



COLORADO COMMUNITY
COLLEGE SYSTEM

Colorado Community College System

THE RELATIONSHIP BETWEEN THE COLORADO ECONOMY AND CCCS ENROLLMENT

OCTOBER 26, 2009

In our current economic recession, President Obama and other political leaders have highlighted the nation's community colleges as a strong partner in efforts to reduce unemployment, providing affordable access for retraining and development of additional relevant job skills. Community college enrollments are reportedly up across the country. It is often noted that community colleges are adaptive to local labor market shifts, and with close connections to employers, can respond quickly to provide education and skills that area employers currently need. In addition, by their very definition, community colleges offer local, convenient, accessible, and low-cost education and training options to the communities which they serve.

In an era where higher education institutions are held accountable for both enrollment numbers and student outcomes, such as retention and graduation rates, many have questioned to what extent economic conditions, particularly unemployment rates, affect these measures. Several entities have sought to quantify the relationship between enrollment and economic measures, although none were found to specifically address the relationship with success measures at public two-year institutions.

As the state with the largest community college system, California looked at the unemployment rate versus enrollment relationship in a couple of different analyses, yielding different results. In response to a proposal to tie community college funding to various measures, including unemployment rate, analysts compared the state unemployment rate (minus 5 percentage points) with the change in community college FTE from the prior year, finding no relationship between the two (California Budget Project, 2007). Another California study released by the Community College League of California in response to proposed budget cuts, compared academic year headcount trends with the state unemployment rate, finding a direct relationship between growth in headcount and higher unemployment rates (Community College League of California, 2008).

The state of Oregon considered unemployment rate as a function of enrollment for enrollment projection analyses for their community colleges. Their analysis compared the calendar year unemployment rate with FTE, initially not finding any relationship. However, in taking the analysis further using a complex econometric model holding other factors constant such as tuition levels and state funding, they did find a relationship – with a 1 percentage point increase in unemployment yielding an FTE increase of just over 1% (Vergun, 2007). Research conducted using Florida Community College data, comparing enrollment change with unemployment rate change also indicated a positive relationship between the two (Bowers, 2007).

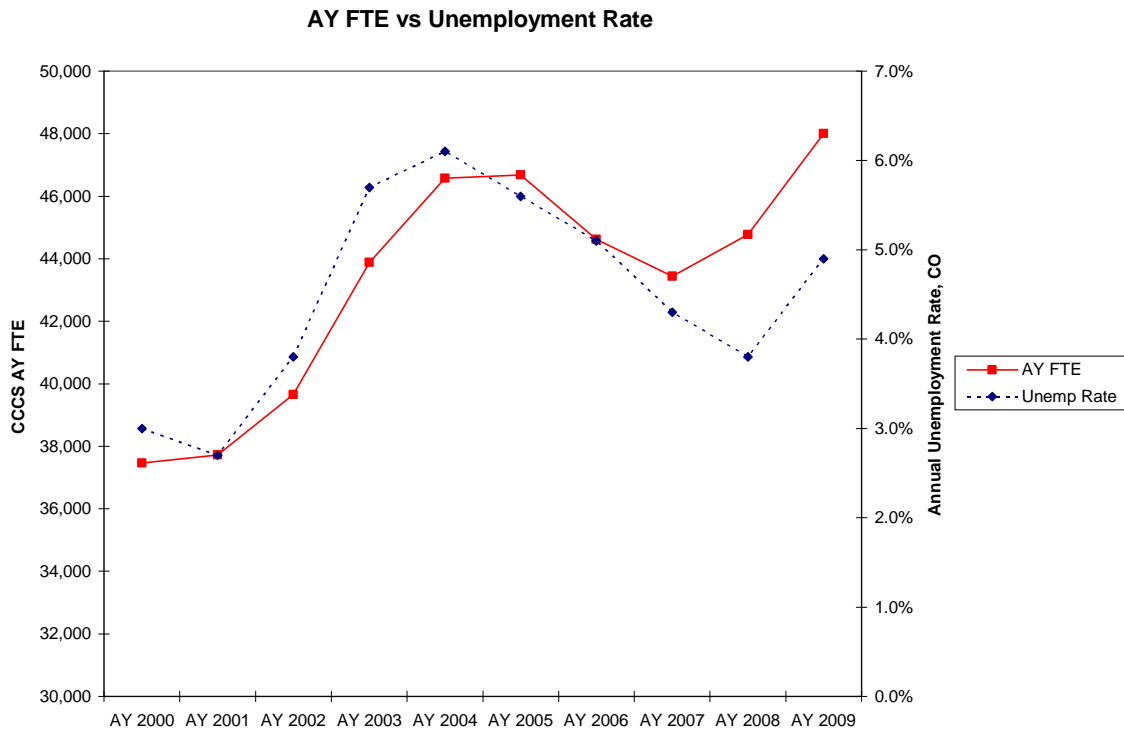
Finally, two research studies using a national dataset also found a direct relationship. The first study compared the unemployment rate with the community college attendance rate finding a positive relationship between the two, especially evident in adult students. The analysis also indicated there was not a significant delay between unemployment increase and attendance rate increase; but rather, occurred rather quickly (Betts and McFarland, 1995). Another national study used over 30 years of national community college

