

Science AMA Series: Hi, I'm Matt Hourihan and I analyze bills—like the recent omnibus—for their impact on science and technology research and development funding. Ask me anything!

Matt_{Hourihan}¹*andr/ScienceAMAs*¹

¹Affiliation not available

April 17, 2023

Abstract

Hi, I'm Matt Hourihan and I run the AAAS R&D Budget and Policy Program, where we follow trends in federal science spending and analyze legislation—like the recent omnibus—for its impact on science and technology budgets. We've served for 40 years as a source of info for policy makers and the science community. Ask me anything! After months of waiting and weeks of negotiating, the Republican-controlled Congress finally released their omnibus bill to fund government for the next several months, and they did something many scientists weren't expecting: they completely diverged from President Trump's blueprint. As part of their historically difficult science budget for 2018, the Trump Administration also recommended a set of steep cuts to take effect immediately in the current fiscal year, on everything from basic science at NIH to technology programs at the Department of Energy to climate research at NOAA. But Congress pretty much ignored these in their 2017 bill. According to our current estimates, the omnibus bill would increase federal R&D by five percent this year, with increases for basic and applied research, development, and R&D facilities funding. Among science agencies, there were a few clear winners, while most managed to avoid the sorts of cuts sought by the President. The bill has passed the House and looks set to pass the Senate today, per the latest update (knock wood). How does the bill shape up? Does it tell us anything about what might happen in the next funding debate, just over the horizon? What kind of say does President Trump have over all this? How does the federal budget process even work?? Ask me anything! (you can also follow me on Twitter or check out our website, or play around with our science budget data dashboard) I'll be answering your questions at 3 pm EST. Ask Me Anything!

[REDDIT](#)

Science AMA Series: Hi, I'm Matt Hourihan and I analyze bills--like the recent omnibus--for their impact on science and technology research and development funding. Ask me anything!

MATT_HOURIHAN [R/SCIENCE](#)

Hi, I'm Matt Hourihan and I run the AAAS R&D Budget and Policy Program, where we follow trends in federal science spending and analyze legislation--like the recent omnibus--for its impact on science and technology budgets. We've served for 40 years as a source of info for policy makers and the science community. Ask me anything!

After months of waiting and weeks of negotiating, the Republican-controlled Congress finally released their omnibus bill to fund government for the next several months, and they did something many scientists weren't expecting: they completely diverged from President Trump's blueprint. As part of their [historically difficult science budget for 2018](#), the Trump Administration also recommended a set of steep cuts to take effect immediately in the current fiscal year, on everything from basic science at NIH to technology programs at the Department of Energy to climate research at NOAA. But [Congress pretty much ignored these in their 2017 bill](#). According to our current estimates, the omnibus bill would increase federal R&D by five percent this year, with increases for basic and applied research, development, and R&D facilities funding. Among science agencies, there were a few clear winners, while most managed to avoid the sorts of cuts sought by the President.

The bill has passed the House and looks set to pass the Senate today, per the latest update (knock wood). How does the bill shape up? Does it tell us anything about what might happen in the next funding debate, just over the horizon? What kind of say does President Trump have over all this? How does the federal budget process even work?? Ask me anything! (you can also [follow me on Twitter](#) or [check out our website](#), or play around with our [science budget data dashboard](#))

I'll be answering your questions at 3 pm EST. Ask Me Anything!

[READ REVIEWS](#)

[WRITE A REVIEW](#)

CORRESPONDENCE:

DATE RECEIVED:
May 05, 2017

DOI:
10.15200/winn.149390.02272

ARCHIVED:
May 04, 2017

CITATION:
Matt_Hourihan , r/Science ,
Science AMA Series: Hi, I'm
Matt Hourihan and I analyze
bills--like the recent omnibus--
for their impact on science and
technology research and
development funding. Ask me

Hi! Thanks for taking the time to answer questions from strangers on the internet. How much input do scientists and researchers have in determining which research areas are prioritized for federal funding? Is the money put where we can make the most progress? Issues that affect the most people?

