True for Your School?

How Changing Reputations Alter Demand for Selective U.S. Colleges

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Abstract There is a comprehensive literature documenting how colleges' tuition, financial aid packages, and academic reputations influence students' application and enrollment decisions. Far less is known about how quality-of-life reputations and peer institutions' reputations affect these decisions. This paper investigates these issues using data from two prominent college guidebook series to measure changes in reputations. We use information published annually by the Princeton Review—the best-selling college guidebook that formally categorizes colleges based on both academic and quality-of-life indicators—and the U.S. News and World Report—the most famous rankings of U.S. undergraduate programs. Our findings suggest that changes in academic and quality-of-life reputations affect the number of applications received by a college and the academic competitiveness and geographic diversity of the ensuing incoming freshman class. Colleges receive fewer applications when peer universities earn high academic ratings. On the other hand, unfavorable quality-of-life ratings for peers are followed by decreases in the college's own application pool and the academic competitiveness of its incoming class. This suggests that potential applicants often begin their search process by shopping for groups of colleges where non-pecuniary benefits may be relatively high.

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"When some loud bragger tries to put me down
And says his school is great,
I tell him right away, now,
What's a-matter buddy,
ain't you heard of my school?
It's number one in the state."

-Beach Boys, *Be True to Your School*

Publicized ratings should influence consumer demand in markets that have at least one of two elements. First, ratings may influence demand when there is asymmetric information whereby consumers possess far less knowledge than suppliers. For example, first-time diners might be unaware of a restaurant's kitchen's typical hygiene standards, and so health inspection report cards can reduce this asymmetric information. Second, ratings may influence demand when consumers would otherwise have trouble processing ample information to determine signals' accuracy and relevance. Concise information can be so influential in some contexts that experimental studies may exploit variation in the availability of concise information to instrument for program participation (e.g., Hastings and Weinstein, 2008).

Several previous empirical studies of ratings and reputations have focused on supply and demand responses to single indicators of the quality of suppliers' services. Researchers have examined the effects of restaurants' display of hygiene quality grades (Jin & Leslie, 2003), mortality rate report cards for hospitals and doctors performing cardiac surgeries (Dranove et. al, 2003), K-12 school accountability grades of A through F (e.g., Figlio & Lucas, 2004), and U.S. News & World Report's rankings of hospitals (Pope, 2009) and colleges (Monks & Ehrenberg, 1999; Griffith & Rask, 2005; Bowman & Bastedo, 2009; Luca & Smith, 2012).

This paper expands on this literature by examining multiple dimensions of reputation and by examining the impact of changes in ratings of both suppliers and their peers. Our market of interest

is selective U.S. colleges[1], and our ratings information comes from two prominent college guidebook series. We use information published annually by the Princeton Review—the best-selling college guidebook that formally categorizes colleges based on both academic and quality-of-life indicators—and the U.S. News and World Report—the most famous rankings of U.S. undergraduate programs.

Each year, hundreds of thousands of college applicants use guidebooks for various stages of the college search process. College guidebooks may influence demand because the market for selective colleges has both cases of asymmetric information and cases of information overflow. Some students (and their parents) have limited information about aspects of particular colleges, especially if they do not know recent attendees. Guidebook information should be particularly influential when other forms of research—e.g., campus visits, discussions with current students or alumnae—are relatively costly. In other cases, students have an abundance of information concerning a specific college but may have difficulty processing this information. Students might not know how to interpret and weight various signals, such as whether higher mean student SAT scores implies more engaging class discussions. College guidebooks thus serve both to inform and to simplify information processing through the use of a limited set of signals. These signals may be influential at multiple stages of the matching process: deciding which colleges to investigate further, deciding where to apply, and deciding which admittance offer to accept.

There is a comprehensive literature documenting how colleges' tuition, financial aid package structure, and academic reputations influence students' application and enrollment decisions.[2] Far less is known about how "quality of life" reputations affect these decisions. By

[1] Throughout this paper, we use the term "colleges" to refer to both universities' undergraduate programs and liberal arts colleges.

[2] For further discussion of these issues, see various chapters in "College Choices: The Economics of Where to Go, When to Go, and How to Pay for It," a National Bureau of Economic Research Conference Report published by the University of Chicago Press in 2004.

examining the importance of quality-of-life reputations, this paper provides complementary evidence to an emerging literature on the importance of non-pecuniary benefits in the market for U.S. postsecondary education. Recent studies document how demand for a college is related to the college's spending on student services (Jacob et al., 2012) and the performance of football and basketball teams (Pope & Pope, 2009, forthcoming).[3] Aside from the pecuniary returns to college, the college experience may be important both for short-term consumption and for long-term investments in additional non-pecuniary benefits (Oreopoulus & Salavanes, 2009). Quality-of-life ratings may provide signals concerning the potential non-pecuniary benefits of attending a particular college.

To investigate the importance of quality-of-life and academic reputations, we use a college-level panel data set containing qualitative information offered by the Princeton Review's *Best Colleges* guidebooks. The guidebooks list various aspects of college life that are allegedly popular or unpopular among students attending each college. To further investigate the importance of academic ratings, we also incorporate the annual rankings in the U.S. News and World Report's *America's Best Colleges* series. Changes in colleges' ratings and rankings over time occur for both idiosyncratic reasons related to the guidebook publishers' methods and for reasons related to broader reputational changes otherwise known to some consumers. Our goal is not to isolate the causal impact of ratings *per se*, but rather to provide evidence on which dimensions of reputation matter for which stages of the college search process. We use a fixed effect methodology similar to Pope's (2009) hospital-level analysis of the impact of rankings.

Our findings suggest that academic ratings and quality-of-life ratings predict both the number of applicants received by a college and the "academic competitiveness" of the ensuing incoming freshman class. Colleges receive more applicants when they make Princeton Review's

[3] See Clotfelter's (2011) comprehensive analysis of how "big-time college sports" are deeply integrated into the operations of many U.S. universities.

Top 20 lists for academics, for happiest students, or for campus beauty; colleges receive fewer applicants when they make the Top 20 list for ugliest campuses or receive a "Students are Not Happy" rating on their individual Princeton Review summary pages. Colleges' incoming freshman classes become more competitive (i.e., higher SAT scores and high school class ranks) in years immediately after the college makes the Top 20 lists for Happiest Students or for Most Beautiful Campuses. Both Princeton Review's academic ratings and the U.S. News and World Report's rankings predict the number of applications and the academic competiveness of the next incoming freshman class; these numerical ratings and rankings are primarily important, however, to the extent that they determine whether colleges are included at all in the lists of top academic colleges.

While our main empirical specification does not necessarily isolate the direct effects of the ratings themselves, additional analyses suggest that the estimates are at least partially influenced by direct effects of ratings. When data are available on both a "top 20" list and the index related to that list, we find that the impact of making the top 20 list remains statistically significant even if the model controls for the related index variable. This suggests a causal effect of the front-of-book advertising associated with the top 20 list.

We also find that close competitors' reputational changes can either enhance or weaken a college's own ability to recruit students. For academic ratings, colleges receive more applications when peer universities earn lower marks. On the other hand, unfavorable quality-of-life ratings for peer colleges are followed by *decreases* in the college's own application pool and the academic competitiveness of its incoming class. This suggests that potential applicants often begin their search process by shopping for groups of colleges where non-pecuniary benefits may be relatively high. While college officials may be concerned with the behavior of their closest competitors, student recruitment is not necessarily hampered by peer institutions' improved reputations.

The next section describes the college guidebook market and content of the Princeton Review and U.S. News and World Report college rating series. The third section describes our data, the fourth section describes our empirical methods, the fifth section discusses our findings, and the final section briefly concludes.

Background on College Guidebooks

The college guidebook business has grown along with its consumer base—a 1998 study estimated that 400,000 high school seniors utilize guidebooks and rankings each year in their search for the best-fit college (McDonough, Antonio, Walpole, Perez, 1998). In addition to the Princeton Review's *Best Colleges* and U.S. News and World Report's *America's Best Colleges* series, other prominent guidebooks include Fiske's *Guide to Colleges* (published for over 25 years), Peterson's *Four-Year Colleges* (published annually since 1970, known as *Peterson's Annual Guide to Undergraduate Study* until 1983), and Barron's *Profiles of American Colleges* (published annually from 1964-1974 and bi-annually from 1980-2010 with additional editions including 1976, 1991, 1997 and 2009). In all, there are over 100 different college guides or rankings that students and parents may choose from (McDonough et al., 1998), dating back to "as early as 1870, [when] annual reports by the United States Bureau of Education rank ordered [graduate] universities based on statistical information" (Meredith, 2004, p.444).

