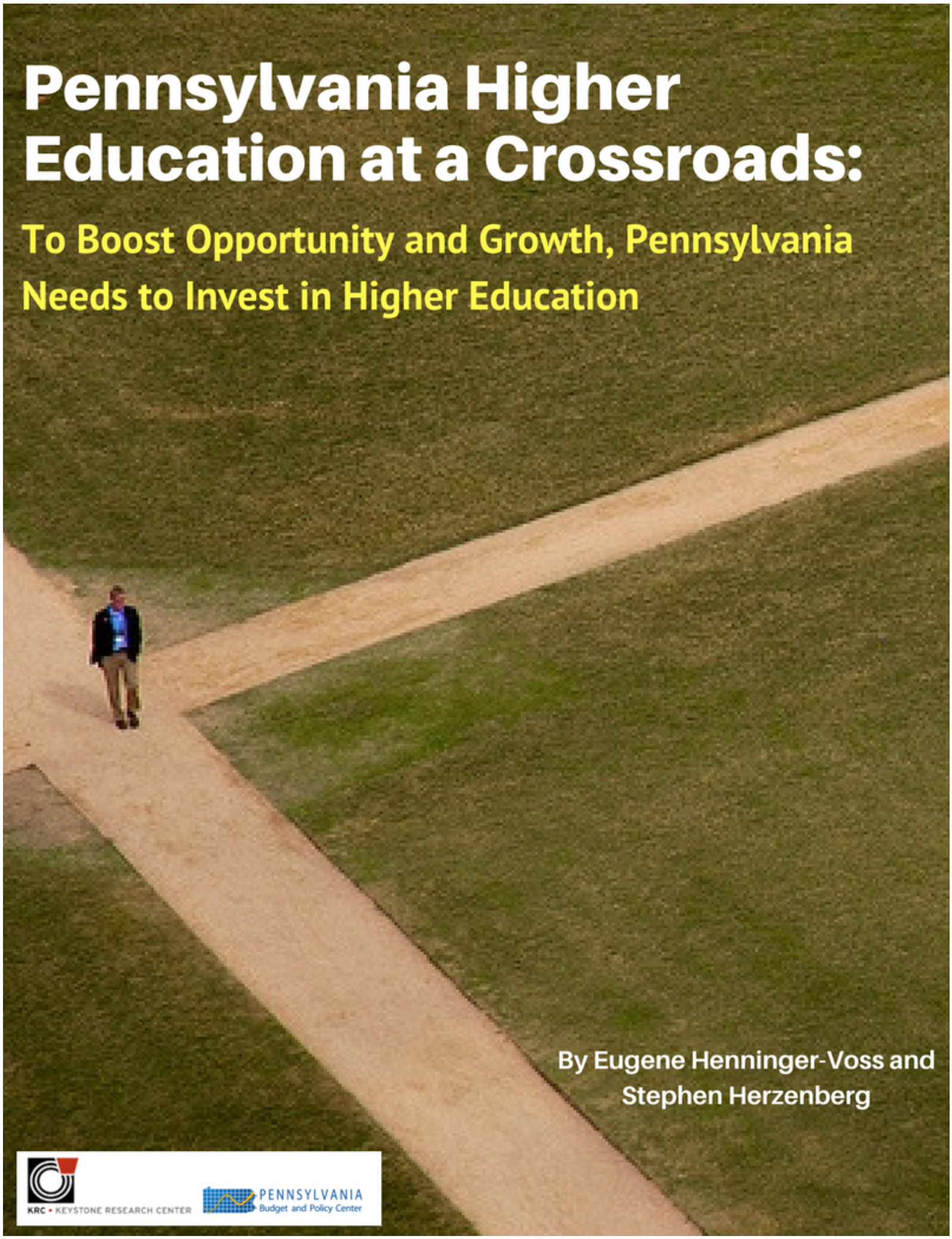


Pennsylvania Higher Education at a Crossroads:

To Boost Opportunity and Growth, Pennsylvania Needs to Invest in Higher Education

By Eugene Henninger-Voss and Stephen Herzenberg

KRC • KEYSTONE RESEARCH CENTER
PENNSYLVANIA Budget and Policy Center

Pennsylvania is now the worst state in the nation for higher education, sunk by students' high debt at graduation and the state's high tuition and fees.
US News and World Report

"Rural America is the New 'Inner City': A *Wall Street Journal* analysis shows that since the 1990s, sparsely population rural areas have replaced large cities as America's most troubled areas by key measures of socioeconomic well-being – a decline that's accelerating."

Wall Street Journal, May 30, 2017
https://www.wsj.com/articles/rural-america-is-the-new-inner-city-1495817008

Executive Summary

Pennsylvania's public four-year colleges currently confront a funding and enrollment crisis, with three of the most distressed Universities in northern and western Pennsylvania regions that lack community colleges. This crisis presents Pennsylvania, and its state legislators: do they want to continue the policies of the past three decades, which have massively underfunded post-secondary education, particularly in rural Pennsylvania? Or do they want to use the crisis of the State System as a wake-up call – a reason to address the state's post-secondary education deficit, and a vital step to avoiding a downward spiral for many of Pennsylvania's rural areas? **This brief argues that lawmakers should take the latter course.**

Our previous two briefs on higher education documented (1) the importance of public universities to upward mobility in Pennsylvania; and (2) the inadequacy of state funding and the impact of this on tuition and enrollment at State System schools.[1] **This brief examines demographic trends and the geography of educational attainment and college access in Pennsylvania.**

Demographic trends and State System enrollment. In the United States, the number of high school graduates fell after 2009 once most of the children of baby boomers – the "echo boom" – left high school. Pennsylvania experienced a sharper fall in the number of high-school graduates than the nation, especially in western and rural parts of the state. Across all 14 campuses of the State System, the percent fall in enrollment since 2009 roughly equals the percent drop in the number of high school students in all of Pennsylvania. Within the 14 schools of the State System, significant variation exists:

- At four north-central and western Pennsylvania Universities (California, Clarion, Edinboro, and Mansfield) where faculty were notified this spring that their contracts might end after the 2017-18 school year, enrollment dropped (in percent) by a bit more than twice the number of high-school graduates in nearby counties and other geographical areas served by these schools.
- At nine schools where faculty received no notices – many of them in faster growing southeastern and southcentral Pennsylvania which faced small drops in the number of high-school students – enrollment (in percent) dropped by half the fall in the number of high school graduates in areas served by these schools.
- At historically black Cheney University, enrollment plunged by more than half.

