

Education Funding and the Economy

Trends and Relationships in Arizona

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The relationship between education and the economy is complex, and it is difficult to tease out exactly how one affects the other. Policy makers and taxpayers both want to ensure that public funds are expended wisely. Parents want quality education for their children so they may prosper in the future. And businesses want to know they will have a workforce equipped with the skills needed to get the job done.

Much of the difficulty in assessing the impact of education funding on the economy is although the costs, in the form of taxes paid, are both calculable and in the present; the benefits are largely incalculable and in the future. To know if expenditures on kindergarten pay off, we must look twenty or thirty years into the future to see how today's students have fared. Productive, happy, and taxpaying young adults are a sign of success. With outcomes decades down the line and thousands of other variables at play in each student's journey, it is nearly impossible to state exactly what the return on our education dollar will be.

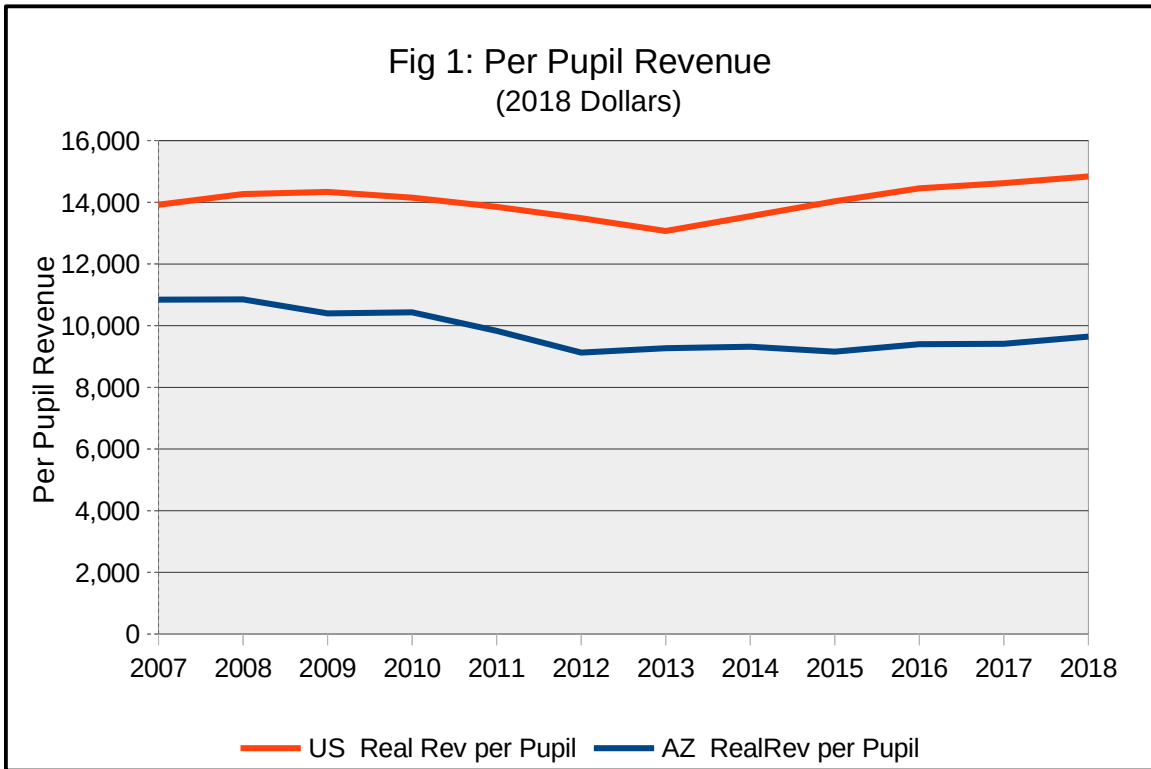
However, we can make some well-founded assertions about general trends in education and the economy by closely examining the data.

This brief analysis looks at Arizona's status with regard to both education funding and the economy. It uses publicly available data from reliable, non-partisan sources and focuses on K-12 funding exclusively. The analysis is framed as a series of questions and answers.

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How Does Arizona's K-12 Funding Compare to Other States?

