In Your Own Backyard:

How NIH Funding Helps Your State's Economy

A REPORT BY
Families USA's
Global Health Initiative

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INTRODUCTION

The National Institutes of Health (NIH) is America's leading medical research agency and the foremost biomedical research institute in the world. The research funded by NIH has led to many dramatic improvements in our nation's health, from decreases in deaths due to cancer, heart disease, and stroke to dramatic increases in life expectancy for patients with diabetes and HIV/AIDS.

Today, the continued preeminence of NIH—and even our position as the leader in biomedical research—is threatened because NIH is not adequately funded. For the past five years, federal funding for NIH has not kept pace with inflation: Since 2003, its purchasing power has actually declined by 13 percent.[1]

Funding declines of that magnitude limit opportunities to make scientific advances that would improve our health here at home and advance the health of people worldwide. Promising research projects must be cut short, and a generation of scientists may opt to pursue other careers or may move to countries that are prioritizing the development of life sciences research.[2]

But NIH funding cuts do more than stifle scientific progress—these cuts have a negative economic impact on communities across the country. Most Americans don't know that NIH is a positive economic force in numerous local communities: Most of its $29 billion budget—between 80 and 90 percent—funds research that takes place at universities, medical research centers, hospitals, and research institutes in every state in the U.S.[3]

The federal dollars that NIH sends out into communities, known as "extramural funding," provide real, direct economic benefits at the local level, including increased employment; growth opportunities for universities, medical centers, and local companies; and additional economic stimulus for the community. And when NIH funding is cut, communities across the country suffer too.

How NIH Spending Provides Economic Benefits to Communities across the U.S.

It's easy to see how NIH funding benefits the institutions that receive grants or contracts.[4] What's less apparent is the broader economic benefit that that money brings to the larger communities of which these institutions are a part.

NIH awards are a funding source that provides direct benefits to the institutions that receive them, and this funding is then passed along from one person or business to another in successive rounds of spending. For example, the research program that receives an NIH grant will hire scientists and other staff to run the lab and conduct research. One of the researchers might spend part of her salary on a new car, for example, which adds to the income of the employees of the auto dealership, who can then buy new appliances, which adds to the income of the appliance store employees, who then have more money to spend on items they need, and so on.

Economists call these successive rounds of spending the "multiplier effect." The size of the multiplier effect varies from state to state, depending on economic conditions in each state and the structure of regional economies. But because of this multiplier effect, for every state, the economic benefits that result from NIH spending are much greater than the value of the dollars received from NIH by the state's research institutions and organizations.

To determine the overall impact of NIH funding on each state's economy, Families USA used the RIMS II input-output economic model created by the U.S. Department of Commerce, Bureau of Economic Analysis. The RIMS II model allowed us to calculate the new economic activity generated by NIH spending in three areas:

- Business activity (the increased output of goods and services);
- Employment (jobs created and supported); and
- Earnings (the additional earnings associated with the new jobs).

We discuss each of these areas in our Findings.

FINDINGS

We analyzed NIH grants and contracts awarded to each state in fiscal year 2007 and the economic impact of these awards in each state.[5] We also provided a framework for predicting the economic impact of potential increases in NIH funding in fiscal year 2008.

NIH Spending Has a Significant Impact on State Economies

- **Grants to States**
  In fiscal year 2007, NIH awarded approximately $22.846 billion in grants and contracts to universities and other research institutions in the 50 states (Table 1).[6]
  - The value of NIH state awards ranged widely, from $3.493 billion (California) to $7 million (Wyoming) (Table 1).
  - Seven states received more than $1 billion in funding from NIH: California ($3.493 billion), Massachusetts ($2.339 billion), New York ($2.005 billion), Maryland ($1.566 billion), Pennsylvania ($1.436 billion), Texas ($1.128 billion), and North Carolina ($1.088 billion) (Table 1).

- **Business Activity**
  On average, in fiscal year 2007, each dollar of NIH funding generated more than twice as much in state economic output. That is, an overall investment of $22.846 billion from NIH generated a total of $50.537 billion in new state business activity in the form of increased output of goods and services (Table 1).
  - Business activity generated per dollar of NIH funding ranged from $2.49 (Texas) to $1.66 (South Dakota) (Table 1).
  - The 10 states that generated the most economic activity per dollar of NIH funding were Texas ($2.49), Illinois ($2.43), California ($2.40), Georgia ($2.36), Colorado ($2.34), Pennsylvania ($2.32), Tennessee ($2.32), Utah ($2.30) Ohio ($2.29), and New Jersey ($2.26) (Table 1).
  - In fiscal year 2007, every $1 million that NIH invested generated $2.21 million in new state business activity (Table 1).

- **Jobs and Wages**
  In fiscal year 2007, NIH grants and contracts created and supported more than 350,000 jobs that generated wages in excess of $18 billion in the 50 states. The average wage associated with the jobs created was $52,000 (Table 2).

- **Jobs**
  - The number of new jobs created ranged from 55,286 (California) to 127 (Wyoming) (Table 2).
  - In six states, more than 20,000 new jobs were created: California (55,286 jobs), Massachusetts (30,864), New York (27,877), Maryland (21,299), Pennsylvania (21,262), and Texas (20,148) (Table 2).
- **Wages**
  - The increase in total wages from jobs created and supported by NIH funding ranged from $3.111 billion (California) to $5 million (Wyoming) (Table 2).
  - In six states, total wages from jobs created exceeded $1 billion: California ($3.111 billion), Massachusetts ($1.815 billion), New York ($1.423 billion), Pennsylvania ($1.164 billion), Maryland ($1.150 billion), and Texas ($1.013 billion) (Table 2).
  - The average wage per new job created by NIH funding ranged from $60,285 (Connecticut) to $38,746 (Louisiana) (Table 2).
  - In seven states, the average wage per new job created exceeded $55,000: Connecticut ($60,285), Massachusetts ($58,801), Delaware ($57,960), New Jersey ($57,720), Nevada ($56,664), California ($56,268) and Illinois ($55,566) (Table 2).
  - The average wage of all the jobs created by NIH funding nationwide is $52,112. The latest estimate of the average U.S. wage is $42,000.[7] This means that, on average, wages associated with jobs created by NIH funding are nearly 25 percent higher than the average U.S. wage.

- **Impact of Changes in NIH funding**

  The amount of money that NIH awards to states increases or decreases as the agency's federal funding is increased or cut every year. The impact of these increases or decreases is somewhat predictable and can be estimated at the state level. Taking 2007 as the base year, we estimated the impact of a 6.6 percent increase in funding on states' economies. (A 6.6 percent increase in NIH funding is the amount needed to offset past flat funding and to adjust for current inflation.[8] This increase in funding will get NIH on the path to restoring the purchasing power it has lost over the years.)