The five schools at which enrollment dropped more (in percent) than the number of high school graduates all cater heavily to moderate- and low-income students. This provides more evidence that rising costs have priced these universities beyond an increasing number of working families. Since the

areas or communities that these five schools serve do not have many (in some cases, any) alternative affordable nearby colleges, not going to State System school may mean not going to college at all.

The geography of educational attainment and college access in Pennsylvania. Reduced college attendance because of lack of access to affordable higher education threatens to drive Pennsylvania's already low educational attainment even lower, especially in rural geographical areas where it is lowest.

- Pennsylvania ranks 40th for the share of adults 25-64 with more than a high-school degree.
- While this share exceeds two thirds (67%) in four counties (Allegheny, Bucks, Chester, and Montgomery), In over half of Pennsylvania counties (35), this share is lower than any of the 50 states (i.e., lower than West Virginia's 48.1%).
- Under the status quo, low educational attainment is likely to persist because low shares of Pennsylvania high-school students consider college (as measured by the share of high-school graduates who fill out forms required to receive federal financial aid). The contrast between Pennsylvania's northern tier and the similarly rural southern tier of New York is striking: counties in New York typically having a 5-25 percentage point higher share of students filling out financial aid forms (Figure 9).

Where do we go from here? How should the state respond to what the National Center for Higher Education Management Systems (NCHEMS) calls the "twin challenges" faced by Pennsylvania's State System of Higher Education – state financial support and demographic decline?[2] NCHEMS itself does not recommend closing or downsizing any of the State System schools. We agree. Significant parts of rural Pennsylvania are already a "higher education desert" according to a recent academic analysis. Reducing access to State System schools would increase the size of this desert, further compromising opportunity for individuals and undercutting rural economies.

Pennsylvania has some breathing space to chart a difference course because demographic decline slows somewhat over the next decade. In this breathing space, Pennsylvania must increase its investment in the State System as part of a more integrated public post-secondary education system. This should include statewide access to community colleges, more integration of post-secondary education and work-based learning that deliver both college credit and industry-recognized credentials (such as apprenticeships), and more affordable access to State System schools. Part of the money for a more integrated public higher education system could come from federal financial assistance: Pennsylvania draws down $202 million less in its "share" of federal Pell grants for attending college (based on Pennsylvania's share of the U.S. young adults most likely to attend college).

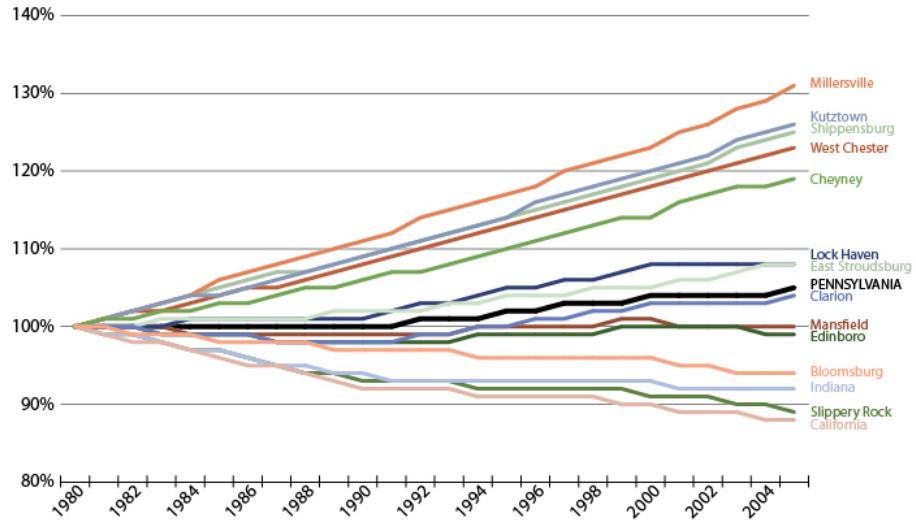
Our next brief will present more details on a policy proposal for investing in Pennsylvania post-secondary education. This brief, and the previous two, establish the need for such a policy proposal.

Western Pennsylvania's 1980s Decline Reduces Birth Rates in the 1990s

It is widely known that Pennsylvania's population grows slowly. In the 1980s, a horrific decade for the state economically, the state's population did not increase at all (Figure 1).[3] In the western half of the state and in and around western Pennsylvania State System campuses, the population declined – by as much as six to seven percentage points in a single decade near California University of Pennsylvania, Slippery Rock and Indiana University. The western Pennsylvania population of women of child-bearing age likely declined by a larger percentage, as young adults have greater mobility than older cohorts.

Figure 1.

Population Near Each State System University as a Percent of Population in I980 (i.e., 1980 = 100)

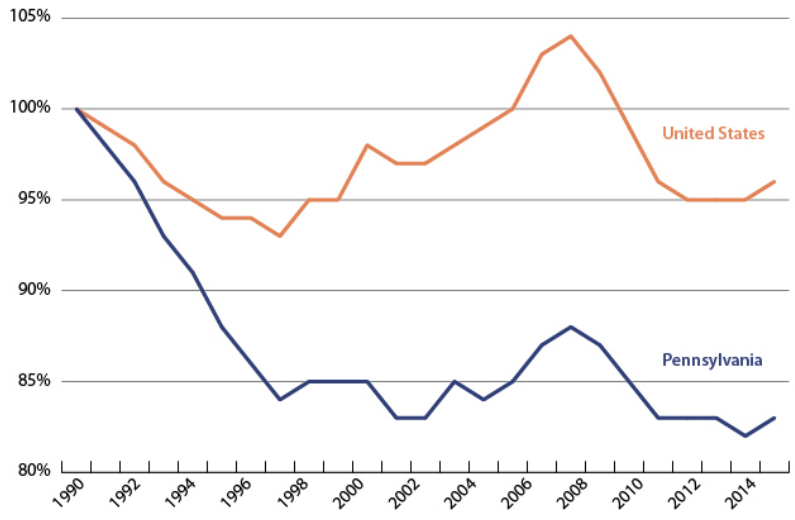


Note: Population "near" each university defined as population in the county of the university plus the population in contiguous counties.
Source: U.S. Census Bureau.

In the United States, birth rates dropped in the 1990s as the "echo boom" came to an end (i.e., the number of children borne by daughters of baby boomers declined) (Figure 2).[4] The birth rate in Pennsylvania dropped more sharply – by about 16 percentage points from 1990 to 1997 versus seven percentage points nationally. Alongside a decline in the population of women of child-bearing age, the depressed incomes of western Pennsylvania working families likely reduced the number of Pennsylvania births further.

Figure 2.