The Princeton Review *Best Colleges* publishers argue that they have filled a void in the college guidebook market. In their Introduction, they state:

> No publication provided college applicants with statistical data from colleges that covered academics, admissions, financial aid, and student demographics along with narrative descriptions of the schools *based on comprehensive surveys of students attending*

> *them*…no one was polling students at these terrific colleges about their experiences on campus—both inside and outside of the classroom. (PR 2008, p.16, emphasis theirs)

By addressing this "very obvious omission in college guide publishing" (PR 2008, p.16), the Princeton Review has set itself apart from its predecessors and competitors. While this is blatant self-promotion, the publishers of the Princeton Review have hit on a key issue present in college ranking systems that rely on mathematical formulas to determine quality. Meredith discusses weaknesses in college rankings, saying "[f]irst, high stakes rankings create more incentive for schools to publish inaccurate or misleading data. Second, academic quality is a difficult concept to quantify" (2004, p.4445). The Princeton Review's student survey includes over 80 questions which aim to cover as many facets as possible of each college. By combining these extensive survey data with facts and statistics, the Princeton Review lends a unique voice to a familiar dialogue. Other guidebooks, such as Fiske's *Guide to Colleges*, also devote great attention to the details of college lifestyle and urge prospective students to consider the goodness-of-fit between themselves and the colleges. The Princeton Review series, however, provides better information for our research study because its guidebooks assign formal ratings for various aspects of colleges and determine these ratings in a rather haphazard fashion.

The Princeton Review's *Best Colleges* series (henceforth abbreviated as PR) began with the 1992 edition and was published annually starting with the 1994 edition. The guidebooks profiled the most selective colleges in the United States, starting with 250 colleges in 1992 and gradually increasing to 366 colleges in 2008. Each edition is intended to be up-to-date for applicants planning to enroll in college in the fall of that year and is therefore published during the summer of the previous calendar year, (e.g., the 2008 edition was published in June of 2007). To prepare these

guidebooks, PR staff survey current college students and obtain administrative data directly from colleges.[4]

The PR's surveys of students are notorious among college administrators for the selection bias issues inherent in the sampling procedures. In the early years of the series, PR staff would go to various spots on campus and recruit students to fill out their questionnaires. The choice of these locations and the voluntary nature of student participation in the surveys could easily make the responses not representative of the overall student population. In some cases, PR staff would even mail the questionnaires to college administrators who could then choose which students to solicit responses. In recent years, the PR contacts college administrators to solicit email addresses of students who might participate in the surveys. This could add an additional layer of selection if colleges strategically choose their lists of potential survey respondents. The unscientific nature of this survey administration should thus lead to year-to-year changes in ratings that are not always reflective of sudden changes in typical student attitudes and perceptions. The PR staff's methods of aggregating these survey results, which they do not publicly disclose, might add further noise to the ratings process. As long as these idiosyncrasies in ratings determinations are unrelated to omitted variables affecting college demand, then these idiosyncrasies will lead the estimates below to more closely reflect the causal impact of ratings changes.

The PR guidebooks publish college ratings in two ways. First, in the front of the books, they present several "top 20" college lists for various categories. Second, in a two-page spread for each individual college, the PR guidebooks list various statistical information and ratings surrounding a narrative that summarizes information about the college. The sidebars on each page of these two-page spreads present statistics and ratings in a standardized format. PR provides

[4] Our comparisons of certain variables that overlap with the National Center for Education Statistics' IPEDS data reveal that the administrative data reported in the PR guidebooks typically correspond with the most recent school year but occasionally correspond with the previous school year.

numerous statistics to assist potential applicants' awareness of the selectivity, resources, and costs associated with the colleges. Admissions statistics include the number of applicants to a college and both the percent accepted and percent attending, SAT and ACT scores, average high school GPA, and the percent of students to graduate in the top 10^{th}, 25^{th} and 50^{th} percentiles of their high schools. SAT and ACT scores are sometimes reported as average scores (1992, 1994-1997), sometimes reported as a range of scores (2007-2008), and sometimes reported as both (1998-2006). GPA reports are generally on a scale of 1-4, but may be on a scale of 100 depending on the scale used by each individual institution. College cost statistics reported in the PR guidebooks include tuition (both in-state and out-of-state where relevant), room and board, and the percentages of both freshmen and all undergraduates receiving financial aid (either need-based or any). Finally, PR includes statistics which describe the institution's student/faculty ratio, the percent of professors who teach undergraduate courses, the percent of courses taught by graduate student teaching assistants, and undergraduate enrollment percentages by race and gender.

The U.S. News and World Report's *America's Best Colleges* was first published in 1983 and has been published annually since 1985. The series publishes two lists of rankings of undergraduate programs, one for universities and one for liberal arts colleges. Some editions also contain other rankings, such as "best value" colleges. Colleges often prominently display favorable rankings from the *U.S. News*, and changes in the order of top ranked universities often draw considerable attention from the media. In recent years, college administrators have decried the arbitrary nature of the *U.S. News* rankings and argued that students and the media should give less credence to the rankings.[5] Some critics argue that the *U.S. News* purposely tweaks their rankings formula to change the ordering from year to year in order to sell more copies (Machung, 1998). Other critics are concerned that colleges engage in undesirable strategic behavior in order to alter their rankings

[5] For some examples of criticism, see Applebome's (1997) article in the New York Times, Strauss's (2007) article in the Washington Post, and Jaschik's (2011) article in Inside Higher Ed.

(Machung, 1998; Monks & Ehrenberg, 1999). While some colleges have gone as far as to refrain from reporting requested information from the *U.S. News* (Strauss, 2007), college administrators may still keep a watchful eye on the ratings for fear that they affect potential enrollees' decisions. In fact, the University of Tennessee recently announced a quest to become a top 25 public research university based on *U.S. News* rankings (Vol Vision Top 25, posted Fall 2010).

Several prior studies examine the impact of *U.S. News* rankings on the higher education market. Monks and Ehrenberg (1999) use data from 30 COFHE (Consortium on Financing Higher Education) colleges to explore responses to *U.S. News* rankings. Using college fixed effect models, they find that worse rankings from the immediate prior year predict higher admit rates, lower yields, lower SAT scores among entering students, and lower net tuition charged. Griffith & Rask (2007) use data from Colgate University's admitted student questionnaire to examine how changes in college's *U.S. News* rankings affect different types of students' enrollment decisions. They find that full-paying students' enrollment decisions were particularly sensitive to the *U.S. News* rankings and were especially sensitive at the top of the ranking distribution. More recently, Luca and Smith (forthcoming) cleverly exploit changes in the *US News*' ranking formulas over time to show that arbitrary changes in rankings affect college applications even controlling for the underlying variables that determine the rankings. Their simulated instrumental variables approach produces even larger coefficients than their OLS models. Bowman and Bastedo (2009) find positive effects of making the top 25 in the US News rankings on colleges' admissions statistics during the following year. The results below are consistent with this finding. This is only part of the story, however, as quality-of-life reputations and peer institutions' rankings also predict changes in college demand.

Data

Our panel data set contains annual college-level data for the class entering in the fall of 1993 through the fall of 2008.[6] In order to examine colleges' longitudinal changes for colleges typically appearing in the Princeton Review guidebooks, we restrict our dataset to observations from the 265 selective colleges that appeared in at least 12 of the 16 Princeton Review guidebook editions published in our sample period.[7] The majority of these colleges (183) were included in all 16 editions of the guidebooks.[8] The resulting data set includes 4,034 college-year observations. Table 1 displays descriptive statistics for the variables used in our analysis, and the remainder of this section describes these variables and their sources.

<<<INSERT TABLE 1 NEAR HERE>>

Guidebook Data

The Princeton Review guidebooks contain front-of-book lists of colleges containing the "top 20" best or worst colleges in a given category. The guidebooks also contain sidebars on each college's 2-page spread; the sidebars include colleges' Academic Ratings[9] (numerical scores from 60 to 100) and descriptors of positive and negative aspects of college life. The descriptors are listed under headings like "Survey Says" or "Hot" and "Not." There are numerous categories for both the top 20 lists and sidebars—far too many to simultaneously test for effects of each one—so

[6] Because the PR *Best Colleges* series began with the 1992 edition and did not include a 1993 edition, we use the 1992 edition to predict outcomes for the class entering in the fall of 1993.