  If the sum of all NIH awards to the states were to increase by 6.6 percent, the national economic benefit would add up to $3.1 billion worth of new business activity, 9,185 additional jobs, and $1.1 billion in new wages (Tables 3, 4, and 5).

Table 1.

Economic Benefits* of NIH Awards to States, Fiscal Year (FY) 2007

State	NIH Award (in millions of dollars)	Business Activity Multiplier (per $1 change in NIH award)	Total New Business Activity (in millions of dollars)**
Alabama	$ 285	2.16	$ 614
Alaska	$ 11	1.82	$ 20
Arizona	$ 175	2.11	$ 369
Arkansas	$ 60	1.97	$ 119
California	$ 3,493	2.40	$ 8,387
Colorado	$ 336	2.34	$ 787
Connecticut	$ 476	1.95	$ 930
Delaware	$ 29	1.74	$ 50
Florida	$ 346	2.15	$ 745
Georgia	$ 374	2.36	$ 883
Hawaii	$ 70	1.98	$ 139
Idaho	$ 10	1.97	$ 19
Illinois	$ 762	2.43	$ 1,848
Indiana	$ 218	2.13	$ 466
Iowa	$ 202	2.04	$ 412
Kansas	$ 88	2.06	$ 182
Kentucky	$ 142	2.13	$ 302
Louisiana	$ 141	2.05	$ 288
Maine	$ 67	1.97	$ 132
Maryland	$ 1,566	2.09	$ 3,271
Massachusetts	$ 2,339	2.14	$ 5,007
Michigan	$ 578	2.13	$ 1,231
Minnesota	$ 486	2.23	$ 1,085
Mississippi	$ 36	1.90	$ 69
Missouri	$ 496	2.09	$ 1,039
Montana	$ 38	1.90	$ 72
Nebraska	$ 74	1.96	$ 145
Nevada	$ 22	1.87	$ 41
New Hampshire	$ 90	2.01	$ 182
New Jersey	$ 280	2.26	$ 631
New Mexico	$ 123	1.95	$ 240
New York	$ 2,005	2.02	$ 4,051
North Carolina	$ 1,088	2.22	$ 2,420
North Dakota	$ 17	1.86	$ 32
Ohio	$ 712	2.29	$ 1,627
Oklahoma	$ 86	2.18	$ 187
Oregon	$ 282	2.13	$ 600
Pennsylvania	$ 1,436	2.32	$ 3,331
Rhode Island	$ 146	1.87	$ 273
South Carolina	$ 130	2.15	$ 281
South Dakota	$ 16	1.66	$ 26
Tennessee	$ 447	2.32	$ 1,038
Texas	$ 1,128	2.49	$ 2,805
Utah	$ 153	2.30	$ 351
Vermont	$ 67	1.88	$ 126
Virginia	$ 441	2.09	$ 921
Washington	$ 851	2.19	$ 1,866
West Viginia	$ 24	1.81	$ 44
Wisconsin	$ 396	2.13	$ 841
Wyoming	$ 7	1.71	$ 13
Total	**$ 22,846**		**$ 50,537**
Average* **		**2.21**	

* Value of additional state business activity attributed to NIH grants and contracts awarded to academic institutions, organizations, and businesses in the state, measured in terms of the dollar value of goods and services, rounded to the nearest million dollars.

** Total new business activity may not equal the NIH award multiplied by the business activity multiplier due to rounding.

*** The "average" multiplier per NIH dollar (2.21) is the sum of total new business activity divided by the sum of NIH awards.

Table 2.

Jobs and Wages Attributed to NIH Awards, Fiscal Year (FY) 2007*

State	NIH Award (in million of dollars)	Total New Jobs Created and Supported**	Total Wages From New Jobs (in millions of dollars)	Average Wage Per Job Created
Alabama	$ 285	4,798	$ 228	$ 47,567
Alaska	$ 11	186	$ 8	$ 41,216
Arizona	$ 175	2,934	$ 141	$ 47,925
Arkansas	$ 60	1,142	$ 45	$ 39,056
California	$ 3,493	55,286	$ 3,111	$ 56,268
Colorado	$ 336	5,417	$ 293	$ 54,028
Connecticut	$ 476	5,503	$ 332	$ 60,285
Delaware	$ 29	257	$ 15	$ 57,960
Florida	$ 346	5,828	$ 284	$ 48,729
Georgia	$ 374	6,774	$ 318	$ 46,924
Hawaii	$ 70	1,117	$ 54	$ 48,248
Idaho	$ 10	160	$ 7	$ 45,615
Illinois	$ 762	11,914	$ 662	$ 55,566
Indiana	$ 218	3,619	$ 169	$ 46,621
Iowa	$ 202	3,907	$ 154	$ 39,336
Kansas	$ 88	1,558	$ 61	$ 39,435
Kentucky	$ 142	2,553	$ 108	$ 42,397
Louisiana	$ 141	2,754	$ 107	$ 38,746
Maine	$ 67	1,302	$ 51	$ 39,352
Maryland	$ 1,566	21,299	$ 1,150	$ 53,984
Massachusetts	$ 2,339	30,864	$ 1,815	$ 58,801
Michigan	$ 578	8,687	$ 469	$ 53,942
Minnesota	$ 486	7,884	$ 397	$ 50,387
Mississippi	$ 36	627	$ 24	$ 38,896
Missouri	$ 496	6,515	$ 335	$ 51,485
Montana	$ 38	703	$ 27	$ 38,811
Nebraska	$ 74	1,292	$ 53	$ 41,034
Nevada	$ 22	283	$ 16	$ 56,664
New Hampshire	$ 90	1,146	$ 62	$ 53,901
New Jersey	$ 280	3,738	$ 216	$ 57,720
New Mexico	$ 123	1,947	$ 94	$ 48,298
New York	$ 2,005	27,877	$ 1,423	$ 51,054
North Carolina	$ 1,088	18,422	$ 896	$ 48,630
North Dakota	$ 17	286	$ 11	$ 38,973
Ohio	$ 712	11,895	$ 591	$ 49,668
Oklahoma	$ 86	1,786	$ 70	$ 39,081
Oregon	$ 282	4,955	$ 218	$ 44,011
Pennsylvania	$ 1,436	21,262	$ 1,164	$ 54,752
Rhode Island	$ 146	2,026	$ 91	$ 44,940
South Carolina	$ 130	2,479	$ 101	$ 40,750
South Dakota	$ 16	193	$ 8	$ 39,433
Tennessee	$ 447	7,704	$ 374	$ 48,540
Texas	$ 1,128	20,148	$ 1,013	$ 50,299
Utah	$ 153	3,003	$ 130	$ 43,271
Vermont	$ 67	1,169	$ 47	$ 39,855
Virginia	$ 441	5,720	$ 312	$ 54,514
Washington	$ 851	12,850	$ 697	$ 54,206
West Virginia	$ 24	394	$ 16	$ 40,627
Wisconsin	$ 396	6,603	$ 315	$ 47,729
Wyoming	$ 7	127	$ 5	$ 39,714
Total	**$ 22,846**	**350,894**	**$18,286**	
Average* **				**$ 52,112**

* State NIH awards and total wages are rounded to the nearest million dollars. Jobs are rounded to the nearest whole number. Total new jobs and wages may not equal the NIH award multiplied by the relevant multiplier due to rounding.

