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BEFORE THE EXODUS? YOUNG SCIENTISTS AND THE FUTURE OF US SCIENCE

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Before the Exodus? Young Scientists and the Future of US Science
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ABSTRACT

Shortly after major policy changes to US science funding began in early 2025, we surveyed 916 young biomedical scientists – PhD students and postdoctoral researchers – about their career intentions and expectations. The results document a dramatic shift in sentiment. Barely half of respondents now say they are likely to remain in academia, down 22 percentage points from how they felt six months earlier. The fraction likely to stay in the United States fell by 21 percentage points. Even satisfaction with having pursued a PhD in science declined by 16 percentage points. These are not the complaints of established scientists defending their budgets, but rather the stated intentions of the next generation – the scientists who would, in ordinary times, become the principal investigators of the future.

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1 Introduction

The first months of 2025 brought an unprecedented series of disruptions to the US scientific enterprise. Nearly $3 billion in National Institutes of Health and National Science Foundation grants were terminated or frozen, affecting approximately 3,800 research projects (Science News, 2025). A new “forward funding” policy – requiring that multiyear grants be disbursed in a single lump sum rather than year by year – sharply reduced the number of new grants agencies could award (Kaiser, 2025). At the National Cancer Institute, success rates fell from roughly one in ten applicants to one in twenty-five (Berg, 2025). In February 2025, NIH proposed capping indirect cost recovery at 15% for all grantees – a change that, if implemented, would reduce funding for the typical research university by approximately 17% and cut more than $100 million annually from each of the dozen most research-intensive institutions (Azoulay et al., 2026). The proposed budget called for a 39% reduction to NIH and 55% to NSF for fiscal year 2026 (Zimmermann, 2025). By mid-2025, new and competitive NIH grants were running more than 40% below the levels disbursed by the same date in the preceding year; although total spending largely caught up by fiscal year-end, this was achieved by funding approximately 3,500 fewer grants than the annual average over the preceding decade (Berg, 2025; Kozlov, 2025).

The disruptions extended to the personnel labs could hire and retain. Over 1,400 international students and scholars had their visas revoked or their immigration status terminated, often with immediate effect (NAFSA: Association of International Educators, 2025). Travel bans, visa interview suspensions, and a proposed rule to eliminate “duration of status” compounded the uncertainty. For the foreign-born scientists who earn roughly half of all STEM doctoral degrees in the United States (National Science Foundation, NCSES, 2024), the unpredictability of these actions may matter as much as the policies themselves. Interest in US graduate programs among international students fell by more than 40% in the first weeks of 2025 (Council of Graduate Schools, 2025). In the biomedical sciences specifically, multiple universities announced cuts to PhD admissions – even at well-endowed institutions (Inside Higher Ed, 2025).

These developments have generated substantial commentary from scientific leaders and organizations. Yet such commentary is sometimes met with skepticism. Reports warning of threats to US scientific competitiveness have appeared regularly over the decades – the “Rising Above the

Gathering Storm" report being a prominent example (National Academy of Sciences and National Academy of Engineering and Institute of Medicine, 2007) – and the predicted crises have not always materialized. Policy-makers and the public can reasonably ask whether current concerns are different in kind, or simply the latest iteration of a familiar refrain.

Missing from this debate is systematic evidence on how the next generation of scientists – those with the least vested interest in the current system and the most career flexibility – are responding to the changed landscape. We document shifts in stated intentions and career satisfaction – leading indicators that typically precede actual departures. Whether these intentions fully materialize remains to be seen. But by the time emigration and attrition are directly observable in workforce data, the opportunity for policy correction will have narrowed considerably.

Many of these policy changes, though announced, had not been fully implemented at the time of our survey. As of this writing, the final NIH appropriation for fiscal year 2026 remains subject to congressional action; the proposed 15% cap on indirect cost recovery has been blocked by federal courts pending litigation; and further changes to the high-skill immigration system – such as modifications to the Optional Practical Training program – remain uncertain. Our respondents are therefore reacting not only to policy changes that have already taken effect, but also to substantial uncertainty about what additional disruptions may follow.

2 Data: Measuring Shifts in Scientist Sentiment

Our data come from an unusual source: a large-scale research project on management practices in biomedical labs that happened to be underway when policy changes began. The *Scientific Labs Management Project* compiled a sample of 2,466 biomedical research laboratories across the United States, located in medical schools and teaching hospitals (45%), graduate schools of arts and sciences or engineering (52%), and independent research institutes (3%). All participating labs maintain active research operations; purely clinical groups are excluded. Most are led by principal investigators with PhD degrees (92%), with smaller shares holding MD degrees (2%) or both (5%). They predominantly receive funding from the NIH (55%), though some receive NSF funding (12%) or funding from both agencies (16%). Our sampling frame comprises the 13,240 doctoral students and postdoctoral fellows listed as members of these labs.

In March 2025, we fielded a brief survey to this population asking about career intentions before and after the current policy environment took shape. The timing was fortuitous. Because the sample was constructed for an entirely different purpose – studying lab management, not science policy – our respondents were not selected on the basis of their grievances.

We received complete responses from 916 scientists across 770 laboratories at 134 institutions, an 8.3% response rate that exceeds typical online academic surveys. Respondents answered three core questions using Likert scales: How likely are you to stay in academia? How likely are you to stay in the United States? How satisfied are you with having pursued a PhD in science? Each question was asked twice – for "now" and for "six months ago" – allowing us to construct within-person changes in sentiment.

