Supporting Information

A. Data

This study makes use of multiple large and complementary datasets, which together provide comprehensive information on (1) the education and academic employment histories of all tenure-track faculty in the field of computer science, (2) each researcher's scholarly publication and citation histories, and (3) department-level attributes related to research environment. The following sections discuss each dataset in detail.

Faculty education and employment histories. The first dataset comprises a hand-curated collection of profiles for faculty at the 205 departmental or school-level academic units on the Computing Research Association's Forsythe List of Ph.D.-granting departments for computing-related disciplines in the United States and Canada.* Collected during the 2011–2012 academic year, this dataset provides partial or complete information on the education and academic appointment histories of 5032 regular faculty, assembled from publicly-available sources.

From this larger set of faculty, we selected the 2583 tenured or tenure-track faculty whom the dataset records as both received their Ph.D. from and were hired to their first assistant faculty position by one of the 205 in-sample institutions in 1970–2011. Past work has established that approximately 87% of computing faculty have trained at, and are employed by one of these institutions (1). Among the faculty removed in this step were those for whom the location or exact year of their first assistant professorship was not known; many of these were senior faculty. Each faculty's perceived gender was coded by data collectors as "male" or "female," based on available images, the individual's name, and the use of gendered pronouns. We believe the perceptions of the data collectors likely match those of the larger scientific community, yet we make no claims about whether these perceived genders align with faculty members' self-identifications.

Finally, in order to investigate how productivity affects faculty selection, adaptation, and retention, we updated all profiles belonging to faculty who were pre-tenure at the time of our 2011 sample. By convention in computer science, tenure is generally awarded in conjunction with promotion from the rank "assistant professor" to "associate professor". As such, we investigated 555 of the 595 (93.3%) faculty holding the title of "assistant professor" during our 2011 sample, recording their job locations and titles as of November in the 2016–2017 academic year. The remaining 6.7% of faculty were excluded from the updated collection if neither DBLP nor Google Scholar information was available (see Supporting Material A for details about DBLP and Google Scholar data). The updated sample was retrieved by three data collectors, who re-obtained a random 10% of the records updated by each of their peers, allowing us to calculate inter-rater reliability. On average, only 7.5% of updated records differed between the collectors, and these known conflicts were resolved manually in the finalized dataset. Of the 555 updated faculty profiles, 474 (85.4%) individuals remained tenure-track faculty at one of our in-sample institutions, with the other 81 (14.6%) having predominantly relocated to positions outside of academia.

*See http://archive.cra.org/reports/forsythe.html

Faculty publication and citation histories. To complement our dataset of education and employment histories, we constructed a complete record of the publication histories for the faculty included in our sample by linking faculty profiles with author pages on DBLP, an online database† containing most journals and conference proceedings relevant to computing research. We performed manual name disambiguation for authors where an exact match could not be made, or multiple possible matches on author profiles existed. DBLP provides, for each publication on an author's profile, a record of the paper's title, its authors, publication venue, publication type (journal or conference paper; we discarded pre-prints and other non-peer-reviewed formats), and year of publication. Following this procedure, we collected data for 200,476 publications, which covered 2453 (95.0%) faculty in our sample.

In previous work, using the same dataset, we inferred subfield information for each individual according to the titles of their publications using topic modeling, characterizing each individual's research portfolio as a distribution over 10 common subfields (see methods of Ref. (2) for details). Additionally, we previously validated the DBLP dataset by manually collecting CVs for 10% of the included faculty, which we used to estimate rising productivity levels over time and DBLP's increasing coverage (3). In the current study, we reuse the previously inferred subfield parameterizations and, according to rates calculated from the CV dataset, adjust all publication counts into 2011-equivalent levels. For details on the adjustment procedure, see the supplemental material of Ref. (3).

We also recorded citation histories as listed on individuals' Google Scholar‡ profile pages. Google Scholar provides an extensive record of citations in computer science, though it can list duplicate entries for the same paper, for example by indexing multiple versions retrieved from pre-print servers and publisher websites (4). With this in mind, we collected the raw number of citations amassed by any of an author's papers in each calendar year, without removing self-citations or performing additional filtering. Under this approach, citations amassed by an article's pre-print and published versions are pooled together. In total, we recorded Google Scholar citation information for 1586 (61.4%) faculty in our sample, who were collectively responsible for over 7.4 million citations between 1970 and 2011. Faculty excluded from this subset were once again primarily senior faculty, due to the fact that they tended not to have Google Scholar profiles.

Of note, Google Scholar's citation counts differ substantially from publication counts in that they represent a cumulative measure, combining the effects of an individual's current and past environments on their prominence. While this construction prevents precisely isolating effects of the two environments, analyzing aggregate citation counts offers insights into how environments may continue to affect a person's career even after they relocate.

Departmental attributes. We compiled additional department-level information, combining our existing datasets with information from the Computing Research Association (CRA)§. Data provided by the CRA span 163 of our 205 (79.5%) institutions and include information from the 2010–2011 Taulbee

†See http://dblp.uni-trier.de

‡See http://scholar.google.com

§https://cra.org/

Experiment	Institutional prestige (π)	Placement year	Pre-hire publications	Pre-hire citations	Pairs formed (N)
A	<2.5	<1 years	–	–	359
B	<2.5	<1 years	–	–	119
C	<2.5	<2 years	<1.25 pubs.	–	194
D	<2.5	<2 years	–	<25 citations	194

Table S1. Caliper widths for forming matched-pair analyses. Experiment labels correspond to Fig. 2 in the main text. (A) and (B) compare differences in publications and citations, respectively, matching on work environment. (C) and (D) compare publications and citations but match on training environment. Faculty were also matched on gender, subfield, and postdoctoral training via exact matching (see text for full details).

Survey[¶] of departments. The annual survey asks departmental units to self-report information about the enrollment, production, and employment of PhDs in computing-related fields, as well as information about faculty, department resources, and funding. These data were combined with information about each institution's parental leave policy (5), its local population, and median household income.[‖] These and other variables are discussed in more detail in Supporting Material F.

Department responses to the CRA's Taulbee survey are provided voluntarily and are not publicly available. Covariates derived from survey responses were analyzed in aggregate by CRA staff, who ran code to align our data with theirs and performed multiple regression analyses. Model coefficients and corresponding statistics from these analyses were then returned to us for inclusion in this work. These steps were taken to ensure that individual department responses remained private and secure. Under these concerns, we believe this model for analyzing privately-held data can be effective in many settings where researchers require individual-level data in order to model system-level behaviors.

B. Methods used to form matched pairs of faculty

In order to determine whether an advantage is conferred to individuals who train at more prestigious institutions than their departmental peers, we constructed several matched-pair experiments wherein individuals were matched according to a number of individual- and institution-level attributes. These attributes were (i) the prestige of the hiring institution, (ii) the year of initial placement, (iii) their gender, (iv) their inferred subfield distribution, and (v) whether they received postdoctoral training.

Matches were constructed using a combination of caliper matching on attributes (i) and (ii), and exact matching on attributes (iii)–(v). Caliper widths for attributes (i) and (ii) were selected to be narrow enough such that differences in the matched individuals' productivity or prominence were not simply explained by differences in these features (Table S1 provides caliper widths for each quasi-natural experiment). These caliper thresholds ensure that differences in, for example, matched individuals' productivity are not significantly biased to favor individuals who placed more recently or at more prestigious institutions. Furthermore, exact matching was applied on attributes (iii)–(v), requiring that matched individuals be of the same gender, that their inferred subfield distributions were in the 90th percentile of similarity, measured by Jensen-Shannon Divergence, and that they both received (or both did not receive) postdoctoral training. Here, analyses of prominence omit individuals who had no citations in their first five years post-hire.

Next, we investigated whether individuals who place at more prestigious institutions become more productive or more prominent than their similarly-qualified but lower-placing peers. As in our analysis of the prestige of researchers' doctoral institutions, we constructed matched-pair experiments using the five criteria listed above. In addition to these criteria, we included a sixth attribute, requiring that matched individuals be similarly productive (number of publications) or prominent (number of citations) in the five years prior to their initial placement.

Sensitivity analysis of caliper matching. We tested the sensitivity of our matched-pair analyses to the exact prescription of caliper widths above by adding a small amount of noise to each caliper threshold, re-forming matches, and re-calculating effect sizes. Specifically, we added noise according to a half-normal distribution, leaving each caliper width untouched in 50% of trials, and in others, widening the caliper by an average of 100% the original width (i.e., doubling it). Criteria requiring exact matches (gender, subfield similarity, and postdoctoral training) were applied as before.

Experiment	Mean pairs formed (SD)	Mean 5-year difference (SD)
A	454 (89)	-0.49 (0.78) papers
B	230 (49)	189.12 (63.59) citations
C	285 (81)	4.43 (0.95) papers
D	264 (55)	268.53 (1153.06) citations

Table S2. Differences in productivity (Experiments A and C) and prominence (B and D) in faculty's first five years post-hire under 100 iterations of forming matched pairs.

Adjusting caliper widths in this fashion and forming 100 complete sets of matched pairs for each experiment, we estimated the average differences in productivity and prominence in faculty's first five years post-hire (Table S2). Regarding productivity, there is no residual advantage to having trained at a more prestigious environment (Experiment A), but faculty who placed at more prestigious environments than their peers produced, on average, 4.67 additional papers in their first five years post-hire (Experiment C). Regarding prominence, both training at and placing into more prestigious environments than one's peers appears to result in being more highly cited. Differences notwithstanding, we note a substantial degree of variability in the effects related to citation counts. This variability may stem from differences in the sizes and citation practices of subfields in computer science (6).