** In order to calculate the impact of NIH awards on employment, 2007 NIH award data were deflated to 2005 levels in order to be consistent with the RIMS II employment multipliers, which are based on 2005 data. Data were adjusted using a deflator of 0.919, which is based on the Bureau of Economic Analysis price index for biomedical research and development (BRDPI).

*** The average wage ($52,112) is the sum of the total wages from new jobs divided by the total number of new jobs.

Table 3.

Potential Gains in Business Activity from a 6.6 Percent Increase in NIH Awards

State	NIH Award (in millions of dollars)	Business Activity Gained (in millions of dollars)	Total New Business Activity (in millions of dollars)
Alabama	$ 302	$ 38	$ 652
Alaska	$ 12	$ 1	$ 21
Arizona	$ 186	$ 23	$ 392
Arkansas	$ 64	$ 7	$ 126
California	$ 3,710	$ 520	$ 8,907
Colorado	$ 357	$ 49	$ 836
Connecticut	$ 506	$ 58	$ 988
Delaware	$ 31	$ 3	$ 54
Florida	$ 367	$ 46	$ 791
Georgia	$ 397	$ 55	$ 938
Hawaii	$ 75	$ 9	$ 148
Idaho	$ 10	$ 1	$ 20
Illinois	$ 809	$ 115	$ 1,963
Indiana	$ 232	$ 29	$ 495
Iowa	$ 215	$ 26	$ 437
Kansas	$ 94	$ 11	$ 193
Kentucky	$ 151	$ 19	$ 321
Louisiana	$ 150	$ 18	$ 306
Maine	$ 71	$ 8	$ 141
Maryland	$ 1,664	$ 203	$ 3,474
Massachusetts	$ 2,484	$ 310	$ 5,317
Michigan	$ 613	$ 76	$ 1,308
Minnesota	$ 516	$ 67	$ 1,153
Mississippi	$ 38	$ 4	$ 73
Missouri	$ 527	$ 64	$ 1,104
Montana	$ 40	$ 4	$ 76
Nebraska	$ 79	$ 9	$ 154
Nevada	$ 23	$ 3	$ 44
New Hampshire	$ 96	$ 11	$ 193
New Jersey	$ 297	$ 39	$ 670
New Mexico	$ 131	$ 15	$ 255
New York	$ 2,129	$ 251	$ 4,302
North Carolina	$ 1,155	$ 150	$ 2,570
North Dakota	$ 18	$ 2	$ 34
Ohio	$ 756	$ 101	$ 1,727
Oklahoma	$ 91	$ 12	$ 199
Oregon	$ 299	$ 37	$ 638
Pennsylvania	$ 1,525	$ 207	$ 3,537
Rhode Island	$ 155	$ 17	$ 290
South Carolina	$ 139	$ 17	$ 298
South Dakota	$ 17	$ 2	$ 28
Tennessee	$ 474	$ 64	$ 1,102
Texas	$ 1,198	$ 174	$ 2,978
Utah	$ 162	$ 22	$ 373
Vermont	$ 71	$ 8	$ 134
Virginia	$ 468	$ 57	$ 978
Washington	$ 904	$ 116	$ 1,981
West Viginia	$ 26	$ 3	$ 47
Wisconsin	$ 420	$ 52	$ 893
Wyoming	$ 8	$ 1	$ 13
Total	**$ 24,262**	**$ 3,133**	**$ 53,670**

Table 4.

Potential Gains in Jobs from a 6.6 Percent Increase in NIH Awards

State	Total New Jobs Created and Supported With 2007 Funding	Additional Jobs Produced by a 6.6% Increase	Total New Jobs Created and Supported By a 6.6% Increase*
Alabama	4,798	126	4,923
Alaska	186	5	191
Arizona	2,934	77	3,011
Arkansas	1,142	30	1,172
California	55,286	1,447	56,733
Colorado	5,417	142	5,558
Connecticut	5,503	144	5,647
Delaware	257	7	264
Florida	5,828	153	5,981
Georgia	6,774	177	6,952
Hawaii	1,117	29	1,147
Idaho	160	4	165
Illinois	11,914	312	12,226
Indiana	3,619	95	3,713
Iowa	3,907	102	4,009
Kansas	1,558	41	1,598
Kentucky	2,553	67	2,620
Louisiana	2,754	72	2,826
Maine	1,302	34	1,336
Maryland	21,299	558	21,857
Massachusetts	30,864	808	31,672
Michigan	8,687	227	8,914
Minnesota	7,884	206	8,091
Mississippi	627	16	643
Missouri	6,515	171	6,685
Montana	703	18	721
Nebraska	1,292	34	1,326
Nevada	283	7	290
New Hampshire	1,146	30	1,176
New Jersey	3,738	98	3,835
New Mexico	1,947	51	1,998
New York	27,877	730	28,607
North Carolina	18,422	482	18,904
North Dakota	286	7	293
Ohio	11,895	311	12,207
Oklahoma	1,786	47	1,833
Oregon	4,955	130	5,085
Pennsylvania	21,262	557	21,819
Rhode Island	2,026	53	2,079
South Carolina	2,479	65	2,544
South Dakota	193	5	198
Tennessee	7,704	202	7,906
Texas	20,148	527	20,675
Utah	3,003	79	3,081
Vermont	1,169	31	1,200
Virginia	5,720	150	5,869
Washington	12,850	336	13,186
West Viginia	394	10	405
Wisconsin	6,603	173	6,776
Wyoming	127	3	130
Total	**350,894**	**9,185**	**360,079**

* Numbers may not add due to rounding.

Table 5.

