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INCLUSIVE ACCESS: A MULTI-INSTITUTIONAL STUDY OF ACADEMIC OUTCOMES FROM A STATEWIDE COMMUNITY COLLEGE AUTOMATIC BILLING ETEXTBOOK PILOT

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Abstract

In response to issues related to the high cost of textbooks and other course materials, *Inclusive Access* programs allow the cost of a discounted eTextbook and/or courseware to be automatically added to a student's tuition bill at the time of course registration (McKenzie, 2017). Touted for their ability to lower costs and provide students with access to materials on or before the first day of class, automatic billing programs have become increasingly prolific across the higher education landscape. At the same time, research into many aspects of the program's impact and efficacy remains lacking. This study examined academic outcomes from an *Inclusive Access* pilot launched fall 2019 by Tennessee's largest system of public higher education. Results from across 13 community colleges, 41 course areas, and 141 courses indicated no significant differences in either overall or population-specific academic outcomes between the *Inclusive Access* pilot semester and the two prior falls in which the courses were taught. The findings demonstrate that benefits accrued from relative cost-savings and/or Day One Access were insufficient to produce significant improvements in academic outcomes, with no significant differences in outcomes also evidenced for non-White, federal Pell grant award recipients, and/or non-traditional students over the age of 25. These results suggest that measures beyond cost-savings and Day One access, such as hidden costs, the need for perpetual access, and the ultimate repercussions of deferred costs to student debt, should also be considered when evaluating ways to provide students with affordable course materials that enable high-quality, equitable learning experiences.

Keywords: Textbook costs, college textbooks, Inclusive Access, community college affordability, course material costs

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Course material costs have increased exponentially over the past two decades. From 2006 to 2016, compared to an overall inflation rate of 20%, the cost of textbooks increased by 88%, more than nearly any other college student expense (U.S. Bureau of Labor Statistics, 2016). As a result of these ever-rising costs, students have reported not purchasing required materials, earning poor grades, dropping and withdrawing from courses, and avoiding majors altogether (Martin, et al., 2017). Vitez (2018) reports that “sixty-five percent of students have skipped buying a textbook at some point because of cost, and each year, \$3 billion of federal student aid goes to pay for textbooks.”

In efforts to lower the cost of course materials, campuses have explored the use of *Inclusive Access* programs, “e-text-based programs developed by for-profit textbook publishers that are bundled within the course and offered at a reduced price over their traditional textbook bookstore sales” (Hurley & Hallmark, 2020, p. 4). In essence, *Inclusive Access* programs automatically bill the cost of a presumably discounted eTextbook or other digital materials directly to a student’s tuition bill at the time they register for a course (McKenzie, 2017). Title 34 of the Code of Federal Regulations paved the way for this automatic billing model, enabling institutions to include the cost of textbooks in tuition and fees provided they are priced “below competitive market rates” (34 e-C.F.R. §668.164 2016).

Distribution via *Inclusive Access* also provides a more sustainable model for publishers, whose profits have substantially declined since 2016 in the face of rental programs, used printed copies available on the third-party market, and innovations such as freely available Open Educational Resources (Carbaugh, 2020; NACS, 2020; Vitez, 2020). The model has likewise provided growth opportunities for companies that specialize in aggregating and distributing

digital content, their promotion key in paving the way for publisher, industry expert, and campus bookstore buy-in (RedShelf, 2017).

Despite the rapid gain in popularity of *Inclusive Access*, however, many aspects remain to be studied. To address this gap in research, this study examines the academic outcomes from a statewide community college *Inclusive Access* pilot of 141 courses in 41 course areas across 13 institutions. The evidence produced by this study helps inform the decisions of policymakers and educational leaders on how and whether to support program expansion.

Review of Literature

This review first outlines the underlying dynamics that generated and made the *Inclusive Access* digital distribution model possible for institutions of higher education. Next, the model's two most consistently marketed benefits – cost savings and Day One access— are reviewed. Finally, advertised program benefits are balanced with related program criticisms, i.e., the program opt-out process, digital material usage and students' need to retain materials, and the hidden costs of program facilitation.

Inclusive Access: Marketed Benefits

Cost Savings. The affordability of textbooks and course materials remains of particular concern for students at community colleges, where those costs can account for 80% of total college attendance expenditures (Jaggars, et al., 2019). Cost-savings are one of the most widely reported benefits of *Inclusive Access* programs (Hurley 2020; McClendon and McMillan, 2020).. Discounts, which are negotiated between institutions and publishers, typically require a set percentage of students to participate, are subject to regular prices increases, and can be reduced or eliminated if enrollment quotas are missed (Vitez, 2020). Criticized for a lack of transparency,

one study of 52 contracts across 31 colleges, researchers found that nearly half of the contracts did not disclose the discount structure (Vitez, 2020).

This immediate access on the first day of class has been thought to help create a more equitable environment by allowing all students access to the same materials at the beginning of the semester, since Title IV funds can be used to cover the costs (Anaya & Yankelewicz, 2020). Nonetheless, the immediate cost-savings and equity of access are somewhat illusory, as paying with student loans can result in higher prices as tuition costs are deferred and interest added. In this respect, these costs ultimately contribute to ever-rising student debt, which as of 2019 totaled over \$1.5 trillion, second only to mortgage debt (Perry, 2019).