[¶] https://cra.org/resources/taulbee-survey/

[‖] https://factfinder.census.gov (US), and http://www12.statcan.gc.ca/ (CA)

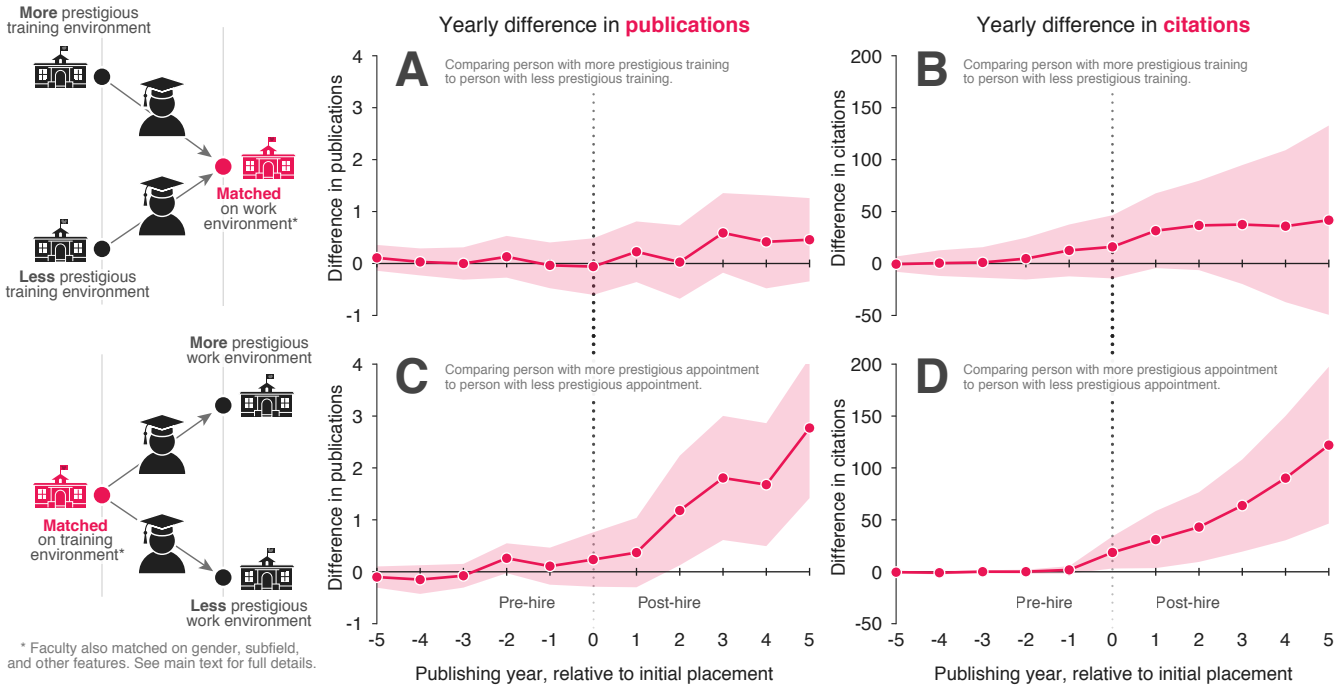

Fig. S1. Fig. 2 from the main text reproduced using *U.S. News & World Report*'s 2010 ranking of departments in place of the network-based prestige measure (1). Matched-pair caliper thresholds are unchanged from Table S1. We note the range of each vertical axis is larger than in Fig. 2.

Matched-pair effects with respect to prestige. We tested the breadth of the effects of environment across the prestige rankings for each of the four matched-pair experiments. For experiments matching individuals based on the prestige of their work environments (Experiments A and B in Fig. 2), the average prestige of the pairs' work environments was not significantly correlated with differences in their 5-year totals of publications ($\rho = 0.0006$; $p = 0.99$, Pearson) or citations ($\rho = -0.142$; $p = 0.12$, Pearson). Similarly, for experiments matching individuals based on the prestige of their doctoral environments (Experiments C and D in Fig. 2 of the main text), the average prestige of the pairs' doctoral environments was not significantly correlated with differences in their 5-year totals of publications ($\rho = -0.123$; $p = 0.09$, Pearson) or citations ($\rho = -0.079$; $p = 0.278$, Pearson).

Several biases complicate our analyses by constraining the range of variability in observed faculty. In particular, the most prestigious institutions train the majority of faculty employed by the academy, and less prestigious institutions only rarely place their graduates into more prestigious appointments (1). Together, these two properties limit the number of matched pairs originating from less prestigious doctoral environments (Fig. S2). The pairs that are formed, too, are limited in the sense that difference in prestige between the individuals' appointments is constrained (i.e., individuals who place too much lower than their peers are likely place into an out-of-sample institution).

C. Mechanism 1: Selection of productive faculty through hiring

Previous studies, including our own (2), have noted significant relationships between individuals' pre-hire productivity and the prestige of their initial faculty appointments. These investigations often mix both junior and senior faculty, which introduces selection bias and a focus on the "survivors" of academia – individuals who were hired, retained through tenure, and continued working as faculty long enough to be included in such studies. But survivors account for only part of the total faculty workforce, and their pre-hire productivities are not necessarily representative of typical early-career faculty. To address this limitation, where appropriate, our analyses focus on the 555 faculty in our dataset who held the title of "assistant professor" during the 2011 sample year, a title that indicates pre-tenure status. These faculty, too, represent a select group of individuals: those who were able to secure tenure-track faculty positions in the academy. As such, our analysis here measures

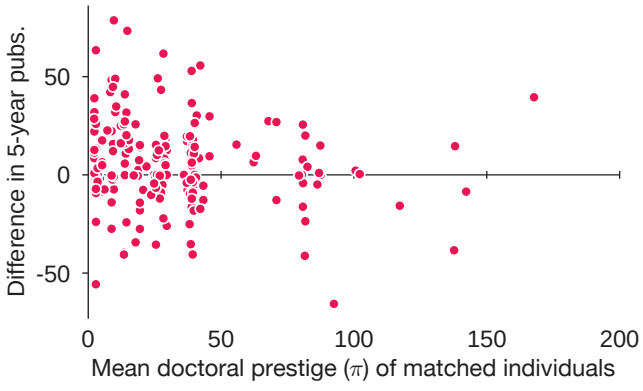

Fig. S2. Total publications in the five years pre-hire versus the average prestige of the pair's doctoral environments. Most faculty receive their doctorate at a prestigious institution, complicating the investigation of graduates from less prestigious institutions.

the extent to which placement in the prestige hierarchy sorts individuals according to their pre-hire productivities, keeping in mind that our sample omits individuals who sought but were unsuccessful in obtaining faculty positions.

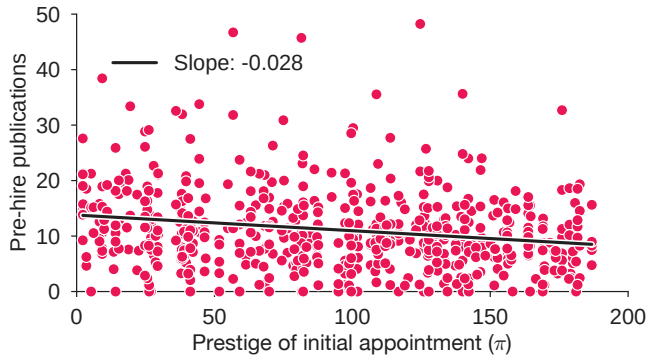

Fig. S3. Total publications in the five years pre-hire versus the prestige of the individual's initial appointment. Black line denotes ordinary least squares regression, with slope indicating that new faculty are on average 0.28 papers more productive for every 10-rank increase in prestige.

Analyzing individual publication counts in the five years before becoming faculty, we find that pre-hire productivity is not significantly correlated with doctoral prestige ($p=0.067$, t-test). However, productivity does slightly correlate with the prestige of initial faculty appointments (Figure S3; $p<0.05$, t-test). Together, these results suggest that faculty hiring does tend to lightly sort more productive individuals into higher ranked institutions. The sorting, however, is far from strict: for every 10-rank increase in employer prestige, faculty produced on average an additional 0.28 papers over the five-year period ($R^2=0.033$). Citation counts correlate significantly but modestly with the prestige of both doctoral institutions and researchers' initial appointments ($p<0.005$, t-test). As with productivity, hiring lightly sorts individuals by prominence. A 10-rank increase in doctoral prestige corresponds to 16.43 additional citations, compared to 18.59 additional citations for each 10-rank increase in appointment prestige ($R^2=0.068$).

The observations above were largely unaffected by the inclusion of dummy variables corresponding to individuals' gender and whether they received postdoctoral training. Gender's effect was significant in regressions of both publication and citation counts ($p<0.05$, t-test). However, normalizing citation counts by publications eliminated gender's effect, suggesting that women receive similar numbers of citations per publication as men in our dataset, yet produce fewer papers. Further, we found that postdoctoral experience is significant in predicting publication counts but not citations (normalized or unnormalized). Postdoctoral experience was significantly linked to employment at elite institutions ($\pi<50$; $p<0.05$, χ^2), yet including it as a dummy variable in regressions for publications and citations does not challenge the only modest sorting effects of faculty placement.

D. Mechanism 2: Adaptation to departmental norms

Previous studies have indicated that faculty productivity maybe be affected by social pressures to conform or adapt to the performance of departmental peers (7–9). Though not an explicit requirement, social pressure could implicitly drive the increases in productivity and prominence for researchers at elite institutions. Here, we measure the extent to which adaptation occurs among computer science faculty, moving researchers closer to their departmental publishing norms.

Because selection during tenure evaluations might artificially signal adaptation by individuals, it is important to only consider pre-tenure faculty in this analysis. Hence, we again focus once on junior faculty, requiring that they both held the title of "assistant professor" and were at least five years post-hire in 2011, allowing us to evaluate their early-career performance in the context of their departmental peers. Further, we restricted our analysis to include only departments that could be characterized by at least three other faculty, so as to provide more robust estimates of departmental publishing norms.

First, we ranked all faculty according to their productivities in the five years before and, separately, the five years after being hired, excluding the hiring year itself from both periods. Applying the above restrictions, we analyzed 133 pre-tenure faculty and noted a significant correlation ($\rho=0.3$, $p<0.005$, Pearson) between individuals' changes in departmental rank through hiring, and their rank change in pre- to post-hire productivity. Here, placements that move faculty to less prestigious institutions tend to correspond to decreases in individual productivity rank. This correlation could reasonably be expected, given the results of the matched pair-analyses in the main text.

Next, we determined, for each pre-tenure individual, whether their pre-hire ranking was more similar to the median pre-hire ranking of their (post-hire) peers or, instead, if their post-hire ranking was more similar to the median post-hire ranking of their peers. Put simply, do faculty resemble their peers more after working with them? Analyzing the same 133 pre-tenure faculty, we found that only 52 (39.1%, $p<0.01$, one-tailed binomial test) moved closer to their peers' median productivity ranking in the post-hire period. Together, these two analyses suggest that while research environment does affect individuals' productivity, social pressure and adaptation to departmental publishing standards play, at best, limited roles in driving the overall effect.

E. Mechanism 3: Selection of productive faculty through retention

Faculty are evaluated and selected at two stages of their career, first upon their initial hiring, and again when they are evaluated for tenure. Past studies have investigated both the effects of tenure on future productivity and productivity's impact on tenure outcomes (10–12), and universally, more productive researchers are more likely to achieve tenure status than their less productive peers. Having previously found only modest effects for selective hiring (Supplemental section C) and adaptation to departmental norms (Supplemental section D) as potential drivers of higher productivity and prominence at prestigious institutions, we now investigate the impact of early-career productivity on the retention and relocation of faculty by exploring how well productivity predicts 2016 status.

