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Borders or Barriers? Assessing Geographic, Economic, and Institutional Factors Related to Study Abroad Access and Participation at Four-Year Colleges and Universities

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Abstract

Using data from public and private not-for-profit US higher education institutions, this study explores the extent to which access to and participation in study abroad is spatially stratified. Drawing from spatial inequality theory, we examine three categories of spatially variable indicators: economic structures, institutional arrangements, and spatial situation/site factors. Findings provide evidence of inequitable spatial relations in study abroad. More specifically, we found that the institutional arrangements of higher education institutions, many of which are intimately linked to spatiality, were significant predictors of both whether an institution offered study abroad and how many students participated. For example, research institutions are more likely to be located in urban areas, and our results indicated that these institutions were more likely to offer study abroad programs. These results point to stratification of both access to and participation in study abroad and have key implications for international education practice and future research.

Abstract in Spanish

Usando datos de instituciones de educación superior estadounidenses públicas y privadas sin fines de lucro, este estudio explora la estratificación espacial a

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través de cuestiones de acceso y participación en estudios en el extranjero. A partir de la teoría de la desigualdad espacial, examinamos tres categorías de indicadores espacialmente variables: estructuras económicas, arreglos institucionales y factores de situación/lugar espacial. Los hallazgos ofrecen evidencia de relaciones espaciales desiguales en los estudios en el extranjero. Más específicamente, encontramos que los arreglos institucionales de instituciones de educación superior, muchos de los cuales están íntimamente vinculados a la espacialidad, son predictores significativos tanto de si una institución ofrece estudios en el extranjero como de cuántos estudiantes participan. Por ejemplo, es más probable que las instituciones con enfoque en la investigación se ubiquen en áreas urbanas, y nuestros resultados indican que es más probable que estas instituciones ofrezcan programas de estudio en el extranjero. Estos resultados indican una estratificación no solo de acceso, sino también de participación en estudios en el extranjero, las cuales tienen implicaciones importantes para la práctica de la educación internacional y la investigación futura.

Keywords:

Institutional stratification, nationally-representative, spatial inequality, study abroad

Introduction

Our current understanding of study abroad activity at US postsecondary institutions often conceptualizes participation from an asset/deficit perspective at the student level, highlighting certain demographic or academic traits that correlate with participation. For example, Lingo (2019) examines the intersection between parental educational attainment and study abroad participation, finding that students whose parents were not as well-educated were less likely to study abroad. Myriad similar studies highlight a host of student characteristics that negatively correlate with study abroad participation, including identification with a historically marginalized racial/ethnic group (e.g., Luo & Jamieson-Drake, 2015; Salisbury et al., 2009) and lower socioeconomic standing (e.g., Whatley, 2017). Conversely, these same studies find that White students, those from families with higher earnings, and students whose parents had attained higher levels of educational attainment are more likely to study abroad. In response to findings such as these, recent years have seen changes in international education programming with the goal of making study abroad more accessible. For example, short-term study abroad programming, which has the potential to appeal to students who either cannot afford a longer-term

program or who do not wish to leave home for an extended period, has increased dramatically in recent years (IIE, 2020). Strategies for making study abroad more accessible to a greater diversity of students is an on-going topic of conversation among international educators (e.g., Berger, 2020; Whatley & Stich, 2021).

While such findings highlight important ways to make study abroad more accessible (Whatley & Stich, 2021), this literature largely ignores how aspects of college students' environments, such as the geographic context of their institution or how far their institution is from an international airport, shape the study abroad opportunities available to them and, consequently, their study abroad participation. Descriptive information on US study abroad participation patterns suggests significant geographic variation, at least by US state. For example, in the 2018-19 academic year (the year prior to the COVID-19 pandemic), the percentage of students studying abroad by state ranged from 0.19% (Alaska) to 5.11% (Vermont) (NAFSA, 2019). Variation in study abroad participation by U.S. state is clearly substantial. A key contribution of the current study is that it acknowledges that, while students' personal characteristics are important indicators of their likelihood of engaging interculturally through study abroad, these characteristics are but a few among many that shape students' international opportunity structures.

Insufficient attention has been paid to the relationship between geography and higher education experiences in general. Recent studies have identified many ways in which spatiality stratifies postsecondary opportunities in the United States (Dache-Gerbino, 2018; González Canché, 2014, 2018; Hillman, 2016; Reyes et al., 2019). The accelerating forces of globalization have led many geographers of education to acknowledge the structural impacts of spatial stratification – a mutually constitutive cause and effect of social processes that allocate resources unevenly across the physical landscape. "[T]he spatial organisation of society matters," argued Massey (1999, p. 261), "it makes a difference to how society works, to how we think about society and ourselves and to what forms of social organisation are possible." Social theorists, such as Lefebvre (1991), have also contended that "(Social) space is a (social) product" (p. 26), arguing that spatial relations may be more deeply interrogated to explore connections between lived daily routines, social conceptualizations of space, and space as experienced passively through imagery and symbolism.

While many scholars have explored stratification within US higher education (Bastedo et al., 2009; Bastedo & Jacquette, 2011; Clotfelter, 2017; Rivera, 2015; Stich, 2012), it has become increasingly clear that students' access to postsecondary opportunities, including study abroad, are not only restricted by factors such as classist and racist societal structures, but also by social, economic, and political factors that vary geographically. Thus, both the physical and the socially-constructed aspects of space (including postsecondary institutions and the stratification between institutions) exert an influence on student experiences. In other words, where a student is located geographically may matter in their access to educational opportunities such as study abroad. Access to study abroad opportunity is important in that these experiences have been shown to have both personal (e.g., a greater likelihood of degree completion) and social (e.g., increased civic participation) benefits (e.g., Bhatt et al., 2022; Mitic, 2020; Vande Berg et al., 2012; Whatley & González Canché, 2022). Differences in students' study abroad participation patterns along geographically variable indicators would have key implications for study abroad program design, for international education advising, and for how educators discuss study abroad opportunities with students.

