Risk Factors for High School Dropouts in Kentucky

by

Chunling Niu

Candace Elliott

Jie Zhang

Antony D. Norman

Gary W. Houchens

John-Patrick Clark

Stephen K. Miller

Kyong Chon

Western Kentucky University

Paper presented at the annual meeting of the

Mid-South Educational Research Association

November 5-7, 2014

Knoxville, Tennessee

Address correspondence to:
Antony D. Norman
Gary Ransdell Hall 3009
Western Kentucky University
College Heights Blvd #41031

Bowling Green, KY 42101-1031

270-745-3260 (office)

tony.norman@wku.edu

Abstract

The purpose of this paper is two-fold: (a) to understand individual student-level demographic factors (gender, race, free/reduced lunch, LEP, homeless, and disability status, excused absences, unexcused absences, and days present) impacting high school dropout in Kentucky; and (b) to examine the relative prediction of student demographics (as above-listed) to student dropout. The 2012-2013 student-level demographics data were obtained from the Kentucky Department of Education (KDE) for a total of 234 Kentucky high schools as part of the RTT-D grant research. Cross tabulation Chi-square and logistic regression analyses showed notable consistency with the previous findings of the significant predictors of student dropout status. The practical implications mainly concern effectively preventing high school student dropout by detecting early warning signs, especially for minority males who show decreased school presence attending Kentucky high schools typically serving large rural populations.

Key words: Risk factors, dropout, Kentucky

Introduction

The purpose of this paper is to understand individual student factors (gender, race, free/reduced lunch, LEP, homeless, and disability status, absences, and days present) impacting high school dropout in Kentucky; and to examine the relative prediction of these student demographics to student dropout status in Kentucky high schools.

The United States is currently dealing with a dropout crisis. It is estimated that 25% of American public school students who began high school in the fall of 2000 did not earn a diploma four years later in 2003-2004 (Rumberger & Lim, 2008). More recent numbers have shown that 1.3 million students from the high school class of 2010 failed to earn a high school diploma. Looking at this number another way means that schools in the United States are losing an average of 7, 200 students every day (Rumberger & Rotermund, 2012). For the 2003–2004 school year, the U.S. Department of Education estimated a national graduation rate of 74.3%. However, other recent studies have begun to re-evaluate the methods of national graduation estimation and have reported that the national average graduation rates are less than 70% (Bowers, 2010). For the 2007-2008 school year, Kentucky had 196,072 students enrolled in grades 9-12. Of this number 5, 516 students dropped out of high school (Stillwell, 2010). More recent data collected on the 2010 graduating class in Kentucky shows a 77.2% graduation rate, slightly better than the 74.7% nation wide rate ("High School Graduation Rate Approaching Milestone," 2013).

Graduating from high school in the United States has been proven to lead to better-quality futures for students, as opposed to students who drop out of school or earn a substitute diploma (Rumberger & Rotermund 2012; Bowers, 2010). Research over the last decade shows that students who do not graduate from high school have higher rates of unemployment and

incarceration and lower lifetime earnings and life expectancy (Bowers, Sprott, & Taff, 2013; Rumberger & Lim, 2008; Rumberger & Rotermund 2012). The Alliance for Excellent Education estimates that, "if the students who dropped out of the class of 2009 had graduated, the nation's economy would have benefited from nearly $335 billion in additional income during the course of their lifetimes" ("A Path to Graduation for Every Child: State Legislative Roles and Responsibilities," 2011).

We need a better understanding of why students drop out in order to address the dropout crisis. Yet recognizing the reasons why a student drops out is tremendously challenging. Like other methods of scholastic achievement (e.g., test scores), the process of dropping out is manipulated by an assortment of influences associated with both the individual student and to the family, school, and community settings in which the student resides (Rumberger, 2001; Rumberger & Lim, 2008; Rumberger & Rotermund 2012). These concerns with early dropout identification are particularly challenging, given current struggles to design and evaluate dropout prevention programs (Bowers, 2010). Also dropping out is not an event that occurs at any single point in time. An increasing amount of research demonstrates that dropping out is the final stage in an extended and complicated progression of disengagement and detachment from school (Bowers, 2010; Balfanz, 2009; National Research Council, 2011; Rumberger & Lim, 2008; Rumberger & Rotermund, 2012).

Equally important to the student's school-related reasons for dropping out are their individual characteristics and demographics. A student's demographics can greatly impact their decision to leave school (National Research Council, 2011). As a result, researchers have looked at those other factors that increase the probability that a student will leave school before receiving their diploma. These factors include absenteeism, socioeconomic status, race and

ethnicity, gender, English language learners and students coping with disabilities.

