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# ECONOMIC RETURNS TO EDUCATION IN IDAHO

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## • TABLE OF CONTENTS •

ACKNOWLEDGEMENTS .....	<b>i</b>
INTRODUCTION .....	<b>1</b>
THE EARNINGS PREMIUM OF EDUCATION .....	<b>2</b>
EDUCATIONAL ATTAINMENT IN IDAHO .....	<b>5</b>
RELATIVE PAY IN IDAHO .....	<b>7</b>
IDAHO EARNED INCOME BY INDUSTRY AND OCCUPATION .....	<b>10</b>
THE WILD CARD: MIGRATION .....	<b>14</b>
IDAHO'S RETURN ON EDUCATION .....	<b>18</b>
EDUCATION AND INNOVATION .....	<b>21</b>
LESSONS FROM IDAHO'S DEMOGRAPHICS .....	<b>21</b>
THE INNOVATION ENGINE .....	<b>22</b>
URBAN VERSUS RURAL ECONOMIES .....	<b>24</b>
ECONOMIC GARDENING AND EDUCATION .....	<b>27</b>
EDUCATION AND LIVABLE COMMUNITIES: ATTRACTING THE "CREATIVE CLASS" .....	<b>29</b>
COMMUNITY-INSPIRED INNOVATION .....	<b>30</b>
INTEGRATING EDUCATION .....	<b>32</b>
BIBLIOGRAPHY .....	<b>34</b>
ENDNOTES .....	<b>36</b>
APPENDIX .....	<b>37</b>

## • ACKNOWLEDGEMENTS •

The Rural Opportunities Consortium of Idaho (ROCI) was launched by the J.A. and Kathryn Albertson Foundation of Boise, Idaho during the summer of 2013. Since then, Bellwether Education Partners and a task force of experts led by Dr. Paul T. Hill have been working to foster a better understanding of the issues that affect rural education, inform policy discussions, and bring attention to the unique needs and circumstances of rural school children. A series of reports, published over the next year, will examine issues including migration, technology, human capital, economic development, postsecondary enrollment and persistence, and more. Papers will be posted online at [www.rociidaho.com/research-publications](http://www.rociidaho.com/research-publications).

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### ABOUT ROCI • RURAL OPPORTUNITIES CONSORTIUM OF IDAHO



ROCI brings together some of the nation's best thinkers to conduct research on the challenges of rural education and identify innovations, programs and models to address them. This effort informs a national body of work on rural education and explores implications for increasing the educational attainment and economic competitiveness of Idahoans and Americans.

### ABOUT JKAF • J.A. AND KATHRYN ALBERTSON FOUNDATION



The J.A. and Kathryn Albertson Foundation is a Boise-based, private family foundation committed to the vision of limitless learning for all Idahoans. Since 1997, the J.A. and Kathryn Albertson Foundation has invested almost \$700 million in Idaho. The J.A. and Kathryn Albertson Foundation honors the legacy of Joe and Kathryn Albertson, founders of Albertsons grocery store, however it is not affiliated with Albertsons LLC. Grant-making is by invitation-only. For more information, visit [jkaf.org](http://jkaf.org).

### ABOUT BELLWETHER EDUCATION PARTNERS



Bellwether Education Partners is a nonprofit dedicated to helping education organizations—in the public, private, and nonprofit sectors—become more effective in their work and achieve dramatic results, especially for high-need students. To do this, Bellwether provides a unique combination of exceptional thinking, talent, and hands-on strategic support.

## • INTRODUCTION •

Mother fastens the buckles on Maggie's little shoes, and some minutes later drives her to school. They walk through the gates and then down the corridor. While her mother looks for the classroom, Maggie admires the pretty pictures on the wall. At the classroom door, her mother says goodbye to her and tells her she will be back in a few hours. Maggie is a little scared, but she holds back her tears; she has been looking forward to this day. The teacher takes Maggie's hand and walks her into the classroom. It is her first day of class.

**An investment in knowledge  
pays the best interest.  
– Benjamin Franklin**

The day passed quickly for Maggie. She and her new friends spent time in the reading corner, the play corner, and then outside. When Mom came to pick her daughter up, she observed the joyous activity at the playground. Maggie was too absorbed to notice; her first day must have gone fine. Mom thought

back to her own time at school. Was it Louis Pasteur, the famous microbiologist, who said that education was the way to prepare for the unforeseen? Something like that; she had forgotten the French words. It had been too long.

The bell rang, and a little later Maggie ran to her clutching a reading book. 'Whatever I need to do,' Mom thought, 'I want Maggie's mind to be prepared...'

## • THE EARNINGS PREMIUM OF EDUCATION •

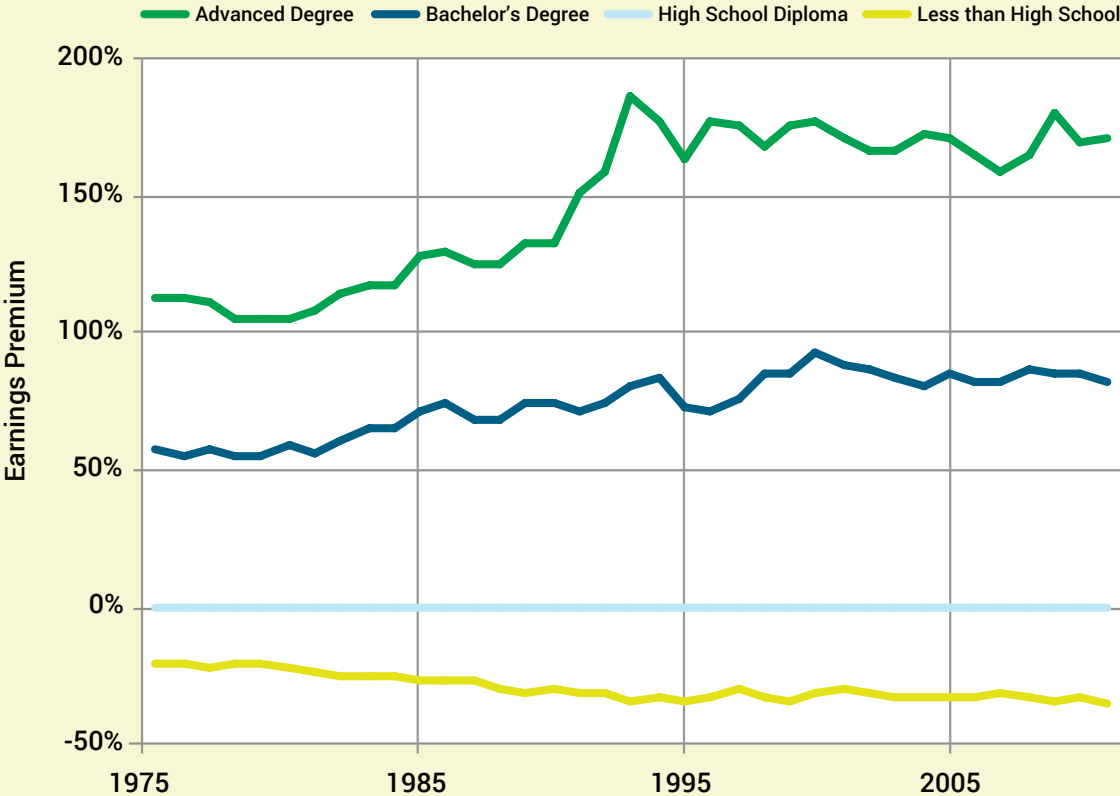
Maggie does not know it yet, but she just started investing in her human capital. Her family expects school to provide their daughter with an edge in life. Phrased in investment terms, Maggie's family expects the increased earnings from education to outweigh the cost of that education. Most families agree with that assumption, and for good reason: a college degree allows the average graduate to earn 50 percent more than their peers with a high school diploma (**Figure 1**) (US Census Bureau 2013).

Some of the earnings premium can be explained by the supply of, and demand for, skills and qualifications. But even in ample supply, engineers command higher wages than high school graduates. There is an important reason for this: employers expect Maggie, with an engineering degree, to contribute more to their profit potential than her peers who have only a high school degree. Her degree presumably makes her more productive. Better still, she may add value to products or services through innovative ideas, methods, and designs. An employer, then, will pay a wage premium for Maggie's efforts proportional to the expected productivity or added value that she brings in; after all, added value and productivity ultimately drive wealth creation and economic growth.<sup>1</sup>

Economists use *return on schooling* (or education) as a measure to tell us how the earnings premium compares to the cost of education. They measure an average rate of return by calculating the discounted earnings premium (net cost) for each additional year invested in education—as if the incremental earnings rewarded by a year of schooling represent a lifetime payment of interest. Indeed, it turns out that education consistently pays off. An additional year of education in the US<sup>2</sup> currently provides an average return of about 7.7 percent for full-time workers (authors' calculation).

• Figure 1 •

### EDUCATIONAL ATTAINMENT AND RELATIVE MEAN EARNINGS OF US WORKERS 18 YEARS AND OVER, PERIOD 1975-2011



Note: Earnings are shown as a premium relative to mean earnings of high school graduates.

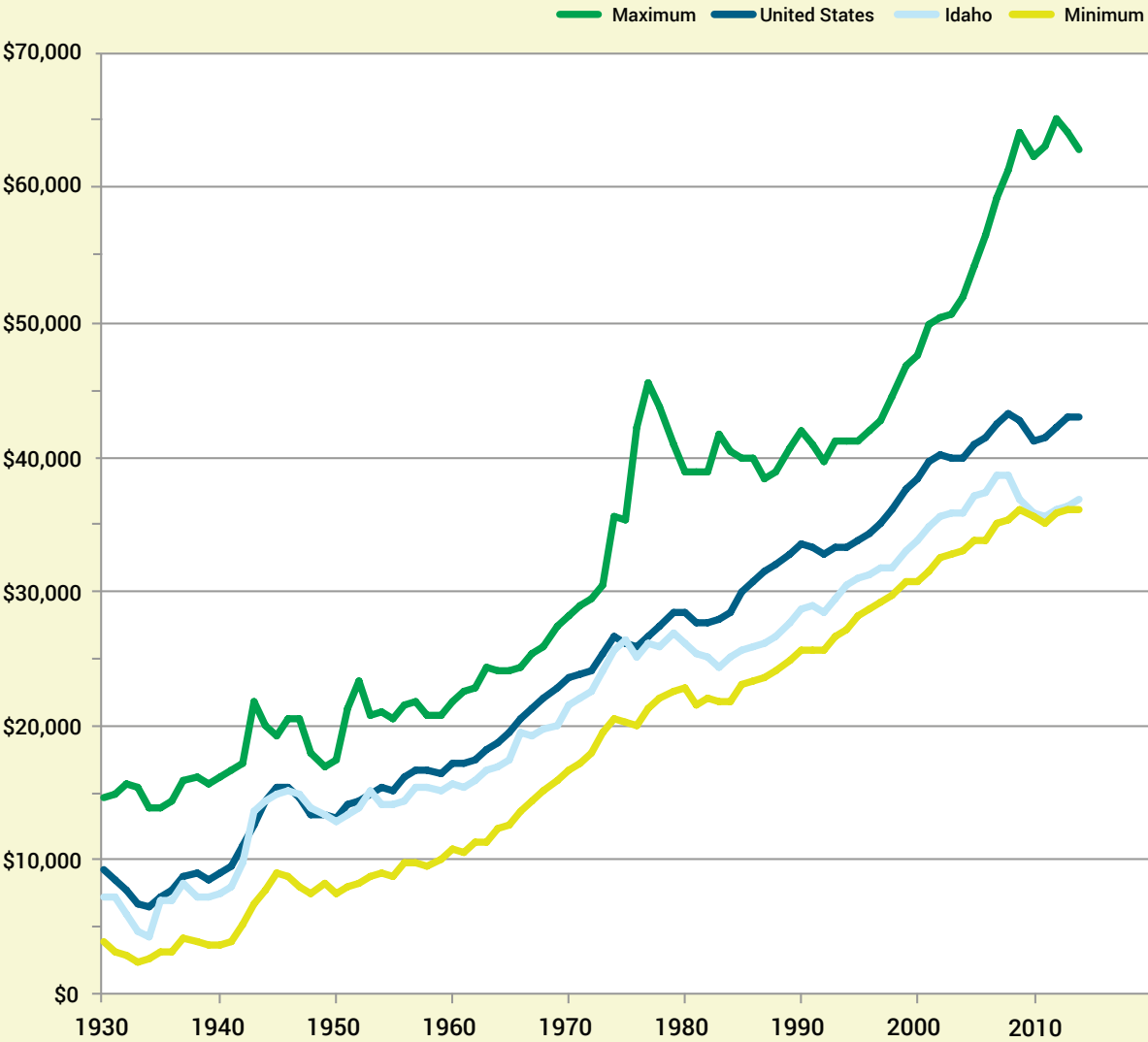
Source: US Census Bureau, 2013.