The purpose of this study is to deepen our understanding of the degree to which geographic indicators of students' environments at their home institution shape their access study abroad and, subsequently, the extent to which students participate in study abroad programs. Using a snapshot of institution- and state-level data from the 2018-19 academic year, we explore the intersection of spatial situation/site factors of a student's postsecondary institution (e.g., driving time to the closest international airport) and related spatially-distributed socio-economic indicators (e.g., immigration rates, political control of state governments) as they relate to both the opportunity to access and participate in study abroad. Within this study, we refer to this set of characteristics jointly as the geographic context of the institution. Specifically, we respond to the following research questions:

1. How do indicators of students' geographic contexts at their postsecondary institution relate to their opportunity to access study abroad programs?
2. How do indicators of students' geographic contexts at their postsecondary institution relate to their participation rates in study abroad programs?

Opportunities for intercultural engagement like study abroad can be crucial to the quality of the education available to students because they provide opportunities for the acquisition of cultural and civic capital (Stich, 2012). Our findings speak to the extent to which the geographic context of a student's postsecondary institution shape their engagement with study abroad, thus informing our understanding of how the spatial organization of society constructs students' access to intercultural learning experiences. In turn, differences in access to study abroad across the geographic landscape might also be conceptualized as a distinct form of institutional stratification within higher education.

Conceptual Framework

Our research design is based upon critical geography, a paradigm that scholars have used in recent years primarily to explore issues of access and degree attainment within higher education (Crain & Webber, 2021; Daché-Gerbino, 2018; Daché et al., 2022; Hillman, 2016; Klasik et al., 2018). While previous research has focused largely on the role of geography in shaping the beginning and ending points of students' college journeys (i.e., postsecondary enrollment or degree completion) (Hillman, 2016; Turley, 2009), the present study expands this dialogue by considering the role of geography on student experiences within college. Study abroad, a pivotal experiential learning opportunity for many students, is a salient focus for this line of inquiry – particularly since international education is an important means by which students can expand their own geographic worldview and has clear benefits for both students and society.

Hillman (2016) drew a clear focus toward the role of geography in higher education through his notable work on educational deserts, defined as areas with limited or no public broad-access postsecondary institutions. Numerous other researchers have sought to understand the role of geography in shaping access to college (Klasik et al., 2018; Ovink et al., 2018; Turley, 2009). In one example, Dache-Gerbino (2018) analyzed the interplay of geography and educational opportunity within the urban context of Rochester, New York. Drawing upon Massey's (1994) concept of power geometry, Dache-Gerbino highlighted the presence of a college desert in the diverse urban core of Rochester and a college oasis (i.e., a high concentration of postsecondary institutions) within the city's primarily-White suburbs. Power geometry is a useful construct for illustrating the relations between place, space, and college

access. Although it is sometimes assumed that the world is getting "flatter" (i.e., more equitable) due to technological innovation, power geometry highlights the ways in which disproportionate access to power shapes spatiality and mobility within society. Power geometry is particularly salient as students seek to draw the necessary forms of capital from their immediate surroundings to activate opportunities in postsecondary education—capital which may or may not be present across all geographic contexts (Ardoin, 2018; Means & Pyne, 2016; Perez & McDonough, 2008; Perna, 2006; Weis et al., 2014).

Previous critical geography research has contributed to the broader body of literature on institutional stratification in higher education. For years, scholars have explored the notion that postsecondary institutions vary widely not only in terms of enrollment numbers but also in terms of the quality of the educational experience that they provide (Bastedo & Jaquette, 2011; Bastedo et al., 2009; Clotfelter, 2017; Marginson, 2016; Taylor & Cantwell, 2018; Rivera, 2015; Stich, 2012). To cite one example, Taylor and Cantwell (2018) argued that declining state support has resulted in limited access to 'good value' institutions, such as public research universities, while more accessible institutions face substantial budgetary constraints. Marginson (2016) argued that growth in access occurs largely in the lower tiers of the system (such as community colleges) while elite institutions limit their expansion – thus resulting in steeper stratification within the system overall. Across this landscape, geography is sometimes shown to play an important role in postsecondary access and success (Dache-Gerbino, 2018; Klasik et al., 2018; Ovink et al., 2018; Turley, 2009), but other factors related to institutional stratification are also important to consider. The present study explores these dynamics further by examining the interplay of institutional and geographic characteristics and key postsecondary developmental offerings, specifically the opportunity to study abroad.

Spatial Inequality Theory

These concepts of geography and institutional stratification are combined through the theory of spatial inequality. Broadly speaking, spatial inequality refers to uneven development across the geographic landscape – how and why socially-valued resources are allocated differentially according to place (Lobao et al., 2007). A key consideration in the spatial inequality framework is how opportunity structures are enacted through social institutions, including via public policies, political forces, and formalized organizations such as colleges and universities that provide access to socially-valued resources and

opportunities (such as study abroad). Spatial inequality theory contends that social stratification may be produced by: 1) economic structures, 2) institutional arrangements, 3) spatial situation/site factors, and 4) historical context (Lobao et al., 2007). As Lobao and Hooks (2007) further contend, "... the interaction of global with local...creates place variations. In turn, places have distinct site or internal characteristics, such as natural amenities, infrastructure, population attributes and other ecological features which confer differential advantages" (p. 48). These dynamics, termed glocalization have been explored only in limited ways within higher education research (Lobao & Hooks, 2007).

