

# ECONOMIC IMPACT STUDY:

## Northern Virginia Community College

*(Report 2 of 3)*



Completed by EMSI in collaboration with:

**The Office of Institutional Effectiveness and Student Success Initiatives**

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# EXECUTIVE SUMMARY

*Demonstrating the Value of Northern Virginia Community College*



AUGUST 2014

ANALYSIS OF THE ECONOMIC IMPACT & RETURN ON INVESTMENT OF EDUCATION

**NOVA** | Northern Virginia Community College

*Northern Virginia Community College (NOVA) creates value in many ways. The college plays a key role in helping students increase their employability and achieve their individual potential. It provides students with the skills they need to have a fulfilling and prosperous career. Further, it supplies an environment for students to meet new people, increase their self-confidence, and promote their overall health and well-being.*

However, the contribution of NOVA consists of more than just influencing the lives of students. The college serves a range of industries in the NOVA Service Area and supports local businesses. Society as a whole in Virginia benefits from an expanded economy and improved quality of life. The benefits created by NOVA extend as far as the state and local government, in the form of increased tax revenues and public sector savings.

The purpose of this study is to investigate the regional economic impacts created by NOVA on the local business community and the benefits that the college generates in return for the investments made by its key stakeholder groups—students, society, and taxpayers. The following two analyses are presented:

- **REGIONAL ECONOMIC IMPACT ANALYSIS**
- **INVESTMENT ANALYSIS**

All results reflect student and financial data for Fiscal Year (FY) 2012-13. Impacts on the local business community are reported under the regional economic impact analysis, and the return on investment to students, society, and taxpayers are reported under the investment analysis. Both analyses are described more fully in the following sections.

# REGIONAL ECONOMIC IMPACT ANALYSIS

*NOVA promotes economic growth in the NOVA Service Area in a variety of ways. The college is an employer and a buyer of goods and services, and the living expenses of students from outside of the region benefit local businesses. In addition, NOVA is a primary source of education to local residents and a supplier of trained workers to local industry.*



The regional economic impact analysis examines the impact of NOVA on the local business community through increased consumer spending and enhanced business productivity. Results are measured in terms of added income and are organized according to the following three effects:

1. Impact of college operations;
2. Impact of the spending of students who relocated to the region, and;
3. Impact of the increased productivity of former students that were employed in the regional workforce during the analysis year.

## IMPACT OF COLLEGE OPERATIONS

NOVA is an important employer in the NOVA Service Area. In FY 2012-13, the college employed 2,948 full-time and part-time faculty and staff. Of these, 75% lived in the NOVA Service Area. Total payroll at NOVA was \$194 million, much of which was spent in the region for groceries, eating out, clothing, and other household expenses.

NOVA is itself a large-scale buyer of goods and services. In FY 2012-13 the college spent \$119.2 million to cover its expenses for facilities, professional services, and supplies.

The total income that NOVA created during the analysis year as a result of its day-to-day operations was \$243.5 million. This figure represents the college's payroll, the multiplier effects generated by the spending of the college and its employees, and a downward adjustment to account for funding that the college received from local sources.

## JOB EQUIVALENTS BASED ON INCOME

Job equivalents are a measure of the average-wage jobs that a given amount of income can potentially support. They are calculated by dividing income by the average income per worker in the region. Based on the added income created by NOVA, the job equivalents are as follows:

Effect of college operations = **3,246** job equivalents

Effect of student spending = **591** job equivalents

Effect of student productivity = **35,971** job equivalents

Overall, the added income created by NOVA and its students supported **39,808** job equivalents.

## INCOME CREATED BY NOVA IN FY 2012-13 (ADDED INCOME)

**\$243.5 MILLION**

Effect of college operations

**\$44.3 MILLION**

Effect of student spending

**\$2.7 BILLION**

Effect of student productivity

**\$3.0 BILLION**

Total effect

## IMPACT OF STUDENT SPENDING

Approximately 6.0% of NOVA's students relocated to the NOVA Service Area to attend college in FY 2012-13. These students would not have come to the region if the college did not exist. While attending, out-of-region students spent \$85.3 million to purchase groceries, rent accommodation, pay for transportation, and so on. A significant portion of these expenditures occurred in the region, generating \$44.3 million in new income in the economy during the analysis year.

## IMPACT OF STUDENT PRODUCTIVITY

NOVA's greatest impact results from the education and training it provides for local residents. Since the college was established, students have studied at NOVA and entered the workforce with new skills. Today thousands of former students are employed in the NOVA Service Area.

