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## Student Repayment Crisis and the Value of Higher Education and the Economy in California's Kern County

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# Student Repayment Crisis and the Value of Higher Education and the Economy in California's Kern County

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*The cost of post-secondary education (PE) continues to increase, which has contributed to elevating federal loan demand, and as of the fourth quarter of 2020, equaling a debt of \$1.56 trillion in the US. The purpose of this research was to compare two post-secondary institutions for specific alignment with the local labor market, examine institutional economic benefits and costs, and impact of loan default. Bakersfield College (BC) and California State University, Bakersfield (CSUB) are both public, Hispanic Serving Institutions, in central California. Despite similarities, loan default rates of each institution differ; six-year mean rates, 24.6% at BC, 7.7% at CSUB. The analysis revealed that although the top degrees at BC and CSUB did not align well with local labor market demands, the individual and institutional economic benefit exceeds the costs. Importantly, both the individual and institutional economic benefits are highly dependent on completing the degree, the time to graduation, and then entering the labor market. The value of this research, specifically a cost-benefit analysis to examine recent trends in local wages, tuition fees, defaults rates, poverty, and alignment with the local labor market, provides insight on the impact of local PE on the individual and the community, providing both educational and economic policy direction.*

**Keywords:** *student loan default, value of education, cohort default rate, higher education*

In the last two decades, a student loan crisis has emerged within higher education, which may be negatively impacting the economic value of education (Greene, 1989; Herr & Burt, 2005; Ishitani & McKittrick, 2016; Kesterman, 2006; Steiner & Teszler, 2005; Volkwein & Szelest, 1995; Webber & Roger, 2014; Webber, 2016). This loan crisis can be seen in the growing national student loan debt, which totaled over 1.56 trillion dollars, in the fourth quarter of 2020, a 546% increase from the first quarter of 2003 and, the second largest form of consumer debt in the United States, surpassed only by mortgages (Federal Reserve New York, 2020). However, this crisis is less about the growth of student debt and more about delinquency and default. [1] Dynarksi (2015, 2) argues the crisis does not center around debt because the “debt levels are not large relative to the estimated payoff to a college education” but, instead, is seen as a repayment crisis.

Three crucial areas that are linked to the emergence of the student loan crisis, and thus its impact on the economic value of higher education both for the individual and the local economy are: (1) labor market educational demands, (2) the cost of education, and (3) the distribution of federal loans. The trends which have developed over the last 20 years show an increase in demand (National Center for Education Statistics [NCES], 2020a), cost (NCES, 2020d), and need for federal loans (College Board, 2020a). These trends culminating together necessitate a further look into the value of postsecondary education (PE), nationally, but particularly at the local level, as only 4.4% of individuals over 10 years (2004–2015) moved to a different county (U.S. Census Bureau, 2019a), and as such, many of the individuals we educate are likely to transition back into the local labor market where they were educated.

## Labor Market Educational Demands

Since the year 1990, undergraduate bachelor degrees conferred in the United States have increased 83.9% (NCES, 2020a). When comparing entry-level education requirements and anticipated requirements,

between 2019 to 2029, in the United States, the need for individuals with an earned bachelor's degree is expected to increase by 6.4%, an earned associate's degree by 6.2%, a postsecondary nondegree award by 5.6%, some college, no degree by -0.1% and a 1.5% increase in occupations which require a high school diploma or equivalent (U.S. Department of Labor and Statistics [BLS], 2020). Additionally, in California, the current labor market trend anticipates a 1.5 million shortage of "some college" educated workers by 2025 and a 1.1 million shortage of bachelor degree-holding workers by 2030 (Bohn, 2014; Bohn, Cuellar Mejia, Johnson, 2015). However, that is not to say the increase in degrees has caused a rise in demand for a more educated workforce. However, they are two events that are converging simultaneously and should be considered, but it is not within the research questions' context for this analysis.

## **Cost of Education**

Despite the increase in postsecondary degrees conferred, education itself has continued to become less affordable, as both community colleges and universities have seen a significant rise in tuition and fees. From 1990 to 2018, community colleges (public, two-year institutions) and universities (public, 4-year institutions) incurred, on average, a 113% and 158% growth in undergraduate tuition and fees, respectively (NCES, 2020d). The most concerning aspects are that tuition rates have outpaced inflation and median incomes in growth (U.S. Bureau of Labor Statistics, 2017; U.S. Census Bureau, 2018). In response to the surge in tuition and fees, loans to finance higher education have also increased steadily.

## **Distribution of Federal Loans**

During the 1990-91 academic year, the total amount of federal loans distributed in the U.S. was \$20.2 billion but rose in 2017-18 to \$92.9 billion, equating to a 352% growth in 30 years (College Board, 2020a). [2] While the increase in the distribution of federal loans is significant, the importance is more evident when compared to enrollment. Looking at the same academic years, the total fall semester enrollment in public degree-granting postsecondary institutions in the United States only increased by 34% (NCES, 2020b). Narrowing the focus strictly on undergraduate students, data shows a 275% increase in federal loan distribution and an inequitable 34% increase in enrollment between 1990-2018 (College Board, 2020b; NCES, 2020c).

State student loan data is scarce and just beginning to gain momentum regarding its importance to educational stakeholders who attempt to understand student borrowing trends. However, PE enrollment data for the state of California is readily available for recent years. From 2000-2018 total fall enrollment at public institutions increased 16.7% within California (NCES, 2020e), whereas from 2003 through 2018, student loan debt per capita grew 367% (Federal Reserve Bank of New York, 2020b).

The foundational issue is not necessarily with the increase in demand, cost, or student loans. Still, the danger comes from those who either do not complete their degree after acquiring debt or those who default on their educational loans, with both outcomes routinely occurring (Mezza & Sommer, 2015). Students most susceptible to default are those who attempt college and take out loans but drop out before attaining a degree. In fact, Mezza and Sommer (2015) found these students were 46% more likely to default. In contrast, those who held a certificate or associate degree were delinquent at 23%, bachelor's degree at 11%, and those with a master's degree at 7%.

## **Default**

The consequence of default on federal loans is detrimental for the student, the local economy, and higher education institutes. Federal student loan defaults or Cohort Default Rates (CDR) are a ratio of all students who default to those who enter repayment within the same three-year period. Specifically, CDRs are "the percentage of a school's borrowers who enter repayment on certain Federal Family Education Loan (FFEL) Programs or William D. Ford Federal Direct Loan (Direct Loan) Program loans during a particular

federal fiscal year (FY), October 1 to September 30" (U.S. Department of Education, 2017a). For example, the formula for the non-average CDR in 2014 calculation was:

$$\frac{\text{Borrowers who entered repayment in 2014 and defaulted in 2014, 2015, or 2016}}{\text{Borrowers who entered repayment in 2014}} \quad (1)$$

A student enters default when they fail to make their scheduled loan payment for 270 days or approximately 9 months (U.S. Department of Education, 2017b). CDRs are calculated nationally for the U.S. and individual institutions (California Student Aid Commission, 2018; U.S. Department of Education, 2017a). It remains essential to view national and institutional CDRs together to see where institutions deviate from national trends. However, the default rate does not consider the number of individuals who are also seriously delinquent (i.e., 90 or more days delinquent). Leaders of postsecondary institutions and policymakers would be wise to consider the 30+ days delinquent and 90+ days delinquent categories. As will be discussed, these variables provide more timely information to predict national cohort default rates.

### Delinquency

Per the Federal Reserve Bank of New York (2018), out of the 18.3 million borrowers who entered repayment in 2003, 600,000 individuals were “90+ days delinquent.” In 2017, the total number of borrowers in repayment increased to 44.7 million, with 2.1 million individuals as “90+ days delinquent.” The 30+ days delinquent and 90+ days delinquent categories are available quarterly, whereas national CDR results have a 3-year lag. It is important to note that the 30+ days delinquent and 90+ days delinquent categories point to default trajectory, as demonstrated in Table 1 and Figure 1. Table 1 provides the historical data, but Figure 1 shows the convergence of similar trajectories. While it can often be challenging to examine the impact of national issues on local institutions and economies, it is critical that policymakers and leaders of postsecondary institutions must do just that.

Table 1

#### *Annual Average New Delinquency and National Cohort Default Rates*

Year (FY)	30 or more days delinquent (%) <sup>1</sup>	90 or more days delinquent (%)	National CDR (%)
2009	9.8	7.6	13.4
2010	10.6	8.5	14.7
2011	10.5	8.8	13.7
2012	10.9	10.0	11.8
2013	11.3	10.1	11.3
2014	11.4	10.2	11.5
2015	10.6	10.2	10.8
2016	9.9	9.5	10.1
2017	9.9	9.6	9.7

<b>2018</b>	9.1	8.9	Unpublished
<b>2019</b>	9.6	9.4	Unpublished
<b>2020</b>	5.78	5.6	Unpublished

*Note.* Federal Reserve Bank of New York, (2020c & 2020d); Federal Student Aid, (2020).