enrollment compared with the national unemployment rate and included other variables. Initially, the researchers compared community college enrollment figures with economic measures of the preceding year, effectively “lagging” the variable, finding a weak correlation between the two. However, when they recalculated without lagging the enrollment figures, they found a much stronger correlation, also indicating a rather immediate impact (Pennington, et. al, 2002).

Consistent with other states, Colorado Community College System colleges are also held accountable for enrollment and retention and graduation rates through performance contracts. It is important to try to determine the impact unemployment rate fluctuations have on our enrollment and success measures. To that end, several CCCS data measures were compared with Colorado unemployment figures from 2000 through 2008.

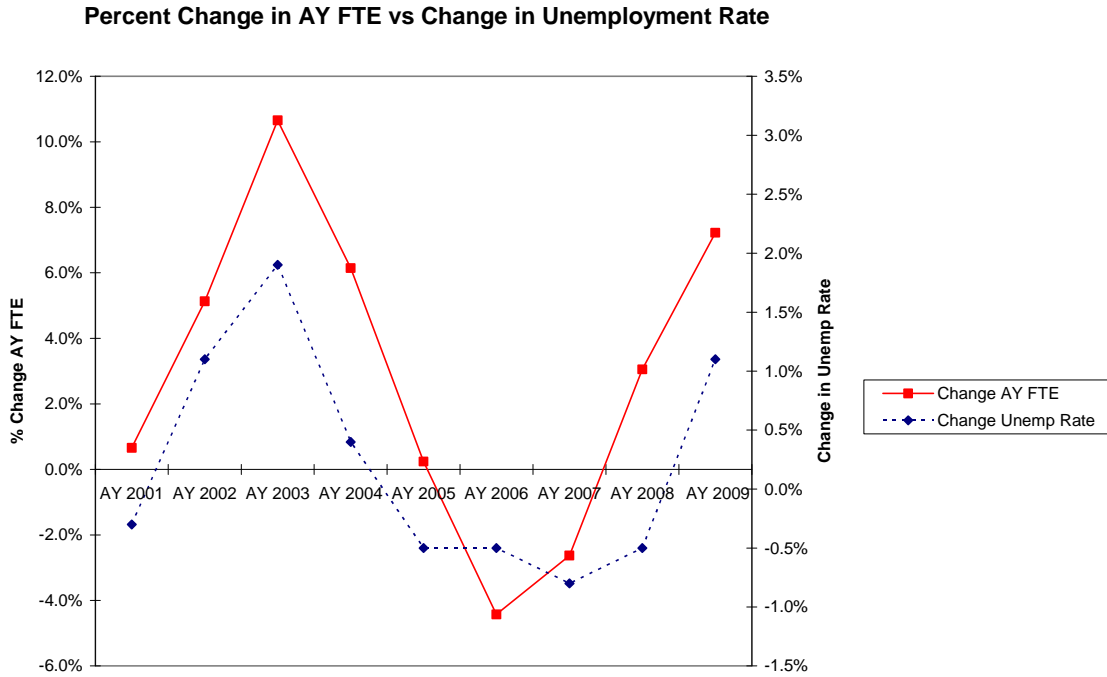
CCCS academic year FTE was compared with the average annual unemployment rate. As shown in Figure 1, the two measures coincide, with FTE tracking unemployment.