During the analysis year, NOVA's former students generated \$2.7 billion in added income in the region. This figure represents the higher wages that students earned during the year, the increased output of the businesses that employed the students, and the multiplier effects that occurred as students and their employers spent money at other businesses.

## TOTAL IMPACT

The overall effect of NOVA on the local business community during the analysis year amounted to \$3.0 billion, equal to the sum of the college operations effect, the student spending effect, and the student productivity effect. This added income was equal to approximately 1.9% of the region's Gross Regional Product.

# INVESTMENT ANALYSIS

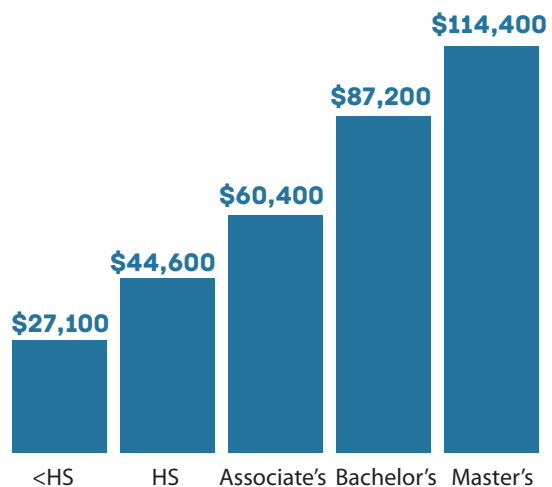
*Investment analysis is the process of evaluating total costs and measuring these against total benefits to determine whether or not a proposed venture will be profitable. If benefits outweigh costs, then the investment is worthwhile. If costs outweigh benefits, then the investment will lose money and is considered unprofitable. This study considers NOVA as an investment from the perspectives of students, society, and taxpayers. The backdrop for the analysis is the entire Virginia economy.*

## STUDENT PERSPECTIVE

In 2012-13, NOVA served 78,635 credit students and 25,973 non-credit students. In order to attend college, students paid for tuition, fees, books, and supplies. They also gave up money that they would have otherwise earned had they been working instead of attending college. The total investment made by NOVA's students in FY 2012-13 amounted to \$737.5 million, equal to \$201.2 million in out-of-pocket expenses plus \$536.4 million in forgone time and money.

In return for their investment, NOVA's students will receive a stream of higher future wages that will continue to grow through their working lives. As shown in Figure 1, mean income levels at the midpoint of the average-aged worker's career increase as people achieve higher levels of education. For example, the average associate's degree completer from NOVA will see an increase in earnings of \$15,800 each year compared to someone with a high school diploma or equivalent. Over a working lifetime, this increase in earnings amounts to an undiscounted value of approximately \$695,200 in higher income.

**FIGURE 1. ANNUAL INCOME BY EDUCATION LEVEL AT CAREER MIDPOINT IN THE NOVA SERVICE AREA**





The present value of the higher future wages that NOVA’s students will receive over their working careers is \$4.4 billion. Dividing this value by the \$737.5 million in student costs yields a benefit-cost ratio of 6.0. In other words, for every \$1 students invest in NOVA in the form of out-of-pocket expenses and forgone time and money, they receive a cumulative of \$6.00 in higher future wages. The average annual rate of return for students is 22.0%. This is an impressive return compared, for example, to the less than 1% return per annum that is generally expected from saving money in today’s standard bank savings accounts.

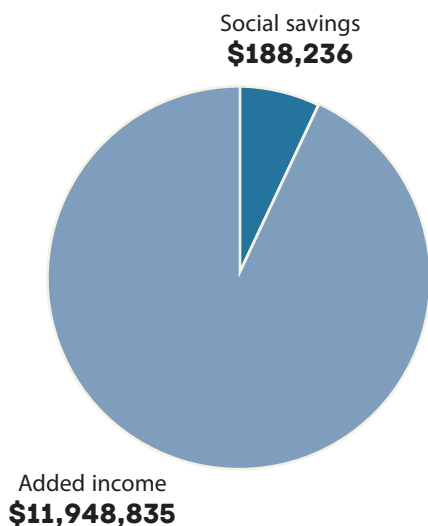
## SOCIAL PERSPECTIVE

Society as a whole in Virginia benefits from the presence of NOVA in two major ways. The first and largest benefit that society receives is the added income created in the state. As discussed in the previous section, students earn more because of the skills they acquire while attending NOVA. Businesses also earn more because the enhanced skills of students make them more productive. Together, higher student wages and increased business output stimulate increases in income across the state, thereby raising prosperity in Virginia and expanding the economic base for society as a whole.