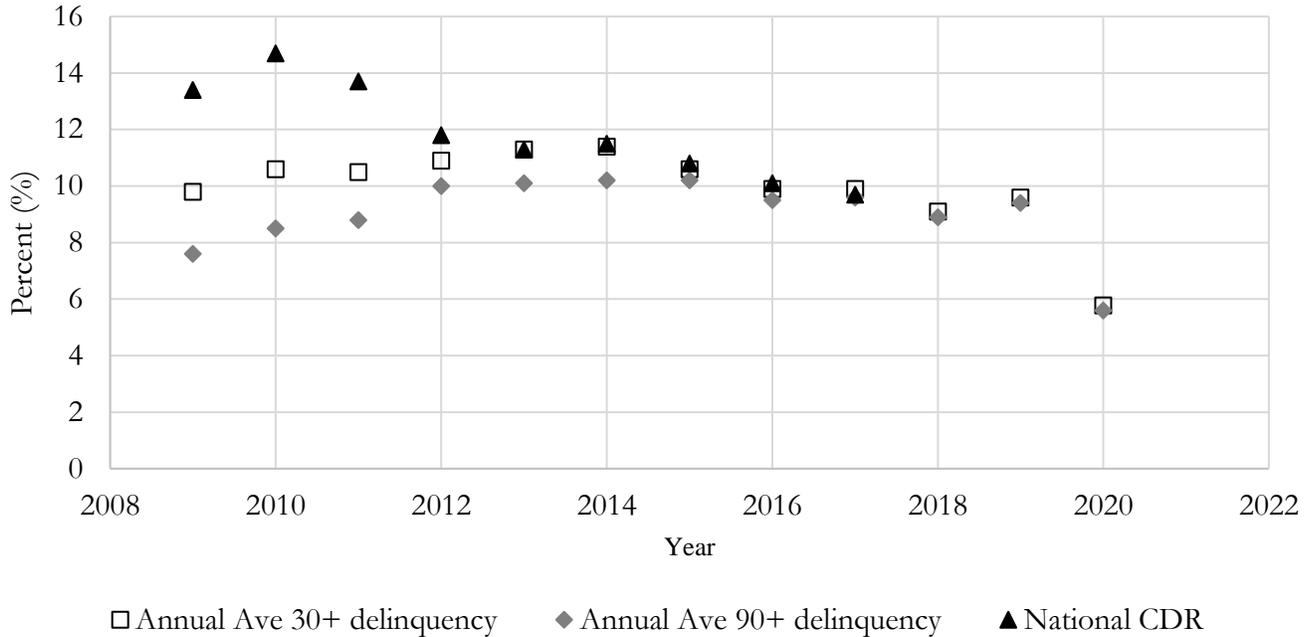


Figure 1

*Annual Average New Delinquency and National Cohort Default Rates.*

*Note.* Annual percentage for 30+ and 90+ days delinquent is taken as the average across each quarter (i.e. the percent for 2009 is the average of the percentage in Q1, Q2, Q3, and Q4). Federal Reserve Bank of New York (2020c, 2020d); Federal Student Aid. (2020).

Ideally, the establishment of federal loans for education would involve individuals utilizing the resource to attain marketable skills that match labor market demand. After completing their PE, individuals would then enter the labor market, pay back their student loans and provide a return on investment (ROI) through the contribution of increased taxes and adding to consumer demand in the national and local economy. However, when students fail to achieve an earned degree or, worse, default on their loans, the economic burden is placed on the student, the institution, and the local economy.

### Purpose

In response to the increase in student loan default and delinquency, this study seeks to investigate the economic value of education within the context of a local economy, specifically for students who utilize loans to finance their education. This investigation will use a cost-benefit analysis (CBA) and net present value (NPV) methodologies, specifically examining two institutions of higher education local to Kern County, California: Bakersfield College (BC) and California State University Bakersfield (CSUB). These

institutions are part of the most extensive higher education system in the United States, which are public and open access.

This study advances the understanding of both the role and impact of the student cohort loan default rates within the United States and, more specifically, in Kern County and could be implemented in similar counties. Further, the impact of economic information is incredibly influential in the design and implementation of public policy.

Kern County was chosen because it is a strong representation of non-metropolitan California. The 2000 Census revealed a Hispanic population in California of 32.4% and 38.4% in Kern County. A decade later, in the 2010 Census, the Hispanic population grew to 37.6% in California and 49.2% in Kern County (State of California, Department of Finance, 2010). These characteristics align with the typical student attending at both BC and CSUB (see Table 2).

Table 2

*Demographics of Bakersfield College (BC) and California State University, Bakersfield (CSUB), 5-Year Averages: 2009-2014*

Variable	Institute of higher education		5-year percent change	
	BC (%)	CSUB (%)	BC (%)	CSUB (%)
<b>Male</b>	46	38	-2.2	11.4
<b>Female</b>	54	62	2.1	-6.2
<b>24&gt;</b>	61	73	5.7	11.1
<b>24+</b>	39	27	-8.4	-28.6
<b>African American</b>	7	7	-35.5	-5.4
<b>Native American</b>	2	1	-78.9	-9.1
<b>Asian</b>	5	7	-32.8	2.9
<b>Hispanic</b>	54	45	42.1	36.6
<b>Caucasian</b>	29	27	-30.5	-27.4
<b>Two or more</b>	2	2	230	100
<b>Unknown</b>	3	9	-80.6	49.3

*Note.*(California State University, Bakersfield, 2018b; Kern Community College District, 2018).

The following research questions guided this study:

1. What economic impact did the undergraduate programs of BC and CSUB have on Kern County and the individual between 2009-2014?
  - a. What is the relationship between private net financial returns of attending BC and CSUB compared to the non-Postsecondary educated individual?
  - b. What is the relationship between public net financial returns of attending BC and CSUB compared to the non-Postsecondary educated individual for Kern County?

## Literature Review

Postsecondary education (PE) is a vital avenue to obtain financial stability. Completing a postsecondary degree is directly correlated with median lifetime earnings, which vary by educational attainment. Still, the complexity of choosing a major, occupation, and whether to pursue a postsecondary loan makes it difficult to predict. Webber (2014, 297) states, “the ethos surrounding postsecondary education has increasingly become akin to, a college degree is the best outcome for everyone regardless of the cost.” The sentiment that postsecondary education is the best choice for every individual requires us to beg the question: Is a postsecondary education always a positive investment? The economic value of education and the use of a cost-benefit analysis methodology has been quantified from several different areas. [3] The common mantra in the literature is that the individual who earns an associate degree or a bachelor’s degree, compared to a high school diploma, will see substantially increased earnings over their working lifetime (Anthony, Ross & Cheah, 2011; Kim, Tamborini, & Sakamoto, 2015). Absolute earnings only provide a portion of the needed information; a full economic analysis requires the inclusion of direct costs and opportunity costs to formulate a clear understanding of economic value. Aside from earnings associated with higher education, completion of PE is also associated with substantial positive externalities, such as better health (Oreopoulos & Petronijevic, 2013), increased productivity, paying higher taxes, decrease in dependency on government assistance, growth in philanthropy, and civic engagement (Baum & Payea, 2004; Brady, Hout, & Stiles, 2005; Trostel, 2003, 2017), lower rates of unemployment (Greenstone & Looney, 2011) and higher wages (Moretti, 2004). There is also evidence that a higher educated population experiences less crime (Education at a Glance, 2018, p. 143).

### **Bachelor’s Degree**

Abel and Deitz (2014b) found that completed PE is a good economic investment, but not for the reasons you might suspect. Their research found that earning a college degree has become more expensive, and wages have stagnated for a large proportion of college-educated individuals, making the value of a college degree less valuable, in absolute terms. However, those who forgo earning a PE degree have experienced an even more severe decline in wages, essentially propping up the value of a college degree. As would be expected in current literature, Abel and Deitz (2014a, 7-8) found that more technical majors like math, engineering, and computer science earned the highest returns on their educational investment (approximately 18-21%), whereas “liberal arts, agriculture and natural resources, leisure and hospitality, and education all generated below-average returns.” Every major assessed, however, earned, at minimum, a return of 9% greater than an earned high school diploma. Baum and Payea (2013) found that individuals with an earned bachelor’s degree in the United States, working full time, had median earnings of \$56,500 per year, \$21,100 more per year than the median earnings of high school graduates. In a national study, Carnevale and Rose (2011) found that individuals with a bachelor's degree almost always earn significantly more, on average, than those with a high school diploma, “even in the low-skilled occupation tier comprising labor, sales, operative, or service worker.” Webber (2014) found that the median net present discounted value for students ranges from \$85,000 to \$300,000 over the costs of most public institutions. However, his research also found that students at the lower end of ability and the higher end of debt may never see the financial rewards exceed the costs.

### **Associate Degree**

Regarding an earned associate’s degree, Baum and Payea (2013) found that median earnings for individuals with associate degrees were 27% higher than median earnings for those with only a high school diploma. Additionally, those with some college but no degree earned 14% more than high school graduates working full time. Oreopoulos and Petronijevic (2013) also reported that students benefit financially from completing a two-year degree compared to only a high school diploma. Cellini and Chaudhary (2011) found

that students who completed an associate's degree at a public or private college experienced an earnings gain of about 15-17% or 8% for each year of education.

Although it is well established in the literature that there is a correlation between PE and increased earnings (Anthony, Ross & Cheah, 2011; Torraco, 2009; Trostel, 2017), it cannot be assumed that this trend holds in all sectors of the United States. As California works to address the incredibly diverse needs to ensure a qualified supply of human capital matches the ever-changing labor market needs, this research aims to address the gap in our knowledge for a quickly growing labor force need in central California. Specifically, this research addresses private returns for individuals and, more broadly, the influence of cohort default rates on the local economy and how regional institutions impact the region in which they are housed. The characteristics associated with cohort default rates and the role of regional institutions of higher education on the local economy are critical for institutions of higher education and policymakers to recognize.

## Methods

### Institutions

Institutions of focus are in Kern County, within the central valley of California. Bakersfield College (BC) is a two-year public, non-profit institution which awards associate degrees. California State University, Bakersfield (CSUB) is a four-year non-profit institution that grants bachelor, master, and doctoral degrees (Kern County Community College District [KCCCD], 2018; California State University, Bakersfield, 2018a). Both institutions are Hispanic Serving Institutions (HSI), which align with the local community's demographics.

### Population, Sample, and Method

This research examines data from Bakersfield College, California State University Bakersfield, Bureau of Labor Statistics, the Education Advisory Board and Employment Development Department of the Labor Market Information Division, National Center for Education Statistics, more specifically, the Integrated Postsecondary Education Data System (IPEDS), the U.S. Department of Education and the Federal Reserve Bank, investigating the period from 2009-2014. These institutions are chosen because (1) they hold a large market share of degrees conferred within Kern County, (2) they are both public, open-access institutions, and (3) both are Hispanic Serving Institutions (KCCD, 2018, California State University, Bakersfield, 2018a).

Using a quantitative non-experimental comparison design, a cost-benefit analysis (CBA) and net present value (NPV) methodology were employed to address each research question. Net financial returns were analyzed for the economic impact the undergraduate programs of BC and CSUB have on Kern County and the individual. This will be broken into two sections. The first section will investigate the relationship between private net financial returns of attending BC and CSUB compared to the non-postsecondary educated individual. Lastly, the second section will examine the relationship between institutional net financial returns of attending BC and CSUB compared to the non-postsecondary educated individual for Kern County.

