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## **North Carolina High School Dropout Rates: An Econometric Analysis**

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## Abstract

Americans have been warned that U.S. dominance in the world's economy is fading because of the country's poor educational performance. North Carolina falls in the bottom 10 states for the percentage of students graduating. During the 2006-07 school year, over 22,000 students in grades 9-12 dropped out of school in North Carolina. Dropouts cost North Carolina millions of dollars each year. The cost includes at least \$169 million annually in taxes and public spending. High levels of poverty and low income housing have long been viewed as a stimulus to the increase in the number of high school dropouts. To address this issue, educators, policy makers, community and business leaders are examining ways to reduce the number of dropouts in every county. This paper examines some of the economic and demographic factors that influence the number of dropouts in North Carolina High Schools. The number of dropouts by county was regressed on factors such as county gross tax revenue, per capita income, minority population, and poverty rate in a panel data setting. Results indicated that almost all factors strongly affect the number of dropouts. As expected, percent minority population and its associated high poverty rates positively affect dropout rates. However, a county with a larger tax revenue base is more likely to have more dropouts than a county with a smaller tax revenue base. This result is consistent with the current trend in North Carolina. The number of dropouts is higher in urban counties than rural school systems.

Keywords: Dropouts, Economy, North Carolina.

## **Background**

President Obama stated that ‘A High School diploma is not enough and urged each American to commit to at least one year or more of higher education or career training, whether it be a community college, a four year school ,vocational training or an apprenticeship.

A dropout is defined by State Board policy (HSP-Q-001) as “any student who leaves school for any reason before graduation or completion of a program of studies without transferring to another elementary or secondary school”.

A dropout is therefore a student who was enrolled at some time during the previous school year, but who was not enrolled (and who does not meet reporting exclusions) on day 20 of the current school year. Schools that cannot document a former student’s enrollment in a US school must report that student as a dropout. Dropouts are therefore students who are listed as leaving the district but have no withdrawal code, students whose status simply disappears in district data or students who dropped out according to the district.

However, an exception is made for students who are known to have left the country. Schools are allowed to exclude from their dropout count “initial enrollees”, students who leave school within twenty days of their first enrollment in a particular school district. Reporting exclusions also include expelled students and students who transfer to a private school, home school or a state-approved educational program. Students who are not enrolled on day twenty because they have serious illness or are serving suspensions are not counted as dropouts. Since 1998, dropout rates have included students who leave public schools to attend community colleges. (2007-08 Dropout Report by the State of North Carolina)

The US Department of Labor estimates that 90 percent of new high-growth high- wage jobs will require some post secondary education, in comparison to decades past, when even a high school dropout could find a position in the manufacturing or agricultural sectors that would support a family in a middle-class lifestyle. Today, many jobs once held by high school dropouts or by individuals who had attained only a high school diploma are being automated or going overseas, leaving minimally educated Americans with increasingly diminished options to support themselves and their families.

No longer is the United States the world leader in graduating students from high school and college. Among developed countries, the United States ranks eighteenth in high school graduation rates and fifteenth in college graduation rates (Organization For Economic Co-operation and Development, 2007).

Graduation rates are a fundamental indicator of whether or not the nation's public school system is doing what it is intended and funded to do: engage, enroll, and educate youth to be productive members of society. But graduation rates are not just a "bottom line" for schools -they are critical predictors of individual achievement and have undeniable consequences for communities and American society at large. The nation needs an educated workforce if it is to maintain productivity, technological innovation, and a strong economy. Communities need educated citizens to participate in civic life and add social and cultural value. And for individuals, graduation from high school is a critical gateway to successful participation in the workforce, economy and society (Pinkus, 2006).

Individuals who fail to earn a high school diploma are at a great disadvantage, and not only when it comes to finding good paying jobs. They are also generally less healthy and die earlier, are more likely to become parents when very young, are more at risk of tangling with the

criminal justice system and are more likely to need social welfare assistance. Even more tragic, their children are more likely to become high school dropouts themselves, as are their children's children, and so on, in a possibly endless cycle of poverty (Amos, 2008).

North Carolina falls in the bottom 10 states for the percentage of students graduating. According to the 2007-08 report issued by the state of North Carolina, high schools reported a dropout rate of 4.97%, a decrease from the 5.24% rate reported from the previous year. Grades 9-12 reported 22,434 dropouts in 2007-08. All ethnic groups except multiracial, contributed to the decrease in the number of reported dropouts. Historically, males have dropped out more frequently than females and this pattern was again seen in the 2007-08 dropout rates. Males accounted for 59.7% of the dropouts up from 59.4% in 2006-07.

The Local Educational Agency (LEAS) reporting the lowest dropout rates in North Carolina are; Chapel Hill-Carrboro, Dare, Newton Conover City, Elkin City, Mt Airy City, Hertford, Yadkin, Guilford, Union, and Iredell-Statesville.

