

An Online College Near Me Exploring the Institutional Factors of E-Learners' Local Orientation

Hyungjoo Yoon

Volume 20, numéro 5, décembre 2019

URI : <https://id.erudit.org/iderudit/1066646ar>
DOI : <https://doi.org/10.19173/irrodl.v20i5.4432>

[Aller au sommaire du numéro](#)

Éditeur(s)

Athabasca University Press (AU Press)

ISSN

1492-3831 (numérique)

[Découvrir la revue](#)

Citer cet article

Yoon, H. (2019). An Online College Near Me: Exploring the Institutional Factors of E-Learners' Local Orientation. *International Review of Research in Open and Distributed Learning*, 20(5), 64–84. <https://doi.org/10.19173/irrodl.v20i5.4432>

Résumé de l'article

One advantage of online learning settings relative to conventional classrooms is their anytime, anywhere accessibility. While online education programs provide students with flexible learning opportunities free from the restrictions of geographic location, a consistently growing number of students who prefer to learn exclusively online still choose nearby colleges. The choice to attend a local college by exclusively online learners is an interesting phenomenon, because most of these students rarely visit campus at any point in the process of obtaining their degrees. This study aims to explain this localized distance student enrollment pattern using Integrated Postsecondary Education Data System data and Homeland Infrastructure Foundation-Level Data from the fall of 2016. This research uses a multiple regression technique to explain the relationship between institutional factors and localized distance student enrollment patterns in the US. This study utilizes the C2Q (cost, convenience, and quality) model to explain the local orientation of e-learners. The findings show that convenience and quality of education are significantly associated with each local institution's share of exclusively online learners in the same state.

Copyright (c) Hyungjoo Yoon, 2019



Ce document est protégé par la loi sur le droit d'auteur. L'utilisation des services d'Érudit (y compris la reproduction) est assujettie à sa politique d'utilisation que vous pouvez consulter en ligne.

<https://apropos.erudit.org/fr/usagers/politique-dutilisation/>

Érudit

Cet article est diffusé et préservé par Érudit.

Érudit est un consortium interuniversitaire sans but lucratif composé de l'Université de Montréal, l'Université Laval et l'Université du Québec à Montréal. Il a pour mission la promotion et la valorisation de la recherche.

<https://www.erudit.org/fr/>

December – 2019

An Online College Near Me: Exploring the Institutional Factors of E-Learners' Local Orientation

Hyungjoo Yoon
University of Georgia

Abstract

One advantage of online learning settings relative to conventional classrooms is their anytime, anywhere accessibility. While online education programs provide students with flexible learning opportunities free from the restrictions of geographic location, a consistently growing number of students who prefer to learn exclusively online still choose nearby colleges. The choice to attend a local college by exclusively online learners is an interesting phenomenon, because most of these students rarely visit campus at any point in the process of obtaining their degrees. This study aims to explain this localized distance student enrollment pattern using Integrated Postsecondary Education Data System data and Homeland Infrastructure Foundation-Level Data from the fall of 2016. This research uses a multiple regression technique to explain the relationship between institutional factors and localized distance student enrollment patterns in the US. This study utilizes the C²Q (cost, convenience, and quality) model to explain the local orientation of e-learners. The findings show that convenience and quality of education are significantly associated with each local institution's share of exclusively online learners in the same state.

Keywords: proximity, online education, college choice, human capital theory

Introduction

Numerous college students prefer to study locally for a variety of reasons. Staying close to home may have both financial and academic benefits. Studying at a nearby college has become a more attractive choice than ever before due to the continuously rising costs of attending college (Hillman, 2016), particularly among low-income students (Griffith & Rothstein, 2009; Ovink, Kalogrides, Nanney, & Delaney, 2018). Students and their parents may potentially save a considerable amount of the cost of attendance by living at home, decreasing expenditures on on-campus housing, food, and transportation.

The location of colleges in relation to students has been a key assumption in increasing the accessibility of the American higher education system and equal access to education for all at the policy level. For the past two decades, however, the system has shifted from using the face-to-face classroom as the primary means of course-delivery to using online formats. Between 2015 and 2016, among about 20 million American students (17 million undergraduates and 3 million graduates), 6 million students took more than one distance course, and approximately half (2.2 million undergraduates and 0.8 million graduates) were exclusively online learners (McFarland et al., 2018; Seaman, Allen, & Seaman, 2018).

Hypothetically, the 3 million exclusively online learners (e-learners) are less constrained by geographic limitations than are traditional college students. In 2014, 58% of high school graduates attended a college within 100 miles of their home, and 72% stayed in-state (Chokshi, 2014). Interestingly, nearly three-quarters of online students reported that they were enrolled at an institution located within 100 miles of their home (Clinefelter & Aslanian, 2017) and more than half of e-learners remained in the same state in 2016 (Seaman et al., 2018). This calls into question the assumption that e-learners tend to be free from geographic limitations when choosing to enroll in a college. Considering the geographically unlimited possibilities of e-learners' college choices, this persistent proximity effect is an interesting phenomenon. Moreover, the proportion of American in-state e-learners has been continuously growing since 2012 (Seaman et al., 2018).

At the individual level, online students tend to be nontraditional students who work full-time, support family members, are older, and are female (Kramarae, 2001; Ortagus, 2017; Radford, 2011). Nontraditional students tend to maintain social relationships with their families, workplaces, and communities, so they might choose one of the nearest and most affordable colleges due to convenience and budget restrictions (Kim & Rury, 2011; Perna, 2010). Although factors specific to the individual e-learner may explain why a group of students prefer in-state colleges, the reasons why some local institutions have a relatively larger number of in-state e-learners remain under-examined.

Understanding how institutional characteristics affect e-learners' decision-making processes would assist higher education administrators in developing more effective student recruitment and marketing strategies. What local e-learners expect from their nearby institutions is an important yet underexamined issue in online college education literature. In this respect, this study addressed the following research questions. Which local institutions tend to have a relatively larger number of in-state e-learners compared to other institutions in the same state? Which institutional factors influence e-learners' choice to enroll at nearby colleges? To answer these questions, a multiple regression analysis was conducted with the Integrated

Postsecondary Education Data System (IPEDS) data and Homeland Infrastructure Foundation-Level Data (HIFLD) from the 2016 academic year.