Benefits to society also consist of the savings generated by the improved lifestyles of students. Education is statistically correlated with a variety of lifestyle changes that generate social savings across three main categories: 1) health, 2) crime, and 3) unemployment. Health savings include avoided medical costs associated with smoking, alcoholism, obesity, drug abuse, and mental disorders. Crime savings include reduced security expenditure and insurance administration, lower victim costs, and reduced criminal justice system expenditures. Unemployment savings include the reduced demand for income assistance and welfare benefits.

Figure 2 shows the present value of the added income and social savings that will occur in Virginia over the working lifetimes of NOVA’s 2012-13 students. Added income amounts to a present value of \$11.9 billion due to the increased lifetime incomes of students and associated increases in business output. Social savings amount to \$188.2 million, the sum of health, crime, and

**FIGURE 2. PRESENT VALUE OF ADDED INCOME AND SOCIAL SAVINGS IN VIRGINIA (THOUSANDS)**







unemployment savings in Virginia. Altogether, total benefits to society equal \$12.1 billion (in present value terms).

Society invested \$910.8 million in NOVA educations during the analysis year. This includes all NOVA expenditures, all student expenditures, and all student opportunity costs. For every dollar of this investment, society as a whole in Virginia will receive a cumulative value of 13.3 in benefits, equal to the \$12.1 billion in benefits divided by the \$114.2 million in costs. These benefits will occur for as long as NOVA's 2012-13 students remain employed in the state workforce.

## TAXPAYER PERSPECTIVE

From the taxpayer perspective, benefits consist primarily of the taxes that state and local government will collect from the added income created in the state. As NOVA's 2012-13 students earn more, they will make higher tax payments. Employers will also make higher tax payments as they increase their output and purchase more supplies and services. By the end of the students' working careers, state and local government will have collected a present value of \$1 billion in added taxes.

A portion of the savings enjoyed by society also accrues to state and local taxpayers. Students are more employable, so the demand for welfare and unemployment benefits reduces. Improved health habits lower the students' demand for national health care services. Students are also less likely to commit crimes, so the demand for law enforcement services reduces. All of these benefits will generate a present value of \$52.1 million in savings to state and local taxpayers.

Total benefits to taxpayers equal \$1.1 billion, equal to the sum of the added taxes and public sector savings. Comparing this to the taxpayer costs of \$114.2 million—equal to the funding that NOVA received from state and local government during the analysis year—yields a benefit-cost ratio of 9.6. This means that for every \$1 of public money invested in NOVA, taxpayers receive a cumulative value of \$9.60 over the course of the students' working lives. The average annual rate of return is 20.1%, a solid investment that compares favorably with other long-term investments in both the private and public sectors.

**TABLE 2. SUMMARY OF INVESTMENT ANALYSIS RESULTS**

<b>STUDENT PERSPECTIVE</b>	
<b>\$4,444,227</b>	Benefits (thousands)
<b>\$737,522</b>	Costs (thousands)
<b>\$3,706,706</b>	Net present value (thousands)
<b>6.0</b>	Benefit-cost ratio
<b>22.0%</b>	Rate of return

<b>SOCIAL PERSPECTIVE</b>	
<b>\$12,137,070</b>	Benefits (thousands)
<b>\$910,834</b>	Costs (thousands)
<b>\$11,226,236</b>	Net present value (thousands)
<b>13.3</b>	Benefit-cost ratio
<b>25.8%</b>	Rate of return

<b>TAXPAYER PERSPECTIVE</b>	
<b>\$1,097,321</b>	Benefits (thousands)
<b>\$114,247</b>	Costs (thousands)
<b>\$983,074</b>	Net present value (thousands)
<b>9.6</b>	Benefit-cost ratio
<b>20.1%</b>	Rate of return

## SUMMARY OF INVESTMENT ANALYSIS RESULTS

Table 2 presents the results of the investment analysis for all three of NOVA’s major stakeholder groups—students, society, and taxpayers. As shown, students receive great value for their educational investment. At the same time, the investment made by state and local taxpayers in the college creates a wide range of benefits to society and returns more to government budgets than it costs.