[dekker44](#)

Some of my best friends are strangers on the Internet! So, there can actually be quite a lot of researcher input, especially in the executive branch. You've got formal entities like the White House Office of Science and Technology Policy, and advisory bodies like the [President's Council of Advisors on Science and Technology, or PCAST](#). These can have a lot of influence on a given administration's agenda, though we're still waiting to see what the current POTUS does with these. Within the agencies, staff have technical expertise, and can draw on advice from program-specific advisory bodies, RFIs and workshops, National Academies studies, etc. Scientific opportunity is typically one criteria when agencies are figuring out what they want to ask of Congress, and the taxpayer.

In Congress, the funding question is **at least** as political as it is analytical (not that it isn't also political

anything!, *The Winnower*
4:e149390.02272 , 2017 , DOI:
[10.15200/winn.149390.02272](https://doi.org/10.15200/winn.149390.02272)

© et al. This article is distributed under the terms of the [Creative Commons Attribution 4.0 International License](https://creativecommons.org/licenses/by/4.0/), which permits unrestricted use, distribution, and redistribution in any medium, provided that the original author and source are credited.



within the agencies). Partly this is a question of expertise, but a big reason is any given legislator has to be responsive to constituents. Here the science community has to engage just like everyone else seeking public dollars. This is a big reason why biomedical research gets funded at the levels it does. Concerns over human health are universal, and disease advocates (among others) make themselves heard.

Thank you for doing this AMA!

Do you think that the increased vocal support for science that has emerged after the election is having any impact on the budget/policy-making around science? What is one thing you would advise scientists to do to help broaden support for scientific research funding in general, beyond biomedical research funding?

[neurobeegirl](#)

Great question. On budgets specifically: it's not so clear, if I'm being honest. Most numbers in the omnibus [began baking into the cake last summer](#). The Senate was already talking about a \$2 billion increase for NIH in June, for instance. So it's easy to look at what we got and think Congress *generally* did what they'd planned on doing anyway. Is it possible that increased advocacy made some difference on the margins? Sure. One thing I don't have a good sense of is whether things like the March for Science (which in and of itself probably didn't make much difference) translated into increased, constructive engagement with legislative offices, which *can* make a difference. It may well have, but it's just not clear to me.

And that would be my #1 piece of advice: Engage. Find ways to build relationships with your own legislators' offices, in DC or in the district, even if they're in a different party than you. If you're at a university, or are a member of a science society, they might have staff who can help. At AAAS, one resource we've got is our [Working with Congress guide](#). It's very useful IMO (I didn't work on it so I can say that). You can find some other resources here on our [Force for Science site](#). Beyond AAAS, FASEB has a [really good toolkit](#).

No reason you can't even start today! The House did just vote for the omnibus yesterday, and the Senate voted to approve it minutes ago; I'm sure they'd be happy to hear from a constituent.

Are there any countries you think do a particularly good job of allocating public funding for research? What conditions there allow for that?

[recentfish](#)

[Here's a brief rundown](#) of the current funding landscape. Several Scandinavian economies have effective S&T ecosystems, and many in East Asia have ramped up what they're doing dramatically. A big element is simply political will; of course another helpful element is a booming economy, which allows for investment! Many of them are good at thinking in terms of national strategy, with government as a partner alongside universities and industry. And they seem to have a higher comfort level with government as an active promoter of innovation, rather than something that needs to simply get out of the way. The US is a science and technology powerhouse, to be sure, and we're going to stay that way for a long time, but there might be some lessons for us elsewhere.

Thank you for your work in analyzing actions in Congress for the sake of science. How does the extreme anti-science rhetoric of the House Science GOP members factor into your analysis? In some ways, they seem to have a lot of power to introduce legislation like HR 1430 and HR 1431 that would

limit the science EPA is allowed to use in policy and limit the scientists serving on advisory boards. In other ways, the budgets still have to be accepted and passed by the House which is far more moderate than the average House Science GOP member. Would changing the makeup of the GOP members to more moderate ones have an impact? Is House Science a somewhat innocuous stage for providing anti-science soundbites during hearings or should it be getting a LOT more attention than it does?