Literature Review and Theoretical Frameworks

Literature Review

The existing literature discusses college choice with a focus on traditional students' individual developmental process during their senior year of high school (Paulsen & St John, 2002; Perna, 2006). College choice studies have been guided by the three-stage model of predisposition, search, and choice (Hossler & Gallagher, 1987; Hossler, Schmit, & Vesper, 1999; Perna, 2006). All three stages are regarded as corresponding to the childhood and adolescence periods, with a focus on the 10th through 12th grades in general. However, the traditional college choice model has many limitations regarding the analysis of online learners' behavior for two reasons.

First, the characteristics of e-learners, in general, do not align with young high school graduates' decision-making processes, because e-learners tend to be nontraditional students. In general, seven characteristics represent the traits of the heterogeneous group of nontraditional students: (a) delayed enrollment; (b) part-time enrollment; (c) 35 or more working hours per week; (d) financial independence; (e) caregiver who has children or dependents other than their partner; (f) single parent; and (g) no high school diploma, general education diploma, or any other type of equivalent certificate (Radford, Cominole, & Skomsvold, 2015). Over the last few decades, there has been no shortage of higher education research on college choice; however, little is known about the college choices of nontraditional students (Perna, 2010) and that of distance students (Lansing, 2017).

Second, previous distance education studies have commonly reported that convenience and flexibility were key characteristics of online student college attendance. According to a recent qualitative explorative study on the online learning experience of students at community colleges, most students preferred to choose online options for relatively easy academic subjects, whereas they chose to take the course face-to-face when it dealt with difficult or more important academic subjects (Jaggars, 2014). The assumption that many distance students are seeking convenient and flexible options to allow them to carry out adult responsibilities during their college years has been accepted in most studies of distance students (Lansing, 2017). In the traditional college choice literature, the time at which a student becomes predisposed to attend college has been regarded as very important. The earlier a student makes this decision, the more time he or she is likely to have to prepare for college. However, for many adult students, spending significant time searching and preparing for college could have different implications, because the time spent on college choice could limit the time available for their many other adult responsibilities. In other words, adult students are more likely to spend a shorter amount of time on college choice than are younger students, due to their life circumstances. In fact, 60% of online college students submitted college applications within four weeks or less after beginning their search process, and almost 90% applied within three months (Clinefelter & Aslanian, 2017). These facts suggest that online students prioritize convenience in their college choice process.

Perceived convenience as a significant factor in college decision-making has been only partially discussed in the college proximity literature. According to Dache-Gerbino (2016), geographic inquiry in college access studies is categorized as proximity research, which focuses on the influence of spatial location on youths' enrollment in college. College proximity researchers (Hillman, 2016; Tate, 2008; Turley, 2009) employed geography of opportunity as a key concept, which originated in the literature on housing (de Souza Briggs, 2005; Rosenbaum, 1995). They predicted that a student's residential location in proximity to colleges might affect her social and economic opportunities and life outcomes.

Turley (2009) argued that the residential location of students may influence every stage of college access and choice phases. She hypothesized that students' proximity to more colleges and universities helped them to develop higher educational aspirations, consequently resulting in a higher likelihood of participation in the actual college admission process. Turley's (2009) empirical study showed that an increase in the number of nearby colleges was significantly associated with an increase in the number of college applicants and college-goers, and nearby four-year college influences were especially distinctive. According to Turley's (2009) theoretical framework, local college orientation is explained by two interrelated mechanisms: the convenience mechanism and the predisposition mechanism. The convenience mechanism refers to a greater likelihood of obtaining convenient access to a college logistically, financially, emotionally, and socially. For instance, it is far easier to visit a local campus and talk to its staff than to do so at faraway colleges. Also, financially, in-state tuition, the possibility of local scholarships, and other tuition-saving strategies will likely be more widely available for those who choose a local campus than for those choosing a distant college. The predisposition mechanism refers to the possibility of increasing the educational aspirations of local youth due to frequent interactions between colleges and community members. For instance, the community outreach program of a large public university will likely impact the postsecondary level educational aspirations of local youths (Turley, 2009). Hillman (2016) used the term spillover effects to comprehensively explain proximity college effects by encompassing the two mechanisms of Turley (2009) and other possibilities (e.g., collective consciousness, civic engagement).

According to the IPEDS college enrollment statistics, the number and percentage of e-learners varied greatly depending on the type of institution and degree level sought, especially between public and private institutions. As shown in Figure 1, public institutions have much higher numbers and percentages of in-state e-learners than do private institutions. Specifically, public two-year institutions have the highest percentage of in-state e-learners, and private institutions have much smaller percentages; in particular, for-profit institutions have the highest percentage of out-of-state e-learners.

