Recruiting Chapter

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Contents

1 Introduction

Figure 1 shows the "enrollment funnel," a conceptual heurisitc used by the enrollment management industry, which describe the stages in the student recruitment process (e.g., prospects, inquiries, applicants, accepted applicants, and enrolled students). For example, "prospects" are "all the potential students you would want to attract to your institution" (Campbell, 2017). "Inquiries" are prospects that contact the institution, including those who respond to a solicitation and those who reach out on their own. The enrollment management industry uses the enrollment funnel to inform interventions that target specific stages of the funnel.

Table X, reproduced from Noel-Levitz (2020), shows the the percentage of undergraduate recruitment budget allocated to different marketing and recruiting activities..[1] Institutions identify undergradaute prospects largely by purchasing "student lists" from College Board, ACT, and other vendors. Institutions utilize advertising (traditional and digital) and social media to solicit inquiries and to create positive "buzz" amongst prospects (Dupaul & Harris, 2012)[CITE OTHER]. Given the the rise in "stealth applicants" who do not inquire before applying (Dupaul & Harris, 2012), advertising and social media enables universities to tell their story to prospects who do not wish to be contacted. Once prospects and inquiries are identified, they are targeted with face-to-face and remote recruiting interventions designed to solit applications and deepen engagement. Face-to-face recruiting interventions include on-campus visits by prospects and off-campus recruiting visits by admissions representatives to high schools, community colleges, college fairs, etc. Remote recruiting interventions include postcards, brochures, email, text messages, and targeted social media.

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[1]table drawn directly from Noel-Levitz (2020) figure 9; based on a convenience sample of 45 four-year non-profit institutions and 21 four-year public institutions

Each of these marketing/recruiting interventions – and dozens of other interventions described in this book – represent organizational behaviors that could be the subject of empirical research. However, the vast majority of research on enrollment management behaviors focuses on the final stages of the enrollment funnel, specifically which applicants are admitted and the use of financial aid "leveraging" to convert admits to enrollees [E.G.] . By contrast, the enrollment management industry expends substantial resources on marketing/recruiting activities that target earlier stages of the enrollment funnel (Noel-Levitz, 2020) [GIVE SOME CONCRETE BUDGET NUMBERS INDICATING BALL PARK SPENDING?]. When we consider descriptions of enrollment management practice from investigative journalism [e.g.,], from enrollment management consulting firms and from this volume [e.g.,], it becomes apparent that – with the notable exception of a small sociological case-study literature [e.g.,] – the research community has ignores a great number of enrollment management practices that plausibly affect access to higher education. As a consequence, enrollment management remains an opaque industry to policymakers and the public. We argue that developing thoughtful policies about enrollment management depends on researchers collectively devloping empirical literatures that document enrollment management practices and evaluate the effects of these practices on opportunities for students.

Access to concrete data about marketing and recruiting behaviors has been a persistent barrier to empirical research. To the extent that marketing/recruiting behaviors are inconsistent with public relations rhetoric (e.g., "our commitment to access"), colleges and universities may have incentive to withhold data from researchers. Therefore, conventional data collection methods such as surveys and even interviews should be appraised with healthy skepticism. We argue that pushing forward an empirical research agenda on marketing/recruiting behaviors depends on different modes of data collection – including public records requests and "data science" methodologies, such as web-scraping and streaming social media data – that record actual behaviors (e.g., contracts, transactions, records of expenditure) as opposed to statements by colleges/universities about their behavior.

We present this chapter as an example of empirical research about marketing/recruiting behavior. This chapter analyzes off-campus recruiting visits by a sample of public research universities and a sample of selective private colleges and universities in 2017. We collected visit data by "scraping" URLs (e.g., "Coming to a neighborhood near you") once per week from college/university admissions websites and – for the sample of public research universities – by issuring public records requests. Our analyses to date have focused on public research universities. As described in more detail below, 12 of the 15 public research universities in our sample made far more out-of-state visits than in-state visits, a finding antithetical to the stated mission of most public research universities. These out-of-state visits focused on wealthy, predominantly white schools and communities. Additionally, most public research universities made a disproportionate number of out-of-state visits to private schools, but visited few in-state private schools.

Building on these findings, this chapter analyzes off-campus visits to private high schools by public research universities and by selective private colleges and universities. We utilize social network methods and emphasize comparisons within and between public and private postsecondary institutions. Analyses are informed by two broad, related questions. First, which types of private high schools receive visits from which types of colleges and universities? Second, to what do extent colleges and universities visit private high schools that share similar characteristics with the college (e.g., geographic region, religious affiliation, academic reputation, and racial composition)?

The motivation for comparing the behavior of public and private coleges/universities is based on the idea that (out-of-state) visits to private high schools are antithetical to the stated mission of public research universities. By contrast, recruiting visits to private high schools are consistent with the mission of private colleges and universities. From this perspective, out-of-state visits to private schools by public research universities is one example of "privatization." A weakness of the privatization literature is that few empirical studies compare the public and private institutions with respect to particular behaviors associated with privatization (McClure, Barringer, & Brown, 2019). Therefore, by comparing the (mostly out-of-state) visits to private high schools by public research universities to those of private colleges and universities, we hope to develop new insights about the privatization of public higher education.

We use social network analysis (SNA) to analyze off-campus recruiting visits. The motivation for using SNA is that SNA privileges relationships between actorsQualitative scholarship on private high schools finds

that college access is substantially determined by the quality of the relationship between a particular college and a particular private high school (Khan, 2010, 2011). An off-campus recruiting visit is an indicator of a relationship between a college and a school that can be analyzed using standard tools of SNA.

[ADD ONE-PARAGRAPH OUTLINE?]

2 What Do We Know About Off-campus Recruiting?

Our research analyzes off-campus recruiting visits by college and university admissions staff. So what do we know about off-campus recruiting? As is true for most aspects of enrollment management, much of what we know about off-campus recruiting comes from consulting firms (e.g., Ruffalo-Noel Levitz, EAB), professional associations (e.g., NACAC), and from practioner-oriented publications. Market research conceives of off-campus recruiting visits as a means of identifying prospects, deepening engagement with prospects already being targeted through mail/email, and maintaining relationships with guidance counselors at "feeder schools" (Clinedinst & Koranteng, 2017; Noel-Levitz, 2020; Ruffalo Noel-Levitz, 2018). With respect to expenditure, Noel-Levitz (2020) found that private (non-profit) 4-yr institutions spent an average of 17% of their undergraduate marketing/recruiting budget on "travel" to high schools and college fairs (as shown in Table X), a higher percentage of budget allocation than any other marketing/recruiting activity. Public institutions spent an average of 16% of their budget on travel, second only to "prospective student communications" at 17%. An emergent trend over the past decade – partially a response to public universities seeking nonresident students – has been the growth of "regional recruiters" who target specific metropolitan areas in the US and abroad. These regional recruiters may be college/university employees or they may be independent contractors who live in the metropolitan area they recruit.

Ruffalo Noel-Levitz (2018) documents the self-reported efficacy of marketing/recruiting interventions. For the median private 4-yr institution, off-campus visits were the second highest source of inquiries (after student list purchases), accounting for 17% of inquiries. Off-campus visits were tied with student list purchases as the highest source of enrollees, accounting for 18% of enrollees. For the median public institution, off-campus visits accounted for 19% of inquiries (second only to student list purchases) and accounted for 16% of enrollees (ranked third after stealth applicants and on-campus visits).

A sociological case-study literature develops helpful insights about the mechanisms and functions of off-campus recruiting visits. Holland (2019) analyzes visits from the perspective of students at two racially and socioeconomically diverse public high schools. Holland (2019) found that high school visits – including college fairs, instant decision events, and small-group representative visits – influenced where students applied and where they enrolled. This finding was strongest for first-generation students and under-represented students of color, who often reported that "school counselors had low expectations for them and were too quick to suggest that they attend community college." This trust vacuum created an opportunity for colleges because these students were drawn to colleges that connected with them and "made them feel wanted." Holland (2019) describes a high-achieving, first-generation, African American student who was admitted by a highly selective liberal arts college but chose to attend a less selective college that "seemed to want him more." By contrast, affluent students with college educated parents were less taken by such overtures and more concerned with college prestige.

Of particular importance for this chapter, Stevens (2007) and Khan (2010);Khan (2011) highlight the relational function of visits. Stevens (2007) provides an ethnography of the admissions office at a selective private liberal arts college, highlights the relational function of visits. During the autumn "travel season," admissions officers visited selected high schools across the country "to spread word of the institution and maintain relationships with guidance counselors" (p. 53-54) because "the College's reputation and the quality of its applicant pool are dependent upon its connections with high schools nationwide" {Stevens (2007)} [p. 54]. The College tended to visit the same schools year after year because recruiting depends on long-term relationships with high schools. The high schools they visited tend to be affluent schools – in particular, private schools – that enroll high-achieving students who can afford tuition and had the resources and motivation to host a successful visit. Whereas Ruffalo Noel-Levitz (2018) highlights the effect of recruiting visits on inquiries and enrollees, findings from Stevens (2007) suggest that the College may have valued recruiting

visits primarily as a means of maintaining relationships with guidance counselors. From this perspective, recruiting visits may affect outcomes such as inquiries, applications, and matriculation through their affect on high school guidance counselors. The logic is that a guidance counselor who views a college favorably will steer students to the college.

Khan (2010) analyzed recruiting from the perspective of an elite private boarding school in order to understand "how such schools continue to get comparatively under-qualified students into top colleges and universities." The answer to this question begins by thinking about the goals of colleges, which are represented by admissions officers, and the goals of private high schools, which are represented by guidance counselors. Colleges want high achieving students who can pay tuition and donate. Additionally, drawing from @Stevens (2007), colleges want a class composed of "interesting characters" whose curricular and extracurricular strengths meet the needs of different campus constituents (e.g., academic majors, the athletic department, clubs, etc.). Colleges also want low acceptance and high yield rates to move up the rankings. Private high schools want to send *all* students to the best college possible. Here, high school guidance counselors face "the pressure of making sure their school seems worth it – that. . . paying some \$40,000+, really does aid students in the college process" [FROM CHAPTER. FIND PG NUMBER] The challenge counselors face is "some of these students are slightly better than others. These students will likely get into more than one school – but they can only attend one. And this will lower the chances of your"second-best" students getting into top schools" (Khan, 2011) [p. 173-174].

