An Economic Analysis of the Education Initiative

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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 and the Beacon Hill Institute for the Nevada Policy Research Institute place the expected revenue from the margin tax at $460 million, $700 and 862.5 million, respectively. These additional revenues could boost annual K-12 educational spending in Nevada by about $985, $1500 or $1,950 per student, respectively.

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 business taxation, such as a corporate income tax.

Consistent with the academic research, 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 net beneficial effect on Nevada's economic activity. The benefits of the additional spending supported by the margin tax would more than offset the negative effects of the increased business taxation.

In a "high-revenue" scenario in which $750 million is raised by the tax in each fiscal year, we find that, when taking into account the government spending, The Education Initiative increases total employment in the state of Nevada by roughly 13,000 jobs in 2016 and 10,400 jobs in 2017. In a "low-revenue" scenario in which the tax raises $460 million annually, the job gains are approximately 8,000 and 6,400 for 2016 and 2017, respectively.

Table of Contents

List of Tables

List of Figures

List of Appendix Tables

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 estimates that roughly 17 percent of Nevada businesses will be affected by the proposed initiative.[2] 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.

We were retained by Daniel M. Hart of The Education Initiative to estimate the educational and economic effects of the Education Initiative—including the margin tax and the K-12 education spending it would support. We were not commissioned to generate an opinion either for or against the tax. Our task is 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.

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.

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. 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).[3]

[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).
[2] Guinn Center for Policy Priorities (2014).
[3] 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.

The firm elects which calculation it wishes to use. In addition, any businesses that would pay the modified business tax 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 per year. Applied Analysis puts the figure at $700 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.[4] If the margin tax raises the estimated $460 million, $700, or $862.5 million, business taxes in Nevada would increase to a respective 0.72 percent, 0.89 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 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 education 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

[4] 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.

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%	50th
Fourth graders proficient in reading (2013)	27%	34%	44th
Eighth graders proficient in math (2013)	28%	34%	41st
High school students graduating on time (2011-2012)	60%	81%	50th

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. The comparable figure for the United States was 29.1 percent.[5] According to the Annie E. Casey Foundation, 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.[6]

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).

[5] Estimates from the American Community Survey conducted by the U.S. Census Bureau. Information accessed on July 14, 2014, from http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?fpt=table.
[6] Reported data are from the Annie E. Casey Foundation Kids Count Data Center.

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 and the Beacon Hill Institute for the Nevada Policy Research Institute place the expected revenue from the margin tax at an estimated $460 million, $700 million and $862.5 million, respectively. These revenue increases would provide the funding to boost annual K-12 spending in Nevada by about $985, $1,500 and $1,950 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

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

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,

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

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:

$$MB_1 = MB_2 = \cdots = MB_m = MC_1 = MC_2 = \cdots = MC_n \quad \textbf{(3)}$$

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 Business Taxes and K-12 Education Spending

For business 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 business taxes are underutilized in the average state. Shifting toward business 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 business taxation 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 may benefit more than the average state by increasing its business taxation to fund increased spending on K-12 education. Because the proposed margin tax likely

has higher economic costs than a corporate income tax, however, increasing business taxation in Nevada may be more costly than in the average state**.**

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

To the authors' knowledge there have been two studies to date that have examined the employment effects of the Education Initiative and its associated margin tax. Applied Analysis conducted the first study dated April 1, 2014.[7] They assumed that the tax would yield $700 million in revenue. To capture direct effects and indirect or secondary effects, they used IMPLAN, which is 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 estimate the potential number of jobs that would be created, 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 jobs in 2015, which would be 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 1,970 jobs in the public sector. That amounts to roughly $438,000 in tax revenue per job created—which is well more than the typical teacher's pay. 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 perhaps understated.[8]

6. CBER's 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

[7] Applied Analysis (2014b).

[8] 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.

two components: (1) tax collections raised from businesses and (2) new government spending resulting from the hiring of new teachers 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. The primary and spinoff impacts are used to produce the total economic impact of the education initiative. We now discuss each step in detail.

6.1 Primary Impacts

As described above, a study conducted by the Guinn Center Policy Priorities estimates the revenue yield from the margin tax at $460 million.[9] Another study conducted by Applied Analysis predicts a range of annual revenue from the margin tax at $650 million to 750 million.[10] Using these figures, we estimate the primary impacts with two scenarios. The "low-revenue" scenario refers to the case when the tax raises $460 million in revenue, whereas the "high-revenue" scenario refers to the case when the tax raises $750 million revenue. For each scenario, the total tax bill is distributed across each industry sector of each county in the state of Nevada. This distribution is implemented using the relative output share of each industry sector by county with respect to the total output of the state of Nevada in 2011.