[7] From the sample of all colleges ever discussed in the PR guidebooks, we remove 69 colleges that appeared in fewer than 12 editions, four military institutions, and two colleges that are highly specialized and have small enrollments (Deep Springs College and Eugene Lang College). In additional analyses, we examined whether entry and removal from Princeton Review editions leads to different types of changes in outcomes over time depending on colleges' ratings. Unfortunately, the standard errors of these estimates were too large to allow any meaningful conclusions, so we omit these analyses from this paper.

[8] We make the sample restriction in order to get closer to a balanced panel, yet keep the sample size relatively large. Point estimates using either a balanced panel or the full sample of colleges listed in the PR are fairly similar and available in this paper's online appendix tables.

[9] The Academic Rating is based on "how hard students work at the school and how much they get back for their efforts" (PR 1995 ed., page 7). In particular, "…how many hours students studied, how vigorously they did assigned readings and attended all classes, and the quality of students the school attracts; …the student/teacher ratio, the students' assessments of their professors' abilities and helpfulness, and the students' assessment of the school's administration (in those areas where administrators directly affect the quality of education)." (PR 1995 ed., page 8)

we narrow down the group by focusing on a few major categories. From the sidebars, we focus on the Academic Rating and on the three descriptors which the guidebooks reported in the most consistent fashion across editions: (1) student happiness, (2) campus appearance, and (3) campus location. From the front pages of the Princeton Review guidebooks (PR), we focus on eight top 20 lists: (1) Best Overall Academic Experience for Undergraduates, (2) Happy Students, (3) Least Happy Students, (4) Beautiful Campus, (5) Campus is Tiny, Unsightly, or Both, (6) Party Schools, (7) Stone-Cold Sober Schools, and (8) Jock Schools. We chose the latter three of these lists because they are related to current policy debates concerning binge drinking and the role of big-time college sports. We chose the former five because they match the ratings and descriptors that we use from colleges' individual sidebars. Appendix 1 describes how we standardize the sidebar descriptors from various guidebook editions to create the college quality-of-life variables. Figures 1a and 1b display the resulting frequencies for these variables across our sample period. Figures 2a and 2b show which schools most frequently received positive and negative happiness ratings. As for patterns in the other ratings, California colleges frequently received positive ratings for their campuses, while Northeastern colleges frequently received positive ratings for their locations.

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Colleges' ratings are somewhat persistent from year to year. As shown in Table 1, colleges are roughly three to four times more likely to receive a rating in a given year if they had received that rating during the previous year. For any specific rating, at least one percent of the entire sample typically gains that rating in a given year and at least one percent of the sample loses that rating. This provides ample variation to examine changes over time for the same colleges across the sixteen years in these data. Colleges' ratings can even abruptly change to contradictory ratings. Five colleges initially receiving a negative happiness rating received a positive happiness rating in

the very next edition. Similarly, location ratings flip-flopped (in either direction) in consecutive editions for nine colleges and campus ratings flip-flopped in consecutive editions for ten colleges.

The content of the top 20 lists do not necessarily correspond with the descriptors that the colleges receive in their sidebars. For example, there are numerous cases where a college received a "students are happy" rating in their sidebar but was not listed among the top 20 colleges for happiness, whereas another college was included in the top 20 but did not receive a "students are happy" rating in their sidebar. The correlations between having a sidebar descriptor and making the top 20 list are positive but not so large to prevent us from separately estimating their effects on college demand in the regression models below.[10] These differences may be partly due to sidebar ratings being norm-referenced against a college's own ratings in other categories, whereas the top 20 lists may be based on mean student survey ratings compared across colleges. Many of these discrepancies, however, appear to be due to arbitrary choices by the publisher. For example, the PR guidebooks claim that the Top 20 Best Overall Academic Experience for Undergraduates is based on the colleges' Academic Ratings. Yet 7 percent of colleges in this top 20 list were not actually among the highest 20 Academic Ratings in that edition, and 24 percent of colleges with the highest 20 Academic Ratings (including ties) in that edition did not make the top 20 list. In some cases, the snubs from the top 20 list seem particularly egregious—Yale University received the third highest Academic Rating in both the 2001 and 2002 editions but did not make the top 20 list in either year. Columbia University was omitted from the top 20 list during three consecutive years in which its Academic Rating was higher than at least one college on the list. Our analyses below reveal that

[10] For example, the correlation between making the top 20 list for happy students and receiving a "students are happy" descriptor is .25. Fifty percent of the college-by-year observations making the top 20 list for happy students received a "students are happy" descriptor on their sidebars, while 20 percent of colleges receiving "students are happy" on their sidebars also made the top 20 list for happy students. For the unhappy student descriptor and top 20 list, the correlation is .35 and these percentages are 44 percent and 36 percent respectively. As seen in Tables 2 through 4, most of the results are robust to omitting other types of ratings variables from the regression models.

these arbitrary omissions from top 20 lists can actually influence the number of applications that colleges receive.

Research assistants helped us carefully enter PR guidebook data by hand, and we painstakingly checked for implausible values or values that were suspiciously different than a college's typical values. In one case, we detected a typographical error made by the PR guidebook itself for a college's entire sidebars for one edition: in the 2006 edition, Stanford University's sidebars contained the statistics and ratings of Saint Mary's College due to an apparent inconsistent alphabetical sorting of "St." and "Saint" for Saint Mary's. This publishing error did not have any apparent effect on Stanford's applications that year, though it may have affected Guilford College's applications because Guilford was incorrectly featured as a peer institution on Stanford's guidebook page.[11]

Our research assistants also hand-coded the U.S. News Rankings for the same years as the PR guidebook editions. We include two sets of rankings found in the U.S. News series: "Best Universities" and "Best Liberal Arts Colleges." Schools were only eligible to be on one of the two lists, and the length of these lists varied over time.[12]

3.2 Other data sources

Along with the guidebooks, our other main data source is the National Center for Education Statistics' Integrated Postsecondary Education Data System (IPEDS), which annually reports comprehensive college-level data. Data culled from IPEDS for our project include the number of

[11] Guilford was listed under the "Applicants also Look at and Sometimes Prefer" header in Stanford's sidebar in the 2006 edition, along with Kenyon College and the College of William and Mary. Guilford's applications increased by a striking 36% between 2005 and 2006, and the resulting competitiveness rating for Guilford's admissions increased by 2 points. In contrast, neither Kenyon College nor the College of William and Mary experienced a significant increase in their applications in spite of being listed on Stanford's page in the 2006 edition. The increase in applications at Guilford in 2006 may have been largely due to the delayed effects of Guilford allowing online applications beginning in 2005—Guilford's applications had increased by only 3% between 2004 and 2005.

[12] The ranked list for universities only included 25 colleges until 1996 and 50 colleges until it was expanded in 2004. The list for liberal arts colleges only included 25 colleges until 2000 and 50 colleges until 2004. Making the top 25 or top 50 thus might have different implications during earlier sample years, when failing to make that ranking meant omission from the ranked list.

undergraduate applications received by colleges, full tuition for both in-state and out-of-state students, instructional expenditures per full-time undergraduate student, and expenditures on student services per full-time undergraduate student. Applications are only available in the IPEDS starting in 2001, so we gathered college applications data for earlier years from U.S. News & World Report college guidebooks, Peterson's college guidebooks, and directly from the colleges themselves.[13]

Empirical Models

We estimate college fixed effect models controlling for year effects and time-varying college-level variables. All models adjust the standard errors for clustering at the college level. Our baseline model is:

$$Y_{it} = USNews_{it}\beta_1 + PR\_Top20_{it}\beta_2 + X_{it}\beta_3 + \gamma_i + \lambda_t + e_{it} \quad (1)$$

where *i* indexes schools and *t* indexes year; γ_i captures college fixed effects; λ_t captures year effects; $USNews_{it}$ contains variables based on the *U.S. News*' rankings of universities and liberal arts colleges; PR_Top20_{it} is a vector of PR Top 20 ratings; X_{it} is a vector of time-varying college-level control variables; and e_{it} is an error term. Y_{it} is one of three dependent variables: (i) the natural log of the number of undergraduate applications received by the college, (ii) the resulting academic competitiveness of the next year's incoming freshman class, or (iii) the natural log of the resulting fraction of the freshman class coming to the college from high schools in other states. The second dependent variable (academic competitiveness) is standardized by year and is based on reading and

[13] U.S. News provides application and admissions data for 1995, 1999 and 2000. Peterson's provides application and admissions data for 1992, 1994, 1996, 1997 and 1998. To fill in otherwise missing values, we obtained applications data directly from Auburn University and Rutgers University for 1993 through 2000.

