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How the 2025 NIH grant terminations varied by researchers' demographic groups

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In early 2025, the NIH unexpectedly terminated 2,291 active research grants, withdrawing $2.45 billion and disrupting thousands of projects. While the economic magnitude of these cuts is known, less is understood about how they differed across researchers' demographic groups. Using an original dataset of publicly available records, we documented how cancelations varied by gender and career stage. Although cuts occurred across all regions and institution types, statistical patterns show that early-career investigators—assistant professors, postdoctoral scholars, trainees, and graduate students—were disproportionately affected, as were women. Women's projects were smaller on average, had a larger share of unspent funds at cancelation, and were more concentrated in training and transition awards. Although available data cannot determine downstream causal effects, NIH economic multipliers suggest a potentially large unrealized loss to the US research enterprise. These patterns highlight the vulnerability of early-career researchers and women to abrupt funding instability and underscore the need for sustained investment to protect the future scientific workforce.

NIH grant cancelations | biomedical research funding | equity in science | economic impact of research funding

Effective US biomedical research is rooted in reliable federal investment. Stable contracts between universities and the NIH enable laboratories to plan strategic multiyear investments in science, infrastructure, and training. The stability of awards such as R01s, R35s, and T32s are especially high impact because they underwrite long-term research projects, cultivate leading-edge expertise in the US scientific workforce, and support major infrastructure projects that if unexpectedly suspended or cut create unnecessary waste, hamper discovery, and weaken US scientific leadership.

Between February and August 2025, the NIH terminated 2,291 active grants, rescinding $2.45 billion in funding out of a $5.08 billion investment. At the point of cancelation, nearly 52 percent of allocated dollars had already been spent, meaning that investments in personnel, consumables, and equipment were aborted prematurely and probably squandered. These cuts are likely most detrimental for early-stage researchers who have fewer resources and less security (1–5). Graduate students, postdoctoral fellows, and assistant professors are among the most vulnerable because they typically channel their energies into a single grant. Similarly, women scholars are heavily concentrated in training and early-career awards (6) and unlikely to have multiple grants (7) or hard-money positions (8). As a result, the degree to which cuts affected early-stage researchers provides a window into the repercussions of these cuts present for future scientific growth (9).

Results

The NIH terminations of 2025 canceled 2,291 active projects and froze 1,534 additional grants, abruptly disrupting research and imposing substantial economic losses on investigators and institutions (10). Although a full comparison would require examining the broader NIH portfolio, no region or institutional type was spared. Cancellations spanned the Northeast (Harvard, Columbia, Brown), the West (University of California system, Stanford, USC), the South (University of Texas system, Emory, Vanderbilt), and the Midwest (University of Michigan, Northwestern, Ohio State). Academic medical centers accounted for the largest number of terminated grants. Table 1 shows that Harvard, the University of California system, and the University of Texas systems were most affected, with 637, 485, and 54 awards, respectively, followed by R1 and AAU institutions such as Columbia, Pennsylvania, Michigan, and North Carolina (Chapel Hill), as well as smaller research universities and minority-serving institutions.

Table 2 indicates that women's projects were smaller on average, with median awards of $0.94M compared with $1.4M for men ($1.10M versus $1.48M among the top 10 mechanisms) (5). Gender differences were especially pronounced among early-career

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Table 1. Gender disparities in rescinded NIH grants by institution and academic rank

