

eRLAS: Establishment Rapid List Assessment Survey

Final Report



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Executive Summary

Respondents from a variety of establishments were selected to participate in a multi-mode survey designed to assess the quality and relevance of data available from lists that hold the potential for the building of a nationally representative sample frame of potential postdocs. The report that follows presents details on design and methodology, along with findings related to key research questions. A brief summary of findings appears below:

Level of Effort and Finding the Most Knowledgeable Contact

- Academic institutions responded in greater proportions than non-academic institutions.
- Efforts to locate the most knowledgeable contact were fairly successful, with 80% of respondents at institutions who can provide NSF a list of postdocs indicating that they themselves could provide the list.

Postdoc Counts

- Sixty-four percent of respondents report having postdocs working at their institution.
- Results reveal a median number of 13.5 postdocs at institutions reporting postdocs.
- “Don’t know” answers are more common when attempting to acquire counts in the self-administered web survey, most likely because telephone respondents can be encouraged to estimate.
- Eighty-three percent of respondents reported being able to provide counts separated by federal and non-federal sources of support.
- Ninety-five percent of respondents reported being able to provide a count of postdocs by sex.
- Seventy-eight percent of respondents reported being able to provide race/ethnicity information.
- Patterns of heaping observed suggest that some respondents were estimating, rather than reporting exact answers.

Postdoc Titles and Definitions

- Titles are varied, and some formal titles include a postdoc-related term while others do not.
- Support for definitional components is high among institutions reporting postdocs. However, institutions without postdocs also report employing individuals with doctoral degrees who satisfy some of these same criteria.

Policies Governing Postdocs

- Half of eRLAS respondents report existing postdoc policies.
- “Don’t Know” responses are higher for this question than for most others in the survey.
- Consistent with findings from prior work, these “don’t know” responses are likely to reflect institutions that do not have policies.

Record Keeping

- Less than half of the respondents with postdocs reported that their office was responsible for maintaining postdoc records.
- Most institutions report updating postdoc records annually, with no month or season obviously preferred for performing updates.
- When asked about the completeness of records, respondents did sometimes express concerns, particularly about other titles being used for postdocs and postdocs not paid through the institution.

Acquiring Lists of Postdocs

- Overall, just over half of responding institutions reported that they could provide a list to NSF, but postdoc-employing institutions are more likely to report that they could provide a list of postdocs than are institutions without postdocs.
- Being able to adapt and address reasons why institutions might not be willing to provide lists is vital. The most common reason given by postdoc-employing institutions for why a list could not be provided is confidentiality concerns, which gives pause for future efforts to emphasize (more than what's already being done) the study's commitment to protecting privacy.
- Among respondents who reported that a list could be provided, more than 80% reported that their office would be the one to provide the list suggesting that our efforts to locate a knowledgeable respondent were fairly successful.
- Among respondents reporting that an office other than their own would make the determination about the provision of a list, or those who reported that a list could be provided, but a different office would provide it, the most common other office named was Human Resources.

Characteristics of Respondents and Responding Institutions

- Clinical researchers, postdocs with Ph.D.-equivalent degrees, and postdocs with foreign doctoral degrees were all common at responding institutions.
- Academic and non-academic institutions were similar in their patterns of postdoc support, with similar shares of each institution type reporting supporting postdocs on fellowships, on traineeships and on research grants.
- When asked about their highest level of education completed, 60% of respondents reported having a doctoral degree, and an additional 24% reported having either a master's degree or a professional degree.

1.0 Introduction

The Establishment Rapid List Assessment Survey (eRLAS) is part of the broader list assessment activities for the Postdoctoral Data Project (PDP) that involve documenting and evaluating available lists that may serve as the basis of a sample frame of potential postdocs.

A number of list evaluation activities take place prior to the RLAS. There is an initial evaluation of the list to determine whether it contains potential postdocs and the characteristics of the list. Further administrative evaluations may take place to determine the availability of and quality of contact information of list members, overlaps with other lists, and periodicity of updates. The document entitled “Catalog of Potential Lists for Building a Postdoc Sample Frame” provides background research on more than 20 establishment and individual lists that have undergone at minimum an initial evaluation. Some of these lists have further been assessed via administrative reviews and through merges and comparisons of other lists to identify overlaps and gaps. Lists that hold potential for frame building after such initial, administrative, and statistical evaluations are moved to the RLAS stage for further assessment. After gathering new information about each list from the survey, we will replicate the comparison processes from earlier list assessment activities, and provide final suggestions on the usability and cost-efficiency of each list’s contribution to the sample frame.

2.0 Goals and Methodology

The purpose of the RLAS was to assess the quality and relevance of data available from each list, evaluate the overlaps and gaps among the lists, and document the list’s suitability for future use in developing a master sample frame in a quick turnaround fashion. Specifically, the eRLAS study was conducted with the following goals:

- Determine if the establishment has potential postdocs.
- Assess the level of effort it would take to use this list to:
 - Obtain a list of potential postdocs (to be used in a postdoc frame)
 - Identify counts of postdocs
- Determine the quality of a potential list of postdocs from the establishment list.

A copy of the eRLAS survey can be found in **Appendix A**.

2.1 Research Questions. The instrument was designed to answer a set of 15 specific research questions developed in May, 2007. These questions were guided by direction from NSF, as well as our earlier background research and qualitative explorations. Over the course of data collection, additional questions arose, and we added additional research questions to our exploration. Investigations into these questions are covered in detail in the findings section of this report, and are grouped as follows:

- Level of Effort and Finding the Most Knowledgeable Contact
 - How much effort is required to find a knowledgeable contact?
 - Were we successful in locating the knowledgeable contact?
- Postdoc Counts
 - Can we obtain postdoc counts?
 - What effect does survey mode (web or phone) have on the reporting of counts?

- How often do respondents estimate counts, rather than checking for precise numbers?
 - Does this vary with mode?
- Postdoc Titles and Definitions
 - How do the elements of the definition of a postdoc match to actual postdoc positions?
 - How do the elements of the definition of a postdoc match to non-postdoc positions (per the institution)?
 - What titles are used to describe postdocs?
- Policies Governing Postdocs
 - Is there a postdoc policy in place at the institution?
 - What does the policy cover?
- Record Keeping
 - Is the postdoc database accurate?
 - Is the postdoc database updated in a timely manner?
 - Is the postdoc database complete?
- Acquiring Lists of Postdocs
 - Are we able to obtain a list of postdocs from the institution?
 - If we are not able to obtain a list of postdocs, why not?
 - Can we determine who provides the list?
- Characteristics of Respondents and Responding Institutions
 - What are the demographics of our respondents?
 - What types of researchers are present at the institutions in our sample?

2.2 Data Collection Methodology. We began the data collection with an advanced contact letter inviting sample members to a web survey. We followed-up with non-responders by a telephone reminder contact after the initial mailing. Interviewers attempted to make contact three times before leaving a voice message or coding the case out. A second letter was mailed to non-responders after the last telephone call to the institution. Following this, a telephone interview protocol was launched, targeting non-respondents. Telephone interviewing included up to eight attempts to complete an interview with each knowledgeable contact at the participating institution. The overall results of these combined contact approaches are visible in the section on response rates.

2.3 Sampling. The overall eRLAS sampling plan focused on surveying establishment lists that will help bridge the gap of non-academic establishments, particularly non-profits, foreign-degreed individuals and ones with professional, Ph.D. equivalent degrees. The lists that were identified from earlier work in the project as “priority” in these areas were the SRS Source List (academic and non-academic employers; year 2003), the SEVIS (academic, non GSS institutions and non-academic employers of students and exchange visitors) and the LCA - Labor Condition Application - Employer application for H-1B visa. We had hoped to conduct an RLAS with the H1B file that we obtained during our visit to the Office of Immigration Statistics (OIS) in May, 2007. This list, however, had enough serious data problems that we were not comfortable with using it for the RLAS and for administrative matching with a comparable year of LCA data¹. Thus, we elected to use the LCA. In addition, we elected to use another list which we felt would be useful, AAVMC - Association of American Veterinary Medical Colleges U.S. Membership Schools. A summary of decisions made as they relate to sampling each list is presented in table 1 below.

