

An Updated Economic Analysis of the Education Initiative

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The views expressed are those of the authors and do not necessarily represent those of the University of Nevada, Las Vegas or the Nevada System of Higher Education.

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Executive Summary

On November 4, 2014, Nevada voters will be asked to approve Question 3: The Education Initiative. If passed, the measure would impose a tax (commonly known as the margin tax) on businesses with a total revenue of \$1 million, which would amount to 2 percent of total sales revenue less the cost of materials or the cost of labor. The revenue would be earmarked to increase funding for kindergarten through 12th grade (K-12) education.

Nevada is slightly below the national average in the taxation of its businesses. If the margin tax were adopted as part of the education initiative, business taxes in Nevada would rise above the national average.

Nevada ranks at the bottom on K-12 educational outcomes and near the bottom on the educational attainment of its adult population, which limits economic opportunity in the Silver State. Economic research finds that regions with higher educational attainment enjoy greater per capita output and income and lower unemployment rates.

Among the 50 U.S. states, Nevada ranks 48th in its funding for K-12 education at \$8,454 per student each year, which is below the national average of \$11,864. Estimates by the Guinn Center for Policy Priorities, Applied Analysis, RCG Economics and the Beacon Hill Institute for the Nevada Policy Research Institute offer revenue estimates from the margin tax in a range from \$460 million to \$862.5 million. These additional revenues could boost annual K-12 educational spending in Nevada by about \$985 to \$1,825 per student.

Economic research on the effects of increased spending on educational outcomes is mixed, but some of the most recent research finds that K-12 school systems supported with higher funding generally produce better educational outcomes.

Economic research on the effects of state and local fiscal policy on regional economic growth generally finds that for the average state, the beneficial effects of increased spending on K-12 education would more than offset the negative effects of raising funds through a corporate income tax. The proposed Nevada margin tax is likely more costly than a corporate income tax.

Our analysis for the Nevada economy using the REMI model finds that the increased government spending that is supported through the margin tax created by the Education Initiative would have a small net positive effect on Nevada's economic activity. The benefits of the additional educational spending supported by the margin tax would slightly more than offset the negative effects of the increased business taxation.

In scenarios in which \$795.3 million is raised by the margin tax in each fiscal year and used for additional educational spending, the Education Initiative would increase total employment in the state of Nevada by 4,000-11,500 jobs (0.2-0.7 percent) in 2016 and 1,700-9,100 jobs (0.1-0.5 percent) in 2017. The net effect on state GDP ranges from a wash to a 0.2 percent gain across the 2016-17 biennium. We consider the smaller figures more realistic.

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1. Introduction

On November 4, 2014, Nevada voters will be asked to approve Question 3: The Education Initiative. If passed, the measure would impose a tax on business (commonly known as the margin tax), which would amount to 2 percent of sales revenue less the cost of materials or the cost of labor for those businesses that have revenues totaling more than \$1 million.¹ The Guinn Center for Policy Priorities (2014) estimates that roughly 17 percent of Nevada businesses will be affected by the proposed initiative. These businesses, being relatively large, employ a majority of Nevada's workers. The revenue would be earmarked to increase funding for kindergarten through 12th grade (K-12) education.

In early summer, we were retained by Daniel M. Hart of The Education Initiative to estimate the educational and economic effects of the Education Initiative. We were not commissioned to generate an opinion either for or against the tax. Our task was to assess the state of education funding in Nevada and to use state-of-the-art impact analysis methodology to arrive at reasonable predictions of how the proposed tax and spending would affect employment and other economic outcomes. To that end, we used the REMI model from Regional Economic Models, Incorporated to arrive at our estimates and delivered a report on July 31, 2014.

As the result of comments from our colleagues and the recent release of an RCG Economics (2014) report on the margin tax, we have updated our analysis. We believe our updated analysis provides a more accurate and nuanced perspective on the likely economic effects of the Education Initiative—including the margin tax and the K-12 education spending it would support. The current report is the result of our updated analysis.

In the next section, we examine how the margin tax works and how it would affect Nevada business taxation. In section three, we consider Nevada's educational outcomes, attainment and funding and how the revenue from the margin tax would affect educational funding and outcomes. In section four, we look at what the economic research on state and local fiscal policy has to say about the economic effects of increasing business taxation to increase K-12 spending. Section five provides a brief overview of two previous studies on the economic impact of the Education Initiative. Section six provides our analysis of the economic impact of the Education Initiative using the REMI model and a brief comparison with our July 31 report. Section seven is the conclusion.

2. The Margin Tax and Nevada Business Taxes

The margin tax will levy a tax on firms with \$1 million or more in total Nevada revenue. The tax is to be calculated as 2 percent of one of the following margins:

¹ The full text of the Education Initiative is provided by State of Nevada (2012). For a thorough explanation of the Education Initiative and the issues surrounding it, we refer readers to the Guinn Center for Policy Priorities (2014).

1. 2.0% X (70% of total revenue);
2. 2.0% X (Total Revenue – Cost of Goods Sold); or
3. 2.0% X (Total Revenue – Employee Compensation plus Benefits).²

The firm elects which calculation it wishes to use. In addition, any businesses that would pay the modified business tax would receive a full credit for that tax against the margin tax, which means that the maximum business tax paid will be the 2 percent margin tax.

According to the Guinn Center for Policy Priorities, the margin tax will raise \$460 million. Applied Analysis puts the figure at \$650 million to \$750 million; RCG Economics puts the figure at \$798.4 million and Beacon Hill for the Nevada Policy Research Institute puts the figure at \$862.5 million.

Currently, Nevada's state and local tax burden is the 23rd highest among U.S. states and slightly above the national average. In 2013, state and local taxes captured 5.42 percent of Nevada's gross state product (GSP). The national average was 5.22 percent.