Pennsylvania vs. U.S. Births as a Percent of 1990 Births (i.e., 1990 = 100)



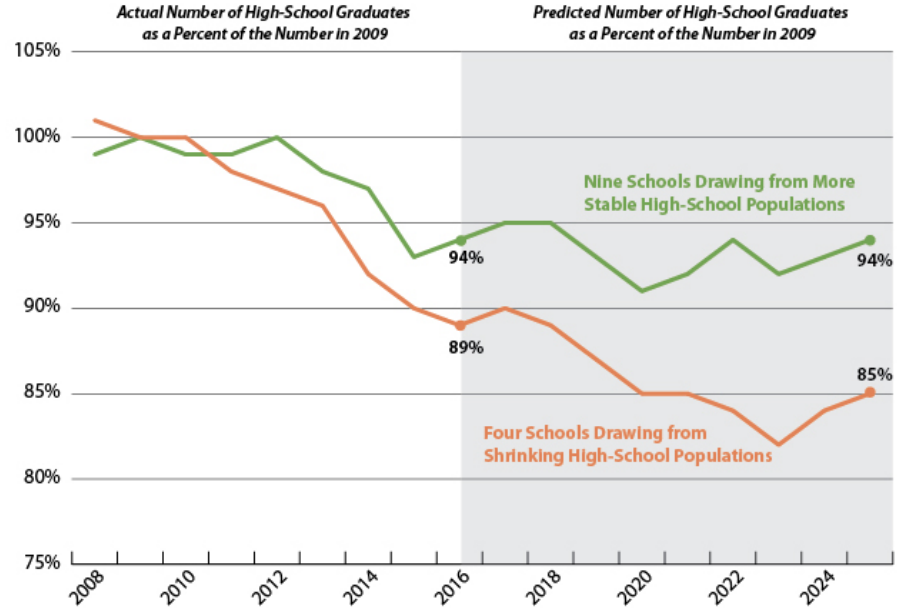
Source: http://datacenter.kidscount.org/data/tables/6038-total-births-by-race#detailed

Early 1990s Fall in Births Means Declining Numbers of High School Graduates 18 Years Later

The birth rate trends above shaped the trends in the number of high-school graduates 18 years later. Figure 3 shows the number of high-school graduates from 2007-08 to 2024-25 (simplified as 2008 to 2025 in Figure 3) in the sending regions of two groups of State System Schools – four schools in central or rural Pennsylvania which received letters in the spring notifying faculty of potential layoffs after 2017-18[5] and which also have similar demographic trends; and nine other State System schools excluding Cheney.[6] (Appendix Table 1 provides more detailed data on individual campuses.) We excluded Cheney because its demographics are different than the other four threatened schools while its enrollment trends are different than the other nine schools.

Figure 3

The Falling Number of High-School Graduates in Areas Served by Two Groups of State System Universities



Note: : For individual universities, the number of high-school graduates relative to 2009 is estimated as a weighted average of the change in the number of high school graduates in Pennsylvania counties and in the United States, with the weights based on the share of students from the university that came from each county and from the rest of the United States in each year. The share of students from outside the United States is weighted at 100 in each year. To go from estimates of the number of high-school graduates relative to 2009 in individual universities to aggregates for the groups of four and nine universities the weight for each university is set equal to that university's share of total enrollment in the group in that year. For future years, the universities for each group are based on the last year of actual enrollment

Note: Data on the number of high-school graduates by county in each year include graduates from cyber charter schools who may not live in the county of the cyber charter school. In the overall estimates, the inclusion or exclusion of cyber charter graduates does not make a significant difference.

Source: Keystone Research Center based on Pennsylvania Department of Education data on the number of high-school graduates each year and on State System of Higher Education data on where students attending each university come from each year.

Figure 3 tells three main stories:

- Both groups of State System campuses faced declines in the number of high-school graduates in their sending areas from 2009 to 2015.
- The fall was larger in the sending areas of the four threatened campuses.

- For both groups, the decline in the number of high-school graduates in sending areas over the next decade is smaller than since 2009 (e.g., a drop of four percentage points in nine years for the group of four schools versus 11 percentage points in seven years).

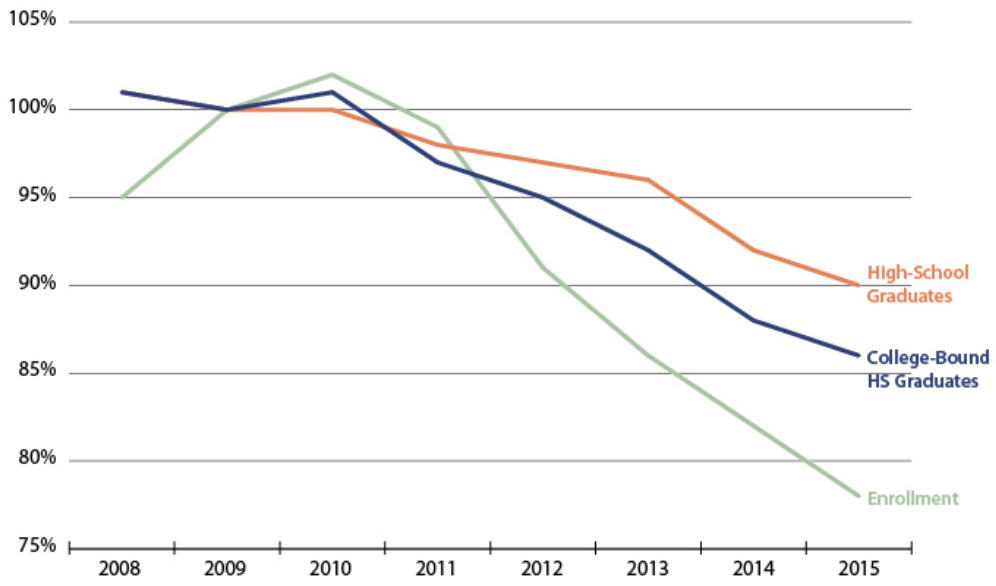
For the four threatened schools as a group, and then for the nine other schools, Figures 4 and 5 compare trends from 2007-08 to 2015-16 in the number of high-school graduates (in sending areas) with two other data series – the number of "college-bound HS grads" and enrollment.[7]

In comparing trends in college-bound high-school graduates versus total high-school graduates, keep in mind that college attendance is "counter-cyclical," meaning that it tends to fall off in economic recoveries, such as the one we have been in since 2009. Dellas and Sakellaris estimate that the roughly three percent fall in unemployment in Pennsylvania between 2009 and 2015 would lead to a 1.8% fall in enrollment.[8] (A counter-cyclical drop of this size will prove to be only a small part of the enrollment drop at the four threatened schools but a large part of the drop at the other nine schools.)