math SAT scores and high school class rank variables.[14] We use factor analysis across these variables to create a single variable, and then we create standardized (Z-scores) values capturing year-specific measures of academic competitiveness. We prefer to use a single measure of academic competiveness to constrain the number of dependent variables that we examine, reducing the chance of spurious statistically significant estimates.[15]

Note that the estimated coefficients of the ratings variables in these models will capture both the causal impact of changes in ratings and the effects of secular changes in reputations that are correlated with changes in ratings. We are most interested in the effects of changes in various aspects of colleges' reputations, regardless of whether these reputational changes are caused by the ratings or simply correlated with the ratings. One can think of these models as difference-in-differences models in which various ratings serve as indicators for whether a college is being "treated" by a strong reputation.[16]

We initially estimate a sparse version of equation 1, in which the X_{it} only contains control variables for whether the college participated in the "common application" and for cost-related variables: in-state and out-of-state tuition and the college's financial aid rating. We then test the robustness of these initial results by estimating the model with additional control variables:

[14] Based on data availability, we use slightly different versions of five SAT and class rank variables across the years. For 1993, 1994, and 1998 through 2005, we use: average SAT scores in math, average SAT scores in reading, and the percent of the incoming class whose grades were in the top 50, 25, and 10 percent of their high school classes. For 2006 and later, we use similar variables except the SAT scores are from the 25th percentile rather than the average score. For 1995 and 1996, we use similar variables except the high school class grade cutoffs are the top 60, 40, and 20 percent. We conduct the factor analysis separately across years with similar data availability. As mentioned in footnote 4, the PR reporting may occasionally refer to data from two year's prior rather than the latest entering class. Unfortunately it is not possible to identify which cases use data from two year's prior. To verify that our main results are not simply due to an endogeneity bias due to delayed reporting, we also found conservative estimates using a dependent variable based on SAT and class rank statistics reported two editions later instead of one edition later. The results of these models remain similar to those reported in column 3 of Table 3 below: statistically significant estimates for making the U.S. News Rank list, for Academic Rating, and for making the top 20 lists for Beautiful Campus or Least Happy Students.

[15] College admissions' offices might change their relative preference for students with better class ranks or SAT scores over time, and these changes might coincide with changes in colleges' reputations.

[16] We also estimated more traditional difference-in-difference models, using a "before-and-after approach," by measuring the impact associated with the first time a college ever moves into a top 20 list. However, due to the lower rates of treatment, the standard errors were far too large to draw meaningful conclusions.

instructional expenditures and student services expenditures, the SAT scores of the prior incoming freshman class, and the prior year's student–faculty ratio. With the addition of these controls, the estimated impact of the ratings reveals the effects of sharp changes in ratings distinct from recent trends in the college's academic resources. The instructional expenditure and student service expenditure variables are similar to those analyzed by Jacob et al. (2012) in their study of how college resources affect demand.

Additional models incorporate the ratings of self-identified peer institutions. We exploit information reported in the PR sidebars concerning which colleges have overlap in their applicant pools.[17] This information is reported directly from the college administrators themselves, and they are free to list any colleges' names without providing any sort of supporting statistics. For each college in our sample, we define groups of its three "peer institutions" as the other colleges in our sample that were most frequently included in the college's applicant pool overlap lists. Our definitions of peer groups are thus static even as the listings change across editions, and our definitions of peer groups are not necessarily reflective—i.e., College X can be a peer institution for College Y even if the converse is not true. We estimate

$$Y_{it} = USNews_{it}\beta_1 + PR\_Top20_{it}\beta_2 + X_{it}\beta_3 + USNews_{it}^{peer}\beta_4 + PR\_Top20_{it}^{peer}\beta_5 + \gamma_i + \lambda_t + e_{it}, \quad (2)$$

where $PR\_Top20_{it}^{peer}$ contains the sum of the rating variables for college *i's* three peer institutions. For ease of interpretation, $USNews_{it}^{peer}$ only contains two variables: the sum of the number of peer institutions placing in either the top 10 or top 11 to 25 colleges for one of the U.S. News rankings.

Results

Own Ratings

[17] The typical headers for these lists are "Applicants often prefer…", "Applicants sometimes prefer…", and "Applicants rarely prefer…"

Table 2 displays our estimation results for versions of model 1 with the log of the number of applications as the dependent variable. The first three rows of Table 2 contain estimates for the U.S. News and World Report rankings: a dummy variable for whether the college received any numerical ranking, a dummy variable for whether the college not only received a numerical ranking but did so in an early edition when only 25 colleges received such rankings, and finally the numerical value of the ranking. We multiply the numerical value of the ranking by negative one, so that a positive coefficient suggests that better rankings increase applications. The second dummy variable accounts for changes in the total size of the ranked lists over time, as making the list might have had different implications in early editions when the list contained fewer colleges.

<<<INSERT TABLE 2 NEAR HERE>>

The results suggest that making the U.S. News rankings list is associated with an increase in applications, particularly when colleges are one of only 25 schools on the list. The actual numerical ranking, however, does not predict the volume of applications. Across the models in the four columns of Table 2, being one of only 25 schools on the list is associated with between a 6 percent and 10 percent increase in applications (the sum of the estimates in the first two rows in column 1 or column 2). In all four specifications, the estimated coefficient on the numerical ranking is statistically significant and very small. For example, the estimate in column 1 suggests only a 0.02% increase in applications after a college's ranking improves by ten places. Making the list, especially a relatively short list, is the strongest predictor of changes in applications.

Several of the PR Top 20 ratings predict large and statistically significant changes in applications. The largest estimated effect in column 1 is a 5.2 percent decrease in applications when a college makes the list of the 20 least desirable campuses. Conversely, there is a 2.3 percent increase in applications when a college makes the Top 20 most beautiful campuses. The other positive quality-of-life list, Happiest Students, is associated with a 2.9 percent increase in

applications. Placement in a Top 20 category of subjective virtue—Party Schools, Stone-cold Sober Schools, and Jock Schools—does not have statistically significant effects on the total number of applications.

Making the PR Top 20 list for Best Overall Academic Experience increases applications by 3.2 percent. This effect remains positive and statistically significant in the model in column 2 when the linear PR Academic Rating measure is also included. This suggests that the front-of-book advertising associated with Top 20 lists do have a causal impact on college demand. In fact, if we further control for whether the college is in the actual highest twenty values for Academic Rating that year, then the coefficient on the front-of-guidebook top 20 Academic Experience Rating is at least as large as before: a .047 estimated coefficient with a .018 standard error. This suggests that the idiosyncratic choices made by PR editors can influence potential college applicants.

The addition of the individual college sidebar ratings to the models in columns 2 and 3 only slightly decreases the estimated effect of the Top 20 placements. The lone statistically significant estimate from the sidebar is the effect of a college receiving a "Students are <u>not</u> happy" rating, which predicts applications decreasing by about 5 percent. When the Top 20 list variables are excluded, the sidebar ratings variables' estimated coefficients remain similar in size and significance (see column 4). The addition of controls for categorical expenditures, prior year student-professor ratio, and prior year freshman class SAT scores in the model in column 3 of Table 2 does not substantially change the estimates. All models in Table 2 also suggest that colleges receive more than 7 percent more applications during years when they accept the "Common Application" that students may easily submit to multiple colleges. This result is very similar to Liu, Ehrenberg, and Mrdjenovic's (2007) finding that colleges' applications increase by between 5.7 and 7 percent when colleges accept the Common Application.

Table 3 presents results from identical models as Table 2, except changes the dependent variable to be the academic competitiveness of the resulting incoming freshman class. Changes in the U.S. News' rankings are associated with statistically significant changes in future academic competitiveness. Across the four models, making the rankings list is associated with between a .30 and .44 standard deviation increase in academic competitiveness. Better rankings are also associated with a positive effects, though the magnitudes are small relative to simply making the list: a 10 rank place improvement is associated with between a 0.04 and 0.08 standard deviation increase in ensuing academic competitiveness. If there is serial correlation of omitted variables used to construct the academic competitiveness index in year *t* and used to determine whether colleges made the U.S. News' rankings in year *t-1*, then these estimates could be biased upward. Comparing the estimates in columns 2 and 3 suggests that this upward bias might be present but small; the estimated effects decrease but do not disappear when the model adds lagged student SAT scores as control variables.