Informed by spatial inequality theory, we have identified several factors that may be used to illuminate postsecondary institutional connectivity between global and local spaces within the present study. For example, geographic indicators of students' postsecondary institutions include variables related to the economic structures (e.g., international import-to-export ratios for states) as well as spatial site factors, such as the institution's driving distance from an international airport. Institutional arrangements are another focus of this study, referring to the "relationships established between social actors via customary social practices, laws, and organizations regulating economic growth and the distribution of social benefits" (Lobao & Hooks, 2007, p. 47). An example of a factor falling within this category is the annual number of permanent residencies granted within the state—used for our purposes as a proxy for immigration practices in a higher education institution's state. State political control may also represent an important form of "relationships established between social actors," as Republican and Democratic political parties within the United States occupy increasingly polarized stances toward postsecondary education and internationalization (Feuling, 2017; Parker, 2019). We also include a series of institutional characteristic variables in our analyses (e.g., enrollments by race and income, institutional control, or degree classification), which represent other forms of institutional arrangements as described within the spatial inequality theoretical framework - traits which are more traditionally used by higher education scholars to understand the dynamics of institutional stratification (Baker et al., 2018; Clotfelter, 2017; Haycock et al., 2010). Each of the independent variables in our analysis has been selected to further inform our thinking on the distinct opportunity structures relative to study abroad within a particular postsecondary institution's geographic context.

Prior Literature

Although this study is the first to our knowledge to center critical geography in assessing opportunities for intercultural engagement through study abroad, prior work has examined stratification in study abroad opportunity from other perspectives. At the same time, scholars have demonstrated that study abroad offers demonstrable value to the cultivation of civic engagement (Mitic, 2019, 2020) and intercultural engagement (Lokkesmoe et al., 2016; Salisbury et al., 2013; Tarrant et al., 2014), important components of a high-quality 21st century education (Raby & Valeau, 2016).

Why Is Study Abroad Important?

Previous research has generally highlighted the benefits of study abroad, both to society in general and to students individually, even while authors have cautioned that study abroad program design is key in whether these student learning goals are achieved (e.g., Vande Berg et al., 2012). In a recent study focusing on a societal benefit, Mitic (2020) drew on nationally representative data from the United States to explore the relationship between study abroad participation and students' subsequent civic engagement, defined as the likelihood to volunteer after college. In a regression model applying propensity score weights, this study found that students who studied abroad were 26% more likely to volunteer after college compared to students who did not. Other research suggests that students are more likely to interact across racial difference after participating in study abroad, although this result was more prominent among students of color compared to White students (Lowe et al., 2014). In another recent study, this time exploring examples of individual benefits to students, Whatley and González Canché (2022) applied a propensity score approach to find that study abroad was positively associated with several academic outcomes, such as credit accumulation and likelihood of degree attainment, among community college students. Similar results have been found for students enrolled in the four-year sector, findings that suggest that the positive relationship between study abroad and academic success applies to postsecondary students broadly (Bhatt et al., 2022). Numerous studies have explored the relationship between study abroad and students' ability to communicate and interact interculturally, an outcome that arguably benefits both students and society at large (see Burrow, 2019 for a meta-analysis). Given the substantial benefits that students and society may gain from study abroad, inequalities in access to these international learning experiences are concerning.

Stratified Access to Study Abroad

Despite repeated evidence of the benefits of study abroad, the study abroad literature documents deep stratification in students' opportunities to engage in these international experiences. Researchers and practitioners have long identified student finances as a significant barrier to study abroad participation (e.g., DeJong et al., 2010), signaling socioeconomic stratification in access to education abroad. Moreover, prior research indicates that student financial aid—both its type and amount—significantly relates to whether students (intend to) study abroad (e.g., Whatley, 2017), with differences along racial/ethnic lines (e.g., Brux & Fry, 2010; Salisbury et al., 2011; Van Der Meid, 2003). However, recent work indicates that stratification in access to education abroad is not only an issue of finances. Findings suggest that students' social connections, family environments, and abilities to navigate academic culture are important predictors of study abroad participation (Weenink, 2014). These findings suggest patterns of exclusivity in study abroad programming (Simon & Ainsworth, 2012). Stratification in access to education abroad also happens at the institution level. For example, institutional resources available to students, such as low student-to-faculty ratios and courses taught by full-time faculty members, appear to facilitate study abroad (Whatley, 2019). Such findings suggest stratification of opportunity in education abroad not only among individual students, but also at the institutional level.

In terms of geographic stratification specifically, Whatley (2019), found that public two-year institutions located in rural areas or towns were less likely to offer study abroad experiences compared to institutions in urban locales (see the following section for specific definitions of these locale terms). Also exploring the two-year sector, Lieberman's (2019) results indicated that changes to institutional funding and structure alongside significant support from leadership and faculty encouragement of student participation were key to successful implementation of study abroad programs at rural institutions. Finally, based on the experiences of three rural community colleges, Thomas (2019) recommends supporting study abroad through connections to other institutional strategies, creating more efficient study abroad operations, and partnership cultivation. In the four-year sector, Ward et al. (2019) outline the design of a study abroad program from rural, agriculture communities. The needs assessment conducted for this program suggested that focus on

experiential learning, program logistics, and instructional decision-making were key for program success.

Stratification in access to study abroad along geographic indicators essentially denies certain segments of the student population access to experiences that have the potential to build intercultural competence and enhance global perspectives, among other important outcomes for postsecondary students (Salisbury et al., 2013; Tarrant et al., 2014). This stratification is especially concerning given that most college students attend school close to home, particularly those who are most disadvantaged (Turley, 2009). If a student is unable or unwilling to move away from a location where study abroad opportunities are scarce, then this student's access to educational international mobility and its benefits is severely constrained.