Figures 1 and 2 show the implied distribution of the total tax bill across counties and industry sectors, respectively.[11] Roughly 74 percent of the tax collections are expected to come from Clark County businesses. Washoe County businesses will account for 15.4 percent of the tax collection, and the remaining 11 percent will be split among the other counties. Tourism, that is the accommodation sector, is the most heavily taxed sector, accounting for roughly 18 percent of the tax collections. Other leading sectors include real estate (14 percent), retail trade (7 percent) and construction (6 percent).

[9] Guinn Center for Policy Priorities (2014): pp. 5-6.
[10] Applied Analysis 2014b. Also see Applied Analysis, 2014a.
[11] A detailed breakdown is shown in Appendix A.

Figure 1: Distribution of Tax Collections across Counties

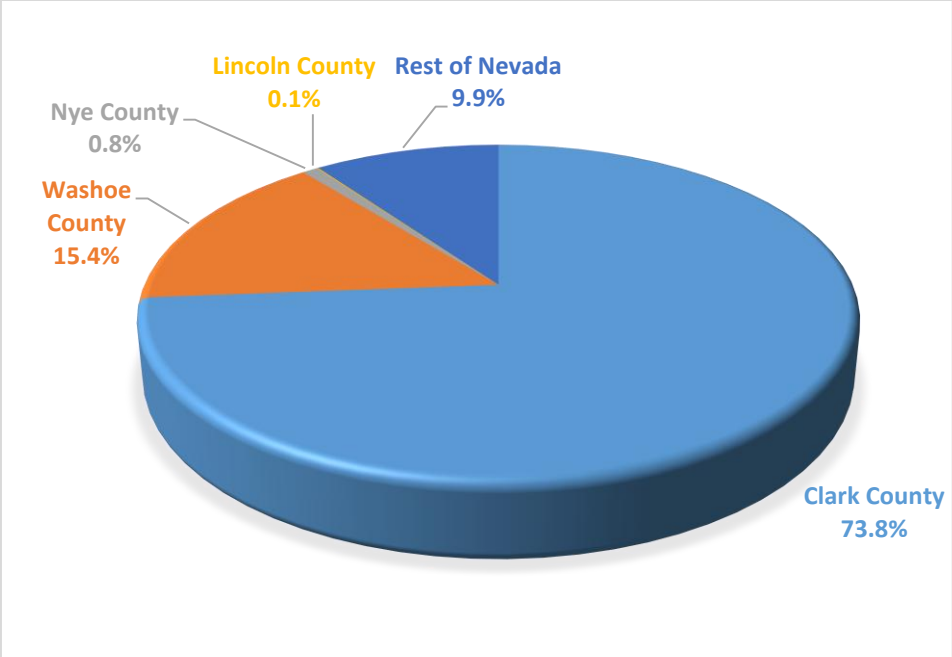
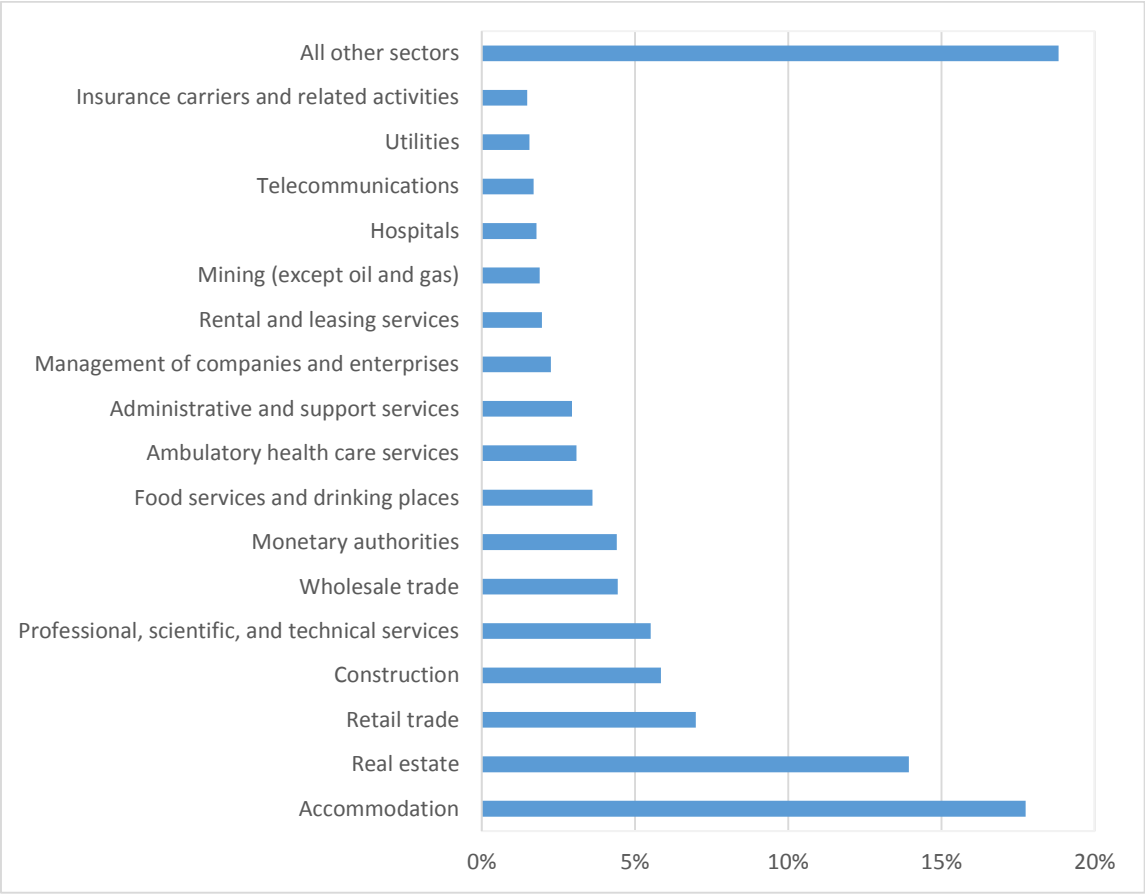
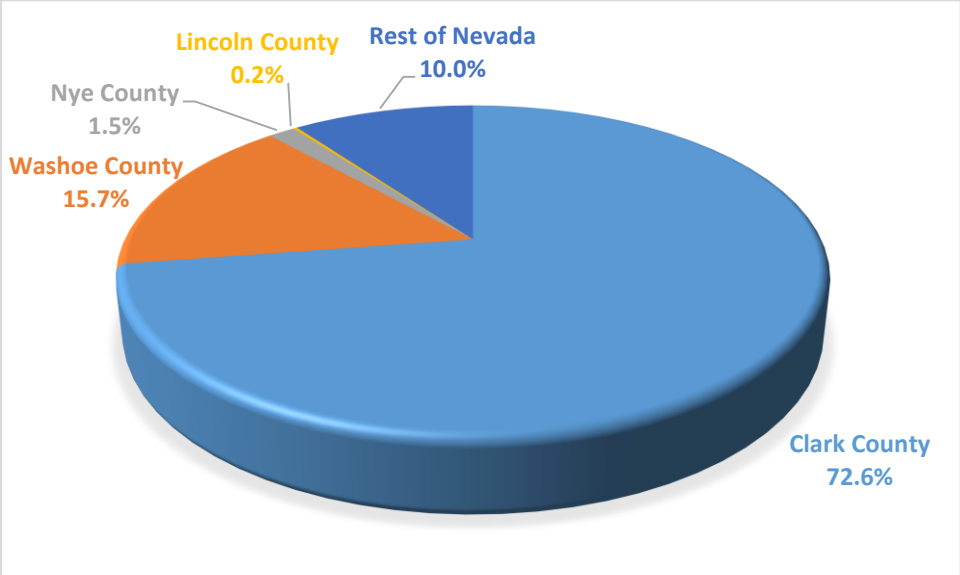


Figure 2: Distribution of Tax Collections across Industry Sectors



The new government spending from the Education Initiative, resulting from each of the two revenue scenarios, is distributed across each county using the relative share of the county's population with respect to the state as of 2011. The implied distribution of the state spending from across counties is shown in Figure 3. As the most populated county, Clark County gets the largest share of spending (72.6 percent) followed by Washoe County (15.7 percent).