<<<INSERT TABLE 3 NEAR HERE>>

Table 3 suggest that making several of the PR Top 20 lists predicts changes in colleges' competitiveness of the next freshman class. In column 1 of Table 3, there are statistically significant positive effects associated with making the Top 20 list for Best Overall Academic Experience (.065 standard deviation improvement in competitiveness), Happy Students (.122 s.d.), or Beautiful Campus (.051 s.d.), as well as a large negative effect associated with making the Top 20 list for Least Happy Students (-.130 s.d.).

Participation in the common application is not significantly related to academic competitiveness. Students who are marginally induced to apply due to the availability of the common application may not tend to be the types of students who increase the academic competitiveness of the admissions process.

When additional control variables are added, the effects of the Top 20 list for Happy Students and Beautiful Campus remain statistically significant (columns 2 and 3 of Table 3). The Princeton Review's numeric Academic Rating also has a large and statistically effect on the ensuing competitiveness of the next year's freshman class—a one point increase in Academic Rating leads to a .018 standard deviation increase in competitiveness. This implies that a 1 standard deviation change in Academic Rating is followed by a .15 standard deviation change in competitiveness. While marginally significant estimates in column 3 suggest negative changes in academic competitiveness after colleges receive a "Students are happy" or "Student like the campus" rating on their sidebars, these results are not robust to slight changes in the independent variables and may be due to multicollinearity of the ratings variables. In particular, column 4 shows that these estimates become statistically insignificant if one omits the top 20 list variables from the model.

Ratings may also influence other characteristics of incoming freshman classes. The information dissemination aspect of ratings might help colleges reach a broader audience. Favorable ratings may enable a college to attract a more geographically diverse class without sacrificing other desired student characteristics. To test this idea, we next estimate equation 1 with a new dependent variable equal to the natural log of the fraction of a college's first-year students coming from out of state.[18] The average college had more than 24 percent of its first-year students come from out of state.

Table 4 displays the results of these models. Geographic diversity increases after colleges are listed in the U.S. News rankings, and the better the ranking the more diversity increases. Just making the rankings list is associated with about a 10 percent increase in the fraction of out-of-state students, and having a ten place improvement in ranking leads to a more than 1.5 percent increase in the fraction of out-of-state students. As expected, geographic diversity also changes after favorable

[18] Data for the geographic location of applicants is unavailable, so we only examine the geographical diversity of enrolled students.

quality-of-life ratings. The share of out-of-state students increases by about 3.7 percent after colleges make the Top 20 list for happiness ratings and by about 2 percent after colleges make the Top 20 list for beautiful campus. Interestingly, placing in the top 20 party schools predicts a decline in the out-of-state student share of about 8 or 9 percent. This suggests that local high school students might be attracted to a partying reputation, or more distant high school students and their parents might be dissuaded by a partying reputation.

<<<INSERT TABLE 4 NEAR HERE>>>

The models in Tables 2 through 4 have various ratings enter individually, but various ratings could potentially be substitutes or complements with each other in terms of how they influence college demand. Several of the independent variables have fairly high positive correlations with each other, so we next verify that these results are not driven by collinearity issues. In particular, (i) 37.5% of colleges making the Top 20 Happiest list also made the Top 20 Beautiful Campus list that year, (ii) 36.4% of colleges making the Top 20 Least Happy Students list also made the Top 20 Unsightly Campus list that year, and (iii) 39.6% of colleges making a top 25 U.S. News ranking, during years in which this list only included 25 colleges, also made the Princeton Review's Top 20 Academic list. Robustness checks verify that the results are even stronger for models which combine or drop independent variables to reduce multi-collinearity. First, we estimate a models similar to column 3 of Tables 3 through 5 but combining Top 20 list variables to test for effects when colleges made either or both positive quality-of-life lists (Happy, Beautiful) or made either or both negative quality-of-life list (Unhappy, Unsightly). The results suggest that simultaneously making both lists predicts even greater effects than making just one list; these differences are statistically significant for the positive quality-of-life lists but not for the negative quality-of-life

lists.[19] Next, we estimate models that exclude the U.S News ranking variables. As expected, the estimated coefficients of the Top 20 Academic variable are slightly greater with this exclusion but are qualitatively similar to those in column 3 of the tables: .033 (.014 standard error) for applications, .029 (.028 standard error) for academic competitiveness, and .011 (.014 standard error for geographic diversity.

Heterogeneous Responses to Own Ratings

The empirical models above assume that different types of colleges would experience similar effects from ratings changes, but there may actually be important heterogeneity in terms of which colleges are most affected. Testing for heterogeneous effects might provide insights into the mechanisms by which reputations matter most. As discussed earlier, ratings and reputations might be particularly important when gathering additional information is relatively expensive or when there is a higher marginal cost of applying. Alternatively, ratings might be more important when there is such an abundance of information that it is difficult to process. First, to investigate whether the marginal cost of applying matters, we test for heterogeneous effects based on whether colleges participate in the Common Application. The marginal cost of applying should be lower for these colleges, at least in terms of students' time. Second, to investigate whether the cost of visiting colleges matters, we test for heterogeneous effect based on whether colleges typically receive at least 25 percent of their incoming students from states located more than 500 miles away—118 of the 267 sampled colleges fall in this category.[20] Ratings might either be more important when visits are costly or more important when students are already overwhelmed by a lot of information about

[19] For predicting applications, academic competitiveness, and percent out-of-state students, respectively, the p-values for the difference in making both Happy Students and Beautiful Campus Top 20 lists, rather than only one of those lists, are .003, .075, and .006. Similarly, for making both the Unhappy and Unsightly Top 20 lists, the p-values of the differences are .123, .627, and .948. Additional analysis reveals that making both a top 20 list and the related sidebar list (e.g., Top 20 Happy students and "Students are Happy" sidebar) does not have a significantly greater effect than making the Top 20 list alone.

[20] The results for this type of model remain similar, (i.e., continue to fail to show insignificant differences in slopes), if we instead use alternative criteria such as at least 15% of students coming from states more than 1,000 miles away.

nearby colleges. Finally, to investigate whether the cost of gathering information from other people matters, we test for heterogeneous effects based on whether the college is a university offering doctoral degrees or a liberal arts college (and we omit colleges in neither of these categories). Universities will have larger alumnae networks and current student networks, so it might typically be easier to obtain information about them than about liberal arts colleges with smaller enrollments. We divide the sample along each of these and test for differences in slopes, using the same models as in column 3 of Tables 2, 3, and 4.

The results do not suggest strong differential effects in the search process. Table 5 displays these estimates for models with the natural log of applications as the dependent variable (analogous to column 3 of Table 2).

<<<INSERT TABLE 5 NEAR HERE>>

In only four cases in Table 5 are the estimated coefficients statistically significant for a sub-sample and also significantly different from the comparison sample. First, receiving a "Students are Happy" sidebar rating is associated with a more positive effect for colleges that are more geographically diverse. Next, the positive effects of being one of only 25 colleges on a U.S. News ranking list is stronger for colleges accepting the Common Application and for colleges that are less geographically diverse. Finally, the positive effect of making the Top 20 list for academics is limited to colleges accepting the Common Application. These findings are consistent with the idea that positive academic ratings matter more when the marginal cost of applying is relatively low. Given the large number of estimated differences in slopes in Table 5, however, one should not put too much emphasis on these findings. Similar estimates for the models using the other two

dependent variables are omitted here for brevity but available in this paper's online appendix tables. Only a few differences in slopes for those models are statistically significant.[21]

Competitor Ratings

Table 6 displays estimates of equation 2, the model that adds peer institution ratings as additional independent variables. Recall that peer groups are self-disclosed by the college themselves, based on the colleges most frequently cited as having overlapping applicants. The estimated coefficients for colleges' own ratings barely change in this model from their values in Tables 2 through 4; for brevity, Table 6 thus only displays the peer rating variables' coefficients. Given that the independent variables are the sum of the ratings across the peer institutions, one should interpret the magnitude of these coefficients as the estimated effect of one peer institution having a rating change.