As previously noted, 474 of the 555 junior faculty (85.4%) in our follow-up sample were still employed as tenure-track faculty at one of the 205 in-sample institutions. Among these faculty, gender was not significantly linked to continued employment

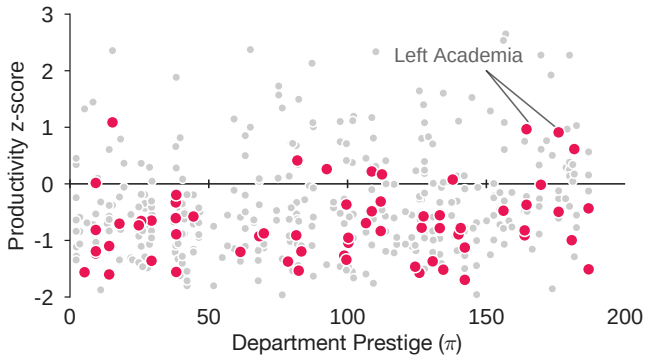

Fig. S4. Post-hire productivities as z-scores (relative to others in the same department) for all junior faculty in the follow-up sample. Magenta dots highlight individuals who were no longer employed as tenure-track faculty at one of the in-sample institutions in 2016.

($p=0.36$, χ^2), whether employed by a top-50 institution or not. Of the 474 individuals still employed, 399 (71.9% of the original 555) were still employed by their 2011 institution, 47 (8.5%) had moved to a more prestigious institution, and 28 (5.0%) had moved to a less prestigious institution. Men and women were once again distributed similarly over these categories, as were individuals from elite versus non-elite institutions. Shown in Fig. 3, the likelihood of faculty leaving their initial appointment was distributed uniformly by prestige ($p=0.96$, χ^2).

After taking inventory of the 2016 outcomes for junior faculty, we used supervised machine learning to determine the extent to which each outcome class could be predicted based on early-career productivity and other attributes. First, to predict faculty who will leave the academy altogether (i.e., they were no longer employed by an in-sample institution in our 2016 follow-up), we applied 6-fold cross-validation and trained logistic regression classifiers on individuals' productivity z-scores, calculated relative to their departmental peers. The AUC score for this task was 0.62, indicating that productivity alone is only weakly predictive of whether individuals will depart academia around tenure evaluations. Perhaps unsurprisingly, those researchers who are filtered out at this career stage tend to have below-average productivity (Fig. S4). However, below-average productivity itself is a poor predictor of retention. The inclusion of other covariates, like gender, prominence, and the prestige of the employing institution had little effect on AUC for this prediction task.

We note that faculty who were not retained between the 2011 and 2016 samples were not necessarily denied tenure explicitly and may have actively decided to leave the academy and pursue other careers. In fact, several departing faculty had above-average productivity relative to their departmental peers, and many departing faculty relocated to careers in industry. The exchange of research personnel between academia and industry in particular remains an interesting and relatively un-explored topic (13). Investigating this exchange directly has significant implications for understanding the research ecosystem beyond academia and the careers of scientists who may prefer one setting over the other.

Using a similar setup, we found that the other classes of outcomes were predictable with similar accuracies. We achieved the highest prediction accuracy predicting transitions up the prestige hierarchy (AUC= 0.65), using productivity z-scores and the rank change from individuals' doctoral and initial employing institutions as feature in our prediction model. Of note, researchers who incurred large rank changes in their initial placements tended to at least partially reverse incurred rank changes through mid-career relocation (Fig. S5), suggesting that individuals who do not conform to departmental norms self-sort into more appropriate publishing climates.

Our prediction results here indicate that while productivity and prominence offer some clues as to which faculty will be retained or will relocate in the early years of their career, these predictions are once again modest. Further, the rates at which faculty leave academia, are relatively consistent across the prestige rankings, suggesting that top-ranked institutions do not rely on selection at retention to maintain their high standards of productivity.

F. Regression analysis

Descriptions of variables. Tables S3 and S4 describe the independent and dependent variables in our regression analyses, respectively, and include references to each variable's source(s). Regressions were performed after standardizing all variables, in order to facilitate comparisons of the variables' relative contributions to each measure of productivity.

Our publication data include, for each researcher, the number of authors on each of their publications. Assuming equal effort by all co-authors, we derive fractional "contributions" by dividing each paper by its number of authors. This measure of productivity adjusts for potentially differing collaborative strategies among faculty and is a common metric in productivity studies (14). Applying similar normalization to citation counts is possible but would require more nuanced data than is provided by Google Scholar's citation trajectories. In particular, this transformation would require having separate, yearly citation counts for each publication, along with its number of authors.

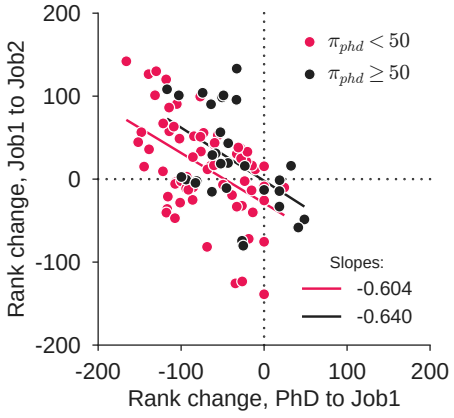

Fig. S5. Faculty who relocate tend to undo the rank change incurred by their initial placement, returning to an institution similar in rank to where they received their doctorate. This reversal of rank-changes is similar for individuals placing in the top-50 (magenta) and otherwise (black).

To determine whether fractional citations might reasonably differ from raw citation counts, we investigated if the denominator in question—the number of authors on publications—varies according to the institutional properties included in our study. If it does, we should expect fractional citations to differ meaningfully from raw counts.

Past studies investigating collaboration among scientists have shown that the average number of authors on a scientific paper has been gradually increasing over time (15, 16). In our data set, the average number of authors per paper has grown at a rate of about 0.6 additional authors per decade ($p < 0.05$, t-test in OLS regression). Noting this relationship, we then considered, for each paper, the difference between the number of authors on the paper and the average number of authors on papers published in that particular year. Next, we asked whether these time-adjusted author counts were related to three key covariates in our study: the prestige of the author's employing institution, whether that institution is private or public, and the size of the department.

Applying ordinary least squares regression, neither private status nor the size of the department significantly impacts the number of authors on a paper. Departmental prestige does correlate significantly with the number of authors ($p < 0.05$, t-test in OLS regression). However, the effect size is small, increasing as 0.01 additional authors for every 10-rank increase in prestige. Accordingly, papers from the most and least prestigious institutions in our analysis are separated by about 0.2 additional authors, on average. This investigation sheds some light on why the publication and fractional contribution measures are similar in our analyses and suggests that fractional citation counts are unlikely to differ substantially from the raw counts included in our study.

Multiple imputation of missing values. Many of the departmental attributes included in our analysis were provided voluntarily by departments to the Computing Research Association as part of the CRA's annual Taulbee Survey**. Data from the 2010-2011 survey cover 163 of our 205 departments and contain missing values (mean 10.1%, median 1.2% values missing across all variables). To handle missing data, prior to our regression analyses, we performed multiple imputation using four popular techniques: multiple imputation by chained equations (17), EM-based imputation (18), nonparametric imputation using random forests (19), and predictive mean matching (20). For each of these methods, we constructed 50 complete datasets that were analyzed in parallel, and whose estimated coefficients and associated statistics were combined using Rubin's Rules (21, 22), as implemented in Zelig (23, 24). The primary relationships identified through regression are consistent across these methods, though smaller effects vary somewhat. For completeness, we present the results of multiple imputation by chained equations (MICE) in the main text and include the results of the remaining techniques in Fig. S6. In addition, Tables S5 through S14 provide the statistics used to create the figure in the main text.

Additional discussion of regression results. In our regression analysis, departmental prestige correlates positively with nearly every measure of individual-level productivity. This outcome is entirely expected and, in fact, serves as the basis for our work. Past studies have examined this relationship at length (3, 25–29), finding consistent effects over time and in a variety of fields. Notably, the collection of works by Long, Allison, and McGinnis (7, 29, 30) suggested prestige's causal role in driving faculty productivity by showing that changes in environment predict corresponding changes in scholarly outputs. Inspired in part by their work, our matched-pair analyses provide what we believe is the strongest possible evidence for causality (short of true randomized controlled trials), finding similar effects under a framework that adjusts for possible confounding variables in a comprehensive dataset that spans an entire field of research.

Past studies have found that faculty at private institutions tend to also be more productive (31–33). Work by Jordan et al. (32) suggested that faculty at private institutions may have fewer constraints, better organizational structure, higher salaries, and more resources that may result in greater productivity. Withholding prestige and private status in our analysis (Model 2), covariates related to additional research staff ("Non-TT teachers+researchers, per faculty"), monetary resources ("External funding dollars, per faculty"), and fewer undergraduate students ("Undergraduate students, per faculty") become significant. These findings support Jordan et al.'s hypothesis that the positive effects of prestige and private status stem in part from having more assistance, both in terms of finance and personnel, as well as possibly fewer obligations for teaching and mentoring undergraduate students.

Counts of undergraduate and PhD students have nearly opposite effects on faculty productivity and prominence. These groups correspond approximately to the two primary objectives expected of tenure-track faculty at PhD-granting institutions: teaching students and conducting research. Past studies have investigated the relationship between faculty's teaching effectiveness (most often measured by undergraduate student evaluations) and research productivity, concluding that there is effectively no relationship between the two (34–37). In other words, faculty can be both good teachers and productive researchers, and effectiveness in one dimension doesn't necessarily preclude effectiveness in the other. However, it remains less clear how productivity is affected by the size of the undergraduate population and whether this relationship depends on the environment. Productivity has been shown to correlate with the amount of time faculty spend on research activities (34), and, intuitively, larger undergraduate populations may encourage faculty to instead spend more time on teaching and mentoring students. We find a marginal effect, which may mask the true impact of teaching due to compensatory mechanisms like hiring teaching faculty and support staff. More research is necessary to unpack the relationships between faculty's teaching and research performance.

Conversely, higher PhD student-to-faculty ratios correspond to strong, positive effects on faculty productivity in our analysis. We should expect this result given that the goal for a PhD student's training is to educate them on how to conduct research, often culminating in publications authored by the student and their faculty advisor. As noted in the main text, faculty prominence as measured by citations is relatively unaffected by this ratio, suggesting that while having more graduate students is beneficial for producing more research, it is not necessarily beneficial for producing research that is better cited. From the faculty's perspective, advising more

** https://cra.org/resources/taulbee-survey/

(a) Amelia. (b) MissForest. (c) Predictive mean matching.

Fig. S6. Alternate regression results using EM-based imputation (Amelia; left), nonparametric imputation using random forests (MissForest, middle), and predictive mean matching (implemented in MICE; right). Significant relationships are largely consistent between methods.

students may produce more research articles and thus more opportunities for well-cited research (38). On the other hand, larger groups tend to be harder to manage and may limit the amount of time faculty can devote to PhD students individually. Together, these opposing forces may induce an optimal size for research labs (39), and with it, an optimal strategy for balancing the quantity and quality of investment in individual PhD students (40).