¹ The data file of H-1B petitioners approved for visas in 2005 shared with SRS and SSG in May of 2007 was an analytic file from a former OIS employee. Upon exploration it contained a limited number of variables, and appeared to contain problems where data for certain variables was out of order.

Table 1. Sampling from lists for eRLAS.

File Name	Description	File Size	Sample Size
SEVIS-Non Academic	Unique Non-Academic Establishments in the SEVIS Exchange Visitor file that were not in the GSS. DECISION: Took all cases.	241	241
SRS Source - Non Academic	Unique Non-Academic Establishments in a SRS data source file from 2003: DECISION: Took simple random sample to approx. 250 cases. File had 1,580 records before de-duplication.	872	257
SEVIS - Academic	Unique Academic Establishments in the SEVIS Exchange Visitor file that were not in the GSS DECISION: Took all cases.	144	144
LCA	Unique institutions from the 2006 applications from the public file DECISION: Took simple random sample to reach 200 cases. File had 384,072 records before de-duplication.	96,128	200
AAVMC	All AAVMC accredited institutions on the AAVMC website in May, 2007 DECISION: Took all cases.	45	45

3.0 Findings

3.1 Level of Effort and Finding the Most Knowledgeable Contact

The following sections provide information related to level of effort across data collection modes, and issues surrounding reaching the most knowledgeable contact at sampled institutions.

3.1.1 Response Rates. Response rates are reported by list and academic status. Our initial expectation was that academic lists may perform better overall when it came to response rate. This expectation was supported, with our highest response rate came from the AAVMC list (60%), followed by SEVIS academic (43%). Our lowest response rate came from the LCA list (5.5%). Examining response rate difference between academic and non-academic lists in the aggregate also confirms our expectations, with academic institutions responding at a rate of 47%, while non-academic institutions responded at a

rate of only 14% overall. This very likely reflects differences in eligibility rates. Veterinary schools are more likely to have postdocs, whereas the LCA application list, which is a list of all organizations that seek to employ workers on H1B visas, probably contains a much smaller eligible population, as these organizations may or may not be doing research. Although our instrument had paths prepared for institutions that did not have postdocs so that we could still count them if they existed, our recruiting materials had to make mention of our study objectives—and potential respondents may very well have been dissuaded from participating in a survey aimed at postdocs or early career researchers if they did not employ these classes of employee. This may account for low levels of response in the face of our robust nonresponse follow-up methodology—and could explain the vast differences in response rate among lists. Our overall response rate was 21.1% (AAPOR2)².

Table 2 below displays response rate by list source and data collection mode, and by complete and partial surveys. A majority of survey responses were completed by self administered web survey.

Table 2: Response Rates by List and Mode

List Source	Type	N	Web Completes	Phone Completes	Web Partials	Phone Partials	Response Rate (%)
SEVIS	Non-Academic	241	30	24	5	3	25.7
SRS Source	Non-Academic	257	13	4	7	1	9.7
SEVIS	Academic	144	40	15	7	0	43.1
LCA	Non-Academic	200	2	7	2	0	5.5
AAVMC	Academic	45	18	5	4	0	60.0
TOTAL		887	103	55	25	4	21.1

3.1.2 General Response and Level of Effort Metrics. Table 3 illustrates metrics related to the administration of the instrument. Overall survey duration was around 10 minutes (median time), with the phone administration being slightly shorter.

A majority of respondents logged into the instrument only a single time—however, the maximum number of logins was as high as 9. It is possible that respondents logging in more than once may have been pausing, by way of logging out, to collect information requested by the survey, gathering counts from sources throughout the institution, and logging back in with completed records.

The instrument was designed to be adaptable enough to collect detailed data from postdoc-employing institutions and non- postdoc-employing institutions alike. Because of this, the number of items presented varied from respondent to respondent. Some respondents saw as few as 7 items, while others were presented as many as 144. The overall median number of items presented was 64. While

² It is important to note, and for readers to remember that while important, from a learning perspective, response rate was not a critical or key factor to the success of this effort. Generalizable or representative results were not a goal, and more critical was the ability to obtain information on the research questions noted earlier, and the feasibility of gaining information from the lists employed.

the self administered mode was fairly close to the overall median in this regard, the phone mode saw comparatively fewer, with respondents receiving a median number of items of only 23.

The number of items answered by respondents varied greatly. Some answered only a single item, while some answered 100% of items presented. The median number of items answered was 36 overall—only 22 in the case of the phone mode. The percentage of items unanswered had correspondingly high variation—the median percentage unanswered was 16%. The minimum was 0% unanswered (some respondents answered all items presented), and the maximum was 87%.

Table 3: Median Response Parameters by Mode

	Web	Phone	Total
Median Elapsed Time	11	9	10
Median Number of Logins	1	1	1
Median Number of Questions Presented	66.5	23	64
Median Number of Questions Answered	12	22	36
Median Percentage of Questions Unanswered	26	9	16

3.1.3 Identifying the Best Contact. In general, we believe that we were successful in finding knowledgeable respondents. Since one goal was to make contact with respondents who would be able to provide a list of postdocs, the fact that, among the 84 institutions reporting that NSF could obtain a list, more than 80% (n=67) of respondents report that their office would be the one to provide the list, and that, among these, two-thirds reported that they personally would be the one to provide the list, is encouraging. Respondents also indicated a low level of uncertainty about their responses to questions about whether their institution employs postdocs and the questions that ask about postdoc definitions. However, respondents reported more uncertainty about the existence of postdoc policies at their institution, which is consistent with the findings of the Postdoc Policy Lookup Project (PPLP). Additionally, respondents were more uncertain about the counts they provided, as indicated by a higher “don’t know” rate, and the patterns of heaping we observe also suggest that some respondents were estimating, rather than reporting exact answers.

3.1.4 Phone Referrals & Level of Effort. Based on the results of prior qualitative work and site explorations, in which many respondents indicated that that they were not necessarily the appropriate contact for postdoc data, we placed a great deal of importance on getting to the appropriate contact, even if it required referrals away from our initial contact. In the eRLAS phone effort, we tested a networking strategy for getting to the person most knowledgeable at the institution about postdoc data. While interviewers made up to 8 contact attempts per record, they also accepted referral information for up to 3 new contacts³ in the phone prompt and again in the following phone survey.

SSG has constructed a metric for measuring the “depth,” or the number of referrals at which the appropriate contact can be found in the institution, which is an important consideration in the total level

³ Referrals to new contacts were made by respondents being called, who indicated that someone else in the institution was the best, or most knowledgeable person to provide data on postdocs.

of effort required to reach a knowledgeable contact. First, we summed the number of contacts made in the initial phone prompt with the number of contacts made in the phone follow up. Then, in cases where the resulting sum was greater than a single contact, we subtracted 1 to correct for duplication. This is because it is possible, but not guaranteed, that the first contact from the phone effort was the same person as the last contact from the phone prompt. This number was added to the number of web cases, because respondents contacted in the prompt or even the phone interview would often ask to complete the survey online themselves. Again, a duplication correction was made for cases going to completion by web with more than 1 contact. Thus, the TotalBounce Metric presents a floor for the total number of contacts, and due to its correction terms, is overall a fairly conservative measure—but one that gives a good sense of how many unique contacts were made in an institution to bring a case to a final disposition.

Table 4 shows the number of referrals made in the total sample. Encouragingly, the vast majority terminated with only a single contact (69.6%, n=617), and very few made it all the way to five contacts. Making up to two contacts covered nearly 94% (n=833) of our sample.

While Table is useful for seeing the total breakdown of number of contacts made, it does not distinguish between cases where the first contact refused, failed to respond, did not refer us elsewhere, or otherwise did not complete the survey, as it groups these with cases that were completed with minimal effort by the first contact. While the findings above would appear to suggest that we reached the correct contact on the first try over 2/3 of the time, it could also be the case that the first contact was so far from the correct contact that we were not even able to get a further referral.

