Structuring College Access: College Board Geo-markets and the Market Segment Model

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1 Introduction

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COULD START WITH HISTORICAL VIGNETTE OF ZEMSKY PARTNERING WITH COLLEGE BOARD TO CREATE THE MARKET SEGMENT MODEL.

- quotes on "admissions officers are invariably tellers of stories" and the goal of the market segment model is to quantify these stories.

TEXT TEXT

Thinking about a revised outline, 4/19/2024

- Intro/lit review
- theory [e.g., quantification, whatever]
- then do a close read of the zemsky book, which ends in creation of EPS, incorporating geomarkets in student list products
  - hypotheses would be motivated here
- methods/data

the alternative (typical education journal) structure would be this [which has one more level 1 heading and feels to inefficient]:

- introduction [topic importance]
- literature review

- background
- conceptual framework
- methods data

IMPORTANT (defense/offense): One important limitation of this manuscript is that we do not study the effect of geomarkets on college access. However, we do show empirically how geomarkets work as a mechanism of exclusion and social reproduction.

Prior research on quantification in education focuses on consumer-facing products. For example, Espeland and Sauder study US News Rankings. McArthur, D., & Reeves, A. (2022) study School League Tables. Prior research has not studied quantification within the context of market research. Here, the desirable attributes of students and places they live are quantified with the purpose of informing colleges about where they should allocate recruiting resources to efficiently enroll the most desirable students.

2 Background: Enrollment Management

The term "enrollment management" (EM) refers to a profession, an administrative structure, and an industry. As a profession, EM integrates techniques from marketing and economics in order to "influence the characteristics and the size of enrolled student bodies" (Hossler & Bean, 1990, p. xiv). As an administrative structure, the EM office typically controls the activities of admissions, financial aid, and recruiting (Kraatz, Ventresca, & Deng, 2010). The EM industry consists of university personnel (e.g., admissions counselors, VP for enrollment management), professional associations (e.g., National Association for College Admission Counseling), and third-party servicers that produce market research, software, and and consulting services (e.g., College Board, ACT, EAB, Huron, Slate, PowerSchool).

The process of recruiting students involves many "make or buy" decisions about whether to perform a given task in-house or outsource it to a third-party vendor. EM consulting firms provide advice and implementation in the areas of marketing, recruiting, pricing and financial aid, and student success. As "creating a class" has becomes complicated and high-stakes (Stevens, 2007), many colleges hire EM consulting firms to develop and/or implement recruiting campaigns. The two largest enrollment consulting firms – Ruffalo Noel Levitz and EAB – claim to serve more than 3,000 colleges and universities collectively (EAB, n.d.; Ruffalo Noel Levitz, 2023). In our data collection, attempting to obtain data about student list purchases from all public universities in four states, at least half of these universities outsourced student list purchases to an EM consultancy (Jaquette, Salazar, & Martin, 2022; Salazar, Jaquette, & Han, 2022).

Figure Figure 1 depicts the "enrollment funnel," which modifies the traditional "marketing funnel" to depict broad stages in the process of recruiting students (EAB, 2019; Litten, Sullivan, & Brodigan, 1983). The funnel begins with a large pool of "prospects" (i.e., prospective students) that the university would like to enroll. "Leads" are prospects whose contact information has been obtained. "Inquiries" are prospects that contact the institution and consist of two types: first, inquiries who respond to an initial solicitation (e.g., email) from the university; and second, "student-as-first-contact" inquiries who reach out to the university on their own (e.g., sending ACT scores). The funnel narrows at each successive stage in order to convey the assumption of "melt" (e.g., a

subset of "inquiries" will apply). Practically, the purpose of the enrollment funnel is to inform recruiting interventions that target one or more stages. These interventions seek to increase the probability of "conversion" across stages (Campbell, 2017). At the top of the enrollment funnel, purchasing student lists is the primary means of converting prospects to leads (Jaquette et al., 2022). Purchased leads are served emails, brochures, and targeted social media advertisements designed to solicit inquiries and applications (Ruffalo Noel-Levitz, 2022).

Scholarship at the nexus of enrollment management and college access can be categorized by which part(s) of the enrollment funnel they focus on. The majority of scholarship focuses on the admissions stage, for example which admissions criteria are used (Hirschman, Berrey, & Rose-Greenland, 2016; Taylor, Rosinger, & Ford, 2024) and which applicants are admitted (Killgore, 2009; Posselt, 2016) [CITE SOMETHING BY BASTEDO].

A growing literature analyzes the earlier "recruiting" stages of identifying leads, soliciting inquiries, and soliciting applications. Scholarship on recruiting has conceptualized recruiting behavior as an indicator of college enrollment priorities (Salazar, Jaquette, & Han, 2021) and identifies recruiting practices as a mechanism for social reproduction in college access (Holland, 2019; Stevens, 2007).

Ethnographies by Stevens (2007) and by Khan (2011) analyze the connections between privileged colleges and privileged high schools. Khan (2011) shows how guidance counselors at elite private school guidance counselors lobby admissions counselors on behalf of marginal students. Stevens (2007) finds that college admissions officers visit high schools as a means of maintaining positive relationships with guidance counselors at affluent feeder schools. Consistent with this finding, quantitative case studies of off-campus recruiting visits show that selective private colleges visit affluent, predominantly white schools and communities, with a disproportionate number of visits to private high schools (Jaquette, Han, & Castañeda, 2024; Jaquette & Salazar, 2018). Additionally, public research universities often make make more out-of-state recruiting visits than in-state visits, and these out-of-state visits focus on the same set sorts of schools targeted by selective private universities (Salazar, 2022; Salazar et al., 2021).

Other studies have investigated recruiting behavior by non-selective institutions (Cottom, 2017; Posecznick, 2017). Analyzing recruiting from the perspective of high school students, Holland

(2019) finds that underrepresented students were drawn to colleges that made them feel wanted, often attending institutions with lower graduation rates and requiring larger loans than other college options. Cottom (2017) and Dache-Gerbino, Kiyama, & Sapp (2018) show that for-profit colleges found a niche in Black and Hispanic communities because traditional colleges ignored these communities.