### Net Financial Returns

This section focuses on a cost-benefit analysis (CBA) and includes net present value (NPV) methodology to determine both private and public net financial returns to education. A cost-benefit analysis weighs the benefits and costs, monetary and non-monetary (if applicable), to determine if an investment would be cost-effective. This research also includes net present value (NPV) methodology using a 4.49% discount rate ( $r$ ). The discount rate considers that money in the future is worth less than money today and

must, therefore, be “discounted” at a specific rate to find its current worth. The choice of the discount rate is complicated but essential when considering the returns to long-term investments, such as education. Lobo and Burke-Smalley (2018) utilized a discount rate of 6.5182%. They took the average annual 20-rate of return on the S&P 500 and the average yield on 10-year Treasury notes between 1996-2015. The Organisation for Economic Co-operation and Development (OCED 2017, 2019) utilized a 3% discount rate in 2017 and a 2% discount rate in 2019. These rates were based on long-term government bonds across the countries within the OECD framework. Kantrowitz (2007) used a rate of 4.812% pulled from the yield on 30-year Treasury bonds, and Daly and Bengali (2014) employed a 6.67% rate acquired from the average yield on AAA-bonds (Lobo and Burke-Smalley, 2018). The present study chose to employ the average yield on AAA bonds from 2009-2014, at 4.49%.

A positive CBA and NPV equate to benefits ( $B$ ) exceeding costs ( $C$ ) and generally deemed a “good” investment to undertake during a specific time ( $t$ ). The reverse, a negative CBA and NPV result equates to costs exceeding benefits and, thus, a “poor” investment. NPV is the sum of the discounted values of all inflows (benefits) and outflows (costs):

$$\sum_{t=0}^{t=N} \frac{B_t}{(1+r)^t} - \sum_{t=0}^{t=N} \frac{C_t}{(1+r)^t}$$

### **Individual net financial returns**

Looking first at the individual, data evaluating net financial returns, the degree premium, on educational attainment will be presented. The degree premium will be presented in both sum and NPV at each level of educational attainment opportunity: (1) the non-postsecondary educated individual (NPI), (2) an individual with an earned associates and (3) an individual with an earned bachelors. Benefits are defined as net median earnings by educational attainment and anticipated earnings growth minus taxes (federal, state, social security, and Medicare). Taxes and loan repayment are included because higher taxes and high-interest rates on loans can dissuade investment into further education (Organisation for Economic Co-operation and Development [OCED], 2017).

Our models were conducted in two-stages at each stage of educational attainment:

1. Establishing individual net median earnings (NE) (benefit)
2. Establishing individual economic cost (EC)

**Individual net median wages.** For this investigation, the model for net wage per annum will be defined with the following variables:

$mw$  = median wage

$tx$  = taxes

$ss$  = social security

$m$  = Medicare

$n$  = non-postsecondary educated individual

$a$  = earned associates

$b$  = earned bachelors

$f$  = federal

$s$  = state

NPV Net earnings per annum

$$\sum_{t=G+1}^{t=N} \frac{mw_{nab}}{(1+r)^t} - \frac{tx_{fs}}{(1+r)^t} - \frac{ss}{(1+r)^t} - \frac{m}{(1+r)^t}$$

For the non-postsecondary educated individual time begins at  $t$ . For those pursuing postsecondary education, time begins at one-year post-graduation ( $G+1$ ).

Median wages are obtained through the U.S. Census Bureau. The median wage for individuals (1) a high school graduate, (2) some college or associate’s degree, and (3) bachelor’s degree were averaged from 2009-2014. Income tax data is obtained from the Internal Revenue Service and computed using median earnings by educational attainment. The Internal Revenue federal marginal income tax rate (Income Tax, 2009) and California taxes (State of California Franchise Tax Board, 2009) were calculated using the 2009 rates. Social Security (OASDI) tax rate was set at 6.20%, with the maximum taxable earnings at \$106,800 and the Medicare tax rate at 1.45%, all 2009 rates set by the Social Security Administration (SSA, 2008). While tax rates fluctuated between the years under investigation, they did so only with minor revisions. For example, Social Security tax rates increased the maximum taxable earnings to \$110,100 in 2012 and \$113,700 in 2013, and Medicare added an additional 0.9% rate increase on income over \$200,000.

**Individual economic costs.** Costs are calculated as the direct expenses of education plus earnings that would be foregone during school and loan repayment. Costs will be presented as a short-run (5-years), long-run (10-years), lifetime (60-years), and a breakeven analysis. It is essential to acknowledge this impact does not consider the use of government services (i.e., food stamps, housing assistance, etc.) by the individual during school.

Net financial returns on education are populated from the median graduation age of 18 through 79. Earnings foregone are calculated utilizing median wage standards in Kern County. Net financial returns on educational attainment provide the first necessary information when looking at the individual.

Individual costs include direct, and opportunity costs: (1) total cost for postsecondary education as determined by IPEDS, (2) interest accrued on loans, and (3) wages forfeited.

For this investigation, the cost model will be defined with the following variables:

*T*: total annual cost (i.e., tuition, fees, and books)

*l<sub>s</sub>* = subsidized loan interest

*l<sub>u</sub>* = unsubsidized loan interest

*l<sub>p</sub>* = private annual loan interest

*w* = wages forfeited

*B* = BC

*C* = CSUB

*t* = time in years

*r* = rate of interest

$$\sum_{t=0}^{t=N} \frac{T_{BCt}}{(1+r)^t} + \frac{w_t}{(1+r)^t} + \frac{l_s}{(1+r)^t} + \frac{l_u}{(1+r)^t} + \frac{l_p}{(1+r)^t}$$

The total price is established for in-state students living off-campus with family. Living costs are not included because they are not exclusive to those attending a postsecondary institution. Whether a student pursues PE or not, housing is an essential commodity that must be obtained. The hypothetical BC and CSUB students will be single, complete their education in either 100% time, two years for BC and four years CSUB, or 150% time, three years for BC and six years for CSUB attending full-time and will finance their education through a combination of subsidized and unsubsidized direct loans and private loans (Table 3).

Table 3

*Federal Loan Program Details*

Federal Loan Program	Program Details	Maximum Annual Award
Direct Subsidized	• Undergraduate students who have	• \$5,500

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Loan	<ul style="list-style-type: none"> <li>financial need</li> <li>• Lender is U.S. Department of Education (ED)</li> </ul>	<ul style="list-style-type: none"> <li>• Lifetime: \$23,000</li> </ul>
Direct Unsubsidized Loan	<ul style="list-style-type: none"> <li>• Undergraduate, graduate and professional students</li> <li>• Financial need not required</li> <li>• Interest begins accruing at disbursement</li> <li>• Lender is ED</li> </ul>	<ul style="list-style-type: none"> <li>• Up to \$20,500 minus any subsidized</li> <li>• Lifetime amount<sup>a</sup> <ul style="list-style-type: none"> <li>○ Dependent: \$31,000</li> <li>○ Independent: \$57,500</li> </ul> </li> </ul>
Direct PLUS Loan	<ul style="list-style-type: none"> <li>• Parents of dependent undergraduate students</li> <li>• Financial need not required</li> <li>• Dependent on credit</li> <li>• Lender is ED</li> </ul>	<ul style="list-style-type: none"> <li>• Cost of attendance less any other financial aid received</li> </ul>
Federal Perkins Loan	<ul style="list-style-type: none"> <li>• Undergraduate, graduate and professional students</li> <li>• Financial need required</li> <li>• Dependent on school funds</li> <li>• Lender is the school</li> </ul>	<ul style="list-style-type: none"> <li>• Undergraduate students: \$5,500</li> <li>• Lifetime: \$27,500 for undergraduates</li> </ul>

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<sup>a</sup>No more than \$23,000 can come from subsidized loans.

*Note:* Types of Federal Loans. Federal Student Aid. (2017).

Between 2009-2014 the average interest rate for a subsidized direct loan was 4.67% and 5.33% for an unsubsidized direct loan (U.S. Department of Education, 2019). The average interest rate for private loans between the same years was 8.50% for a fixed rate. Additionally, this hypothetical student will work 15 hours per week. The average median wage for individuals with a high school diploma in Kern County, according to the U.S. Census Bureau (American FactFinder, 2014), was \$12.71 per hour or \$26,427.67 annually; this will be the value on which the wages forfeited will be calculated.

Wage Premium NPV=

$$\sum_{t=G+1}^{t=N} \left[ \frac{NE_{ab}}{(1+r)^t} - \sum_{t=G+1}^{t=10} \frac{EC}{(1+r)^t} \right] - \sum_{t=G+1}^{t=N} \frac{NE_n}{(1+r)^t}$$

***Net financial returns on Kern County***

Institutional costs associated with this examination include the impact of cohort default rates and the opportunity cost of foregone wages and taxes. Benefits will include taxes and social contributions. To examine the local market's effects, monetary public loss (monies distributed in financial aid compared to the institutional CDR) will be included as costs. Benefits are higher public returns through taxes paid after a postsecondary degree is earned.

Specifically, costs are funds obtained through municipal sources and those associated with student loan defaults. Since CDRs only track the default of student loans provided through taxpayer-funded sources, the default effect is important but may under-represent private contributions and loss to education. The purpose of each element of this investigation was to better understand the respective institutions in the context of their CDRs.

When examining average CDRs, BC's average of 23.7% was 4.4 percentage points higher than the federal rate, for public, 2-year institutions at 19.3%. BC pushed dangerously close to sanction levels, with CDR's calculated at 26.6%, 30.0%, and 27.7% between 2009-2011 (California Student Aid Commission, 2018). CSUB maintained an average CDR of 7.4%, 0.7 percentage points lower than the federal rate, for public, 4-year institutions of 8.1% (U.S. Department of Education, 2017a). The data provided will lay the foundation for the remaining investigation and contributions.

To examine the impact on the local market, monetary public loss (monies distributed in financial aid compared to the institution CDR) will be included as costs. Benefits are higher public returns through taxes paid post-degree. Additionally, the effect of income taxes can result in an expansion of the supply side of the local economy.