"Luckily," Khan (2010 pg. xx) writes, "the problem for elite boarding schools matches up quite nicely with the problem faced by elite colleges." Specifically, college admissions officers receive applications from many outstanding students. But "These outstanding students will also be outstanding to Princeton, Yale, Stanford, and everywhere else. How do you know the ones you pick will attend your school? you can't quite trust applicants, as they are all likely to tell you how much they want to go to your school. And if students you accept go somewhere else, there's not much you can do. But you can get better information – information you want – from their high school" (Khan, 2011) [pg. 173?].

Khan (2011) argues that the desire by colleges for trustworthy information about applicant intentions creates an opportunity for high school counselors to advocate on behalf of their students. This opportunity depends on guidance counselors having personal relationships with university admissions offices and on having small enough caseloads to advocate for each student individually. To explain how the process works, Khan (2011) describes two hypothetical students – Susan and Billy – who both apply to Harvard and Yale. Susan is a shoo-in at both universities, but wants to attend Harvard. Billy has a weaker academic record than most Ivy League students, but has strong extracurricular activities. The guidance counselor tells Harvard that Susan wants to attend Harvard. Next, he informs Yale that Susan will choose Harvard, but Billy loves Yale and has great "character" and extracurricular activities. In the end, Harvard rejects Billy and accepts Susan (decreasing acceptance rate, increasing yield). Yale rejects Susan and accepts Billy (decreasing acceptance rate, increasing yield).

The horsetrading described by Khan (2011) depends on a relationship where the college can trust statements made by the high school counselor and vice-versa. This relationship is the product of repeated interactions over many years. Khan (2011) writes that colleges "can reward that [high] school for good information and sanction it for bad information" [p. 173]. A high school that makes false statements about applicant intentions faces consequences. The college "might stop taking these telephone calls and ignore the information provided. They may even start accepting fewer students from the school, thinking it is less than an honest place." [CITE BOOK CHAPTER; PG NUMBER]. Because the college and the high school are mutually dependent, however, both "have an incentive to continue with a strong, honest relationship" [CITE BOOK CHAPTER; PG NUMBER]. Such horsetrading may be less pervasive than now than it was in prior decades, less common at non-elite private schools, and also public university admissions officers likely have less authority to engage in these tacit negotiations.

Nevertheless, maintaining a strong relationships is mutually important for the college and the high school. Both the college admissions counselor and the high school guidance counselor need to tell one another "their story" and relay that story to constituents. The college admissions counselor explains why the college/university is a "special place" that high school students should want to attend. The guidance counselor

explains why the high school is a special place, that even students with lower grades have outstanding extracurricular strengths that will benefit the college. [CITES FOR THIS PARAGRAPH]

Circling back to the focus of this chapter, off-campus recruiting visits are necessary for the maintenance of strong relationships that enable colleges and high schools to negotiate and send trustworthy information to one another. Without face-to-face visits, it is less likely that that a college admissions counselor will "take the call" of a guidance counselor. Simultaneously, a recruiting visit between a college and a high school can be conceived as an indicator. First, the fact that the college took time and effort to make the visit suggests that the college wants to enroll students from the high school. Second, the fact that the high school hosted the visit suggests that the high school likely views the college as a desirable destination for some of its students. Third, the presence of the recruiting visit indicates that the high school and the college have a relationship and suggests the probability of additional interactions (e.g., phone calls).

Our project collected data about off-campus recruiting visits made in 2017 by a convenience sample of colleges universities. Our analysis sample is based on three different lists of postsecondary institutions: first, the set of public research universities (which category) as defined by the YYYY Carnegie Classification; second, private universities in the top 100 of USNWR YYYY "national universities"; and, third, private colleges in the top 50 of USNWR YYYY "national liberal arts colleges" rankings. For each of these institutions, we investigated their admissions website for pages that provided the details of upcoming off-campus recruiting visits. For institutions that posted such pages, we scraped the pages once per week throughout the 2017 calendar year. Many colleges and university only posted certain kinds of events (e.g., hotel receptions and national college fairs) but not others (e.g., day-time visits to high schools). These institutions are excluded from the analyses. Our final analysis sample consists of X public research universities, X private research universities, and X private liberal arts colleges. [MAYBE ADD TABLE/FIGURE OR APPENDIX TABLE/FIGURE ON CHARACTERISTICS OF INSTITUTIONS IN OUR SAMPLE?]

Our analyses to date have focused only on visits by public research universities [CITE]. The big-picture takeaways are as follows. Most public research universities in our sample made more out-of-state than in-state recruiting visits. The exceptions were UC-Berkeley, UC-Irvine, and North Carolina State University, three institutions with relatively generous state appropriations and the only three public universities in our sample that faced strong nonresident enrollment caps. Accross all universities, out-of-state visits systematically targeted affluent, predominantly white schools and communities, usually within populous metropoitan areas. Most public universities also made a disproportionate number of out-of-state visits to private high schools. Analyses of in-state visits also found that public high schools in affluent communities were more likely to receive a visit, but this relationship was modest compared to the income disparity between visited and not visited out-of-state public schools. Furthermore, in-state visits did not consistently indicate preferences for majority white high schools or for private high schools.

Tables/Figures X and X show simple counts and descriptive staitistics of off-campus recruiting visits by colleges and universities in our sample. TEXT BRIEFLY DESCRIBING FINDINGS FROM DESCRIPTIVE TABLES.... Table/Figure X demonstrates the disproportionate number of visits to private high schools. The goal of this chapter is to investigate off-campus recruiting visits to private high schools. Which types of private high schools receive visits from which types of colleges and universities? Additionally, to what extent were visits a college/university to a private high school more likely if the two organizations were similar to one another on key characteristics? Our analyses focus on the characteristics of academic reputation, geographic region, religious affiliation, and racial composition. WHAT TO SHOW IN TABLES/FIGURES:

[PARAGRAPH ABOUT TABLE THAT DESCRIBES CHARACTERISTICS OF VISITED VS. NON-VISITED PRIVATE SCHOOLS] Before proceeding to network analyses, Table/Figure X compares the characteristics of private high schools that received at least one recruiting visit from a college/university in our sample to those of private high schools that did not receive a visit. WHICH CHARACTERISTICS TO SHOW: geographic region; religious affiliation; academic reputation; racial composition; enrollment size.

3 Network Methods and Data

We utilize network methods rather than conventional descriptive statistics for two, related reasons. First, social network analysis privileges the relationship between actors. The discussion of Stevens and Khan suggests that for private school students, "it is not just the quality of the students that gets them into college but the quality of the relationship between elite high schools and colleges" (Khan, 2011) [pg. 175]. Second, a visit from a college/university admissions counselor to a high school can be conceived as a "network tie" connecting two actors in a social network.

We briefly define essential social network analysis concepts and their operationalization in our analyses. A social network consists of a set of actors – referred to as "vertices" – and the connections – referred to as "edges" between these actors. Whereas "one mode" networks consist of vertices of the same "type" (e.g., in a publication network each vertex is an author), "two mode" networks consit of vertices associated with one type of actor/entity having connections to vertices of another type. For example, an an actor-movie network consists of actors – mode 1 – who appear in movies – mode 2 and an actor shares an edge with a movie if the actor appears in the movie. The social network analyzed in this chapter is a two-mode network, where vertices consists of colleges/universities (mode 1) and high schools (mode 2) and an "edge" is defined as a visit from a college/university to a private high school [DELETE THIS SENTENCE OR THE REDUNDANT ONE IN BELOW PARAGRAPH].

Our analyses draw from analyses of "corporate board-director" networks because these are the most commonly analyzed two-mode networks in the social networks literature [e.g.] (Davis, Yoo, & Baker, 2003). Board-director networks consist of directors (mode 1) who serve on organizational boards (mode 2). Our school-college network is a two-mode network composed of two sets of vertices, private high schools (mode 1) and colleges/universities (mode 2). Off-campus recruiting visits are edges (e.g., high school i shares an edge with college j if high school i receives at least one visit from college j) and visits can only occur between a school-college pair (not a school-school pair or a college-college pair). Our school-college network is a two-mode network composed of high schools (mode 1) who are visited by colleges and universities (mode 2). This (weighted) network is represented as a school-by-college matrix (e.g., a 500×40 matrix if our network contains 500 high schools and 40 colleges/universities) in which matrix cell $a_{i,j}$ identifies the number of visits that high school i received from college/university j. [SHOW AN EXCERPT OF THE TWO MODE ADJACENY MATRIX, LIKE 4 BY 3 OR SOMETHING] [DEFINE WEIGHTED VS. UNWEIGHTED SOMEWHERE]

Two-mode networks are ofen analyzed as one-mode networks (Borgatti, 2008). Davis et al. (2003) states that "overlapping groups such as boards of directors form a two-mode membership network in which one can conceive of directors as nodes [vertices] connected by a tie of common board membership, or boards as nodes connected by a tie of one or more shared directors" [pg. xx]. Thus, a two-mode board-director network can be transformed into two one-mode networks. A weighted one-mode director network can be created as follows: create a director-by-director matrix (e.g., a 100×100 matrix if there are 100 directors in the network); two directors share an edge if they serve together on a board; matrix cell $a_{i,j}$ identifies the number of boards that include both director i and director j (e.g., $a_{i,j} = 0$ if directors i and j do not serve on any of the same boards and $a_{i,j} = 3$ if directors i and j do not serve on three boards together. Similarly, a one-mode board network is created based on a board-by-board matrix in which two boards share an edge if a director sits on both boards and matrix cell $a_{i,j}$ identifies the number of directors that serve on both board i and board j. Following this approach, we create a one-mode high school network in which two private high schools share an edge if both receive a visit by the same college/university and cell $s_{i,j}$ of the school-by-school matrix S indicates the number of colleges/universities that visited both school i and school j [SHOW EXCERPT OF ONE-MODE SCHOOL BY SCHOOL MATRIX, LIKE 3 BY 3 OR SOMETHING]. Similarly, we create a one-mode college/university network (herein the college network) in which two colleges share an edge if both colleges visited the same high school and cell $c_{i,j}$ of the college-by-college matrix C indicates the number of private high schools that received at least one visit from both college i and college j [SHOW EXCERPT OF ONE-MODE COLLEGE BY COLLEGE MATRIX, LIKE 3 BY 3 OR SOMETHING].

