Geography and Employer Recruiting*

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Abstract

I analyze whether reducing geographic distance to high-wage jobs increases access to those employment opportunities. I collect office locations and campus recruiting strategies for over 70 prestigious banking and consulting firms, from 2000 to 2013. Using an event-study framework, I find firms are twice as likely to recruit at local universities after opening a nearby office, and 6.5 times more likely outside industry clusters. New target campuses outside industry clusters are less academically selective. I complement the analysis with two case studies and firm-level hiring data from two business schools. Hires from local universities also increase after firms increase their local presence, relative to other similar firms. The results suggest the importance of a university's local labor market for post-graduation outcomes.

Does reducing distance to economic opportunity increase access to higher-wage jobs? The relationship between geography and jobs motivates many programs and policies, including place-based policies targeting firms, as well as programs like Moving to Opportunity that target individuals. Underscoring the importance of this relationship, recent work has shown

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dramatic geographic variation in intergenerational mobility across the United States (Chetty et al. 2014).

There are several reasons distance to economic opportunity may affect access to jobs. Migration frictions may prevent individuals from applying to high-quality jobs in more distant, higher-opportunity areas.[1] Manning and Petrongolo (2017) find applicants are less attracted to jobs as distance from their home location increases. Alternatively, employer or applicant search frictions may increase with distance. There are also reasons reducing distance to opportunity may not improve worker outcomes, conditional on worker ability. In particular, reducing geographic distance to economic opportunity may not meaningfully impact workers' networks, and firms may rely on networks for hiring.[2]

I study whether geographic distance to economic opportunity has a causal effect on access to high-wage jobs, by focusing on the geography of college attendance. Using the *Internet Archive: Wayback Machine*, I assemble a new dataset of office locations and campus recruiting strategies for over 70 firms at over 360 universities from 2000-2013. Recruiting on university campuses is a critical hiring mechanism for firms across many industries, yet underexplored in the literature. In a recent survey of 275 firms across many industries, 76.9% conducted on-campus interviews, and 59.4% of full-time entry-level college hires were initially interviewed on campus (National Association of Colleges and Employers 2014).

I analyze the impact of firm-university distance on recruiting strategies, identifying changes when firms open offices in new cities or close existing offices. I focus on prestigious, multi-office, finance and consulting firms. When a firm opens an office in a new city, it faces tradeoffs from recruiting at universities in this new market not among their previous target campuses. Students at these universities have revealed some geographic preference for the city. If migration frictions are important in this market, as suggested by Weinstein

[1] This is related to the spatial mismatch literature, focusing on whether blacks in US cities experience poor labor market outcomes because of distance to jobs for lower-skilled workers in the suburbs (Kain 1968, see Gobillon, Selod, and Zenou 2007 for a review).

[2] See Ioannides and Loury 2004 and Topa 2011 for a review of the literature on networks in labor markets. Burks et al. 2015 show benefits of hiring through referrals.

(forthcoming), recruiting at these local universities will result in fewer offers rejected due to locational preferences.

Although distance between the firm and the local university is reduced, its employees are less likely to share an alumni network with the students, given the lack of a previous recruiting relationship. This may affect applicant screening, since the firm has less university-specific information (e.g. course difficulty). It also may affect productivity on the job if there are complementarities from coworkers sharing an alma mater. This setting enables testing the impact of geographic distance, while arguably holding constant the alumni network of the firm's current employees.

I estimate event-study regressions with firm-university pair fixed effects, identifying changes in recruiting within a firm-university pair when the distance between that pair changes. Importantly, this framework allows me to test for increases in recruiting prior to office openings, which would raise concerns about reverse causality. In addition, I include firm-year and university-year fixed effects to account for unobservable changes in universities or firms that affect recruiting, and are timed with office openings and closings.

I find that when a firm opens an office within 100 miles of a university, it is nearly twice as likely to recruit at the university in the four years following the move relative to the year preceding the move. The recruiting probability remains similarly elevated five or more years after the move. There is no increase in recruiting prior to the move, suggesting new office locations are not driven by recruiting relationships. I show these new target campuses are less academically selective than the firm's other target campuses.

There are nontrivial decreases in recruiting in the four years after firms close local offices, though the standard errors are large and the coefficients are not statistically significant. Five or more years after moving away from the university, the likelihood of recruiting falls to about 25% of the likelihood in the year preceding the move.

The effect of a firm moving closer to a university is especially large for universities in areas with fewer of these firms. For these universities outside industry clusters, firms are six

and a half times more likely to recruit at the university relative to before the move.[3] The effect of closing offices on recruiting at local universities is negative in magnitude only when firms close these offices in industry clusters.

As discussed above, concerns that firms open offices for the purposes of recruiting are mitigated by the absence of effects before the move and including firm-year and university-year fixed effects. I present two additional tests to determine whether the results are explained by this reverse causal mechanism. First, I find large effects on recruiting if firms open an office 50 to 100 miles from the university. If the office were opened for the purpose of recruiting, we would expect the firm-university distance to be quite small and certainly less than 50 miles. Thus, here it is clear that the offices were not opened because of the university. Second, I find little evidence that changes in university characteristics surrounding the move explain the results.

I also show that office openings are not timed with MSA employment growth, or other sample firms opening nearby offices. They are timed with the same firm opening new offices elsewhere, mitigating concerns that office openings reflect local market changes also affecting local universities.

The binary recruiting variable may overestimate firm access if recruiting is symbolic and does not result in hires. To complement the analysis I collect data on undergraduate hires by firm from annual reports of two business schools. I construct a panel dataset with undergraduate hires by firm for over 10 years from University of Michigan Ross School of Business and Ohio State University-Fisher College of Business. Using two case studies, I show whether firms hire more from local universities after increasing local presence. Huron Consulting Group hires an additional five Michigan students after opening a Detroit office, relative to other similar firms and relative to before the office opening. Further, JP Morgan Chase hires an additional 10 Ohio State students after increasing its presence in Columbus,

[3]The important effects at universities outside industry clusters are related to research showing that low-income, high-ability students in geographically isolated areas do not apply to selective universities (Hoxby and Avery 2013). Here we see that reducing geographic distance to high-wage firms increases access.

Ohio, relative to other similar firms and relative to before the increased presence.

The results suggest recruiting strategies are driven either by student migration frictions (real or perceived by firms) or employer search costs increasing in distance. In particular, it appears very costly to incentivize students at firms' original target campuses to work outside industry clusters. These findings imply place-based policies may be effective in improving access to high-wage jobs. Without these policies, geographically mobile students attending university outside these firms' markets must credibly signal their willingness to move. Advances in screening technology may make this increasingly possible.[4] Recruiting strategies based on applicant migration frictions may also imply these firms have market power over their workers, consistent with Manning (2003) and Manning and Petrongolo (2017).

It may be surprising that prestigious high-wage firms hiring highly-educated workers would pursue local recruiting strategies. However, this is consistent with declines in interstate migration for college-educated individuals and those who are 18-24 years old (Molloy, Smith, and Wozniak (2011)).[5] In addition, only 16% of students attend a college or university in a state that did not share a border with their home state, among a large sample from the College Board of college-bound seniors in 1999 who study at a four-year university (Mattern and Wyatt 2009).

Several literatures study the impact of reducing distance to economic opportunity on labor market outcomes. This includes the impact of individuals moving to lower-poverty areas (Chetty, Hendren, and Katz 2015, Kling, Liebman, and Katz 2007, Oreopolous 2003), as well as the impact of policies attracting firms to local jurisdictions (see Neumark and Simpson 2015 for a review). I build on these literatures in several ways.

First, I show geography has a causal impact on access to jobs. Recent evidence suggests

[4]Goldman Sachs announced they were adopting a new screening technology, and would no longer hold first-round on-campus interviews at elite universities. Instead, they require all applicants, regardless of their university, to complete a video interview (Gellman 2016).

[5]While decreased labor market fluidity may instead imply improved worker-firm matching, Molloy et al. (2016) argue this is unlikely to explain overall declines in U.S. labor market fluidity.

the causal effect of childhood neighborhood on later earnings does not operate through this job access mechanism (Chetty and Hendren 2016). The reason for this difference may be driven by the setting and population. For older, college-going adolescents, their university's geographic location (rather than childhood neighborhood) may more likely affect earnings through improving access to jobs, as they will soon be likely to enter the labor market.

Second, I focus on a sample of firms that are often pathways to elite careers. Studying the recruiting strategies of these firms identifies mechanisms enabling mobility into top income quintiles, and the role of universities in this process. Specifically, I show the importance of the university's local labor market in providing access to high-wage firms. This complements recent work showing variation across universities in rates of upward intergenerational mobility (Chetty at al. 2017), and presents a mechanism that may explain the variation.[6] In studying the relationship between university and access to the business elite, the paper also complements Zimmerman (forthcoming), who finds admission into elite university programs in Chile affects attainment of top jobs and incomes.

In addition, recruiting for these prestigious finance and consulting companies is generally thought to be driven by established elite networks (Gellman 2016; Rivera 2011).[7] If reducing distance increases access to jobs in these industries, even for individuals not in these elite networks, it would suggest migration frictions may be especially strong. Testing for changes in recruiting strategies among these firms provides important quantitative evidence about their reliance on elite networks, where previous evidence has largely been qualitative.

Third, the place-based policies literature has focused on the manufacturing and energy industries. Whether reducing distance has an impact on access to jobs may vary substantially with industry. Studying higher-wage services industries is highly relevant for policymakers,

[6]The relationship between universities and local employers is consistent with recent findings that college major and enrollment are affected by local economic conditions (Cascio and Narayan 2015, Charles, Hurst, and Notowidigdo 2015, Weinstein 2017b).

[7]Based on employer interviews and observations of a hiring committee, Rivera (2011) finds elite services sector employers rely heavily on elite universities for recruiting. She also finds geographic proximity could influence which universities were target campuses.

given these industries are important targets for local jurisdictions.[8]

Finally, I use employer-level data on recruiting strategies. This contrasts with the related literature, typically using individual or aggregate employment and earnings data. Observing whether the firm is recruiting in a given applicant pool conveys whether the firm is investing in the possibility of hiring from that pool, an important outcome on its own, and rarely studied in the literature. Using recruiting strategies to study the impact of distance on access to firms provides an additional firm-level perspective to this literature.

Recent work by Oyer and Schaefer (2016) also distinguishes the roles of geography and networks in hiring. Their focus is on the matching between US law firms and law school students, using a very rich and unique dataset of lawyer biographies. Similar to this paper, their finding suggests that even if a firm's partners did not attend the local law school, closer geographic proximity implies the firm is more likely to hire its graduates. I build on their paper by using panel rather than cross-sectional data, and identifying office openings and closings as an additional strategy for testing the causal role of geographic distance.

1 The Campus Recruiting Labor Market

Based on interviews with career services personnel and consulting firm employees (former and current), these firms choose a core set of universities at which to target their recruiting efforts.[9] These efforts include recruiting events at the university throughout the semester, and ultimately first-round interviews. While students at non-target campuses may usually apply through a general procedure open to everyone, obtaining an entry-level job in this way is the exception not the rule.[10] As a result, access to firms is captured well by whether the firm recruits at the student's university.

[8] Reflecting this importance, Prudential Financial and Royal Bank of Scotland each received more than 100 million dollars in state grants from 2007 to 2012 (Story, Fehr, and Watkins 2012).

[9] Weinstein (forthcoming) describes the campus recruiting labor market for undergraduates, specifically for finance and consulting firms. Rivera (2011, 2012) studies hiring processes of professional services firms based on interviews and observation of a hiring committee.

[10] This is based on conversations regarding management consulting recruiting.

2 Data

I collect a rich and unique panel dataset of locations and recruiting strategies using *The Internet Archive: Wayback Machine*. I focus on the 50 most prestigious consulting and banking firms as ranked by Vault in 2007 and 2008, respectively.[11] As described in Weinstein (forthcoming), I identified that firms often list their target campuses for recruiting on their websites. For these ranked firms, I attempted to collect data on recruiting strategies and office locations from their websites in the Fall of each year from 2000 to 2013.[12] I denote whether a firm (f) recruits at a given university (j) in a given year (t) ($Recruit_{fjt}$), for each university in Princeton Review's *The Best 376 Colleges* (2012).[13] Figure 1 gives an example of this data collection process for the consulting firm Bain & Company in 2001.

For each firm/university pair, in each year I calculate the distance between the university and every office location of the firm in that year.[14] I then identify the office location with the shortest distance to the university. I define a move in as an instance in which a firm moves within 100 miles of a university, and a move out as a firm closing its office within 100 miles of a university. I exclude firm/university pairs experiencing both a move in and a move out. In the robustness section, I discuss results using alternative definitions of moves and include pairs experiencing both move ins and move outs. I drop singletons: firm/university pairs only in the sample for one year, and firm/year pairs with only one observation in the sample (after dropping firm/university pairs that are singletons).

[11] I use the 2008 Vault rankings for banking firms, rather than 2007, because the 2007 ranking contained very few firms.

[12] This data collection was done manually for locations of consulting firms and recruiting strategies of banking and consulting firms. For locations of banking firms, we wrote a program to download webpages containing office locations for firms in the sample (using the API of the Wayback Machine to identify which webpages to download). We then read the locations from the downloaded pages.

[13] Several universities are excluded: two without IPEDS data, 13 without test scores, three foreign, and five service academies. I create one observation for the five Claremont Colleges. By focusing only on universities listed in the Princeton Review, I do not capture the universities outside this list where the firm may recruit. Recruiting at these less selective universities may be more likely driven by geographic proximity, which suggests the effects I report are underestimates.

[14] I compute the lengths of the great circle arcs connecting each university and each office location for a given firm, located on the surface of a sphere.

2.1 Employer Recruiting Strategies

The *Wayback Machine*

The *Wayback Machine,* made available by the non-profit organization Internet Archive, is an archive of the internet constructed by automated systems routinely crawling the web.[15] While the archive contains recruiting and location pages for many firms in the sample, not all pages are archived. Either the automated web crawlers were not aware of the site's existence at the time of the crawl, or the site blocked access to automated web crawlers.[16] I code *Recruit* as missing for all of these nonarchived pages. However, the page may not have been archived because it did not exist. This may suggest there was no active recruiting that year.

Appendix Figure A1 shows the number of observations for which the recruiting page was not archived, for reasons other than being blocked or nonworking links. The number of these nonarchived pages increases dramatically from 2008-2011. This suggests that nonarchived pages may be related to the recession, and signify an absence of active recruiting.

