



RESEARCH ARTICLE

REVISED Monitoring the compliance of the academic enterprise with the Fair Labor Standards Act [version 2; referees: 3 approved]

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v2 First published: 17 Nov 2016, 5:2690 (doi: [10.12688/f1000research.10086.1](https://doi.org/10.12688/f1000research.10086.1))
 Latest published: 28 Sep 2017, 5:2690 (doi: [10.12688/f1000research.10086.2](https://doi.org/10.12688/f1000research.10086.2))

Abstract

Background: On December 1, 2016, the Fair Labor Standards Act (FLSA) was due to be updated by the U.S. Department of Labor. Key changes included an increase in the salary threshold for exemption from overtime for working more than 40 hours per week, and indexing the salary level so that it is updated automatically every 3 years. This was predicted to have a profound effect on academe as postdoctoral researchers were mostly paid at a salary below the new threshold. On November 22, 2016, an injunction was granted nationwide, delaying implementation of the updates, which were finally struck down entirely on August 31, 2017. Here we review the key changes to the FLSA, how they came about, and how the postdoctoral population was affected.

Methods: We describe recent data collection efforts to uncover what institutions with postdocs were doing to comply with the FLSA.

Results: Our data showed that 57% of institutions checked (containing 41% of the estimated postdoctoral workforce in science, engineering and health) had not decided or had no public decision available one month prior to implementation, and only 35.5% of institutions were planning to raise salaries to the new minimum. After the injunction, a number of institutions and the NIH continued with their plans to raise salaries. Overall, despite the removal of a federal mandate, approximately 60% of postdocs are at institutions whose policy is to raise salaries.

Conclusions: Our data show uncertainty in postdoctoral salaries in the U.S. prior to implementation of the FLSA ruling. In addition, while some institutions did suspend plans to raise postdoctoral salaries after the injunction, many continued with the raise. The implementation of postdoctoral salary raises may be inconsistent, however, as the legal minimum is still \$23,660.

Open Peer Review

Referee Status:

	Invited Referees		
	1	2	3
REVISED			
version 2	report	report	
published			
28 Sep 2017			
version 1			
published	report	report	report
17 Nov 2016			

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Competing interests: No competing interests were declared.

How to cite this article: Bankston A and McDowell GS. **Monitoring the compliance of the academic enterprise with the Fair Labor Standards Act [version 2; referees: 3 approved]** *F1000Research* 2017, 5:2690 (doi: [10.12688/f1000research.10086.2](https://doi.org/10.12688/f1000research.10086.2))

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Grant information: This work was supported by a grant from the Open Philanthropy Project to Future of Research, awarded in April 2016.

First published: 17 Nov 2016, 5:2690 (doi: [10.12688/f1000research.10086.1](https://doi.org/10.12688/f1000research.10086.1))

REVISED Amendments from Version 1

This version of the article has now been updated to take account of the injunction against the FLSA updates, and to present data collection efforts subsequent to the injunction, to see whether institutions continued in their plans, and to evaluate which institutions continued to plan raising postdoctoral salaries. We present this data (Dataset 1), along with a summary of minimum wage laws in each state (Dataset 2), which may come to affect postdoctoral salaries themselves over time. We have also addressed and modified the paper in response to the reviewer reports, including clarifying that postdocs on fellowships were also subject to the updates to the FLSA; highlighting the effect on international researchers; addressing why we believe our survey results differed from an institutional survey prior to our data collection efforts; addressing international postdocs; clarifying the Boston institutional data; clarifying issues with salary transparency and salary minima at institutions; and updating the dates on the figure legends.

See referee reports

Background

Defining the Fair Labor Standards Act (FLSA)

The [Fair Labor Standards Act \(FLSA\)](#) establishes standards such as minimum wage and overtime pay for employees in both the public and private sectors in the United States. Through the FLSA a minimum wage and overtime pay (for working more than 40 hours per week) at 1.5 times the employee's regular rate are guaranteed ([United States Department of Labor, 2016a](#)).

On December 1, 2016, the FLSA was due to be updated by the U.S. Department of Labor (DOL). One key change proposed was an increase in the annual salary threshold for exemption from overtime pay from the 2004 level of \$23,660 to \$47,476. The other key change was indexing the salary level so that it would be updated automatically every 3 years pegged to the 40th percentile of full-time salaried workers in the lowest-wage Census region. This means that the overtime threshold will be \$51,168 in 2020. We first describe the timeline of how these updates were decided, and how they were due to affect the postdoctoral researcher population. We will then describe how a court injunction, and the eventual demise of the updates, affected postdoctoral salary policies in the U.S.

Updating the FLSA

On March 13, 2014, a [memorandum](#) was issued by the White House from U.S. President Barack Obama to Secretary of Labor Thomas Perez, instructing the Department of Labor to investigate updating and modernizing current overtime regulations:

"I hereby direct you to propose revisions to modernize and streamline the existing overtime regulations. In doing so, you shall consider how the regulations could be revised to update existing protections consistent with the intent of the Act; address the changing nature of the workplace; and simplify the regulations to make them easier for both workers and businesses to understand and apply (Obama, 2014)."

On July 6, 2015, the Department of Labor issued a "Notice of Proposed Rulemaking," soliciting feedback by September 4, 2015. The notice proposed increasing the current exemption salary of \$23,660, set in 2004, to \$50,440 in 2016, with automatic updates the level every 3 years ([United States Department of Labor, 2016b; Obama, 2015](#)).

On May 18, 2016, the Secretary of Labor, Thomas Perez, gave notice of the final decision on the updates to overtime regulations in the FLSA. The exemption salary would be set at \$47,476 (lower than the \$50,440 originally proposed) with updates every 3 years determined by future wage growth ([United States Department of Labor, 2016f](#)). The date for implementation was set as December 1, 2016. Therefore, 2 years after the first indication of a change to overtime regulations, and just under a year from the indication of what those changes were likely to be, an additional 6 months allowance was made to prepare for compliance with the new rule.

Efforts to delay implementation of the new rule included H.R.6094, the Regulatory Relief for Small Businesses, Schools, and Nonprofits Act, which passed the U.S. House of Representatives on September 28, 2016 by 246 votes to 177. It was then passed to the Senate on September 29, 2016 ([Congress of the United States of America, 2016](#)) where it awaits action. An emergency motion for preliminary injunction was also filed by 21 States (Nevada; Texas; Alabama; Arizona; Arkansas; Georgia; Indiana; Kansas; Louisiana; Nebraska; Ohio; Oklahoma; South Carolina; Utah; Wisconsin; Kentucky; Iowa; Maine; New Mexico; Mississippi; Michigan) on October 12, 2016 ([Anon, 2016](#)).

