average
5. Failing

Q10: How often do you/did you read books with your oldest child when they were young?

1. Very often
2. Often
3. Occasionally
4. Rarely
5. Never

Q11: Next we'd like to ask you some questions regarding your experience with your oldest child's school. How often do you volunteer at school?

1. Never
2. Once a year
3. 2-4 times a year
4. 5 or more times per year

Q12: How often do you have conversations with other parents about school?

1. Never
2. Once a year
3. 2-4 times a year
4. 5 or more times per year

Q13: How often do you talk with your oldest child's teachers beyond parent-teacher conferences?

1. Never
2. Once a year
3. 2-4 times a year
4. 5 or more times per year

Q14: How comfortable are you communicating with schools about your oldest child's learning needs?

1. Very comfortable
2. Comfortable
3. Uncomfortable
4. Very uncomfortable

Q15: How often do you have a set time for homework for your oldest child?

1. Always
2. Usually
3. Sometimes
4. Rarely
5. Never

Q16: How strongly do you agree or disagree with the following statement: I have the appropriate level of skills to help my oldest child with their homework.

1. Strongly agree
2. Agree
3. Disagree
4. Strongly disagree

Q17: How often do you feel that your own math and science knowledge makes it difficult to help your oldest child with their math and science homework? Does this happen....

1. Very often
2. Often
3. Occasionally
4. Rarely
5. Never

Q17a: At what grade level did you notice it became difficult to assist?

Next I'm going to read you a list of statements. Please tell me how strongly you agree or disagree with each of them.

Q18: I do not have as much time as I would like to be involved in my oldest child's education.

1. Strongly agree
2. Agree
3. Disagree
4. Strongly disagree

Q19: My financial situation makes it difficult for me to be as involved in my oldest child's education as I would like.

1. Strongly agree
2. Agree
3. Disagree
4. Strongly disagree

Questions 20-35 were asked of respondents who are parents but whose children are no longer in the K-12 school system.

Q20: How many years has it been since your youngest child last attended K-12?

If more than 10 years, skip to Q36

Q21: In what state did your youngest child attend high school?

Q22: What type of high school did your youngest child graduate from?

1. Homeschool
2. A charter school
3. A private school
4. A public school

Q23: How well did your youngest child usually perform in high school science?

1. Excellent
2. Above average
3. Average
4. Below average
5. Failing

Q24: How well did your youngest child usually perform in high school math?

1. Excellent
2. Above average
3. Average
4. Below average
5. Failing

Q25: Overall, how well did your youngest child usually perform in high school?

1. Excellent
2. Above average
3. Average
4. Below average
5. Failing

Q26: How often did you read books with your youngest child when they were young?

1. Very often
2. Often
3. Occasionally
4. Rarely
5. Never

Q27: Next we'd like to ask you some questions regarding your experience with your children's school. When your youngest child was in elementary school, how often did you volunteer at school?

1. Never
2. Once a year
3. 2-4 times a year
4. 5 or more times per year

Q28: When your youngest child was in elementary school, how often did you have conversations with other parents about school?

1. Never
2. Once a year
3. 2-4 times a year
4. 5 or more times per year

Q29: When your youngest child was in elementary school, how often did you talk with your child's teachers?

1. Never
2. Once a year
3. 2-4 times a year
4. 5 or more times per year

Q30: How comfortable were you communicating with schools about your youngest child's learning needs when your child was in elementary school?

1. Very comfortable
2. Comfortable
3. Uncomfortable
4. Very uncomfortable

Q31: When your youngest child was in middle school, how often did you have a set time for homework?

1. Always
2. Usually
3. Sometimes
4. Rarely
5. Never

Q32: How strongly do you agree or disagree with the following statement: I had the appropriate level of skills to help my youngest child with their homework during middle school.

1. Strongly agree
2. Agree
3. Disagree
4. Strongly disagree

Q33: How often did you feel that your own math and science knowledge made it difficult to help your youngest child with their math and science homework? Did this happen....

1. Very often
2. Occasionally
3. Rarely
4. Never

Q33: At what grade level did you notice it became difficult to assist?

Next I'm going to read you a list of statements. Please tell me how strongly you agree or disagree with each of them.

Q34: I did not have as much time as I would have liked to be involved in my youngest child's education.

1. Strongly agree
2. Agree
3. Disagree
4. Strongly disagree

Q35: My financial situation made it difficult for me to be as involved in my youngest child's education as I would have liked.

