



2006 Survey of Graduate Students and Postdoctorates in Science and Engineering

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Resources Statistics

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Postdoc Response Behavior Survey Pilot

Topline Report



Overview

- Background
- Methods Results
- RBS Implementation
- Key Analyses



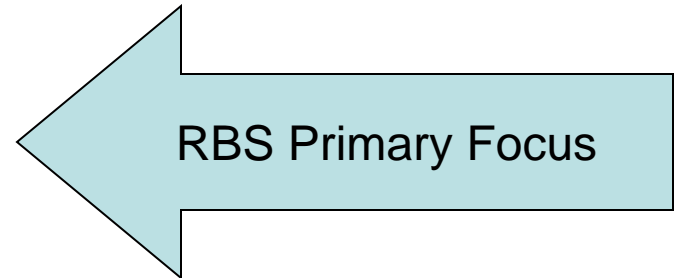
Background

- Purpose of RBS
 - *KNOWLEDGE DOMAIN:*
 - Assess the efficiency and effectiveness of the current approach to postdoc data collection at U.S. academic institutions within the GSS
 - *ACTIONS DOMAIN:*
 - Help understand respondent behavior when providing postdoc-related data within the scope of the GSS
 - *FUTURE DOMAIN:*
 - Inform the development of the Postdoc Data Project Design Options Report
 - Inform Postdoc Data Project phase 2



Error Sources Used to Guide RBS

- We took a total survey error approach, maintaining awareness for all potential error sources, including:
 - Errors of Nonobservation
 - Sampling
 - Coverage
 - Nonresponse
 - Observational Errors
 - Respondent
 - Instrument
 - Mode





RBS Sample

- Sampling
 - Frame
 - GSS department contact person list
 - Things considered
 - Consistency with GSS design
 - Large enough to identify trends and comparison cells in specific response characteristics (quantitative baseline study)
 - Small enough to minimize burden on respondents in an ongoing study
 - Some GSS departments do not have postdocs
 - Given the respondent-department link, we needed to consider the fact that some respondents had multiple departments



Early GSS Responder List

by June 19th

Department Status	N	%
Dropped	396	3.1
Awaiting Response	464	3.6
Awaiting Processing	28	0.2
Awaiting Correction	222	1.7
Awaiting Verification	369	2.9
Awaiting Imputation	1,172	9.1
Clean	10,171	79.3
Total	12,822	100.0



RBS Sample Allocation – Early GSS Responders

Strata	N	Selection	Sampling Rate
One Department Postdocs Only	423	423	100%
One Department Graduate Students Only	1,900	510	26.8%
One Department Both	1,336	500	37.4%
Multiple Departments	567	567	100%
Total	4,226	2,000	