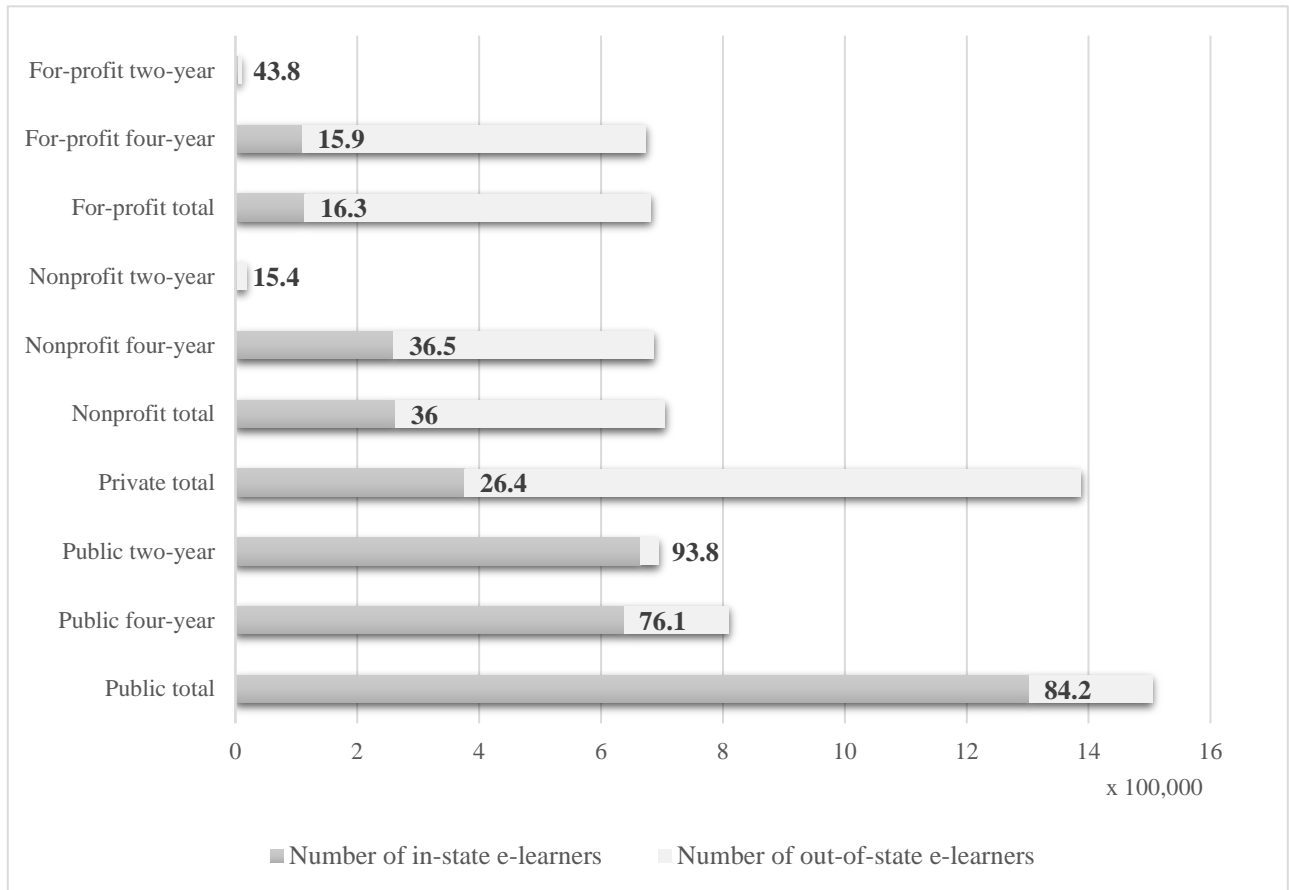


Figure 1. Number and percentage of e-learners by institutional type and location of students in fall 2016. Adapted from “Table 311.15. Number and percentage of students enrolled in degree-granting postsecondary institutions, by distance education participation, location of student, level of enrollment, and control and level of institution: Fall 2015 and fall 2016,” by U.S. Department of Education, National Center for Education Statistics, 2018 (https://nces.ed.gov/programs/digest/d17/tables/dt17_311.15.asp). In the public domain.

In sum, current college choice theories of traditional students' individual developmental process during their senior high school year may not explain online students' local orientation, because it is difficult to accommodate (a) nontraditional student characteristics and their different college choice process, (b) proximity effect, and (c) different institutional type. Therefore, an alternative theoretical framework will be proposed in the following section, with four hypotheses addressing the different characteristics of e-learners' college choice.

Theoretical Frameworks

Both local colleges and distance education options promise flexibility, convenience, and affordability, which are especially preferred by nontraditional students. Levine (2001) found that the nontraditional college student's attitude toward college resembles that of a consumer:

older, part-time, and working students, especially those with children, often said in a national study I conducted (1998) that they wanted a very different type of relationship with their college than students have historically had. They preferred relationships like those they already had with their bank, the electric company, and the grocery. Today's older adult students are bringing precisely the same consumer attitudes to higher education. They are looking for just four things from their colleges—convenience, service, quality, and low cost. (p. 256)

Also, in a recent survey, when online students were asked to select the three most important factors of college choice, tuition and convenience were among the top three (Clinefelter & Aslanian, 2017). In this respect, three theoretical perspectives were applied to explain the underlying factors of local college orientation regarding low cost, quality of education, convenience, and available student services: (a) human capital theory, (b) college proximity theory, and (c) relational marketing theory. Based on these theories, this study proposed the C²Q model, which suggests that the various factors of the local orientation of e-learners might fall into three categories: cost, convenience, and quality of education and service.

First, economic factors have been discussed in postsecondary research literature mainly based on human capital theory (Becker, 1964; Mincer, 1958; Toutkoushian & Paulsen, 2016). While other types of investments also improve human capital, education is among the most worthwhile of human capital investments. The rational model of human capital investment predicts that individuals decide to invest in additional education based on a comparison of the expected lifetime benefits and the expected costs. Based on human capital theory, e-learners might assume that additional years of online education will raise their productivity, and thus future earnings. In addition to the substantial benefit of an increase in earnings, other long-term benefits, including a more fulfilling work environment, better health, and lower probabilities of unemployment might be expected by e-learners. Hypothetically, if colleges in the same state provide the same quality of education, a local e-learner would likely choose the most affordable college among them to minimize the cost of attending. Therefore, this study hypothesized that in-state tuition will predict the college choice of in-state e-learners.

The role of lower in-state tuition. Hypothesis One states that for the same state, an institution with lower in-state tuition will have a relatively larger number of in-state e-learners. The total costs of attending incurred by e-learners might be minimized by choosing the lowest tuition, but the benefits of the cheapest college choice could vary depending on various institutional factors because e-learners might consider convenience, and quality of education and service as much as low cost. In recent surveys of 1,500 online students conducted by Aslanian Market Research and Learning House, about 25% of students reported that they were willing to pay more for a higher quality program (Clinefelter & Aslanian, 2016, 2017; Magda & Aslanian, 2018).