Figure 1. CCCS academic year FTE compared with Colorado average annual unemployment rate (not seasonally adjusted). Academic year FTE is compared with the calendar year unemployment rate in which the academic year begins, which is consistent with the comparison done for Oregon community colleges. For example, AY 2009 FTE is compared with 2008 unemployment data, as AY 2009 begins in June 2008.



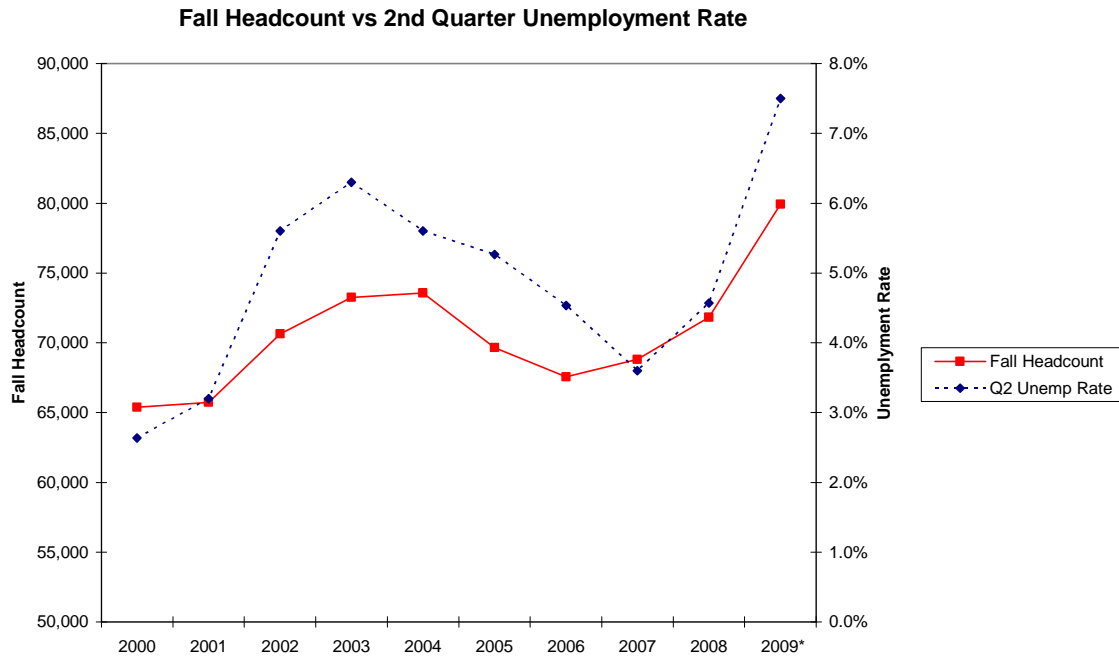
For added measure and consistent with the Florida community college analysis, the percentage change in AY FTE was also compared with the change in unemployment rate (Figure 2). These results are consistent with the comparison in Figure 1, with changes in unemployment rate yielding similar changes in FTE.

Figure 2. The year over year percentage change in CCCS academic year FTE compared with the year over year change in Colorado average annual unemployment rate (not seasonally adjusted). Academic year FTE is compared with the calendar year unemployment rate in which the academic year begins. For example, AY 2009 FTE is compared with 2008 unemployment data, as AY 2009 begins in June 2008.



