

# **THE ECONOMIC IMPACT OF VICTOR VALLEY COLLEGE**

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## **Executive Summary**

*\*The Victor Valley College is a tremendous resource for the High-Desert community, producing \$898 million per year in total benefits/outputs, at a total economic cost of only \$141 million per year. We found such a favorable benefit-cost ratio despite the fact that we made every effort to make our benefit estimates conservative and our cost estimates inclusive. We also find these results to be quite robust with respect to changes in assumed values for various parameters, such as interest rates, wage prospects, etc.*

*\*On the benefit side, the main outputs of the College are the increments to students' lifetime earning power that a college education provides. We estimate this output as being worth \$882 million per year. Our estimates of these outputs were based directly on federal government studies of earnings experience by educational attainment. In addition, a college education can be thought to produce better citizens and to enhance the quality of life for the community as a whole. As these citizenship and quality-of-life benefits are non-monetary in nature, we have not attempted to include them within our economic impact calculus.*

*\*Another benefit of having VVC in the High Desert community is the savings in time and expenditure it affords local residents by allowing them to achieve their higher education locally, rather than to commute elsewhere. We estimate these savings to be worth \$16 million per year.*

*\*The last measurable output of VVC operations are the community enrichment afforded by its athletic and entertainment events. We have under-stated these benefits by equating them to the revenues earned by the College in these endeavors (\$0.08 million).*

*\*In producing these outputs, the community expense costs via its expenditure on VVC budget items (\$41 million), via the foregone use (opportunity costs) of College land and facilities (\$10 million), and via the costs of time and expenditure that VVC students expend in traveling to campus and performing their studies (\$91 million per year).*

*\*While the total benefits of VVC operations exceed the total costs by better than six to one, the cash revenues of the College typically fall short of cash expenditures. Based on our findings, we believe community support of the College to bridge this gap is certainly with the interest of the High Desert community.*

<b><u>ECONOMIC IMPACT OF VICTOR VALLEY COLLEGE</u></b>	
<b><u>BENEFITS</u></b>	
<b><u>Contributions to...</u></b>	
<b>Future BAs from this year's transfers</b>	<b>\$127,665,204</b>
<b>AAs only from this year's finishers</b>	<b>\$290,319,674</b>
<b>Some College For First-Year Students</b>	<b>\$425,089,387</b>
<b>Benefits For Non-Graduating Students</b>	<b>\$38,777,226</b>
<b>Total Educational Benefits</b>	<b>\$881,851,492</b>
<b><u>Time-Savings for...</u></b>	
<b>Full-Load Students</b>	<b>\$3,420,227</b>
<b>Other Credit Students</b>	<b>\$1,023,959</b>
<b>Non-Credit Students (&lt; 6 units)</b>	<b>\$1,138,052</b>
<b>Total Time Savings</b>	<b>\$5,582,238</b>
<b>Car Expenses Saved</b>	<b>\$10,507,741</b>
<b>Revenues of Athletics &amp; Performing Arts</b>	<b>\$77,500</b>
<b><u>TOTAL BENEFITS</u></b>	<b><u>\$898,018,971</u></b>
<b><u>COSTS</u></b>	
<b>VCC Payrolls</b>	<b>\$34,109,305</b>
<b>VCC Procurements</b>	<b>\$5,740,581</b>
<b>Books &amp; Materials</b>	<b>\$1,038,550</b>
<b>Total Monetary Expenses</b>	<b>\$40,888,436</b>
<b>Foregone Rental Value of VVC Facilities</b>	<b>\$9,816,074</b>
<b><u>Students' Time &amp; Costs</u></b>	
<b>Full-Load Students, Foregone Earnings</b>	<b>\$45,831,040</b>
<b>Other Credit Students, Foregone</b>	<b>\$13,721,046</b>
<b>Non-Credit Students, Foregone</b>	<b>\$22,874,846</b>
<b>Students' Travel Expenditures</b>	<b>\$4,631,540</b>
<b>Students' Materiel Expenditures</b>	<b>\$3,618,390</b>
<b>Total Students' Costs</b>	<b>\$90,676,863</b>
<b><u>TOTAL COSTS</u></b>	<b><u>\$141,381,372</u></b>

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## **I. Introduction and Summary**

**Victor Valley College provides upwards of \$898 million per year in benefits** to the San Bernardino County community. At the same time, **it costs the County about \$142 million per year in manpower and resources** to sustain College operations so as to provide those benefits. These are the findings of a study of the economic impact of VVC that my firm conducted.

In performing this study, we have enumerated the benefits and costs of VVC operations in an economically rigorous way. That is, we have excluded specious "benefits" such as job creation and multiplier effects supposedly associated with VVC operations. Instead, we have defined as **benefits** only the "outputs" VVC **directly** provides to its students through its educative operations and through the entertainment and enrichment it provides to the community. The employees VVC utilizes and the goods it procures from merchants local and otherwise (part of the "manpower and resources" referred to above) in the production of these outputs are properly accounted for as **costs** of its operation. What is more, in tabulating the benefits of VVC operations, we have included only those for which objective valuation metrics are available. Finally, our accounting of the costs of VVC operations are exhaustive, including the time and materiel expenditures incurred by the community in participating in VVC operations, the "opportunity costs" of land and facilities devoted to the College, and the direct cash expenditures of the College itself.

In other words, in tabulating benefits and costs, we have made every effort to be conservative on benefit estimates and inclusive on cost estimates. Even so, our results indicate that the annual benefits from VVC's operations are more than six times as large as the costs incurred. This ratio compares favorably with benefit/cost ratios I have estimated for other community colleges in the Inland Empire region, utilizing the same methodology as in the present study. The main reason for these favorable results for VVC is the relatively high graduation rate it experiences for new and existing credit students.