1. Strongly agree
2. Agree
3. Disagree
4. Strongly disagree

[Read to those without children or whose children were not yet in K-12]

Although you do not currently have children in school, we are interested in your attitudes about parental behavior and children's experiences in your community.

[Read to those whose children graduated from high school more than 10 years earlier]

Since your children have been out of school for some time, we are going to ask you some questions about other parents and schools in your community, rather than your own children and experiences.

Q36: What type of high school do you think is best for children to attend in your local community?

1. Homeschool
2. A charter school
3. A private school
4. A public school

Q37: How often do you think most parents in your community read books with their children when they are young?

1. Very often
2. Often
3. Occasionally
4. Rarely
5. Never

Q38: How often do you think most parents in your community volunteer at school when their children are in elementary school?

1. Never
2. Once a year
3. 2-4 times a year
4. 5 or more times per year

Q39: How often do you think most parents in your community have conversations with other parents about school when their children are in elementary school?

1. Never
2. Once a year
3. 2-4 times a year
4. 5 or more times per year

Q40: How often do you think most parents in your community regularly talk with their child's teachers beyond parent-teacher conferences while their child is in elementary school?

1. Never
2. Once a year
3. 2-4 times a year
4. 5 or more times per year

Q41: How comfortable do you think most parents in your community are in communicating with schools about their children's learning needs while their children are in elementary school?

1. Very comfortable
2. Comfortable
3. Uncomfortable
4. Very uncomfortable

Q42: How often do you think most parents have a set time for homework when their child is in middle school?

1. Always
2. Usually
3. Sometimes
4. Rarely
5. Never

Q43: How strongly do you agree or disagree with the following statement: Most parents in the community have the appropriate level of skills to help their children with their homework during middle school.

1. Strongly agree
2. Agree
3. Disagree
4. Strongly disagree

Q44: How often do you think most parents' own math and science knowledge makes it difficult to help their children with math and science homework? Does this happen....

1. Very often
2. Occasionally
3. Rarely
4. Never

Q44a: At what grade level do you think it becomes difficult for most parents to assist?

Q45: Next I'm going to read you a list of statements. Please tell me how strongly you agree or disagree with each of them. Most parents in my community do not have as much time as they would like to be involved with their children's education.

1. Strongly agree
2. Agree
3. Disagree
4. Strongly disagree

Q46: In my community, the financial situation of most parents makes it difficult for them to be as involved in their children's education as they would like.

1. Strongly agree
2. Agree
3. Disagree
4. Strongly disagree

Please tell me how strongly you agree or disagree with the following statements:

Q47: I am unsure of what high school classes a student should take to be successful in a four-year college.

1. Strongly agree
2. Agree
3. Disagree
4. Strongly disagree

Q48: I am unsure of how to help someone apply to a four-year college.

1. Strongly agree
2. Agree
3. Disagree
4. Strongly disagree

Q49: I am unsure of how financial aid works in a four-year college.

1. Strongly agree
2. Agree
3. Disagree
4. Strongly disagree

Q50: When do you think it is most important for parents to be involved in their children's educational experience and decision making?

1. Elementary School
2. Middle School/Junior High
3. High School

Q51: Have you been involved in your local schools outside of attending or supporting athletic events?

1. Yes
2. No

Q51a: What did you do?

Q52: I am going to read a list of items that may or may not reflect your experiences within the community. As I read each item, please tell me if you feel that it describes you or not.

1. I feel like an outsider
2. I make friends easily
3. I feel like I belong
4. Other community members seem to like me
5. I feel lonely
6. I do not want to be involved in community activities

Q53: To what extent do you agree or disagree with this statement: Our schools' operations should be controlled locally.

1. Strongly Agree
2. Agree
3. Am neutral
4. Disagree
5. Strongly Disagree

Q54: Scientists sometimes provide information to state and local leaders that help them make decisions on land, water, energy, agriculture, or wildlife issues.

Do you think scientists have had a positive or negative influence in any of these areas in your community?

1. Very positive
2. Positive
3. Both positive and negative
4. Negative
5. Very negative

Q55: In which area of management decision making?

Q56: For each of the following state budget items, please tell me if you think Idaho should increase, decrease, or keep the same level of funding in future appropriations.

- Health and Human Services
- Natural Resources
- K-12 Education
- Higher Education
- STEM Education Programs
- Economic Development
- Law Enforcement and Public Safety

Q57: In the areas of science and technology, would you say you are...