Variables related to individuals' financial compensation, both faculty and students', are largely uncorrelated with productivity and prominence in our analyses. This may be driven in part by the fact that market forces constrain salaries and student support to be similar across departments (similar constraints plausibly limit the dynamic range of other variables, including gender ratios and teaching requirements). Other benefits, however, including institutional support for parental leave, do vary considerably across departments but are also statistically insignificant. Past studies investigating the impact of family on research productivity reveal complex interactions with productivity (41, 42), though the effects of departmental support remain largely unexplored. To support further research into this question, we have created a public repository of institutional parental leave policies collected for this study (5), and we welcome more in-depth investigations into the effects of these policies.

Finally, our analyses here shed light on the possible mechanisms through which prestigious institutions might facilitate greater productivity and prominence of their faculty. These mechanisms focus primarily on the resources and qualities of working environments that might reasonably augment or restrict an individual's research agenda. However, prestige itself can also facilitate success in publishing through "halo effects" (43) or expectations of merit that surround work originating from prestigious institutions. These expectations might simplify the process of peer review for faculty with prestigious appointments, leading to greater productivity, and enhance the visibility of their work, making it better cited (44–46). Empirical studies find mixed evidence to support or reject the existence of such biases (47), though, suggesting a limited role for halo effects in contributing to the greater productivity and prominence of faculty at prestigious institutions. We believe the differences observed in this study are largely due to facilitation rather than bias stemming from halo effects. Nevertheless, fairness in peer review is essential to the proper, meritocratic functioning of science and represents an important direction for future studies.

Variable name	Source	Description
Prestige	Our data (1)	A data-driven measure of status. For each department, the average position across multiple orderings of all institutions by the placement power of their PhD programs.
Private	Our data (1)	Whether the department is housed in a private or public university.
Department size	Our data (1)	Number of tenured and tenure-track faculty.
Non-TT teachers + researchers, per faculty	CRA	Number of non-tenure-track, full-time employees, divided by Department Size. Non-tenure-track positions include research and teaching professors, and postdoctoral researchers.
Admin and support staff, per faculty	CRA	Number of administrative and other full-time employees, divided by Department Size. Positions include administration, computer support, and researchers.
PhD students, per faculty	CRA	Number of PhD students in the 2010–2011 academic year, divided by Department Size.
Local population	Census	Population of the city in which the university resides.
Undergraduate students per faculty	CRA	Number of undergraduate students, divided by Department Size.
External funding dollars, per faculty	CRA	Total research dollars from external sources, divided by Department Size.
Gender ratio, PhD students	CRA	Fraction of all PhD students who are women.
Gender ratio, faculty	Our data (1)	Fraction of all tenured and tenure-track positions held by women.
Avg. assistant professor salary	CRA	Average assistant professor salary in 2010-2011 academic year.
Avg. assistant professor salary, normalized	CRA, Census	Average assistant professor salary in 2010-2011 academic year, divided by the median household income for the local population.
Research area (sq. ft), per faculty	CRA	Total square footage allocated to research laboratories, divided by Department Size.
Years of guaranteed PhD student funding	CRA	Number of years of guaranteed support offered to incoming PhD students.
Junior-senior ratio (assistant to other)	Our data (1)	The number of faculty holding the title of "assistant professor," divided by Department Size.
Offers parental leave	Our data (5)	Whether the department offers any amount of paid leave for new parents.
Department size, squared	Our data (1)	The squared number of tenured and tenure-track faculty.
Teaching load, courses per semester	CRA	Average number of courses taught per academic term, converted to semester-equivalent counts.

Table S3. Descriptions of the independent variables in our regression analysis.

Variable label	Source	Description
Pubs., 5yr	DBLP	Median number of publications through faculty's first 5 years post-hire.
Pubs., 10yr	DBLP	Median number of publications through faculty's first 10 years post-hire.
Contributions, 5yr	DBLP	Median number of contributions ("fractional contributions", where each paper count is divided by its number of authors) through faculty's first 5 years post-hire.
Contributions, 10yr	DBLP	Median number of contributions through faculty's first 10 years post-hire.
Citations, 5yr	Google Scholar	Median number of citations through faculty's first 5 years post-hire.
Citations, 10yr	Google Scholar	Median number of citations through faculty's first 5 years post-hire.
In-dept. collabs.	DBLP	For all faculty, the fraction of publications co-authored with in-sample faculty from $the\ same\ institution$.
Out-dept. collabs.	DBLP	For all faculty, the fraction of publications co-authored with in-sample faculty from $another\ institution$.

Table S4. Descriptions of the dependent variables in our regression analysis.

	Model 1			Model 2		
Feature	β	SE β	p	β	SE β	p
(Intercept)	-	-	1.000	-	-	1.000
Prestige	−0.255	0.092	0.006**	-	-	-
Private	0.168	0.076	0.027*	-	-	-
Department size	0.497	0.172	0.004**	0.575	0.168	<0.001***
Non-TT teachers+researchers, per faculty	0.100	0.068	0.141	0.182	0.068	0.007**
Admin and support staff, per faculty	−0.131	0.086	0.128	−0.139	0.089	0.119
PhD students, per faculty	0.277	0.069	<0.001***	0.290	0.070	<0.001***
Undergraduate students, per faculty	−0.051	0.067	0.450	−0.125	0.068	0.065
Department size, squared	−0.294	0.156	0.060	−0.306	0.160	0.055
External funding dollars, per faculty	0.084	0.076	0.266	0.138	0.075	0.064
Gender ratio, PhD students	0.020	0.068	0.769	0.008	0.069	0.906
Gender ratio, faculty	−0.074	0.071	0.299	−0.079	0.072	0.270
Research area (sq. ft), per faculty	0.101	0.080	0.204	0.120	0.084	0.153
Junior-senior ratio (assistant to other)	0.003	0.066	0.965	0.009	0.069	0.900
Offers parental leave	−0.024	0.065	0.710	0.030	0.066	0.643
Teaching load, courses per semester	−0.065	0.073	0.374	−0.119	0.075	0.113
Avg. assistant professor salary	0.009	0.077	0.909	0.054	0.078	0.485
Avg. assistant professor salary, normalized	−0.004	0.072	0.960	−0.002	0.074	0.983
Years of guaranteed PhD student funding	−0.010	0.076	0.899	0.024	0.078	0.753
Local population	0.034	0.066	0.607	0.067	0.067	0.317

	Model 1			Model 2		
Feature	B	SE B	p	B	SE B	p
(Intercept)	1.217×10^{1}	7.670	0.112	3.928	7.479	0.599
Prestige	-4.113×10^{-2}	1.486×10^{-2}	0.006**	-	-	-
Private	3.390	1.531	0.027*	-	-	-
Department size	2.089×10^{-1}	7.210×10^{-2}	0.004**	2.416×10^{-1}	7.041×10^{-2}	<0.001***
Non-TT teachers+researchers, per faculty	3.228	2.195	0.141	5.871	2.186	0.007**
Admin and support staff, per faculty	−2.723	1.791	0.128	−2.885	1.849	0.119
PhD students, per faculty	1.849	4.651×10^{-1}	<0.001***	1.935	4.678×10^{-1}	<0.001***
Undergraduate students, per faculty	-5.954×10^{-2}	7.874×10^{-2}	0.450	-1.459×10^{-1}	7.914×10^{-2}	0.065
Department size, squared	-8.434×10^{-4}	4.490×10^{-4}	0.060	-8.805×10^{-4}	4.591×10^{-4}	0.055
External funding dollars, per faculty	2.954×10^{-6}	2.614×10^{-6}	0.258	4.886×10^{-6}	2.589×10^{-6}	0.059
Gender ratio, PhD students	1.991	6.672	0.765	8.336×10^{-1}	6.828	0.903
Gender ratio, faculty	−8.271	7.960	0.299	−8.898	8.062	0.270
Research area (sq. ft), per faculty	1.660×10^{-3}	1.307×10^{-3}	0.204	1.962×10^{-3}	1.372×10^{-3}	0.153
Junior-senior ratio (assistant to other)	2.636×10^{-1}	5.956	0.965	7.805×10^{-1}	6.222	0.900
Offers parental leave	-4.305×10^{-1}	1.159	0.710	5.457×10^{-1}	1.179	0.643
Teaching load, courses per semester	-4.063×10^{-1}	4.573×10^{-1}	0.374	-7.423×10^{-1}	4.685×10^{-1}	0.113
Avg. assistant professor salary	8.205×10^{-6}	6.941×10^{-5}	0.906	4.956×10^{-5}	7.074×10^{-5}	0.484
Avg. assistant professor salary, normalized	-4.883×10^{-2}	1.017	0.962	-2.238×10^{-2}	1.051	0.983
Years of guaranteed PhD student funding	-4.161×10^{-2}	3.284×10^{-1}	0.899	1.062×10^{-1}	3.368×10^{-1}	0.753
Local population	2.350×10^{-7}	4.569×10^{-7}	0.607	4.617×10^{-7}	4.617×10^{-7}	0.317

Table S5. Regression tables for "Publications, 5yr" using MICE.
β and B denote standardized and unstandardized coefficients, respectively.
$^{***}p < 0.001$, $^{**}p < 0.01$, $^{*}p < 0.05$.