Net financial returns on education are populated from the median graduation age through the age of 79. Earnings foregone are calculated utilizing minimum wage standards in the state of California. Income tax data is obtained from the Internal Revenue Service and computed using median earnings by educational attainment.

**Results**

**Net Financial Results**

This research's primary directive was to examine the economic value of an earned associate and bachelor degree in Kern County compared to the alternative of forgoing postsecondary education. Additionally, this research examined the institutional economic benefits and costs produced by BC and CSUB on Kern County. Individual net financial return results are presented first.

***Individual Net Financial Returns***

When the cost of tuition and fees, time to graduation, interest accrued on loans, wages forfeited, and taxes are included, the BC student has a total cost of \$44,686 for completing two years of education and the CSUB student of \$121,170 for completing four years of education (Table 4).

Table 4

*Individual Economic Costs*

<b>COSTS</b>	<b>BC (100%)</b>	<b>BC (150%)</b>	<b>CSUB (100%)</b>	<b>CSUB (150%)</b>
Tuition and fees per year	\$5,947	\$5,947	\$11,439	\$11,439
Time to graduate	2	3	4	6
Total tuition and fees	\$11,895	\$17,843	\$45,756	\$68,634
Interest accrued	\$3,341	\$4,964	\$16,515	\$24,450
Wages forfeited	\$24,959	\$37,438	\$49,918	\$74,876
Taxes paid	\$2,974	\$4,461	\$5,948	\$8,922
SS & Medicare	\$1,517	\$2,275	\$3,034	\$4,550
<b>Total</b>	<b>\$44,686</b>	<b>\$66,981</b>	<b>\$121,170</b>	<b>\$181,433</b>

*Note.* Calculation from tuition and fees multiplied by years to graduation. Interest accrued is calculated using the total tuition and fees at an interest rate of 4.67% for the subsidized loan, 5.33% for the unsubsidized loan and 8.50% for the private loan for a term of 10 years. Wages forfeited calculated at 25 hours per week times \$12.71/hour, times 52 weeks per year, times the time in school, minus federal and state taxes. At 100% of the time, this is 2 years for the BC student and 4 years for the CSUB student; at 150% time, 3 years for BC and 6 years for CSUB. Taxes paid are derived by calculating the wages at 15 hours per week, at \$12.71/hour, 52 weeks times the years in school at the specified federal and state tax levels. Total may be inexact due to rounding.

The average annual median wage for a BC graduate was \$33,755 and \$55,827 for a CSUB graduate. Assuming graduation at 100% time, the revised per annum median wage from the degree attainment (less loan repayments and taxes) is \$20,034 for the BC student and \$28,311 for the CSUB student (Table 5).

Table 5

*Individual Economic Benefits*

<b>Net Benefit</b>	<b>BC (100%)</b>	<b>BC (150%)</b>	<b>CSUB (100%)</b>	<b>CSUB (150%)</b>
Wages	\$33,755	\$33,755	\$55,827	\$55,827
Federal taxes	8,439	8,439	13,957	13,957
State taxes	1,176	1,176	3,062	3,062
Social Security and Medicare	2,582	2,582	4,271	4,271
Loan repayment per month	127	190	519	776
Loan repayment per year	1,524	2,280	6,227	9,308
<b>Total</b>	<b>\$20,034</b>	<b>\$19,277</b>	<b>\$28,311</b>	<b>\$25,229</b>

*Note.* Median wages in Kern County. Loan repayments are calculated 4.67% for the subsidized loan, 5.33% for the unsubsidized loan and 8.50% for the private loan for a term of 10 years. Federal and state taxes are obtained at (Income Tax, 2009; State of California Franchise Tax Board, 2009). Total may be inexact due to rounding.

Table 6 presents estimated wages across education categories.

Table 6

*Estimated summation of net wages across education categories*

<b>Net wages/degree premium</b>	<b>Non-PE Person</b>	<b>Associate</b>	<b>Bachelor</b>
<b>1-year summation, (\$)</b>	\$19,724	\$23,486	\$29,028
<b>Net present value, (\$)</b>	\$18,876	\$22,802	\$27,780
<b>Degree premium-sum, (\$)</b>		\$3,686	\$9,304
<b>Degree premium - NPV, (\$)</b>	---	\$3,528	\$8,904
<b>5-years summation, (\$)</b>	\$102,453	\$107,756	\$151,722
<b>Net present value, (\$)</b>	\$89,829	\$94,738	\$132,992
<b>Degree premium-sum, (\$)</b>	---	\$5,303	\$49,268
<b>Degree premium - NPV, (\$)</b>		\$4,908	\$43,163
<b>10-years summation, (\$)</b>	\$215,084	\$223,095	\$320,921
<b>Net present value, (\$)</b>	\$169,111	\$175,921	\$252,064
<b>Degree premium-sum, (\$)</b>	---	\$8,012	\$105,837
<b>Degree premium - NPV, (\$)</b>		\$6,811	\$82,953
<b>60-Years summation, (\$)</b>	\$2,067,497	\$2,253,714	\$3,378,738
<b>Net present value, (\$)</b>	\$578,146	\$595,353	\$853,198
<b>Degree premium-sum, (\$)</b>	---	\$186,218	\$1,311,241
<b>Degree premium - NPV, (\$)</b>		\$17,207	\$275,053

*Note.* Net wages are calculated post-graduation, assuming a 100%-time graduation rate, benefit, and cost. The formula calculates annual median wage plus a 2% COLA increase annually minus federal and state taxes (Income Tax, 2009; State of California Franchise Tax Board, 2009), social security, Medicare and loan repayment where applicable.

When examining the economic value of completing an earned degree at BC or CSUB for the individual, monetary gains are an important consideration. While there is a monetary increase for an individual with an earned associate’s degree, in Kern County, where the majority of occupations do not require a postsecondary degree, the gains are minor. Over the course of five years, the BC student will earn a present monetary value just over \$5,000 more than their non-PE counterpart, just over \$8,000 in 10-years and over \$180,000 in lifetime earnings. A CSUB student will earn a monetary value of only over \$9,000 more in five years over their non-PE counterpart, almost 50,000 in 10-years, and over \$1.3 million in lifetime earnings. The total return on investment (ROI) for a BC and CSUB student is presented in Table 7.

There is a profound difference between the ROI of earning a postsecondary degree at 100% time compared to 150% time, presented in Table 7. There is a 62% higher ROI for individuals who earned their associate degree in 100% (two years) versus 150% time (three years) throughout a lifetime. For the bachelor-holding individual, there is a 394% greater ROI over a lifetime at 100% time (four years) versus 150% time (six years) (Table 7).

Table 7

*Estimated Return on Investment*

	<b>Associate 100%</b>		<b>Associate 150%</b>		<b>Bachelors 100%</b>		<b>Bachelors 150%</b>	
	Absolute value (%)	NPV (%)						
<b>5-year ROI</b>	-88	-89	-97	-97	-59	-64	-73	-76
<b>10-year ROI</b>	-82	-85	-92	-94	-13	-32	-41	-54
<b>Lifetime ROI</b>	317	-61	255	-66	987	127	588	30

*Note.* Calculation degree premium at either 100% or 150% minus individual economic cost calculated at 100% or 150% divided by the same individual economic cost.

The BC student's economic costs earning an associate's degree totaled \$44,686, equaling a breakeven point just over two years. The economic costs for the CSUB student earning a bachelor's degree totaled \$121,170, equaling a breakeven point in four years.

***Net Financial Returns on Kern County***

In Table 8, the monetary loss between BC and CSUB in the course of the six years under investigation is over \$7.8 million. The economic benefit to BC's local economy over the six years equates to over \$79 million. When compared to the economic loss over the cohort default rates, \$3.2 million, the ratio of economic gain/loss is \$24.81:1. The economic benefit provided by CSUB over the same period is just over \$208 million. Compared to the loss of \$4.6 million in student loan defaults, the economic benefit equals a ratio of \$45.09:1. Although the impact is indirect, the undergraduate programs at BC and CSUB also impacted individual exposure to poverty and unemployment for those who completed their PE (Figures 2 and 3).

Table 8

*Economic Loss for Kern County*

Year	Student headcount		No. of students receiving federal loans		CDR		Average financial aid awarded		Approximate monetary loss	
	BC	CSUB	BC	CSUB	BC	CSUB	BC	CSUB	BC	CSUB
<b>2009</b>	18,564	6,553	557	1,900	26.6	6.4	\$5,424	\$4,270	\$803,515	\$519,333
<b>2010</b>	19,673	6,570	787	2,234	30.0	10.7	\$4,974	\$4,370	\$1,174,242	\$1,044,503
<b>2011</b>	17,726	6,746	355	2,631	27.7	9.6	\$3,414	\$4,303	\$335,262	\$1,086,810
<b>2012</b>	17,741	7,271	355	2,545	21.3	6.7	\$5,072	\$4,498	\$383,325	\$766,931
<b>2013</b>	18,295	7,242	366	2,317	21.4	5.5	\$4,346	\$4,338	\$340,303	\$552,918
<b>2014</b>	19,143	7,544	191	2,188	20.4	7.1	\$4,276	\$4,276	\$166,985	\$664,195
<b>Total</b>									\$3,203,632	\$4,634,690

*Note.* The student headcount by percent of students awarded federal loans to derive the number of students receiving federal loans. The numeric value is multiplied by the institutional CDR and average financial aid awarded per student to obtain an approximate monetary loss.