That is, we find that in the academic year (AY) 2004-2005, 15.2% of VVC's student body either completed their studies with an A.A. or equivalent degree or certificate or else with admission to a four-year college (without first receiving an A.A. or equivalent). This rate is much higher than those we have observed for other community colleges in the region.

Meanwhile, one distinctive feature of VVC which did NOT enter into our benefit/cost calculus is the College's extensive program of fee-based, non-credit courses offered, ranging from traffic schools to continuing education. These programs enjoy wide participation from the Victor Valley community at large, marking them as a valuable community resource. However, in the absence of comprehensive data on revenues for these programs, we have not included them among the benefits of VVC's operations. Even so, our findings resulted in the high benefit-to-cost ratio cited above.

Our findings indicate that VVC is a valuable asset to the Victor Valley community, and it is worthy of community support. Such support is crucial to the sustenance of VVC, because, while total benefits cover costs many times over, the actual cash revenues VVC receives do not presently cover its cash expenses.

The format of this report is as follows. **Section II** enumerates the benefits and costs of VVC operations and details the specifics of its student body in terms of graduation rates, etc. **Section III** utilizes federal government studies to derive estimates of the increments to lifetime earnings provided by educational attainment. **Section IV** applies these estimates to the VVC student census to derive estimates of the annual value of benefits provided by VVC operations. **Section V** details a thorough cost-accounting of VVC operations. **Section VI** discusses some of the differences between our approach to calculating economic impacts and that of other such studies, specifically the job-creation and multiplier effects that other studies focus on, and it also discusses the sensitivity of our results to various assumptions. **Section VII** concludes by summarizing our results and reporting on their sensitivity to different assumptions.

## **II. The Benefits and Costs of VVC Operations**

### **Enumerating VVC Benefits and Costs**

Once again, the benefits of VVC operations are the "outputs" that the College produces, while its costs are the "inputs" required to produce those outputs. This is true for any private-sector business, and it is just as true for a public institution such as VVC. Typically with a private business, the value of its outputs is fully described by its revenues, and the value of its inputs is fully described by its costs. If a business is fully profitable, then by definition, revenues exceed expenses, so benefits exceed costs, and the business is a worthwhile addition to the community's economy. However, even for a business, this market-evaluation process will prove inadequate when there are impacts on the community that are "external" to the firm's finances, such as the costs of any pollution it generates or non-cash community benefits from its operations.

For a public institution, such as a community college, such "externalities" are the **dominant** aspect of the institution's operations in the first place (otherwise a private company could handle those operations just as well). Therefore, tabulation of its economic impacts requires a more comprehensive benefit-cost analysis than merely an income statement. Still, such a comprehensive benefit-cost analysis would at least start with the elements of the institution's financial statements.

In the case of the VVC, its output is the education it provides to the Victor Valley community. There are three major, identifiable "externalities" involved in this accounting.

- 1) *The benefits of VVC education accrue throughout students' lives, not just for a year. This factor is an "externality" because young people are typically not in a situation where they can accurately evaluate the lifelong benefits a college education affords, and so they would typically not be willing--even if able--to pay the full market value of a college education.*
- 2) *Providing education enriches the whole community, not just the VVC student body itself.*
- 3) *A substantial portion of the "costs" of VVC operation--as well as that of any school--are borne outside the school's budget, namely via the value of time and non-fee materiel expenditures invested by students themselves in their education. These inputs are crucial in securing the "outputs" of VVC education, but again, they are not part of the District's operating budget.*

The first two items provide an argument for government and community support of VVC. Indeed, both public and private colleges typically receive the major component of their support from government, alumni, and concerned citizens, not from their student body. Still, there is a valid question as to whether the community receives adequate recompense for its support, and so a study such as ours becomes useful.

The third "external" item is of relevance to a comprehensive cost accounting of VVC operations. As stated just above, in order to ascertain that a college is fully worthy of community support, we should be able to show that the total benefits from its operations meet or exceed total costs. At the same time, in order to ensure that such a finding is meaningful, we must ensure that the cost measure used is inclusive.

There are two aspects of the education benefits of VVC. Again, VVC provides higher education to the Victor Valley community. In addition, VVC allows residents to obtain this higher education locally, without having to commute to or reside elsewhere, and these cost savings are also benefits of VVC.

Some students matriculate at VVC in order to obtain the lower-division credits that will eventually allow them to earn a Bachelor's degree or higher at a four-year institution. Others attend VVC in order to earn an Associate's Degree or equivalent certification alone. Others will earn college credits, but will leave school before they earn a college degree.

While all these students receive value from their education at VVC, for each, the different levels of educational attainment will bring different associated economic returns. All of these students also benefit from the cost savings of being able to study locally at VVC rather than at more distant facilities, in different degrees depending on the time spent on schoolwork. **Our accounting of the benefits of VVC operations proceeds by distributing the VVC student body across these various categories and calculating associated educational and cost-savings benefits for each group.**

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Meanwhile, VVC provides these benefits by hiring professors and support staff and by operating and maintaining its facilities. These are the "internal" costs of VVC operations, and their economic value is adequately stated by VVC's operating budget.

However, as a public institution, VVC's budget statement is not an income statement per se, and so it does not include any provisions for non-cash costs of depreciation or other "capital consumption," such as a private company would report. Still, the College does utilize a large stock of plant and equipment in its operations. Those facilities have alternate uses to the community, and even though the College does not pay explicit cash costs to utilize these facilities, the "opportunity costs" of reserving these facilities for VVC rather than alternative uses is a legitimate cost of VVC operations. That is, the foregone benefits from using these facilities in their next best pursuit is an accurate measure of the costs of utilizing the facilities for College operations, and so an allowance for such opportunity costs should be included (within capital costs) as part of a full cost-accounting for VVC.

Finally, again, in addition to College staff time and material expenditures, VVC students themselves expend vast amounts and time and material in furthering their studies. These implicit and explicit expenses should also be accounted as costs (inputs) of VVC operations.