Quality of education has been operationalized differently by researchers with different data sources (Shin, Toutkoushian, & Teichler, 2011). For instance, *Barron's Profiles of American Colleges* (Thomas & Zhang, 2005), *U.S News and World Report* college rankings (Bastedo & Bowman, 2010), and institutional expenditure for students and the average SAT scores of first-year students in IPEDS (Toutkoushian & Smart, 2001) have all been used by past researchers. This study employed IPEDS data because most institutions offering online programs have often been excluded from other college ranking data sets. In addition, college major choice and institutional prestige have been widely accepted as the two major predictors of economic

benefits after graduation. College graduates from more prestigious and more selective colleges gained small but consistently significant wage premiums relative to peers graduating from lower-quality institutions (Thomas & Zhang, 2005). Based on human capital theory, individuals might be willing to take a huge financial risk to attend prestigious colleges that promise greater economic rewards (e.g., earnings), but the same investment mechanisms might be rare in the case of students who attend less prestigious institutions. In fact, numerous online education researchers have accepted that concern over the quality of online education is growing, especially with regard to student attrition (Lee & Choi, 2011). The average attrition rates of online college students are at least 10% higher than those of students matriculating in conventional classrooms (Carr, 2000; Jenkins, 2011; Patterson & McFadden, 2009; Xu & Jaggars, 2011). Given the low completion rate of e-learners, it might be necessary to examine several hypotheses in terms of the selectivity and expenditure of institutions in conjunction with the graduation rate of the institution:

Association of college choice and quality of education. Hypothesis Two states that the quality of education with regard to admission selectivity, graduation rate, and expenditure of institutions will be associated with the college choice of in-state e-learners. Additionally, this study acknowledged the effect of a college's geographic location on convenience (as perceived by students), as shown by the college proximity literature. Hypothetically, if colleges in the same state provide the same quality of education for the same price, a local e-learner will likely choose one of the nearest colleges, because it is the most convenient and comfortable choice for her due to the spillover effects of college proximity. Based on proximity theory, this study examined a third hypothesis.

The effect of an institution's population base. Hypothesis Three states that an institution located in a more populous area will have a relatively large number of in-state e-learners. Despite the growing popularity of online education, top tier universities provide online options exclusively for continuing education programs and Massive Open Online Courses (MOOCs) (Hanover Research, 2014). Also, "a marked stigma attached to online degrees throughout the hiring process" is prevalent in many workplaces (Columbaro & Monaghan, 2009, para. 32.; see Kizilcec, Davis, & Wang, 2019). *The Chronicle of Higher Education* conducted a survey of 50,000 employers who hire recent college graduates in order to understand employer perceptions, and found a consistent pattern of negative employer responses to online degrees (Chronicle of Higher Education, 2012). Unlike the few prestigious schools, which serve the highest achieving traditional-age students, none of the less prestigious institutions that offer online degree programs have sufficient prestige to recruit on that basis. For the less prestigious institutions, student recruiting or marketing consists of identifying and targeting potential customers (prospective e-learners), wooing them, and developing strong relationships. In this respect, although human capital theory and proximity theory both informed the study as to why some local colleges might be more attractive to e-learners than others due to their affordable tuition and accessible locations, this study employed relational marketing theory to examine the influence of quality of service on local college orientation.

Non-prestige-based alternative strategies might aim to satisfy customers by improving service quality. In fact, according to Clinefelter and Aslanian's (2017) survey, the number of transferrable credits and institutional responsiveness influenced e-learners' college choice significantly. In this respect, this research assumed that the quality of service tends to follow relational marketing strategies. Helgesen (2008) identified four factors of relational marketing in the context of higher education: (a) service quality, (b)

available facilities, (c) information technology, and (d) social activities. Helgesen's (2008) survey results showed that service quality and information technology were the two most influential factors for improved student value.

The role of quality of student service. Hypothesis Four states that the quality of student service will be associated with the college choice of in-state e-learners. In this study, available student services such as alternative tuition plans, prior-learning assessments, and career counseling services were used to examine the quality of service.

Summarizing the theoretical framework. The proposed theoretical framework for this study predicted that cheaper and more populous areas near colleges would have a relatively larger number of in-state e-learners because students might choose the most affordable, convenient, accessible, and familiar institution. Also, the framework suggested that the quality of education, as well as the quality of student service, will explain the college choice of e-learners. The various factors fell into the three main categories of institutional factors, namely cost, convenience, and quality of education and student service.

Methods

Data Collection

The main data source for this research came from the IPEDS, for which the National Center for Education Statistics gathered various data from annual mandatory surveys of US postsecondary institutions. The colleges and universities section in the HIFLD provided multiple geospatial data for the postsecondary institutions in the IPEDS for the 2016–2017 school year. Data were retrieved for e-learner enrollment, tuition and fees, population, admission selectivity, graduation rates, institutional expenditure, and service for fall 2016.

Enrollment. The IPEDS offers enrollment data for distance students, including students who have been enrolled exclusively in distance education courses since 2012. This research uses the number of an institution's e-learners who reside in the same state. This research modified the original enrollment variables by calculating the percentages within local institutions from the same state to reflect differences in the number of e-learners and institutions across specific states.

Cost. The IPEDS reports comprehensive data on tuition, fees, and other costs of attendance for each institution every year. This research creates a new tuition variable by calculating the difference between the average in-state tuition and the tuition of each institution in the same state to reflect differences in the amount of in-state tuition and fees across each state.

Proximity. The HIFLD offers the total number of the population around each institution's geographic location. This research modified the original variable by calculating the shares of institutions in the same state to minimize the impact of differences in population across each state.

Selectivity and graduation rate. This study categorized all institutions into three groups: (a) non-selective (admission rate of 100%); (b) selective (admission rate lower than 100% and higher than the average of 35.33%); and (c) highly selective (admission rate lower than the average), because the distribution of the admission rate was left-skewed due to the large number of institutions offering open admission policies. The average admission rate was calculated before assigning a 100% admission rate to those institutions with open admission policies but lacking a reported admission rate. Otherwise, the original graduation rate variable in the IPEDS was employed without modification because its distribution was not skewed.

Expenditure. Toutkoushian and Smart (2001) examined institutional expenditure as one of the indicators of quality of education and used expenditure for instruction, academic support, and institutional support data. The present study used the same categories in Toutkoushian and Smart to examine the effect of institutional expenditures used primarily for students. In the regression model, the percentage of the three categories of the expenditure for students was employed. The total amount of expenditure was not selected because public, private, and for-profit institutions employed different accounting standards (e.g., the Financial Accounting Standards Board [FASB] and the Governmental Accounting Standards Board [GASB]).