The LEAS reporting the highest dropout rates are found in Hickory City, Jackson, Swain, Madison, Mitchell, Yancey, Roanoke Rapids City, Kannapolis City, Granville, and Edgecombe.

The dropout problem is difficult to manage because its causes are many and complex. Research on dropping out has shown that the decision to persist in or leave school is affected by multiple contextual factors-family, school, neighbourhood, peers interacting in a cumulative way over the life course of a student (Allensworth, Easton, 2005).

### *Factors that lead to High School Dropout*

Research shows that there are many factors related to the school environment that affect school completion and dropout rates. Some of these factors, such as school size, location, the percentage of English Language Learners (ELL), and the demographic make-up of the school are relatively unchanging for the most part. Conversely there are other factors that schools have greater control over, such as teacher quality, class size, school safety, and student discipline. When combined, both sets of factors lay the groundwork for understanding the problem of student dropout and how to address it.

Finn (1989) explained that either low participation in school activities or early school failure leads to low self-esteem, problem behaviours, and then alienation from school. In a later study (1993), he added that “*the likelihood that a youngster will successfully complete 12 years of schooling is maximized if he or she maintains multiple, expanding forms of participation in school-relevant activities*”. It can be seen that, High schools can reduce dropout’s rates by encouraging multiple types of extracurricular opportunities for students and insuring that all students can participate (e.g. charging low fees so students from lower income background can participate).

Factors related to the school setting include the student not liking school, being unable to get along with teachers or peers, having difficulty with the material being taught, or even having safety Concerns while at school. Also, students who receive disciplinary measures (detentions, suspensions and expulsions) run a higher risk of dropping out as well as for retention between grades.

“The issue of dropping out and dropout prevention cannot be separated from issues affecting our total economic and social structure. These issues include

poverty,unemployment,discrimination,the role of the family, social values, the welfare cycle, child abuse, and drug abuse”(Peck,law,and Mills,1987).

### *The Cost of the Crisis*

The costs and losses associated with a high school system that allows one third of its students to dropout go beyond the students themselves. Clearly the drop out suffers the most direct impact. But the economy, social fabric and security of the nation, states, and local communities are also adversely affected

Most high school dropouts see the results of their actions mostly clearly in the slimness of their wallets. The average annual income for a high school dropout in 2005 was \$17,299 compared to \$26,933 for a high school graduate, a difference of almost \$10,000.If that high school graduate goes on to earn a bachelors degree, he or she will earn an average of \$52,671 annually. Over the course of a lifetime, a college graduate will earn, on average,\$1million more than a high school graduate (Amos,2008)..

Consequently, dropouts cost North Carolina taxpayers millions of dollars each year. Today, many jobs once held by high school dropouts or by individuals who had attained only a high school diploma are being automated or going overseas, leaving minimally educated Americans with increasingly diminished options to support themselves and their families.

Working age North Carolina dropouts earn an average of about \$10,400 less than high school graduates. If all of North Carolina’s residents of working age had obtained at least a high school diploma, total earnings in North Carolina in 2005 would have been \$7.5 billion higher. Dropouts have much higher unemployment rates than individuals with at least a high school diploma. The average unemployment rate for North Carolina High School dropouts is more than 10%.dropouts reduce state tax revenues by at least \$712 million annually. They are more likely



to rely on Medicaid. Dropouts increase North Carolina's Medicaid costs by \$155 million each year and are twice likely to be incarcerated. Each class of dropouts costs an extra \$6 million each year.

Along with increased earnings by North Carolina, an increase in graduation rates will provide additional revenues for the state of North Carolina. Dropouts are more likely to rely on Medicaid. Dropouts increase Medicaid by \$155 million each year (Gottlob 2007).

### *High School Reform in North Carolina*

For more than a decade, North Carolina has been a leader in Standards Based Reform. The Accountability, Basics and Local Control (ABCs) accountability system took effect during the 1996-97 school year under the leadership of former Governor James B. Hunt Jr. The ABCs brought a comprehensive system of testing in grades three through eight and high school and school ratings that determine school wide financial bonuses for schools that meet growth and targets and trigger supports and interventions for low performing schools.

Under the leadership of Governor Michael Easley, North Carolina is a frontrunner in high school reform. Governor Easley worked with the North Carolina Department of Public Instruction to develop and expand the *Learn and Earn* high school initiative, allowing students to earn both a high school diploma and associate's degree (or two years of college credit) with just one additional year of schooling. Therefore, in partnership with the new schools project and with the support of the state of North Carolina and the Bill and Melinda Gates Foundation, the number of small high Schools opening across the state has steadily increased.

North Carolina joined the American Diploma project in May 2005 to align high school standards with those of postsecondary education and work, institute a default college and-career-ready

diploma, and hold high schools and colleges accountable for student success. The creation of the center for 21<sup>st</sup> century skills illustrates the states commitment to preparing all students to meet the demands of the 21<sup>st</sup> century. Legislative leaders are focused on dropout prevention and recovery and how to support low performing students and schools. (Achieve, inc and Jobs for the future, 2007)

### **Objective**

The Objective of this paper is to econometrically determine the factors that might affect High School dropouts in the 100 counties in North Carolina from 2001 to 2007.