A limitation of our data collection is that we collected off-campus visit data only from a convenience sample of X colleges and universities, as described above. Thus, for each college and university in our sample, we

know all the private high schools they visited (assuming no measurement error). However, for each private high school in our sample, we only know visits they received from the set of X colleges/universities in our sample. Given this limitation, it may be useful to think of our data collection as resulting in X "ego networks." An "ego" is a single "focal" node (e.g., The University of Notre Dame). An ego network consists "of a focal node (")ego(") and the nodes to whom ego is directly connected to (these are called"alters(") plus the ties, if any, among the alters" [from http://www.analytictech.com/networks/egonet.htm#:~:text=Ego%20networks%20consist%20of%20a,form%20The%20human%20social%20network]. For example, the University of Notre Dame ego network consists of all private high schools that received at least one visit from Notre Dame. Additionally, for each high school visited by Notre Dame, the ego network may include all colleges/universities in our sample that also visited the high school.

Figure X shows the ego network of all high schools visited by Notre Dame.

When analyzing ego networks, researchers often investigate the extent of "homophily" versus "heterophily" (McPherson, Smith-Lovin, & Cook, 2001). Homophily is the idea that two vertices are more likely to be connected if they have similar characteristics (e.g., two people are more likely to be freinds on Facebook if they have similar political ideologies). Heterophily, the opposite of homophily, is when pairs of connected vertices have different characteristics from one another. Figure X shows the University of Notre Dame ego network, with separate panels for vertex characteristics (academic reputation, geography, religious affiliation, and racial composition) and with vertex shapes (?colors?) to identify values of vertex characteristics [INSERT FIGURE]. Visually, we can see that . . . .[DESCRIBE BIG TAKEAWAYS].

Figure X augments the Notre Dame ego network by including the private colleges/universities in our sample that visited private high schools visited by Notre Dame [INSERT FIGURE]. ADD BRIEF TEXT ABOUT FIGURE?

4   Network Analyses of Off-Campus Recruiting Visits

This section presents network analyses of visits by colleges and universities to private high schools. Analyses are motivated by two, related research questions. First, which types of private high schools receive visits from which types of colleges and universities? Second, to what extent do off-campus recruiting visits by colleges and universities to private high schools exhibit homophily versus heterophily with respect to the vertex characteristics of geographic region, religious affiliation, academic reputation, and racial composition?

Figure 2 plots the two-mode network of visits to private high schools by all colleges and universities in our sample, with private high schools vertices the color salmon, public research universities shown in violet, and private colleges and universities shown in green green. The graph layout places vertices closer together if they are similar to one another in terms of network structure. [SAY WHAT THIS MEANS, DRAWING FROM NOTES FROM RUSS]. Figure 2 suggests that the recruiting visit patterns of private colleges and universities tend to be more similar to one another than they are to those of public research universities. By contrast, many public research universities are far away from one another and a subset of public researchg universities appear to have network structure similar to many of the private colleges and universities (e.g., CU Boulder, UC Berkeley, University of South Carolina)

We present results in three steps: First, visits by private colleges and universities; second, visits by public research universities; and, third, comparisons of visits by public research universities to visits by private colleges and universities.

4.1   Visits by Private Colleges and Universities

Many social network analyses utilize data-driven "community detection" algorithms to categorize vertices into a small number of groups (or cluster) based purely on patterns of network ties. Generally, groups are chosen to maximize the number of within-group ties while minimizing ties between members of different groups. We used XYZ community detection approach [add footnote w/ details?] to allocate private colleges

and universities [? and private high schools] to clusters. Four clusters emerge. The largest cluster consists largely of nonsectarian liberal arts colleges (e.g., Williams, Swarthmore, Colorado College). Cluster 2 consists of Emory University, Tulane, Northwestern, and Sewanee. These universities all have relatively strong ties to Southern private high schools. Cluster 3 consists of three catholic universities – Notre Dame, Villanova, Boston College – and Case Western Reserve and Stevens Institute of Technology. Although not a Catholic University, Stevens Institute of Technology has strong ties to Catholic private schools (representing X% of visits). Finally, cluster 4 consists of three religiously affiliated Texas universities – Southern Methodist, Baylor, Texas Christian University – and the University of Denver.

Figure 3 plots the two-mode network of visits by private colleges and universities to private high schools, with vertex color determined by community cluster. The placement of college and high school vertices on an X-Y axis/coordinates is determined such that vertices with many direct and indirect ties are closer together. Although the process of placing vertices was separate from the process of determining community cluster, vertices within the same cluster tend to be closer to one another than those of different clusters. For example, the nonsectarian liberal arts colleges in Cluster 1 tend to be be close to one another and also relatively close to the highest concentration of private high schools in cluster 1, suggesting that these colleges visit substantially overlapping sets of private high schools. For Cluster 2, by contrast, Northwestern and Emory are relatively far from Tulane and Sewanee.

Addressing our two motivating research questions – which schools receive visits from which colleges/universities and the extent to which visits are more likely to occur between organizations that share certain characteristics – requires analyses that are more granular than Figure 3.

Table 2 shows the characteristics of private high schools visited by each private college and university. This table was created from the ego networks of each private college and university. As such, we visualize selected ego networks to illustrate several patterns that emerge from Table 2. Ego networks consist of an ego (a single college/university), the set of high schools the ego visted (one degree of separation from the ego), and the set of colleges/universities that also visited high schools visited by the ego (two degrees of separation from the ego). Figure 4 shows the ego network of Villanova University, with vertex color determined by religious affiliation. About 50% of Villanova's visits were to Catholic schools, a percentage [?percent?] much higher than most colleges and universities shown in Table 2, and second only to Notre Dame University. In Figure 4, Notre Dame is closer to Villanova than any other college/university in the Villanova ego network, suggesting that Villanova and Notre Dame visit substantially overlapping sets of schools. Boston College, another Catholic university, is situated a bit further away from Villanova in the clump of colleges that includes Case Western, Tulane, Sewanee, Southern Methodist, and TCU, all of which visit a relatively high share of Catholic high schools, despite not being Catholic universities. By contrast, Villanova is far from nonsectarian liberal arts colleges (e.g., Swarthmore, Smith, Colorado College) which visit fewer Catholic high schools.

Figure 5 shows the ego network of Emory University, with vertex color determined by geographic region. Located in Atlanta, about 47% of Emory's visits were to schools in the South. Figure 5 indicates that Emory's network structure is similar to several other southern universities – including Tulane, TCU, SMU, and Sewanee, but is dissimilar from Baylor University which made about 56% of visits in the South, but with a focus on schools with a Christian religious affiliation. Figure 5 also suggests that the set of schools visited by Emory overlaps substantially with several institutions located in the Northeast (e.g., Villanova, Boston College, Middlebury) and the Midwest (e.g., Case Western Reserve, Northwestern, Notre Dame).

Figure 6 shows the academic reputation of private high schools visited by [selected] private colleges and universities. Compared to other institutions, the cluster of nonsectarian liberal arts colleges visits a higher share of high schools ranked in the top 200 of Niche and a lower share of schools with a grade of "A" or lower. By contrast, Catholic universities (in cluster 3) and Christian affiliated Texas universities (cluster 4) tend to visit a higher share of high schools graded as "A" or lower by Niche.

Figure 7 shows the racial composition of visited private high schools by college [REVISE PARAGRAPH ONCE WE FIX MISSING VALUES FOR RACE]. The big take-away is that the most colleges predominantly visit high schools where fewer than 25% of students identify as Black, Latinx, or Native. This finding is largely true across clusters. Private high schools tend to have a higher share of White students than public

high schools. Moreover, the private high schools that were visited by private colleges and universities in our sample had a lower share of Black/Latinx/Native students, on average, than the population of private high schools. Our findings suggest that the low number of Black/Latinx/Native students at private colleges and universities may be driven by thse institutions explicitly recruiting from private high schools that enroll few Black/Latinx/Native students.

[NEED TRANSITION TO FOCUS NOW ON HIGH SCHOOLS] Which private high schools receive the most visits? Table 3 shows characteristics of the 20 private high schools that were visited by the most private colleges and universities. The last two columns of Table 3 are "degree" and "strength," which are related measures of vertex "centrality." Measures of centrality attempt to identify the most important or influential actors in a social network. "Degree" is defined as the number of edges direclty connected to a vertex. In Table 3, the degree of a high school is the number of private colleges and universities in our sample that visited. The concept "strength" is generally defined as a weighted measure of degree. In our study, colleges often made more than one visit to the same high school in 2017. Thus, Table 3 defines strength as the total number of visits from private colleges and universities in our sample.

The Kent Denver School, the top ranked school in 3,was visited by 23 of the 26 private colleges and universities in our sample. Choate Rosemary Hall was visited by 21 colleges and universities, but these 21 institutions made 34 total visits. Most schools in Table 3 are mostly nonsectarian. Although all received a Niche grade of "A+", they are not uniformly in the upper-echelon of schools ranked in the top 50 or top 100 nationwide. With the exception of St. Ignatius Prep in Chicago and the Maret School in Washington DC, students who identify as Black, Latinx, or Native comprise less than 20% of all students.

Table 4 shows the characteristics of private high schools by degree band (e.g., visits from 15+, 10-14, etc). Schools that received visits from 4 or fewer private colleges and universities enrolled a greater share of Black/Latinx/Native students. These schools were also disproportionately Catholic schools and were more likely to recieve a grade of "A" or lower from Niche.

Whereas Tables 3 and 4 examine centrality, they do not assess the extent to which high schools cluster into groups, with some high schools visited by nearly all colleges and universities and other groups of high schools only receiving visits from a particular subset of colleges and universities. [THIS IS WHERE THE DIRECT VS. INDIRECT CONNECTION ANALYSIS RECOMMENDED BY RUSS WOULD GO. WE MIGHT ADD THIS TO BURD CHAPTER OR DO AFTER BURD CHAPTER SUBMITTED]

4.2 Visits by Public Research Universities

ADD TABLES/FIGURES OF VISITS BY PUBLIC RESEARCH UNIVERSITIES.