Day One Access. Alongside the potential for cost-savings, another marketed benefit of the *Inclusive Access* is the convenience of having materials available within the instructor's Learning Management System (LMS) course section when classes begin. Having course materials is generally deemed more beneficial for student learning than not having them (Grimaldi, et al., 2019). However, actual need for usage on the first day of class is debatable, as researchers have also reported students' being unaware they could access materials on the first day (McClendon & McMillan, 2020),

Some researchers have suggested associations between Day One access and higher course completion rates (Colvard et al., 2018; Fischer, et al., 2015). Fischer, et al. (2015) suggested Day One access to freely accessible Open Educational Resources (OER) may have influenced moderate differences in course completion and academic achievement between the OER treatment group and a control group using traditionally copyrighted textbooks. In another study involving OER, Colvard, et al., (2018) found that the improved end of course grades and decreased DFW rates of the OER treatment group could have been attributed to all students

having access on the first day of class. While both Colvard, et al., (2018) and Fischer, et al., (2015) evidenced significantly improved course grades for groups using Day One access materials, these studies also examined materials based on OER. Given that OER materials possess inherently different qualities than traditionally copyrighted materials, it is unknown whether the grade improvements seen in these two studies can be attributed to Day One access or to the unique nature of OER in being freely available, sharable, printable, editable, retainable, etc.

Inclusive Access: Criticisms

Opt-In / Opt-Out. To enable features like Day One access for all students, most *Inclusive Access* programs are “Opt-Out” in nature, with all students automatically enrolled to participate unless they opt-out of the program (Vitez, 2020). To achieve enrollment quotas, all students are usually automatically enrolled unless they manually opt-out within a specified timeframe (Jaggars, et al., 2019). Most programs operate on this opt-out basis, one exception being the state of Florida, which has a legislative “opt-in/opt out” provision allows students choose whether or not to participate (Textbook and instructional materials affordability, 2017).

The process for opting out differs in transparency and complexity (Vitez, 2020). Regardless of process, when students opt out, access to materials within the LMS are revoked (Jarvis, 2019). The National Association of College Stores reported that preference for a print version was the top reason students opted out of *Inclusive Access*, followed secondly by already having a copy of the materials, and thirdly, that they found a cheaper version elsewhere (NACS, 2020).

Retention and Usage of Materials. The subscription-based nature of *Inclusive Access* typically means that students lose access to materials at the end of the semester. With this

revocation, students also often lose access to the highlights, notes, homework assignments, practice problems, supplementary resources, etc. (Wiley, 2017). One exception is Indiana University, which negotiated to allow students to maintain their access until they leave the institution, the most common scenario is a loss of access after the semester end (Abaci & Quick, 2020).

Leadership hesitancy and/or opposition to *Inclusive Access*, often stemming from the publishing industry's poor affordability record, presents another system-level barrier (Hurley & Hallmark, 2020). Students have also reported mixed levels of satisfaction with the model. For instance, researchers showed that 51% of students participating in at least one *Inclusive Access* course reported being satisfied with the digital delivery model, while 21% indicated dissatisfaction, mostly due to dislike of the digital format (NACS, 2020). Not all digital materials allow students to copy/paste text, which can present difficulties when creating notes and study guides. Some institutions have even gone so far as to negotiate copyright clearance so students can print portions of the eTextbook (Hurley & Carter, 2020).

Hidden Costs. By changing the traditional methods by which students acquire course materials, *Inclusive Access* has also transformed the nature of institution, bookstore, and publisher interactions. Under the traditional distribution model, campus bookstores collect course material “adoption” information from instructors and make that information available (ideally by the time of registration, as stipulated by the Higher Education Opportunity Act; HEOA, 2008) so students can budget and shop multiple purchase channels for new, used, or rental materials. A 2019 survey of Tennessee community college students indicated students frequently acquire materials from their campus bookstore, commonly purchasing used (50.9%), new (40.7%), and rental materials (33.9%; Spica, 2020). The next most common purchase sources were

Amazon/Chegg online purchases (35.6%) and Amazon/Chegg online rentals (36.1%; Spica, 2020).

The *Inclusive Access* digital distribution model, in contrast, removes the student consumer from the equation. The campus bookstore continues to collect course material information, then prices are negotiated and provided to the registrar and/or bursar to post the fees within the course registration system. While the workflow varies, information is commonly communicated using a shared spreadsheet operated by central institutional employees (Anaya & Yankelewitz, 2020). Publisher representatives, working alongside the bookstore, campus IT, and faculty ensure the correct content is activated in the LMS (Hurley, 2020). After the semester begins, the registrar/bursar is responsible for keeping accounts current for students who opt-out, which usually also entails fielding communications, answering questions, and manually adding and subtracting charges from individual student accounts (Conole, et al., 2020). This process is repeated repeated with each semester – spring, summer, and fall, impacting resources that institutions may not be able to effectively support. Human error like typos, errors in transmission of enrollment data, or even faculty missing enrollment deadlines, can create additional, oftentimes manual steps for resources previously uninvolved in the course material process (Anaya & Yankelewitz, 2020).

Because the *Inclusive Access* distribution model remains relatively new, continued research is warranted to inform how and whether to further support program expansion. While several researchers have examined cost data, no studies to date have focused on academic outcomes for community college students, a population with a more diverse demographic in terms of age, socio-economic status, and geographical location. To fill this gap, this study explored academic outcomes of *Inclusive Access* programs across multiple community college

institutions, programs, and courses. By measuring course completion (passing with a grade of A-C) and withdrawal rates, this study will help quantify the potential impact of Day One access and other marketed aspects of *Inclusive Access*.

Conceptual Framework

This study gauges the value of marketed program benefits by comparing the academic outcomes of an *Inclusive Access* pilot semester with those of two previous fall semesters. The conceptual framework guiding this exploration is Bensimon's (2005, 2012) work on equity in higher education, which posits institutional practices and policies as responsible for creating equitable conditions for learning and student outcomes. Equity is a value and quality that attempts to provide the right and appropriate amount of resources to accommodate individual student circumstances (as opposed to equality, which centers around providing access to the *same* rights and resources). *Inclusive Access* programs are geared toward saving students money and providing Day One access, which presumably helps eliminate inequities that allow underserved populations to realize outcomes similar to the dominant populations. Incorporating a lens of equity, this study not only examines academic outcomes, but also the extent to which those outcomes were achieved for traditionally underserved and underrepresented populations (non-White, federal Pell grant recipients, and non-traditional Adult Learners over the age of 25).

