

education policy analysis archives

A peer-reviewed, independent,
open access, multilingual journal



Arizona State University

Volume 27 Number 41

April 15, 2019

ISSN 1068-2341

Improving Graduation Rates: Legitimate Practices and Gaming Strategies

Noralee R. Edwards



Diana L. Mindrila

University of West Georgia
United States

Citation: Edwards, N., & Mindrila, D. (2018). Improving graduation rates: Legitimate practices and gaming strategies. *Education Policy Analysis Archives*, 27(41). <http://dx.doi.org/10.14507/epaa.27.4222>

Abstract: Accountability pressures faced by teachers and leaders may lead well-intentioned educators to engage in strategic reporting and operational practices to increase test scores, graduation rates, and other indicators of student success. Such practices are referred to as *gaming behaviors*. School district personnel attending a Georgia educational conference ($N=146$) reported a significant prevalence of two such practices – purging data for students enrolled for a short period of time and fabricating withdrawal forms in case of audit. Exploratory factor analysis yielded three categories of strategies employed by school districts to improve reported graduation rates: a) practices that directly contradict the rules governing ethical reporting of data (Factor1); b) legitimate educational practices aiming to enhance student learning (Factor2); and c) possible gaming strategies aiming to exclude low performing students from the computation of graduation rates (Factor3). Latent profile analysis distinguished a) a group with average scores on all factors ($N=120$); and b) a group with significantly higher scores on Factor1 and Factor3 ($N=26$). The second group included a significantly larger proportion of individuals from districts with 5,000 – 10,000 students; districts of this size may have the expertise in-house to understand calculations and take strategic action with their data reporting practices.

Journal website: <http://epaa.asu.edu/ojs/>
Facebook: /EPAAA
Twitter: @epaa_aape

Manuscript received: 9/16/2018
Revisions received: 11/10/2019
Accepted: 11/10/2019

Keywords: high school; graduation rates; accountability; professional ethics; data ethics; strategic practices; mandatory reporting

Mejorando las tasas de graduación: Prácticas legítimas y estrategias de juego

Resumen: Presiones sobre rendición de cuentas pueden llevar a educadores bien intencionados a comprometerse en informes estratégicos y prácticas operativas para aumentar los resultados de las pruebas, las tasas de graduación y otros indicadores de éxito del alumno. Estas prácticas se denominan comportamientos de juego. El personal del distrito escolar en Georgia ($N = 146$) relató una prevalencia significativa de dos de estas prácticas - expurgando los datos para los alumnos matriculados por un corto período de tiempo y fabricando formularios de retiro en caso de auditoría. El análisis factorial exploratorio resultó en tres categorías de estrategias empleadas por los distritos escolares para mejorar las tasas de graduación relatadas: a) prácticas que contradice directamente las reglas que rigen el relato ético de datos; b) prácticas educativas legítimas destinadas a mejorar el aprendizaje de los alumnos; y c) posibles estrategias de juego con el objetivo de excluir a los alumnos con bajo desempeño del cálculo de las tasas de graduación. Este análisis distinguió un grupo con puntuaciones medias en todos los factores y un grupo con puntuaciones significativamente más altas en la primera y tercera categorías. El segundo grupo incluyó una proporción significativamente mayor de individuos de distritos con 5.000 a 10.000 alumnos; los distritos de este porte pueden tener la experiencia para entender los cálculos y tomar acciones estratégicas con sus prácticas de informes de datos.

Palabras-clave: escuela secundaria; tasas de graduación; rendición de cuentas; éticas profesionales; ética de los datos; prácticas estratégicas; informe obligatorio

Melhorando as taxas de graduação: Práticas legítimas e estratégias de jogo

Resumo: Pressões sobre prestação de contas podem levar educadores bem-intencionados a se engajarem em relatórios estratégicos e práticas operacionais para aumentar os resultados dos testes, taxas de graduação e outros indicadores de sucesso do aluno. Tais práticas são referidas como comportamentos de jogo. O pessoal do distrito escolar na Geórgia ($N = 146$) relatou uma prevalência significativa de duas dessas práticas - expurgando os dados para os alunos matriculados por um curto período de tempo e fabricando formulários de saque em caso de auditoria. A análise fatorial exploratória resultou em três categorias de estratégias empregadas pelos distritos escolares para melhorar as taxas de graduação relatadas: a) práticas que contradizem diretamente as regras que regem o relato ético de dados; b) práticas educativas legítimas que visam melhorar a aprendizagem dos alunos; e c) possíveis estratégias de jogo com o objetivo de excluir os alunos com baixo desempenho do cálculo das taxas de graduação. Esta análise distinguiu um grupo com pontuações médias em todos os fatores e um grupo com pontuações significativamente mais altas na primeira e terceira categorias. O segundo grupo incluiu uma proporção significativamente maior de indivíduos de distritos com 5.000 a 10.000 alunos; distritos deste porte podem ter a expertise para entender os cálculos e tomar ações estratégicas com suas práticas de relatórios de dados.

Palavras-chave: ensino médio; taxas de graduação; prestação de contas; éticas profissionais; ética dos dados; práticas estratégicas; relatório obrigatório

Introduction

The No Child Left Behind (NCLB) Act, signed into law by George W. Bush in January, 2002, increased federal oversight of U.S. public schools by implementing accountability systems that included rewards and sanctions based on schools meeting adequate yearly progress performance targets (Dee & Jacob, 2011). This legislation ushered in a new age of accountability, resulting in complex debates about the appropriateness of federal oversight of public education, pedagogical concerns surrounding high stakes testing, apprehensions about use of student achievement data for the evaluation of educators, and the advantages and disadvantages of school choice legislation. Situated firmly within this complex and often contentious landscape is the high school graduation rate, the credential that serves as evidence of a student's readiness to be a productive citizen, empowered with the necessary skills and knowledge for post-secondary educational opportunities or employment. It is within this high-pressure milieu that schools adopt strategies to improve their graduation rates.

Accountability pressures faced by teachers and leaders may lead well-intentioned educators to engage in strategic reporting and operational practices to increase test scores, graduation rates, and other indicators of student success (Amrein-Beardsley, Berliner, & Rideau, 2010; Courty & Marschke, 2004; Cullen & Reback, 2006; DeMatthews, 2014; Figlio & Getzler, 2006; Heilig & Darling-Hammond, 2008; McKenzie, 2009). In the context of this paper, such practices are referred to as *gaming behaviors*. Amrein-Beardsley (2009) points to a variety of ways in which gaming behaviors can occur, including: teaching to the test, narrowing of the curriculum, excluding or exempting under-performing students, manipulation of cut scores, administrative manipulations, and cheating.

The theoretical framework from which the phenomenon of gaming behaviors can best be understood is that of "unanticipated consequences of purposive social action," a framework first investigated by Robert K. Merton. Merton (1936) states:

Moreover, action in which this element of immediacy of interest is involved may be rational in terms of the values basic to that interest but irrational in terms of the life organization of the individual. Rational, in the sense that it is an action which may be expected to lead to the attainment of a specific goal; irrational, in the sense that it may defeat the pursuit or attainment of other values which are not, at the moment, paramount but which none the less form an integral part of the individual's scale of values (p. 902).

This statement precisely describes the internal struggle many well-meaning educators contend with when faced with accountability pressures to graduate students. In the short-run, it is rational to choose from available options that benefit some individual students, guarantee positive reviews and evaluations for school staff, and improve public perception. The core values of educators, however, may be threatened as graduation targets are met through unprincipled reporting practices or actions that threaten rigor and high expectations for students.

Literature Review

Accountability systems and sanctions for low-performing schools are adopted to encourage the improvement of our nation's schools. Studies conducted in several states found that the performance of schools is improved when threats of sanctions and market forces are introduced (Chiang, 2009; Haycock, 2006; Jacob, 2005; Klein, Hamilton, McCaffrey, & Stecher, 2000; Richards & Sheu, 1992). Georgia House Bill 338, adopted in 2017, provides escalating penalties for schools not meeting accountability targets, including removal of the principal and even complete

management takeover by a successful school district or a private educational provider (Georgia General Assembly, 2017). Some researchers have also found that accountability systems have unintended, negative side effects. The presence of accountability systems contributes to the stress of educators, leads high-performing schools to become complacent, leads to increased attrition rates, and impacts market forces in education (deWolf & Janssens, 2007; von der Embse, Pendergast, Segool, Saeki & Ryan, 2016; Ingersoll, Merrill & May, 2016; Ravitch, 2013, p. 138; Sass, Flores, Claeys & Perez, 2012). Educators may also engage in gaming behaviors to create the data that will allow individuals, schools, and school districts to meet accountability targets and receive positive recognition from state officials and the local community. Heilig and Darling-Hammond (2008) posited that high-stakes accountability led schools to find loopholes and manipulate data and practices in response to changing threats and incentives. In the published report of investigative findings of the Atlanta Public Schools (APS) 2009 Georgia Criterion Referenced Competency Test (CRCT) cheating scandal, three conditions were identified as contributing to the widespread prevalence of cheating:

- (1) The targets set by the district were often unrealistic, especially given their cumulative effect over the years. Additionally, the administration put unreasonable pressure on teachers and principals to achieve targets;
- (2) a culture of fear, intimidation and retaliation spread throughout the district; and,
- (3) Dr. Hall [APS Superintendent] and her administration emphasized test results and public praise to the exclusion of integrity and ethics. (Bowers, Wilson, & Hyde, 2011)

In Georgia, professional ethics are governed by Standard 4 of Georgia's Professional Standards Commission Code of Ethics. Among other items, this standard includes a prohibition of falsifying, misrepresenting, or omitting information submitted to federal, state, local school districts and other governmental agencies (Georgia Professional Standards Commission, 2018). It is important to note however, that while professionally licensed educators are subject to the Code of Ethics, this does not apply to non-licensed staff, which often includes secretaries, registrars, and data clerks who are typically assigned the task of data entry and reporting.