Method

Data

To address this study's research questions, which inquire about the extent to which the geographic context of students' postsecondary environments shapes their access to and participation in study abroad opportunities, we drew upon 2018-19 academic year data from several sources (e.g., the Integrated Postsecondary Education Data System [IPEDS], the Institute of International Education, and the Federal Aviation Administration) to construct an institution-level dataset, limited to include public or private not-for-profit four-year institutions that did not report that they would close during the 2018-19 academic year[1]. Given the focus of our study on education abroad programming, we removed three groups of institutions from the dataset prior to analysis, namely special focus institutions (i.e., those awarding a high concentration of degrees in a single field or set of related fields according to their Carnegie classification) and US Service schools (e.g., the US Air Force Academy), institutions serving majority or exclusively graduate students, and institutions not in the Carnegie universe[2]. Education abroad likely plays a very different role in the education of students enrolled at institutions that fall into

[1] A total 22 institutions in our original dataset were set to close during the 2018-19 academic year.
[2] Institutions were grouped according to their Carnegie 2018 classification. An institution was included in this classification framework if they granted at least one degree in the 2016-17 academic year. Institutions serving majority or exclusively graduate students were those at which more than half of full-time equivalent enrollment comprised graduate students. See https://carnegieclassifications.iu.edu/ for additional information.

the first two of these categories compared to students enrolled at institutions in the broader category of four-year degree-granting institutions. Institutions in the third category did not grant a degree in the 2016-17 academic year, thus calling into question the credit-bearing nature of their study abroad offerings. Finally, given the importance of geographic contextual indicators in our study, particularly driving time to the closest international airport, we removed institutions located outside the 48 continental United States, but retained institutions located in Washington, DC. These exclusions resulted in a dataset of 1,621 institutions, twenty-five of which were missing data on student demographic information[3], resulting in an analytic dataset of 1,596 institutions.

We used this dataset to explore two outcome variables of interest, a binary indicator of whether the institution offered education abroad opportunities[4] (corresponding to our first research question) and a continuous indicator representing the number of students participating in study abroad, logged for analytic purposes (our second research question). Important to note is that the former outcome is an indicator or whether study abroad – of any kind – was offered at the institution during a specific academic year and does not speak to the number or type of programs offered or other program characteristics, such as duration. The latter outcome indicates the number of students who studied abroad for academic credit at a given institution, regardless of whether the program was home-, host-, or external provider-sponsored, and speaks to the volume of study abroad participation at a particular institution. However, this outcome was only available for 829 of the 1,596 institutions in our analytic sample. The reason for such substantial missing information on this variable is due to its data source – the Institute of International Education (IIE). IIE collects study abroad participation numbers on a voluntary basis, meaning that institutions are not required to report this

[3] These institutions were College of St. Joseph, East-West University, Elizabethtown College School of Continuing and Professional Studies, Green Mountain College, Herzing University-Toledo, Hiwassee College, Marygrove College, New Saint Andrews College, Newbury College, Purdue University Global-Augusta, Purdue University Global-Cedar Falls, Purdue University Global-Cedar Rapids, Purdue University Global-Davenport, Purdue University Global-Des Moines, Purdue University Global-Hagerstown, Purdue University Global-Lewiston, Purdue University Global-Lincoln, Purdue University Global-Mason City, Purdue University Global-Milwaukee, Purdue University Global-Omaha, Purdue University Global-St. Louis, Southern Vermont College, The College of New Rochelle, Urbana University, and Wheelock College.

[4] Note two exceptions; these institutions reported to IPEDS that they did not offer study abroad opportunities, yet they reported study abroad participation information to IIE. These two institutions were recoded as having offered education abroad opportunities.

information. Moreover, for student and institution confidentiality purposes, IIE only releases data for institutions that report ten or more students studying abroad in a given academic year (see https://opendoorsdata.org/ for additional information). Results corresponding to this second outcome variable should be interpreted with this caveat in mind.

Our dataset contained five additional variables from other sources, several of them internationally-focused, that allow us to speak to the extent to which study abroad opportunity and participation are spatially stratified. These variables correspond to three of the four categories identified in spatial inequality theory as possible producers of stratification (i.e., Economic Structures, Institutional Arrangements, and Spatial Situation/Site Factors) and their relation to the overall internationalization of that particular locale. First, we included an indicator of the economic structures surrounding higher education institutions, namely the ratio of international imports to exports in each state.[5] Second, we included two indicators of the institutional arrangements – otherwise conceptualized here as the institutionalized policy dynamics - in the state where a college or university was located, the number of foreign individuals obtaining lawful permanent residence (i.e., admitted as immigrants or became legal permanent residents) and political control of state governments. We represent this latter variable as Republican control, measured on a scale from 0 to 2 (either party can be indicated in the variable name to model control, and in this case the choice was random). Following Klarner (2013), each state was awarded one point if the Republican party controlled the state legislature and one point if the state governor was Republican. Half-point increments were awarded for divided control. A third set of indicators corresponded to the spatial situation/site factors that surround a postsecondary institution, namely its locale[6] (rural, town, suburb, and city) and driving time, in minutes, from the institution to the closest international airport. For institutions with multiple campuses, these indicators correspond to the institutionally-designated main campus location. Regarding locale, these geographic designations delineate rural areas as communities of 2,500 or fewer, towns as urban clusters outside of a larger urbanized area of 2,500 to 50,000 residents, suburbs as territories

[5] These ratios were calculated with data retrieved from the US Census Bureau Foreign Trade via USA Trade Online. They represent international exchanges of commodities originated in and delivered to each state.

[6] Geographic locale categories correspond to those used by the US Census Bureau's Population Division and represent an institution's physical address.

outside of a principal city but inside an urbanized area of 50,000 or more residents, and cities as territories within both a principal city and an urbanized area (NCES, 2022). We enter our driving time variable into our regression models as both a linear and quadratic term to account for variations in the functional form relationship between distance to an international airport and study abroad.

Our dataset also included numerous institution-level variables corresponding to student demographic information, namely international (non-resident) student status, racial/ethnic identity, gender identity, and income status (using Pell receipt as a proxy[7]), and institutional characteristics such as classification as an Arts and Sciences-focused institution, public/private control, doctoral degree-granting classification, and the log of total enrollment. These variables were entered into our analyses as control variables and allowed us to account for variables that prior research identified as exhibiting stratification patterns in study abroad, but that are not necessarily related to the geographic context of an institution. Shown in the *Findings* section, Table (1) lists all the variables included in this study and the data source for each one.

