

Impact of Prop. 208: Invest in Ed

Dave Wells, Ph.D.

Research Director, Grand Canyon Institute

With research assistance from Lilian Le, Research Associate

FINDINGS

CURRENT PER PUPIL SPENDING AND ITS IMPACT

- **Arizona's investment in education lags other states.** The chief source of Arizona's underinvestment in K-12 education is the state-based funding per pupil, which in 1991-1992 was 39th in the country but in 2012-2013 and 2017-2018 ranked 50th.
- **Arizona has a teacher supply problem.** The number of teacher vacancies before RedforEd in 2016 and 2017 was higher than has been the case from 2018 to 2020; however, the ability to find adequate replacement teaching staff has not changed.
- **Arizona's five-year cohort high school graduation rate is less than the country's average four-year cohort high school graduation rate.** Arizona's five-year cohort graduation rate (including students taking five years to finish high school) is still below the nation's four-year cohort graduation rate. Arizona has made some progress, but at its current rate of improvement, the state's five-year high school graduation rate will not hit the 90% goal until 2060. Lower high school graduation rates along with lower college-going rates, pull down the state's economic advancement.

SCHOOL SPENDING

- **Arizona public schools have low administrative costs.** Altogether, Arizona district schools spend about 90 cents on the dollar on non-administrative costs that benefit students, and charter schools spend about 80 cents on the dollar on non-administrative costs that benefit students.
- **There's no clear evidence Arizona district schools systematically waste money.** Overall administrative costs of \$903 per pupil include the lowest general administration (district office) cost in the country and among the lowest school administrative costs.

IMPACT INVEST IN ED FUNDS WILL HAVE ON PUBLIC EDUCATION

- No significant classroom size reductions and no discernable impact on student achievement by itself.
- **Improved teacher retention and improved student test scores are likely to result** (magnitude greater than zero-but not easily estimated).
- **Substantial reduction in teacher pipeline problem likely due to teacher training programs.**
- As a result of overall teacher investments,
 - GCI estimates a low-end gain of \$630 million annually building over the next 13 years as Kindergarteners next year get the full benefit just for the estimated 65% of students who will spend their working lives in Arizona (\$970 million for all students graduating in 13 years):
 - **High school graduation rate increases 2% and college attendance increases 1%** over the next 13 years, leading to net present value of benefits to the state building up to at least \$350 million annually among students expected to stay in Arizona.
 - Student learning gains resulting from collective impact of teacher investments will lead to a net present value of **future earnings gains of at least \$281 million** among students expected to stay in Arizona.
 - GCI estimates a high-end gain of \$1.3 billion annually building over the next 13 years as Kindergarteners next year get the full benefit just for the estimated 65% of students who will spend their working lives in Arizona (\$2 billion for all students graduating in 13 years).
- **Career and Technical Education investments are likely to result in improvements in student performance, labor market attachment, and future earnings.** It is not likely to impact college attendance. Overall impacts are difficult to estimate.

IMPACT ON TAXING HIGH-INCOME EARNERS

- An estimated 30,000 Arizona income tax filers/households will be affected, approximately 55% (16,000) of whom receive pass-through business income. Business income is typically about one-third of their income.
- Less than 100 tax filers/households are likely to move from Arizona since their taxes have increased as a result of Prop. 208's impact on high-income earners.
- 10,000 jobs might be lost by the 10th year among small businesses impacted by the Initiative's tax surcharge — this does not take into consideration eventual economic growth impacts the educational investments are estimated to have.

INTRODUCTION

Prop. 208 would assess a 3.5% income tax surcharge on single filers with taxable incomes of more than \$250,000, or if married, filing separately. In addition, Prop. 208 would apply the surcharge to married couples and heads of households with joint taxable incomes greater than \$500,000. The impact on a married couple or head of household is illustrated below.

Table 1: Illustration of Prop. 208 Impact on A Married/Head of Household Tax Filer

Taxable Income <i>(Married/Head of Household)</i>	Current State Income Tax	Additional due to Prop. 208 Surcharge	Total AZ Income Tax Obligation	% more	Avg. State Income Tax Rate with Prop. 208
\$250,000	\$7,551	\$0	\$7,551	0%	3.02%
\$500,000	\$18,801	\$0	\$18,801	0%	3.76%
\$750,000	\$30,051	\$8,750	\$38,801	29%	5.17%
\$1,000,000	\$41,301	\$17,500	\$58,801	42%	5.88%
\$1,500,000	\$63,801	\$35,000	\$98,801	55%	6.59%
\$2,000,000	\$86,301	\$52,500	\$138,801	61%	6.94%

The Joint Legislative Budget Committee (JLBC) estimates that if passed, Prop. 208 would initially generate revenues of \$827 million annually to be used solely for the purposes outlined in the initiative. If the current economic downturn persists well into 2021, the amount generated may be less next year. Revenues generated by Prop. 208 will recover with the economy thereafter but will be more cyclical than the economy as a whole—growing faster as the economy expands and contracting faster during downturns. Initiative backers estimate \$940 million in annual revenue, which will eventually be achieved as the economy recovers.

This analysis uses the JLBC estimate less a 2% state-level administrative cost, which provides \$810 million for direct education expenditures.

The Grand Canyon Institute (GCI) does not take a position on the Initiative. It provides the following analysis based on the best available academic research to estimate how Prop. 208's estimated \$810 million in revenue (after state-level administrative costs are deducted) might impact educational and economic outcomes as well as the individuals and businesses affected by the 3.5% surcharge. This analysis does not address the public policy concerns associated with the constitutional limits on modifying a voter-passed body of law.

SUMMARY OF PROP. 208 EDUCATION REVENUE ALLOCATIONS

After administrative costs to administer and oversee the initiative, Prop. 208 requires that funds generated be distributed and used as follows. Dollar amounts are based on projected revenues for direct expenditure in 2021 of \$810 million.

- 50% (\$405 million) for hiring and wage increases for teachers and classroom support personnel.
- 25% (\$203 million) for hiring and wage increases for student support services personnel.
- 10% (\$81 million) for new teacher retention programs.
- 12% (\$97 million) to the Career Training and Workforce Fund, newly-established by Prop. 208.
- 3% (\$24 million) to expand the Arizona Teachers Academy by removing current caps on award to students, which provides tuition and fee waivers for higher education students who commit to teaching in Arizona public schools after graduation.