We make two observations about the recruiting literature. First, consistent with scholarship on political economy (Cottom, 2017; Stevens & Gebre-Medhin, 2016) [cite Stevens; cottom] and industrial organization [cite Winston], the recruiting literature suggests a hierarchical competition in which different "types" of postsecondary institutions target hierarchically arranged customer niches. For example, for-profit institutions target adults in communities not being targeted by traditional colleges (Cottom, 2017). Non-selective private non-profits target prospects who might be considering community college or a local state colleges (Holland, 2019). Selective private colleges target private high schools, with a particular link between sectarian high schools and colleges of the same faith (Jaquette et al., 2024), but these schools are increasingly targeted by out-of-state public research universities, suggesting growing competition for a coveted market niche. This process of hierarchically organized colleges matching to hierarchical student segments exemplifies the idea that higher education is mechanism of social reproduction (Domina, Penner, & Penner, 2017; Stevens, Armstrong, & Arum, 2008)

Second, by focusing on the behaviors of individual colleges, the literature makes the implicit assumption that recruiting is something done by individual colleges. Why then, does recruiting behavior look so similar across colleges of a particular "type"?[1]

Jaquette & Salazar (2024) argues that the process of college access is structured by third-party recruiting products utilized by colleges. Jaquette & Salazar (2024) deconstructs the College Board *Student Search Service* product. Student list products are "selection devices" (Hirschman & Bosk, 2020) that incorporate search filters (e.g., high school graduating class, state) which enable colleges to select prospective students. Drawing from Norris (2021), Jaquette & Salazar (2024) argue that

[1]New institutional theory offers one explanation (DiMaggio & Powell, 1983). In highly developed organizational fields like higher education, forces of competitive and institutional isomorphism – including institutional locics – compel organizations adopt similar practices as their peers. Practices deemed advantageous spread quickly, for example, public research universities targeting nonresident prospects to compensate for declines in state appropriations. These behaviors are conceived as autonomous decisions by individual colleges, albeit structured by institutional logics.

several search filters (e.g., AP test score, zip code, geodemographic segment) are "racialized inputs," defined as ostensibly race-neutral inputs that are correlated with race because disadvantaged racial groups have historically been excluded from the input. Using a national sample of high school students from the High School Longitudinal Study of 2009 (HSLS), they show that racialized search filters have a strong negative relationship with the selection of Black and Latinx prospects. Using data from actual student lists purchased by public universities, they show that raciaized search filters – used in conjunction with other search filters – yield dramatic racial inequality in which prospective students are targeted.

[NEED CLEANER TRANSITION]Two geographic search filters – geo-market and geodemographic segment – that Jaquette & Salazar (2024) observe in lists purchased by public could not recreate using HSLS. Using geographic borders to determine selection for an intervention has been widely studied as a mechanism of structural inequality because of historic and contemporary racial segregation in American communities and schools (e.g., Benjamin, 2019; Korver-Glenn, 2022; O'Neil, 2016). The geo-market and geodemographic segment search filters of the College Board *Student Search Service* are examples of creating new geographic borders for the purpose of targeting students for educational opportunities. The geo-market filter slices states and metropolitan areas into smaller, "local" markets. For example, CA08 refers to "Alameda Country excluding Oakdland" and a university might purchase prospect contact information by filtering on this geographic region, alongside additional filters. The geodemographic segment filters utilize cluster analysis to allocate each census tract and each high school into different categories based past college enrollment and other factors. This manuscript focuses on geo-markets. The first question we asked ourselves was, "where did these geo-markets come from?" The answer is, market research.

The enrollment management industry puts great stock in market research. Litten et al. (1983) define market research as all "activities intended to increase understanding of a market and consumer behavior in that market" (p. 17). At the most basic level, (in-house) market research is a function of intentional record-keeping. Stevens (2007) describes the archives of annual reports of admissions activities from a selective liberal arts college. In the 1942 report, "Section 2.5 is titled 'Secondary School Quartile Standings," a measure of where matriculants fell in the rankings of their high school classes" (Stevens, 2007) while Section 3.11 describes the high schools visited. In the

chapter entitled "Travel," Stevens (2007, p. 69) describes how The College used record-keeping to inform decisions about visits to local high schools in the 2000s: "The College keeps files on hundreds of schools across the country, and around the globe, with which it had contact …The files enable officers to quickly discern"how we've done here lately," …with the number, relative quality, and yield rate of applicants from a particular school."

The College Board played a pivotal role in transforming market research about enrollment from something done by individual universities to something done by third-party professionals. In the late 1970s, College Board provided Carleton College with funding and data for a six-year project that analyzed college choice decisions by households in six metropolitan areas.[2] This project was the basis for the landmark book *Applying Market Research in College Admissions* (Litten et al., 1983), published by College Board, and was the basis for the College Board Admitted Student Questionnaire (ASQ), a revenue-generating product that provides colleges with information about admitted students – those who enrolled and who did not enroll.

Similarly, in 1979 The College Board provided Robert Zemsky, a professor of education at UPenn, with data and funding to develop the *Comprehensive Undergraduate Enrollment Planning Project* (Zemsky & Oedel, 1983). In 1983, The College Board published *The Structure of College Choice* by Robert Zemsky and Penney Oedel, developed the "market segment model" and defined local "geo-markets" based on a comprehensive analysis of SAT score-sending by prospective students to coleges and universities. In 1984/5, the market segment model and geo-markets became the basis for the College Board Enrollment Planning Service (EPS), the market research division of College Board.

This manuscript analyzes the market segment model and geo-markets as a case study in order to investigate market research – and its commodification into recruiting products – as a mechanism for social reproduction. At root, third-party market research helps universities identify who are the desirable students, where are they located, which institutions are they considering, and how best to reach them. Today, Ruffalo-Noel Levitz and EAB both produce prodigious amounts of market research, some publicly available as a means of business development [e.g., CITE RNL],

[2]In the 1970s, Carleton College became a leader in applying market research to student recruiting, under the leadership of Larry Litten, the then director of institutional research. Litten would later become Associate Director of the Consortium of Financing Higher Education (COFHE).

but most only available to clients. EPS remains the market research arm of College Board, while Encoura Eduventures is the market research arm of ACT. Despite being central to enrollment management for at least 40 years (Litten et al., 1983), the role of third-party market research has been ignored by scholarship on college access, which views enrollment management behavior as the autonomous decisions of individual colleges, albeit structured by institutional logics (Domina et al., 2017; Salazar et al., 2021; Stevens, 2007). We argue that market research structures who colleges recruit, in ways that reinforce existing social stratification.

3 Quantification

We situate our study amidst scholarship on within scholarship on quantification as a mechanism that reproduces inequality. The foundational essay by Espeland & Stephens (2008, p. 402) defines quantification as "the production and communication of numbers." Scholarship by Wendy Espeland and Michael Sauder used the case of U.S. News & World Report (USNWR) Law School rankings to study the effects of quantification (Espeland & Sauder, 2007, 2016; Sauder, 2008; Sauder & Espeland, 2009).

Reactivity, discipline, and authority are three interrelated themes that describe the effects of quantification [CITE ESPELAND & STEVENS]. Reactivity is the idea that (highly salient) quantitative measures cause people and organizations to change their behavior. US News developed law schools rankings as a means of informing prospective students about law school quality. In turn, rankings affected how prospective students conceive law school quality and which schools they applied to. Rankings also affected the cognition and behavior of other actors. Looking downstream, entities that received law school students as an input – for example, law firms – used rankings as a hiring criterion because their clients evaluated the organization based on the the prestige of the schools their firm's lawyers attended.