To determine the impact of unemployment on headcount, Fall headcount was compared with the second quarter unemployment rate (calculated as the average rate for the three months of the quarter, not seasonally adjusted). Since other studies found the impact of unemployment was rather prompt, second quarter data were used as students begin registering for Fall term in April. As shown in Figure 3, Fall headcount also tracks closely with unemployment.

Figure 3. CCCS Fall headcount compared with the Colorado yearly second quarter unemployment rate.

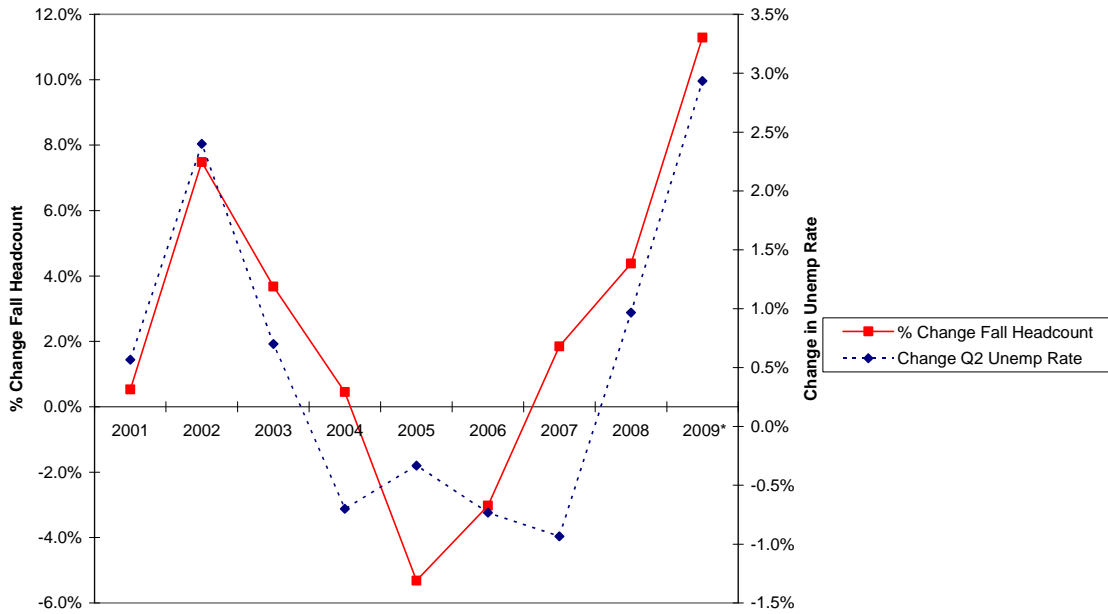


*Fall 2009 headcount reflects Census data and is preliminary, value will change

Percentage change in Fall headcount was also compared with the change in unemployment rate (Figure 4). Overall, these two measures also appear in synch.

Figure 4. Percentage change in CCCS Fall headcount compared with the change in Colorado yearly second quarter unemployment rate.