Potential Gains in Wages from a 6.6 Percent Increase in NIH Awards

State	Total Earnings Based on 2007 Funding (in thousands of dollars)	Additional Wages Produced by a 6.6% Increase (in thousands of dollars)	Total Wages Produced by a 6.6% Increase (in thousands of dollars)*
Alabama	$ 228,208	$ 14,149	$ 242,357
Alaska	$ 7,659	$ 475	$ 8,134
Arizona	$ 140,633	$ 8,719	$ 149,352
Arkansas	$ 44,620	$ 2,766	$ 47,387
California	$ 3,110,825	$ 192,871	$ 3,303,697
Colorado	$ 292,646	$ 18,144	$ 310,791
Connecticut	$ 331,729	$ 20,567	$ 352,296
Delaware	$ 14,913	$ 925	$ 15,838
Florida	$ 284,015	$ 17,609	$ 301,624
Georgia	$ 317,878	$ 19,708	$ 337,586
Hawaii	$ 53,910	$ 3,342	$ 57,253
Idaho	$ 7,319	$ 454	$ 7,773
Illinois	$ 662,034	$ 41,046	$ 703,081
Indiana	$ 168,701	$ 10,459	$ 179,161
Iowa	$ 153,692	$ 9,529	$ 163,221
Kansas	$ 61,426	$ 3,808	$ 65,234
Kentucky	$ 108,242	$ 6,711	$ 114,953
Louisiana	$ 106,713	$ 6,616	$ 113,329
Maine	$ 51,230	$ 3,176	$ 54,407
Maryland	$ 1,149,809	$ 71,288	$ 1,221,097
Massachusetts	$ 1,814,819	$ 112,519	$ 1,927,338
Michigan	$ 468,582	$ 29,052	$ 497,634
Minnesota	$ 397,269	$ 24,631	$ 421,900
Mississippi	$ 24,382	$ 1,512	$ 25,894
Missouri	$ 335,410	$ 20,795	$ 356,205
Montana	$ 27,277	$ 1,691	$ 28,968
Nebraska	$ 53,031	$ 3,288	$ 56,318
Nevada	$ 16,013	$ 993	$ 17,006
New Hampshire	$ 61,750	$ 3,829	$ 65,579
New Jersey	$ 215,729	$ 13,375	$ 229,104
New Mexico	$ 94,024	$ 5,830	$ 99,854
New York	$ 1,423,240	$ 88,241	$ 1,511,480
North Carolina	$ 895,863	$ 55,544	$ 951,407
North Dakota	$ 11,136	$ 690	$ 11,826
Ohio	$ 590,811	$ 36,630	$ 627,441
Oklahoma	$ 69,796	$ 4,327	$ 74,123
Oregon	$ 218,082	$ 13,521	$ 231,603
Pennsylvania	$ 1,164,152	$ 72,177	$ 1,236,330
Rhode Island	$ 91,062	$ 5,646	$ 96,708
South Carolina	$ 101,040	$ 6,264	$ 107,305
South Dakota	$ 7,597	$ 471	$ 8,068
Tennessee	$ 373,959	$ 23,185	$ 397,145
Texas	$ 1,013,405	$ 62,831	$ 1,076,236
Utah	$ 129,926	$ 8,055	$ 137,981
Vermont	$ 46,608	$ 2,890	$ 49,497
Virginia	$ 311,804	$ 19,332	$ 331,136
Washington	$ 696,528	$ 43,185	$ 739,713
West Viginia	$ 16,021	$ 993	$ 17,014
Wisconsin	$ 315,152	$ 19,539	$ 334,691
Wyoming	$ 5,050	$ 313	$ 5,363
Total	**$ 18,285,722**	**$ 1,133,715**	**$ 19,419,437**

* Numbers may not add due to rounding.

DISCUSSION

When lawmakers are making decisions about NIH funding, first and foremost, they should bear in mind the considerable medical accomplishments that have flowed from NIH-supported research. To list just a few:

- Death rates from stroke declined by 51 percent between 1975 and 2000;[9]
- AIDS-related deaths fell by roughly 70 percent between 1995 and 2001;[10] and
- Rubella, whooping cough, pneumococcal pneumonia, and other infectious diseases that once killed or disabled millions of Americans, especially children, can now be prevented by vaccines.[11]

NIH is the research engine that has positioned America as an international leader in medical science for decades, and it has improved the health and quality of life for millions of Americans.

But beyond the considerable achievements in medical science that NIH has fostered, lawmakers should also be aware of the economic contributions that NIH makes to communities in every state across the country. As outlined in the Findings, those contributions can be substantial. Furthermore, the contributions extend beyond the measurable economic advantages to less tangible benefits, which, though difficult to measure, are nonetheless real. NIH funding can enhance the standing and economic stability of universities, helps businesses grow, and improves locally available health care and the overall quality of life in a state.

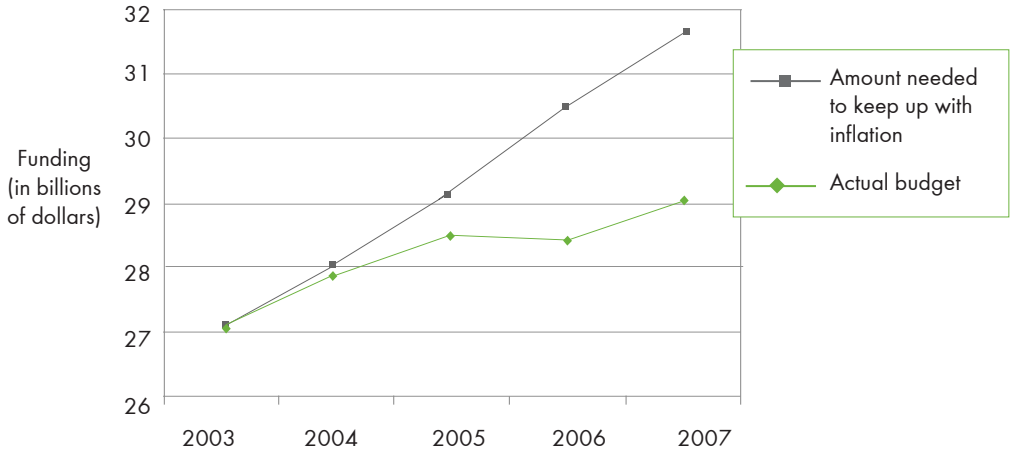
NIH Funding: Not Keeping Pace

Between 1998 and 2003, Congress doubled the annual budget for NIH to ensure America's world leadership in science and to spur medical innovation. For the 10 years prior to this "doubling" effort, NIH funding rose by approximately 7.5 percent annually.[12] However, since 2003, NIH funding has been flat. What's more, when inflation in the cost of conducting biomedical research is taken into account, the government has effectively cut NIH funding, limiting the agency's ability to fund promising research projects and slowing the pace of medical innovation (see Figure 1).[13] Because NIH research encompasses both domestic and global health issues, funding constraints slow advances in health care in the U.S. and abroad.

Funding constraints are also threatening the next generation of scientists: As it becomes more difficult to obtain grants for research, aspiring young scientists are dissuaded from pursuing careers in research, opting instead for more financially predictable careers. And cuts to the NIH budget lead to reduced funding for research at medical centers and universities across the country, hurting local economies.

Figure 1.