Court injunction and eventual demise of the updates

On November 16, 2016, a preliminary injunction hearing took place to delay implementation of the FLSA ruling. At that point, if no delay were to be imposed, employers needed to comply with the FLSA on December 1, 2016. However, the injunction was granted nationwide on November 22, 2016 by a federal judge. The updates were finally ruled invalid on August 31, 2017 ([Anon, 2017](#)).

The debate over the FLSA changes and their effect on higher education

The changes to the FLSA proposed on July 6, 2015 stood to make a large impact on higher education. The large rise in the salary threshold for exemption had the potential to affect a wide range of workers in academe. As stated by the College and University Professional Association for Human Resources (CUPA-HR), affected employees could include: "librarians; advisers; counselors; residence hall managers; admissions counselors; financial aid counselors' student activities officers; human resources professionals and trainers; accountants; head cashiers; textbook managers; ticket managers; alumni relations; fundraising professionals; head of mail services; farm managers; information technology professionals; research and clinical professionals (including many with advanced degrees and those engaged in advanced training such as postdocs); managers in food service,

security and building and grounds. Many of these jobs have always been and are well suited to exempt status (CUPA-HR, 2015a)."

A concerted effort was therefore made to reduce the potential impact of FLSA changes on higher education. A letter to the Department of Labor was coordinated by CUPA-HR on behalf of 18 higher education organizations (CUPA-HR, 2015a; CUPA-HR, 2015b). Key recommendations made in the letter were: 1) the Department of Labor providing a longer time to adjust to the changes; 2) proposed lower salary level options of: \$29,172, \$30,004 or \$40,352; and 3) rephrasing language to specifically exempt postdocs based on their "trainee" status in a similar manner to medical residents.

Similarly, the Association of American Medical Colleges (AAMC) submitted a letter supporting this position and adding:

"Any increase in the salary threshold for exemption should be graduated and incremental. AAMC recommends an initial threshold that does not exceed the National Institutes of Health (NIH) guidelines for postdoctoral stipends, currently set at \$42,840 for new trainees in [fiscal year] 2015. In addition, postdoctoral scientists should be considered salaried, FLSA-exempt "learned professionals," similar to medical residents (AAMC, 2015)."

On the other hand, in addition to postdocs themselves commenting on the ruling (Wexler, 2016), on May 10, 2016 four unions representing postdocs or higher education employees (American Federation of State, County and Municipal Employees; Service Employees International Union; the United Auto Workers and the National Education Association) met with the Department of Labor to argue against institutional calls for exemption for postdoctoral researchers (Penn, 2016).

Attempts to exempt postdocs and to push for an exemption threshold below current postdoctoral salary levels were unsuccessful. With the announcement of updates to the FLSA, there was a simultaneous announcement that postdocs would not be exempt and would in fact be targeted by the ruling, discussed in the article co-authored by Director of the NIH Francis Collins and the Secretary of Labor Thomas Perez, "Fair Pay for Postdocs: Why We Support New Federal Overtime Rules (Collins & Perez, 2016)."

Employees must meet a series of tests in order to be exempt from overtime payments. First, they must be paid on a salary basis and not an hourly basis, by the "salary basis test." Second, their salary must meet the minimum salary threshold of \$913 per week or \$47,476 annually, by the "salary level test" (which does not apply to doctors, lawyers or teachers). Finally, the employee's primary job duty must pass the "standard duties test". The duties test is either an executive exemption (e.g. managing a department), an administrative exemption (e.g. being in a primarily clerical role), or a professional exemption, such as that of a postdoc. Unless all 3 tests are passed, the employee is eligible for overtime payment. For example, a first year postdoc in 2015 earning a salary of \$43,692 would pass the salary basis test, would fail the salary level test and pass the standard duties test. Hence the focus placed on the overtime pay threshold.

The Department of Labor issued a summary of the impact that updates to the FLSA have on higher education (United States Department of Labor, 2016e) and guidance for higher education on compliance with the FLSA ruling (United States Department of Labor, 2016c). Limits to the impact of this ruling include exemptions for those who are in primarily teaching roles (such as adjunct faculty) and students (including undergraduate and graduate students) earning degrees. However, technical staff who are primarily carrying out benchwork and not clerical work were likely affected by the new ruling.

The effect of FLSA updates on postdoctoral researchers

From this point, we will focus particularly on postdoctoral researchers in Science, Engineering and Health, as this population has been the focus of our data collection efforts. However all postdocs (in Science, Technology, Engineering and Math (STEM) disciplines, as well as in humanities and social sciences) primarily engaged in research (and not teaching) at an U.S. institution regardless of visa status and salary source are affected by this ruling as follows:

"Postdoctoral fellows are employees who conduct research at a higher education institution after the completion of their doctoral studies. Postdoctoral fellows are not considered students because they are not working towards a degree...Postdoctoral fellows often meet the duties test for the "learned professional" exemption but must also satisfy the salary basis and salary level tests to qualify for this exemption." (United States Department of Labor, 2016c)

Raising postdoctoral salaries in the U.S. under the FLSA. Recommendations have been made to raise postdoctoral salaries across a wide swathe of academe, as summarized by Pickett *et al.* (Pickett *et al.*, 2015). The American Academy of Arts and Sciences (American Academy of Arts and Sciences, 2014), the National Academies (Committee to Review the State of Postdoctoral Experience in Scientists and Engineers *et al.*, 2014), senior biomedical researchers (Alberts *et al.*, 2014), junior scientists (McDowell *et al.*, 2014), organizations representing postdocs (National Postdoctoral Association, 2016) and advisory groups to the NIH (Biomedical Research Workforce Working Group, 2012) have all recommended increases to postdoctoral salaries in the years prior to the FLSA update, often to the level of at least \$50,000, which is higher than the proposed level of \$47,476 for overtime exemption.

The Department of Labor issued the following statement in its guidance to higher education about current postdoctoral salaries:

"Under the 2016 National Institutes of Health (NIH) salary guidelines for postdoctoral research fellows, some fellows earn more than the revised salary level. Other postdoctoral research fellows earn less, although it is the Department's understanding that many postdoctoral research fellow salaries are close to the new salary level, and that any differences are not more than a few thousand dollars a year (United States Department of Labor, 2016c)."

There is an assumption that postdoctoral salaries are, on average, around \$45,000 per year for a full-time postdoc (Collins & Perez, 2016) and that most institutions follow the NIH National Research Service Award (NRSA) stipend levels. In theory,

therefore, the salary changes expected for postdocs in many cases should approximate the changes in the new NRSA levels (National Institutes of Health, 2016) as shown in Figure 1.