# CONCLUSION



The results of this study demonstrate that NOVA creates value from multiple perspectives. The college benefits local businesses by increasing consumer spending in the region and supplying a steady flow of qualified, trained workers into the workforce. It enriches the lives of students by raising their lifetime incomes and helping them achieve their individual potential. It benefits society as a whole in Virginia by creating a more prosperous economy and generating a variety of savings through the improved lifestyles of students. Finally, it benefits state and local taxpayers through increased tax receipts across the state and a reduced demand for government-supported social services.

## ABOUT THE STUDY

This study was produced by Economic Modeling Specialists Int. in collaboration with Northern Virginia Community College's Office of Institutional Effectiveness and Student Success Initiatives. Data and assumptions used in the study are based on several sources, including the 2012-13 academic and financial reports from the college, industry and employment data from the U.S. Bureau of Labor Statistics and U.S. Census Bureau, outputs of EMSI's Social Accounting Matrix (SAM) model, and a variety of studies and surveys relating education to social behavior. The study applies a conservative methodology and follows standard practice using only the most recognized indicators of investment effectiveness and economic impact. For a full description of the data and approach used in the study, please contact the college for a copy of the technical report.

# FACT SHEET

*Demonstrating the Value of Northern Virginia Community College*

AUGUST 2014



*NOVA creates a significant positive impact on the local business community and generates a return on investment to its major stakeholder groups—students, society, and taxpayers. Using a two-pronged approach that involves a regional economic impact analysis and an investment analysis, the study calculates the benefits to each of these groups. Results of the analysis reflect Fiscal Year (FY) 2012-13.*

## INCOME CREATED BY NOVA IN FY 2012-13 (ADDED INCOME)

<b>\$243.5 MILLION</b> Effect of college operations
<b>\$44.3 MILLION</b> Effect of student spending
<b>\$2.7 BILLION</b> Effect of student productivity
<b>\$3.0 BILLION</b> Total effect

## IMPACT ON LOCAL BUSINESS COMMUNITY

During the analysis year, NOVA and its students added **\$3.0 BILLION** in income to the NOVA Service Area economy, approximately equal to **1.9%** of the region's Gross Regional Product. The economic impacts of NOVA break down as follows:

### *Impact of college operations*

- NOVA employed 2,948 full-time and part-time employees in FY 2012-13. Payroll amounted to **\$194.0 MILLION**, much of which was spent in the NOVA Service Area to purchase groceries, clothing, and other household goods and services. The college spent another **\$119.2 MILLION** to support its day-to-day operations.
- The net impact of college payroll and expenses in the NOVA Service Area during the analysis year was approximately **\$243.5 MILLION** in added regional income.

### *Impact of student spending*

- About **6.0%** of students at NOVA relocated to the NOVA Service Area from outside of the region and spent money at local businesses to purchase groceries, rent accommodation, pay for transport, and so on.
- The expenditures of students who relocated to the region during the analysis year added approximately **\$44.3 MILLION** in income to the economy.

### *Impact of student productivity*

- Over the years, students have studied at NOVA and entered or re-entered the workforce with newly-acquired skills. Today thousands of these former students are employed in the NOVA Service Area.
- The accumulated contribution of former students currently employed in the regional workforce amounted to **\$2.7 BILLION** in added income during the analysis year.

## JOB EQUIVALENTS BASED ON INCOME

Job equivalents are a measure of the average-wage jobs that a given amount of income can potentially support. They are calculated by dividing income by the average income per worker in the region. Based on the added income created by NOVA, the job equivalents are as follows:

Effect of college operations = **3,246** job equivalents

Effect of student spending = **591** job equivalents

Effect of student productivity = **35,971** job equivalents

Overall, the added income created by NOVA and its students supported **39,808** job equivalents.

## FOR EVERY \$1 SPENT...

**\$6.00**

Gained in lifetime income for STUDENTS

**\$13.30**

Gained in added state income and social savings for SOCIETY

**\$9.60**

Gained in added taxes and public sector savings for TAXPAYERS



## RETURN ON INVESTMENT TO STUDENTS, SOCIETY, AND TAXPAYERS

### Student perspective

- NOVA's 2012-13 students paid a total of **\$201.2 MILLION** to cover the cost of tuition, fees, books, and supplies. They also forewent **\$536.4 MILLION** in money that they would have earned had they been working instead of learning.
- In return for the monies invested in the college, students will receive a present value of **\$4.4 BILLION** in increased earnings over their working lives. This translates to a return of **\$6.00** in higher future income for every \$1 that students invest in their education. The average annual return for students is **22.0%**.