Drawing from Foucault [CITE DISCIPLINE AND PUNISH], discipline is the idea that surveilance – attributes of a law school being quantified and aggregated into a public-facing metric – compels people and organizations to react in a particular way. For example, the reputational assessment of peer leaders as an important component of most US News rankings. Bastedo and Bowman

showed that once (undergraduate) USNWR rankings became popular, the reputational assessment of peers primarily became a function of previous USNWR rankings. Once law schools realized that "important groups of constituents — students, faculty, trustees, employers, other media — were using rankings to make decisions that had large consequences for schools …schools felt pressured to take them seriously" [QUOTE FROM ESPELAND AND STEVENS]. For example, applicants with characteristics valued by the rankings system (e.g., LSAT scores) became more important for decisions about admissions and merit aid [CITE].

The theme of authority is that quantification destabilizes and weakens the authority of local decision-makers. For example, law school rankings weakened the authority of law schools to make independent decisions about which applicants to admit, ideal class size, and curricular offerings [CITE THE BOOK]. In a process akin to sports analytics in Moneyball [CITE MICHAEL LEWIS], we suggest that market research replaces the wisdom and authority of local admissions counselors.

The analysis of UK League Tables by McArthur & Reeves (2022) show how quantification can be a mechanism of social reproduction. In 1992, as part of a the broader *New Public Management* effort to instill market competition amongst public providers (Walsh, 1995), the UK government started publishing school "league tables" that ranked schools based on student performance on the high-stakes General Certificate of Secondary Education (GCSE) exams that students take at age 16. McArthur & Reeves (2022) argue that quantifying the quality of schools entrenches class-based inequalities between schools particularly when the measure of quality – standardized test scores – is substantially a function of the class composition of schools. School league tables discipline households and schools to conceive of school quality in terms of test scores and they facilitate making evaluative comparisons between schools that are geographically close or distant. Compared to working-clas parents, parents with professional/managerial occupations are more aware of school league tables and have financial resources necessary to move to neighborhoods near a "good" school.

Using school-level data and data on census data on occupational class measured at the local authority level (similar to a U.S. county), McArthur & Reeves (2022) find that, following the adoption of league tables, local areas with higher performing schools experience growth in the share of managerial/professional occupational classes and a decline in the share of working class families. Additionally, using longitudinal survey data on 1% of the population of England and Wales and

a diference-in-difference estimator, the authors find that managerial/professional households are more likely to move to local areas with higher ranked schools following the introduction of school league tables. Overall, McArthur & Reeves (2022) show that quantifying which schools are high-performing contributes to social reproduction because managerial/professional households respond to consumer-facing metrics by moving to more expensive neighborhoods, near higher performing schools. Schools that performed well on initial league tables tended to be schools with a high share of professional/managerial families. Therefore, quantification takes a snapshot of existing social stratification and that snapshot becomes a power unto itself, amplifying the effect of previous strctural inequality on subsequent structural inequality.

In the broader quantification literature, critical data studies (e.g., Chun, 2021; Noble, 2018; O'Neil, 2016) and sociological analyses of technology and inequality (M. Fourcade & Healy, 2013; e.g., Hirschman & Bosk, 2020; Norris, 2021; Poon, 2007) introduce concepts salient to the analysis of market research. Our focus is on "selection devices," which utilize some combination of inputs and discretion to categorize places, people, and organizations for the purpose of allocating opportunities or interventions (Hirschman & Bosk, 2020; Jaquette & Salazar, 2024).

A multi-disciplinary literature examines structural inequality produced by predictive analytics that capture correlational relationships (Chun, 2021). Predictive analytics utilize actuarial methods, which were pioneered by the insurance industry and proceed in two steps (Hirschman & Bosk, 2020; Simon, 1988). First, apply statistical techniques to previous cases (training data) in order to identify factors positively and negatively associated with an outcome of interest. Second, apply these results to future cases in order to make predictions and to assign levels of risk to each case. Importantly, these models predict outcomes based on correlations without requiring knowledge about causal relationships. Chun (2021) provides the example of Kosinski, Stillwell, & Graepel (2013), who develop a method to predict sensitive personal attributes (e.g., gender, political party) based on Facebook Likes.

The use of predictive analytics reproduces structural inequality. The correlations observed during the training data stage are a snapshot of relationships between variables at a particular point of time. Although these correlations may b e a function of enduring structural inequality, the underlying

causes are not considered by applications of predictive models.[3]. This algorithm recommends high purchase volume in zip codes that sent large number of students in previous years. Burrell & Fourcade (2021) [p. 224] state that "predicting the future on the basis of the past threatens to reify and reproduce existing inequalities. Harcourt (2015) refers to this phenomenon as the"ratchet effect," whereby disproportionately targeted/excluded populations are predicted to have a higher risk of an outcome, which amplifies disproportionate targeting/exclusion.[HMM. PERNICIOUS FEEDBACK LOOPS WOULD SEEM TO FIT HERE]

O'Neil (2016) shows how predictive analytics create "weapons of math destruction" (WMD), which are defined as algorithms that have three characteristics: opacity, meaning that the algorithm is proprietary or unknown to the people it affects; scale, meaning that the algorithm can affect large numbers of people; and damage, meaning that the algorithm can reinforce past inequality. An exemplar WMD is the XXX model used to predict a prisoner's chances of re-arrest. How the algorithm uses inputs to predict the outcome is unclear (opacity).[4] The algorithm is used by 24 states (scale). Because the algorithm uses zip code as an input, people who live in highly policed neighborhoods have a higher predicted probability of being arrested, which leads to more policing in those neighborhoods, which perpetuates racialized inequality in arrests. Berman & Hirschman (2018) observe that such "pernicious feedback loops" (O'Neil, 2016) are similar to the "ratchet effect" (Harcourt, 2015) and are extreme versions of "reactivity" from Espeland & Sauder (2016).

Due to data limitations, weapons of math destruction (WMD) – and predictive analytics more broadly – often utilize "proxy" variables, which are variables that are correlated to a variable of interest (O'Neil, 2016). FICO credit scores are based solely on individual repayment history and do not utilize proxies. By contrast, "e-scores" utilize proxy variables to identify "people like you" and then predict your buying behavior based on the past buying behavior of these others. O'Neil (2016, p. 146) states that "the modelers for e-scores have to make do with trying to answer the question 'How have people like you behaved in the past?' when ideally they would ask, 'How have you behaved in the past?' " We observe similar behavior in market research about college access,

[3]For example, the College Board *Student Search Service* allows colleges to filter student list purchases based on zip code, amongst other filters. The consulting firm Ruffalo Noel Levitz offers an algorithm that recommends how many prospect profiles a college should purchase from each zip code, based on historic enrollment data from the college (James Madison University, 2017)

[4]By contrast, U.S. law school rankings and UK leage tables are not WMDs because these algorithms are transparent (Berman & Hirschman, 2018).

when enrollment managers use 'which colleges did students near you consider' as a proxy for, 'which colleges would you consider?'