In addition to some firms having unarchived or broken location pages, there is some variation within firms across years in the types of locations they report. This variation due to reporting could lead to mistakenly coding office openings and closings. I code location as missing for firm/years in which the reporting of locations appears inconsistent with other years.[17]

Firms in the Sample

The final dataset contains 42 consulting firms and 31 banking firms.[18]

Appendix Table 1 shows the firms in the sample, the years in which each firm is in the sample, and the reason for any missing years. I define a firm to be in the sample if the

[15] The archive began in 1996, and contains 279 billion web pages (Internet Archive 2017).

[16] An error message denotes whether the page blocked automated web crawlers.

[17] Details are available in the data files.

[18] These are the firms remaining after dropping singletons (firm/university pairs only in the sample for one year, and firm/year pairs with only one observation in the sample after dropping firm/university pairs that are singletons).

firm is in the sample for at least one university that year. Firms may not be in the sample if they are missing location information or recruiting information, or if they have not yet been founded or have exited. There are several reasons why for a given firm $Recruit_{fjt}$ may be missing for some universities and not others. These include event dates listed as TBA, and nonworking university-specific links when others were accessible or clearly not attracting firms.[19]

Of the 73 firms, 44 are in the sample for at least half of the 14 sample years. Six of the 42 consulting firms, and four of the 31 banking firms entered or exited during the sample period. $Recruit_{fjt}$ is set to missing for these firms in the years they were not active. I obtain the latitude and longitude of the office locations using the Census Gazetteer place and county subdivision files, merging on the city name and state. For cities that could not be merged, I manually obtained the latitude and longitude. I merge the recruiting data with university-level characteristics from IPEDS, including latitude and longitude.

New office locations may result from mergers or acquisitions. New target campuses timed with these new locations may be the original targets of the acquired or merging firm. However, the decision to keep the target campuses of the acquired/merging firm continues to suggest the importance of distance between the sample firm and the university. When merging or acquiring new businesses, the firms in my sample continue to have a decision about whether to update their target campuses. In particular, they could decide to abandon the recruiting strategies of the firm they acquired/merged with, and instead apply their own recruiting strategies. As a result, even if new target campuses are original targets for acquired/merging firms, keeping these targets suggests a relationship between recruiting and geography.

[19] A separate appendix with coding details, including why $Recruit_{fjt}$ is listed as missing in each case, is available upon request.

Summary Statistics

Of the 73 firms, Table 1 shows 50 experience at least one move in, and 323 of 362 universities experience at least one move in. Approximately 1525 firm/university pairs (about 5.9%) experience move ins. There are 389 cities in the sample that are the closest office to a university, and 37% of these experience at least one move in.

Instances of firms moving out of cities are less common, though still affect 36 firms and 295 universities, or 655 firm/university pairs. Approximately 70 cities experience move outs. Cities experiencing move ins and move outs are distributed across the country, as are universities in the sample (Figure 2). The cities experiencing the greatest number of move ins are Houston, Boston, Chicago, New York, Los Angeles, Dallas, and Atlanta. The cities experiencing the greatest number of move outs are Dallas, Miami, Los Angeles, San Francisco, Cleveland, and Vienna (VA).

Appendix Figures A2 and A3 show that move ins are distributed across years in the sample, though move outs appear more likely after the Great Recession.

3 Empirical Strategy

To measure the effect of move ins, I estimate the following event-study regression:

$$Recruit_{fjt} = \alpha_0 + \alpha_{fj} + \gamma_t + \sum_{k=k_{min}}^{k_{max}} \beta_k I(t = t^* + k) MoveIn_{fj} + \epsilon_{fjt} \quad (1)$$

I estimate the analogous regression for move outs. The variable $Recruit_{fjt}$ is an indicator equal to one if firm f recruits at university j in year t. I include university/firm fixed effects (α_{fj}) which ensures that I identify changes in recruiting within a firm/university pair when the closest office changes for that pair. I also include year fixed effects (γ_t).

The variable $MoveIn_{fj}$ is an indicator for whether firm f moved within 100 miles of university j at t^*, whereas in a previous year it was outside this radius. The variable is zero for firm/university pairs that never experience a move in (either because the firm was always

within 100 miles of the university, or never within 100 miles). When estimating the effect of move outs, I replace $MoveOut$ for $MoveIn$ in (1). The variable $MoveOut_{fj}$ is an indicator for firm f closing its office within 100 miles of university j in t^*. The variable is zero for firm/university pairs that never experience a move out.

Each coefficient β_k measures the change in the probability that firm f recruits at university j in the k^{th} year relative to the move, relative to the year preceding the move. I censor $|t - t^*|$ at five, and to increase power group together $k = -2$ to $k = -4$, and $k = 2$ to $k = 4$. For robustness, I estimate the specification without grouping these years.

The estimates of β when $k < 0$ identify whether there were increases in the probability of recruiting in the years preceding the move in. If these coefficients are small, and insignificant from zero, this provides evidence that recruiting decisions are not driving location decisions. However, for firms closing offices, prior to the move we may expect changes in recruiting if the firm's office is not performing well.

One concern is that firms would have started to recruit at the university even if they had not opened an office within 100 miles. Opening the office could have been timed with an overall increase in recruiting for this specific firm, or with an overall increase in recruiting firms at this specific university. To control for these possibilities, I include firm-year and university-year fixed effects in (1).[20] I estimate the specification with standard errors clustered at the firm level since these are larger than those obtained by clustering at other levels.[21]

I will also show regression results from a similar specification that groups years into short-run (zero through four years after the move) and long-run (five or more years after the move):

$$Recruit_{fjt} = \alpha_0 + \alpha_{fj} + \delta_{ft} + \kappa_{jt} + MoveSR_{fjt} + MoveLR_{fjt} + \epsilon_{fjt} \tag{2}$$

[20] Given the large number of fixed effects this adds to the regression (5,068 university-year categories, 607 firm-year categories, and 25,767 firm-university categories), I estimate this specification on a server, with higher processing and memory capabilities, using the *reghdfe* command in Stata (Correia 2016).

[21] These are larger than standard errors clustered at the firm/university level, the firm level, the university level, the firm/year level, the university/year level, and unclustered but robust to heteroskedasticity.

4 Results

I first show the likelihood a firm recruits at a university in the years preceding and following the office relocation (relative to the year preceding the move).[22] Figure 3 shows the effects for instances of firms moving within 100 miles of a university, and Figure 4 shows instances of move outs. For move ins, Year 0 is the first year the firm has an office within 100 miles of the university (Figure 3). For move outs, Year 0 is the first year the firm is no longer within 100 miles of the university (Figure 4). Results are based on regression (1) including firm-year and university-year fixed effects.

Figure 3 shows firms are .8 percentage points more likely to recruit at a university immediately after moving within 100 miles of the university, relative to the year preceding the move. This effect increases to 1.6 percentage points by the year after the move, and the probability remains similarly elevated in the subsequent years. The mean of the dependent variable is .014 in pre-move in years among firm/university pairs that experience move ins. This suggests that office relocations more than double the probability that a firm recruits at the university relative to before the move. There is no evidence that firms are increasingly likely to recruit at the university preceding the move.

These figures are not based on balanced panels, and so not all firm/university pairs have data in each of the year bins before and after the policy. Appendix Table A2 shows the number of firm/university pairs with the event-study coefficient equal to one. The increase in the probability of recruiting between $t = t^*$ and $t = t^* + 1$ is not simply because of the change in composition of the firm/university pairs with data in $t = t^* + 1$. I estimate the regression including only firm/university pairs with data at least in $t = t^* - 1$, t^*, and $t^* + 1$, as well as the pairs that never experience move ins. This decreases the number of pairs experiencing move ins and as a result the precision, but allows me to see whether there is still a jump between t^* and $t^* + 1$. The coefficient on $t = t^*$ is .003 ($p = .10$), and the

[22] Regression results, as well as the number of firm/university pairs with the event-study coefficient equal to one, are shown in Appendix Table A2.

coefficient on $t = t^* + 1$ is 3.5 times as large with a magnitude of .011 ($p = .06$).

Figure 4 shows firms are .7 percentage points less likely to recruit at a university immediately after moving further than 100 miles from the university, relative to the year before the move. This effect is not statistically significant from zero. The magnitude suggests a similarly lower likelihood of recruiting the year after the move, and the two to four years after the move.

By five years after the move, firms are 2.3 percentage points less likely to be recruiting at the university relative to the year preceding the move, statistically significant at the 10% level. The mean of the dependent variable is .031 in pre-move out years among firm/university pairs that experience move outs. This suggests that when a firm leaves the market, the probability of recruiting falls by about 74%. This effect also does not appear to be driven by differential selection of firms with data five or more years after the move out. I estimate the specification including only firm/university pairs with data in $t = t^* + 5^+$, and there is still a much larger effect five or more years after the move relative to immediately afterwards. There is no evidence that firms are decreasingly likely to recruit at the university preceding the move.

Table 2 shows regression results from specification (2), grouping years into pre-move years, post-move short-run years (0 through 4 years after the move) and post-move long-run years (five or more years following the move).

Firms that open offices in new cities are 1.1 percentage points more likely to recruit at local universities in the four years following the move (Table 2, column 1). Controlling for firm-year and university-year fixed effects, the coefficient falls to 1 percentage point (column 2) and is statistically significant at the 1% level. The likelihood of recruiting remains similarly elevated five or more years after the move (an increase of 1.2 percentage points).

Firms that move out of cities are .8 percentage point less likely to recruit at local universities in the four years following the move. After controlling for firm-year and university-year fixed effects, the coefficient falls to .5 percentage points and is not statistically significant.

Again, we see that five or more years after moving away from the university, the likelihood of recruiting falls 2.3 percentage points relative to before the move (significant at the 10% level).

Appendix Table A1 shows there are no statistically significant differences in the results for finance firms compared to consulting firms. However, the magnitude of the short-run effect of office openings is much larger for consulting than for finance firms. Further, the short-run effect of a move out is statistically significantly negative for consulting firms. There are also no statistically significant differences when estimating the specification separately for the highest ten ranked banking and consulting firms in the sample, and separately for the less prestigious firms. The magnitude of the effects of moving within 100 miles are smaller for the more prestigious firms (short-run effects of .006 versus .011), and not statistically significant, although the differences are also not statistically significant.[23]

Differential Effects for Universities Outside Industry Clusters

The effect of a firm moving within 100 miles is much larger in magnitude for universities that are in areas with fewer of these firms (maximum offices within 100 miles over the course of the sample is five or fewer) (Table 2, columns 3 and 4).[24] For these universities, there is a 2.6 percentage point increase in the probability of attracting a recruiting firm in the first four years of it moving within 100 miles, relative to before the move. The effect is largest the year after the move, increasing the likelihood of recruiting by 3.3 percentage points (Appendix Table A2). The mean of the dependent variable is .006 in pre-move in years, among firm/university pairs experiencing move ins, and in areas with maximum offices over

[23]Including the highest ten ranked firms implies I include ranks worse than 10 because of firms with missing data. For the consulting firms, the tenth ranked firm in the sample is the 12th ranked firm in the Vault rankings. For the banking firms, the tenth ranked firm in the sample is the 19th ranked firm in the Vault rankings. Limiting the regressions to the top ten ranked firms by Vault significantly reduces the sample, but similarly yields no statistically significant differences in the effects of move ins for high and low ranked firms. Less prestigious firms are significantly more likely to stop recruiting after move outs (and the probability of recruiting increases for very prestigious firms after move outs). One firm, Booz & Company, is not included in the sample because it spun off one of the original Vault-listed firms.

[24]Appendix Table A3 lists the cities attracting firms, for which universities are outside industry clusters but within 100 miles of an MSA with employment of at least 500,000 in 2007.

the sample five or fewer. This implies firms are 6.5 times more likely to recruit at these universities relative to before the move.

The short-run effect is 1.8 percentage points smaller for universities within industry clusters, though the difference is not statistically significant. The long-run effects are similar to the short-run effects. Firms may have existing target campuses in industry clusters, even before having an office in the area. This may explain why they are less likely to start recruiting at local universities when opening offices in these areas. It is difficult to test whether effects are smaller outside industry clusters if the firm already had a target campus in the market, since this is only true for three firm/university pairs. Further, for over 90% of the firm/university pairs in industry clusters experiencing move ins, the firm did not have target campuses in the market before the move.[25]

Interestingly, there is no negative effect of a firm moving out among universities outside industry clusters (Table 2, panel B, columns 3 and 4), and the short-run coefficient is positive and significant at the 10% level. The short- and long-run effect is significantly more negative for universities within industry clusters. While the firm may have moved further than 100 miles from the university, it may still be in the same region, and outside industry clusters there may be fewer other choices for target campuses. Of the instances of moving away from a university outside an industry cluster, only approximately 23% of these locations were on the East Coast. Of the instances of moving away from a university within an industry cluster, approximately 48% of these locations were on the East Coast. The East Coast has a greater number of selective universities than other regions in the US (Figure 2), and so when firms move out of other regions the closest candidate target university may still be their original target.

Figure 5a shows the universities that began attracting a recruiting firm within five years of the firm moving within 100 miles, but had not attracted this firm in their most recent observation preceding the move. These universities are distributed across the country, with

[25]See appendix for details, and regressions analyzing heterogeneous effects of moves by the number of existing target campuses.

many in areas that are not finance/consulting industry clusters. This suggests students in these areas may lack access because of geographic frictions. Comparing this map to Figure 2 shows there are still many universities in areas receiving new firms which do not attract these firms following the move in. This is consistent with the low baseline probability of attracting a recruiting firm, and the prestigious nature of these particular firms. Figure 5b shows very few universities lose recruiting firms after a move out.

Selectivity of New Target Campuses After Move Ins

The analysis above shows that firms are willing to hire outside their traditional networks when opening offices in new cities. This suggests the role of migration frictions (real or perceived by firms) and/or search costs increasing with distance. Analyzing the selectivity of the new campuses at which firms recruit is one way of quantifying the importance of these mechanisms. If there is a very selective university in the new market, then adding this university to their list of target campuses may not be so costly for the firm. However, recruiting at a local university in the new market that is less selective than its other targets may be costly for the firm, for example by requiring more screening. Recruiting at this less selective, local university would be justified if there is a greater cost of incentivizing students from its existing target campuses to work in the new city.

I find strong evidence that new target campuses associated with move ins are less selective than new target campuses not associated with move ins. For each firm/university pair with a recruiting relationship, I compare the proportion of students scoring above 700 on the math SAT or 30 on the math ACT at this university to the other universities at which the firm recruits in that year ($p_{jt} - \bar{p}_{ft}$).[26] I estimate the following regression, with one observation per firm/university pair in the year the recruiting relationship begins:

$$p_{jt} - \bar{p}_{ft} = \alpha_0 + \beta_1 Post_{fj} + \beta_2 Post_{fj} * TotOffices_j + \gamma_f + \delta_j + \rho_t + \epsilon_{fjt}$$

[26] See appendix for calculation of p.