	Model 1			Model 2		
Feature	β	SE β	p	β	SE β	p
(Intercept)	-	-	1.000	-	-	1.000
Prestige	−0.361	0.086	<0.001***	-	-	-
Private	0.089	0.071	0.212	-	-	-
Department size	0.488	0.160	0.002**	0.656	0.160	<0.001***
Non-TT teachers+researchers, per faculty	0.072	0.064	0.259	0.155	0.065	0.017*
Admin and support staff, per faculty	−0.095	0.081	0.241	−0.125	0.085	0.142
PhD students, per faculty	0.228	0.065	<0.001***	0.269	0.067	<0.001***
Undergraduate students, per faculty	−0.031	0.063	0.622	−0.108	0.065	0.096
Department size, squared	−0.272	0.146	0.063	−0.334	0.152	0.028*
External funding dollars, per faculty	0.085	0.074	0.249	0.139	0.072	0.055
Gender ratio, PhD students	0.016	0.064	0.798	−0.012	0.067	0.854
Gender ratio, faculty	−0.128	0.066	0.053	−0.158	0.069	0.021*
Research area (sq. ft), per faculty	0.060	0.074	0.418	0.094	0.080	0.240
Junior-senior ratio (assistant to other)	0.036	0.062	0.563	0.035	0.066	0.601
Offers parental leave	−0.030	0.061	0.623	0.016	0.063	0.803
Teaching load, courses per semester	0.025	0.071	0.728	−0.040	0.073	0.586
Avg. assistant professor salary	0.044	0.070	0.534	0.095	0.073	0.196
Avg. assistant professor salary, normalized	−0.055	0.066	0.404	−0.057	0.070	0.416
Years of guaranteed PhD student funding	0.049	0.069	0.476	0.092	0.072	0.200
Local population	−0.021	0.062	0.735	−0.009	0.064	0.890

	Model 1			Model 2		
Feature	B	SE B	p	B	SE B	p
(Intercept)	2.615×10^{1}	1.644×10^{1}	0.112	1.334	1.636×10^{1}	0.935
Prestige	-1.338×10^{-1}	3.208×10^{-2}	<0.001***	-	-	-
Private	4.124	3.306	0.212	-	-	-
Department size	4.715×10^{-1}	1.546×10^{-1}	0.002**	6.340×10^{-1}	1.542×10^{-1}	<0.001***
Non-TT teachers+researchers, per faculty	5.333	4.727	0.259	1.148×10^{1}	4.802	0.017*
Admin and support staff, per faculty	−4.536	3.866	0.241	−5.990	4.075	0.142
PhD students, per faculty	3.497	1.002	<0.001***	4.129	1.028	<0.001***
Undergraduate students, per faculty	-8.336×10^{-2}	1.692×10^{-1}	0.622	-2.889×10^{-1}	1.736×10^{-1}	0.096
Department size, squared	-1.794×10^{-3}	9.638×10^{-4}	0.063	-2.205×10^{-3}	1.006×10^{-3}	0.028*
External funding dollars, per faculty	6.835×10^{-6}	5.801×10^{-6}	0.239	1.124×10^{-5}	5.721×10^{-6}	0.049*
Gender ratio, PhD students	3.766	1.460×10^{1}	0.796	−2.771	1.523×10^{1}	0.856
Gender ratio, faculty	-3.313×10^{1}	1.710×10^{1}	0.053	-4.081×10^{1}	1.771×10^{1}	0.021*
Research area (sq. ft), per faculty	2.250×10^{-3}	2.779×10^{-3}	0.418	3.526×10^{-3}	2.998×10^{-3}	0.240
Junior-senior ratio (assistant to other)	7.433	1.285×10^{1}	0.563	7.159	1.370×10^{1}	0.601
Offers parental leave	−1.227	2.500	0.623	6.462×10^{-1}	2.595	0.803
Teaching load, courses per semester	3.540×10^{-1}	1.023	0.729	-5.713×10^{-1}	1.049	0.586
Avg. assistant professor salary	9.135×10^{-5}	1.461×10^{-4}	0.532	1.983×10^{-4}	1.537×10^{-4}	0.197
Avg. assistant professor salary, normalized	−1.787	2.139	0.403	−1.866	2.290	0.415
Years of guaranteed PhD student funding	4.904×10^{-1}	6.862×10^{-1}	0.475	9.202×10^{-1}	7.171×10^{-1}	0.199
Local population	-3.321×10^{-7}	9.814×10^{-7}	0.735	-1.405×10^{-7}	1.013×10^{-6}	0.890

Table S6. Regression tables for "Publications, 10yr" using MICE.
β and B denote standardized and unstandardized coefficients, respectively.
$^{***}p < 0.001$, $^{**}p < 0.01$, $^{*}p < 0.05$.

	Model 1			Model 2		
Feature	β	SE β	p	β	SE β	p
(Intercept)	-	-	1.000	-	-	1.000
Prestige	−0.294	0.090	0.001**	-	-	-
Private	0.192	0.074	0.010**	-	-	-
Department size	0.508	0.167	0.002**	0.599	0.166	<0.001***
Non-TT teachers+researchers, per faculty	0.120	0.066	0.070	0.214	0.067	0.001**
Admin and support staff, per faculty	−0.241	0.084	0.004**	−0.250	0.088	0.005**
PhD students, per faculty	0.239	0.068	<0.001***	0.254	0.069	<0.001***
Undergraduate students, per faculty	−0.012	0.066	0.851	−0.097	0.067	0.147
Department size, squared	−0.249	0.152	0.101	−0.264	0.158	0.095
External funding dollars, per faculty	0.067	0.078	0.388	0.129	0.077	0.095
Gender ratio, PhD students	0.013	0.066	0.841	0.000	0.068	0.995
Gender ratio, faculty	−0.011	0.069	0.871	−0.018	0.071	0.801
Research area (sq. ft), per faculty	0.119	0.077	0.121	0.140	0.082	0.088
Junior-senior ratio (assistant to other)	−0.035	0.064	0.590	−0.028	0.068	0.680
Offers parental leave	−0.019	0.063	0.760	0.043	0.065	0.508
Teaching load, courses per semester	−0.058	0.073	0.430	−0.119	0.076	0.117
Avg. assistant professor salary	−0.005	0.073	0.942	0.047	0.076	0.533
Avg. assistant professor salary, normalized	−0.008	0.069	0.905	−0.006	0.072	0.934
Years of guaranteed PhD student funding	−0.010	0.073	0.894	0.029	0.077	0.701
Local population	0.047	0.064	0.465	0.084	0.066	0.203

	Model 1			Model 2		
Feature	B	SE B	p	B	SE B	p
(Intercept)	6.185	3.104	0.046*	2.238	3.073	0.466
Prestige	-1.970×10^{-2}	6.022×10^{-3}	0.001**	-	-	-
Private	1.608	6.221×10^{-1}	0.010**	-	-	-
Department size	8.869×10^{-2}	2.906×10^{-2}	0.002**	1.045×10^{-1}	2.892×10^{-2}	<0.001***
Non-TT teachers+researchers, per faculty	1.606	8.870×10^{-1}	0.070	2.867	9.018×10^{-1}	0.001**
Admin and support staff, per faculty	−2.081	7.239×10^{-1}	0.004**	−2.160	7.627×10^{-1}	0.005**
PhD students, per faculty	6.635×10^{-1}	1.881×10^{-1}	<0.001***	7.053×10^{-1}	1.925×10^{-1}	<0.001***
Undergraduate students, per faculty	-5.984×10^{-3}	3.186×10^{-2}	0.851	-4.718×10^{-2}	3.255×10^{-2}	0.147
Department size, squared	-2.968×10^{-4}	1.810×10^{-4}	0.101	-3.153×10^{-4}	1.886×10^{-4}	0.095
External funding dollars, per faculty	9.652×10^{-7}	1.106×10^{-6}	0.383	1.888×10^{-6}	1.104×10^{-6}	0.087
Gender ratio, PhD students	5.580×10^{-1}	2.687	0.835	-2.270×10^{-3}	2.798	0.999
Gender ratio, faculty	-5.203×10^{-1}	3.208	0.871	-8.347×10^{-1}	3.308	0.801
Research area (sq. ft), per faculty	8.081×10^{-4}	5.220×10^{-4}	0.122	9.531×10^{-4}	5.589×10^{-4}	0.088
Junior-senior ratio (assistant to other)	−1.296	2.406	0.590	−1.054	2.560	0.680
Offers parental leave	-1.429×10^{-1}	4.686×10^{-1}	0.760	3.216×10^{-1}	4.853×10^{-1}	0.508
Teaching load, courses per semester	-1.502×10^{-1}	1.899×10^{-1}	0.429	-3.107×10^{-1}	1.986×10^{-1}	0.118
Avg. assistant professor salary	-1.964×10^{-6}	2.743×10^{-5}	0.943	1.781×10^{-5}	2.852×10^{-5}	0.532
Avg. assistant professor salary, normalized	-4.724×10^{-2}	4.043×10^{-1}	0.907	-3.524×10^{-2}	4.230×10^{-1}	0.934
Years of guaranteed PhD student funding	-1.740×10^{-2}	1.321×10^{-1}	0.895	5.328×10^{-2}	1.382×10^{-1}	0.700
Local population	1.348×10^{-7}	1.845×10^{-7}	0.465	2.422×10^{-7}	1.901×10^{-7}	0.203

Table S7. Regression tables for "Contributions, 5y" using MICE.
β and B denote standardized and unstandardized coefficients, respectively.
$^{***}p < 0.001$, $^{**}p < 0.01$, $^{*}p < 0.05$.

	Model 1			Model 2		
Feature	β	SE β	p	β	SE β	p
(Intercept)	-	-	1.000	-	-	1.000
Prestige	−0.379	0.086	<0.001***	-	-	-
Private	0.077	0.071	0.276	-	-	-
Department size	0.431	0.159	0.007**	0.614	0.159	<0.001***
Non-TT teachers+researchers, per faculty	0.126	0.063	0.047*	0.209	0.065	0.001**
Admin and support staff, per faculty	−0.168	0.080	0.036*	−0.202	0.085	0.017*
PhD students, per faculty	0.186	0.064	0.004**	0.232	0.067	<0.001***
Undergraduate students, per faculty	0.021	0.063	0.736	−0.056	0.065	0.386
Department size, squared	−0.249	0.145	0.085	−0.319	0.152	0.035*
External funding dollars, per faculty	0.107	0.071	0.130	0.161	0.070	0.022*
Gender ratio, PhD students	−0.010	0.063	0.871	−0.042	0.066	0.529
Gender ratio, faculty	−0.092	0.065	0.157	−0.126	0.068	0.064
Research area (sq. ft), per faculty	0.075	0.073	0.305	0.112	0.080	0.161
Junior-senior ratio (assistant to other)	−0.002	0.061	0.968	−0.005	0.066	0.941
Offers parental leave	−0.044	0.060	0.464	0.000	0.063	0.996
Teaching load, courses per semester	−0.038	0.071	0.591	−0.104	0.073	0.154
Avg. assistant professor salary	0.052	0.069	0.446	0.105	0.072	0.148
Avg. assistant professor salary, normalized	−0.037	0.064	0.558	−0.040	0.069	0.557
Years of guaranteed PhD student funding	0.045	0.070	0.516	0.090	0.073	0.219
Local population	0.026	0.061	0.674	0.035	0.064	0.587

