Are Four-year Institutions Attracting Students Who Would Normally Attend Two-year Colleges?

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Introduction

In an earlier book I noted sharp declines in two-year college enrollments in Southwestern states as enrollments in four-year institutions increased or held steady.[1] As more reports of enrollment declines at community colleges have come in, especially following the end of the worst of the pandemic, I am now examining longer-term trends, this time in national degree-seeking enrollments by sector.

Financial balance is a challenge for most organizations, and colleges and universities all face this challenge. Keeping prices at or below inflation while increasing salaries at rates above inflation and adding services while raising quality is impossible in the long run. Soon reserves are depleted, and payrolls become hard to meet.

One way out of this financial trap is to grow, that is, to continuously increase sales, or, in the case of higher education, enrollments. This ploy works because short-term enrollment growth can be accommodated with lower-cost, marginal expense increases—that is, adding a few adjunct faculty. Full-time faculty may be added later, as long as enrollments keep growing and each short-term deficit is handled with low cost "filler" appointments.

Smaller institutions may maintain financial balance while in an enrollment steady-state by higher than inflation tuition price increases and below-inflation salary improvements, letting more senior (and more highly paid) faculty leave for greener pastures, replacing them with less expensive junior faculty on a regular basis. One-time bonuses are another clever way of keeping better faculty happy (for one more year).

Growth has become an addiction for many institutions. My beginning hypothesis in this research was that four-year institutions, in a quest for necessary growth in a time of slowing increases in the size of high school graduating classes, have pulled first-time enrollments from community colleges.

Analysis: Looking for Signs of Competition

Let's begin by examining the number of students graduating from high schools from 1992 through 2022 (fall 2022 being the most recent year of complete NCES, National Center for Education Statistics, data) and the numbers of these students entering either four-year public and private colleges and universities (herein after called four-year institutions) or two-year public colleges (also called community colleges). (The data for all the following analyses are given in the Appendix.)

Figure 1 shows that high school graduating classes remained nearly level for the four years from 1992 to 1995. After 1995 until 2009, the number of high school graduates increased rapidly. After 2009, however, there were three years without growth. Then growth resumed in 2012, moving up somewhat more slowly until the start of the pandemic in 2019 when there was a slight dip, followed by what is probably a long decline, according to Nathan D. Grawe who found that, depending on the

[1] Nathan Dickmeyer, *The Death & Life of Great American Community Colleges,* Chelmsford Press, 2022.

region and the mix of students sought, institutions will see freshmen classes drop by between eight and fifteen percent over the next eighteen years.[2]

First-time enrollments at four-year institutions closely followed the changes in high school graduation, except increases appeared to be at a lower rate, while no-growth periods appeared to go on longer.

At first glance, first-time enrollments at two-year colleges don't follow any rules, being nearly level from 1992 through 2007, except for a dip in 1997 and 1998. Then, a two-year jump begins in 2008 as word of problems in the economy spread. A recession was only formally declared in December 2008, however. After 2009, first-time enrollments fell with a good tumble during the pandemic, until 2022, ending at a point that appears to be the natural tail of the late decline.