The variable $Post_{fj}$ indicates whether firm f began recruiting at university j after moving within 100 miles of university j. The variable $TotOffices$ denotes the maximum number of firm offices (of the firms in my sample) within 100 miles of university j, out of all the sample years. The coefficient β_1 measures whether new target campuses after move ins (not surrounded by any offices) are less selective relative to the firm's other target campuses, compared to new target campuses the firm selected before move ins, or the firm's new target campuses that are always further than 100 miles from the university.[27] The coefficient β_2 indicates how this effect differs for new target campuses in areas with more firm offices. Including firm fixed effects allows me to compare new target campuses for the same firm.

I estimate $\hat{\beta}_1 = -.029$, with a p-value of .11. The coefficient $\hat{\beta}_2$ is positive (.001), though not statistically significant from zero. When a firm opens a new office, and selects a new target campus in the local market, the proportion of high-scoring students is 2.9 percentage points lower than the average at the firm's other target campuses, relative to new target campuses chosen before move ins, or new targets that are always further than 100 miles from the firm. The average of $\bar{p}_{ft}$ in the sample is .42, and so this effect implies the proportion of high-scoring students at these new targets is approximately 7% lower than the average at the firm's other target campuses (.2 standard deviations).

The results suggest firms are willing to recruit outside their traditional networks when opening offices in new cities. Further, they are willing to recruit at less selective universities than their typical target campus when opening offices in areas with fewer of these firms. This suggests it may be quite costly to incentivize students at their original target universities to relocate to cities outside industry clusters.

[27] I exclude new target campuses that are always within 100 miles of a firm since these may be chosen based on local geography as well. I analyze only new target campuses, excluding target campuses that existed the first year the firm is in the sample.

Are Local Workers More Productive?

Hiring from local universities may instead reflect that local students are more productive, rather than reflecting search or migration frictions. This may also explain why firms are willing to recruit from less selective universities. Local students may have more knowledge of the local economy, or be better acquainted with local business culture. I test this hypothesis using differences in typical travel across consulting firms. For some consulting firms, entry-level consultants are away from their home office Monday through Thursday every week, suggesting that local knowledge and local culture may be less important. Additionally, some firms implement global staffing, in which a consultant whose home office is Boise, Idaho is equally likely to work on a case in South Dakota, Boston, or London relative to a consultant based in one of those offices.

If firms requiring extensive travel still recruit at local universities after office openings, the importance of the student's local knowledge is unlikely the explanation. Employer search frictions, or student migration frictions are more consistent explanations. Even with extensive travel, employees return to their home office on Fridays and so firms need to find students interested in having a base in their new city.

I collect information on travel norms for each of the consulting firms in the sample, based on the careers section of the firm's website, the description of the company on Vault.com, and occasionally using the Wayback Machine for firms that are no longer in business.[28] I denote a firm as not requiring extensive travel if they employ a local staffing policy, or the employees generally do not travel. I denote a firm as requiring extensive travel if they employ a global staffing policy, or employees generally travel frequently.

Of the 42 consulting firms in the sample, 17 are coded as requiring extensive travel.[29] I estimate the principal regressions limiting the sample only to firms with extensive travel, and

[28] Appendix Table A4 lists the firms with extensive travel, and those without extensive travel. The particular texts I use to determine these designations are available upon request.

[29] One firm (Giuliani Partners) has very little information about careers and description of work assignments, and so I code the travel variable as missing.

then separately for firms with less travel. Even among firms with extensive travel, opening an office within 100 miles of a university significantly increases the likelihood they will recruit at that university (Appendix Table A1).

4.1 Robustness

Alternative Definitions of Move Ins and Move Outs

For robustness, I estimate an alternative specification including a quadratic in distance, rather than identifying a move as moving within or outside of 100 miles. Specifically, I estimate:

$$Recruit_{fjt} = \alpha_{fj} + \delta_{ft} + \kappa_{jt} + \beta_1 Distance_{fjt} + \beta_2 Distance^2{}_{fjt} + \epsilon_{fjt} \quad (3)$$

I again present standard errors clustered at the firm level.

Appendix Table A7 shows that within a firm/university pair, decreasing the distance between the firm and university has a positive effect on recruiting. I evaluate the coefficients for decreases in distance at the 75th and 90th percentile of distance decreases (approximately 330 and 610 miles respectively), for firm/university pairs that are approximately 75 miles apart after the move (approximately the 25th percentile of firm/university distance among pairs experiencing the firm moving closer to the university).

If a firm moves 330 miles closer to the university, to a distance of 75 miles, the firm is approximately .6 percentage points more likely to recruit at the university. If a firm moves 610 miles closer to the university, to a distance of 75 miles, the firm is approximately 1.2 percentage points more likely to recruit at the university. This effect is similar to the effect when defining a move in as moving within 100 miles.

Appendix Table A1, column 2, shows results when defining move ins as instances when firms move within 50 miles of a university, and move outs as instances of firms moving outside of a 50 mile radius. The results are similar to the principal results, though as expected the

magnitudes are generally larger.[30]

Appendix Table A1, column 1 extends the sample to include firm/university pairs that experience a move in followed by a move out, but only observations before the eventual move out. Similarly, I include pairs experiencing a move out followed by moving back in, but only observations before the eventual return to the area. The results are similar, with only slightly smaller magnitudes and sample sizes that are larger by about three to four thousand.

Do Firms Open Offices Based on Recruiting?

One threat to identification is that firms are opening offices in particular locations for the purposes of recruiting. In this case, there would be no causal effect of distance to university on recruiting. Greiner and Malernee (2010) note that management consulting firms typically open new office locations when clients ask to be served in new ways. Office locations are driven by the clients, not by recruiting.

However, I present two tests of whether the results might be driven by this reverse causal mechanism. First, I restrict the sample to instances of offices opening 50 to 100 miles from the university. Given the offices were not opened immediately next to the university, it is clear they were not opened for the purpose of recruiting from the university. If the purpose were to recruit from the university, the firm would have opened an office much closer. There are still large effects of opening a local office on recruiting when restricting to this sample, suggesting the results are not driven by endogeneity in office openings.

As a second test, I analyze whether office openings are explained by university changes. The principal results control for university-year fixed effects, which will capture any changes in university characteristics over time. This is important for ensuring that changes in university characteristics are not driving office openings/closings. I also formally test whether university characteristics are correlated with timing of office openings or closings. I estimate regression (2), excluding university-year fixed effects, with university characteristics as

[30]Appendix Table A5 shows results from estimating specification (1), but also including university-year fixed effects and firm-year fixed effects.

dependent variables.[31]

Table 3 shows that universities become slightly more selective at the same time firms move in, however, the effects are quite small. For example, when a firm opens an office in a city, the proportion of high scoring students increases by .4 percentage points. This is approximately one tenth of a standard deviation of the annual change in this variable within target campuses, among firm/university pairs that are always within 100 miles and never experience a move in or move out. Controlling for these university characteristics in regression (2), without university-year fixed effects, also has little effect on the results (Appendix Table A6, columns 3 and 4).[32]

Changes in Cities Correlated with Moves

Cities attracting new offices may be experiencing overall changes in desirability or business climate. This could affect office location decisions, but also student composition at local universities. The previous section showed little change in observable university characteristics surrounding moves, and controlling for university-year fixed effects will capture unobservable changes. However, it is still informative to test for overall changes in cities attracting new firms.

I address why firms open offices in particular cities in several ways. First, I test whether office openings are correlated with total employment changes in the university's MSA. I estimate regression (2), without university-year fixed effects, with natural log of employment in the university's MSA as the dependent variable.[33] There is no evidence that moving within 100 miles of a university is timed with total employment changes in that university's MSA

[31]The dependent variables are constant within university-year cells.

[32]Because the measure of university selectivity is only available starting in 2004, I exclude years prior to 2004. As this is a significant sample restriction, I compare results including university characteristics to results excluding these characteristics, but on the same sample.

[33]Since every observation for a given university in a given year will have the same value of MSA employment, university-year fixed effects are excluded. I obtain MSA employment from the BLS Local Area Unemployment Statistics. These specifications exclude universities which are not in an MSA. However, there are only eight universities in the sample that are not in MSAs but experience a move in or move out. See online appendix for more details regarding matching of universities to local employment.

(Table 4, columns 1 and 2). This mitigates concerns that universities experiencing move ins are also experiencing other changes due to overall regional growth.

Second, I test whether move ins are timed with other sample firms opening offices in the same area. Specifically, for each firm/university pair I calculate the total number of other firms opening an office within 100 miles of the university in each year. I estimate regression (2) without university-year fixed effects, with this as a dependent variable.[34] There is no evidence that firms are opening offices in areas that are attracting other finance and consulting offices around the same time (Table 4, columns 3 and 4). Using analogous variables, I also find no evidence that firms are closing offices in areas also losing other firms' offices around the same time (column 6).

Third, I test whether the decision of a firm to open an office in a particular city is timed with its own expansionary trajectory. For each firm/university pair, I calculate the number of other cities into which the firm moves in each year (putting it within 100 miles of at least one university). For firm/university pairs in years without move ins, this equals total cities into which the firm moves that year. For firm/university pairs in years with move ins, this equals total cities into which the firm moves minus one. I estimate regression (2) without firm-year fixed effects, with this as a dependent variable.[35] I find strong evidence that office openings are timed with the firm opening offices in other cities (Table 4, columns 7 and 8). In the first four years after a firm moves within 100 miles of a university, the firm is on average opening 1 additional office location. In the year a firm moves away from a university, it is not opening additional offices elsewhere.

Together, this evidence suggests that firms open offices in new cities for reasons idiosyncratic to the firm (a firm's idiosyncratic growth and firm-city match quality), rather than because the city is becoming dramatically more attractive in the year before the move in.

[34] Within university-year variation in the dependent variable only exists if the firm has moved within 100 miles of the university, in which case the variable will be smaller by one. This is not the variation I am looking to exploit in these regressions. Instead, I want to compare number of other firms opening local offices before and after move ins, across university-year cells.

[35] I exclude firm-year fixed effects since the only variation within firm-year is if the firm moves within 100 miles of a university, in which case the dependent variable will be smaller by one.

This mitigates concerns that there are significant changes in universities because of overall regional growth, which could explain office location decisions.

5 Effect of Geography on Hires

Using a binary variable denoting whether a firm recruits at a university may not truly capture access to the firm. The recruiting variable could underestimate or overestimate the true change in access. If firms recruit at local universities as a symbolic gesture, with no intention of hiring from the university, then using the recruiting variable will lead to an overestimate. If firms recruited at a university before the move, and then increase recruiting intensity after the move, the binary recruiting variable will suggest no change in access and will underestimate the true impact. I complement the main analysis by looking at the effect of geography on hires using two case studies.

Unlike recruiting schedules, these firms generally do not post online the number of people they hired from a given university. However, some universities report data on hires by firm, for the top hiring firms. I look at the impact of Huron Consulting group opening a Detroit office using data on undergraduate hires from University of Michigan Ross School of Business. I also look at the impact of JP Morgan increasing its presence in Columbus, Ohio using undergraduate hires data from Ohio State University Fisher College of Business. I collect annual reports from these two universities to create a panel of hires by firm.

Other universities also make this information available, but I focus on these two case studies because of the higher response rate and the number of years the hires data is available. I do not observe Huron and JP Morgan hiring at all other universities, but I will compare their hires to hiring by other similar firms at the same university.

Huron Consulting Group opened a Detroit office in 2007. Before opening this office, their Chicago office was the closest office to University of Michigan. The annual reports of the University of Michigan Ross School of Business list number of hires by the top hiring firms.

I collect these annual reports from 2002 to 2013, and include in the data any consulting firm with data before 2007. This yields nine firms. For several of these firms I know only an interval for the number of hires. However, in most cases these intervals are quite narrow, for example less than two hires. I use the midpoint of the interval, but also use alternative specifications discussed below. I estimate a regression with firm and year fixed effects:

$$Hires_{ft} = \alpha_0 + \gamma_t + \delta_f + \sum \beta_t year\_t_t * Huron_f + u_{ft}$$

The coefficient β_t identifies differential changes in hires for Huron in each year, relative to the other consulting firms. Relative to the other consulting firms in 2007 (the year Huron opens a local office), it hires an additional five people from Michigan relative to its hiring in 2006 (Figure 6a). This is also true in 2008. Thus, there is strong evidence that after opening a local office, Huron meaningfully increases hires from University of Michigan.

There is not strong evidence the effect persists, but for the years 2011 through 2013 we only know that the firm hired fewer than approximately 10 students. Figure 6a shows the results using the midpoint of the interval, but using the minimum or maximum of the interval would clearly yield different conclusions in this case. Importantly we do not see evidence that Huron is increasing the number of hires from University of Michigan leading up to opening the office. This mitigates concerns that they open the Detroit office because they increasingly value recruiting from University of Michigan.

The second case study analyzes JP Morgan hiring after it increases its presence in Columbus, Ohio. In 2000, JP Morgan merged with Chase, and Chase had a presence in Columbus. More importantly, in 2004 JP Morgan Chase merged with Bank One. Up until 1998, the headquarters for Bank One was in Columbus and so its presence there was quite strong even after it moved its headquarters to Chicago. As further evidence that JP Morgan increased its presence in Columbus, in 2006 Columbus is listed as a headquarters for JP Morgan Investment Banking but it previously was not listed on the website.

I collect annual reports from the Ohio State University-Fisher College of Business from 2000 to 2017. I construct a dataset of hires by JP Morgan Chase, and five other finance/accounting firms with greatest coverage in the data. For each of these firms, I know the exact number of hires from the university for at least 15 of the 18 years. Again, if I know only the interval I use the midpoint of the interval and also estimate alternative specifications.

Relative to other firms, JP Morgan Chase dramatically increases its hires from Ohio State starting in 2004, the year of the Bank One merger (Figure 6b). The initial effects are large, with JP Morgan Chase hiring an additional ten students from Ohio State relative to other firms and relative to the difference in 2003. By the end of the period, these effects are even larger, with JP Morgan Chase hiring an additional 40 Ohio State students. The second case study also presents strong evidence that when firms increase their presence in the local market, there are meaningful impacts on hires. Again, there is not evidence that JP Morgan Chase was differentially increasing hiring from Ohio State in years leading up to the Bank One merger.