Service. To examine the effect of student service quality on e-learner enrollment, this research collected data from the several items in the IPEDS institutional characteristics survey data, such as (a) academic/career counseling service; (b) employment service; (c) placement service; (d) on-campus daycare for students' children; (e) alternative tuition plans; (f) non-traditional credits; and (g) services and programs for service members and veterans. To dichotomize the categorical variables, three values of no, not reported, and not applicable in the original data were converted to 0, and only all yes responses were assigned 1.

Table 1 provides information on the average number (mean), standard deviation, minimums, and maximums for each variable. The cost variable, which refers to the difference in in-state tuition and fees between each institution and the average, has a relatively higher value than the other independent variables due to their unit of measurement, which is the US dollar.

Table 1

Descriptive Statistics

Variable	Mean	SD	Min.	Max.
Dependent variable	1.97	0.09	0	73.78
Independent variables				
Cost	0	211.32	-21250.66	43018.42
Proximity	1.97	0.08	0	59.87
Selectivity	0.79	0.02	0	2
Graduation rate	38.32	0.42	0	100
Expenditure for student				
% instruction	41.05	0.22	0	79
% academic support	10.64	0.14	0	62
% institutional support	20.29	0.22	0	84
Service for student				
Military member friendly	0.03	0	0	1
Dual credit	0.92	0.01	0	1
AP credit	0.96	0	0	1
Remedial	0.84	0.01	0	1
Academic counseling	0.99	0	0	1
Employment	0.90	0.01	0	1
Placement	0.82	0.01	0	1
Daycare	0.31	0.01	0	1
Alternative tuition plan	0.90	0.01	0	1

Table 2 describes the correlation coefficients of independent variables with the dependent variable. Pearson's product-moment correlation coefficient, which is a measure of the strength of a linear association between two variables, was measured to explore the potential for bias since many indicators of institutional characteristics were not included in the model. Mostly weak associations between the dependent variable and independent variables were identified, except in the case of the proximity variable. Any potential multicollinearity among predictors was not identified; the Variance Inflation Factors (VIFs) of the variables were less than 2, except that of the selectivity (2.76) and cost (2.06) variables.

Table 2

Correlations of Dependent Variable With Other Measures

Measures	Correlation
Cost	-0.1193
Proximity	0.6697
Selectivity	-0.0543
Graduation rate	-0.0743
% Instruction	0.0346
% Academic support	0.0321
% Institutional support	-0.1160
Military member friendly	-0.0647
Dual credit	0.0683
AP credit	0.0588
Remedial	-0.0017
Academic counseling	0.0307
Employment	-0.0007
Placement	0.0072
Daycare	0.0855
Alternative tuition plan	0.0489

Data Analysis

The primary goal of this study was to determine whether the e-learner shares of local institutions in the same state are affected by the cost, convenience, and quality of education and service. As a multiple regression analysis, this study used the following explicit functional forms for an explanation of various variables by grouping them into six different categories:

$$E_{ij} = \alpha + \beta_1 T_{ij} + \beta_2 P_{ij} + \beta_3 S_i + \beta_4 G_i + \beta_5 X_i + \beta_6 V_i + \epsilon_i$$

On the left side of the equation, E_{ij} represented the estimated proportion of the in-state e-learners at i institution relative to the total number of e-learners in j state. On the right side, T_{ij} represented the tuition difference of i institution in j state, P_{ij} referred to the proportion of the population of nearby institution i in j state that indicates proximity. S_i represented selectivity, which encompassed the admission rate and open admission policy; G_i referred to the graduation rate; X_i indicated institutional expenditures for student; V_i

encompassed multiple variables related to student services. The six coefficients β_k represented the partial effects of the independent variables described in the above section.

Results

To assess whether institutional factors affect the college choice of local e-learners in the US, this study estimated multiple regressions for in-state e-learner enrollment. As shown in Table 3, models (1), (2), (3), and (5) were nested in the full model (4) because they represented special cases of model (4), which contained all predictor variables. In multiple regression, the coefficient of determination (R-squared) represented the percentage of deviation in the dependent variable explained by all independent variables together. The first three nested models showed relatively smaller R-squared values than the full model, but model (5) reported nearly the same R-squared value as the full model. To obtain model (5), this study used the *step* function, which is one of the built-in functions in R software for stepwise model selection (R Core Team, 2016). The step function is used for stepwise variable selection process which helps to find a nested model with the lowest value of Akaike's information criterion (AIC) by repeatedly adding or dropping variables among all predictors in the full model, and AIC is one of the most widely used criterions in regression variable selection (Fox, 2016; Gujarati & Porter, 2009). This study used the Stargazer package in R (Hlavac, 2018) to print multiple regression results in a single table.

Table 3

Multiple Regression Models Explaining In-State E-Learner Enrollment

	Dependent variable				
	A proportion of local e-learners at an institution in the same sate				
	(1)	(2)	(3)	(4)	(5)
Private four-year	-1.963*** (0.231)			0.580** (0.280)	0.342 (0.208)
For-profit four-year	-1.860*** (0.332)			-0.573 (0.365)	-0.726** (0.331)
Public two-year	-0.969*** (0.227)			-0.435* (0.227)	-0.471** (0.224)
Private two-year	-3.058*** (1.074)			-0.899 (0.819)	-1.114 (0.802)
For-profit two-year	-2.904*** (0.636)			-0.733 (0.585)	-0.804 (0.515)
Tuition		-0.00001 (0.00001)		-0.00001 (0.00001)	
Proximity		0.751*** (0.016)		0.784*** (0.017)	0.783*** (0.016)
Selective		-0.806***		-0.758***	-0.805***