Late GSS Responder List

by August 22nd

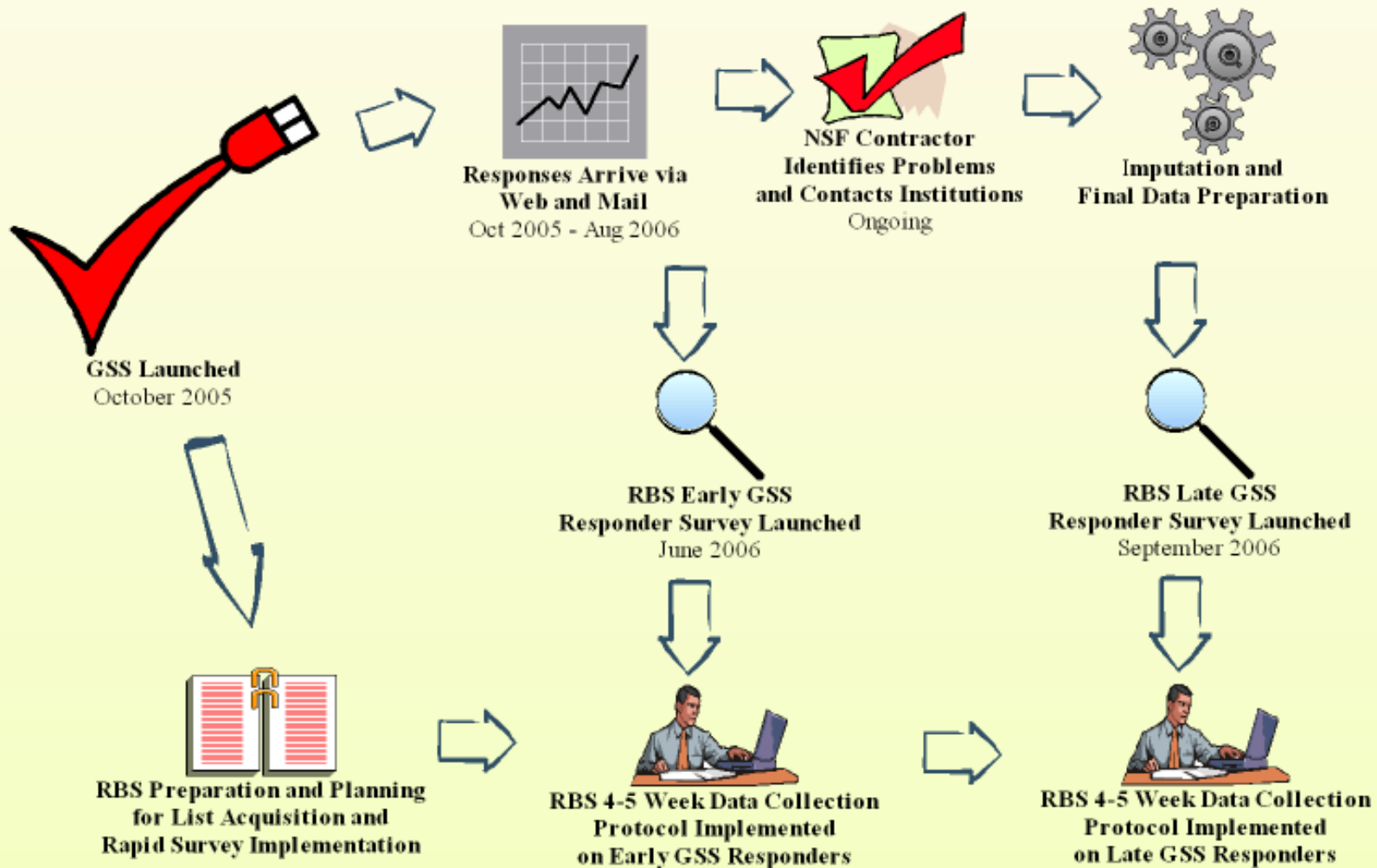
Department Status	N	%
Dropped	391	3.0
Awaiting Response	248	1.9
Awaiting Correction	15	0.1
Awaiting Verification	20	0.2
Awaiting Imputation	1,435	11.2
Clean	10,725	83.6
Total	12,834	100.0



RBS Sample Allocation – Late GSS Responders

Strata	N	Selection	Sampling Rate
One Department Postdocs Only	40	40	100%
One Department Graduate Students Only	575	205	35.7%
One Department Both	177	177	100%
Multiple Departments	78	78	100%
Total	870	500	100%

GSS / Response Behavior Survey Flow





RBS Rapid Deployment

- Preparation Required Prior to File Receipt
 - Sample Design and Sampling Procedures
 - Preparation for Sample Contact Info Lookup
 - File Processing Setup
- Once File is Received
 - Sample Contact Info Lookup Process
 - Processing mailing and email files
 - Load sample into data collection instrument
 - Conduct mailing
 - Complete data collection protocol
- Post Data Collection
 - Nonresponse Adjustment Weighting
 - Preparation and Development of Final Analytic Datafile
 - Creation of Data Tables
 - Final Analysis and Reporting



Sample Contact Info Lookup

- GSS maintains
 - Full contact info for institutional contacts
 - Only emails for departmental contacts
- RBS needed more information, thus we conducted Web searches
 - This was found to be cost effective (\$900 with a 1% increase in RR for each \$50 spent) in the pretest
- Protocol
 - If address info was included in list, no action taken
 - If no address info was included in list...
 - Web search was used to identify individual list...
 - If not individual list, then search continued for departmental address...
 - If no departmental address, then the Institutional Contact address was used.