Nonetheless, most Nevada businesses currently enjoy a slightly better-than-average tax climate. Excluding severance taxes on mineral production, state and local taxes on Nevada businesses captured 0.36 percent of Nevada's GSP in 2013. The national average was 0.43 percent.³ If the margin tax raises the estimated \$460 million, \$700 million, \$798.4 million or \$862.5 million, business taxes in Nevada would increase to a respective 0.72 percent, 0.89 percent, 0.97 percent or 1.01 percent of GSP—a little less to a little more than twice the national average.

3. Educational Outcomes, Attainment and Funding in Nevada

Nevada ranks at the bottom on K-12 educational outcomes and near the bottom on K-12 educational spending. Use of the revenue generated by the margin tax would boost Nevada's educational spending from its current 71 percent of the national average to about 80-88 percent of the national average. Although the effect of additional spending on educational outcomes is controversial, a number of recent studies show increased classroom resources improve educational outcomes.

3.1 Nevada's Educational Outcomes

Many indicators can be used to assess a state's educational outcomes. The Annie E. Casey Foundation, known for its annual *Kids Count Data Book*, uses four indicators to assess educational outcomes across the United States: children attending preschool, fourth graders

² Total compensation is capped at \$300,000 per employee including benefits such as retirement, health care, employer contributions to health savings accounts and other workers' compensation benefits.

³ Including severance taxes, state and local taxes on Nevada businesses add up to 0.58 percent of the state's GSP. The national average is 0.54 percent.

proficient in reading, eighth graders proficient in math and high school students graduating on time. Together, these four indicators do a good job of predicting life success.

Overall, the Annie E. Casey Foundation ranked Nevada last among the U.S. states on educational outcomes in its 2014 *Kids Count Data Book*. Nevada ranked 50th on two of the indicators: the percentage of children attending preschool and the percentage of high school students graduating on time (Table 1). Only 30 percent of Nevada children attended preschool in 2010-2012. Connecticut ranked first (best) on this indicator with 63 percent of its children of the appropriate age in preschool. Only 60 percent of Nevada high school students graduated on time in 2011-2012. At 93 percent, Nebraska and Vermont ranked first on this indicator.

Nevada ranked 44th in fourth graders proficient in reading—with only 27 percent reading at grade level. Massachusetts ranked first (best) on this indicator with 47 percent of its fourth graders reading at grade level.

Nevada ranked 41st in eighth graders proficient in math—with only 28 percent able to use math at grade level. Massachusetts ranked first (best) on this indicator with 55 percent of its eighth graders able to use math at grade level.

Table 1: Nevada’s Educational Performance

Indicators	Nevada	United States	Nevada’s ranking on indicator
Children attending preschool (2010-2012)	30%	46%	50 th
Fourth graders proficient in reading (2013)	27%	34%	44 th
Eighth graders proficient in math (2013)	28%	34%	41 st
High school students graduating on time (2011-2012)	60%	81%	50 th

Source: Annie E. Casey Foundation, *Kids Count Data Book 2014*.

3.2 Nevada’s Educational Attainment

Nevada’s educational attainment is below the national average. In 2012, only 22.4 percent of Nevadans ages 25 years and over had a bachelor’s degree or higher (U.S. Census Bureau). The comparable figure for the United States was 29.1 percent (U.S. Census Bureau). In 2012, only 80 percent of Nevada children lived in a household where the head had a high school diploma, which is lower than the 85 percent national average (AECF, Kids Count Data Center, 2014).

3.3 Educational Attainment and Incomes

Boosting Nevada’s educational attainment would boost productivity and earnings in the state. Economic research shows a strong relationship between educational attainment and a region’s or a state’s income. Peer-reviewed economic research provides estimates that a one-year increase in a region’s average educational attainment boosts incomes by 6.7-15.0 percent (Table 2).

Table 2: The Return to Education

Source	Measure	Return
McMahon (1991)	Net earnings differential before taxes	10.2% – Grade 9-12; 12.8% – College
Acemoglu and Angrist (1999)	Wages	7.0%
Ciccone and Peri (2000)	Labor productivity	8.0-11.0%
Moretti (2004)	Wages	8.6-13.2%
Topel (2004)	Individual earnings	8.0-15.0%
Lange and Topel (2006)	Wages	6.7-7.5%

Source: Compiled from the sources identified above.

3.4 Nevada’s Educational Spending

Adjusted for regional cost differences, Nevada ranks 48th among U.S. states on per-pupil educational expenditures. In 2011, Nevada spent an average of \$8,454 on education per K-12 student. The average for the nation was \$11,864. Among the states, Wyoming ranked first in funding at \$19,534, and Utah ranked 50th at \$6,905. Of Nevada’s neighbors, Oregon spent the most per student, and Utah spent the least (Table 2).

Table 3: Education Spending Per Student, Nevada and Neighboring States, 2011

State	Education Spending Per Student
Arizona	\$8,495
California	\$8,341
Idaho	\$8,471
Nevada	\$8,454
Oregon	\$10,413
Utah	\$6,905

Source: Education Week Research Center, Education Counts, <http://www.edcounts.org/>, accessed on July 14, 2014.

Estimates by the Guinn Center for Policy Priorities, Applied Analysis, RCG Economics and the Beacon Hill Institute for the Nevada Policy Research Institute place the expected revenue from the margin tax at an estimated \$460 million, \$650 million to \$750 million, \$798.4 million and \$862.5 million, respectively. These revenue increases would provide the funding to boost annual K-12 spending in Nevada by about \$985, \$1,395-\$1,610, \$1,710 and \$1,825 per student, respectively.