Figure 3: Distribution of New Government Spending across Counties



6.2 Total Economic Impact of the Education Initiative

The spinoff impacts and the total impact of the Education Initiative are estimated using a structural input-output model developed by Regional Economic Models, Inc. (REMI), specifically for Nevada.[12] 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.

Table 4 shows the total impact of the Education Initiative on the state economy in 2016 and 2017. In the "high-revenue" scenario, $750 million is raised by the tax in each fiscal year, while in the "low-revenue" scenario the tax raises $460 million annually. For each scenario we run the analysis with and without the new state government spending on education for which the tax collections are intended. For the high-revenue scenario, we find that, when taking into account the government spending, the Education Initiative increases total employment in the state of Nevada by roughly 13,000 jobs in 2016 and 10,400 jobs in 2017. The high-revenue scenario coupled with government spending also increases the state gross domestic product (GDP) by $1.02 billion in 2016 and $790 million in 2017.

[12] An overview of the REMI model is provided in Appendix B.

Table 4: Economic Impact of the Education Initiative

	Total Impact FY2016	Total Impact FY2017	Total Impact 2016-2017
High-Revenue Scenario ($750M)			
Total Employment (Thousand Jobs)	12.99	10.40	23.39
Gross Domestic Product ($Billions)	1.02	0.79	1.81
High-Revenue Scenario (without Spending)			
Total Employment (Thousand Jobs)	-5.84	-8.21	-14.05
Gross Domestic Product ($Billions)	-0.55	-0.82	-1.37
Low-Revenue Scenario			
Total Employment (Thousand Jobs)	7.97	6.38	14.35
Gross Domestic Product ($Billions)	0.63	0.48	1.11
Low-Revenue Scenario (without Spending)			
Total Employment (Thousand Jobs)	-3.59	-5.04	-8.63
Gross Domestic Product ($Billions)	-0.34	-0.50	-0.84

When the new state government spending is not taken into account, the high-revenue scenario leads to a net employment loss in the state of almost 6,000 jobs in 2016 and roughly 8,000 jobs in 2017. The state GDP is also reduced by $550 million in 2016 and $820 million in 2017. The impact analysis of the low-revenue scenario reveals qualitatively similar results, though the figures are lower than those of the high-revenue scenario.

Hence, our findings suggest that the positive impacts from the new state government spending resulting from the tax collections more than offset the negative impacts resulting from levying the tax. As a result, the overall impact of the Education Initiative on the state's economy is positive. This finding is consistent with the peer-reviewed literature that shows that increasing business taxation to increase the funding for K-12 education spending would enhance the average state's economic activity in the long run.[13] (See Section 4.4. above.) Our results also imply that studies that investigate the impact of the tax without fully accounting for the new state spending will incorrectly find a negative impact for the policy.

[13] Our short-run finding owes to somewhat different set of economic forces. The shift of resources from the private sector to the public sector boosts spending on local resources, which enhances local economic activity and accounts for the positive economic impact. See Leistritz (1994).

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 in 2013 was 0.43 percent.

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 which 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 $985-1,950 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 business taxes that are similar to a corporate income tax. Consistent with the academic research, 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 net beneficial effect on Nevada's economic activity. The benefits of the additional spending supported by the margin tax would more than offset the negative effects of the increased business taxation.

In particular, we estimate a statewide gain of 8,000-13,000 jobs in 2016 and 6,400-10,400 in 2017. We also estimate that Nevada's GDP would be boosted by by $630 million to $1,020 million in 2016 and $480 million to $790 million in 2017.

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Appendix A: Detailed Report Tables

Table A1: Distribution of Tax Collections in 2016 ($Millions, High-Revenue Scenario)