The minimum annual salary should therefore rise from \$43,692 for Year 0 postdocs to \$47,484, which constitutes an increase of 8.7%. Thus, postdocs with more than 3 years of postdoctoral experience are, in theory, already exempt from this rule. However, it is difficult to gauge exactly how postdoctoral salaries are changing across the U.S. Transparent salary information for postdoctoral positions is very hard to find and the administration of postdocs (Callier, 2016; McDowell, 2016b; Schaller & McDowell, 2016) means that many of them may be on lower salaries than expected. It is not currently possible for all institutions in the United States to identify and obtain information on the salaries of all of their postdocs with certainty. Therefore we cannot tell whether all postdocs at Year 3 and above are actually currently paid according to the NRSA scale, and so cannot determine how this group is affected.

Another problem with the NRSA assumption is that not all institutions peg their salaries to NRSA levels even for Year 0. In 2014, 89% of institutions had a minimum salary policy, where 51% of those institutions set their postdoctoral salary scales to the NRSA scale, but ~30% set their minima lower and 7% did not enforce these policies (data in Figure 21, (Ferguson *et al.*, 2014); for a visual description of this see also (McDowell, 2016)). It is also unclear how many postdocs are employed at each of these institutions (populations potentially from 1 to 5761, according to 2014 data from the National Science Foundation (NSF,

(National Science Foundation, n.d.)). However, we have recently analyzed data from the NSF's Survey of Graduate Students and Postdoctorates in Science and Engineering and found a wide range of errors in reporting the data year-to-year (Pickett *et al.*, 2017) and therefore the number of U.S. postdocs at different points on this salary range is also unclear. If 11% of U.S. institutions haven't set a minimum salary level, it is therefore possible (and legal) that there may be full-time postdocs currently earning as little as \$23,660, and these salaries would need to double if they were to meet the FLSA exemption criteria.

International postdocs were also due to be affected by the FLSA overtime rule change. International postdocs, particularly those on temporary visas, are anecdotally supposed to receive lower salaries than U.S. citizens and permanent residents. In a similar manner to the requirements for fellows (see Discussion), nationality is not a condition under the FLSA, but again, it is the nature of the work undertaken which matters; and so international postdocs also came under the ruling.

Implementing the salary change. Institutions had the choice to either increase the minimum salary for postdocs to \$47,476, or to classify postdocs as hourly workers.

The first option was difficult because there was no extra money for this ruling, and PIs may have had to pay postdocs from research grants such as R01 grants. Salaries of postdocs on training grants/fellowships (NRSA, HHMI and possibly NSF) were to be increased (National Institutes of Health, 2016; National Science Foundation, 2016).

The second option, however, may have cost even more. It would involve implementing a system for keeping track of the hours that postdocs spend in the lab. Many postdocs work, and are expected to work, in excess of a standard 40-hour week. One calculation posits that a postdoc earning the NRSA minimum of \$43,692 working 50 hours a week under the new rule would have an effective increase in salary to \$60,076 (Polka, 2016).

Methods

What were institutions planning to do under the FLSA?

In an effort to make salary information as transparent as possible, we gathered information at the "FLSA and postdocs" resource on the Future of Research website (<http://futureofresearch.org/flsa-and-postdocs/>, (Future of Research, 2016b)). This data-gathering involved checking university websites and contacting HR departments at institutions for information on complying with the FLSA ruling for postdocs. We made it clear that this information was to be made publicly available, using as our guide data from the 2014 NSF Survey of Graduate Students and Postdoctorates in Science and Engineering (National Science Foundation, n.d.) using the total number of Science, Engineering and Health postdocs as our postdoc population (as all postdocs are affected) to approximate the number of postdocs at each institution, errors in reporting notwithstanding (Pickett *et al.*, 2017). We were in a position, with one month prior to implementation, to describe the landscape of publicly available information on changes to the administration of postdocs in compliance with the FLSA.

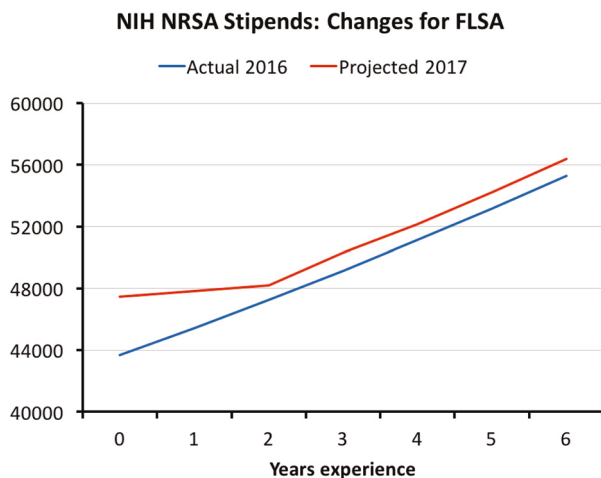


Figure 1. NRSA stipend level changes with FLSA as of December 1st 2016. The 2016 salary for postdocs on NRSA grants (blue) in 2016 increases from a minimum of \$43,692 at a linear rate with increasing years of postdoctoral experience. The 2017 levels (red) will raise the minimum salary in 2017 to \$47,484, which will remain relatively constant until 2 years experience and increase linearly thereafter (data source: NIH NOT-OD-16-134, (National Institutes of Health, 2016)).

Council on Governmental Relations Survey - August 2016

The only other publicly available data source was a survey by the Council on Governmental Relations conducted of their membership in August (Council on Governmental Relations, 2016). Of 190 member institutions, 109 responded, 68 of which had medical schools. Out of these, 79 were public institutions and 30 were private.

In August 2016, 63% of institutions claimed to have made a decision, 19% said the decision would be made in September, and 15% said their decision would be made in October. Therefore 97% surveyed by now, with a month before implementation, should have made a decision. Based on the decisions institutions made or were leaning towards, the survey reported 75% of institutions would raise salaries, and 25% would allow the tracking of hours, 55% of which would leave the decision up to the individual PI. Also, 96 institutions have reported on salary levels with $\frac{2}{3}$ reporting at least 50% of salaries, and $\frac{1}{4}$ reporting at least 75% of salaries were below the new threshold, and 2% reported that 90% of salaries exceeded the new threshold.