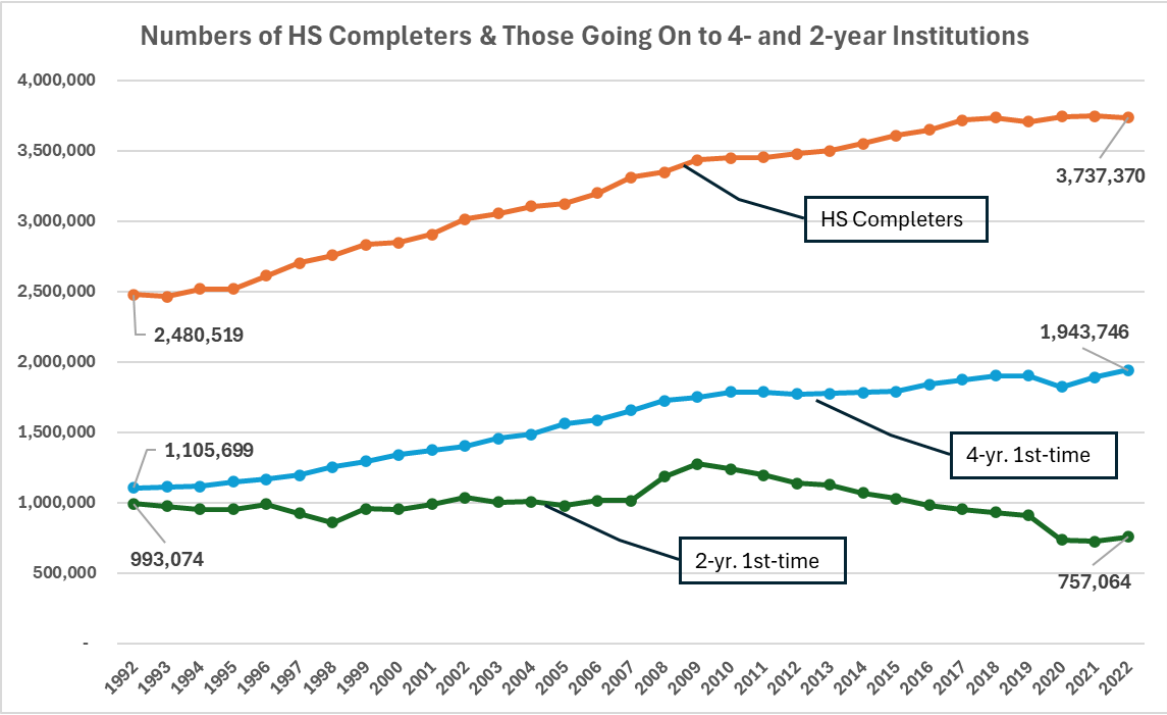

Figure 1[3]

Figure 1 demonstrates that four-year institutions did reasonably well from 1992 to 2022, gaining 838,047 more new, first-time students over the 1992 number, an increase of 76%. Two-year colleges saw first-time enrollments fall 236,010, a drop of 24%.

If we alter Figure 1 to see the percentage of high school graduates who became first-time higher education degree students, we get Figure 2 and can see how the overall percentage of high school graduates who attended college for the first time followed the curves of the two-year participation rate. Note that there was a short period in the early 2000s when the percentage of high school

[2] Nathan D. Grawe, *The Agile College: How Institutions Successfully Navigate Demographic Changes,* Johns Hopkins University, 2021.
[3] *NCES Digest of Education Statistics, 2023*, Table 302.10.

graduates who attended two-year colleges for the first-time fell, while the percentage of high school graduates who attended four-year institutions climbed.

Ater 2010, the percentage of high school graduates who attended four-year institutions for the first time remained level for almost a decade, while the percentage of high school graduates who attended two-year colleges fell.

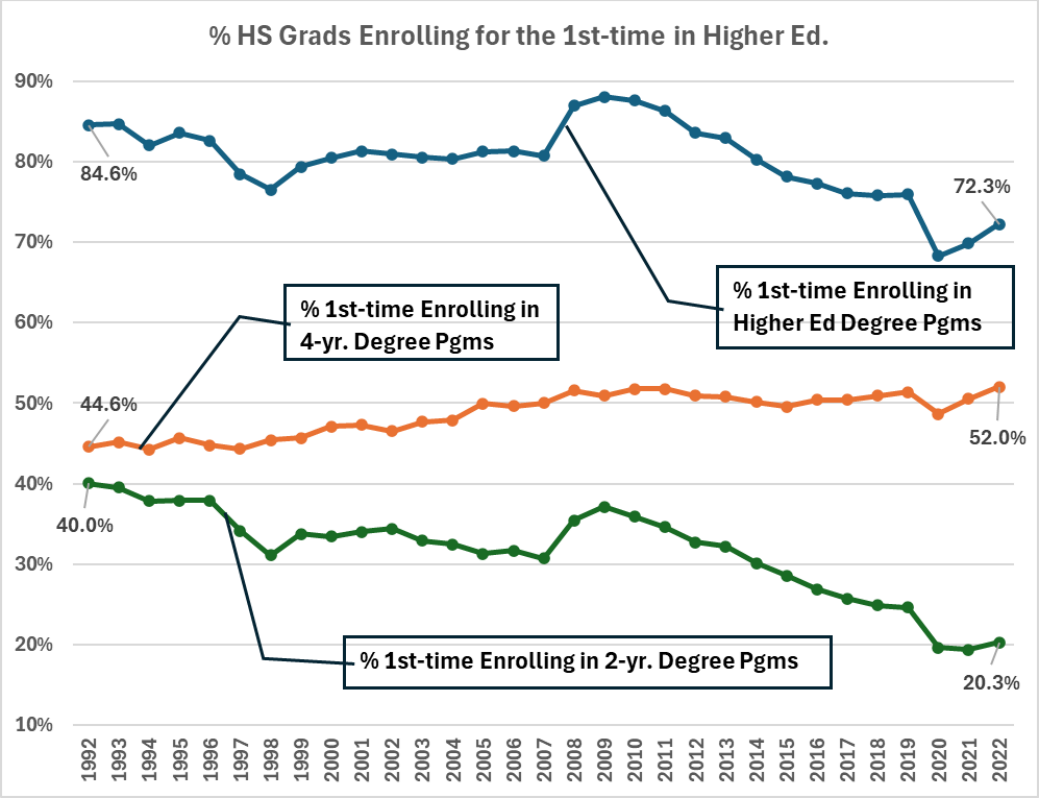

Figure 2[4]