ARIZONA: EVEN AFTER GOV. DUCEY'S 20X2020 PLAN, ARIZONA UNDERINVESTS IN K-12 EDUCATION COMPARED TO OTHER STATES

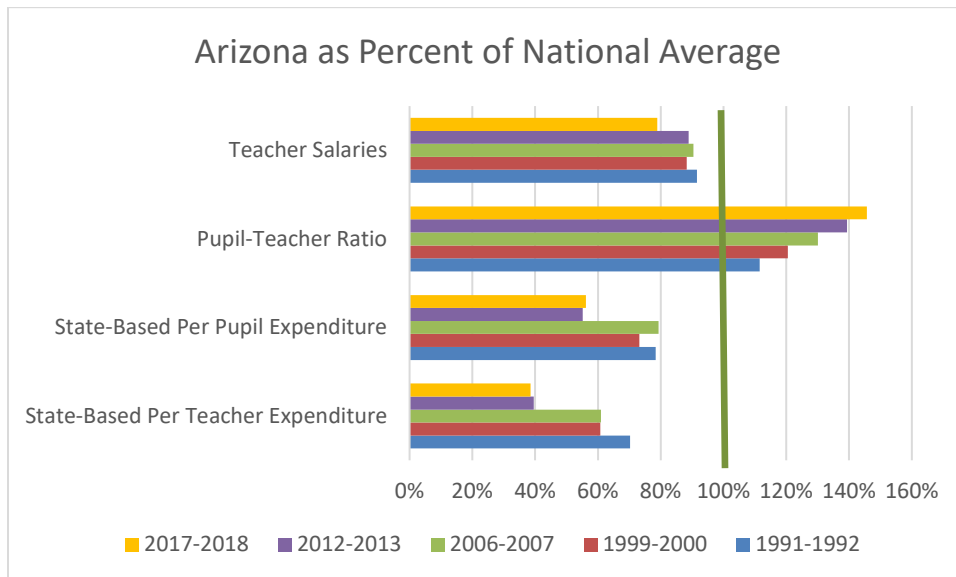
In 2018, Gov. Doug Ducey instituted a 20 by 2020 program designed to raise teacher salaries by 20% over three years in response to pressure from the teachers' RedforEd movement. This year represents the third year of that program with baseline data indicating that average annual teacher pay in Arizona will have risen to around \$57,000. That would still lag the national average, but likely put the state back to where it was in 1991-1992 compared to other states. The year 1991-1992 is used as it predated the two decades in systematic tax reductions that now amounts to more than \$4 billion annually in lost general fund revenue for Arizona.¹

¹¹ Wells, Dave (2016), "A Fiscal Analysis of Proposition 123 and Arizona's Underinvestment in K-12 Education: an essential first step for K-12 funding," Grand Canyon Institute, Jan. 7, <https://grandcanyoninstitute.org/a->

The slide in salaries has largely been mitigated by Arizona also employing fewer teachers than other states as the pupil-teacher ratio in Arizona is nearly 50% higher than the country as a whole. (Note: The most recent data for this ratio is 2016-2017). While the student achievement data on class size reduction is mixed, the impact in Arizona is that teachers have much higher student teaching and evaluation loads, especially relative to their pay, making their positions qualitatively worse on average than other states.

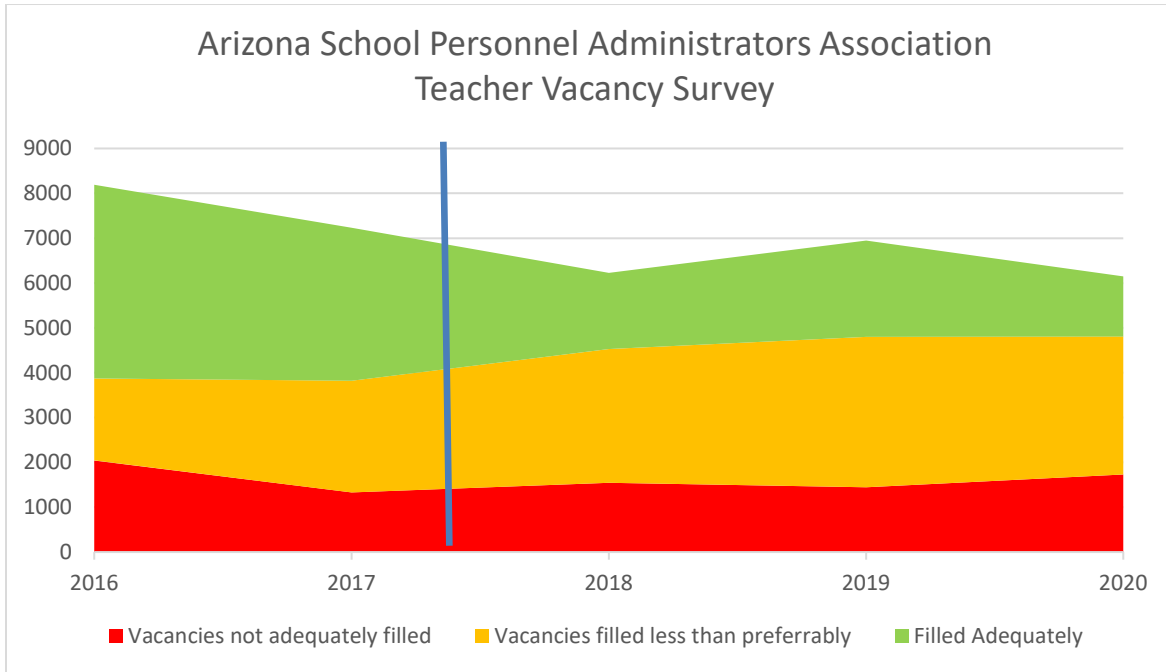
The main aspect of Arizona’s underinvestment in K-12 education is state-based funding per pupil, which in 1991-1992 was 39th in the country but in 2012-2013 and 2017-2018 ranked 50th. Combined, this means the state-based funding per teacher is incredibly low in Arizona, declining from 70% of the national average in 1991-1992 to 40% in 2017-2018.

Figure 1: Arizona as Percent of National Average Education Indicators



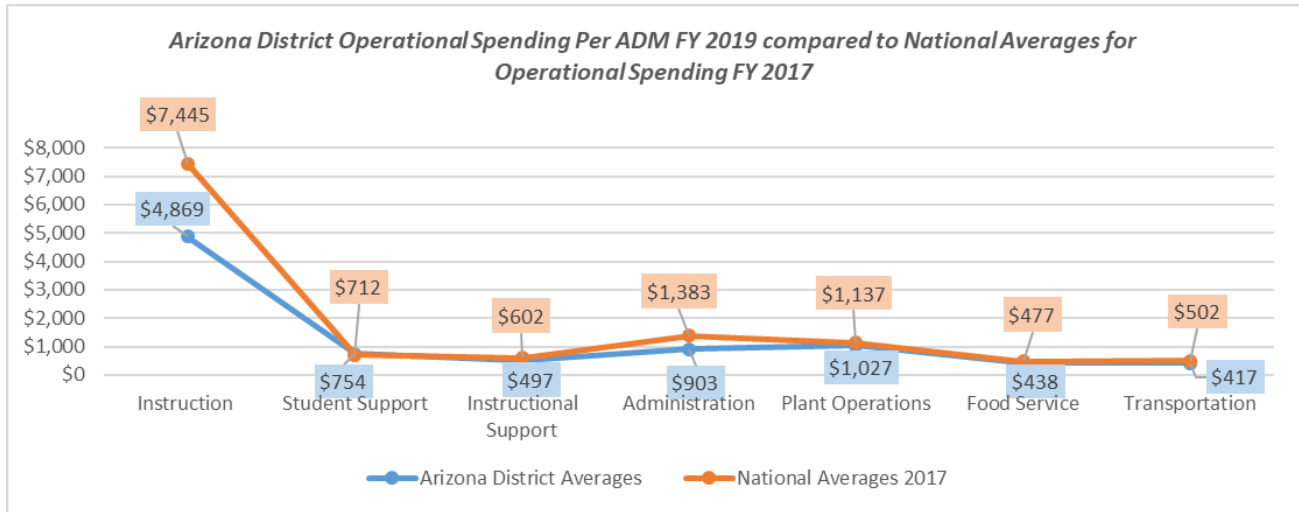
The effort to raise salaries appears to have mitigated teacher vacancies in some districts since the RedforEd movement, but not impacted the teacher pipeline problem Arizona continually faces. The Arizona School Personnel Administrators Association conducts a teacher vacancy survey each fall. The survey is only based on the particular school districts that respond—so results are not exactly comparable year-to-year, since a different mix of school districts respond each year, which could impact the results. However, it is evident that the number of teacher vacancies before RedforEd in 2016 and 2017 was higher than has been the case from 2018 to 2020. However, the ability to find adequate replacements has not changed.