Bensimon's inquiry-based framework and guidelines for equity in higher education have helped guide studies and initiatives ranging from racial equity in student affairs (LePeau, et al, 2019; Pendakur, 2020) to inclusion in STEM education (Bensimon, et al., 2019; MacDonald, et al., 2020) and professional development and faculty workload concerns (O'Meara, et al., 2019; Sidman-Taveau & Hoffman, 2019). The central approach to Bensimon's framework is data-based inquiry. By disaggregating data on academic outcomes based on populations of concern,

this study will produce information to help policymakers and other educational leaders focus conversations on how the institution can contribute to improving inequities (Bensimon, 2012). Such contributions could lie in unexamined policies, practices, institutional structural arrangements, or even institutional cultural characteristics. Finally, given the role of the Tennessee Higher Education Commission to “protect students and consumers from substandard, transient, deceptive or fraudulent institutions and practices” (THEC, 2020), examining outcomes through the lens of equity will help ensure that programs are supported that deliver on their intended benefits.

Purpose of the Study and Research Questions

The purpose of this study was to explore the academic outcomes of a fall 2019 statewide community college *Inclusive Access* pilot, with particular focus on whether and how the use of *Inclusive Access* materials impacted academic outcomes for traditionally underserved and/or underrepresented populations (non-White, federal Pell grant recipients, and Adult Learners over the age of 25). Academic outcomes were measured by DFW rates, an aggregate measure of D grades, F grades, I grades, and W (course withdrawal). DFW rates were compared between the pilot semester and the two previous falls in which the courses were taught (fall 2018, fall 2017). With Bensimon’s (2005) equity framework in mind, the following research questions guided the study:

1. How do the academic outcomes for the *Inclusive Access* pilot semester compare to the two previous fall semesters in which each course was taught?
2. How do these outcomes differ for traditionally underserved and underrepresented populations (non-White, federal Pell grant recipients, and Adult Learners over the age of 25)?

Method

Study Design

This study on the fall 2019 Tennessee community college *Inclusive Access* pilot analyzed an anonymized student-level demographic and course outcomes data set provided by the Tennessee Board of Regents (TBR) Student Information System. TBR is the largest system of public higher education in Tennessee, serving nearly 120,000 students at 40 community colleges and colleges of applied technology (TBR, 2020). TBR also houses all of Tennessee's two-year public institutions, including the 13 community colleges that served as the focus of this study. The study was approved by the Institutional Review Board for The University of Tennessee, Knoxville, as well as that of the Tennessee Board of Regents.

Participants

The population for this study consisted of students enrolled for the fall 2019 semester at community colleges across the TBR system (N=88,946). The racial/ethnic characteristics of the fall 2019 community college student population consisted of 70.7% White, 15.9% Black, 6.4% Hispanic, and 7.0% of classified as Other (TBR, 2020). Over half (61.1%) of students were female, 38.9% male, with 28% over the age of 25. Over a quarter (37%) of all students received a federal Pell grant, and 50.5% attended part-time. Over a quarter (28%) were also over the age of 25. High school students participating in dual-enrollment programs were not included in analysis. Basic demographic characteristics of the sample are presented in Table 1.

[Table 1 near here]

Data Collection and Procedure

For inclusion in the study, all sections of a course had to have been included in the fall 2019 *Inclusive Access* pilot, i.e., courses with participation from only selected sections were eliminated from inclusion. Learning Support courses (e.g., non-credit bearing remediation courses in English and math that utilize a different grading system) were also not included in the analysis. Based on these criteria, 141 courses in 41 course areas across 13 institutions were selected for inclusion (see Appendix for a list of courses included in the study).

The comparison groups included outcome data for those same courses in the previous fall 2018 and fall 2017 semesters. The two previous fall terms were selected in efforts to maintain consistency between terms, as well as because many courses were taught only in fall. For the regression analyses, a weighted average from the two previous falls was used to better control for potential anomalies from either of the previous semesters.

Analysis of academic outcomes utilized DFW rates, or the aggregate proportion of students who received a grade of D, F, I, or W (Withdrawal). Course grades of D, F, and I indicate a lack of academic achievement which can ultimately influence a student's progress toward graduation. A grade of W is given when a student drops a course after the deadline or leaves the institution (TBR, 2018). In counting as though no hours had been attempted, course withdrawals likewise indicate a lack of progress to graduation. One study of withdrawal rates at a large community college district in Texas, for instance, indicated excessive course dropping to be a "'cooling out' mechanism" reducing students' ambitions to complete degrees (McKinney et al., 2019).

Researchers have found that both underprepared and underserved students may more frequently fail or withdraw from courses, with students from weaker academic backgrounds

more likely to withdraw later in the semester (Bosshardt, 2004; Hagedorn, et al., 2007).

Additional factors of influence include findings that African Americans drop courses at higher rates than their peers, and that STEM-related courses have been found to experience higher drop rates (see McKinney et al., 2019, for an overview of characteristics influencing course withdrawal rates). To control for this as well as other environmental factors, institution, course, and semester were included as random effects.

The second step in evaluating academic outcomes from the fall 2019 *Inclusive Access* pilot semester was an analysis through the lens of equity. This step featured data disaggregated based on populations of concern for equitable access and completion for Tennessee community colleges (non-White, federal Pell grant recipients, and Adult Learners over the age of 25).