### **Methodology**

The average percentage of dropouts in each county High School is regressed on county: Gross Tax revenue, Median Per Capita Income, Percent Minority population and Poverty Rate. Four Econometric models were developed;

The Random Effect Model which assumes that county characteristics have no effect on the dropout rate and as a result the dropout happens by chance; The Fixed One Effect Model that postulates that only county characteristics affect dropout rates and time dimension has no effect; the Two-Way Fixed Effect Model that takes into account that both county characteristics and time effect on dropout rates; and the Pooled Ordinary Least Squares where data on all the 100 counties were pooled together as one uniform county for the 7 year period. All variables are in natural logs and the number of observations is 700.

## **Results**

Results of the four models indicate that county characteristics are significant as indicated in the Fixed One Effect Model. However, the factors that we are interested are not consistent and sometimes not significant when we assume differences in county characteristics. This may probably be due to the large number of cross sectional units compared to few number of years. We report instead on the pooled OLS that has consistent and significant results.

### *RESULTS OF THE POOLED OLS:*

The results of the Pooled OLS regression are presented in table 1. The Fit Statistics include R-squared of 0.82. Income is not significant. Percent minority population variable is highly significant and positively impacts dropout rates. The elasticity of 6.9 means a 1 percent increase in a county's minority population may cause an average of about 7 percent in that county's high school dropout rate. The probability that this variable is not significant is less than 0.0001 ( $P < 0.0001$ ). Poverty is also significant ( $P < 0.0004$ ). However, it is negative. This is consistent with the data that poor rural counties have lower dropout rates. This explains why the income variable is not significant. Gross Tax revenue is highly significant and positive ( $P < 0.0001$ ). Metropolitan counties with higher tax revenue base always have higher dropout rates.

## **Conclusions**

This study econometrically determines the factors that might affect high School dropouts in the 100 counties in North Carolina from 2001 to 2007. It was found that Gross Tax revenue, median per capita income, percent minority and poverty rate are not consistent and sometimes not significant when we assume differences in county characteristics. Income level is not a significant factor but minority population, gross tax revenue and poverty are significant factors

that affect high school dropout rates in the state as a whole. Each student who fails to graduate from high school in North Carolina creates large public costs to the state. There is the need for policy makers to address the issue given the cost of high dropout rates in the state of North Carolina

## References

Allensworth M.E, Easton Q. J (2005): *The On-Track indicator as a predictor of High School Graduation*. Consortium on Chicago School Research at the University Of Chicago.

Amos, Jason. *Dropouts, Diplomas, and Dollars: U.S High Schools and the Nation's Economy*. Washington, DC: Alliance for Excellent Education

Balfanz R, Legters N, McPartland J (2002): *Solutions for failing High Schools: Converging Visions and Promising Models*. Johns Hopkins University.

Balfanz R, Legters N. *Locating The Dropout Crisis: Which High Schools Produce The Nations Dropouts? Baltimore, MD*: Center for Research on the Education of Students Placed At Risk, Johns Hopkins University.

Balfanz R, Neild C. R (2006). *An extreme Degree of Difficulty: The Educational Demographics of Urban Neighborhood High Schools*. Journal of Education for students placed at risk; Lawrence Erbaum Associates, Inc

Finn, J.D. (1989) *Withdrawing from school*. *Review of Educational Research*

Finn, J.D (1993) *School engagement and students at risk*. Washington D.C: U.S Department of Education, National Center For Education Statistics.

Gottlab J. B (2007). *The High Cost of low Graduation Rates in North Carolina*. Milton and Rose D. Friedman foundation.

Mishel, L, Roy J (2006). *Rethinking High School Graduation Rates and Trends*. Washigton D.C. Economic policy Institute.

Peck. N, Law. A, Mills. R (1987). *Dropout Prevention: What we have learned*. ERIC/CAPS Clearinghouse, Office of Educational Research and Improvement, U.S Department of Education, University Of Michigan, Ann Arbor, MI

Pinkus, Lyndsay. (2006). *who's counted? Who's counting? Understanding High School Graduation Rates*. Washington, DC: Alliance for Excellent Education

Mantas. M (2007). *A Risk Analysis of crime and High School Dropout Rates*. Andrew Young School of Policy Studies. Department Of Economics. Georgia State University

**Table 1. Results of the Pooled OLS Regression**

<b>Variable</b>	<b>Elasticity</b>	<b>P-Value</b>
Median Income	0.002	< 0.2500
Percent Minority	6.900	< 0.0001
Poverty Rate	-0.873	< 0.0004
Gross County Tax	3.200	< 0.0001
R <sup>2</sup>	0.82	