Our respondents are broadly similar to non-respondents in our sampling frame on most observable characteristics, including foreign versus US undergraduate institution (39% vs. 38%), career stage, and years since undergraduate degree. Respondents do skew more female (40% vs. 31%). At the laboratory level, labs from which we received at least one response are similar to those from which we received none across a wide range of PI and funding characteristics (see Appendix Table A1). More broadly, the share of respondents with foreign undergraduate degrees is consistent with National Science Foundation data showing that temporary visa holders constitute 26% of doctoral students in biological and biomedical sciences, a figure that rises for postdoctoral researchers but remains lower in biomedicine than in other scientific fields (National Science Foundation, NCSES, 2024).

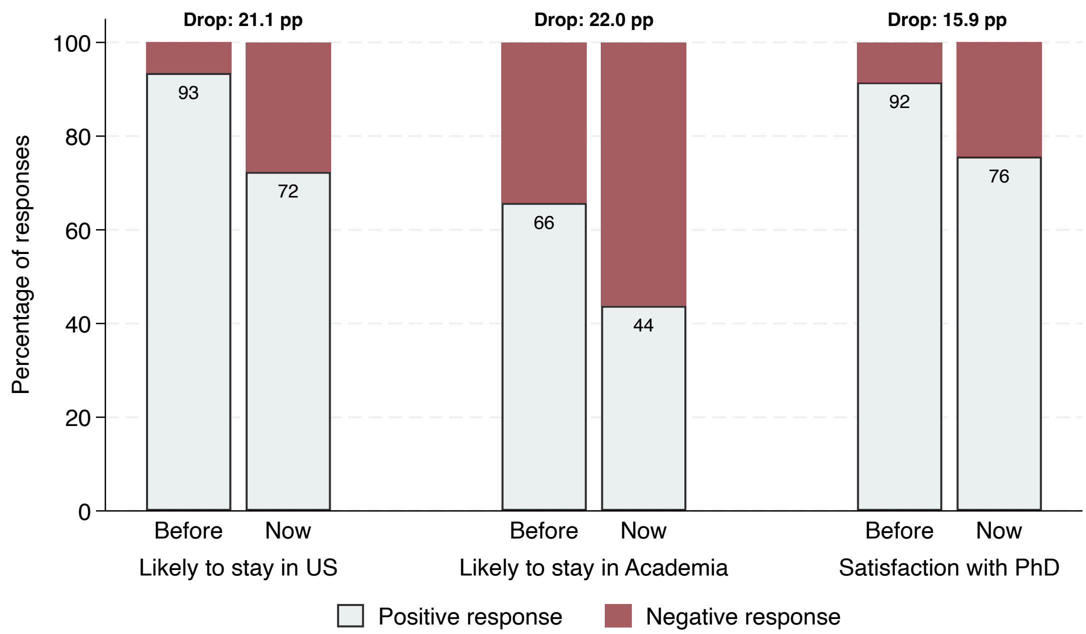
A potential concern with this design is recall bias: perhaps respondents are simply remembering the past more favorably than it actually was. We can address this concern directly because approximately one quarter of our respondents (262 scientists) had also participated in phone interviews for the management survey before the end of 2024, during which they answered the PhD satisfaction question contemporaneously. Comparing their recalled responses with their actual prior responses, we find no systematic evidence of rose-colored retrospection. The shift we document reflects a genuine change in sentiment, not a failure of memory (see Appendix Figure A1).

3 Results

3.1 Changes in sentiment among young US biomedical lab members

Figure 1 presents our main findings. Six months prior to the survey, 93% of respondents said they were likely or very likely to remain in the United States; by March 2025, only 72% gave the same response – a drop of 21 percentage points. The share likely to stay in academia fell from 66% to 44%, a decline of 22 percentage points. Even satisfaction with having pursued a PhD dropped substantially: whereas 92% of respondents reported being satisfied or neutral six months earlier, only 76% did so at the time of the survey – a 16 percentage point decline.