### Social perspective

- Society as a whole in Virginia will receive a present value of **\$11.9 BILLION** in added state income over the course of the students' working lives. Society will also benefit from **\$188.2 MILLION** in present value social savings related to reduced crime, lower unemployment, and increased health and well-being across the state.
- For every dollar that society spent on NOVA educations during the analysis year, society will receive a cumulative value of **\$13.30** in benefits, for as long as NOVA's 2012-13 students remain active in the state workforce.

### Taxpayer perspective

- In FY 2012-13, state and local taxpayers in Virginia paid **\$114.2 MILLION** to support the operations of NOVA. The net present value of the added tax revenue stemming from the students' higher lifetime incomes and the increased output of businesses amounts to **\$1.0 BILLION** in benefits to taxpayers. Savings to the public sector add another **\$52.1 MILLION** in benefits due to a reduced demand for government-funded services in Virginia.
- Dividing benefits to taxpayers by the associated costs yields a **9.6** benefit-cost ratio, i.e., every \$1 in costs returns \$9.60 in benefits. The average annual return on investment for taxpayers is **20.1%**.

# IMPACT ON THE LOCAL BUSINESS COMMUNITY

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## JOB EQUIVALENTS BASED ON INCOME

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Overall, the added income created by NOVA and its students supported **39,808** job equivalents.

*In FY 2012-13, NOVA's total impact on the NOVA Service Area economy was \$3.0 billion in added income, equal to 1.9% of the region's Gross Regional Product.*

## NOVA PAYROLL & EXPENSES SUPPORT LOCAL BUSINESSES

- In FY 2012-13, NOVA employed **2,948** full-time and part-time faculty and staff, with an annual payroll of **\$194.0 MILLION**. Much of this was spent in the NOVA Service Area to purchase groceries, clothing, and other household goods and services.
- The college is itself a buyer of goods and services and spent another **\$119.2 MILLION** to support its operations during the analysis year.
- The net impact of college payroll and expenses in the NOVA Service Area was **\$243.5 MILLION** in added regional income.



**INCOME CREATED BY NOVA IN FY 2012-13 (ADDED INCOME)**

**\$243.5 MILLION**

Effect of college operations

**\$44.3 MILLION**

Effect of student spending

**\$2.7 BILLION**

Effect of student productivity

**\$3.0 BILLION**

Total effect



**NOVA STUDENTS BOOST LOCAL SPENDING**

- Approximately 6.0% of NOVA students relocated to the NOVA Service Area from outside the region to attend the college in FY 2012-13. Their expenditures for room and board, transportation, and other personal goods and services helped support local businesses.
- The expenditures of the college's out-of-region students added approximately **\$44.3 MILLION** in income to the region during the analysis year.



**NOVA TRAINING SUSTAINS A SKILLED WORKFORCE**

- Over the years, students have studied at NOVA and entered or re-entered the workforce with newly-acquired skills. Today, thousands of former students are employed in the NOVA Service Area.
- As students apply the skills they acquired at the college, they are rewarded with higher incomes. They also raise business profits through their increased productivity. These higher incomes and increased profits create even more income as they are spent in the region.
- In FY 2012-13, the effect of former NOVA students on the regional economy amounted to **\$2.7 BILLION** in added income.

# RETURN ON INVESTMENT TO STUDENTS

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*Education has the power to raise students' earning potential and increase their employability. In return for their investment in education, NOVA's 2012-13 students will receive higher wages that will continue to grow throughout their working lives.*

## EDUCATION MAKES A DIFFERENCE IN PEOPLE'S LIVES

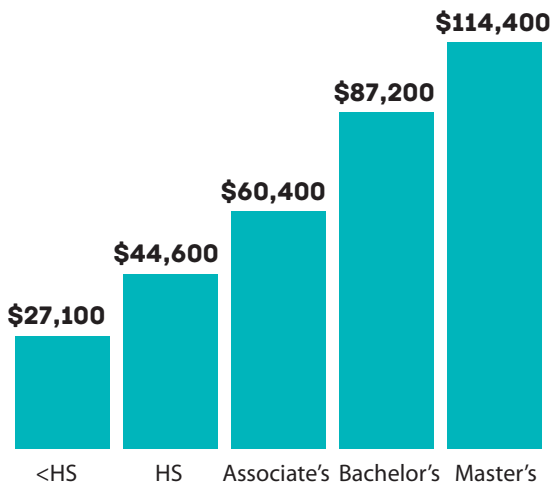
- NOVA provides an environment for students to learn the skills they need to gain and maintain productive employment.
- The training and credentials that students acquire at the college increase their earning potential and help put them on the path to fulfilling and prosperous careers.