	Model 1			Model 2		
Feature	B	SE B	p	B	SE B	p
(Intercept)	1.317×10^{1}	6.871	0.055	2.176	6.891	0.752
Prestige	-5.981×10^{-2}	1.352×10^{-2}	<0.001***	-	-	-
Private	1.519	1.395	0.276	-	-	-
Department size	1.772×10^{-1}	6.524×10^{-2}	0.007**	2.525×10^{-1}	6.550×10^{-2}	<0.001***
Non-TT teachers+researchers, per faculty	3.962	1.992	0.047*	6.593	2.038	0.001**
Admin and support staff, per faculty	−3.414	1.629	0.036*	−4.106	1.728	0.018*
PhD students, per faculty	1.217	4.217×10^{-1}	0.004**	1.516	4.363×10^{-1}	<0.001***
Undergraduate students, per faculty	2.415×10^{-2}	7.172×10^{-2}	0.736	-6.423×10^{-2}	7.405×10^{-2}	0.386
Department size, squared	-7.003×10^{-4}	4.063×10^{-4}	0.085	-8.979×10^{-4}	4.264×10^{-4}	0.035*
External funding dollars, per faculty	3.687×10^{-6}	2.368×10^{-6}	0.119	5.567×10^{-6}	2.373×10^{-6}	0.019*
Gender ratio, PhD students	-9.772×10^{-1}	6.083	0.872	−4.025	6.408	0.530
Gender ratio, faculty	-1.015×10^{1}	7.175	0.157	-1.385×10^{1}	7.489	0.064
Research area (sq. ft), per faculty	1.205×10^{-3}	1.174×10^{-3}	0.305	1.789×10^{-3}	1.276×10^{-3}	0.161
Junior-senior ratio (assistant to other)	-2.180×10^{-1}	5.411	0.968	-4.295×10^{-1}	5.812	0.941
Offers parental leave	-7.707×10^{-1}	1.053	0.464	5.809×10^{-3}	1.101	0.996
Teaching load, courses per semester	-2.359×10^{-1}	4.364×10^{-1}	0.589	-6.412×10^{-1}	4.503×10^{-1}	0.154
Avg. assistant professor salary	4.661×10^{-5}	6.099×10^{-5}	0.445	9.312×10^{-5}	6.463×10^{-5}	0.150
Avg. assistant professor salary, normalized	-5.200×10^{-1}	8.876×10^{-1}	0.558	-5.644×10^{-1}	9.568×10^{-1}	0.555
Years of guaranteed PhD student funding	1.921×10^{-1}	2.954×10^{-1}	0.515	3.820×10^{-1}	3.109×10^{-1}	0.219
Local population	1.740×10^{-7}	4.138×10^{-7}	0.674	2.339×10^{-7}	4.304×10^{-7}	0.587

Table S8. Regression tables for "Contributions, 10yr" using MICE.
β and B denote standardized and unstandardized coefficients, respectively.
$^{***}p < 0.001$, $^{**}p < 0.01$, $^{*}p < 0.05$.

	Model 1			Model 2		
Feature	β	SE β	p	β	SE β	p
(Intercept)	-	-	1.000	-	-	1.000
Prestige	−0.428	0.106	<0.001***	-	-	-
Private	0.135	0.087	0.122	-	-	-
Department size	0.087	0.197	0.657	0.276	0.196	0.160
Non-TT teachers+researchers, per faculty	0.041	0.078	0.600	0.146	0.080	0.066
Admin and support staff, per faculty	−0.003	0.102	0.975	−0.036	0.106	0.738
PhD students, per faculty	0.144	0.080	0.073	0.188	0.082	0.022*
Undergraduate students, per faculty	−0.066	0.078	0.399	−0.162	0.079	0.042*
Department size, squared	−0.033	0.180	0.856	−0.098	0.188	0.602
External funding dollars, per faculty	0.037	0.080	0.647	0.105	0.082	0.203
Gender ratio, PhD students	0.112	0.080	0.162	0.080	0.084	0.337
Gender ratio, faculty	0.017	0.082	0.835	−0.014	0.085	0.870
Research area (sq. ft), per faculty	0.030	0.088	0.734	0.069	0.093	0.457
Junior-senior ratio (assistant to other)	0.204	0.076	0.007**	0.205	0.081	0.012*
Offers parental leave	0.114	0.074	0.125	0.174	0.077	0.024*
Teaching load, courses per semester	0.058	0.087	0.510	−0.021	0.090	0.816
Avg. assistant professor salary	0.001	0.090	0.990	0.065	0.093	0.485
Avg. assistant professor salary, normalized	−0.038	0.088	0.662	−0.040	0.092	0.666
Years of guaranteed PhD student funding	−0.011	0.082	0.892	0.041	0.087	0.636
Local population	−0.082	0.075	0.277	−0.061	0.077	0.431

	Model 1			Model 2		
Feature	B	SE B	p	B	SE B	p
(Intercept)	2.256	3.950×10^{-1}	<0.001***	1.693	3.908×10^{-1}	<0.001***
Prestige	-2.989×10^{-3}	7.399×10^{-4}	<0.001***	-	-	-
Private	1.175×10^{-1}	7.597×10^{-2}	0.122	-	-	-
Department size	1.591×10^{-3}	3.581×10^{-3}	0.657	5.013×10^{-3}	3.572×10^{-3}	0.160
Non-TT teachers+researchers, per faculty	5.732×10^{-2}	1.092×10^{-1}	0.600	2.036×10^{-1}	1.109×10^{-1}	0.066
Admin and support staff, per faculty	-2.619×10^{-3}	9.162×10^{-2}	0.977	-3.179×10^{-2}	9.562×10^{-2}	0.740
PhD students, per faculty	4.151×10^{-2}	2.319×10^{-2}	0.073	5.435×10^{-2}	2.376×10^{-2}	0.022*
Undergraduate students, per faculty	-3.316×10^{-3}	3.934×10^{-3}	0.399	-8.181×10^{-3}	4.019×10^{-3}	0.042*
Department size, squared	-4.064×10^{-6}	2.239×10^{-5}	0.856	-1.217×10^{-5}	2.337×10^{-5}	0.602
External funding dollars, per faculty	5.556×10^{-8}	1.220×10^{-7}	0.649	1.611×10^{-7}	1.263×10^{-7}	0.202
Gender ratio, PhD students	4.835×10^{-1}	3.445×10^{-1}	0.161	3.476×10^{-1}	3.586×10^{-1}	0.332
Gender ratio, faculty	8.335×10^{-2}	4.007×10^{-1}	0.835	-6.752×10^{-2}	4.142×10^{-1}	0.870
Research area (sq. ft), per faculty	2.129×10^{-5}	6.265×10^{-5}	0.734	4.892×10^{-5}	6.577×10^{-5}	0.457
Junior-senior ratio (assistant to other)	7.969×10^{-1}	2.977×10^{-1}	0.007**	7.980×10^{-1}	3.172×10^{-1}	0.012*
Offers parental leave	8.834×10^{-2}	5.765×10^{-2}	0.125	1.350×10^{-1}	5.962×10^{-2}	0.024*
Teaching load, courses per semester	1.570×10^{-2}	2.375×10^{-2}	0.509	-5.598×10^{-3}	2.451×10^{-2}	0.819
Avg. assistant professor salary	5.662×10^{-8}	3.519×10^{-6}	0.987	2.550×10^{-6}	3.646×10^{-6}	0.484
Avg. assistant professor salary, normalized	-2.362×10^{-2}	5.375×10^{-2}	0.660	-2.473×10^{-2}	5.688×10^{-2}	0.664
Years of guaranteed PhD student funding	-2.084×10^{-3}	1.541×10^{-2}	0.892	7.730×10^{-3}	1.634×10^{-2}	0.636
Local population	-2.455×10^{-8}	2.256×10^{-8}	0.277	-1.826×10^{-8}	2.321×10^{-8}	0.431

Table S9. Regression tables for "Log(Citations), 5yr" using MICE.
β and B denote standardized and unstandardized coefficients, respectively.
$^{***}p < 0.001$, $^{**}p < 0.01$, $^{*}p < 0.05$.

	Model 1			Model 2		
Feature	β	SE β	p	β	SE β	p
(Intercept)	-	-	1.000	-	-	1.000
Prestige	−0.328	0.109	0.003**	-	-	-
Private	0.169	0.089	0.058	-	-	-
Department size	0.421	0.201	0.037*	0.539	0.196	0.006**
Non-TT teachers+researchers, per faculty	−0.018	0.080	0.822	0.077	0.080	0.336
Admin and support staff, per faculty	0.018	0.106	0.868	0.001	0.108	0.989
PhD students, per faculty	0.046	0.082	0.573	0.070	0.083	0.396
Undergraduate students, per faculty	−0.058	0.079	0.461	−0.145	0.080	0.069
Department size, squared	−0.264	0.184	0.152	−0.294	0.188	0.118
External funding dollars, per faculty	0.058	0.084	0.488	0.121	0.084	0.153
Gender ratio, PhD students	0.130	0.083	0.118	0.111	0.085	0.191
Gender ratio, faculty	−0.020	0.084	0.813	−0.034	0.086	0.690
Research area (sq. ft), per faculty	0.118	0.091	0.196	0.144	0.094	0.127
Junior-senior ratio (assistant to other)	0.097	0.078	0.217	0.101	0.082	0.217
Offers parental leave	0.017	0.076	0.820	0.077	0.077	0.317
Teaching load, courses per semester	0.059	0.089	0.504	−0.006	0.090	0.945
Avg. assistant professor salary	0.030	0.090	0.742	0.084	0.092	0.361
Avg. assistant professor salary, normalized	−0.029	0.087	0.736	−0.028	0.090	0.754
Years of guaranteed PhD student funding	0.012	0.085	0.887	0.054	0.088	0.537
Local population	−0.042	0.077	0.582	−0.011	0.078	0.885

	Model 1			Model 2		
Feature	B	SE B	p	B	SE B	p
(Intercept)	2.486	4.210×10^{-1}	<0.001***	2.007	4.134×10^{-1}	<0.001***
Prestige	-2.455×10^{-3}	8.147×10^{-4}	0.003**	-	-	-
Private	1.579×10^{-1}	8.339×10^{-2}	0.058	-	-	-
Department size	8.202×10^{-3}	3.925×10^{-3}	0.037*	1.051×10^{-2}	3.828×10^{-3}	0.006**
Non-TT teachers+researchers, per faculty	-2.697×10^{-2}	1.202×10^{-1}	0.822	1.150×10^{-1}	1.194×10^{-1}	0.336
Admin and support staff, per faculty	1.744×10^{-2}	1.018×10^{-1}	0.864	1.832×10^{-3}	1.040×10^{-1}	0.986
PhD students, per faculty	1.433×10^{-2}	2.546×10^{-2}	0.573	2.175×10^{-2}	2.560×10^{-2}	0.396
Undergraduate students, per faculty	-3.167×10^{-3}	4.298×10^{-3}	0.461	-7.832×10^{-3}	4.317×10^{-3}	0.070
Department size, squared	-3.515×10^{-5}	2.455×10^{-5}	0.152	-3.922×10^{-5}	2.509×10^{-5}	0.118
External funding dollars, per faculty	9.546×10^{-8}	1.367×10^{-7}	0.485	1.985×10^{-7}	1.382×10^{-7}	0.151
Gender ratio, PhD students	6.013×10^{-1}	3.843×10^{-1}	0.118	5.138×10^{-1}	3.911×10^{-1}	0.189
Gender ratio, faculty	-1.042×10^{-1}	4.395×10^{-1}	0.813	-1.779×10^{-1}	4.455×10^{-1}	0.690
Research area (sq. ft), per faculty	8.946×10^{-5}	6.903×10^{-5}	0.195	1.094×10^{-4}	7.166×10^{-5}	0.127
Junior-senior ratio (assistant to other)	4.040×10^{-1}	3.271×10^{-1}	0.217	4.220×10^{-1}	3.416×10^{-1}	0.217
Offers parental leave	1.442×10^{-2}	6.333×10^{-2}	0.820	6.431×10^{-2}	6.421×10^{-2}	0.317
Teaching load, courses per semester	1.732×10^{-2}	2.588×10^{-2}	0.503	-1.708×10^{-3}	2.602×10^{-2}	0.948
Avg. assistant professor salary	1.258×10^{-6}	3.775×10^{-6}	0.739	3.552×10^{-6}	3.876×10^{-6}	0.359
Avg. assistant professor salary, normalized	-1.937×10^{-2}	5.732×10^{-2}	0.735	-1.875×10^{-2}	5.936×10^{-2}	0.752
Years of guaranteed PhD student funding	2.431×10^{-3}	1.715×10^{-2}	0.887	1.091×10^{-2}	1.766×10^{-2}	0.537
Local population	-1.364×10^{-8}	2.481×10^{-8}	0.582	-3.624×10^{-9}	2.503×10^{-8}	0.885

Table S10. Regression tables for "Log(Citations), 10yr" using MICE.
β and B denote standardized and unstandardized coefficients, respectively.
$^{***}p < 0.001$, $^{**}p < 0.01$, $^{*}p < 0.05$.