Figure 1: **Large drops in career optimism among young biomedical scientists**

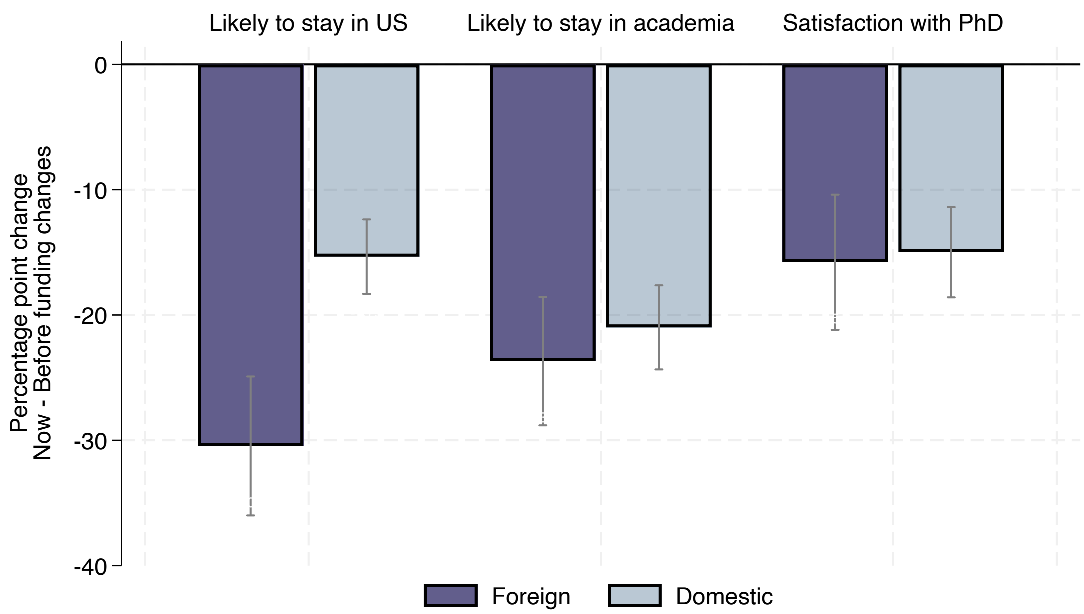


Notes: Reported likelihood of staying in the US, staying in academia, and satisfaction with a PhD in science, before and after funding changes. Each bar shows the percentage of positive and negative responses to each of the following questions: "How likely were/are you to stay in the US?", "How likely were/are you to stay in academia?" and "How satisfied were/are you with having pursued a PhD in science?". Each question asked about the respondent's sentiment at the time of the survey (March 2025) and 6 months prior, with responses measured on a Likert scale. For the first two questions "positive" indicates a response of *likely* or *very likely*. For the third question "positive" indicates a response of *neutral*, *satisfied*, or *very satisfied*.

These are large effects. The decline in intention to remain in academia means that a majority of young biomedical scientists now express doubt about pursuing academic careers. The decline in intention to remain in the United States, from 93% to 72%, indicates that more than one in four young scientists who previously planned to stay are now reconsidering.

Figure 2 disaggregates these results by whether scientists received their undergraduate education in the United States (a proxy for domestic origin) or abroad (a proxy for foreign birth). The patterns are instructive. For likelihood of staying in academia and for PhD satisfaction, the declines are essentially identical for foreign and US scientists – roughly 22 and 16 percentage points respectively for both groups. Whatever is driving the retreat from academic careers and the decline in satisfaction affects all young scientists, regardless of origin.

Figure 2: **Foreign-born scientists show largest decline in intention to stay in the US**



Notes: Difference in the share of young scientists responding negatively, before and after funding changes. Each bar shows the percentage point change in positive (to negative) responses to each of the following questions: "How likely were/are you to stay in the US?", "How likely were/are you to stay in academia?" and "How satisfied were/are you with having pursued a PhD in science?". For the first two questions we coded as "positive" a response of *likely* or *very likely*. For the third question we coded as "positive" a response of *neutral*, *satisfied*, or *very satisfied*. Bars include confidence intervals. Darker bars represent scientists whose undergraduate was not in a US institution (a proxy for foreign status in the US). The lighter bars represent scientists whose undergraduate degree was in a US institution. Error bars indicate 95% confidence intervals.

The picture differs for likelihood of staying in the United States. Here, the decline is substantially larger for foreign scientists (30.8 percentage points) than for domestic scientists (15.8 percentage points). But even US scientists show a meaningful shift: one in six who previously planned to stay in the United States now express willingness to pursue their careers abroad. The United States is losing its appeal not only for the foreign scientists it has trained but also for its own citizens.

The decline varies by region of origin (Appendix Figure A3): European scientists show the largest decline in intention to stay (approximately 50 percentage points), followed by scientists from India (38 percentage points) and Latin America (14 percentage points). Scientists from China show smaller but still substantial declines. That European scientists – who face the fewest visa barriers and have the most robust alternative academic labor markets – show the largest shifts is consistent with a model in which scientists with better outside options are the first to reconsider their plans.

3.2 A Uniform Shift

A striking feature of our results is how uniform they are across different types of scientists and labs. The patterns hold for PhD students and postdoctoral researchers separately. They hold for scientists in elite and non-elite labs. Crucially, they do not vary systematically with the funding security of scientists' laboratories – the declines are similar for scientists in labs with secure, multi-year NIH grants and those in labs with more precarious funding streams. The shift in sentiment is not simply a reaction to local funding shocks; it appears to reflect a broader reassessment of the US scientific environment.

The lack of heterogeneity extends to laboratory characteristics beyond funding. Our sample spans laboratories headed by young investigators just establishing their first research groups to those that have been operating for 20 or 30 years, and from intimate groups with a single trainee to large operations with as many as 100 (median lab size is 11). Controlling flexibly for lab age and lab size, we find no meaningful differences: trainees show essentially the same shifts in sentiment regardless of whether their laboratory is new or established, small or large. The breadth and uniformity of the response is itself a finding. Whatever signal young scientists are receiving about the future of US science, it is reaching all of them (Appendix Figure A4).

3.3 Policy and Industry Implications

What do these findings mean for the future of US science? We must be clear about what our data can and cannot show. We have documented shifts in stated intentions, not actual behavior. Whether these intentions translate into departures from academia or emigration from the United States remains to be seen – expressed intentions may overstate actual responses if scientists ultimately adapt to the new environment rather than exit it.

But given what we already know about the fragility of early scientific careers (Tham et al., forthcoming), it is difficult to construct a scenario in which these shifts are benign. At minimum, they indicate that the current policy environment is generating substantial uncertainty and dissatisfaction among precisely the people the scientific enterprise needs to attract and retain. Doctoral students and postdocs represent the future of the scientific workforce. Their willingness to invest years in training, to accept below-market wages, and to endure the uncertainty of academic job markets depends on some expectation that the investment will pay off. A 22 percentage point decline in intention to remain in academia suggests that expectation is eroding.