Chun (2021) argues that ideas about homophily often underlie the use of correlation to predict future behavior. Homophily means that actors who share common characteristics are likely to form connections with one another. The ubiquitous colloquialism is "birds of a feather flock together." Homophily has become a core assumption for network science (McPherson, Smith-Lovin, & Cook, 2001), in which actors (e.g., high school students) are linked to one another through direct and indirect network ties (e.g., submit SAT scores to the same college). Because network science often draws from rational choice theory, it assumes that homophily is the result of voluntary action by individuals, which "erases historical contingencies, institutional discrimination, and economic realities" (Chun, 2021, p. 95) that underlie behavior consistent with homophily. Chun (2021) problematizes the idea that homophily is a naturally occurring phenomenon. In commercial social networks, such as Facebook, Twitter/X, and TikTok, homophily is programmed into the algorithms that create connections between users. Thus, "echo chambers are not unfortunate errors, but deliberate goals" because "homophily is used to create agitated clusters of individuals whose angry similarity and overwhelming attrication to their common object of hatred both repel them from one another and glue them together" [p. 82].

Before the emergence of commercial social networks, homophily was the stated motivation behind geodemography, a branch of market research that estimates the behavior of consumers based on where they live (Burrows & Gane, 2006). Geodemography emerged in the 1970s from parallel efforts in the U.S. and U.K to classify consumers based on publicly available census data. Market segments are subgroups within a larger market that have similar consumer demand. In the U.S., the Claritas Corporation classified zip codes into market segments that would be useful for direct mail marketing campaigns (McKelvey, 2022). Clusters were given evocative names like "Blue Blood Estates," "[Archie] Bunker's Neighbors", and "Share Croppers." Because U.S. publicly available U.S. Census data disaggregated data only to the zip code-level, the Claritas Corporation had a strong incentive to argue that consumer behavior within zip codes was very similar (McKelvey, 2022). College Board (2011) emulated the behavior of Claritas by developing the *Segment Analysis Service: An Educationally Relevant Geodemographic Tagging Service*, which was an "add-on" to

the *Student Search Service* student list product. Describing its conceptual underpinnings, College Board (2011, p. 1) states, "the basic tenet of geodemography is that people with similar cultural backgrounds, means, and perspectives naturally gravitate toward one another or form relatively homogeneous communities; in other words, birds of a feather flock together." The Segment product allocated each high school and each census tract into a distinct "educational neighborhoods" thought to reflect useful market segments for colleges looking for students.

Related to the creation of market segments, M. Fourcade & Healy (2013) introduce the concept "classification situations" to describe the expansion of actuarial techniques to categorize customers into many, ordinally ranked groups. Historically, classifications were binary. Consumers with "good" credit were offered loans and those with bad credit were not. The innovation of individual FICO scores – and, later, other credit scores – enabled merchants to classify consumers into many, fine-grained groups or along a continuum. Merchants and lenders began tying these classifications to tiered products that targets different consumer groups with different levels of benefits and costs (Marion Fourcade & Healy, 2024). People previously denied credit were now granted credit on different terms. For example, "payday loans" charge high interest rates to consumer groups that were previously denied credit altogether. Thus, at the bottom of the continuum, contemporary classification situations produce "predatory inclusion" – exemplified by payday loans and for-profit colleges – which is the logic of "including marginalized consumer-citizens into ostensibly democratizing mobility schemes on extractive terms" (Cottom, 2020, p. 443). Whereas FICO scores assign individuals a credit-worthiness value based solely on their individual record of financial transactions (Poon, 2007), other innovations classify consumers by integrating credit scores with demographic and geographic information (O'Neil, 2016).

Classification situations engender markets where a vertical hierarchy of products are targeted to a vertical hierarchy of consumers. To our knowledge, prior scholarship on quantification within the sociology of education has not examined the role of third-party market research in classifying consumers. Based on a snapshot of existing social stratification, market research matches verticially categorized consumers to vertically categorized producers, thereby amplifying the effect of initial stratification on subsequent stratification. Furthermore, prior scholarship has not examined how market research becomes embedded in products that structure how consumers are matched to pro-

ducers. This manuscript examines how the "market segment model" (Zemsky & Oedel, 1983) categorized high school students into vertical market segments – local, in-state, regional, and national – and simultaneously created local "geo-markets" that were evaluated based on their composition of student market segments. These geo-markets are highly correlated with race and class. The market segment model became the basis for the College Board *Enrollment Planning Service* (EPS), which advised colleges which geo-markets to target, and geo-markets were later incorporated as a filter in the College Board *Student Search Service*. Prior scholarship in the sociology of education shows the effect of quantification on social reproduction (Espeland & Stephens, 2008; McArthur & Reeves, 2022). This study provides insight about the mechanism underlying this effect, by showing how geo-markets are highly correlated with race and class and by showing how geomarkets are utilized within student list purchases to reproduce historical class and racial inequality in college access.

PARAGRAPH ABOUT CONTRIBUTION THAT IS MOVED HERE. WORK THESE IDEAS IN SOMEWHERE

Reviewing recent scholarship on quantification, Berman & Hirschman (2018) argue that quantification has effects to the extent that stakeholders care about the numbers. Law school rankings and school league tables seem to exemplify this sort of salience. By contrast, many quantification projects – for example, human rights indicators – have "little oomph" (Berman & Hirschman, 2018, p. 265). FROM BERMAN & HIRSCHAN PAGE 263: "Merry demonstrates how human trafficking indicators largely sit on the shelf because no audience for them has been created." The widely known studies of quantification in education [e.g.,] (Espeland & Sauder, 2016; McArthur & Reeves, 2022) tend to study consumer-facing quantification. By contrast, market research targets businesses rather than consumers. To our knowledge, prior research on quantification in education does not examine market research. Unlike studies like McArthur & Reeves (2022) we cannot show the effect of quantification. However, by analyzing and simulating student list purchases we can show *how* the "geo-markets" reproduce inequality [NOTE: THIS PARAGRAPH CONTAINS TWO IDEAS; MIGHT MOVE OR CUT ONE OF THEM LATER].

4 The Market Segment Model

The market segment model – and its associated geo-markets – is a case that incorporates several themes of the quantification literature and one that is simultaneously historical and contemporary. In 1978, Robert Zemsky, a University of Pennsylvania professor, began working with the Market Research Committee of the Consortium on Financing Higher Education (COFHE) – a group of 30 selective private institutions – to understand questions like, " 'Who thinks about Penn?' [and] also, 'What other institutions do they think about when they think about us?' " (Zemsky & Oedel, 1983, p. x). As the project project became more ambitious, the researchers reached out to College Board because "we needed a database that described most institutions and most students…Coincientally the Board was reviewing its own efforts to help colleges estimate their enrollment potential, efforts which had faltered largely because the smallest demographic unit used in tehse analyses was the state' (Zemsky & Oedel, 1983, p. x). In 1979, College Board began providing data and funding for what became the Comprehensive Undergraduate Enrollment Planning Project (CUEPP). In 1983, the College Board published *The Structure of College Choice* (Zemsky & Oedel, 1983), which developed the market segment model, introduced geo-markets, and became the basis for the College Board Enrollment Planning Service (EPS).