As a key component of accountability systems, graduation rates are often viewed as a key measure of a school or district's effectiveness. Comparisons are made across schools, school districts, and states, often without an understanding of the variations of student populations and calculation methodology differences across districts and states.

Methods Employed to Improve Graduation Rates

Legitimate methods to increase graduation rates. Studies of high-performing schools have identified many best practices that lead to genuine improvements in student achievement that result in increases in graduation rates (Robertson, Smith, & Rinka, 2012; Wilcox & Angelis, 2011; Rumberger & Larson, 2012). These strategies are often practices that result in slow, incremental growth and require exceptional effort by educators. In a study of North Carolina schools achieving the highest graduation rates increases between 2006 and 2010, surveyed leaders attributed their successes to many research-based whole school strategies, in addition to strategies that targeted at-risk youth. Included were attendance improvement programs, employment of graduation coaches, efforts at improving school climate, supports for students transitioning to high school, and online credit recovery opportunities. To address the at-risk student population, these leaders most often reported implementing programs involving mentoring, pregnancy prevention, family engagement, and life skills development (Robertson, Smith, & Rinka, 2012). A multiple case study analysis of the practices of New York high schools yielded evidence of four commonalities that exist in those schools that outperform demographically similar schools in successfully graduating academically

prepared students: (1) “rigorous curriculum and expectations;” (2) “innovative instructional programs and practices;” (3) “transparent communications;” and, (4) “varied evidence to make strategic decisions” (Wilcox & Angelis, 2011). Rumberger and Larson (2012) recommended improving school climate by creating a nurturing environment that encourages student engagement and sense of belonging.

Increasing diplomas by decreasing student expectations. Practices such as the narrowing of the curriculum, teaching to the test, and incessant drill and practice are employed by many well-intentioned teachers and school leaders to improve performance on standardized assessments (Amrein-Beardsley, Berliner, & Rideau, 2010). In response to a new accountability system adopted by North Carolina in 2011, online credit recovery programs increased in popularity, with many systems allowing at-risk students to earn a diploma with 20-21 credits, the minimum required by North Carolina law, while many districts applied a much higher expectation of 27-28 credits to the population not considered to be at-risk (Robertson et al., 2012). Other states have recently lifted graduation testing requirements, including provisions for allowing students earning non-standard diplomas in previous years to apply for regular diplomas (California Department of Education, 2015; Georgia General Assembly, 2015). While such measures effectively constitute reducing standards and jeopardizing the value of a high school diploma, these concerns must be weighed against the cost to students if they don’t attain a diploma. The Providence Student Union once conducted a protest march on the Rhode Island Department of Education where student representatives dressed as zombies to communicate their message that poor performance on high-stakes graduation tests would lead a large population of students, particularly minority students, to only have access to undesirable jobs (Kern, 2013).

“Gaming the system” through strategic data reporting and operational practices. Researchers have found that the introduction of high-stakes accountability increases the likelihood that educators will game the system in order to present their schools in the most favorable light, attain rewards or pay raises, or avoid sanctions (Amrein-Beardsley, 2009; deWolf & Janssens, 2007). These behaviors may include window dressing, misrepresentation, fraud and deception, and reshaping the test pool (deWolf & Janssens, 2007, p. 383). Window dressing is defined by the researchers as “creation of proactive and reactive arrangements, which are generated simply and solely to be assessed more favourably by the supervisor,” which they assert can lead to more serious behaviors including: the creation of false documentation, providing assistance to students during testing, exclusion of weak students from testing, and reporting weak teachers as sick to avoid having their performance assessed (p. 382).

Many researchers have studied the remarkable improvements in the achievement of Texas public high school students, particularly minority students, on the Texas Assessment of Academic Skills (TAAS) in the 1990s (Haney, 2000; Heilig & Darling-Hammond, 2008). Texas Education Authority (TEA) auditors found that Brazos City high schools reported 5,500 students as leaving high school without graduating, and of these students 3,000 (54.5%) should have been recorded as dropouts but were not (Heilig & Darling-Hammond, 2008). Haney (2000) found that Texas school districts, during this period of exceptional growth, increased the practice of retaining minority students in the eighth and ninth grades. This practice ultimately led to students dropping out of school or otherwise being excluded from the denominator prior to the administration of TAAS in the tenth grade, thereby creating the illusion of increased student achievement. During these same years, starkly different dropout rates were reported by different agencies, with those reported by the TEA being the lowest, leading Haney to assert that “It is clear that the TEA has been playing a Texas-sized shell game on the matter of dropouts” (Haney, 2000 p. 92).

In the high-profile case of El Paso Independent School District, the Superintendent orchestrated unethical behavior in what was known as the “Bowie Plan,” including retaining students in the ninth grade or promoting students from ninth directly to eleventh grade to avoid mandated testing, improperly awarding initial credit for participation in online classes designed for credit recovery, and manipulating the membership of students to subpopulations (Weaver & Tidwell, 2013). A mixed-methods study conducted in Brazos City, Texas, consisting of quantitative analysis of data and staff interviews, resulted in very similar conclusions (Heilig & Darling-Hammond, 2008). Heilig and Darling-Hammond (2008) further suggested that, as a result of accountability pressures, many schools are actively engaged in taking advantage of loopholes and opportunities for data manipulation. This manipulation of results compromises the values of educators and erodes public trust (Amrein-Beardsley, 2009). Much of the previous literature and published investigations of wrongdoing have focused on test administration and preparation. Some high-profile cases of such behavior that are found in the literature are the Atlanta Public Schools (Bowers, Wilson, & Hyde, 2011), Chicago Public Schools (Jacob & Levitt, 2003), and numerous studies of the Texas Assessment of Academic Skills (Haney, 2004; Heilig & Darling-Hammond, 2008; Weaver & Tidwell, 2013).

Much is found in the literature concerning the negative social and academic outcomes of highly mobile students (Black, 2006; Rumberger & Lawson, 1998; Weisman, 2012). Black (2006) suggests that educators may even openly resent these students when they transfer into their schools and classrooms. There was no existing research found, however, that measured whether educators were actively engaged in turning away such students in order to avoid negative impacts upon school graduation rates.

Similarly, the critical literature on homeschooling in the United States is focused on how differences in state regulations affect enrollment (Stewart & Neely, 2005) and how lax homeschool requirements may disguise abuse and neglect, both educational and physical / emotional (Reich, 2016; West, 2009; Yuracko, 2008). According to Reich (2016) and Yuracko (2008), home schooling is largely unregulated as a result of lobbying efforts by such organizations as the Home School Legal Defense Association (HSLDA) and National Center for Home Education (NCHHE). No research was found, however, that examined the removal of high school graduation cohort members through use of homeschool withdrawals.

Since the 2002 passage of the No Child Left Behind Act, educators have felt unprecedented pressure to improve our nation’s schools, especially as measured by the accountability systems by which schools and educators are judged by the public eye. To date, most research into gaming practices has been situated around the actions of teachers and administrators related to the preparation for and administration of standardized tests. Nationwide, only a few studies have looked at data reporting practices and the correlation of certain practices to improved graduation rates.

As important as what is found in the literature is what is absent from the literature. While measurement of graduation rates is an important function in ensuring their improvement, we must be wary of the “unintended consequences of purposive social action” and corruption pressures of which Merton warns (1936). The existence of accurate graduation rates that are the output of legitimate improvement efforts and ethical reporting practices are of critical concern to developers of accountability systems, policymakers, data management personnel, and researchers. This study seeks to illuminate areas in which gaming practices may be occurring that undermine the intended effect of accountability systems in Georgia’s public schools.

The current study used cross-sectional survey data collected from the attendees of an annual educational conference to investigate the following research questions:

Research Question 1: What is the prevalence of ethical and non-ethical strategies leveraged for the purpose of improving graduation rates and improving overall accountability position?

Research Question 2: What are the common factors in a series of practices that school districts in Georgia employ to improve graduation rates?

Research Question 3: What latent profiles of respondents underlie the data based on the types of strategies observed?

Method

Data Sources

Participants in the study were the school district personnel attending an annual educational conference. A total of 460 people were in attendance, including representatives from 134 of 203 local education agencies and public charter schools. Of the 460 attendees present, 402 worked for school systems. The remaining 58 attendees were vendors or State Department of Education representatives. A total of 146 surveys were returned, with a response rate of 36%.

The majority of attendees work in positions that deal directly with the entry, collection, analysis, and reporting of student data. Most are heavily involved with the scheduling process and, therefore, have a vast knowledge of academic and supporting programs offered at their schools. Unlike upper-level instructional leaders, such as principals and superintendents, the personnel who attend this conference are not likely to be evaluated on the improvement of student achievement indicators such as the graduation rate; it is reasonable to assume that data collection and reporting personnel would feel less pressure to mask the practices that are occurring in school settings to improve graduation rates.

The data collection instrument was a 22-item survey titled *Survey of School Operational and Data Reporting Practices to Improve Graduation Rates in Georgia's Public Schools*. The first section of the survey collected general information regarding district size, primary work location, and primary position. Response categories did not allow the identification of individual schools or school districts. The second section of the survey instrument listed 22 practices that may contribute to improvements in graduation rates and utilized a Likert scale (1 = Never; 2 = Rarely; 3 = Sometimes; 4 = Often) to record how often respondents witnessed their schools or school districts have engaged in these practices over the last 12 months. An additional response option was "I Don't Know or Not Applicable". Researchers interpreted these responses as participants' lack of knowledge of a specific item and coded them as missing values. Of the 22 practices included in the survey, 12 items referred to practices that could be considered gaming behaviors, and the other 10 items referred to practices that would generally be accepted as commonsense best practices for improving graduation rates.

Data Analysis

Descriptive analysis. Data analysis began by summarizing survey responses using descriptive statistics such as the mean and standard deviation of each variable. Further, researchers examined the distribution of survey variables by computing univariate coefficients of skewness and kurtosis and Mardia's estimate of multivariate kurtosis. Indices of univariate skewness larger than 2, univariate kurtosis larger than 7, and multivariate kurtosis larger than 3 were the criteria indicative of non-normality (Bentler & Wu, 2002; Chou & Bentler, 1995). For the survey items measuring unethical practices, researchers used the *t* test to determine whether the average response was significantly higher than the expected value of one (1=Never). To avoid losing observations, researchers also examined the distribution of missing values to determine the need of using an imputation procedure.