3.5 Educational Spending and Educational Outcomes

The relationship between educational spending and educational outcomes is controversial. Hanushek (1989) found no statistically significant relationship between spending on K-12 education and outcomes (as measured by SAT scores). Variation in the composition of spending results in no relationship between a school district's total spending and the quantity of resources reaching the classroom. Subsequent research, such as Hanushek (1996); Hanushek, Rivkin and Taylor (1996); Neymotin (2010) and Coulson (2014), support Hanushek's 1989 findings.

In a different vein, however, Card and Krueger (1992); Betts (1995); Card and Payne (2002); and Jackson, Johnson and Persico (2014) have reached the conclusion that increased school resources can favorably affect educational outcomes. Card and Krueger find that a 10 percent reduction in the student-to-teacher ratio is associated with a 1.1 percent gain in the subsequent weekly earnings of the students, whereas Betts finds that a 10 percent reduction in the student-to-teacher ratio is associated with a 0.4 percent gain.

Card and Payne and Jackson, Johnson and Persico examine cases of school finance reforms that led to an equalization of spending across a state's school districts. Card and Payne find that an equalization of spending leads to a narrowing of the variation in SAT scores. Jackson, Johnson and Persico find that an equalization of spending that increases the resources devoted to education leads to improved educational outcomes. In particular, Jackson, Johnson and Persico find that a 20 percent increase in K-12 educational spending on students from low-income families raises high school completion rates by 22.9 percentage points.

4. Taxing Nevada's Businesses to Increase Educational Funding

The key to sustained economic growth in Nevada, or any state for that matter, is attracting new business investment and labor to the state while retaining the current business investment and work force in the state. States compete with each other to attract these mobile resources. Although climate, location, industry mix, regulation and natural resources are important determinants of a state's economic performance, sound fiscal policy can give a state a competitive advantage in attracting and keeping business investment and able workers.

These mobile resources are less attracted to the states in which they would incur higher taxes. On the other hand, they are more attracted to the states that provide highly valued government services. The states with the most attractive state and local fiscal policies strike a balance between the provision of government services and the taxes required to finance those services.

The same sort of thinking applies to increasing taxation to fund additional spending. Financing an increase in any government service with increased taxation will discourage economic activity if the increased spending offers less value to investors and labor than the

taxes cost the economy. On the other hand, financing an increase in any government service with increased taxation will stimulate economic activity if the increased spending offers more value to the investors and labor than the taxes cost the economy.

In fact, economic research generally finds that the average state would stimulate its economic activity by increasing its business taxation to provide more K-12 educational spending. Because state and local governments in Nevada tax businesses less than is the national average and spend less on K-12 education than the national average, Nevada may benefit more than the average state by increasing its business taxation to fund increased spending on K-12 education.

4.1 The Economic Effects of Increased Taxation

Taken by itself, any tax will have a negative effect on economic activity. In fact, the negative effect on economic activity means the economic cost of government revenue is typically higher than the total revenue raised by a given tax. Furthermore, increasing any tax will have an increasingly negative effect on economic activity. As any tax is increased, it increasingly alters the direction of economy activity, which increases the cost of each additional dollar collected with the tax.

4.2 The Economic Effects of Increased Spending on a Government Service

Taken by itself, spending on any government service will have a positive effect on economic activity because it will attract capital investment and labor. As is the case for all goods, however, the value of a given government service diminishes relative to other goods as more of the service is provided.

4.3 The Optimal Provision of Government Services

Of course, government revenues are required to pay for the provision of state and local government services. Any increase in state and local government services will require an increase in funding. To assess the effects of increasing a tax to fund additional government services, the benefits of the service and the costs of the tax must be evaluated.

More generally, the net benefit of all government services and revenue sources is

$$\Pi = \sum_{i=1}^m TB_i - \sum_{j=1}^n TC_j \quad (1)$$

where Π is the net benefit of government services; TB_i is the total benefit from the service provided by government spending i ; and TC_j is the total cost of revenue source j , which can be higher than the actual revenue raised.

At the state and local level, the provision of government services requires total spending be fully supported by revenue sources. So,

$$\sum_{i=1}^m TE_i = \sum_{j=1}^n TR_j \quad (2)$$

where TE_i is the total expenditure on government service i and TR_j is the total revenue from source j .

Maximization of the total benefit of government services and revenue source (Equation 1) subject to the budget constraint (Equation 2) yields:

$$MB_1 = MB_2 = \dots = MB_m = MC_1 = MC_2 = \dots = MC_n \quad (3)$$

where MB_i is the marginal benefit of spending an additional dollar of government service i and MC_j is the marginal cost of increasing government revenue with source j .

The maximum benefit from the provision of government services occurs when the marginal benefit of an additional dollar spent on each government service is equal to that of a dollar spent on other government services. Achieving maximum value also requires that the marginal cost of a dollar of government revenue from each source be equal to that of a dollar obtained from other sources, and that the marginal benefit of any spending be equal to the marginal cost of the revenue used to support spending.

In practice, state and local governments are unlikely to achieve these optimality conditions. Some services are overprovided, and others are underprovided. Some taxes are overutilized, and others are underutilized.

A substantial body of economic research examines the effects of state and local fiscal policy on state economic growth—such as Helms (1985); Gyourko and Tracy (1989); Miller and Russek (1997); Brown, Hayes and Taylor (2003); Harden and Hoyt (2003); Tomljanovich (2004); Taylor and Brown (2006); Bania, Gray and Stone (2007) and Ojede and Yamarik (2012). With the models used for this research, the misallocation of government services and revenues shows up as reducing economic growth (in some models by discouraging capital investment and growth of the labor force). For instance, a reduction in an overprovided service in favor of a reduction in taxes or the increased provision of another government service is found to increase economic growth. Similarly, a reduction in an overutilized tax in favor of other taxes or the reduced provision of government services is found to increase economic growth.