1. Very Informed
2. Somewhat Informed
3. Somewhat Uninformed
4. Very Uninformed

Q58: Where do you get most of your information about science? Please select one of the following:

1. Newspapers
2. Magazines
3. Internet
4. Books/Printed material
5. TV
6. Radio
7. Government agencies
8. Family and friends
9. Colleagues
10. Other (specify)

Q59: Please specify the specific source (e.g. which website, newspaper, or television program).

For the next few statements, please tell me how strongly you agree or disagree.

Q60: Students should choose what to believe and what not to believe from the scientific claims they learn about in school.

1. Strongly agree
2. Agree
3. Disagree
4. Strongly disagree

Q61: Science is a process for collecting and explaining facts, not a matter of belief.

1. Strongly agree
2. Agree
3. Disagree
4. Strongly disagree

Q62: Science can be in conflict with my religious beliefs.

1. Strongly agree
2. Agree
3. Disagree
4. Strongly disagree

Q62a: Can you tell me some ways in which science conflicts with your religious beliefs?

Q62b: Can you tell me what, if any, type of scientific issues OTHERS in your community feel are in conflict with their religious beliefs?

Q63: Schools should teach students about evolution.

1. Strongly agree
2. Agree
3. Disagree
4. Strongly disagree

Q64: Schools should teach students about humans' impact on global climate change.

1. Strongly agree
2. Agree
3. Disagree
4. Strongly disagree

Q65: People in my community rely too much on science and not enough on religion.

1. Strongly agree
2. Agree
3. Disagree
4. Strongly disagree

Q66: Scientific knowledge changes so rapidly that it is hard to know what to trust.

1. Strongly agree
2. Agree
3. Disagree
4. Strongly disagree

Q67: We are interested in your impression of scientists. To what extent do you feel scientists have a political agenda with their research?

1. A great deal
2. Somewhat
3. A little bit
4. Not at all

Q67a: What is the agenda?

Q68: How would you rate your local schools' performance at educating youth in general? Is it...

1. Very good
2. Good
3. Fair
4. Poor
5. Very poor

Q69: How would you rate your local schools' performance at educating youth in STEM subject areas? Is it..

1. Very good
2. Good
3. Fair
4. Poor
5. Very poor

Q70: Your community is concerned about the quality of STEM education. Would you say you..

1. Strongly agree
2. Agree
3. Disagree
4. Strongly disagree

Q71: The new regulation that requires high school students to take two online courses in order to graduate from high school is good for students. Do you...

1. Strongly agree
2. Agree
3. Disagree
4. Strongly disagree

Q72: How likely are you to support local tax levies to improve STEM education in your local schools?

1. Very likely
2. Likely
3. Unlikely
4. Very unlikely

The last few questions are for data analysis purposes only.

Q73: What is your current occupation status?

1. Employed full-time
2. Employed part-time
3. Full-time student
4. Serving on active duty in the Armed Services
5. Full-time homemaker
6. Holding a job, but on temporary layoff from work or waiting to report
7. Looking for work
8. Retired
9. Disabled

Q74: What is your occupation? (open ended and recoded)

1. Agriculture, forestry, fishing, mining
2. Construction
3. Manufacturing
4. Wholesale trade
5. Retail trade [includes small shop owners and their employees]
6. Information [publishers, television, radio, Web, telecommunications, libraries, software, etc.]
7. Finance, real estate, insurance
8. Professional, scientific, management, administrative, waste management [lawyers, architects, etc.]
9. Education (all levels)
10. Health care and social assistance [includes all doctors, home health care providers, social services]
11. Arts, entertainment, recreation, accommodation, or food services [artists, museums, hotels, restaurants]
12. Other services [inc. auto repair, religious institutions, nonprofits, dry cleaning, funeral homes]
13. Public administration [courts, police, fire, city/state/ Federal workers]

Q75: Do you currently have more than one job?

1. Yes
2. No

Q75a: How many jobs do you currently hold?

Q76: Did you ever need or wish you had more science or math for any job you held or wanted?

1. Yes
2. No

Q77: Which of the following describes your home computer and Internet access?

1. No computer or Internet service
2. Computer, no Internet service
3. Computer and dial-up Internet service
4. Computer and high speed Internet

Q77a: How many of each of the following types of telephone numbers are used in your household?