## EDUCATION RETURNS VALUE FOR MONEY SPENT

- To meet the costs of going to college, students rely on their own earnings or on the earnings of their families. At NOVA, students paid a total of **\$201.2 MILLION** in FY 2012-13 to cover the cost of tuition, fees, books, and supplies.
- While at college, students spend time focusing on their studies, time they would have otherwise spent in employment or with their families and friends. For NOVA students, the value of time and earnings forgone was estimated to be **\$536.4 MILLION** (less offsetting monies received from residual aid).



## ANNUAL INCOME BY EDUCATION LEVEL AT CAREER MIDPOINT IN THE NOVA SERVICE AREA



- In return for the costs of going to college, students will receive a stream of higher lifetime income. These income gains will fully recover the money that students invested and will continue to grow throughout the students' working lives.

## EDUCATION INCREASES PEOPLE'S EARNING POTENTIAL

- Average annual incomes increase as students attain higher levels of education. On average, associate's degree completers in the NOVA Service Area will earn \$60,400 at the midpoint of their careers, **\$15,800** more than someone with a high school diploma.
- Associate's degree completers will earn **\$2,657,600** (undiscounted) over their working lifetime, an increase of \$695,200 compared to someone with a high school diploma.

## EDUCATION IS ONE OF THE BEST INVESTMENTS STUDENTS AND THEIR FAMILIES CAN MAKE

- NOVA's 2012-13 students will receive an average annual rate of return of **22.0%** on their investment in the college. This rate of return continues throughout their working lives.
- Had students and their families taken the money they spent on education and invested it instead in a standard bank savings account, they would have received a rate of return of less than 1%.
- On average, NOVA's 2012-13 students will receive a cumulative **\$6.00** in higher future income for every \$1 they invested in their education.

# RETURN ON INVESTMENT TO SOCIETY

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*Benefits created by NOVA extend to far more people than just its students. As students and employers enjoy higher income and increased output, society as a whole benefits from an expanded economy and a range of savings associated with the students' improved quality of life.*

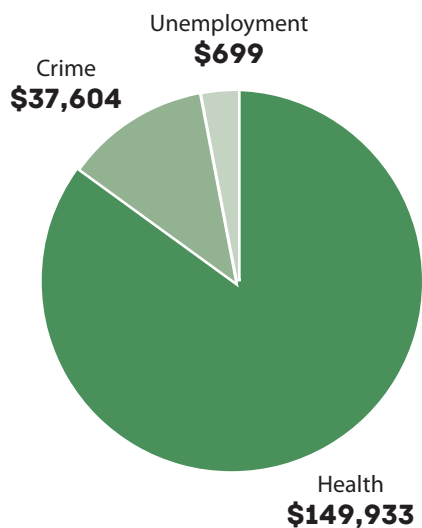
## NOVA RAISES PROSPERITY IN THE STATE

- Students earn more because of the skills and qualifications they acquire at NOVA. Further, employers earn more because the added skills of the students they hire make their businesses more productive.
- Together, increases in earnings and business output stimulate corresponding increases in income and employment throughout the state. Over their working lives, NOVA's 2012-13 student population will generate a present value of **\$11.9 BILLION** in added income in the state of Virginia.

## NOVA IMPROVES QUALITY OF LIFE

- As NOVA students achieve higher levels of education, they are statistically more likely to develop good health habits. This leads to a present value of **\$149.9 MILLION** in savings to students and to society as a whole for medical treatment related to smoking, alcoholism, obesity, drug abuse, and mental disorders.

## PRESENT VALUE OF SOCIAL SAVINGS (THOUSANDS)



- Students enjoy better employment opportunities as a result of their education at NOVA. This makes them less likely to require income assistance and less likely to commit crimes. These effects translate to a present value of **\$698,732** in unemployment-related savings and **\$37.6 MILLION** in law enforcement savings to society as a whole.
- Altogether, savings to society amount to a present value of **\$188.2 MILLION**, equal to the sum of avoided costs related to health, crime, and unemployment.