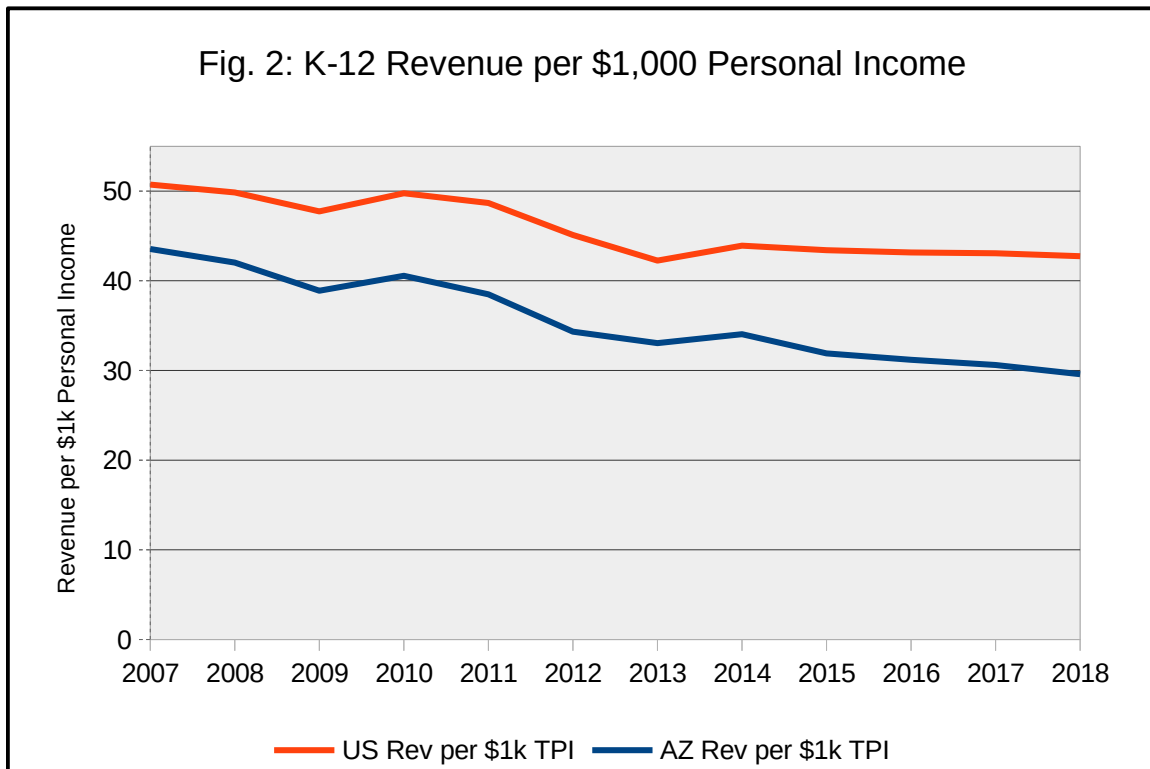
Arizona's K-12 funding has been below the national average for decades. Peak funding for education in Arizona was in 2008. At that time per-pupil funding was 25 percent below the national average.¹ Although much of the funds cut in the wake of the Great Recession had been restored by 2018, the most recent year for which comparable data is available, the rest of the nation had increased their funding of education even more. By 2018, per-pupil funding in Arizona was 35 percent below the national average (Figure 1).² Note that when comparing figures across years, it is important to express the amounts in *real dollars*, that is adjusted for inflation. Omitting this step distorts the true picture considerably.



Although per-pupil funding is a commonly understood term to express education funding, it is student centered and does not capture the economic reality of the state. Rich states can afford to spend more on education than poor states.

From a taxpayer perspective, what is important is not how much is spent per pupil, but how much income is directed toward K-12. This is done by looking at how much of a state’s total personal income goes toward education funding, a measure of how much of a state’s economy it is willing to put toward education.

Again, Arizona has long lagged the nation as a whole in the amount of revenue directed toward education funding. The nation in general has lessened its commitment to education by this measure. In 2007, the US average was \$50.72 per \$1,000 of personal income directed toward K-12 (Figure 2).³ By 2018, this figure had dropped by 16 percent, to \$42.74. Arizona had a more dramatic drop, from \$43.54 per \$1,000 total personal income in 2007 to \$28.58 in 2018, a decline of 32 percent.



Arizona’s funding for education is well below the national average on both a per-pupil basis and as a share of the state economy. The funding gap has widened over the years.

Does Arizona Have Excessive Administrative Expenses?