Analysis

We used two different types of regression, logistic regression when our outcome was binary (an institution offering study abroad – RQ1) and ordinary least squares regression when our outcome was continuous (number of study abroad participants – RQ2), to describe the relationship between our geographic context variables and study abroad. Given the nested nature of our data (institutions nested within states), all analyses included a state-level random effect, which has the benefit of accounting for the non-independence of same-state institutions in standard error calculations while also resulting in efficient coefficient estimates (Fitzmaurice et al., 2011; Raudenbush & Bryk, 2002). We estimated our regression models twice for each outcome variable, once with only our geographic context variables of interest and again including control variables. When number of study abroad participants is the outcome of interest, we control for total enrollment in both models to account for institutional size.

[7] The Pennsylvania State System of Higher Education (PASSHE) reported Pell enrollment at the system- rather than the institution-level and consequently the percentage of Pell recipients is the same (23%) across PASSHE institutions (23%).

For interpretation purposes, logistic regression coefficients were converted to average marginal effects.

Findings

Descriptive Statistics

Descriptive statistics, displayed for our full sample in Table (1) on the following page, provide a snapshot of the institutions in our dataset, although we note that many of these variables exhibit a substantial range of values, underscoring the heterogeneity of institutional contexts in US higher education. Approximately 86% of institutions in our dataset offer study abroad. Among institutions reporting (N=829 out of a total of 1,596 institutions), an average of 377 students studied abroad. The range of values for this figure was quite broad, ranging from 10 (the minimum number reported by IIE) to nearly 5000. Regarding spatial economic structures, the mean international imports-to-exports ratio was 1.64, suggesting that, on average, institutions were located in states importing more international products than they exported internationally. As far as institutional arrangements are concerned, institutions were located in states averaging 457 foreign individuals obtaining lawful presence in 2018, although again this variable exhibits substantial variation. The Republican party held a greater number of state legislatures and executive offices, hence the mean value of 1.32 for political control. For spatial situation/site factors, the largest proportion of schools are designated as located in a city (45%), while the numbers for suburb and town are nearly equal (25% and 23%, respectively), and fewer than ten percent are designated as rural (7%). The mean drive time to an international airport across all schools was just over 56 minutes; however, this variable also exhibited a broad range of values, with a minimum of around five minutes to a maximum of almost six hours (352 minutes).

TABLE (1): VARIABLES, DATA SOURCES, AND DESCRIPTIVE STATISTICS

Variable	Obs	Mean	Std. Dev.	Min	Max	Data Source
Outcome Variables						
Study Abroad Offered	1,596	0.86	0.35	0	1	Integrated Postsecondary Education Data System (IPEDS)
Total Study Abroad Participation[1]	829	377.11	560.01	10	4839	Institute of International Education
Geographic Context						
City[2]	1,596	0.45	0.50	0	1	IPEDS
Suburb	1,596	0.25	0.43	0	1	IPEDS
Town	1,596	0.23	0.42	0	1	IPEDS
Rural	1,596	0.07	0.26	0	1	IPEDS
Drive time to closest international airport (in minutes)	1,596	56.08	45.93	4.60	351.70	IPEDS and the Federal Aviation Administration
International imports-to-exports ratio	1,596	1.64	0.69	0.28	4.37	US Census Bureau
Individuals obtaining lawful presence	1,596	456.58	574.39	4.09	2008.97	Department of Homeland Security
Republican control[3]	1,596	1.32	0.74	0	2	National Conference of State Legislatures
Control Variables						
Percentage non-resident	1,596	4.52	5.55	0	58.35	IPEDS
Percentage American Indian/Alaska Native	1,596	1.45	8.54	0	100.00	IPEDS
Percentage Asian	1,596	3.98	4.80	0	36.18	IPEDS
Percentage Black/African American	1,596	13.81	18.77	0	97.99	IPEDS
Percentage Hispanic	1,596	11.65	12.47	0	95.21	IPEDS
Percentage Native Hawaiian/Pacific Islander	1,596	0.21	0.35	0	5.09	IPEDS
Percentage White	1,596	55.84	22.31	0	93.42	IPEDS
Percentage two or more race/ethnicity	1,596	3.36	2.29	0	28.99	IPEDS
Percentage women	1,596	58.00	11.45	0	100.00	IPEDS
Percentage Pell recipients	1,596	36.42	15.56	0	95.00	IPEDS
Arts/Sciences Carnegie Classification[4]	1,596	0.14	0.35	0	1	IPEDS
Public	1,596	0.43	0.50	0	1	IPEDS
Private not-for-profit	1,596	0.57	0.50	0	1	IPEDS
Doctoral classification[5]	1,596	0.22	0.42	0	1	IPEDS
Total enrollment	1,596	7503.96	10803.30	61	121437	IPEDS

[1] THIS DATA SOURCE IS COMPILED OF VOLUNTARY SURVEY RESPONSES AND ONLY INCLUDES STUDY ABROAD PARTICIPATION NUMBERS FOR INSTITUTIONS THAT REPORT TEN OR MORE STUDENTS STUDYING ABROAD IN A GIVEN ACADEMIC YEAR, THUS ACCOUNTING FOR THE LOWER NUMBER OF OBSERVATIONS AVAILABLE FOR THIS VARIABLE.

[2] GEOGRAPHIC LOCALE CATEGORIES CORRESPOND TO THOSE USED BY THE US CENSUS BUREAU'S POPULATION DIVISION AND REPRESENT AN INSTITUTION'S PHYSICAL ADDRESS.

[3] Republican control is derived from the National Council of State Legislatures state partisan composition data. This variable captures party control in a single numeric value for analysis and represents partisan control of legislative and gubernatorial government—one point each if controlled by Republicans—with half-point increments for divided control, (e.g. Klarner, 2013). Either major US party could have been specified as the reference party through this process, and the Republican party was chosen at random.