In 1992 two-year colleges were nearly matched with four-year institutions in their ability to attract high school graduates, garnering 40.0% of the graduating class, while four-year institutions pulled in 44.6% of the graduating class. By 2022, four-year institutions were pulling in 52.0% of the graduating class, while two-year colleges could only obtain 20.3% of the class.

[4] *NCES Digest of Education Statistics, 2023*, Table 302.10.

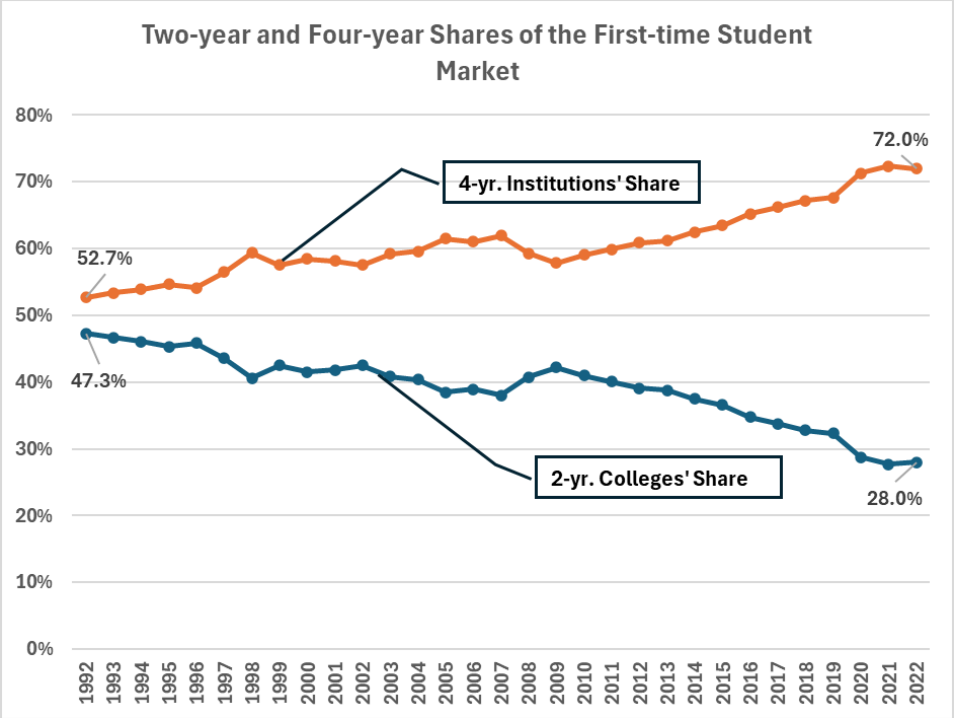

Figure 3[5]

As a result, the two-year college share of the market dropped from 47.3% to 28.0%, while that of four-year institutions climbed from 52.7% to 72.0% as shown in Figure 3.