The Annual Survey of School System Finances reports total school expenditures as well as expenditures for salaries, benefits, and two types of administrative expense. School administration expense is for school principals, vice principals and the like. General administration expense is for district-level expense.

In 2018, Arizona ranked 48th among the 50 states for total K-12 expenditures. It ranked 50th for combined per-pupil general and school-level administration expense among the states.⁴

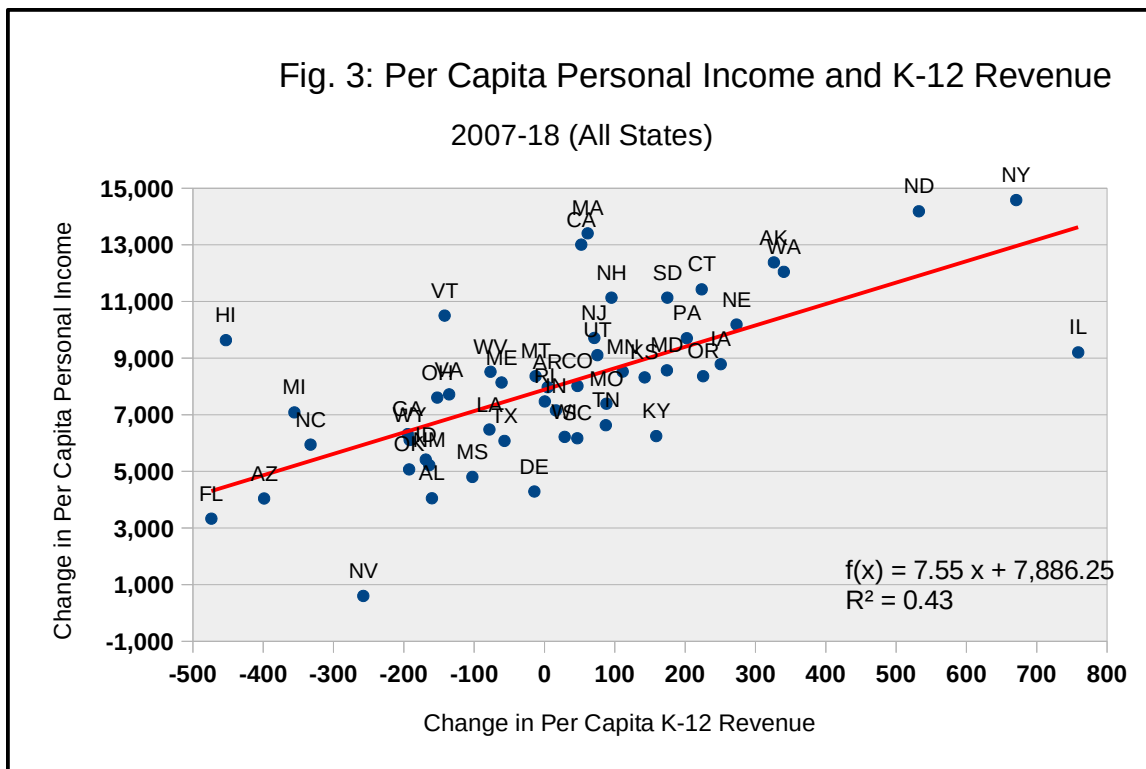
Arizona schools have lower per-pupil administration spending than any other state.

Do Increases in K-12 Funding Stimulate Economies?

Although tracing the precise cause-and-effect relationship between education funding and economic activity is difficult, it is possible to look at data from past years to see how economies reacted after states either increased or decreased funding for K-12. Using data from the Census Bureau’s Annual Survey of School System Finances, we can plot how states changed their education funding between 2007 and 2018 and how the size of their economy