Figure 2: Arizona Teacher Vacancies, 2016-2020



Contrary to some advertisements in the campaign, there is no clear evidence Arizona district schools systematically waste money. General administration costs per pupil are the lowest in the country, and school administrative costs per pupil are among the lowest in the country.

Figure 3: Arizona District School Operation Spending compared to National Average

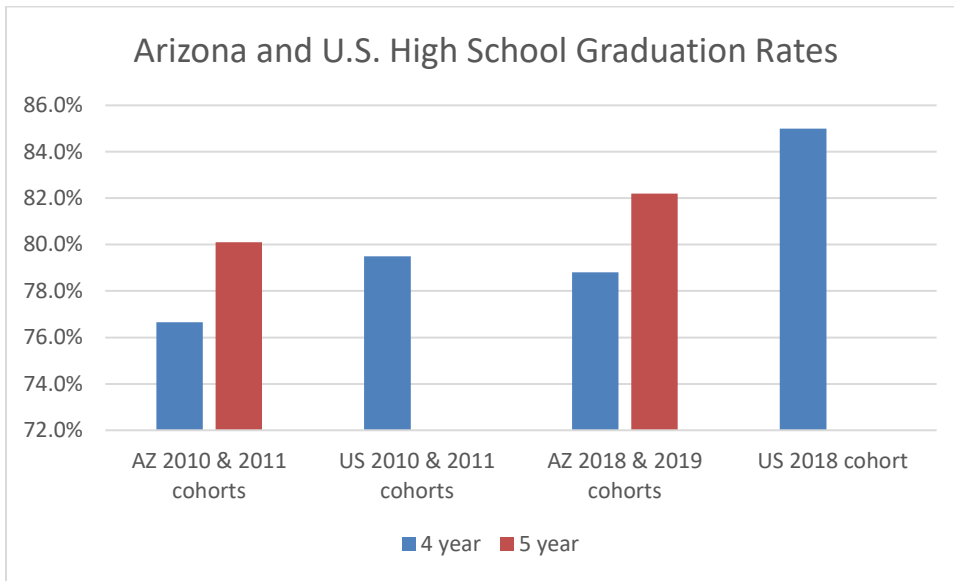


Source: Annual Auditor General's Report. Note: The Auditor General does not audit charter schools in Arizona.

In Arizona, altogether, district schools spend about 90 cents on the dollar on non-administrative costs that benefit students and charter schools spend about 80 cents on the dollar on non-administrative costs that benefit students.

Beyond staffing issues, GCI looks at outcomes—with particular attention to the high school graduation rate. Despite a proliferation of schools specializing in credit recovery for students not on track to graduate on time, Arizona has struggled to improve its high school graduation rate, even though state leaders have set a goal of a 90% high school graduation rate by 2030. As can be seen below, Arizona's five-year cohort graduation (including students taking five years to finish high school) is still below the nation's four-year cohort graduation rate. Arizona has made some progress, but at its current rate of improvement, the state's five-year high school graduation rate will not hit 90% until 2060.

Figure 4: Arizona and U.S. High School Graduation Rates



Source: Arizona Dept. of Education, National Center for Educational Statistics.

Lower high school graduation rates along with lower college-going rates impact Arizona's opportunity for economic advancement that is dependent upon attracting and developing businesses and industries relying upon an educated population pool. **Stanford's Hoover Institution's Eric Hanushek in a 2015 National Bureau of Economic Research paper identified Arizona as one of the states that would most benefit in GDP growth from improvements in the base education level of its workforce.²**

²² Hanushek, Eric A., Jens Ruhose, and Ludger Woessmann (2015), "Economic Gains for U.S. States from Educational Reform," National Bureau of Economic Research, working Paper No. 21770, December, <https://www.nber.org/papers/w21770>.

Table 2: Arizona adult education levels compared to selected states

	HS Dropout	HS Graduate	Some College	AA Degree	BA Plus
Current Arizona Baseline	23%	27%	23%	9%	19%
Colorado	10%	23%	26%	9%	32%
Indiana	13%	35%	21%	8%	23%
Kentucky	17%	34%	21%	7%	22%
Tennessee	16%	33%	21%	6%	24%
Texas	19%	25%	23%	6%	27%

Source: College Success Arizona (Lumina Foundation 2015)

IMPACTS OF PROP. 208 ON ARIZONA'S PUBLIC SCHOOLS

The following analysis looks at the impact that the passage of the Prop. 208 will have on Arizona's public education given the Initiative's estimated revenues. The analysis will look at how the funds generated are intended to be allocated, and the impact of the allocation on such factors as class size, teacher pay, teacher retention programs, teacher training programs, collective impact of teacher investments, and career and technical education investments. The "Yes" campaign has published some general estimates of fiscal impacts and correlation studies to suggest the initiative will help Arizona's economy. GCI provides a more detailed and careful look at the economic impact of the initiative's components than other studies presented in the "Yes" and "No" campaigns.

CLASS SIZE

As noted above, Arizona has seen a rise in its student-teacher ratio which is likely the result of district schools' attempt to maintain salaries at the expense of job quality for their teaching staff. However, studies on class size reduction impacts suggest that unless there is a significant reduction in the student-teacher ratio, reductions in class size have little impact on student academic achievement.³ However, Prop. 208's impact on class size would enable district schools to reduce their most severe class size irregularities, and the impact may have some discernable bearing on the respective district school's ability to improve teacher

³ Chingos, Matthew M. and Grove J. "Russ" Whitehurst (2011), "Class Size: What Research Says and What it Means for State Policy," Brookings Institution, May 11, <https://www.brookings.edu/research/class-size-what-research-says-and-what-it-means-for-state-policy/>.

retention.⁴ Arizona's current enrollment is approximately 1.15 million students, with a student-teacher ratio of 23.3 students to 1 teacher. In order to decrease the total enrollment to approximately 22.3 to 1, Arizona would have to hire about 2,000 new teachers. If the total cost, including employer-related expenses (most would be less experienced), was \$60,000, then it would cost \$120 million of the dollars raised by Prop. 208. There can be added expenses related to infrastructure costs to accommodate more classrooms. The impact on infrastructure may be somewhat diminished because the growth of charter schools in Arizona has left many district schools with unused space in existing buildings.