Exploratory factor analysis. The sample size of 146 individuals met the recommendation of at least five cases per variable for exploratory factor analysis (EFA) (Mundfrom, Shaw, & Kee, 2005; Preacher & Maccallum, 2002). Researchers conducted EFA using the exploratory structural equation modeling framework (ESEM) using the *Mplus* 7.4 software with the mean and variance adjusted weighted least squares (WLSMV) estimation procedure and Geomin rotation. The ESEM approach allows the estimation of an EFA model with rotations and yields a realistic representation of the data by allowing item cross-loadings. ESEM includes the methodological advances of confirmatory factor analysis and allows the computation of goodness of fit indices (Marsh, Morin, Parker, & Kaur, 2014). The WLSMV estimation provides more accurate results than other estimation procedures with small sample sizes, ordinal variables, and non-normal data (Finney & DiStefano, 2006). Geomin is an oblique factor rotation procedure, which allows factors to correlate (Browne, 2001).

Researchers included all 22 survey items for the initial EFA run. They determined the number of factors based on the interpretability of the factor solutions, and based on a set of goodness of fit indices: a) chi-square (χ^2) and its *p*-value, b) χ^2 divided by the degrees of freedom (χ^2/df), c) root mean square error of approximation (RMSEA) and its 90% confidence interval (CI), c) comparative fit index (CFI), d) Tucker-Lewis index (TLI), and e) weighted root mean residual (WRMR).

The χ^2 statistic is an omnibus measure of model fit, with non-significant values indicating good fit (Barrett, 2007). This index is, however, sensitive to non-normality, sample size, and model size; therefore, the χ^2/df is often used as a measure of fit, where values lower than 3 indicate good fit (Finney & DiStefano, 2006). For RMSEA values lower than .05 indicate excellent fit, values between .05 and .08 indicate good fit, values between .08 and .10 indicate acceptable fit, whereas values above .10 indicate poor fit (Hu & Bentler, 1999). For CFI and TLI, values larger than .90 indicate good fit, whereas values above .95 show excellent fit (Hu & Bentler, 1999). For the WRMR index, values lower than 1 indicate good fit (DiStefano, Liu, Jiang & Shi, 2017; Yu & Muthén, 2002).

Cross-loading items and items with non-significant factor loadings were sequentially removed. When a simple structure was reached, researchers computed factor scores to estimate the location of each individual on the identified factors (DiStefano, Zhu, & Mindrila, 2012).

Latent profile analysis. Latent profile analysis (LPA) helps estimate an error-free categorical latent variable, based on a set of continuous observed variables (Collins & Lanza, 2010). In the current study, researchers used EFA factor scores as observed indicators with the robust maximum likelihood estimation method. They estimated models with two (Model2) and three (Model3) latent profiles and selected the optimal model based on the interpretability of the profiles and a set of goodness of fit indices such as the Akaike Information Criteria (AIC) and the Bayesian Information Criteria (BIC). These are indices of relative fit and compare models with different numbers of latent categories or different model specifications (DiStefano, 2012); lower AIC and BIC values indicate better fit and higher model parsimony (Muthén, 2004; Vermunt & Magidson, 2002). To compare Model2 and Model3, researchers also used measures of classification precision such as a) the average latent profile probabilities for the most likely profile membership, b) classification probabilities for the most likely latent profile membership, and c) entropy. Entropy is an omnibus index of classification precision and takes values from zero to one, where values closer to one indicate clear distinctions among the identified groups and high levels of classification precision (Ramaswamy, Desarbo, Reibstein, 1993; Vermunt & Magidson, 2002).

Further, researchers described latent profiles by aggregating factor scores by group and identifying the factors where scores were significantly different than the mean of zero. They used a

χ^2 test to determine whether the work position and the size of the school district where individuals work varied significantly across the identified groups.

Results

Descriptive Analysis

The survey data did not have a multivariate normal distribution (Mardia’s coefficient of multivariate kurtosis=6.217, $p=.001$). Most survey items had non-significant indices of univariate skewness and kurtosis; however, four items had significant positive skewness coefficients and kurtosis coefficients above 4. In contrast, two items had significant negative skewness coefficients, and kurtosis coefficients above 6 (Table 1).

Table 1
Survey Response Distribution

Item	<i>N</i>	<i>M</i>	<i>SD</i>	Skewness	Kurtosis
Students were recorded as transferring out of the country without confirmation from a parent or guardian.	121	1.140	0.505	4.193	18.665
School staff assisted at-risk students and/or parents with securing funds to pay for private school tuition.	53	1.302	0.696	2.356	4.907
Records requests or withdrawal forms were fabricated in order to have transfer evidence in case of audit.	117	1.333	0.900	2.533	4.746
Enrollment data were purged from the student information system for transfer students enrolled for only a short time period prior to dropping out.	89	1.337	0.811	2.311	4.103
At-risk students aged 16+ were retained at the middle school level until they were either achieving on grade level or dropped out of school.	78	1.782	0.907	.987	.140
Students with disabilities were retained prior to entry into 9th grade so that they had exactly 4 years of high school possible before aging out.	74	1.838	1.034	0.870	-.579
At-risk students and/or their parents were counseled on private schools that may have less strenuous requirements for the awarding of a high school diploma.	59	1.847	0.997	.857	-.451
Students had access to attendance recovery programs on weekends or after school.	101	1.990	1.237	-.244	-1.425
Students presenting for enrollment who were already aged 16+ and did not have sufficient credits or had a previous history of dropping out were encouraged to pursue a GED instead of enrolling in high school.	67	2.209	0.962	.195	-.998

Table 1 cont.
Survey Response Distribution

Item	<i>N</i>	<i>M</i>	<i>SD</i>	Skewness	Kurtosis
When students aged 16+ withdrew without transferring, parents were encouraged by the school to sign withdrawal forms indicating intent to homeschool.	72	2.500	1.256	-.919	-.087
At-risk middle school students were provided opportunities to earn high school credits before entering 9 th grade.	85	2.635	1.174	-.244	-1.425
At-risk students had the opportunity to work on computer-based, self-paced courses without adult supervision.	98	2.673	1.091	-.335	-1.171
When students aged 16+ withdrew without transferring to another traditional school, students were encouraged to consider enrolling in an online school either within or outside the district.	74	3.027	0.993	-.919	-.087
At-risk students were encouraged to participate in extracurricular and volunteer opportunities that encourage school and community engagement.	87	3.069	0.887	-.854	.201
Computer-based, self-paced courses were used to allow at-risk youth to earn initial credit for classes in an expedited manner from his or her peers.	77	3.169	1.044	-1.061	-.110
Mentors were assigned to at-risk students.	110	3.182	0.768	-0.819	.586
School events were held that encouraged the involvement of parents of at-risk youth.	116	3.216	0.842	-1.050	.725
Positive Behavior Instructional Supports (PBIS) initiatives were implemented with fidelity.	109	3.514	0.801	-1.645	1.981
Students were given the opportunity to participate in summer, after-school or weekend tutoring and remediation programs.	130	3.515	0.819	-1.815	2.691
Students had the opportunity to participate in instructional extension, study hall, or dedicated support periods during the school day.	115	3.53	0.653	-1.267	1.273
Computer-based, self-paced courses were used to allow for credit recovery and to allow students to exempt certain modules for which they have already demonstrated mastery.	93	3.656	0.744	-2.573	6.453
Technology tools such as parent portals, district websites, and text messaging software were used to keep parents informed of school activities.	138	3.891	0.376	-3.693	13.751

Overall, survey items inquiring about gaming and unethical practices had lower response means than the items inquiring about legitimate strategies for improving graduation rates (Table 1). The item with the lowest ratings was “Students were recorded as transferring out of the country without confirmation from a parent or guardian” ($M=1.14$, $SD=0.505$). The survey item with the highest rating was “Technology tools such as parent portals, district websites, and text messaging software were used to keep parents informed of school activities” ($M=3.891$, $SD=0.376$).

For the question “Enrollment data were purged from the student information system for transfer students enrolled for only a short time period prior to dropping out,” the mean was found to be statistically different from 1.00 (*Never*), $t_{(88)} = 15.553$, $p < .001$. For the question “Records requests or withdrawal forms were fabricated in order to have transfer evidence in case of audit,” the mean was also found to be statistically different from 1.00, $t_{(116)} = 16.021$, $p < .001$. Missing values had a completely at random distribution ($\chi^2_{(188)}=214.017$, $p=.094$); therefore, researchers imputed missing values with the series mean before proceeding to further analyses.

Exploratory Factor Analysis

The scree plot indicated a solution with 2-3 factors as optimal, with three eigenvalues larger than one. Therefore, researchers estimated solutions with two (Model2) and three (Model3) factors. Although Model2 had a very good fit to the data, Model3 had an excellent fit, with a non-significant χ^2 , a χ^2/df lower than 1, an RMSEA of approximately zero, CFI and TLI of approximately 1, and WRMR lower than 0.5 (Table 2). Further, the additional factor included in Model3 helped distinguish more clearly the different types of strategies used to improve graduation rates; therefore, Model3 was selected as the optimal factor solution.