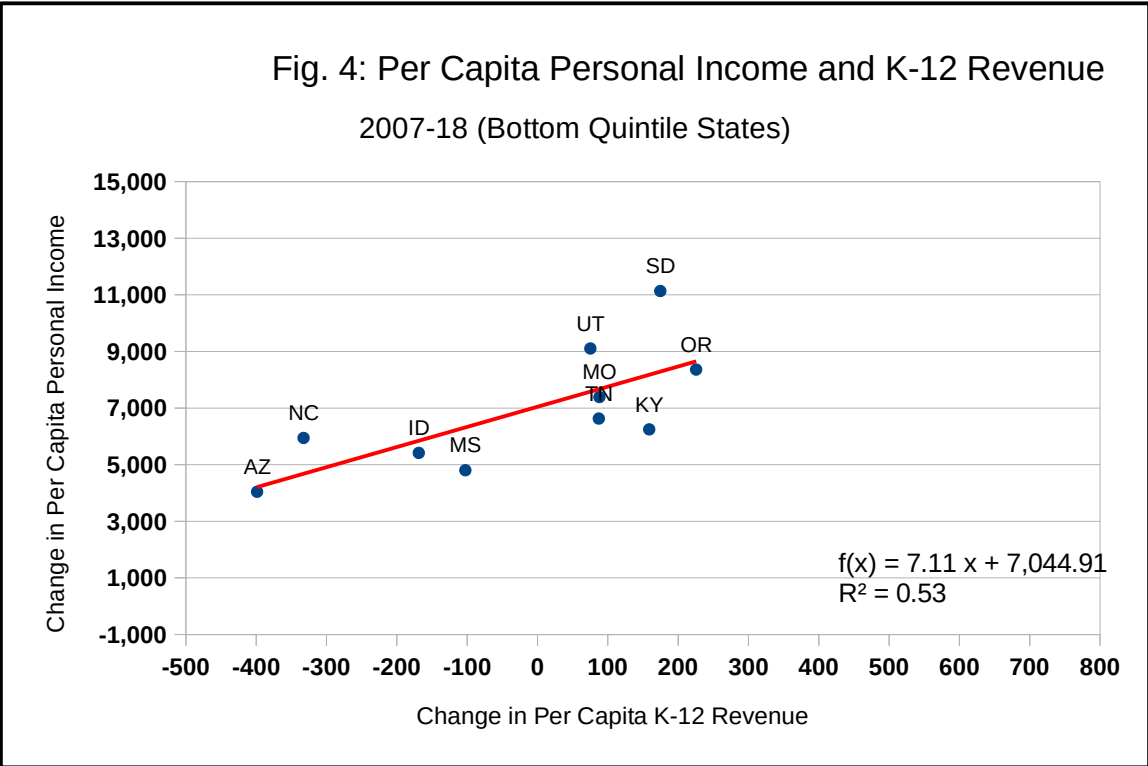
changed over that period. Economic growth is expressed as changes to a state's total personal income, which is roughly analogous to gross state product. Changes in both K-12 revenue and total personal income are expressed on a per capita basis to allow accurate comparison of states with both large and small populations.

Figure 3 shows states that increased their K-12 funding over the period from 2007-2018 had larger increases in per capita personal income. All amounts shown are adjusted for inflation and expressed in 2018 dollars. Arizona saw an increase in real per capita personal income in this time frame of \$4,044 and decreased its per capita K-12 funding by \$399. The increase in per capita personal income in the nation as a whole was more than double that of Arizona while showing a very slight increase in education funding. Nationwide, there was an increase in real per capita personal income in this time frame of \$8,314 and an increase in per capita K-12 funding of \$12.⁵



Although there is both a strong correlation (R-squared of 0.43) and magnitude shown in Figure 3, there are legitimate concerns with this comparison. Some states, especially those in the northeast such as New York, Massachusetts, and New Jersey are both relatively wealthy and possess a long history of high levels of K-12 funding. North Dakota also stands out as an outlier. Revenues from oil shale development allowed the state to experience a boom in both state revenue and K-12 funding.

An argument can be made that this analysis should be confined to states that had low K-12 funding to begin with. This attempts to address the question of whether or not increasing spending on education can actually benefit their economies. Figure 4 restricts the analysis to the bottom quintile of states, the ten states that had the lowest per capita education funding in 2007. The results are largely the same, and show that states like Tennessee, Missouri, and Kentucky that increased their education funding more than Arizona also saw their per capita personal incomes rise.



Increasing funding for K-12 education is correlated with increased per capita personal income for all residents.

Is Arizona a High-Tax State? Are high-income Arizonans taxed at higher rates than in other places?

A wide variety of taxes make up the tax burden that an individual faces. The total taxes paid are a mix of income, sales, property, and many others. This burden varies greatly from one jurisdiction to another, with some states having relatively high income taxes, but low sales taxes and vice versa. Additionally, cities have their own taxes which must be taken into account. To complicate things even more, tax burdens vary with income, with lower-income

individuals paying a larger share of their income to sales taxes, while those with higher incomes pay more income tax.