Landlines ____

Cell phones ____

Q78: What is the highest level of education that you have completed?

1. 8th grade or less
2. 9th-12th grade, no diploma
3. High school graduate (includes GED)
4. Some college, no degree
5. Associate's degree
6. Bachelor's degree (specify field of degree)
7. Graduate or professional degree (specify field of degree)

Q79: What Idaho county do you live in?

Q80: How many years have you lived in this county?

Q81: In what year were you born?

Q82: Are you...

1. Male
2. Female

Q83: Which of the following categories best describes your race or ethnicity?

1. White/Caucasian
2. Hispanic/Latino/a
3. American Indian or Alaska Native
4. Black/African American
5. Asian or Pacific Islander
6. Other or mixed race

Q84: Which of the following categories describes your marital status?

1. Married
2. Widowed
3. Divorced
4. Separated
5. Never married
6. Other

Q85: How many of your own children are currently living with you?

Q86: What is your present religion if any? (open ended and recoded)

1. Stated religion (required)
2. Atheist/Agnostic
3. Buddhist
4. Christian--Baptist
5. Christian--Catholic
6. Christian--Episcopalian
7. Christian--Evangelical
8. Christian--LDS/Mormon
9. Christian--Lutheran
10. Christian--Methodist
11. Christian--Nondenominational
12. Christian--Presbyterian
13. Christian--Unitarian
14. Christian--Other
15. Hindu
16. Jewish--Conservative
17. Jewish--Orthodox
18. Jewish--Reformed
19. Muslim
20. Other

Q87: How often do you attend church?

1. More than once a week
2. Once a week
3. About twice a month
4. Once a month
5. A few times a year
6. Never

Q88: In politics today, if you identify with a particular political party, which one is it?

1. Democrat
2. Libertarian
3. Republican
4. Other (specify)
5. I don't identify with a party

Q89: In general, would you describe your political views as...

1. Very conservative
2. Conservative
3. Moderate
4. Liberal
5. Very liberal

Q90: Please stop me when I reach the category that best describes your total household income.

1. Less than \$15,000
2. Between \$15,000 and \$24,999
3. Between \$25,000 and \$34,999
4. Between \$35,000 and \$49,999
5. Between \$50,000 and \$74,999
6. Between \$75,000 and \$99,999
7. More than \$100,000

Q91: How would you describe your household's financial situation? Would you say you..

1. Havemorethanenoughtomeetbasicneedsandexpenses
2. Meet your basic expenses with a little left over for extras
3. Just meet basic expenses
4. Don't have enough to meet basic expenses

That's all the questions I have for you today. Do you have anything else you'd like to add?

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SECTION 8.

REFERENCES

STATEWIDE RESULTS REFERENCES

ACT. "Developing the STEM Education Pipeline." Accessed July 6, 2012. <https://www.act.org/research/policymakers/cccr11/pdf/ConditionofCollegeandCareerReadiness2011.pdf>

-----."The Condition of College and Career Readiness 2011." Accessed July 5, 2012. <https://www.act.org/research/policymakers/cccr11/pdf/ConditionofCollegeandCareer-Readiness2011.pdf>

Bryan, Julia, Cheryl Moore-Thomas, Norma L. Day-Vines, and Cheryl Holcomb-McCoy, "School Counselors as Social Capital: The Effects of High School College Counseling on College Application Rates," *Journal of Counseling and Development* 89 (2011): 190-199.

Bushaw, William J. and Shane J. Lopez, "A Time for Change: The 42nd Annual Phi Delta Kappa/Gallup Poll of the Public's Attitudes Toward the Public Schools," *Phi Delta Kappan* 92 (2012): 9-26.

California Postsecondary Education Commission. "2010 ACT Participation Rates and Average Scores." Accessed June 5, 2012. <http://www.cpec.ca.gov/StudentData/50StateACTScores.asp>

Carnevale, Anthony P., Nicole Smith, and Jeff Strohl. "Help Wanted: Projections of Jobs and Education Requirements Through 2018." Center on Education and the Workforce, Georgetown University. Accessed June 6, 2012. <http://www9.georgetown.edu/grad/gppi/hpi/cew/pdfs/FullReport.pdf>

Green, Mayrta M. "Science and Engineering Degrees: 1966-2004." NSF 07-307. Arlington, VA: National Science Foundation, 2007. Accessed July 6, 2012. <http://www.nsf.gov/statistics/nsf07307/>