The amount raised by Invest in Ed will not cover the total cost of hiring enough new teachers to decrease the student-teacher ratio significantly. For our analysis, GCI has assumed that approximately \$100 million would be allocated to address the most significant classroom size issues and that would have a modest impact on teacher retention, but with no discernable and corroborative impact on student achievement measured by graduation rates or test scores.

Likely Outcome: Some improvement in teacher retention, no clear measurable improvement in student achievement.

TEACHER PAY RAISES

Prop. 208's allocation based on the first year's anticipated generated revenues will provide approximately \$305 million for teacher and classroom support staff raises. GCI estimates that the current overall cost of teacher salaries in Arizona is \$3.7 billion.⁵ **Consequently, a \$305 million raise would increase teacher salaries on average 8%.** Ideally, this would be distributed more toward new and early career teachers to entice entrance into the profession, and better retain existing teachers. If so, new and early career teachers would see at least a 10% increase in their base salaries, which is doable since their base salaries are lower than experienced teachers. However, due to the potential volatility in Prop. 208 monies, district schools and charter schools would be wise to institute a method for establishing a "rainy day" fund to avoid situations where an economic downturn leads to salary reductions. Some districts are known to do something like this to manage their Prop. 301 funds. Alternatively, district and charter schools might slightly increase their budget carryover to accomplish this objective. Consequently, while the initiative would start in January 2021,

⁴ Insenberg, Emily Pas (2010), "The Effect of Class Size on Teacher Attrition: Evidence from Class Size Reduction Policies in New York State," February, US. Bureau of the Census, <https://www2.census.gov/ces/wp/2010/CES-WP-10-05.pdf>.

⁵ In the FY2019 Joint Legislative Budget Committee's Appropriations report at the start of the 20 by 2020 program it noted as a starting point for the increase \$64,419,100 from the FY2018 budget to fund a 2.12% salary base improvement. That should increase employer-related expenses such as increased FICA and pension costs. That equates to a base teacher salary cost of \$3.09 billion. GCI assumes this has increased by 20% leading to a \$3.7 billion teacher salary base now.

teacher raises would not commence until the 2021-2022 academic year enabling a six-month buffer to build. As the economy recovers, money for raises would rise modestly.

Improving teacher salaries should impact teacher recruitment and retention, potentially leading to a larger and stronger stock of teachers and improved learning outcomes as measured by either test scores, high school graduation rates, and future earnings capacity of Arizona students.

Research demonstrates that improving teacher pay will improve academic outcomes. **A 2000 study of teacher salaries from 1960-1990 found a 10% increase in teacher pay relative to other occupations decreased the dropout rate of students by 3%, which GCI equates as a 3% improvement in the high school graduation rate.** The authors also find a 1.6% improvement in college attendance rate among high school graduates.⁶

Because the world does not stand still, GCI assumes Prop. 208 leads to a 10% teacher pay increase for the lowest paid teachers—which has the greatest positive impact on teacher quality might be a 7% gain net of other occupations, if other occupations that those going into teaching could also consider experience more modest salary increases. That would lead to a 2% gain in high school graduation rates and a 1% gain in college attendance that might be gradually realized over the next 13 years.⁷

To evaluate gains in educational achievement for Arizona students, GCI makes the following assumptions regarding lifetime earnings, and the net present value of those earnings. The results are the combined male and female earnings results adjusted from 2009 dollars to 2020 dollars using the change in average weekly wage of covered workers from 2019 to 2009 in Arizona. Original calculations come from demographic work cited by the Social Security Administration and appear to be the best available estimates. Tamborini, Kim, and Sakamoto use Social Security Administration data from 1982 through 2004. Results control for other demographic characteristics that can also impact earnings to isolate the education impact.⁸ The net present value was discounted at 4%, meaning a \$1.04 a year from now was equated to \$1 today and \$2.19 in 20 years would be counted as \$1 today.

⁶ Loeb, Susanna and Marianne E. Page (2000), "Examining the Link Between Teacher Wage and Student Outcomes: The Importance of Alternative Labor Market Opportunities and Non-Pecuniary Variation," *Review of Economics and Statistics*, 82(3): 393-408.

⁷ GCI assumes half the college attendance gain leads to college graduates and the other half with "some college."

⁸Tamborini, Christopher R., ChangHwan Kim, and Arthur Sakamoto (2015), "Education and Lifetime Earnings in the United States," *Demography*, 52: 1383-1407.

Table 3: Net Present Value of Lifetime Earnings Based on Educational Outcomes for 1 Person

Education	Lifetime Earnings	Net Present Value
Less than High School	\$1,130,000	\$450,000
High School	\$1,530,000	\$660,000
Some College	\$1,750,000	\$740,000
College	\$2,240,000	\$940,000
Graduate Degree	\$2,790,000	\$1,110,000

The most carefully constructed study of teacher pay relative to student outcomes is from Loeb and Page. Under Prop. 208, their analysis suggests a 2% gain in the high school graduation rate and a 1% gain in college attendance (which GCI presumes is split between some college and graduates). Table 4 indicates that eventually **1,800 more students would graduate each from high school instead of dropping out and an additional 900 students would attend college, leading to a total lifetime earnings gain of \$1.139 billion that is \$540 million in net present value and \$351 million in net present value if restricted to students expected to have their careers based in Arizona.** Hanushek et al. note that about 35% of those born in Arizona leave the state during their adult years, meaning 65% of high school graduates remain.⁹

Likely Outcome: 2% improvement in high school graduation rate, 1% improvement in college attendance leading to eventual \$1.139 billion annual gain in lifetime earnings, which is \$540 million in net present value and \$351 million in net present value for graduating students expected to stay in Arizona.

TEACHER RETENTION PROGRAMS

Prop. 208 also identifies teacher retention programs for designated funds. GCI expects and assumes the new teacher retention programs will include some degree of more formal master teacher-mentor development—meaning that master teachers will have classroom release and consequently they can be paid partly out of the new teacher retention programs.

Based on ASU's Morrison Institute's Report (Morrison Institute), there are approximately 9,500 teachers in their first two years and almost 14,000 in their third year of teaching in Arizona.¹⁰ Presumably some level of mentoring already exists. Research indicates that two

⁹ Hanushek, Eric A., Jens Ruhose, and Ludger Woessmann (2015), "Economic Gains for U.S. States from Educational Reform," National Bureau of Economic Research, working Paper No. 21770, December, <https://www.nber.org/papers/w21770>. See Figure 5.