6 Conclusion

In this paper, I study whether a change in geographic proximity to high-wage firms can improve access to those firms. For 2000 to 2013, I collect data on office locations and recruiting strategies of over 70 prestigious finance and consulting firms.

I find that firms are twice as likely to recruit at local universities in the years following an office opening. Firms are six and a half times more likely to recruit at local universities after opening an office in areas with fewer of these firms. These universities are likely to be less selective than the firm's other target campuses. The results suggest large decreases in recruiting at local universities after firms close local offices, especially five or more years after the firm has closed their local office. To complement this main analysis, I collect additional

panel data from two business schools on hires by firm. I present results from two case studies showing firms increase hires from local universities after increasing local presence.

Recruiting at local universities after office openings suggests recruiting decisions are driven by applicant migration frictions (real or perceived by firms) or employer search frictions. These frictions may be especially strong in the economy as a whole given this is a setting where we may least expect to find effects: high-wage firms, perceived to rely heavily on elite networks, hiring college-educated individuals. The results are consistent with declines in interstate migration of college-educated and young individuals, as well as research showing applicants are attracted to very local jobs. These results suggest that local economic development policies, which attract firms to municipalities or states, may improve access to high-quality jobs for local residents. The results also suggest universities affect labor market outcomes in part based on the university's local labor market.

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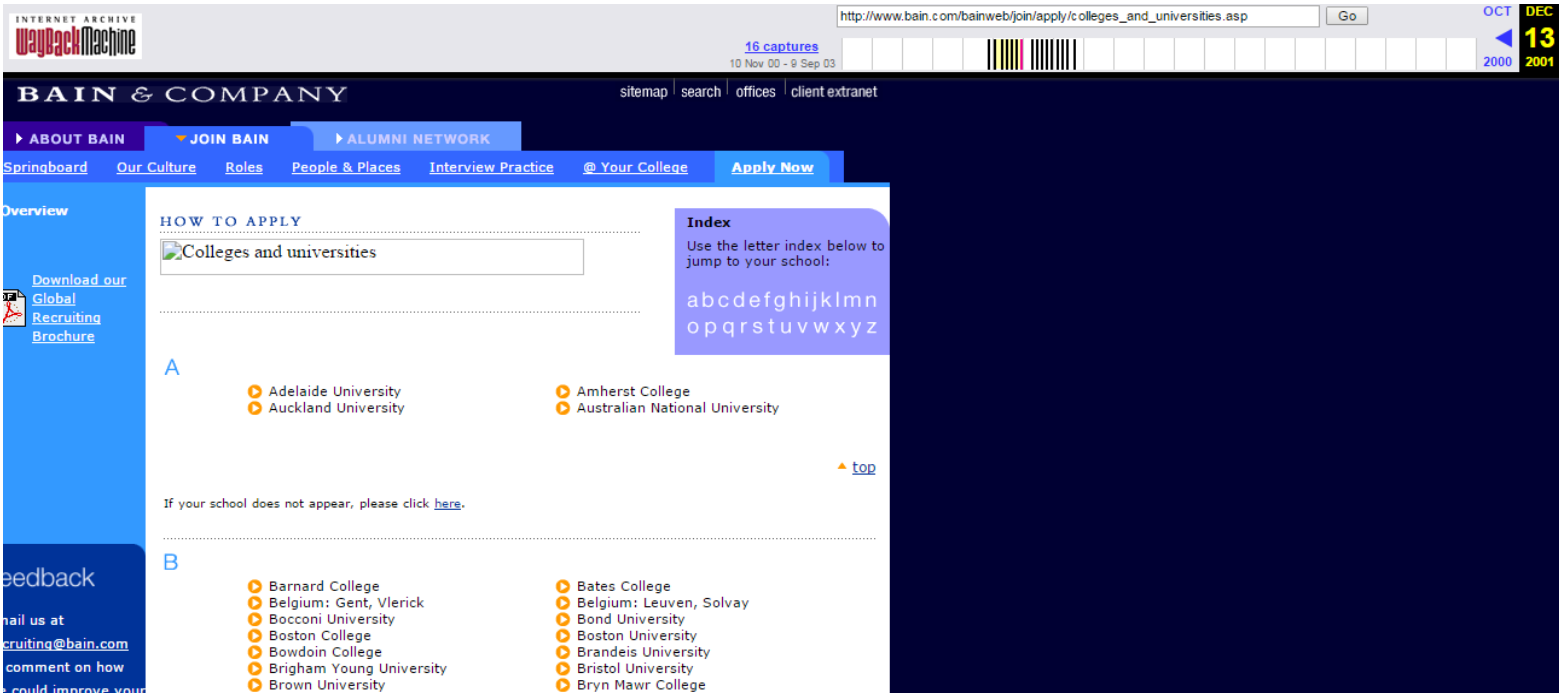
Figure 1: Data Collection from *The Internet Archive Wayback Machine*: Bain & Company Recruiting Pages

(a) University-Specific Links

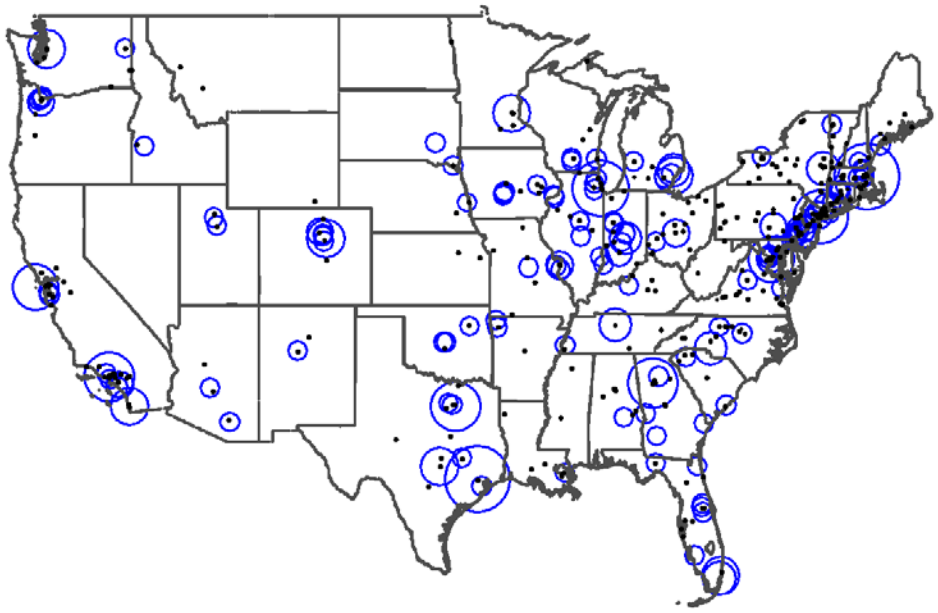


(b) Dartmouth-Specific Link

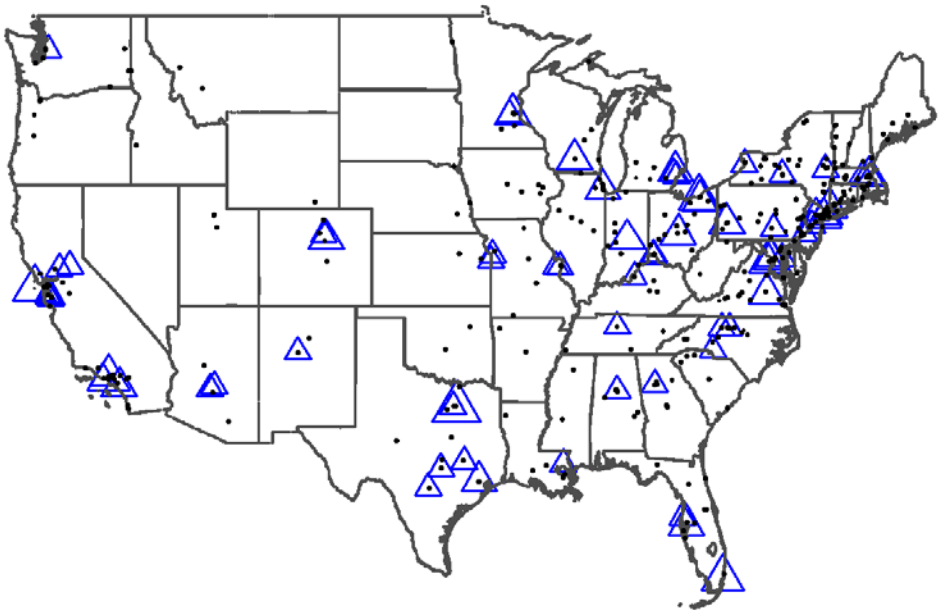
Note: This figure gives an example of the data collection for the consulting firm Bain & Company in 2001, using *The Internet Archive Wayback Machine*.

Figure 2: Cities Experiencing Move Ins and Move Outs, and Universities in the Sample

(a) Move Ins



(b) Move Outs



Note: These maps show all universities in the sample (solid dots) as well as cities experiencing move ins (open circles in (a)) and move outs (open triangles in (b)). These are cities in which a firm opens an office (a) or closes an office (b). In addition, in (a) this move puts them within 100 miles of at least one university whereas before their closest office was further than 100 miles from this university. In (b) this move puts them further than 100 miles for at least one university whereas before they were within 100 miles of the university. Marker sizes are weighted based on how many firms move in or out of the city, based on these definitions of move in and move out. See text for details.

Figure 3: Office Openings and Recruiting at Local Universities

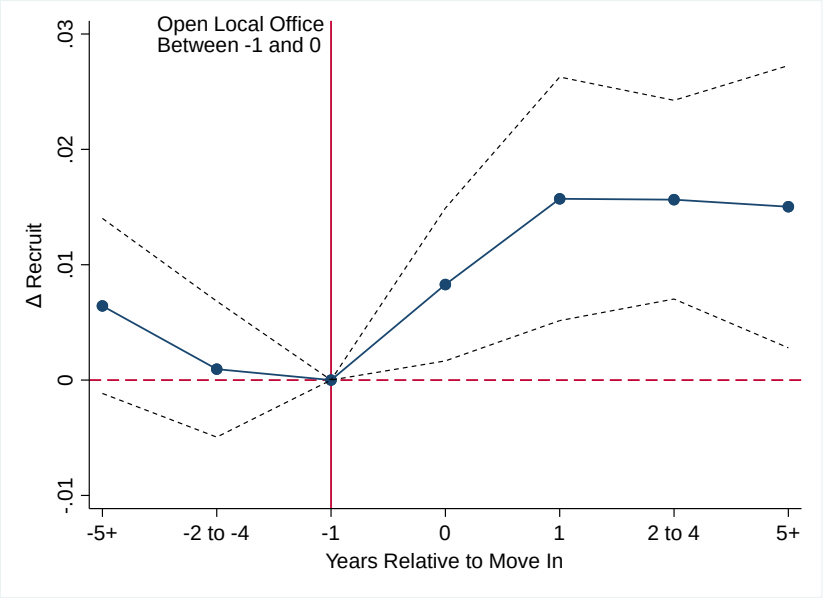
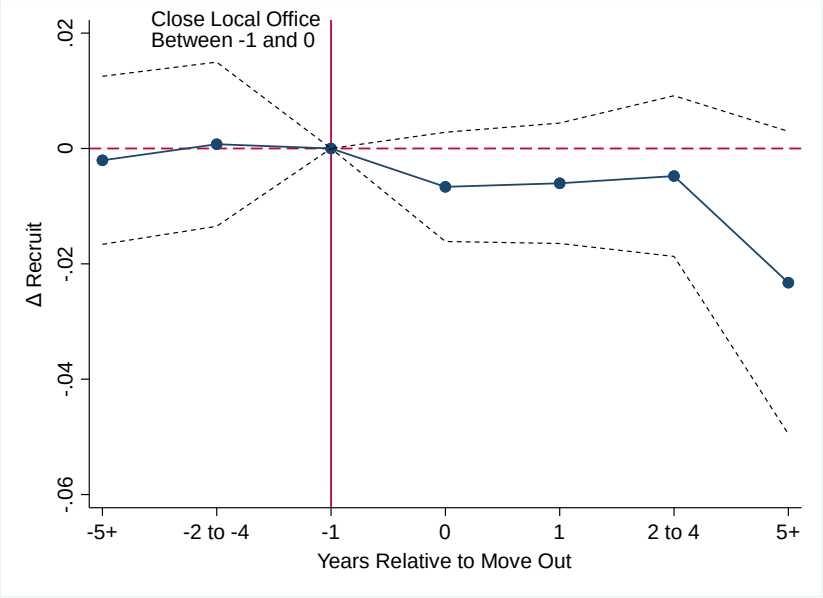


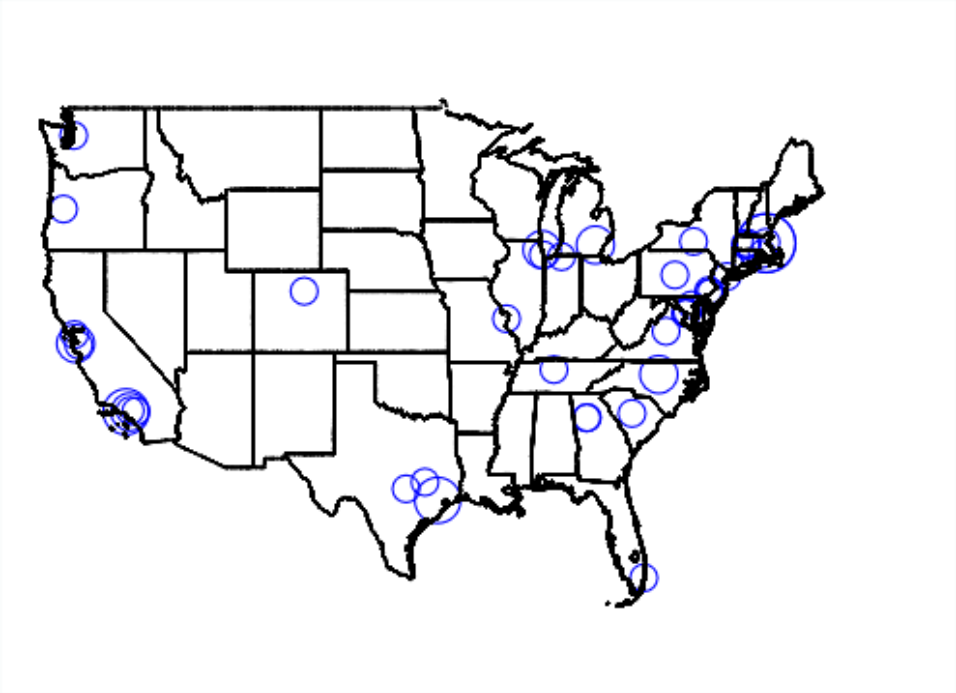
Figure 4: Office Closings and Recruiting at Local Universities