A useful tool to sort out the many complications of taxes comes from the municipal government of Washington, DC. The Chief Financial Officer of the District of Columbia produces an annual report on the tax burden in the largest city of each state. Rather than relying on average numbers, this report analyzes the tax burden as it applies to families at five income levels: \$25,000, \$50,000, \$75,000, \$100,000, and \$150,000 annually.

The Washington tax burden analysis looks at the largest city in each state, plus the District of Columbia. Phoenix, which is by far the largest city in Arizona, will be the proxy for Arizona in comparisons to other large cities. The study calculates the tax burden for a hypothetical family of three across four types of taxes:

- Income tax
- Property tax
- Sales tax
- Automobile registration and licensing

Figure 5 shows the results for high-income families in 2018, ranked from the city with the highest total tax burden (Bridgeport, Connecticut) to the lowest (Anchorage, Alaska).⁶ Phoenix ranks 37th out of 51 cities for total tax burden on this list.

Fig. 5: Tax Burden in the Largest City in Each State and Wash. DC, 2018

For a Family With Income of \$150,000 Annually

CITY	ST	Income	Property	Sales	Auto	Total Burden
Bridgeport	CT	\$7,749	\$15,040	\$1,887	\$828	\$25,504
Newark	NJ	5,520	15,819	1,604	624	23,567
Detroit	MI	9,459	9,077	1,534	1,028	21,099
Baltimore	MD	8,854	9,193	1,826	588	20,462
Milwaukee	WI	7,906	9,643	1,677	562	19,788
Des Moines	IA	8,797	7,838	1,719	1,037	19,391
New York	NY	11,747	3,981	2,671	653	19,052
Portland	ME	6,938	8,284	1,819	1,783	18,824
Los Angeles	CA	4,190	10,065	2,429	1,408	18,093
Providence	RI	5,120	6,583	2,036	4,136	17,875
Philadelphia	PA	10,426	4,642	1,854	738	17,660
Kansas City	MO	8,122	4,462	2,999	2,074	17,657
Portland	OR	10,531	6,182	0	648	17,360
Burlington	VT	6,029	8,839	1,857	507	17,232
Chicago	IL	6,761	6,688	2,612	816	16,877
Columbus	OH	8,849	5,610	1,968	436	16,862
Louisville	KY	10,078	4,114	1,686	830	16,707

Fig. 5: Tax Burden in the Largest City in Each State and Wash. DC, 2018

For a Family With Income of \$150,000 Annually

CITY	ST	Income	Property	Sales	Auto	Total Burden
Indianapolis	IN	7,508	5,196	2,367	1,237	16,307
Omaha	NE	7,189	5,574	2,215	1,244	16,222
Atlanta	GA	6,719	6,002	2,741	572	16,033
Jackson	MS	5,538	5,923	2,709	1,777	15,947
Boise	ID	7,712	5,802	1,897	499	15,910
Boston	MA	7,137	5,047	1,602	1,612	15,398
Wilmington	DE	8,587	6,379	34	340	15,340
Charleston	WV	8,379	2,557	1,893	2,498	15,327
Little Rock	AR	8,056	3,772	2,706	481	15,015
Washington	DC	9,144	3,287	2,055	496	14,981
Minneapolis	MN	7,633	3,982	2,340	862	14,816
Albuquerque	NM	5,764	6,263	2,393	329	14,750
Wichita	KS	6,823	3,290	2,659	1,696	14,467
Charlotte	NC	7,166	3,906	2,035	1,226	14,332
Salt Lake City	UT	7,425	3,640	2,483	688	14,236
Charleston	SC	8,027	3,096	2,477	420	14,019
Virginia Beach	VA	6,788	3,777	1,709	1,683	13,957
Billings	MT	7,714	4,280	69	1,107	13,170
New Orleans	LA	5,131	4,669	3,053	302	13,155
Phoenix	AZ	3,138	6,480	2,647	882	13,147
Oklahoma City	OK	6,360	3,740	2,616	418	13,134
Denver	CO	5,903	3,396	2,227	1,299	12,825
Birmingham	AL	6,708	2,126	2,945	936	12,716
Honolulu	HI	7,116	2,678	1,589	839	12,221
Manchester	NH	0	8,315	715	1,863	10,892
Seattle	WA	0	5,570	2,759	1,428	9,758
Las Vegas	NV	0	5,878	2,287	1,529	9,694
Houston	TX	0	6,420	2,147	351	8,918
Jacksonville	FL	0	6,295	1,992	470	8,757
Fargo	ND	1,963	3,970	1,916	446	8,296
Nashville	TN	0	3,756	3,135	467	7,358
Cheyenne	WY	0	4,036	1,858	1,463	7,357
Sioux Falls	SD	0	4,406	2,345	519	7,270
Anchorage	AK	0	5,457	172	321	5,950