4.4 Corporate Income Taxes and K-12 Education Spending

For corporate income taxes, the preponderance of peer-reviewed economic research on state and local fiscal policy and regional economic growth—such as Helms (1985); Miller and Russek (1997); Brown, Hayes and Taylor (2003) and Taylor and Brown (2006)—supports the view that corporate income taxes are underutilized in the average state. Shifting toward corporate incomes taxes, away from other taxes, such as the property tax, would enhance the average state’s economic activity.

The peer-reviewed economic research—such as Miller and Russek (1997); Brown Hayes and Taylor (2003); Tomljanovich (2004) and Taylor and Brown (2006)—also generally shows that increasing corporate income taxes to increase the funding for K-12 education spending would enhance the average state’s economic activity. Because state and local governments in Nevada tax businesses less than is the national average and spend less on K-12 education than the national average, Nevada might benefit more than the average state by increasing its business taxation to fund increased spending on K-12 education.

4.5 The Proposed Nevada Margin Tax

The form of the business tax a state adopts matters. The empirical research on the economic effects of state and local government taxation and spending is based on the business taxes actually used, which for most states is a corporate income tax. As RCG Economics (2014) demonstrates, the proposed Nevada margin tax does not closely resemble a corporate income tax. Rather, it is a modified gross receipts tax that allows for some deductions and cuts very unevenly across businesses. Because the margin tax cuts unevenly across businesses, its use likely has higher economic costs than the corporate income tax.

5. Previous Studies of the Education Initiative’s Employment Effects

To the authors’ knowledge, four studies to date have examined the education initiative and its associated margin tax. These include studies by Applied Analysis, the Guinn Center for Policy Priorities, the Beacon Hill Institute on behalf of the Nevada Policy Research Institute and RCG Economics. Of these studies, only those by Applied Analysis and the Beacon Hill Institute on behalf of the Nevada Policy Research Institute assessed the employment effects.⁴

To capture the direct effects and indirect or secondary effects of the margin tax, Applied Analysis (2014b) used a revenue figure of \$700 million and IMPLAN, the latter a commonly used software package for regional economic impact analysis. They found that extracting \$700 million from the private sector would reduce *private sector jobs* by 8,860. They further stated that if all the tax revenue were devoted to hiring new teachers, then it would likely have a net positive effect on total jobs created because the tax revenue was originating from relatively capital intensive private sector industries and being distributed into a labor intensive part of government—K-12 teaching. Applied Analysis did not provide estimates of the number of jobs that might be created through the increased spending, however.

Another study was released by the Beacon Hill Institute on behalf of the Nevada Policy Research Institute (Bachman, Head and Conte, 2014). The analysts at Beacon Hill used State Tax Analysis Modeling, a regional economic and tax planning software package, to generate their estimates. The model predicted that the tax would generate \$862.5 million in revenue its first year. The reduction in economic activity in the private sector would lead to a loss of 3,610

⁴ The reports by the Guinn Center for Policy Priorities and RCG Economics provide revenue estimates, but neither study provides estimates of the employment effects.

jobs in 2015, which would be partially offset with a gain in 1,970 jobs in the public sector. The net loss in jobs according to Beacon Hill is 1,640.

An important point to consider is that according to Beacon Hill's estimate, \$862.5 million in revenue will go to the state, which will only result, according to their estimates, in an additional 1,970 jobs in the public sector. Even if only one-third of the additional government spending went to hire new teachers, that amounts to roughly \$146,000 per job created—which is well above the typical teacher's pay. Moreover, the study does not adequately explain where the rest of the money in the public sphere is going, which suggests that the public sector job gain is likely understated.⁵

6. Economic Impact Analysis of the Education Initiative

This analysis quantifies the economic impact of the Education Initiative. A traditional economic impact analysis is used to assess how the Nevada economy would be affected by the policy. The first step of the analysis is to assess the primary or direct impact of the policy on each sector of the Nevada economy. The primary impact of the Nevada Education Initiative has two components: (1) tax collections raised from businesses and (2) new government spending resulting from the hiring of new teachers, increasing the wages of existing teachers and improving the schools in the state of Nevada.

The second step of the analysis is to estimate spinoff impacts, defined as the ripple effect of the policy through the Nevada economy. Each time a dollar of new economic activity is re-spent, a spinoff effect is generated. For example, construction workers spend their paychecks at local businesses for housing, groceries and clothing. Local business employees then spend those dollars again for their own housing, groceries and clothing, and so on. For the Education Initiative, the spinoff impacts are twofold. For the tax collections, a negative ripple effect results from the fact that each tax dollar could not be re-invested by the firm as new employees hired or new spending on goods and services. For the new government spending, a positive ripple effect results from the fact that each teacher hired will create new economic activity through his/her spending on local goods and services. Increasing the wages of existing teachers will also create additional local spending on goods and services. The primary and spinoff impacts are used to produce the total economic impact of the education initiative. We now discuss each step in detail.

⁵ Charney (2010b) provides an interesting critique of Beacon Hill's methodology for estimating the economic effects of changes in tax laws. In another study, Charney (2010a) compares Beacon Hill's estimates of a potential sales tax increase in Arizona. The Beacon Hill study predicted net job losses associated with the tax increase. In contrast, a study conducted with the widely accepted REMI model (the same model used in the present analysis) predicted significant net job gains associated with the tax increase.

6.1 Assumptions and Primary Impacts

As described above, a study conducted by the Guinn Center Policy Priorities (2014) estimates the revenue yield from the margin tax at \$460 million. Another study conducted by Applied Analysis (2014b) predicts a range of annual revenue from the margin tax at \$650 million to \$750 million.⁶ Another study by Beacon Hill for the Nevada Policy Research Institute puts the figure at \$862.5 million.