Data Analysis

Analysis of DFW rates utilized a four-level hierarchical generalized linear mixed modeling approach to investigate the influence of the fall 2019 *Inclusive Access* pilot on student academic outcomes. Multilevel modeling was selected for its ability to provide a more confident estimate of variability in student performance, as the hierarchical introduction of levels can reduce uncertainty from contextual factors and account for co-variates that might have otherwise been causally attributed (Raudenbush & Bryk, 2002). Hierarchical linear modeling is likewise appropriate for nested data in which observations are theoretically dependent, allowing for a more precise estimation that accounts for independence in random effects.

Data were cleaned prior to analysis, with cases lacking complete data eliminated from the regression, leaving 92% of the dataset intact (135,316 of 147,020 cases). The race/ethnicity variable, which followed federal recommendations, allowed respondents to self-identify as one or more of six categories (Black or African American, Hispanic or Latino, White or Caucasian,

Prefer Not to Respond, Other; OMB, 2016). Race/Ethnicity was recoded White or Non-White to align with TBR's annual reporting format. For example, in the fall 2019 semester, TBR community college students consisted of 70.7% White, 15.9% Black, 6.4% Hispanic, and 7.0% Other (TBR Data, 2020). Federal Pell grant recipient status was provided in the original dataset, and age was recoded into Adult Learners (age 25 or older) and Non-Adult Learners (under age 25). Prior to analysis, multicollinearity was assessed using a basic linear model, with Variance Inflation Factors (VIFs) greater than 1 indicating no multicollinearity concerns for independent variables race/ethnicity (1.023), Pell-recipients (1.023), and Adult Learners (1.001).

Results

A total of 135,316 cases were included in the analysis. Of the 47,462 cases in *Inclusive Access* courses for the fall 2019 semester, 13,086 earned a grade of D, F, I, or W (DFW rate 27.6%). For the previous fall in which the same courses were taught under a non-*Inclusive Access* model, 13,322 of 48,035 cases were a D, F, I, or W (DFW rate 27.7%). For the second previous fall in which the courses were taught under a non-*Inclusive Access* model, 11,536 of 39,818 cases were a D, F, I, or W (DFW rate 29.0%). Table 2 displays overall grade distribution and course withdrawals by semester.

[Table 2 near here]

To compare DFW rates for the fall 2019 *Inclusive Access* pilot semester against the two previous falls in which the courses were taught, a four-level random intercept model was fit using SAS 9.4 PROC GLIMMIX, with logit link function and variance components. Model 1 determined random variability in the odds of passing courses with an A-C grade at the course and/or institution levels. Model 1 displayed significant variation between courses within

institutions, ($OR = 1.41, p < .0001$) and significant variation between courses within semester ($OR = 1.43, p < .0001$).

Model 2 introduced semester as a fixed effect. The Type III Test of Fixed Effects indicated no significant differences in DFW rates between semesters, $F(2, 411) = 1.29, p = 0.277$. In further examination, DFW rates for the fall 2019 *Inclusive Access* pilot semester were compared with a weighted average of DFW rates for the two previous fall semesters in which the courses were taught (fall 2018, fall 2017). This estimation indicated students in the *Inclusive Access* fall 2019 pilot semester were on average 7% more likely to pass with an A-C grade as compared to students in the fall 2018 and fall 2017 semesters ($OR = 1.067, SE = 0.0496$). This difference, however, was not statistically significant, $t(411) = 1.32, p = 0.188$.

Model 3 displayed differences in DFW rates between semesters after controlling for three demographic characteristics: 1) Race/ethnicity (0=White, 1= Non-White, i.e. Black, Hispanic, Asian, Multi-racial, Other); 2) Pell grant recipients (0=Non-Pell Recipient, 1=Pell Recipient); and 3) Adult Learner status (0=Under 25, 1=Over 25). This model revealed significant differences for all three categories, Race/ethnicity $F(1, 134,661) = 794.20, p < 0.0001$; Pell recipients $F(1, 134,551) = 105.11, p < 0.0001$; and Adult Learners $F(1, 134,661) = 695.28, p < 0.0001$. Specifically, after controlling for semester, as compared to White students, non-White students were on average 34% less likely to pass with a grade of A-C, $OR = 0.66, 95\% CI [0.64, 0.68]$. Adult Learners over age 25 were 52% more likely to pass than learners under age 25, $OR = 1.52, CI [1.47, 1.56]$. Pell recipients were 12% less likely to pass than non-Pell recipients, $OR = 0.877, CI [0.86, 0.90]$. In spite of these pockets of difference, when comparing DFW rates from the 2019 *Inclusive Access* pilot semester against average DFW rates from the 2017 and

2018 semesters, no significant differences were detected, $OR = 1.06$, $t(411)=1.21$, $p = 0.228$.

Table 3 displays results of the first three of four regression models.

[Table 3 near here]

Models 4-6. Level 4 Moderated Effects: Race/Ethnicity, Pell Recipients, and Adult Learners

A fourth level in the hierarchical linear regression probed for potential inequities across DFW rates for three different populations of concern to creating an equitable learning environment in community colleges. Models 4-6 explored differences in outcomes based on demographic characteristics race/ethnicity (White/Non-White), whether students had been awarded a federal Pell Grant award, and whether students were Adult Learners, or over age 25.

Model 4 Race/Ethnicity. Model 4 explored DFW rate differences based on race/ethnicity (White or Non-White, i.e., Black, Hispanic, Asian, Multi-racial, Other). Results indicated DFW rates did not significantly vary based on whether students were White or Non-White, $F(2, 134,659)= 1.25$ $p = 0.286$. Therefore, as compared to the two previous fall semesters in which the courses were taught, the fall 2019 Inclusive Access pilot semester did not produce significantly different outcomes for students based on whether they were classified as White or Non-White. Since no significant variability in outcomes across semesters was detected, no further computations were performed.

