US-China Education Review A, ISSN 2161-623X
June 2013, Vol. 3, No. 6, 417-422

# Identifying the Factors Impacting the Adequately Yearly Progress Performance in the United States

Ju-Shan Hsieh
National Taiwan University of Arts, New Taipei City, Taiwan

The NCLB (No Child Left Behind Act) specifies that states must develop AYP (adequate yearly progress) statewide measurable objectives for improved achievement by all students, including economically disadvantaged students, students from minority races, students with disabilities, and students with limited English proficiency. By the 2013-2014 school year, all students must be at the proficient level or above. Many factors could be possible reasons of variation in percentages of schools fail to make AYP. The purposes of this paper are employing the statistical analysis to identify factors which can explain the variation of percentages fail to make AYP under NCLB regulations. The correlation and regression analysis are used to examine the degree of relationship between these factors.

*Keywords:* AYP (adequate yearly progress), NCLB (No Child Left Behind Act), school performance

## Introduction

Formative assessment can really improve classroom teaching, particularly for low achieving students, and this point of view has been supported by researchers and practitioner communities (Borman, 2003; Shepard, 2005; Herman, 2010; Herman, Osmundson, Dai, Ringstaff, Timms, 2011). Therefore, policymakers across the world are considering formative assessment as a primary approach to educational reform (Organization for Economic Co-operation and Development, 2005; Council of Chief State School Officers, 2008). The *No Child Left Behind Act of 2001* (The White House, 2001; U.S. department of Education, 2010) was put into law, this law not only brought each state a new challenge, but also gave the public schools a new demand. This reform requires each state to develop its own method to evaluate individual schools' improvement every year, and to set up an index, called the AYP (adequate yearly progress), as a goal for schools to meet yearly. The purpose of the law is to ensure that all states and school districts demonstrate progress toward ensuring that all students, regardless of race or socioeconomic status, become academically proficient by the academic year 2013-2014.

NCLB specifies that states must develop AYP statewide measurable objectives for improved achievement by all students, including economically disadvantaged students, students from minority races, students with disabilities, and students with limited English proficiency. By the 2013-2014 school year, all students must be at the proficient level or above. Therefore, states have to set up yearly goals based on state assessments, but also needs to include one additional academic indicator, such as graduation rate, dropout rate, etc. The AYP is assessed at the school level. Schools that fail to meet the AYP objectives for two consecutive years will be identified as in need of improvement. Moreover, there should be at least 95% of each group participating in

Ju-Shan Hsieh, Ph.D., Teacher Education Center, National Taiwan University of Arts.

state assessments. Local Educational Agencies, school buildings and school districts should report separately for each group of students, and then it can be determined whether each student's group met the AYP objective. Test scores can be aggregated over several years and schools should not be penalized if there are too few students in a particular subgroup to yield reliable information.

However, states set up different proficiency standards for their schools. For example, the percentage of students reported on the respective state department of education Websites to have scored at the proficient level or higher in 2001 on the state Grade 8 mathematics assessment was 39% in Mississippi, and only 7% in Louisiana. However, the percentage of students who passed the Grade 8 mathematics assessment in Texas in 2001 was 92% (Linn, 2002). Another example from The Washington Post (Jan. 22, 2003) states that because the state used test scores to label schools, "Michigan is the national dunce with 1500 schools failures, and Arkansas is the national genius with zero school failures". These kinds of reports show that different standards exist in each state. Although there may exist some differences between students' abilities, it is unreasonable that there are such a great difference. However, the different states' standards will result in some problems—students may make the same progress, but different test systems or state dynamics may cause them to pass or fail.

Besides, earlier report by Hall, Wiener, and Carey (2003) and Fleming (2011) concluded that several factors could explain the variation of the number of schools identified as failing to make AYP across states: (1) The size of achievement gaps: Some states have greater achievement gaps originally than other states. States with larger achievement gaps are intended to have more schools identified; (2) The distribution of low performing students: Low performing students concentrating in a few large schools tend to have less schools identified in the state. If the low performing students are distributed evenly across the state, there will have more schools identified; (3) Participation rates: There should be at least 95% of students participating the state assessment in order to make AYP. Those states which are routinely excluded the special education students or limited English proficiency students are tended to have more schools identified; and (4) Minimum *N* size: States need to set up the minimum number of students in the school to report AYP. Schools with the number of students less than the minimum *N* size do not need to report AYP. States set up larger minimum *N* size would tend to have fewer schools identified. However, the authors did not do any analysis to test the effect of these factors in practice.

Although all of these could be possible reasons of variation in percentages of schools fail to make AYP, it would be worthwhile testing those factors with the real data from states. In addition, it is possible that there exist other factors which would relate to the variation of percentages of schools identified across states. The purposes of this paper are employing the factor analysis to identify factors which can explain the variation of percentages fail to make AYP under NCLB regulations. The correlation and regression analysis are used to examine the degree of relationship between these factors.