**Table 1** lists the benefits and costs--outputs and inputs--of VVC operations. Each of these items is evaluated in turn in the sections below.

<b>TABLE 1. LISTING OF VVC BENEFITS AND COSTS</b>	
<b>BENEFITS (OUTPUTS)</b>	<b>COSTS (INPUTS)</b>
<i>i) Education Provided to:</i>	<i>i) Staff Time</i>
<i>a) Eventual Bachelor's Recipients</i>	<i>ii) Procurement/ Materials</i>
<i>b) Eventual Associate's Recipients</i>	
<i>c) Non-Graduating College Students (including Adult Ed, etc.)</i>	<i>iii) Capital Costs of VVC Facilities</i>
<i>d) Non-graduating non-credit students</i>	
<i>ii) Cost Savings to students from local study</i>	<i>iii) Students' Time</i>
<i>iii) Indirect benefits to I.E. Community</i>	<i>iv) Students' Expenses</i>
<i>iv) Other (Athletic/Theatrical Events, etc.)</i>	

**Composition of VVC Student Body**

The composition of VVC student body in the Spring 2005 semester is shown in **Table 2**. Out of a total enrolled student body of 10,704, 3,715 students took a full course-load, and 2,805 "credit" students took a partial course-load. At the end of that semester, the College awarded 1,016 Associate's Degrees and 469 equivalent certificates.

<b>TABLE 2. Spring 2005 VVC ENROLLMENT</b>	
<b>TOTAL STUDENTS</b>	<b>10,704</b>
<b>New Students</b>	<b>2,859</b>
<b>Continuing/Transfer</b>	<b>7,845</b>
<b>COURSE-LOADS</b>	
<b>Full-Time (12 units +)</b>	<b>3,715</b>
<b>Part-Time (6-11.9 units)</b>	<b>2,805</b>
<b>"Casual" (0.1 to 5.9 units)</b>	<b>4,184</b>

Ultimately, we are interested in splitting Spring 2005 graduates and the rest of the student body into cohorts of eventual Bachelor's degree recipients, A.A.-only recipients, and non-graduating recipients. Notice, though, that not all students leaving VVC after Spring 2005 to transfer to 4-year colleges and universities first received an Associate's Degree. Some transferred directly (without graduating from VVC) upon receiving appropriate college credits. Such students should be included among eventual Bachelor's recipients within VVC AY 2004-2005 outputs, even though they are not included within the ranks of official 2004-05 graduates.

Official data are not yet available on total VVC transfers to 4-year institutions for AY 2005-06 or on transfers by students not receiving an A.A. or equivalent. In lieu of such data, we used information on educational "Goals," as stated by VVC students in their Spring 2005 census, to estimate that 435 Spring 2005 A.A. recipients and 104 "non-graduating" students will eventually transfer to four-year institutions. Of these 539 total transferring students, past experience indicates that 420 will actually receive B.A. degrees or the equivalent.

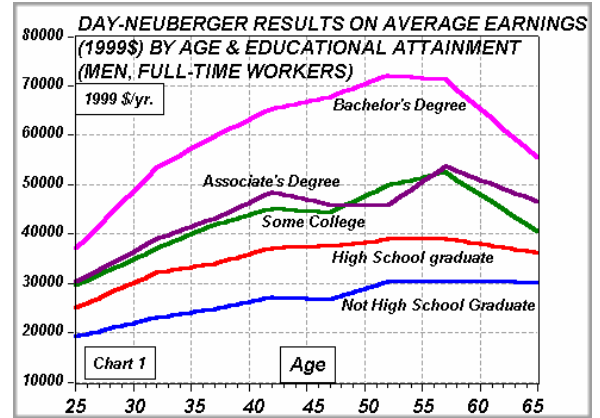
Other estimated 2004-05 outputs of VVC are as listed in **Table 3**. The specific details shown there will be of use when we evaluate educational benefits in **Section III** below.

<b>TABLE 3. VVC EDUCATIONAL OUTPUTS</b>	
<b>Spring 2005 VVC graduates expected to receive B.A.</b>	<b>420</b>
<b>Spring 2005 VVC graduates not expected to complete B.A.</b>	<b>1,169</b>
<b>New students expected eventually to receive AA/BA</b>	<b>579</b>
<b>New Students not expected receive A.A. or B.A.</b>	<b>2,280</b>
<b>Continuing students not graduating in Spring 2005</b>	<b>6,256</b>

### III. The Economic Value Of A College Education<sup>2</sup>

Rather than generating our own data on the economic value of higher education, we draw on the results of federal government surveys performed by the Bureau of the Census, U.S. Department of Commerce. Specifically, a recent study by Jennifer Cheeseman Day and Eric C. Neuberger, entitled "**The Big Payoff: Educational Attainment and Synthetic Estimates of Work-life Earnings**" (hereafter referred to as Day-Neuberger, see "References" below for a full citation), utilized survey data on earnings by age and by education, to derive estimates of work-life earnings by level of education.

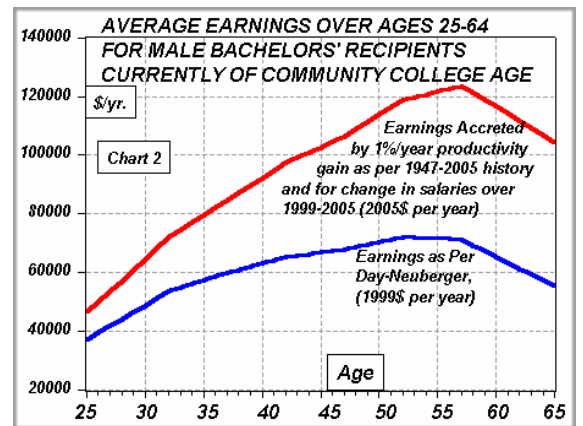
They reported average earnings levels by age and educational attainment as of 1999. Their results showed definite and substantive effects of educational attainment on lifetime earnings power. They found earnings levels to vary directly with level of education throughout a worker's career, not just over the lifetime in total. **Chart 1** at right summarizes their findings for male workers over the educational levels relevant to our study. Similar results hold for female workers across education levels.