Organization name	No. of grants (% of women)	Total award amount in $ (% canceled)	M/W Awards ($)	Median ($, M/W)	Median Diff. ($, 95% CI)	Canc. (M/W)	Median Canc. ($, M/W)	Median Diff. Canc. ($, 95% CI)
Harvard	637 (39.3%)	2.22B (57.7%)	1.64B/0.59B	1.86M/0.97M	−0.89M (−1.47M, −0.27M)***	61.0%/48.4%	689K/363K	−326K (−537K, −129K)***
UC System	485 (34.4%)	1.01B (50.5%)	0.70B/0.32B	1.84M/1.35M	−0.49M (−0.76M, −0.00M**	50.4%/50.7%	616K/518K	−98K (−198K, 18K)**
UT System	54 (44.4%)	176M (38.3%)	147M/29.0M	1.33M/0.74M	−0.59M (−1.67M, 0.55M)	38.7%/36.5%	318K/171K	−147K (−428K, 218K)
Columbia	48 (52.1%)	116M (62.7%)	61.0M/54.6M	1.40M/2.02M	0.62M (−1.54M, 1.54M)	69.6%/55.0%	919K/839K	−80K (−634K, 1.13M)
UPenn	29 (34.5%)	42.1M (30.6%)	31.0M/11.1M	806K/1.23M	0.42M (−1.38M, 1.71M)	37.3%/11.9%	142K/98K	−44K (−401K, 193K)
U Michigan	28 (64.3%)	44.9M (43.2%))	14.0M/30.9M	104K/1.53M	1.43M (−1.57M, 2.15M)	52.4%/39.1%	21K/383K	363K (−634K, 543K)
UNC	27 (74.1%)	42.9M (39.0%)	16.5M/26.4M	2.10M/0.82M	−1.28M (−2.26M, 0.98M)	40.7%/37.9%	272K/213K	−59K (−736K, 354K)
Yale	26 (42.3%)	29.2M (35.1%)	17.7M/11.5M	1.29M/0.97M	−0.32M (−1.78M, 1.66M)	37.3%/31.7%	77K/262K	185K (−559K, 554K)
JHU	26 (50.0%)	41.7M (29.2%)	13.8M/27.9M	450K/97K	−354K (−2.49M, 1.86M)	24.4%/31.6%	89K/33K	−57K (−508K, 662K)
WUSTL	25 (52.0%)	51.0M (27.5%)	29.7M/21.3M	1.51M/1.17M	−0.35M (−2.83M, 1.62M)	26.8%/28.4%	481K/239K	−242K (−608K, 269K)
Top 10	1,385 (39.8%)	3.78B (53.4%)	2.66B/1.12B	1.73M/1.22M	−0.50M (−0.80M, −0.27M)***	56.0%/47.2%	597K/400K	−197K (−294K, −103K)***
All	2,291 (46.1%)	5.08B (48.4%)	3.29B/1.79B	1.40M/0.94M	−0.46M (−0.70M, −0.25M)***	51.8%/42.1%	438K/250K	−189K (−246K, −120K)***
Rank								
Professor	1,044 (37.8%)	3.42B (50.3%)	2.37B/1.05B	2.13M/1.82M	−0.31M (−0.53M, −0.07M)**	52.5%/45.3%	689K/604K	−85K (−202K, 10K)**
Associate professor	366 (49.2%)	705M (42.4%)	411M/294M	1.45M/1.53M	84K (−258K, 338K)	46.5%/36.7%	492K/471K	−21K (−138K, 93K)
Assistant professor	251 (59.8%)	283M (33.2%)	112M/170M	879K/744K	−134K (−491K, 95K)	32.2%/33.8%	262K/228K	−34K (−146K, 55K)
Postdoctoral fellow	100 (48.00%)	20.7M (35.6%)	12.3M/8.49M	163K/162K	−0.9K (−40K, 46K)	38.3%/31.7%	58K/44K	−14K (−47K, 11K)
Doctoral student or candidate	279 (60.2%)	21.2M (30.2%)	8.76M/12.4M	74K/71K	−3.7K (−27K, 27K)	30.4%/30.1%	20K/17K	−3.1K (−9.8K, 4.1K)
All others	251 (46.2%)	635M (52.4%)	377M/258M	823K/921K	98K (−509K, 395K)	59.9%/41.5%	268K/190K	−78K (−199K, 71K)

This table reports 2025 NIH grant terminations by institution and academic rank, including the number of canceled grants, percentage awarded to women, total funding and percent canceled, and men–women funding shares. Median awarded and canceled grant sizes by gender are shown, with median differences (95% CIs, p-values). Results are provided for the top 10 institutions, all institutions combined, and academic ranks from professor to trainee.
Note, * = $P<0.05$; ** = $P<0.01$; *** = $P<0.001$.

investigators. Women had a larger share of active resources at cancellation (57.9% vs. 48.2% for men), meaning more ongoing research and personnel support were abruptly halted. Consequently, women lost a greater portion of unrealized scientific output.