Table 2
EFA Goodness of Fit Indices

	Model2	Model3
χ^2	35	14.119
df	26	18
p value	0.1116	0.7213
χ^2/df	1.346	0.778
RMSEA	0.049	0.000
(90% CI)	(0.000-0.087)	(0.000-0.056)
CFI	0.947	1.000
TLI	0.908	1.058
WRMR	0.598	0.329

After sequentially removing cross-loading items and items with non-significant loadings, researchers obtained a simple structure consisting of ten items. All items in the final solution had

loadings that were statistically significant at $\alpha=.05$ level and larger than the cutoff of .320 (Costello & Osborne, 2005). Table 3 lists the survey items included in each factor, along with their factor loadings. The first factor explained 47.83% of the variance, with factor loadings between .668 and .965. The marker item for this factor was “Students were recorded as transferring out of the country without confirmation from a parent or guardian”. The second factor explained 27.64% of the variance, with

Table 3
Matrix of Factor Loadings

Item	Factor1	Factor2	Factor3
Students were recorded as transferring out of the country without confirmation from a parent or guardian.	0.965*		
Records requests or withdrawal forms were fabricated in order to have transfer evidence in case of audit.	0.820*		
Enrollment data was purged from the student information system for transfer students enrolled for only a short time period prior to dropping out.	0.668*		
At-risk students were encouraged to participate in extracurricular and volunteer opportunities that encourage school and community engagement.		0.721*	
Mentors were assigned to at-risk students.		0.644*	
Students were given opportunity to participate in summer, after-school or weekend tutoring and remediation programs.		0.364*	
Students had the opportunity to participate in instructional extension, study hall, or dedicated support periods during the school day.		0.343*	
At-risk students aged 16+ were retained at the middle school level until they were either achieving on grade level or dropped out of school.			0.706*
When students aged 16+ withdrew without transferring, parents were encouraged by the school to sign withdrawal forms indicating intent to homeschool.			0.645*
Students presenting for enrollment who were already aged 16+ and did not have sufficient credits or have a previous history of dropping out were encouraged to pursue a GED instead of enrolling in high school.			0.370*

*Note.** Significant at $p<.05$ level.

factor loadings between 0.343-0.721; the marker item for this factor was “At-risk students were encouraged to participate in extracurricular and volunteer opportunities that encourage school and community engagement”. The third factor explained 24.53% of the variance, with factor loadings ranging between 0.370 and 0.706. The marker item of this factor was “At-risk students aged 16+ were retained at the middle school level until they were either achieving on grade level or dropped out of school”. Factor correlations were not statistically significant at $\alpha=.05$ (Table 4).

Table 4
Matrix of Factor Correlations

	Factor1	Factor2
Factor2	-0.094	
Factor3	0.304	0.353

Latent Profile Analysis

Based on measures of classification precision, goodness of fit indices, and the interpretability of the identified latent profiles, researchers selected Model2 as the optimal model. This model differentiated two latent profiles, labeled a) LP1 (N=120, 82%) and b) LP2 (N=26, 18%). It had a slightly higher AIC than Model3, but a lower BIC. As indicated in Table 5, entropy was much higher for Model2 (93%), indicating a higher level of classification precision. Specifically, Model2 average latent profile probabilities and classification probabilities for the most likely profile membership for LP1 and LP2 ranged between 93% and 99%.

Table 5
Goodness of Fit and Entropy for Latent Profile Models

	Model2	Model3
AIC	905.156	896.028
BIC	934.992	937.799
Entropy	0.927	0.814

LP1 and LP2 had very similar scores on Factor2, but LP2 had higher scores than LP1 on both Factor3 and Factor1 (Figure 1). LP1 had close to average scores on all factors; however, the difference from zero was statistically significant for Factor3 (*estimate*=0.109, *SE*=0.035, *t*=3.1, *p*=.002). LP2 also had close to zero factor scores on Factor2, but the difference from zero was statistically significant on Factor3 (*estimate*=1.305, *SE*=0.132, *t*=9.892, *p*=0.000) and on Factor1 (*estimate*=0.559, *SE*=0.118, *t*=2.980, *p*=0.003). Members of the two groups did not differ significantly on the reported work position ($\chi^2_{(4)}=4.925, p=.295$), but differed significantly on district size. Specifically, a significantly larger proportion of individuals from districts with 5,000 – 10,000 students were included in LP2 than in LP1 ($\chi^2_{(3)}=12.906, p=.005$, standardized residual=2).

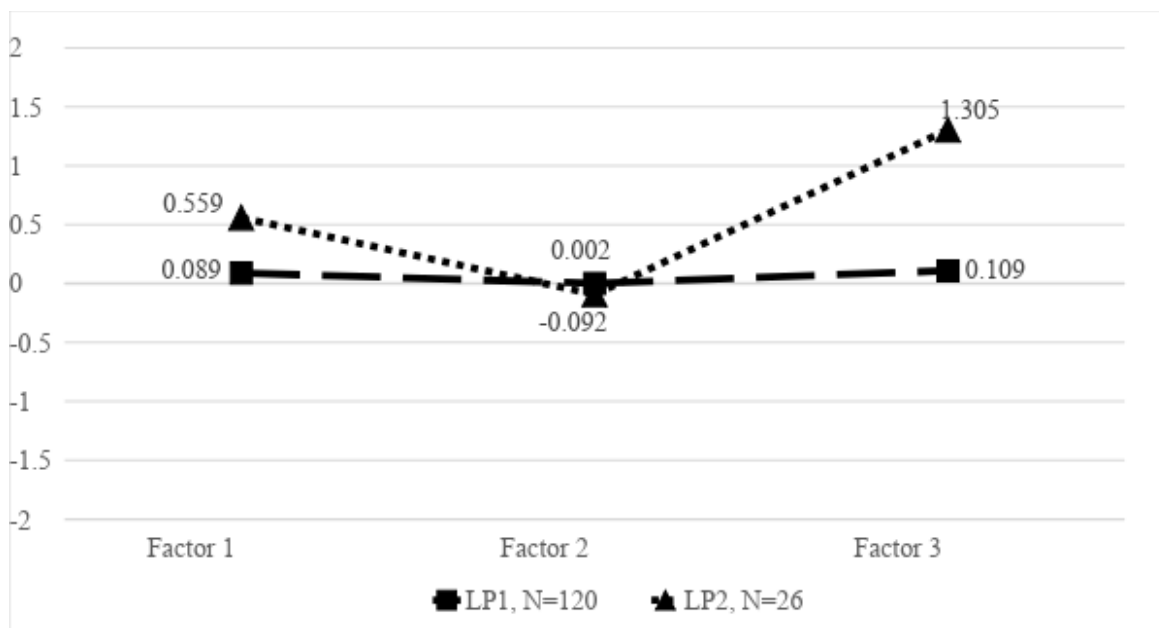


Figure 1. Mean factor scores by latent profile

Discussion

The study aimed to examine the prevalence of a series of ethical and non-ethical strategies for improving graduation rates, and to identify common factors among these practices. Further, the study aimed to differentiate respondents based on the types of strategies observed most often. Descriptive analyses showed that, overall, gaming practices were less frequently observed than the legitimate practices; however, *t* test results showed a significant prevalence for two unethical data management practices: a) purging data from the student information system for transfer students enrolled for only a short time period prior to dropping out; and b) fabricating withdrawal forms in order to have transfer evidence in case of audit. In Georgia, school districts are currently held accountable for any students who transfer into them, even if they only stay for a matter of days before they dropout. These practices could be indicative of educators' response to a system they believe to be unjust to schools.

Factor analytic results showed that the strategies employed by school districts to improve reported graduation rates can be grouped into three categories, as described by Factor1, Factor2, and Factor3. Factor1 includes practices that contradict the rules governing ethical reporting of data. Factor2 includes legitimate educational practices aiming to enhance student learning and increase academic performance. Strategies in Factor3 exclude low performing students from the computation of graduation rates. These strategies may be legitimately used in some instances but can also be employed as gaming strategies. For example, in some instances, it may be appropriate to retain older students in middle school due to the gaps in achievement that require intensive remediation. This could also, however, be a strategy used to retain low-performing students likely to dropout in middle school such that they are never identified as a member of a high school cohort. Likewise, in some cases, high school students may be withdrawn to participate in legitimate home study programs; yet, due to the lack of substantive homeschool regulations in Georgia, this could also simply be used as a strategy to record dropouts as transfers and remove them from the cohort. Finally, in some cases, students seeking to enroll may be so behind in earning high school credits that graduation before

“aging out” is improbable. In this case, there may be sound reason to encourage these students to pursue a GED. Yet, it cannot be ignored that discouraging enrollment prevents credit deficient students from negatively impacting a school’s graduation rate.

LPA identified two distinct groups of participants based on their scores on the three factors. The largest group, LP1, included 82% of the sample and had close to average factor scores on all factors, with scores significantly above zero on Factor3. The second group included only 18% of the sample but the individuals in this group had significantly higher scores on Factor1 and Factor3. Particularly concerning is that none of the groups recorded mean factor scores significantly above zero on Factor2, which included legitimate strategies for improvement. Further, both groups had scores significantly higher than zero on Factor3, which included possible gaming strategies. The distinction between the two groups was that individuals in LP2 reported a higher prevalence of possible gaming strategies and witnessed significant levels of unethical practices.

Comparing demographic information across latent profiles allowed researchers to describe the two groups without using identifying information. Results showed individuals in LP1 and LP2 did not differ significantly based on their reported work position; this indicates that patterns of survey responses were consistent across school district personnel, regardless of their roles in processing the student data. Nevertheless, patterns of responses differed significantly across districts of different size. Specifically, LP2 included a significantly higher proportion of individuals from districts with 5,000-10,000 students. Districts of this size may have the expertise in-house to understand calculations and take strategic action with their data reporting practices. Larger districts likely have more people engaged in auditing and oversight functions, which would discourage the use of unethical practices. Smaller districts, with employees wearing many different hats, may have less expertise or time to consider strategic reporting practices.

The original research presented herein also found evidence to support that at least some Georgia schools may also be participating in the types of gaming behaviors centered on grade assignment. Approximately 19% of survey respondents indicated that they *Sometimes* ($n = 10$) or *Often* ($n = 5$) retained students aged 16+ at the middle school until they were either achieving on grade level or dropped out of school. This suggests that manipulation of how and when students are promoted between grades might not be only a means to avoid state testing, but also a means by which schools attempt to improve their graduation rates.