Table 4: Number of Contacts before Case Termination

	n	%
1 Contact	617	69.6
2 Contacts	216	24.4
3 Contacts	46	5.2
4 Contacts	6	0.7
5 Contacts	2	0.2
Total	887	100

Table 5 breaks the contacts down by terminal disposition: complete, partial, and nonresponse. About 17%(n=102) of those cases terminating with only one contact completed the survey, while nearly 21% (n=45) of cases terminating with 2 contacts completed. The rate dipped back down for 3 contacts, with only 10.9% (n=5) completing in cases that went as far as 3 contacts. Thus, taking referrals appears to have diminishing marginal returns, as 2 cases provided the highest completion rate, falling off after that. No cases that made it as far as 4 or 5 contacts completed.

Table 5: Number of Contacts before Case Ended, by Terminal Disposition

	n Completed	% Completed	n Partial	% Partial	n Nonresponse	% Nonresponse
1 Contact	102	16.5	22	3.6	493	79.9
2 Contacts	45	20.8	6	2.8	165	76.4
3 Contacts	5	10.9	1	2.2	40	87.0
4 Contacts	0	0	0	0	6	100
5 Contacts	0	0	0	0	2	100

As a cautionary note, this should not be taken as strong evidence against networking strategies. The additional completions made three contacts deep are not negligible, and may be important enough to total response rate in future studies to justify a deep-contact networking strategy. Additionally, it is possible that with a different initial contact, subsequent referrals could be of even higher quality, and more likely to respond. That is, if instead of beginning our efforts with someone we thought would be the best respondent, if we had begun with the person we thought most likely to recommend us to the best respondent, the networking strategy may have been even more effective.

Finally, we also analyzed TotalBounce by list, looking for whether list source and academic/non-academic status had any relationship to contact depth (Table 6). As some lists may be better than others, we hypothesized that we would see differential contact depth between lists—specifically that lists containing academic institutions, because of their size and complexity, would be more likely to have initially sampled respondents refer us to other individuals than those from nonacademic lists. This hypothesis was rejected by the data.

The most noticeable feature of Table 6 is that SEVIS and SRS Source contacts were much more likely to end with more than one contact than LCA or AAVMC lists. We believe that the high rate of 1-contact termination for LCA and AAVMC may actually be for two very different reasons. As Table 2 showed, LCA had a very low response rate overall, while AAVMC had the highest response rate. It seems probable that the high level of termination with only one contact for LCA actually stemmed from its very low rates of eligibility, such that the first contact passively refused the survey, and all our further contact attempts were unable to dig deeper—in these cases, no further contact was possible. With the AAVMC list, on the other hand, we believe we may have contacted the correct person on the first try—in these cases, no further contact was necessary. Another factor that may have contributed to higher rates of multiple contacts for the SEVIS and SRS lists than the LCA and AAVMC is that the first three lists happened first, in a single batch, with LCA and AAVMC occurring later in their own effort. The first batch had slightly longer to respond than the second batch, and additionally, it is possible that our interviewers gained more experience over the course of the first batch, so that by the time they reached the second batch, they needed fewer contacts to bring a case to a final status.

An additional point revealed by this table is that SEVIS Academic displays the highest rate of 3-contact and 4-contact terminations of all lists. While AAVMC has the highest rate of 5-contact terminations, this is likely in part to its smaller sample size.

Table 6: Number of Contacts before Case End, by List

			TotalBounce = Web + Phone - duplicates					Total	
			Contact terminated with 1 contact	Contact terminated with 2 contacts	Contact terminated with 3 contacts	Contact terminated with 4 contacts	Contact terminated with 5 contacts		
List, academic or non	SEVIS Academic	Count	76	49	16	3	0	144	
		%	52.8%	34.0%	11.1%	2.1%	.0%	100.0%	
	SEVIS Nonacademic	Count	146	84	10	1	0	241	
		%	60.6%	34.9%	4.1%	.4%	.0%	100.0%	
	SRS Source Nonacademic	Count	165	71	19	1	1	257	
		%	64.2%	27.6%	7.4%	.4%	.4%	100.0%	
	LCA Nonacademic	Count	187	11	1	1	0	200	
		%	93.5%	5.5%	.5%	.5%	.0%	100.0%	
	AAVMC Academic	Count	43	1	0	0	1	45	
		%	95.6%	2.2%	.0%	.0%	2.2%	100.0%	
	Total		Count	617	216	46	6	2	887
			%	69.6%	24.4%	5.2%	.7%	.2%	100.0%

3.2 Postdoc Counts. Overall, 64.2% (n=113) of the institutions surveyed reported having postdocs working at the institution. Differences between academic and non-academic institutions proved to be insignificant, with 63.5% of academic institutions (n=54) and 64.8% (n=59) of non-academic institutions reporting having postdocs.

A large battery of questions was directed at finding counts of postdocs in various categories at institutions—including funding source, foreign-degree status, and race and sex. Count information is available below for each of the questions except race, where the number of categories and n size prohibited meaningful analysis. Even for the analyses reported, it should still be noted that the small n size for several lists and categories makes representative analysis prohibitive. T-tests and F-tests were performed to verify these results, but in every case they returned insignificant differences.

Overall, the most informative listing of count information comes from the survey item directed at counting the number of postdocs, of all categories in general, at an institution (Table 7). Overall, we found a median number of 13.5 postdocs at institutions reporting postdocs—but it is clear from the quartile information presented that the data is heavily right-skewed. While the median rests at 13.5, the highest quartile goes as high as 1200. Due to the heavy skew, the results reported below focus on the median rather than mean values.

Table 7: Institutional Counts of Postdocs, by Mode and List

	What is the number of postdocs at {Value:PRE3}?								
	Phone				Web	By List			
Quartile	All Completes	All Phone Completes	Phone Completes with an Exact Count	Phone Completes with an Estimate	Web	SEVIS	SRS Source	LCA	AAVMC
1 st	3.75	4	3	3.25	3	4	2	3	8
2 nd	13.5	15	19	17.5	12	18	4	4	54
3 rd	61.75	40	26	118.75	67	67	50	5	100
4 th	1200	1200	154	1200	1000	1200	125	5	100
N	66	23	9	12	43	55	7	2	2
% DK	37.14	14.81			44.87				
Mean	83.73	99.30	28.67	167.75	75.40	94.91	27.14	4.00	54.00
Median	13.5	15	19	17.5	12	18	4	4	54
Std D	203.98	262.60	48.08	354.22	167.53	221.25	46.58	1.41	65.05

Mode differences otherwise appear negligible, except with respect to the percentage of respondents who report not knowing how many postdocs are at the institution. For this, 45% (n=35) of respondents reporting by web didn't know, compared to 14% (n=4) reporting by phone. A more detailed analysis of the effects of postdoc count estimation is reported at the end of the section. The pattern of the percentage of "Don't Know" responses being lower for those who estimated counts appears throughout the results.

The survey also asked respondents two items focused on postdoc counts by source of funding, whether federal or nonfederal. Regarding counts, total N for this question was slightly smaller than for the overall case—indicating that some respondents may not have been able to distinguish federal/nonfederal funding at all. At the same time, for institutions that were able to distinguish federal/nonfederal support, a roughly equal number (median of 2 versus 2.5), were reported. The number of respondents was too small to reliably analyze differences between modes.

In addition, there existed a considerable difference between the SEVIS and SRS source lists on the one hand, and the LCA lists on the other. LCA organizations did not report any information for these two questions, while SEVIS and SRS made up the vast majority of responses. There appear to be other slight differences between federal and non-federally funded postdoc counts, but due to the size of the sample, we did not explore further analyses. Tables of federal support information are available below (Tables 8 and 9). Note that 26 institutions reported some number of PDs with some kind of federal support and 27 institutions reported some number PDs with some kind of non-federal support.