A more recent study from RCG Economics (2014) estimates that the proposed margin tax will raise roughly \$798.4 million. The RCG study also provides a breakdown of the estimates for each industry sector. We adopt the estimates from the RCG study because they provide the most detailed breakdown of the tax revenues by industry. Table 4 shows the distribution of the total tax bill across industry sectors for Nevada. The industry tax revenues are distributed across each county in the state of Nevada using the relative output share of each industry sector by county with respect to the total output of the state of Nevada in 2011.

Using the estimates from Table 4, we estimate the primary impacts in three alternative scenarios described in Table 5. The first scenario assumes that new tax revenues are not reinvested in the education sector. This scenario is called the “no-spending” scenario. This scenario is obviously not realistic given that the purpose of the proposed margin tax is to fund K-12 education in Nevada. We include this scenario, however, for comparison purposes with other studies.

Because we cannot accurately predict how the increased funding will be spent, our second and third scenarios are based on different assumptions about how the revenue is spent. The second scenario assumes that all revenues from the proposed margin tax are used to hire new teachers. This scenario is called the “gross-spending” scenario.

The “gross-spending” scenario may be realistic, but its quite possible that the new education funds will be distributed across a variety of activities—including hiring new teachers, increasing the salaries of existing teachers in an effort to improve teacher retention, and capital expenditures to build new schools and improve existing schools with new state-of-the-art learning technology. Although the Education Initiative does not allow the funds from the margin tax to be used for capital spending, current K-12 spending in Nevada is \$8,454 per student, and school districts could displace some the monies they already devote to salaries with the new funds. They could then use a greater share of the \$8,454 per student they already spend on education to support capital expenditure. Hence, the additional funding is quite fungible.

With a wide range of possibilities, our third scenario assumes that the new education funds will be split equally among hiring new teachers, increasing the wages of existing teachers and capital expenditures. This scenario is called the “mixed-spending” scenario. A similar mixed

⁶ Also see Applied Analysis (2014a).

allocation of new education funding was used in a 2013 study on the economic impact of a proposed income tax to finance pre-K-12 education in the state of Colorado (Wobbekind and Lewandowski, 2013).

Table 4: Estimated Annual Margin Tax by Industry Sector (2-Digit NAICS Code)*

NAICS	Category	Estimated Net Tax Amount
11	Agriculture, forestry, fishing, and hunting	\$2,793,230
21	Mining, and oil and gas extraction	\$3,839,798
22	Utilities	\$63,384,728
23	Construction	\$39,565,713
31	Manufacturing	\$1,513,424
32	Manufacturing	\$2,378,907
33	Manufacturing	\$1,090,894
42	Wholesale trade	\$90,640,820
44	Retail trade	\$109,319,925
45	Retail trade	\$31,698,206
48	Transportation and warehousing	\$9,747,195
49	Transportation and warehousing	\$6,634,642
51	Information	\$31,645,936
52	Finance and insurance	\$98,533,189
53	Real estate	\$39,636,125
54	Professional, scientific, and technical services	\$58,578,257
56	Administrative and support services, waste management services	\$48,454,926
61	Educational services	\$2,826,087
62	Health care and social assistance	\$95,854,008
71	Arts, entertainment, and recreation	\$13,378,479
72	Accommodation and food services	\$26,351,068
81	Other services (except public administration)	\$17,471,101
	Total**	\$795,336,658

*Source: RCG Economics, DETR, Nevada Department of Taxation and Consultant Team.

** Total excludes the unclassified sector, as it is not represented in our model.

Table 5: Summary of Assumptions

Policy Scenario	Estimated Gross Tax Receipts (Millions)	Allocation of New Education Spending
No-Spending	\$795.3	None
Gross-Spending	\$795.3	100% on new teachers
Mixed-Spending	\$795.3	1/3 new teachers 1/3 wages of existing teachers 1/3 capital expenditures (construction and technology)

6.2 Economic Impact of the Education Initiative

The total impact of the Education Initiative is estimated using a structural input-output model developed by Regional Economic Models, Inc. (REMI), specifically for Nevada.⁷ The model divides Nevada into five regions—Clark County, Nye County, Lincoln County, Washoe County, and the remaining counties are combined to form a fifth region. The model is used to estimate the impacts of the proposed initiative on Nevada’s employment and Gross Domestic Product (GDP). The impact estimates are presented for the three alternative policy scenarios described above. As with any economic impact analysis, the impact estimates represent deviations from a business-as-usual baseline scenario.

6.2.1 Total Economic Impact: “No-Spending” Scenario

Table 6 shows the total impact of the Education Initiative on the state economy in 2016 and 2017 under the “non-spending” policy scenario. This scenario shows the impact of the margin tax alone, without accounting for the new state government spending on education for which the tax collections are intended. Under this scenario, the proposed margin tax leads to an employment loss in the state of about 5,300 jobs in 2016 and roughly 7,400 jobs in 2017. These employment losses represent 0.3 percent and 0.4 percent of state’s total baseline employment in 2016 and 2017, respectively. A detailed breakdown of the job losses across industry sectors is shown in Appendix A.

The state’s GDP is also reduced by \$477 million in 2016 and \$689 million in 2017. The GDP losses represent 0.3 percent and 0.4 percent of state’s total baseline GDP in 2016 and 2017, respectively. It is important to reiterate that these impacts do *not* take into account the education funding component of the proposed legislation.