4.3 Comparison of Public Versus Private Colleges and Universities

5 References

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Table 1: Percentage of budget allocated to marketing/recruiting activities by private non-profit 4yr and public 4yr institutions

Activity	Private	Public
Travel	17	16
Student search (purchased lists)	14	12
Prospective student communications	13	17
Events	12	11
Recruitment publications	11	15
Web services and digital advertising	11	13
Traditional advertising	6	6
International recruitment	5	3
Transfer recruitment	4	4
Other	8	3

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Table 2: ego table private colleges and universities

University	Cluster	Type	Rank	total	in_state	out_state	Northeast	Midwest	South	West	Catholic	Conserv	Nonsect	Other	c1_lt10	c2_10to25	c3_25to50	c4_50+	c1_top200	c2_A+	c3_A	c4_ltA
Harvey Mudd	1	lib arts	25	114	24	90	11.1%	7.4%	27.8%	36.1%	18.5%	0.0%	49.1%	14.8%	21.3%	45.4%	10.2%	5.6%	43.5%	30.6%	4.6%	1.9%
Occidental	1	lib arts	40	199	56	143	21.3%	5.1%	18.8%	36.0%	21.8%	1.5%	46.7%	11.2%	26.4%	42.1%	10.2%	2.5%	31.0%	38.1%	7.1%	2.0%
Scripps	1	lib arts	28	111	34	77	6.4%	10.9%	11.8%	56.4%	20.0%	1.8%	55.5%	8.2%	26.4%	42.7%	12.7%	3.6%	35.5%	40.0%	4.5%	1.8%
Colorado Coll.	1	lib arts	25	315	11	304	26.0%	10.7%	19.2%	25.3%	13.2%	1.8%	53.0%	13.2%	29.5%	42.7%	5.0%	3.9%	31.7%	40.2%	3.9%	2.1%
U of Denver	4	univ	80	271	13	258	18.9%	18.5%	18.5%	28.0%	30.7%	2.0%	40.6%	10.6%	35.8%	37.4%	8.7%	2.0%	18.9%	47.6%	11.8%	2.4%
Conn Coll.	1	lib arts	51	286	29	257	45.5%	5.4%	9.0%	20.4%	14.0%	0.4%	53.8%	12.2%	32.3%	42.3%	3.9%	1.8%	31.5%	38.0%	6.5%	1.1%
Emory	2	univ	21	275	16	259	11.2%	9.2%	46.9%	18.1%	22.3%	1.9%	45.0%	16.2%	33.1%	43.5%	8.5%	0.4%	21.9%	48.8%	11.2%	2.7%
Northwestern	2	univ	9	362	36	326	14.0%	19.1%	30.6%	20.9%	29.4%	2.6%	41.1%	11.4%	25.7%	46.3%	10.0%	2.6%	26.0%	41.4%	11.7%	3.1%
Notre Dame	3	univ	19	687	24	663	21.2%	20.7%	24.4%	19.5%	56.6%	1.5%	20.3%	7.2%	28.9%	39.7%	11.6%	5.5%	12.6%	35.3%	25.7%	10.4%
Tulane	2	univ	41	428	37	391	17.0%	11.2%	39.7%	15.7%	28.7%	1.0%	39.9%	14.0%	28.7%	42.6%	9.5%	2.7%	22.2%	43.1%	11.5%	4.2%
Boston Coll.	3	univ	35	333	27	306	21.4%	11.8%	25.1%	25.4%	40.6%	1.9%	34.7%	6.5%	26.0%	41.5%	11.1%	5.0%	22.6%	37.8%	14.6%	5.3%
Smith	1	lib arts	15	164	15	149	29.7%	3.2%	18.1%	27.7%	12.3%	0.6%	54.2%	11.6%	22.6%	46.5%	7.7%	1.9%	34.2%	38.1%	2.6%	1.3%
Tufts	1	univ	30	292	15	277	24.7%	6.5%	24.0%	27.2%	19.0%	0.0%	49.1%	14.3%	28.7%	44.1%	6.5%	3.2%	30.5%	43.4%	4.7%	2.2%
Wellesley	1	lib arts	4	139	13	126	30.2%	7.1%	19.8%	24.6%	21.4%	0.0%	50.0%	10.3%	26.2%	46.0%	5.6%	4.0%	35.7%	27.8%	10.3%	4.8%
Williams	1	lib arts	1	200	15	185	22.1%	13.7%	24.2%	19.5%	23.2%	0.5%	46.8%	8.9%	22.6%	46.3%	4.7%	5.8%	34.7%	31.6%	8.9%	2.1%
Macalester	1	lib arts	27	207	8	199	21.9%	15.0%	12.3%	30.5%	12.3%	0.5%	56.1%	10.7%	28.3%	44.4%	4.8%	2.1%	38.0%	33.7%	4.8%	1.1%
Stevens Ins. Tech	3	univ	80	169	41	128	52.3%	1.3%	20.8%	11.4%	40.9%	1.3%	30.2%	13.4%	26.2%	47.0%	12.1%	0.7%	16.8%	41.6%	21.5%	2.7%
Case Western Res.	3	univ	42	219	16	203	22.5%	15.1%	30.7%	15.6%	28.4%	0.9%	39.0%	15.6%	30.3%	44.0%	6.9%	2.8%	23.9%	45.0%	11.9%	1.8%
Oberlin	1	lib arts	36	337	25	312	30.4%	12.3%	16.8%	21.4%	17.2%	0.3%	51.8%	11.7%	30.1%	42.4%	6.1%	2.3%	29.1%	40.1%	7.8%	0.6%
Swarthmore	1	lib arts	3	208	16	192	25.8%	7.5%	25.3%	21.0%	18.3%	0.5%	49.5%	11.3%	25.3%	42.5%	5.9%	5.9%	33.3%	31.7%	8.6%	3.8%
Villanova	3	univ	53	617	42	575	30.0%	16.8%	31.0%	7.5%	49.3%	1.8%	26.0%	8.2%	28.2%	43.6%	9.7%	3.8%	12.3%	39.4%	22.3%	9.2%
Sewanee	2	lib arts	47	429	29	400	17.7%	7.0%	52.6%	4.9%	19.5%	2.9%	41.1%	18.8%	31.2%	45.3%	4.9%	0.8%	15.6%	46.6%	15.6%	2.9%
Baylor	4	univ	76	257	102	155	0.0%	6.7%	55.8%	20.5%	30.4%	21.0%	11.2%	20.5%	24.6%	39.3%	15.6%	3.6%	5.4%	36.2%	27.2%	11.6%
SMU	4	univ	66	562	75	487	14.9%	11.5%	41.3%	14.5%	30.2%	4.4%	33.3%	14.3%	27.5%	40.3%	11.1%	3.3%	15.9%	43.6%	16.3%	3.3%
TCU	4	univ	80	480	58	422	13.9%	11.8%	36.9%	23.7%	39.8%	5.3%	26.9%	14.4%	26.6%	42.7%	12.9%	4.1%	12.5%	47.0%	20.9%	4.6%
Middlebury	1	lib arts	9	277	4	273	32.4%	6.9%	23.9%	17.0%	14.3%	0.0%	53.3%	12.7%	31.7%	41.7%	5.8%	1.2%	30.1%	40.2%	5.4%	2.3%

Table 3: most central private high schools, private colleges and universities

school_name	city	state_code	region	religion	pct_blacklatinxnative	ranking	ranking_numeric	degree	strength
KENT DENVER SCHOOL	ENGLEWOOD	CO	4	other_religion	6.370370	A+	122	23	24
CHOATE ROSEMARY HALL	WALLINGFORD	CT	1	nonsectarian	15.882353	A+	8	21	34
HARVARD-WESTLAKE SCHOOL	STUDIO CITY	CA	4	other_religion	16.708385	A+	6	21	22
THE LAWRENCEVILLE SCHOOL	LAWRENCEVILLE	NJ	1	nonsectarian	15.911873	A+	10	20	22
ALBUQUERQUE ACADEMY	ALBUQUERQUE	NM	4	nonsectarian	15.862069	A+	83	20	22
DALTON SCHOOL	NEW YORK	NY	1	nonsectarian	12.718964	A+	32	20	26
UNIVERSITY PREP	SEATTLE	WA	4	nonsectarian	9.683099	A+	249	20	22
ST IGNATIUS COLLEGE PREP	CHICAGO	IL	2	catholic	24.253460	A+	298	20	24
GREENHILL SCHOOL	ADDISON	TX	3	nonsectarian	16.679718	A+	64	20	20
THE BISHOP'S SCHOOL	LA JOLLA	CA	4	other_religion	0.000000	A+	43	19	19
THE ATHENIAN SCHOOL	DANVILLE	CA	4	nonsectarian	12.213741	A+	106	19	21
THE HOTCHKISS SCHOOL	LAKEVILLE	CT	1	nonsectarian	14.006515	A+	17	19	30
MARET SCHOOL	WASHINGTON	DC	3	nonsectarian	23.112481	A+	100	19	19
THE BRYN MAWR SCHOOL	BALTIMORE	MD	3	nonsectarian	18.491124	A+	98	19	19
PHILLIPS ACADEMY	ANDOVER	MA	1	nonsectarian	11.759505	NA	NA	19	30
OREGON EPISCOPAL SCHOOL	PORTLAND	OR	4	other_religion	4.470588	A+	135	19	19
EPISCOPAL HIGH SCHOOL	ALEXANDRIA	VA	3	other_religion	16.447368	A+	141	19	32
THE KINKAID SCHOOL	HOUSTON	TX	3	nonsectarian	8.654545	A+	89	19	21
HEAD ROYCE SCHOOL	OAKLAND	CA	4	nonsectarian	16.628959	A+	42	18	18
MARIN ACADEMY	SAN RAFAEL	CA	4	nonsectarian	9.669811	A+	129	18	18

Table 4: characteristics of high schools by degree band, private colleges and universities