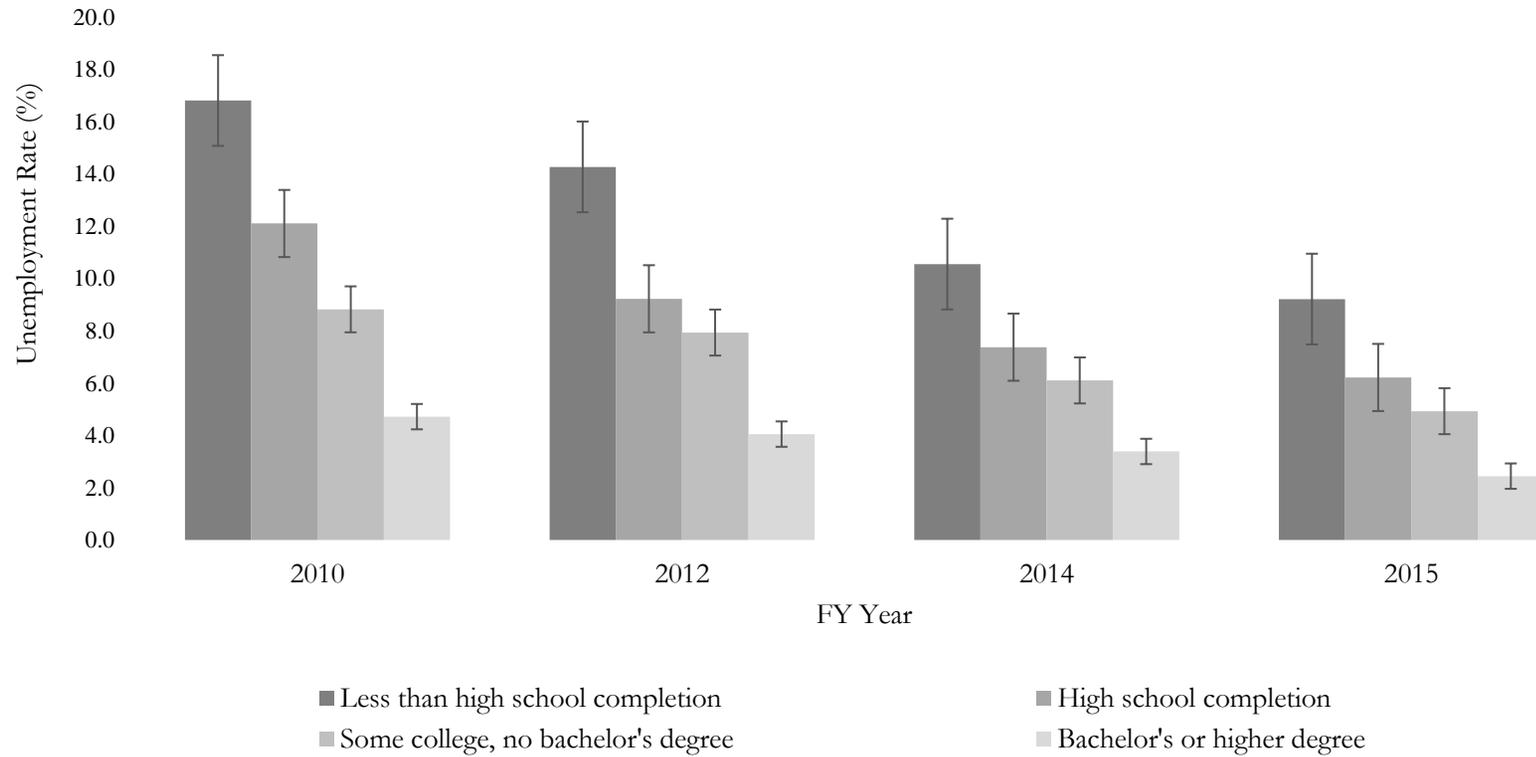


Figure 2.

*A comparison of unemployment rates by educational attainment for those between the ages 25-64 years of age in Kern County.*

*Note.* Error bars are represented by standard error, U.S. Census Bureau. (2018). Kern County Educational Attainment 2009-2014, S1501.

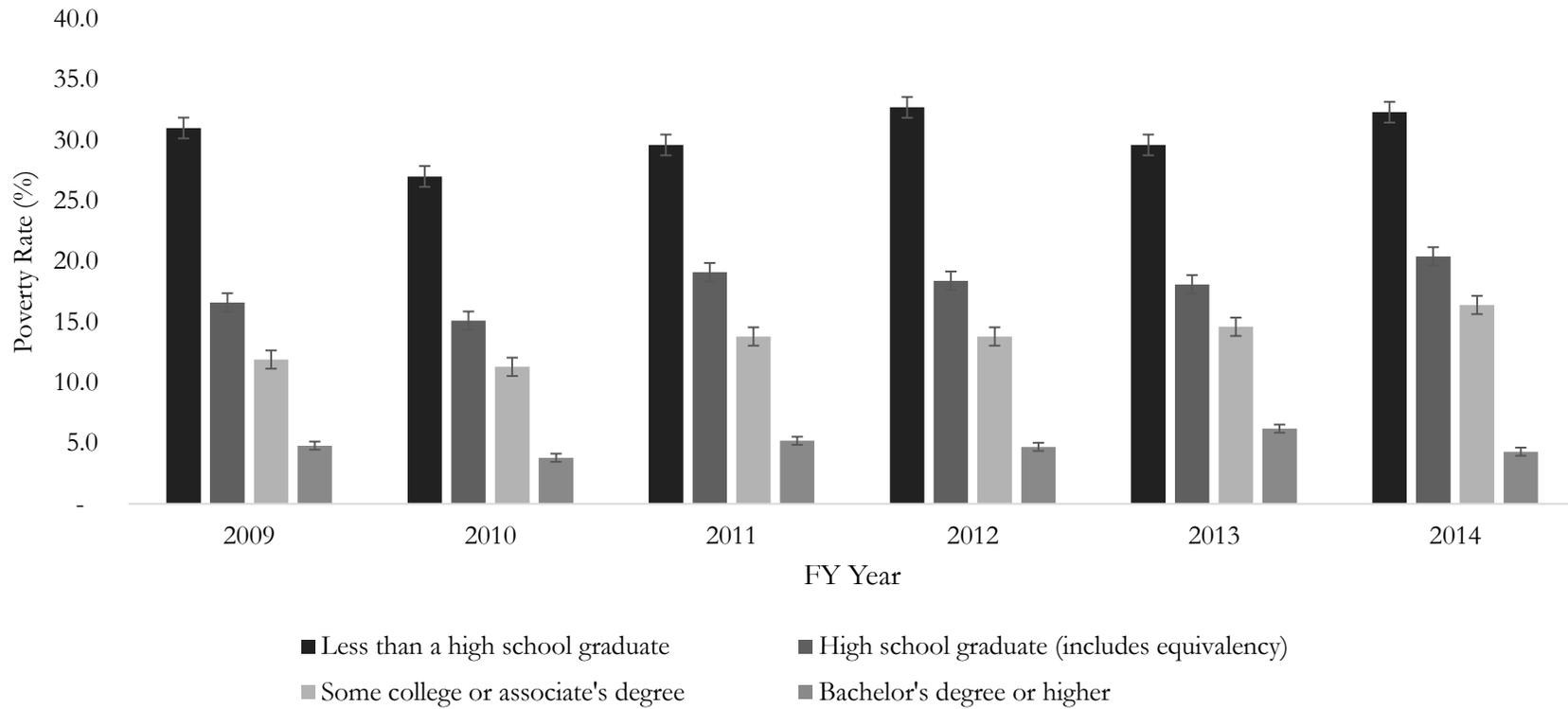


Figure 3.

*A comparison of poverty rates by educational attainment for those between the ages 25-64 years of age in Kern County.*

*Note.* Error bars are represented by standard error, U.S. Census Bureau. (2018). Kern County Educational Attainment 2009-2014, S1501.

## Discussion

The economic value of an earned associate and bachelor's degree in Kern County compared to the alternative of not pursuing postsecondary education and the institutional economic benefits and costs produced by BC and CSUB on Kern County were examined. The economic impact of the undergraduate programs of BC and CSUB on Kern County and the individual between 2009-2014 was economically positive. Both institutions had a substantial economic impact on Kern County and the individual student. The effect of the institutional level undergraduate programs at BC and CSUB resulted in positive monetary returns, less exposure to poverty and unemployment for those who completed their PE, and growth in the local labor market. Although the monetary returns are minor for an individual with an associate's degree, at the institutional level, there are additional benefits in Kern County from pursuing a postsecondary education, primarily the decreased exposure to unemployment and poverty.

### Net Financial Returns

When examining the relationship between private net financial returns to the individual graduating from either BC or CSUB to the non-postsecondary education individual, the monetary returns are positive. However, it is essential to note that time to graduation is critical, particularly when presenting ROI.

The relationship between public net financial returns of attending BC and CSUB compared to the non-postsecondary educated individual for Kern County is also economically favorable, even during 2009-2014 when the United States was still transitioning from the Great Recession. Completed PE, being the primary directive, positively impacted Kern County by decreasing an individual's probability of falling into poverty. This knowledge makes it even more important for both BC and CSUB to program alignment with respect to local labor market demand. Currently, the labor market in Kern County and the degrees issued by BC and CSUB do not align well. The top five occupations in Kern County with the most positions are agriculture, labor, and service industries, none of which require formal education beyond high school (Employment Development Department, 2014; Queenan and Street, 2018). Kern County mirrors California closely. Projecting through 2024, in Kern County, 33.57% of new jobs would require a bachelor's degree or higher. Occupations that require some college, a postsecondary award, or an associate's degree, will encompass 14.08% of available jobs. The remaining 52.35% of occupations will require no formal educational credential or a high school diploma (Employment Development Department, 2018b). While the demand for postsecondary educated workers is low, it still provides Kern County the opportunity to expand its current labor force population. In 2014, 15.2% of Kern County's workforce had a bachelor's degree or higher (American FactFinder, 2014a), far below the state average of 31.0% (American FactFinder, 2014b). These statistics reveal that Kern County will need to expand its bachelor-educated labor force by 18.37% [4] or approximately 3,355 additional individuals [5] by 2024 to meet projected County demand. If 3,355 individuals transitioned into the labor market to positions requiring a bachelor's degree, that would result in over a \$28 million increase in revenue and taxes into the economy. [6]

Although the analysis is focused on California's Central Valley, the findings are also valuable, generally, to other institutions of higher education, making clear two critical points: 1) time to graduation should be a priority and 2) the intentional alignment of programs to the local labor market is imperative. This knowledge and the specific implementations can and should only be uncovered through a local examination of data.