Table 8: Counts of Postdocs Receiving Federal Support, by Mode and List

Please provide the number of postdocs receiving federal support.									
		Phone			Web	By List			
Quartile	All Completes	All Phone Completes	Phone Completes with an Exact Count	Phone Completes with an Estimate	Web	SEVIS	SRS Source	LCA	AAVMC
1 st	1	1	0.75	0.75	0.5	1	0		6
2 nd	2.5	4	3	3.5	1	2.5	1		6
3 rd	6.25	13.5	21.5	105.25	4	10.25	3		6
4 th	400	400	26	400	95	400	3		6
n	26	13	6	6	13	22	3	0	1
Mean	23.31	36.46	8.83	69.17	10.15	27.09	1.33		6.00
Median	2.5	4	3	3.5	1	2.5	1		6
Std D	79.14	109.52	11.27	162.09	26.04	85.77	1.53		0.00

Table 9: Counts of Postdocs Receiving Non-federal Support, by Mode and List

Please provide the number of postdocs receiving non-federal support.									
		Phone			Web	By List			
Quartile	All Completes	All Phone Completes	Phone Completes with an Exact Count	Phone Completes with an Estimate	Web	SEVIS	SRS Source	LCA	AAVMC
1 st	1	0.5	1.75	0	0.75	1	0		2
2 nd	2	2	3	0.5	2.5	3	0.5		2
3 rd	4	13.5	21.25	30.25	4	7.25	3.25		2
4 th	100	100	25	100	89	100	4		2
N	27	13	6	6	14	22	4	0	1
Mean	10.56	12.62	9.00	18.00	8.64	12.64	1.25		6.00
Median	2	2	3	0.5	2.5	3	0.5		6
Std D	24.93	27.44	10.60	40.26	23.23	27.28	1.89		0.00

Respondents who reported postdocs supported by fellowships, traineeships, or research grants were asked to report the number of postdocs in each of these positions (Tables 10 through 12). The median number of postdocs reported in each class of funding was highest for traineeships, 4.5, compared to 4 for fellowships and 2 for research grants. However, given the low n and the different numbers of institutions in each group, we are not able to draw strong conclusions about patterns of postdoc support. Noteworthy again is the significant right skew of the data.

Table 10: Counts of Postdocs Supported by Fellowships, by Mode and List

	Please provide the number of postdocs supported by fellowships.								
		Phone			Web	By List			
Quartile	All Completes	All Phone Completes	Phone Completes with an Exact Count	Phone Completes with an Estimate	Web	SEVIS	SRS Source	LCA	AAVMC
1 st	1	1	3.75	0	1	1	4		
2 nd	4	6	10	1	4	4	4		
3 rd	19	20	22.25	20	30	20	4		
4 th	100	25	25	20	100	100	4		
N	20	7	4	3	13	19	1	0	0
Mean	15.20	9.86	12.00	7.00	18.08	15.79	4.00		
Median	4	6	10	1	4	4	4		
Std D	24.65	9.89	9.83	11.27	29.80	25.18	0.00		

Table 11: Counts of Postdocs Supported by Traineeships, by Mode and List

	Please provide the number of postdocs on traineeships.								
		Phone			Web	By List			
Quartile	All Completes	All Phone Completes	Phone Completes with an Exact Count	Phone Completes with an Estimate	Web	SEVIS	SRS Source	LCA	AAVMC
1 st	0.75	0	2	0	1	0.25	3		6
2 nd	4.5	2	2	0	8	5	3		6
3 rd	9.5	6	2	0	11	10.5	3		6
4 th	25	6	2	0	25	25	3		6
N	10	3	1	1	7	8	1	0	1
Mean	6.50	2.67	2.00	0.00	8.14	7.00	3.00		6.00
Median	4.5	2	2	0	8	5	3		6
Std D	7.59	3.06		0.00	8.53	8.49			0.00

It is clear that the sex of postdocs at organizations is more frequently reported (and perhaps more readily available) than funding information, as a result of either its presence in databases or other sources that assist respondents in reporting data. Of 55 respondents, 94.5% (n=52) of respondents reported being able to provide a count of postdocs by sex, while 5.5% (n=3) reported not knowing—no institutions reported a definitive ‘No.’ To test their reports, we asked for an estimate of the number of female postdocs at an institution. The results are available below in Table 13. Although 52 reported that their institution could provide this number, only 40 (76.9%) actually reported a count.

Table 12: Counts of Postdocs Supported by Research Grants, by Mode and List

Please provide the number of postdocs supported by research grants.									
	Phone				Web	By List			
Quartile	All Completes	All Phone Completes	Phone Completes with an Exact Count	Phone Completes with an Estimate	Web	SEVIS	SRS Source	LCA	AAVMC
1st	1	1	0.5	1	1	1	1		2
2nd	2	2	2	3	2.5	3	1.5		2
3rd	9	4.5	12.5	4	25.75	14.75	2		2
4th	173	20	20	4	173	173	2		2
n	21	9	5	3	12	18	2	0	1
Mean	18.10	4.22	5.60	2.67	28.50	20.83	1.50		6.00
Median	2	2	2	3	2.5	3	1.5		6
Std D	42.85	6.12	8.26	1.53	55.10	45.88	0.71		0.00

Table 13: Counts of Female Postdocs, by Mode and List

Please provide your estimate of the number of female postdocs.									
	Phone				Web	By List			
Quartile	All Completes	All Phone Completes	Phone Completes with an Exact Count	Phone Completes with an Estimate	Web	SEVIS	SRS Source	LCA	AAVMC
1st	1	0.5	0.75	0	1	1.25	1		5
2nd	4.5	5	4	6	4	5	1		5
3rd	15	11	9.75	73.75	24	17.25	3		5
4th	402	250	12	250	402	402	3		5
n	40	13	6	6	27	36	3	0	1
Mean	31.63	24.00	5.00	46.17	35.30	34.86	1.67		5.00
Median	4.5	5	4	6	4	5	1		5
Std D	76.75	68.08	4.69	100.04	81.56	80.35	1.15		0.00

We also asked whether respondents could provide counts of postdocs by race/ethnicity. Of 55 respondents, 78.2% (n=43) reported being able to provide race/ethnicity information, while 9.1% (n=5) could not and 12.7% (n=7) did not know. While we included a question asking for precise counts, the large number of categories in a race/ethnicity question meant that each cell contained too few counts for useful analysis. However, the large percentage of respondents able to report R&E information looks promising for future data collection efforts with larger samples.

Respondents were less capable of reporting PhD equivalent degrees. Of 96 respondents, 45.8% (n=44) said they knew their institution had postdocs holding PhD-equivalent professional degrees, 47.9% (n=46) said no, and 6.3% (n=6) did not know. Of course, this high level of certainty is influenced by our sample—of the 19 AAVMC schools that responded, 18 reported equivalent degrees. Since the veterinary degree is considered a PhD equivalent, we should expect the vet sample to be overwhelmingly capable of reporting PhD equivalent degrees. This suggests that overall institutions are probably less likely to be able to report equivalent degrees than the 45.8% result above might indicate.

Our final question in the count battery was whether institutions had postdocs with PhDs or equivalent degrees from foreign institutions. Of 94 respondents, 70.2% (n=66) reported yes, 14.9% (n=14) reported No, and 14.9% (n=14) reported that they did not know.

A follow-up question went on to ask whether institutions who had foreign degreed postdocs could provide counts of these individuals. Sixty-Five (98.5%) organizations indicated that they could, and 48 (73.8%) of these organizations indicated that they could break that count down further, by sex. As in other count questions, a right-skew was present. The right skew seems most pronounced for the institutions in the SEVIS list; however, this is likely just because of the small n in other lists (tables 14 and 15).