Degree	Count	Northeast	Midwest	South	West	Catholic	Conservative Christian	Nonsectarian	Other	c1_lt10	c2_10to25	c3_25to50	c4_50+	c1_top200	c2_A+	c3_A	c4_ltA	rank_NA
6+	401	26.4%	12.0%	36.7%	24.9%	32.7%	1.0%	52.6%	13.7%	35.2%	52.1%	10.2%	2.5%	29.7%	56.4%	10.5%	1.5%	2.0%
5	74	28.4%	13.5%	28.4%	29.7%	45.9%	8.1%	29.7%	16.2%	35.1%	44.6%	12.2%	8.1%	1.4%	64.9%	28.4%	1.4%	4.1%
4	87	28.7%	12.6%	43.7%	14.9%	59.8%	6.9%	17.2%	16.1%	41.4%	42.5%	12.6%	3.4%	1.1%	51.7%	41.4%	3.4%	2.3%
3	114	27.2%	26.3%	39.5%	7.0%	54.4%	5.3%	26.3%	14.0%	32.5%	49.1%	12.3%	6.1%	NA	34.2%	43.9%	13.2%	8.8%
2	171	28.7%	21.6%	33.9%	15.8%	55.6%	8.2%	19.3%	17.0%	39.8%	33.3%	19.9%	7.0%	1.2%	24.6%	43.9%	25.1%	5.3%
1	272	21.7%	21.3%	42.3%	14.7%	55.1%	13.2%	16.2%	15.4%	31.6%	38.6%	18.4%	11.4%	0.4%	22.4%	33.5%	39.0%	4.8%

Table 5: ego table caption public universities

University	Cluster	Type	Rank	total	in_state	out_state	Northeast	Midwest	South	West	Catholic	Conserv	Nonsect	Other	c1_lt10	c2_10to25	c3_25to50	c4_50+	c1_top200	c2_A+	c3_A	c4_ltA
U of Alabama	3	univ	143	985	54	931	13.8%	8.6%	48.6%	15.5%	41.1%	8.2%	22.1%	15.0%	33.3%	37.6%	12.1%	3.5%	6.1%	37.3%	25.5%	15.5%
U of Arkansas	2	univ	160	225	21	204	0.0%	15.1%	62.3%	8.2%	39.6%	9.4%	13.8%	22.6%	25.2%	46.5%	10.7%	3.1%	4.4%	39.6%	26.4%	13.8%
UC Berkeley	7	univ	22	208	46	162	13.7%	5.3%	41.1%	24.7%	23.2%	4.7%	45.8%	11.1%	22.1%	44.2%	14.2%	4.2%	23.7%	41.6%	14.2%	3.7%
UC Irvine	7	univ	35	60	20	40	5.6%	5.6%	1.9%	59.3%	40.7%	5.6%	16.7%	9.3%	7.4%	33.3%	22.2%	9.3%	7.4%	33.3%	16.7%	11.1%
UC Riverside	7	univ	88	87	55	32	11.7%	2.6%	15.6%	50.6%	31.2%	9.1%	33.8%	6.5%	23.4%	26.0%	24.7%	6.5%	23.4%	23.4%	16.9%	13.0%
UC San Diego	7	univ	35	197	85	112	11.5%	1.6%	23.6%	50.0%	36.3%	4.9%	31.9%	13.7%	21.4%	39.0%	20.9%	5.5%	23.6%	37.4%	14.3%	9.3%
CU Boulder	7	univ	103	379	17	362	14.7%	11.2%	31.2%	30.3%	40.3%	3.2%	32.4%	11.5%	29.4%	39.1%	13.5%	5.3%	17.1%	44.4%	17.9%	4.4%
U of Georgia	4	univ	47	302	69	233	2.8%	0.8%	71.3%	12.7%	26.7%	7.2%	32.7%	21.1%	31.5%	46.2%	8.4%	1.6%	12.7%	49.0%	15.1%	9.2%
U of Kansas	2	univ	124	235	22	213	0.0%	51.2%	16.7%	18.5%	61.3%	4.8%	9.5%	10.7%	28.6%	42.9%	10.7%	4.2%	4.8%	40.5%	23.2%	17.3%
UMass Amherst	1	univ	66	292	62	230	45.7%	0.7%	23.4%	15.1%	37.8%	0.7%	30.9%	15.5%	30.9%	40.6%	11.2%	2.2%	12.9%	40.6%	20.5%	6.1%
UNL	2	univ	133	159	55	104	0.0%	67.7%	12.5%	3.1%	60.4%	3.1%	6.2%	13.5%	34.4%	43.8%	2.1%	3.1%	1.0%	28.1%	21.9%	32.3%
Rutgers	1	univ	63	303	72	231	47.9%	3.3%	25.4%	11.7%	47.1%	2.1%	22.9%	16.2%	28.7%	40.0%	13.3%	6.2%	8.3%	40.0%	24.2%	12.1%
SUNY Stony Brook	1	univ	88	146	39	107	80.5%	0.0%	8.5%	0.0%	54.2%	0.8%	22.0%	11.9%	33.1%	38.1%	10.2%	7.6%	9.3%	33.9%	23.7%	17.8%
NCSU	4	univ	80	23	3	20	9.1%	9.1%	72.7%	0.0%	50.0%	4.5%	22.7%	13.6%	50.0%	27.3%	4.5%	9.1%	4.5%	50.0%	27.3%	9.1%
U of Cincinnati	5	univ	143	283	79	204	3.4%	38.4%	39.2%	2.2%	47.8%	6.5%	16.4%	12.5%	33.6%	39.2%	7.8%	2.6%	8.6%	31.9%	25.4%	16.4%
U of Pitt	6	univ	58	261	51	210	43.1%	11.6%	31.9%	0.5%	49.5%	1.4%	26.4%	9.7%	34.3%	42.6%	8.3%	1.9%	14.8%	38.4%	22.2%	10.6%
U of S.Carolina	4	univ	118	486	34	452	12.5%	11.0%	57.4%	5.7%	35.8%	5.7%	30.5%	14.6%	32.9%	43.1%	9.7%	1.0%	9.7%	45.2%	23.5%	7.0%

Table 6: most central private high schools, private colleges and universities

school_name	city	state_code	region	religion	pct_blacklatinxnative	ranking	ranking_numeric	degree	strength
NOTRE DAME HIGH SCHOOL	SHERMAN OAKS	CA	4	catholic	31.163548	A+	642	11	15
JESUIT COLLEGE PREP SCHOOL	DALLAS	TX	3	catholic	18.140794	A+	235	11	19
SANTA MARGARITA CATHOLIC HIGH SCHOOL	RANCHO SANTA MARGARITA	CA	4	catholic	11.600928	A+	475	11	19
GREENHILL SCHOOL	ADDISON	TX	3	nonsectarian	16.679718	A+	64	11	12
CATHEDRAL CATHOLIC HIGH SCHOOL	SAN DIEGO	CA	4	catholic	10.384615	A+	536	11	13
EPISCOPAL HIGH SCHOOL	ALEXANDRIA	VA	3	other_religion	16.447368	A+	141	10	17
ST IGNATIUS COLLEGE PREP	CHICAGO	IL	2	catholic	24.253460	A+	298	10	14
SERVITE HIGH SCHOOL	ANAHEIM	CA	4	catholic	49.529412	A	NA	10	13
URSULINE ACADEMY OF DALLAS	DALLAS	TX	3	catholic	23.174971	A+	344	10	14
FORT WORTH COUNTRY DAY SCHOOL	FORT WORTH	TX	3	nonsectarian	86.909091	A+	327	10	22
JSERRA CATHOLIC HIGH SCHOOL	SAN JUAN CAPISTRANO	CA	4	catholic	13.963211	A+	656	10	18
MCDONOGH SCHOOL	OWINGS MILLS	MD	3	nonsectarian	22.320769	A+	311	9	9
NOLAN CATHOLIC HIGH SCHOOL	FORT WORTH	TX	3	catholic	35.213033	A	NA	9	22
STRAKE JESUIT COLLEGE PREP SCHOOL	HOUSTON	TX	3	catholic	29.076621	A+	191	9	18
LOYOLA HIGH SCHOOL	LOS ANGELES	CA	4	catholic	8.776167	A+	281	8	9
MATER DEI HIGH SCHOOL	SANTA ANA	CA	4	catholic	39.033457	A+	910	8	13
ST JOHNS COLLEGE HIGH SCHOOL	WASHINGTON	DC	3	catholic	29.743590	A+	715	8	11
LAKE FOREST ACADEMY	LAKE FOREST	IL	2	nonsectarian	12.183908	A+	126	8	11
ARCHBISHOP SPALDING HIGH SCHOOL	SEVERN	MD	3	catholic	9.959839	A	NA	8	11
ROLAND PARK COUNTRY SCHOOL	BALTIMORE	MD	3	nonsectarian	19.748653	A+	578	8	9

Table 7: characteristics of high schools by degree band, private colleges and universities

Degree	Count	Northeast	Midwest	South	West	Catholic	Conservative Christian	Nonsectarian	Other	c1_lt10	c2_10to25	c3_25to50	c4_50+	c1_top200	c2_A+	c3_A	c4_ltA	rank_NA
6+	112	12.5%	6.2%	63.4%	17.9%	50.9%	0.9%	31.2%	17.0%	25.9%	56.2%	15.2%	2.7%	22.3%	65.2%	9.8%	1.8%	0.9%
5	69	20.3%	14.5%	47.8%	17.4%	47.8%	5.8%	33.3%	13.0%	33.3%	53.6%	11.6%	1.4%	11.6%	53.6%	29.0%	5.8%	NA
4	117	24.8%	17.9%	38.5%	18.8%	48.7%	6.8%	30.8%	13.7%	36.8%	44.4%	15.4%	3.4%	13.7%	47.9%	33.3%	3.4%	1.7%
3	185	28.6%	11.4%	40.5%	19.5%	44.3%	4.9%	30.3%	20.5%	35.7%	47.6%	11.4%	5.4%	11.4%	47.6%	28.1%	10.8%	2.2%
2	280	26.1%	17.5%	37.5%	18.9%	45.0%	6.8%	33.2%	15.0%	44.3%	40.4%	12.5%	2.9%	10.4%	34.6%	32.1%	17.5%	5.4%
1	474	25.5%	24.7%	32.1%	17.7%	45.6%	13.9%	20.9%	19.6%	41.8%	35.2%	13.3%	9.7%	3.0%	16.9%	28.5%	46.4%	5.3%