Since earnings drive the return on education, low average earnings could affect educational attainment decisions and the skills available in the workforce. Insights into Idaho’s economy can shed light on the low-wage and low-educational attainment problems in rural states and help them to better connect education to their economy.

Idaho is an extreme case: per capita income has been deteriorating since 1980. Between 1929 and 1977, the state's per capita income was near the national average. The 1980 recession brought it down; however, unlike the national average, it failed to return to its original growth path. This repeated with the 2008 recession, and in 2014, Idaho's per capita income had become one of the lowest in the nation. (Figure 2).

### INCOME PER CAPITA, 1930-2013

• Figure 2 •



Source: US Bureau of Economic Analysis (BEA)



## • EDUCATIONAL ATTAINMENT IN IDAHO •

**Employees in Idaho are paid less—and in some cases significantly less—than in most other states; the state of Idaho leads the nation in minimum-wage workers and has the second-lowest per capita personal income.**

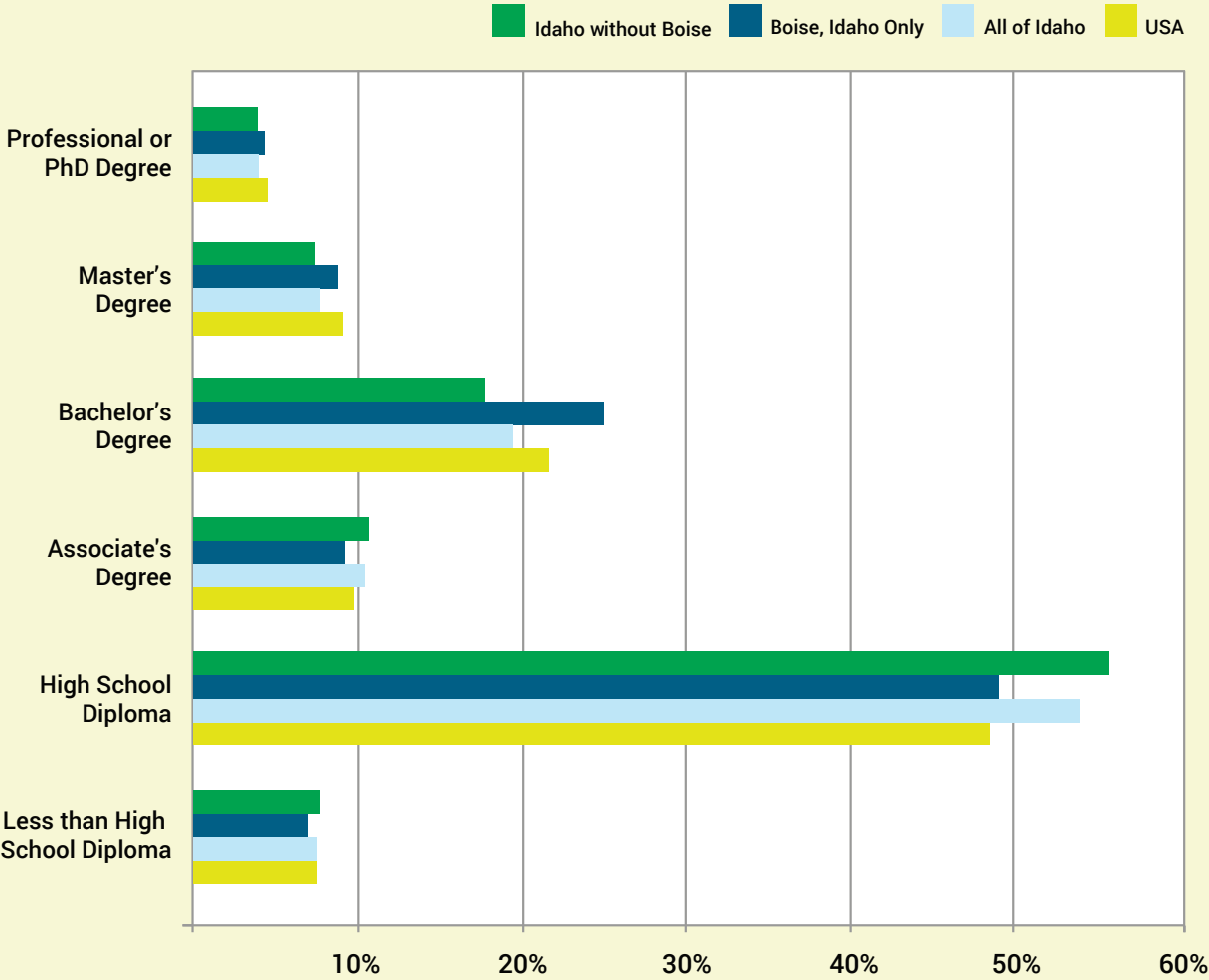
Employees in Idaho are paid less—and in some cases significantly less—than in most other states;<sup>3</sup> the state of Idaho leads the nation in minimum-wage workers and has the second-lowest per capita personal income. Assuming that the relationship between wages and education holds true in Idaho, we can expect the educational attainment of Idahoans to be less than the national average. So let's take a look.

**High School:** Graduation from high school offers a low threshold into continued education. With a dropout rate of more than four percent, Idaho ranked in the bottom half of the nation a decade ago. However, in recent reports it ranks among the top five performers in the nation, with only a 1.6 percent dropout rate (2008–2009). It is too early to tell if this vast improvement may change the future mix of educational attainment in Idaho.

**Higher Education:** Nationwide, Idaho ranks 46th in terms of high school students going on to college (National Center for Education Statistics 2014). Graduation rates of two-year institutions are close to the national average, but graduation rates of four-year public colleges are among the lowest in the nation (an average of 38 percent, but with a very large variance among institutions) (*The Chronicle of Higher Education* 2013). Not surprisingly, self-reported education in Idaho shows a high prevalence of college dropouts and relatively fewer college graduates as compared to the national average (**Figure 3**).

### EDUCATIONAL ATTAINMENT OF INDIVIDUALS AGE 25-64, 2001-2011

• Figure 3 •



Source: American Community Survey (ACS) and US Bureau of Economic Analysis (BEA), Department of Commerce.

We did look if age or gender made a difference, but Idahoans reported an average of one year of higher education regardless of age or gender (a mean and median education of Idahoans of approximately 14 years). There was also no improvement between the reported numbers from 2001 to 2011.

## • RELATIVE PAY IN IDAHO •

Thus far our data tells us that, on average, educational attainment and income of Idahoans is below the national average. How about Idahoans with a college degree? In other words, are earnings of Idahoans with a college degree equivalent to their peers elsewhere in the US?

We ran this analysis using both average and median annual salary income from the *Integrated Public Use Microdata Series (IPUMS)*,<sup>4</sup> which consists of high-precision samples of the American population drawn from the 2000 and 2010 US Census and from the American Community Surveys of 2001–2011.<sup>5</sup> Note that the income for this period is

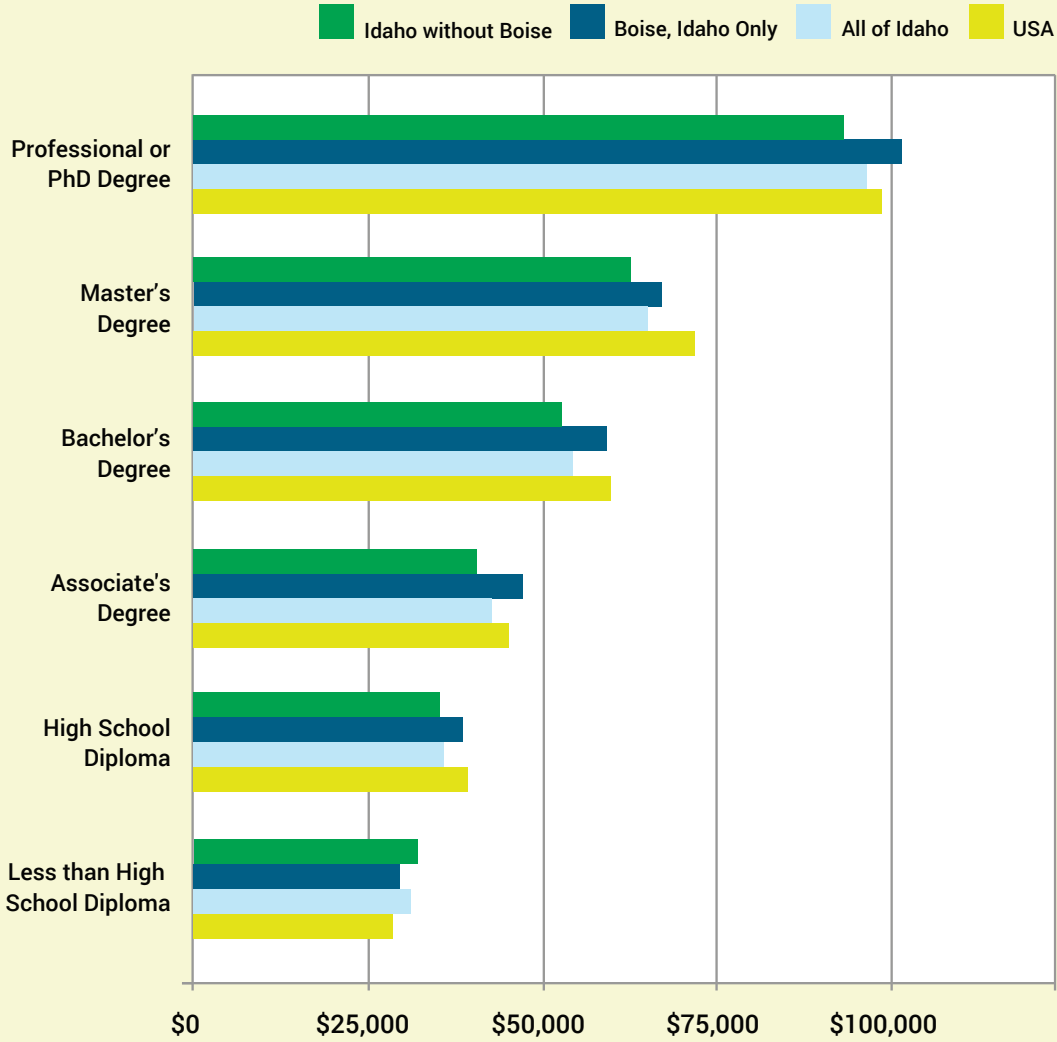
**Idahoans with a college degree earn less than most of their peers elsewhere in the United States**

adjusted for inflation as well as for regional price parities (which take Idaho's reduced cost of living into account). This drill-down look at earned total income by educational attainment shows that Idaho, again, lags behind the national average. In other words: Idahoans with

a college degree earn less than most of their peers elsewhere in the United States (**Figure 4**). For reasons that we cover later in this paper, there is a distinct difference between the Boise metro area and the rest of Idaho (**Figure 4**). Also, workers with lower levels of education (12th grade and below) are paid the same in Idaho as in the nation overall.