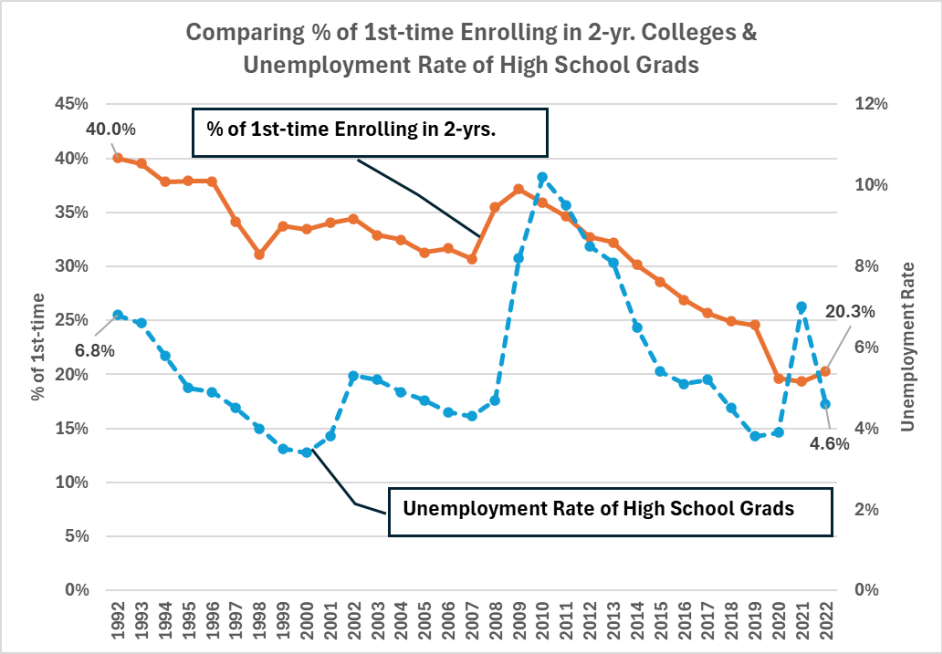

Figure 4[6]

[5] *NCES Digest of Education Statistics, 2023*, Table 302.10.

[6] NCES Digest 2023, Table 302.10 and BLS, Labor Force Statistics from the Current Population Survey: Series ID: LNS14027660.

But what about the impact of unemployment? Figure 4 compares the unemployment rate for high school graduates with no further education and first-time community college enrollment. The data makes sense. A high unemployment rate for high school graduates tells young people that at least a community college education is necessary to get a job. The higher the rate, the higher the percentage of high school graduates going on to community college. (Note, all employment data are taken from January of each year. Also, BLS (Bureau of Labor Statistics) unemployment data are for people twenty-five years old and older.)

Figure 4 tells us that before we can accuse four-year institutions of taking enrollments from two-year colleges, we must account for the impact of the changing unemployment rate of high school graduates.

An attempt to do the same for four-year institutions was less successful. In Figure 5 the rate of unemployment for bachelor's degree holders should push against the percentage of first-time students entering those institutions. Poor job prospects should hold down first-time enrollments. The opposite appears to be the case. Nevertheless, no significance could be discovered in various regressions using these variables with four-year institutions.

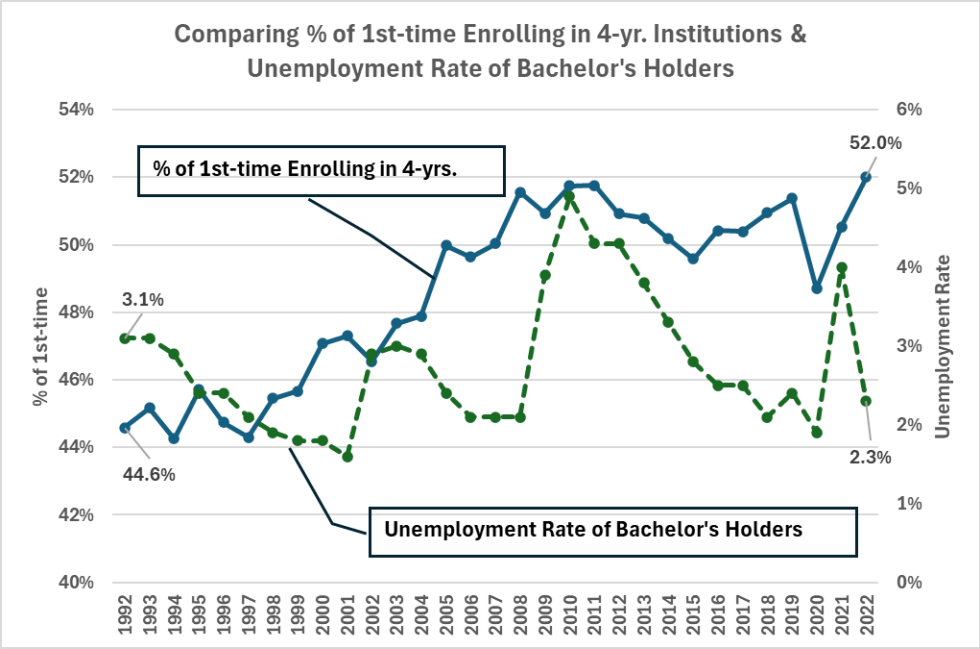

Figure 5[7]

I performed a series of regressions, attempting to fit predictions, using the high school graduate unemployment rate. Very poor fits resulted when I used the full series of data from 1992 to 2022. The recession that began in December 2008 seemed to change the relationship between two-year first-time enrollments and the high school graduate unemployment rate. The approach that worked best at fitting lines happened when I split the regression into two parts: the years before 2008 and the years after 2009.

[7] NCES Digest 2023, Table 302.10 and BLS, Labor Force Statistics from the Current Population Survey: Series ID: LNS14027660.