Table 8: most central private high schools, public and private colleges and universities

school_name	city	state_code	region	religion	pct_blacklatinxnative	ranking	ranking_numeric	degree	strength
GREENHILL SCHOOL	ADDISON	TX	3	nonsectarian	16.679718	A+	64	31	32
ST IGNATIUS COLLEGE PREP	CHICAGO	IL	2	catholic	24.253460	A+	298	30	38
KENT DENVER SCHOOL	ENGLEWOOD	CO	4	other_religion	6.370370	A+	122	29	31
EPISCOPAL HIGH SCHOOL	ALEXANDRIA	VA	3	other_religion	16.447368	A+	141	29	49
JESUIT COLLEGE PREP SCHOOL	DALLAS	TX	3	catholic	18.140794	A+	235	28	46
CHOATE ROSEMARY HALL	WALLINGFORD	CT	1	nonsectarian	15.882353	A+	8	27	42
MCDONOGH SCHOOL	OWINGS MILLS	MD	3	nonsectarian	22.320769	A+	311	27	27
URSULINE ACADEMY OF DALLAS	DALLAS	TX	3	catholic	23.174971	A+	344	27	31
HARVARD-WESTLAKE SCHOOL	STUDIO CITY	CA	4	other_religion	16.708385	A+	6	27	28
PHILLIPS ACADEMY	ANDOVER	MA	1	nonsectarian	11.759505	NA	NA	26	37
STRAKE JESUIT COLLEGE PREP SCHOOL	HOUSTON	TX	3	catholic	29.076621	A+	191	26	45
THE KINKAID SCHOOL	HOUSTON	TX	3	nonsectarian	8.654545	A+	89	26	31
THE ATHENIAN SCHOOL	DANVILLE	CA	4	nonsectarian	12.213741	A+	106	24	26
LAKE FOREST ACADEMY	LAKE FOREST	IL	2	nonsectarian	12.183908	A+	126	24	30
THE BRYN MAWR SCHOOL	BALTIMORE	MD	3	nonsectarian	18.491124	A+	98	24	25
DALTON SCHOOL	NEW YORK	NY	1	nonsectarian	12.718964	A+	32	24	30
GEORGETOWN PREPARATORY SCHOOL	NORTH BETHESDA	MD	3	catholic	17.741936	A+	162	24	31
ST MARK'S SCHOOL OF TEXAS	DALLAS	TX	3	other_religion	13.584475	A+	2	24	30
BROPHY COLLEGE PREPARATORY	PHOENIX	AZ	4	catholic	32.099644	A+	335	23	30
PINE CREST SCHOOL	FORT LAUDERDALE	FL	3	nonsectarian	10.000000	A+	52	23	29

Table 9: characteristics of high schools by degree band, public and private colleges and universities

Degree	Count	Northeast	Midwest	South	West	Catholic	Conservative Christian	Nonsectarian	Other	c1_lt10	c2_10to25	c3_25to50	c4_50+	c1_top200	c2_A+	c3_A	c4_ltA	rank_NA
6+	595	26.4%	12.8%	37.8%	23.0%	41.2%	3.0%	41.2%	14.6%	36.1%	49.7%	11.1%	3.0%	20.2%	54.3%	20.3%	2.9%	2.4%
5	80	33.8%	21.2%	38.8%	6.2%	57.5%	5.0%	20.0%	17.5%	33.8%	37.5%	22.5%	6.2%	1.2%	40.0%	40.0%	16.2%	2.5%
4	102	30.4%	11.8%	46.1%	11.8%	48.0%	7.8%	24.5%	19.6%	36.3%	44.1%	14.7%	4.9%	1.0%	37.3%	38.2%	16.7%	6.9%
3	127	24.4%	18.9%	40.2%	16.5%	49.6%	13.4%	24.4%	12.6%	36.2%	44.9%	10.2%	8.7%	NA	24.4%	41.7%	26.8%	7.1%
2	194	20.1%	27.8%	35.1%	17.0%	51.0%	9.8%	20.6%	18.6%	40.2%	32.0%	19.6%	8.2%	0.5%	20.1%	40.7%	33.0%	5.7%
1	366	22.1%	26.8%	36.3%	14.8%	46.2%	17.2%	14.2%	22.4%	42.6%	31.1%	13.1%	13.1%	0.3%	8.7%	23.5%	62.6%	4.9%

Leads/Prospects

Inquiries

Applicants

Stealth Applicants
(Did Not Identify)