Model 5 Pell-Recipients. Model 5 more closely examined differences in DFW rates between non-Pell and Pell grant recipients. Moderated effects displayed significant differences in DFW rates from the *Inclusive Access* intervention semester based on whether a student had received a federal Pell grant, $F(2, 134,659)=17.86$, $p < 0.0001$. Further comparison of fall 2019 *Inclusive Access* semester DFW rates against a weighted average of fall 2017 and 2018 semester DFW rates showed significant variability between and within Pell- and Non-Pell populations at

various points. See Table 4 for least squares means variation in DFW rates over time for both Pell- and Non-Pell populations.

[Table 4 near here]

Despite variation at points both within and between Pell and non-Pell recipients, a comparison of average fall 2017 and 2018 DFW rates with fall 2019 *Inclusive Access* pilot semester DFW rates displayed no significant differences for either Pell recipients, $OR = 1.012$, $t(411) = 0.42$, $p = 0.671$, or non-Pell recipients $OR = 1.047$, $t(411) = 1.61$, $p = 0.106$. Pell recipients were 1% more likely to pass in fall 2019 as compared to falls 2017 and 2018, and non-Pell recipients were almost 5% more likely to pass as compared to falls 2017 and 2018. These differences, however, did not prove overall to be statistically significant.

Model 6 Adult Learners. Model 6 examined differences in DFW rates for Adult Learners over the age of 25 as compared to students under the age of 25. No significant moderating effect was shown by the comparison of DFW rates for Adult Learners between the *Inclusive Access* pilot semester and two previous semesters, $F(2, 134,659) = 0.99$, $p = 0.3711$. The data therefore showed no statistically significant differences in the *Inclusive Access* intervention as compared to the two previous semesters in which the courses were taught.

In summary, no significant differences were found in either overall DFW rates or population specific DFW rates between the *Inclusive Access* fall 2019 semester and the two prior fall semesters. These results demonstrate that the *Inclusive Access* pilot neither significantly improved nor worsened student DFW rates. Similarly, DFW rates in the fall 2019 *Inclusive Access* pilot semester neither significantly improved nor worsened for students in any of the three populations included to examine differences in outcomes through the lens of equity (Non-

White, Pell Grant Recipients, Adult Learners). Table 5 summarizes results of the hierarchical linear regression for each of the three populations examined in Models 4-6.

[Table 5 near here]

Discussion

This study examined DFW rates for a statewide community college *Inclusive Access* pilot. Following Bensimon's (2005) conceptual framework for examining inequities in higher education, specific attention was given to possible differences in outcomes experienced by three traditionally underrepresented populations: non-White, federal Pell grant recipients, and/or Adult Learners over the age of 25. Results indicated no statistically significant improvements or declines in either overall or disaggregated DFW rates between the *Inclusive Access* pilot semester and the two previous falls in which the courses were taught. As such, this study produced no evidence to support statistically significant benefits or detriments to academic achievement from participating in an *Inclusive Access* automatic billing program. Through the lens of equity, these findings indicate that the disadvantaged populations the program purports to serve are no better or worse off (from an academic outcomes standpoint) with an *Inclusive Access* automatic billing program. Considering these findings, the following section connects the discussion with the perceived program benefits from the review of literature: Day One Access and cost-savings.

Day One Access. One of the main advertised benefits of *Inclusive Access* is the ability to provide students with Day One access to course materials. The results of this study suggest that Day One access itself may not be sufficient to erase inequities for traditionally underrepresented populations. The data in this study detailed that certain populations experience statistically significant lower odds of passing courses with an A-C. For example, Model 3 showed that, after

controlling for semester, compared to White students, non-White students are on average 34% less likely to pass with a grade of A-C. Learners over age 25 are 52% more likely to pass than learners under age 25, and Non-Pell recipients are 14% more likely to pass than Pell recipients.

While there was no evidence to support improved academic outcomes as a benefit of participating in *Inclusive Access*, Day One access may provide indirect benefits for general course administration. Instructors are known to grapple with issues, complaints, and excuses from students related to not having the access needed to complete homework and other course assignments (Abaci & Quick, 2020, p. 42; Anaya & Yankelewitz, 2020; Williams, et al., 2020). Day One access relieves the logistical burden of instructors having to negotiate extended trial access with publishers. *Inclusive Access* alleviates the need to request PDF copies of first chapters from publishers, as well as the extra step of extending deadlines, shifting assignments, and other workarounds to accommodate students waiting on financial aid to purchase needed materials. In these situations, *Inclusive Access* programs may provide relief by making materials immediately available for use on the first day of class.

Conversely, the results of this study suggest that significant academic benefits cannot be attributed to the Day One access feature of *Inclusive Access* automatic billing programs. These findings suggest that Day One access alone is insufficient to produce significant gains in DFW rates, even for at-risk populations deemed most likely to benefit. Other methods of Day One access, for instance the use of Open Educational Resources (OER), have shown to produce significant improvements in Drop, Withdrawal, and Passing with a C or better rates (Hilton, 2016). In this respect, usage, rather than access, may be key (Grimaldi, et al., 2019). Kinskey, et al. (2018) indicated the most frequently reported reason that students did not buy a textbook was

because they could adequately complete assignments without one. Students not being asked to engage with the materials they are required to purchase makes any emphasis on access irrelevant.

Cost-Savings. In absence of significant benefits to academic outcomes, evaluations of *Inclusive Access* programs become more a question of value vis-à-vis explicit and implicit costs—costs to the publishers, the bookstore, the institution, the faculty, and most importantly, to the student consumer. The past decade has witnessed a transition for most publishers from print materials to digital subscription-based, limited access duration products that have effectively reduced the number of used textbooks available on the third-party market (Academic Senate for California Community Colleges, 2019; Vitez, 2020). For publishers, *Inclusive Access* provides an avenue for direct purchases that maintain and allow for continued profit growth. For institutions, hidden costs accrue as units invest energies to set up and facilitate automatic billing, whereas the perceived benefits of cost-savings and Day One access could be had independently of the *Inclusive Access* distribution model. Furthermore, the use of digital materials may require faculty to take additional steps to transfer annotations, notes, highlights, etc. from semester to semester (Abaci & Quick, 2020). Further investigations into these hidden costs may provide a more holistic picture of actual program costs. If an institution shoulders most of the burden, those costs could at least be leveraged in pricing negotiation (or institutions may simply choose to invest those costs in the exploration of alternative solutions).