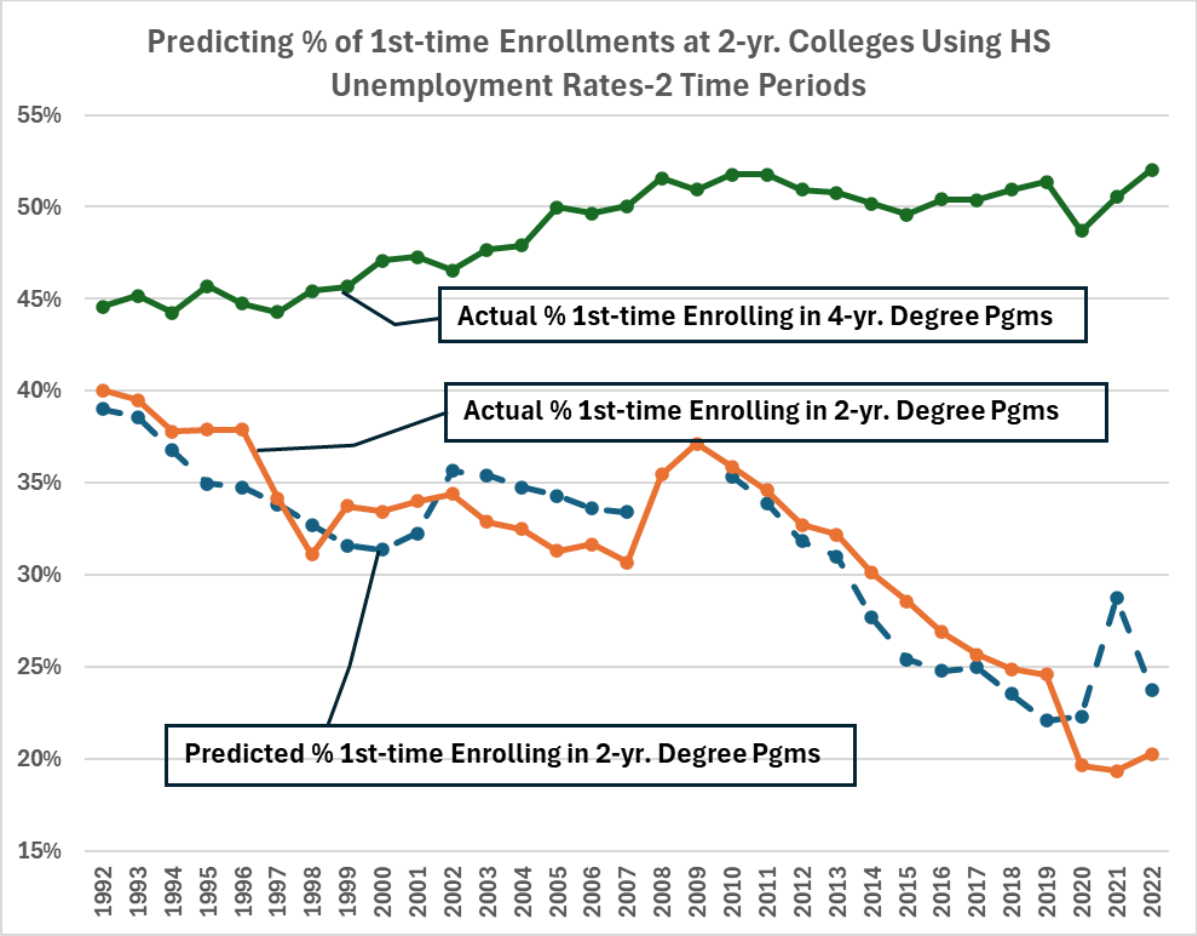

Figure 6

The solid lines in Figure 6 show, again, the actual percentage of first-time students enrolling in either four-year or two-year colleges. The dotted lines, there are two, one covering 1992 to 2007 and the second covering 2010 to 2022, indicate the expected percentage of first-time students enrolling in two-year colleges, considering high school graduate unemployment rates.

The early series has an R-squared of 0.515, not a very encouraging fit: only 51.5% of the predicted line fits the actual line (all confidence levels = 95%). Nevertheless, the P-values are significant and below the 0.05 cutoff as shown in Table 1.