Researchers have found that students who chronically miss school are more likely to fall behind their peers and eventually dropout (Schoeneberger, 2012). A student's attendance patterns can be an important, and early, warning sign (Bridgeland, Dilulio, & Morison, 2006). It is also commonly noted that students from lower SES backgrounds have a higher likelihood of dropping out (Rumberger, 2001; Schoeneberger, 2012; Suh, Suh, & Houston, 2007). Students in the 16-24 age group, from the highest socioeconomic status, are seven times more likely to graduate from high school than those students in the lowest socioeconomic range (A Path to Graduation for Every Child, 2011; Hammond, Linton, Smink, & Drew, 2007). Studies have also found that minority populations, males, English Language Learners, and students with disabilities are less likely to graduate than their counterparts (A Path to Graduation, 2011; Schoeneberger, 2012; Stillwell, 2010).

The Present Study

To date, most research on the risk factors of high school dropouts focuses on individual student academic achievement (GPA, course passing, and grade retention) and individual student-level demographic variable. However, less is understood about how the relative prediction of each demographic variables to high school dropouts.

The purpose of this paper is two-fold: (a) to further the understanding of each student-level demographic factor of high school dropout in Kentucky separately; and (b) to examine the combined effects of individual student demographics on student dropout. Thus, two empirical research questions were asked:

1. To what extent is each student-level demographic factor associated with student dropout status in Kentucky high schools?

2. What student-level demographic factors can best predict student dropout status in Kentucky high schools?

Method

Data Sources

This study constitutes an analysis of the secondary data provided by the Kentucky Department of Education (KDE) on the student-level demographics and end-of-the-year status for a total of two hundred and thirty four Kentucky high schools in 2012-2013. A total of 200,269 registered students were involved in the dataset. The dataset was provided by the KDE to facilitate a RTT-D grant awarded to GRREC/OVEC school districts to track the various effects of educational reform initiatives on school environment, students' academic achievement, and career/college readiness. As part of the RTT-D evaluation grant, this particular study drew from the high-school student-level learning environment data.

The student-level demographics dataset included a list of nine demographic variables: gender, race, free/reduced lunch status, Limited English Proficiency (LEP) status, homeless status, Disability IEPSPED status, student excused absent days, student unexcused absent days, and student days present at school. The end-of-the-year status dataset provided 7-level data, containing *Level 0 = Dropout (age 16 or older)*, *Level 1 = Close of year*, *Level 2 = Completed GED*, *Level 3 = Graduated in 6 or more years*, *Level 4 = Graduated in 5 years*, *Level 5 = Graduated in 4 years*, and *Level 6 = Graduated in less than 4 years*. The 7-level individual student dropout status data were first aggregated into two categories: dropout (level 0) versus non-dropout (levels 1-6).

Data Analyses

To address the first research question: whether there is a strong association between individual student dropout status and each of the nine student-level demographic factors, cross tabulation Chi-square analyses were performed to examine the relationship patterns between individual student dropout status and each of the six categorical student-level demographic factors (including gender, race, free/reduced lunch status, LEP status, homeless status, and Disability IEPSPED status); furthermore, for the remaining three continuous student-level demographic factors (including student excused absent days, student unexcused absent days, and student days present at school), discriminant analyses were implemented to affirm their possible significant relations to student dropout status.

The second research question investigated to the relative contribution of the nine student-level demographic factors to individual student dropout status. Logistics regression analyses were implemented to locate strong predictors from the nine student-level demographic variables (the independent variables) for student dropout status (the dependent variable).

Results

Table 1 shows the frequencies and cross tabulation Chi-square analyses results. The findings revealed significant associations between individual student dropout status with all the six categorical student-level demographic factors. All demographic variables were significantly associated with dropout status, ps< .001. Specifically, among the total 2.8% of the high school students who dropped out from school in 2012-2013, males (3.1%) rather than females (2.4%), Native Americans (7.1%), African Americans (4.9%), and Hispanics (3.9%) than students of other ethnic groups, free-lunch-status (3.1%) students than other students, LEP-status students (6.8%) than non-LEP-status students (2.7%), homeless students (7.1%) than regular students

(2.6%), and Disability-IEPSPED-status students (4.3%) than other students (2.6%), were more likely to drop out the school.

Discriminant analyses yielded three major findings as follows: (a) the three continuous student-level demographic variables combined (student excused absent days, student unexcused absent days, and student days present at school) constitute a statistically significant model ($p =$ .000) in predicting student membership in dropout or non-dropout group ($d = .17$); (b) *student days present at school* has the highest loading on Eigenvalue in predicting student dropout status ($\lambda = .93$), followed by *student unexcused absent days* ($\lambda = -.27$) and *student excused absent days* ($\lambda = .16$); and (c) this model of the three continuous student-level demographic variables combined accurately predicts student membership in the non-dropout group 95% of the time, and in the dropout group for 60% of the time.