[4] Derived from 2018 Basic Carnegie Classifications (Baccalaureate Colleges: Arts & Sciences)

[5] Derived from 2018 Basic Carnegie Classifications (Doctoral Universities: Very High Research Activity, Doctoral Universities: High Research Activity, and Doctoral/Professional Universities)

Table (2) below displays these same descriptive statistics disaggregated according to whether an institution offered study abroad opportunities to students. This table suggests that institutions offering study abroad were more likely to be located in cities (46% compared to 37%) and less likely to be located in rural areas (5% compared to 19%). Institutions offering study abroad were also slightly closer to an international airport (around 55 minutes driving compared to 60 minutes) and were located in states with a higher international imports-to-exports ratio (1.67 compared to 1.48) and a higher mean number of foreign individuals obtaining lawful presence in 2018 (approximately 463 compared to 418). Finally, institutions offering study abroad were also located in states with lower Republican government control (1.29 compared to 1.49).

Table (2): Descriptive Statistics for Institutions Offering Study Abroad and not Offering Study Abroad

	Study Abroad Offered				No Study Abroad Offered (N=226)			
Outcome Variables	Mean	Std. Dev.	Min	Max	Mean	Std. Dev.	Min	Max
Geographic Context								
City[1]	0.46	0.50	0	1	0.37	0.48	0	1
Suburb	0.26	0.44	0	1	0.20	0.40	0	1
Town	0.23	0.42	0	1	0.24	0.43	0	1
Rural	0.05	0.23	0	1	0.19	0.39	0	1
Drive time to closest international airport (in minutes)	55.41	44.63	5.78	288.83	60.10	53.03	4.60	351.70
International imports-to-exports ratio	1.67	0.69	0.28	4.37	1.48	0.68	0.28	4.37
Individuals obtaining lawful presence	462.92	576.66	4.09	2008.97	418.14	560.15	5.65	2008.97
Republican control[2]	1.29	0.74	0.00	2.00	1.49	0.74	0	2
Control Variables								
Percentage non-resident	4.94	5.51	0	58.35	1.96	5.08	0	53.05

Percentage American Indian/Alaska Native	0.59	2.22	0	68.25	6.65	21.33	0	100.00
Percentage Asian	4.25	4.94	0	36.18	2.38	3.43	0	29.42
Percentage Black/African American	12.97	17.64	0	97.74	18.87	23.94	0	97.99
Percentage Hispanic	11.35	11.74	0	95.21	13.51	16.13	0	84.34
Percentage Native Hawaiian/Pacific Islander	0.19	0.33	0	5.09	0.31	0.47	0	3.23
Percentage White	57.36	21.04	0	92.55	46.64	27.12	0	93.42
Percentage two or more race/ethnicity	3.37	2.05	0	24.56	3.31	3.40	0	28.99
Percentage women	57.77	11.11	0	100.00	59.40	13.27	7.66	93.60
Percentage Pell recipients	34.64	14.10	0	91.00	47.16	19.25	0	95.00
Arts/Sciences Carnegie Classification[3]	0.15	0.36	0	1.00	0.08	0.27	0	1
Public	0.43	0.50	0	1	0.46	0.50	0	1
Private not-for-profit	0.57	0.50	0	1	0.54	0.50	0	1
Doctoral classification[4]	0.26	0.44	0	1	0.01	0.11	0	1
Total enrollment	8081.70	10776.41	90	104068	4001.70	10315.43	61	121437

1 Geographic locale categories correspond to those used by the US Census Bureau's Population Division and represent an institution's physical address.

2 Republican control is derived from the National Council of State Legislatures state partisan composition data. This variable captures party control in a single numeric value for analysis and represents partisan control of legislative and gubernatorial government—one point each if controlled by Republicans—with half-point increments for divided control, (e.g. Klarner, 2013). Either major US party could have been specified as the reference party through this process, and the Republican party was chosen at random.

3 Derived from 2018 Basic Carnegie Classifications (Baccalaureate Colleges: Arts & Sciences)

4 Derived from 2018 Basic Carnegie Classifications (Doctoral Universities: Very High Research Activity, Doctoral Universities: High Research Activity, and Doctoral/Professional Universities.

Regression Models

Table (3) on the following page summarizes our regression models. Among our geographic context variables of interest, only locale and driving time were significantly related to the two outcomes, study abroad offered (columns 1 and 2) and study abroad participation (columns 3 and 4). Institutions in rural locales were significantly less likely to offer study abroad compared to their urban counterparts (p<.001) in the model without control variables (column 1). However, this significant difference did not persist when controls were added to the model (column 2). Similarly, driving time to the closest international airport was significantly related to study abroad offering in the model without controls (column 1) (p<.05 for both drive time variables). The positive coefficient on the primary drive time variable and the negative coefficient on the squared term suggests an inverse u-shaped relationship between driving time and study abroad offering. That is, up until a certain point, as driving time to the closest international airport increases, the likelihood of an institution offering study abroad goes up. After this point, increases in drive time are negatively related to study abroad offering. However, once control variables were added to this model (column 2), this significant relationship disappeared. Regarding study abroad participation, in the model without controls (column 3), institutions located in suburbs and rural locales reported fewer students studying abroad compared to those located in cities (p<.10 in both cases). However, once control variables were added to the model, only institutions in suburbs reported significantly fewer students studying abroad compared to those in cities (p<.05). More specifically, compared to institutions located in cities, those in suburbs reported study abroad participation that was 16% lower.

Although our control variables were not the central focus of this study, several of them presented findings that inform stratification of study abroad opportunity more generally. For example, as the percentage of the student population comprised of Pell recipients increased, institutions were both less likely to offer study abroad and reported fewer students participating (p<.01 or lower in both cases). Similarly, public institutions were both less likely to offer study abroad and reported lower participation compared to private not-for-profits (p<.001). In contrast, institutions with an arts and sciences focus and doctoral institutions were more likely to study abroad and reported a greater number of students participating, even after controlling for an institution's total enrollment (p<.01 or lower in all cases).