Considering the Espeland & Stephens (2008) [p. 402] definition of quantification as "the production and communication of numbers," the market segment model is an effort to quantify and communicate the knowledge that admissions officers have about student demand. Zemsky & Oedel (1983, pp. 9–10) write that,

> Admissions officers invariably are tellers of stories – about the colleges they represent, about the colleges they attended, about each other, and about the often vagabond life of college recruiting …we believe that the institutions of admissions officers actually comprise a remarkably systematic body of knowledge about the college selection process."

Zemsky & Oedel (1983, p. 10) stress the importance of "knowing the territory":

> A good recruiter knows where to look for prospective applicants, as seen in the students' willingness or eluctance to travel. It is necessary to identify not only the most promising

> communities or poools, but also the specific neighborhoods within those communities – hence the recruiter's emphasis on feeder high schools. From the beginning, we have sought to mold our research to these concepts, to capture and quantify the phenomenon behind the folklore. Thus, it is the admissions officers' notion of admissions pools that dictates the geographic units of our analysis." [p. 11]

Creating the market segment model. The first step in developing the market segment model was creating "three types of boundaries" (Zemsky & Oedel, 1983, p. 11), region, state, and community. The three regions were New England, Middle States, and the South. Next, "we divided each state into as few as two and as many as thirty community-based enrollment markets or pools, for a total of 143 separate markets" [in New England, Middle States, and the South]. These enrollment markets, later called "geo-markets" by he College Board Enrollment Planning Service were intended to be consistent with the conception of a catchment market from the perspective of admissions counselors. Zemsky & Oedel (1983) write that,

> In many cases, the market boundaries match formal political and educational divisions, reflecting natural channels of communication. Each major metropolitan area is composed of several markets, usually corresponding to the inner city, a first ring of suburbs, and an outer ring of suburbs. In more sparsely populated areas, communities are sometimes combined in order to make the analysis meaningful."

Having defined these geographic boundaries, high school students were categorized into one of four different *market segments* – local, in-state, regional, and national – based on SAT score-sending behavior. Each institution a student sends SAT scores to can be defined as "local" (institution is in the same local market that the student lives in), "in-state" (same state but different local market), "regional" (same region but different state), or "national." In turn, a "local" student submits more SAT scores to local institutions than they do to in-state, regional, or national institutions. An "in-state" student submits more SAT scores to in-state institutions than they do to local, regional, or national institutions, etc.

The two primary outputs of the market segment model are the (1) Market Segment Profile and (2) the Institutional Profile. The Market Segment Profile, which was produced separately for each of

the 143 geo-markets, provides information about the number and characteristics of students in each market segment. Table 1 reproduces a partial, simplified version of the bottom panel of Zemsky & Oedel (1983, fig. 2.1) which represents the Market Segment Profile for "Connecticut Market 3: Fairfield County." Table 1 has separate columns for each market segment (local, in-state, regional, national) and rows show the number of test-takers and characteristics of test-takers. For example, there were 550 "local" students in Fairfield county and these students submitted SAT scores to 2.8 postsecondary institutions on average. By contrast, there were 1,664 "regional" students who submitted test scores to 4.8 institutions on average. For local students, 11.2% had family income greater than $35,000 and 9% had both parents with a BA. For regional students, 41.9% had family income greater than $35,000 and 34.0% had both parents with a BA. Each Market Segment Profile also present information about the institutions that students from each segment sent scores to.[5]

INSERT Table 1 ABOUT HERE

The *Institutional Profile* describes students who send scores to a particular institution and which majors these students are interested in. For each institution, institutional profiles are created separately for students from a particular local market, for all students in a state, or all students in a region. Table 2 reproduces a partial, simplified version of Zemsky & Oedel (1983, fig. 2.3), the institutional profile of an anonymous institution for students from Fairfield County, CT. Table 2 shows that 58 in-state students submitted SAT scores to the institution. These 58 students represented 4.8% of the total 1,199 in-state students from Fairfield County. 69 regional students sent scores to the institution, representing 4.1% of all 1,664 regional test-takers. Of these 69 regional students, 35 expressed interest in majoring in the liberal arts. These 35 students represent 7.0% of all regional students from Fairfield County who expressed interest in the liberal arts.

INSERT Table 2 ABOUT HERE

Zemsky & Oedel (1983) argue that the Institutional Profile and the Market Segment Profile enable admissions officers to know where to look for students and which institutions are competing for those students (p. 25):

[5]Table 3 recreates the top panel of Zemsky & Oedel (1983, fig. 2.1) for the Fairfield County, CT local market. For example, of the 550 local students, 277 (50.4%) sent scores to institution #1, which was a private master's granting institution. Of the 1,199 in-state students, 757 (63.1) sent scores to institution #1, a public doctoral granting institution, and 515 (43.0%) sent scores to institution #2, a public master's granting institution.

> The Institutional Profile and the Market Segment Profile quantify the admission officers' intuitive grasp of market structure. Structure here carries a dual meaning, connoting both the structure of student choice and the structure of institutional competition…This two-sided interpretation furnishes the essential framework for planning by individual colleges and universities…To draw effectively on its own natural constituency, a college not only must contact the "right" kind of students — that is, students who are predisposed toward that type of institution – but also must persuade them of its special character. This means knowing the competition as well as the clientele.

Understanding and using the market segment model. Chapter 3 of Zemsky & Oedel (1983) – "A Sense of Place: Students, Families, and Communities" – identifies the student characteristics associated with being in the local, in-state, regional, or national market segment and examines the extent to which these relationships hold across states and local markets. The data analyzed by Zemsky & Oedel (1983) can be seen as training data. In actual recruiting applications, colleges would have historic data on the number of students in each segment in a local market, but they would not know a current high school student is a local, in-state, regional, or national prospect. Therefore, knowing which observable student characteristics are associated with score sending outcomes can be useful for knowing which prospects an institution should target.

Chapter 3 of Zemsky & Oedel (1983) is fundamentally about correlations. The authors identify four variables – educational aspirations, parental education, scholastic aptitude, and family income – that individually or in combination predict score-sending behavior. These four variables "reflect the basic social patterns of the nation" (Zemsky & Oedel, 1983, p. 33). The text uses authoritative language to summarize the correlational analyses.[6] Zemsky & Oedel (1983) state that "these data allow us to say with considerable confidence that local and in-state students are not likely to come from families in which both parents have received college educations" (p. 33) and "the implication is simply that college-educated parents instill in their children more wide-ranging educational aspirations. Commenting on family income, Zemsky & Oedel (1983) write that"we could predict that all local students would come from moderate-income or low-income families and be wrong only 5.5

[6]For example, Zemsky & Oedel (1983), pp. 34-35 state, "it is hard to overemphasize the importance of this statistical pattern. Social data seldom line up as we expect …The information derived from the Market Segment Model, however, is a remarkably ordered set of data, consistent in its relationships, that reflects the basic social and economic patterning associated with the structure of college choice."

percent of the time" (p. 33). Further analyses reveal that the SAT score is the most important predictor of score-sending behavior, followed by parental education, family income, and educational aspirations. In their analysis of quantifying school quality in England, McArthur & Reeves (2022, p. 517) observe that "one problem with school league tables …is that the measures of school quality often merely reflect the social origins of those who attend a particular school." Similarly, considering prior research showing that SAT scores are substantially a function of social origin [CITE], the Market Segment Model essentially argues that student demand for higher education is mostly a function of social origin.