¹⁰ Hunting, Dan et al. (2017), "Finding and Keeping Educators for Arizona's Classrooms," ASU Morrison Institute, May.

years of mentoring leads to the best results—which include both teacher retention and improvements in student learning based on standardized testing. This indicates an optimal target group for mentoring and retention.¹¹ Invest In Ed allocates about \$8,500 per teacher in their first two years for mentoring, which is roughly equivalent to an experienced teacher being provided with a one-class load relief to mentor two teachers. That should be sufficient to improve student achievement and teacher retention. This would not be sufficient funding to also reduce the mentee’s load while participating. Exact quantitative improvements are not easily identified due to the various structures and study designs in the literature.¹²

Likely Outcome: Improved teacher retention, improved student test scores (magnitude greater than zero-but not easily estimated).

TEACHER TRAINING PROGRAMS

Prop. 208 allocates monies for a more robust teacher training program for Arizona students. While Arizona has teacher academies at its three public universities, they are nowhere close to the scope needed to improve the teacher pipeline. The academies provide year-for-year tuition waiver scholarships for students who commit to teaching in Arizona public schools. The universities also provide support services as graduates commence their teaching careers—and hopefully remain in them. Their 2019 annual report indicated that in 2018-2019, the academies enrolled 464 students and expected to have 171 completions by the end of that academic year.¹³ In a world where we still have at least 1,500 teacher vacancies being filled by inadequate means—such as long-term substitutes or large class sizes — the academies’ current annual budget of \$4.1 million is wholly inadequate to meet the state’s needs.

Prop. 208 would provide additional funding of \$24 million to the academies, providing for a six-fold expansion and enrollment of more than 2,500 students a year. This expansion on the potential pool of teachers may lead to an equivalent increase in the number of annual graduates. The Morrison Institute report noted that most significant teacher shortages are in math and science.¹⁴ If the academies have increased funding, recruitment of students in math and the sciences may be more effective. This additional funding may allow the academies to review their recruitment goals to better align with the needs of the education communities the students may choose.

¹¹ Ingersoll, Richard and Michael Strong (2011), “The Impact of Induction and Mentoring Programs for Beginning Teachers: A Critical Review of the Research,”
https://repository.upenn.edu/cgi/viewcontent.cgi?article=1127&context=gse_pubs

¹² Ingersoll, Richard and Michael Strong (2011)

¹³ Arizona Board of Regents, “2019 Arizona Teachers Academy Annual Report,”
https://public.azregents.edu/News%20Clips%20Docs/ArizonaTeachersAcademy_Report.pdf.

¹⁴ Hunting, Dan et al. (2017), “Finding & Keeping Educators for Arizona’s Classrooms,” Morrison Institute, Arizona State University, May.

Outcome: Potential to increase interest in teacher academies and put more students in the Arizona teacher pipeline.

Collective Impact of Prop. 208 on Teacher Investments

The discussion above indicates that a key challenge for Arizona has been finding sufficient quality teachers for its classrooms. Consequently, it is quite likely Arizona has a significant number of low value-added teachers due to the use of long-term substitutes, for instance. Chetty, Friedman and Rockoff in [Measuring the Impacts of Teachers II: Teacher Value-Added and Student Outcomes in Adulthood](#) from American Economic Review in 2014 estimate that if 5% of the lowest performing teachers (in terms of their ability to help students perform better as measured by standardized test improvements) were replaced by teachers at 83% of the median performance level (which would be above average), that the typical student would gain in lifetime earnings \$16,500 per grade and \$7,500 expressed as net present value.¹⁵ This study then presumed everyone else's experience was not changed (the other 95% of student-teacher experiences)—but you could also realize similar gains by improving teacher quality among a wider band of teachers at a lower percentage amount. Using the Chetty, Friedman and Rockoff analysis, the outcome suggests that if Prop. 208 is successful that Arizona would realize annual gains of \$947 million in lifetime earnings, \$433 million in net present value, and \$280 million in net present value for students taught by more proficient teachers and expected to spend their careers in Arizona.¹⁶ These results are summarized in Table 4.

Jackson, Johnson and Persico looked at the impacts of funding shocks where district schools received added money because of adopted school finance reforms.¹⁷ Typically, these were equity cases that forced states to improve their funding of lower income school districts. The authors used the longitudinal Panel Study of Income Dynamics to pair participants with impacted districts along with participants not impacted. They found significant benefits to

¹⁵ Chetty, Raj, John N. Friedman, and Jonah E. Rockoff (2011), "The Long-Term Impacts of Teachers: Teacher Value-Added and Student Outcomes in Adulthood," National Bureau of Economic Research, Working Paper 17699, December, <http://www.nber.org/papers/w17699>.

¹⁶ Chetty et al discounted earnings at a 3% real rate from age 12, whereas the GCI calculations uses slightly different lifetime earnings totals with a discounted present value from age 20 of 4Study details: Chetty, Raj, John N. Friedman and Joan E. Rockoff (2011), "The Long-Term Impacts of Teachers: Teacher Value-Added and Student Outcomes in Adulthood," National Bureau of Economic Research, Working paper 17699, December, <http://www.nber.org/papers/w17699>.

¹⁷ Jackson, C Kirabo, Rucker C. Johnson, and Claudia Persico (2015), "The Effects of School Spending on Educational and Economic Outcomes: Evidence from School Finance Reforms," National Bureau of Economic Research, Working Paper 20847, January, <http://www.nber.org/papers/w20847>.

lower income students and more modest—and not statistically significant—benefits for other students. The population used was weighted toward low-income students so the best approach is to take each group separately. **Focusing on earnings impacts, the authors found a 10% improvement in school funding, similar to the Prop. 208 goal of financial support to instruction, led to a 9.5% increase in wages for students taught by teachers supported by the reform.** For other students the impact was 4.3%, but not statistically significant.

These gains appear to be probably somewhat higher than would be experienced under Prop. 208. Jackson et al. focus on students born between 1955 and 1985 and followed through 2011. Lafortune, Rothstein and Schanzenbach focusing on the more recent post-1990 school finance reforms estimate a net present value return in enhanced earnings per dollar investment of 1.5 to 1.¹⁸ However, they note their estimation techniques are not as strong as Jackson et al.