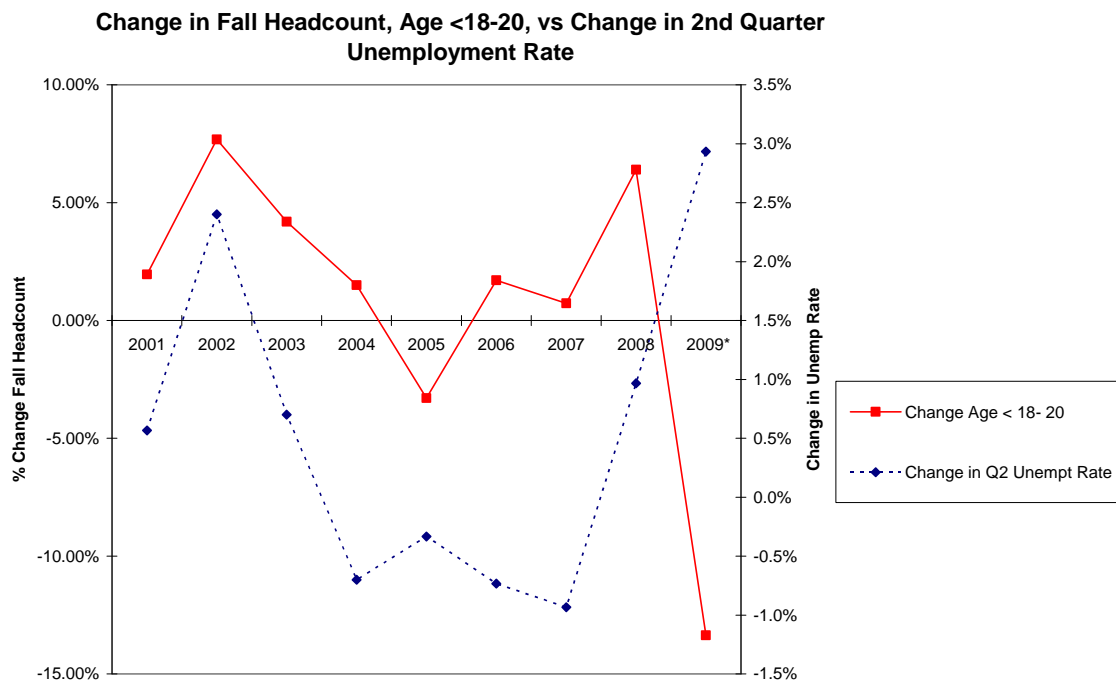
Change in Fall Headcount vs Change in 2nd Quarter Unemployment Rate



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To further clarify unemployment impact on headcount, a comparison of the change in Fall headcount for various age categories with unemployment is shown in Figures 5, 6 and 7. Consistent with one of the research studies, there appears to be a stronger relationship between those in the older age groups (21-24 and 25+) with unemployment than in the younger segment of our population. Particularly in 2009, the 18-20 population enrollment change drastically deviates from the change in unemployment rate – showing a decrease in enrollment rather than an increase. One explanation may be that families with one or more provider who has become unemployed can no longer afford for their recent high school graduates to attend college. In addition, the data for 2009 are preliminary based on enrollment at census. Very often, concurrently enrolled high school students are added to the enrollment file near the end of term. As a result, the 18 to 20 enrollment may increase substantially by the end of term and more closely follow the unemployment rate. Overall, these figures demonstrate that at every age group a positive relationship exists between enrollment and unemployment.

Figure 5. Change in CCCS Fall headcount , age <18 – 20, compared with the change in Colorado yearly second quarter unemployment rate.



*Fall 2009 headcount reflects Census data and is preliminary, value will change

Figure 6. Change in CCCS Fall headcount, age 21-24, compared with the change in Colorado yearly second quarter unemployment rate.