Figure 4 shows that, for the four rural threatened schools, the decline in the number of high school graduates from school districts in their sending regions equals about a third of the enrollment decline from 2009 to 2015. The figure also shows that there has been a larger decline in the number of college-bound students since 2009 than in the number of high-school graduates and that the fall in college-bound graduates more closely matches the decline in enrollment.

Figure 4.

Demographic Trends and Enrollment at Four Threatened Universities
Chart shows trends for an aggregate of California, Clarion, Edinboro, Mansfield.



Note: For high-school graduates, see the notes to Figure 3. For college-bound HS graduates, generated using a method analogous to that for high-school graduates.
Source: See the source note to Figure 3.

The fall in college-bound graduates in sending areas of these four schools is not solely a demographic (and counter-cyclical) phenomenon: it is likely driven also by the rising cost of State System campuses themselves. This is especially true in areas in which other higher education offerings are sparse.

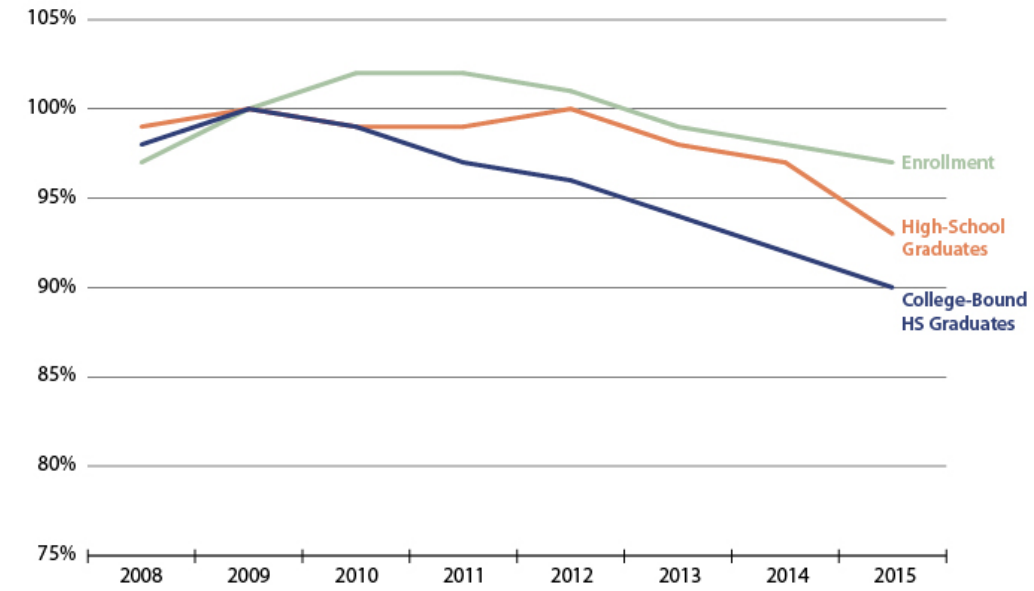
Mansfield, Clarion, and Edinboro Universities are all situated in a block of 24 contiguous counties in northern PA that do not have community colleges. Washington County, where California is located, only has access to a branch campus that offers out-of-district tuition. The few private colleges in rural northern and western Pennsylvania do not have the resources to give significant portions of the local population financial aid. Thus, the drop in the number of college-bound students in the sending regions of the four threatened schools may reflect the fact that the price of State System schools is rising beyond the reach of a growing share of area families.

The overall conclusion based on Figure 4 (and the cost analysis in our previous brief) is that demographic factors are part of the enrollment challenge faced by these schools, but cost is also a factor.

Figure 5 shows that the nine non-threatened State System schools have seen enrollment falling slower than the number of high-school graduates and college-bound students in their sending regions. Enrollment (in percent) has declined by about half as much as the number of high-school graduates and a third as much as the number of college-bound students. Across all 14 State System schools as a group enrollment trends mirror those in the number of high-school students and enrollment has fallen by less than the number of college-bound students.

Figure 5

Demographic Trends and Enrollment at Nine Other Universities
Chart shows trends for an aggregate of Bloomsburg, East Stroudsburg, Indiana, Kutztown, Lock Haven, Millersville, Shippensburg, West Chester, and Slippery Rock



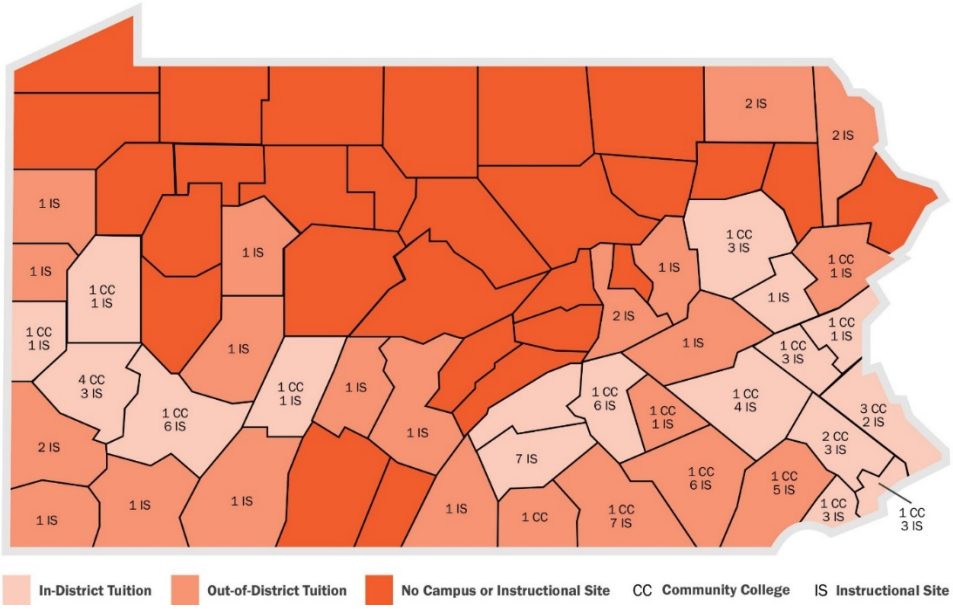
Note: For high-school graduates, see the notes to Figure 3. For college-bound HS graduates, generated using a method analogous to that for high-school graduates.
Source: See the source note to Figure 3.