Funding for NIH Is Not Keeping up with Inflation



Enhancing Local Universities—and Local Economies

Beyond the direct economic benefits of NIH grants and contracts, these awards help universities, medical schools, and other research institutions to expand their programs, to grow in reputation, and, in turn, to attract additional funding from other sources. This leads to increased enrollment and an improved ability to recruit and retain faculty. These benefits are very important to many communities, especially those where universities, research institutes, and medical colleges are major contributors to the local economy.

NIH grants also build schools' research capacity, which helps them attract more funds from other sources.[14] The National Center for Research Resources, a center within NIH, makes awards to institutions in states that have historically had a low success rate for NIH grant applications. The center's Institutional Development Awards are designed to enhance research capacity at institutions in 23 target states and Puerto Rico.[15] In 2006 and 2007, the center awarded more than $150 million in Institutional Development Awards to universities and medical schools in 11 states: Kansas, Louisiana, Mississippi, New Hampshire, New Mexico, Oklahoma, Rhode Island, South Carolina, Vermont, West Virginia, and Wyoming.[16]

The Center for Measuring University Performance, an academic think tank dedicated to evaluating universities, includes federal research funding in its evaluation criteria, and NIH grants are a significant component of federal research funding.[17] Mainstream publications that rank medical schools, such as *U.S. News & World Report*, also use NIH funding as one of their criteria.[18] Students and their families then use these rankings when selecting which universities or medical schools they will apply to and attend. A higher ranking can mean more applications and a growing student body.

Better rankings, growing research capacity, and broader funding sources all show that NIH grants can help make universities and other institutions of higher education more competitive, which can improve local and state economies, too. A study of Michigan's University Research Corridor (URC) confirms this point. That study, which included Michigan State University, the University of Michigan, and Wayne State University, found that "Michigan's URC universities have become a vital economic engine for the state."[19] The operations of those three universities were responsible for a net economic impact of $12.8 billion in additional earnings to state residents. In addition, the universities educate students who are "highly valued in Michigan's emerging knowledge economy." Of the hundreds of thousands of students who pass through these universities, more than 60 percent remain in the region, building the economy and paying taxes.

The positive economic impact of universities and other institutions of higher education can be seen in community after community.[20] The American Association of Medical Colleges (AAMC) found that in 2005, its 500 or so member medical schools and teaching hospitals had a combined economic impact of $451 billion, accounted for 3 million full-time jobs nationwide, and generated $20 billion in state revenue.[21] Other studies have shown that federally funded research contributes significantly to state and national economies, increasing output and creating jobs.[22] Additional economic advantages include higher incomes, new tax revenues, new inventions, and the creation of new companies whose businesses are based on the new technologies developed at these institutions.

Helping Businesses Grow

NIH doesn't just help local universities grow. It contributes to business growth, too. While the bulk of NIH funding goes to universities, research institutes, and medical centers—all powerful drivers of local economies—some funding is also directed to businesses. The list of NIH grant recipients for any state shows a mix of universities, medical centers, research institutes, and companies, with both large and small businesses benefiting.[23] NIH also helps industry grow through non-grant resource sharing arrangements. Cooperative Research and Development Agreements (CRADAs) and Material Transfer Agreements (MTAs) allow resources, facilities, and expertise to be shared between NIH and industry.[24] From 1985 to 2004, NIH entered into more than 400 CRADAs.[25] From 1991 to 2004, at least 15 drugs and vaccines approved for use had been developed through NIH-industry relationships. These included drugs that treat cancer and HIV/AIDS, that limit kidney transplant rejection, and a vaccine for Hepatitis A.[26]

NIH has also helped business growth through less direct channels. A study that examined the factors that led to industry growth in certain regions of the country concluded that one of the critical elements was strong regional research capacity, which is linked to NIH funding.[27] The emergence of the biotechnology industry is a particularly salient example of how NIH-supported academic research can help new industries flourish. The biotechnology

industry is most heavily concentrated in nine metropolitan areas across the country,[28] including large metropolitan areas such as San Francisco and Boston, as well as areas such as Raleigh-Durham-Chapel Hill, North Carolina. All nine areas include universities that are recipients of large NIH grants. These universities are training grounds for new scientists. And the interplay between those publicly financed research institutes and young biotech ventures was one of the key factors that led the biotechnology industry to flourish in certain areas.

NIH funding does not necessarily lead to the growth of whole new industries such as biotechnology. However, NIH funding of universities and corporations does provide valuable opportunities for businesses to innovate and fosters the careers of scientists, some of whom end up helping local businesses grow.

Improving Health Care and the Quality of Life in Your State

Beyond improving local economies, NIH funding can also improve the quality of local health care. While NIH research has led to better treatments and health outcomes for the entire nation and the world, at the local level, NIH research also has a positive impact on health care by improving the quality of medical services that are available to community residents.

To measure the effects of locally conducted NIH research on the quality of health care, we compared national rankings of hospitals with the NIH funding received by the medical schools affiliated with those hospitals. Of the 20 highest-ranked hospitals, 19 were affiliated with one of the medical schools that ranked among the top 25 in NIH funding.[29]

There also seems to be a positive relationship between clinical trials—one component of clinical research—and health outcomes.[30] In 2007, NIH spent more than $9 billion on clinical research, including nearly $3 billion on clinical trials.[31] Much of that funding went to communities across the country for clinical research, including clinical trials, conducted at medical centers. That funding can also help improve care at the local level. For example, studies have shown that, for patients with acute heart events such as a heart attack, outcomes may be better at hospitals that participate in clinical trials.[32]

An Investment That Pays off over the Long Term

Medical research does not just deliver returns in the form of jobs and higher economic output, but it also leads to long-term gains in life expectancy and better health. Those gains have an economic impact too, in the form of increased productivity and reduced health care costs. Between 1970 and 2000, increases in U.S. life expectancy caused national wealth to grow by $3.2 trillion every year.[33] Much of that increase in life expectancy is attributable to medical advances that are linked to NIH-funded discoveries.

NIH-funded research has not only contributed to increases in longevity that have added to national wealth, but it has also resulted in health care cost savings by lowering both the direct costs (hospital and nursing home stays, surgery, and other treatments) and indirect costs (reduced productivity from illness and death) of illness here in the U.S. and globally. The following examples illustrate the societal savings of medical advances in both the direct and indirect costs of illness. These savings are possible in part due to NIH-funded research.