The present study included a survey item to measure the extent to which schools were discouraging enrollment of highly mobile, credit deficient students. Forty percent of respondents also reported that they *Sometimes* ($n = 21$) or *Often* ($n = 6$) encourage credit deficient students or those with a previous history of dropping out to pursue a GED rather than enroll in high school, $M = 2.209$. An additional survey item was included to measure the extent to which schools encourage the parents of non-transferring students to sign withdrawal forms indicating intent to homeschool their children. Fifty-one percent of respondents reported that schools *Sometimes* ($n = 14$) or *Often* ($n = 23$) encouraged parents to sign withdrawal forms indicating intent to homeschool, $M = 2.500$. Georgia accepts parent signed withdrawal forms indicating intent to home school as acceptable evidence for removal of students from graduation cohorts. While some transfers to home school are likely legitimate, the prevalence of this practice may indicate a possible loophole through which students dropping out of high school may be disguised.

Implications for Policy and Accountability Systems

This research has significant implications for policy and accountability systems that inform the calculation of high school graduation rates. These implications fall into four main categories – *Rethinking the 4-year Graduation Rate*; *Ending the One-Size-Fits-All Approach to the High School Diploma*; *Fair Consideration of Highly Mobile Students in Graduation Rates*; and *Strengthening Home School Requirements*.

Rethinking the 4-year graduation rate. Nineteen percent of the individuals responding to the survey indicated that they *Sometimes* ($n = 10$) or *Often* ($n = 5$) retained students aged 16+ at the middle school until they were either achieving on grade level or dropped out of school. Because each graduating cohort is established based on ninth grade entry dates, dropouts prior to entering high school do not count against a school or school district.

Designers of accountability systems should re-consider the practices of establishing cohorts based on ninth grade entry dates for district and state-level graduation rates. Jimerson et al. (2006) found in a meta-analysis of over 300 studies that grade retention, even in early grades, was associated with likelihood of students dropping out of high school. Given this association, 12-year high school graduation rates that rely on date entered first grade would be a more appropriate calculation for school districts and states. This would ensure that all educators from early grades through high school are working towards the same goal. This would create an important incentive for elementary and middle schools to provide within-school, after-school, and summer programs to remediate the learning of students in the earlier grades. Once middle schools begin receiving students who are not overage, they would have less incentive to continue holding them back so that they turn 16 in middle school. High schools would cease to be expected to overcome prior year retentions that have left students behind their peers. While the high school graduation rates for individual high schools necessarily must rely upon ninth grade entry dates, it may make more sense to hold districts and states accountable for cohorts based on a first grade entry date. Having middle school dropouts count against school districts would further discourage the practice of retaining students in the middle grades.

While backing up the point at which cohorts are formed at the district and state level would arguably lead to less gaming and discourage the practice of retaining students throughout the educational experience, there still remains a small population of students with significant disabilities that would benefit from additional years of schooling, as mandated by federal law. For these students, an extended educational experience may be required in the high school years to prepare them for transition to productive post-secondary lives. Designers of accountability systems should, therefore, also consider allowing students with significant cognitive disabilities to continue until the age of 22, without negatively impacting a school or district graduation rate, provided that additional years are spent in transition activities designed to support post-secondary success.

Ending the one-size-fits-all approach to the high school diploma. Currently, Georgia only offers a single high school diploma option for which schools receive credit for the high school graduation rate. Typically, to meet state requirements, students must earn a minimum of 23 credits and participate in eight state end-of-course exams, which each count for 20% of the final associated course grades. There is also an exception by which students with significant cognitive disabilities who have participated in the state alternate standardized assessment since middle school, completed an integrated curriculum, and either turned 22 or transitioned into another employment, education, or training setting may earn a standard high school diploma. These are the students with the most significant cognitive disabilities and because they often remain in school until the age of 22, even though they may earn a standard high school diploma, these students do not earn schools credit towards their high school's graduation rates (Georgia Department of Education, 2013).

It is undeniable that all students, including students with disabilities, are afforded increased opportunity for post-secondary employment and education when they are able to produce a standard diploma (Erickson, Kleinhammer-Tramill, & Thurlow, 2007; Rubin, 2015). There is, however, a large population of learners that lies somewhere between the students who meet rigorous expectations when challenged and the ones with significant cognitive disabilities. This population includes students with learning and mild intellectual disabilities, as well as non-disabled students who

struggle academically. Thurlow, Vang & Cormier (2010) found that information regarding the diploma options and eligibility requirements for students with disabilities in individual states was scarce and lacked clarity. This amalgamation of state diploma options, varied high-stakes testing requirements, focus on individual needs of disabled students, national comparisons of graduation rates, and accountability pressures create an environment where reaching a national consensus regarding the treatment of this population in the awarding of high school exit credentials would be a daunting task.

Education that is relevant and rigorous is dependent upon the learner's experience in that education, yet Georgia offers no option for the in-between learners who desire to earn a high school diploma but are frustrated by their lack of success in meeting the rigorous requirements that have become the new norm. A return to a vocational or career-ready diploma option that emphasizes employability and life skills, along with the acquisition of a trade, would help ensure that this population of students exits high school with a standard diploma and the skills necessary for post-secondary success.

Also worthy of consideration is making an allowance for partial high school graduation rate credit for students who pass the GED®. High school students may be presented with numerous challenges and obstacles that limit their ability to participate fully in the traditional high school experience. Unplanned pregnancies, financial hardships, and social-emotional difficulties can arise and derail a student from obtaining a high school diploma. Currently, schools have no incentive to provide assistance for students in finding alternate paths to earning a credential. Opportunities such as the National Guard Youth ChalleNGe Program (2017) offer no-cost, comprehensive educational options for youth who are unsuccessful in traditional schools. Because this program prepares students to take the GED®, schools have little incentive to inform students of this option. By providing schools the opportunity to earn partial credit for students who receive a GED®, they will be more apt to work to find solutions that best meet the needs of students that are not successful in the traditional school setting.

Fair consideration of highly mobile students in graduation rates. Currently, all students who have been enrolled at any point during their four-year cohort period in a public high school and subsequently withdraw without transferring or graduating, count fully in the denominator for that school's high school graduation rate (GaDOE, 2017). Forty percent of survey respondents reported that they encourage potential enrollees who are credit deficient or have a history of dropping out to enroll in a GED program *Sometimes* ($n = 21$) or *Often* ($n = 6$). This is not surprising, considering that these students would count against the school's graduation rate, even if they were only enrolled briefly in the receiving school. It is imperative that a solution is found for the treatment of these highly mobile students in the high school graduation rate calculation that is both fair to students and to educators.

One possible solution would be to allow students who transfer in with credit deficiencies of one year or more to fully count in the numerator if they successfully graduate within the allotted time, but only count at a half-weight in the denominator. This would provide schools with an incentive to work with at-risk youth, rather than turn them away. For students who are not able to find success in traditional school due to external factors, the previously suggested half-credit in the numerator for GED attainment would allow the district the opportunity to at least earn full credit for these students transferring from other districts when they work with those students to ensure that they earn a credential that will open doors for career and post-secondary educational options. Essentially, this would create a "bonus" structure by which schools could earn extra credit for working with the most at-risk students.

Strengthening home school requirements. Over half (51%) of survey respondents indicated that they *Sometimes* ($n = 14$) or *Often* ($n = 23$) encouraged parents of student withdrawing without transferring to sign forms indicating intent to home school. While the aforementioned changes to accountability calculations could reduce the likelihood of schools feeling pressured to engage in strategic gaming behaviors, action is needed to directly address this loophole by which schools may camouflage the problem of students dropping out of high school. In Georgia, school districts are only required to have the signature of a parent indicating intent to home school in order to avoid having students count against the school in the graduation rate calculation. While proponents of home schooling may argue that states should not interfere with their decision to provide in-home education, the concerns of this small population (2.5%) of students and their families should not create a loophole by which masses of dropouts can be hidden from public view. More importantly, home schools should be subject to regulations that ensure that students participating in in-home educational experiences are mastering at least basic literacy and numeracy skills.

Because compulsory school attendance ceases at age 16 in Georgia, the issue of hiding dropouts through home school withdrawal reporting can only be rectified if more stringent requirements are in place for allowing a student to transfer to a home school program. When a student is reported as transferred to home school education and home schooling ceases after the age of 16, the parent has not violated any statute and the school at which the student was once enrolled also ceased to be responsible for the student's high school graduation. Parents seeking to provide a home school experience should be required to make application to establish a home study program. As part of the application process, the parent should be required to submit the necessary credentials (i.e., high school diploma or GED) required to operate a home school, specify the curriculum that will be developed or used, and certify an agreement to participate in annual testing of basic skills to remain in operation. That application should then be approved by the supervising agency, in this case the Georgia Department of Education.

With a more stringent process for qualifying as a home school program in place, traditional schools could be required to have an approved application on file as evidence of transfer to home school. Parents truly not planning to provide substantial educational support, other than perhaps help their child study for a GED, would be less likely to go through a full application process to establish themselves as a home school. Traditional schools would also have incentive to either work harder to develop innovative solutions to keep students in high school, or, at very least, work to ensure that they enroll in a legitimate GED® preparation program in order to receive partial credit towards the high school graduation rate.

Implications for Professional Development and Auditing

Amrein-Beardsley (2010) states that there is a need for data ethicists to counter the tendency towards engagement in gaming behaviors on the part of educators. While the Georgia Department of Education has certainly made some strides to improve professional development through an annual Data Collections Conference and routine webinars, more formalized training is needed. The fact that, in 2016, only nine of 43 high schools audited by the Georgia Governor's Office of Student Achievement (2016) on use of student withdrawal codes fully satisfied documentation requirements is one indicator of this need. The individuals wishing to enter a profession in education informatics should participate in certification and training programs that prepare them to understand the rules and regulations surrounding the 138 distinct data elements for which they are charged with overseeing the collection and reporting. These data elements are the byproducts of numerous daily data management activities that occur in school, including student enrollment and withdrawal,

scheduling, maintenance of grades and transcripts, and reporting of participation in programs for funding and other purposes.