Many Parts of Northern Pennsylvania Are Already a Higher Education Desert

Two additional pieces of context to keep in mind when considering the future of the State System are the availability of other affordable post-secondary options and educational attainment. Figure 6 shows community college access in Pennsylvania:

- 28 counties have no community college instructional site;
- 22 counties have one or more "instructional sites" at which residents of the county must pay "non-resident" (i.e., double) tuition;
- In only 17 counties do students have access to a campus at which they can pay "sponsoring county" tuition.

Figure 6.
Community Colleges and Instructional Sites in Pennsylvania



Source. Ginger Stull et al., "College Affordability in PA: How Did We Get Here, and What Can Be Done?" Research for Action, November 2016, Figure 11, p. 16; this source cites PA Commission for Community Colleges February 2016. We have a request out to the PA Commission for updated information.

Reflecting this lack of access, the Legislative Budget and Finance Committee found that a dozen counties had less than 10 full-time students enrolled at any Pennsylvania community college in the fall of 2010.[9] To give the population of some rural counties more access to community college, the legislature, led by Representative Scarnati provided in Act 78, the 2014 Fiscal Code bill, for the establishment of a rural community college spanning multiple counties.[10]

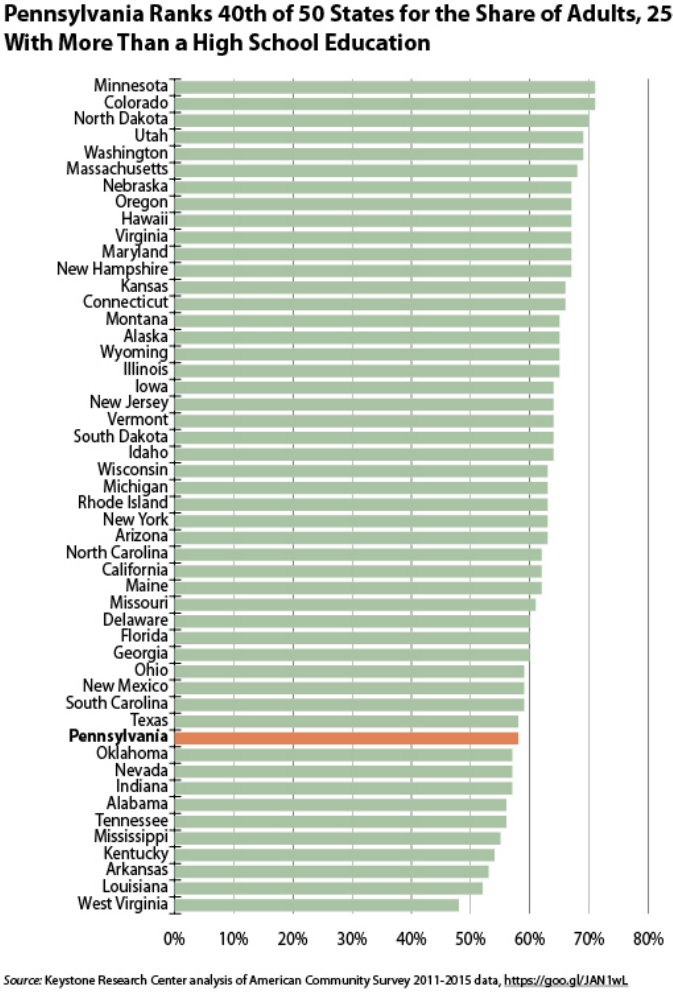
Figure 1 (p. 9) of the NCHEM report to the State System (cited in footnote 3) shows all degree-granting post-secondary institutions in Pennsylvania. The map shows that Mansfield has no other post-secondary institution nearby; Clarion has one other and Edinboro several others, but the counties of both these Clarion and Erie, and of Mansfield (Tioga County), have no access to community college. There are also

no other higher education institutions shown in Washington County, where California University is located, although there are many offerings in neighboring Allegheny County.

The dearth of accessible education in Pennsylvania has led Hillman and Weichman (2016) to label 15 counties in central, northern, and western PA as "education deserts", areas where "college opportunities are literally few and far between.[11] Three of these counties, Venango, Warren, and Bradford, are adjacent to counties with a threatened State System University. Further restricting the accessibility or offerings at State System Universities would further constrict the higher education opportunities available to many rural Pennsylvanians.

The dearth of affordable, accessible higher education options helps explain the educational attainment profile of Pennsylvania. Pennsylvania has a high share of adults 25-64 who have a high-school degree but NO postsecondary education at all. As a result, even though the state ranks in the middle for the share of adults with at least a high-school degree, the state ranks 40th for the share with more than a high-school education (Figure 7).

Figure 7.

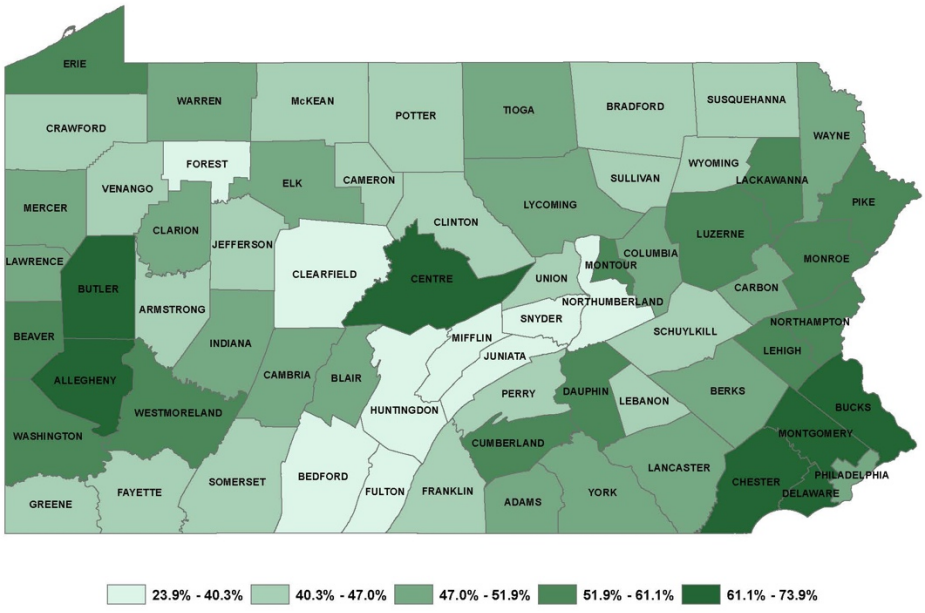


Furthermore, there is significant variation in educational attainment within Pennsylvania. While this share exceeds two thirds (67%) in four counties (Allegheny, Bucks, Chester, and Montgomery), In over half of Pennsylvania counties (35), this share is lower than any of the 50 states (i.e., lower than West Virginia's 48.1%) (Figure 8).