History offers instructive examples. The United States built much of its scientific preeminence by attracting talented researchers from abroad – scientists who came seeking opportunity, freedom, or refuge. The migration of scientists from Europe in the mid-twentieth century helped establish American leadership in fields from physics to biomedicine (Moser et al., 2014; Waldinger, 2010). But brain drains can reverse. When young scientists leave or never arrive, a generation of mentorship, tacit knowledge transmission, and scientific capacity is lost. These effects are not easily undone.

4 Conclusion

Young scientists are the canary in the coal mine of the American scientific enterprise. They have the most career flexibility, the least sunk cost in the current system, and the longest time horizons over which policy changes will affect their lives. Our survey documents a substantial and broad-based shift in their career intentions – a signal that the next generation is reconsidering its commitment to American science. What can be disrupted in a single year may take a generation to rebuild.

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Appendix for "Before the Exodus?", May 2026,
by Pierre Azoulay, Raffaella Sadun and Daniela Scur

This appendix includes:

A. Materials and Methods

- A.1 Sample and sampling frame
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  - A.1.2 Final sample and representativeness
  - A.1.3 Validation of recall data
- A.2 Data and summary statistics
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B. Supplementary Results

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A Materials and Methods

A.1 Sample and sampling frame

The labs included in this survey were those where at least one lab member participated or was scheduled to participate in the Scientific Labs Management Project (SMLP); a separate project that aims to measure the adoption of basic managerial practices within academic scientific laboratories across the largest and most important research institutions in the United States.[1] Our sampling frame included all trainees listed as lab members within the 2,466 biomedical research laboratories in that survey—13,240 young scientists either studying for their PhD, or in postdoctoral research positions. In what follows, we denote a laboratory as "represented" if it contributed at least one completed survey response to our sample (770 labs) and unrepresented if it did not (1,696 labs).

A.1.1 Recruitment of participants

The data used in this paper was collected via an online survey, using Qualtrics software. All questions were optional. Respondents were offered a report of the findings as an incentive to respond (no direct payments). The survey team sent 10,285 emails via the Qualtrics platform on 18 March 2025. 816 respondents completed the survey, for an online response rate of about 8%.[2] From these, 709 included responses to all questions. Out of these respondents, 262 had also conducted an interview with the SLMP team before January 2025. After March 10 2025, the SLMP team added our phone survey questions to the phone interviews still being conducted through the end of April 2025, adding another 207 new observations to the total respondent roster.

A.1.2 Final sample and representativeness

After dropping observations with incomplete responses, the final sample includes 916 observations corresponding to respondents who answered all relevant questions in the survey. We have relatively few trainee-level covariates with which to compare respondents and non-respondents. Respondents are nine percentage points more likely to be female trainees and five percentage points less likely to have completed their undergraduate degree in a foreign institution, relative to non-respondents (Table A1, Panel A). We explore heterogeneity across gender in the survey responses (see Figure A4, Panel (f)). In a robustness check, we also reweight the survey responses of our respondents to make them similar to the distribution of non-US undergraduate institution among non-respondents (Figure A5).

We also compare labs represented in the survey with those not represented (we have many more laboratory-level covariates at our disposal). In doing so, we must first address the mechanical effect of laboratory size on the probability that a laboratory yields at least one survey response. Indeed, the first row of Table A1, Panel B1 shows that laboratories represented in the survey are, on average, two members larger than those not represented. We model the probability of lab inclusion as stemming from a binomial distribution with parameters n and p, where $p = 0.08$ (our response rate in the online survey) and n is laboratory size. We then weight the sample of respondents by

[1] `https://labsmanagement.org/`

[2] This response rate is fairly high for non-incentivized online surveys. For example, Altig et al. (2020); Ben-David et al. (2013); Bloom et al. (2019); Bartik et al. (2020) report responses rates in firms survey range from 0.1% to 13%.

the inverse probability of observing a survey response, which has the expected effect of making laboratory size statistically indistinguishable between laboratories represented in the survey and those unrepresented (second row of Table A1, Panel B1). Panel B2 of Table A1 then compares represented and unrepresented laboratories across a broad set of covariates, using this reweighted sample. Two-tailed t-tests do not uncover statistically meaningful differences, except for PI degree (represented labs are 2.5 percentage points less likely to be headed by a PI holding an MD degree). Even this difference would not survive a comparison that adjusts our standard errors for multiple comparisons using the usual Bonferroni correction for multiple hypothesis testing.

A.1.3 Validation of recall data

Approximately one quarter of our respondents (262 scientists) participated in both our short online survey as well as a longer phone interview for the SLMP (about the management practice of their labs) before January 2025. During this phone call they answered a question about their satisfaction with having pursued a PhD in science (contemporaneous sentiment). The comparison of these responses are reported in Figure A1.

Table A1: **Balance table comparing key trainee and lab characteristics for respondents and non-respondents.** Panel A reports the unweighted averages of trainee-level characteristics. Years since undergrad and Non-US institution have missing values. Panel B reports lab-level characteristics and uses stabilized inverse probability weights for in-survey labs based on lab size to make them representative. The predicted probability for a lab to be included in the survey is modeled as $P(\text{in survey}) = 1 - (1 - p)^n$, where $p = 0.08$ and n is lab size. Inverse probability weights are winsorized at the 95^{th} percentile.