		(0.186)		(0.230)	(0.227)
Highly selective		-1.139***		-1.064***	-1.159***
		(0.179)		(0.242)	(0.232)
Graduation rate			-0.021***	-0.033***	-0.035***
			(0.004)	(0.004)	(0.004)
% of instruction			-0.005	0.023***	0.023***
			(0.009)	(0.007)	(0.007)
% of academic support			0.019	0.038***	0.038***
			(0.014)	(0.010)	(0.010)
% of institutional support			-0.040***	0.013*	0.014*
			(0.009)	(0.008)	(0.008)
Military member friendly			-1.149**	-0.633	-0.580
			(0.539)	(0.398)	(0.391)
Dual credit			0.933**	0.665**	0.630**
			(0.365)	(0.275)	(0.262)
AP credit			0.408	-0.232	
			(0.461)	(0.376)	
Remedial			-0.589**	0.004	
			(0.252)	(0.186)	
Academic counseling			0.697	1.034	
			(1.148)	(0.842)	
Employment			-0.426	-0.163	
			(0.351)	(0.257)	
Placement			0.083	-0.190	-0.243
			(0.256)	(0.188)	(0.170)
Daycare			0.539***	-0.407***	-0.402***
			(0.199)	(0.154)	(0.153)
Alternative tuition plan			0.807***	0.715***	0.736***
			(0.288)	(0.212)	(0.210)
Constant	3.124***	0.986***	1.593	-1.046	-0.146
	(0.170)	(0.100)	(1.301)	(0.992)	(0.570)
Observations	2,593	2,593	2,593	2,593	2,593
R ²	0.034	0.467	0.035	0.497	0.496
Adjusted R ²	0.032	0.466	0.031	0.493	0.493
Residual std. error	4.373	3.250	4.377	3.166	3.166
	(df = 2587)	(df = 2588)	(df = 2579)	(df = 2570)	(df = 2575)
F statistic	18.350***	565.867***	7.296***	115.479***	149.301***
	(df = 5; 2587)	(df = 4; 2588)	(df = 13; 2579)	(df = 22; 2570)	(df = 17; 2575)

*p<0.1. **p<0.05. ***p<0.01.

Among the four main hypotheses, the hypotheses about quality of education and proximity were strongly supported; the effect of quality of service was partially supported, but the first hypothesis about cost was not supported by the regression results. The selected model (5) suggested the following findings. First, the cost was not a decisive factor of each local institution's share of e-learners within the same state. Given the larger number of in-state e-learners attending public colleges (Figure 1), the impact of tuition benefits for public institutions would diminish when e-learners select a specific local college to attend.

Otherwise, the effect of proximity was apparent, which strongly supported the main assumption of this study about the local orientation of e-learners. Based on the literature review, this study predicted that proximity theory would facilitate an understanding of why some local colleges would be more attractive for e-learners than others, due to their accessible location. The findings of the study suggested that the college choice mechanisms of convenience and predisposition in Turley's (2009) study should be applied in order to understand the relationship between college proximity and perceived convenience regarding the local college choice of e-learners.

Next, the overall negative effects of selectivity and graduation rate were statistically significant. These results required more detailed interpretations of the effect of quality of education, because selective and highly selective institutions with higher graduation rates would have a smaller proportion of e-learners, compared to institutions that offered an open admission policy, which was regarded as a reference category in the regression process. The research results supported the hypothesis of quality of education, but in a problematic way: low-quality institutions tend to have a larger share of in-state e-learners. The negative effect of quality of education would mean the strong preference for convenience among e-learners allows them to sacrifice quality education for the sake of quick and easy access. This result corresponded to widespread concerns about higher attrition rates, because, as Engstrom and Tinto (2008) addressed, the open-door policy common at the bottom of the college pyramid turns out to be more of a so-called revolving door, since it does not guarantee degree completion, especially for many underprivileged students. This, in turn, can impact later social mobility for this population.

Last, the negative effect of on-campus daycare services and the positive effects of dual credit and alternative tuition plan services were identified. When considering this inconsistent effect of service factors alongside the consistent positive effect of expenditure together, one possible interpretation that emerged is that an institution can expect a larger number of local e-learners when it increases its budget and targets improving the quality of academic services that do not require a campus visit. Regarding the fact that the academic support expense category includes information technology expenses related to academic support activities, the considerable effects of the quality of both education and service partially explain the distribution of local e-learners.

Conclusion and Discussion

This study began with the question of which institutional factors of local postsecondary institutions explain e-learners' college choice. Based on a literature review of online student characteristics, college choice theory, and college proximity theory, the four main hypotheses were suggested and examined by multiple

regression analysis. Research findings showed that specific types of institutions tend to attract a larger share of local e-learners, and the features of such institutions include: (a) located in a more populous area; (b) larger proportion of expenditure spent on academic support; (c) open admission policy, dual credit services, and alternative tuition plans; and (d) lower reported graduation rates. Because this study was based on the human capital theory, it predicted that a larger number of local e-learners would prefer to attend more affordable in-state institutions, but this insignificant effect of the cost was sorted out in the regression model.

American e-learners' strong preference for low-graduation schools showed that they prioritize convenience in their college choice process while taking a huge risk of attrition. This finding is related to the growing public concern over the credibility of an online college education. The reputation of online college education came under siege due to fraud in student recruitment and marketing strategies, resulting in enormous accrued student debt at a few for-profit colleges specializing in online education (Cottom, 2017; Wessel, 2015). For decades, distance student enrollment has been highly concentrated in a few institutions, especially in the private for-profit sector. Accordingly, a common misconception regarding e-learners is that they attend private for-profit distance-only institutions that lack any brick-and-mortar campus (Seaman et al., 2018). The Century Foundation analyzed all 98,868 allegations of fraud submitted to the US Department of Education by students and found that for-profit colleges generated almost 99% of the allegations; the most-accused institution, Corinthian Colleges, accounted for approximately three-fourths (75,343) of the claims and closed after a series of legal challenges by the government in April 2015 (Cao & Habash, 2017).

Unfortunately, these instances of fraud did not cease but were instead mirrored in public and private non-profit colleges. Graduate students at George Washington University filed a lawsuit against their college because of the relatively inferior quality of the online master's program compared to the on-campus degree program (McMurtrie, 2017). These problems could be a transitional phenomenon or a side effect, but the situation requires careful monitoring. Moreover, only seven percent of all distance students were enrolled in a private for-profit institution in 2016, and the total number of distance-only schools (140) accounted for a much smaller proportion of e-learners than did public schools (Seaman et al., 2018). In other words, it is time to turn back to the online courses and programs offered by dual-mode local colleges, rather than focus exclusively on the relatively low numbers of students enrolled in single-mode online colleges.