- Polio was once one of the most dreaded childhood diseases in the United States. At its peak in 1952, there were more than 21,000 reported cases in the U.S. Polio was eradicated from the U.S. in the late 1970s thanks to the discovery of the polio vaccine. In the U.S., between 1955 and 2005, more than 1.1 million cases of polio and 160,000 deaths were averted because of vaccination programs. The net economic benefits were $180 billion in saved treatment costs and avoided deaths.[34]
- A 17-year, $56-million investment in testicular cancer research has greatly improved treatment and survival rates. Men with testicular cancer now have a 91 percent cure rate and an increased life expectancy of 40 years. Annual savings from those advances are estimated at $166 million.[35]
- Thirty years ago, diabetic retinopathy, a complication sometimes experienced by those with diabetes, was responsible for about 20 percent of new cases of blindness for people between the ages of 45 and 74. Today, NIH research has come up with treatments that reduce blindness by 90 percent among people with severe retinopathy, saving the U.S. $1.6 billion every year.[36]

These examples show that biomedical research has delivered high returns on our investment dollars that have continued to pay off over the long term.

CONCLUSION

The government's investment in NIH is an investment in the physical and economic health of our communities and our nation. It is an investment that we should protect.

For the last five years, the NIH budget has been steadily declining, compromising its capacity to fund medical research around the country. Universities and medical centers that benefit from NIH funding suffer. That, in turn, hurts communities where these institutions are both critical to community health care and major contributors to the economy. And perhaps most importantly, shortfalls in federal funding hinder our ability to develop medical advances that can benefit the U.S. and the world.

As Congress evaluates NIH funding, it should keep in mind the interrelated set of benefits that flow from that funding. An NIH budget that falls short of what's needed hurts labs, hospitals, and communities. NIH funding is an excellent investment—improving the health of communities, the nation, and the world.

Benefits from beyond Our Borders

Some of the research that NIH funds takes place in other countries, particularly developing countries. Certainly, that research benefits those countries, funding training for local health professionals, improving the health care infrastructure, and developing new tools to prevent, diagnose, and treat global diseases. But research that is conducted abroad can have benefits for local economies here at home, too.

International research programs can help our universities attract students, which can be a boost to local economies. These programs can also foster long-term international ties, and those ties can make it easier for other businesses in the state or region to enter new and emerging markets, which can also boost local economies. For example, Indiana University-Purdue University (IUPU) at Indianapolis has entered into strategic partnerships with the MOI University, Kenya. The core of the partnership is shared research on HIV/AIDS. IUPU says that this partnership benefits both countries and opens up opportunities.[37] "Oftentimes, before you can do business, you have to be friends…." says David A. Ford, Associate Dean for Research and Graduate Programs at the School of Liberal Arts at Indiana-Purdue.[38]

In addition to establishing relationships that can foster further international collaboration, the findings from research conducted abroad can help us here at home in direct ways. For example:

- Millions of infants in the U.S. no longer face the threat of dehydration from diarrhea or vomiting. Pedialyte, a life-saving treatment for dehydration, was derived from the rehydration concept that was tested among children in India and Bangladesh.[39]
- Studies of pregnant HIV-positive women in Africa first shed light on cost-effective therapies for the prevention of mother-to-child transmission of HIV. As a result, newborn HIV infections in the U.S. are down by 80 percent since 1981.[40]
- The use of chemotherapy for cancer and the discovery of the genes that cause Huntington's disease resulted from research performed in other countries where those conditions are highly prevalent.[41]

The research and training programs that NIH funds in other countries—programs that help find new ways to treat or prevent global diseases and that also help build long-lasting international partnerships for the U.S.—are directly affected by changes in the overall NIH budget. Therefore, the impact of flat-funding NIH is felt abroad, as well as here at home.

ENDNOTES

[1] *A Broken Pipeline? Flat Funding of the NIH Puts a Generation of Science at Risk,* A Follow-Up Statement by a Group of Concerned Universities and Research Institutions (March 2008), available online at http://www.brokenpipline.org/. When NIH funding is adjusted to take into account the fact that inflation has eroded the agency's purchasing power, NIH has in effect experienced a budget cut: Since 2003, its purchasing power has declined by 13 percent. In order to keep up with inflation and to make up for funding shortfalls in recent years, a 6.6 percent increase in the NIH budget is needed in 2008.

[2] Ibid.

[3] Information on NIH awards to different kinds of institutions, as well as award trends, is available on the NIH Web site at http://grants.nih.gov/grants/award/HistoricRankInfo.cfm.

[4] NIH supports research using both grants and contracts. The vast majority of awards—about 90 percent—are in the form of grants. Grant applications respond to broader topics and are more flexible. Contracts are much more focused and specific to a research topic outlined within a contract solicitation. The percent allocation between grants and contracts is based on conversations with staff at the NIH Office of Extramural Affairs. Definitions of grants and contacts are from *Grants-vs-Contracts: What's the Difference?* (Bethesda, MD: NIH Office of Extramural Research, May 7, 2007), available online at http://grants.nih.gov/grants/funding/contracts_vs_grants.htm; and from *Glossary of Terms* (Bethesda, MD: NIH Office of Extramural Research, 2008), available online at http://grants.nih.gov/grants/glossary.htm#C.

[5] NIH spending for 2007 is based on the 2007 federal fiscal year, which ran from October 1, 2006, to September 30, 2007.

[6] See the Methodolgy for an explanation of how we derived NIH total awards for fiscal year 2007.

[7] This estimate is from 2006. Bureau of Economic Analysis (BEA), *Regional Economic Accounts*, Table CA34 (Washington: BEA, 2007), available online at http://www.bea.gov/regional/reis/default.cfm?catable=CA34&section=2. The BEA estimates used to compute the average wage are a job count, not a person count. People holding more than one job are counted in the employment estimates for each job they hold.

[8] Families USA's Global Health Initiative, *Fighting the World's Most Devastating Diseases: A Plan for Closing the Research Gap* (Washington: Families USA, 2008).

[9] A short list of NIH accomplishments is available on the NIH Web site under "About NIH" at http://www.nih.gov/about/NIHoverview.html.

[10] Ibid.

[11] Ibid.

[12] NIH historic appropriations are available on the NIH Web site at http://www.nih.gov/about/almanac/appropriations/part2.htm. Calculations are by Families USA.

[13] Changes in the cost of conducting biomedical research, the type of research that NIH funds, are measured by a separate index, the Biomedical Research and Development Price Index (BRDPI). BRDPI is calculated annually by the Bureau of Economic Analysis. Biomedical research inflation is typically higher than general inflation, which is measured by the Consumer Price Index (CPI). In 2007, the index for biomedical inflation rose by 3.9 percent. Information on BRDPI is published annually by NIH and is available online at http://officeofbudget.od.nih.gov/ui/2008/BRDPI_Proj_2008_final.pdf.

[14] Some universities use NIH-published rankings of award recipients to demonstrate the quality of their programs when applying for funding from other sources. Comments on the Ranking Tables are available online at http://grants.nih.gov/grants/multi_pi/RFI_Ranking_Table_Comments.doc.

[15] Information on the National Center for Research Resources and the 23 states targeted for Institutional Development Awards is available online at http://www.ncrr.nih.gov/research_infrastructure/institutional_development_award/.