	Model 1			Model 2		
Feature	β	SE β	p	β	SE β	p
(Intercept)	-	-	1.000	-	-	1.000
Prestige	−0.388	0.110	<0.001***	-	-	-
Private	0.196	0.090	0.030*	-	-	-
Department size	0.141	0.205	0.492	0.282	0.203	0.164
Non-TT teachers+researchers, per faculty	0.005	0.081	0.948	0.117	0.082	0.155
Admin and support staff, per faculty	−0.047	0.103	0.648	−0.067	0.107	0.535
PhD students, per faculty	0.108	0.083	0.193	0.137	0.085	0.106
Undergraduate students, per faculty	−0.062	0.080	0.438	−0.164	0.082	0.046*
Department size, squared	−0.059	0.187	0.752	−0.096	0.194	0.620
External funding dollars, per faculty	0.009	0.082	0.916	0.082	0.084	0.330
Gender ratio, PhD students	0.091	0.080	0.253	0.068	0.083	0.411
Gender ratio, faculty	−0.015	0.085	0.863	−0.032	0.087	0.715
Research area (sq. ft), per faculty	0.123	0.092	0.180	0.154	0.096	0.110
Junior-senior ratio (assistant to other)	0.126	0.079	0.111	0.131	0.084	0.118
Offers parental leave	0.052	0.077	0.502	0.122	0.080	0.125
Teaching load, courses per semester	0.037	0.088	0.671	−0.040	0.090	0.657
Avg. assistant professor salary	0.001	0.092	0.992	0.065	0.094	0.485
Avg. assistant professor salary, normalized	−0.027	0.086	0.757	−0.025	0.090	0.776
Years of guaranteed PhD student funding	−0.058	0.086	0.499	−0.008	0.092	0.928
Local population	−0.088	0.079	0.267	−0.051	0.081	0.524

	Model 1			Model 2		
Feature	B	SE B	p	B	SE B	p
(Intercept)	3.282×10^{2}	2.982×10^{2}	0.271	-6.139×10^{1}	2.899×10^{2}	0.832
Prestige	−1.997	5.684×10^{-1}	<0.001***	-	-	-
Private	1.261×10^{2}	5.819×10^{1}	0.030*	-	-	-
Department size	1.883	2.741	0.492	3.781	2.714	0.164
Non-TT teachers+researchers, per faculty	5.470	8.357×10^{1}	0.948	1.201×10^{2}	8.444×10^{1}	0.155
Admin and support staff, per faculty	-3.113×10^{1}	6.829×10^{1}	0.648	-4.422×10^{1}	7.129×10^{1}	0.535
PhD students, per faculty	2.308×10^{1}	1.774×10^{1}	0.193	2.922×10^{1}	1.809×10^{1}	0.106
Undergraduate students, per faculty	−2.322	2.993	0.438	−6.091	3.051	0.046*
Department size, squared	-5.422×10^{-3}	1.714×10^{-2}	0.752	-8.822×10^{-3}	1.778×10^{-2}	0.620
External funding dollars, per faculty	8.908×10^{-6}	9.256×10^{-5}	0.923	9.246×10^{-5}	9.471×10^{-5}	0.329
Gender ratio, PhD students	2.883×10^{2}	2.522×10^{2}	0.253	2.164×10^{2}	2.620×10^{2}	0.409
Gender ratio, faculty	-5.247×10^{1}	3.044×10^{2}	0.863	-1.142×10^{2}	3.126×10^{2}	0.715
Research area (sq. ft), per faculty	6.427×10^{-2}	4.792×10^{-2}	0.180	8.061×10^{-2}	5.039×10^{-2}	0.110
Junior-senior ratio (assistant to other)	3.626×10^{2}	2.278×10^{2}	0.111	3.765×10^{2}	2.408×10^{2}	0.118
Offers parental leave	2.972×10^{1}	4.429×10^{1}	0.502	6.978×10^{1}	4.553×10^{1}	0.125
Teaching load, courses per semester	7.366	1.746×10^{1}	0.673	−8.023	1.799×10^{1}	0.656
Avg. assistant professor salary	3.218×10^{-5}	2.654×10^{-3}	0.990	1.892×10^{-3}	2.713×10^{-3}	0.485
Avg. assistant professor salary, normalized	-1.202×10^{1}	3.884×10^{1}	0.757	-1.160×10^{1}	4.059×10^{1}	0.775
Years of guaranteed PhD student funding	−8.055	1.193×10^{1}	0.499	−1.147	1.272×10^{1}	0.928
Local population	-1.931×10^{-5}	1.741×10^{-5}	0.267	-1.135×10^{-5}	1.782×10^{-5}	0.524

Table S11. Regression tables for "Citations, 5yr" using MICE.
β and B denote standardized and unstandardized coefficients, respectively.
$^{***}p < 0.001$, $^{**}p < 0.01$, $^{*}p < 0.05$.

	Model 1			Model 2		
Feature	β	SE β	p	β	SE β	p
(Intercept)	-	-	1.000	-	-	1.000
Prestige	−0.039	0.120	0.748	-	-	-
Private	0.097	0.099	0.324	-	-	-
Department size	0.394	0.223	0.077	0.378	0.207	0.067
Non-TT teachers+researchers, per faculty	0.007	0.089	0.940	0.035	0.084	0.676
Admin and support staff, per faculty	−0.111	0.111	0.318	−0.103	0.109	0.346
PhD students, per faculty	−0.050	0.091	0.585	−0.059	0.087	0.501
Undergraduate students, per faculty	−0.131	0.088	0.136	−0.155	0.084	0.064
Department size, squared	−0.211	0.203	0.299	−0.192	0.198	0.331
External funding dollars, per faculty	0.012	0.087	0.887	0.032	0.084	0.708
Gender ratio, PhD students	0.068	0.087	0.433	0.072	0.085	0.396
Gender ratio, faculty	−0.071	0.092	0.440	−0.061	0.089	0.492
Research area (sq. ft), per faculty	0.193	0.098	0.049*	0.192	0.097	0.047*
Junior-senior ratio (assistant to other)	0.034	0.087	0.694	0.039	0.086	0.647
Offers parental leave	0.015	0.084	0.859	0.039	0.082	0.636
Teaching load, courses per semester	0.035	0.094	0.712	0.021	0.092	0.820
Avg. assistant professor salary	0.164	0.097	0.091	0.177	0.095	0.063
Avg. assistant professor salary, normalized	−0.053	0.089	0.554	−0.050	0.088	0.575
Years of guaranteed PhD student funding	0.027	0.090	0.767	0.034	0.089	0.701
Local population	−0.072	0.086	0.405	−0.050	0.082	0.544

	Model 1			Model 2		
Feature	B	SE B	p	B	SE B	p
(Intercept)	-1.789×10^{3}	1.844×10^{3}	0.332	-2.098×10^{3}	1.724×10^{3}	0.224
Prestige	−1.169	3.635	0.748	-	-	-
Private	3.674×10^{2}	3.729×10^{2}	0.324	-	-	-
Department size	3.100×10^{1}	1.751×10^{1}	0.077	2.976×10^{1}	1.626×10^{1}	0.067
Non-TT teachers+researchers, per faculty	4.016×10^{1}	5.357×10^{2}	0.940	2.119×10^{2}	5.078×10^{2}	0.676
Admin and support staff, per faculty	-4.322×10^{2}	4.328×10^{2}	0.318	-3.997×10^{2}	4.239×10^{2}	0.346
PhD students, per faculty	-6.198×10^{1}	1.134×10^{2}	0.585	-7.329×10^{1}	1.087×10^{2}	0.500
Undergraduate students, per faculty	-2.857×10^{1}	1.917×10^{1}	0.136	-3.397×10^{1}	1.834×10^{1}	0.064
Department size, squared	-1.134×10^{-1}	1.091×10^{-1}	0.299	-1.033×10^{-1}	1.063×10^{-1}	0.331
External funding dollars, per faculty	7.892×10^{-5}	5.762×10^{-4}	0.891	2.071×10^{-4}	5.596×10^{-4}	0.711
Gender ratio, PhD students	1.272×10^{3}	1.609×10^{3}	0.429	1.345×10^{3}	1.577×10^{3}	0.394
Gender ratio, faculty	-1.494×10^{3}	1.933×10^{3}	0.440	-1.288×10^{3}	1.872×10^{3}	0.492
Research area (sq. ft), per faculty	5.918×10^{-1}	3.003×10^{-1}	0.049*	5.885×10^{-1}	2.965×10^{-1}	0.047*
Junior-senior ratio (assistant to other)	5.744×10^{2}	1.459×10^{3}	0.694	6.641×10^{2}	1.452×10^{3}	0.647
Offers parental leave	5.055×10^{1}	2.836×10^{2}	0.859	1.295×10^{2}	2.739×10^{2}	0.636
Teaching load, courses per semester	4.084×10^{1}	1.108×10^{2}	0.712	2.455×10^{1}	1.078×10^{2}	0.820
Avg. assistant professor salary	2.793×10^{-2}	1.664×10^{-2}	0.093	3.012×10^{-2}	1.635×10^{-2}	0.065
Avg. assistant professor salary, normalized	-1.403×10^{2}	2.373×10^{2}	0.554	-1.323×10^{2}	2.358×10^{2}	0.575
Years of guaranteed PhD student funding	2.179×10^{1}	7.342×10^{1}	0.767	2.784×10^{1}	7.246×10^{1}	0.701
Local population	-9.277×10^{-5}	1.114×10^{-4}	0.405	-6.475×10^{-5}	1.068×10^{-4}	0.544

Table S12. Regression tables for "Citations, 10yr" using MICE.
β and B denote standardized and unstandardized coefficients, respectively.
$^{***}p < 0.001$, $^{**}p < 0.01$, $^{*}p < 0.05$.