• Figure 4 •

### MEDIAN EARNED TOTAL INCOME BY EDUCATIONAL ATTAINMENT INDIVIDUALS AGE 25-65, 2001-2011



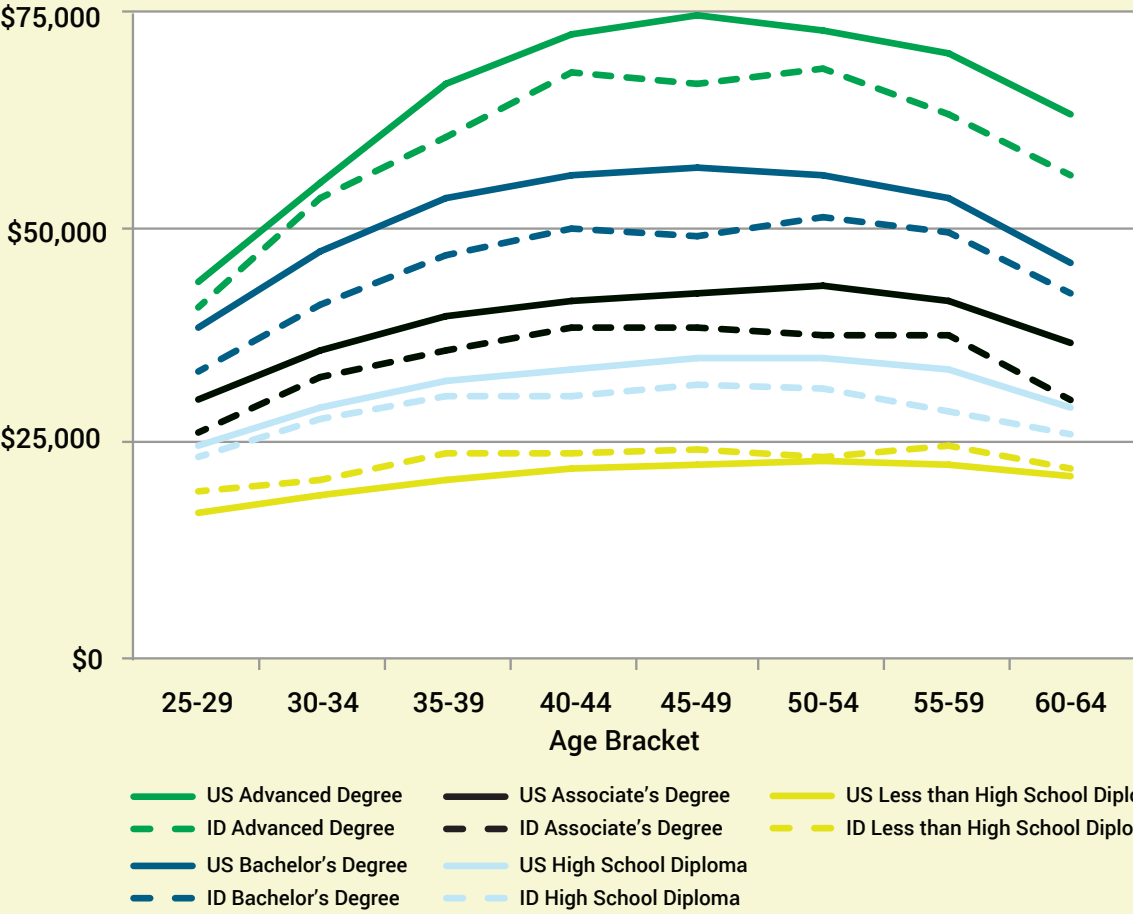
Note: 2010 dollar adjusted by regional price parities.  
Source: American Community Survey (ACS) and US Bureau of Economic Analysis (BEA), Department of Commerce.

By simply graphing the median earned income per level of education, we may ignore the effect of other control variables related to earned incomes. Let's see what happens if we differentiate by work experience.

After controlling for work experience (which is approximated by age), Idaho earned incomes are still below the national average. **Figure 5** shows the average relationship between earned incomes and age for individuals. Note that the earned income gap between Idaho and the nation increases with higher levels of education and experience. Also, lower levels of education have a flatter shape, meaning that experience is then valued less.

• Figure 5 •

**MEDIAN EARNED TOTAL INCOME BY EDUCATIONAL ATTAINMENT AND AGE BRACKET FOR FULL-TIME EMPLOYEE MEN AND WOMEN AGE 25-64, 2001-2011**



Note: 2010 dollar adjusted by RPP.

Source: American Community Survey (ACS) 2001-2011 and US Bureau of Economic Analysis (BEA), Department of Commerce.

## IDAHO EARNED INCOME BY INDUSTRY AND OCCUPATION

Why do Idahoans with a college degree earn less than the national average? The answer may lie with Idaho's industry mix: individuals with the same level of education are paid differently depending on their occupation and industry. For example, an engineer earns more in the computer manufacturing industry than in the educational service industry.

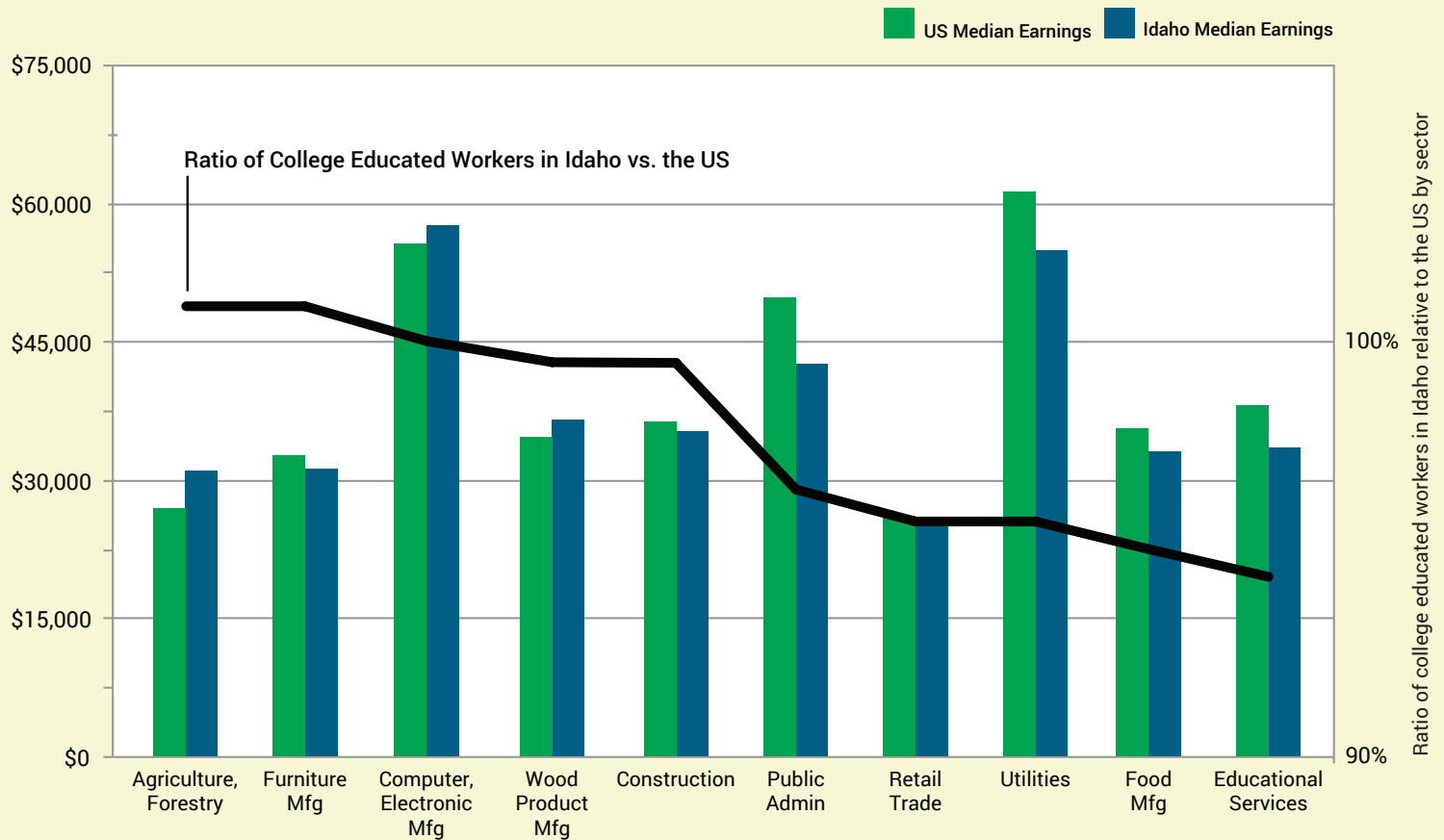
**In only one of the 10 highest-paying sectors is Idaho's educational attainment greater than the US average: the computer sector.**

Similarly, an engineer often earns more as manager than in his functional capacity. In only one of the 10 highest-paying sectors is Idaho's educational attainment greater than the US average: the computer sector. And, yes, on

average the sector pays slightly better than the computer industry in the US at large.<sup>6</sup> In all other high-paying sectors, Idaho finds itself either underrepresented or represented with lower-than-average educational attainment (these are not shown in **Figure 6**).

• Figure 6 •

**MEDIAN EARNED INCOME PER INDUSTRY 2001-2011,  
MEN AND WOMEN AGE 25-64**



Note: Detailed data are available in Table 1 in Appendix.

A different way of looking at industries is by examining state employment figures relative to those of the nation. Sectors with a high comparative employment may represent a competitive advantage for Idaho.<sup>7</sup> The top five Idaho sectors that stand out in relative strength are Agriculture & Forestry, Wood Products, Food Manufacturing, Construction, and (again) Computer & Electronic Manufacturing. These five sectors represent 22.3 percent of employment in Idaho, as compared to 12 percent in the nation. Other than construction, these sectors all show intrinsic strength and represent educational attainment and earned incomes beyond the national average. Compared to the rest of the nation, Idaho's Agriculture & Forestry sector has 5.2 percent more workers with an associate's degree or higher (four percent more with bachelor's degree or higher) and 5.2 percent fewer workers with a high school diploma or lower level of education. Similarly, the Computer & Electronic Manufacturing industry in Idaho has 5.5 percent more workers with an associate's degree or higher level of education than the Computer & Electronic Manufacturing industry in the nation. This higher concentration of educated workers in

**Not only is Idaho's economy biased toward low-paying industries, but workers in high-wage occupations, with noted exceptions, also tend to earn less—and have less education—than their national peers.**

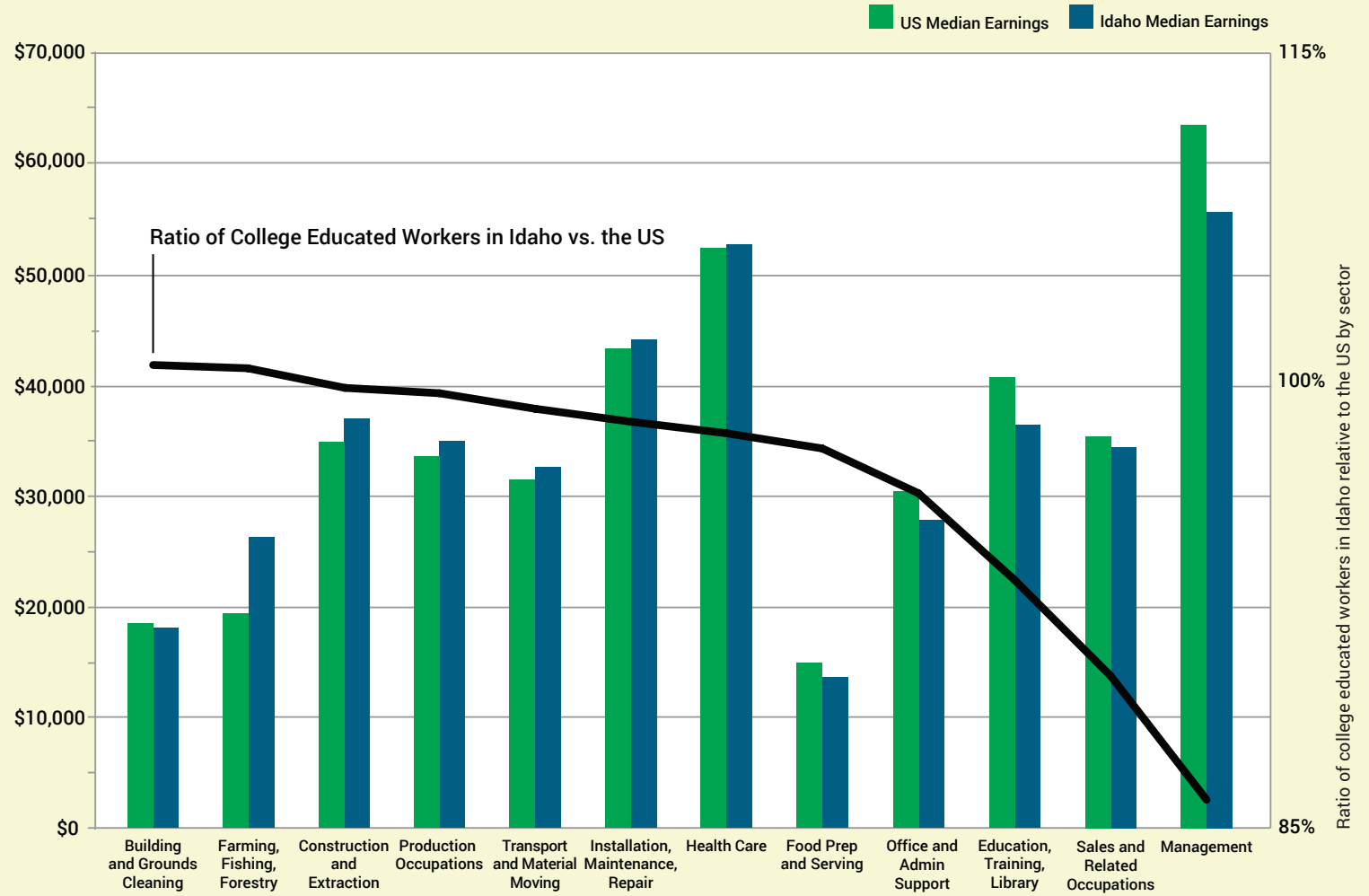
the Agriculture & Forestry and Computer & Electronic Manufacturing sectors may also explain why Idahoans in these industries are paid better than their national peers. Unfortunately, even though relative earned incomes in these industries are higher, all but the computer sector represent lower-wage industries. Any strategies in economic development should therefore focus on value-added activities.