Table 14: Counts of Foreign-Degreed Postdocs, by Mode and List

Please provide the number of postdocs with a Ph.D. or Ph.D.-equivalent degree from a foreign institution.									
	Phone				Web	By List			
Quartile	All Completes	All Phone Completes	Phone Completes with an Exact Count	Phone Completes with an Estimate	Web	SEVIS	SRS Source	LCA	AAVMC
1 st	1	1	4	1	1	1.25	1	3	1
2 nd	3	3.5	6	3	3	3.5	3	3	1.5
3 rd	10.5	7.5	12	12.5	11	11.75	5	3	2
4 th	54	20	12	20	54	54	5	3	2
N	25	10	3	5	15	20	2	1	2
Mean	7.40	5.60	7.33	6.00	8.60	8.65	3.00	3.00	1.50
Median	3	3.5	6	3	3	3.5	3	3	1.5
Std D	11.21	6.04	4.16	8.00	13.71	12.24	2.83	0.00	0.71

Table 15: Counts of Foreign-Degreed Female Postdocs, by Mode and List

Please provide the number of female postdocs with a Ph.D. or Ph. D.-equivalent degree from a foreign institution.									
	Phone				Web	By List			
Quartile	All Completes	All Phone Completes	Phone Completes with an Exact Count	Phone Completes with an Estimate	Web	SEVIS	SRS Source	LCA	AAVMC
1 st	0	5.6	3	0	0	0	1	2	0
2 nd	2	3.5	4.5	1	1	2	1.5	2	0
3 rd	3	6.04	6	2	3	3.75	2	2	0
4 th	11	6	6	2	11	11	2	2	0
N	23	8	2	4	15	18	2	1	2
Mean	2.52	1.88	4.50	1.00	2.87	2.94	1.50	2.00	0.00
Median	2	2	4.5	1	1	2	1.5	2	0
Std D	3.20	2.03	2.12	1.15	3.70	3.49	0.71	0.00	0.00

3.2.1 Estimation and Heaping in Postdoc Counts. As a measure of estimation, we investigated whether more respondents give answers ending in 5 or 0 than would be expected by random chance. To the extent that responses heap on these values, we assume that respondents are estimating rather than enumerating the number of postdocs at their institution. To measure the extent of heaping, we use the Whipple index, which is computed as:

$$\text{Whipple Index} = (\text{number of responses ending in 0 or 5}) * 5 / (\text{all responses}) * 100$$

The more the Whipple Index exceeds 100, the more heaping we observe, and, therefore, the more estimation we suspect. For the total number of postdocs at the institution, for all respondents, the Whipple Index is 159, indicating a moderate degree of heaping. However, for those reporting 20 or fewer postdocs, the Whipple Index is only 110, indicating little heaping, while for those reporting more than 20 postdocs, it is 240. These results are not surprising; for institutions with few postdocs, the respondent is more likely to enumerate and, therefore, provide a precise answer (which may not be accurate, but is less susceptible to heaping), while institutions with more postdocs are more likely to provide an estimate of the number of postdocs. This suggests that respondents were not in fact querying databases to provide their answers, but instead using estimates. Similarly, we find a low level of heaping (Whipple Index = 111) among phone respondents who did not estimate, a medium amount among web respondents (Whipple Index = 140), and very substantial heaping among phone respondents who reported estimating (Whipple Index = 292). Although the estimation prompt was used for phone respondents only on the assumption that web respondents would be able to take the time to find exact counts, it seems more likely that web respondents, like phone respondents, sometimes estimated. While the overall phone heaping (Whipple Index = 214) was higher than for the web, web respondents do not seem to have been immune to estimation.

3.3 Postdoc Titles and Definitions. In total, eRLAS respondents reported 67 different titles for postdocs, many of which were only mentioned once. Table 16 below displays the titles that were listed with a frequency of 5 or more. All of the titles reported can be found in **Appendix B**. The particular distribution of individual titles used may be less important than some of the patterns visible. For example, many of the titles reported use the word “Postdoctoral” (31.3%, n=21), suggesting a clear signal of their appropriateness for postdoctoral scholars. Other titles use the word research but less obviously distinguish between postdocs and other research positions (23.9%, n=16). These include titles such as “Research Assistant” and “Research Associate.” There are a few titles that seem inappropriate, including “Pre Doctoral Fellow” and “Professor.” Finally, the use of the term “Visiting” to designate postdocs (“Visiting Fellow”, “Visiting Scholar”), perhaps because of postdocs’ temporary status, is visible in 5 different titles reported. It is unclear whether these titles are only used for postdocs or for other researchers as well. Our findings confirm the heterogeneity of titles associated with postdocs and suggest that in at least some cases titles are used that would not be identified by an outsider as appropriate to postdocs or only appropriate to postdocs. This suggests that if institutions provide counts by querying databases on the basis of job codes, finding a respondent who is knowledgeable about these codes will be critical.

Table 16: Postdoc Titles Reported by eRLAS respondents 5 Times or More

Title	N
Postdoctoral Fellow	11
Research Associate	8
Post Doc	6
Post-Doctoral Associate	5
Others	31
Total	67

Respondents who reported having postdocs at their institution were asked a series of questions about the characteristics of those postdocs. Consistent with previous findings, there was broad agreement among respondents about a number of these definitional components, although no item received universal support and several items received only mixed support.

The items that received broad support (more than 85% of respondents) were: that the position is primarily for training in research (85.2%, n=92), that the individual must have a Ph.D. or equivalent degree (94.5%⁴, n=104), that the position is for a defined period of time (85.5%, n=94), that the individual works under a senior scholar (87.7%, n=93), that the position is temporary (86.1%, n=93), and that individual is mentored (94.4%, n=101). Moderate support was received for the idea that the individual is expected to publish (73.6%, n=78) and that the individual must have received his doctoral degree recently (45.4%, n=49).

While the generally high support received for the proposed definitional components might be encouraging, it is useful to compare these responses to those provided by firms who reported having no postdocs. These firms were asked whether they employed researchers with Ph.D.s or Ph.D.-equivalent degrees who met a number of criteria. Generally, these firms also reported broad support for the definitional components about which they were asked: 70.2% (n=40) reported employing recent Ph.D.s, 54.5% (n=30) reported that some researchers in this group held temporary appointments, and 53.6% (n=30) reported having some researchers with Ph.D.s appointed for a defined period of time. This particular subset of questions, then, may not provide good distinction between the postdoc and non-postdoc groups. By contrast, only 17.5% (n=10) of these respondents reported having Ph.D.s with positions that provide training in research, significantly less than the aforementioned 85.2% of firms with postdocs who reported that postdoc positions were primarily for training in research. Thus, among the items that were asked of both groups, the question of whether the position provides training in research, when coupled with the stipulation of a Ph.D. or Ph.D.-equivalent degree, appears to provide the best demarcation between the groups. Given this, by asking whether the position provides training in research, we believe we may very well be able to distinguish postdocs from nonpostdocs in otherwise similar research positions.

Upon designing the study to operate under two modes, mode differences in acquiescence bias, most likely due to acquiescence bias being higher in interviewer-administered modes⁵, was an anticipated concern. An interesting mode difference did in fact emerge in the analysis of the responses to definitional questions. Among respondents who reported having postdocs, those who responded on the phone were more likely to give a positive response to *each* of the definitional components asked about, and 5 of these 8 differences were significant in t-tests at the .10 significance level (4 of 8 at the 0.05

⁴ This is the percent of respondents who answered “Yes” to either the question about a Ph.D. being required for postdocs (A5B) or an equivalent degree being required if a Ph.D. is not (A5C). The reason these items were combined is that we believe some respondents answered “No” to A5C because they had already answered “Yes” to A5B – equivalent degrees are not required because Ph.D.s are.

⁵ Tarnai, J. and Dillman, D. (1992), “Questionnaire Context as a Source of Response Differences in Mail vs. Telephone Surveys,” in Schwarz, N. and Sudman, S. (eds.), *Telephone Survey Methodology*, pp. 301-320, New York: Wiley.

significance level). Taken by itself, this finding might suggest simply that there are mode differences in acquiescence bias in the data.

However, a similar comparison of the definitional components asked of respondents reporting no postdocs revealed no statistically significant differences by mode differences in responses. Moreover, we would expect that if the differences were the results of an interview-administered acquiescence bias, this bias would also be observed in other, similar questions. Yet neither group showed significant mode differences on a question that asked about the presence of various types of clinical researchers at the firm. Therefore, we suggest that the mode differences observed in the responses to the questions on postdoc definitions may be due to acquiescence bias. Under this line of thinking the bias occurs due to respondents' desires to be consistent with their assertion that their organization has postdocs. Having claimed that they have postdocs, they are motivated to report that their postdocs conform to the definitional aspects suggested by the survey, and they are particularly motivated to do so when they interact with an interviewer on the phone, rather than completing the self-administered web survey.

