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The Incidence of At-Risk Students in Indiana: A Longitudinal Study

Randall S. Vesely

Introduction

Elementary and secondary students can be impacted by a number of risk factors, all of which can have a negative influence on their academic success. To that end, the identification of risk factors is an important first step in closing achievement gaps. For example, clear evidence of an achievement gap can be found in Indiana's high school graduation rate where, in 2009, 84.4% of white students graduated compared with 66% of African American students; 58.6% of students with disabilities; 61.5% of students with limited English proficiency, and 68% of students in poverty.¹ (See Figure below for these and other comparisons.) This study took a longitudinal approach to the analysis, comparing the incidence of at-risk students in Indiana between 1999 and 2009. Unlike much previous research, this study utilized a research-based typology of risk factors to ensure accuracy and consistency over time. The article begins with a brief historical review of the research literature on the definition and identification of risk factors. In the second section, research methods and data sources are described. These are followed by the results of the analysis and conclusions.

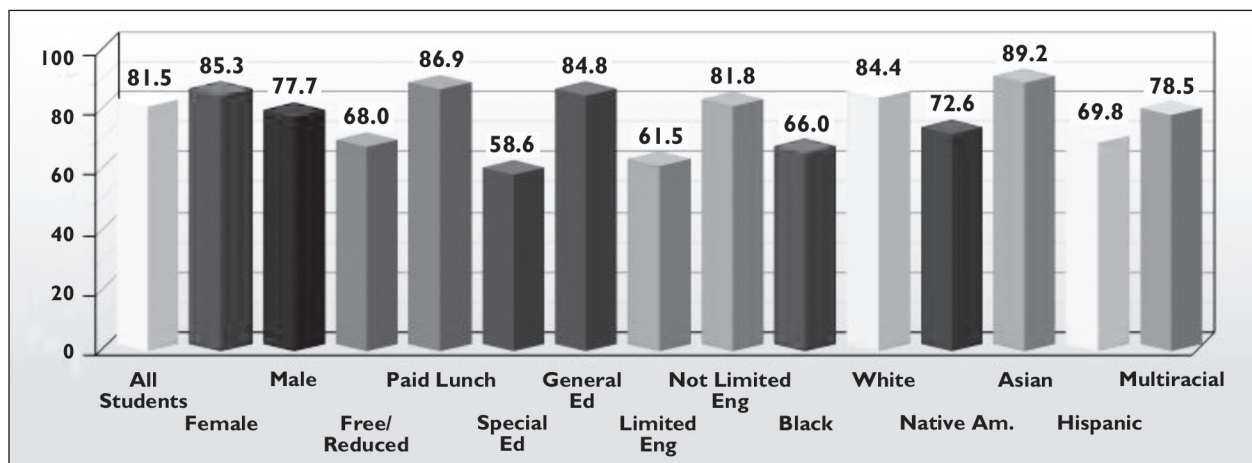
Defining Risk

A review of the research literature on the definition of student risk factors reveals an evolving body of knowledge. In the 1960s, factors that placed school-aged children at risk of poor academic performance were attributed to cultural deprivation, and schools responded by creating compensatory enrichment programs that "attempted to create a middle-class culture for them [students]."² Subsequently, lack of access to quality education was considered the primary cause of at-risk status, particularly poor, minority students, being identified as educationally disadvantaged, and "resulting educational programs focused on... the lack of fit between poor, minority children and their schools."³

By the 1980s, the definition of student risk had broadened considerably. In 1988, McCann and Austin defined at-risk students as those "...who, for whatever reason, are at risk of not achieving the goals of education, of not meeting local and state standards for high school graduation, of not acquiring the knowledge, skills, and dispositions to become productive members of the American society."⁴ The authors identified risk factors in terms of student behaviors and community and family characteristics that interfered with the educational process. Student risk behaviors included truancy; drug and alcohol use; suicide attempts; pregnancy; and commitment of disruptive acts. Risk factors associated with community and family background characteristics were limited English proficiency; single parent status; low parental education attainment; and poverty.