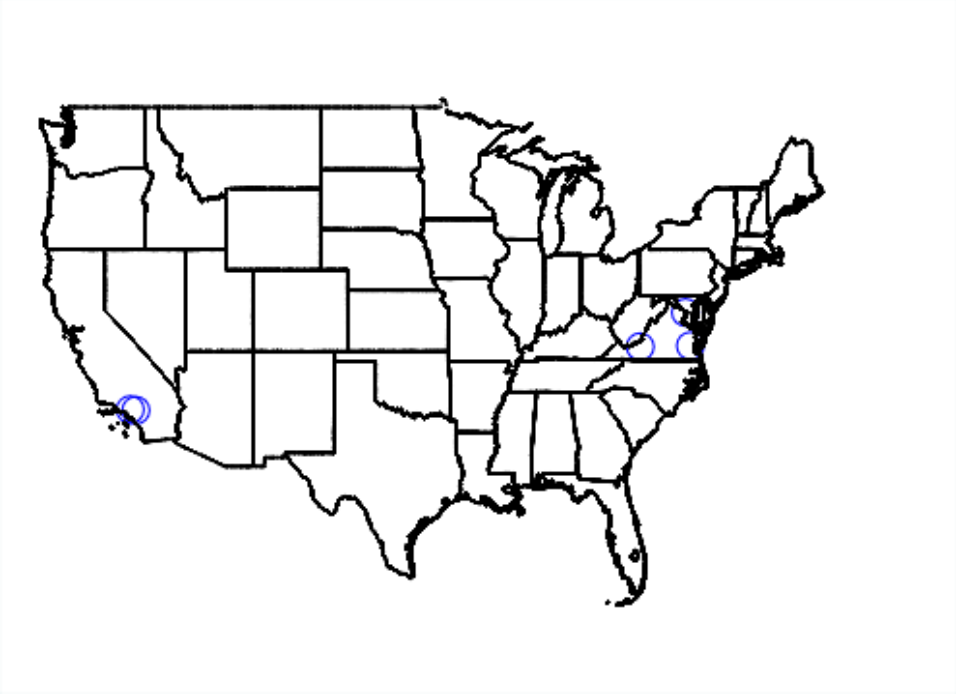
Note: These figures show the results of a regression of *Recruit* on indicators for period from the move in (Figure 3) or move out (Figure 4). I define move ins as instances in which a firm moves within 100 miles of a university, whereas before the closest offices was further than 100 miles. Similarly, I define move outs as instances in which a firm moves out of a 100 mile radius of the university. The dependent variable in the regression is an indicator for whether firm *f* recruits at university *j* in time *t*. The regression includes firm-university pair fixed effects, firm-year fixed effects, and university-year fixed effects. I include in this exercise only those firm/university pairs who experience one move in (move out) during the sample period, and no move outs (move ins). See text for details.

Figure 5: Changes in Recruiting Following Office Openings and Closings

(a) Universities Attracting Recruiting Firms After They Move Within 100 Miles



(b) Universities Losing Recruiting Firms After They Move Outside 100 Miles



Note: Plot (a) shows the universities that began attracting a recruiting firm within five years of the firm moving within 100 miles, but had not attracted this firm in their most recent observation preceding the move. Plot (b) shows the universities that stopped attracting a recruiting firm within five years of the firm moving outside a 100 mile radius of the university.

Figure 6a: Huron Consulting Group's Undergraduate Hires from University of Michigan's Business School

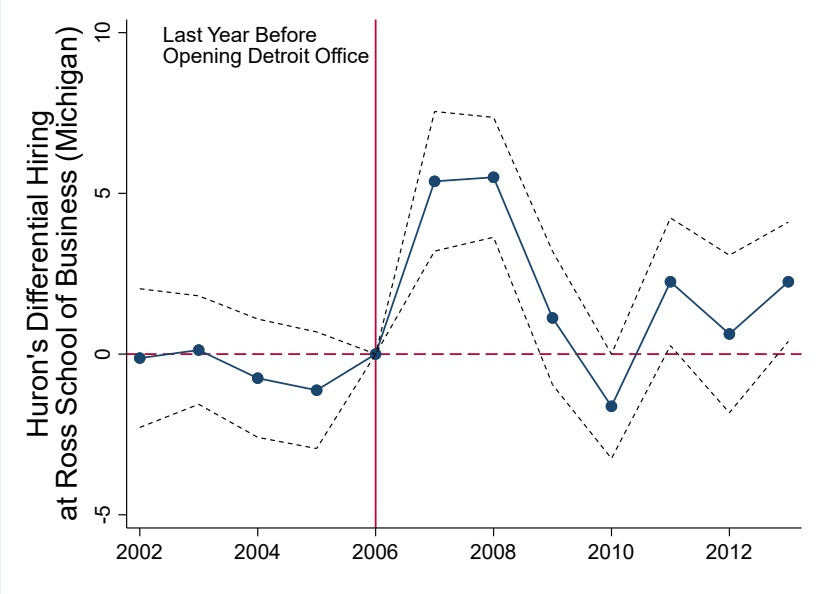
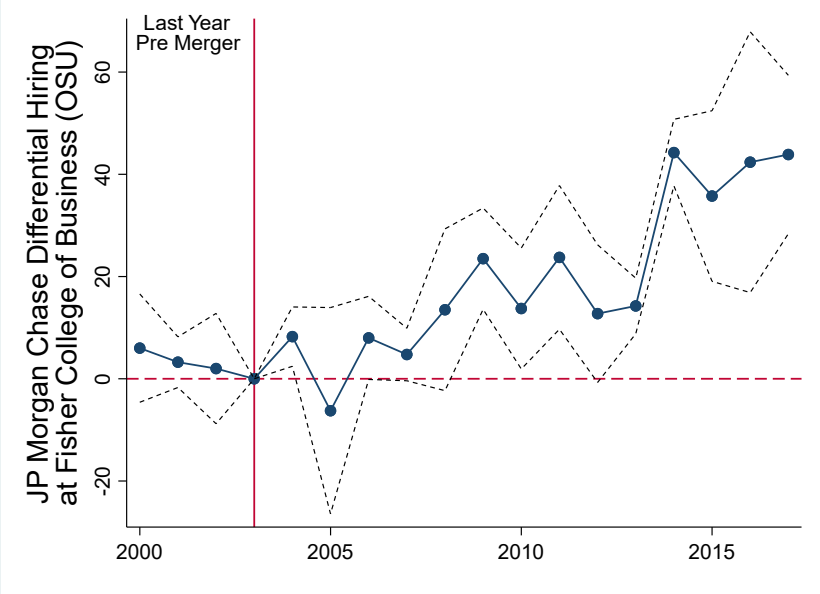


Figure 6b: JP Morgan Chase's Undergraduate Hires from Ohio State University's Business School



Note: These figures shows the differential change in hires surrounding Huron Consulting Group opening an office in Detroit, MI (6a) and JP Morgan Chase increasing its presence in Columbus, OH (6b). Coefficients show the differential change in hires relative to the base year of Huron relative to nine other consulting firms with data before 2007 (6a) and JP Morgan Chase relative to five finance/accounting firms with greatest coverage in the data (6b). For some firms and years I know only an interval for the number of hires. For those cases, these plot shows results using the midpoint of the interval. See paper for details.

Table 1: Move Ins and Move Outs in the Sample

# Firms	73
# Consulting Firms	42
# Banking Firms	31
# Universities	362
# Firm/University Pairs	25,767
# Cities that are the Closest Office Location to a University	389
# Firms with ≥ 1 Move In	50
# Universities with ≥ 1 Move In	323
# Firm/University Pairs with 1 Move In	1525
# Cities with ≥ 1 Move In	143
# Firms with ≥ 1 Move Out	36
# Universities with ≥ 1 Move Out	295
# Firm/University Pairs with 1 Move Out	655
# Cities with ≥ 1 Move Out	70
Cities with Greatest Move Ins (#)	
Houston, TX	12
Boston, MA	12
Chicago, IL	9
New York, NY	8
Los Angeles, CA	7
Dallas, TX	7
Atlanta, GA	7
Cities with Greatest Move Outs (#)	
Dallas, TX	4
Miami, FL	3
Los Angeles, CA	3
San Francisco, CA	3
Cleveland, OH	3
Vienna, VA	3

Note: Move ins are defined as instances in which a firm moves within 100 miles of a university, whereas before the move the closest office was more than 100 miles from the university. Move outs are defined as instances in which a firm closes its office within 100 miles of the university, and the closest office is now more than 100 miles from the university. I exclude from the sample firm/university pairs that experience both move ins and move outs. The list of cities with the greatest number of move ins are cities with the greatest number of firms opening an office in the city such that they are now within 100 miles of a university and before they were not. The number of move ins listed is limited to one per firm, so the maximum number is the total number of firms in the sample. The sample drops singletons: firm/university pairs only in the sample for one year, and firm/year pairs with only one observation in the sample (after dropping firm/university pairs that are singletons).

Table 2: The Effect of Office Openings and Closings on Recruiting at Local Universities

Outcome: Recruit	(1)	(2)	(3)	(4)
	Panel A: Move Ins			
Post Move, Short Run	0.011**	0.010***	0.026*	0.008**
	(0.005)	(0.004)	(0.013)	(0.004)
Post Move, Long Run	0.014	0.012*	0.027*	0.013*
	(0.009)	(0.006)	(0.014)	(0.006)
Observations	206,349	206,349	71,860	134,486
R-Squared	0.600	0.636	0.632	0.638
	Panel B: Move Outs			
Post Move, Short Run	-0.008	-0.005	0.024*	-0.010
	(0.008)	(0.006)	(0.013)	(0.007)
Post Move, Long Run	-0.011	-0.023*	0.014	-0.030**
	(0.007)	(0.014)	(0.019)	(0.015)
Observations	206,349	206,349	71,860	134,486
R-Squared	0.599	0.636	0.632	0.638
Firm-Year, University-Year Fixed Effects	N	Y	Y	Y
Universities	All	All	Near ≤ 5 Offices	Near > 5 Offices
Mean Recruit:				
Any Move In = 1, Post Move in = 0	0.014			
Any Move Out = 1, Post Move Out = 0	0.03			

Note: *** p<0.01, ** p<0.05, * p<0.1. Standard errors are clustered at the firm level. All regressions include firm/university pair fixed effects. Column 1 includes year fixed effects, while columns 2-4 include firm-year fixed effects and university-year fixed effects. The variable *Post Move, Short Run* is an indicator for the year of the move, and the four years following the move event (t*, t*+1, t*+2, t*+3, t*+4). The variable *Post Move, Long Run* is an indicator for five or more years following the move. Move ins are defined as instances in which a firm moves within 100 miles of a university, whereas before its closest office to the university was further than 100 miles from the university. Move outs are defined as instances in which a firm closes its office within 100 miles of a university, and the firm's closest office to the university is now further than 100 miles. I exclude pairs that experience both move ins and move outs. I also drop singletons, defined in Table 1. Column 3 includes only firm/university pairs for which the university in 2000 is within 100 miles of five or fewer firm offices of the firms in my sample. Column 4 includes only firm/university pairs for which the university in 2000 is within 100 miles of more than five offices of the firms in my sample. See text for details.

Table 3: Changes in University Characteristics Around Office Openings

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Share Scoring > 700 on SAT Math or 30 on ACT Math	Percent Admitted	SAT Verbal, 75th Percentile	ACT English, 75th Percentile	Number of Students	Out of State Tuition	Percent Black	Percent Hispanic	Regional Rank
Post Move, Short Run	0.004**	0.021**	1.430***	0.082	-44.971*	574.624***	-0.000	0.001**	-0.803***
	(0.002)	(0.010)	[0.464]	[0.059]	[24.347]	[87.904]	[0.001]	[0.000]	[0.275]
Post Move, Long Run	0.009***	0.021	0.914	0.062	-61.329	1,395.841***	0.001	0.002***	-0.859**
	(0.003)	(0.013)	[0.726]	[0.070]	[51.079]	[159.784]	[0.001]	[0.001]	[0.419]
Observations	143,198	151,753	138,195	83,291	205,908	203,442	205,908	205,908	194,071
R-Squared	0.972	0.437	0.962	0.942	0.990	0.963	0.986	0.977	0.965

Note: *** p<0.01, ** p<0.05, * p<0.1. Standard errors are clustered at the firm level. All regressions include firm/university pair fixed effects and firm/year fixed effects. See Table 2 for definitions of Post Move, Short Run and Post Move, Long Run. I exclude firm/university pairs experiencing both move ins and move outs. Number of observations differs with each dependent variable because these variables are not reported by the universities in some years. The first four columns are estimated using only years greater than or equal to 2004, since this is when these variables become available. Singletons are dropped based on the regression sample in each column. See text for details.

Table 4: Changes in City and Firm Characteristics Timed with Moves

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
			Other Firms Moving		Other Firms Exiting		Other Offices Opened	
Outcome:	Ln(Empl. In Univ. MSA)		Within 100 miles		Within 100 miles		by the Firm	
(1) Post Move, Short Run	-0.001	-0.005	-0.048	0.042	0.016	0.007	1.022**	-0.009
	(0.002)	(0.003)	(0.035)	(0.070)	(0.035)	(0.042)	(0.420)	(0.121)
(2) Post Move, Long Run	-0.002	-0.001	0.018	0.044	0.045	-0.019	-1.169**	0.020
	(0.005)	(0.005)	(0.069)	(0.113)	(0.058)	(0.055)	(0.582)	(0.184)
Move Type	Move In	Move Out	Move In	Move Out	Move In	Move Out	Move In	Move Out
Observations	201,180	201,180	206,349	206,349	206,349	206,349	206,349	206,349
R-Squared	1.000	1.000	0.315	0.315	0.212	0.212	0.266	0.248

Note: *** p<0.01, ** p<0.05, * p<0.1. Standard errors are clustered at the firm level. All regressions include firm/university pair fixed effects. Columns (1) through (6) also include firm-year fixed effects, Columns (7)-(8) include university-year fixed effects. See Table 2 notes for description of independent variables. In columns (1) and (2) the dependent variable is the natural log of total employment in the university's MSA. Universities not located in MSAs are excluded from these regressions. In columns (3) and (4), the dependent variable is the number of other firms moving within 100 miles of the university in the given year (equal to the number of firms moving within 100 miles for pairs not experiencing move ins that year). In columns (5) and (6), the dependent variable is the number of other firms closing their office within 100 miles of the university in the given year (equal to the number of firms closing their office within 100 miles for pairs not experiencing move outs that year). In columns (7) and (8), the dependent variable is the number of other new office locations for the firm in that year (that put them within 100 miles of at least one university). This equals the number of new office locations for the firm in that year for pairs not experiencing move ins. Similar to the regressions in Table 2, I exclude pairs that experience both move ins and move outs. See text for details.