## BENEFITS TO SOCIETY OUTWEIGH TAXPAYER COSTS

- In FY 2012-13, society invested **\$910.8 MILLION** in NOVA educations. This includes all NOVA expenditures, all student expenditures, and all student opportunity costs. In return for this investment, society as a whole will receive a present value of **\$12.1 BILLION** in benefits, the sum of the added income and social savings that NOVA's 2012-13 student population will generate in the state.
- For every dollar spent on NOVA educations, society as a whole in Virginia will receive a cumulative value of **\$13.30** in benefits, for as long as NOVA's 2012-13 students remain active in the state workforce.

# RETURN ON INVESTMENT TO TAXPAYERS

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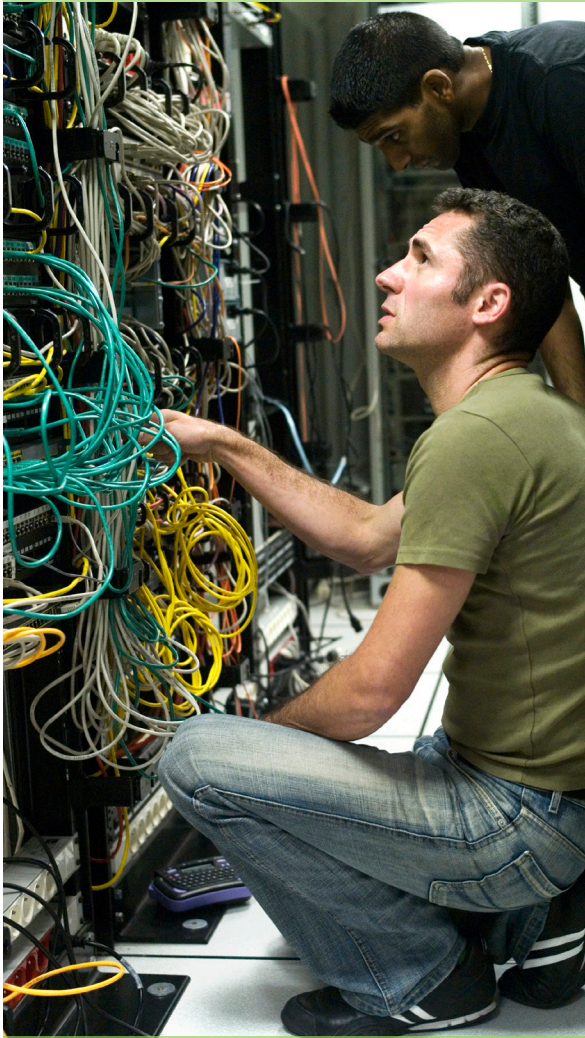
*Students and society as a whole enjoy a range of benefits due to their educational investment in NOVA. A portion of these benefits accrues to state and local taxpayers in the form of higher tax receipts and a reduced demand for government-supported social services.*

## NOVA INCREASES TAX REVENUE

- Approximately **92%** of NOVA's students remain in Virginia upon completing their educational goals. As students earn more, they pay higher taxes. Employers also pay higher taxes through their increased output and spending.
- Over the students' working lives, state and local government in Virginia will collect a present value of **\$1.0 BILLION** in the form of higher tax receipts.

## NOVA REDUCES GOVERNMENT COSTS

- NOVA students who achieve higher levels of education are statistically less likely to have poor health habits, commit crimes, or claim welfare or unemployment benefits.
- The improved lifestyles of students result in a reduced demand for government-supported services. Better health leads to reduced health care costs. Reduced crime leads to a reduced burden on the criminal justice system. Further,



increased employability leads to fewer claims for welfare and unemployment benefits.

- As a result, taxpayers in the state of Virginia will see a present value of **\$52.1 MILLION** in savings to government over the students' working careers.

## NOVA IS A SOLID INVESTMENT FOR STATE AND LOCAL TAXPAYERS

- In FY 2012-13, state and local taxpayers in Virginia paid **\$114.2 MILLION** to support the operations of NOVA.
- For every \$1 of public money spent in NOVA, taxpayers receive a cumulative return of **\$9.60** over the course of students' working lives in the form of higher tax receipts and public sector savings.
- Taxpayers see an annual return of **20.1%** on their investment in NOVA. This return compares favorably with the 1.1% discount rate used by the federal government to appraise long-term investments.

### COMPARING TAXPAYER RATE OF RETURN TO DISCOUNT RATE