Panel A: Trainee-level characteristics (unweighted)

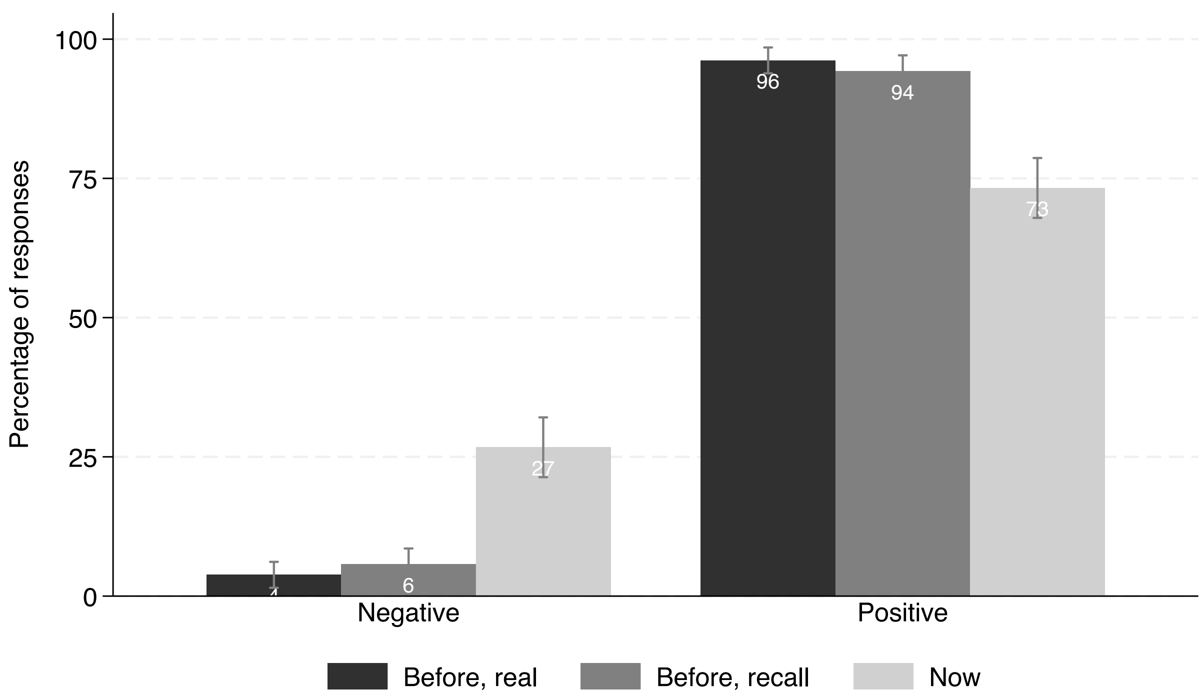
	Not Responding		Responding			
Variable	Mean	SD	Mean	SD	Difference	p-value
Female	0.307	(0.461)	0.395	(0.489)	0.088	(0.000)
Years since undergrad	8.458	(4.457)	8.272	(4.216)	-0.186	(0.233)
Postdoc (vs. grad student)	0.381	(0.486)	0.396	(0.489)	0.016	(0.345)
Non-US undergrad institution	0.384	(0.486)	0.332	(0.471)	-0.052	(0.002)
Observations	12,324		916		13,240	

Panel B: Lab-level characteristics

B1. Lab size

	Not in Survey		In Survey			
Variable	Mean	SD	Mean	SD	Difference	p-value
Lab size (unweighted)	10.495	(6.169)	12.670	(7.868)	2.175	(0.000)
Lab size (weighted)	10.495	(6.169)	10.924	(6.853)	0.429	(0.122)
B2. Other lab characteristics (weighted)						
Lab age > 11 (median)	0.431	(0.495)	0.434	(0.496)	0.004	(0.873)
PI female	0.335	(0.472)	0.360	(0.480)	0.025	(0.251)
PI career publications	74	(77)	75	(80)	2	(0.573)
PI career citations (× 100)	69	(116)	77	(132)	8	(0.117)
NIH+NSF active funding (× $1,000)	3,583	(5,860)	3,805	(5,723)	222	(0.355)
Organization type						
Arts & Science, Engineering	0.476	(0.500)	0.503	(0.500)	0.027	(0.235)
Med Schools, Hospitals, Institutes	0.524	(0.500)	0.497	(0.500)	-0.027	(0.235)
PI degree						
PhD	0.971	(0.168)	0.976	(0.153)	0.005	(0.483)
MD	0.101	(0.301)	0.075	(0.263)	-0.026	(0.037)
Lab funding source						
NSF and/or NIH	0.798	(0.402)	0.822	(0.383)	0.024	(0.187)
Neither NSF nor NIH	0.202	(0.402)	0.178	(0.383)	-0.024	(0.187)
Observations	1,696		770		2,466	

Figure A1: **Satisfaction with a PhD responses, validating recall sub-sample.** This figure reports the negative and positive share of responses to the question: "How satisfied are you with your decision to do a PhD in science?" Bars include 95 percent confidence intervals. The sub-sample in this graph includes only the scientists for which we both had a phone interview (as part of the SMLP sister project) in 2023 or 2024, as well as a self-respondent survey response in March/April 2025. "Before, real" refers to the contemporaneous response to the question in December 2024 or before during the phone survey, and "Before, recall" refers to the reported satisfaction level '6 months ago' in the online self-respondent survey. "Now" refers to the contemporaneous reported satisfaction level at the time of taking the online self-respondent survey.



A.2 Data and summary statistics

A.2.1 Trainee-level data (scientists)

For each lab, we started from the list of lab members collected as the sampling frame of the Scientific Labs Management Project (SLMP). The list of lab members in each of these labs by March 10th, 2025 made up the sample of scientists which received the email with the online survey invitation. After March 10th, 2025 we also included the same set of questions as an additional module in the SLMP interviews. The full set of labs and their lab members make up our sampling frame. For this set of lab members, we then collected all publicly available CV information, including as available career histories (including undergraduate institution), year of graduation from undergraduate studies and gender.