Zemsky & Oedel (1983) find that the SAT score, parental education, and family income also predict student score-sending behavior at the local geo-market level but geo-markets differ in the relative abundance of students with particular socioeconomic characteristics. These findings have practical implications for recruiting. Zemsky & Oedel (1983) recommend that colleges target geo-markets with desirable compositions of socioeconomic characteristics and student market segment. Zemsky & Oedel (1983, p. 44) describes a hypothetical college that wants to target regional and national students in New England and is considering whether to expend limited recruiting efforts in the Boston geo-market – which was relatively low-income in 1980 – or in more affluent geo-markets nearby:

> Where would you concentrate your energies? Ideally, you would seek communities with a high proportion of students already predisposed toward institutions such as your own. The Market Segment Model would provide this information through segment percentages for the community in question. Further classification of students by social attributes allows you to identify a group for mailings or recruiting…If you were to recruit in Boston, only about two out of every ten students with fewer than two attributes would likely listen, while slightly less than half of the students with two or more attributes would be receptive…. Your efforts would surely be better directed toward three of the four communities in the bottom band, Manchester, Hartford, and Fairfield County. Simply by knowing a little bit about the students' backgrounds and academic records you could quickly focus your attention on those most likely to consider your kind of institution. Indeed, in Fairfield County alone you could reach more than 40 percent

> of your "primary target" population – that is, students with a greater than 75-percent probability of concentrating their college choices among institutions like your own."

In 1984, College Board created the Enrollment Planning Service (EPS) based on the Zemsky & Oedel (1983) market segment model (College Board, 2012; Takamiya, 2005). Each institution purchasing EPS information services would obtain access to the Market Segment Report for each local market. They also received the Institutional Profile – their own and that of competitors – for each local market. Promotional material highlights the themes of "locate the students you want" (Board, 2003) and "focus your valuable time and resources on the right prospects" (Board, 2005). Board (2010) promotional material describes EPS as:

> the analysis tool that pinpoints the schools and geomarkets where your best prospects are most likely to be found. You can research your existing (or new) markets using selection criteria and locate your top prospects in various ways – by states, geomarkets, counties, Zip codes, high schools and international regions. EPS provides you with comprehensive reports on your markets, your position in those markets, and your copetition."

Whereas Zemsky & Oedel (1983, Appendices X-Y) created 143 geo-markets covering the New England, Middle States, and South region, EPS created geo-markets for the remaining U.S. states, with 304 geo-markets in total. College Board (2023) shows the College Board geo-markets circa 2023. Interestingly, the geo-markets for New England, Middle States, and the South remain nearly identical to those developed by Zemsky & Oedel (1983). Concrete information about how EPS created the remaining geo-markets is elusive. Documentation and promotional material suggests that geo-market borders were chosen based on a combination of formal geographic borders (e.g., counties) as well as proprietary College Board data designed to identify geographic areas with different college-going behaviors.[7]

Although the methods utilized to create geomarket borders remain unclear, we expect substantial socioeconomic inequality between geomarkets in large metropolitan areas. Given the extent of

[7] Board (n.d.) states that "geomarkets are areas within a state that represent a further segmentation of a population. Students from California don't all share the same college-going behaviors. We have accounted for this variance by segmenting the 50 states into 304 geomarkets to provide further insight into student behaviors within particular areas of individual states."

class- and race-based residential segregation in the U.S., it would be surprising to not observe such inequality. Additionally, Zemsky & Oedel (1983) created geomarkets in service of the Market Segment Model. The Market Segment Model argues that socioeconomic status drives whether students belong to the local, in-state, regional, or national market segment. In turn, geomarkets are described by the relative numbers of local, in-state, regional, or national students, which is substantially a function of socioeconomic status. The language of Zemsky & Oedel (1983, pp. 11–12) suggests that in large metropolitan areas, the borders of geomarkets may have been drawn in ways that separate affluent from less affluent communities: "each major metroplitan area is composed of several markets, usually corresponding to the inner city, a first ring of suburbs, and an outer ring of suburbs." We present the following hypothesis:

H1. In large metropolitan areas that contain multiple geomarkets, we expect significant socioeconomic inequality (e.g., income, parental education) between geomarkets.

We also expect substantial racial inequality between geomarkets in large metropolitan areas. Interestingly, whereas the Market Segment Model is explicitly based on socioeconomic stratification, Zemsky & Oedel (1983) do not mention race once. Structural racism is "a form of systematic racial bias embedded in the 'normal' functions of laws and social relations" (Tiako, South, & Ray, 2021, p. 1143), whereby processes viewed as neutral or common sense systematically advantage dominant groups and disadvantage marginalized groups. Because of the extent of residential racial segregation in the U.S. (Korver-Glenn, 2022; Rothstein, 2017), algorithms that utilize geographic borders as an input have been shown to reproduce racial inequality (e.g., Benjamin, 2019; Korver-Glenn, 2022; O'Neil, 2016). Unless they intentionally consider racial segregation, selection devices that categorize people based on geographic location are likely to reproduce historical race-based inequality in opportunity (Chun, 2021).

Geomarket borders may be correlated with race for two additional reasons. First, geomarket borders may have been drawn along class divides and there is a strong correlation between race and wealth (Kraus, Onyeador, Daumeyer, Rucker, & Richeson, 2019). Second, geo-market borders may have been drawn in a way that follows the countours of racial segregation in residential housing. Examples include: the "South and South Central Los Angeles" geomarket (CA21); the "City of Oakland" geomarket (CA07), which is surrounded by the "Alameda County excluding Oakland"

geomarket (CA08); and the "Wayne County Detroit" geomarket (MI01), which is surrounded by the "Detroit's Northern Suburbs" (MI02) and "Ann Arbor" (MI03) geomarkets. Although these arguments are speculative, the extent of racial inequality between geomarkets can be assessed empirically. We present the following hypothesis:

H2. In large metropolitan areas that contain multiple geomarkets, we expect significant racial inequality (e.g., income, parental education) between geomarkets.