Ideally, technical colleges could assist in filling this knowledge gap for school-level data clerks and registrars by offering certificate or associate degree programs in education informatics. Universities would also be well served to offer advanced degrees in education informatics for those educators who aspire to lead data, research, and accountability operations in a school district setting. By having qualified individuals serving in these roles, all stakeholders, including parents, policymakers, and researchers, would benefit from having confidence that the data used in accountability systems is trustworthy and has been ethically reported.

The published report of findings from the 2016 Governor's Office of Student Achievement audit of withdrawal codes also highlights the need for continued inspection of school records. Audits serve an important function in providing a checks and balances process for ensuring the ethical and accurate reporting of data. While the auditing of accounting records and compliance for federal programs requirements are accepted as necessary functions, the auditing of student-level data reported by schools is far less common. While it is encouraging to see that the Governor's Office of Student Achievement has taken an interest in implementing such audit procedures, consideration should be given to increasing and extending audit functions.

Limitations

The overwhelming majority (84%) of the respondents were information services personnel, working at either a school or district office. The perceptions and understanding of operational practices engaged in by their schools or districts may or may not mirror those of teachers and administrators. Further, findings of the current study pertain only to Georgia, and cannot be extrapolated to other U.S. states due to differences in regulations and data reporting practices. Also, only 146 surveys were returned, yielding a response rate of 36%. Respondents were given the option of providing a response of *I Don't Know or Not Applicable* for all survey items, resulting in a lower number of valid responses collected for each item, as presented in Table 1. Although lower response rates are fairly common in survey research (Draugalis, Coons, & Plaza, 2008) and there is no agreed-upon standard of acceptable response-rates (Fowler, 1995), a relatively low response rate increases non-response bias and limits the generalizability of the results; therefore, a replication of the study may provide additional evidence of validity and attenuate the impact of non-response bias.

Another limitation is the disconnect between the accepted understanding that *gaming behaviors* are unethical and the lack of agreement on what constitutes *gaming behaviors* in the first place (DeMatthews, 2014). For nearly all of the reporting practices analyzed, there could be arguments made that the practice may be in the best interest of at least some students. Homeschool or GED preparation programs may be in the best interest of some high school students, just as some students may benefit from being retained in lower grades. The results of these analyses should, therefore, be interpreted in the context of the complex social and political environment in which schools operate — environments in which educators feel both the pressure to perform and the desire to help students succeed.

Recommendations for Further Research

The research community and policymakers would benefit from a more comprehensive study on the effects of homeschool legislation on high school graduation rates. This study yielded evidence of schools encouraging parents of older students withdrawing without transferring to sign withdrawal forms indicating intent to homeschool. This could, in some instances, be a practice

intended to disguise dropouts. Ray (2004) states that available research provides evidence that homeschooled students are generally quite successful in both college and adult life. Much of the evidence in support of homeschooling specifically analyzes those students homeschooled throughout childhood or those that go on to post-secondary education. More research is needed to determine whether homeschool withdrawals during the high school years constitute a problem in accurate graduate rate calculations. Finally, students with disabilities are uniquely impacted by the limitations of a single standard diploma option and the pressures educators feel to graduate students within four years. The educational community needs a better understanding of how “one size fits all” accountability policies related to the awarding of standard diplomas within 4 years impact individual students with unique learning needs.

Conclusion

Appropriately designed accountability systems serve an important function in improving our nation’s schools. They provide a means for all stakeholders to measure achievement and growth on a variety of indicators. Many of these metrics, however, are often susceptible to *gaming behaviors* on the part of educators. These behaviors are apt to increase when performance pressures are high and the “fairness” of the calculation methodology to schools is in question. The high school graduation rate is a key component of accountability systems and one which is highly publicized. Adjusted cohort graduation rates in Georgia fail to provide fair consideration for highly mobile students or students with disabilities who require more than four years to graduate. Loopholes also exist through which schools may have a means to remove students from the cohort denominator. These include failing to consider dropouts that happen before ninth grade entry and limited documentation requirements for transfer to home study programs.

Results from this study indicate that educators are actively engaged in many data reporting and operational practices that effectively lead to improved graduation rates. Three practices generally considered to be unethical were found to differ significantly from the expected response of *Never*. These were (1) recording students as out-of-country transfers without confirmation by a parent or guardian, (2) fabrication of withdrawal forms in case of audit, and (3) the purging of enrollment data for students enrolled for a short period of time prior to dropping out. In other instances, reported practices may sometimes be used for legitimate purposes but could also serve as gaming behaviors to improve graduation rates. Survey results indicated an additional three practices in this category with significant findings: (1) retention of students aged 16+ in middle school until they were either achieving on grade level or dropped out, (2) encouraging parents of students aged 16+ who are withdrawing without transferring to sign withdrawal forms indicating intent to homeschool, and (3) encouraging students aged 16+ with deficient credits or a history of dropping out of school to pursue a GED instead of enrolling in high school.

Resources

- Amrein-Beardsley, A. (2009). The unintended, pernicious consequences of “staying the course” on the United States No Child Left Behind policy. *International Journal of Education Policy & Leadership*, 4(6), 1–13.
- Amrein-Beardsley, A., Berliner, D. C., & Rideau, S. (2010). Cheating in the first, second, and third degree: Educators’ response to high-stakes testing. *Education Policy Analysis Archives*, 18(14), 1–36. <http://dx.doi.org/10.14507/epaa.v18n14.2010>
- Barrett, P. (2007). Structural equation modelling: Adjusting model fit. *Personality and Individual Differences*, 42(5), 815-24.

- Bentler, P. M., & Wu, E. J. C. (2002). EQS 6 for Windows guide. Encino, CA: Multivariate Software.
- Black, S. (2006). Stabilizing schools with kids on the move. *The Education Digest*, 72(3), 46–51.
- Bowers, M. J., Wilson, R. E., & Hyde, R. L. (2011). *Atlanta Public Schools Investigation. Office of the Governor: Special Investigators*. Retrieved from:
https://gosa.georgia.gov/sites/gosa.georgia.gov/files/related_files/site_page/APS-Investigation-Volume-1.pdf; https://gosa.georgia.gov/sites/gosa.georgia.gov/files/related_files/site_page/APS-Investigation-Volume-2.pdf; https://gosa.georgia.gov/sites/gosa.georgia.gov/files/related_files/site_page/APS-Investigation-Volume-3.pdf
- Browne, M. W. (2001). An overview of analytic rotation in exploratory factor analysis. *Multivariate Behavioral Research*, 36(1), 111-150.
- California Department of Education (2015). FAQs about the suspension of CAHSEE. Retrieved from <https://www.cde.ca.gov/ta/tg/hs/faq.asp>
- Chiang, H. (2009). How accountability pressure on failing schools affects student achievement. *Journal of Public Economics*, 93(9-10), 1045–1057. <http://doi.org/10.1016/j.jpubeco.2009.06.002>
- Chou, C. P., & Bentler, P. M. (1995). Estimates and tests in structural equation modeling. In R. H. Hoyle (Ed.), *Structural equation modeling: Concepts, issues, and applications* (pp. 37-55). Thousand Oaks, CA: Sage.
- Collins, L. M., & Lanza, S. T., (2010). *Latent class and latent transition analysis for the social, behavioral, and health sciences*. New York: Wiley.
- Courty, P., & Marschke, G. (2004). An empirical investigation of gaming responses to explicit performance incentives. *Journal of Labor Economics*, 22(1), 23–56. <http://doi.org/10.1086/380402>
- Costello, A. B., & Osborne, J. W. (2005). Best practices in exploratory factor analysis: Four recommendations for getting the most from your analysis. *Practical Assessment, Research & Evaluation*, 10(7), 1-9.
- Cullen, J. B., & Reback, R. (2006). Tinkering toward accolades: School gaming under a performance accountability system. *Advances in Applied Microeconomics*, 14, 1–34.
[http://dx.doi.org/10.1016/S0278-0984\(06\)14001-8](http://dx.doi.org/10.1016/S0278-0984(06)14001-8)
- Dee, T. S. & Jacob, B. (2011). The impact of No Child Left Behind on student achievement. *Journal of Policy Analysis & Management*, 30(3), 418-446. <http://doi.org/10.1002/pam.20586>
- DeMatthews, D. E. (2014). Looks like 10 miles of bad road: Cheating, gaming, mistrust, and an interim principal in an urban Texas high school. *Journal of Cases in Educational Leadership*, 17(4), 19–33. <http://doi.org/10.1177/1555458914549667>
- de Wolf, I. F., & Janssens, F. J. G. (2007). Effects and side effects of inspections and accountability in education: an overview of empirical studies. *Oxford Review of Education*, 33(3), 379–396.
<http://doi.org/10.1080/03054980701366207>
- DiStefano, C. (2012). Cluster analysis and latent class clustering techniques. In B. Laursen, T. D. Little, & N. A. Card (Eds.), *Handbook of developmental research methods* (pp. 645-666). New York, NY: The Guilford Press.
- DiStefano, C., Liu, J., Jiang, N., & Shi, D. (2017). Examination of the weighted root mean square residual: Evidence for trustworthiness? *Structural Equation Modeling: A Multidisciplinary Journal*, <http://doi.org/10.1080/10705511.2017.1390394>
- DiStefano, C., Zhu, M., & Mindrila, D. (2009). Understanding and using factor scores: Considerations for the applied researcher. *Practical Assessment, Research & Evaluation*, 14(20), 1-11.
- Draugalis, J. R., Coons, S. J., & Plaza, C. M. (2008). Best practices for survey research reports: A synopsis for authors and reviewers. *American Journal of Pharmaceutical Education*, 72(1), 11.
- Erickson, A. S., Kleinhammer-Tramill, J. K., & Thurlow, M. L. (2007). An analysis of the relationship between high school exit exams and diploma options and the impact on students