A bias of Idaho's economy toward low-paying industries may be one explanation as to why the aggregated median earned income in the state is lower than that of the nation. How about the types of jobs? **Figure 7** provides an overview of job types, in the same manner as **Figure 6** did for industries. Idahoans in higher-paying occupations such as legal; computer and mathematical; and life, physical, and social science lag significantly in both education and salaries. Exceptions are architects, engineers, and healthcare practitioners (6.9 percent of Idaho occupations). In particular, management positions (13.2 percent of Idaho jobs) rank quite low, with 13 percent fewer college-educated individuals and 16 percent less pay. Thus, not only is Idaho's economy biased toward low-paying industries, but workers in high-wage occupations, with noted exceptions, also tend to earn less—and have less education—than their national peers.



• Figure 7 •

### MEDIAN EARNED INCOME PER OCCUPATION 2001-2011, MEN AND WOMEN AGE 25-64



Note: Detailed data are available in Table 2 in Appendix.

## THE WILD CARD: MIGRATION

Analyzing Idaho's educational attainment and industry mix assumes a closed system, where Idahoans alone suffice the labor market. The truth is, of course, quite different. If workers with a college degree earn less in Idaho, then qualified Idaho graduates may very well look for jobs across the state border (Domina 2006). If a business cannot find

**If workers with a college degree earn less in Idaho, then qualified Idaho graduates may very well look for jobs across the state border**

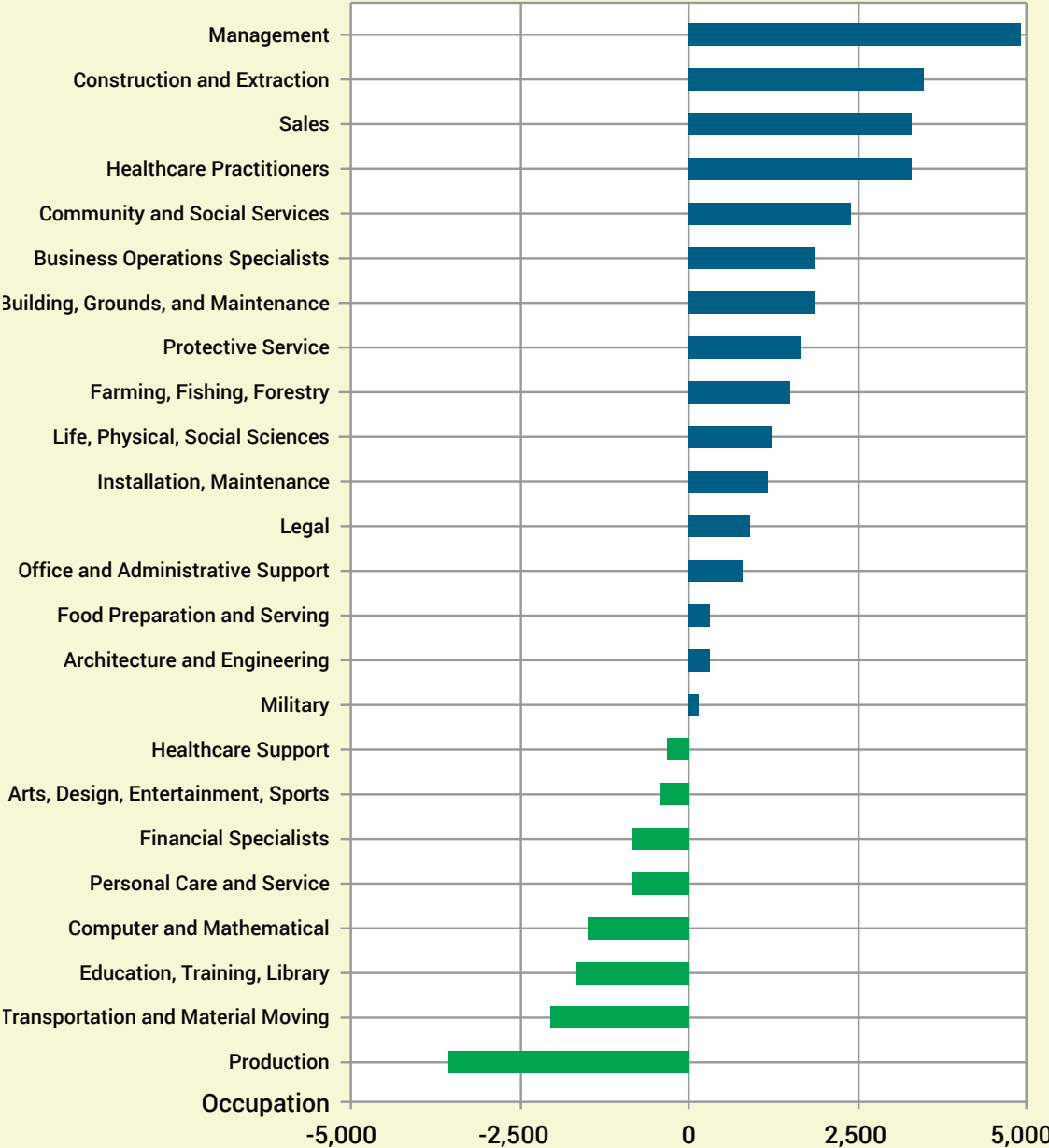
qualified workers in Idaho it may recruit from outside the state. In recent years, Idaho has seen close to 60,000 people age one and older migrate into the state annually, with California, foreign origin (each approx. 10,000 individuals), and Washington State (some 5,000 individuals)

by far the largest sources. Idahoans migrate out of state in much smaller numbers; the total out-migration is around 6,000, with the states of Washington, Utah, and Oregon the largest recipients (US Census Bureau 2014).

The American Community Surveys of 2001–2011 can again be of help in understanding the types of jobs migrants take and the educational level they have attained. **Figure 8** looks at the contribution of net migration at the occupational level. This figure only shows individuals between 25 and 64 years of age. It is interesting to see that the third-largest in-migration of workers is at the management level—an employment rank plagued by the largest educational deficiency and with significantly lower pay in Idaho than outside the state's borders. Unfortunately, it is not possible to assess whether hiring out-of-state employees to fill management ranks is an attempt by businesses to strengthen their educational base or merely a result of opportunistic hiring.

• Figure 8 •

### MIGRANT WORKERS PER OCCUPATION, MEN AND WOMEN AGE 25-64 FOR THE PERIOD OF 2001-2011



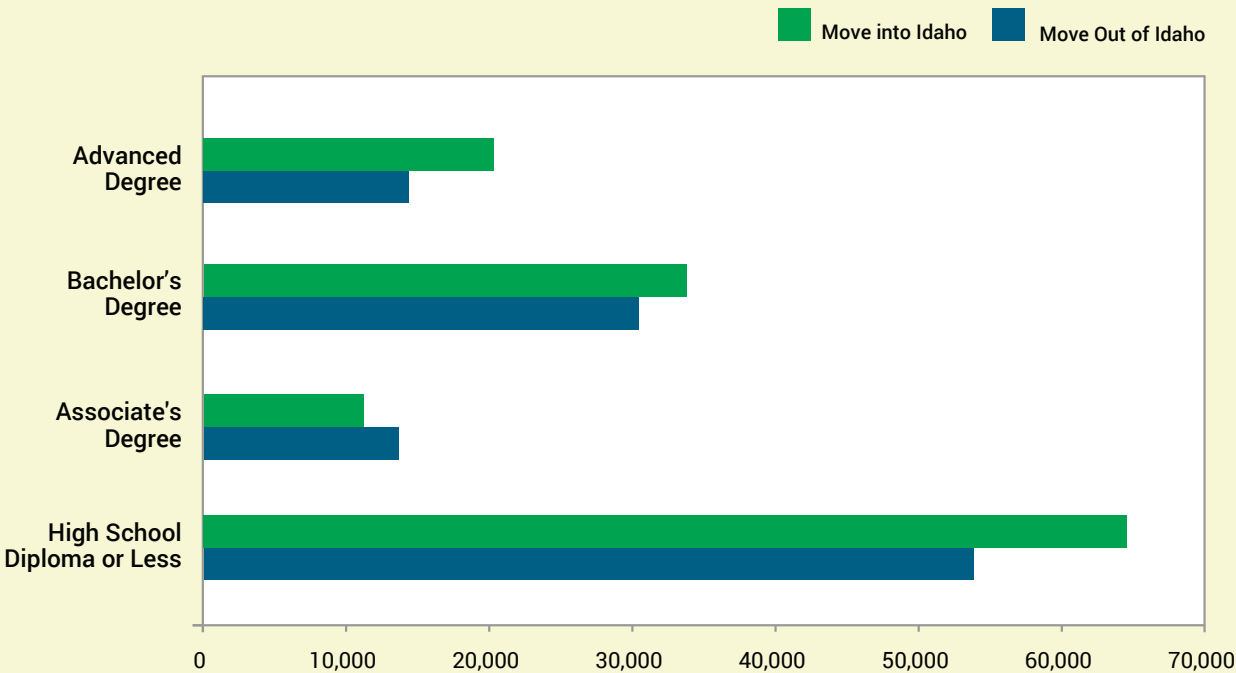
Note: Migrant workers are defined as those who move in and out of the state one year previous to the survey date.

Source: American Community Survey (ACS) and US Bureau of Economic Analysis (BEA), Department of Commerce

**Figure 9** shows the educational attainment of migrant workers moving in and out of Idaho in the decade spanning 2001 to 2011. There is a slight net in-migration (in-migration minus out-migration) of college-educated workers into Idaho which is not statistically significant. However, the in-migration of workers with a high school diploma or less is much higher than the out-migration. Thus, the net increase in Idaho’s population engendered by migration is offset by a lower level of schooling.