Data collection post-injunction

When the preliminary injunction was granted on November 22, 2016, we began to track how institutions chose to respond to the injunction via checking the university websites or by contacting the HR departments of the same 340 institutions from the 2014 NSF Survey of Graduate Students and Postdoctorates in Science and Engineering (Pickett *et al.*, 2017; National Science Foundation, n.d.). The data are collected at the Future of Research online resource (<http://futureofresearch.org/flsa-and-postdocs/>) under the tab "How institutional plans have/have not changed since the injunction".

Results

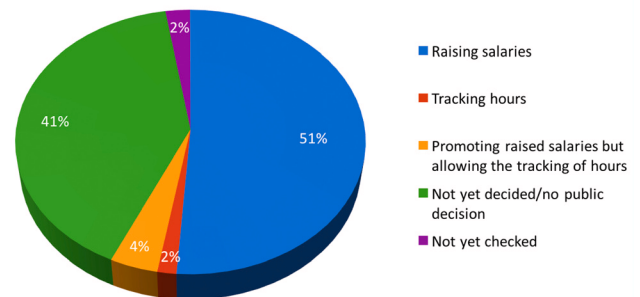
One Month Before Implementation

In a blogpost for Addgene, we reported data that had been collected so far (McDowell, 2016a). In this analysis, we looked at both the percentage of the postdoctoral workforce at institutions implementing various plans for the FLSA, as well as provided data on the percentage of institutions implementing various FLSA plans, as of October 21, 2016.

Repeating this analysis a month before compliance was required, we were able to discuss data for institutions that we had checked or contacted covering 97.5% of the estimated postdoctoral workforce, or every U.S. higher education institution listed in the NSF dataset with > 35 postdocs in 2014 (Dataset 1).

Out of these, 51% of the estimated postdoctoral workforce came from institutions that had stated they were raising salaries, 1.5% from institutions focused on tracking hours, and 4% from institutions allowing the tracking of hours while promoting (but not mandating) salary raising. However, still 41% of postdocs came from institutions that had either reported to us that they had not decided, had no information available, and/or had not yet responded to a request for information (Figure 2A).

A Postdoctoral population affected by FLSA implementation plans



B FLSA administrative plans for postdocs at researched institutions

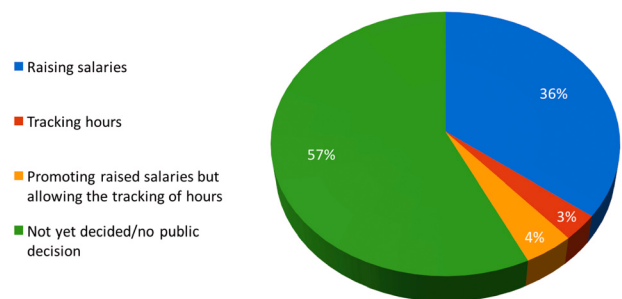


Figure 2. The predicted effect of FLSA updates and institutional decisions on the Science, Engineering and Health postdoctoral workforce as of November 1st 2016. Pie charts show the percentage of the postdoctoral population at institutions implementing various plans for FLSA (A) and the percentage of institutions implementing various plans for FLSA (includes institutions so far researched for the FLSA and postdocs resource) (B).

One month away from December 1, 2016, we had checked 56% of institutions, and of those checked, 35.5% were planning to raise salaries, and 57% had no public decision yet available (Figure 2B).

A case in point: Boston postdocs

To illustrate the point of what postdocs knew at this point in time, with one month prior to implementation, we took Boston postdocs as an example. The Boston Postdoctoral Association had been taking an active role in gathering institutional information and preparing resources on the FLSA for its members (Boston Postdoctoral Association, 2016). We have listed Boston institutions along with the numbers of postdocs from the NSF dataset we used for our analysis (where known; "Harvard" and "MIT" are each listed as a single institution) and current estimates of 9,000 postdocs in Boston (Table 1).

Out of 9,000 postdocs in Boston, and estimating the distribution of postdocs at Harvard and MIT institutions, we estimate that half, and perhaps as many as two thirds, of the postdocs in Boston - a very well-organized group of postdocs already gathering information - were not aware of what their status would be in a month, either

Table 1. Postdoctoral salary status and the number of postdoctoral researchers at various universities in Boston. *Unknown number out of 5,761 at "Harvard" and **Unknown number out of 1,516 at "MIT".

University	Postdoc salary status	Number of postdocs
Boston Children's Hospital	Raising salary	Unknown*
Boston University & Boston University Medical Campus	Raising salary	444
Brandeis University	Raising salary	102
Brigham and Women's Hospital	Unknown	Unknown*
Broad Institute	Unknown	Unknown*
Dana-Farber Cancer Institute	Salary already \$50,000	Unknown*
Harvard Medical School & Harvard School of Dental Medicine	Decision not yet made/available	Unknown*
Harvard T.H. Chan School of Public Health	Raising salary	Unknown*
Harvard University	Raising salary	Unknown*
Joslin Diabetes Center	Unknown	Unknown*
Massachusetts Eye and Ear Infirmary	Unknown	Unknown*
Massachusetts General Hospital	Unknown	Unknown*
Massachusetts Institute of Technology	Unknown except for Department of Brain and Cognitive Sciences, which has a salary already of \$51,120	Unknown**
Tufts University	Raising salary	194
Whitehead Institute for Biomedical Research	Salary already \$50,127 (in 2012)	Unknown**

because they had not been told, or their institution had not yet made a decision.

Changes reported post-injunction

Repeating the data gathering process after the injunction, at which point we also received much more input from institutions from which we previously had not received any data, we found that on December 22, 2016, at exactly one month following the injunction, 59.2% of postdocs were still expected to receive salary raises (Figure 3). This information is documented on the Resource page (<http://futureofresearch.org/flsa-and-postdocs/>, (Future of Research, 2016b)) under the tab, "How institutional plans have/have not changed since the injunction". We have summarized information to the best of our knowledge in Dataset 1, which lists whether or not we had determined that a FLSA-compliant policy was in place before the injunction (raising salaries and/or tracking hours), and whether institutions raised all salaries after the injunction, using postdoctoral population data from the NSF's 2014 GSS data tables (National Science Foundation, n.d.). An updated version of this table will be kept at our website and we can be contacted for corrections and updates (<http://futureofresearch.org/flsa-and-postdocs/>, (Future of Research, 2016b)).

Dataset 1. Status of postdoc policies prior to and following the injunction against updates to the FLSA

<http://dx.doi.org/10.5256/f1000research.10086.d177471>

The dataset is a compilation of information obtained from checking HR websites or contacting HR departments at various universities listed in the 2014 NSF Survey of Graduate Students and Postdoctorates in Science and Engineering. The majority of these data are publicly available on institutional websites, and some were obtained informally by e-mail from HR contacts or postdoctoral offices.