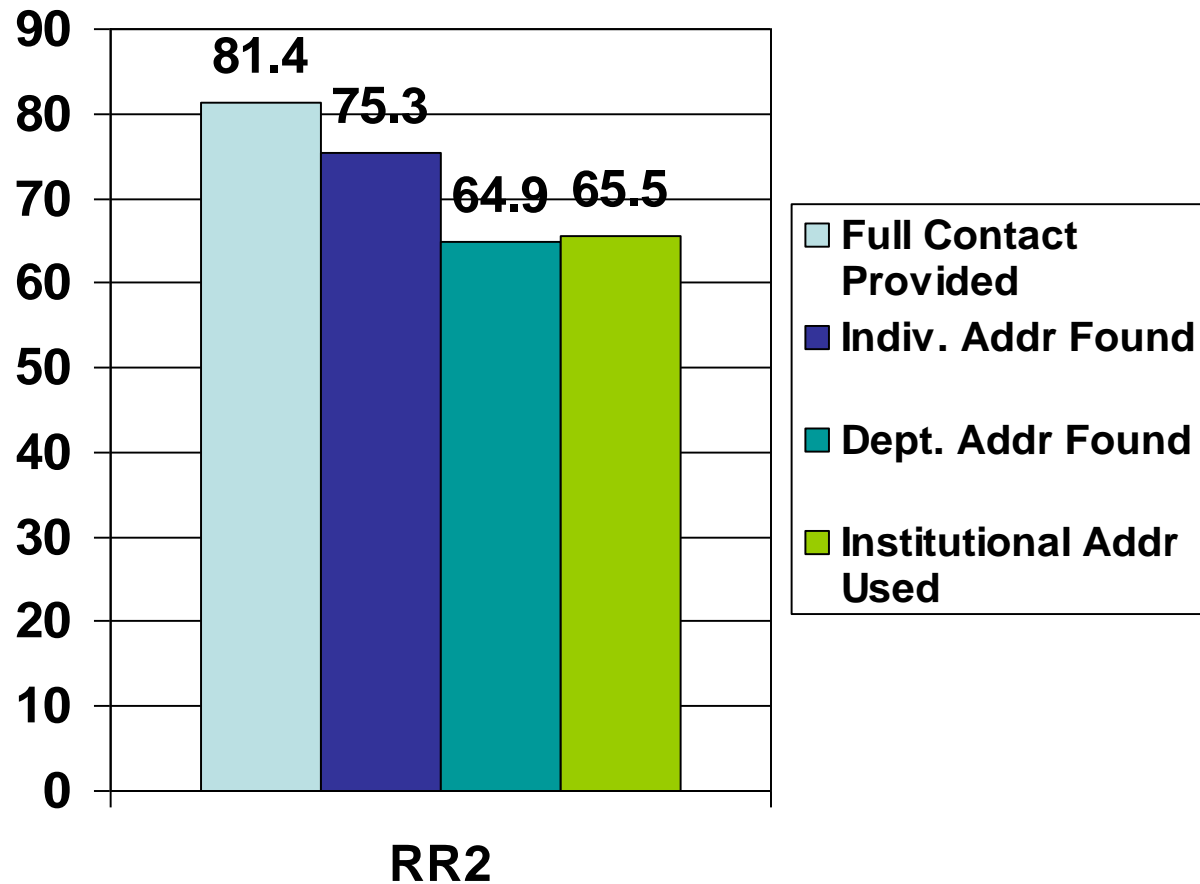


Sample Contact Info Lookup Results

- Of the n=2,496 total sampled respondents
 - 280 (11.2%) had full contact information
 - 1107 (44.4%) had individual contact information found via Web search
 - 553 (22.2%) had departmental contact information found via Web search
 - 556 (22.3%) were not located, Institutional address was used



Response Rates by Sample Contact Type





RBS Contact Strategy

- Data and mode of each contact effort for the early and late sample

	Contact Mode	Days After Prev. Contact
1 st Contact	Heads up email from NSF	NA
2 nd Contact	Invitation letter mailed	14 days
3 rd Contact	Invitation email sent	7 days
4 th Contact	1 st email reminder sent	6 days
5 th Contact	Letter reminder mailed	3 days
6 th Contact	2 nd email reminder sent	5-7 days
7 th Contact	3 rd email reminder sent	4 days
8 th Contact	Telephone calls	All conducted in late Sept. and early Oct.