• Figure 9 •

### EDUCATIONAL ATTAINMENT OF MIGRANT WORKERS, MEN AND WOMEN AGE 25-64 FOR THE PERIOD OF 2001-2011

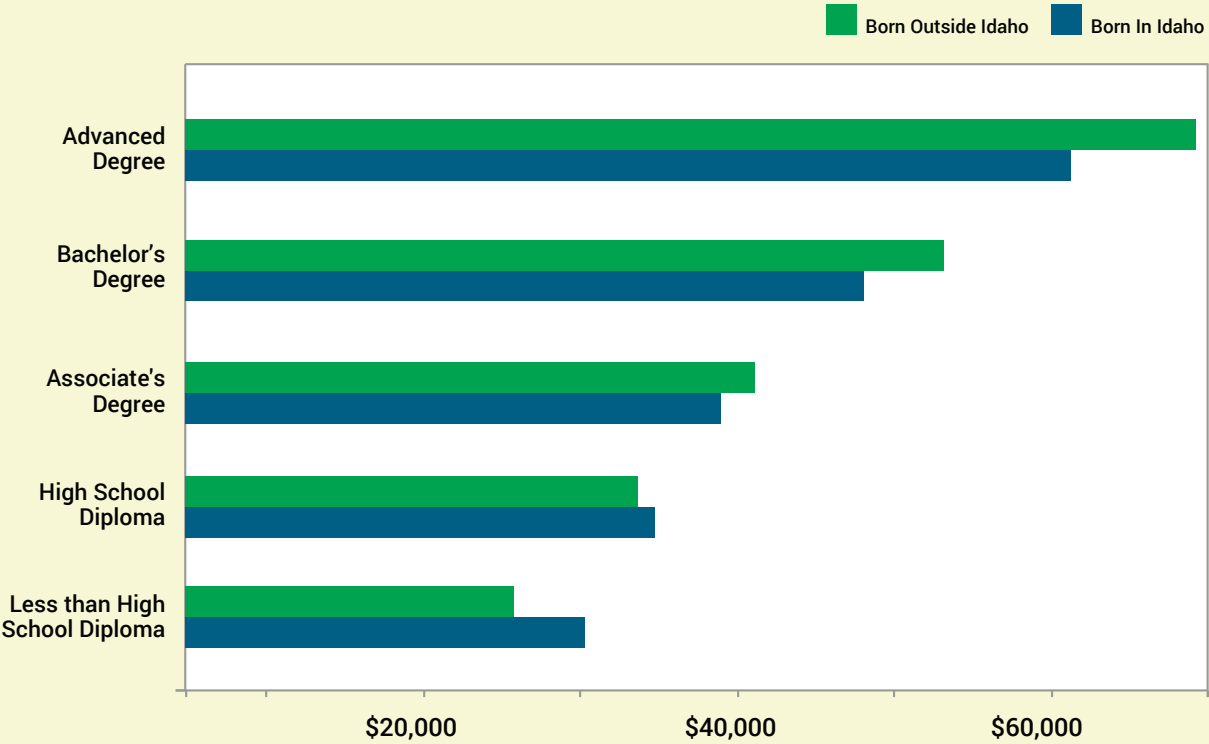


Source: American Community Survey (ACS) and US Bureau of Economic Analysis (BEA), Department of Commerce.

How does Idaho pay its migrants? **Figure 10** shows the median earned income per educational level. Among workers who have a high school diploma, Idaho natives are paid better than migrant workers, but the opposite is true for degreed workers.

• Figure 10 •

### EARNINGS OF NATIVE IDAHOANS VERSUS MIGRANTS BY EDUCATIONAL ATTAINMENT



*Note:* Migrant workers are defined as those who move in and out of the state one year previous to the survey date.

*Source:* American Community Survey (ACS) and US Bureau of Economic Analysis (BEA), Department of Commerce.

## • IDAHO'S RETURN ON EDUCATION •

As we have seen, earnings are correlated with several variables, some of which are correlated with each other. Thus, to obtain a meaningful estimate of the effect of education on earnings, we need to use regression methods. Econometric regression allows us to obtain an accurate estimate of the influence of education (an independent variable) on earnings (the dependent variable), removing the simultaneous influence of other independent variables (such as age, industry, occupation, etc.) on earnings (Kennedy 1998).

Most studies on returns on education use Mincer's (1974) human capital earning function (Card 1999) or some variation of it. Mincer's model establishes that the logarithm of individual earnings in a given time period is a function of education, experience, and other observable characteristics that affect earnings.<sup>8</sup> The rate of return on education shows how much an additional year of schooling increases the total earned income of an individual. The rate of return on education for full-time workers in Idaho is 7.3

**Full-time workers in Idaho receive lower returns on their years of schooling than the average full-time worker in the United States.**

percent per year, which is slightly below the national average of 7.7 percent per year. This difference is small but still statistically significant. Hence, full-time workers in Idaho receive lower returns on their years of schooling than the average full-time worker in the United States.

**The total earned income of full-time workers in Idaho is 6.8 percent lower than the national average. The difference in years of schooling accounts for about 17 percent of the total earned income gap between Idaho and the United States.**

Our econometric results<sup>9</sup> show that the total earned income of full-time workers in Idaho is 6.8 percent lower than the national average. The difference in years of schooling accounts for about 17 percent of the total earned income gap between Idaho and the United States. If the average Idaho full-time worker had as many years of education as the average US full-time worker, his or her average earned income would increase by 1.2 percent. Differences in the industry mix account for about 30 percent of the total earned

income gap between Idaho and the United States. In only two industries (Wood Product Manufacturing and Agriculture & Forestry) are Idaho's full-time workers paid above the US average, whereas in 12 of the 29 industry groups they are paid below the national average. Moreover, Idaho has a predominance of low-pay and low-skill industries.

In most industries, the rate of return on education is not statistically different for a full-time worker in Idaho versus the nation as a whole; exceptions include workers in financial, educational, and information services. When we look at the educational endowment of an industry, i.e., the years of schooling in that industry, there is a significant difference in 13 of 29 total industry groups. In only four of these industries do full-time workers in Idaho have more years of schooling than their US peers: Agriculture & Forestry; Wood Product Manufacturing; Construction; and Computer & Electronic Manufacturing. Within these four industries, only the computer industry has a higher return on education (8.7 percent per year); the other three are at the bottom of the list (between 4.3 percent and 4.7 percent per year).

Let's take a more detailed look at Agriculture & Forestry. It is the industry with the lowest return on education, but remains important to Idaho's economy. While at the national level Agriculture & Forestry employs 1.6 percent of full-time workers, Idaho's employment rate for the industry is 6.2 percent. Even though the rate of return on education is not significantly different between Idaho and the United States, the average full-time agricultural worker in Idaho is more educated. Each additional year of education increases the earned income of full-time workers by 4.3 percent, which explains 6.8 percent of the positive earning income gap between full-time workers in agriculture in Idaho and their national peers (Table 1 in the appendix).

The question that emerges from these results is why Idaho's workforce in the Agriculture & Forestry sector is so much more educated despite the low return on education in the sector. The answer to this question is out of the scope of this paper, but a plausible

explanation is that Idaho's competitive advantage in this sector invites reinvestment and continued education, perhaps compounded by the absence of other industries in rural areas and the substantial rurality of the state.

The computer industry is also important to Idaho, but differs from Agriculture & Forestry in that it has one of the highest rates of return on education. This industry employs 3.2 percent of full-time workers in the state compared to a national average of only 1.8 percent. One year of additional education earns a full-time worker in this industry 8.7 percent more pay. As with agriculture, there is no significant difference in the return on education between Idaho and the nation, but Idahoans in this industry are again more educated than their US peers. In this case, however, the difference does not translate necessarily into a statically significant higher earned income.<sup>10</sup>

Among the nine industries in which full-time workers in Idaho have fewer years of schooling than their US peers, the Health Care & Social Assistance sector has the highest rate of return on education (9.8 percent per year). It also has the highest rate of return on education among all 29 industries in the state. Even though there is no significant statistical difference in the return on education between Idaho and the United States Idahoans who work in this industry earn 5.2 percent less than their peers in the nation as a whole. They are also less educated than their peers, which explains 23 percent of the income gap. If Idahoans in this industry had as many years of education as their national peers, their earned income would actually be 1.2 percent higher. Finally, Idaho's Health Care & Social Assistance sector has a lower rate of full-time employment (two percent lower than in the nation overall), which may explain the remaining portion of the income gap. Given the low earning potential in this industry, it may simply have difficulty recruiting full-time workers.

Within Idaho, educational attainment accounts for half of the 12 percent earned income gap between the Boise metropolitan area and the rest of the state; the industry mix and type of occupation account for another third of the gap. With no statistical difference between the return on education in Boise and the rest of Idaho, increasing the years of schooling for the rest of the state to the level of Boise suggests it would raise the rest of Idaho's earned income by 6.6 percent (Bauer, Schweitzer, and Shane 2006). We will come back to this issue in subsequent sections of this paper.

Finally, the rate of return on education for full-time male workers in Idaho is 6.8 percent, while for women it is 7.7 percent. Although statistically significant, education accounts for little of that difference, which is mostly attributed to unobserved characteristics.



## • EDUCATION AND INNOVATION •

### LESSONS FROM IDAHO'S DEMOGRAPHICS

Thus far, we have answered questions about the relationship between education and income through data. We found that the average Idaho worker, when compared to the national workforce, has a lower-than-average education. We also found that Idahoans generally earn lower wages than their peers with similar education across the state border, and that Idaho's economy is concentrated in lower-wage industries. There are notable exceptions, however: Computer & Electronics Manufacturing, one of the highest-paying industries in the nation, is well represented in Idaho and pays respectable wages, even in national terms. There are also exceptions in the lowest-paying industry: jobs in Agriculture & Forestry are staffed by workers with better-than-average education and earn wages above the national average.

**Increasing investment in advanced education at the state level would therefore seem a logical step; without better opportunities for Idaho graduates, however, that strategy may merely increase the export of talented Idahoans to bordering states—much like the net in-migration of workers with lower education that Idaho currently experiences.**

What can we learn from this? An encouraging lesson is that a sparsely populated state like Idaho can still compete with the nation's mega-regions in certain sectors. A more troubling finding is that Idaho's economy is increasingly biased toward lower-wage industries and, with noted exceptions,

fueled by a workforce with lower-than-average education. Increasing investment in advanced education at the state level would therefore seem a logical step; without better opportunities for Idaho graduates, however, that strategy may merely increase the export of talented Idahoans to bordering states—much like the net in-migration of workers with lower education that Idaho currently experiences. This chicken-and-egg problem in advancing a local economy can be referred to as a low-skill equilibrium trap (Redding 1996; Scicchitano 2010); that is, a lack of talent or skills prevents advancement in economic activity, but investing in skills and talent without appropriate economic activity is difficult to justify. In the following section, we will leave the relative objectivity of data behind and explore economic theory and research as we consider how to escape this low-wage equilibrium trap.

## THE INNOVATION ENGINE

Whereas education and earned income are important indicators of economic *potential*, actual economic advancement is ultimately generated by increased productivity. The overriding driver in increasing productivity, and therefore in economic growth, is innovation—doing things smarter; going from the spade to the plow, the washtub to the automatic washer; permitting online; reducing waste. **Education provides a foundation of skills and knowledge that facilitate this pursuit of innovation.** A recent study from Berger and Fisher placed worker education and compensation within the framework of productivity (2013). The authors argue that productivity has increased more in states that have greater growth in the educational attainment of their workforce, positively correlating education with productivity.

Traditionally, economics focused on capital investment as the driver for increases in productivity. Investment in equipment and design would promote economies of scale, akin to upgrading from spade to plow. Education, in this approach, had merely a supporting role as a source of skills and knowledge. That focus on financial capital as driver of productivity never satisfactorily explained why, throughout history, some regions or nations became more wealthy than others (Landes 1998).