In addition to items focused on definitional components, respondents were asked a series of questions focused on whether or not their institutions employed individuals working in positions that may actually fit the NSF definition of a postdoc, be be undercounted due to title; Clinical Researchers, Clinical Fellows and Clinical Practitioners. Results show that Clinical Researchers were the most commonly reported title (32.1%, n=54), followed by Clinical Practitioners (29.2%, n=49) and Clinical Fellows (20.8%, n=35).

Tables 17 and 18 display analyses of these results broken out by both the type of institution and whether or not the institution reported having postdocs. The tables show that academic institutions and institutions who employ postdocs were significantly more likely to report having employees in these three titles than their counterparts. If, when asked about postdocs, these organizations are reporting only on employees who fall outside of these three positions, it is possible that underreporting is taking place.

Table 17: Clinical Positions by Type of Institution

Type of Institution	n Clinical Researchers	% Clinical Researchers	n Clinical Practitioners	% Clinical Practitioners	n Clinical Fellows	% Clinical Fellows
Academic	34	43.0	36	45.6	24	30.4
Non-Academic	20	22.5	13	14.6	11	12.4

*results statistically significant at p<.001

Table 18: Clinical Positions by Employs Postdocs

Type of Institution	n Clinical Researchers	% Clinical Researchers	n Clinical Practitioners	% Clinical Practitioners	n Clinical Fellows	% Clinical Fellows
Employs	48	44.0	41	37.6	31	28.4
Does not Employ	6	10.2	8	13.6	4	6.8

*results statistically significant at p<.001

3.4 Policies Governing Postdocs. Overall, 51% (n=48) of respondents reported that there are postdoc policies in place at their institution. Only 29% (n=27) reported that their institution has no policy, while 20% (n=19) reported not knowing. Differences between academic and non-academic institutions were not significant. Based on our results from the PPLP, we think that it is likely that those who are unsure about having a policy in fact do not have one, but find it difficult to assert definitively that no such policy exists. Among institutions reporting policies, the policies appear to be fairly comprehensive. Most institutions report that these policies address: a formal postdoc definition (83.3%, n=40), the criteria to qualify as a postdoc (83.3%, n=40), acceptance or termination of postdocs (77.1%, n=37), responsibilities (66.7%, n=32), supervision responsibilities or mentoring (58.3%, n=28), code of conduct (60.4%, n=29), annual reviews (56.3%, n=27), titles (56.3%, n=27), duration of position (79.2%, n=38), funding (58.3%, n=28), salary (70.8%, n=34), and benefits (77.1%, n=37). The only topic that less than half of the respondents indicated is included in their policies is training (43.8%, n=21). An additional 12.5% (n=6) of respondents reported that their policy addressed some other topic, and the results from this open-ended response are listed below:

- Intellectual Property Rights, And Copy Writing, Standard HR Policies On Harassment
- Outreach And Candidate Selection
- Patent Agreement
- Postdocs Are Regular Employees So All Normal Policies Apply. The Only Special Criteria Are The Dates Of Employment And Its Contingency Nature
- Responsibilities, Mentoring, Training Are Defined On A Position-By-Position Basis
- Stipend Award No Salary

These results suggest that the divide may be primarily between institutions with and without policies, while those with policies generally implement comprehensive plans that address a variety of postdoc-related issues.

3.5 Record Keeping. All institutions that reported having postdocs were asked whether their office was responsible for maintaining postdoc records. Forty-five percent (n=48) of the institutions reported that their office did the maintenance. In addition, a significantly greater (significant at $p < .001$) proportion of non-academic respondents (60.7%, n=34) reported that their own office handled record keeping, compared to 28% (n=14) of academic respondents. The distribution of responses for those who said that some other office did the maintenance (55%, n=48) is shown below in Table 19.

Table 19: Offices Responsible for Maintaining Postdoc Records

Office	N	%
Postdoc Office	4	7.3
Graduate School	1	1.8
Office of the Vice President for Research	3	5.5
President's Office	1	1.8
Human Resources/Personnel Department	28	50.9
Hiring Lab or Department	2	3.6
Educational Programs Office	2	3.6
Other (specify)	14	25.5

Of the 48 respondents who answered the question about how often postdoc records are updated, the most common response was annually, given by 24 (50%) respondents. Next most common was monthly updating, however only 7 (14.6%) respondents gave this answer. Updates each day, week, quarter, or semester were rare. However, 10 respondents (20.8%) reported not knowing how often records are updated. These results suggest that updating of records may indeed pose a problem in generating current counts of postdocs. Those who reported updating monthly, quarterly, or annually were asked in what month the last update had been done. The responses to this question might help NSF to determine in what month they would be most likely to receive recently-updated information on postdocs. The results for these questions are shown below in Table 20. The responses are separated by the frequency of updates, since a simple frequency would suggest that more updates are done in the months just prior to the completion of the survey (August and September), because of those who update monthly.

Our initial expectations were that a large number of updates would likely occur either in the beginning of the calendar year or around the beginning of both the academic and fiscal year in October. While the highest number of updates was reported in January, the distribution of responses is fairly uniform, giving no clear answer about what month would maximize the recency of the records. In particular, it should be noted that the average quality of records may well not be maximized by conducting a survey in the month following the modal month of update. If, for example, 50% of updates were conducted in January, 40% in March, and the remaining 10% distributed 1% to each month, it would make more sense to do the survey in April, when more than 90% of the sample had updated within the last few months, than in February. Therefore, the evidence collected unfortunately provides no conclusive best month for collecting up-to-date postdoc information.

Table 20: Reported Month of Last Update to Postdoc Records

		How often are postdoc records/data files updated? Would you say...?			Total
		Monthly	Quarterly	Annually	
In what month was the last update?	September 2006	0	0	1	1
	October 2006	0	0	3	3
	November 2006	0	0	1	1
	December 2006	0	0	1	1
	January 2007	0	0	4	4
	March 2007	0	0	1	1
	July 2007	0	0	2	2
	August 2007	5	0	2	7
	September 2007	2	0	1	3
	November 2007	0	1	1	2
	December 2007	0	0	1	1
Total		7	1	18	26

A related question is whether the counts provided by institutions are comprehensive, even when the records have been recently updated. To address this question, respondents were asked whether any of a series of reasons might explain postdocs being excluded from the list. Overall, respondents do have some concerns about postdocs being excluded, but they are not pervasive. Unfortunately, the

questions we asked do not provide us with detail about the degree to which institutions believe that these sources of undercount will reduce data quality. Additionally, the survey did not query respondents about potential sources of over-counts—however, they were free to include such information, either in the “other” specify item, or in the comments section at the end of the survey.

Responses from the 96 respondents who answered this item include whether other titles are used for postdocs (33.3%, n=32), some postdocs are not paid through the institution (26.0%, n=25), some postdocs work at research centers at other locations (13.5%, n=13), departments or labs define postdocs differently (19.8%, n=19). Other reasons were also listed by 11.5% (n=11) of respondents, and the responses to this open-ended question are displayed below:

- Came In Through Uncompetitive Research Or Thru Their Own Grants
- Count Does Not Include Our 1000 Add'l Clinical Or Residency Fellow Postdocs
- Different Schools At The University May Have Different Designations
- I Would Not Know Why They Would Not Be Counted
- If Someone Has A PhD And A JD, We Might Only Count Them Under JD; Same Situation With Md.
- If They're Not Hired By The Government
- Newly Granted Graduate Student That Received A PhD(Interim Appointment)
- Not A Resident Postdoc
- We Are Testing Our Processes To Make Sure That We Do, In Fact, Count All Postdocs

3.6 Acquiring Lists of Postdocs. Overall, 54.9% (n=84) of institutions responding to the survey reported that NSF would be able to obtain either a list of individuals in postdoc positions, or individuals with doctoral degrees if the institution has no postdocs. However, the pattern was different according to whether the institution employs postdocs or not. The results by postdoc status are shown in Table 21. While more than 60% (n=67) of respondents employing postdocs report that NSF could obtain a list, just less than 40% (n=17) of respondents at institutions without postdocs do. This significant difference might be explained by institutional differences, but also might be explained by the

different nature of the question that is asked of each group. While those with postdocs are asked about providing a list of postdocs, those without postdocs are asked about providing a list of individuals with doctoral degrees. If “postdoc” is considered a group of job titles or codes, while institutions generally keep less information in databases about an individual’s educational attainment, it might be easier for institutions to produce lists of postdocs than lists of individuals with doctoral degrees. Alternately, it could be the case that an institution that reports having no postdocs is less likely to have researchers with PhDs.