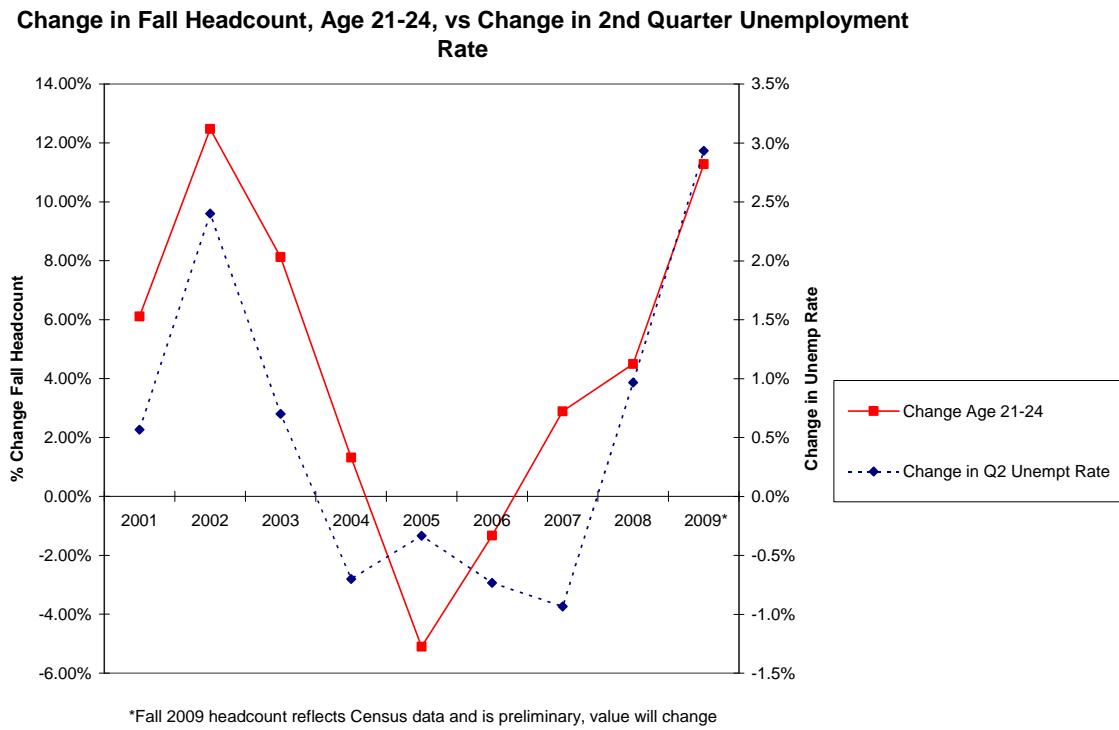
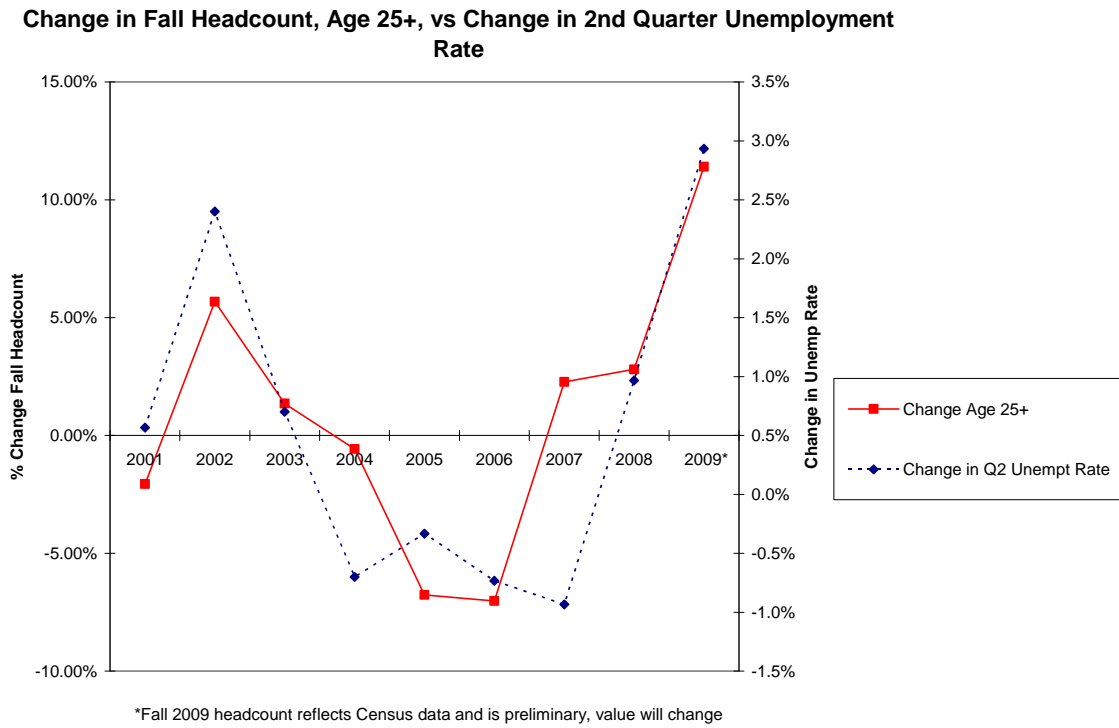