New insights since the 1990s now point to innovation as an equally important driver, perhaps more so. Regions where need, opportunity, and local know-how reinforce each other, such as Silicon Valley, have sparked tremendous economic growth. Frederick Terman, provost, professor, and engineering dean at Stanford University in the 1950s and 1960s, is credited as the father of Silicon Valley because he was a major influence on cooperation and information exchange that still defines the region. He accomplished

this by encouraging science and engineering departments to work together, linking them to local firms, and focusing research on the needs of industry (Wadhwa 2013). These regions resemble “ecosystems” of innovation that steadily grow into strong, interconnected economies leveraged through induced spending and investments from local employees, local government, and the local service sector. They demonstrate three distinct feedback loops that dramatically increase the pace of innovation (Romer 1990; Krugman 1997):

- Industry linkages, where the ideas or problems of one company spur innovation with suppliers or users
- Research linkages, where knowledge centers can prompt ideas, inspire entrepreneurship, and learn from the results of industry experience
- Spatial concentration, where geographic proximity allows for synergy and spillover benefits

Idaho also has strong examples of such ecosystems:

- The agriculture sector may be the oldest example in Idaho, kick-started by Simplot’s inventions in food processing—such as the freeze-drying of sliced potatoes that enabled the growth of the fast-food giant McDonald’s.
- The dairy industry is a more recent example. When yogurt maker Chobani built a \$450 million plant in Twin Falls, Idaho in 2012, it purposefully leveraged the strong dairy sector in the surrounding region. The city was willing to spend \$6.5 million to upgrade its wastewater treatment facility, realizing that the investment would be paid back—maybe not through direct impact on the city, but certainly through induced impact from growth of the regional economy (Saunders 2012). Less well known, but perhaps equally important, was the quick response from the local College of Southern Idaho in collaborating with Chobani to create supportive job training. Further, the University of Idaho is researching several issues that affect the dairy industry, like turning its sizeable waste-stream (manure) into an economic input. Similar initiatives are emerging in Idaho’s panhandle, where the local aerospace industry in Sandpoint is discussing a potential alliance with the Ponderay Center–North Idaho College through the Idaho PTECH Network.

- Idaho's successful computer industry is concentrated in the Boise metro area, started and dominated by Micron and Hewlett-Packard. The region is now host to more than a thousand high-tech companies, the majority employing fewer than 10 people (Mayer 2008). Until very recently, Boise was the lone remaining metropolitan area in the United States without a community college. The metro area represents more than one-third of the Idaho population in two counties but had been unable to convince a supermajority of voters (required under Idaho law) to support the formation of a tax district to fund the college. Local chambers of commerce, together with businesses like Micron, recognized the tremendous value for the local economy and teamed up with the counties in a campaign that got the supportive supermajority vote passed in 2007.

## URBAN VERSUS RURAL ECONOMIES

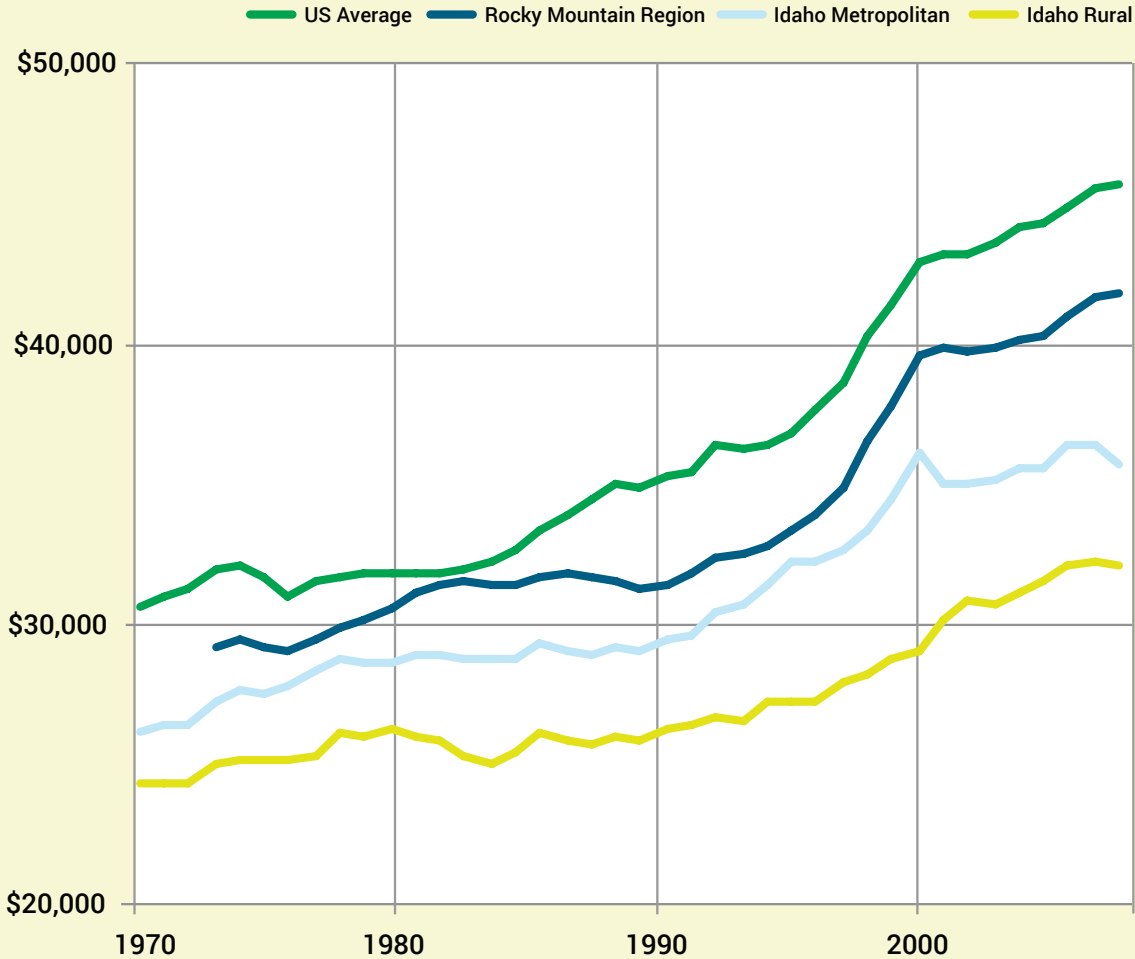
**If innovation clusters rely on mutually reinforcing links between education, research, and industry within close proximity, then geographic concentration is an important factor. This suggests that the rural US is at a disadvantage.**

If innovation clusters rely on mutually reinforcing links between education, research, and industry within close proximity, then geographic concentration is an important factor. This suggests that the rural US is at a disadvantage. The lower earnings in rural economies (Figure 11) indeed suggest that rural areas are generally less productive. Economic models seem to support the idea that urbanization and its inherent economies of scale have the advantage (Bettencourt et al. 2007). These

models depict urban economies as economic "black holes," accelerating at the expense of their surrounding rural economies and effectively transferring wealth and talent from rural to urban areas.

### AVERAGE WAGES IN RURAL STATES LAG BEHIND US AVERAGES

• Figure 11 •



Note: Wages in 2008 dollars  
Source: US Census

Many rural places have become ghost towns in the last 40 years. Family farms and Main Street mom-and-pop stores have surrendered to the economy-of-scale advantages of mega-farms and malls. Also, automation and outsourcing have decimated the employment base of rural towns, hitting them so hard that many never recovered (Carr and Kefalas 2009). What happens now is that rural schools encourage their highly diligent students

**The loss of many bright young people—compounded by the rather modest educational attainment of those who remain—challenges the viability of rural towns, with fewer taxpayers, consumers, and workers to keep their economy going.**

to leave for college, consequently trapping the more modestly educated young workers close to home (Carr and Kefalas 2009). The loss of many bright young people—compounded by the rather modest educational attainment of those who remain—challenges the viability of rural towns, with fewer taxpayers,

consumers, and workers to keep their economy going. Idaho communities that experienced the boom-and-bust cycles of the mining and logging industries paint very similar pictures (Sachs and Warner 2001; Hill 2012; Carr and Kefalas 2009).

So how can rural America hold onto its people and stop wealth erosion? Harvard economist Edward Glaeser looked at two centuries of the rise and death of American communities and found that “a region’s stock of creative potential is at the heart of this process of renewal... older cities with a substantial stock of well-educated workers, like Boston, have time and again managed to shake off decline and reinvent themselves” (2009).

Rural areas, of course, don’t have a stock of educated workers like Boston, but education is also key to making rural regions more economically resilient. A number of community economists have looked for the positive exceptions among rural regions: communities that are at odds with the notion that rural economies are at a disadvantage.<sup>11</sup> Isserman, Feser, and Warren (2009) looked at 300 rural counties in the United States that are more prosperous than the nation and concluded that “educational attainment sharply differentiates prosperous from other rural places.” Their study contradicted conventional wisdom (for example, that climate and distances to cities and major airports are the important drivers) and found jobs, education, and a more distributed income to be the strong, intertwined correlates of rural prosperity.

The future of rural towns rests in the hands of the young people who stay and in the hands of those who, after getting a degree, decide to return. Rural education should devote resources to ensuring that both those who stay and those who leave are prepared to lead and thrive in today’s economy, while officials should generate the right conditions for those who want to return.

## ECONOMIC GARDENING AND EDUCATION

The traditional tactic of recruiting medium-sized and large-sized companies to small towns through the use of incentives and tax breaks is usually not effective. It may work when companies can move closer to the source of their raw material and thereby reduce their costs, or when there is a qualified workforce in the area. The relocation of Chobani to Twin Falls is a good example.

Another approach, with very limited success thus far, is one in which researchers and consultants work with regions to identify strong local industries that can induce top-down geographic clusters of interconnected industries and educational institutions (Porter 2000). In practice, this becomes an economic development approach that co-locates industrial parks with research centers or universities. The state of Idaho has worked with Harvard Business School professor Michael Porter to explore this type of development, and Porter's 2012 report on Idaho is available online.<sup>12</sup>

The lack of success in business recruitment and top-down geographic cluster creation has pushed many towns to “economic gardening” strategies, which have proved more effective in rural areas. The idea behind economic gardening is to empower residents to improve and sustain their communities. A central goal of the strategy is to keep the best talent in the community, or at least bring them back once they finish their education (Carr and Kefalas 2009).

Education, in fact, plays a central role in encouraging entrepreneurship and collaboration between adults and youths. Fostering entrepreneurship by training and investing in young people creates opportunities for them to stay in or return to the community. This process is enhanced by investing in the right infrastructure—building cutting-edge digital technology—

**High school curricula should be modeled to funnel youth into vocational and professional training that meets the needs of local employers. The traditional low-skill blue-collar jobs are not broadly available anymore; youths need to be proficient in technology.**

to reduce the costs of conducting business far from urban cities. Youths well prepared in business and computer technology, and with access to digital technology, can help rebuild rural communities through the creation of new businesses and teleworking.

High school curricula should be modeled to funnel youth into vocational and professional training that meets the needs of local employers. The traditional low-skill blue-collar jobs are not broadly available anymore; youths need to be proficient in technology. Rather than assuming that those who are not college bound will get jobs on their own, one option to support those staying in the community is to model high school curricula after community college programs that cover accounting, business, computer science, nursing, etc., and thus help fill the holes in the rural labor force (Carr and Kefalas 2009).

The following place-based initiatives are familiar to the authors:

- Residents of McCall in Valley County, Idaho, started a privately funded initiative in 2013 to offer advanced education for place-based topics like hospitality and natural science. They teamed up with the local economic development council to support a new business initiative aimed at stimulating local entrepreneurship and sustainable economic diversification.
- Mike Mehan, the founder of BikeTronics (a manufacturer of high-end motorcycle electronics in Moscow, Idaho), set out to engage youth in innovation and entrepreneurship by acquainting them with enabling equipment such as 3-D printers and laser cutters. The initiative grew into an incubator of sorts in nearby Lewiston in 2011.
- Kendra Kenyon, president of the Idaho Council of Governments, experimented with an idea called “building it forward” in which high school students used the concepts of business researcher Jim Collins in their senior project, working with local business mentors to explore place-based trades and entrepreneurship (Collins 2001).
- The Nez Perce tribe has considered using some of its casino profits to fund ideas for sustainable, place-based activities from high school graduates.

These types of activities also encourage the growth of small, local economic “ecosystems”—connecting supplier linkages, local assets, knowledge centers, and entrepreneurial initiatives, which in turn may grow into more a more significant asset base for the region.



## EDUCATION AND LIVABLE COMMUNITIES: ATTRACTING THE “CREATIVE CLASS”

A 2005 Harvard Business Review publication launched Richard Florida’s now widely cited concept of the “creative class” (Florida and Goodnight 2005). His concept still generates debate, but the underlying message rings true: In order to innovate and be economically successful, communities and companies need creative people. Find out what creative people look for, and remake your communities to attract them.