Costs to the student consumer must also be considered, including weighing the loss of student consumer choice against the convenience of automatic billing and Day One access. Prior to the introduction of *Inclusive Access*, student consumers were encouraged to shop and select from several options, from digital or print and new or used to renting or purchasing and even borrowing from friends or accessing from library course reserves (Florida Virtual Campus,

2019). Unless students understand and follow through with the opt-out process, *Inclusive Access* digital distribution models eliminate the opportunity to compare and select from multiple options. In an ideal situation where the price is truly discounted, the materials actually used, and the consumer in favor of a digital product, *Inclusive Access* could save students the 2+ hours they would have otherwise spent shopping around and comparing options (Katz, 2019).

Limitations and Directions for Future Research

A few limitations of this study warrant mention. Only one year of academic outcome data was available from one institution type (community colleges) across a single state (Tennessee). While these data still provided a large data set for comparative purposes, additional years and representation across a broader geographic reach would have proven even more beneficial to analysis. Using federal Pell Award recipients as a proxy for socio-economic status likewise only provided an approximation, with low-income students often undercounted and middle-income students included as part of the proxy (Delisle, 2017). Future studies may consider balancing student cost savings against the hidden costs of implementation incurred by program partners. Since *Inclusive Access* programs have been viable for several years, it may also be prudent to explore if, and the extent to which, prices have increased from year to year. This study likewise did not account for the ability or importance of perpetual access, yet another factor separating subscription-based programs like *Inclusive Access* from other initiatives that provide Day One access like Open Educational Resources, which allow students to retain materials after the conclusion of the semester. Features like highlighting, note-taking, and other annotation functionalities of digital, subscription-based materials certainly add to their value; however, this value may prove moot when students lose access as they progress to more advanced courses

without the ability to reference prior work. Future studies may also consider exploring the extent to which students want or need to retain course materials.

The impact of automatic billing programs on future student debt likewise remains unknown. This study elected not to examine explicit costs, but further research is needed as to students' levels of awareness on how *Inclusive Access* charges may increase student loan debt: “Interestingly, many students believe that IM Direct [Instructional Materials Direct] course materials are free because it is included in the tuition and fees paid upon course registration. Because the course materials are not paid for separately, students are not as concerned about the cost” (Anaya & Yankelewitz, 2020, p. 54). Future studies may consider charting trends in student loan debt attributable to *Inclusive Access* programs, as currently \$3 billion of federal student aid is devoted toward paying for textbooks each year (Vitez, 2018). Deferring the costs of course materials does not alter their fundamental lack of affordability, an important point of consideration for policymakers and educational leaders looking “to learn what is not working and what changes need to be made” regarding course material programs and initiatives (Bensimon, 2012, p.28).

Implications

If equity in higher education is the end game, these findings raise questions regarding the long-institutionalized practice of requiring students to purchase additional materials when they register and pay the tuition to enroll in a course. Evidence suggests that there are many cases in which course materials are required but not used. For example, a 2019 survey of 1,912 Tennessee community college students surfaced that more than forty percent (44.4%) of students purchased required materials in the fall 2019 semester that went unused (Spica, 2020). Furthermore, over ten percent of student respondents (11.8%) reported purchasing required

course materials that went unused at least three or more times throughout their college career. The absence of significant improvements in academic outcomes, especially when weighed against the potentially detrimental impacts to long-term financial security from increased student loan debt, make practices like *Inclusive Access* deserving of further scrutiny. Are instructors being forced to adopt materials simply for the sake of appearing consistent across multiple sections of a course? If required textbooks are simply used as a reference, is it vital that everyone have the newest, most expensive edition? When tuition must be paid prior to the first day of class to avoid the purging of a schedule, how do students find out whether and how an instructor plans to use the textbook so they can make an informed decision to opt-out? The findings of this study surface a need for these discussions, lest institutions fall prey to forcing students into exactly the “substandard, transient, deceptive or fraudulent” practices they seek to avoid (THEC, 2020).

Cost-savings certainly provide an important metric for evaluating the effectiveness of course material initiatives, and *Inclusive Access* programs claim to provide subscription-based digital materials at relatively lower prices. Similarly, thanks to integrations between publishers/vendors and the institutional LMS, *Inclusive Access* programs enable access to materials on or before the first day of class (whether and how those materials are used is another matter). Cost-savings or access aside, this study found the *Inclusive Access* digital distribution model as piloted in community colleges across Tennessee to be insufficient in producing significant improvements in academic outcomes, even for the at-risk populations the program deemed to benefit.

This study emphasized the importance of examining academic outcomes when evaluating programmatic interventions like *Inclusive Access*. Through the lens of equity, the importance of disaggregating data to examine outcome disparities for underserved and underrepresented

populations was also emphasized. For this study, the convenience of Day One access and potential cost-savings may offer reasons to pursue *Inclusive Access* automatic billing programs, but the hidden costs, possible needs for perpetual access, and repercussions for student loan debt should also be considered, especially if the model produces no significant benefits to academic outcomes. In the end, paraphrasing Tennessee's iconic philanthropist Dolly Parton, the cost of looking so cheap may actually be surprisingly high.