In 1994, student risk was defined even more broadly although there was some overlap with McCann and Austin. Pisapia and Westfall referred at-risk students as "...those who, because of a combination and interaction of multiple variables, possess characteristics that are likely to result in the student's failure to graduate from high school, to attain work skills, and to become a productive member of society."⁵ They identified three groups of factors that placed students at-risk: Social/family background; personal problems; and

Figure
2008-09 State Graduation Rate by Group



Source: Indiana Department of Education.

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school factors. Factors within the social/family background group were low socioeconomic status; sibling or parent dropout; dysfunctional family; language; and poor communication between home and school. Personal problems included low self-esteem, disability, teen pregnancy, substance abuse, and suicide attempts. School factors were defined as absenteeism; retention; behavioral problems; suspensions; lack of quality programs and services; and school climate.

In 2002, in *Educating At-Risk Students*, Stringfield and Land offered a concise definition of at-risk students as those "...who, through no fault of their own, are at risk of low academic achievement and dropping out before completing high school."⁶ In one of the volume's chapters, Land and Legters operationalized this definition by identifying seven risk factors gleaned from a comprehensive review of research.⁷ These represented the most frequently cited individual or family-level risk factors: disability; poverty; limited English proficiency; race/ethnicity; urbanicity;⁸ single parent status;⁹ and low parental educational attainment.

Of the seven factors, Land and Legters found poverty to be the most consistent predictor of academic failure, with the concentration of poverty at the school level exacerbating the problem.¹⁰ Land and Legters then added a new dimension to student risk; that is, the "compound nature" of risk whereby some students experience multiple risk factors. Because Stringfield and Land, and Land and Legters provided a succinct, yet inclusive, definition of student risk and a comprehensive research-based typology, their definition and typology were selected to serve as the foundation for this study.

Research Methods

This section presents the population, data sources, variables, and analytic procedures used to answer the following research questions:

- To what extent has the incidence of at-risk students in Indiana changed over the last decade?
- What is the current incidence of at-risk students in Indiana?

To answer these questions, this study analyzed the population of Indiana public school corporations, with the corporation serving as the unit of analysis.¹¹ Data from the 2008-2009 and 1998-1999 schools years from the Indiana Department of Education were utilized.¹²

Six variables relevant to the research questions were selected: (1) Total student enrollment; (2) number of students with disabilities; (3) number of students living in poverty; (4) number of students with limited English proficiency;¹³ (5) number of ethnic/racial minority students; and (6) number of students attending urban schools. Students with disabilities were defined as those having an Individual Education Plan (IEP) while students living in poverty were defined as those who qualified for free or reduced-price school meals. Urban schools are defined by the Indiana Department of Education as those in a school corporation which is located in a city with a population of 50,000 or more; or an urbanized area of at least 50,000 with the surrounding area having a minimum population of 100,000.¹⁴ Data for parental education attainment by school corporation were not available and so could not be included in the analysis. Using the data described above, descriptive statistics and the incidence of risk factors were calculated and compared for 1999 and 2009. Pearson Product Moment correlations were calculated to determine the compound nature of risk in both years.

Results of Analysis

In 1999, Indiana educated 986,908 public elementary and secondary students in 293 corporations. (See Table 1.) School corporation size ranged from 199 to 42,084 students, with a mean enrollment of 3,380 and a median of 1,919. In 2009, total student enrollment increased slightly to 1,028,885 students, an increase of 41,977 students or 4.3%. However, minimum and maximum corporation size fell to 168 and 34,050 students respectively. At the same time, the mean and median increased to 3,524 and 1,942 respectively. Overall, student enrollment and the size of the average school corporation increased modestly over this time period. The remainder of this section presents the results for each risk factor, the compound nature of risk, and the incidence of risk factors.

Table 1
Total Student Enrollment by District

Descriptive Statistics	Enrollment by Year	
	1999	2009
Minimum	199	168
Maximum	42,084	34,050
Range	41,885	33,882
Mean	3,380	3,524
Median	1,919	1,942
Standard Deviation	4,376	4,349
Sum	986,908	1,028,885

N = 293

Disability. In 1999, Indiana educated 145,459 students with disabilities. (See Table 2.) Enrollment by school corporation ranged from 4 to 7,315 students with a mean enrollment of 496 and a median of 284. Over the ensuing decade, enrollment of students with disabilities increased substantially to 173,406, an increase of 27,947 or 19.2%. However, while the minimum by almost doubled, the maximum enrollment by corporation fell. At the same time, the mean and median increased to 592 and 312 students respectively.