	Coefficients	*P-value*
Intercept	0.237	9.28E-07
Unemployment Rate of HS Completers	2.251	0.00175

Table 1

The later regression line has a slightly better fit with an R-squared of 0.631 and healthy P-values as shown in Table 2

	Coefficients	*P-value*
Intercept	0.142	0.00094
Unemployment Rate of HS Completers	2.071	0.00118

Table 2

If the regressions are to be believed (that is, if correlation really were causation), the impact of the high school graduate unemployment rate changed slightly after the 2008 recession. *For each percentage point* of unemployment of high school graduates, pre-2008, the proportion of high school graduates who go to community college increased by 2.251 percentage points, while after 2009 the proportion increased by 2.071 percentage points, slightly less.

The interpretation of the intercept is shaky, however. Before 2008 the percentage of high school graduates who went on to community college, not accounting for the high school graduate unemployment rate, is 23.7%, but after 2009, this drops to 14.2%. This might argue that the perception of who must attend community college changed after the 2008 recession. Nearly a ten percentage-point drop happened after 2009.

All attempts to perform regressions with four-year institution variables, including changes in four-year first-time enrollments, failed to satisfactorily predict first-time community college enrollments or shares of graduating high school classes. Instead of two regressions, dummy variables that changed from 0 to 1 at the 2008 mark were also weak predictors. At best these split regressions could only demonstrate that "something happened" in 2008 that may have caused high school students to look more favorably on four-year institutions and much less favorably on community colleges: A weak statement based on weak statistics.

Analysis: The Role of Unemployment and Employment of High School Graduates

Finally, what if enrollment in community colleges was driven by the unemployment rate of high school graduates with no further education *and* by the number of those with only a high school education who *are* employed. While I tried using variables related to four-year first-time enrollments, the high school graduate employment statistics worked better without any four-year-related variables. In fact, the best fit came when I did not use a dummy variable to shadow a magical "something happened" in 2008 and when I eliminated the intercept, my "a certain percentage always attends" variable.

Table 3 gives the result of this rather austere regression. The R-squared was 0.992. Both P-values are well below 0.05. For every percentage point of unemployment of those with only a high school diploma there will be 50,306 new students in community colleges. The employment coefficient indicates that for every 1,000 people with only a high school diploma who *are* employed there will be just over 20 new students in a community college.

The *news* about the unemployment of people with only a high school diploma drives students to begin at community colleges, but it's the *fact* of college costs and living expenses that requires most community college students to work while in school. No job prospect means no enrollment.

	Coefficients	*P-value*
Intercept	0	
Employment of HS Grads per 1,000	20.45	4.1E-14
Unemployment Rate of HS Grads per 100%	5,030,635	5.41E-06

Table 3

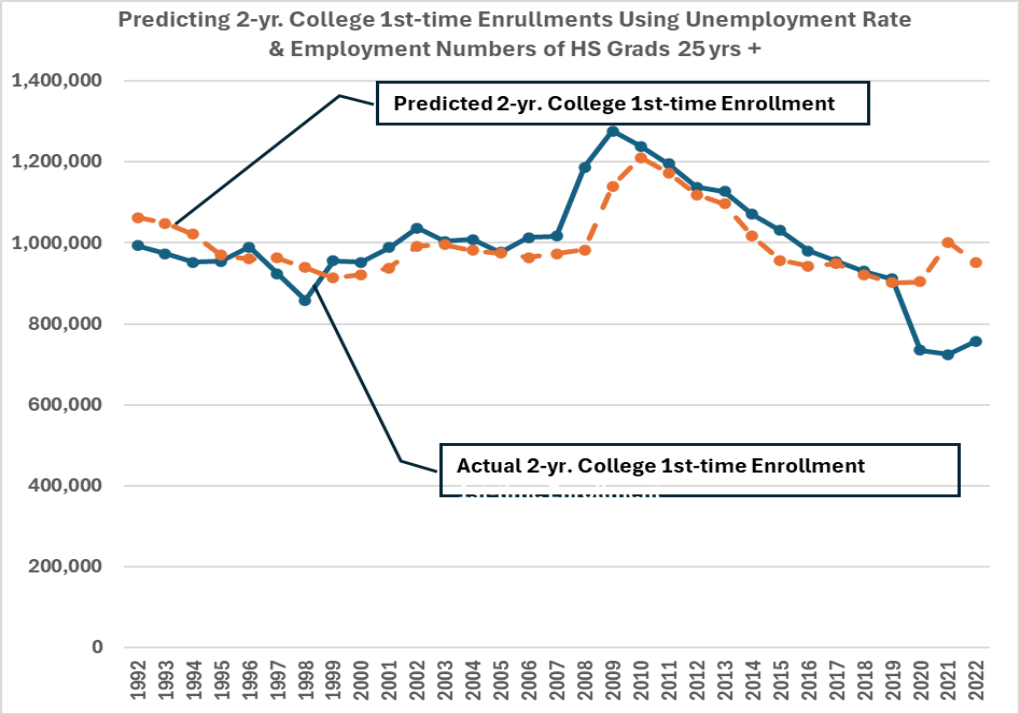

Figure 7

Figure 7 shows how well a regression using the unemployment rate and the employment number of those with only a high school diploma fits the actual data on first-time community college enrollments. The employment variables appear to lag after the 2008 recession. These employment data also do not explain what happened during the pandemic.