Figure 8.

Percent of the Population Age 25-64

With More Than a High School Education by Pennsylvania County, 2011-15



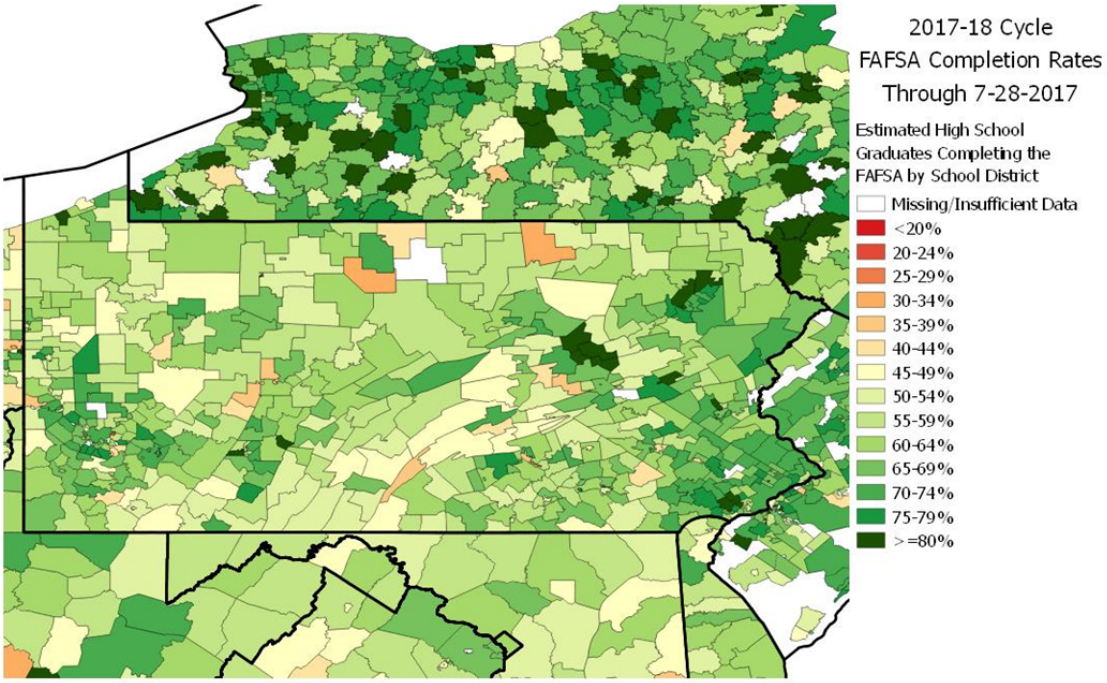
Source: Keystone Research Center analysis of American Community Survey 2011-2015 data, https://goo.gl/qgw2RD

While some of the explanation for low educational attainment may be cultural and historical – reflecting the fact that men (especially) could historically support a family by working manufacturing jobs that did not require more than a high school education – lack of access also seems a likely contributing factor.

Looking forward, under the status quo, low educational attainment is likely to persist because low shares of Pennsylvania high-school students consider going to college (as measured by the share of high-school graduates who fill out forms required to receive federal financial aid) (Figure 9). The contrast between Pennsylvania's northern tier and the similarly rural southern tier of New York is striking: New York counties typically having a 5 to 25 percentage points higher share of students filling out financial aid forms.

Figure 9.

Public School District 2017-18 Cycle FAFSA Completion Rates for Pennsylvania



Source. https://studentaid.ed.gov/sa/about/data-center/student/application-volume/fafsa-completion-high-school; select Pennsylvania on the drop-down menu and then download

Since a small share of Pennsylvania students apply for federal financial assistance to attend college, Pennsylvania draws down fewer Pell grants compared to other states. Table 2 shows that if Pennsylvania drew down a comparable share of the Pell grant funds that all states and the District of Columbia draw down as a share of the population 19-34, it would access another $201.6 million. Our public institutions of higher education are the reason we draw down less than our share: Pennsylvania receives $273.2 million less in Pell grants to public institutions that it would if it received an amount based on our share of the U.S. 19-34 population.

Table 2. Pennsylvania Drawdown of Pell Grant Funds Compared to State Share of Population 19-34 (expenditures in millions of dollars)

	PUBLIC		PRIVATE		PROPRIETARY		TOTAL	
	Total Recip-ients	Total Expend-itures	Total Recip-ients	Total Expend-itures	Total Recip-ients	Total Expend-itures	Total Recip-ients	Total Expend-itures
PA Pell Grant Recipients and Expenditures	139,073	$493.9	71,174	$285.5	48,663	$169.8	258,910	$949.2
PA Share of Pell Grant Funding 2014-15	2.5%	2.4%	5.9%	6.0%	3.2%	3.1%	3.1%	3.1%
Increase if PA Received Same as Its Share of U.S. 19-34 Population 2015	71,040	$273.2	-$25,877	-$106.9	8,414	$35.4	53,577	$201.6

Source. Keystone Research Center based on Kaiser Family Foundation population estimates (using the Census Bureau's March 2016 Current Population Survey) and U.S. Department of Education data from Table 21 after downloading "Zip Archive" from https://www2.ed.gov/finaid/prof/resources/data/pell-2014-15/pell-eoy-2014-15.html

Stop Accommodating – and Accelerating – the Decline of Rural and Northern Pennsylvania

The research literature shows that higher levels of education are associated with higher economic output and higher wages – each one-year increase in average education is associated with a 17-18% increase in GDP per capita and wages.[12] Higher educational attainment also powerfully influences wages and economic opportunity for individuals, with college-educated workers typically having lower unemployment rates than groups with lower levels of education. Recent data document that rural areas with higher education levels (more than 30% of adults having a bachelor's degree) grew rapidly in 2016, while all U.S. rural areas saw their population shrink for the sixth year in a row in 2016 by 0.4%.[13] *The Wall Street Journal* recently rang a loud alarm, labelling rural areas in America the new "inner city."

Pennsylvania's rural areas have not historically been highly distressed (based on such indicators as per capita income, unemployment, and poverty rates): the 1980s were difficult for rural as well as western Pennsylvania, but the region rebounded somewhat in the second part of the 1990s and the first part of the 2000s.[14] Moreover, a 2013 study documented the robust upward mobility in Pennsylvania's rural areas, with students from low-income families who graduated from high school in the late 1990s faring well economically by 2010-11.[15] The concern, however, is that some of this performance reflects economic assets that continue to dwindle – such as non-college wages lifted by a large manufacturing sector and strong unions, and public schools once funded more adequately by the state.