Poverty. Indiana enrolled 273,307 low income students in 1999. (See Table 3.) By school corporation, enrollment ranged from zero to 31,362, with a mean of 936 students and a median of 396. The number of students in poverty jumped to 426,007, an increase of 152,700, or 55.9%, a decade later. In addition, the mean and median increased to 1,459 and 681 students respectively. The considerable skew between the mean and median point to a cluster of high poverty school corporations in the state.

Limited English Proficiency (LEP). In 1999, Indiana educated 27,023 LEP students. (See Table 4.) Enrollment by school corporation size ranged zero to 2,232, with a mean enrollment of 99 and a median of 18. In 2009, the enrollment of LEP students more than doubled to 65,541, an increase of 38,518. While the minimum remained the same, the maximum enrollment by corporation grew to 4,513. At the

Table 2

Students with Disabilities: Enrollment by Year

Descriptive Statistics	Enrollment by Year	
	1999	2009
Minimum	4	7
Maximum	7,315	6,979
Range	7,311	6,972
Mean	496	592
Median	284	312
Standard Deviation	723	807
Sum	145,459	173,406

N = 293

Table 3

Students in Poverty: Enrollment by District

Descriptive Statistics	Enrollment by Year	
	1999	2009
Minimum	0	40
Maximum	31,362	28,281
Range	31,362	28,241
Mean	936	1,459
Median	396	681
Standard Deviation	2,345	2,680
Sum	273,307	426,007

N = 293

same time, the mean and median increased to 241 and 27 students respectively. Here too, the considerable skew between the mean and median is important to note because it denotes a cluster of school corporations with relatively higher concentrations of English language learners.

Racial/ethnic minority. Indiana schools enrolled 158,969 racial/ethnic minority students in 1999. (See Table 5.) By school corporation size, enrollment ranged from zero to 26,696, with a mean enrollment of 544 and a median of 47. In 2009, the number of ethnic/racial minority students attending Indiana schools increased by more than half to 249,392, an increase of 90,423, or 56.9%. While the minimum increased slightly, the maximum enrollment by corporation fell by 506. At the same time, the mean and median increased to 854 and 111 students respectively. As with the risk factors of poverty and limited English proficiency, there is considerable skew in the distribution of ethnic/racial minority students in Indiana pointing to higher concentrations in a cluster of school corporations.

Table 4

Limited English Proficient Students: Enrollment by District

Descriptive Statistics	Enrollment by Year	
	1999	2008*
Minimum	0	0
Maximum	2,232	4,513
Range	2,232	4,513
Mean	99	241
Median	18	27
Standard Deviation	247	597
Sum	27,023	65,541

N = 293

*2009 LEP data were not available.

Table 5

Racial Minority Students: Enrollment by District

Descriptive Statistics	Enrollment by Year	
	1999	2009
Minimum	0	3
Maximum	26,696	26,190
Range	26,696	26,187
Mean	544	854
Median	47	111
Standard Deviation	2,248	2,467
Sum	158,969	249,392

N = 293

Urbanicity. In both 1999 and 2009, 36 of Indiana's 293 school corporations were classified as urban by the state department of education. (See Table 6.) In 1999, these school corporations educated 351,584 students. Enrollment by school corporation size ranged 866 to 42,084, with a mean enrollment of 9,766 and a median of 8,149. In 2009, the enrollment of urban students decreased slightly to 350,215, a decrease of 1,369, or less than one percent. In addition, both the minimum and maximum enrollments decreased, as did the mean and median. In general, the average enrollment of urban school corporations was three times greater than that of the state average.