Completed
Applications

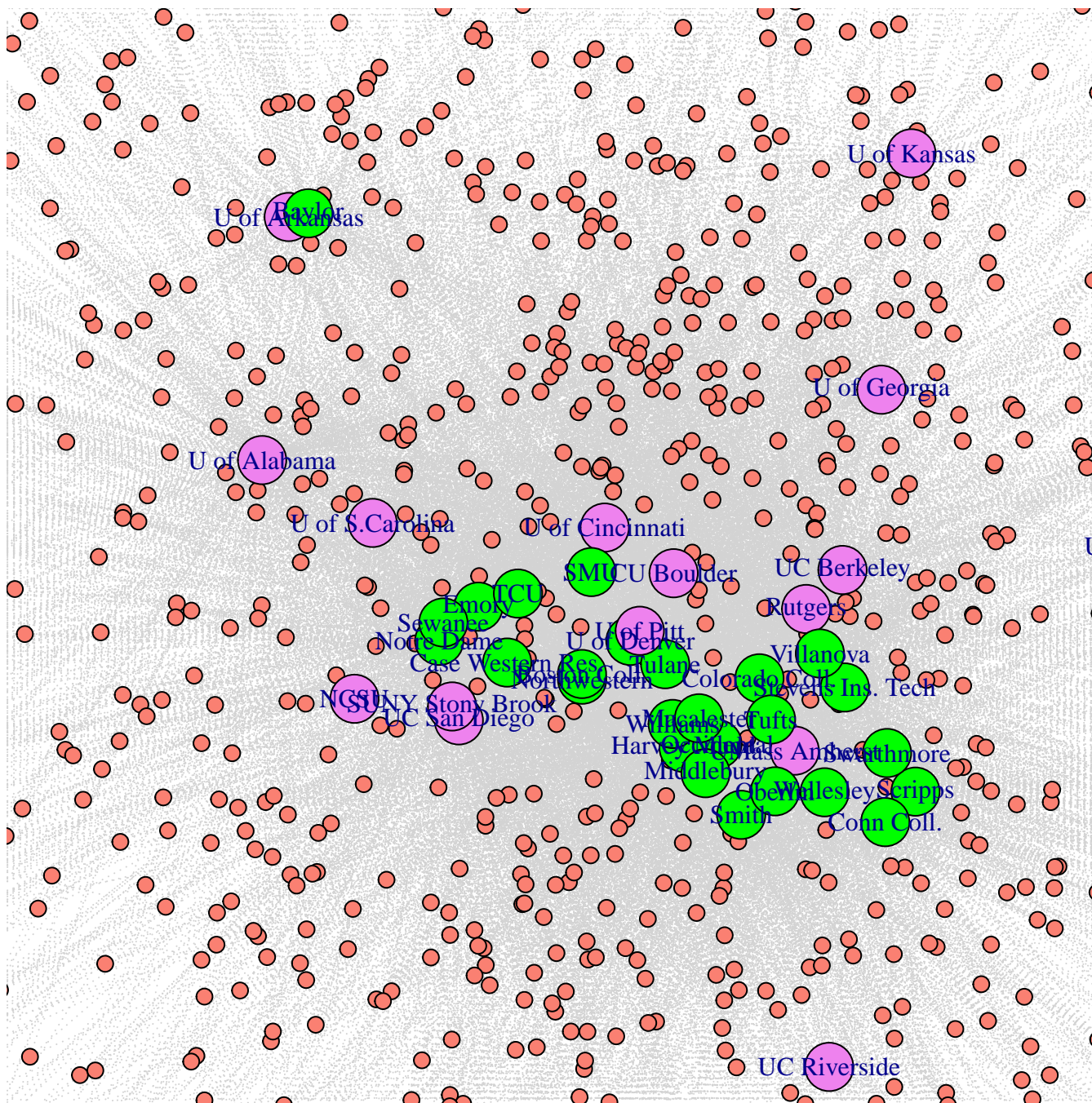Accepted

Enrolled

Matriculated
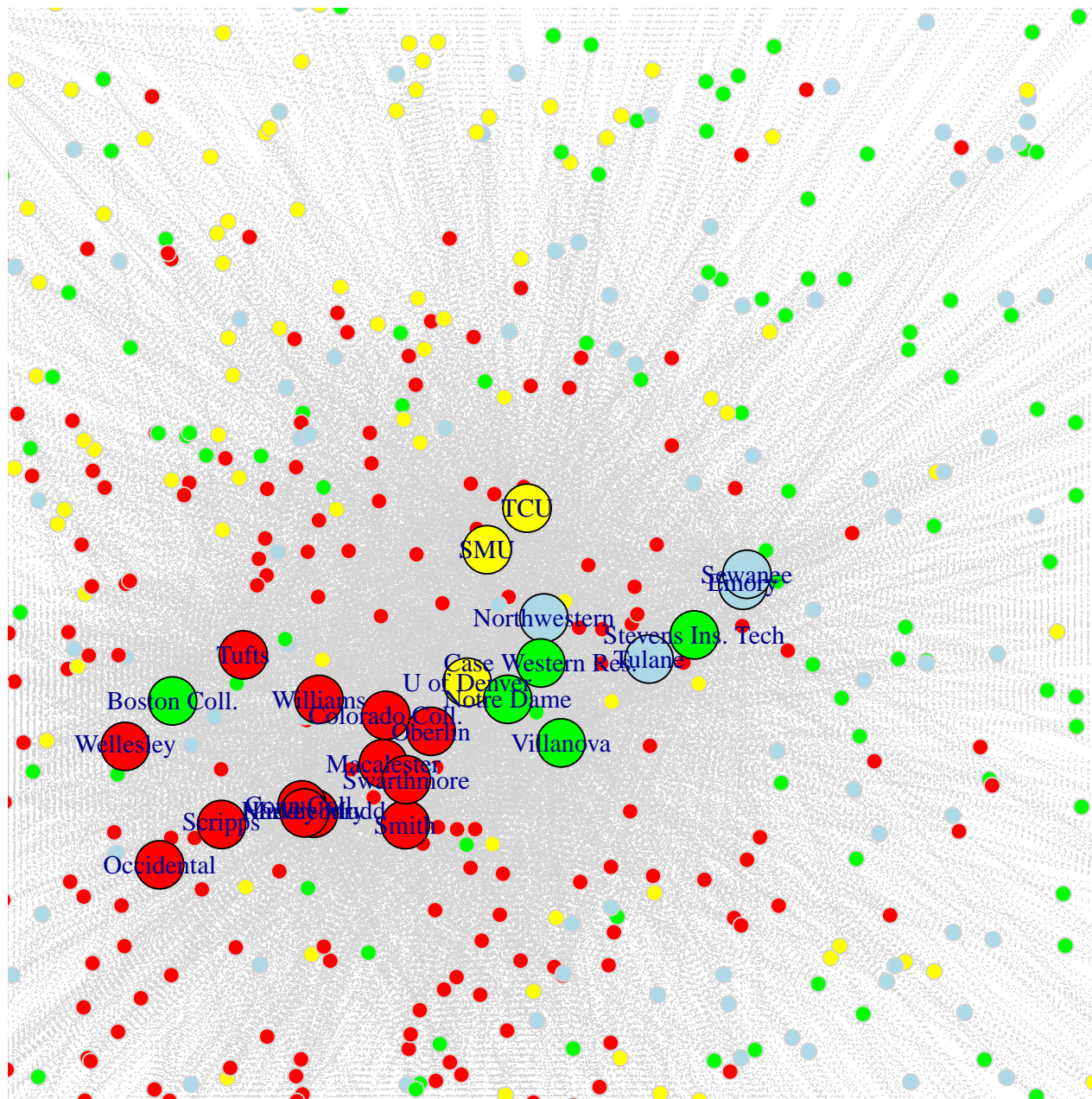
Figure 1: The enrollment funnel

Figure 2: caption of 2 mode graph

Figure 3: caption of 2 mode graph
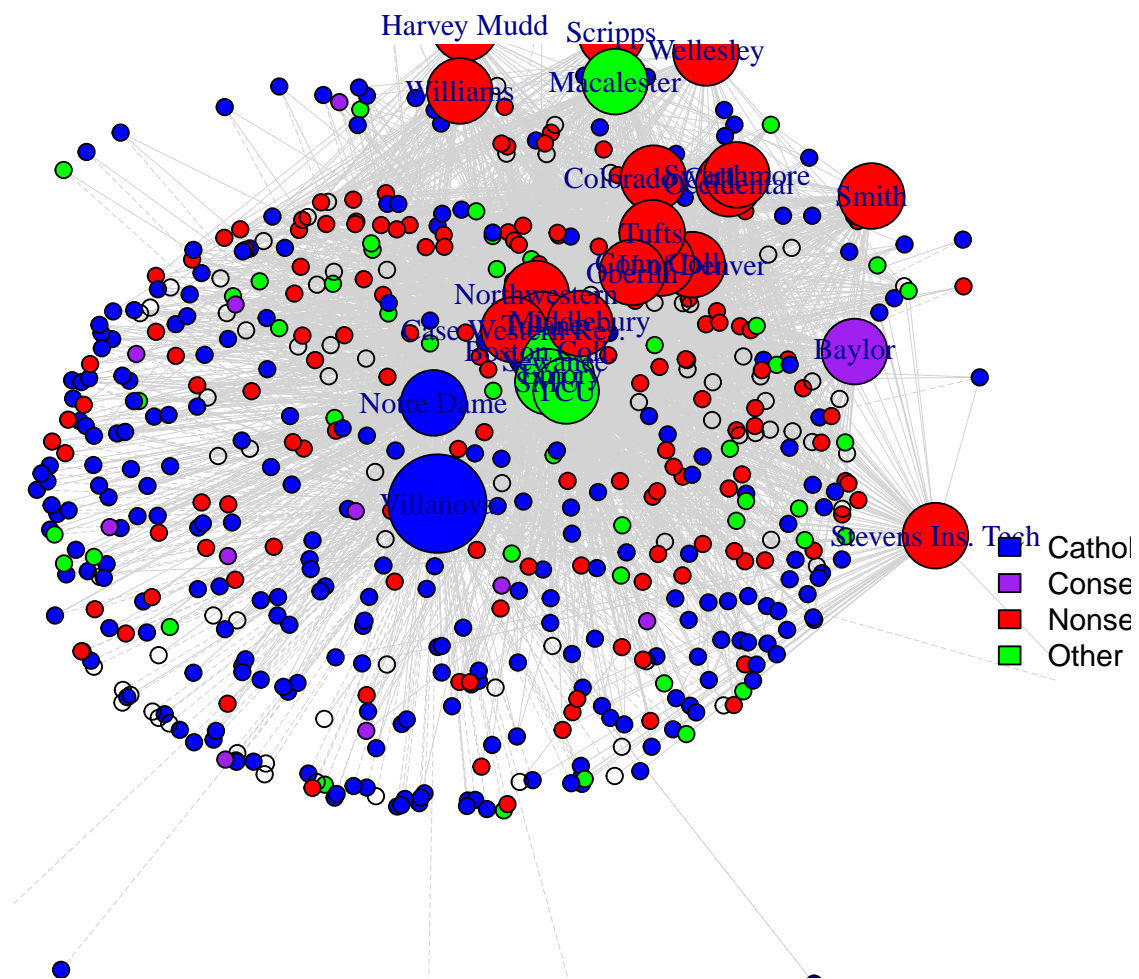
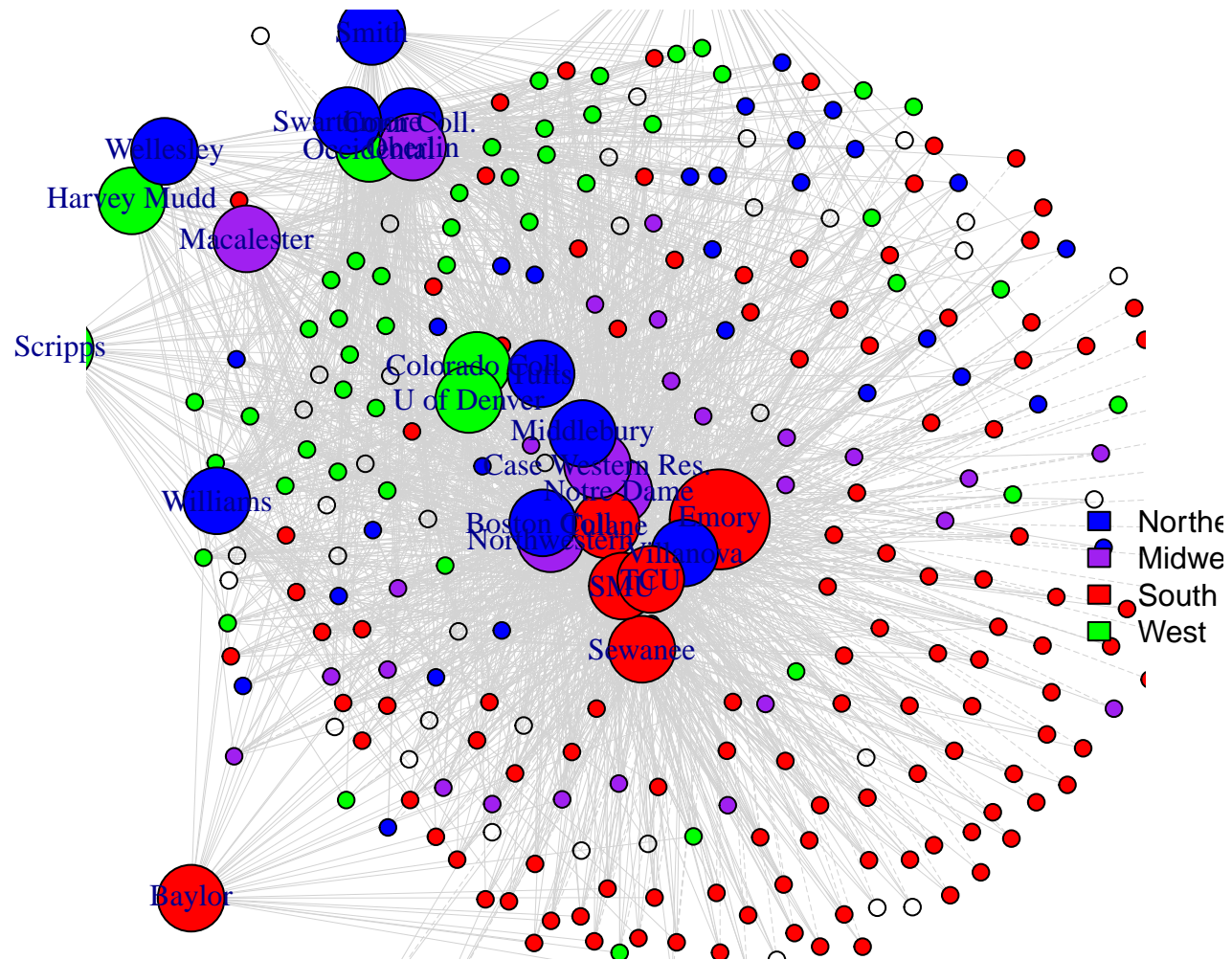Figure 4: Ego network of Villanova University, with religious affiliation

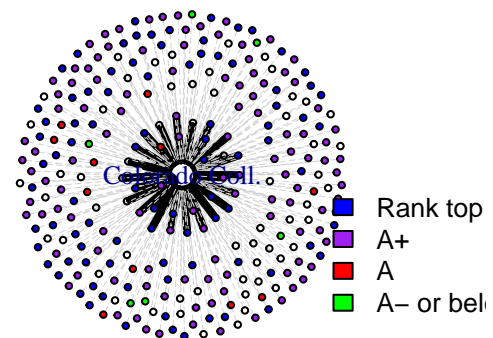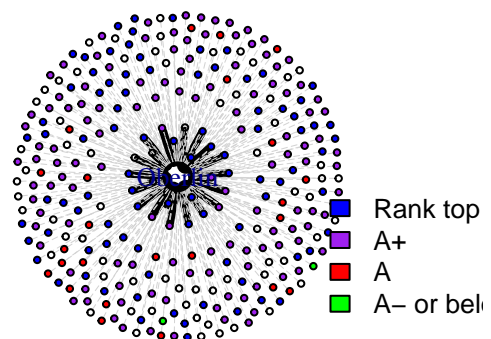Figure 5: Ego network of Emory University, with geographic region

Swarthmore

Rank top
A+
A
A− or bel

Colorado Coll.