Idaho State Board of Education. "Higher Education Fact Book, 2012." Accessed July 6, 2012. http://www.board-of-ed.idaho.gov/communications_center/documents/publications/2012_higher_ed_factbook.pdf

Idaho State Department of Education. "Achievement Level Results: Idaho vs. Nation NAWP 2009 Mathematics, Grades 4, 8 and 12. National Assessment of Educational Progress in Idaho, Idaho Snapshot 2009." Accessed June 4, 2012. <http://www.sde.idaho.gov/site/naep/data/g12p/g12p-34-snp-3yr-levels-ma.pdf>

----- "FY13 Budget Request." Accessed June 10, 2012. <http://www.sde.idaho.gov/site/edsources/2011/nov/FY13-Budget.htm>

----- "Home School." Accessed July 16, 2012. http://www.sde.idaho.gov/site/home_school/

----- "Students Come First, About the Laws." Accessed July 16, 2012. <http://www.studentscomefirst.org/about.htm>

Internet World Stats, 2012. Accessed June 5, 2012. <http://www.internetworldstats.com/stats14.htm>

Laugsch, Rudiger, "Scientific Literacy: A Conceptual Overview," *Science Education* 84 (2000): 71-94.

National Center for Education Statistics, "The Nation's Report Card; Mathematics 2011." Accessed June 5, 2012. <http://nces.ed.gov/nationsreportcard/pdf/main2011/2012458.pdf>

----- "The Nation's Report Card: Science 2011." Accessed June 5, 2012. <http://nces.ed.gov/nationsreportcard/pdf/main2011/2012465.pdf>

National Center for Higher Education Management Systems (NCHEMS) Information Center for Higher Education Policy-making and Analysis. Accessed June 5, 2012. <http://www.higheredinfo.org/>

- National Center for Public Policy and Higher Education.
 “Measuring Up 2008: The National Report Card on Higher Education. September 2008.” Accessed June 5, 2012. http://measuringup2008.highereducation.org/states/report_cards/index.php?state=ID
- National Research Council. “Successful K-12 STEM Education: Identifying Effective Approaches in Science, Technology, Engineering, and Mathematics.” Washington, D.C.: The National Academies Press, 2011. http://www7.nationalacademies.org/dbasse/Successful_K12_STEM_Education_PDF.pdf
- National Science Board. “Preparing the Next Generation of STEM Innovators: Identifying and Developing our Nation’s Human Capital.” NSB-10-33. Accessed June 5, 2012. <http://www.nsf.gov/nsb/publications/2010/nsb1033.pdf>
- Office of Performance Evaluations, Idaho Legislature.
 “Reducing Barriers to Postsecondary Education, Report 12-01.” Accessed July 16, 2012. <http://www.legislature.idaho.gov/ope/publications/reports/r1201.pdf>
- . “Public Education Funding in Idaho, Evaluation Report.” Report 09-01. Accessed July 16, 2012. <http://www.legislature.idaho.gov/ope/publications/reports/r0901.pdf>
- Paulhus, Delroy, “Socially Desirable Responding: The Evolution of a Construct,” in *The Role of Constructs in Psychological and Educational Measurement*, ed. Henry I. Braun et al. (Mahwah, NJ: Lawrence Erlbaum Associates, Inc., 2002), 51-76.
- State of Idaho. “Enhancing Economic Opportunity.” Accessed June 19, 2012. <http://gov.idaho.gov/priorities/opportunity.html>
- . “C.L. ‘Butch’ Otter’s State of the State and Budget Address.” Accessed June 9, 2012. http://gov.idaho.gov/mediacenter/speeches/sp_2011/State_of_the_State_2011.pdf
- U.S. Department of Education. “Postsecondary Awards in Science, Technology, Engineering, and Mathematics by State: 2001 and 2009.” NCES 2011-226. April 2011. Accessed June 17, 2012. <http://nces.ed.gov/pubs2011/2011226.pdf>

U.S. Department of Labor, Bureau of Labor Statistics.

“Occupational Outlook Handbook, 2012-13 Edition, Projections Overview.” Accessed June 17, 2012. <http://www.bls.gov/ooh/about/projections-overview.htm>

Western Interstate Commission for Higher Education. “Tuition and Fees in Public Higher Education in the West, 2011-2012: Detailed Tuition and Fees Tables.” Accessed July 6, 2012. <http://www.wiche.edu/pub/15454>.