Table A2: **Summary statistics of surveyed scientists.** The table shows each variable and its mean, standard deviation, median and sample size. Female and years since undergrad are self-explanatory. US- and Non-US undergrad are indicators for scientists whose undergraduate degrees are from an institution in the United States or outside of the United States, respectively. Grad student and postdoc are indicators for whether the scientist is a graduate student or a postdoc in their lab.

	Mean	Std. Dev	Median	N
Female	0.40	0.49	0.00	916
Years since undergrad	8.27	4.22	7.00	883
US undergrad	0.67	0.47	1.00	901
Non-US undergrad	0.33	0.47	0.00	901
Grad student	0.60	0.49	1.00	916
Postdoc	0.40	0.49	0.00	916

A.2.2 Laboratory-level data (labs/PIs)

We match every principal investigator in the 2,466 laboratories in the SMLP to their records in the NSF and NIH award data.[3] From these records, we compute the number of grants and funding totals for each investigator across both funding sources. We also compute the amount of grant funding currently at risk—that is, funding from grants scheduled to expire in 2024, 2025, or 2026.[4] Funding amounts are deflated by the Biomedical R&D Producer Price Index (base year = 2023).[5]

Through collection of CVs, Who's Who records, and exhaustive web searches, we gather information about each PI's gender, degree, degree year, and year of career independence (i.e., the year in which they founded their laboratory, possibly at a different institution than the one at which they are currently employed), as well as whether they are members of the National Academy of Sciences,

[3] `https://reporter.nih.gov/exporter/projects` and `https://www.nsf.gov/awardsearch/download.jsp`.

[4] Approximately 16% of investigators do not receive any funding from either NIH or NSF. This reflects either that these PIs are currently funded by their institution in the form of startup funds as they launch their laboratories, or that they receive funding from sources to which we have no systematic access, such as the Department of Defense, the Department of Energy, or philanthropic foundations.

[5] `https://officeofbudget.od.nih.gov/gbipriceindexes.html`

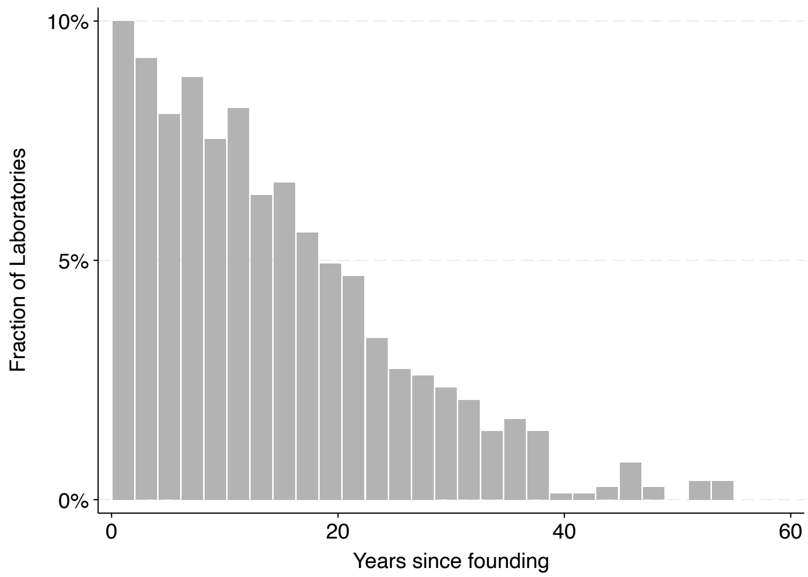
National Academy of Medicine, or hold a Howard Hughes Medical Institute Investigatorship. We also collect extensive data on their publications (from PubMed) and citations (from OpenAlex), although these variables do not play a role in the current analysis.

Table A3: **Laboratory-level Summary Statistics.** The table shows each variable and its mean, standard deviation, median and sample size. Elite lab is an indicator variable equal to one if the PI holds an Howard Hughes Medical Investigatorship or is a member of NAS/NAM. Laboratory age is the number of years since the PI first established an independent laboratory (possibly at a different institution). Laboratory size is the number of scientists working in the lab as of late 2024/early 2025. Arts & Science, Engineering is an indicator for whether the lab is located within a School of Arts and Science (or a School of Engineering) on a traditional university campus. Med Schools, Hospitals, Institutes is an indicator for whether the lab is located within a medical school, a free-standing teaching hospital (such as Massachusetts General Hospital), or an independent research institute (such as the Salk Institute). Active grants is the total value of NSF and NIH grants the PI held as of Sept 30, 2024 (reported in thousands of inflation-adjusted US dollars). Expiring grants is the total value of NSF and NIH grants that are expiring in either 2024, 2025 or 2026 (reported in thousands of US dollars). NSF and/or NIH is an indicator for whether the PI has an NSF and/or an NIH grant. Neither NSF nor NIH is an indicator that takes a value of 1 when the PI does not have a grant from either agency. PI degrees are not mutually exclusive – 6% of PIs have both an MD and a PhD.