Among assistant professors, 59.8% of terminated projects were women-led. Women represented 60.2% of affected doctoral candidates and 48.0% of postdoctoral fellows. Training and transition awards were frequently terminated, including 57.77% of F31 fellows, 57.8% of F30 fellows, and 66.0% of T34 awardees. For T32 institutional grants, women-led awards had a median value of $502K compared with $1.2M for men, a median difference of -$781K (95% CI -2.49M to -98K; $P = 0.01$). Among canceled R01 awards, 41.81% were led by women.

Institutional patterns varied by gender, reflecting heterogeneity rather than consistent institutional vulnerability. Overall, women-led projects were smaller in value, with median awards of $0.94M versus $1.4M for men, and total losses of $1.12 billion versus $2.66 billion among the ten most affected institutions. These disparities suggest reduced financial flexibility for women investigators. At Michigan, 64.3% of terminated grants were women-led, with median awards of $383K for women versus $20K for men. At Harvard, women represented nearly 40% of affected investigators, with median canceled grants of $362K compared with $689K for men. At Yale, women accounted for over 42% of cancellations, with median values of $262K versus $77K. At Johns Hopkins, women led half of the canceled projects but lost more than two-thirds of terminated funding; men lost 24.4% of support compared with 31.6% for women.

Applying the NIH multiplier of $2.56 per $1 invested (11), the $2.45 billion in canceled awards ($1.70 billion from men and $753 million from women principal investigators) corresponds to approximately $6.29 billion in unrealized economic output. Because women led a larger share of training and early-career grants, the terminations disproportionately disrupted stages of the biomedical pipeline where women are most represented, intensifying risks to research continuity and workforce development. Overall, the 2025 terminations unevenly affected women investigators and key career stages, magnifying long-term consequences for the U.S. biomedical workforce.

Discussion

The 2025 NIH terminations underscored the biomedical research system's dependence on stable federal support and how abrupt policy shifts can halt active scientific work. Canceling projects after major investments produced immediate losses in research, personnel, and infrastructure. Although more than half of awarded funds had already generated over 14,000 publications and 608,000 citations, these productive projects were cut midstream, interrupting substantial federally funded activity. This study documents the researchers and projects affected by this disruption.

Demographic patterns indicate that women and early-career researchers were more likely to hold smaller grants with higher proportions of committed funds at the time support ended. Such investigators appeared especially vulnerable to abrupt changes, consistent with prior work showing that women and early-career

Table 2. Gender distribution, funding amounts, and cancelation outcomes for NIH grants terminated in 2025