“The creative class thesis prioritizes the building and marketing of amenities to attract the educated entrepreneurial members of the creative class” (Carr and Kefalas 2009). The concept is to attract people with human capital (education and skills) because higher levels of human capital are associated with higher levels of income, increased productivity, and economic growth. The City of Boise, for example, recognizes that its economy thrives only if its Computer & Electronics Manufacturing sector retains and attracts creative talent; accordingly, it has made tremendous strides to transform itself. Mayor David Dieter recently communicated the city’s 2013 vision of “becoming the most livable city in the country.”<sup>13</sup>

**Developing local amenities alone will not persuade significant numbers of professionals to leave behind the economic benefits of metro areas and relocate to small rural towns.**

Developing local amenities alone will not persuade significant numbers of professionals to leave behind the economic benefits of metro areas and relocate to small rural towns. Investing in technology—especially communications technology—is essential to improving quality of life

and helping local entrepreneurial opportunities grow. Greater livability, characterized by better access to amenities and the addition of institutional magnets such as community colleges, draws entrepreneurs. A particular effort should be made to attract college-educated workers with experience rather than newly minted college graduates, as their residency preference is strongly influenced by the well-being of their families.

The concept of livability changes over time, which prompts a discussion about the steps rural towns must take to be competitive. A community modeled after auto-centric baby boomers may lose its edge over time simply because the millennials<sup>14</sup> about to displace them tend to prefer walkable amenities and biking. Urban design schools increasingly recognize that vibrant towns and regions are also “ecosystems,” and follow the very principles of leverage that we discussed for economic growth.

How do communities update and reinvent themselves? Template solutions that function well in cities rarely work as designed in rural places. Without social and political capital to facilitate constructive dialogue, addressing a community's livability can easily become a generational divide where walkability and biking become associated with climate-change activism instead of quality of life. By social and political capital, we mean the intangible ability of a community to generate and execute place-based initiatives while avoiding political stalemate. It is the lubricant for accepting diversity, considering differing opinions, and inching forward with the majority of decisions and issues. The social and political capital of a community allows it to be responsive and is highly correlated with the educational attainment of its community members (Schuller et al. 2004; Fukuyama 1995; Sidorkin 2007).

A place-based initiative formulated to increase livability is the Community Review Program of the Idaho Rural Partnership. This nonprofit connects diverse public and private Idaho resources into innovative collaborations to strengthen rural Idaho.<sup>15</sup> On invitation from a community, it deploys a team of volunteer professionals to work with the local populace for three days to audit for opportunities in community and economic development. The implementation of audit suggestions varies with the community's social and political capital, but several communities look back on the audit as a turning point from which they developed a vision for their future. Another such enterprise, recently adopted by the Idaho Department of Commerce, is the Main Street Program—an educational and collaborative tool to promote livability and assist rural towns in avoiding further erosion of their downtowns, talent, and populations.

## COMMUNITY-INSPIRED INNOVATION

**Our regulatory systems safeguard our communities by asking us to think before we act. The unintended outcome, however, is often one of risk aversion: we forego innovation in favor of proven solutions with decades of history, which have grown into affordable, one-size-fits-all solutions through economies of scale.**

Our regulatory systems safeguard our communities by asking us to think before we act. The unintended outcome, however, is often one of risk aversion: we forego innovation in favor of proven solutions with decades of history, which have grown into affordable, one-size-fits-all solutions through economies of scale. Guidelines for community budgets inspire much of the same:

the rules, though designed to protect the taxpayer and stimulate competition, too often steer the outcome toward lower, cash-out-of-pocket solutions at the expense of innovation, long-term economic growth, and place-based entrepreneurship. Moreover, the lower acquisition cost is often dwarfed by the higher (unbudgeted) maintenance and personnel costs over the service life of the purchase.

What communities need are decision makers who favor innovation. A responsive government can listen to its business community, link to educational and support organizations at the regional and state levels, and, foremost, create a fair and predictable working environment for businesses and organizations. This, however, requires an understanding of what is feasible—territory wherein communities, research and education, and industry must link to get it right. In this process, “communities need to equalize their investment across different groups of young people and to tie education and training for stayers” closer to the demands and needs of industries (Carr and Kefalas 2009). It also requires increased cooperation among institutions of higher education to enhance resources and eliminate duplication.

The City of Twin Falls offers an example. Among several upgrades to its wastewater infrastructure, Twin Falls faced a \$5 million capital investment to reduce its pollutant discharge into the Snake River (Fields 2012). This mandate was known since 2000, but was not to take effect until 2014. The city's staff used the long lead time to its advantage and worked with the Idaho Department of Environmental Quality (DEQ) and the US Environmental Protection Agency on alternative solutions. They eventually offset the discharge load by constructing wetlands near the river, thus reducing equivalent pollution from sources like agriculture and storm water. This investment of less than \$1 million had the additional benefit of creating a valuable wildlife habitat and green space. Idaho DEQ, initially unfamiliar with constructed wetlands, had expressed concerns to other small communities that wanted to use them to replace aging wastewater lagoon systems. The less critical application in Twin Falls may therefore serve as a pilot project that opens the door to more such innovative efforts. The lesson of Twin Falls, and of other successful rule-setting programs such as the phase-out of leaded gasoline and Freon®, is that rule setting—combined with economic incentives and a reasonable timeline—turns businesses and even government into innovators.

Idaho's construction industry may be a good illustration of how far this approach can reach. We have seen that the construction sector is the third-largest employer in the state (larger than the national average), but with weak wages and educational attainment (both

two percent under the national average). By periodically setting increased performance standards for construction output in collaboration with local builders, architects, colleges, and universities, the state can drive innovation, educational attainment, and ultimately wages and profits. These standards can be general, for instance in energy performance, urban design aspects, or demolition parameters. They can also be place-based, solving regional issues and stimulating localized expertise. The increased acquisition cost to the end user would again pay for itself through offset by the improved lifecycle cost.

Idaho's Blaine and Valley counties took some steps in this direction. These counties in the intermountain region long struggled to shield homebuyers from opportunistic contractors and architects unfamiliar with the extreme snow conditions in the mountains. Both counties instituted a simple snow-load ordinance that raised the bar for all industry participants, favoring knowledgeable builders; the improved building stock paid for itself through long-term (lifecycle) cost savings.

## INTEGRATING EDUCATION

Every investment can be a potential spark for innovation, education, and local economic growth if a community is willing to move beyond the status quo and reinforce the connections between education, community assets, and industry. A simple road-improvement project can become an opportunity to experiment with new materials, improve wastewater management or reduce waste, implement walking- and bike-friendly amenities, and reduce tax dollars committed to ongoing maintenance. Yet for local governments and businesses to live up to this kind of challenge and inspire innovative solutions, they need access to ideas and know-how: they must become start-up communities, where creative ideas build on existing ideas and solutions build on solutions.

The accepted way to think about education is that it takes place in our schools, with the ultimate outcome defined by standardized test scores, graduation, or a degree. This paradigm drives rural schools to focus on their best and brightest, only to see them leave. It limits education to a finite period of our lives, isolated from our economy and community other than to supply us with skills and literacy. Creativity, our source for innovation and growth, seems to become less important with every standardized test we add.

**Maybe we should think of education as a community-wide process, where place-based education nurtures a local understanding and information flow that allows local organizations and government to better learn and adapt.**

Perhaps it is time for a paradigm change. Maybe we should think of education as a community-wide process, where place-based education nurtures a local understanding and information flow that allows local organizations and government to better learn and adapt.

Only then will communities acquire the responsiveness and resilience to survive in our era of constant change.

## • BIBLIOGRAPHY •

- Bauer, Paul W., Mark E. Schweitzer, and Scott Shane. 2006. State Growth Empirics: *The Long-Run Determinants of State Income Growth*. Working paper 06-06. Federal Reserve Bank of Cleveland. [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=1022341](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1022341).
- Berger, Noah, and Peter Fisher. 2013. *A Well-Educated Workforce Is Key to State Prosperity*. Washington DC: Economic Analysis and Research Network. [http://massbudget.org/reports/pdf/education\\_wages\\_epi.pdf](http://massbudget.org/reports/pdf/education_wages_epi.pdf).
- Bettencourt LM, Lobo J, Helbing D, Kühnert C, and West GB. 2007. "Growth, Innovation, Scaling, and the Pace of Life in Cities." *Proceedings of the National Academy of Sciences of the United States of America* 104 (17): 7301–6. 2007. Bettencourt Urban Metabolism.pdf. C:\Users\wim\Documents\100. Correspondence and filing\180. reference and databases\184. books and articles.
- Card, David. 1999. "The Causal Effect of Education on Earnings." *Handbook of Labor Economics*. Elsevier. <http://econpapers.repec.org/bookchap/eeelabchp/3-30.htm>.
- Carr, Patrick J., and Maria J. Kefalas. 2009. *Hollowing Out the Middle: The Rural Brain Drain and What It Means for America*. Beacon Press.
- Collins, James C. 2001. *Good to Great: Why Some Companies Make the Leap and Others Don't*. New York, NY: HarperBusiness.
- Cooke, S.C., and B.A. Kulandaisamy. 2010. "Wage Divergence between the Rocky Mountain States and the U.S.: Idaho Measures and Sources, 2001–2009." *Rev. Reg. Stud. Review of Regional Studies* 40 (1): 99–124. /z-wcorg/.
- Domina, Thurston. 2006. "What Clean Break?: Education and Nonmetropolitan Migration Patterns, 1989–2004." *Rural Sociology* 71 (3): 373–98. doi:10.1526/003601106778070626.
- Fields, Jackie. "Ignite Presentation: Community Case Study from Idaho." Presentation at the UI President's Sustainability Symposium, Coeur d'Alene, ID, March 11-12, 2012.
- Florida, Richard, and Jim Goodnight. 2005. "Managing for Creativity." *Harvard Business Review* 83 (7/8): 124–31.
- Fukuyama, Francis. 1995. *Trust: The Social Virtues and the Creation of Prosperity*. New York: Free Press.
- Glaeser, Edward. 2009. "Growth: The Death and Life of Cities." In *Making Cities Work: Prospects and Policies for Urban America*, by Robert P. Inman. Princeton University Press.
- Mayer, Heike. 2008. *Boise, Idaho: An Overview of the High Technology Economy in the Treasure Valley*. [http://www.idahotechconnect.com/Documents%20and%20Settings/7/Site%20Documents/Boise\\_Issue%20Paper\\_Feb%202008\\_Final.pdf](http://www.idahotechconnect.com/Documents%20and%20Settings/7/Site%20Documents/Boise_Issue%20Paper_Feb%202008_Final.pdf).
- Hill, Edward. 2012. "Economic Shocks and Regional Economic Resilience." In *Urban and Regional Policy and Its Effects*, by Margaret Weir, Nancy Pindus, Howard Wial, and Harold Wolman, 4:193–274. Building Resilient Regions. Brookings Institution Press.
- Isserman, A.M., E. Feser, and D.E. Warren. 2009. "Why Some Rural Places Prosper and Others Do Not." *Int. Reg. Sci. Rev. International Regional Science Review* 32 (3): 300–342. /z-wcorg/.
- Kennedy, Peter. 1998. *A Guide to Econometrics*. 4th ed. Cambridge, Mass: MIT Press.
- Krugman, Paul. 1997. *Development, Geography, and Economic Theory*. Cambridge, Mass.: MIT Press.
- Landes, David S. 1998. *The Wealth and Poverty of Nations: Why Some Are So Rich and Some So Poor*. New York: W.W. Norton.
- Mincer, Jacob. 1974. *Schooling, Experience, and Earnings*. New York: National Bureau of Economic Research; distributed by Columbia University Press.
- National Center for Education Statistics. 2014. "Dropouts, Completers and Graduation Rate Reports." *Common Core of Data (CCD)*. [http://nces.ed.gov/ccd/pub\\_dropouts.asp](http://nces.ed.gov/ccd/pub_dropouts.asp).
- Porter, Michael E. 2000. "Location, Competition, and Economic Development: Local Clusters in a Global Economy." *Economic Development Quarterly* 14 (1): 15–34.