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Table 1 Sample Demographic Characteristics

Demographic Characteristics	Semester (Cases, % of Total Cases)		
	2019 IA Pilot	2018 Pre-Pilot	2017 Pre-Pilot
Gender			
Male	20,275 (39.2%)	21,110 (40.5%)	17,921 (41.4%)
Female	31,361 (60.7%)	30,950 (59.4%)	25,356 (58.6%)
Non-binary/Third Gender	23 (0.0004%)	2 (0.00004%)	0 (0.0%)
Total Cases	51,659	52,062	43,277
Race/Ethnicity			
White	36,008 (69.7%)	36,776 (70.6%)	31,947 (73.8%)
Black	8,355 (16.2%)	8,621 (16.6%)	6,400 (14.8%)
Hispanic	3,738 (7.2%)	3,267 (6.3%)	2,268 (5.2%)
Asian	899 (1.7%)	945 (1.8%)	670 (1.5%)
Other	2,681 (5.2%)	2,453 (4.7%)	1,992 (4.6%)
Total Cases	51,681	52,062	43,277
Pell Award Recipients			
Pell Recipient	26,056 (50.4%)	25,395 (48.8%)	22,230 (51.4%)
Not a Pell Recipient	25,625 (49.6%)	26,667 (51.2%)	21,047 (48.6%)
Total Cases	51,681	52,062	43,277
Adult Learner Status			
Adult Learners Over 25	12,905 (25.0%)	13,025 (25.0%)	8,369 (19.3%)
Learners Under 25	38,776 (75.0%)	39,037 (75.0%)	34,908 (80.7%)
Total Cases	51,681	52,062	43,277

Table 2 Grade Distribution & Course Withdrawals by Semester

Semester	Passed (A-C)	D or F Grade	Withdrawals	Total Cases
Fall 2019 IA Pilot	34,376 (72.4%)	9,343 (19.7%)	3,743 (7.9%)	47,462
Fall 2018 Pre-Pilot	34,713 (72.3%)	9,415 (19.6%)	3,907 (8.1%)	48,035
Fall 2017 Pre-Pilot	28,282 (71.0%)	8,184 (20.6%)	3,352 (8.4%)	39,818

Table 3 Hierarchical Linear Regression Models: DFW Rates

Fixed Effect	Model 1		Model 2		Model 3	
	<i>Coefficient</i>	<i>SE</i>	<i>Coefficient</i>	<i>SE</i>	<i>Coefficient</i>	<i>SE</i>
Intercept	1.179	0.064	1.199	0.066	1.269	0.064
Pre-IA 2017			-0.047	0.030	-0.035	0.030
Pre-IA 2018			-0.018	0.028	-0.025	0.028
IA Pilot 2019			-		-	
Pre-Pilot vs. Pilot			0.065	0.050	0.060	0.050
Race/Ethnicity (0=White)					-0.412	0.015
Pell Recipients (0=Non-Pell)					-0.132	0.013
Adult Learner (0=<25)					0.417	0.016
Random effects	<i>Parameter</i>	<i>SE</i>	<i>Parameter</i>	<i>SE</i>	<i>Parameter</i>	<i>SE</i>
Level 4: Institution	0.020	0.016	0.020	0.016	0.018	0.014
Level 3: Course	0.344	0.042	0.343	0.042	0.325	0.040
Level 2: Semester	0.036	0.006	0.035	0.006	0.035	0.006
Deviance	154932.6		154930.1		153238.0	

Table 4 Least Squares Means: DFW Rates Over Time

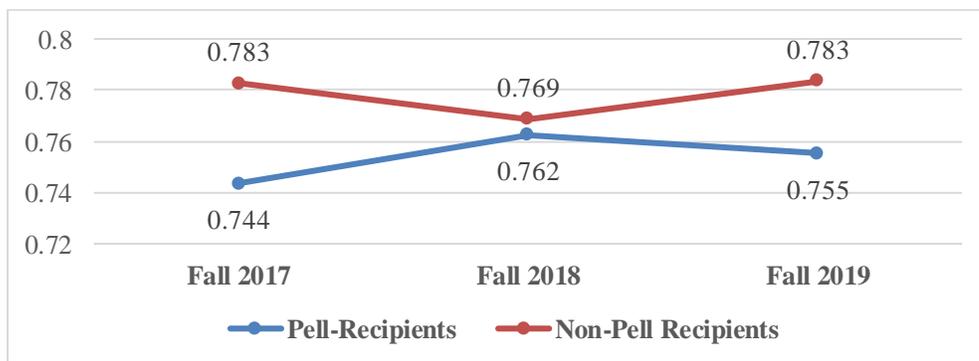


Table 5 Hierarchical Linear Regression Models 4-6: DFW Rates by Demographic

	Model 4			Model 5			Model 6		
	Race/Ethnicity			Pell Recipient			Adult Learners		
	1=Non-White 0=White			1=Pell 0=Non-Pell			1=Over 25 0=Under 25		
Fixed Effect	Coefficient	SE	OR	Coefficient	SE	OR	Coefficient	SE	OR
Intercept	1.259	0.064	3.523	1.283	0.065	3.606	1.265	0.065	3.104
Pre-IA 2017	-0.023	0.031	0.977	-0.006	0.034	0.994	-0.023	0.031	0.977
Pre-IA 2018	-0.008	0.030	0.992	-0.085	0.032	0.918	-0.020	0.029	0.980
IA Pilot 2019	-			-			-		
Race (0=White)	-0.383	0.024	0.682	-0.411	0.015	0.663	-0.412	0.015	0.663
Income (0=Non-Pell)	-0.132	0.013	0.877	-0.159	0.022	0.853	-0.131	0.013	0.877
Adult Learner (0=>25)	0.417	0.016	1.517	0.418	0.016	1.518	0.440	0.026	1.553
Pre-IA 2017 * 1 ^a	-0.038	0.036	.963	-0.057	0.032	0.945	-0.056	0.040	0.945
Pre-IA 2017 * 0 ^b	-			-			-		
Pre-IA 2018 * 1	-0.052	0.034	.949	0.124	0.030	1.132	-0.022	0.037	0.978
Pre-IA 2018 * 0	-			-			-		
IA Pilot 2019 * 1	-			-			-		
IA Pilot 2019 * 0	-			-			-		
Random Effects	Parameter	SE		Parameter	SE		Parameter	SE	
Level Four: Institution	0.018	0.014		0.018	0.014		0.018	0.015	
Level Three: Course	0.325	0.040		0.325	0.040		0.325	0.040	
Level Two: Semester	0.035	0.006		0.035	0.006		0.035	0.006	
Deviance	153235.5			153202.3			153236.2		