Grant Type	No. of Grants (% W)	Total ($, % Canc.)	M/W Awards ($)	Median ($, M/W)	Median Diff. ($, 95% CI)	% Canc. (M/W)	Median Canc. ($, M/W)	Median Diff. Canc. ($, 95% CI)
R01	928 (41.8%)	2.04B (43.7%)	1.21B/828.29M	1.95M/1.90M	−55.2K (−230K, 182K)	46.68%/39.44%	624K/646K	21.3K (−54.2K, 98.4K)
F31	251 (57.8%)	17.08M (27.1%)	7.43M/9.65M	67.7K/65.8K	−1.8K (−26.0K, 21.8K)	27.50%/26.71%	15.8K/13.4K	−2.4K (−8.6K, 3.5K)
R25	143 (58.0%)	225.52M (60.3%)	107.99M/117.53M	1.08M/769K	−312K (−585K, 103K)	64.52%/56.43%	301K/256K	−45.3K (−431K, 47.1K)
R35	105 (35.2%)	252.58M (43.0%)	176.90M/75.68M	2.20M/1.35M	−852K (−1.16M, −60.1K)	44.32%/39.87%	664K/615K	−49.8K (−345K, 162K)
T32	101 (33.7%)	329.63M (67.3%)	256.93M/72.69M	2.14M/1.57M	−578K (−2.65M, 145K)	70.12%/57.40%	1.28M/502K	−781K (−2.49M, −98.0K)*
R21	91 (38.5%)	36.59M (43.8%)	22.98M/13.61M	429K/422K	−6.6K (−63.2K, 5.9K)	43.52%/44.31%	153K/165K	11.1K (−90.1K, 67.6K)
U01	55 (40.0%)	307.93M (36.9%)	203.09M/104.84M	3.97M/2.49M	−1.48M (−4.71M, 1.66M)	40.97%/29.12%	948K/787K	−161K (−1.17M, 95.4K)*
T34	47 (66.0%)	34.00M (19.4%)	13.32M/20.68M	645K/534K	−111K (−670K, 210K)	16.09%/21.47%	64.4K/76.5K	12.1K (−191K, 8.8K)
F30	45 (57.8%)	5.77M (34.8%)	2.53M/3.24M	136K/132K	−3.6K (−62.3K, 57.6K)	34.14%/35.32%	41.9K/43.5K	1.6K (−15.5K, 16.8K)
K99	44 (52.3%)	7.94M (41.5%)	3.89M/4.05M	181K/142K	−38.7K (−103K, 52.6K)	49.12%/34.19%	84.5K/49.0K	−35.5K (−78.6K, 10.4K)
Top 10 grants	1,810 (45.5%)	3.26B (46.2%)	2.01B/1.25B	1.48M/1.10M	−381K (−561K, −149K)***	49.53%/40.87%	462K/292K	−170K (−246K, −109K)***
All grants	2,291 (46.1%)	5.08B (48.4%)	3.29B/1.79B	1.40M/940K	−456K (−707K, −250K)***	51.82%/42.09%	438K/250K	−189K (−247K, −119K)***

This table summarizes rescinded NIH grants by mechanism and awardee sex. For each mechanism, it presents the number of terminated grants, share awarded to women, total funding and percent canceled, median awarded and canceled grant sizes by gender, and median differences (95% CIs, p-values). The share of canceled dollars by gender is also shown. Mechanisms include major research (R01/R21/U01/U54), training (F- and T-series), and career transition (K99/R00) grants.
Note, * = $P<0.05$; ** = $P<0.01$; *** = $P<0.001$.

scientists frequently face structural constraints, hold fewer simultaneous awards, or have more limited financial buffers (5–8).

The data show highly visible effects on the research training pipeline. Many terminated awards supported graduate students, postdoctoral scholars, first-stage independent investigators, and women researchers - groups that form the foundation of the next-generation scientific workforce. Although we do not measure long-term career outcomes, these observations align with prior research indicating that early-career funding interruptions can disrupt research continuity and limit advancement (2–4, 12). Accordingly, our economic-loss estimates based on NIH multipliers (11) should be interpreted as unrealized benchmarks rather than verified outcomes. These projections assume cancellations were not correlated with project-level productivity or expected returns and therefore reflect the potential scope of disruption rather than realized losses. A complete accounting, including opportunity costs of foregone discoveries, would require data on uninterrupted awards and post-termination trajectories to assess whether canceled projects would have yielded comparable returns.

Our findings therefore highlight plausible risks to workforce development, though definitive conclusions about downstream effects will require systematic monitoring of affected cohorts over time. Strategic planning begins with estimation. As additional data emerge, an important direction for future research will be to measure directly how the magnitude and distribution of funding cuts across researcher groups shape the trajectory of the U.S. scientific workforce.

These findings provide a timely descriptive portrait of the researchers affected by the 2025 NIH terminations and the characteristics of interrupted projects. The documented patterns raise important questions about the vulnerability of early-stage investigators, training environments, and workforce diversity under funding instability. As the biomedical community assesses these terminations, sustained attention to equity, stability, and workforce support will be essential to maintaining U.S. scientific leadership and ensuring that future disruptions do not disproportionately affect emerging talent.

Materials and Methods

We analyzed publicly available data on NIH grants terminated between February 28 and August 22, 2025 (13). Of 2,295 grants listed on Grant Witness, 2,291 with available award-size information were included in the analysis. Detailed methods and limitations are provided in the *SI Appendix*.

Data, Materials, and Software Availability. CSV Files data have been deposited in Zenodo (13).

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