Now, again, Day-Neuberger report earnings as of 1999 for various levels of age and education, so their results require modification to make them directly applicable to our study. As they acknowledge, a current 25-year-old can expect to earn more when he or she turns 40 than is **currently** earned by a 40-year-old of equivalent education, and similarly for other ages. Therefore, in order to estimate a value for future lifetime earnings of, say, a college graduate currently 25 year old, the Day-Neuberger results should be adjusted to reflect future earnings accretion at various ages.

Over the last fifty years, per-capita real earnings of American workers have risen at an average rate of 1% per year. This is a good measure of the rate at which the wages of workers of a particular age can be expected to rise in the future. For example, accreting the **current** wages of 40-year olds by 1% per year for ten years provides a good measure of what 40-year-olds can expect to earn ten years from now.

We took the Day-Neuberger 1999 earnings levels of male BAs of various ages and adjusted these to 2005 dollars, using the cumulative increase from 1999 through 2005 in the Employment Cost Index for Private-Sector Workers' wages (+20.5%), as published by the Bureau of Labor Statistics (**Chart 2**). We then accreted resulting wages levels at each age by a 1% per year productivity growth factor, in order to estimate prospective future earnings at various ages for individuals currently of community college age, that is, 21 years old. For example, 1999 earnings at age 40 were accreted by 16.9% to convert them into 2005 dollars and then by 1% per year for 19 years to estimate the prospective future earnings (in 2005 dollars) at age 40 of a (eventual) college graduate currently 21 years old. Earnings for other ages and educational attainment (and for females) were adjusted comparably.



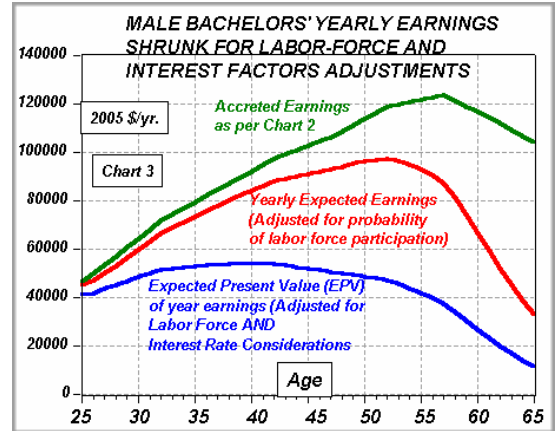
Finally, we want to use these results to derive estimates of expected work-life earnings for various education levels and for males and females. While Day-Neuberger's calculate such work-life aggregates, they make no allowance for the **time value of money**. Because of interest rate (time value) considerations, a dollar today is worth more than a dollar in the future. So in order to properly aggregate earnings over time, prospective, future earnings levels should be adjusted for interest factors.

<sup>2</sup> The findings in this section were presented in earlier and somewhat different form in "The Personal Value Of A College Education And The Community Value Of Colleges," **Inland Empire Review**, September 2003, UCR Forecasting Center. This study is available upon request.

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Similarly, the Day-Neuberger results were reported both for full-time and part-time workers. However, studies typically find that this distinction muddies over time. That is, a person who is working full-time today can be expected to transition out of and back into the labor force (and from full- to part-time and back) at various points in his or her work-life. A Labor Dept. study by Shirley Smith, "*Work-life Estimates: Effects of Race and Education*," details the statistical incidence of these transitions for workers of different ages and education levels. (See "References" below for a full citation.) We used her findings to adjust the Day-Neuberger results for the likelihood of workers being alive and active in the workforce at various ages.

**Chart 3** shows the effects of these successive adjustments, again for male BAs. Specifically, the top line in that chart shows prospective future earnings levels for a current 21-year old, as per **Chart 2**. The middle line shows how these prospective earnings shrink to "expected" earnings upon adjustment for the probability of a current 21-year-old actually being in the labor force in respective future years. The lower line shows how expected earnings levels shrink further to the expected present values of future earnings upon further adjustment for interest rate factors.



In adjusting future earnings levels to present values, we use a 2.36% annual interest rate, which is appropriate for inflation-adjusted values. That is, the annual earnings levels shown in **Chart 2** and "shrunk" in **Chart 3** are given in 2004 dollars, and so they are real--or after-inflation--wages estimates. Since we are dealing with inflation-adjusted earnings, it is appropriate to time-discount these using an inflation-adjusted interest rate. The 2.36% value we use is that currently available on inflation-indexed, long-term U.S. Treasury Bonds (TIPS), and so it is an appropriate interest factor to apply to our prospective earnings data.

Again, **Charts 2** and **3** show annual earnings estimates for male college graduates. Similar patterns hold for females and for other levels of education. **Table 4** shows resulting estimates of work-life earnings levels for men and women at various levels of educational attainment when expected present values of future earnings are aggregated across work-life. The first column shows the actual Day-Neuberger results. The second column shows expected present values of lifetime earnings as per the adjustments summarized here. Notice that despite the accretions summarized in **Chart 2**, our work-life earnings estimates are only about half as large as those of Day-Neuberger. This "shrinkage" reflects the effects of workforce-participation and interest-rate factors on their results (as depicted in **Chart 3**).

Now, so far, we have dealt only with wage earnings, such as were reported in Day-Neuberger. The third column in **Table 4** adjusts work-life earnings (wages) for the effects of employee benefits (pension contributions, health care coverage), using a conservative assumption of benefits accruing at the rate of 25% of wages.

The last column in **Table 4** shows the **increments** to lifetime contributed by each successive level of educational attainment. The earnings increments for high school graduates are calculated as the differences between lifetime earnings for high school graduates and those for non-high-school graduates ("<H.S. Grad.") For higher levels of education, the increments to earnings are calculated relative to earnings for high school graduates.