^a 1 = Comparison Categories (Non-White, Pell Recipient, Adult Learner)

^b 0 = Reference Categories (White, Non-Pell, non-Adult Learner)

* $p > .001$.

Appendix. Courses Included in Study

ACCT (Accounting)	<ul style="list-style-type: none">• BUSN 2320• BUSN 2330• BUSN 2350• BUSN 2360• BUSN 2370• BUSN 2380	ECON (Economics)
<ul style="list-style-type: none">• ACCT 1010• ACCT 1020• ACCT 2341	CHEM (Chemistry)	<ul style="list-style-type: none">• ECON 2100• ECON 2200
ADMN (Administration)	<ul style="list-style-type: none">• CHEM 1010• CHEM 1030• CHEM 1110• CHEM 2010	EDU (Education)
<ul style="list-style-type: none">• ADMN 1302• ADMN 1309• ADMN 1311• ADMN 1313	CITC (Computer Info Technology)	<ul style="list-style-type: none">• EDU 1120• EDU 201• EDU 2100• EDU 2230
AHSC/ALHS (Allied Health Science)	<ul style="list-style-type: none">• CITC 1300• CITC 1302• CITC 1303• CITC 1308• CITC 1310• CITC 1326• CITC 2320• CITC 2326• CITC 2344	EETC (Electrical Engineering Tech)
<ul style="list-style-type: none">• AHSC 1310• AHSC 1320• ALHS 2311• ALHS 2312• ALHS 2314	COL/GEN/ORN/VSCC (College Success)	<ul style="list-style-type: none">• EETC 1311
ART (Art)	<ul style="list-style-type: none">• COL 1010• COL 1030• GEN 1010• ORN 1010• VSCC 1000	ENGL (English)
<ul style="list-style-type: none">• ART 1035• ART 2000• ART 2020	COMM (Communication)	<ul style="list-style-type: none">• ENGL 1010• ENGL 1020• ENGL 2120
ASTR (Astronomy)	<ul style="list-style-type: none">• COMM 2025• COMM 2045	ENST (Engineering Systems Tech)
<ul style="list-style-type: none">• ASTR 1010	CRMJ (Criminal Justice)	<ul style="list-style-type: none">• ENST 1300• ENST 1350• ENST 1370
BIOL (Biology)	<ul style="list-style-type: none">• CRMJ 1010• CRMJ 1020• CRMJ 1340• CRMJ 2010• CRMJ 2020	ET (Engineering Technology)
<ul style="list-style-type: none">• BIOL 1010• BIOL 1110• BIOL 1120• BIOL 1230• BIOL 1430• BIOL 2010• BIOL 2020• BIOL 2230	CULA (Culinary Arts)	<ul style="list-style-type: none">• ET 112
BUSN (Business)	<ul style="list-style-type: none">• CULA 1310• CULA 1320• CULA 1330• CULA 2331	GEOG (Geography)
<ul style="list-style-type: none">• BUSN 1300• BUSN 1302• BUSN 1305• BUSN 1310• BUSN 1320• BUSN 1350• BUSN 1360• BUSN 1370• BUSN 1380• BUSN 2300		<ul style="list-style-type: none">• GEOG 2010
		HEC/HED (Health Education)
		<ul style="list-style-type: none">• HEC 231• HED 120• HED 220
		HIST (History)
		<ul style="list-style-type: none">• HIST 2010• HIST 2020• HIST 2310• HIST 2320
		HMGT (Hospitality Management)
		<ul style="list-style-type: none">• HMGT 1030
		HSC (Human Pathophysiology)
		<ul style="list-style-type: none">• HSC 111• HSC 190
		HUM (Humanities)

- HUM 1010

INFS (Information Systems)

- INFS 1010

LOGI/LGM (Logistics/Logistics Management)

- LGM 130
- LGM 140
- LGM 180
- LOGI 1000

MATH (Math)

- MATH 1000
- MATH 1010
- MATH 1030
- MATH 1050
- MATH 1100
- MATH 1130
- MATH 1410
- MATH 1420
- MATH 1530
- MATH 1630

- MATH 1710
- MATH 1730
- MATH 1830
- MATH 1910
- MATH 2010

MUS (Music)

- MUS 1030

OTAP (Occupational Therapy Assistant)

- OTAP 1130
- OTAP 1210
- OTAP 1310

PHIL (Philosophy)

- PHIL 1030

PHYS (Physics)

- PHYS 2010
- PHYS 2110

PLBT (Phlebotomy)

- PLBT 1300

POLS (Political Science)

- POLS 1030
- POLS 2025

PSCI (Physical Science)

- PSCI 1030

PSYC (Psychology)

- PSYC 1030
- PSYC 2110
- PSYC 2130
- PSYC 2220

PTAT (Physical Therapy)

- PTAT 2200

SOCI (Sociology)

- SOCI 1010
- SOCI 1011
- SOCI 1020
- SOCI 1040
- SOCI 2010

SPAN (Spanish)

- SPAN 1010
- SPAN 1020

SWRK (Social Work)

- SWRK 2010
- SWRK 2020

THEA (Theatre)

- THEA 1030