Dataset 2. Minimum wage information from all U.S. states (correct at time of writing)

<http://dx.doi.org/10.5256/f1000research.10086.d177472>

This information was gathered from comprehensive sources, and showed changes mainly for New York and California.

Five of the institutions which initially cancelled plans to raise salaries have since largely reversed their decision to do so, with some exceptions made. These are the University of Michigan, the University of Illinois, Brigham and Women's (Boston, MA), Iowa State University and Massachusetts General Hospital.

How postdocs will see their salaries change after the injunction against FLSA updates? Data on Dec 22

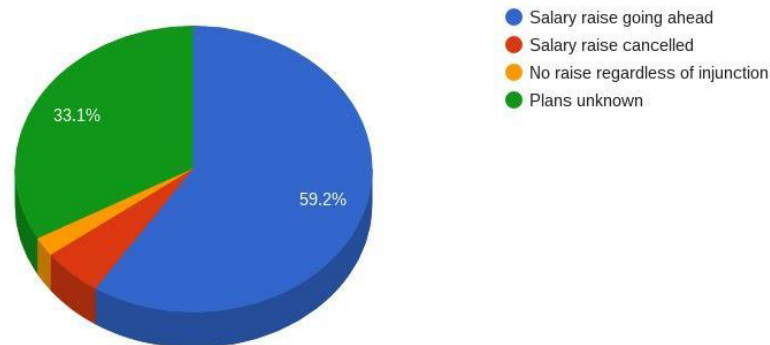


Figure 3. The effect of FLSA updates and institutional decisions on the Science, Engineering and Health postdoctoral workforce after an injunction against the updates was granted (data as of December 22nd 2016). Pie chart shows the percentage of the postdoctoral population at institutions implementing various plans for salary policies after an injunction against the FLSA updates was granted.

Conclusions

Discussion of the data collected

We approached the data collection by first assuming that all institutions would have postdoc salary information transparently and publicly available, whereas of course there was great variation in the institutions publishing this information on the web or responding to queries for FLSA compliance information, and this did not seem to be linked to the size of the institution, which hindered our ability to gather the data. We have observed a greater demand for increased transparency about postdoc salaries, and benefits, and the Boston Postdoc Association is one example of an organization that has collected and published this data themselves since we began our efforts (see <http://bostonpostdocs.org/advocacy/benefits/>, (Cijsouw *et al.*, 2017)).

As we have discussed the difficulties with using the NSF data on postdoc numbers elsewhere (Pickett *et al.*, 2017), it is understood that these numbers likely have some degree of variation. In contrast to the Council on Governmental Relations report of August 2016, we saw a very striking difference in institutional plans. Decisions were expected to have been made at this time at 97% of institutions, whereas we were able to find only 43% of them had done so one month before the FLSA implementation date. The ratio of institutions planning to raise salaries to those planning to track hours was 3:1 in the report, whereas our data show the ratio closer to 9:1. Why are these numbers so different? It is possible that the sample surveyed was biased towards the hours-tracking institutions, but what seems more likely is that as institutions investigated the legal ramifications of tracking hours, and reconciled these with the culture of academe, they likely revised their plans in recognition that postdocs could not comfortably fit their work into this system in an affordable manner, or that FLSA violations would be extremely likely.

Effects on postdocs after the injunction

The injunction granted in November 2016 left postdocs feeling confused and disposable to the scientific enterprise. Postdoc reactions were documented by various sources (Anon, n.d.) in

which postdocs gave voice to their sense of feeling undervalued by the academic system, particularly after the injunction. We began attempting to collect salaries of individual postdocs at public institutions to assess the current state of postdoctoral salaries. Our preliminary analysis shows a sizeable portion of reported full-time postdoctoral annual salaries reaching as low as the current legal minimum of \$23,660. There are discrepancies in salary reporting, particularly if salaries are paid from multiple sources. This effort will be discussed in future work. The difficulty we have faced in attempting to obtain basic information from institutions gives us cause for concern that the general standard of postdoc administration at institutions is worse even than currently supposed.

Next steps: Individual states implementing updates to the FLSA

One recent development is that the new U.S. administration solicited feedback on proposed updates to the FLSA (Department of Labor, 2017), although it may be unlikely to reproduce some of the effects desired by the previous administration. The Union of Auto Workers submitted comments specifically discussing postdocs (<https://www.regulations.gov/document?D=WHD-2017-0002-139165> and <https://www.regulations.gov/document?D=WHD-2017-0002-140022>).

However, some U.S. states are going ahead with updates from their own Departments of Labor. New York and California in particular are states where postdocs may be affected within the next 1–2 years. We have gathered minimum wage information for all U.S. states (Dataset 2).

Issues encountered so far

Were postdocs on fellowships FLSA exempt? Brown, Brandeis and Rutgers universities suggested that postdocs paid on training grant/fellowship stipends would be FLSA exempt, and that they would not be mandating raises in the salaries of postdocs on stipends below the exemption level. No responses to requests for their legal justification was ever received. Nevertheless, the position of Brown University was stated explicitly as follows:

“Postdoctoral fellows are defined as non-employees, paid by stipend rather than salary, and are thus not covered by the FLSA (Brown University, 2016).”

The position of Brandeis University was stated publicly on their website as follows (with info that salaries need to be raised for postdoctoral associates, but with no mention of fellows):

“Postdoctoral Fellows come to Brandeis to further their scholarly competence, with fellowship aid through sources other than the NRSA. These sources may be federal or non-federal. Appointments are usually for one semester or more and are renewable, based upon the terms and conditions of the individual award. Postdoctoral Fellows are trainees and do not provide services to the University, and are not considered to be employees. A Postdoctoral Fellow is eligible to be appointed as a Postdoctoral Associate after the term of the Postdoctoral Fellowship has ended (Brandeis University, 2016).”

Postdoctoral fellows are often not considered employees by institutions, as they are not paid by the institution. However, reading the directions from the Department of Labor, that is not the same as being recognized as exempt from the FLSA. A postdoc is federally recognized as both a trainee and an employee (Code of Federal Regulations, Title 2, part 200.400(f) (U.S. Government, 2014)) and unless they are in a primarily teaching role, all postdocs come under the FLSA (see Overtime Final Rule and Higher Education (United States Department of Labor, 2016c)). In addition, the Department of Labor defines what “employ” means in the context of the FLSA:

“The FLSA defines the term “employ” to include the words “suffer or permit to work”. Suffer or permit to work means that if an employer requires or allows employees to work, the time spent is generally hours worked (United States Department of Labor, n.d.).”