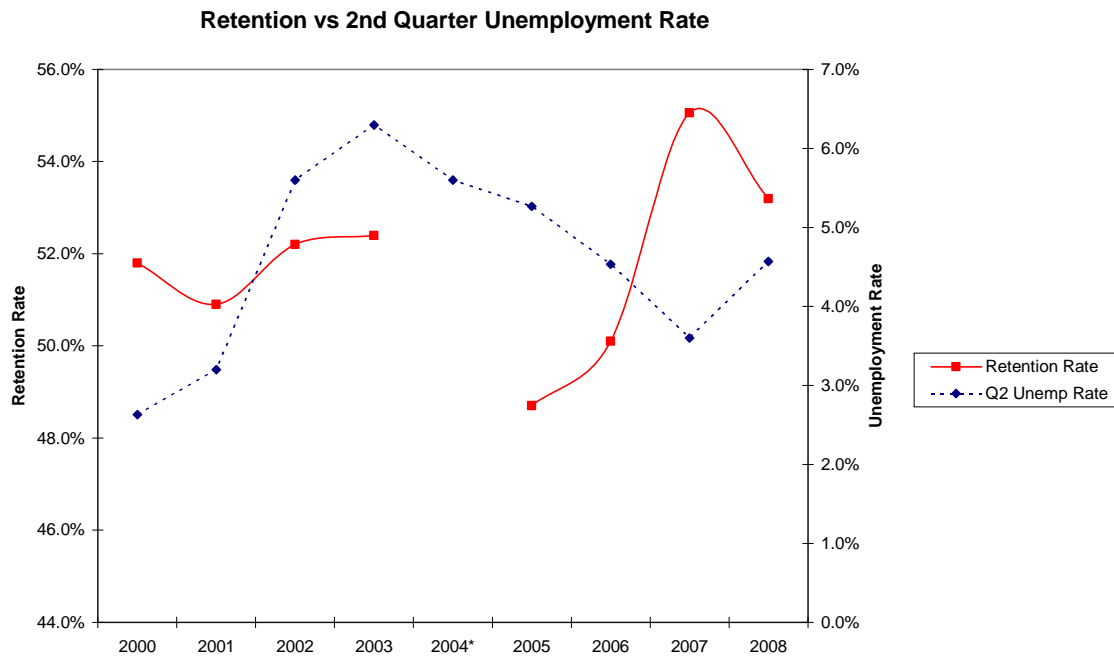