Logistics regression analyses were implemented using the nine student-level demographic variables as the independent variables and student dropout status as the dependent variable. The results are summarized in Table 2. Results showed that all nine demographic variables significantly predicted student dropout status, ps < .05. The odds ratio of dropout vs. nondropout for the male students was 1.27 times greater than for the female students. African Americans, Hispanic, Native Americans, and multi-racial groups were 1.79, 1.34, 2.18, and 1.41 times are more likely than white students to dropout high schools. The chance of dropout for Asian students were half (.53) of the white students. No significant difference between Pacific Islanders and white students were found in the likelihood of dropout.

Free/Reduced lunch status had a significant impact on student dropout, $p < .05$. Free lunch students were 1.93 times more likely than standard lunch students to dropout. No significant difference between reduced lunch students and standard lunch students was found.

Limited English Proficiency (LEP) status, homeless status, and disability status also significantly predicted student dropout, ps< .05. The LEP students, homeless students, and disability students were 1.99, 2.28, and 1.9 times more likely than the non-LEP students, no-homeless students, and no-disability students to dropout, respectively. Finally, excused absence, unexcused absence and days present all significantly predicted student dropout status.

Discussion and Conclusion

The major findings of this study are that, (a) notably consistent with literature, strong associations between dropout status and student-level demographic factors (including gender, race, free/reduced lunch status, LEP status, homeless status, and Disability IEPSPED status, attendance) were found, and (b) the logistic regression analyses further revealed how the categorical and continuous demographic variables predicted student dropout.

Previous research found that a student's attendance patterns can be an important, and early, warning sign (Bridgeland, Dilulio, & Morison, 2006). One study found that every year one in ten kindergarteners will miss a month or more of school. They also found that over half of the kindergarten students with chronic absenteeism also had excessive absenteeism in the first grade (Romero & Lee, 2007). A similar study found that students who miss between 10 to 14 days of school in a semester are much less likely to graduate on time (A Path to Graduation, 2011). There are other differences between students as well. For example, males are more likely to drop out than females in every state reported (Stillwell, 2010). One study found that 29.9% of male students dropped out of school, compared to only 18.8% of their female peers (Bowers, 2010).

Several studies have also looked at the association between individual student race and ethnicity and the probability of dropping out. Most of these studies note that African American students are more likely to drop out than their Caucasian or Asian counterparts (Schoeneberger,

2012; Stillwell, 2010). Caucasian and Asian students also graduate at higher rates than their Hispanic and Native American peers (Stillwell, 2010; A Path to Graduation, 2011). This difference could be because African American and Hispanic students are more likely to leave school due to academic problems they may be experiencing (Stearns & Glennie, 2006).

This study adds to the literature because, to date, most research on risk factors of high school dropouts focuses on individual student academic achievement (GPA, course passing, and grade retention) and student demographics. However, less is understood about how the combined effects of these student demographics like absenteeism, gender, and race impact the probability of a student dropping out of school. The practical implications mainly concern effectively preventing high school student dropout by detecting early warning signs, especially for minority males who show decreased school presence attending Kentucky high schools typically serving large rural populations.

References

A Path to Graduation for Every Child: State Legislative Roles and Responsibilities. (2011).

   Dropout Prevention and Recovery.

Balfanz, R. (2009) "Putting Middle Grades Students on the Graduation Path: A Policy and

   Practice Brief." Baltimore: John Hopkins University for the National Middle School

   Association

Bowers, A. J. (2010). Grades and Graduation: A Longitudinal Risk Perspective to Identify

   Student Dropouts. *Journal Of Educational Research*, 103(3), 191-207.

Bowers, A. J. & Sprott, R. & Taff, S. A.(2013). Do We Know Who Will Drop Out?: A Review

   of the Predictors of Dropping out of High School: Precision, Sensitivity, and Specificity.

   The High School Journal 96(2), 77-100. The University of North Carolina Press.

Bridgeland, J.M., DiIulio, J.J., & Morison, K. B. (2006). *The silent epidemic: Perspectives of

   high school dropouts*. Washington, DC: Civic Enterprises.

Hammond, C., Linton, D., Smink, J., & Drew, S. (2007). *Dropout risk factors and exemplary

   programs.* Clemson, SC: National Dropout Prevention Center, Communities in Schools.

National Research Council. *High School Dropout, Graduation, and Completion Rates: Better

   Data, Better Measures, Better Decisions*. Washington, DC: The National Academies

   Press, 2011.