Figure 8 shows how the two variables come together to make a good match to the actual data on first-time community college enrollments. After 2010, when the unemployment rate began to fall, employment did not rise. This combination of factors caused the steep decline in first-time community college enrollment.

Let us return to Figure 2. What would be the number of first-time students who would have enrolled in each sector if the percentage of high school graduates had not changed from 1992 to 2022? If the participation percentages had not changed, 278,000 fewer new students would have enrolled in four-year institutions and 739,189 more new students would have enrolled in community colleges. There was much more to the loss of community college enrollment than competition with four-year institutions.

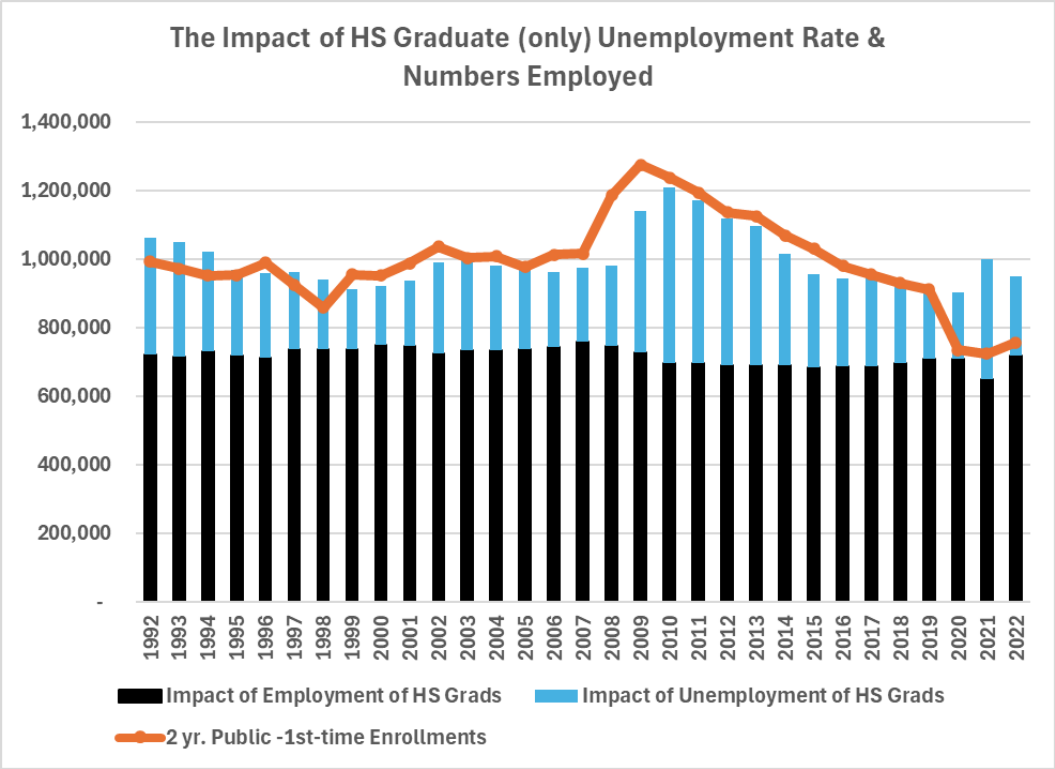

Figure 8

Conclusion

Historical factors seem to determine the choice high school graduates make among educational options: no college, community college, or four-year institutions. The wealth of a school district is a major factor in determining preparation. Family employment histories, whether determined by education or by discrimination or both, also determine the choice. Many high school graduates look at the unemployment data for those with only a high school degree and jump right into community college. Others wait until a job prospect promises enough money to allow enrollment.

The community college market thus depends on both high unemployment of those with only a high school education and high employment of those similarly educated. We should assume that the future will bring more unemployment for those with only a high school education and less employment for the same group. The former may be helpful to community colleges but is not likely to offset the decline in numbers of employed high school graduates. Serving only 20 out of 1,000 of those employed with only a high school education appears to be an opportunity.