## Method

### Data Source

The data are obtained from the following sources: (1) education counts database: This database is located on the Education Week Website. There are more than 250 educational indicators for each state in this Website; (2) NAEP (National Assessment of Educational Progress) database: Because the NAEP scores are used as a validation indicator of state assessments, it would be informative to include NAEP scores in the analysis. The

NAEP data were obtained from its Website (Retrieved from http://nces.ed.gov/nationsreportcard/); and (3) State's department of education Website. The general information of the each state can be obtained from their own department of education Website (such as minimum *N* size, participation rate, etc.).

**Procedure**

To select the variables which can explain the variation in percentage of schools among states identified as in need of improvement, several steps are adopted (see Figure 1). First, discarding the variables of states before 2000. Because NCLB implemented in 2002, the variables before 2000 may not have great impact on schools' performance. If the same variable has multiple records in several years, the most recent one would be utilized for the data analysis; and Second, the exploratory factor analysis was used to reduce the number of variables which were obtained in the first step. The variables with eigenvalues greater than those with one were retained to do the correlation and regression analysis.

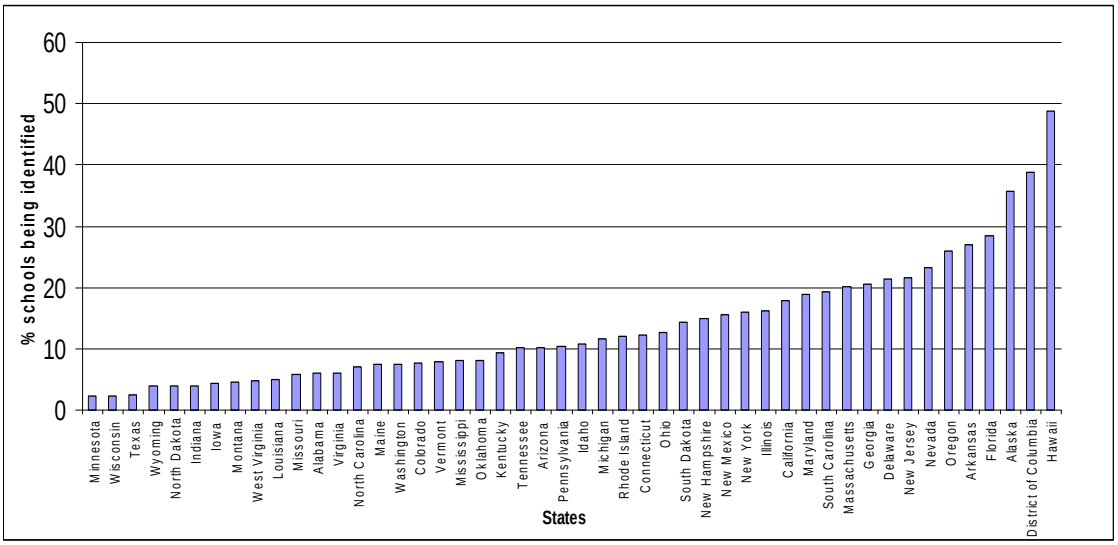


*Figure 1.* The percent of schools identified as in need of improvement. *Source:* Obtained from the US Department of Education, Consolidated State Performance Reports 2010-2011.

## Result

After carrying out the exploratory factor analysis, there are four factors extracted to represent all variables. The four factors include: economic factor (the percent of students in districts with per-pupil expenditures at or above the U.S. average and the percent of annual education expenditures devoted to instruction); demographic variables of minority group (percent of special education students who dropped out, the percent of minority students, the percent of English limit proficiency students, and the percent of disability students); the change of other academic indicator (scale score change of NAEP in Grade 4 of mathematics from 2007 to 2009), and teachers' effect (the percent of national board certificated teacher and average number of students per teacher). These variables selected by exploratory factor analysis were employed as independent variables to carry out the multiple regressions. The percent of schools identified as in need of improvement is employed as dependent variable. The bivariate correlations between all variables were examined.

**Bivariate Correlations**

For the correlation between the dependent variable and independent variable, the percent of schools

identified as improvement was significantly correlated with the percent of minority students in the states at the level of 0.01 (see Table 1). It is in the expected direction since schools with large numbers of minority students are likely to be below the annual measurable achievement objectives. Correlation of the percent of schools identified is negative (non-significant) with the percent of disability students in the states and the percent of special education students drops out.

When examining the correlation between the independent variables, we can see that many independent variables are significantly correlated with each other, which would create a collinearity problem if they are all included in the regression model. In some cases, the independent variables are more strongly correlated with each other than with the dependent variable. For example, the percent of ELL (English limited learner) students in the state is strongly correlated with the percent of minority students (*corr.* = 0.57). In addition, the number of students per teacher is negatively correlated to the percent expense on each pupil above US average (*corr.* = -0.63). In order to avoid the collinearity problem in regression analysis, two variables are dropped: the percent of ELL students and percent of expense on pupil above US average.