Compound nature of risk. To determine the existence of the compound nature of risk, Tables 7 and 8 each contain a Pearson Product Moment matrix of risk factors for 1999 and 2009 respectively. Coefficients in Table 7 confirm the existence of a moderate, statistically significant correlation ($p < .001$) in 1999 between poverty

Table 6
Urban Student Enrollment

Descriptive Statistics	Enrollment by Year	
	1999	2009
Minimum	886	915
Maximum	42,084	34,050
Range	41,198	33,135
Mean	9,766	9,728
Median	8,149	7,929
Standard Deviation	8,289	7,361
Sum	351,584	350,215

N = 36

and ethnicity/race (0.512), with weaker, but statistically significant, relationships between ethnicity/race and limited English proficiency (0.398) and poverty and disability (0.379). In 2009, compound relationships were also evident. The correlation between poverty and race/ethnicity was slightly higher (0.529) while the relationship between poverty and disability was weaker (0.294) but remained statistically significant. In addition, there was a stronger relationship, albeit moderate, between race/ethnicity and limited English proficiency (0.574).

Incidence of risk factors. The incidence of risk factors was calculated as the percentage of students identified with a particular risk factor divided by total student enrollment. In 1999, urbanicity represented the largest risk factor in that it affected 35.6%, more than one-third, of Indiana students. (See Table 9.) Poverty was second at 27.6%. The incidence of ethnic/racial minority students and those with disabilities ranked third and fourth respectively, at 16.1% and 14.7%; and the incidence of students with limited English proficiency ranked fifth, or last, at 2.7%. By 2009, the pattern of incidence had changed whereby student poverty eclipsed urbanicity at 41.4% and 34.0% respectively. Although the incidence of the remaining three risk factors increased, their ranking did not. The incidence of ethnic/racial minority students did increase substantially, by 50%, to 24.2% of student enrollments while the incidence of LEP students almost tripled to 6.4%. Finally, the incidence of students with disabilities increased approximately 14% to 16.8% of Indiana's student population.

Conclusions

The rationale for this study lay with the incidence of students at risk of academic failure in Indiana where academic failure was defined as low achievement or failure to graduate from high school. Using a comprehensive research-based typology, this study identified the change in magnitude and incidence of at-risk student populations in Indiana public school corporations between 1999 to 2009. At-risk children were defined not only as those living in poverty, but also children impacted by disability, race, limited English proficiency, and urbanicity. This study also sought to establish the compound nature of risk whereby some students have multiple risk factors.

Table 7
Pearson Product Moment Correlation Matrix of Risk Factors for 1999

	DISABILITYPC	POVERTYPC	LEPPC
POVERTYPC	0.379*		
LEPPC	-0.180	0.174	
RACEPC	-0.030	0.512*	0.398*

*Statistically significant at the .001 level.

Note: DISABILITYPC = percentage of students with disabilities; POVERTYPC = percentage of low income students; LEPPC = percentage of students identified as limited English proficient (or English language learners); RACEPC = percentage of student identified as ethnic/racial minorities.

Table 8
Pearson Product Moment Correlation Matrix of Risk Factors for 2009

	DISABILITYPC	POVERTYPC	LEPPC
POVERTYPC	0.294*		
LEPPC	-0.246*	0.364*	
RACEPC	-0.123	0.529*	0.574*

*Statistically significant at the .001 level.

Note: DISABILITYPC = percentage of students with disabilities; POVERTYPC = percentage of low income students; LEPPC = percentage of students identified as limited English proficient (or English language learners); RACEPC = percentage of student identified as ethnic/racial minorities.

Table 9
Incidence of Student Risk Factors

Student Risk Factors	Incidence by Year (%)		Percent Change (%)
	1999	2009	
Disability	14.7	16.8	2.1
Poverty	27.6	41.4	13.8
LEP	2.7	6.4	3.7
Racial Minority	16.1	24.2	8.1
Urbanicity	35.6	34.0	-1.6

Although many may think of Indiana as a predominantly rural and low poverty state with a homogenous population—and hence one with a relatively low incidence of student risk factors—the reality is somewhat different. For example, the incidence of urbanicity in Indiana was 34% in 2009, similar to the national average.¹⁵ Second, the incidence of student poverty as a risk factor in Indiana in 2009 (41.4%) mirrored the 50 state average of 41.3%.¹⁶ The same was true of the incidence of limited English proficient students (6.4% in Indiana vs. the 50 state average of 6.2%).¹⁷ However, the incidence of Indiana students with disabilities in 2009 (16.8%) exceeded the 50 state average (13.0%).¹⁸ Admittedly, the incidence of ethnic/racial minority students in Indiana is substantially lower than the 50 state average of 34.8%¹⁹ although these students constituted approximately one-quarter of Indiana's student population. In sum, this analysis revealed a startling and concerning incidence of student risk factors in Indiana that in almost all cases increased between 1999 and 2009.