<<<INSERT TABLE 6 NEAR HERE>>

Better academic ratings for peer colleges decrease the number of applications that colleges receive. Applications decrease by 2.9 percent after a peer institution makes the PR top 20 list for academics. Applications decrease by 6.3 percent after a peer institution ranks in the top 11 to 25 in the U.S. News rather than a lower ranking or no ranking at all. The academic competitiveness of the following freshman class also declines by more than 0.12 standard deviations after a peer institution cracks that 11 to 25 range. Interestingly, neither applications nor academic competitiveness significantly changes after peer institutions crack the U.S. News top 10 list. It is

[21] For colleges that are more geographically diverse, academic competitiveness is significantly more favorably related to previous U.S. News rankings and yet less favorably related to previously making the PR top 20 list for academics. For liberal arts colleges, but not for Ph.D.-granting universities, accepting the Common Application is followed by a decrease in academic competitiveness. Making the top 20 list for Least Happy Students is followed by larger decreases in academic competitiveness for colleges not accepting the Common Application, while making the Happy Students list is followed by larger increases for colleges that are more geographically diverse, liberal arts colleges, and colleges accepting the Common Application. This is consistent with negative reputation information being relatively influential when the marginal cost of applying is high, and positive information being relatively influential when the cost of applying is low and the cost of visiting the campus is high. Note that these results are far from conclusive given the large number of statistically insignificant differences in estimates across these groups.

possible that there is little crowd-out of applications at this level because students targeting the very most selective colleges—those typically ranked in the top 10 or so—are seeking to diversify the perceived selectivity of the colleges that they apply to. None of the academic ratings are followed by statistically significant changes in the fraction of the freshman class coming from out of state.

Unlike peers' academic reputations, peer institutions' quality-of-life reputations seem to have complementary effects on a college's own recruitment efforts. Applications decrease by 3.4 percent after a peer institution makes the top 20 list for Unsightly, Tiny Campus, and they increase by 1.7 percent after a peer institution makes the top 20 list for Beautiful Campus. Peers making the Unsightly, Tiny Campus list also are associated with a 9.5 percent decline in the academic competitiveness and a 5.2 increase in the percent out-of-state students in the ensuing freshman class. These results are consistent with the idea that potential applicants initially search for groups of colleges with better quality-of-life reputations. Then, with admissions offers in hand, out-of-state students might be especially likely to use quality-of-life rankings to guide their decisions given their higher costs of gathering information through other mechanisms. This interpretation about out-of-state students is highly speculative, however; unlike the first two columns of Table 6, the estimates in the third column are not jointly statistically significant at the .10 level. Overall, the results in Table 6 suggest that competitors' improved academic reputations may diminish demand for a college but competitors' improved quality-of-life reputations may actually increase demand for a college.

Conclusion

This paper's results contribute to the general literature on reputation formation by showing that perceived non-pecuniary benefits affect demand (e.g., happiness ratings matter) and that different dimensions of close competitors' reputations can either increase or decrease demand. Our

analysis reveals three general findings for the U.S. market for selective undergraduate colleges. First, inclusion in selective academic lists (i.e., Princeton Review's Top 20, U.S. News rankings of universities) is followed by an increase in applications, suggesting that front-of-book advertising may be important in the initial phases of the college search process. Second, quality-of-life ratings predict substantial changes in the demand for specific colleges. Negative quality-of-life ratings are especially important for the early stages of the search process (as reflected by changes in the number of applicants), and positive quality-of-life ratings are especially important for the later stages (as reflected by the competitiveness of the resulting freshman class). Finally, peer colleges' *favorable academic* ratings and *unfavorable quality-of-life* ratings both appear to decrease college demand. Quality-of-life ratings may primarily influence how students narrow down their choice set to groups of peer institutions. An implication of these findings for future research is that it may be important to control for quality-of-life factors when examining the impact of college costs and expenditures on application and matriculation decisions.

There are also several potential policy implications from these findings. Colleges may wish to collaborate with peer institutions to entice students to further investigate themselves as a group. Students appear to be responsive to quality-of-life information for sets of colleges—especially if these colleges are geographically distant from the students' high schools. There may be economies of scale associated with colleges' collaborative efforts. Second, colleges' efforts to enhance their reputations as places with happy students and beautiful campuses may attract high school students with stronger academic credentials. Both academic and quality-of-life reputations influence the credentials of the incoming cohorts of students. While colleges' objective functions are not as simple as maximizing the number of applicants or the SAT scores of enrolled students, they should be concerned with the types of students they are attracting.

Colleges may wish to monitor the accuracy and representativeness of information put forth in college guidebooks and websites. Several websites with user-generated content—such as unigo.com—are becoming increasingly popular as ways of reading reviews, watching videos, and viewing pictures posted by current college students. These websites could greatly reduce high school students' search costs, but they will only improve student–college matches if the websites produce more accurate reputation formation.

It may be in the public interest for an independent organization to review the practices of these guidebooks and websites to assess the objectivity of their content. Otherwise, one can imagine financial or other considerations being given to the publisher. Improved match quality between students and colleges could potentially improve social welfare. Better student–college matches could lead to improved student learning and happiness, as well as fewer costly frictions related to students dropping out or transferring between colleges. Social welfare would improve due to higher college completion rates, fewer years lost by transfer students' transitions, happier undergraduates, and better outcomes after graduation day.

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Table 1: Descriptive Statistics

Variable	Mean	SD			Source(s)[i]
DEPENDENT VARIABLES					
Applications (N=4,104)	7,451	7,340			Several
Academic Competitiveness Rating (N=3,521)	.056	1.01			PR
Fraction of Enrolled First-year Students from Out of State	.244	.193			IPEDS
KEY INDEPENDENT VARIABLES OF INTEREST (N=4,104)					
Listed in the U.S. News Rankings	.238	.426			US News
One of Only 25 Schools Listed in the U.S. News Rankings	.053	.224			US News
U.S. News Ranking if present	21.7	10.6			US News
Princeton Review Top 20 Listing for…			Mean Among Colleges Receiving That Rating in Their Prior Edition	Mean Among Colleges Not Receiving That Rating in Their Prior Edition	
Best Overall Academic	.060	.238	.707	.015	PR
Happy Students	.060	.237	.631	.023	PR
Least Happy Students	.062	.241	.697	.019	PR
Beautiful Campus	.068	.251	.693	.021	PR
Unsightly, Tiny Campus	.058	.235	.786	.014	PR
Party Schools	.064	.245	.669	.023	PR
Stone-cold Sober Schools	.052	.222	.755	.011	PR
Jock Schools	.056	.230	.704	.018	PR
Princeton Review Individual College Sidebar					
Academic Rating	83.3	8.2	-	-	PR
"Students are Happy"	.147	.355	.534	.079	PR
"Students are NOT Happy"	.075	.264	.666	.019	PR
"Students like the Location"	.216	.411	.859	.035	PR
"Students DO NOT like the Location"	.136	.343	.759	.026	PR
"Students like the Campus"	.146	.353	.638	.051	PR
"Students DO NOT like the Campus"	.093	.291	.733	.022	PR
Common Application Dummy Variable	53.2%	49.9%	-	-	The Common Application,

Table 1 continued

TUITION/COST CONTROL VARIABLES (N=4,088)			
	Mean	SD	
Full Tuition (equal to out-of-state tuition for public universities), Year 2008 Dollars [ii]	$27,650	$8,706	IPEDS
Full Tuition for In-State Residents (equal to full tuition for private universities), Year 2008 Dollars [ii]	$24,531	$12,692	IPEDS
Financial Aid Rating	81.8	8.6	PR
CATEGORICAL EXPENDITURES PER PUPIL (N=3,902)			
Instructional Expenditures, Year 2008 Dollars [ii]	$20,845	$24,028	IPEDS
Student Services Expenditures, Year 2008 Dollars [ii]	$4,260	$2,862	IPEDS
PRIOR YEAR PERFORMANCE AND RESOURCE VARIABLES (N=3,902)			
PRIOR YEAR AVERAGE MATH SAT SCORE [ii]	603	53	PR
PRIOR YEAR AVERAGE VERBAL SAT SCORE [ii]	591	59	PR
PRIOR YEAR Student–Professor Ratio	12.7	3.5	PR

(i) PR= Princeton Review *Best Colleges* series; IPEDS= National Center for Education Statistics' Integrated Postsecondary Education Data System; Several= U.S. News & World Report for 1995, 1999 and 2000, Peterson's Guide for 1992, 1994, 1996, 1997 and 1998, and IPEDS for 2001 and later.
(ii) Values for these variables are interpolated for some years in which they are otherwise unavailable.