Table 1

*Correlations Among Variables*

| | Expense on instruction | NAEP score change 2007 to 2009 | Special education student drop out | Minority | Disability | ELL | National certified teacher | No. of students per teacher | Expense on pupil above US average | Needing improvement |
|---|---|---|---|---|---|---|---|---|---|---|
| Expense on instruction | 1 | 0.16 | 0.010 | -0.17 | 0.03 | -0.14 | -0.10 | -0.18 | 0.34* | 0.03 |
| NAEP score change 2007 to 2009 | | 1 | -0.13 | 0.12 | -0.28 | -0.09 | 0.37* | -0.15 | 0.33 | 0.11 |
| Special education student drop out | | | 1 | -0.21 | 0.25 | -0.49** | 0.27 | -0.24 | 0.29 | -0.22 |
| Minority | | | | 1 | -0.23 | 0.57** | 0.17 | 0.32 | -0.36** | 0.42** |
| Disability | | | | | 1 | -0.20 | 0.10 | -0.47** | 0.28* | -0.24 |
| ELL | | | | | | 1 | -0.20 | 0.17 | -0.42* | 0.34 |
| National certified teacher | | | | | | | 1 | 0.16 | 0.17 | 0.11 |
| No. of student per teacher | | | | | | | | 1 | -0.63* | 0.36 |
| Expense on pupil above US average | | | | | | | | | 1 | -0.27 |
| Needing improvement | | | | | | | | | | 1 |

*Notes.* * Correlation is significant at the 0.05 level (2-tailed); ** Correlation is significant at the 0.01 level (2-tailed).

Even though the percent of national certified teacher had only a weak bivariate correlation with the dependent variable, it is still included in the regression analysis, because it is substantively important and leaving it out would have produced bias from an omitted regressor. Table 2 shows that in the regression model, percent of minority students is the only variable whose relation with the dependent variable remains statistically

significant at the level of 0.05. This model is telling us with a greater percentage of minority students within a state, the greater likelihood of the state having a higher percent of schools identified as in need of improvement.

Table 2

*Regression Result*

| | Coefficient | Std. error | *P*-value |
|---|---|---|---|
| Constant | -50.75 | 40.22 | 0.22 |
| National certified teacher | -1.13 | 0.73 | 0.26 |
| Scale score change in NAEP from 2007 to 2009 | 0.93 | 0.64 | 0.14 |
| Expense on instruction | 0.33 | 0.53 | 0.52 |
| No. of students' per teacher | 0.94 | 0.75 | 0.22 |
| Special education student drop out | 0.03 | 0.23 | 0.83 |
| Minority | 0.26 | 0.03 | 0.00* |
| Disability | 0.25 | 0.75 | 0.41 |

*Note.* Dependent variable is percent of schools identified as in need of improvement.

## Discussion

AYP is the continuous and substantial, yearly improvement of each Title I school and LEA (Local Educational Agency). By gradually attaining the AYP each year, schools should be able to achieve the goal under Title I of serving all children, particularly economically disadvantaged and limited-English proficient children, and can meet the state's proficient and advanced levels of performance before the 2013-2014 school year. AYP is sufficiently rigorous to achieve the goal within an appropriate time frame, and links progress primarily to performance on the state's final assessment while permitting progress to be established in part through the use of other measures, such as dropout, retention, and attendance rates.

What might be the factors most related to the percent of schools in the state identified as in need of improvement? The result of this study indicates that the major reason is the percent of minority students in the states. States with higher percentage of minority students are more likely have schools identified. It could infer that the minority students are the population with low performing in the schools and they could result in schools fail to make AYP. However, the results from this study should be used with caution. In this study, only a simple statistical analysis of school performance is used. However, a more complicated statistical method could be used, such as structural equation modeling or hieratical level modeling technique, to validate the results obtained in this study.

Why do schools with large minority students perform poorly in the state? Researchers and analysts have provided a variety of explanation. First, minority students are mainly from low income family and have the destabilized home life. The environment of their living usually creates highly stressful conditions that inhibit learning (Shannon & Bylsma, 2002); Second, high poverty and high minority schools receive significantly less state and local fund than other schools do; also, students in such schools are almost twice as likely to be taught by teachers who are inexperienced or teaching outside their specialties (Jerald, 2001; Orlofsky, 2002); and Third, the schools with large minority populations usually have the uncoordinated curriculum, superficial instructional strategies, insufficient professional development, and timid leadership. The characteristics of schools might lead the low performance of students (Jerald, 2001). It is better to set up separate goals for school buildings, instead of setting the omnibus target for all schools in the state.

Critics and proponents of NCLB agree that it has brought new attention to the needs of some minority

groups. Districts and schools which have long neglected their minority students can no longer afford to do so as they are now held accountable for the academic performance of these students. Many controversial and practical issues will be discussed continually in the future. However, no one will doubt that all students deserve these opportunities and that none child should be left behind without a high quality education.

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