A more nuanced picture emerges when the four types of taxes are individually ranked. Phoenix families earning \$150,000 face a relatively high sales tax burden, 11th on the list. However, they face a low income tax burden, 41st out of 51 cities.

**Fig. 6: Tax Burden in the Largest City in Each State and Wash. DC
(Ranks) 2018**

For a Family With Income of \$150,000 Annually

CITY	ST	Income Rank	Property Rank	Sales Rank	Auto Rank	Total Burden Rank
Bridgeport	CT	16	2	33	26	1
Newark	NJ	37	1	43	32	2
Detroit	MI	5	6	46	20	3
Baltimore	MD	7	5	37	33	4
Milwaukee	WI	15	4	42	35	5
Des Moines	IA	9	10	39	19	6
New York	NY	1	37	9	30	7
Portland	ME	26	9	38	5	8
Los Angeles	CA	40	3	16	13	9
Providence	RI	39	12	26	1	10
Philadelphia	PA	3	30	36	28	11
Kansas City	MO	12	31	3	3	12
Portland	OR	2	18	51	31	13
Burlington	VT	33	7	35	37	14
Chicago	IL	29	11	13	27	15
Columbus	OH	8	23	29	44	16
Louisville	KY	4	34	41	25	17
Indianapolis	IN	20	27	18	16	18
Omaha	NE	22	24	23	15	19
Atlanta	GA	30	19	6	34	20
Jackson	MS	36	20	7	6	21
Boise	ID	18	22	31	38	22
Boston	MA	24	28	44	9	23
Wilmington	DE	10	15	50	48	24
Charleston	WV	11	50	32	2	25
Little Rock	AR	13	41	8	40	26
Washington	DC	6	47	25	39	27
Minneapolis	MN	19	36	20	23	28
Albuquerque	NM	35	17	17	49	29
Wichita	KS	27	46	10	7	30
Charlotte	NC	23	39	27	17	31
Salt Lake City	UT	21	44	14	29	32
Charleston	SC	14	48	15	45	33
Virginia Beach	VA	28	40	40	8	34
Billings	MT	17	33	49	18	35
New Orleans	LA	38	29	2	51	36
Phoenix	AZ	41	13	11	22	37
Oklahoma City	OK	32	43	12	46	38
Denver	CO	34	45	22	14	39

**Fig. 6: Tax Burden in the Largest City in Each State and Wash. DC
(Ranks) 2018**

For a Family With Income of \$150,000 Annually

CITY	ST	Income Rank	Property Rank	Sales Rank	Auto Rank	Total Burden Rank
Birmingham	AL	31	51	4	21	40
Honolulu	HI	25	49	45	24	41
Manchester	NH	43	8	47	4	42
Seattle	WA	43	25	5	12	43
Las Vegas	NV	43	21	21	10	44
Houston	TX	43	14	24	47	45
Jacksonville	FL	43	16	28	41	46
Fargo	ND	42	38	30	43	47
Nashville	TN	43	42	1	42	48
Cheyenne	WY	43	35	34	11	49
Sioux Falls	SD	43	32	19	36	50
Anchorage	AK	43	26	48	50	51

Phoenix residents have a low overall tax burden compared to other cities, and rank 41st out of 51 comparison cities for income tax burden.

Do Higher Taxes Cause Wealthy People to Move Away?

An argument against raising taxes on high-income individuals is that higher taxes will motivate these people to move to areas with lower tax rates in an effort to lower their tax burden. This hypothesis is testable using the data from the District of Columbia tax burden study⁷ and Census Bureau data on income.⁸

Looking back to 2010, we identify the tax burdens cities placed on high-income families and compare the number of families in 2010 and in 2018. If people are inclined to move out of these cities to lower their tax burden, we would expect to see these cities show a decline in the number of high-income families, or perhaps a decline in percentage of high-income families as a share of total. Correspondingly, growing numbers of high-income families should be apparent in low-tax cities.