[16] In September 2006, the National Center for Research Resources announced awards of $117.3 million to institutions in nine states. In October 2007, it announced awards of $33 million to institutions in three states. Press Release, *NIH Grants $117 Million in Institutional Development Awards to Underserved States*, September 19, 2006, available online at http://www.nih.gov/news/pr/sep2006/ncrr-19.htm; and Press Release, *NIH Grants $33 Million in Institutional Development Awards to Three States*, October 29, 2007, available online at http://www.nih.gov/news/pr/oct2007/ncrr-29.htm.

[17] The Center for Measuring Research Performance evaluates university performance annually. Information on its membership and criteria is available online at http://mup.asu.edu/index.html.

[18] *U.S. News & World Report*, "Medicine Methodology," March 26, 2008, available online at http://www.usnews.com/articles/education/best-graduate-schools/2008/03/26/medicine-methodology.html.

[19] Caroline M. Sallee and Patrick L. Anderson, Anderson Economic Group, LLC, *Michigan's University Research Corridor: First Annual Economic Impact Report* (Lansing, MI: Anderson Economic Group, September, 2007).

[20] Research universities such as Brown University, the University of California, Johns Hopkins University, and the University of North Carolina, to name a few, have also been shown to have a strong and significant impact on the economic development of their local and state economies.

[21] Tripp Umbach, *The Economic Impact of AAMC-Member Medical Schools and Teaching Hospitals* (Washington: American Association of Medical Colleges, January 2007).

[22] Tim Lynch and Necati Aydin, *Literature Review of the Economic and Social Impact of Higher Education Research Funding* (Tallahassee, FL: Florida State University, May 2004).

[23] Detailed information on organizations that receive NIH grants, by state, is available online at http://grants.nih.gov/grants/award/state/state07.htm. NIH sets aside 2.5 percent of all of its extramural funding to support small businesses through its Small Business Innovation Research Program.

[24] NIH, Office of Technology Transfer, *Cooperative Research and Development Agreements (CRADAs) and Material Transfer Agreements (MTAs)* (Bethesda, MD: NIH, 2008), available online at http://www.ott.nih.gov/CRADAs/, accessed on May 14, 2008.

[25] Biotechnology Industry Organization (BIO), *Statement of the Biotechnology Industry Organization before the NIH Blue Ribbon Panel on Conflict of Interest Policies* (Washington: BIO, April 16, 2004), available online at http://www.bio.org/reg/20040416NIHconflict.pdf.

[26] Ibid.; National Institutes of Health, *FDA Approved Therapeutic Drugs and Vaccines Developed with Technologies from the Intramural Research Program at the National Institutes of Health as of July 1, 2004* (Bethesda, MD: NIH), available online at http://ott.od.nih.gov/NewPages/therapeutics.pdf.

[27] Joseph Cortright and Heike Mayer, *Signs of Life: The Growth of Biotechnology Centers in the U.S.* (Washington: Brookings Institute, 2002).

[28] Ibid.

[29] Hospital rankings were drawn from *U.S. News & World Report*, "America's Best Hospitals, 2007," available online at http://health.usnews.com/usnews/health/best-hospitals/honorroll.htm, accessed on May 14, 2008. NIH awards to medical schools were for the year 2005. These data are available on the NIH Web site at http://grants.nih.gov/grants/award/rank/medttl05.htm. A lag between hospital and medical school NIH rankings is appropriate because the positive impact of grant awards on hospital services is not immediate. Among the criteria used to rank hospitals was their designation as a National Cancer Institute (NCI) cancer center. This designation is conferred by the NCI, which is part of NIH. NCI-designated cancer centers receive NIH grants and also conduct clinical research.

[30] Clinical research is patient-focused research that includes population studies and clinical trials. Clinical trials are studies in which new treatments are tested on people for safety and efficacy. *Executive Summary, NIH Director's Panel on Clinical Research Report of the Advisory Committee to the NIH Director* (Bethesda, MD: NIH, 1997), available online at http://www.nih.gov/news/crp/97report/execsum.htm.

[31] NIH, *Estimates of Funding for Various Diseases, Conditions, Research Areas, February 2008* (Bethesda, MD: NIH, 2008), available online at http://www.nih.gov/news/fundingresearchareas.htm.

[32] Sumit R. Majumdar, Matthew T. Roe, Eric D. Peterson, Anita Y. Chen, W. Brian Gibler, and Paul W. Armstrong, "Better Outcomes for Patients Treated at Hospitals That Participate in Clinical Trials," *Archives of Internal Medicine* 168, no. 6 (March 2008): 657-662.

[33] Kevin M. Murphy and Robert H. Topel, *The Value of Health and Longevity* (Cambridge, MA: National Bureau of Economic Research, March 2005).

[34] *Harvard Public Health Review*, "Prevention: It Just Makes Cents," Spring/Summer 2007, available online at http://www.hsph.harvard.edu/review/spring07/spr07polio.html.

[35] NIH Undergraduate Scholarship Program, *Biomedical Research at the National Institutes of Health* (Bethesda, MD: NIH, 2008), available online at http://www.ugsp.nih.gov/nih/nih.asp?m=03.

[36] National Institutes of Health, *Diabetic Retinopathy* (Bethesda, MD: NIH).

[37] Sara Hebel, "The Global Campus: Thinking Locally, Acting Globally. Public Research Universities Seek to Make a Difference, at Home and Abroad, by Forming Strategic Partnerships," *The Chronicle of Higher Education* 53, Issue 43 (2007), A38.

[38] Ibid.

[39] Karin Kierwa, "The Lessons of Oral Rehydration Therapy," *Harvard Public Health Review* (Winter 2007).

[40] National Institute of Allergy and Infectious Diseases (NIAID), *HIV Infection and AIDS: An Overview* (Bethesda, MD: NIH, 2007.

[41] Roger Glass, *Testimony on Frontiers of Science* before the Senate Subcommittee on Labor-HHS-Education Appropriations, April 30, 2007.

APPENDIX:

Methodology

Appendix Table

METHODOLOGY

Families USA retained Richard Clinch, Director of Economic Research at the Jacob France Institute, University of Baltimore, to assist in the development and evaluation of the economic models used.

To estimate the impact of NIH grants and contracts on state economies, we used an economic model developed by the U.S. Department of Commerce Bureau of Economic Analysis (BEA) known as the Regional Input-Output Modeling System (RIMS II). The RIMS II model estimates the impact of spending in one industry on a larger region by taking into account the relationships among approximately 500 industries in the region, the region's prevailing economic structure, and trading patterns in the region. Within a defined region, this model measures the extent to which an investment in one industry affects all other industries in that region, and ultimately, the region's economy.