The “employer” is the institution that “suffers [someone] to work,” so institutions are the ones responsible for ensuring FLSA compliance. Postdoctoral fellows are “permitted” to work at the institution. In combination with further guidance from the Department of Labor on independent contractors, the closest possible analogy to postdoctoral fellows (United States Department of Labor, 2014), it was our understanding that if postdoctoral fellowships did not pay stipends above the new FLSA minimum, the employer was still responsible for making sure the salary of employees was supplemented up to federal standards. This was also the understanding made clear to the NIH by the Department of Labor, driving the increase in the NRSA levels (National Institutes of Health, 2016). What matters from the point of view of the Department of Labor is not where the money comes from, but what a person is doing at an institution that “suffers or permits them to work” there. Fellows and non-fellows alike carry out work of identical nature, and so both fall under the FLSA.

This may become part of the larger conflict in the debate over whether postdocs are trainees or employees, and what services (including intellectual property) they do or do not provide to the university (Haak, 2002a; Haak, 2002b; Haak, 2002c). This aspect may

aggravate existing issues with postdoctoral fellowships, as recipients already face losing benefits (Gaval, 2014), or dealing with tax complications such as imputed income tax (National Postdoctoral Association, n.d.; University of California San Francisco, 2015). Elsewhere we have discussed changes that may be taking place to postdoctoral benefits, such as reductions in fringe rates, as a similar but separate effect of the FLSA implementation at institutions. For example, postdocs at institutions such as the University of Alabama Birmingham actually stood to lose money overall, if they had a family, as they were now required to cover 25% of their healthcare as a result of institutional policy changes (Future of Research, 2016a).

In general, there were a number of loopholes that institutions were actively exploiting in an apparent attempt to recover or reduce costs, illustrating the need to closely monitor institutional activities with respect to how they deal with those undertaking training at their institutions.

If violations to the FLSA ruling occurred, would they have been reported? One question that occupied some discussion about the FLSA was whether violations, such as directing employees to give false reports on timesheets, would actually be reported. This is now a relatively moot point; however the Department of Labor has advice on how to report these violations (United States Department of Labor, 2016d) and points out that there is a three year statute of limitations, and reporting is completely confidential until the point of allegation being pursued; at that point, the person deals with the Department of Labor and not the institution. In addition, it is illegal for employers to take action against employees based on reporting of violations, and their immigration status will not be investigated.

Comparisons were made between the perceived lack of reporting violations in tracking hours during medical residency, and what could occur with the new postdoc system in academia. We use this comparison here to illustrate why reporting hours could have been more common in academic science. First, medical residents are exempt from the FLSA, so a different system of salary reporting exists to begin with. Medical residents can have up to an additional ~\$250,000 debt for tuition, compared to the relatively lower student debts in the academic path, as well as the cultural eschewing of financial gain, and perhaps have more “skin in the game”. The bottleneck in the medical system is often getting into residency, from where job certainty is much higher than in academia, where most postdocs end up leaving academia despite a high interest in staying (Sauermaun & Roach, 2016). In addition, medical residents may consider that reporting hours could actually harm their own training and the training of others, whereas whether many postdocs actually receive training is of great concern in academe (Pickett *et al.*, 2015), and this certainly rarely happens to a cohort of postdocs at once (unlike medical residency), and perhaps the perceived harm to that training may be seen as minimally impacting them. This perception, combined with the 3 year statute of limitations, makes “burning bridges” a much stronger possibility for postdocs.

If a violation of the FLSA is reported, it seems that the burden of proof is on the institution to counter the evidence from the complaint (discussed in (American Council on Education, 2016)).

There were many common false assumptions being discussed in academia about how federal labor law could be implemented (Reynolds & Rudnick, 2010). This made it very interesting that a number of institutions seemed willing to allow departments, or even individual PIs, with poor understanding of federal labor laws, to decide on how to administer postdoctoral salaries at the institutional level.

Moving towards greater transparency in postdoc salaries. Our goal in presenting these data is to increase transparency about the postdoc position, in terms of their administration and benefits, in a similar manner to a call for transparency in career outcomes (Polka *et al.*, 2015). Here, we have presented our impression of the information currently available to postdocs about how salaries may broadly have changed due to updates to the FLSA. We are currently analyzing postdoctoral salaries as of December 1, 2016 at a number of public institutions, and plan to carry out annual samplings of the salaries of postdocs at U.S. institutions going forward, as far as it is possible given the barriers to collecting this data.

Effects of the FLSA updates which did not come to pass. We previously speculated on the possible effects that the updates to the FLSA may have had on postdocs - tracking hours ran counter to academic culture, and the notion of the postdoc being a “trainee”, or someone in a mentored environment developing research independence. This is also in contrast to behaviors learned in graduate school and the working culture of the faculty positions to which postdocs are meant to be directed. Analyzing data, writing and reading papers and carrying out other job related duties of the postdoc are often performed during nights and weekends, while away from the lab. How would those hours have been tracked to everyone’s satisfaction? The relatively small numbers of institutions tracking hours for postdocs suggested that these issues were appreciated by many institutions.

In addition, there is now a clear differential landscape of institutions who raised or did not raise postdoc salaries, which creates a wide discrepancy and may influence the market for attracting postdocs, which both potential postdocs and the principal investigators looking to hire them should be aware of.

There are still many questions that this change in the postdoctoral salary landscape raises. How will this affect smaller institutions? Will there be a drop in new postdoc hires as they become more expensive, will postdocs be paid out of grants in the long run, or will some other institutional mechanisms be employed? Given that international postdocs are generally presumed to earn less, will they continue to do so, or will salary increases at institutions affect the demographics of the postdoc population? How many postdocs are about to lose their jobs (bearing in mind that wider labor market analysis found no drop in employment levels over seven decades of minimum wage increases (Sonn & Lathrop, n.d.))? How many postdocs have to shorten their current positions? Will junior faculty

bear the brunt, will mid-career researchers be most strained, or will tenured professors be more likely to cut postdocs loose? Will institutions look to increase admission of graduate students, to keep up the labor at the bench? Will there be a shift to more postdocs on particular training mechanisms or fellowships, where the salary is provided, and less on other types of fellowships or research grants?

Perhaps most importantly, will the research enterprise start acting on salary recommendations for postdocs in a more timely fashion? The academic system will survive this modernization, and in the long term the likely decrease of the postdoctoral population may be a necessary cap on the expanding “trainee” population. This will make the research enterprise more sustainable by limiting the number of postdocs which the system can support. The FLSA ruling change could have been handled far better by the system in favor of postdocs. Postdocs have traditionally been severely underpaid, and have also had other significant burdens placed on them - not limited to long working hours with little reward, and work-life balance issues.