COMMUNITY PROFILE REFERENCES

Association of Religious Data Archives (ARDA) Website. Accessed July 20, 2011, and June 25, 2012. <http://www.thearda.com/mapsReports/reports/selectCounty.asp>.

----- “Ada County.” Accessed August 26, 2012. http://www.thearda.com/mapsReports/reports/counties/16001_2000.asp

----- “Bonneville County.” Accessed August 26, 2012. http://www.thearda.com/mapsReports/reports/counties/16019_2000.asp

----- “Caribou County.” Accessed August 26, 2012. http://www.thearda.com/mapsReports/reports/counties/16029_2000.asp

----- “Jefferson County.” Accessed August 26, 2012. http://www.thearda.com/mapsReports/reports/counties/16051_2000.asp

Bloomberg Business Week. “Best Places To Raise Your Kids 2010.” Accessed July 20, 2011. http://images.businessweek.com/ss/09/11/1117_best_places_to_raise_kids/13.htm.

City of Idaho Falls Website. “Social and Economic Profile of Idaho Falls and Bonneville County.” Accessed June 25, 2012. http://www.idahofallsidaho.gov/wwwroot/userfiles/files/planning/social_and_economic_profile_of_idaho_falls_and_bonneville_county.01.pdf

City of Melba, Idaho, Website. “History of Melba.” Accessed July 20, 2011. <http://www.cityofmelba.org/index.html>

City of Priest River. Accessed July 20, 2011. <http://priestriver-id.gov/>

Coeur d'Alene KXLY.com. March 30, 2011. "Kootenai Tech Center Clears Another Hurdle." Accessed July 20, 2011. <http://coeurdalene.kxly.com/news/business/kootenai-tech-center-clears-another-hurdle/44079>

Fairfield, Camas County, Idaho Website. "Welcome to Fairfield." Accessed July 20, 2011. <http://www.fairfieldidaho.net/community/history/>

Federal Reserve Bank of St. Louis (FRED) Website. "Economic Research (April 2012 Unemployment Statistics by County in Idaho)." Accessed June 22 to June 27, 2012. <http://research.stlouisfed.org/fred2/>

----- "Ada County." Accessed June 22, 2012.
<http://research.stlouisfed.org/fred2/series/IDADAC1URN?cid=27894>

----- "Bannock County." Accessed June 27, 2012.
<http://research.stlouisfed.org/fred2/series/IDBANN5URN?cid=27896>

----- "Bonner County." Accessed June 27, 2012.
<http://research.stlouisfed.org/fred2/series/IDBONN7URN?cid=2790>

----- "Bonneville County." Accessed June 22, 2012.
<http://research.stlouisfed.org/fred2/series/IDBONNOURN>

----- "Camas County." Accessed June 22, 2012.
<http://research.stlouisfed.org/fred2/series/IDCAMA5URN?cid=27906>

----- "Canyon County." Accessed June 27, 2012.
<http://research.stlouisfed.org/fred2/series/IDCANY5URN?cid=27907>

----- "Caribou County." Accessed June 22, 2012.
<http://research.stlouisfed.org/fred2/series/IDCARI9URN?cid=27908>

----- "Jefferson County." Accessed June 22, 2012.
<http://research.stlouisfed.org/fred2/series/IDJEFF1URN?cid=27919>

----- "Jerome County." Accessed June 22, 2012.
[http://research.stlouisfed.org/fred2/series/
IDJERO3URN?cid=27920](http://research.stlouisfed.org/fred2/series/IDJERO3URN?cid=27920)

----- "Kootenai County." Accessed June 27, 2012.
[http://research.stlouisfed.org/fred2/series/
IDKOOT0URN?cid=27921](http://research.stlouisfed.org/fred2/series/IDKOOT0URN?cid=27921)

----- "Lewis County." Accessed June 22, 2012.
[http://research.stlouisfed.org/fred2/series/
IDLEWI1URN?cid=27924](http://research.stlouisfed.org/fred2/series/IDLEWI1URN?cid=27924)

----- "Nez Perce County." Accessed June 27, 2012.
[http://research.stlouisfed.org/fred2/series/
IDNEZP9URN?cid=27928](http://research.stlouisfed.org/fred2/series/IDNEZP9URN?cid=27928)

Forbes.com. "Best Small Places for Businesses and Careers."
Accessed July 20, 2011. [http://www.forbes.com/lists/2010/5/
business-places-10_Idaho-Falls-ID_IDIda.html](http://www.forbes.com/lists/2010/5/business-places-10_Idaho-Falls-ID_IDIda.html)