The “It’s Not Me” Phenomenon

- Respondents contacted us in several ways to tell us that they were NOT involved in the 2005 GSS. These were treated as “respondents” as one purpose of the study was to identify the quality of the current list.
 - Telephone/Email Reports
(15 cases/0.6%)
 - Survey Reports – QA3=“No”
(105 cases/5.9%)



Response & Completion Rates

- Response Rates
 - Calculated with AAPOR RR2
 - Completes and partials are considered “responses”
 - Only known ineligible are removed from the denominator
- Completion Rates
 - Total number of complete responses over the total number of responses started (by logging in)

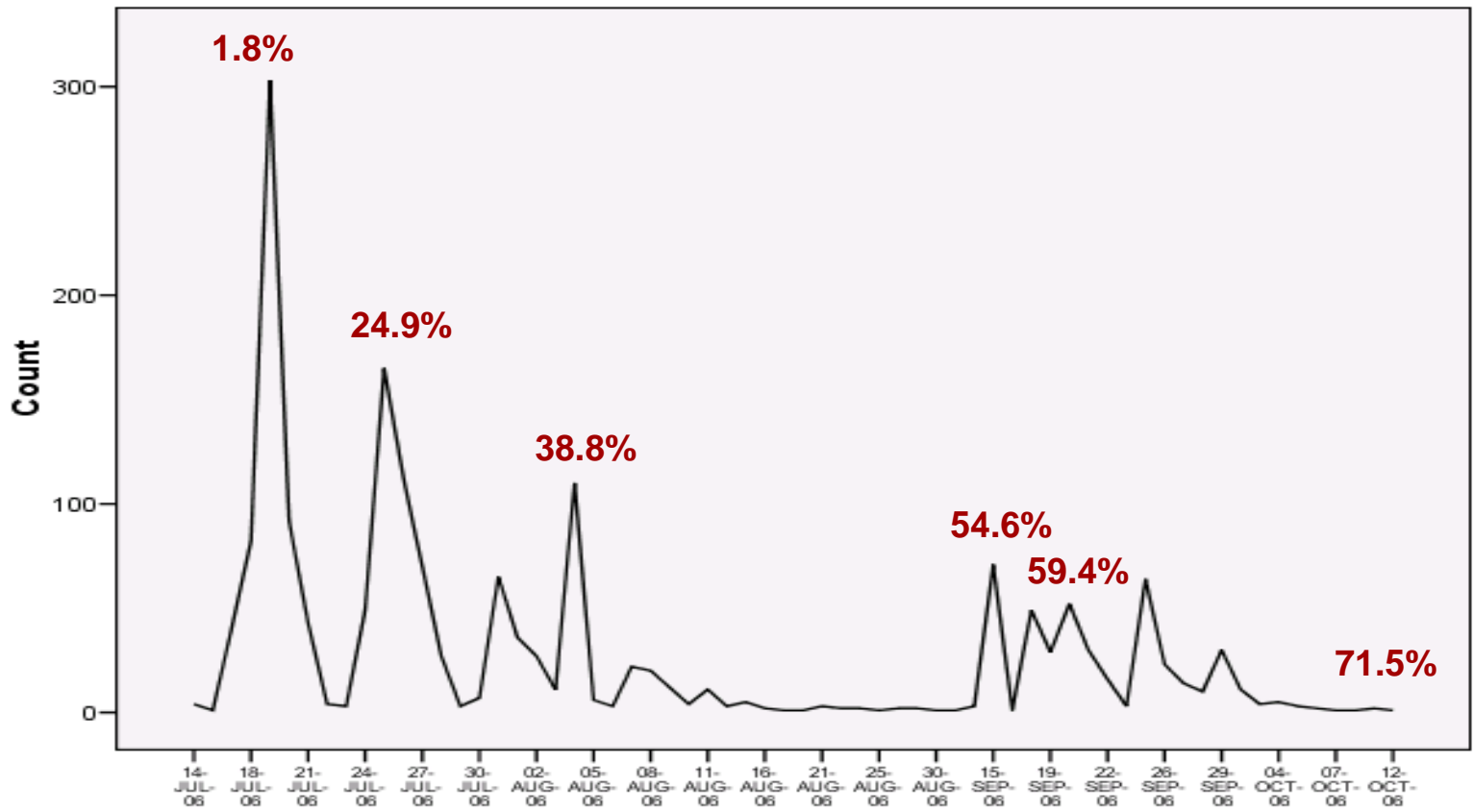


RBS Response & Completion Rates

	Contact Mode	Cumulative Response Rate (RR2)	Completion Rates
1st Contact	Heads up email from NSF	0.0%	NA
2nd Contact	Invitation letter	1.8%	NA
3rd Contact	Invitation email	24.9%	NA
4th Contact	1 st email reminder	38.8%	NA
5th Contact	Letter reminder	45.9%	NA
6th Contact	2 nd email reminder	54.6%	NA
7th Contact	3 rd email reminder	59.4%	NA
8th Contact	Telephone calls	71.5%	NA
OVERALL		71.5%	84.5%
EARLY SAMPLE		74.7%	85.3%
LATE SAMPLE		61.6%	80.7%