Unfortunately, recommendations to raise postdoc salaries have been ignored for a long time by universities. The salary raise imposes changes on the system at universities, but these changes could have been implemented more gradually, and with less pain inflicted on postdoctoral researchers than they are now. This would ensure that postdocs are treated more fairly, or at least dealt with as the highly-trained PhD scientists that they are. How to correctly deal with the administration of postdocs at institutions has been in discussion over decades (Curtis, 1969), and raising postdoc salaries has previously been advocated for. Hopefully this study will serve as a call to action in terms of how to deal with other issues affecting the research enterprise in the future. Will other recommended changes within the research enterprise be made by the deliberate action of scientists and administrators, or will they have to be imposed by federal statutes? We hope that the abrupt nature of the FLSA revision serves as a call to redouble efforts for academia to become the driver, rather than the subject, of change.

Data availability

F1000Research: Dataset 1. Status of postdoc policies prior to and following the injunction against updates to the FLSA, [10.5256/f1000research.10086.d177471](https://doi.org/10.5256/f1000research.10086.d177471) (Bankston & McDowell, 2017a)

F1000Research: Dataset 2. Minimum wage information from all U.S. states (correct at time of writing), [10.5256/f1000research.10086.d177472](https://doi.org/10.5256/f1000research.10086.d177472) (Bankston & McDowell, 2017b)

Author contributions

GSM conceived the study and designed the experiments. AB and GSM carried out the research. AB collected a large portion of the data. GSM made the figures and wrote the manuscript with extensive editing input from AB. The final version was approved by both AB and GSM.

Competing interests

No competing interests were declared.

Grant information

This work was supported by a grant from the Open Philanthropy Project to Future of Research, awarded in April 2016.

The funders had no role in study design, data collection and analysis, decision to publish, or preparation of the manuscript.

Acknowledgements

Many thanks to Jessica Polka, David Riglar and Rodoniki Athanasiadou for comments on the manuscript, and Chris Pickett for discussions. Future of Research is supported by a grant from the Open Philanthropy Project (<http://www.openphilanthropy.org/focus/scientific-research/miscellaneous/future-research-general-support>). We are grateful to Chris Pickett, Paula Stephan and Nathan Vanderford for their reviews of the first version of this paper.

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Open Peer Review

Current Referee Status:   

Version 2

Referee Report 02 October 2017

doi:[10.5256/f1000research.13681.r26512](https://doi.org/10.5256/f1000research.13681.r26512)



Christopher L. Pickett

Rescuing Biomedical Research, Washington, DC, USA

Bankston and McDowell have made considerable modifications, and they have completely addressed my concerns. They also added much more information than was requested, and the resulting document is insightful and thorough. This is an important and impressive amount of work that highlights the inequities in postdoc pay in the biomedical research enterprise.

Competing Interests: I can confirm that when reviewing Version 1 of the article, I had no collaborations with the authors but over the past year, I have collaborated with AB and GSM on other publications and projects.

I have read this submission. I believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard.

Referee Report 02 October 2017

doi:[10.5256/f1000research.13681.r26514](https://doi.org/10.5256/f1000research.13681.r26514)



Nathan L. Vanderford 

Markey Cancer Center, Department of Toxicology and Cancer Biology, College of Medicine, University of Kentucky, Lexington, KY, USA

The revised manuscript has been improved in several ways and now also contains information/data regarding the planned institutional changes in relation to the injunction against the FLSA updates. The manuscript provides an important analysis and it raises many additional questions. In relation to the latter comment, as I stated in my initial review, I believe it would be useful for the authors to clearly discuss policy recommendations related to the pay and employment status of postdocs. For example, the issue of some institutions recognizing postdocs as employees and other institutions not doing so is an issue that may require greater policy clarification at the federal level. What would the authors recommend in relation to this?

Minor comment:

The authors should check for spelling and typo errors. For example, "possible" is misspelled in the second paragraph of the conclusion.

Competing Interests: No competing interests were disclosed.

I have read this submission. I believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard.

Version 1

Referee Report 28 November 2016

doi:[10.5256/f1000research.10867.r18035](https://doi.org/10.5256/f1000research.10867.r18035)**Paula E. Stephan**

Department of Economics, Andrew Young School of Policy Studies, Georgia State University, Atlanta, GA, 30303, USA

The Bankston & McDowell article is highly informative on two counts. First, it highlights the extreme difficulty encountered in collecting information regarding postdocs. The Boston data are but one case in point. Second, it contributes information concerning the percent of postdocs which, at the time Bankston & McDowell collected their data, were likely to be affected by the FLSA ruling. This constitutes a significant contribution to our understanding of how the law may affect actual salaries.

For my taste, however, the article could go a bit further. First, the authors present no information regarding who will pay for the increase on campuses that intend to raise salaries sufficiently so that postdocs will be exempt. The authors speculate that the funds will come out of grants. And in the long run, they are probably right. But, in the short run the evidence is that universities and departments will pick up some of the increases. (See Council on Governmental Relations 2016 Survey). Second, they do not speculate on how the increase will likely affect the number of postdocs employed. To the extent the demand for postdocs is sensitive to salary, one would predict that in the long run the regulation will lead to a decrease in the number of postdocs working at universities.

The authors also imply that it is not clear as to whether the regulation applies to postdocs on fellowships. It is my understanding that a decision by the Department of Labor means that those on fellowships are to be treated the same as are postdocs supported in other ways.

The authors also make no effort to explain why their results seem so at odds with the results found by the Council on Governmental Relations Survey, which suggests that something like 75% of campuses surveyed were choosing to raise salaries so that postdocs would be exempt from overtime pay.

Finally, there is the issue that the authors could not have foreseen that a Federal Judge would issue an injunction November 22, 2015 which preserves the status quo. While the injunction is temporary, many believe that the judge's language "indicated he was likely to strike down the regulation."

<http://www.nytimes.com/2016/11/22/business/obama-rule-to-expand-overtime-eligibility-is-suspended-by->

To the extent the implications of the regulation for postdoc pay were difficult to understand before this ruling, they are even more so today. Assuming the rule is found to be invalid, campuses will find themselves in the awkward position of having to decide if they will take back a promised increase. Or, take back an increase that has already taken effect.

Competing Interests: No competing interests were disclosed.

I have read this submission. I believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard.