INDUSTRY	Clark County	Washoe County	Nye County	Lincoln County	Rest of Nevada	Total
Forestry and logging; Fishing, hunting, and trapping	0.2752	0.0008	0.0002	0.0001	0.0875	0.3638
Agriculture and forestry support activities	0.0051	0.0085	0.0029	0.0005	0.0477	0.0647
Oil and gas extraction	0.2761	0.0379	0.0377	0.0052	0.0515	0.4084
Mining (except oil and gas)	0.24	0.5107	0.9622	0.032	12.4225	14.167
Support activities for mining	0.0745	0.2164	0.0289	0.0106	2.7081	3.0385
Utilities	8.2326	1.2577	0.2545	0.0007	1.9348	11.680
Construction	31.9587	7.1467	0.304	0.0171	4.4141	43.840
Wood product manufacturing	0.3473	0.2091	0.0013	0	0.3914	0.9491
Nonmetallic mineral product manufacturing	2.0962	0.3217	0.0112	0.0027	0.6611	3.0929
Primary metal manufacturing	1.1495	0.1915	0.0081	0	1.1623	2.5114
Fabricated metal product manufacturing	1.4522	1.6153	0.0054	0.0019	1.2519	4.3267
Machinery manufacturing	0.4446	0.6469	0	0	0.3903	1.4818
Computer and electronic product manufacturing	0.7929	2.2289	0	0	2.0811	5.1029
Electrical equipment and appliance manufacturing	0.541	0.1077	0	0	0.0983	0.747
Motor vehicles, bodies and trailers, and parts manufacturing	0.3752	0.1875	0	0	0.8135	1.3762
Other transportation equipment manufacturing	0.206	0.0195	0	0	0.701	0.9265
Furniture and related product manufacturing	0.6179	0.2881	0	0	0.0773	0.9833
Miscellaneous manufacturing	5.4236	2.7342	0.0077	0.0104	0.2978	8.4737
Food manufacturing	3.5452	1.5901	0.0339	0	0.9369	6.1061
Beverage and tobacco product manufacturing	0.2479	0.3117	0.006	0	0.0324	0.598
Textile mills; Textile product mills	0.2702	0.0312	0.0014	0	0.0978	0.4006
Apparel manufacturing	0.0285	0.0013	0.003	0.0001	0.0065	0.0394
Paper manufacturing	0.5886	0.4009	0	0	0.0124	1.0019
Printing and related support activities	1.5656	0.6484	0.0112	0.0021	0.1672	2.3945
Petroleum and coal products manufacturing	0.418	0.1936	0.0837	0	1.4877	2.183
Chemical manufacturing	1.9744	0.351	0	0	0.958	3.2834
Plastics and rubber product manufacturing	1.6199	0.9762	0.0108	0	0.4059	3.0128
Wholesale trade	22.0509	8.6166	0.1019	0.0088	2.5453	33.323
Retail trade	38.3395	8.6063	0.5504	0.0597	4.8554	52.411
Air transportation	6.3682	0.3513	0	0	0.1473	6.8668
Rail transportation	0.4172	0.2814	0.006	0.0381	0.1981	0.9408
Water transportation	0.0435	0.0003	0.0003	0.0003	0.0178	0.0622
Truck transportation	2.7852	2.4712	0.0163	0.0062	0.9703	6.2492
Couriers and messengers	1.4041	1.0635	0.0068	0.0004	0.1296	2.6044
Transit and ground passenger transportation	5.4073	0.2388	0.0214	0	0.1437	5.8112
Pipeline transportation	0.0155	0.0056	0	0	0.0306	0.0517
Scenic and sightseeing transportation	2.3578	0.3212	0.0067	0	0.5169	3.2026
Warehousing and storage	1.3147	1.3237	0.0078	0	0.515	3.1612