In this context, the gradual defunding of Pennsylvania public higher education plays with fire. If it continues – maintaining much of rural Pennsylvania as a higher education desert – the region's economic future could be fatally compromised.

Pennsylvania and its lawmakers need to make a choice. Will they address Pennsylvania's higher education investment deficit before it's too late? Lawmakers who represent rural regions should be leading the charge to reinvest in Pennsylvania higher education. Our next brief will explore options for such reinvestment.

TECHNICAL APPENDIX – DEMOGRAPHICS AND ENROLLMENT FOR PENNSYLVANIA STATE SYSTEM OF HIGHER EDUCATION SCHOOLS, 2008-2025

Table A1.

Demographics and Enrollment, Indexed to 2009=1

University	Group	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Bloomsburg	Graduates	1.01	1.00	0.98	0.97	0.98	0.93	0.91	0.90	0.90	0.87	0.88	0.87	0.87	0.89	0.89	0.87	0.88	0.88
	College-Bound	0.97	1.00	0.91	0.88	0.86	0.86	0.83	0.83	0.84									
	Enrollment	0.93	1.00	1.06	1.07	1.05	1.06	1.05	1.02										
California	Graduates	1.00	1.00	1.00	0.98	1.00	0.98	0.97	0.93	0.93	0.91	0.91	0.90	0.88	0.88	0.87	0.86	0.87	0.88
	College-Bound	0.97	1.00	1.01	0.99	0.98	0.94	0.92	0.89	0.90									
	Enrollment	0.94	1.00	1.04	1.05	0.95	0.91	0.88	0.87										
Cheyney	Graduates	0.99	1.00	1.03	1.07	1.11	1.10	1.09	1.07	1.06	1.08	1.07	1.06	1.06	1.07	1.09	1.09	1.11	1.14
	College-Bound	0.97	1.00	1.05	1.08	1.06	1.05	1.01	1.00	0.97									
	Enrollment	1.00	1.00	1.07	0.81	0.86	0.81	0.69	0.48										
Clarion	Graduates	1.02	1.00	0.99	1.00	0.95	0.97	0.93	0.91	0.92	0.94	0.90	0.89	0.85	0.85	0.86	0.81	0.85	0.83
	College-Bound	1.01	1.00	0.97	0.97	0.89	0.92	0.86	0.87	0.81									
	Enrollment	0.97	1.00	1.00	0.95	0.89	0.83	0.78	0.73										
East Stroudsburg	Graduates	1.03	1.00	0.99	0.98	0.98	0.95	0.93	0.87	0.92	0.90	0.89	0.89	0.85	0.88	0.88	0.87	0.86	0.88
	College-Bound	1.01	1.00	0.91	0.93	0.91	0.89	0.85	0.81	0.86									
	Enrollment	0.95	1.00	0.98	0.97	0.92	0.89	0.90	0.90										
Edinboro	Graduates	1.01	1.00	1.00	0.99	0.97	0.95	0.87	0.89	0.86	0.87	0.88	0.85	0.83	0.81	0.80	0.77	0.81	0.83
	College-Bound	1.06	1.00	1.07	0.99	1.00	0.94	0.87	0.86	0.80									
	Enrollment	0.93	1.00	1.04	1.00	0.90	0.86	0.83	0.79										
Indiana	Graduates	1.00	1.00	0.98	0.96	0.93	0.91	0.91	0.85	0.86	0.87	0.85	0.82	0.82	0.81	0.81	0.79	0.79	0.80
	College-Bound	0.98	1.00	0.99	0.96	0.92	0.85	0.87	0.82	0.80									
	Enrollment	0.98	1.00	1.03	1.05	1.07	1.02	0.99	0.95										
Kutztown	Graduates	0.98	1.00	1.01	1.02	1.05	1.03	1.03	1.00	1.01	1.01	1.02	1.02	1.00	1.00	1.02	1.01	1.03	1.04
	College-Bound	0.97	1.00	1.01	1.00	1.01	1.00	0.96	0.98	0.98									
	Enrollment	0.98	1.00	1.01	0.97	0.92	0.89	0.87	0.85										
Lock Haven	Graduates	1.03	1.00	1.01	0.98	0.96	0.92	0.93	0.86	0.85	0.87	0.89	0.86	0.82	0.84	0.87	0.85	0.84	0.85
	College-Bound	1.02	1.00	0.99	0.91	0.90	0.87	0.86	0.80	0.77									
	Enrollment	0.99	1.00	1.02	1.01	1.00	0.99	0.92	0.86										
Mansfield	Graduates	1.02	1.00	1.02	0.95	0.93	0.89	0.90	0.84	0.81	0.84	0.85	0.84	0.81	0.82	0.82	0.81	0.81	0.84
	College-Bound	0.97	1.00	0.96	0.89	0.85	0.82	0.81	0.74	0.69									
	Enrollment	0.96	1.00	0.96	0.92	0.88	0.83	0.77	0.66										
Millersville	Graduates	0.97	1.00	1.01	1.02	1.06	1.04	1.05	1.02	1.04	1.05	1.06	1.05	1.04	1.04	1.07	1.06	1.07	1.08