Finally, students do not receive BA degrees from

Education Level	Work-life Earnings, as per [1] (mil.1999\$)	Exp. Pres. Value, (mil.2005\$)		
		Work-life Earnings	Work-life Earnings & Benefits	Increment*
<b>Men (mil.\$/lifetime)</b>				
< H.S. Grad.	\$1.069	\$0.725	\$0.906	
H.S. Grad.	\$1.420	\$0.984	\$1.231	\$0.324
Some College	\$1.741	\$1.196	\$1.495	\$0.265
Associate Degree	\$1.793	\$1.232	\$1.540	\$0.310
Bachelor Degree	\$2.468	\$1.799	\$2.249	\$1.019
AA's Contribution Toward a BA (40% of BA total)				\$0.407
<b>Women (mil.\$/lifetime)</b>				
< H.S. Grad.	\$0.722	\$0.377	\$0.471	
H.S. Grad.	\$0.968	\$0.515	\$0.644	\$0.173
Some College	\$1.173	\$0.622	\$0.777	\$0.133
Associate Degree	\$1.291	\$0.680	\$0.850	\$0.207
Bachelor Degree	\$1.612	\$0.982	\$1.228	\$0.584
AA's Contribution Toward a BA (40% of BA total)				\$0.234
*Increment for H.S. Grad. Is calculated over earnings for "< H.S." Other increments are calculated relative to "H.S. Grad."				

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VVC. However, their studies there do contribute toward the BA earnings increment they will eventually receive at four-year institutions. The VVC contribution to a BA degree should be worth more than the increment earned for an AA alone. At the same time, while VVC studies account for about half an eventual BA's college time, the VVC contribution will be worth something less than 50% of the value of a BA, since the lower-division credits earned at VVC presumably make less of a contribution to a BA than the upper-division credits earned at a four-year school. We take the VVC contribution to a BA to be worth 40% of the earnings increment provided by a BA, as shown in the last lines of each segment of **Table 4**.

Once again, the earnings increments shown in **Table 4** are measures of the expected present value **today** of the increment to **future** lifetime earnings achieved by a current VVC student upon his or her completion of a given level of education. As such, they measure the present economic, earnings value of educational attainment. Of course, as acknowledged in **Section I**, a college education is also understood to produce benefits such as improved citizenship and quality-of-life. As we have no good metric for such benefits, we have had to exclude them from our analysis, which serves to understate the benefits reported in our study relative to the total that VVC operations actually produce.

Similarly, the reader will notice that the Day-Neuberger results report earnings only over ages 25-65. Presumably, the Census survey they drew from had too small a sample over ages 18-24 and 66-up to draw reliable results. Yet, even college students can be expected to participate in the labor force over ages 22-25, and there is substantial probability they will continue to work past age 65, so that further earnings increments from education can be expected over those ages. On these grounds, too, our results can be said to understate the benefits of education by ignoring earnings outside ages 25-65.

**IV. Estimating The Specific Benefits Of VVC Operations**

**Value of Educational Benefits Bestowed in AY2004-05**

The results from **Section III** can be applied to the AY2004-05 census of VVC students to calculate educational benefits actually provided. An initial complication is the fact that the Day-Neuberger effects and our modification of them report increments to earnings from **completed levels** of educational attainment, not from the **individual years** of study (freshman, sophomore, etc.). However, with some students at VVC in AY2004-05 engaged in 1st-year studies, some engaged in 2nd-year studies, and some involved in comparable levels of high-school equivalency studies, we can use the **Section III** findings to obtain a simplified approximation of the educational benefits specifically provided in AY 2004-05.

The actual academic benefits produced by VVC in 2004-05 are the sum of **first-year credits** earned in **2004-05** and **second-year credits** earned in **2004-05**. Meanwhile, the degrees awarded in 2004-05 accrue from **first-year credits** earned in **previous** years and from **second-year credits** earned in **2004-05**. Since VVC's student body has grown over time, we know that the value of first-year credits awarded in 2004-05 to **future** graduates is larger than the first-year credits awarded in previous years to **2004-05** graduates. Therefore, the value of all college credits awarded in 2004-05 to current- and future-year graduates can be underestimated as the value of all college credits awarded in 2004-05 and earlier to 2004-05 graduates. But this latter value is merely the economic value of the degrees awarded in 2004-05 by VVC, which we can evaluate via the **Section III** results. This logic is recapped in stylized form in the text box below.

<p style="text-align: center;"><b>VALUE OF COLLEGE CREDITS PROVIDED THIS YEAR</b> <b>VAL(1st-yr. creds.2004-05) &gt; VAL(1st-yr. creds.2003-04),</b> SO <b>VAL(1st-yr. creds.2004-05) + VAL(2nd-yr. creds.2004-05) &gt; VAL(1st-yr. creds.2003-04)+VAL(2nd yr. creds.2004-05)</b> <b>= VAL(AA's awarded in 2004-05).</b></p>
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Now, the logic in the box proceeds as if all VVC graduates complete their work in two years. However, the fact that some students take more than two years does not invalidate the result; it only makes the actual notation for the box above more complicated than we have actually shown it to be. **As long as all components of the VVC student body are stable or growing over time, it must be the case that the increments to earnings achieved this year by all current- or future-year VVC graduates will be greater than the economic value of AA degrees (and equivalents) actually awarded this year by VVC.**

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To apportion these estimates correctly, we need to estimate how many of the current-year, non-graduating, students can be expected to graduate at some time in the future. VVC Census and graduation results indicate that 33.2% of continuing, active students in 2004-05 actually graduated in that year.<sup>3</sup> We take this figure as an estimate of (eventual) graduation rates for all active students.