Table A1: Continued

INDUSTRY	Clark County	Washoe County	Nye County	Lincoln County	Rest of Nevada	Total
Publishing industries, except Internet	3.6546	1.0917	0.0302	0.0009	0.3808	5.1582
Motion picture and sound recording industries	1.5904	0.1718	0.001	0	0.1502	1.9134
Internet publishing and broadcasting	1.8043	0.279	0.0064	0	0.1291	2.2188
Broadcasting, except Internet	1.8417	0.7917	0.0054	0	0.0935	2.7323
Telecommunications	9.8614	2.1305	0.0836	0.0015	0.6492	12.726
Monetary authorities	25.856	4.5213	0.1539	0.0434	2.4896	33.064
Securities, commodity contracts, investments	3.8227	2.1619	0.0193	0.0056	0.645	6.6545
Insurance carriers and related activities	8.6418	2.0525	0.029	0.0027	0.4308	11.156
Real estate	85.3278	13.2054	0.3027	0.0348	5.6768	104.54
Rental and leasing services	11.8373	2.123	0.0476	0.0044	0.749	14.761
Professional, scientific, and technical services	29.0128	8.3863	1.2857	0.163	2.4693	41.317
Management of companies and enterprises	13.1298	2.7333	0.0527	0.0076	1.0343	16.957
Administrative and support services	16.7639	3.5485	0.3587	0.0017	1.3909	22.063
Waste management and remediation services	1.8412	0.3996	0.1708	0.0031	0.3167	2.7314
Educational services	2.1631	0.5696	0.0421	0.0009	0.1295	2.9052
Ambulatory health care services	16.7068	4.7492	0.1702	0.0066	1.5629	23.195
Hospitals	9.1263	2.9523	0.0786	0	1.267	13.424
Nursing and residential care facilities	1.8549	0.5704	0.0324	0.0083	0.3632	2.8292
Social assistance	2.7728	0.9088	0.0246	0.0026	0.3156	4.0244
Performing arts and spectator sports	5.4449	0.4811	0.02	0.0019	0.116	6.0639
Museums, historical sites, zoos, and parks	0.1837	0.0603	0	0.0007	0.0276	0.2723
Amusement, gambling, and recreation	3.3149	1.2899	0.1178	0.0002	0.9675	5.6903
Accommodation	117.8169	8.972	0.3907	0.0238	5.8923	133.09
Food services and drinking places	22.3803	3.116	0.1371	0.0217	1.4289	27.084
Repair and maintenance	3.9575	1.607	0.0801	0.0001	0.9588	6.6035
Personal and laundry services	4.2751	0.5836	0.0308	0.0003	0.2815	5.1713
Membership associations and organizations	2.6511	0.7797	0.0488	0.0012	0.3527	3.8335
Private households	0.3801	0.1135	0.0041	0.0044	0.0618	0.5639
Total	**553.2849**	**115.8633**	**6.216**	**0.5383**	**74.0975**	**750**

Table A2: Distribution of Tax Collections in 2016 ($Millions, Low-Revenue Scenario)

INDUSTRY	Clark County	Washoe County	Nye County	Lincoln County	Rest of Nevada	Total
Forestry and logging; Fishing, hunting, and trapping	0.1688	0.0005	0.0001	0.0001	0.0536	0.2231
Agriculture and forestry support activities	0.0031	0.0052	0.0018	0.0003	0.0293	0.0397
Oil and gas extraction	0.1693	0.0232	0.0231	0.0032	0.0316	0.2504
Mining (except oil and gas)	0.1472	0.3132	0.5902	0.0196	7.6191	8.6893
Support activities for mining	0.0457	0.1327	0.0177	0.0065	1.6609	1.8635
Utilities	5.0494	0.7714	0.1561	0.0004	1.1867	7.1640
Construction	19.6013	4.3833	0.1865	0.0105	2.7073	26.8889
Wood product manufacturing	0.2130	0.1283	0.0008	0.0000	0.2400	0.5821
Nonmetallic mineral product manufacturing	1.2857	0.1973	0.0069	0.0017	0.4055	1.8971
Primary metal manufacturing	0.7051	0.1175	0.0050	0.0000	0.7129	1.5405
Fabricated metal product manufacturing	0.8907	0.9907	0.0033	0.0012	0.7678	2.6537
Machinery manufacturing	0.2727	0.3968	0.0000	0.0000	0.2394	0.9089
Computer and electronic product manufacturing	0.4863	1.3671	0.0000	0.0000	1.2764	3.1298
Electrical equipment and appliance manufacturing	0.3318	0.0661	0.0000	0.0000	0.0603	0.4582
Motor vehicles, bodies and trailers, and parts manufacturing	0.2301	0.1150	0.0000	0.0000	0.4990	0.8441
Other transportation equipment manufacturing	0.1263	0.0119	0.0000	0.0000	0.4299	0.5681
Furniture and related product manufacturing	0.3790	0.1767	0.0000	0.0000	0.0474	0.6031
Miscellaneous manufacturing	3.3265	1.6770	0.0047	0.0064	0.1827	5.1973
Food manufacturing	2.1744	0.9753	0.0208	0.0000	0.5746	3.7451
Beverage and tobacco product manufacturing	0.1521	0.1912	0.0037	0.0000	0.0199	0.3669
Textile mills; Textile product mills	0.1657	0.0192	0.0009	0.0000	0.0600	0.2458
Apparel manufacturing	0.0175	0.0008	0.0018	0.0001	0.0040	0.0242
Paper manufacturing	0.3610	0.2459	0.0000	0.0000	0.0076	0.6145
Printing and related support activities	0.9602	0.3977	0.0069	0.0013	0.1026	1.4687
Petroleum and coal products manufacturing	0.2564	0.1188	0.0513	0.0000	0.9125	1.3390
Chemical manufacturing	1.2110	0.2153	0.0000	0.0000	0.5876	2.0139
Plastics and rubber product manufacturing	0.9936	0.5988	0.0066	0.0000	0.2490	1.8480
Wholesale trade	13.5246	5.2849	0.0625	0.0054	1.5611	20.4385
Retail trade	23.5149	5.2785	0.3376	0.0366	2.9780	32.1456
Air transportation	3.9058	0.2155	0.0000	0.0000	0.0903	4.2116
Rail transportation	0.2559	0.1726	0.0037	0.0233	0.1215	0.5770
Water transportation	0.0267	0.0002	0.0002	0.0002	0.0109	0.0382
Truck transportation	1.7083	1.5157	0.0100	0.0038	0.5951	3.8329
Couriers and messengers	0.8612	0.6523	0.0042	0.0002	0.0795	1.5974
Transit and ground passenger transportation	3.3165	0.1465	0.0132	0.0000	0.0882	3.5644
Pipeline transportation	0.0095	0.0034	0.0000	0.0000	0.0188	0.0317
Scenic and sightseeing transportation	1.4461	0.1970	0.0041	0.0000	0.3171	1.9643
Warehousing and storage	0.8063	0.8119	0.0048	0.0000	0.3159	1.9389