Table 21: Whether NSF Could Obtain a List, by Postdoc Status

	% Can Obtain List	% Cannot Obtain List	% Don’t Know
Has Postdocs	61.5	11.9	26.6
Has PhDs	38.6	31.8	29.5

*results statistically significant at $p < .05$

In addition to these differences, academic and non-academic institutions were also significantly different, with non-academic institutions more likely to be able to provide a list (63.2%, n=48) than their academic counterparts (46.8%, n=36), as illustrated in table 22.

Table 22: Whether NSF Could Obtain a List, by List Type

	% Can Obtain List	% Cannot Obtain List	% Don't Know
Academic	46.8	18.2	35.1
Non-Academic	63.2	17.1	19.7

***results statistically significant at p<.10**

Institutions that reported that a list could not be obtained yet reported having postdocs were asked to select from a number of options describing why NSF could not obtain the list. Although only 13 institutions fell into this group, making any strong conclusions difficult, no more than 2 of 13 institutions reported difficulties due to a lack of consistent definition of postdocs, a lack of consistent job titles, a lack of a respondent who would be knowledgeable about all of the job titles, a lack of a single person who could gather the entire list, or because the list is difficult to access. By contrast, 7 of 13 respondents reported that a list exists, but could not be obtained because it is confidential (plus one more who described a confidentiality concern under “Other”). While we have often been concerned with the quality of lists that might be provided, because of a lack of consistent definitions or titles, it appears that institutions’ greater concern in providing lists will arise from confidentiality issues.

Institutions who reported that they did not know whether NSF could obtain a list were asked which office or department could make this determination. Forty-two institutions responded to this set of questions, although some options were tailored for academic institutions or only to non-academic institutions. However, the broad pattern of results is clear. No institutions suggested that the International Office, Institutional Research Office, the Information Technology Department / Office, or the hiring lab / department be contacted. A few institutions believed that each of the following offices would make the determination: Postdoc Office (3), Graduate School (4), President’s Office (1), and Educational Programs Office (1). The offices receiving the most responses were the Office of the Vice President for Research (7) and, by far the largest, Human Resources (24). In addition, 13 respondents provided their own response under “Other” with no discernable pattern.

Finally, among those who said that NSF could obtain a list, 81% (n=67) indicated that their office would be the one to provide the list. Among those respondents who said that their office would provide the list, about two thirds (66.7%, n=44) said that they (as individuals) would be the one to provide the list. This high rate suggests that we were fairly successful in locating a respondent with a central role in managing postdoc records. Among institutions who say that a list can be provided, the list appears to be fairly complete, in terms of desirable information. Sixty-two percent of respondents (n=41) reported that the list would include information on race, 76% (n=50) on sex, 76% (n=50) on citizenship, and 62% (n=41) said the list would include contact information. Additionally, 31% (n=19) of the respondents reported that the list would contain additional information. The unedited open-ended responses about what type of additional information would be provided are displayed below. Note that many of these categories overlap:

- Area Of Specialty
- Area Of Study
- Degree
- Degree, Primary Lab Assignment
- Department Of Hire
- Discipline And Degree Granting Institution
- Educational Background
- Experience And So Forth.
- He Can Include Other Information If We Ask For It
- It Will Depend Upon What The Information Is Needed For
- Research Fields, Educational/Professional Background
- Responsibilities And Duties
- Salary
- The Mentor Of Each Postdoc Is Listed
- Their Area Of Study And What Lab They Are In
- University Affiliation, Tenure Dates , [Inst]. Advisor
- With The Individual's Person Whatever Other Information You May Need

The 16 respondents who said that a list could be provided, but that their office would not be the one to provide it, were asked which office would be able to provide the list. We might expect that the distribution of responses would be similar to that among respondents who referred us to other offices to determine whether the list could be provided, and in fact there are some similarities. Again, some responses were provided only to academic or only to non-academic respondents. No respondents referred us to the president's office, the international office, the institutional research office, the information technology office, the hiring lab or department, or the educational programs office. Again, a few respondents referred us to each of: the postdoc office (3), the graduate school (1), the office of the vice president for research (4), and the human resources department (8). Again, human resources receives the most support, followed by the office of the vice president for research. Four respondents indicated that some other office should be contacted, and three of the four provided the name of that office. These are listed below:

- Academic Vice President's Office
- Dean of the Faculty
- Office of Science and Academic Affairs

3.7 Characteristics of Respondents and Responding Institutions. Beginning with support for postdocs, there was remarkably little difference between academic and non-academic institutions in the types of support reported. About 2/3 of each type of institution reported funding postdocs on fellowships (65.2%, n=15 for academic institutions, 65.6%, n=21 for non-academic), a little less than half reported postdocs on traineeships (45.5%, n=10 for academics, 42.9%, n=12 for non-academics), and more than 80% reported funding postdocs on research grants (82.6%, n=19 for academics, 83.3%, n=25 for non-academics). None of these slight differences were statistically significant.

Interestingly, academic institutions were more likely than non-academic institutions to report employing postdocs with a Ph.D.-equivalent degree (59%, n=27 for academics vs. 34%, n=17 for non-academics). Both academic and non-academic institutions were likely to report employing postdocs with foreign degrees (63%, n=27 for academics and 77%, n=39 for non-academics). While these differences are notable, they are not statistically significant.

We also asked our respondents a number of questions about themselves. When asked about their position, the most common response selected was “Other”, chosen by 41% (n=55) of respondents—often even when the answer they filled in for ‘other’ was clearly listed as a selection choice. This finding is interesting and, especially in light of the self-reported titles given among those who chose this option, we suspect that respondents see divisions between their own positions and the titles we suggested that might be lost on an outside observer. Additionally, 15% (n=20) of the respondents described themselves as a human resource manager, 13% (n=17) reported that they were a dean, and 8% (n=11) identified as a director of research. The remaining response options received less support. When asked about their highest level of education completed, 60% (n=82) report having a doctoral degree, and an additional 24% (n=33) report having either a professional degree or a master’s degree. While almost 30% (n=47) of respondents had been in their current positions for 3 or fewer years, half (n=80) had been in them for 8 or more years, and a quarter had been in them for 16 (n=40) or more years. As would be expected, the distribution of time spent working for this institution was slightly higher: 75% (n=120) had worked for the institution for 6 or more years, 50% (n=80) for 13 or more years, and approximately 25% (n=40) for 30 years or more.

4.0 Summary of Conclusions and Recommendations

The final section of the report provides a summary of the conclusions drawn from each section presented. In addition, where possible, suggestions and recommendations for future work are presented.

Level of Effort and Finding the Most Knowledgeable Contact

- Establishments with two unique respondents (via referral) covered nearly 94% of our sample.
- About 17% of those cases terminating with only one contacted completed the survey, while a peak of 21% of cases terminating with 2 contacts completed. Only 10.9% completing in cases that went as far as 3 contacts. There were no completions in cases that went beyond 3 contacts.
- Making multiple contacts appeared to demonstrate diminishing marginal returns, but may be worth the investment for higher response rate overall.
- Given these three points, it is recommended that future efforts be prepared to make multiple contacts and roster institutions so that referrals can be made. However, based on eRLAS results, terminating cases after 3 referrals is recommended in an effort to maximize efficiency and save costs.