Idaho Department of Labor. "Work Force Trend Profiles,
Caribou County." Accessed July 20, 2011. [http://labor.idaho.
gov/publications/lmi/pubs/CaribouProfile.pdf](http://labor.idaho.gov/publications/lmi/pubs/CaribouProfile.pdf)

----- "Work Force Trend Profiles, Bannock County."
Accessed July 20, 2011. [http://labor.idaho.gov/publications/
lmi/pubs/BannockProfile.pdf](http://labor.idaho.gov/publications/lmi/pubs/BannockProfile.pdf)

----- "Work Force Trend Profiles, Bonner County."
Accessed July 20, 2011. [http://labor.idaho.gov/publications/
lmi/pubs/BonnerProfile.pdf](http://labor.idaho.gov/publications/lmi/pubs/BonnerProfile.pdf)

Idaho Falls Chamber of Commerce Website. Accessed July 20,
2011. [http://www.idahofallschamber.com/.](http://www.idahofallschamber.com/)

Idaho Falls Convention and Visitors Bureau Website.
"Frequently Asked Questions, "What is the history of Idaho
Falls?" Accessed July 20, 2011. [http://www.visitidahofalls.
com/index.cfm?pg=dis_faq#history](http://www.visitidahofalls.com/index.cfm?pg=dis_faq#history)

Idaho Office of Refugees Website. Accessed June 24, 2012.
[http://www.idahorefugees.org.](http://www.idahorefugees.org)

----- "About Refugees in Idaho." Accessed August 26, 2012.
http://www.idahorefugees.org/Refugees_in_Idaho/#about

- "Population Information." Accessed August 26, 2012. http://www.idahorefugees.org/About_IOR/Refugees_in_Idaho/Population_Information_/
- Jenson, Andrew. *Encyclopedic History of the Church*. Salt Lake City: Deseret News Press, 1941.
- National Geographic Adventure. "Best Adventure Towns List." Accessed July 20, 2011. <http://adventure.nationalgeographic.com/weekend-getaways/best-adventure-towns-list/2>
- Post Falls History Walk. "Frederick Post: Founder of Post Falls." Accessed July 20, 2011. <http://postfallshistorywalk.webs.com/frederickpost.htm>
- Priest River Times Online. May 25, 2011. "School Levy Passes." Accessed July 20, 2011. http://www.priestriver-times.com/breaking_news/article_8155b05a-86f1-11e0-bfd8-001cc4c002e0.html
- Southern Idaho Economic Development Organization (SIEDO) Website. "Twin Falls Profile." Accessed July 20, 2012. <http://www.southernidaho.org/>
- Spokesman Review 2010 Census Website. Accessed June 26-27, 2012. <http://data.spokesman.com/census/2010/idaho/>
- The Spokesman Review.com. May 15, 2006. "Bond Levies Respond to Growth." Accessed July 20, 2011. <http://www.spokesman.com/stories/2006/may/15/bond-levies-respond-to-growth/>
- State of Idaho Official Website. "Caribou County." Accessed July 20, 2011. <http://www.idaho.gov/aboutidaho/county/caribou.html>.
- U.S. Census Bureau. "ACS 2006-2010 5-year Estimates, Jerome City, Idaho." Accessed August 26, 2012. <http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=bkmk>
- U.S. Census Bureau. "ACS 2006-2010 5-year Estimates, Jerome County." Accessed August 28, 2012. http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_10_5YR_DP02

U.S. Census 2010 Website. "American FactFinder." Accessed July 19-20, 2011 and June 18 to June 27, 2012. <http://factfinder2.census.gov/faces/nav/jsf/pages/index.xhtml>

----- "Kamiah City, Idaho." Accessed July 19, 2012. http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=DEC_10_DP_DPDP1

----- "Jefferson County, Idaho." Accessed August, 26 2012. http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=DEC_10_DP_DPDP1

----- "Mud Lake City, Idaho." Accessed August 26, 2012. http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=DEC_10_DP_DPDP1

U.S. Census Website. "Census Viewer." Accessed June 24 to June 27, 2012. <http://censusviewer.com/>

Untraveled Road. "Bancroft, Idaho." Accessed July 20, 2011. <http://www.untraveledroad.com/USA/Idaho/Caribou/Bancroft.htm>