	College-Bound	0.96	1.00	1.01	1.02	1.05	1.03	0.97	0.99	0.99									
	Enrollment	0.99	1.00	1.04	1.04	0.99	0.98	0.95	0.94										
Slippery Rock	Graduates	1.01	1.00	1.00	0.98	0.99	0.98	0.96	0.92	0.92	0.92	0.91	0.89	0.87	0.87	0.88	0.85	0.87	0.87
	College-Bound	0.97	1.00	1.00	0.98	0.96	0.94	0.91	0.88	0.88									
	Enrollment	0.96	1.00	1.01	0.99	0.94	0.91	0.89	0.85										
Shippensburg	Graduates	0.99	1.00	1.00	0.96	0.97	0.95	0.95	0.92	0.95	0.98	0.96	0.94	0.92	0.92	0.92	0.95	0.96	0.99
	College-Bound	0.99	1.00	1.03	0.98	0.97	0.95	0.98	0.91	0.94									
	Enrollment	0.98	1.00	1.02	1.01	0.99	0.97	0.98	1.00										
West Chester	Graduates	0.97	1.00	0.99	1.01	1.05	1.03	1.02	1.00	1.00	1.02	1.02	1.01	0.99	1.00	1.02	1.00	1.03	1.03
	College-Bound	0.97	1.00	1.00	1.00	1.03	1.03	0.97	1.00	0.98									
	Enrollment	0.96	1.00	1.02	1.06	1.08	1.11	1.13	1.17										
State System	Graduates	1.00	1.00	1.00	0.99	0.99	0.97	0.96	0.93	0.93	0.94	0.94	0.92	0.90	0.91	0.92	0.90	0.91	0.92
	College-Bound	0.99	1.00	0.99	0.97	0.96	0.94	0.91	0.89	0.89									
	Enrollment	0.96	1.00	1.02	1.01	0.98	0.96	0.94	0.92										
Threatened Five	Graduates	1.01	1.00	1.00	0.99	0.98	0.96	0.93	0.91	0.90	0.91	0.90	0.88	0.86	0.85	0.85	0.82	0.85	0.86
	College-Bound	1.01	1.00	1.01	0.98	0.95	0.93	0.88	0.86	0.83									
	Enrollment	0.95	1.00	1.02	0.98	0.91	0.86	0.82	0.77										
Threatened Four	Graduates	1.01	1.00	1.00	0.98	0.97	0.96	0.92	0.90	0.89	0.90	0.89	0.87	0.85	0.85	0.84	0.82	0.84	0.85
	College-Bound	1.01	1.00	1.01	0.97	0.95	0.92	0.88	0.86	0.82									
	Enrollment	0.95	1.00	1.02	0.99	0.91	0.86	0.82	0.78										
Non-Threatened	Graduates	0.99	1.00	0.99	0.99	1.00	0.98	0.97	0.93	0.94	0.95	0.95	0.93	0.91	0.92	0.94	0.92	0.93	0.94
	College-Bound	0.98	1.00	0.99	0.97	0.96	0.94	0.92	0.90	0.90									
	Enrollment	0.97	1.00	1.02	1.02	1.01	0.99	0.98	0.97										

Note: College-bound and graduate aggregates are weighted by the enrollment of each school in each year. For years schools failed to report college-bound graduates they were estimated. Enrollment levels reflect total enrollment (part-time and full-time, undergraduate and graduate, etc.). Graduate and college-bound graduate numbers are reported for spring of the given year, enrollment for the fall of the given year.

Sources: Pennsylvania Budget and Policy Center analysis of Pennsylvania Department of Education data, available online at www.education.pa.gov/data-and-statistics (Grauades and College-Bound graduates), and IPEDS data (enrollment).

[1] See Mark Price, "Pennsylvania's Great Working Class Colleges," April 2017, http://keystoneresearch.org/sites/default/files/KRC_PBPC_EnginesofMobility.pdf; and Diana Polson, Stephen Herzenberg, and Mark Price, "At Students' Expense: Rising Costs Threaten Public Universities' Role in Upward Mobility," June 2017, http://www.pennbpc.org/sites/default/files/20170608_RisingCostsPaper.pdf

[2] National Center for Higher Education Management Systems (NCHEMS), "Pennsylvania State System of Higher Education: Strategic System Review Findings & Recommendations," July 21, 2017, http://www.nchemsproject.com/system-review

[3] On the economic trauma of the 1980s for Western Pennsylvania, see Stephen Herzenberg, "The State of Working Pennsylvania 1996," Harrisburg, Keystone Research Center, September 1996.

[4] https://www.pop.org/u-s-birth-echo-boom-fades-away/

[5] California tenured and tenure track faculty have since been notified that the university does not plan to lay them off next year. See Bill Shackner, "Cal U says it doesn't plan to lay off tenured faculty this year," *Pittsburgh Post-Gazette*, July 21, 2017, http://www.post-gazette.com/news/education/2017/07/21/California-University-of-Pennsylvania-programs-discontinued-Cal-U-State-System-of-Higher-Education-higher-education-college/stories/201707210137

[6] Estimating the impact of demographic shifts on enrollment requires, first, defining a "sending region" for each university and then demographic trends in this region. We defined the sending region of each university using data on actual attendance from 2014 to 2016. To generate the university demographic trends, we weighted each county's demographic trends (i.e., number of high-school graduates or college-bound high-school graduates relative to 2009) by the county's share of university attendees from 2014 to 2016. We similarly weighted demographic trends for the United States by the "rest of U.S." share of school attendance in 2014 to 2016. We gave international students an index of 100 in all years and weighted that group by the international student share of school attendance from 2014 to 2016. As expected, this approach heavily weights nearby counties which account for most attendance at state system campuses. To create an index of demographic trends across our groups of four and nine universities, we weighted each university's demographics trends by its share of total enrollment at all schools in the group in each year.

[7] Since we do not have projections for the number of "college bound HS grads" or for enrollment, we cannot project these two charts forward another decade.

[8] Harris Dellas and Plutarchos Sakellaris, "On the Cyclicality of Schooling: Theory and Evidence," *Oxford Economic Papers*, Vol. 55, No. 1 (January 2003), pp. 148-172.

[9] LBFC, *The Need for Public Community College*, Exhibit 4, pp. 35-38; see especially Exhibits 7 and 8.

[10] See Printer No. 393 of House Bill 78, Artic XVII-E.1 "Rural Regional College for Underserved Communities;" online at http://www.legis.state.pa.us/cfdocs/billInfo/billInfo.cfm?sYear=2013&sInd=0&body=H&type=B&bn=278. For a description of the rural community college concept based on earlier stand-alone legislation (Senate Bill 1000), see http://www.senatorscarnati.com/senate-passes-scarnatis-rural-regional-community-college-legislation/

[11] Hillman and Weichman define an "education desert" as an area with either 1. Zero colleges or universities located nearby or 2. One community college "is the only public broad access institution near-by." "Broad access" is defined as having an acceptance rate of greater than 75%. "Near-by" is defined as located within the same Commuting Zone (from the 1990 census), metropolitan, or metropolitan statistical area.

[12] For details and references in support of this and the following sentence, see Stephen Herzenberg, Mark Price, and Michael Wood "A Must Have for Education Part II: Investment in Higher Education for Growth and Opportunity," October 2014; https://www.keystoneresearch.org/sites/default/files/KRC_PBPC%20Higher%20Ed_0.pdf

[13] Jed Kolko, "Americans' Shift to The Suburbs Sped Up Last Year," March 23, 2017, https://fivethirtyeight.com/features/americans-shift-to-the-suburbs-sped-up-last-year/

[14] Stephen Herzenberg and Mark Price, "The State of Rural Pennsylvania," revised May 2008; https://www.keystoneresearch.org/sites/default/files/srpa508_1.pdf

[15] Stephen Herzenberg, "PA Regions Rank High in Study of Upward Mobility," July 24, 2013; http://keystoneresearch.org/sites/default/files/KRC-Policy-Brief-Upward-Mobility-7-24-2013.pdf