### *Individual Net Financial Returns*

Costs and benefits are not only incurred by the individual but by the local economy as well. When students take out loans and either fail to obtain employment or default on their student loans, the impact on the economy can be significant. In the instance of a default on a mortgage, the bank can seize a tangible asset, notably the house. However, when a student defaults on their loan(s), it is impossible to recoup the

intellectual knowledge gained. The economic benefit and costs gained and forfeited by the individual presented above assumed the student would graduate in the established 100%-time frame, two years for an associate degree, and four years for a bachelor's degree. However, most students do not graduate in the established time. Only 58.6% of students in a public bachelor level program currently graduate in 150% or six years (National Center for Education Statistics, 2017b). At public two-year institutions, the completion rate in 150% of the time, or three years is 21.9% (National Center for Education Statistics, 2017a). This change in years to completion will then also change the individual economic cost significantly.

As stated, students who graduate in 100% time at BC incur economic costs of \$44,686. If the time to attaining an associate degree increases to even 150%-time, the amount the individual incurred grows to \$66,981, resulting in an additional 50.0% increase in time and expenses incurred. Additionally, this data means that the remaining 78.1% of students are still ungraduated within three years. If only 21.9% of students graduate with an associate degree in three years and then choose to transfer, they will average nine years to complete their bachelor's degree, placing a significant economic burden on both the individual and the local economy.

The individual economic cost incurred for a bachelor student who graduates in 100% time is \$121,170. If the time to graduation increases to 150%, the economic costs grow to \$181,433, a 50.0% rise. As data relates, this still leaves 41.4% of bachelor pursuing students ungraduated. Since economic costs are higher at CSUB compared to BC, it is critical that students at this level graduate. The costs incurred by both the student and the taxpayer make the stakes much higher if the individual fails to attain their degree. These new statistics are important when the institutions evaluate their program offerings and considering adaptations.

At first glance, the short-run paints a dismal picture for those who earn their degree in 150% time and fund their education through loans. However, this is merely a temporary trade-off for an individual earning a bachelor's degree. For an individual earning an associate's degree within Kern County, the NPV return on education is valuable at 100% time, but the return remains negative at 150% time.

**Recommendations.** It is obvious to state an important solution to addressing the extended costs to the individual when they do not graduate in 100% time is to empower students toward graduation. This is challenging because the mission of CSU's and CCC's do not allow for high admissions criteria. CSU's can choose from the top one-third of high school graduating classes, but CCC are tasked to admit any student capable of benefiting from instruction (University of California, 2017). It must be acknowledged, particularly for BC, that not every student who attends is seeking a postsecondary degree. One attempt to address barriers which impede graduation in 100% time is Assembly Bill (AB) 705.

The purpose of Assembly Bill (AB) 705 and implementation of Guided Pathways attempt to focus on the issue of delayed graduation. AB 705 bypasses remedial math and English for students and requires higher education institutions to place all students in a transferable level math and English class within one year of matriculation (California Legislative Information, 2017). Guided Pathways attempts this by establishing majors for students while they are in high school, hoping they can transition directly into college and complete a familiar major instead of spending a few years searching for one. These will undoubtedly have a significant economic impact on the individual and the institution, but the ramifications are yet to be determined.

### ***Net Financial Returns on Kern County***

The monetary loss through student defaults is only a portion of BC and CSUB's impact on the local economy. The impact institutions of higher education have on the local economy should not be understated. The loss experienced by the institution, the local economy and the student when students default on their federal loans has deep reverberations. It is not a dollar-for-dollar loss; instead, it has the power to be much more profound. When a student defaults on a federal loan, they can have wages garnished, which will impact their credit score negatively. If the student also did not complete their degree,

they are forfeiting the degree premium from an earned degree. All of this leads to a decrease in disposable income, which impacts spending in the local economy and potential taxes, which benefit the public.

On the other side, completed education provides individuals the opportunity to profoundly change the trajectory of their lives. Aside from the monetary benefits such as higher wages, there are also non-monetary benefits, as stated previously. Looking at unemployment, wages, and poverty can provide a glimpse into how invaluable PE is to a local economy.

**Unemployment, Education, Wages, and Poverty.** Educational attainment, unemployment, wages, and poverty are all intimately interlinked. Individuals with PE were more likely to be employed and realize a higher wage (U.S. Census Bureau, 2018). In 2009, 14.6% of Kern's workforce had a bachelor's degree or higher (American FactFinder, 2009), by 2014, that number had only risen slightly to 15.2% (American FactFinder, 2014a), far below the state average of 31.0% (American FactFinder, 2014b), which means there may be room to expand a qualified labor supply.

**Unemployment.** The unemployment rate in the U.S. averaged 8.25% during the five years being investigated, California at 9%, but Kern County remained substantially more elevated at 13.8%. The portion of the population without a PE was impacted the most significantly by the rise in unemployment (U.S. Census Bureau, 2018).

Between 2009 to 2014, the population of Kern County grew in educational attainment. [7] Those aged 18 to 24 experienced the most impact through education. Those in this age range who were "Less than a high school graduate" declined by -29.79%; whereas, those who earned a "Bachelor's degree or higher" grew by 65.52%. Given that the average student at both BC and CSUB are under 24 years of age, these statistics coincide. Those over the age of 25 years saw similar trending, but with a different magnitude. Those with "Less than a high school graduate" declined by -10.88%, individuals with "an Associate's degree" increased by 12.90%, and those who attained a "Bachelor's degree or higher" increased by 10.79%. Unemployment rates are an important part of the economic picture being framed, with the median income being another valuable component. An additional benefit to a decline in unemployment is an increase in median wages.

**Median Wages.** Individuals with PE were more likely to be employed and to realize a higher wage. Examining median income in Kern County, there were critical differences that varied by educational attainment. In 2014, the median income of those with a bachelor's degree and those with some college or an associate's degree exceeded the median income of an earned high school diploma by 94.5% and 11%. (U.S. Census Bureau, 2018).

The focus in Kern County being on unskilled laborers is demonstrated by the median wage growth between 2009 to 2014. The category "High school graduate or equivalent" saw a 22.79% 5-year percent increase. This aligned well with the demand for Farm and Retail employment, which comprised 19% and 10% of the highest growing industries within Kern County during the same period (Employment Development Department, 2016). The most concerning data is the -5.8% decline in the "Some college or associate degree" category. This category needs further disaggregation because, in the labor market, there is an essential difference between the population with some college and the attainment of an associate degree. Census data disaggregates this category further. Over the five years in question, an average of 24.07% of the population had some college, but no degree, whereas, on average, 7.02% of the population had an associate degree. It is logical that those with some college, but no degree, would be the dominant population in this income sector. Lacking specified educational qualifications leaves individuals unable to enter the more lucrative job market that demands a completed PE. Despite the lack of demand for skilled workers in Kern County, those who attained a "Bachelor's degree or higher" saw a 19.42% increase in the 5-year percent change in wages.

**Poverty.** The impact the issuance of degrees had on the labor market in Kern County can be viewed

in the educational attainment of the population in relation to the level of poverty. Where they differ most importantly is the arena of poverty change. In both Kern County and California, the 5-year (2009-2014) percent change increase in poverty was most pronounced in the categories “High school graduate (or equivalent)” and those with “Some college or associate degree.” These areas increased 22.90% and 37.8% for Kern County; 26.50% and 25.00% for California. U.S. Census data defines over 24.00% of this category as “some college,” as opposed to an “associate degree.” Even though the percentage of the population remained relatively low for those who held a bachelor’s degree or higher, California saw a 22.20% 5-year percent change increase in poverty for these individuals where Kern County saw a decrease of -10.40%.

## Limitations

Quantifying the value of education is a subjective undertaking. There are monetary and non-monetary gains and losses, all of which carry different weights to each individual and society. This study is limited to the geographical constraints of Kern County. Second, the years of impact are limited from 2009-2014 because it is within these dates the U.S. Department of Education has calculated 3-year cohort default rates. Also, this study was conducted using only those students who attended undergraduate programs at BC and CSUB. The main reason for choosing to limit the scope of the study to these two institutions is because they are both public and open access. The two schools hold between 63-70% of the market share on postsecondary graduates, with degrees conferred at an average of 1,600 each per year. The choice to exclude CSUB graduate programs is to center on the impact of an undergraduate education, which varies significantly from that of a graduate degree.

Additionally, this study was conducted at an institutional level; therefore, data need to be minimally disaggregated by program level. The program level, debt incurred, and opportunity for post-graduation earnings are an important part of breaking down this analysis further (Carnevale, Cheah, and Hanson, 2015, Gross et al., 2010, Herr & Burt, 2005; Lobo & Burke-Smalley, 2018; Oreopoulos and Petronijevic, 2013; Steiner & Teszler, 2005). The importance of choosing a major could be more important than deciding whether to attend college, particularly if debt is accrued.

Last, this study focused on federal student loans. Students are free to choose a private loan from a private source, but that information is not included due to the inaccessibility of the data. Within the United States, in the context of total student aid and non-federal loans, during the 2000-01 AY, the percent of non-federal loans versus federal loans was 6% to 38%. During the 2017-18 AY, the percent of non-federal loans versus federal loans was 5% to 29% (College Board, 2020b). Although the demand for loans has declined from 2000, federal loans still supersede non-federal loans by 14 percentage points during the 2017-18 AY.

## Implications for Policy and Practice

Findings from this study can be useful to students, institutions, and policymakers. From a student standpoint, it is essential to acknowledge that education is valuable from a monetary and non-monetary perspective. But if approached strategically, education can be utilized as a significant lifetime asset.

From an institutional standpoint, the most critical takeaways are to (a) know the student demographics well, (b) strategically utilize already created programs, (c) invest in programs which will further strengthen the local economy in the long-run, (d) pursue an active analysis of labor market demand and alignment and (e) consider the role of postsecondary institutions outside of direct labor market demand.

### ***Know Your Student***

The predominant student characteristics at both institutions are: female, under the age of 24, and Hispanic. During the years of 2009-2014, these characteristics were further strengthened. Despite predominately serving a marginalized population and experiencing a severe recession, both institutions saw an increase in enrollment. Since Latinos are the fastest-growing population in Kern County yet have one of the lowest postsecondary attainment rates (Kelly, Schneider, & Carey, 2010), it is critical to address how best to support these Hispanic Serving Institutions. Both institutions should attempt to market their programs to the student type, which dominates their campus. Marketing strategies and outreach should focus not entirely but substantially on drawing young Hispanic females to the fields which most align with the market.