- Redding, Stephen. 1996. "The Low-Skill, Low-Quality Trap: Strategic Complementarities between Human Capital and R&D." *The Economic Journal* 106 (435): 458–70. doi:10.2307/2235260.
- Romer, Paul M. 1990. "Endogenous Technological Change." *Journal of Political Economy* 98 (5): S71–S102. doi:10.2307/2937632.
- Sachs, Jeffrey D., and Andrew M. Warner. 2001. "The Curse of Natural Resources." *European Economic Review* 45 (4-6): 827–38. doi:10.1016/S0014-2921(01)00125-8.
- Saunders, Emilie Ritter. "Chobani Opens Twin Falls Yogurt Facility Today, But at What Cost to Taxpayers." *StateImpact Idaho*. December 17, 2012.
- Schuller, Tom, John Preston, Cathie Hammond, Angela Brassett-Grundy, and John Bynner. 2004. *The Benefits of Learning: The Impact of Education on Health, Family Life and Social Capital*. Routledge.
- Scicchitano, Sergio. 2010. "Complementarity between Heterogeneous Human Capital and R&D: Can Job-Training Avoid Low Development Traps?" *Empirica* 37 (4): 361–80. doi:10.1007/s10663-009-9113-8.
- Sidorkin, Alexander M. 2007. "Human Capital and the Labor of Learning: A Case of Mistaken Identity." *Educational Theory* 57 (2): 159–70. doi:10.1111/j.1741-5446.2007.00254.x.
- Taleb, Nassim Nicholas. 2007. *The Black Swan: The Impact of the Highly Improbable*. New York: Random House.
- The Chronicle of Higher Education. 2013. "Graduation Rates by State | College Completion." [http://collegecompletion.chronicle.com/state/#state=id&sector=public\\_four](http://collegecompletion.chronicle.com/state/#state=id&sector=public_four).
- U. S. Census Bureau. 2014. "State-to-State Migration Flows." Accessed January 6, 2014. <http://www.census.gov/hhes/migration/data/acs/state-to-state.html>.
- US Census Bureau. 2013. Educational Attainment CPS Historical Tables U.S. Census Bureau. Table A-3: "Mean Earnings of Workers 18 Years and Over, by Educational Attainment, Race, Hispanic Origin, and Sex: 1975 to 2011." <http://www.census.gov/hhes/socdemo/education/data/cps/historical/>.
- Wadhwa, Vivek. 2013. "Silicon Valley Can't Be Copied." *MIT Technology Review* 116 (5): 84–93.

## • ENDNOTES •

- 1 We will use *wealth creation* and *economic growth* interchangeably; both mean an increase in preferred goods, services, or circumstance with the same or less effort.
- 2 Returns on education vary throughout the world, but average around 10 percent. Returns are generally higher in low- and middle-income areas of the world.
- 3 The wage gap between Idaho and the nation has grown during the last decade, primarily as a result of (1) high employment growth in low-wage sectors, (2) relatively low levels of wages in high-wage sectors, and (3) low employment growth in high-wage sectors, for more see Cooke and Kulandaisamy, 2010.
- 4 *Integrated Public Use Microdata Series*, <https://usa.ipums.org/usa/>
- 5 To make salary income comparable over time and space, we adjusted it for inflation and regional price parities (RPPs). Also, to create comparable cohorts, the sample is limited to those working-age individuals who work full time, i.e., their salary income is different from zero, and they work between 48 and 52 weeks per year and at least 35 hours per week. The sample is further restricted to working-age individuals between 25 and 64 years old. The lower limit of 25 was chosen because in the early 1990s, less than one-fifth of US adults were enrolled in school (even on a part-time basis) by the time they turned 24; thus, most people have completed their formal schooling by the age of 24 (Card 1999).
- 6 The earned income difference between Idaho and the US is not statistically significant at 95 percent confidence, but is significant at 90 percent confidence.
- 7 If we divide the number of employees in an Idaho industry by Idaho's total employment and compare that to the national ratio, we can see which sector is represented higher or lower in Idaho relative to the nation at large (a location quotient).
- 8 The modeling discussion and its limitations are out of the scope of this paper. For a deep analysis about these issues, we recommend that readers review Card 1999.
- 9 We use the Blinder-Oaxaca decomposition for linear regression model to compare Idaho with the US, urban Idaho with rural Idaho and male Idahoans with female Idahoans.
- 10 The earned income gap between Idaho and the United States is not statistically significant at 95 percent confidence, but is significant at 90 percent confidence.
- 11 Taleb (2007) reaffirms how important it is to avoid being trapped by confirmation bias and instead look for exceptions to assumed rules.
- 12 Available at: [http://www.isc.hbs.edu/Documents/ced/states/State\\_Competitiveness---Idaho\\_v312.pdf](http://www.isc.hbs.edu/Documents/ced/states/State_Competitiveness---Idaho_v312.pdf).
- 13 Available at <http://www.cityofboise.org/>, retrieved November 11, 2013.
- 14 The millennial generation, born between the early 1980s and the early 2000s, currently comprises almost a third of the US population. Also called Generation Y, millennials are culturally and racially much more diverse than the baby boomers, are more urban-based, and place greater value on walkable amenities and biking. Another distinct difference from the baby boom generation is that millennials tend to find a place to live first and look for a job next.
- 15 For more information: <http://irp.idaho.gov>.



## • APPENDIX •

The following two tables show median earned income for industry sectors and occupations in Idaho.

**Importance of the sector in Idaho:** Column 1 of each table indicates the employment percentage of the sector relative to all Idaho employment. Column 2 shows whether the sector is smaller or larger relative to its importance at the national level (the location coefficient -1). For example, occupations in farming, fishing, forestry, construction, and life sciences are represented as having greater importance in Idaho than in the nation.

**Median earned income:** Columns 3 and 4 reflect earnings in 2010 dollars, adjusted for inflation and Regional Price Parities. The table is sorted on Column 3. Column 5 shows the difference between the national and state median.

**Education:** Columns 6 and 7 of each table show the percentage of college-educated workers within the sector in the nation and Idaho, respectively. Column 8 shows whether Idaho has more or fewer college graduates in that sector.

*Note:* All percentages are rounded and do not necessarily add up to 100 percent.

TABLE 1 Median earned income per industry, 2001–2011, men and women age 25-64	Idaho employment		Median pay per industry		Educational attainment: Bachelor's and advanced degrees		
	Industry NAICS [sorted descending on median US income]	%	Relative to US*	US	Difference	US	ID
Column	1	2	3	5	6	7	8
Utilities	1%	0.1	\$60,744	-10%	26%	22%	-4%
Mining, Quarrying, Oil and Gas Extraction	0%	-0.1	\$58,453	-10%	19%	11%	-8%
Computer, Electronic Product, Electrical	2%	0.6	\$55,183	4%	42%	43%	0%
Transportation Equipment Manufacturing	1%	-0.7	\$54,014	-31%	27%	11%	-16%
Petroleum, Coal, Chemical Manufacturing	1%	-0.5	\$53,382	-21%	33%	18%	-15%
Information	2%	-0.3	\$49,570	-33%	46%	30%	-16%
Public Administration	6%	0.1	\$49,469	-13%	40%	37%	-3%
Finance and Insurance	4%	-0.3	\$47,934	-20%	47%	32%	-14%
Machinery Manufacturing	0%	-0.5	\$45,587	-14%	22%	21%	-1%
Transporting and Warehousing	4%	0.0	\$42,907	-7%	16%	10%	-6%
Wholesale Trade	3%	-0.1	\$42,852	-10%	28%	18%	-10%
Professional, Scientific, Technical	9%	-0.2	\$42,589	-17%	48%	37%	-11%
Paper Products, Manufacturing	1%	-0.2	\$42,306	-6%	19%	15%	-3%
Primary Metal, Fabricated Metal Product Mfg	1%	-0.4	\$41,831	-11%	13%	10%	-3%
Nonmetallic Mineral Product Mfg	0%	-0.3	\$41,031	-10%	15%	14%	-1%
Educational Services	11%	0.1	\$38,987	-16%	68%	61%	-6%
Miscellaneous Manufacturing	1%	-0.4	\$37,430	-13%	26%	18%	-7%
Real Estate and Rental and Leasing	2%	-0.1	\$36,437	-16%	35%	27%	-8%
Construction	9%	0.2	\$36,232	-3%	12%	10%	-1%
Food, Beverage, Tobacco Product Mfg	3%	1.2	\$35,067	-7%	16%	11%	-5%
Health Care and Social Assistance	12%	-0.1	\$33,569	-17%	37%	33%	-4%
Wood Product Manufacturing	1%	2.3	\$33,549	8%	11%	10%	-1%
Furniture and Related Product Mfg	0%	0.1	\$31,801	-3%	12%	14%	2%
Retail Trade	10%	0.1	\$27,234	-1%	21%	17%	-4%
Arts, Entertainment, and Recreation	1%	-0.2	\$26,251	-22%	36%	28%	-8%
Agriculture, Forestry, Fishing, Hunting	6%	3.9	\$26,108	17%	16%	18%	2%
Textile, Apparel, Leather, Allied Prod.	0%	-0.7	\$25,662	-18%	15%	11%	-4%
Other Services (except Public Admin)	4%	-0.1	\$24,929	-6%	24%	18%	-6%
Accommodation and Food Services	4%	-0.1	\$18,205	-18%	15%	11%	-4%

\* A value greater than 0 indicates that Idaho is more active in that industry than the national average

\*\* To make income comparable over time and space, it is adjusted for inflation and Regional Price Parities (RPPs)

TABLE 2 Median earned income per industry, 2001–2011, men and women age 25-64	Idaho employment		Median pay per industry			Educational attainment: Bachelor's and advanced degrees		
	Industry NAICS [sorted descending on median US income]	%	Relative to US*	US	Idaho RPP**	Difference	US	ID
Column	1	2	3	4	5	6	7	8
Legal Occupations	1%	-0.3	\$71,134	\$60,616	-15%	79%	67%	-12%
Computer and Mathematical	2%	-0.4	\$70,889	\$59,407	-16%	66%	51%	-15%
Architecture and Engineering	2%	0.0	\$70,738	\$73,642	4%	64%	61%	-3%
Management	11%	0.0	\$63,913	\$56,095	-12%	53%	39%	-14%
Life, Physical, Social Science	1%	0.4	\$56,450	\$56,715	0%	82%	74%	-8%
Financial Specialists	2%	-0.3	\$54,053	\$51,714	-4%	70%	61%	-8%
Healthcare Practitioners and Technical	5%	-0.1	\$52,405	\$52,545	0%	56%	54%	-2%
Business Operations Specialists	2%	-0.2	\$51,667	\$46,649	-10%	54%	43%	-10%
Military Specific	0%	-0.4	\$50,570	\$55,185	9%	36%	27%	-10%
Protective Service	2%	0.0	\$45,804	\$45,074	-2%	24%	22%	-2%
Installation, Maintenance, Repair Work	4%	0.1	\$43,237	\$44,274	2%	7%	6%	-2%
Education, Training, Library	7%	0.0	\$40,478	\$37,700	-7%	79%	73%	-7%
Community and Social Services	2%	0.0	\$38,246	\$40,393	6%	73%	73%	0%
Arts, Design, Entertainment, Sports	1%	-0.3	\$37,730	\$29,002	-23%	60%	46%	-13%
Sales and Related	9%	-0.1	\$35,436	\$34,476	-3%	32%	22%	-9%
Construction and Extraction	7%	0.2	\$34,615	\$36,821	6%	6%	6%	0%
Production	7%	0.0	\$33,305	\$34,986	5%	7%	7%	0%
Transportation and Material Moving	7%	0.1	\$31,351	\$32,654	4%	8%	6%	-1%
Office and Administrative Support	14%	0.0	\$30,391	\$28,468	-6%	18%	14%	-4%
Health Care Support	2%	0.0	\$22,285	\$20,723	-7%	10%	9%	-1%
Farming, Fishing, Forestry	3%	3.1	\$19,447	\$26,480	36%	7%	8%	1%
Building and Grounds Cleaning and Maintenance	4%	0.0	\$18,834	\$18,751	0%	6%	8%	1%
Personal Care and Service	3%	0.0	\$16,304	\$14,324	-12%	16%	14%	-2%
Food Preparation and Serving	3%	-0.1	\$15,402	\$14,234	-8%	9%	7%	-3%

\* A value greater than 0 indicates that Idaho is more active in that industry than the national average

\*\* To make income comparable over time and space, it is adjusted for inflation and Regional Price Parities (RPPs)

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