Appendix Table 1: Firms in Sample, by Year

	Total Years in Sample	Years in Sample	Reason missing years?	Vault Rank
Consulting Firms				
Marakon	13	2000-2001, 2003-2013	Contact university	12
Parthenon Group	13	2000-2006, 2008-2013	Contact university	9
Oliver Wyman	13	2001-2013	No page archived	7
Huron Consulting Group	12	2002-2013	Formed in 2002	47
The Boston Consulting Group	12	2001-2005, 2007, 2009-2013	2006: Singleton 2008: No page archived	2
First Manhattan Consulting Group	12	2000-2008, 2010-2012	No page archived	35
Gallup	12	2000-2003, 2005, 2007-2013	No page archived	38
Mars & Co.	12	2000-2003, 2005-2011, 2013	No page archived	25
Putnam Associates	12	2000-2009, 2011-2012	No page archived	46
ZS Associates	12	2000-2005, 2007-2012	No page archived	28
PRTM	11	2000-2010	Acquired by PwC in 2011	43
Mitchell Madison Group	11	2003-2013	No website found	48
NERA Economic Consulting	11	2000, 2003, 2005-2013	Blocked Robots	22
Dean & Company	11	2000-2009, 2011	2010: No location, 2012-2013: No page archived	41
Gartner Inc.	11	2000-2002, 2004, 2007-2013	No page archived	15
Giuliani Partners	11	2002-2008, 2010-2013	Formed in 2002	42
Corporate Executive Board	10	2000-2008, 2010	Error loading page	34
A. T. Kearney	10	2004, 2006-2013	2000: No page archived, 2001-2003: Contact firm, 2005: Singleton	14
Bain & Company	10	2000-2007, 2011-2012	No page archived	3
Cornerstone Research	9	2000-2004, 2006, 2008, 2011-2012	Blocked Robots	33
Arthur D. Little	9	2003-2008, 2010, 2012-2013	No page archived	30
Hewitt Associates	9	2000-2004, 2006-2009	2005: No page archived, 2010: Data combined with Aon	18
PA Consulting Group	9	2003-2005, 2007, 2009-2013	No page archived	49
Roland Berger	9	2001-2002, 2006-2009, 2011-2013	No page archived	17
Analysis Group	8	2006-2013	Error loading page	40
Kurt Salmon	8	2000, 2005-2011	2001: Contact university 2002-2004: Error loading website	36

	Total Years in Sample	Years in Sample	Reason missing years?	Vault Rank
L. E. K. Consulting	8	2001-2008	Blocked Robots	11
Booz Allen Hamilton	7	2000, 2007-2009, 2011-2013	Error loading page	4
FTI Consulting	7	2004-2007, 2009, 2012-2013	2001-2003, 2008: Error loading page 2010-2011: Contact university	50
OC&C Strategy Consultants	7	2004-2007, 2011-2013	2000-2003: Broken links; 2008: Contact university; 2009-2010: No page archived	45
Stern Stewart & Co.	7	2001-2006, 2010	No page archived	37
Booz & Company	6	2008-2013	Split from Booz Allen Hamilton in 2008	NR
McKinsey & Company	6	2007-2009, 2011-2013	2001-2002: Contact University 2004-2006: Blocked Robots	1
Navigant	6	2005-2007, 2010, 2012-2013	Blocked Robots	32
Cambridge Associates	6	2000-2001, 2009-2011, 2013	No page archived	23
Charles River Associates	5	2000-2001, 2010, 2012-2013	Error loading page	24
LECG Corporation	4	2000, 2008-2010	Liquidated in March, 2011	29
Advisory Board	4	2000, 2002, 2012-2013	No page archived	
Monitor Group	3	2000, 2011-2012	Acquired by Deloitte in January, 2013	5
Capgemini	3	2002, 2004, 2013	Contact university	13 (27?)
Mercer	3	2004, 2006, 2008	2000-2003: No page archived; 2007, 2009-2013: No Location;	8
Accenture	2	2012-2013	Contact university	16
Banks				
Jefferies & Company	14	2000-2013		22
Keefe Bruyette & Woods	14	2000-2013		38
Gleacher & Company	13	2000-2005, 2007-2013	2006: No location	45
Morgan Keegan & Co.	12	2001-2012	2000, 2013: No location	44
Raymond James Financial	12	2000-2002, 2004-2010, 2012-2013	2003, 2011: No page archived	41
U.S. Bancorp	11	2002-2004, 2006-2013	2000-2001: No page archived	46
Lazard	11	2000-2010	2011-2013: Contact university	8
Citi	10	2000-2009	2010-2011: Blocked Robots 2012-2013: No page archived	7 (13)
Evercore Partners	10	2000-2006, 2010-2012	2007-2009: No page archived	25
HSBC	10	2004-2013	2000-2001: No page archived 2002-2003: No page archived	20

	Total Years in Sample	Years in Sample	Reason missing years?	Vault Rank
Morgan Stanley	10	2001-2002, 2005-2009, 2011-2013	2000: No page archived 2003-2004: Error loading page 2010: No page archived	3
Macquarie Group	9	2000-2004, 2006-2009	2005: Contact university	47
Piper Jaffray Companies	9	2000-2005, 2007, 2010, 2012	2006, 2008-2009, 2011: No page archived	27
Rothschild	9	2002-2003, 2005-2008, 2011-2013	2000-2001: Error loading page 2009-2010: Blocked robots	19
ABN AMRO	8	2000-2007	2007: Acquired	40
Greenhill & Co.	8	2006-2013	2000-2005: No page archived	16
Wachovia	8	2000-2007	2008: Acquired by Wells Fargo	18
Cowen Group	7	2000-2006	2007-2010: No page archived 2011-2012: Contact university 2013: No page archived	39
Deutsche Bank	7	2001-2003, 2008-2011	2000, 2004-2007, 2012-2013: No page archived	12
William Blair & Company	7	2001-2004, 2006, 2012-2013	2000: No location 2005: Mentions recruiting, but says positions filled 2007-2011: No page archived	36
Allen & Company	6	2007-2008, 2010-2013	2000-2006, 2009: No page archived	33
Brown Brothers Harriman	6	2000-2005	2006-2013: No page archived	37
Perella Weinberg Partners	6	2006-2009, 2012-2013	Founded in 2006 2010-2011: Contact university	23
BNP Paribas	5	2001-2002, 2006-2007, 2013	2000: Error loading page 2003-2005, 2008-2012: No page archived	34
Barclays	5	2009-2013	2000-2008: No US locations	17
Robert W. Baird & Co.	5	2007-2011	2000-2006: No page archived 2012-2013: Contact university	42
Bank of America	4	2006-2007, 2012-2013	2000-2005, 2008, 2010: No location	15
JP Morgan Chase & Co.	3	2000, 2006-2007	2001-2002: No page archived 2003: No Location 2004: No page archived 2005, 2008-2010: No page archived 2011-2013: Blocked robots	5 (11)
Houlihan Lokey	2	2007, 2009	2000-2005, 2010-2013: No location 2008: Page unarchived	21
RBC Capital Markets	2	2012-2013	2000-2001: No website found 2002-2005: No location 2006-2009: No page archived 2010-2011: No page archived	29
Thomas Weisel Partners Group	2	2008-2009	2000-2007: No location 2010: Acquired by Stifel Financial	28

Note: The explanation "No page archived" may reflect that there is no recruiting page at all or that the archived recruiting page does not have the necessary information (i.e. discusses recruiting but not specific target campuses). The explanation "No location" may reflect that the firm's locations were unarchived, or inconsistencies in how/what type of locations were reported. The explanation "Contact university" reflects that the firm tells interested students to contact their university to determine if the firm recruits on their campus. The explanation "Blocked robots" reflects that the site blocked access to automated web crawlers. The explanation "Singleton" reflects there was only one observation for the firm in that year. Vault Rank is the rank from 2007 for consulting firms, and from 2008 for banking firms because the 2007 banking ranking contained very few firms. The question mark in the rank cell for Capgemini is because the firm was included twice in the rankings.

Geography and Employer Recruiting: Online Appendix

Russell Weinstein*

October 30, 2018

Data

There are 46 consulting firms listed in the Vault top 50 ranking by prestige. Four of these 46 are not in my sample, either because automated web crawlers were blocked, or the page was nonarchived, in all sample years. Deloitte Consulting and Watson Wyatt were not included because their pages could not be crawled by robots in any of the sample years. Towers Perrin was not included because robots could not crawl the pages listing the firm's locations. Strategic Decisions Group was not included because the pages were not archived in any of the sample years. I collect data for one firm not listed in the top 50 in 2007 because it split from a top 50 firm in 2008 (Booz), yielding a total of 43 consulting firms.

There are 43 banking firms in the Vault top 50 ranking by prestige of commercial banks and financial services companies. Data were not available for four firms: Goldman Sachs, Blackstone, Deloitte, or UBS. There were duplicate listings of two firms in the Vault ranking. There were two listings for JP Morgan (JP Morgan Investment Bank and JPMorgan Chase & Co.), and the data were collected for JP Morgan as a whole. There were also two listings for Citi (Citi Institutional Clients Group and Citigroup Inc.), and the data were collected for Citi as a whole. For three firms, recruiting pages were identified but missing recruiting or location information prevented their inclusion. KPMG says to contact the university regarding recruiting in each year. Wells Fargo has inconsistent location information in each year except

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2004 and 2005, and in 2005 it says to contact the university while in 2004 the page is not archived. RBS does not give relevant location data, so this firm is not used in the analysis.

In the case of mergers or acquisitions, I collect the post-merger or post-acquisition target campuses if the original sample firm remains in the name of the new firm, or the target campuses can be separated from the parent firm. I collect the pre-merger target campuses for the original sample firm. This is relevant for Oliver Wyman and Hewitt.

From 2000-2002, Oliver Wyman existed as a firm. The firm was renamed Mercer Oliver Wyman in 2003. In 2006, Mercer Oliver Wyman merged with Mercer Management and Mercer Delta to form Oliver Wyman. The recruiting data for Oliver Wyman consists of the target campuses for Oliver Wyman from 2000-2002, for Mercer Oliver Wyman from 2003-2006, and Oliver Wyman from 2007 forward. Thus, for this firm I do not include the target campuses for the other companies that merged in 2006.

Hewitt was bought by Aon in October 2010, and a new firm Aon Hewitt was formed. The values of *Recruit* for Hewitt consist of Hewitt's target campuses through 2009, and Aon Hewitt's target campuses from 2010 forward. While PRTM retained its name after being acquired by PwC, the recruiting strategies could not be separated from PwC as a whole, which has many other divisions. I only collect data on recruiting strategies for PRTM through 2010, the year before it was acquired.

Calculating Distance Between Firms and Universities

I compute the lengths of the great circle arcs connecting each university and each office location for a given firm, located on the surface of a sphere. The arc length, measured in degrees, is then converted to statute miles as measured along a great circle on a sphere with radius 6371 kilometers, the mean radius of the earth. These calculations are performed using the *arclen* and *deg2sm* commands in MATLAB.

Calculating the Share of High-Scoring Students at a University

I test whether university characteristics change around the time of move ins or move outs. Among the variables I consider are the share of students scoring above 700 on the SAT Math or 30 on the ACT Math. I calculate this share using the 25th and 75th percentiles of the Math SAT and ACT score distribution for entering students from IPEDS. Assuming test scores are distributed normally, I obtain from the percentiles the mean and standard deviation of each test score distribution at each university. Using the normal CDF, and weighting by the percent of students reporting each exam, I calculate the percent at each university scoring above 700 on the Math SAT or above 30 on the Math ACT.[1] I determine the university's regional rank based on this percentage, where regions are defined using the Bureau of Economic Analysis OBE regions (combining New England and the Mideast).

Matching Universities with Local Employment

I match each university to its local employment using employment in the university's MSA (as defined in 2013), with data from the Bureau of Labor Statistics Local Area Unemployment Statistics (LAUS). The LAUS data give employment in the MSA, or NECTA for New England states. I merge this with the university, using the university's MSA or NECTA in 2013, which I identify using IPEDS data. There are two New England universities in the sample which are not in a NECTA, but they are in an MSA, and the name of the MSA is also the name of a NECTA. For these universities, I assign them to the NECTA associated with their MSA. Green Mountain College is in the Rutland, VT MSA but is not in a NECTA. There is a Rutland NECTA, and so I assign Green Mountain College to the Rutland NECTA. Bard College at Simon's Rock is in the Pittsfield, MA MSA, but not in a NECTA. There is a Pittsfield NECTA and so I assign Bard College at Simon's Rock to the Pittsfield NECTA.

[1] However, if the test score percentiles for a particular test are missing, I assume the weight on the non-missing test is one. Otherwise, I am implicitly assuming that the percent above the threshold on the missing test is zero. Any concerns that this places too much weight on the non-missing test are mitigated because the percent reporting the non-missing test when there is a test with missing percentiles is approximately 87%.

Existing Target Campuses

For each firm/city/year combination, I calculate *ExistingTargets*, the number of other universities within 100 miles of the firm's closest office to the university at which the firm recruits in the observation preceding the move.[2] For pairs experiencing move ins, the university is now within 100 miles of the firm because of the firm's new office. The variable *ExistingTargets* identifies the number of other universities within 100 miles of this new office, at which the firm recruited in the observation prior to opening the office.

There are 143 firm/university pairs outside of industry clusters that experience a move in. Of those, for only 3 of those pairs was the firm recruiting at another university in the local market before the move in. There are 1313 firm/university pairs within industry clusters that experience a move in. Of those, for 115 had the firm been recruiting at another university in the local market before the move.

For pairs experiencing move outs, the university is no longer within 100 miles of the firm, and the closest office to the university is now in a new city. The variable *ExistingTargets* identifies the number of other universities within 100 miles of this office, which is now the closest office to the university, at which the firm was already recruiting (in the observation prior to the move out). This variable equals zero for pairs never experiencing move outs or move ins, and in years prior to move ins and move outs.

I estimate regression (2) in the paper, interacting *ExistingTargets* with the $MoveSR$ and $MoveLR$ variables. There is no variation in *ExistingTargets* when the $MoveSR$ and $MoveLR$ variables are both zero, and so I do not include *ExistingTargets* uninteracted.