RIMS II uses linkages among industries in a local economy to estimate the impacts of economic development projects. It can be used to analyze the economic impact of a variety of different projects and investments, including construction, new retail establishments, the opening or closing of manufacturing plants, tourist expenditures, and university expenditures. The model allows the user to assess the impact of these projects on local economies through changes in production, jobs, wages, and tax revenues. It estimates the impact of research dollars on local economies assuming that the structure of those economies remains unchanged, i.e., that there are no changes in productivity, price levels, wages, or taxes. It also accounts for the fact that leakages may result because some spending occurs outside the state. However, RIMS II cannot be used to estimate the effect of a new industry entering or leaving a region altogether.

NIH funding has an economic impact by pulling in federal dollars, which promote new spending that would otherwise not exist in a state. A new source of spending from outside a state creates a larger impact on a state economy than the amount of new spending alone through what economists call "multiplier effects." An economic multiplier quantifies the total impact on a state economy of successive rounds of spending that occur as the new spending is earned by state businesses and residents who then spend these earnings on purchases from other state firms or residents, who in turn make other purchases, creating successive rounds of earnings and purchases. These multiplier effects are measured by the RIMS II economic model. The RIMS II model allows economists to estimate three economic impacts:

1. Economic output, or the value of goods and services produced in the state;
2. Employment, or the number of jobs in the state; and
3. Employee earnings, or the wage and salary income associated with the affected jobs.

This report examines the multiplier effect of investing in the scientific research and development industry on all other industries in a particular state economy.

Every year, Congress appropriates funds for NIH. Scientists submit research proposals to NIH and compete for grants. Grants are awarded based on the significance of the problem being investigated, the experience level of the researchers, as well as the scientific approach that the proposed research will take. Approximately 10 percent of the NIH budget is spent on "intramural research"—research that is by and large performed at NIH headquarters in Bethesda, Maryland. About 80 to 90 percent of NIH grants are awarded for "extramural research," which is research that is conducted in places other than NIH headquarters. This extramural research involves more than 325,000 scientists working at more than 3,000 universities, medical centers, and other organizations in every state and around the world.[1] In this report, we consider extramural research awards only. Our analysis does not include the District of Columbia because of the region's unique economy: Most of the money awarded to D.C. grantees is spent outside of D.C. in the surrounding states of Maryland and Virginia.

This report uses 2007 data on the awards made to each state. NIH makes extramural awards either as grants (90 percent of extramural awards) or contracts (10 percent). NIH had not made 2007 contract data available at the time that we conducted this analysis. In order to produce an estimate of the total awards made to each state in 2007, we determined the average proportion of awards accounted for by contracts between 2004 and 2006 and increased 2007 grant data by the same percentage.

The RIMS II employment multipliers for the scientific research and development (R&D) industry are based on 2005 data. We therefore had to adjust the 2007 NIH award data for the difference in purchasing power using the Biomedical Research and Development Price Index (BRDPI). BRDPI is a price index used by BEA to determine how much the NIH budget needs to change to maintain its purchasing power. It measures changes in the prices of all inputs (personnel, supplies, and equipment) purchased with the NIH budget to support research.

We applied the research and development (R&D) multiplier to the NIH award data to determine the economic impact of NIH awards on each of the 50 states. The BEA provides multipliers for nearly 500 industries, including multipliers for the economic impact of universities. However, we selected the scientific R&D multiplier over the university multiplier because the activities of the R&D industry most closely reflect the range of activities funded by NIH awards, even though most research is conducted at universities.

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[1] NIH, *NIH Overview* (Bethesda, MD: NIH, 2008), available online at http://www.nih.gov/about/NIHoverview.html, accessed on May 13, 2008.

Appendix Table 1.

Scientific Research and Development Multipliers for Business Activity, Jobs, and Wages, by State

State	Business Activity Multiplier [1]	Jobs Multiplier [2]	Wages Multiplier [3]
Alabama	2.1559	18.3442	0.8019
Alaska	1.8153	18.6629	0.7069
Arizona	2.1140	18.2731	0.8048
Arkansas	1.9660	20.5810	0.7387
California	2.4011	17.2230	0.8906
Colorado	2.3425	17.5463	0.8712
Connecticut	1.9523	12.5681	0.6963
Delaware	1.7444	9.6855	0.5159
Florida	2.1546	18.3355	0.8211
Georgia	2.3607	19.7062	0.8498
Hawaii	1.9812	17.2848	0.7664
Idaho	1.9694	18.2394	0.7646
Illinois	2.4272	17.0233	0.8693
Indiana	2.1341	18.0301	0.7725
Iowa	2.0367	21.0400	0.7606
Kansas	2.0629	19.2240	0.6967
Kentucky	2.1254	19.5493	0.7617
Louisiana	2.0487	21.2874	0.7580
Maine	1.9704	21.0895	0.7627
Maryland	2.0882	14.7951	0.7340
Massachusetts	2.1405	14.3585	0.7759
Michigan	2.1317	16.3637	0.8112
Minnesota	2.2348	17.6631	0.8179
Mississippi	1.9017	18.8777	0.6748
Missouri	2.0930	14.2789	0.6756
Montana	1.9027	20.2847	0.7235
Nebraska	1.9603	18.9867	0.7160
Nevada	1.8717	13.9013	0.7239
New Hampshire	2.0114	13.7984	0.6835
New Jersey	2.2559	14.5368	0.7711
New Mexico	1.9465	17.2036	0.7636
New York	2.0201	15.1284	0.7098
North Carolina	2.2249	18.4310	0.8237
North Dakota	1.8631	18.2934	0.6552
Ohio	2.2850	18.1840	0.8300
Oklahoma	2.1791	22.6339	0.8129
Oregon	2.1298	19.1293	0.7737
Pennsylvania	2.3190	16.1079	0.8105
Rhode Island	1.8684	15.1040	0.6238
South Carolina	2.1506	20.6784	0.7744
South Dakota	1.6581	13.2951	0.4818
Tennessee	2.3229	18.7633	0.8370
Texas	2.4866	19.4377	0.8985
Utah	2.2977	21.3751	0.8500
Vermont	1.8797	18.9235	0.6931
Virginia	2.0877	14.1123	0.7070
Washington	2.1928	16.4326	0.8186
West Virginia	1.8084	17.6048	0.6573
Wisconsin	2.1250	18.1474	0.7960
Wyoming	1.7109	18.7851	0.6856
United States	**3.1193**	**22.2843**	**1.0816**

[1] Total dollar change in business activity for each additional dollar awarded by NIH.

[2] Total change in number of jobs for each additional $1 million dollars awarded by NIH (employment multiplier is based on 2005 data).

[3] Total dollar change in wages for each additional dollar awarded by NIH.

Source: Bureau of Economic Analysis (BEA), RIMS II Multipliers (1997/2005) 541700 for Scientific Research and Development Services.

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