### ***Use What Is Already Established***

BC and CSUB benefit from an already established registered nursing program on which to build a stable student base where demand is already firmly established. CSUB can also attempt to capitalize on the counselor's field, but it will need to be strategic and attempt to tie it to the psychology degree. As previously seen, the majority of degrees conferred by both institutions were in the Liberal Arts category. This field is generic in its composition and might leave individuals lacking the expertise needed to adequately move into specific labor markets. When addressing the top degrees issued, CSUB revealed a trend that will require future education for those who obtain a bachelor's degree. With the top degrees in 2014 being Liberal Arts, English, Psychology, and Social Studies, individuals working in these fields will require advanced postsecondary degrees or additional certification if they choose to teach. Specifically, CSUB should continue to promote the Teacher Education programs. All areas of education are expected to see higher than average growth and high median wages (Employment Development Division, 2018). Middle school teachers are expected to experience the highest growth at 16.1% with a median wage of \$67,200, secondary teachers with the second-highest growth of 15.1% and a median wage of \$69,614, and elementary school teachers with a gain of 14.9% and a median wage of \$64,420 (Employment Development Division, 2018). CSUB provides these options, but the delay in individuals entering the labor market will likely result in additional costs to both the individual and the economy.

### ***Invest in New Programs***

Program adaptations are needed to meet labor market demand. Addressing this issue will be much more difficult for CSUB than BC. BC and CSUB will need to reevaluate their academic offerings to address the conflicting needs between Kern County and the state of California. Out of the top 50 fastest growing occupations in Kern County, 6 require a bachelor's degree, 4 require postsecondary nondegree award, and 1 requires some college, no degree. Out of the projected employment for these 50 occupations, only 17.00% require a postsecondary degree, with 12.87% requiring some postsecondary skills. Even though these are small percentages requiring PE, there is still room for BC and CSUB to help grow the needed labor force, given a Kern County workforce with 15.2% holding bachelor's degrees (American FactFinder, 2014a).

CSUB should consider moving into software development. This occupation is in demand both in Kern County and California. If CSUB can establish relationships with the largest software companies in the state to assist in developing required skills, it would be a degree that could increase enrollment, completion, and individuals finding a job post-graduation (in their field), which is economically advantageous for all involved. Additionally, CSUB could expand into Occupational Health and Safety Specialists and Athletic Trainers degrees. Both occupations are expected to grow, 10.0% and 20.0% and median wages are \$77,913 and \$44,475, respectively (Employment Development Department, 2017b).

Although this research focuses on undergraduate programs, CSUB should also consider expanding master-level education options. As previously stated, from 2014 to 2024, demand for individuals who hold a master's degree is expected to be the fastest-growing typical entry-level education category, at approximately

13.75% (Bureau of Labor and Statistics, 2017). The occupations requiring PE in Kern County and California, which could be immediately addressed by CSUB, are rehabilitation counselors and statisticians. Specifically, CSUB could expand into the nurse practitioner arena, meet the statistician labor demand through their economics and mathematics degrees, and intentionally align the counseling psychology master's degree to meet the rehabilitation counselor demand.

In addition to focusing on the projected positions which require a postsecondary degree, with such a small portion of the labor market in Kern County demanding a PE, both institutions should reevaluate the degrees they emphasize, potentially increasing their vocational emphasis, which BC has already begun to do through Career Technical Education (CTE). BC should consider expanding their Heating, Air Conditioning, and Refrigeration Mechanics and Installer program and programs Industrial Machinery Mechanics. These occupations are expected to grow by 3.0% and 36% over the next decade and have a median wage of \$51,306 and \$60,185 (Employment Development Department, 2017b).

In line with the health care emphasis, both institutions could consider expanding into respiratory therapists, diagnostic medical sonographers, and psychiatric technicians. Neither of these degrees requires more than an associate and expected to grow by 12.5%, 25.0%, and 40.0% over the next decade, respectively. Additionally, they have median wages of \$74,616, \$79,333, and \$63,48 (Employment Development Department, 2017b).

### ***Ongoing Analysis***

Additionally, more frequent examinations into labor market demand are required to identify surplus and deficit areas and strengthen the correlation with BC and CSUB. These examinations would have a more substantial impact if there were a quantitative and qualitative component. Running projected occupation analysis is valuable but engaging with the private sector is invaluable. Those in the private sector are quick to identify shifts in demand and articulate what they need in employees. Once economic needs are identified, it can be challenging to find alignment if it is not already established. BC has the advantage of utilizing Career Education programs to meet labor demands in Kern County. Career Education is more malleable than strictly academic programs. For example, an entrepreneurship certificate or degree could be easily modified to meet the specific needs of local industry, whereas a degree in English is less pliant. CSUB could consider a similar degree type, but it would be most valuable if tied to a particular industry. In Kern County, this demand appears to be in agriculture, health aides, and the service/hospitality industry.

### ***Address Upcoming Demand***

Institutional economic benefits and costs are directly tied to the labor market in Kern County and to the programs each institution offers. The labor market in Kern County has shown a remarkable trend for demanding, primarily, uneducated workers. This reality and the extended time it takes students to graduate are likely tied closely to the CDR, BC being the greatest cause for concern. Unless these institutions can make program adaptations that meet what the market is demanding, and there are minimal options for emphasis given current projections, they will likely continue to see problematic defaulting. Additionally, both institutions need to address completion over enrollment. It provides neither the institution nor Kern County any value having individuals start a postsecondary path, accrue debt, and then fail to achieve a degree.

### ***Purpose of Education***

This research is unashamedly a proponent of alignment between the local labor market and institutions of postsecondary education, for all the reasons already addressed. Still, there is value in postsecondary education outside of return on investment. There was a time when college was a time for self-discovery. A time for students to develop the skills needed to establish their values and define how they

choose to measure success (Deresiewicz, 2014). The role of higher education, in certain years, has become complex, at best. When discussing postsecondary institutions Chan (2016, 2) clearly addresses this complexity. He says they,

...are not only under pressure to promote college access, affordability and completion...but also enhance individuals' core competencies and dispositions, such as the ability to think logically, the capacity to challenge the status quo, and the desire to develop sophisticated values for entry into the highly competitive labor market.

Colleges and universities are striving to prove their worth and, as such, are moving students to define their educational goals and complete them expeditiously. However, students do not always enter postsecondary education with the same intense desire to complete their education in the desired time frame. Students at times attend colleges just because (a) their friends are going, (b) it's an expectation by a parent or teacher, (c) they enjoy learning, (d) they desire independence, (e) they are searching for confidence functioning in society, or the antithesis of modern educational goals, and (f) to delay entry into the workforce (Bui, 2002). While institutions of postsecondary education and policymakers understand the importance of students being equipped to enter the labor market in a timely manner, it must be acknowledged that students do not always enter college with that intent and yet can, in fact still acquire valuable knowledge from experience.

## Conclusion

In a generic sense, degrees attained align with the labor market because skilled workers are in high demand for California, but less so for Kern County, where occupations requiring a PE are minimal. The individual economic benefit of obtaining an education far exceeds the costs in the long-run, but in the short-run, it is greatly dependent on the time it takes a student to complete their degree. The longer a student remains in the place of "some college," but no degree, they accumulate debt without the benefits associated with degree attainment. The institutional economic benefits and costs were positive over the 6-year investigation but were dependent upon student success. BC and CSUB between the years of 2009-2014 had low graduation rates. Graduation rates being defined as those who graduate in 150% time. BC maintained incredibly low graduation rates, which, if left unaddressed, will produce negative economic growth for the economy. Program adaptations to meet labor market demand are needed at both institutions. The demand for educated workers in Kern County is limited to professional fields. Therefore, CSUB will need to be cautious in what program changes it makes.

The value of this research, in particular the use of a cost-benefit analysis, is two-fold. First, it is malleable to any geographical area. Second, it allows institutions of higher education to focus on data specific to their community and institution. Broadening the geographical analysis can provide a valuable overview, but a great many details significant to the counties' success will be lost. Higher education institutions do not need general recommendations, the institution, the student, and the local economy need specific analysis to allow all three to function at the highest synergistic level. A localized analysis will allow postsecondary institutions the information required to be intentional about aligning institutional goals strategically. Examining recent trends in local median wages, tuition fees, cohort default rates, poverty, and alignment with the local labor market can provide real-time insight into the ever-fluctuating impact of education on the individual and the local community. This information can allow institutions of higher education to address the changing needs of the local economy. During this time of severe economic volatility, it is crucial to note that both BC and CSUB experienced elevated levels of default in student loans, PE, and financial aid still provided value to the student and the local economy.

## Nexus: Connecting Research to Practice

Understanding the importance of the deep and intricate relationship between the local economy and the dominant institutions of higher education cannot be overstated. Continual analysis and work to strengthen weak areas in the local economy will allow counties and states to grow in income equality and sustainability. A few policy and practice recommendations derived from this study's findings include the following:

### ***Work Experience***

Labor market data show that students who work in their field during school can see an increase in wages by 37% (Lipson & Stern, 2018). In areas where majors and occupational demand experience misalignment, it would be beneficial to consider internships to support both the major and the individual pursuing the degree. Other potential advantages of a built-in internship would be getting investment from the private sector and establishing valuable networking arenas.

### ***Financial Aid***

The years under investigation were economically volatile as the United States was coming through the Great Recession. The occupational growth in California's Central Valley was most prolific in areas that did not require PE. Both BC and CSUB experienced higher than national average cohort defaults. Despite this culmination of events, PE still proved to be valuable, both monetarily and non-monetarily, for the student and the local community, due in part to the access and availability of financial aid. The recommendation to strengthen the opportunity financial aid has provided students is intentionality in advising.

### ***Advising***

Advising is a critical component to student success. Both BC and CSUB need to implement multiple layers of advising resources. There is advising on degree/major and career advising. For students, there can often be a disconnect between the degree/major they wish to pursue and available career options, particularly geographically specific career options. It would benefit the individual, the institution, and the local economy for clear communication in this area. When a student shows interest in a degree/major, it would be advantageous for the individual to be provided with local industries that offer jobs to holders of that specific degree.