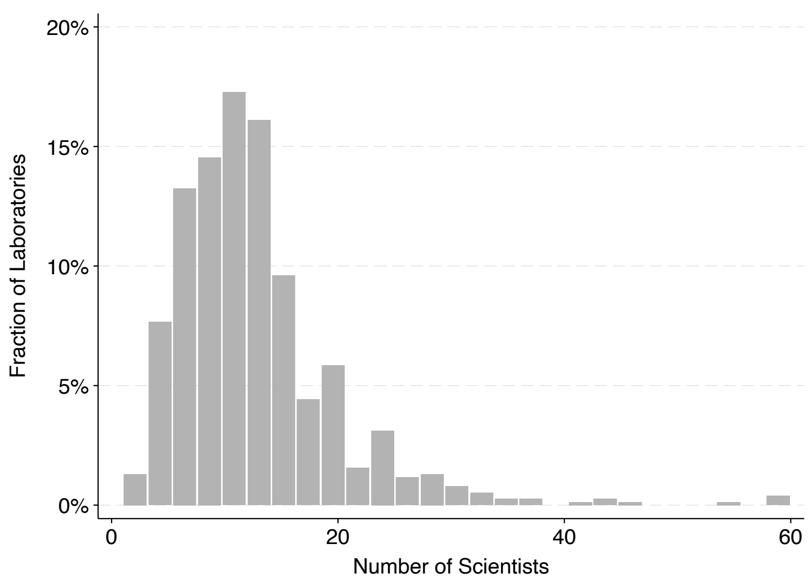
	Mean	Std. Dev	Median	N
Lab characteristics				
Elite lab	0.08	0.27	0.00	770
Lab age (years)	14.30	10.67	12.00	770
Lab size	12.67	7.87	11.00	770
Arts & Science, Engineering	0.52	0.50	1.00	770
Med Schools, Hospitals, Institutes	0.48	0.50	0.00	770
Grants				
NIH+NSF active funding ($\times$ \$1,000)	4,305.75	6,385.41	2,463.57	770
NIH+NSF expiring funding ($\times$ \$1,000)	1,630.96	3,196.09	944.64	770
NSF and/or NIH	0.84	0.37	1.00	770
Neither NSF nor NIH	0.16	0.37	0.00	770
PI characteristics				
PI female	0.35	0.48	0.00	770
PI has MD	0.08	0.27	0.00	770
PI has PhD	0.98	0.15	1.00	770

Figure A2: **Distribution of laboratory age and size.** Laboratory age is the number of years since the PI first established an independent laboratory (possibly at a different institution). Lab size was collected via the phone interview for the SMLP survey, and corresponds to the total number of scientists who work at the lab (trainees, technicians, and undergraduate students, but excluding administrative personnel and the PI).

(a) Laboratory Age



(b) Laboratory Size



B Supplementary Results

Figure A3: **Difference in the share of young scientists responding negatively, before and after funding changes.** The questions were: "How likely were/are you to stay in the US?" Bars show the difference between the share of young scientists who responded *likely* or *very likely* for "now" vs "before" funding changes. Bars include 95 percent confidence intervals. Labels refer to the region of the world of the undergraduate institution of the respondent.

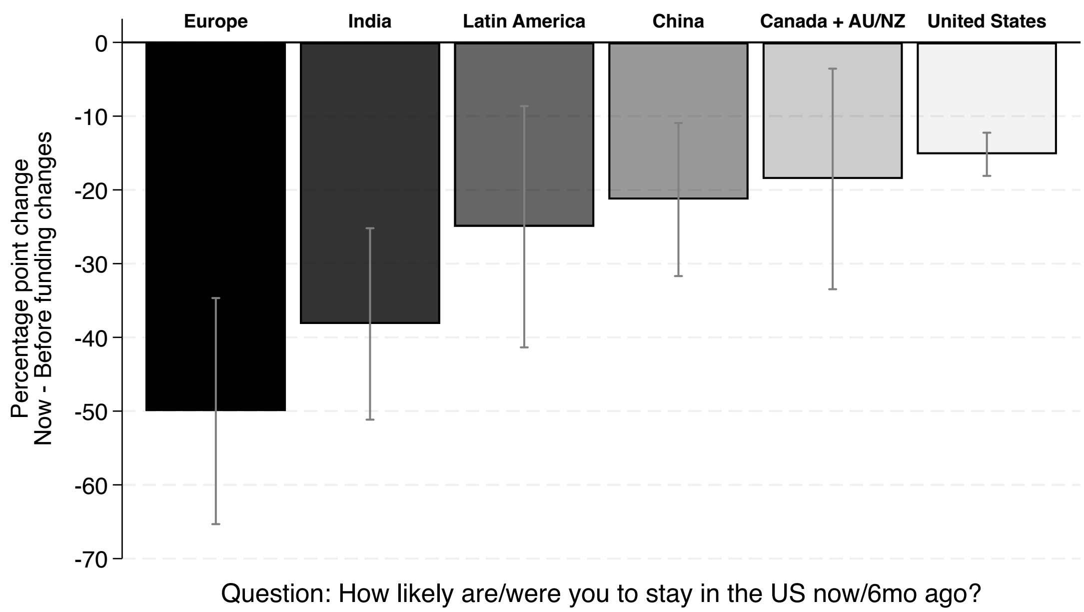
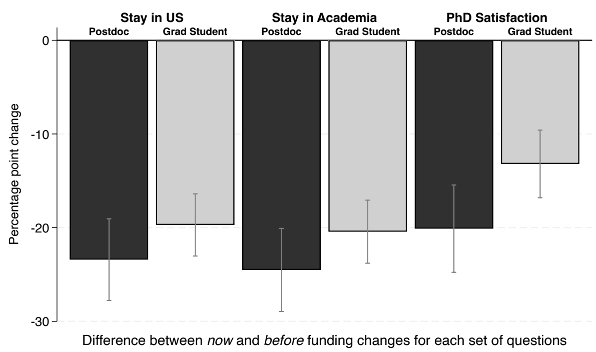
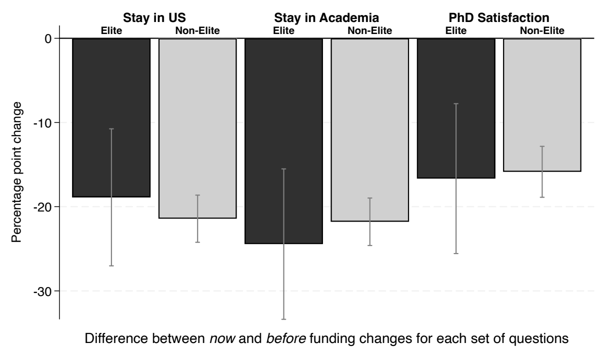