Patterns of the compound nature of student risk in Indiana bore some similarities to 50 state analysis for 1999.²⁰ Similar moderate, statistically significant correlations were found between the incidence of poverty and ethnicity/race, and between ethnicity/race and limited English proficiency. However, although there was a moderately, statistically significant relationship between the incidence of poverty and disability in Indiana, none was found in the 50 state analysis. With these research results now available, future research can begin to analyze the extent to which Indiana focuses its resources on students at risk of academic failure in order to ensure equality of educational opportunity, a key component in addressing achievement gaps.

Endnotes

¹ See, *Graduation Rate 2008-09* (Indianapolis, IN: Indiana Department of Education), <http://mustang.doe.state.in.us/TRENDS/grad4orless.cfm?pub=1>.

² Aaron Pallas, "Making Schools More Responsive to At-Risk Students," *ERIC/CUE Digest*, No. 60 (ERIC Clearinghouse on Urban Education, 1989) 1.

³ Ibid.

⁴ Richard McCann and Susan Austin, "At Risk Youth: Definitions, Dimensions, and Relationships," paper presented at the Annual Meeting of the American Educational Research Association, New Orleans, Louisiana, 1988, 4.

⁵ John Pisapia and Amy Westfall, "At-Risk Students: Who Are They and What Helps Them to Succeed?" *Research Brief #17*, Metropolitan Educational Research Consortium (November 1994) 3.

⁶ Sam Stringfield and Deborah Land, ed., *Educating At-Risk Students*, 101st yearbook of the National Society for the Study of Education (Chicago, IL: University of Chicago Press, 2002) vii.

⁷ Deborah Land and Nettie Legters, "The Extent and Consequences of Risk in U.S. Education," in *Educating At-Risk Children*, ed. Sam Stringfield and Deborah Land, 1-28.

⁸ Ibid. Although the risk factor of urbanicity is multifaceted, Land and Legters isolated it as an independent risk factor because students attending urban schools were at greater risk of poor academic outcomes than students attending suburban and rural schools even after taking into account factors such as race/ethnicity and poverty.

⁹ Note that single parent status was not used as a risk factor in this study because it is generally highly intercorrelated with poverty. In addition, data on the marital status of students' parents in Indiana were not available.

¹⁰ Ibid., 13.

¹¹ In Indiana, school districts are referred to as "corporations."

¹² Indiana K-12 Education Data, <http://www.doe.in.gov/data>.

¹³ These students are also referred to as English language learners.

¹⁴ Personal communication with Karen Lane, Data Management Specialist, Indiana Department of Education.

¹⁵ In 2008, the latest data available for urbanicity, the portion of the U.S. student population designated as urban was 29.4% (calculated from Table A.1.a-3," Enrollment of Public Elementary and Secondary Students, by Locale and State or Jurisdiction: School Year 2007-08," Urban Education in America, <http://nces.ed.gov/surveys/ruraled/tables/a.1.a-3.asp?refer=urban>. This designation contains students who attend school districts large, midsize, and small cities. Indiana definition's of "urban" as it relates to school corporations is more expansive.

¹⁶ Source: Common Core of Data, 2008-2009 (Washington, DC: National Center for Education Statistics, Institute of Education Sciences, U.S. Department of Education, 2010). <http://nces.ed.gov/ccd>.

¹⁷ Ibid.

¹⁸ Ibid.

¹⁹ Ibid.

²⁰ Randall S. Vesely, Faith E. Crampton, Festus E. Obiakor, and Marty Sapp, "The Role of States in Funding Education to Achieve Social Justice," *Journal of Education Finance* 34 (1): 56-74. Note that 1999 represents the most recent 50-state analysis.