The time frames for advising could be outlined as pre-admission, year one, year two, and year three. Pre-admission advising may include, as stated above, the connection between degree/major to career options, specific geographical employment opportunities, and salary potential. After year one, there should be a degree/major check and a qualitative examination into how the student is doing. Solid grades are important, but is the student still connecting with the degree/major? Year one should also be the first introduction to internship opportunities. Year two should place heavy emphasis on internships and local industry networking. Year three should include career and job counseling, preferably from individuals within the department who can continue local industry networking. In addition, resume building, soft skills valued by this specific industry, and important job application tips would also benefit students transitioning from education into the industry.

### Notes

[1] The U.S. Department of Education has several definitions for examining delinquency and default. Delinquency is defined as a payment not received by the due date. A loan remains delinquent until the borrower makes up the missed payment(s) or receives a deferment or forbearance that covers the period they were delinquent. Default is when a borrower fails to make a payment for 270 days. The National Student Loan Data System uses the Cumulative in Default definition which includes loans that are more than 360 days delinquent.

[2] In real 2018 dollars.

[3] There have been examinations into the fiscal impact of high school graduation Brady, Hout, and Stiles (2005), Currie (2001), Goldhaber and Player (2003), and Levin, Belfield, Muennig, and Rouse (2007); public and individual investment Baum and Payea (2004), Belfield, Nores, Barnett, & Schweinhart (2006), Lynch (2004), and Trostel (2007, 2009, 2017).

[4] 33.57% (2024 anticipated demand)-15.2% (Kern County Bachelor holding individuals).

[5]  $[54,400 \text{ (anticipated individuals)} * 33.57\% \text{ (anticipated bachelor or higher)}] * 18.37\% \text{ (bachelor gap)}$ .

[6] This amount reflects the marginal benefit over a non-PE person (Table 10).

[7] Authors calculation from American FactFinder, 2014a.

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Table 9

*Economic benefit for Kern County*

Year	Degrees issued		Increase of income revenue due to educational attainment		Increase of tax revenue <sup>a</sup>		Economic benefit	
	BC (Associate)	CSUB (Bachelor)	BC (Associate)	CSUB (Bachelor)	BC (Associate)	CSUB (Bachelor)	BC (Associate)	CSUB (Bachelor)
<b>2009</b>	1,803	1,314	\$210,301	\$11,028,254	\$13,207,992	\$21,573,030	\$13,418,293	\$32,601,283
<b>2010</b>	1,696	1,286	197,821	10,793,253	12,424,156	21,113,330	12,621,977	31,906,583
<b>2011</b>	1,569	1,388	183,008	11,649,327	11,493,810	22,787,949	11,676,817	34,437,277
<b>2012</b>	1,748	1,490	203,886	12,505,402	12,805,086	24,462,568	13,008,972	36,967,970
<b>2013</b>	1,822	1,480	212,518	12,421,473	13,347,177	24,298,390	13,559,695	36,719,863
<b>2014</b>	2,040	1,448	237,945	12,152,901	14,944,150	23,773,019	15,182,095	35,925,920
<b>Total</b>							\$79,467,850	\$208,558,895

<sup>a</sup> Federal, state, Social security and Medicare taxes are summed to obtain the increase in tax revenue. The annual tax difference from the degree holder and the non-PE individual is multiplied by the degrees issued to derive the increase in tax revenue. The economic benefit is the summation of the additional income and taxes.

*Note.* Increase of income is calculated by taking the difference between the median associate/bachelor degree from wages a non-PE individual can earn at the utilized median wage of \$12.71 per hour. Federal and state taxes (Income Tax, 2009; State of California Franchise Tax Board, 2009). Social security and Medicare are calculated at the 2009 rate of 7.65% This figure is multiplied by the appropriate institutional degrees issued.

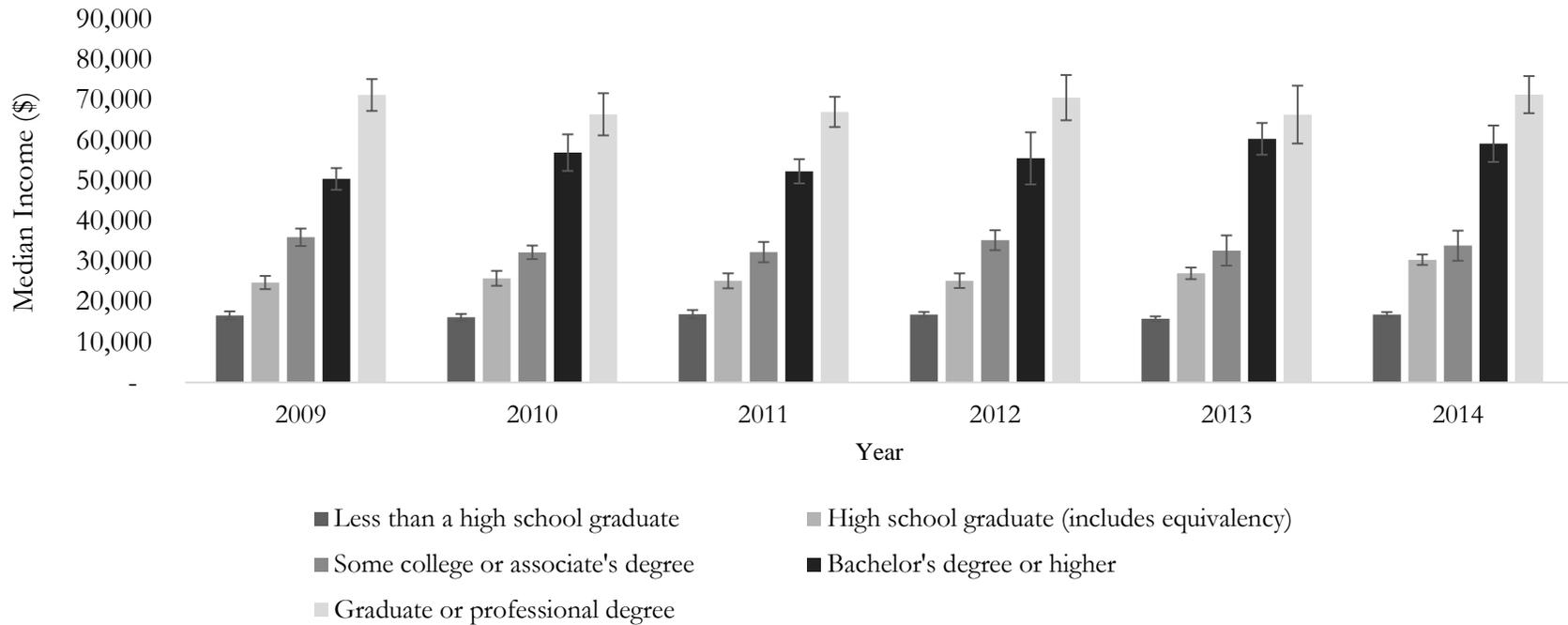


Figure 4.

*Median wages in Kern County by educational attainment for those over 25 years of age.*

*Note.* The degree of uncertainty for an estimate arising from sampling variability is represented through the use of a margin of error. The value shown here is the 90 percent margin of error. U.S. Census Bureau, 2018. Educational Attainment 2009-2014, S1501.

Table 10

*Net Median Wage Comparison by Educational Attainment*

	NPI (Median Wage)*			Associate*						Bachelor*					
	Per Annum (\$)	5-year (\$)	10-year (\$)	Per Annum, (\$)	Difference from Med Wage, (\$)	5-year, (\$)	Difference from Med Wage, (\$)	10-year, (\$)	Difference from Med Wage, (\$)	Per Annum, (\$)	Difference from Med Wage, (\$)	5-year, (\$)	Difference from Med Wage, (\$)	10-year, (\$)	Difference from Med Wage, (\$)
<b>Wages</b>	26,428	132,138	264,277	33,755	7,327	168,775	36,637	337,550	73,273	55,827	29,399	279,135	146,997	558,270	293,993
<b>State Taxes</b>	524	2,620	5,240	1,176	652	5,880	3,260	11,759	6,519	3,062	2,538	15,308	12,688	30,617	25,377
<b>Federal Taxes</b>	3,964	19,821	39,642	8,439	4,475	42,194	22,373	84,388	44,746	13,957	9,993	69,784	49,963	139,568	99,926
<b>SS &amp; Medicare</b>	2,022	10,109	20,217	2,582	561	12,911	2,803	25,823	5,605	4,271	2,249	21,354	11,245	42,708	22,490
<b>Loan</b>	----	----	----	1,524	1,524	7,618	7,618	15,236	15,236	6,227	6,227	31,136	31,136	62,271	62,271
<b>Net</b>	<b>19,918</b>	<b>99,589</b>	<b>199,178</b>	<b>20,034</b>	117	<b>100,172</b>	583	<b>200,344</b>	1,166	<b>28,311</b>	8,393	<b>141,553</b>	41,964	<b>283,107</b>	83,929

\*Values have been rounded to the nearest dollar. Values assume graduation at 100% time.

Table 11

*Occupation in Kern County with the Highest Job Demand, 2009-2014*

<b>Year</b>	<b>Occupation</b>	<b>Percent of total industry jobs</b>
<b>2009</b>	Total Farm	15.0
	Health Care & Social Assistance	10.0
	Retail Trade	9.0
	Local Government Education	9.0
	Accommodations & Food Service	7.0
<b>2010</b>	Total Farm	16.0
	Health Care & Social Assistance	10.0
	Retail Trade	9.0
	Local Government Education	9.0
	Accommodations & Food Service	7.0
<b>2011</b>	Total Farm	17.0
	Health Care & Social Assistance	10.0
	Retail Trade	9.0
	Local Government Education	9.0
	Accommodations & Food Service	6.0
<b>2012</b>	Total Farm	18.0
	Health Care & Social Assistance	10.0
	Retail Trade	9.0
	Local Government Education	9.0
	Accommodations & Food Service	6.0
<b>2013</b>	Total Farm	19.0
	Health Care & Social Assistance	10.0
	Retail Trade	9.0
	Local Government Education	8.0
	Accommodations & Food Service	7.0
<b>2014</b>	Total Farm	19.0
	Health Care & Social Assistance	10.0
	Retail Trade	10.0
	Local Government Education	8.0
	Accommodations & Food Service	7.0

*Note.* Employment Development Department (2016).