TABLE (3): LOGISTIC REGRESSION RESULTS (REPRESENTED AS MARGINAL EFFECTS) PREDICTING STUDY ABROAD OFFERING (COLUMNS 1 AND 2) AND ORDINARY LEAST SQUARES REGRESSION RESULTS PREDICTING NUMBER OF STUDY ABROAD PARTICIPANTS (LOGGED; COLUMNS 3 AND 4) (ALL MODELS WITH A STATE-LEVEL RANDOM EFFECT)

	(1) Study Abroad Offered	(2) Study Abroad Offered	(3) Study Abroad Participation (log)	(4) Study Abroad Participation (log)
Suburb	-0.017	0.004	-0.148+	-0.160*
	(0.024)	(0.021)	(0.089)	(0.067)
Town	-0.052+	0.007	-0.108	0.007
	(0.026)	(0.023)	(0.109)	(0.084)
Rural	-0.182***	-0.008	-0.463+	-0.091
	(0.032)	(0.029)	(0.258)	(0.196)
Driving time (in minutes)	0.001*	0.000	-0.002	0.001
	(0.001)	(0.001)	(0.003)	(0.002)
Driving time squared	-0.000*	0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Imports-to-exports ratio	0.031	0.010	-0.038	0.049
	(0.021)	(0.017)	(0.054)	(0.042)
Individuals obtaining lawful	-0.000	0.000	-0.000**	-0.000
Permanent residence (in 100s)	(0.000)	(0.000)	(0.000)	(0.000)
Republican control	-0.025	-0.024	-0.106+	-0.035
	(0.023)	(0.019)	(0.056)	(0.047)
Pct Non-residents		0.010***		0.033***
		(0.003)		(0.009)
Pct American Indian/Alaska Native		-0.001		0.015
		(0.002)		(0.026)
Pct Asian		0.004		0.033***
		(0.003)		(0.010)
Pct Black		0.003**		0.018**
		(0.001)		(0.006)
Pct Hispanic		0.001		0.017**
		(0.001)		(0.007)
Pct Native Hawaiian/Pacific Islander		-0.037*		-0.066
		(0.019)		(0.112)
Pct White		0.003***		0.026***
		(0.001)		(0.006)
Pct 2+ racial/ethnic identities		0.002		0.007
		(0.003)		(0.018)
Pct Women		0.000		0.005+
		(0.001)		(0.003)
Pct Pell		-0.002**		-0.023***
		(0.001)		(0.003)
Arts/Sciences		0.083**		0.770***
		(0.028)		(0.092)
Public		-0.104***		-0.697***
		(0.021)		(0.085)
Doctoral		0.160**		0.364***
		(0.055)		(0.078)

Total enrollment (log)		0.076*** (0.010)	0.648*** (0.036)	0.902*** (0.049)
Constant			0.021 (0.344)	-4.511*** (0.712)
Sample Size	1596	1596	829	829
Sigma(e)			1.02	0.76
Sigma(u)	0.67	0.62	0.00	0.00
Rho	0.12	0.11	0.00	0.00

STANDARD ERRORS IN PARENTHESES, + P<.10, * P<.05, ** P<.01, *** P<.001

REFERENCE GROUP FOR LOCALE IS CITY

Limitations

Although this study provides important insight into the extent to which stratification of opportunity in study abroad is influenced by the geographic context of a student's postsecondary institution, several limitations should be taken into consideration when interpreting our results. First, as already mentioned, our data on study abroad participation numbers are limited given the voluntary nature of the reporting of this information to IIE and IIE's subsequent censoring of publicly reported data. Second, as already mentioned, our binary indicator of whether study abroad was offered at a given institution is not able to account for the extent to which study abroad is offered nor can it speak to qualitative differences in study abroad offerings, such as program length, location, cost, or eligibility to participate, all elements that may make study abroad more or less accessible to certain groups of students. We are unaware of a dataset that would be able to speak to these aspects of institutional study abroad offerings at this time but encourage future research in this area.

Third, while our study focuses on a prominent intercultural learning opportunity, study abroad, it is certainly possible that institutions not offering study abroad opportunities provide alternative means for students to engage internationally, such as through internationalized curricula or virtual exchange. That is, while our results are indicative of differential educational opportunities that involve international mobility, they do not necessarily extend to other types of intercultural engagement. A final limitation concerns our geographic context variables themselves, which are likely imperfect measures of factors that shape study abroad opportunity. For example, while political control in each state may provide some measure of the political circumstances of a particular institution, this variable ignores micro-level variations in the political context within a state, such as at the county-, city-, or institution-level, that a student encounters while attending a postsecondary education institution. Future studies might also

further explore the interplay between state politics and funding mechanisms, focusing on differential funding models in public institutions. While we have worked to introduce novel data in this study, we understand the need to continue this research and tease apart the factors that undergird these geographic contexts. Racial demographics and socioeconomic indicators are both examples of factors that undergird the geographic context variables we deploy in this study. These findings will hopefully serve as a launching point to further explore the relationship between study abroad access and geographic context.

Discussion

The purpose of this study was to better understand whether and the extent to which students' ability to access study abroad might be constrained by the geographic context of their postsecondary institutions. The spatial inequality theoretical lens that informed this study suggests that uneven development across the geographic landscape—and the related unequal dispersion of resources—structures the opportunities available to students through social institutions, including institutions of higher education (Lobao et al., 2007). That is, in the context of this study, this framework suggests that students will disproportionately access study abroad opportunity in ways that correspond to the variable spatial contexts of their postsecondary institutions. While the study abroad literature provides substantial evidence that study abroad opportunities are stratified according to certain student demographic characteristics (e.g., DeJong et al., 2010; Salisbury et al., 2011; Simon & Ainsworth, 2012; Weenink, 2014; Whatley, 2017), this study is the first to focus on geographic context explicitly. More specifically, we focused on variables falling into three categories identified in spatial inequality theory as producers of social stratification: economic structures (the international import-to-export ratio in the state where an institution was located); institutional arrangements (number of international individuals obtaining lawful presence and political control in a state); and spatial situation/site factors (an institution's locale and the driving time between the institution and the closest international airport).