Figure 7. Change in CCCS Fall headcount , age 25+, compared with the change in Colorado yearly second quarter unemployment rate.



In an effort to gauge the impact of unemployment on student success measures, the fall to fall retention rate was compared with second quarter unemployment. It should be noted that since 2000 the Colorado Department of Higher Education (CDHE) has calculated and reported retention and graduation rates for all Colorado public higher education institutions. The method CDHE uses is to compare enrollment files that are submitted by individual institutions, and create first-time, full-time, degree-seeking fall cohorts for each institution by comparing enrollment state-wide to determine the true first-time student population. Then these students are followed fall to fall to create retention rates, and over three years for two-year institutions to determine graduation rates. Unfortunately, for both retention and graduation rate data, 2004 figures are unavailable, leaving a missing data point in the already limited data series. This omission makes the trend in these two measures difficult to interpret. However, based on a short and incomplete data series, it would appear that an inverse relationship exists for retention and unemployment, as unemployment increases, retention decreases (Figure 8). A percentage change comparison was not made for retention, as year over year change data would result in two missing data points.

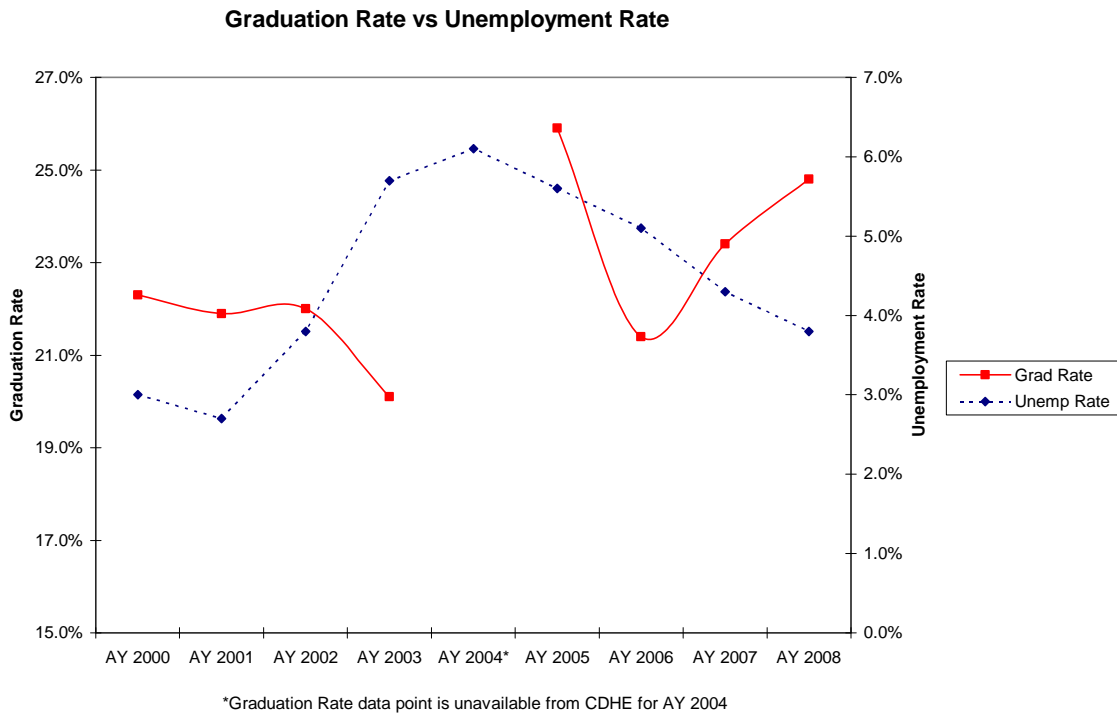
Figure 8 CCCS fall to fall retention rate compared with the Colorado yearly second quarter unemployment rate.



*Missing data point for 2004 retention data which is unavailable from CDHE

The annual graduation rate was compared with the average annual unemployment rate (Figure 9). Consistent with the FTE comparison, academic year graduation rate data was measured against unemployment data (not seasonally adjusted) for the same calendar year as the beginning of the academic year. Again, as mentioned above, the 2004 data point is missing which makes interpretation difficult. The results appear mixed. Additional data points in an extended time series are needed to determine if any relationship exists.

Figure 9. CCCS annual graduation rate compared with Colorado annual average unemployment rate.



Consistent with the majority of other studies, CCCS academic year FTE and fall headcount appear to coincide with the trend in the state unemployment rate. As unemployment increases, enrollment increases and vice versa. An Oregon study found that a 1 percentage point increase in unemployment resulted in just over a 1% increase in FTE. In addition, like one of the studies which evaluated age of enrollment with unemployment, a relationship with age category is apparent for CCCS with enrollment of older students tracking the unemployment rate more closely. It should be noted that this is a basic comparison of enrollment and unemployment data based on other studies, and there are other potential variables that could impact these results.

An analysis of the effect of unemployment on CCCS student outcomes yielded mixed results. Based on the incomplete data series, it appears that retention rates have an inverse relationship with unemployment rates – as unemployment increases, retention decreases. As this is a short and incomplete data set, a more complex relationship may be

in play, where there is a lagging effect not apparent here. Conversely, there may be other variables not taken into account, or factors such as the impact on student behavior when other family members become unemployed. A relationship between unemployment and graduation rates was unable to be identified. A longer time series and more complete data set would be helpful in making this determination.

Finally, from the analyses of unemployment versus enrollment and unemployment versus retention, it appears that the recent increase in enrollment at CCCS is due to new students enrolling and not due to increased retention.

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