Table 2: Do Recent College Ratings Affect Applications?
Dependent Variable: Natural Log of # of Undergraduate Applications

	(1)		(2)		(3)		(4)	
Listed in the U.S. News Rankings	0.043		0.041		0.010		0.017	
	(.037)		(.037)		(.038)		(.038)	
One of Only 25 Schools Listed in the U.S. News Rankings	0.056	**	0.056	**	0.054	**	0.054	*
	(.027)		(.027)		(.028)		(.028)	
U.S News Ranking (times -1)	0.0002		0.0001		-0.0009		-0.0007	
	(.001)		(.001)		(.001)		(.001)	
Princeton Review Top 20 Listing for…								
Best Overall Academic Experience	0.032	**	0.026	*	0.025	*		
	(.014)		(.014)		(.014)			
Happy Students	0.029	*	0.026	*	0.026	*		
	(.016)		(.016)		(.015)			
Least Happy Students	-0.044	*	-0.034		-0.046			
	(.027)		(.026)		(.028)			
Beautiful Campus	0.023	*	0.022	*	0.021	*		
	(.013)		(.013)		(.012)			
Unsightly, Tiny Campus	-0.052	**	-0.050	**	-0.045	*		
	(.025)		(.023)		(.025)			
Party Schools	0.002		0.002		0.004			
	(.018)		(.018)		(.019)			
Stone-cold Sober Schools	0.016		0.017		0.016			
	(.028)		(.028)		(.028)			
Jock Schools	-0.002		-0.005		0.000			
	(.025)		(.025)		(.025)			
Princeton Review Individual College Sidebar								
Academic Rating			0.002		0.001		0.002	
			(.001)		(.001)		(.001)	
"Students are Happy"			0.006		0.004		0.009	
			(.012)		(.012)		(.012)	
"Students are NOT Happy"			-0.047	**	-0.050	**	-0.058	**
			(.022)		(.023)		(.025)	
"Students like the Location"			0.019		0.020		0.019	
			(.022)		(.022)		(.022)	
"Students DO NOT like the Location"			-0.008		-0.006		-0.005	
			(.018)		(.019)		(.019)	
"Students like the Campus"			-0.010		-0.016		-0.014	
			(.018)		(.018)		(.018)	
"Students DO NOT like the Campus"			-0.006		-0.005		-0.008	
			(.021)		(.021)		(.021)	
Common Application	0.074	***	0.073	***	0.077	***	0.075	***
	(.026)		(.026)		(.027)		(.027)	
School Effects, Year Effects, & Tuition/Cost Control Variables	**X**		**X**		**X**		**X**	
Controls for Categorical Per Student Exp., Prior Freshman Class SAT Scores, & Prior Student-Professor Ratio					**X**		**X**	
N	**4,104**		**4,104**		**3,902**		**3,902**	

Notes: Each column displays the results of separate regression. The models in columns 1 through 4 respectively explain 56.2%, 56.4%, 56.8%, and 56.6% of the *within-college* variation in applications.
*** denotes statistical significance at the .01 level; ** .05 level; * .10 level

Table 3: Do Recent College Ratings Affect the Academic Competitiveness of Entering Students?

Dep. Variable: Z-score for Academic Competitiveness Index of Following Year's Entering Freshman Class

	(1)		(2)		(3)		(4)	
Listed in the U.S. News Rankings	0.440	***	0.414	***	0.327	***	0.295	**
	(.159)		(.149)		(.123)		(.118)	
One of Only 25 Schools Listed in the U.S. News Rankings	0.014		0.038		0.033		0.036	
	(.066)		(.068)		(.076)		(.08)	
U.S News Ranking (times -1)	0.0076	**	0.0068	**	0.0049	*	0.0043	
	(.0035)		(.0032)		(.0029)		(.0028)	
Princeton Review Top 20 Listing for…								
Best Overall Academic Experience	0.065	**	0.004		0.018			
	(.029)		(.031)		(.030)			
Happy Students	0.122	*	0.132	*	0.139	*		
	(.065)		(.068)		(.071)			
Least Happy Students	-0.130	**	-0.099	*	-0.076			
	(.057)		(.055)		(.056)			
Beautiful Campus	0.051	*	0.051	*	0.051	**		
	(.028)		(.026)		(.025)			
Unsightly, Tiny Campus	0.017		0.051		0.060			
	(.053)		(.053)		(.044)			
Party Schools	-0.016		-0.005		-0.008			
	(.037)		(.035)		(.034)			
Stone-cold Sober Schools	0.037		0.015		0.010			
	(.044)		(.046)		(.044)			
Jock Schools	0.018		0.008		0.005			
	(.035)		(.035)		(.034)			
Princeton Review Individual College Sidebar								
Academic Rating			0.018	***	0.018	***	0.018	***
			(.003)		(.002)		(.002)	
"Students are Happy"			-0.035		-0.047	**	-0.029	
			(.023)		(.022)		(.021)	
"Students are NOT Happy"			-0.064		-0.079	**	-0.088	**
			(.039)		(.037)		(.038)	
"Students like the Location"			0.014		0.018		0.023	
			(.034)		(.032)		(.033)	
"Students DO NOT like the Location"			-0.029		-0.030		-0.029	
			(.031)		(.031)		(.033)	
"Students like the Campus"			-0.037		-0.039	*	-0.032	
			(.025)		(.023)		(.022)	
"Students DO NOT like the Campus"			-0.025		-0.005		-0.005	
			(.03)		(.025)		(.024)	
Common Application	0.004		0.002		-0.005		-0.005	
	(.053)		(.052)		(.049)		(.05)	
School Effects, Year Effects, & Tuition/Cost Control Variables	**X**		**X**		**X**		**X**	
Controls for Categorical Per Student Exp., Prior Freshman Class SAT Scores, & Prior Student-Professor Ratio					**X**		**X**	
N	*3,521*		*3,521*		*3,366*		*3,366*	

Notes: Each column displays the results of separate regression. Note that these samples are smaller than those in Table 2 because we do not have data for our dependent variable for the 2008 entering class and for all cases in which the college did not make the PR guidebook during the immediate following year. The models respectively explain 10.1%, 12.2%, 16.5%, and 15.7% of the *within-college* variation in academic competitiveness. *** denotes statistical significance at the .01 level; ** .05 level; * .10 level

Table 4: Do Recent College Ratings Affect the Geographic Diversity of Entering Students?

Dep. Variable: Natural log of the fraction of out-of-state students

	(1)		(2)		(3)		(4)	
Listed in the U.S. News Rankings	0.110	***	0.113	***	0.097	**	0.091	***
	(.039)		(.041)		(.038)		(.034)	
One of Only 25 Schools Listed in the U.S. News Rankings	0.019		0.017		0.015		0.018	
	(.022)		(.021)		(.019)		(.019)	
U.S News Ranking (times -1)	0.0020	**	0.0021	**	0.0016	*	0.0016	*
	(.001)		(.001)		(.0009)		(.0009)	
Princeton Review Top 20 Listing for…								
Best Overall Academic Experience	-0.005		-0.008		-0.005			
	(.012)		(.016)		(.017)			
Happy Students	0.0359	**	0.037	**	0.037	**		
	(.015)		(.014)		(.015)			
Least Happy Students	0.063		0.066		0.066			
	(.04)		(.04)		(.043)			
Beautiful Campus	0.021		0.023	*	0.020	*		
	(.013)		(.013)		(.012)			
Unsightly, Tiny Campus	-0.021		-0.021		-0.009			
	(.047)		(.046)		(.046)			
Party Schools	-0.079	**	-0.081	**	-0.090	**		
	(.035)		(.035)		(.037)			
Stone-cold Sober Schools	-0.060		-0.061		-0.058			
	(.044)		(.044)		(.042)			
Jock Schools	0.029		0.028		0.021			
	(.031)		(.031)		(.031)			
Princeton Review Individual College Sidebar								
Academic Rating			0.001		0.001		0.001	
			(.002)		(.002)		(.002)	
"Students are Happy"			-0.013		-0.014		-0.007	
			(.012)		(.013)		(.013)	
"Students are NOT Happy"			-0.012		-0.007		0.002	
			(.03)		(.031)		(.031)	
"Students like the Location"			0.010		0.010		0.013	
			(.022)		(.023)		(.022)	
"Students DO NOT like the Location"			0.020		0.022		0.016	
			(.02)		(.02)		(.021)	
"Students like the Campus"			0.018		0.018		0.018	
			(.018)		(.017)		(.017)	
"Students DO NOT like the Campus"			-0.005		-0.002		-0.001	
			(.026)		(.027)		(.025)	
Common Application	0.024		0.024		0.033		0.037	
	(.028)		(.027)		(.028)		(.029)	
School Effects, Year Effects, & Tuition/Cost Control Variables	**X**		**X**		**X**		**X**	
Controls for Categorical Per Student Exp., Prior Freshman Class SAT Scores, & Prior Student-Professor Ratio					**X**		**X**	
N	*2,728*		*2,728*		*2,622*		*2,622*	