The decline in new community college students does not seem to be caused by competition from four-year institutions. The decline perhaps comes from a poor fit between work and school for many people. Community colleges should decrease their emphasis on being a college and increase the priority of providing educational opportunities for working adults. Continuing education programs deserve greater prominence. Teaching schedules must allow greater flexibility for working adults.

Appendix: Data[8]

Year (Fall)	HS Grads	2 yr. Public -1st-time	4-yr. Pub&Pri-1st time	% Enrolling in Higher Ed	% First-time Enrolling in 2-yr.	% First-time Enrolling in 4-yr.	Unemployment Rate of HS Grads	Unemployment Rate of Bach Holders	No. of Employed HS Grads (1,000s)
1992	2,480,519	993,074	1,105,699	84.6%	40.0%	44.6%	6.8%	3.1%	35,237
1993	2,463,849	973,545	1,112,961	84.7%	39.5%	45.2%	6.6%	3.1%	35,047
1994	2,519,084	952,468	1,114,959	82.1%	37.8%	44.3%	5.8%	2.9%	35,708
1995	2,518,109	954,595	1,150,861	83.6%	37.9%	45.7%	5.0%	2.4%	35,134
1996	2,611,988	989,536	1,168,606	82.6%	37.9%	44.7%	4.9%	2.4%	34,897
1997	2,704,050	923,954	1,197,759	78.5%	34.2%	44.3%	4.5%	2.1%	36,002
1998	2,758,655	858,417	1,253,720	76.6%	31.1%	45.4%	4.0%	1.9%	36,107
1999	2,832,844	955,499	1,293,726	79.4%	33.7%	45.7%	3.5%	1.8%	36,039
2000	2,847,973	952,175	1,340,760	80.5%	33.4%	47.1%	3.4%	1.8%	36,716
2001	2,906,534	988,726	1,374,649	81.3%	34.0%	47.3%	3.8%	1.6%	36,519
2002	3,015,735	1,037,267	1,403,918	80.9%	34.4%	46.6%	5.3%	2.9%	35,482
2003	3,054,438	1,004,428	1,456,328	80.6%	32.9%	47.7%	5.2%	3.0%	35,907
2004	3,106,499	1,009,082	1,487,734	80.4%	32.5%	47.9%	4.9%	2.9%	35,945
2005	3,122,544	977,224	1,560,615	81.3%	31.3%	50.0%	4.7%	2.4%	36,087
2006	3,199,650	1,013,419	1,588,343	81.3%	31.7%	49.6%	4.4%	2.1%	36,293
2007	3,312,337	1,016,636	1,657,561	80.7%	30.7%	50.0%	4.3%	2.1%	37,047
2008	3,347,828	1,186,640	1,726,201	87.0%	35.4%	51.6%	4.7%	2.1%	36,490
2009	3,435,022	1,275,974	1,749,788	88.1%	37.1%	50.9%	8.2%	3.9%	35,561
2010	3,449,940	1,238,491	1,785,174	87.6%	35.9%	51.7%	10.2%	4.9%	34,115
2011	3,454,095	1,195,083	1,787,955	86.4%	34.6%	51.8%	9.5%	4.3%	33,989
2012	3,478,027	1,137,927	1,771,060	83.6%	32.7%	50.9%	8.5%	4.3%	33,789
2013	3,499,560	1,126,978	1,777,286	83.0%	32.2%	50.8%	8.1%	3.8%	33,707
2014	3,552,880	1,070,625	1,782,801	80.3%	30.1%	50.2%	6.5%	3.3%	33,734
2015	3,609,080	1,031,117	1,789,448	78.2%	28.6%	49.6%	5.4%	2.8%	33,520
2016	3,649,800	981,029	1,840,312	77.3%	26.9%	50.4%	5.1%	2.5%	33,571
2017	3,718,590	954,930	1,873,895	76.1%	25.7%	50.4%	5.2%	2.5%	33,573
2018	3,737,174	930,083	1,904,056	75.8%	24.9%	50.9%	4.5%	2.1%	34,027
2019	3,705,930	911,238	1,904,157	76.0%	24.6%	51.4%	3.8%	2.4%	34,735
2020	3,742,260	734,959	1,822,262	68.3%	19.6%	48.7%	3.9%	1.9%	34,608
2021	3,746,040	724,154	1,893,069	69.9%	19.3%	50.5%	7.0%	4.0%	31,755
2022	3,737,370	757,064	1,943,746	72.3%	20.3%	52.0%	4.6%	2.3%	35,165

Table 4

[8] NCES Digest 2023, Table 302.10 and BLS, Labor Force Statistics from the Current Population Survey: Series ID: LNS14027660.