[AltHouseScience](#)

So, the House Science Committee isn't actually a funding committee; it's an authorizing committee, so it can write policy bills but not spending bills. Actual spending bills are handled by the Appropriations Committees. So House Science can somewhat influence what's going on in the funding realm but they don't control it.

A common dynamic for funding debates is actually moderation between the House and Senate. For instance, House Science has been very interested in curtailing social science and geoscience spending at NSF. Such provisions might show up in the House version of a spending bill (again, written by the Appropriations Committee and not the Science Committee), but then get dropped when it comes to the Senate. It's never a guarantee, but that's a somewhat typical pattern.

(by the way, since you asked about HR 1430, [here's a letter from AAAS and several other orgs on it](#))

Hello! Do you think Trump will continue to push for budget cuts in the sciences? Does your team put together a document for Congress and the Senate to review that summarizes programs and policies? What kind of updates are they allowed to make to the bill? What programs will most of the federal budget be placed into most heavily?

[DeadDollKitty](#)

Second question first: we do in fact produce a report on the President's budget; [here's last year's edition](#). We've been doing variations on this for 40 years in fact.

Time will tell what President Trump does. However, it's worth noting that Reagan, [whose early science budgets were similar to Trump's](#), evolved on science, especially basic research. For instance, he started out trying to cut NSF; he ended by encouraging Congress to double it.

All that said: there are good arguments to be made that the President's budget doesn't matter all that much in most years! Congress has the constitutional power of the purse, and funding decisions are primarily up to them. They write the spending bills, and are free to ignore a president's proposals, as they did with this omnibus.

Elephant in the room: I love science but do scientific budgets ever stipulate a return on investment?

[jawz101](#)

They do not, if for no other reason that calculating potential returns on something as inherently high-risk and uncertain as research doesn't seem all that feasible. What happens if research produces a discovery that doesn't yield tangible economic benefits for 20 years? When Congress funds science, it's with the general expectation that a healthy science portfolio is in the nation's interest and will yield unpredictable, but positive, returns.

People are currently worried about losing funding to civilian gov't science organizations but what is the current state of non civilian organizations? Researchers for DARPA projects and groups like the NRO

seem to have all the funds they need to do whatever it is they're up to. I've heard a story about how the NRO gave NASA some old cold war era spy satellites they had in storage and NASA realized not only was the NRO legacy satellites decades ahead of anything they had currently but they didn't even have the means to get them into space for another decade.

[eskimoexplosion](#)

Well, I dunno if DARPA would agree they have all the funds they need! Also, not sure the NRO satellites were quite as far out (so to speak) as you make them sound; [here's a story on what they're doing with one](#).

Outside the classified parts of the Defense R&D budget, science and technology has actually had pretty similar downs & ups as other agencies the past several years. [Chart](#).

What sort of educational/work background do you have? What is your day to day like? How would you recommend someone with a strong science background transition more toward policy analysis?

[neverdonebefore](#)

I am not a scientist; more's the pity. My undergrad degree is in journalism, and my first several years in DC were spent doing journalism and communications/PR, which has actually been helpful background to have. I went back to school for a grad degree in policy later. Day-to-day: way too much time sitting in my budget cave looking at numbers, basically. There's also a *lot* of reading, and writing. I also do a lot of talking, public speaking, helping individuals inside and outside DC understand budget trends and developments, while trying to understand them myself.

If you're interested in policy, a really good place to start is the [AAAS Science & Tech Policy Fellowships program](#). That program has been a great springboard for many science policy careers. Case in point: Rush Holt, our CEO. He was a AAAS policy fellow in 1982, and now he's running the joint!

I'd also take a look at the Mirzayan Fellows through the [National Academies](#). There are others as well.

I know nih got a bump. How about NSF? And when will the new goddamn EDGE track RFPs get released?

[Arsenes-Guilt](#)

NSF was essentially flat-funded. Not too surprising, their budget growth has slowed down the past few years after having a pretty good run from 2007-2010 or so.

Regarding EDGE: only NSF knows. What do I look like, a Jedi precog??