Table 6: Economic Impact under “No-Spending” Scenario

	Units	Total Impact FY2016	Total Impact FY2017	Total Impact 2016-2017
Total Employment	Thousand (Jobs)	-5.31	-7.40	-12.70
	Change from baseline	-0.31%	-0.42%	-0.37%
Gross Domestic Product	Millions of 2014 dollars	-477.48	-689.19	-1166.67
	Change from baseline	-0.29%	-0.41%	-0.35%

6.2.2 Total Economic Impact: “Gross-Spending” Scenario

The “gross-spending” policy scenario accounts for both the margin tax and the new education funding from the proposed legislation. It is assumed that all the revenues from the

⁷ An overview of the REMI model is provided in Appendix B.

tax are used to fund the hiring of new teachers. The education funding component is entered in the REMI model as a change in industry output/sales in the education services sector. Under these assumptions, the Education Initiative increases total employment in the state of Nevada by roughly 11,500 jobs in 2016 and 9,100 jobs in 2017. These employment gains represent 0.7 percent and 0.5 percent of state’s total baseline employment in 2016 and 2017, respectively. It is also estimated that the “gross-spending” scenario will increase the state’s GDP by \$362 million in 2016 and \$163 million in 2017. The GDP gains represent 0.2 percent and 0.1 percent of state’s total baseline GDP in 2016 and 2017, respectively.

The GDP gains are much smaller in relative terms compared to the employment gains. This is mainly because the average wage in education services is below the state average wage. A detailed breakdown of the job losses across each industry sector is shown in Appendix Table A2. It is estimated that the new education funding will create roughly 12,000 jobs in education services, which represents about a 70 percent employment increase in education services relative to the baseline. It may not be feasible for the state to hire such a large number of new teachers in one year. In that case, the FY2016 total impact will be lower than those shown in Table 7.

Table 7: Economic Impact under “Gross-Spending” Scenario

	Units	Total Impact FY2016	Total Impact FY2017	Total Impact 2016-2017
Total Employment	Thousand (Jobs)	11.54	9.12	20.65
	Change from baseline	0.68%	0.52%	0.60%
Gross Domestic Product	Millions of 2014 dollars	362.56	163.47	526.03
	Change from baseline	0.22%	0.10%	0.16%

6.2.3 Total Economic Impact: “Mixed-Spending” Scenario

This policy scenario allows for a more realistic allocation of the new education funds from the proposed legislation. It assumes that one-third of the education funds are spent on new teachers. The remaining two-thirds of the new funds are split equally between wage increases for existing teachers and capital expenditures.⁸ The spending on new teachers is entered in the REMI model as a change in industry output/sales in the education services sector. The wage increase for existing teachers is modeled as a change in the wage bill for the education services sector. The capital expenditures are modeled as a change in exogenous final demand for construction, professional and technical services, internet publishing and computer manufacturing.

⁸ Although the Education Initiative does not allow for the funds it generates to be used for capital spending, we assume funds are fungible as described above, and that funds from other sources will be diverted from salaries to capital spending.

The net impact of these changes on the Nevada economy is still positive, but the impact on the state’s GDP is neutral. Total employment increases by roughly 4,000 jobs (+0.23 percent) in 2016 and 1,700 jobs (+0.10 percent) in 2017. The state GDP experiences a small increase of \$106 million (+0.07 percent) during the first year of the legislation, 2016, but falls by \$102 million (-0.06 percent) in 2017.

The net GDP impact over the 2016-2017 biennium is neutral. The impact estimates are smaller in this policy scenario compared to the “gross-spending” scenario. The reduction is because only one-third of the new funding goes directly to hire new teachers in this scenario. One-third goes to increase pay for existing teachers, and the remaining one-third goes to capital expenditures, which, except for the construction sector, is mostly produced outside of the state of Nevada. A breakdown of the employment impact by sector is provided in Appendix Table A3. Annual employment in the education services sector increases by an average of 3,900 jobs (+22 percent) over the 2016-2017 biennium.

Table 8: Economic Impact under “Mixed-Spending” Scenario

	Units	Total Impact FY2016	Total Impact FY2017	Total Impact 2016-2017
Total Employment	Thousand (Jobs)	3.95	1.68	5.63
	Change from baseline	0.23%	0.10%	0.16%
Gross Domestic Product	Millions of 2014 dollars	106.17	-102.09	4.08
	Change from baseline	0.07%	-0.06%	0.00%

6.2.4 Comparing the Spending Scenarios

Clearly, it matters how the additional funding affects educational spending. If all the additional funding is used for new teachers, total employment in the state of Nevada will rise by roughly 11,500 jobs (0.7 percent) in 2016 and 9,100 jobs (0.5 percent) in 2017. State GDP will be boosted by an estimated by \$362 million (0.2 percent) in 2016 and \$163 million (0.1percent) in 2017.

To the extent that increased funding is shared across hiring new teachers, salary increases for existing teachers and increased capital spending on schools, the gains in total employment will be less. With the new revenue split equally across these activities, total employment in the state of Nevada will increase by only 4,000 jobs (0.2 percent) in 2016 and 1,700 jobs (0.1 percent) in 2017. The net effect on state GDP will be a wash across the 2016-17 biennium.

6.2.5 A Comparison to Our Previous Analysis

In our previous analysis (Brown et al., 2014), we examined a case in which we assumed the margin tax raised \$750 million, with the revenue coming from industries in proportion to

their output (value added). We estimated the margin tax taken by itself would yield job losses of 5,840 in 2016 and 8,210 in 2017 and GDP losses of \$550 million in 2016 and \$820 million in 2017. In our updated analysis (with revenue estimates of \$795.3 million coming from industries as estimated by RCG Economics), we find slightly smaller job losses of 5,310 in 2016 and 7,400 in 2017 and a somewhat smaller reduction in GDP of \$477 million in 2016 and \$689 million in 2017. Even though the margin tax raises 6.04 percent more revenue in our updated analysis, we find smaller impacts because the margin tax falls more heavily on capital-intensive industries that import more of their inputs from outside Nevada in our updated analysis.