Response Counts by Day of Response for Full Sample





%% Break-off Analysis

- Review partials by data table banner columns
- `resp_fnl_wgt_trim_rscl` is the respondent level weight, and `dept_fnl_wgt_trim_rscl` is the department level weight



Item Missing Data

- Item missing data
 - Exploratory analysis found that the item missing data rates were negligible and would not have any effect on this analysis
 - Break-off (documented in the completion rate discussion) accounted for most all item missing data



%%% WHO DID WE TALK TO???
(DESCRIBE RESPONDENTS)



Key Questions Analysis Overview

- Self-Assess Data Quality
- Institutions and Respondents – Descriptive
- The GSS Instrument
- Response Behavior

- Summary of Findings
- Summary of Recommendations



Self-Assess Data Quality : Key Analytic Question 1

- Is a respondent's (meaning the individual responding for the department) assessment of their own ability to provide quality data supported by other measures of quality in the postdoc data?



What is at Stake in Key Analytic Question 1?

- Why ask this question?
 - This question is foundational to the rest of the analyses we perform. Finding that data quality self-assessments are consistent to serve as a proxy for data quality, in the absence of a validation study.
- Methodological knowledge
 - Since we know that self-reported data are subject to error, we need to carefully explore such measures before using the self-assessed measures as a valid metric for postdoc data quality.



Measures Overview

- Self-assessed data quality was measured by GSS respondents on a scale from 1 (excellent) to 5 (poor).
- Actual data quality was measured by data completeness and imputation rates



Analysis of KAQ1

- Our first analysis examined whether the self-assessed postdoc data quality were supported by the actual data quality as measured by imputation rates. Since imputation rates were so low in our sample, this was not very informative. We reviewed both 2004 and 2005 GSS data to evaluate this measure and found no differences.
- Validation Study is RECOMMENDED



Findings for KAQ 1

- The self-assessed postdoc quality appears consistent with other quality measures.
- Therefore, we believe we can use the self-assessed data quality measures as the key measure of the postdoc data quality for subsequent analyses. The consistency of our later findings help demonstrate to us that we are indeed measuring data quality.



Institutions & Respondents: KAQ 2-4

- What characteristics of departments are correlated with *perceived* high- or low-quality data on postdocs?
- Does the organizational culture around postdocs (policies, enforcement of rules, existence of special offices/people, etc.) have an impact on *perceived* data quality?
- What are the characteristics of respondent (individual recording responses for the department/institution) that are correlated with *perceived* high- or low-quality data on postdocs?



Background

- Why ask these questions?
 - Understanding which institutional and respondent factors correlate with higher data quality will enable us to better adapt our methodology to cope with problem cases, increasing overall perceived data quality.

Methods

- Exploratory and regression analyses were performed in which we examined:
 - Self-assessed data quality
 - Department characteristics, such as size of the university, location, etc.
 - Organizational culture, measured by questions like whether the institution has a postdoc policy
 - Respondent characteristics, such as how long a respondent has worked in the department



Institutions & Respondents: Findings

- If there is a person who always responds to requests for student data, self-assessed data quality of (1) the total postdoc counts and (2) financial support information is significantly better
- There is no significant difference in perceived data quality between whether the respondent is usually selected by position, or on an individual basis



Institutions & Respondents: Findings, Continued

- The perceived postdoc data quality is significantly better when the institution has a postdoc *office*, but we saw no association between perceived data quality and whether an institution has a formal, institution-level postdoc *policy*.
- Whether an institution is private or public, an AAU (Association of American Universities) or non-AAU member, medical or non-medical, how large it is, its geographic region, and level of urbanization have no correlation with perception data quality (with a few exceptions, such as postdoc financial support in mid-sized cities)



Institutions & Respondents: Findings, Continued

- Self-assessed data quality is much lower for departments in which (1) GSS respondents do not know whether the department has an official postdoc definition, (2) for departments that do not have a postdoc listserv or email group
- There is no relationship between perceived data quality and (1) how the primary data source is maintained, or (2) how the primary data source is stored.