I live in Canada, where scientific freedom has been hugely curtailed since the Harper administration - and unfortunately hasn't seemed to improve much under Trudeau. Scientists need government permission to make any findings public, which slows things down hugely and allowed the Harper government to basically muzzle environmental research.

Are you seeing a similar situation in the USA? Or have you? Is scientific freedom a contentious issue?

[paddywagon_man](#)

Scientific freedom is definitely a point of concern, and many groups here are keeping an eye on it, including AAAS. It was a bigger issue in prior years; still something of a wait-and-see mode here,

frankly. There have been some mixed signals coming out of agencies under Trump ([for example](#)). Most recently, obviously, is the situation with EPA's climate web pages, which have been taken down. Temporary? We'll see.

What are some of the most effective ways for the public and the scientific community to advocate for increased public investment in science and innovation? Do you think the arguments of long-term economic return, job creation, etc. are starting to be ignored? If so, what would be most persuasive to convince our elected officials?

[Archie Waters](#)

As I mentioned above, building relationships with legislative offices is really important. Telling stories, demonstrating connections between science and impacts, especially local impacts. Setting up campus visits. They **definitely** still care about long-term economic return as well; that's a big reason so many still support it.

Check out the resources I linked above; another good one is [this report from the Congressional Management Foundation](#) on effective engagement.

I keep hearing that grant funding rates are decreasing. Will this make much impact on how many grants get funded? Do you know/have any guesses on if this will go to fund a small number of large projects or a larger number of exploratory projects?

[kerovon](#)

Depends on the agency of course. At NIH, safe to assume funding rates will go up at least a little. Also worth noting that NIH just announced they're [capping awards to expand their numbers](#). Competitive grants at USDA got a nice bump too, though their success rates are very low right now IIRC. Other agencies, like NSF, not so much; probably won't be enormous changes there, I'd wager.

How do you qualify and eventually get hired for a position like yours?

[esol9](#)

Equal parts luck and trickery? The real answer is that I was a AAAS intern some years ago, so our Govt Relations team knew me from then (though I was able to build up a bit more experience in the intervening years). I've had something of a varied career with some policy, some communications, and I wasn't a stranger to the budget, so I guess they thought I had a good mix on which to draw.

What do you see is the future of science funding in a republican controlled government? How is it that something that is objectively non-partisan as the funding of research science has become so politically polarized, do you think?

[p1percub](#)

I disagree with the premise that science funding on the whole is polarized, actually. There are lots of heated debates, sure - climate science being one - but there are many other areas where Congress has shown bipartisan support for years to varying degrees, especially in discovery science. Basic research funding has actually been surprisingly steady over the long term, when you look at the numbers. So long as Congress doesn't cut nondefense discretionary spending - and it will be hard for

them to do so - the R&D enterprise will probably fare OK. Parts will be vulnerable, but Congress doesn't tend to pursue massive swings in science expenditures except in very special circumstances.

Hi! Thanks for sharing your time with us.

How do you maintain any hope for the state of science and funding in America, given the current political climate?

[NYSEstockholmsyndrom](#)

Thank *you!*

Honestly: [I take a look at what Congress just did](#) It might be hard to see sometimes, but Congress has typically been supportive of science and technology, and will likely continue to be so, whatever the current Administration proposes. Doesn't mean parts of the budget won't be vulnerable, and we've got much bigger fiscal challenges that are going to keep any increases in check for a while, but basic science should do OK all things considered. It also helps that [Americans, in general, are fans of science...](#)

While no where near requested, the EPA was the clear loser relative to all other science agencies receiving a 1% cut in the omnibus package. What is being done to protect both the EPA and its R&D programs from additional cuts particularly with the upcoming FY18 budget? As the lowest funded scientific agency with a larger target on their back, they're at the greatest risk of injury.

[cnm03d](#)

Yes, EPA has been a target for cuts for many years now - more than any other agency. Frankly, I don't have great expectations for EPA in the next few years. They're not going to be cut anywhere near what the Administration is seeking - Congress does take much of what they do seriously, after all, i.e. water infrastructure - but they also make an easy target. Legislators can trim their budget a bit and call it a victory.