Despite this theoretical support, we largely found that our spatial variables did not exhibit a significant relationship with our two study abroad outcome variables once we controlled for student demographics and institutional characteristics. That is, while study abroad opportunity appears to be broadly stratified according to spatial characteristics such as locale (i.e.,

urbanicity) or distance from an international airport, other institutional arrangement measures served as the primary predictors of study abroad outcomes in our analysis. These findings are challenging to parse, as many of these institutional characteristics are linked intrinsically with spatiality. For instance, private not-for-profit institutions, doctoral institutions, and arts and sciences institutions were all significantly more likely both to offer study abroad and to report higher participation. Some of these institutional types – such as research universities – are far less likely to be found in rural settings. For example, IPEDS data from 2020-21 indicates that only 10 out of the 662 institutions designated as doctoral degree-granting institutions within the Carnegie Classification system (less than two percent) are situated in rural locales. Our analyses also show that institutional characteristics such as a suburban locale or enrolling a higher percentage of Pell recipients is associated with more limited study abroad activity. We might then surmise that socioeconomic class and/or commuter status play a role in both student access to study abroad as well as student participation in such activities. These dynamics arguably sit at the nexus of our three theoretical categories (e.g., economic structures, institutional arrangements, and spatial situation/site factors). Meanwhile, at institutions with higher proportions of doctoral activity or emphases on arts and sciences, another distinct institutional arrangement - we again observe that study abroad is both more accessible and more commonly engaged with among the student population. Individuals attracted to these spaces may view study abroad as a normal part of their educations and are thus attracted to institutions with programs that satisfy what they view as an educational need.

These findings suggest that study abroad opportunities may be shaped in complex and significant ways by spatial dynamics - particularly those captured within institutional arrangements across the higher education landscape. If so, our results suggest that not all students have access to the same quality educational experience which, for some students, includes study abroad (Bastedo & Jaquette, 2011; Bastedo et al., 2009; Clotfelter, 2017; Marginson, 2016; Rivera, 2015; Stich, 2012; Taylor & Cantwell, 2018). These findings are, of course, worrisome in the context of the benefits of study abroad to both society (e.g., increased civic engagement; Mitic, 2020) and individual students (e.g., increased likelihood of credential completion; Bhatt et al., 2022; Whatley & González Canché, 2022) as they suggest that only certain students can access these benefits. Further research might explore this issue in greater depth, examining whether

study abroad and other intercultural activities are conceptualized differently within various spaces in higher education.

Implications

Our results have key implications for both future research on this and similar topics and for international education professionals. For research, our results suggest that future studies that do not account for the institutional arrangement of US postsecondary education when exploring issues of access to international education miss key factors that help or hinder students in this regard. That is, a study that claims to explore access to international education, including both study abroad and other international opportunities, but that does not account for characteristics of students' postsecondary institutions, at best ignores a key category of factors that shape students' educational experiences and at worst produces results that are underspecified and inaccurate. Of course, including postsecondary institutional characteristics in future research requires data resources to complete such an analysis, data that are not necessarily available broadly in international higher education (McAllister-Grande & Whatley, 2020). In an ideal situation, such information would exist at the student-level and include information about both individual student characteristics (e.g., demographics, prior educational history, current academic information) and characteristics of the institution that a student attends, such as those included in this study. Currently, no such dataset exists.

Assuming sufficient data resources, future research is needed to explore institutional stratification in international education opportunity along the lines of other categories of variables, such as institutional mission or prestige-focused variables, rather than the geographic context variables explored in this study. Additionally, flipping the script of the current study, research is needed to explore geographically variable indicators such as those included in this study as they apply to the host countries where students choose to study. The extent to which programs with specific characteristics, such as academic focus or length, are unevenly dispersed around the world speaks to a different kind of geographic stratification in international education.

For international educators, and particularly study abroad practitioners, this study's results may be promising in that, regardless of the political orientation of the state, location vis-à-vis an international airport, or economic and social context, institutions were equally as likely to offer study abroad opportunities and reported similar participation numbers on average. These

results suggest that robust study abroad programs can be built and maintained regardless of an institution's geographic context. However, again, our findings regarding institutional characteristics give reason for pause. For practitioners, implementing study abroad programs may be more difficult at public institutions and at institutions that do not offer doctoral degrees. Practitioners at institutions falling into these categories may consider partnering with institutions with more robust study abroad offerings to provide access to these opportunities. Of course, these partnerships raise important questions regarding data reporting, particularly around which institution should report study abroad participation of students who study abroad through an institution other than their home institution. We advocate for the student's home institution reporting this participation, as the home institution is the one that otherwise impacts the student's educational experience more directly. In contrast, an arts and sciences focus appears to facilitate the establishment and maintenance of these programs. Despite a general lack of significance for our indicators of geographic context, we did find consistently that a suburban locale appeared to negatively relate to study abroad. As mentioned in our general discussion of results, this finding may indicate a negative relationship between a student's commuter status, and an institution's perception of itself as a commuter institution, and a focus on study abroad at a particular institution. At these institutions, study abroad advisors and others working in international education, including faculty members who aim to encourage students to study abroad, should keep these dynamics in mind when designing study abroad programs and discussing these opportunities with students. Students who commute may have significant home and family responsibilities that would prevent them from studying abroad for extended periods of time (e.g., Amani & Kim, 2018), and they may need to hear perspectives that focus on career and economic benefits of study abroad to understand the value of these experiences. When advocating for international education, international educators must also keep in mind that institutional leaders will likely center these students' needs.

Conclusion

This study uncovered key information regarding the nature of institutional stratification in study abroad opportunity. While study abroad does not appear to be stratified along the lines of geographic context, at least in general, other institutional characteristics suggest significant patterns of stratified opportunity, signaling the presence of spatial inequality within

postsecondary study abroad. Our findings are useful in that they extend current discourse on access to study abroad and further our understanding of the ways in which study abroad participation is shaped among students attending four-year colleges and universities in the United States.

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