Institutions & Respondents: Findings, Continued

- The format of the primary data source (being aggregate or individual) does not appear to have an influence on the perception of data quality.
- Self-assessed data quality is generally higher when the *primary data source itself* is (1) easily accessible by respondents, (2) considered accurate by the respondent, or (3) updated in a timely manner.
- Respondents being familiar with how the data is entered in the primary data source is also correlated with higher data quality.
- Respondents who consider their data source as “complex” are more likely to assess their data quality as lower than those who consider it “not at all complex”.



Institutions & Respondents: Findings, Continued

- There is no difference between self-assessed data quality and (1) whether the respondent is one of the people always responsible for responding to student data requests or the GSS; (2) whether respondents have been involved in providing data for IPEDS, other NSF surveys, or surveys similar to the GSS; or (3) respondent education level, or position.
- Being at the institution itself does not help, but being within the department is what matters and improves the perception of data quality.



%%%Recommendations



The GSS: KAQ 5-7

- Do the instructions provided about postdoc data have an impact on the perception of data quality?
- How do differences in definitions of postdocs (between NSF and institutions) impact data quality?
- Does the GSS do a better job of collecting specific types of data than other types of data? (i.e. graduate student over postdocs)



Background

- Why ask these questions?
 - Understanding how (1) the instructions of the GSS and (2) postdoc definitions influence the quality of the data, and knowing which types of data are more difficult to collect effectively, will help us evaluate potential modifications to these protocols as a means of increasing data quality.



Methods

- Regression analyses and T-tests were performed in which our variables were
 - Self-assessed postdoc data quality for various postdoc-related questions
 - Whether respondents had read various aspects of the postdoc definition
 - Questions regarding criteria included in the department's definition of a postdoc
 - Self-assessed graduate student data quality



The GSS: Findings

- Among respondents who used aspects of the GSS definition, the ranking of the components used is as follows:

1. The appointee holds a PhD or equivalent doctorate	74.9%
2. The appointee works under the supervision of a senior scholar in a department or research unit affiliated with the university	62.3%
3. The appointment is primarily for the purpose of training in research or scholarship	57.2%
4. The appointment is for a limited term, the limit generally being 5-7 years.	46.1%
5. The doctorate was awarded recently, generally within the last 5 years.	44.0%



The GSS: Findings Continued

- Only about 1/3 of the GSS respondents reported the postdoc data for the 2005 GSS based on all of the criteria provided in the instructions
 - The perceived data quality for those who did was reported as much higher than for those who did not.
- More than 1/2 of GSS respondents indicated that they had read the instructions for the criteria of what constitute a postdoc
 - Their perceived data quality was much higher than for those who had not read the criteria.
 - However, the instructions provided in the GSS were considered helpful in improving their perception of data quality.



The GSS: Findings Continued

- *Less than half* of departments' postdoc definitions are consistent with the GSS' definition.
- However, there is no significant difference in self-assessed data quality between departments whose definition is consistent with the GSS and those whose is not.
- While departments/institutions have different definitions of postdocs, if the respondent read the GSS definition, they were able to provide good quality data. Quality problems only seem to come up when the definition was not used.



The GSS: Findings Continued

- The self-assessed data quality of the postdoc data provided in the 2005 GSS is significantly lower than the self-assessed quality of the graduate student data.
- A comparison of data quality rankings between graduate students and postdocs:
 - Graduate student data:
 - Total count > Foreign count > Demographics > Financial Support
 - Postdoc data:
 - Foreign count > Total count > Demographics > Financial Support



%%%The GSS: Recommendations



Responses: KAQ 8-10

- Does time of response (early, middle or late) correlate with perceived postdoc data quality?
- What kind of response strategy does the respondent prefer or recommend? (i.e. web verses paper)
- What specific recommendations does the respondent have about improving data quality?



Background

- Why ask these questions?
 - By understanding how data quality varies over time, and taking into consideration the preferences of respondents, we will be able to better tailor data-collection to improve data quality.
 - The GSS data collection currently takes nearly 1 year to complete, with only half of responses coming in prior to the desired cut off. What does the extra effort give us?