Referee Report 22 November 2016

doi:[10.5256/f1000research.10867.r17778](https://doi.org/10.5256/f1000research.10867.r17778)



Christopher L. Pickett

Rescuing Biomedical Research, Washington, DC, USA

The research article “Monitoring the compliance of the academic enterprise with the Fair Labor Standards Act” by Bankston & McDowell is a review of academic compliance with changes to the FLSA overtime rules as of Nov. 1. The authors give a good primer on the history of the FLSA overtime rule change and how it is expected to affect academic research starting Dec. 1. They then discuss their extensive outreach to institutions with postdocs, and their efforts to determine how the institutions are adjusting to the new overtime rule with regard to postdoc salaries.

This paper and the results of the authors’ outreach are important for the postdoc and larger academic communities to understand how institutions are dealing with the increase to postdoc pay.

Major concerns:

- The authors should devote some space to a discussion of international postdocs and how they are affected by the FLSA overtime rule change. Anecdotally, international postdocs may not be paid on the same scale as American postdocs, even at institutions with well-defined salary minima. Since the nation of origin does not affect whether someone is FLSA exempt, just how widespread the disparities in U.S. versus international postdoc pay are could have significant repercussions in the relative populations of each in the enterprise moving forward.
- The authors should take the time to explain exactly what is going on in Boston. There seems to be an assumption that the reader will know all of the institutions that are classified under “Harvard” or “MIT”. The assumption comes across in phrases such as institutions “...cannot be more than a small proportion...” As someone who has never done research in Boston, it is not clear to me why this phrase must be true. The authors should take the time to indicate, both in the text and Table 1, which institutions are part of “Harvard” for example, which have released decisions about postdoc pay, and why this may be confusing for postdocs employed there.
- The conclusions section opens with a meandering and confusing sentence and the first section is about the difficulties of data collection. I agree these are real concerns, but the authors should state their overall and most important conclusions at the beginning of this section as a way to frame the rest of the discussion.

Minor concerns

- Background

- The sentence beginning, “The other key change is indexing...” is not clear. Recommend breaking the sentence into two with the second sentence starting something like, “This means the OT threshold will be \$51,168 in 2020.”
- It would be helpful to know the current status of H.R. 6094. Was it vetoed or does it await action?
- On page 4, in the paragraph about the test that must be passed to be eligible for overtime pay, the authors should consider a short example at the end of the paragraph. For example, “A first year postdoc in 2015 earning a salary of \$XX,XXX would pass the salary basis test, would fail the salary level test and pass the standard duties test. Hence the focus on the overtime pay threshold.”
- In the paragraph starting “The minimum salary should therefore...”: for consistency, recommend the authors indicate years experience as they do in Fig. 1 (Year 0, 1, etc.) as opposed to calling them “new postdocs”.
- The two problems with the assumption of the NRSA minimum as the actual minimum pay for postdocs, as I understand them are, (1) transparent salary information does not exist and (2) institutional salary minima are unknown or unenforced. These seem very similar problems to me and I don’t understand the distinction the authors are trying to make. I recommend the authors draw a starker division between the two problems they see or discuss them as one.
- Due to the date-sensitive nature of the information, I recommend the authors add the date to the titles of all figures and tables.
- In the discussion, the comparison between medical residents and postdocs:
 - The authors should explicitly state why, after each condition they site, why postdocs would be more likely to report violations. For example, “...debts in the academic path, meaning postdocs are significantly less dependent on academic employers and may be more inclined to report violations.” “...postdocs end up leaving academia meaning postdocs are less likely to be concerned about how academic employers will view their willingness to report violations.”
 - “...compared to the relatively lower (undergraduate) student debts...” It is not clear why the authors specify these as undergraduate debts. Graduate students can also secure student loans. I recommend removing the parenthetical.

Competing Interests: No competing interests were disclosed.

I have read this submission. I believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard, however I have significant reservations, as outlined above.

Referee Report 18 November 2016

doi:[10.5256/f1000research.10867.r17777](https://doi.org/10.5256/f1000research.10867.r17777)



Nathan L. Vanderford 

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Bankston and McDowell provide a comprehensive and well-written report on the status and impact of the Fair Labor Standards Act (FLSA) on the US postdoc population. This article is very timely given the “go-live” date for implementing this Act is less than a month away and given that there has been great consternation among academic institutions in terms of how the mandates will be implemented and what impacts it will have on institutions, postdocs, and science in general.

While acceptable for publication now, there are minor changes that could improve the article.

1. The non-yes (i.e. the “X” and “-”) annotations in dataset 1 should be defined.
2. The y-axis of Figure 1 should be labeled.
3. At the top of page 7, a deeper analysis comparing salary by region, public vs. private institutions, etc. is mentioned as a future direction. This is a critical aspect of understanding how the FLSA will differentially impact institutions and postdocs across the country. I believe it is a very important point that, for example, the cost of living in the middle of the country is not comparable to the cost of living on the east and west coast, which begs the question of whether such differences should be considered within the FLSA. Will this analysis be added to this current article as more data is collected or will this form the basis of another article? It is my opinion that this analysis would greatly strengthen and compliment the current article’s argument and impact.
4. It may be interesting (and impactful) to add a current snapshot of what postdocs think of the FLSA implementation at their institutions. At my institution, postdocs have been very concerned about the short- and long-term impacts on their current positions and how any potential changes (eg, losing their position) may impact their career progression. It would be interesting to hear from postdocs representing institutions across the country (not just on the coasts).
5. At the bottom of page 8 the authors begin to question how the FLSA will impact the biomedical enterprise. It would be more powerful if the authors were more definitive and concrete with their own opinions as to what impact FLSA will have on science. Some have argued that the FLSA will shrink the postdoc pool thus shrink the pipeline of future researchers thus set back the momentum of new science discoveries. The article could be more impactful if the authors wrote specific speculations as to the threats and opportunities that the FLSA will have on the biomedical enterprise.
6. Similar to point #4, could the authors provide some specific recommendations to institutions, postdocs, the government, etc.?
7. What implications will/could a new political party and leader have on FLSA?

In summary, this is an important article that is acceptable for publication now although there are several areas that could be improved upon as noted above. As such, I look forward to reviewing any revised version of the article.

Competing Interests: No competing interests were disclosed.

I have read this submission. I believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard.

Discuss this Article

Version 1

Author Response 17 Nov 2016

Gary McDowell, Future of Research, USA

We are constantly updating the resource and have updates on the data as time progresses. For example you can find a similar analysis of the data as of November 10th here: <http://futureofresearch.org/2016/11/11/20-days-to-go-what-institutions-are-doing-about-flsa/>

Competing Interests: No competing interests were disclosed.