Among universities in cities where the firm had no existing targets within 100 miles, the short-run effect of an office is smaller if the firm had an existing target campus in that market, although the differential effect is not statistically significant and there are only three pairs where the firm had existing targets (Appendix Table A6, column 1, row 2). The effect of existing target campuses is small, and also not statistically significant when looking within industry clusters. As a result, we do not see a much larger effect of move ins within industry clusters, among firms with

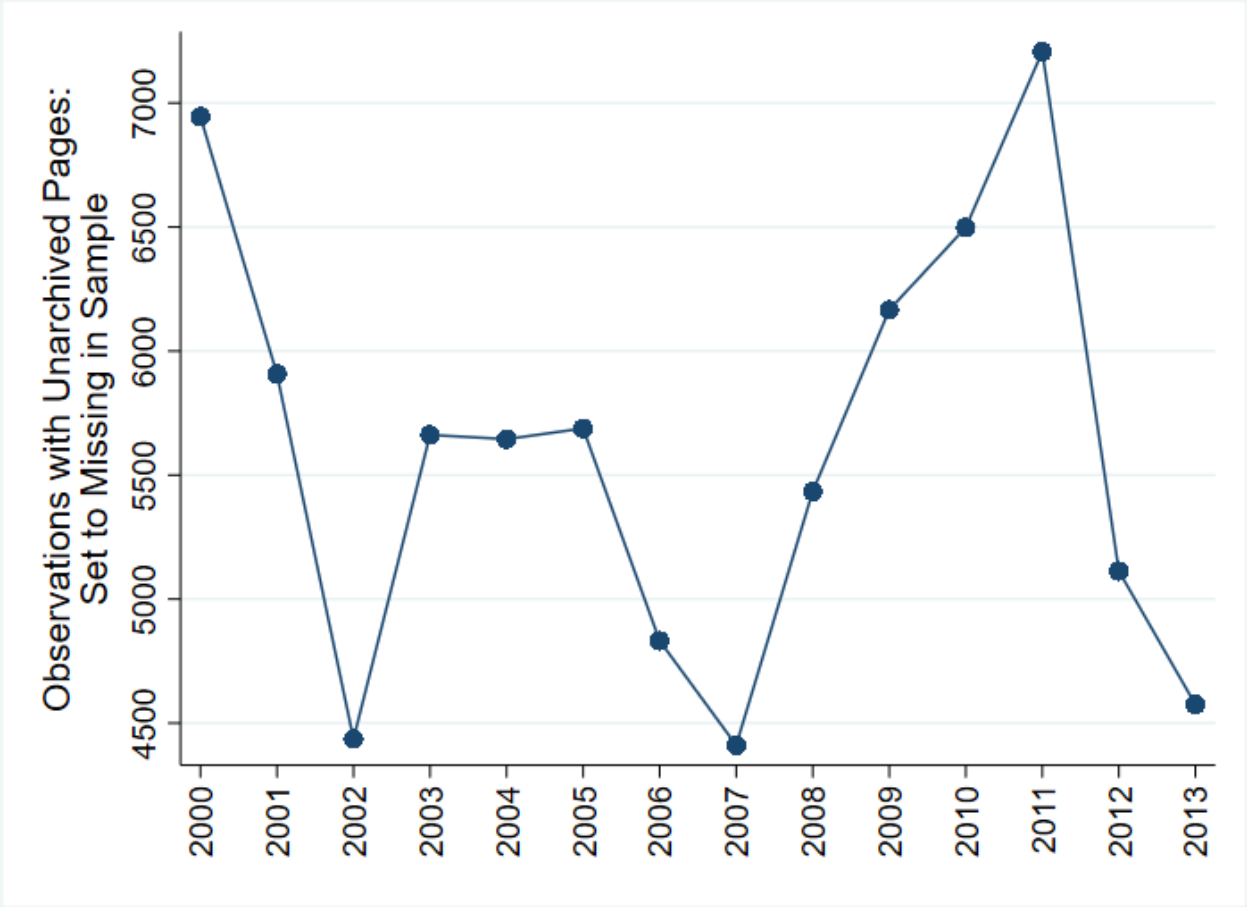
[2]Specifically, *ExistingTargets*, is the number of universities within 100 miles of the firm's closest office to the university, which are also closest to this office, at which the firm recruits in the observation preceding the move.

no existing target campuses (Appendix Table A6, column 2, row 1). This evidence suggests the smaller effects in industry clusters are not explained by the existing targets hypothesis.

The long-run effect of moveouts for universities outside industry clusters is much more negative when the firm has more existing targets surrounding the office now closest to the university (column 1, row 9).[3] This is intuitive. Suppose a firm closes its Miami office and the closest office to University of Miami is now Washington, DC. The firm is more likely to stop recruiting at University of Miami if the firm already had more target campuses in the Washington, DC area.

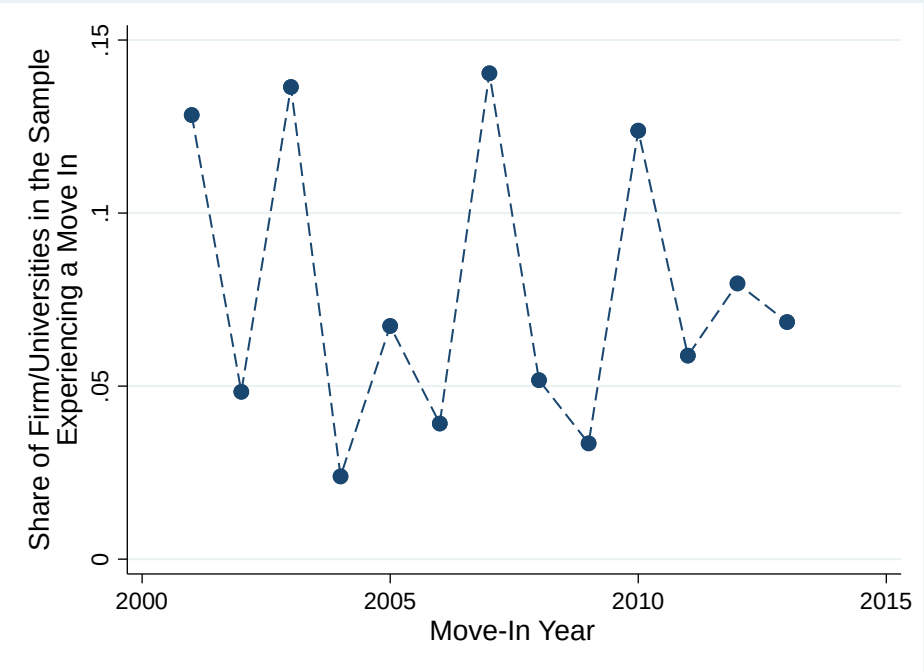
[3]There are 94 firm/university pairs for which the university is located outside an industry cluster, and the firm closes its office within 100 miles of that university. For twenty six of these pairs, the firm had existing target campuses in the closest city after the move out.

Appendix Figure A1: Observations with Unarchived Pages by Year

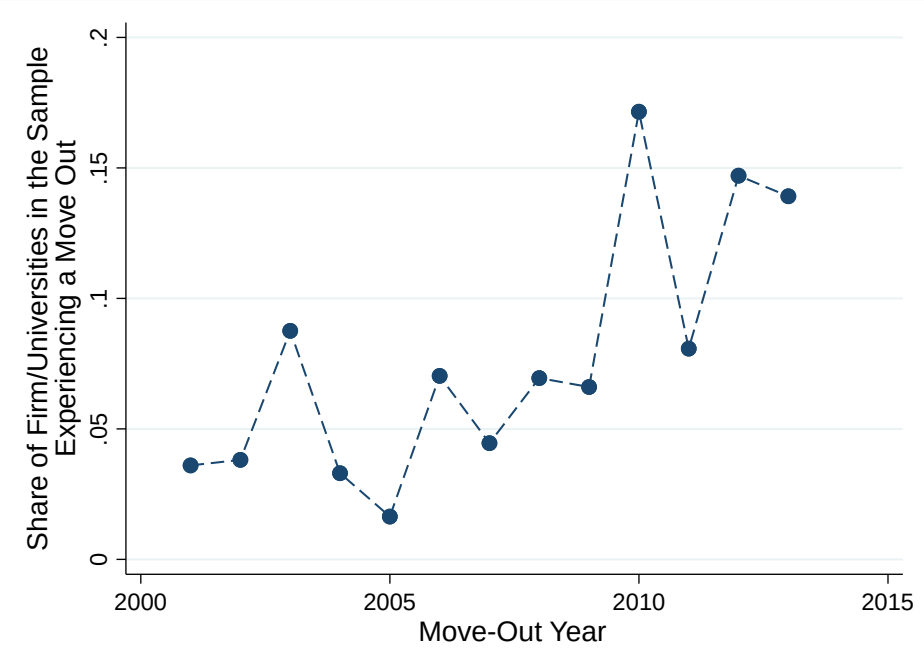


Note: This plot shows the number of firm/university pairs in each year whose recruiting page was not archived. I set the *Recruit* variable equal to missing for these observations.

Appendix Figure A2: Office Openings by Year

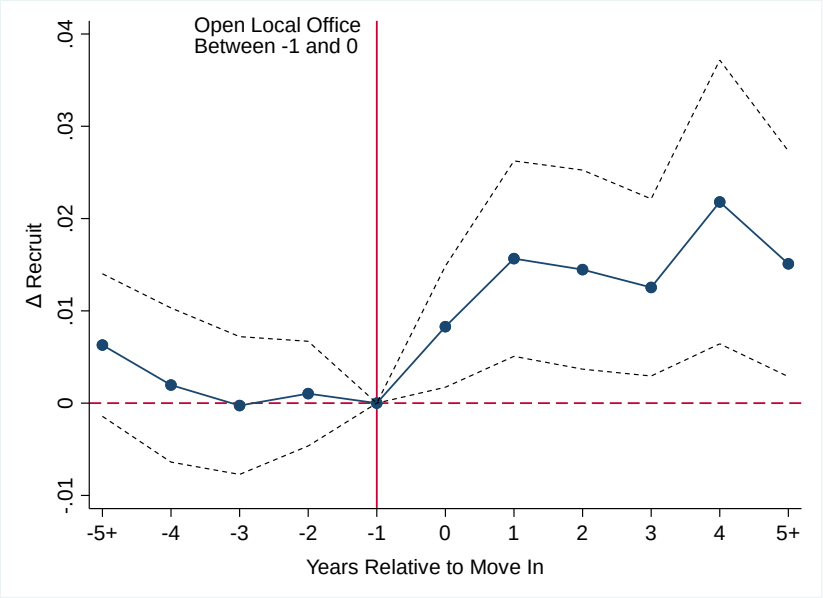


Appendix Figure A3: Office Closings by Year

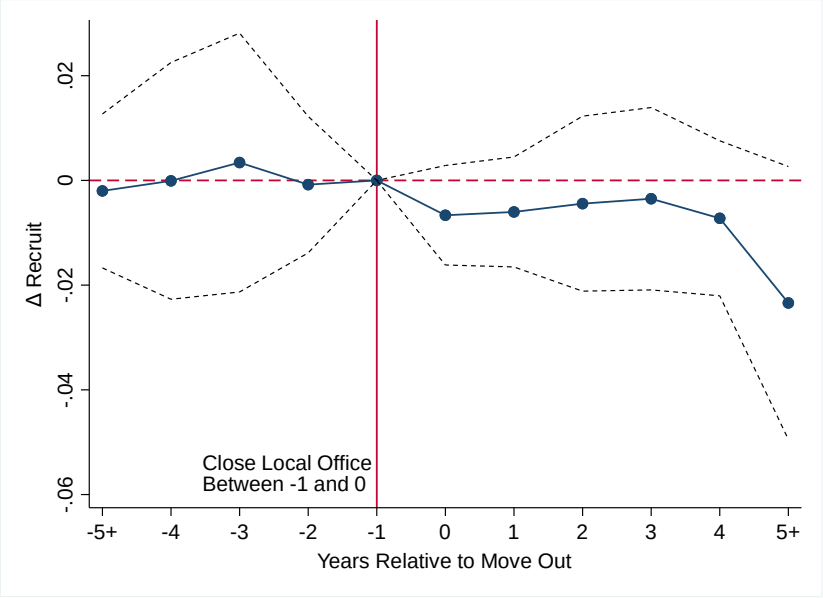


Note: These figures show histograms of the year in which firm/university pairs experience openings (Appendix Figure A2) and closings (Appendix Figure A3) among the pairs in the sample that experience openings (Appendix Figure A2) and closings (Appendix Figure A3). I exclude pairs from the sample that experience both move ins and move outs. See text for details.

Appendix Figure A4: Office Openings and Recruiting at Local Universities, Without Grouping Years



Appendix Figure A5: Office Closings and Recruiting at Local Universities, Without Grouping Years



Note: These figures show the results of a regression of *Recruit* on indicators for period from the move in (Appendix Figure A4) or move out (Appendix Figure A5). I define move ins as instances in which a firm moves within 100 miles of a university, whereas before the closest offices was further than 100 miles. Similarly, I define move outs as instances in which a firm moves out of a 100 mile radius of the university. The dependent variable in the regression is an indicator for whether firm *f* recruits at university *j* in time *t*. The regression includes firm-university pair fixed effects, firm-year fixed effects, and university-year fixed effects. I include in this exercise only those firm/university pairs who experience one move in (move out) during the sample period, and no move outs (move ins). See text for details.