In our previous analysis, we assumed the \$750 million in tax revenue was used to hire teachers and other government employees. We estimated the combined effects of the taxes and spending would yield job gains of 12,990 in 2016 and 10,400 in 2017 and GDP gains of \$630 million in 2016 and \$480 million in 2017. In our updated analysis, we examine a similar scenario in which tax revenues of \$795.3 million are spent on hiring additional teachers. We estimate employment gains of 11,540 in 2016 and 9,200 in 2017 and increased GDP of \$363 million in 2016 and \$163 million in 2017. Restricting the spending to hiring teachers in the updated analysis weakens the employment and GDP effects.

In the updated analysis, we also introduced a new scenario in which the spending is shared across the hiring of new teachers, salary increases for existing teachers and increased capital spending on schools. With that scenario, we estimate employment gains of 3,950 in 2016 and 1,680 in 2017 and find the effect on GDP as a wash over the 2016-17 biennium. We had no comparable scenario in our previous analysis.

7. Summary and Conclusion

If passed, the Education Initiative would impose a tax (commonly known as the margin tax) on businesses with revenues totaling more than \$1 million, which would amount to 2 percent of sales revenue less the cost of materials or the cost of labor. The revenue would be earmarked to increase funding for kindergarten through 12th grade (K-12) education.

Estimates of the annual revenue to be raised by the margin tax range from a low of \$460 million to a high of \$862.5 million. Those gains would boost state and local tax revenues obtained from Nevada businesses from 0.36 percent of Nevada's GSP to about 0.72-1.01 percent. The national average was 0.43 percent in 2013.

Among the 50 U.S. states, Nevada ranks 50th in educational outcomes and 48th in its funding for K-12 education at \$8,454 per student each year. The latter figure is well below the national average of \$11,864. Used to fund K-12 education, the additional revenues from the margin tax could boost annual K-12 spending in Nevada by \$985-1,825 per student. Used to increase classroom resources, the additional spending on K-12 education could improve educational outcomes in Nevada, particularly for children in low-income families. The resulting gains in educational attainment would boost incomes statewide.

Economic research on the effects of state and local fiscal policy on regional economic growth generally finds that for the average state, the beneficial effects of increased spending on K-12 education would more than offset the negative effects of raising funds through increased corporate income taxes. The proposed margin tax could prove more costly to Nevada economic activity than a corporate income tax.

Taken by itself, we find the margin tax would yield a small negative effect on Nevada's economic activity. Consistent with the academic literature, however, we find the combination of a margin tax yielding revenue of \$795.3 million and an increase in education spending of the same amount would have a small net positive effect on Nevada's economic activity.

It matters how the additional funding affects educational spending. If all the additional revenue is used to hire new teachers, total employment in the state of Nevada will be boosted by roughly 11,500 jobs (0.7 percent) in 2016 and 9,100 jobs (0.5 percent) in 2017. The net gains include job losses in most, but not all, private sector industries. State GDP will be boosted by an estimated \$362 million (0.2 percent) in 2016 and \$163 million (0.1) percent in 2017.

To the extent that the additional revenue allows for increases in the salaries of existing teachers and capital spending on schools, the gains in employment and GDP will be less. With the amount of the new revenue split equally across these activities, total employment in the state of Nevada will increase by only 4,000 jobs (0.2 percent) in 2016 and 1,700 jobs (0.1 percent) in 2017. The net gains include job losses in most, but not all, private sector industries. The net effect on state GDP will be a wash across the 2016-17 biennium—with a small increase in 2016 and a small decrease in 2017.

We consider these smaller estimates to be more realistic. In addition to hiring new teachers, the additional funds raised by the margin tax are likely to be distributed across a variety of educational activities, including boosting the salaries of existing teachers and increased capital expenditure. Although the Education Initiative does not allow the funds from the margin tax to be used for capital spending, school districts can easily boost their capital spending by using their new funds to free up some of the monies currently devoted to salaries.

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Appendix A: Detailed Report Tables

Table A1: Nevada Employment Impacts by Industry Sector (No-Spending Scenario)

Category	FY2016		FY2017	
	Thousands (Jobs)	Change from Baseline	Thousands (Jobs)	Change from Baseline
Forestry, Fishing, and Related Activities	-0.004	-1.02%	-0.006	-1.70%
Mining	-0.002	-0.07%	-0.003	-0.11%
Utilities	-0.016	-0.57%	-0.021	-0.74%
Construction	-0.302	-0.42%	-0.492	-0.64%
Manufacturing	-0.033	-0.15%	-0.045	-0.20%
Wholesale Trade	-0.076	-0.27%	-0.101	-0.35%
Retail Trade	-0.408	-0.31%	-0.523	-0.39%
Transportation and Warehousing	-0.141	-0.34%	-0.239	-0.55%
Information	-0.044	-0.31%	-0.066	-0.47%
Finance and Insurance	-0.406	-0.61%	-0.614	-0.90%
Real Estate and Rental and Leasing	-0.263	-0.35%	-0.358	-0.46%
Professional, Scientific, and Technical Services	-0.258	-0.39%	-0.399	-0.59%
Management of Companies and Enterprises	-0.016	-0.09%	-0.023	-0.13%
Administrative and Waste Management Services	-0.339	-0.39%	-0.468	-0.52%
Educational Services	-0.024	-0.19%	-0.035	-0.27%
Health Care and Social Assistance	-0.669	-0.72%	-0.777	-0.81%
Arts, Entertainment, and Recreation	-0.097	-0.26%	-0.125	-0.32%
Accommodation and Food Services	-0.408	-0.14%	-0.612	-0.20%
Other Services, except Public Administration	-0.393	-0.73%	-0.442	-0.80%
Government	-0.227	-0.21%	-0.321	-0.30%
Total	-5.31	-0.31%	-7.40	-0.42%