Table A2: Continued

INDUSTRY	Clark County	Washoe County	Nye County	Lincoln County	Rest of Nevada	Total
Publishing industries, except Internet	2.2415	0.6696	0.0185	0.0005	0.2336	3.1637
Motion picture and sound recording industries	0.9754	0.1053	0.0006	0.0000	0.0922	1.1735
Internet publishing and broadcasting	1.1066	0.1711	0.0039	0.0000	0.0792	1.3608
Broadcasting, except Internet	1.1296	0.4855	0.0033	0.0000	0.0573	1.6757
Telecommunications	6.0483	1.3067	0.0513	0.0009	0.3982	7.8054
Monetary authorities	15.8583	2.7731	0.0944	0.0266	1.5270	20.2794
Securities, commodity contracts, investments	2.3446	1.3260	0.0118	0.0035	0.3956	4.0815
Insurance carriers and related activities	5.3003	1.2589	0.0178	0.0017	0.2642	6.8429
Real estate	52.3344	8.0993	0.1857	0.0213	3.4818	64.1225
Rental and leasing services	7.2602	1.3021	0.0292	0.0027	0.4594	9.0536
Professional, scientific, and technical services	17.7945	5.1436	0.7886	0.1000	1.5145	25.3412
Management of companies and enterprises	8.0530	1.6764	0.0323	0.0046	0.6343	10.4006
Administrative and support services	10.2819	2.1764	0.2200	0.0010	0.8531	13.5324
Waste management and remediation services	1.1293	0.2451	0.1048	0.0019	0.1943	1.6754
Educational services	1.3267	0.3493	0.0258	0.0005	0.0794	1.7817
Ambulatory health care services	10.2468	2.9128	0.1044	0.0041	0.9586	14.2267
Hospitals	5.5975	1.8108	0.0482	0.0000	0.7771	8.2336
Nursing and residential care facilities	1.1377	0.3499	0.0199	0.0051	0.2227	1.7353
Social assistance	1.7007	0.5574	0.0151	0.0016	0.1936	2.4684
Performing arts and spectator sports	3.3396	0.2951	0.0123	0.0012	0.0711	3.7193
Museums, historical sites, zoos, and parks	0.1127	0.0370	0.0000	0.0004	0.0169	0.1670
Amusement, gambling, and recreation	2.0332	0.7911	0.0722	0.0002	0.5934	3.4901
Accommodation	72.2593	5.5028	0.2396	0.0146	3.6140	81.6303
Food services and drinking places	13.7266	1.9112	0.0841	0.0133	0.8764	16.6116
Repair and maintenance	2.4273	0.9856	0.0492	0.0001	0.5881	4.0503
Personal and laundry services	2.6220	0.3579	0.0189	0.0002	0.1727	3.1717
Membership associations and organizations	1.6260	0.4782	0.0299	0.0007	0.2163	2.3511
Private households	0.2332	0.0696	0.0025	0.0027	0.0379	0.3459
Total	**339.3469**	**71.0632**	**3.8128**	**0.3302**	**45.4469**	**460**

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.[14] 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.

[14] See Rickman and Schwer (1995).