Appendix Table A1: Office Openings and Closings and Recruiting at Local Universities, Robustness

Outcome: Recruit	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
				Panel A: Move Ins				
Post Move, Short Run	0.008**	0.011**	0.013***	0.006	0.015*	0.013*	0.006	0.011**
	(0.003)	(0.005)	(0.005)	(0.005)	(0.007)	(0.006)	(0.004)	(0.005)
Post Move, Long Run	0.010*	0.015*	0.012	0.017	0.010*	0.024	0.006	0.015
	(0.006)	(0.009)	(0.008)	(0.013)	(0.005)	(0.020)	(0.004)	(0.009)
Observations	209,519	206,349	121,526	84,823	50,125	67,419	52,846	151,342
R-Squared	0.634	0.636	0.678	0.585	0.722	0.680	0.688	0.628
				Panel B: Move Outs				
Post Move, Short Run	-0.005	-0.008	-0.011*	0.018*	-0.020**	-0.002	0.004	-0.006
	(0.006)	(0.005)	(0.006)	(0.009)	(0.008)	(0.008)	(0.028)	(0.006)
Post Move, Long Run	-0.022*	-0.031**	-0.025*	-0.005	-0.020**	-0.027	-0.007	-0.027*
	(0.013)	(0.015)	(0.015)	(0.011)	(0.007)	(0.023)	(0.025)	(0.015)
Observations	210,594	206,349	121,526	84,823	50,125	67,419	52,846	151,342
R-Squared	0.633	0.636	0.678	0.585	0.722	0.680	0.688	0.628
Sample	Multiple Moves	50 Mile Radius	Consulting	Banking	High Travel	Low Travel	High Rank	Low Rank

Note: *** p<0.01, ** p<0.05, * p<0.1. Standard errors are clustered at the firm level. All regressions include firm/university pair fixed effects, firm-year fixed effects, and university-year fixed effects. The variable *Post Move, Short Run* is an indicator for the year of the move, and the four years following the move event *(t*, t*+1, t*+2, t*+3, t*+4)* . The variable *Post Move, Long Run* is an indicator for five or more years following the move. See Table 2 for definition of move ins and move outs. In Panel A column 1, the sample includes observations that experienced a move in, and then a move out. For these observations I include the years only up to the subsequent move out. Similarly in Panel B column 1, I include observations experiencing a move out followed by a move in. I include the years only up to the subsequent move in. This identifies the effect of the first move. Column 2 defines Move Ins as instances when a firm moves within a 50 mile radius of a university, and analogously for move outs. Column 3 includes only consulting firms, while column 4 includes only banking firms. Column 5 includes consulting firms denoted as requiring extensive travel, while column 6 includes consulting firms denoted as requiring less extensive travel. Column 7 includes only firms whose Vault ranking by industry was among the ten highest (best) of the firms in that industry in the sample. Column 8 includes only the firms with lower Vault rankings. See text for details.

Appendix Table A2: The Effect of Office Openings and Closings on Recruiting at Local Universities

Outcome: Recruit		(1)	(2)	(3)	(4)
		Panel A: Move Ins			
(*t=t**)*Move*		0.007**	0.008**	0.025	0.008**
	Pairs with data: 1525	(0.004)	(0.003)	(0.017)	(0.004)
(*t=t* + 1*)*Move*		0.017**	0.016***	0.033	0.015***
	Pairs with data: 1051	(0.008)	(0.005)	(0.020)	(0.005)
(*t=t* + (2 to 4)*)*Move*		0.018***	0.016***	0.022	0.015***
	Pairs with data: 987	(0.006)	(0.004)	(0.019)	(0.004)
(*t=t* + 5*$^{+}$)*Move*		0.016*	0.015**	0.027	0.017***
	Pairs with data: 636	(0.009)	(0.006)	(0.017)	(0.006)
(*t=t* - (2 to 4)*)*Move*		0.000	0.001	0.003	0.002
	Pairs with data: 1039	(0.004)	(0.003)	(0.011)	(0.003)
(t=t - 5*$^{+}$*)Move*		0.007	0.006*	-0.004	0.009**
	Pairs with data: 930	(0.005)	(0.004)	(0.012)	(0.004)
Observations		206,349	206,349	71,860	134,486
R-Squared		0.600	0.636	0.632	0.638
		Panel B: Move Outs			
(*t=t**)*Move*		-0.007	-0.007	-0.017	-0.005
	Pairs with data: 655	(0.005)	(0.005)	(0.012)	(0.006)
(*t=t* + 1*)*Move*		-0.004	-0.006	-0.003	-0.006
	Pairs with data: 369	(0.006)	(0.005)	(0.008)	(0.006)
(*t=t* + (2 to 4)*)*Move*		-0.006	-0.005	-0.003	-0.008
	Pairs with data: 338	(0.006)	(0.007)	(0.026)	(0.006)
(*t=t* + 5*$^{+}$)*Move*		-0.009	-0.023*	-0.017	-0.027*
	Pairs with data: 211	(0.006)	(0.013)	(0.026)	(0.014)
(*t=t* - (2 to 4)*)*Move*		0.004	0.001	-0.043	0.006
	Pairs with data: 375	(0.009)	(0.007)	(0.028)	(0.004)
(t=t - 5*$^{+}$*)Move*		0.002	-0.002	-0.037*	0.003
	Pairs with data: 485	(0.007)	(0.007)	(0.019)	(0.007)
Observations		206,349	206,349	71,860	134,486
R-Squared		0.599	0.636	0.632	0.638
Firm-Year, University-Year Fixed Effects		N	Y	Y	Y
Universities		All	All	Near ≤ 5 Offices	Near > 5 Offices

Note: *** p<0.01, ** p<0.05, * p<0.1. Standard errors are clustered at the firm level. All regressions include firm/university pair fixed effects. Column 1 includes year fixed effects, while columns 2-4 include firm-year fixed effects and university-year fixed effects. In Panel 1, *Move* is an indicator for whether firm *f* moved within 100 miles of university *j* in *t**. In Panel 2, *Move* is an indicator for whether firm *f* moved outside 100 miles of university *j* in *t**. The variable *t = t** indicates whether the year is the same as the move year, while *t = t*+1* indicates whether the year is the year after the move year, and analogously for the other time variables. Move ins are defined as instances in which a firm moves within 100 miles of a university, whereas before its closest office to the university was further than 100 miles from the university. Move outs are defined as instances in which a firm closes its office within 100 miles of a university, and the firm's closest office to the university is now further than 100 miles. I exclude pairs that experience both move ins and move outs. I also drop singletons, defined in Table 1. Column 3 includes only firm/university pairs for which the university in 2000 is within 100 miles of five or fewer firm offices of the firms in my sample. Column 4 includes only firm/university pairs for which the university in 2000 is within 100 miles of more than five offices of the firms in my sample. Below each independent variable, I list the number of firm/university pairs with that independent variable equal to one. For the omitted category (the year preceding the move), there are 985 firm/university pairs with data in the year preceding the move in, and 409 pairs with data in the year preceding the move out. See text for details.

Appendix Table A3: Cities Firms Move into, for which Universities are Outside Industry Clusters

	# Move Ins	MSA
Phoenix, AZ	1	Phoenix-Mesa-Scottsdale, AZ
Columbia, IL	1	St. Louis, MO-IL
Town and Country, MO	1	St. Louis, MO-IL
St. Louis, MO	2	St. Louis, MO-IL
Miamisburg, OH	1	Dayton, OH
Jacksonville, FL	1	Jacksonville, FL
Lake Mary, FL	1	Orlando-Kissimmee-Sanford, FL
Millington, TN	1	Memphis, TN-MS-AR
Radcliff, KY	1	Elizabethtown-Fort Knox, KY
Midvale, UT	1	Salt Lake City, UT
Orem, UT	1	Provo-Orem, UT
Rochester, NY	1	Rochester, NY
Oklahoma City, OK	1	Oklahoma City, OK
Midwest City, OK	1	Oklahoma City, OK
Winston-Salem, NC	1	Winston-Salem, NC
New Orleans, LA	1	New Orleans-Metairie, LA

Note: This table shows cities in which firms open offices, for which every university within 100 miles is surrounded in every sample year by five or fewer firm offices of the firms in my sample. I show only those cities for which there is at least one university within 100 miles in an MSA with employment of at least 500,000 in 2007. The university's MSA may not be the same as the MSA listed in column 3, which is the MSA of the city in column 1. As a result, 2007 employment in the MSA of the city in column 1 may not be at least 500,000. For example, when a firm moves into Columbus, it may become within 100 miles of a university outside of Cincinnati, and so the employment reflects employment in the Cincinnati MSA rather than the Columbus MSA. MSAs associated with each city are obtained using the HUD Metropolitan Area Look-Up Tool, and where necessary counties are obtained from the National Association of Counties County Explorer.

Appendix Table A4: Extent of Travel at Consulting Firms in the Sample

Firms Requiring Extensive Travel or with Global Staffing	Firms Requiring Less Extensive Travel or with Local Staffing
McKinsey & Company	Bain & Company
The Boston Consulting Group	Mercer
Booz & Company	A. T. Kearney
Monitor Group	Parthenon Group
Oliver Wyman	Navigant
Huron Consulting Group	ZS Associates
First Manhattan Consulting Group	NERA Economic Consulting
Marakon	Hewitt Associates
Mars & Co.	Cornerstone Research
PRTM	Cambridge Associates
Mitchell Madison Group	Charles River Associates
Gartner Inc.	Corporate Executive Board
Arthur D. Little	The Advisory Board Company
Kurt Salmon	Analysis Group
Stern Stewart & Co.	Gallup
Capgemini	Putnam Associates
Accenture	Dean & Company
	Roland Berger
	L. E. K. Consulting
	Booz Allen Hamilton
	FTI Consulting
	OC&C Strategy Consultants
	LECG Corporation
	PA Consulting Group

Notes: Designations are based on firm websites, Vault.com, and both of these sites accessed through The Wayback Machine. Local staffing refers to assigning cases to consultants in the area of their local offices. Global staffing refers to case assignments that do not depend on the location of the consultant's home office. The particular texts which determined these designations are available from the author upon request. See text for details.

Appendix Table A5: The Effect of Office Openings and Closings on Recruiting at Local Universities, Robustness

Outcome: Recruit	(1)	(2)	(3)	(4)	(5)	(6)
			Panel A: Move Ins			
(*t=t*)Move*	0.007**	0.009**	0.010**	0.005	0.011*	0.006
	(0.003)	(0.004)	(0.005)	(0.006)	(0.006)	(0.007)
(*t=t* + 1)Move*	0.015***	0.015**	0.020**	0.011	0.017*	0.020*
	(0.005)	(0.007)	(0.007)	(0.009)	(0.010)	(0.012)
(*t=t* + (2 to 4))Move*	0.013***	0.018***	0.018***	0.011*	0.020**	0.017*
	(0.004)	(0.006)	(0.006)	(0.006)	(0.008)	(0.009)
(*t=t* + 5^{+})Move*	0.013**	0.017**	0.014*	0.019	0.013**	0.024
	(0.006)	(0.008)	(0.007)	(0.013)	(0.006)	(0.022)
(*t=t* - (2 to 4))Move*	0.001	0.000	0.001	-0.002	0.004	-0.004
	(0.002)	(0.004)	(0.004)	(0.004)	(0.005)	(0.005)
(t=t - 5^{+})Move*	0.006	0.009*	0.004	0.011***	-0.001	0.002
	(0.004)	(0.005)	(0.004)	(0.004)	(0.007)	(0.006)
Observations	209,519	206,349	121,526	84,823	50,125	67,419
R-Squared	0.634	0.636	0.678	0.585	0.722	0.680
			Panel B: Move Outs			
(*t=t*)Move*	-0.007*	-0.001	-0.005	-0.010	-0.014	0.004
	(0.004)	(0.009)	(0.006)	(0.007)	(0.012)	(0.007)
(*t=t* + 1)Move*	-0.006	0.003	-0.004	-0.007	-0.011	0.004
	(0.005)	(0.010)	(0.007)	(0.009)	(0.011)	(0.010)
(*t=t* + (2 to 4))Move*	-0.005	0.008	-0.007	-0.004	-0.026**	0.007
	(0.007)	(0.010)	(0.009)	(0.009)	(0.009)	(0.012)
(*t=t* + 5^{+})Move*	-0.022*	-0.021	-0.020	-0.029**	-0.019*	-0.019
	(0.013)	(0.018)	(0.014)	(0.013)	(0.009)	(0.022)
(*t=t* - (2 to 4))Move*	0.000	0.007	0.009	-0.035	0.004	0.014*
	(0.007)	(0.009)	(0.005)	(0.024)	(0.009)	(0.008)
(t=t - 5^{+})Move*	-0.003	0.014*	0.004	-0.034**	0.001	0.004
	(0.007)	(0.008)	(0.007)	(0.014)	(0.006)	(0.011)
Observations	210,594	206,349	121,526	84,823	50,125	67,419
R-Squared	0.633	0.636	0.678	0.585	0.722	0.680
Sample	Multiple Moves	50 Mile Radius	Consulting	Banking	High Travel	Low Travel

Note: *** p<0.01, ** p<0.05, * p<0.1. Standard errors are clustered at the firm level. See notes to Appendix Table A2 for description of variables included in regression. See notes to Appendix Table A1 for description of samples in each regression.

Appendix Table A6: The Effect of Office Openings and Closings on Recruiting at Local Universities, Role of Existing Target Campuses

	Outcome: Recruit	(1)	(2)	(3)	(4)
		Panel A: Move Ins			
(1)	Post Move, Short Run	0.026*	0.008*	0.016***	0.016***
		(0.014)	(0.005)	(0.004)	(0.004)
(2)	Post Move, Short Run*Existing Targets	-0.009	0.002		
		(0.018)	(0.011)		
(3)	Post Move, Long Run	0.027*	0.013*	0.022**	0.021**
		(0.014)	(0.007)	(0.009)	(0.009)
(4)	Post Move, Long Run*Existing Targets	0.007	-0.007		
		(0.014)	(0.007)		
	Observations	71,860	134,486	143,151	143,151
	R-Squared	0.632	0.638	0.693	0.693
		Panel B: Move Outs			
(6)	Post Move, Short Run	0.018*	-0.011*	-0.010	-0.010
		(0.010)	(0.007)	(0.009)	(0.009)
(7)	Post Move, Short Run*Existing Targets	0.012	0.007		
		(0.025)	(0.006)		
(8)	Post Move, Long Run	0.023	-0.030*	-0.022*	-0.022*
		(0.014)	(0.016)	(0.011)	(0.011)
(9)	Post Move, Long Run*Existing Targets	-0.050**	0.002		
		(0.021)	(0.007)		
	Observations	71,860	134,486	143,151	143,151
	R-Squared	0.632	0.638	0.693	0.693
	Firm-Year Fixed Effects	Y	Y	Y	Y
	University-Year Fixed Effects	Y	Y	N	N
	University Characteristics	N	N	N	Y
	Universities	Near ≤ 5 Offices	Near > 5 Offices	All	All

Note: *** p<0.01, ** p<0.05, * p<0.1. Standard errors are clustered at the firm level. All regressions include firm/university pair fixed effects. See notes to Appendix Table A1 for description of the Post Move variables. The variable *Existing Targets* denotes the number of other universities within 100 miles of the firm's closest office to the university at which the firm recruits in the observation preceding the move. This is described in greater detail in the online appendix. I exclude pairs that experience both move ins and move outs. I also drop singletons, defined in Table 1. Column 1 includes only firm/university pairs for which the university in 2000 is within 100 miles of five or fewer firm offices of the firms in my sample. Column 2 includes only firm/university pairs for which the university in 2000 is within 100 miles of more than five offices of the firms in my sample. See text for details.