Table A2: Nevada Employment Impacts by Industry Sector (Gross-Spending Scenario)

Category	FY2016		FY2017	
	Thousands (Jobs)	Change from Baseline	Thousands (Jobs)	Change from Baseline
Forestry, Fishing, and Related Activities	-0.008	-0.47%	-0.014	-0.83%
Mining	-0.003	-0.01%	-0.006	-0.03%
Utilities	-0.002	-0.05%	-0.013	-0.29%
Construction	0.201	0.20%	0.204	0.19%
Manufacturing	0.011	0.03%	-0.004	-0.01%
Wholesale Trade	0.072	0.17%	0.047	0.11%
Retail Trade	0.288	0.16%	0.194	0.10%
Transportation and Warehousing	-0.148	-0.24%	-0.277	-0.43%
Information	-0.018	-0.09%	-0.049	-0.26%
Finance and Insurance	-0.374	-0.40%	-0.682	-0.72%
Real Estate and Rental and Leasing	0.020	0.02%	-0.099	-0.09%
Professional, Scientific, and Technical Services	-0.085	-0.09%	-0.295	-0.30%
Management of Companies and Enterprises	-0.014	-0.06%	-0.031	-0.13%
Administrative and Waste Management Services	-0.001	0.00%	-0.197	-0.16%
Educational Services	12.131	69.99%	11.594	65.14%
Health Care and Social Assistance	-0.423	-0.32%	-0.587	-0.43%
Arts, Entertainment, and Recreation	-0.012	-0.02%	-0.054	-0.10%
Accommodation and Food Services	-0.213	-0.06%	-0.510	-0.14%
Other Services, except Public Administration	-0.132	-0.17%	-0.222	-0.28%
Government	0.247	0.15%	0.118	0.07%
Total	11.54	0.68%	9.12	0.52%

Table A3: Nevada Employment Impacts by Industry Sector (Mixed-Spending Scenario)

Category	FY2016		FY2017	
	Thousands (Jobs)	Change from Baseline	Thousands (Jobs)	Change from Baseline
Forestry, Fishing, and Related Activities	-0.008	-0.47%	-0.013	-0.82%
Mining	-0.004	-0.02%	-0.008	-0.04%
Utilities	-0.013	-0.30%	-0.023	-0.54%
Construction	0.475	0.47%	0.383	0.35%
Manufacturing	0.015	0.03%	-0.002	-0.01%
Wholesale Trade	0.062	0.14%	0.030	0.07%
Retail Trade	0.347	0.19%	0.206	0.11%
Transportation and Warehousing	-0.150	-0.24%	-0.275	-0.43%
Information	-0.005	-0.03%	-0.038	-0.20%
Finance and Insurance	-0.371	-0.40%	-0.676	-0.72%
Real Estate and Rental and Leasing	-0.076	-0.07%	-0.205	-0.19%
Professional, Scientific, and Technical Services	0.337	0.35%	0.093	0.09%
Management of Companies and Enterprises	-0.012	-0.05%	-0.026	-0.11%
Administrative and Waste Management Services	-0.077	-0.07%	-0.273	-0.23%
Educational Services	4.054	23.39%	3.872	21.76%
Health Care and Social Assistance	-0.359	-0.27%	-0.531	-0.39%
Arts, Entertainment, and Recreation	-0.011	-0.02%	-0.055	-0.10%
Accommodation and Food Services	-0.218	-0.06%	-0.506	-0.14%
Other Services, except Public Administration	-0.105	-0.14%	-0.200	-0.25%
Government	0.068	0.04%	-0.070	-0.04%
Total	3.95	0.23%	1.68	0.10%

Appendix B: Overview of the REMI Model

The REMI model is a state-of-the-art econometric forecasting model that accounts for dynamic feedbacks between economic and demographic variables. Special features allow the user to update the model to include the most current economic information.

The model divides Nevada into five regions: Clark County; Nye County; Lincoln County; Washoe County; and the remaining counties, which are combined to form a fifth region. These regions are modeled using the U.S. economy as a backdrop. The model contains over 100 economic and demographic relationships that are carefully constructed to concisely represent the Clark County economy. The model includes equations to account for migration and trade between Nevada counties and other states and counties in the country.

The demographic and economic data used to construct the model begin in 1990, the most important of which include the aggregate totals of employment, labor force and population. The economic data for the most recent version of the model (REMI PI+ v1.5) are consistent with the North American Industry Classification System (NAICS). The REMI PI+ v1.5 model was released in 2013. Hence the model's most recent data are from 2011 because the Bureau of Labor Statistics (BLS) personal-income data are reported with a two-year lag. Over the years, the availability of the income data has been the key in setting the last year of history in the model.

The REMI model was chosen over other economic models because it has several desirable features. First, the REMI model contains over 100 economic and demographic relationships carefully constructed to represent regional economies and includes equations to account for migration and trade between regions. These relationships are constructed utilizing the latest economic theory and empirical understanding. Second, REMI is able to calculate how the impacts filter through the economy over an extended period of time. This is important for understanding the true economic impact of the project. Other impact-modeling frameworks fail to address this issue.

The REMI model is the best model available for describing how economies interact geographically.⁹ These interactions may take place within a single economy (such as the interaction between house-price growth and employment growth in Clark County) or between two economies (such as the interaction between Southern Nevada and Southern California). These interactions contained within the model are too complex to consider modeling on our own. Rather, we turn to the REMI model because it has a solid foundation in economic theory and the principles of general-equilibrium-based growth distribution, yet it still offers the flexibility required to model a state economy like Nevada.

⁹ See Rickman and Schwer (1995).

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