Postdoc Counts

- We found a median number of 13.5 postdocs at institutions reporting postdocs, with a maximum 1200 postdocs.
- Postdoc counts are heavily right skewed.
- “Don’t know” answers are more common in self administered web surveys than in phone surveys.
- Eighty-three percent of institutions (of an N = 57) reported being able to provide counts separated by federal and non-federal sources of support.
- Ninety-five percent of respondents reported being able to provide a count of postdocs by sex.
- Seventy-eight percent reported being able to provide race/ethnicity information.
- The counts of postdocs provided by respondents were analyzed for patterns of heaping on round numbers that would indicate estimation by respondents. Heaping was especially pronounced for institutions reporting large number of postdocs and among phone respondents who reported that they were, in fact, estimating. While phone respondents show stronger heaping patterns than do web respondents, heaping is evident in both cases, suggesting that not all web respondents performed queries in order to enumerate postdocs. The fact that heaping was more pronounced among institutions reporting more postdocs is likely to reflect a greater difficulty in quickly enumerating large number of postdocs, and therefore a greater incentive to estimate.
- In order to limit the frequency of don’t know responses in the self-administered survey, future efforts should provide respondents with an opportunity to estimate counts as they see fit. However, this should be viewed as an alternative to respondents in the self administered survey (especially those at larger organizations) being allowed enough time (through on screen text or instructions, prenotification materials, etc.) to gather count data that may not be readily available.

Postdoc Titles and Definitions

- Titles are varied. While some formal titles include a postdoc-related term, others do not, suggesting that a knowledgeable respondent will be needed to query all relevant job titles to produce postdoc counts.
- Mode differences emerged only selectively. While there were no mode differences on the questions asking about clinical researchers, and no differences by mode for institutions that did not report postdocs, institutions reporting postdocs were more likely to support each of the definitional components if they responded on the phone instead of on the web. We suspect that this is due to respondents' greater desire to provide consistent answers when completing an interviewer-administered mode.
- Support for the definitional components is high among institutions reporting postdocs. However, institutions without postdocs also report employing individuals with doctoral degrees who satisfy some of these same criteria. The trait that appears to most clearly divide postdocs from other doctoral-degreed employees is that the position is primarily for the purpose of training in research.
- It is recommended that future definitions of postdoc highlight both that these individuals have doctoral degrees or doctoral-equivalent degrees, and that they occupy positions designed to provide training in research.

Policies Governing Postdocs

- About half of eRLAS respondents reported existing postdoc policies. Those who do report policies generally report quite comprehensive policies, especially including formal postdoc definitions (83%), criteria to qualify as a postdoc (83%), duration of postdoc positions (79%), acceptance or termination of postdoc positions (77%), and benefits (77%).
- "Don't know" responses are higher for this question than for most others in the survey. Consistent with the Postdoc Policy Lookup Project (PPLP), these don't know responses likely reflect institutions that do not have policies, rather than respondents who are ill-informed about existing postdoc policies.

Record Keeping

- A little less than half of the respondents with postdocs reported that their office was responsible for maintaining postdoc records. Among those who reported that some other office maintained the records, Human Resources was by far the most commonly mentioned.
- Most institutions report updating postdoc records annually, with no month or season obviously preferred for performing updates. It is recommended that this issue be explored with other lists in order to gain a better understanding of when data is updated, in the hopes of being able to plan a survey at an optimal time for a majority of possible respondents.
- When asked about the completeness of records, respondents did sometimes express concerns, particularly about other titles being used for postdocs (33%), and postdocs not paid through the institution (26%). This highlights the difficulty posed by heterogeneous titles.
- Additionally, the concern about postdocs not paid through the institution is one that was raised during the site explorations, but has been relatively little addressed since then. One difficulty on this issue is that Human Resources, to which many respondents referred us, may be especially unlikely to have information about postdocs not paid through the institution. It is recommended that a battery of questions focused on this topic is created for future efforts.

Acquiring Lists of Postdocs

- Overall, just over half of responding institutions reported that they could provide a list to NSF, but postdoc-employing institutions are more likely to report that they could provide a list of postdocs (62%) than are institutions without postdocs to report that they could provide a list of employees with doctoral degrees (39%). We suspect that this difference is due primarily to differences in the difficulty of the task asked in the two cases, not to institutional differences.
- The most common reason given by postdoc-employing institutions for why a list could not be provided is confidentiality concerns. Concerns about whether a list exists and whether it would be accurate are much less prominent. Any additional steps to ensure respondents of the confidential nature of the work being conducted will be helpful. Although, it should be noted that current survey materials do go to great lengths to protect respondent confidentiality.
- Among respondents reporting that a different office would make the determination about the provision of a list, or those who reported that a list could be provided, but a different office would provide it, the most common other office named was by far Human Resources. The Office of the Vice President for Research, the Provost's Office, the Postdoc Office, and the Graduate School also received support from multiple respondents.
- Among respondents who reported that a list could be provided, more than 80% reported that their office would be the one to provide the list, and 2/3 of these reported that they would be the individual to provide the list. This suggests that our efforts to locate a knowledgeable respondent were fairly successful. As noted above, it is highly recommended that future protocols be prepared to work with multiple contacts at organizations in order to find the best possible respondent.
- Among respondents who reported that a list could be provided, the lists appear to be fairly complete in terms of available information, with more than 60% of respondents reporting that each of race, sex, citizenship, and contact information would be included on the list.

Characteristics of Respondents and Responding Institutions

- Clinical researchers, postdocs with Ph.D.-equivalent degrees, and postdocs with foreign doctoral degrees were all common at responding institutions. Institutions from the AAMVC list were especially likely to report employing both clinical researchers and postdocs with Ph.D.-equivalent degrees.
- Academic and non-academic institutions were similar in their patterns of postdoc support, with similar shares of each institution type reporting supporting postdocs on fellowships (about 2/3), on traineeships (a little over 40%), and on research grants (just over 80%).
- While respondents were varied in the positions they reported, they were most likely to select "Other" (40%) in response to this question. The open-ended responses provided by this group, however, were sometimes quite similar to the response options provided. Providing this item as solely open ended in the future may ease data coding and response clarity. A sizable minority of respondents also reported being Human Resources managers (15%), deans (13%), and directors of research (8%).
- 60% reported having a doctoral degree, and an additional 24% reported having either a master's degree or a professional degree. In the future, tailoring of certain items to higher language levels and specificity may help to remove any ambiguity certain questions may currently leave.

Appendix A

eRLAS Questionnaire Specifications



Appendix B

Individual Postdoc Titles Reported by Respondents (Alphabetical)

Title	Freq	Title	Freq
(Discipline), Associate Fellow	1	Postdoctoral Residency Fellow	1
(Discipline), Full	1	Post-doctoral Scholar	1
(Discipline), Senior	1	Postdoctoral Scientist	2
[Name of fellowship] postdoctoral fellow	1	Postdoctoral Trainees	2
Assistant in science instruction	1	Pre Doctoral Fellow	1
Associate Policy Researcher	1	Professor	2
Associate Research Scientist	1	Project Director	1
Director of Behavior Change Programs	1	Research Assistant	4
Fellows	2	Research Assistant Professor	2
Instructors	1	Research Associate	8
International Visiting Fellow	1	Research Associate Professor	2
Interns	1	Research Chemist	1
[Named] Fellow	1	Research Fellow	2
Medical doctor	1	Research Molecular Biologist	1
Member	1	Research Physical Scientist	1
NIH Postdoctoral Fellow	1	Research Post Doc	1
None	1	Research Scientist	1
Non-resident Senior Fellow	1	Researcher	1
[Institution name] Postdoctoral Fellows	1	Resident	2
Pediatric Pharmacy Practice Fellow	1	Science Fellow	1
Pharmacy Research Fellow	1	Senior Fellow	1
Policy Researcher, Full	1	Senior Project Associate	1
Post Doc	6	Senior Research Associate	1
Post Doc Fellow / Research	1	Staff Scientist	1
Post Doctoral Research Fellow	1	Stipend Research Fellow	1
Post Graduate Pharmacy Practice Resident	1	Teaching Post-doc	1
Postdoctoral Researcher	4	University Postdoc Fellow	1
Post-doctoral Associate	5	Vice President	1
Postdoctoral Clinical Fellow	1	Visiting Assistant Professor	1
Postdoctoral Fellow	11	Visiting Fellow	1
Postdoctoral Research Assistant	1	Visiting Scholar	1
Postdoctoral Research Associate	4	Visiting Scientist and Scholar	1
Postdoctoral Research Scholar	1	Working Research Fellow	1
Postdoctoral Research Scientist	1		