Reproducing Inequality. Finding that geomarkets are correlated with class and race is neither surprising nor noteworthy. However, we argue that the Market Segment Model and geomarkets are mechanisms for reproducing class-based and race-based inequality that exemplify many themes of the broader quantification literature.

the Market Segment Model and geo-markets exemplify concerns about the application of correlational analysis. The data on 1980 SAT score-sending behavior analyzed by Zemsky & Oedel (1983) can be conceived as training data. These training data were used to define geomarkets (e.g., how many geomarkets in a metropolitan area is partially a function of the number of test-takers) and to identify student characteristics associated with the local, in-state, regional, and national market segments. These analyses found that student demand for different kinds of colleges was largely a function of social origin, and that student demand within a geo-market was largely a function of the class composition of the geo-market. but did not interrogate the historical and contemporary structural inequalities that produced observed patterns of social stratification. Instead, the Market Segment Model encouraged colleges to use this snapshot of student demand as the basis for future decisions about which communities and prospective students should be targeted by college recruiting campaigns. This process exeemplifies the "ratchet effect" (Harcourt, 2015) and "pernicious feedback loops" (O'Neil, 2016) whereby predicting the behavior of future individuals based on the behavior of past individuals "threatens to reify and reporduce existing inequalities" (Burrell & Fourcade, 2021, p. 224). This process also exemplifies concerns about proxy variables whereby selective colleges view privileged social class as a proxy for desirable students and this creates an incentive to focus recruiting efforts on communities that have these characteristics. Zemsky & Oedel (1983, p. 44) corroborates these concerns:

> On occasion, senior spokespersons for the profession worry that students outside the main market areas remain forgotten and hence, unchallenged. Inevitably, the increasing competition for students, the expense of travel and mailings, and internal political constraints compel institutions to concentrate their efforts where they will do the most good. The result is a natural reinforcing of the basic socioeconomic patterns that gave shape in the first place to the structure of college choice.

The utilization of the Market Segment Model as the basis for Enrollment Planning Service (EPS) raises the themes of reactivity, discipline, and authority introduced by Espeland & Stephens (2008). Reactivity means that quantitative measures cause people and organizations to change behavior. Both Espeland & Sauder (2016) (law school rankings) and McArthur & Reeves (2022) (UK leage tables) study highly salient consumer-facing products. Although EPS targeted colleges rather than students, we suggest that EPS – and geomarkets – were highly salient within the enrollment management community. Noel-Levitz (1998) reports that in 1995, 37% of 4-year publics and 49% of 4-year privates used EPS, while 41% of 4-year publics and 16% of 4-year privates used ACT's market analysis service product, which was similar to EPS. Discipline is the idea that quantitative measures compel people and organizations to react in a particular way. To the best of our knowledge, EPS originally provided colleges permutations of the Market Segment Model – how many students in each market segment – and the Institutional Profile – which students in a market segment were interested in my college or a competitor. Both of these outputs were provided at the geomarket level. Promotional material from College Board -(Board, 2005, 2010) suggests that EPS encouraged colleges to first choose geo-markets of interest and then to plan recruiting efforts within these selected geo-markets.

Usage of EPS also raises the theme of authority, whereby quantification weakens the authority of local decision-makers (Espeland & Stephens, 2008). The Market Segment model sought to develop a concrete, data-driven framework that replicated the aggregate wisdom of admissions officers (Zemsky & Oedel, 1983). This model makes the local expertise of admissions officers less valuable. EPS transformed the model into a product stored on a CD-ROM. In turn, the EPS product increases the ability of a college admissions leader – working with College Board staff or an enrollment management consultant – to plan recruiting efforts centrally. Individual admissions

officers are relegated to implementation of the plan rather than being valued for their local expertise about student demand.

The incorporation of geo-markets within the Student Search Service student list product raises concerns about the three characteristics of weapons of math destruction. First, geo-markets are opaque. The borders of a geomarket may be unclear to someone purchasing student lists and very few people know how these borders were created [COULD TALK ABOUT PRODUCT UTILIZATION HERE; NOT CLEAR HOW GEOMARKETS INTERACT WITH OTHER STUDENT LIST FILTERS]. Second, geo-markets scale. Each year, thousands of colleges purchase student lists and it is easy to filter purchases based on geo-markets in concert with other filters (e.g., SAT score, GPA). Third, geo-markets can cause damage. When a college decides to purchase names from one geo-market but exclude prospects from an adjacent geo-market, this affects which college students have an opportunity to attend. Zemsky & Oedel (1983) suggests that selective colleges focus on geomarkets with large numbers of affluent, college educated households, while low-income communities are left to local four-year and community colleges.

Chapter 4 of Zemsky & Oedel (1983) – The Company We Keep: Colleges and Their Competition – shows that the Market Segment Model is based on homophily. The authors conduct a social network analysis that defines two institutions as being in competition with one another if at least 15% of students who sent SAT scores to one institution also sent scores to the other institution and vice-versa.[8] Zemsky & Oedel (1983, p. 42) sate, "we draw a fundamental conclusion about the structure of college choice: collegiate competition occurs principally between like institutions."[9] Subsequent analyses investigate the tuition price and socioeconomic competition of institutions in competition with one another. Private selective colleges and private flagship universities compete directly for students, charge the highest prices, and enroll students with the highest socioeconomic status. Rather than considering the structural inequality that gives rise to these patterns, Zemsky

[8]We can think of students sending SAT scores to colleges as a "two-mode" social network in which students (mode 1) send SAT scores – the network tie – to colleges (mode 2). Next, the authors develop "Tinker Toy" diagrams that show which institutions are connected to one another. These diagrams are drawn separately for each student segment – local, in-state, regional, and national – and separately for each geomarket, such that the analyses convey which institutions compete with one another for which student segments in each local market.

[9]For example, describing the Figure 4.4 "Structure of Fairfield County Regional Market," (Zemsky & Oedel, 1983, p. 54) state that "competitive overlap, moreover, is often confined to institutions belonging to the same [Carnegie] type as well sector. For example, public flagships compete primarily with other public flagships; private standard colleges, with other private standard colleges; Catholic institutions, with other Catholic institutions."

& Oedel (1983) describe a naturally occuring process of homophily in which a vertical socioeconomic hierarchy of students is matched to a vertical hierarchy of universities.[10] Zemsky & Oedel (1983, p. 72) state that

> We now know why students so seldom speak of their own social or family backgrounds in explaining how they go about choosing a college. They have no need to. Students describe themselves socially simply by telling us the colleges and universities in which they are interested. The layering of collegiate competition is primarily a socioeconomic layering. The hierarchical structure of collegiate competition largely reflects the stratified social and economic dimensions of the communities from which colleges draw their students. Competition among colleges, as admissions officers have told us for so long, is in fact, a matter of keeping company with one's peers.

Although this perspective is not entirely inconsistent with mid-20th Century scholarship on social mobility (Blau & Duncan, 1967; Sewell & Shah, 1967), the Market Segment Model was the basis for the EPS market research product and, later, geomarkets were incorporated into the *Student Search Service* student list product. Drawing from Chun (2021), commodification of the Market Segment Model "engineers homophily" (Zemsky & Oedel, 1983) by taking a snapshot of existing stratification – without considering the class-based or race-based structures that produced these patterns – and then recommending that colleges utilize this snapshot as the basis for decisions about where to concentrate recruiting efforts. Zemsky & Oedel (1983, p. 58) states that "correlations, do not simply predict actions; they also form them." The Market Segment Model not only describes the structure of college choice, it influences the future structure of college choice by becoming the basis for practices and products. Once the Market Segment Model is inscribed in EPS and Student Search Service, these products are likely to amplify the effect of historic structural inequalities on future opportunity structure by encouraging colleges to pursue local markets – and student segments within these local markets – in ways that are consistent with the patterns observed by Zemsky & Oedel (1983).