<b>TABLE 5. VALUE OF EDUCATION BENEFITS OF VVC in 2004-05 (mil.\$)</b>		
<i>Disposition</i>	<i># of Students</i>	<i>Economic Benefits Accrued</i>
<i>Ultimately a B.A.</i>	<i>420</i>	<i>\$127.7</i>
<i>A.A. Only</i>	<i>1,169</i>	<i>\$290.3</i>
<i>Some College</i>	<i>2,280</i>	<i>\$425.1</i>
<i>Other Students</i>	<i>6,256</i>	<i>\$38.8</i>
<b>TOTAL</b>	<b>10,704</b>	<b>\$881.9</b>

From the VVC census results reported in **Table 3**, 420 AY 2004-05 graduates can be expected eventually to receive a BA or equivalent, and 1,169 2004-05 graduates can be expected to have finished their educational attainment with an AA or equivalent. Out of 2,859 new students in 2004-05, 579 can be expected eventually to graduate from VVC or higher. Also, of continuing or returning students in 2004-05 who did not graduate in that year, 689 can be expected eventually to graduate in some future year. For all these students, the value of all credits earned by them in 2004-05 can be underestimated by calculating the present value of 1,169 AAs or equivalents for 2004-05 and VVC's contribution to 420 eventual BAs. These values are given in the first two lines in **Table 5**, using the respective increments reported in **Table 4** and a 40%/60% split between men and women.

The estimates derived so far cover only those 2004-05 students who either graduated this year or who can be expected to graduate at some time in the future. That leaves another 2,280 new, active students who cannot be expected to finish their degree and 6,256 continuing students not expected to graduate.

To these cohorts, we want to apply the education level "Some College" and the associated earnings increment. The question arises as to how to do this in a way that avoids double-counting or over-counting. That is, the description "Some College" would seem to be applicable to anyone who has ever registered for a college course. This is not an educational level for which a fixed or recognizable curriculum can be ascribed. To keep our estimates conservative, we will apply this level figure to as narrow a cohort of students as is relevant. That is, we will apply it only to new students who cannot be expected to graduate in the future. After all, for continuing students who will not graduate, they already had attained the level of "Some College" in previous years, and so there is no discernible increment to that level in 2004-05.

As seen in the 3rd line of **Table 5**, attributing the education level of "Some College" to those 2,280 new credit students who cannot be expected to graduate results in an output estimate of \$425 million. While this output estimate is enormous, it is also the smallest such estimate that could be attached to this group, given that we have excluded such a large number of VVC students from this cohort.

For the 6,256 remaining students, the 2004-05 year provided no apparent increment to educational attainment. (These students had already attained the educational level of "Some College" in prior years, and no higher educational level will be attained.) The fact that these students continued their education indicates that they believed that they received **SOME** benefits from this education, and a lower-bound estimate of these benefits can be obtained by estimating the cost of time, fees, and materiel that these students actually invested in furthering their education in 2004-05. We estimate this amount at \$38.8 million. (This amount is also included as a cost of education for these students, and so the reader should be aware that there is no increment to net benefits of VVC operations from including these amounts.)

As shown in **Table 5**, the sum total of educational benefits provided in 2004-05 is estimated to have been \$881.9 million. Notice also that our calculations have excluded estimating any benefits from VVC programs such as "Adult Education," "Continuing Education," ESL programs, or the fee programs for non-credit students. Similarly, we did not provide benefit estimates for citizenship or "quality-of-life" benefits from education, and the earnings results we drew from excluded earnings gains for college graduates before age 25 or after age 65. We'll discuss these aspects of our findings more in **Section VI**, but for now, we would assert that as large as the estimated education benefits of VVC are, we have taken steps at every juncture to ensure that these estimates are conservative, even understated.

<sup>3</sup> "Active" students are defined, for our purposes, as those students sustaining a load of 6 units or more per semester. It is from this cohort that future VVC graduates can be expected to be drawn. These students comprise 60.9% of the VVC student body.

**Value of Cost Savings From Students Being Able to Study Locally**

As stated in [Section II](#), another benefit provided by VVC is that its presence in the Victor Valley community saves local students considerable amounts of time and expenses that would have had to be expended in commuting to the next closest higher-ed alternative, were VVC not in existence.

The 10,704 VVC students in AY 2004-05 took an average course load of 8.3 units. We assume that for each 4 units of course load, one round trip to campus is required, so that the average VVC student can be expected to have made just over 2 round trips to the VVC campus per week over the 32 weeks of 2004-05. But for the existence of VVC, those trips would have had to be made to community colleges in San Bernardino, Barstow, or even further away, necessitating a round-trip commute of one hour more than what these students currently expend in commuting to VVC campuses. Assuming a market value of time equal to the minimum wage in California, \$8.50 per hour, leads to an estimate of \$5.6 million per year worth of time **NOT** expended by VVC students in commuting.

As for meals and parking fees for commuting students, these expenditures would have to be made whether they commuted to VVC or elsewhere. However, the availability of VVC in the Valley does allow students to expend less on automobile fuel and wear-and-tear than would otherwise be the case. Using the standard allowance of vehicle costs of \$0.32 per mile for fuel, maintenance, depreciation, and insurance, we estimate that VVC students saved \$10.5 million in vehicle expenses by being able to attend VVC rather than commuting to institutions to the north or west.

**V. The Economic Costs Of VVC Operations**

**VVC Direct Expenditures**

The various costs of VVC operations were listed in [Section II](#) above. Most of these costs are included in VVC's operating budgets. However, it should be noted that from those budgets, we have excluded such "expenditure" items as "Debt Service," "Book Grants/Waivers," "Intrafund Transfers," and "Contingency/Reserves." Such items do **NOT** cover costs of current operations, and so they are excluded from our cost-accounting. What are included are total payrolls, costs of utilities and other procurements, and costs of books and other supplies, and the expenditures of ASVVC.