- with disabilities. *Journal of Disability Policy Studies*, 18(2), 117-128.
<https://doi.org/10.1177/10442073070180020201>
- Finney, S. J., & DiStefano, C. (2006). Non-normal and categorical data in structural equation modeling. *Structural Equation Modeling: A Second Course*, 10(6), 269-314.
- Figlio, D. N., & Getzler, L. S. (2006). Accountability, ability, and disability: Gaming the system? *Advances in Applied Microeconomics*. [http://doi.org/10.1016/S0278-0984\(06\)14002-X](http://doi.org/10.1016/S0278-0984(06)14002-X)
- Fowler F. J. (1995). *Improving survey questions: Design and evaluation*. Thousand Oaks, CA: Sage Publications
- Georgia Department of Education. (2013). Free Appropriate Public Education (FAPE). [Board Rule]. Retrieved from <http://www.gadoe.org/External-Affairs-and-Policy/State-Board-of-Education/SBOE%20Rules/160-4-7-.02.pdf>
- Georgia Department of Education. (2017). High School Calculation Guide for 2017 CCRPI. Retrieved from <http://www.gadoe.org/Curriculum-Instruction-and-Assessment/Accountability/Documents/Reference%20Guides%20and%20Support%20Files/2017%20Documents%20for%20Educators/High%20School%20Calculation%20Guide%20for%202017%20CCRPI%20%203.15.2017.pdf>
- Georgia General Assembly. (2015). House Bill 91: Eliminate Georgia's a requirement for graduation. Retrieved from <http://www.legis.ga.gov/legislation/en-US/Display/20152016/HB/91>
- Georgia General Assembly. (2017). House Bill 338: Education; system of supports and assistance for low-performing schools in the greatest need; provisions. Retrieved from <http://www.legis.ga.gov/Legislation/en-US/display/20172018/HB/338>
- Georgia Governor's Office of Student Achievement (2016). Withdrawal code verification inquiry form results. Retrieved from <https://gosa.georgia.gov/academic-auditing>
- Georgia Professional Standards Commission (2018). *The code of ethics for educators*. Retrieved from <https://www.gapsc.com/Rules/Current/Ethics/505-6-.01.pdf>
- Haney, W. (2000). The myth of the Texas miracle in education. *Education Policy Analysis Archives*, 8(41), 1–323. <http://dx.doi.org/10.14507/epaa.v8n41.2000>
- Haycock, K. (2006). No more invisible kids. *Educational Leadership*, 64(3), 38–42. Retrieved from <http://www.ascd.org/publications/educational-leadership/nov06/vol64/num03/No-More-Invisible-Kids.aspx>
- Heilig, J. V., & Darling-Hammond, L. (2008). Accountability Texas-style: The progress and learning of urban minority students in a high-stakes testing context. *Educational Evaluation and Policy Analysis* (Vol. 30). <http://doi.org/10.3102/0162373708317689>
- Ingersoll, R., Merrill, L., & May, H. (2016). Do accountability policies push teachers out? *Educational Leadership*, 73(8), 44–50.
- Jacob, B. A. (2005). Accountability, incentives and behavior: The impact of high-stakes testing in the Chicago public schools. *Journal of Public Economics*, 89(5-6), 761-796.
<http://dx.doi.org/10.1016/j.jpubeco.2004.08.004>
- Jacob, B. A., & Levitt, S. D. (2003). Rotten apples: An investigation of the prevalence and predictors of teacher cheating. *Quarterly Journal of Economics*, 118(3), 843–878.
<http://dx.doi.org/10.1162/00335530360698441>
- Kern, D. (2013). Zombie ideas in education: High-stakes testing and graduation policies. *New England Reading Association Journal*, 49(1), 96–99. Retrieved from https://digitalcommons.uri.edu/cgi/viewcontent.cgi?referer=https://www.google.com/&httpsredir=1&article=1001&context=education_facpubs
- Klein, S., Hamilton, L., McCaffrey, D. & Stecher, B. (2000). What do test scores in Texas tell us? *Education Policy Analysis Archives*, 9. <http://dx.doi.org/10.14507/epaa.v8n49.2000>

- Marsh, H. W., Morin, A. J., Parker, P. D., & Kaur, G. (2014). Exploratory structural equation modeling: An integration of the best features of exploratory and confirmatory factor analysis. *Annual Review of Clinical Psychology, 10*, 85-110.
- McKenzie, K. B. (2009). Pragmatism or gaming the system? One school district's solution to low test scores. *Journal of Cases in Educational Leadership, 12*(4), 17-28. <http://doi.org/10.1177/1555458909353184>
- Merton, R. K. (1936). The Unanticipated Consequences of Purposive Social Action. *American Sociological Review, 1*(6), 894-904. <http://doi.org/10.2307/2084615>
- Mundfrom, D. J., Shaw, D. G., & Ke, T. L. (2005). Minimum sample size recommendations for conducting factor analyses. *International Journal of Testing, 5*(2), 159-168.
- Muthén, B. (2004). Latent variable analysis. *The Sage handbook of quantitative methodology for the social sciences* (pp. 345-368). Thousand Oaks, CA: Sage.
- National Guard Youth Foundation. (2017). Frequently asked questions. Retrieved from <http://www.ngyf.org/faqs/>
- Ravitch, D. (2013). *Reign of error*. New York, NY: Alfred A. Knopf.
- Preacher, K. J., & MacCallum, R. C. (2002). Exploratory factor analysis in behavior genetics research: Factor recovery with small sample sizes. *Behavior Genetics, 32*(2), 153-161.
- Ramaswamy, V., Desarbo, W. S., & Reibstein, D. J. (1993). An empirical pooling approach for estimating marketing mix elasticities with PIMS data. *Market Science, 12*, 103-124.
- Ray, B. D. (2004). Homeschoolers on to college: What research shows us. *The Journal of College Admission, 185*, 5-11. Retrieved from <https://files.eric.ed.gov/fulltext/EJ682480.pdf>
- Reich, R. (2016). Why home schooling should be regulated. *Homes schooling in new view* (2nd ed., pp. 133-143). Charlotte, NC: Information Age Publishing.
- Richards, C. & Sheu, T. (1992). The South Carolina school incentive reward program: A policy analysis. *Economics Education Review, 11*(1), 71-86. [http://dx.doi.org/10.1016/0272-7757\(92\)90024-W](http://dx.doi.org/10.1016/0272-7757(92)90024-W)
- Robertson, J. S., Smith, R. W., & Rinka, J. (2012). How did successful high schools improve their graduation rates? *The Journal of At-Risk Issues, 19*(1), 10-19. Retrieved from <https://files.eric.ed.gov/fulltext/EJ1104424.pdf>
- Rubin, J. (2016). Georgia's policies regarding high school special education diplomas: Are too many children left behind? *Georgia State University Law Review, 32*, 1-29.
- Rumberger, R. W., & Larson, K. A. (1998). Student mobility and the increased risk of high school dropout. *American Journal of Education, 107*(1), 1-35. <http://dx.doi.org/10.1086/444201>
- Sass, D. A., Flores, B. B., Claeys, L., & Perez, B. (2012). Identifying personal and contextual factors that contribute to attrition rates for Texas public school teachers. *Education Policy Analysis Archives, 20*(15), 1-26. <http://dx.doi.org/10.14507/epaa.v20n15.2012>
- Stewart, K. P., & Neeley, R. A. (2005). The impact of home schooling regulations on educational enrollments in the United States. *Education, 126*(2), 353-363.
- Thurlow, M., Vang, M. & Cormier, D. (2010). *Earning a high school diploma through alternative routes: synthesis report 76*. Minneapolis, MN: National Center on Educational Outcomes, University of Minnesota. Retrieved from the ERIC database. (ED511745).
- von der Embse, N. P., Pendergast, L. L., Segool, N., Saeki, E., & Ryan, S. (2016). The influence of test-based accountability policies on school climate and teacher stress across four states. *Teaching and Teacher Education, 59*, 492-502. <http://doi.org/10.1016/j.tate.2016.07.013>
- Vermunt, J. K., & Magidson, J. (2002). Latent class cluster analysis. In J. A. Hagenaars & A. L. McCutcheon (Eds.), *Applied latent class analysis* (pp. 89-106). Cambridge, U.K.: Cambridge University Press.

- Weaver & Tidwell, LLC. (2013). *Final report of investigation into cheating scandal at El Paso Independent School District*. [Audit Report]. Retrieved from <http://www.lrl.state.tx.us/scanned/archive/2013/23488.pdf>
- Weisman, C. (2012). Giving credit where credit is due: Advancing the highly mobile student population toward high school graduation. *Family Court Review*, 50(3), 527–542. <http://doi.org/10.1111/j.1744-1617.2012.01469.x>
- West, R. L. (2009). The harms of homeschooling. *Philosophy & Public Policy Quarterly*, 29(3/4), 7–12. <http://dx.doi.org/10.13021/G8PPPQ.292009.104>
- Wilcox, K. C. & Angelis, J. I. (2011). High school best practices: Results from cross-case comparisons. *The High School Journal*, 94(4), 138–153. <http://dx.doi.org/10.1353/hsj.2011.0009>
- Yu, C., & Muthén, B. (2002, April). *Evaluation of model fit indices for latent variable models with categorical and continuous outcomes*. Paper presented at the annual meeting of the American Educational Research Association, New Orleans, LA.
- Yuracko, K. A. (2008). Education off the grid: Constitutional constraints on homeschooling. *California Law Review*, 96(123), 123–184. <http://dx.doi.org/10.2139/ssrn.1016778>

About the Authors

Noralee R. Edwards

University of West Georgia
ndeason1@my.westga.edu

Noralee R. Edwards earned her Doctorate in School Improvement from the University of West Georgia in May, 2018. She is currently employed as the Director of Data Support for Bulloch County Schools in southeast Georgia. Her research interests include educational leadership, accountability systems, and education informatics.