UTILIZATION. Finally, within the Student Search Service product, we suggest that geomarket

[10]These patterns are similar to different offers for credit products in The Ordinal Society (Marion Fourcade & Healy, 2024), except Marion Fourcade & Healy (2024) show that the matching of consumers to products is engineered by firms rather than naturally occurring.

filters are likely to be used in ways that amplify class-based and race-based disparities in college opportunity. In contrast to standardized selection devices (e.g., the FICO score algorithm), student list products are discretionary selection devices in that colleges have discretion of which filters they elect to select prospects. Compared to standardized selection devices, scholars tend to find that administrative discretion over selection devices causes structural inequality to increase (Castilla, 2008; Cotter, Medeiros, Pak, & Thorson, 2021; Norris, 2022). Even in the absence of explicit or implicit bias, discretionary selection devices can increase structural inequality when decision-makers have incomplete knowledge about how the inputs they choose are correlated with race [CAN MOVE O'NEIL TEXT ON OPACITY HERE]. For example, research shows that Americans dramatically underestimate the magnitude of racial income inequality (Kraus et al., 2019). As such, discretionary selection devices are particularly sensitive to inputs that are correlated with race but are perceived to be race-neutral.

Colorblind racism describes ideology and associated behaviors that ignore the significance of race and racial discrimination (Bonilla-Silva, 2003). The Market Segment Model can be seen as an example of colorblind racism. Zemsky & Oedel (1983) develop an analysis of the structure of college choice that ignores race but we contend that geo-markets are correlated with race. Race-neutral racism is racial inequality that results from using ostensibly race-neutral inputs that are systematically correlated with race [CITE] (e.g., Benjamin, 2019; Chun, 2021; Norris, 2021). Enrollment management professionals utilizing EPS and *Student Search Service* may interpret geomarkets as a race-neutral recruiting tool. When purchasing student lists, Zemsky & Oedel (1983, p. X) suggest that affluent colleges should consider targeting affluent geomarkets. Student list purchases do not show how the characteristics of targeted prospects compare to the characteristics of the surrounding community. From this perspective, racial inequality from the use of geomarkets in student list purchases may be the unintentional result of using a seemingly race-neutral product. Furthermore, purchases that specify multiple filters (e.g., test scores, grades, intended major) including geomarkets can yield unintended racial inequality because administrators have incomplete knowledge about how the intersection of these filters interact with local patterns of segregation.

Below, we use simulations and actual student list purchases that filtered on geomarkets. In purchases that filtered on test-score and/or GPA thresholds, we can simluate who would be included

and excluded had certain geo-markets were been selected. In purchases that filter on geomarkets, we can get an initial sense of who is included in geomarkets targeted by regional state colleges versus research universities.

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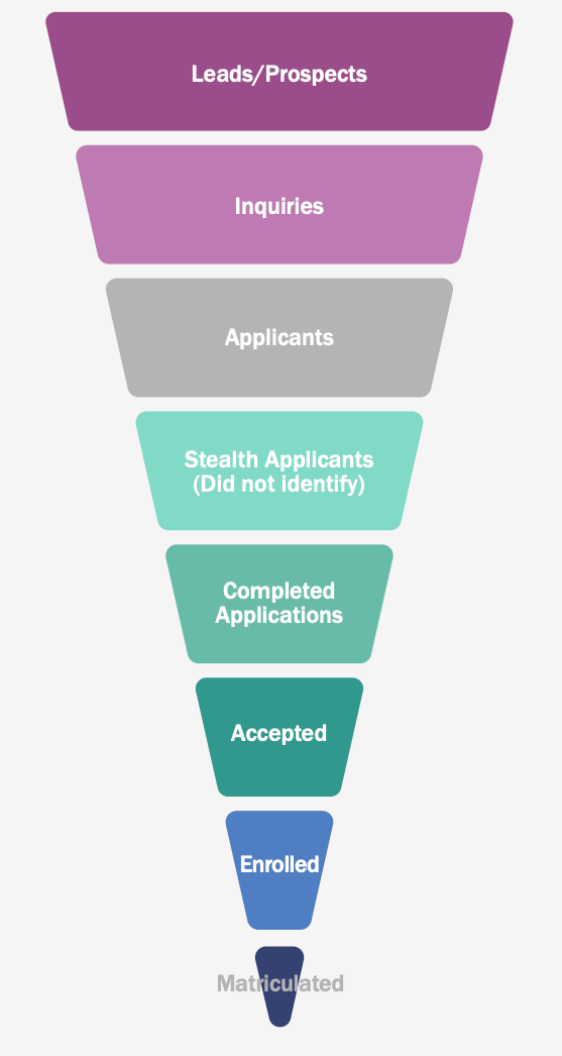

Figure 1: The Enrollment Funnel

Table 1: Simplified market segment profile, Connecticut Market 3: Fairfield County

Characteristic	Local	In-state	Regional	National
Total test takers	550.0	1199.0	1664.0	3766.0
Avg SAT (verbal + math)	770.0	850.0	970.0	980.0
Avg # scores sent per test taker	2.8	3.5	4.8	5.3
Percent in top 20% of HS class	27.8	26.1	44.7	45.7
Percent aspiring to more than BA	30.6	41.5	54.5	62.2
Percent family income more than $35,000	11.2	20.6	41.9	43.0
Percent both parents with BA	9.0	16.3	34.0	37.1

Table 2: Simplified sample institutional profile for anonymous institution, students from Connecticut Market 3: Fairfield County

	Local	In-state	Regional	National	Total
Total number of scores received	1.0	58.0	69.0	109.0	237.0
Pct of all test-takers in segment	0.2	4.8	4.1	2.9	3.3
lib_arts_num	0.0	25.0	35.0	61.0	121.0
lib_arts_share	0.0	8.4	7.0	5.3	5.9
engineering_num	0.0	2.0	5.0	3.0	10.0
engineering_share	0.0	3.0	5.8	0.8	1.8

Table 3: Top 5 institutions in terms of number of scores sent by segment, Connecticut Market 3: Fairfield County

	Local (N=550)			In-state (N=1,199)			Regional (N=1,664)			National (N=3,766)		
	Num	Pct	Type	Num	Pct	Type	Num	Pct	Type	Num	Pct	Type
1	277	50.4	priv ma	757	63.1	pub doct	610	36.7	pub doct	1226	32.6	pub doc
2	261	47.5	priv ma	515	43.0	pub ma	348	20.9	priv doct	371	9.9	priv doct
3	183	33.3	priv ma	438	36.5	pub ma	272	16.3	priv doct	327	8.7	priv res
4	103	18.7	pub doct	183	15.3	pub ma	248	14.9	pub doct	312	8.3	priv doct
5	100	18.2	pub ma	177	14.8	pub ma	197	11.8	pub doct	308	8.2	priv doct