Figure A4: **Difference in the share of young scientists responding negatively, before and after funding changes.** Bars include 95 percent confidence intervals. The questions were: "How likely were/are you to stay in the US?," "How likely were/are you to stay in academia?" and "How satisfied are you with having pursued a PhD in science?" Bars show the difference between the share of young scientists who responded *likely* or *very likely* for "now" vs "before" funding changes for the first two questions, and *neutral*, *satisfied* or *very satisfied* for the third question. Bars include confidence intervals. Panel (a) shows the differences by training phase: whether the respondent is in a postdoc position or is a grad student. Panel (b) shows the differences by lab "eliteness," defined as the PI being a member of at least one of HHMI, NAS and/or NAM. Panel (c) shows the differences by funding security, defined as higher if at least 50% of the grants the PI holds are not expiring soon (within the next 1-2 years). Panel (d) shows the differences by lab age, with an established lab defined as being founded over 5 years ago. Panel (e) shows the differences by lab size, with a large lab defined as having 10 scientists or more on staff (the median lab size is 11). Panel (f) shows the differences by gender of the responding scientist (lab member).

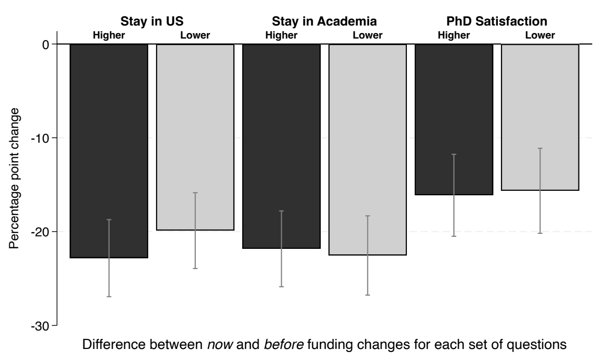
(a) By training phase



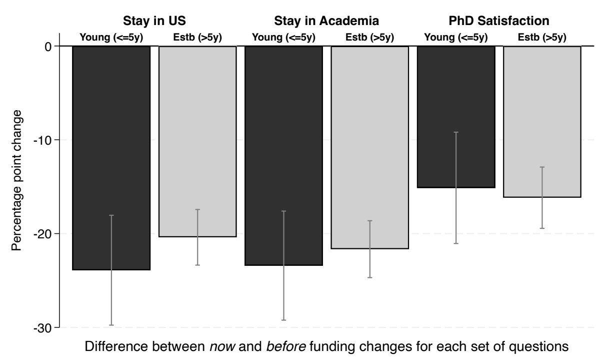
(b) By lab elite status



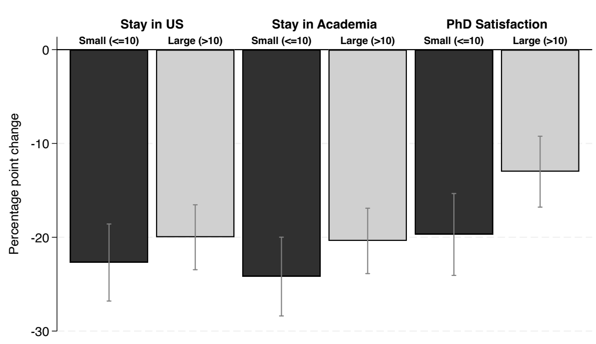
(c) By funding security



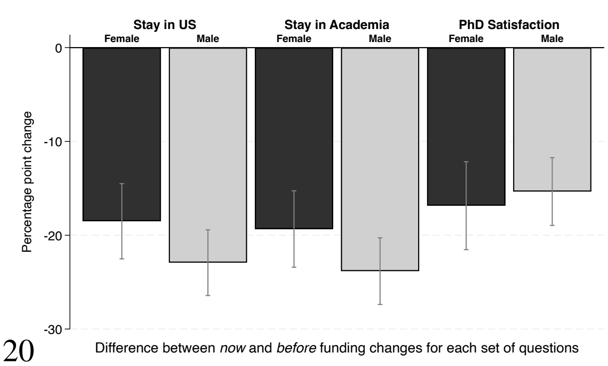
(d) By lab age



(e) By lab size



(f) By trainee gender



C Robustness

Figure A5: **Weighted share of young scientists responding negatively, before and after funding changes.** The questions were: “How likely were/are you to stay in the US?,” “How likely were/are you to stay in academia?,” and “How satisfied were/are you with having done a PhD in science?” Bars show the weighted share of young scientists who responded *likely* or *very likely* for the two first questions, and *very satisfied* and *satisfied* or *neutral* for the third question. The averages are weighted by the inverse probability of having a non-US undergraduate degree.