Diana L. Mindrila

University of West Georgia
dmindril@westga.edu

Diana Mindrila is an Associate Professor of Educational Research at the University of West Georgia. Her research interests include latent variable modelling and the development of behavior typologies using multivariate classification procedures.

education policy analysis archives

Volume 27 Number 41

April 15, 2019

ISSN 1068-2341



Readers are free to copy, display, and distribute this article, as long as the work is attributed to the author(s) and **Education Policy Analysis Archives**, it is distributed for non-commercial purposes only, and no alteration or transformation is made in the work. More details of this Creative Commons license are available at <http://creativecommons.org/licenses/by-nc-sa/3.0/>. All other uses must be approved by the author(s) or **EPAA**. **EPAA** is published by the Mary Lou Fulton Institute and Graduate School of Education at Arizona State University. Articles are indexed in CIRC (Clasificación Integrada de Revistas Científicas, Spain), DIALNET (Spain), [Directory of Open Access Journals](#), EBSCO Education Research Complete, ERIC, Education Full Text (H.W. Wilson), QUALIS A1 (Brazil), SCImago Journal Rank, SCOPUS, Socolar (China).

Please send errata notes to Audrey Amrein-Beardsley at audrey.beardsley@asu.edu

Join **EPAA's Facebook community** at <https://www.facebook.com/EPAAAPE> and **Twitter feed** @epaa_aape.

education policy analysis archives
editorial board

Lead Editor: **Audrey Amrein-Beardsley** (Arizona State University)

Editor Consultor: **Gustavo E. Fischman** (Arizona State University)

Associate Editors: **David Carlson, Lauren Harris, Eugene Judson, Mirka Koro-Ljungberg, Scott Marley, Molly Ott, Iveta Silova** (Arizona State University)

Cristina Alfaro
San Diego State University

Gary Anderson
New York University

Michael W. Apple
University of Wisconsin, Madison

Jeff Bale
University of Toronto, Canada

Aaron Bevanot SUNY Albany

David C. Berliner

Arizona State University

Henry Braun Boston College

Casey Cobb

University of Connecticut

Arnold Danzig

San Jose State University

Linda Darling-Hammond

Stanford University

Elizabeth H. DeBray

University of Georgia

David E. DeMatthews

University of Texas at Austin

Chad d'Entremont Rennie Center
for Education Research & Policy

John Diamond

University of Wisconsin, Madison

Matthew Di Carlo

Albert Shanker Institute

Sherman Dorn

Arizona State University

Michael J. Dumas

University of California, Berkeley

Kathy Escamilla

University of Colorado, Boulder

Yariv Feniger Ben-Gurion

University of the Negev

Melissa Lynn Freeman

Adams State College

Rachael Gabriel

University of Connecticut

Amy Garrett Dikkers University
of North Carolina, Wilmington

Gene V Glass

Arizona State University

Ronald Glass University of
California, Santa Cruz

Jacob P. K. Gross

University of Louisville

Eric M. Haas WestEd

Julian Vasquez Heilig California
State University, Sacramento

Kimberly Kappler Hewitt University
of North Carolina Greensboro

Aimee Howley Ohio University

Steve Klees University of Maryland

Jaekyung Lee SUNY Buffalo

Jessica Nina Lester

Indiana University

Amanda E. Lewis University of
Illinois, Chicago

Chad R. Lochmiller Indiana

University

Christopher Lubienski Indiana

University

Sarah Lubienski Indiana University

William J. Mathis

University of Colorado, Boulder

Michele S. Moses

University of Colorado, Boulder

Julianne Moss

Deakin University, Australia

Sharon Nichols

University of Texas, San Antonio

Eric Parsons

University of Missouri-Columbia

Amanda U. Potterton

University of Kentucky

Susan L. Robertson

Bristol University

Gloria M. Rodriguez

University of California, Davis

R. Anthony Rolle

University of Houston

A. G. Rud

Washington State University

Patricia Sánchez University of
University of Texas, San Antonio

Janelle Scott University of
California, Berkeley

Jack Schneider University of
Massachusetts Lowell

Noah Sobe Loyola University

Nelly P. Stromquist

University of Maryland

Benjamin Superfine

University of Illinois, Chicago

Adai Tefera

Virginia Commonwealth University

A. Chris Torres

Michigan State University

Tina Trujillo

University of California, Berkeley

Federico R. Waitoller

University of Illinois, Chicago

Larisa Warhol

University of Connecticut

John Weathers University of
Colorado, Colorado Springs

Kevin Welner

University of Colorado, Boulder

Terrence G. Wiley

Center for Applied Linguistics

John Willinsky Stanford University

Jennifer R. Wolgemuth

University of South Florida

Kyo Yamashiro

Claremont Graduate University

archivos analíticos de políticas educativas consejo editorial

Editor Consultor: **Gustavo E. Fischman** (Arizona State University)

Editores Asociados: **Armando Alcántara Santuario** (Universidad Nacional Autónoma de México), **Angelica Buendia**, (Metropolitan Autonomous University), **Alejandra Falabella** (Universidad Alberto Hurtado, Chile), **Antonio Luzon**, (Universidad de Granada), **José Luis Ramírez**, (Universidad de Sonora), **Paula Razquin** (Universidad de San Andrés), **María Alejandra Tejada-Gómez** (Pontificia Universidad Javeriana, Colombia)

Claudio Almonacid

Universidad Metropolitana de Ciencias de la Educación, Chile

Miguel Ángel Arias Ortega

Universidad Autónoma de la Ciudad de México

Xavier Besalú Costa

Universitat de Girona, España

Xavier Bonal Sarro Universidad Autónoma de Barcelona, España

Antonio Bolívar Boitia

Universidad de Granada, España

José Joaquín Brunner Universidad Diego Portales, Chile

Damián Canales Sánchez

Instituto Nacional para la Evaluación de la Educación, México

Gabriela de la Cruz Flores

Universidad Nacional Autónoma de México

Marco Antonio Delgado Fuentes

Universidad Iberoamericana, México

Inés Dussel, DIE-CINVESTAV,

México

Pedro Flores Crespo Universidad

Iberoamericana, México

Ana María García de Fanelli

Centro de Estudios de Estado y Sociedad (CEDES) CONICET, Argentina

Juan Carlos González Faraco

Universidad de Huelva, España

María Clemente Linuesa

Universidad de Salamanca, España

Jaume Martínez Bonafé

Universitat de València, España

Alejandro Márquez Jiménez

Instituto de Investigaciones sobre la Universidad y la Educación, UNAM, México

María Guadalupe Olivier Tellez,

Universidad Pedagógica Nacional, México

Miguel Pereyra Universidad de

Granada, España

Mónica Pini Universidad Nacional de San Martín, Argentina

Omar Orlando Pulido Chaves

Instituto para la Investigación Educativa y el Desarrollo Pedagógico (IDEP)

José Ignacio Rivas Flores

Universidad de Málaga, España

Miriam Rodríguez Vargas

Universidad Autónoma de Tamaulipas, México

José Gregorio Rodríguez

Universidad Nacional de Colombia, Colombia

Mario Rueda Beltrán Instituto de Investigaciones sobre la Universidad y la Educación, UNAM, México

José Luis San Fabián Maroto

Universidad de Oviedo, España

Jurjo Torres Santomé, Universidad de la Coruña, España

Yengny Marisol Silva Laya

Universidad Iberoamericana, México

Ernesto Treviño Ronzón

Universidad Veracruzana, México

Ernesto Treviño Villarreal

Universidad Diego Portales Santiago, Chile

Antoni Verger Planells

Universidad Autónoma de Barcelona, España

Catalina Wainerman

Universidad de San Andrés, Argentina

Juan Carlos Yáñez Velazco

Universidad de Colima, México

arquivos analíticos de políticas educativas conselho editorial

Editor Consultor: **Gustavo E. Fischman** (Arizona State University)

Editoras Associadas: **Kaizo Iwakami Beltrao**, (Brazilian School of Public and Private Management - EBAPE/FGV, Brazil), **Geovana Mendonça Lunardi Mendes** (Universidade do Estado de Santa Catarina), **Gilberto José Miranda**, (Universidade Federal de Uberlândia, Brazil), **Marcia Pletsch, Sandra Regina Sales** (Universidade Federal Rural do Rio de Janeiro)

Almerindo Afonso

Universidade do Minho
Portugal

Alexandre Fernandez Vaz

Universidade Federal de Santa
Catarina, Brasil

José Augusto Pacheco

Universidade do Minho, Portugal

Rosanna Maria Barros Sá

Universidade do Algarve
Portugal

Regina Célia Linhares Hostins

Universidade do Vale do Itajaí,
Brasil

Jane Paiva

Universidade do Estado do Rio de
Janeiro, Brasil

Maria Helena Bonilla

Universidade Federal da Bahia
Brasil

Alfredo Macedo Gomes

Universidade Federal de Pernambuco
Brasil

Paulo Alberto Santos Vieira

Universidade do Estado de Mato
Grosso, Brasil

Rosa Maria Bueno Fischer

Universidade Federal do Rio Grande
do Sul, Brasil

Jefferson Mainardes

Universidade Estadual de Ponta
Grossa, Brasil

Fabiany de Cássia Tavares Silva

Universidade Federal do Mato
Grosso do Sul, Brasil

Alice Casimiro Lopes

Universidade do Estado do Rio de
Janeiro, Brasil

Jader Janer Moreira Lopes

Universidade Federal Fluminense e
Universidade Federal de Juiz de Fora,
Brasil

António Teodoro

Universidade Lusófona
Portugal

Suzana Feldens Schwertner

Centro Universitário Univates
Brasil

Debora Nunes

Universidade Federal do Rio Grande
do Norte, Brasil

Lílian do Valle

Universidade do Estado do Rio de
Janeiro, Brasil

Flávia Miller Naethe Motta

Universidade Federal Rural do Rio de
Janeiro, Brasil

Alda Junqueira Marin

Pontifícia Universidade Católica de
São Paulo, Brasil

Alfredo Veiga-Neto

Universidade Federal do Rio Grande
do Sul, Brasil

Dalila Andrade Oliveira

Universidade Federal de Minas
Gerais, Brasil