GCI's analysis of the Jackson, Johnson and Persico report uses its higher quality wage details but reduces likely impacts in light of the work of Lafortune et al. So, for low income students the estimate is reduced to two-thirds of the effect rounded down to the nearest percent, concluding with an estimated 6% impact on low income students' future wages. Because the effect on other students was positive, but not statistically significant, GCI follows the same procedure but takes only one-third of the estimated impact and rounds down to a 1% impact on wages. The study defines "low income" as any student whose family ever fell below 200% of the poverty line—which is roughly equivalent to the criteria for free and reduced lunch. For Arizona Merit Testing, the economically disadvantaged category roughly correlates with free-and reduced-lunch status and represents about 45% of students. Thus, GCI presumes 45% of students in Arizona are low income. **This leads to 40,000 graduating low-income students annually who will gain about \$3.9 billion in lifetime earnings and 49,000 other students who will gain \$800 million in lifetime earnings.** The net present value of these figures is \$1.7 billion and \$340 million, respectively, with \$1.1 billion and \$220 million in net present value for students expected to spend their work lives in Arizona. **This study suggests the largest economic benefit, totaling \$2 billion annually in net present value including \$1.3 billion for students expected to stay in Arizona.** These are also found in Table 4. GCI considers this the high-end possible impact of Prop. 208.

¹⁸ Lafortune, Julien, Jesse Rothstein, and Diane Whitmore Schanzenback (2016), "School Finance Reform and the Distribution of Student Achievement," National Bureau of Economic Research, Working Paper 22011, February, <http://www.nber.org/papers/w22011>.

Table 4: Academic Study Estimates of Possible Impacts of Prop. 208

	Loeb & Page Impact of Teacher Pay			Chetty	Jackson et al Impact of Improved Funding		
	High School Grads	College Attendance	Total	Good Teachers replace worst 5%	Low Income Impact	Other Children	Total
Students Impacted Annually	1,800	900	2,700	57,500	40,000	49,000	89,000
Lifetime Earnings '000's	\$720,000	\$419,000	\$1,139,000	\$952,000	\$3,936,000	\$804,000	\$4,740,000
Net PV '000's	\$378,000	\$162,000	\$540,000	\$433,000	\$1,680,000	\$343,000	\$2,023,000
Net PV in State '000's	\$246,000	\$105,000	\$351,000	\$280,000	\$1,092,000	\$223,000	\$1,315,000
	Low End: Studies impacts combined				High End Estimate		

Likely Outcome: Student Learning gains leading to a net present value of future earnings gains of at least \$970 million per year with \$630 million per year among those staying in Arizona—and possibly as high as \$2 billion per year with \$1.3 billion for students spending their careers in Arizona.

CAREER AND TECHNICAL EDUCATION

Studies on the impact of funding Career and Technical Education (CTE) generally suggests it creates paths for stronger employment opportunities for a group of students that may be somewhat less likely to attend college—and if they do attend college are more likely to pursue STEM fields.

However, the lack of a good comparison group to match CTE students makes vigorous research difficult. Comparison work done in Washington state suggests a statistically significant improvement in labor market outcomes for CTE students in the first three years after high school, compared to other students.¹⁹

¹⁹ Hollenbeck, Kevin and Wei-Jang Huang (2016), "Net Impact and Benefit-Cost Estimates of the Workforce Development System in Washington State," Upjohn Institute, December, https://research.upjohn.org/cgi/viewcontent.cgi?article=1036&context=up_technicalreports.

A more elaborate Brookings Institution study in Connecticut comparing students who barely qualified to attend a popular CTE program, compared to those who were not admitted to the same program showed systematic benefits.²⁰

- Better 9th-grade attendance rates (by 14%)
- Better 10th-grade test scores (by 0.2 standard deviations)
- Higher graduation rates (by 10 percentage points)
- Higher quarterly earnings at age 23 (by 30%)
- No difference in college attendance by age 23.

Prop. 208 provides a significant boost in CTE program funding, up from the approximately \$150 million currently received by Joint Technical Education programs (JTEDs).²¹ It is a separate ADE program but is funded with approximately \$100 million from the Prop. 208 funds if the initiative is adopted.

Likely Outcome: Improvements in student performance, labor market attachment, and future earnings—not likely to impact college attendance (precise estimate not possible).

PROP. 208 IS NOT FREE — IT RELIES ON RAISING THE TAXES OF WEALTHIER ARIZONANS

The Grand Canyon Institute evaluated three areas relevant to the impact of placing a surcharge on the state's highest income earners.

1. Number of tax filers impacted
2. Whether high earners might migrate away from Arizona
3. Impact on pass-through businesses that are subject to the tax increase

²⁰ Brunner, Eric, Shaun Dougherty, and Stephen Ross (2019), "The Promise of Career and Technical Education," Brown Center Chalkboard, Brookings Institution, September, <https://www.brookings.edu/blog/brown-center-chalkboard/2019/09/20/the-promise-of-career-and-technical-education/>.

²¹ JLBC Staff (2018), "Joint Technical Education District (JTED) Funding: FY 1992 – FY 2017, Joint Legislative Budget Committee, June 1, <https://www.azleg.gov/jlbc/JTEDFunding.pdf>.

The “No” campaign has made claims regarding each of these areas, so in this section GCI compares and substantiates its findings and how they compare to what the “No” campaign has put out. The “Yes” campaign has discounted any possible negative impacts from the higher taxes. As stated earlier, GCI will not address the public policy issues of voter-approved initiatives that may require amendments or adjustments to address unintended consequences.

GCI assumes no economic change due to the transfer of monies in terms of a macro-multiplier. Sometimes, one can argue that if funds are taken from wealthier taxpayers and then used to improve pay for lesser paid workers, i.e., teachers, there should be a consumption multiplier benefit, since in this case school personnel are more likely to spend a greater portion of their earned income on local expenditures such as housing and living expenses. However, this analysis of a macro-multiplier could also assume that household spending, namely investments, by higher wage taxpayers would have similar economic benefits. In a slack economy, the redistribution argument is strongest, but for this analysis it is assumed that the net immediate macroeconomic impact is a wash.

ISSUE: HOW MANY HIGH INCOME EARNERS WILL BE IMPACTED BY PROP. 208?

“No” Campaign Claim: Goldwater Institute Paper: “An analysis of IRS data—supplemented by additional modeling and adjustments to identify only those Arizona taxpayers directly affected by the rate increase—reveals an estimated 90,000 Arizona tax filers who will be affected. Of these, more than 50% would be small business owners.”²²

GCI’s Likely Outcome: 30,000 “high” income filers will be affected. Analysis also shows that approximately 55% of the taxpayers receive pass-through business income. This pass-through business income accounts for approximately one-third of the business owner’s annual taxable income.

The Joint Legislative Budget Committee (JLBC) conducted an analysis of Prop. 208 and the summary is below:

²² Beienburg, Matt and James Rounds (2020), “Good for Special Interests and Unions, Bad for Arizona: The Economic Impacts of Proposition 208,” Goldwater Institute, September 15, <https://goldwaterinstitute.org/prop208-bad-for-arizona/>.