**Value of VVC Services From VVC Plant & Buildings**

As for "capital outlays," while these are substantial, production-oriented expenditures, they are investments made to produce a flow of outputs over time. The "costs" in any one year of the usage of the capital stocks accreted by capital outlays is equal to the foregone earnings (opportunity costs) from using this capital at VVC rather than in an alternative pursuit.

That is, VVC occupies a large facility, with diverse buildings and improvements. Were VVC not in existence, those facilities could be utilized in alternative pursuits, which could be expected to result in a flow of capital income to the community. By using these facilities for VVC operations, the community foregoes these alternative income flows, and so they represent an opportunity cost of VVC operations.

Our very rough estimate is that the land and facilities encompassed by the three campuses of VVC have a current market value of \$98 million. In the private sector, assets of that value should be accruing total, gross returns of \$9.8 million per year, and we have included this amount as a cost of VVC operations.

**Costs Expended by Students**

In addition to the operating costs of VVC plant itself, other costs of VVC include the value of time and cash expended by VVC students in pursuing their studies. This includes time spent on campus, commuting to campus, and studying at home for classes, as well as the cash costs of commuting, books, and materials. Meals would have to be consumed anyway, and students' clothes and lodging would have to be purchased anyway if students were not in school, so these are not legitimate cost items for VVC operations.

For each unit of courseload, we estimate VVC students' class time at 1.1 hours per week, with an additional 2 hours per week spent in study and study groups. As for commute time, as in [Section IV](#), we assume one trip to class per week for each 4 units of courseload, though in this case, the commute to school is assumed to be a 1-hour roundtrip rather than 2 hours.

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Using these parameters, we estimate that full-time students invested \$45.8 million of their time in their studies in 2004-05, that other active students expended \$13.7 million worth of their time, and that "inactive" students expended \$23.4 million worth of their time in pursuing their studies.

Finally, there is the item of materiel expenditures by VVC students on textbooks, commuting, and school materials. We assume the average commute to VVC is 10 miles in each direction, which results in an estimate of \$4.6 million per year in actual car expenses by all VVC students. Also,

we allow for an expenditure on textbooks and materials of \$40 per unit of courseload, which amounts to total materiel expenditures by students of \$3.6 million. All told, the costs of time and money expended by VVC students on their studies is found to be on the order of \$91.0 million per year.

<i>Item</i>	<i>Amt.</i>
VVC Payrolls and Benefits	\$34.1
Procurement and Contracts	\$5.7
Books and Materials	\$1.0
<b>Total Cash Expenditures</b>	<b>\$40.9</b>
Foregone Revenue from Use of VVC Facilities	\$9.8
Time Investment By Full-Time Students	\$45.8
Time Investment By Other Active Students	\$13.7
Time Investment By "Inactive" Students	\$23.4
Students Car and Materiel Expenses	\$8.2
<b>Total Economic Costs</b>	<b>\$141.4</b>

Upon adding VVC direct expenditures, the opportunity costs of the VVC plant, costs of time expended by VVC students in their studies, and textbook/material expenditures by them, we estimate the total economic cost to the community of VVC operations to have been \$141.4 million in 2004-05, as detailed in **Table 6**. This amount is three times as large as the direct cash expenditures listed on VVC financial statements.

Note that we have not included the fees and tuition paid by students as an item of either economic costs or benefits. These fees are certainly a cost to the students paying them. However, those expenditures--and the revenues VVC receives from the state--are paid toward the operating expenses in VVC's cash budget. As those latter expenses have already been included in our accounting, it would be double-counting to also include the fees and tuition paid toward these expenses by VVC students.

Again, the costs of VVC are all the value of all resources expended in providing its services to the community. Various cash flows (in various directions) that cover **some** of these expenditures are essential for the financial integrity of VVC, but they are only incidental to the cost accounting of the College.

**VI. Why We Don't Tally Job Creation Or Multiplier Effects**

As suggested earlier, our economic impact analysis of VVC is quite different from other such studies in that we don't tally any benefits from jobs "created" by VVC or from "multiplier effects" from downstream job servicing VVC staff and students. Our objection to such treatments is twofold. First, the economic theory behind such notions of job creation is dubious, if not outright wrong. Second, the labor inputs used in operating VVC (or any other institution) should more properly be considered a cost of the operation of VVC, not a benefit of it.

Consider some analogous situations. Remember, we stated in **Section II** that but for "external" items, the benefit/cost analysis for a public institution is comparable to that for a private company. The labor hired by a company and the materials it purchases are properly considered as part of its costs, part of its inputs rather than its outputs. Why should the analysis be any different for a public institution?

If VVC were not in existence, the labor it employs and the facilities it utilizes would be available for use elsewhere, and in a functioning economy, those resources would indeed be utilized elsewhere. In this case, jobs are not **created** at a public institution, such as a community college, they are merely **allocated** to be used at the college. The wages paid to those workers reflect the costs to the community of so allocating resources to the institution. They are not a benefit of the institution.

Granted, a community college is a worthy enterprise, as are other public institutions. However, the worth of such institutions should be verified by a sober assessment of legitimate benefits relative to legitimate costs. Confusing some costs for benefits (i.e., listing jobs "created" as a benefit rather than as a cost) cannot deliver accurate assessments.

This conclusion holds for the direct expenditures allocated ("created") by a public institution. It holds doubly for the indirect spending and jobs associated with the institution. These are expenses and labor inputs necessary to service the workers directly employed by the institution. If the public institution were not in existence, the institution's workers would find employment elsewhere, and they would still be purchasing goods and services from the rest of the community.

Again, the studies that list job creation and multiplier effects as supposed benefits of an institution completely ignore the alternate possible uses of the resources utilized in those institutions. In so doing, they end up confusing benefits and costs. Our study does neither. *We have properly accounted for the manpower and procurements utilized by VVC as part of its economic costs of operations and so as part of its "impact" on the cost side, where they belong.*

## VII. Conclusions

As large as our estimates of the economic costs of VVC's operations were found to be, we have found the benefits accruing from those operations to be greater by a factor of more than six. Certainly, VVC looks to be a beneficial investment/operation for the community. Meanwhile, keep in mind that 60% of VVC's costs of operations accrue from the costs of time that VVC students willingly invest in their education.