According to a recent national survey, an increasing number of American people showed a loyal preference for local colleges and universities, compared to their tenuous distrust toward the higher education system in general (Fishman, Ezeugo, & Nguyen, 2018). Local colleges and universities have long been regarded as engines for local economic development, and they are expected to increase the local supply of human capital through the production of a skilled labor force (Abel & Deitz, 2012). Most online learners are nontraditional students, so they might be relatively less mobile than traditional-age students. As a result, the economic and social spillover effects of local colleges could perhaps be maximized by improving the quality of online education and providing unwavering support to nontraditional learners. They may not want to spend time on campus, but they still want to be connected to their colleges and communities, albeit in ways different from traditional young students. The existing tuition gap between in-state and out-of-state costs is likely a strong incentive for students' choosing in-state colleges. However, these results suggest special attention to

convenience and quality of education is needed to fully understand local college preference among e-learners.

References

- Abel, J. R., & Deitz, R. (2012). Do colleges and universities increase their region's human capital? *Journal of Economic Geography*, 12(3), 667–691. doi:10.1093/jeg/lbr020
- Bastedo, M. N., & Bowman, N. A. (2010). U.S. News & World Report college rankings: Modeling institutional effects on organizational reputation. *American Journal of Education*, 116(2), 163–183. doi:10.1086/649437
- Becker, G. (1964). *Human capital* (2nd ed.). New York, NY: Columbia University Press.
- Cao, Y., & Habash, T. (2017, November 8). College complaints unmasked: 99 percent of student fraud claims concern for-profit colleges. *The Century Foundation*. Retrieved from <https://tcf.org/content/report/college-complaints-unmasked/?session=1>
- Carr, S. (2000, February 11). As distance education comes of age, the challenge is keeping the students. *The Chronicle of Higher Education*, pp. A39–A41. Retrieved from <https://www.chronicle.com/article/As-Distance-Education-Comes-of/14334>
- Chokshi, N. (2014, June 5). Map: The states college kids can't wait to leave. *The Washington Post*. Retrieved from https://www.washingtonpost.com/blogs/govbeat/wp/2014/06/05/map-the-states-college-kids-cant-wait-to-leave/?noredirect=on&utm_term=.ebe8d77f5e06
- Chronicle of Higher Education. (2012, December). The role of higher education in career development: Employer perceptions. Retrieved from <https://chronicle-assets.s3.amazonaws.com/5/items/biz/pdf/Employers%20Survey.pdf>
- Clinefelter, D. L., & Aslanian, C. B. (2016). *Online college students 2016: Comprehensive data on demands and preferences*. Louisville, KY: The Learning House, Inc.
- Clinefelter, D. L., & Aslanian, C. B. (2017). *Online college students 2017: Comprehensive data on demands and preferences*. Louisville, KY: The Learning House, Inc.
- Columbaro, N. L., & Monaghan, C. H. (2009). Employer perceptions of online degrees: A literature review. *Online Journal of Distance Learning Administration*, 12(1). Retrieved from <https://www.westga.edu/~distance/ojdla/spring121/columbaro121.html>
- Cottom, T. M. (2017). *Lower ed: The troubling rise of for-profit colleges in the new economy*. New York, NY: The New Press.
- Dache-Gerbino, A. (2016). College desert and oasis: A critical geographic analysis of local college access. *Journal of Diversity in Higher Education*, 11(2), 97–116. doi:10.1037/dhe0000050
- de Souza Briggs, X. (Ed.) (2005). *The geography of opportunity: Race and housing choice in metropolitan America*. Washington, DC: Brookings Institution Press.

- Engstrom, C., & Tinto, V. (2008). Access without support is not opportunity. *Change the Magazine of Higher Learning* 40(1), 46-50.
- Fishman, R., Ezeugo, E., & Nguyen, S. (2018). *Varying degrees 2018: New America's annual survey on higher education*. Washington, DC: New America. Retrieved from https://d1y8sb8igg2f8e.cloudfront.net/documents/Varying_Degrees_2018_Final_PDF.pdf
- Fox, J. (2016). *Applied regression analysis and generalized linear models* (3rd ed.). Thousand Oaks, CA: Sage.
- Griffith, A. L., & Rothstein, D. S. (2009). Can't get there from here: The decision to apply to a selective college. *Economics of Education Review*, 28(5), 620–628. doi:10.1016/j.econedurev.2009.01.004
- Gujarati, D. N., & Porter, D. C. (2009). *Basic econometrics* (5th ed.). New York, NY: Mc Graw-Hill Education.
- Hanover Research. (2014). *Trends in higher education marketing, recruitment, and technology*. Washington, DC. Retrieved from <https://www.hanoverresearch.com/media/Trends-in-Higher-Education-Marketing-Recruitment-and-Technology-2.pdf>
- Helgesen, Ø. (2008). Marketing for higher education: A relationship marketing approach. *Journal of Marketing for Higher Education*, 18(1), 50–78. doi:10.1080/08841240802100188
- Hillman, N. W. (2016). Geography of college opportunity: The case of education deserts. *American Educational Research Journal*, 53(4), 987–1021. doi:10.3102/0002831216653204
- Hlavac, M. (2018). *Stargazer: Well-formatted regression and summary statistics tables*. R package version 5.2.2. Retrieved from <http://CRAN.R-project.org/package=stargazer>
- Hossler, D., & Gallagher, K. S. (1987). Studying college choice: A three-phase model and the implications for policy-makers. *College and University*, 62(3), 207–221.
- Hossler, D., Schmit, J., & Vesper, N. (1999). *Going to college: How social, economic, and educational factors influence the decisions students make*. Baltimore, MD: Johns Hopkins University Press.
- Jaggars, S. S. (2014). Choosing between online and face-to-face courses: Community college student voices. *American Journal of Distance Education*, 28(1), 27–38. doi:10.1080/08923647.2014.867697
- Jenkins, R. (2011, May 22). Why are so many students still failing online? *The Chronicle of Higher Education*. Retrieved from <https://www.chronicle.com/article/Why-Are-So-Many-Students-Still/127584>