Romero, M., & Lee, Y. S. (2007). A national portrait of chronic absenteeism in the early grades.

Rumberger, R. (revised 2001). *Why Students Dropout of School and What Can Be Done*. Paper

   prepared for the Conference, "Dropouts in America: How Severe is the Problem? What

Do We Know about Intervention and Prevention?" Civil Rights Project, Cambridge, Massachusetts: Harvard University.

Rumberger, R. and Lim, S. (2008), *Why Students Drop Out of School: A Review of 25 Years of Research*, California Dropout Research Project, Santa Barbara.

Rumberger, R.W. & Rotermund, S. (2012). The relationship between engagement and High School Dropout. In S.L. Christenson, A.L. Reschly, & C. Wylie (Eds). *The Handbook of Research on Student Engagement.* New York: Springer. 491-514.

Schoeneberger, J. A. (2012). Longitudinal Attendance Patterns: Developing High School Dropouts. *Clearing House*, 85(1), 7-14

Stearns, E., & Glennie, E. J. (2006). When and Why Dropouts Leave High School. *Youth & Society*, 38(1), 29-57

Stillwell, R. (2010). *Public School Graduates and Dropouts from the Common Core of Data: School Year 2007-08* (NCES 2010-341). National Center for Education Statistics, Institute of Education Sciences, U.S. Department of Education. Washington, DC.

Suh, S., Suh, J., & Houston, I. (2007). Predictors of Categorical At-Risk High School Dropouts. *Journal Of Counseling & Development*, 85(2), 196-203.

Table 1

Cross Tabulation Chi-square Analyses Results for Student-Level Demographics Related to Individual Student Dropout Status (N=200,269)

Student Demographics		Non-Dropout	Dropout	Total	Chi-square	*p*
Gender	Female	95,151 (97.6%)	2,318 (2.4%)	97469	108.89	.000
	Male	99,568 (96.9%)	3,232 (3.1%)	102800		
Race	White	161,403 (97.5%)	4,080 (2.5%)	165483		
	African American	20,584 (95.1%)	1,056 (4.9%)	21640		
	Hispanic	6,501 (96.1%)	266 (3.9%)	6767		
	Asian	2,589 (98.7%)	34 (1.3%)	2623	495.64	.000
	Native American	287 (92.9%)	22 (7.1%)	309		
	Pacific Islanders	158 (100%)	0 (0.00%)	158		
	Two or more races	3,197 (97.2%)	92 (2.8%)	3289		
Free/Reduced lunch	Standard	95,307 (97.2%)	2,704 (2.8%)	98011		
	Reduced Lunch	13,009 (99.2%)	104 (0.8%)	13113	221.19	.000
	Free Lunch	86,403 (96.9%)	2,742 (3.1%)	89145		
LEP Status	Non-LEP	192,594 (97.3%)	5,394 (2.7%)	197988	141.69	.000
	LEP	2,125 (93.2%)	156 (6.8%)	2281		
Homeless	No	189208 (97.4%)	5132 (2.6%)	194340	415.15	.000
	Yes	5,511 (92.9%)	418 (7.1%)	5929		
Disability IEPSPED Status	No	175,630 (97.4%)	4,694 (2.6%)	180324	190.07	.000
	Yes	19,089 (95.7%)	856 (4.3%)	19945		

Table 2

Logistic Regression Results Predicting Student Dropout Status(N=200,269)

Predictors	B	S.E.	Wald	df	Sig.	Exp(B)
Gender	.244	.032	57.801	1	.000	1.276
Male vs. female						
Race						
African American vs. White	.587	.043	187.652	1	.000	1.798
Hispanic vs. White	.295	.086	11.836	1	.001	1.343
Asian vs. White	-.624	.192	10.624	1	.001	.536
Native American vs. White	.781	.276	8.013	1	.005	2.184
Pacific Islanders vs. White	-17.374	2781.503	.000	1	.995	.000
Two or more races vs. White	.346	.122	8.021	1	.005	1.414
Free/Reduced Lunch						
Reduced Lunch vs. Standard	.111	.111	1.011	1	.315	1.118
Free Lunch vs. Standard	.660	.037	319.740	1	.000	1.935
LEP Status	.690	.115	35.665	1	.000	1.993
LEP vs. non-LEP						
Homeless	.825	.063	172.638	1	.000	2.282
Yes vs. No						
Disability IEPSPED Status	.670	.047	202.809	1	.000	1.953
Yes vs. No						
Excused Absence	.012	.001	62.365	1	.000	1.012
Unexcused Absence	.021	.001	790.397	1	.000	1.021
Days Present	-.031	.000	11547.781	1	.000	.969