Rank top
A+
A
A− or bel

Oberlin

Rank top
A+
A
A− or bel
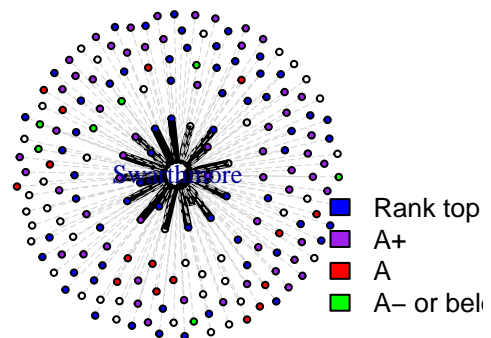
Conn Coll.

Rank top
A+
A
A− or bel
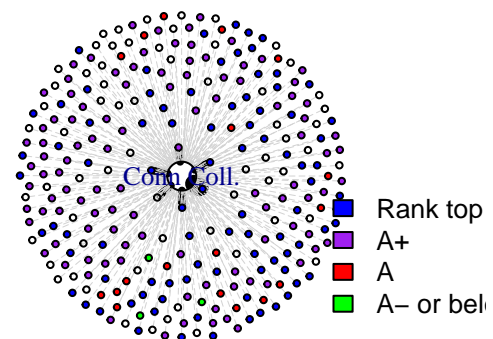
Figure 6: Academic rating of private high schools visited by selected colleges from cluster 1

Smu

Baylor

Tcu

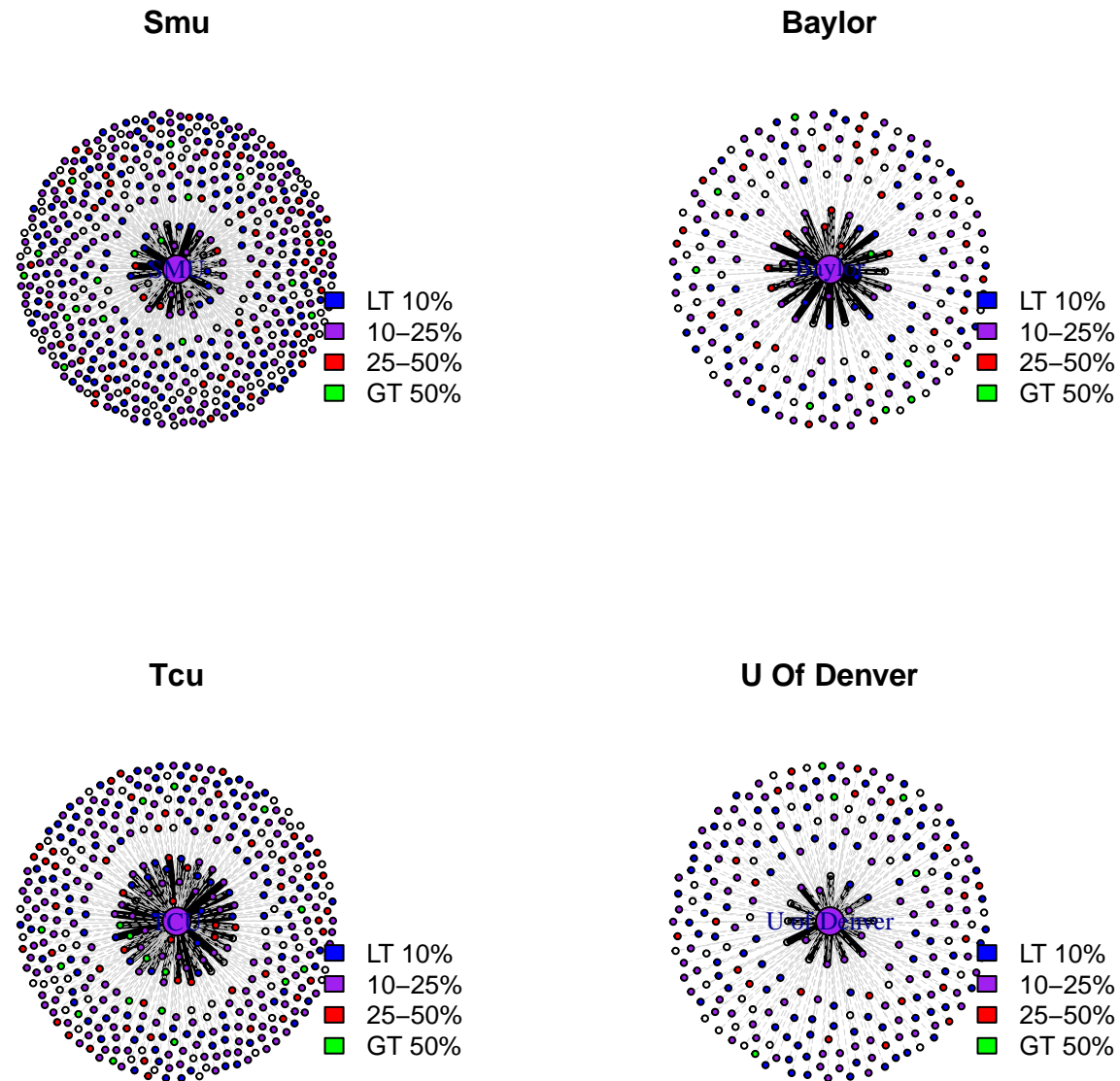**U Of Denver**

LT 10%
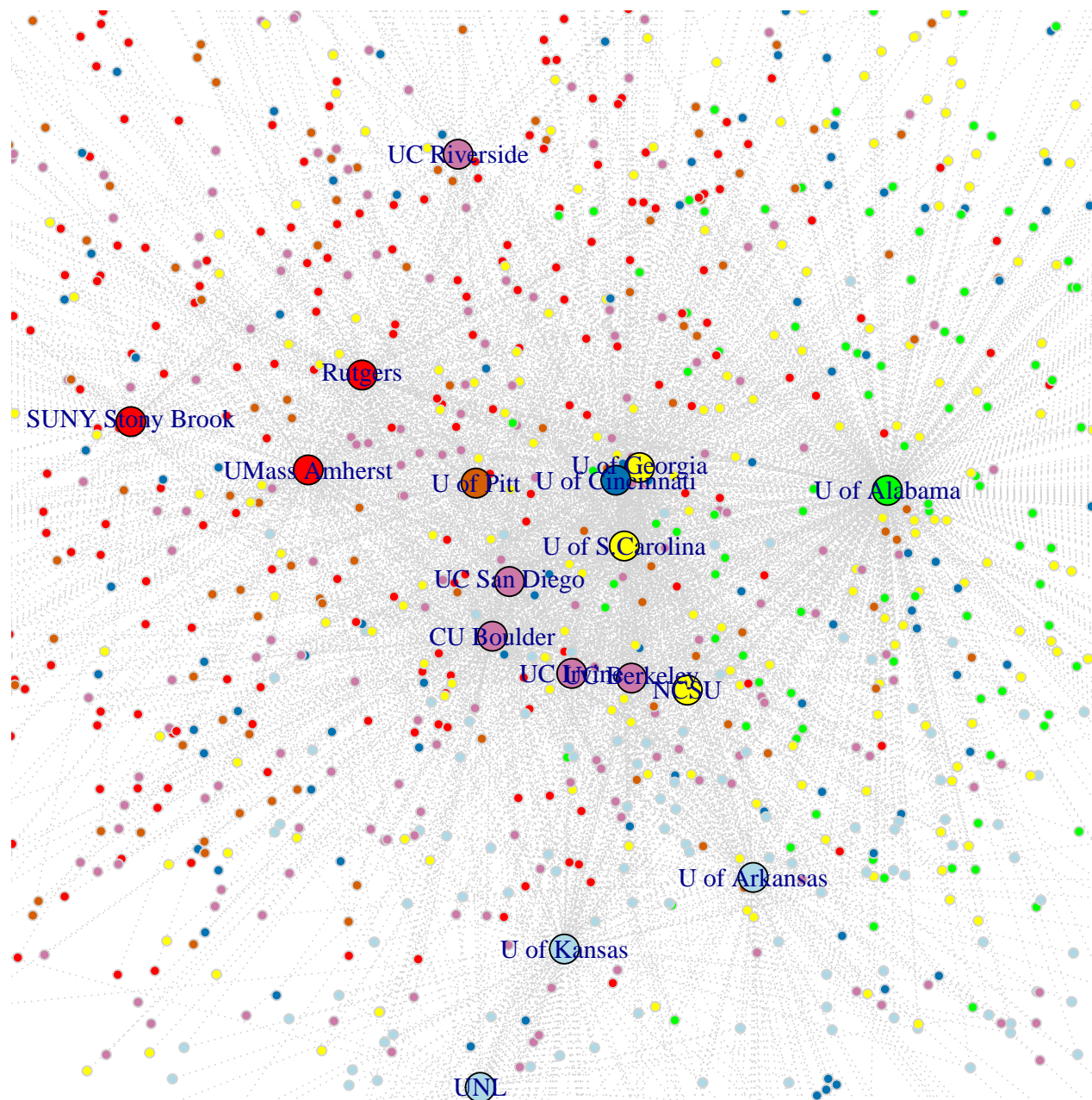10–25%
25–50%
GT 50%

Figure 7: Racial composition of visited private high schools, selected colleges

Figure 8: caption of 2 mode graph

Figure 9: caption of 2 mode graph