- Kizilcec, R., Davis, D., & Wang, E. (2019). Online degree stigma and stereotypes: A new instrument and implications for diversity in higher education. *Social Science Research Network (SSRN)*. doi:10.2139/ssrn.3339768
- Kim, D., & Rury, J. L. (2011). The rise of the commuter student: Changing patterns of college attendance for students living at home in the United States, 1960–1980. *Teachers College Record, 113*(5), 1031–1066.
- Kramarae, C. (2001). *The third shift: Women learning online*. Washington, DC: American Association of University Women Educational Foundation.
- Lansing, J. (2017). A new model of college choice for distance learners. *Journal of Educational Technology Systems, 45*(3), 365–389. doi:10.1177/0047239516673183
- Lee, Y., & Choi, J. (2011). A review of online course dropout research: Implications for practice and future research. *Educational Technology Research and Development, 59*(5), 593–618. doi:10.1007/s11423-010-9177-y
- Levine, A. (2001). The remaking of the American university. *Innovative Higher Education, 25*(4), 253–267. doi:10.1023/a:1011094507049
- Magda, A. J., & Aslanian, C. B. (2018). *Online college students 2018: Comprehensive data on demands and preferences*. Louisville, KY: The Learning House, Inc.
- McFarland, J., Hussar, B., Wang, X., Zhang, J., Wang, K., Rathbun, A., . . . Mann, F. B. (2018). *The condition of education 2018* (NCES 2018-144). Washington, DC: National Center for Education Statistics.
- McMurtrie, B. (2017, October 23). Controversy at George Washington U. highlights challenges of diving deeply into online education. *The Chronicle of Higher Education*. Retrieved from <https://www.chronicle.com/article/Controversy-at-George/241528>
- Mincer, J. (1958). Investment in human capital and personal income distribution. *Journal of Political Economy, 66*(4), 281–302.
- Ortagus, J. C. (2017). From the periphery to prominence: An examination of the changing profile of online students in American higher education. *The Internet and Higher Education, 32*, 47–57. doi:10.1016/j.iheduc.2016.09.002
- Ovink, S., Kalogrides, D., Nanney, M., & Delaney, P. (2018). College match and undermatch: Assessing student preferences, college proximity, and inequality in post-college outcomes. *Research in Higher Education, 59*(5), 553–590. doi:10.1007/s11162-017-9482-y

- Patterson, B., & McFadden, C. (2009). Attrition in online and campus degree programs. *Online Journal of Distance Learning Administration, 12*(2). Retrieved from <https://www.westga.edu/~distance/ojdla/summer122/patterson112.html>
- Paulsen, M. B., & St. John, E. P. (2002). Social class and college costs: Examining the financial nexus between college choice and persistence. *Journal of Higher Education, 73*(2), 189–236. doi:10.1353/jhe.2002.0023
- Perna, L. W. (2006). Studying college access and choice: A proposed conceptual model. In J. C. Smart (Ed.), *Higher education: Handbook of theory and research* (pp. 99–157). Netherlands, Dordrecht: Springer.
- Perna, L. W. (2010). *Understanding the working college student: New research and its implications for policy and practice*. Sterling, VA: Stylus Publishing.
- Radford, A. W. (2011). *Learning at a distance: Undergraduate enrollment in distance education courses and degree programs* (NCES 2012-154). Washington, DC: National Center for Education Statistics.
- Radford, A. W., Cominole, M., & Skomsvold, P. (2015). *Demographic and enrollment characteristics of nontraditional undergraduates: 2011–2012 Web tables*. Washington, DC: National Center for Education Statistics.
- R Core Team. (2016). *R* [Computer program]. R Foundation for Statistical Computing, Vienna, Austria. Retrieved from <https://www.R-project.org>
- Rosenbaum, J. E. (1995). Changing the geography of opportunity by expanding residential choice: Lessons from the Gautreaux program. *Housing Policy Debate, 6*(1), 231–269. doi:10.1080/10511482.1995.9521186
- Seaman, J. E., Allen, I. E., & Seaman, J. (2018). *Grade increase: Tracking distance education in the United States*. Oakland, CA: Babson Survey Research Group.
- Shin, J. C., Toutkoushian, R. K., & Teichler, U. (Eds.). (2011). *University rankings: Theoretical basis, methodology and impacts on global higher education*. Dordrecht, Netherlands: Springer.
- Tate, W. F. (2008). “Geography of opportunity”: Poverty, place, and educational outcomes. *Educational Researcher, 37*(7), 397–411. doi:10.3102/0013189x08326409
- Thomas, S. L., & Zhang, L. (2005). Post-baccalaureate wage growth within four years of graduation: The effects of college quality and college major. *Research in Higher Education, 46*(4), 437–459. doi:10.1007/s11162-005-2969-y
- Toutkoushian, R. K., & Paulsen, M. B. (2016). *Economics of higher education: Background, concepts, and applications*. Dordrecht, Netherlands: Springer.

- Toutkoushian, R. K., & Smart, J. C. (2001). Do institutional characteristics affect student gains from college? *The Review of Higher Education*, 25(1), 39–61. doi:10.1353/rhe.2001.0017
- Turley, R. N. L. (2009). College proximity: Mapping access to opportunity. *Sociology of Education*, 82(2), 126–146. doi:10.1177/003804070908200202
- U.S. Department of Education, National Center for Education Statistics. (2018). Table 311.15. Number and percentage of students enrolled in degree-granting postsecondary institutions, by distance education participation, location of student, level of enrollment, and control and level of institution: Fall 2015 and fall 2016. Retrieved from https://nces.ed.gov/programs/digest/d17/tables/dt17_311.15.asp
- Wessel, D. (2015, June 18). High stakes and a potential standoff over student-loan debt relief. *The Wall Street Journal*. Retrieved from <https://blogs.wsj.com/washwire/2015/06/18/high-stakes-and-a-potential-standoff-over-student-loan-debt-relief/>
- Xu, D., & Jaggars, S. S. (2011). The effectiveness of distance education across Virginia's community colleges: Evidence from introductory college-level math and English courses. *Educational Evaluation and Policy Analysis*, 33(3), 360–377. doi:10.3102/0162373711413814