Fig. 7: Tax Burden and Change in Wealthy Family Share

City	2010 Tax Burden	Change in Total Number of Families, 2010-18	Change in High-Income Share, 2010-18	Families Earning >\$150,000	
				2010 Share	2018 Share
Bridgeport	\$23,655	6.4%	3.7%	5.2%	8.9%
New York City	\$18,077	2.2%	8.7%	12.7%	21.4%
Louisville	\$17,458	-0.9%	6.6%	8.0%	14.6%
Philadelphia	\$16,302	5.5%	7.0%	5.8%	12.8%
Portland	\$16,297	3.8%	7.2%	10.4%	17.6%
Detroit	\$16,109	-7.1%	1.5%	1.8%	3.3%
Columbus	\$15,928	13.0%	4.6%	5.4%	10.0%
Los Angeles	\$15,539	3.0%	7.8%	11.9%	19.7%
Des Moines	\$15,499	-3.5%	3.7%	5.2%	8.9%
Baltimore	\$15,180	-9.5%	8.8%	6.7%	15.5%
Charlotte	\$15,002	15.7%	8.9%	13.4%	22.3%
Atlanta	\$14,861	19.3%	12.4%	18.2%	30.6%
Kansas City	\$14,741	3.1%	8.3%	7.0%	15.3%
Milwaukee	\$14,698	1.1%	3.0%	3.0%	6.0%
Providence	\$14,604	3.6%	1.6%	7.6%	9.2%
Omaha	\$14,267	12.4%	8.6%	8.4%	17.0%
Minneapolis	\$14,258	13.6%	11.8%	11.9%	23.7%
Portland	\$14,100	9.4%	15.7%	11.6%	27.3%
Columbia*	\$13,848	0.3%	7.2%	11.9%	19.1%
Jackson	\$13,506	-14.2%	1.0%	5.3%	6.3%
Washington	\$13,330	19.7%	14.3%	26.6%	40.9%
Boise	\$13,262	10.1%	9.8%	9.6%	19.4%
Salt Lake City	\$13,168	-0.5%	16.0%	8.8%	24.8%
Little Rock	\$13,168	-4.6%	8.7%	12.3%	21.0%

Fig. 7: Tax Burden and Change in Wealthy Family Share

City	2010 Tax Burden	Change in Total Number of Families, 2010-18	Change in High-Income Share, 2010-18	Families Earning >\$150,000	
				2010 Share	2018 Share
Wichita	\$13,115	0.4%	5.3%	6.9%	12.2%
Burlington	\$12,947	-13.4%	6.5%	10.8%	17.3%
Wilmington	\$12,947	-9.6%	2.9%	9.1%	12.0%
Indianapolis	\$12,787	-3.1%	4.8%	6.1%	10.9%
Charleston	\$12,644	-6.6%	3.4%	15.4%	18.8%
Birmingham	\$12,467	-8.2%	1.7%	4.4%	6.1%
Boston	\$12,426	9.1%	10.2%	15.9%	26.1%
Newark	\$11,921	7.5%	2.9%	3.4%	6.3%
Honolulu	\$11,506	1.0%	12.5%	12.7%	25.2%
Oklahoma City	\$11,419	5.8%	6.5%	8.0%	14.5%
Albuquerque	\$11,386	-2.7%	4.1%	8.9%	13.0%
Virginia Beach	\$11,205	3.6%	7.0%	12.6%	19.6%
Chicago	\$11,152	0.8%	10.2%	10.4%	20.6%
Billings	\$10,877	6.2%	9.2%	6.6%	15.8%
Denver	\$10,693	13.3%	11.3%	15.3%	26.6%
Phoenix	\$9,748	11.5%	5.6%	8.8%	14.4%
New Orleans	\$9,338	-12.0%	5.8%	10.1%	15.9%
Fargo	\$7,990	15.8%	9.5%	11.1%	20.6%
Seattle	\$6,502	25.2%	20.3%	23.3%	43.6%
Houston	\$6,310	13.5%	5.3%	10.3%	15.6%
Manchester	\$6,159	-12.0%	3.1%	8.5%	11.6%
Memphis*	\$6,092	-9.4%	4.1%	5.2%	9.3%
Las Vegas	\$5,836	6.5%	7.3%	8.1%	15.4%
Jacksonville	\$5,797	10.4%	6.2%	6.1%	12.3%
Sioux Falls	\$5,647	11.8%	2.7%	8.3%	11.0%
Cheyenne	\$4,560	9.6%	4.3%	6.3%	10.6%
Anchorage	\$4,133	-0.6%	6.1%	20.8%	26.9%

Figure 7 indicates there is no such correlation. Cities with high tax burdens simply did not lose high-income families, either in absolute numbers or as a percentage of the whole.