Figure 5: JLBC Analysis of Prop. 208

Table 2

Distributional Impacts of Proposal

1 Tax Filer Adjusted Gross Income ^{1/2}	Projected # of Returns	Average Increase 3	Total Increase	% of Total Impact
Under \$200,000	2,854,671	\$0	\$0	0.0%
\$200,000-\$499,999 2	111,963	\$120	\$14,000,000	1.7%
\$500,000-\$999,999	17,425	\$5,549	\$97,000,000	11.7%
\$1,000,000-\$4,999,999	8,127	\$40,287	\$327,000,000	39.5%
\$5,000,000 and above	956	\$353,448	\$338,000,000	40.9%
Non-Resident Filers ^{4/}			\$51,000,000	6.2%
Total			\$827,000,000	100%

1/ The DOR tax return model displays impact by income in terms of AGI rather than taxable income. Taxable income is typically lower than AGI.
 2/ Does not differentiate between single, married, and other filing statuses.
 3/ The DOR tax return model does not provide a breakout of tax filers with AGI between \$250,001 and \$499,999.
 4/ The DOR tax return model does not report a number of non-resident filers.

- 1** Prop. 208 covers TAXABLE income which is smaller than adjusted gross income
- 2** Prop. 208 requires taxable income to exceed \$250,000 for single filers and \$500,000 for married filers/head of household--88% of these filers are married or head of household.
- 3** Very small amount clue that very few in bracket impacted.

Based on the JLBC analysis and review of the 2015 income tax returns from the Arizona Department of Revenue, 88% of filers in the \$200,000 to \$499,999 income are married or head of household.²³ Overall, an estimated 30,000 filers are impacted by the initiative.

²³ Arizona Department of Revenue, "Individual Income Tax Statistics" Tax Year 2015 Preliminary Report (most recent available), https://azdor.gov/sites/default/files/media/REPORTS_STATS_2015_Arizona_Individual_Income_Tax_Statistics.pdf.

Table 5: Arizona Income Tax Filers Impacted by Prop. 208

Adjusted Gross Income Range	Number of Filers	Estimated Percent Subject to Initiative	Number of Filers impacted
\$200,000 to \$499,999	111,963	5%	5,462
\$500,000 to \$999,999	17,425	82%	14,321
\$1,000,000 to \$4,999,999	8,127	100%	8,127
\$5 million or more	956	100%	956
			28,866

ISSUE: HOW MANY HIGH INCOME PEOPLE MIGHT LEAVE ARIZONA?

“No” Campaign Claim: “The leading peer-reviewed study in tax increases on high income filers from Varner and Young concludes that for every 10% rate increase, 1% of high income filers will move and another 1% who would have moved to Arizona will move elsewhere. The proposed 78% rate increase projects to flush 7.8% of high income filers and prevent the same number of high income migrants from moving to Arizona.” (Source: Arizona Tax Research Association (ATRA))²⁴

GCI’s Likely Outcome: Less than 100 households considered high income tax filers are likely to move from Arizona as a result of Prop. 208’s adoption.

Varner and Young do come up with an elasticity as explained above, but their statistical analysis is based on the total tax rate, not the marginal state tax rate faced for a hypothetical

²⁴ McCarthy, Sean (2020), “Invest in Ed Tax increase Misguided & Cynical,” ATRA Special Report, August 3, http://www.arizonatax.org/sites/default/files/publications/ballot_measures/special_report_income_tax_initiative_8-3-20.pdf.

couple with an income of \$1.7 million before deductions.²⁵ That total income tax rate included federal income taxes (see Appendix 1 in their article). What’s more, the elasticity estimate was only statistically significant if they included the state of Florida—which has no individual income tax. When they ran the analysis without Florida the impact was cut in half and no longer was statistically different from zero.

Furthermore, Arizona is currently highly competitive with Florida. Most states see net out-migration to Florida—whereas as the ATRA report notes, Arizona shows even migration to and from Florida. The CATO report cited by the Goldwater Institute, [Tax Reform and Interstate Migration](#), has a crude correlation graph related to taxes and migration patterns.²⁶ Arizona stands out for having far more in-migration than out-migration beyond what Arizona’s taxes alone suggest on their graph (in migration being well above the regression estimate, signaling that something, i.e., climate) is attracting folks to Arizona besides its income tax rates).

GCI noted that the average taxable income among those earning \$500,000 or more and subject to the initiative was about \$1.4 million. GCI used that average and applied it to Varner and Young’s Florida included model (Model 2) and their model excluding Florida (Model 4), assuming the latter estimate is more accurate. As a result of this analysis, **GCI found that it is likely that less than 100 Arizona income tax filers will leave the state due to the initiative.**

Table 6: Potential Out-Migration due to Prop. 208

Avg. Taxable Income	Current Avg. Tax Rate	With Prop 208	Percent Change	Max Est. Filers Lost Model 2	More Likely Estimated Filers Lost Model 4
\$1.4 million	36.7%	39.0%	6.1%	143	61

ISSUE: HOW WILL EMPLOYMENT BE IMPACTED BY JUST THE TAX PORTION OF

²⁵ Young, C., Varner, C., Lurie, I. Z., & Prisinzano, R. (2016). 7. Millionaire Migration and Taxation of the Elite: Evidence from Administrative Data. *American Sociology Review*, 81(3), 421-446. Retrieved from <https://web.stanford.edu/~cy10/public/Jun16ASRFeature.pdf>.

²⁶ Edwards, Chris (2018), “Tax Reform and Interstate Migration,” Tax & Budget Bulletin, CATO Institute September, <https://www.cato.org/sites/cato.org/files/pubs/pdf/tbb-84-revised.pdf>

PROP. 208?

“No” Campaign claim: Job losses will reach a minimum of 124,000 by the 10th year of implementation (Goldwater Institute).²⁷

GCI’s Likely Outcome: GCI estimates that approximately 10,000 Arizona jobs might be lost by the 10th year of implementation of the tax increase. This estimate of jobs lost is ONLY due to changes in the pass-through companies impacted and does not include the eventual likely economic growth due to the estimated impact on improved educational outcomes.

While opponents of Prop. 208 have talked about the detrimental impact that it will have on small businesses, it is important to note that the initiative imposes a tax only on business income subject to individual income taxes. Specifically, the personal income tax will impact individuals who own a business structured as a pass-through organization such as an S Corporation or Partnership. The individual business owner’s income will be taxed after all business expenses are deducted and profit is “passed through” to the individual. An analysis of overall income suggests among these taxpayers that the pass-through income is about one-third of their taxable income, though in some cases it is higher.

GCI estimates that up to 360,000 people in Arizona are employed at pass-through small business organizations whose owners will be impacted by Prop. 208. So in effect, Goldwater claims that one in six jobs with pass-through organizations will disappear and that a job multiplier of about two, doubles the impact over ten years.

In fact, GCI estimates that 0.7% of the positions could be impacted over two years and 1.4% of them impacted over ten years, leading to a loss of 5,000 positions over ten years. If there was a job multiplier of two, as many as 10,000 positions may be impacted over the 10-year period. This is less than one-tenth of the estimate by the Goldwater Institute. While the Goldwater Institute analysis is based on conjecture from interviews with people in economic development communities, the GCI analysis is based on empirical research—and is designed, if anything, to be a high-end estimate.