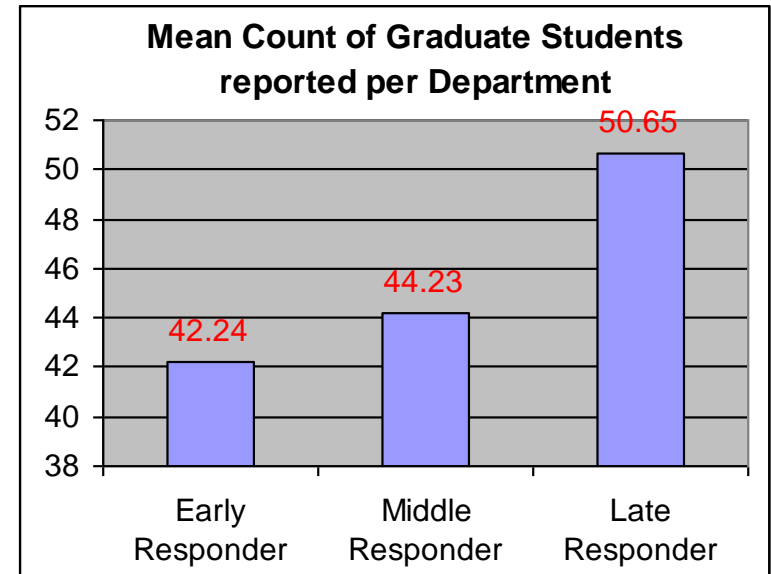
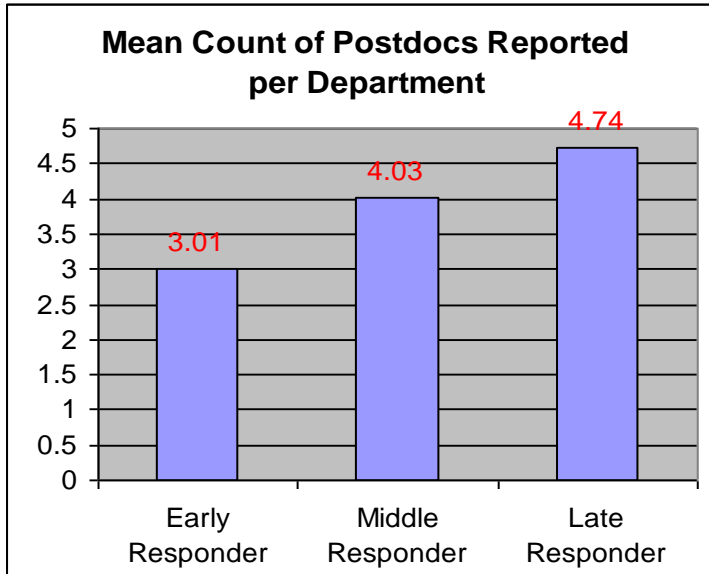


Methods

- Regression analyses were performed in which our variables were:
 - Time of response, grouped into
 - Early responders (before the deadline of Jan 31)
 - Middle responders (after Jan 31, before Mar 31)
 - Late responders (after Mar 31)
 - RBS questions asking respondents' preferences over items like whether they prefer web or paper surveys, whether they would prefer 2 separate data collections, etc.
 - Respondent feedback on various items.



%% %Methods



- The mean count of postdocs reported for each department increases from the early responders to the middle responders, and then to the late responders. The differences are significant between the three.
- The mean count of graduate students reported for each department has the similar trend to the mean postdoc count, except that the reporting by the late responders is significantly higher than the early and middle responders, but the difference between the early and middle responders is not significant.



Responses: Findings

- Middle responders provided lower perceived quality postdoc data than early responders for several variables.
- Interestingly enough, there is no difference between self-assessed data quality between early responders and late responders.



Responses: Findings Continued

- Most GSS respondents used the web survey as their primary mode of providing data. The paper survey was used more as a worksheet to collect responses prior to submission. The majority of respondents reported a preference for the web form.
- When respondents were contacted by email, they were more likely to have used web surveys, and when contacted by mail, they were more likely to use paper surveys.

Responses: Findings Continued

- Top ranking responses for improving response time and data quality are
 - Regarding GSS submission
 - Earlier distribution of the GSS
 - Extending the deadline
 - Providing more time
 - Improving data contacts (frequency and the right person)
 - Regarding their own institutions
 - Improving their databases
 - Improving support, reducing workload, expanding personnel
 - Regarding the format of the GSS
 - Make the format more user-friendly, simplify the form
 - Clarify wording and definitions
 - Designate a contact person for support



%%%Responses: Recommendations



Summary of Recommendations



Additional Resources

- Plans
 - Study Plan
 - Sample Plan
 - Analysis Plan (Full and Executive Summary)
- Questionnaire
- Data
 - Marginals
 - Data Books
 - Background to Key Analyses



Questions?