In arriving at these estimates, we have made a number of estimates for real-world parameters for which we do not have exact data. It is reasonable to ask how sensitive our findings are to these assumptions. We will work through some of these issues here.

We discounting future (real) earnings to present values, we used the "real" interest rate of 2.36% currently available on Inflation-Protected Treasury Bonds and comparable to a rate of 5% on non-indexed TBonds. While a struggling college student is not able to borrow at this rate, it is the relevant rate for society as a whole. Still, we can easily determine the sensitivity of our estimates to different interest rate assumptions. Raising the interest rate used from 2.36% to 4% lowers the incremental value of a Bachelor's Degree from \$1.019 million to \$0.719 million, with other increments also declining. The total educational benefits provided by VVC then decline from \$878.6 to \$637.7 million per year, but still remain larger than total costs by a factor nearly five to one. Such effects are not linear. That is, successive increases in the assumed interest rate have smaller net effects on total benefits. Thus, even with a real yield at 10% (equivalent to a nominal rate of 12.5% and thus far above current junk bond rates), total benefits of VVC are still estimated to be about \$259.1 million per year, still nearly double total operating costs.

Similarly, our results in [Section III](#) allowed for 1% per year future gains in workers' productivity. Assuming, instead, zero productivity growth reduces the total value of VVC educational benefits by only \$164.2 million per year, less than 20% of the total benefits of VVC operations and not enough to make a critical difference in our results (when benefits exceed costs by more than 6-to-1).

We estimated workers' benefits to accrue at a rate of 25% of wages. Removing this allowance altogether reduces our estimate of total benefits from VVC's education provisions by \$168.6 million per year, also less than 20% of total annual benefits and again insufficient to alter our findings.

In assessing earnings increments for VVC graduates who will eventually receive a B.A. or equivalent, we estimated the educational attainment earned at VVC as being 40% of the increment accruing to a B.A. This is conservative, given that a transferring student from VVC has already earned 50% of the credits required for a B.A. Nevertheless, upper-division credits could be judge to be worth more toward a B.A. than the lower-division credits that can be earned at VVC. Still, the earnings increment for an A.A. alone is already more than 30% of that accruing to a B.A. over a high-school diploma (cf. [Table 4](#)). As an extreme assumption, we could posit that the current increment for a VVC graduate who will eventually earn a B.A. is no greater than that for a VVC graduate ending his educational attainment with an A.A. That change reduces our estimate of VVC educational outputs of only \$23.4 million per year, less than 5% of total benefits/outputs and not nearly enough to significantly change our results.

Finally, consider the effects of changes in the money cost (value) of time ascribed to students. For non-matriculating students, again, the educational benefits to them were assumed to be exactly equal to the

costs of their time. Therefore, assuming a higher cost of time for such students would change benefit and time-cost estimates equally, resulting in a net change only to the extent that the time-savings (benefits) from the shorter commute afforded by VVC become larger. For matriculating students, raising their assumed cost/value of time raises the costs of their time spent in studies, class, and commuting, with only a slight offset from greater commute-time savings. The earnings levels reported in Day-Neuberger for young adults indicate that the minimum wage is about the correct cost-of-time assumption. Still, for the record, raising the cost of time for VVC students from \$8.50 per hour to \$12 per hour raises the economic benefits of VVC by \$18 million per year, while raising the economic costs by \$34 million per year, thus lowering the net benefits of VVC operation by only \$16 million per year. It would take unrealistically huge increases in assumed costs/values of time for matriculating VVC students to significantly reduce the net economic benefits we have estimated from the existence of VVC.

In summary, we have found our results to be hardly sensitive at all to changes in the various assumptions we have made in tabulating our results. We're left with the conclusion that these findings are quite robust with respect to various proffered values for these parameters. Rather, our findings would appear to result and be crucially dependent upon the values postulated and used for the earnings increments arising from various levels of educational attainment. Once again, those values were drawn directly from federal government analyses of extensive earnings surveys conducted by the Census Department. Our results are indeed dependent on the accuracy of these government findings, but it is only reasonable to take these government findings as accurate estimates.

In closing, our analysis has found the educational benefits accruing from VVC operations to be greatly in excess of the costs incurred in sustaining those operations. In fact, the excess of benefits over costs is nothing short of staggering. Yet, as discussed just above, these findings prevail virtually unaffected across the whole reasonable range of values for relevant parameters beneath our estimates. The critical elements, again, of our calculations are the lifetime increments to earnings provided by successive levels of educational attainment, and these estimated increments were taken directly from federal government studies (and then subject to various adjustments which reduced their value well below those reported in [1]). Meanwhile, as we noted in Section II, at virtually every step of the way, any simplifying assumptions we have made have been in the direction of understating benefits and overstating costs.

Under commonly accepted, authoritative estimates of the economic value of a college education, we find the operations of Victor Valley College to provide economic benefits to the Victor Valley community which sharply exceed the economic costs incurred by the community in producing those benefits. VVC would appear to be an extremely beneficial investment for the Inland community.

At the same time, the cash expenses incurred by VVC in providing these benefits exceed that portion of the benefits of VVC actually captured via college revenues. In other words, to insure the continued, efficient operation of the VVC, either contributions from the community at large, an increase in fees paid by students, or else an increase in direct aid from the state government would appear to be called for.

Our findings indicate that such increased support of VVC would be an extremely beneficial investment. Yet, given state budget problems, increased support from Sacramento is not politically feasible. Similarly, increased fee support from the student body might not be advisable, given the sizable contribution in time that students already expend toward their education. An increase in community support would be extremely worthwhile and certainly welcome.

### References

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