Giroud and Rauh of Columbia and Stanford Business Schools, respectively, in a 2017 paper looked at how state taxation impacted business relocation.²⁸ This analysis used the top

²⁷ Beienburg, Matt and James Rounds (2020), “Good for Special Interests and Unions, Bad for Arizona: The Economic Impacts of Proposition 208,” Goldwater Institute, September 15, <https://goldwaterinstitute.org/prop208-bad-for-arizona/>.

²⁸ Giroud, Xavier and Joshua Rauh (2017), “State Taxation and the Relocation of Business Activity: Evidence

marginal personal income tax rate as part of its analysis. The authors looked at all forms of corporate structures. For this analysis, GCI only examines the pass-through forms that are impacted by Prop. 208.

Giroud and Rauh only included pass-through S Corporations, Partnerships, and Sole Proprietorships that employed a minimum of 100 people AND had operations in multiple states. GCI's analysis looks at only S Corporations and Partnerships—since very few sole proprietorships employ anyone beyond the proprietor and that information is not readily discernable from IRS filings. However, GCI's analysis looks at a much wider range of S Corporations in terms of employment—and includes those that exist only in Arizona and may have significant obstacles to relocating, in addition to organizations that exist in multiple states. Consequently, by adopting Giroud and Rauh's findings, GCI is likely overstating the likely impact of Prop. 208. However, Giroud and Rauh provide the best academic study to apply to an analysis of Prop. 208 due to the quality and detail of their data sources as well as their wide scope.

Note that because C Corporations pay Corporate Income Tax they are not impacted by Prop. 208 and therefore not included in this analysis. Giroud and Rauh tested included C Corporations in their hypothesis—and found no support that C Corporations were impacted by individual income tax rates.

However, S Corporations, Sole Proprietorships and Partnerships are “pass-through” organizations for whom net income shows up on individual income tax returns and would be subject to the initiative.

For pass-through entities, Giroud and Rauh find that a one percentage point increase in the top state personal tax rate decreases employment in pass-through organizations by 0.2%. In a ten-year analysis of the impact that a 1% increase in the top state personal tax rate, they found that employment decreases by 0.4%, though they caution that the analysis didn't adequately take into account other factors that might be relevant over 10 years. Prop. 208 raises the top marginal tax rate by 3.5 percentage points—so the effects are 0.7% and 1.4%, respectively.

GCI used IRS details from Arizona from 2018 to estimate the number of business owners. GCI used the Giroud and Rauh methodology to determine what portion in each income group will be subject to the initiative.

Small businesses as defined by the Small Business Administration employ under 500 employees—and the average small business that has employees in Arizona employs 11 people and almost all small businesses employ less than 20 people as seen in the charts below.

form Establishment-Level Data,” December, published in *Journal of Political Economy*, <http://www.columbia.edu/~xg2285/Taxes.pdf>

Figure 6: Business size by number of employees

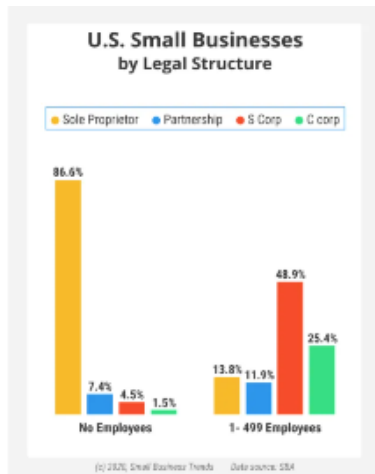


Table 2: Arizona Small Businesses



Tables 1 and 2 display data from the 2016 SUBS. Table 2 includes additional data from the 2016 Nonemployer Statistics (NES).

Source: Small Business Administration: Arizona 2019 Small Business Profile

From this analysis, we can estimate the likely jobs impact over two years (0.2%) and ten years (0.4%). Prop. 208 raises the top marginal tax rate by 3.5% and therefore would be expected to diminish employment 0.7% among small businesses in the first two years and 1.4% in the next ten years.

Although Giroud and Rauh looked at firms operating in multiple states, GCI presumes the same tax elasticity of employment applies to impacted pass-through organizations in Arizona.

GCI ignores sole proprietorships as they frequently employ only the operator, but does include partnerships and S Corporations. Using a 2018 IRS analysis of Arizona returns, GCI identified the number of returns in impacted tax brackets that reported income from an S Corporation or Partnership. While the same S Corporation and Partnership could appear on multiple returns—if two different people operate the company, for instance—GCI presumes each represents a separate entity.

GCI examined the distribution of small business employment available from the Small Business Administration for Arizona, including the portions that were likely C Corporations, and estimated the likely range covered by those with pass-through business income for each of three income classes that matched up with the IRS income range categories for income from S Corporations or Partnerships.²⁹ In addition, GCI examined the average

²⁹ Internal Revenue Service, “SOI Tax Stats—Historic Table 2” Arizona Tax Year 2018, <https://www.irs.gov/statistics/soi-tax-stats-historic-table-2>. For business employment distributions Small Business Administration, “Firm Size Data,” <https://www.sba.gov/node/12162>, and for Distribution of legal structure and employment: Small Business Trends <https://smallbiztrends.com/small-business-statistics>.

income from businesses based on 2019 earnings as calculated by the Urban-Brookings Tax Policy Center for those reporting business income. Business income is not typically the main source of income for these taxpayers. Their business income averaged \$50,000 for those in the \$250,000 to \$499,999 taxable income range, \$145,000 for those in the \$500,000-\$999,999 income range and \$455,000 for those with \$1 million or more in income. This matches up well with the GCI estimated number of employees per business in each income range of 3, 9 and 46.

Table 7: Impacted Pass-Through Businesses

Adjusted Gross Income Range	Estimated Filers with Pass Throughs	Estimated Portion Subject to Initiative	Number Business Filers Impacted	350 Basis Point Impact	Est. Employees Impacted	Employment Lost	
\$200,000 to \$499,999	34,090	5%	2,045	0.70%	6,141	43	
\$500,000 to \$999,999	9,910	82%	8,145	0.70%	74,333	520	
\$1,000,000 or more	6,060	100%	6,060	0.70%	280,281	1,962	
			15,868	TOTALS	361,488	2,517	2 years
						5,034	10 years
						10,069	with Job Multiplier

Dave Wells holds a doctorate in Political Economy and Public Policy and is the Research Director for the Grand Canyon Institute. He can be reached at DWells@azqci.org or contact the Grand Canyon Institute at (602) 595-1025, Ext. 2.

Lilian Le is a Master's of Public Administration student at Northern Michigan and a research associate for the Grand Canyon Institute.

The Grand Canyon Institute, a 501(c) 3 nonprofit organization, founded in 2011, is a centrist think tank led by a bipartisan group of former state lawmakers, economists, community leaders and academicians. The Grand Canyon Institute serves as an independent voice reflecting a pragmatic approach to addressing economic, fiscal, budgetary and taxation issues confronting Arizona.

Grand Canyon Institute
P.O. Box 1008
Phoenix, Arizona 85001-1008
GrandCanyonInstitute.org