There were, however, several interesting counter-examples. Louisville, Kentucky, which had the third highest tax burden in 2010, saw the total number of families decrease by 0.9 percent between 2010 and 2018. The share of families earning over \$150,000 grew by 6.6 percentage points over that time. Although there were fewer families overall, tax rates apparently did not discourage high-income families from living in Louisville.

On the other end of the scale, Sioux Falls, South Dakota saw the total number of families grow by 11.8 percent between 2010 and 2018. With a tax burden ranked at 49th out of the

51 cities in the study, one might expect Sioux Falls to attract some wealthy families fleeing high-tax locales. Instead, the share of families earning over \$150,000 grew by just 2.7 percentage points.

These two examples are not meant to imply that there is a negative correlation between tax burden and the presence of high-income families. There is simply no correlation in this data. A possible explanation for this is that, rather than protecting their income by fleeing jurisdictions with higher tax burdens, people with high incomes are willing to spend some of their wealth to live in areas where their tax dollars provide services they find valuable.⁹ People who value good schools, roads, libraries, and other civic infrastructure will be attracted to cities that provide these amenities, especially if they have income sufficient to cover the tax burden.

This analysis finds no correlation between increased tax burden and loss of high-income families.

Conclusion

This brief analysis provides evidence on several significant points regarding Arizona's education funding:

- Arizona's education funding lags behind the rest of the country and the gap is widening.
- Arizonans were directing less of their income to education funding in 2018 than they were in 2007.
- Administrative expenses for K-12 education in the state are the lowest in the nation.
- Increases in education funding are positively correlated with increases in total personal income.
- As a proxy for the state of Arizona, Phoenix ranks 37th among the largest cities in each state for overall tax burden among families earning \$150,000 annually.
- These families have a personal income tax burden that is even lower, ranked at 41st in among the selected cities.
- Finally, there appears to be little evidence for the contention that high-tax cities are losing population to low-tax municipalities.

End Notes

- 1 Annual Survey of School System Finances, Public Elementary-Secondary Education Finances State Tables, US Census Bureau, 2007-2018 <https://www.census.gov/programs-surveys/school-finances.html>
Figures adjusted for inflation using Consumer Price Index from US. Bureau of Labor Statistics.
https://www.bls.gov/regions/.../consumerpriceindexhistorical_us_table.pdf
- 2 *ibid.*
- 3 *ibid.*
- 4 Annual Survey of School System Finances, Public Elementary-Secondary Education Finances State Tables, US Census Bureau, 2018, Table 11, <https://www.census.gov/programs-surveys/school-finances.html>
- 5 Annual Survey of School System Finances, Public Elementary-Secondary Education Finances State Tables, US Census Bureau, 2007-2018 <https://www.census.gov/programs-surveys/school-finances.html>
Figures adjusted for inflation using Consumer Price Index from US. Bureau of Labor Statistics.
https://www.bls.gov/regions/.../consumerpriceindexhistorical_us_table.pdf
- 6 Tax Rates and Tax Burdens in the District of Columbia – A Nationwide Comparison, 2018, Table 1e – Estimated Burden of Major Taxes for a Hypothetical Family Earning \$150,000/Year, <https://cfo.dc.gov/page/tax-burdens-comparison>
- 7 Tax Rates and Tax Burdens in the District of Columbia – A Nationwide Comparison, 2010, Table 1 – Estimated Burden of Major Taxes for a Hypothetical Family of Three (\$150,000), Page 12.
- 8 U.S. Census Bureau, American Community Survey, Table S1901, 1 _year estimates from 2010 and 2018. The cities of Burlington, VT, Charleston, WV, and Cheyenne, WY are too small to be included in the 1-year estimates data, so 5 year estimates were substituted.
- 9 See *A Pure Theory of Local Expenditures*, Charles M. Tiebout, *Journal of Political Economy* 1956 64:5, 416-424 and *The Homevoter Hypothesis*, William Fischel, *Land Economics*, 2002 78:4, 627-630.