	Model 1			Model 2		
Feature	β	SE β	p	β	SE β	p
(Intercept)	-	-	1.000	-	-	1.000
Prestige	−0.032	0.129	0.804	-	-	-
Private	−0.080	0.106	0.451	-	-	-
Department size	−0.209	0.240	0.384	−0.160	0.223	0.474
Non-TT teachers+researchers, per faculty	−0.048	0.095	0.615	−0.060	0.090	0.505
Admin and support staff, per faculty	0.109	0.119	0.360	0.095	0.117	0.415
PhD students, per faculty	0.046	0.098	0.640	0.063	0.093	0.501
Undergraduate students, per faculty	0.047	0.095	0.618	0.057	0.090	0.528
Department size, squared	0.102	0.219	0.641	0.071	0.213	0.740
External funding dollars, per faculty	−0.038	0.098	0.698	−0.047	0.094	0.621
Gender ratio, PhD students	0.059	0.092	0.523	0.049	0.090	0.584
Gender ratio, faculty	−0.009	0.099	0.926	−0.025	0.096	0.797
Research area (sq. ft), per faculty	−0.117	0.107	0.274	−0.109	0.105	0.298
Junior-senior ratio (assistant to other)	−0.068	0.093	0.461	−0.074	0.092	0.421
Offers parental leave	−0.063	0.090	0.483	−0.078	0.087	0.370
Teaching load, courses per semester	0.027	0.101	0.787	0.029	0.098	0.772
Avg. assistant professor salary	0.027	0.111	0.806	0.024	0.108	0.826
Avg. assistant professor salary, normalized	−0.034	0.101	0.736	−0.038	0.101	0.709
Years of guaranteed PhD student funding	0.072	0.100	0.470	0.073	0.098	0.456
Local population	−0.092	0.092	0.319	−0.111	0.088	0.208

	Model 1			Model 2		
Feature	B	SE B	p	B	SE B	p
(Intercept)	2.520×10^{-2}	3.500×10^{-2}	0.471	2.383×10^{-2}	3.261×10^{-2}	0.465
Prestige	-1.632×10^{-5}	6.562×10^{-5}	0.804	-	-	-
Private	-5.072×10^{-3}	6.723×10^{-3}	0.451	-	-	-
Department size	-2.769×10^{-4}	3.179×10^{-4}	0.384	-2.116×10^{-4}	2.952×10^{-4}	0.474
Non-TT teachers+researchers, per faculty	-4.849×10^{-3}	9.642×10^{-3}	0.615	-6.075×10^{-3}	9.117×10^{-3}	0.505
Admin and support staff, per faculty	7.164×10^{-3}	7.829×10^{-3}	0.360	6.223×10^{-3}	7.641×10^{-3}	0.415
PhD students, per faculty	9.584×10^{-4}	2.050×10^{-3}	0.640	1.319×10^{-3}	1.960×10^{-3}	0.501
Undergraduate students, per faculty	1.736×10^{-4}	3.473×10^{-4}	0.617	2.093×10^{-4}	3.313×10^{-4}	0.527
Department size, squared	9.242×10^{-7}	1.979×10^{-6}	0.641	6.382×10^{-7}	1.925×10^{-6}	0.740
External funding dollars, per faculty	-4.316×10^{-9}	1.092×10^{-8}	0.693	-5.280×10^{-9}	1.054×10^{-8}	0.616
Gender ratio, PhD students	1.846×10^{-2}	2.880×10^{-2}	0.521	1.546×10^{-2}	2.815×10^{-2}	0.583
Gender ratio, faculty	-3.247×10^{-3}	3.513×10^{-2}	0.926	-8.731×10^{-3}	3.397×10^{-2}	0.797
Research area (sq. ft), per faculty	-6.030×10^{-6}	5.511×10^{-6}	0.274	-5.624×10^{-6}	5.402×10^{-6}	0.298
Junior-senior ratio (assistant to other)	-1.933×10^{-2}	2.623×10^{-2}	0.461	-2.094×10^{-2}	2.600×10^{-2}	0.421
Offers parental leave	-3.576×10^{-3}	5.102×10^{-3}	0.483	-4.401×10^{-3}	4.914×10^{-3}	0.370
Teaching load, courses per semester	5.440×10^{-4}	1.997×10^{-3}	0.785	5.676×10^{-4}	1.942×10^{-3}	0.770
Avg. assistant professor salary	7.837×10^{-8}	3.167×10^{-7}	0.805	6.871×10^{-8}	3.096×10^{-7}	0.824
Avg. assistant professor salary, normalized	-1.533×10^{-3}	4.537×10^{-3}	0.735	-1.682×10^{-3}	4.500×10^{-3}	0.709
Years of guaranteed PhD student funding	9.846×10^{-4}	1.362×10^{-3}	0.470	9.967×10^{-4}	1.337×10^{-3}	0.456
Local population	-1.994×10^{-9}	1.999×10^{-9}	0.319	-2.410×10^{-9}	1.914×10^{-9}	0.208

Table S13. Regression tables for "In-dept. collabs." using MICE.
β and B denote standardized and unstandardized coefficients, respectively.
$^{***}p < 0.001$, $^{**}p < 0.01$, $^{*}p < 0.05$.

	Model 1			Model 2		
Feature	β	SE β	p	β	SE β	p
(Intercept)	-	-	1.000	-	-	1.000
Prestige	–0.300	0.120	0.013*	-	-	-
Private	–0.041	0.098	0.678	-	-	-
Department size	–0.395	0.222	0.075	–0.211	0.211	0.317
Non-TT teachers+researchers, per faculty	0.101	0.088	0.254	0.144	0.085	0.090
Admin and support staff, per faculty	0.131	0.111	0.240	0.090	0.111	0.415
PhD students, per faculty	0.218	0.091	0.016*	0.270	0.089	0.002**
Undergraduate students, per faculty	–0.039	0.088	0.656	–0.081	0.086	0.344
Department size, squared	0.137	0.203	0.499	0.051	0.201	0.798
External funding dollars, per faculty	0.067	0.090	0.457	0.093	0.087	0.282
Gender ratio, PhD students	0.190	0.087	0.028*	0.157	0.086	0.069
Gender ratio, faculty	0.037	0.093	0.693	–0.005	0.092	0.958
Research area (sq. ft), per faculty	–0.178	0.100	0.074	–0.144	0.099	0.149
Junior-senior ratio (assistant to other)	–0.105	0.086	0.222	–0.114	0.087	0.193
Offers parental leave	0.030	0.084	0.719	0.043	0.083	0.599
Teaching load, courses per semester	0.085	0.100	0.395	0.040	0.098	0.681
Avg. assistant professor salary	0.127	0.099	0.200	0.159	0.100	0.110
Avg. assistant professor salary, normalized	–0.005	0.096	0.956	–0.011	0.096	0.906
Years of guaranteed PhD student funding	–0.016	0.094	0.862	0.016	0.095	0.869
Local population	–0.049	0.086	0.569	–0.065	0.083	0.435

	Model 1			Model 2		
Feature	B	SE B	p	B	SE B	p
(Intercept)	6.283×10^{-2}	5.267×10^{-2}	0.233	1.988×10^{-2}	5.055×10^{-2}	0.694
Prestige	-2.514×10^{-4}	1.009×10^{-4}	0.013*	-	-	-
Private	-4.290×10^{-3}	1.032×10^{-2}	0.678	-	-	-
Department size	-8.629×10^{-4}	4.847×10^{-4}	0.075	-4.606×10^{-4}	4.601×10^{-4}	0.317
Non-TT teachers+researchers, per faculty	1.686×10^{-2}	1.478×10^{-2}	0.254	2.413×10^{-2}	1.423×10^{-2}	0.090
Admin and support staff, per faculty	1.416×10^{-2}	1.206×10^{-2}	0.240	9.770×10^{-3}	1.198×10^{-2}	0.415
PhD students, per faculty	7.582×10^{-3}	3.163×10^{-3}	0.017*	9.382×10^{-3}	3.080×10^{-3}	0.002**
Undergraduate students, per faculty	-2.368×10^{-4}	5.330×10^{-4}	0.657	-4.910×10^{-4}	5.193×10^{-4}	0.344
Department size, squared	2.043×10^{-6}	3.025×10^{-6}	0.499	7.677×10^{-7}	3.005×10^{-6}	0.798
External funding dollars, per faculty	1.221×10^{-8}	1.636×10^{-8}	0.455	1.721×10^{-8}	1.595×10^{-8}	0.281
Gender ratio, PhD students	9.794×10^{-2}	4.506×10^{-2}	0.030*	8.079×10^{-2}	4.472×10^{-2}	0.071
Gender ratio, faculty	2.147×10^{-2}	5.437×10^{-2}	0.693	-2.840×10^{-3}	5.341×10^{-2}	0.958
Research area (sq. ft), per faculty	-1.519×10^{-5}	8.495×10^{-6}	0.074	-1.224×10^{-5}	8.479×10^{-6}	0.149
Junior-senior ratio (assistant to other)	-4.929×10^{-2}	4.040×10^{-2}	0.222	-5.322×10^{-2}	4.086×10^{-2}	0.193
Offers parental leave	2.815×10^{-3}	7.833×10^{-3}	0.719	4.054×10^{-3}	7.701×10^{-3}	0.599
Teaching load, courses per semester	2.744×10^{-3}	3.233×10^{-3}	0.396	1.294×10^{-3}	3.174×10^{-3}	0.684
Avg. assistant professor salary	6.004×10^{-7}	4.700×10^{-7}	0.201	7.524×10^{-7}	4.742×10^{-7}	0.113
Avg. assistant professor salary, normalized	-3.720×10^{-4}	7.049×10^{-3}	0.958	-8.324×10^{-4}	7.079×10^{-3}	0.906
Years of guaranteed PhD student funding	-3.714×10^{-4}	2.129×10^{-3}	0.861	3.530×10^{-4}	2.134×10^{-3}	0.869
Local population	-1.751×10^{-9}	3.077×10^{-9}	0.569	-2.343×10^{-9}	3.001×10^{-9}	0.435

Table S14. Regression tables for "Out-dept. collabs." using MICE.
β and B denote standardized and unstandardized coefficients, respectively.
$^{***}p < 0.001$, $^{**}p < 0.01$, $^{*}p < 0.05$.

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