Notes: Each column displays the results of separate regression. Note that these samples are smaller than those in Table 2 because, prior to the year 2000, the IPEDS only collected data on students' home states during every other sample wave (i.e., only for even-numbered years). The models respectively explain 7.0%, 7.3%, 8.3%, and 7.3% of the *within-college* variation in geographic diversity. *** denotes statistical significance at the .01 level; ** .05 level; * .10 level

Table 5: Testing for Heterogeneous Effects of Ratings on Applications to Colleges

Types of College:	Accepts Common Applicat.?			Geographically Diverse?			Degree Offerings		
	(1) No	(2) Yes	(3) t-stat	(4) More	(5) Less	(6) t-stat	(7) Ph.D-granting	(8) Liberal Arts	(9) t-stat
Listed in the U.S. News Rankings	0.025	-0.031	0.62	0.007	0.070	0.32	0.052	-0.002	0.79
	(.082)	(.038)		(.04)	(.189)		(.053)	(.045)	
One of Only 25 Schools Listed in U.S. News Rankings	-0.035	0.094***	2.00	0.059*	-0.182*	2.37	0.027	0.018	0.17
	(.055)	(.034)		(.033)	(.096)		(.047)	(.031)	
U.S News Ranking (times -1)	-0.0015	-0.0006	0.42	-0.0006	-0.0002	0.09	-0.0002	-0.0014	0.65
	(.0021)	(.001)		(.0011)	(.0043)		(.0013)	(.0014)	
Princeton Review Top 20 Listing for…									
Best Overall Academic Experience	-0.032	0.035**	2.02	0.023	0.054	0.71	0.005	0.016	0.40
	(.03)	(.014)		(.014)	(.041)		(.022)	(.016)	
Happy Students	0.0148	0.0292*	0.44	0.0234	0.0175	0.17	0.023	0.035**	0.39
	(.028)	(.017)		(.019)	(.029)		(.027)	(.017)	
Least Happy Students	-0.052	-0.048	0.09	-0.021	-0.065*	0.81	-0.035	-0.015	0.30
	(.036)	(.032)		(.04)	(.038)		(.032)	(.058)	
Beautiful Campus	0.008	0.040***	1.04	0.019	0.016	0.10	0.014	0.026*	0.39
	(.027)	(.014)		(.014)	(.027)		(.028)	(.015)	
Unsightly, Tiny Campus	-0.018	-0.067	0.89	-0.055	-0.032	0.41	-0.058**	-0.160	1.00
	(.025)	(.049)		(.05)	(.025)		(.026)	(.099)	
Party Schools	0.005	0.024	0.52	0.007	0.013	0.15	-0.012	0.021	0.76
	(.023)	(.028)		(.024)	(.027)		(.021)	(.038)	
Stone-cold Sober Schools	0.034	0.012	0.40	0.026	-0.021	0.50	-0.014	-0.020	0.16
	(.049)	(.024)		(.026)	(.091)		(.031)	(.02)	
Jock Schools	-0.016	0.035	1.04	0.036	-0.026	1.31	-0.015	0.006	0.45
	(.037)	(.032)		(.027)	(.039)		(.032)	(.032)	
Academic Rating	0.001	-0.001	0.55	0.001	0.002	0.43	0.002	0.003	0.44
	(.002)	(.002)		(.002)	(.002)		(.002)	(.003)	
Students are Happy	0.004	0.000	0.17	0.028*	-0.030	2.20	0.004	-0.002	0.26
	(.017)	(.016)		(.015)	(.022)		(.018)	(.015)	
Students are NOT Happy	-0.056*	-0.092***	0.88	-0.070*	-0.048*	0.49	-0.036	-0.079*	0.86
	(.03)	(.029)		(.037)	(.028)		(.029)	(.040)	
Students like the Location"	-0.009	0.049	1.08	0.028	0.005	0.55	0.009	-0.011	0.63
	(.018)	(.051)		(.036)	(.021)		(.02)	(.025)	
Students DON'T like Location	-0.009	0.004	0.26	-0.034	0.035	1.81	-0.060	-0.033*	0.66
	(.045)	(.02)		(.025)	(.029)		(.037)	(.019)	
Students like the Campus	-0.004	-0.025	0.68	-0.012	-0.028	0.47	-0.006	-0.015	0.36
	(.018)	(.025)		(.028)	(.018)		(.02)	(.016)	
Students DON'T like Campus	-0.020	0.012	0.77	0.022	-0.031	1.30	-0.012	0.000	0.24
	(.03)	(.029)		(.03)	(.026)		(.025)	(.044)	
Common Application	-	-		0.106***	0.045	1.14	0.103***	0.077**	0.52
				(.039)	(.037)		(.033)	(.037)	
Sample Size	*1,802*	*2,100*		*2,245*	*1,657*		*1,752*	*1,556*	

Notes to Table 5: The t-statistics presented in columns 3, 6, and 9, are for the test of equality of the estimated coefficients in the two columns immediately preceding those columns. Colleges are categorized as more geographically diverse if at least 25% of their first-year students come from states located at least 500 miles away.
*** denotes statistical significance at the .01 level; ** .05 level; * .10 level

Table 6: Do Peer Institutions' Ratings Affect a College's Own Applications & Incoming Class?

	(1) ln(Applications)	(2) Academic Competitiveness	(3) ln(% Out-of-state students)
Sum of Values for Three Peer Institutions			
Made U.S. News Top 10 Ranking	-0.003	0.150	-0.008
	(0.012)	(0.098)	(0.011)
Made U.S. News Top 11-25 Ranking	-0.063**	-0.026**	-0.005
	(.026)	(.055)	(.017)
Princeton Review Top 20 Listing for…			
Best Overall Academic Experience	-0.029**	0.011	0.006
	(0.014)	(0.020)	(0.007)
Happy Students	-0.004	-0.005	-0.003
	(0.008)	(0.014)	(0.008)
Least Happy Students	-0.003	-0.044	-0.069
	(0.012)	(0.031)	(0.051)
Beautiful Campus	0.017*	-0.018	0.005
	(0.010)	(0.024)	(0.008)
Unsightly, Tiny Campus	-0.034*	-0.095***	0.052*
	(0.019)	(0.037)	(0.028)
Party Schools	0.000	-0.008	-0.002
	(0.011)	(0.021)	(0.010)
Jock Schools	-0.004	0.002	-0.004
	(0.011)	(0.018)	(0.013)
Stone-Cold Sober Schools	-0.002	-0.008	0.023
	(0.021)	(0.051)	(0.021)

Notes to Table 6: Each column displays estimates from a separate regression of the model in equation 2, including the independent variables listed above as well as those used for the model in column 3 of Table 2.
*** denotes statistical significance at the .01 level; ** .05 level; * .10 level

Appendix

Table A.1: Construction of Quality-of-Life Indicator Variables

Our Variable	PR Guidebook Wording	Guidebook Edition
"Students like the Campus"	Beautiful campus	2000-2004,2006
	Hot: Campus is beautiful	1994-2000
	Hot: Campus	1995
	Hot: Campus safe, beautiful	1995
	Hot: Great campus	1995
	Hot: Campus appearance	1992
"Students DO NOT like the Campus"	Unattractive campus	1997-2004,2006
	Not: Campus is ugly	1996
	Not: Campus ugly	1994,1996
	Not: Campus	1995
	Not: Campus appearance	1992
	Not: Campus beauty	1992
"Students are Happy"	Students are happy	1996-2008
	Hot: Overall satisfaction	1994-1995
	Hot: Overall happiness	1992
"Students are NOT Happy"	Students not very happy	2001-2004,2006
	Students are not very happy	1999-2000
	Not: Students are unhappy	1996-1998
	Not: Many unhappy students	1995
	Not: Overall dissatisfaction	1994
	Not: Overall satisfaction	1994
	Not: Overall happiness	1992
"Students like the Location"	Students love the college's city	2000-2008
	Students love college's city	2008
	Students love school's city	2008
	Everyone loves the college's city	2000
	Hot: Location	1992-1999
	Hot: *Name of town (e.g., Cambridge)*	1999
	Hot: Town is fun	1996
	Hot: Suitcase Syndrome	1992
"Students DO NOT like the Location"	Students don't like the college's city	2000-2006,2008
	Not: Location	1992,1994,1997-1999
	Not: *Name of town (e..g, Irvine)*	1998
	Not: Town is boring	1995-1996
	Not: Suitcase Syndrome	1992

Note: The capitalization of PR wording also varies by year.