

## Let Me Tell You What You Told Me: Dependent Interviewing in Establishment Surveys

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### Abstract

In panel surveys, respondents are asked to report the same information several times. Often, respondents are instructed to provide the same information for a different reference period or to update their previous answers. In these cases, survey designers are faced with the choice of whether or not to provide respondents with their previously reported data (PRD). On one hand, PRD may reduce respondent burden and improve data quality by giving respondents an anchor on which to base their current reports. Rather than starting from scratch, respondents can start with their prior reports and determine what changes or adjustments need to be made. On the other hand, PRD may lead to respondent satisficing and lower quality data, by giving respondents the opportunity to simply confirm their previous answers. This is a particular problem as panel surveys are trying to measure change from one wave to another. Previous research on household survey respondents suggests that the impact of PRD can have differential effects, depending on the stability, saliency and complexity of the question topics. It can be difficult to generalize results from household surveys to establishment surveys. Currently there is not much known about the impact of PRD in establishment surveys. This study seeks to understand, through cognitive interviews and behavior coding, how establishment respondents incorporate PRD when formulating their survey responses. We explore how respondents react to their PRD, and how, if at all, they use it when arriving at their answer to the current survey.

**Key Words:** Dependent interviewing, previously reported data, establishment surveys, behavior coding, cognitive interviewing

### 1. Background

In panel surveys, respondents are often asked to report the same information at different data collection points. While useful for assessing change or consistency over time, this data collection strategy can present numerous challenges to survey practitioners and place additional burden on respondents. Asking respondents to report the same information over time may lead to false rates of change due to recall errors, variation in question interpretation, variation in open ended responses, and coding errors (Mathiowetz and McGonagle 2000). Correspondingly, panel surveys are prone to “seam effects,” in which reports of change in events or statuses tend to be larger at the “seam” between data collection periods than within a single data collection (Rips, Conrad and Fricker 2003). For constructs that require detailed reporting and are not likely to change over the course of the study, asking respondents to report this information at regular intervals can place unnecessary burden on respondents (Hoogendoorn 2004).

Dependent interviewing (DI) is one solution to measurement error and burden associated with panel studies. In dependent interviewing, respondents’ previously reported data (PRD) is used to aid their response process when reporting on the same information across data collection waves. There are two types of DI: proactive and reactive.

In proactive DI, respondents are provided with PRD during the question administration. PRD can aid comprehension by providing insight into how they interpreted the question in the past and it can serve as an anchoring and adjustment strategy (Tversky and Kahneman 1973). Proactive DI changes the cognitive processes respondents engage in when answering the survey question by asking respondents to engage in recognition and reconciliation of information rather than recalling it (Mathiowetz and McGonagle 2000) thus reducing cognitive demand.

Proactive DI can be implemented in a few ways (Jackle 2009), with the *remind, still* being the most commonly used. This strategy asks respondents if anything has changed since the last data collection period (e.g., The last time we interviewed you on January 21, 2013, you only had field workers, is that still true?). If no change in status is reported, respondents are not asked the independent survey question, which can be more burdensome than the dependent interviewing question (e.g., Describe the work these \_\_\_ workers were hired to do) (Jackle 2008). If no change occurs, respondents can also be routed around redundant questions that ask for additional information about the reported status (Jackle 2009).

In reactive DI, respondents are provided with PRD during edit checks as a way to address item nonresponse or as a corrective follow up when values have changed (Jackle 2009). As a strategy for reducing item nonresponse, respondents who answer 'don't know' are reminded of their previously reported status and asked if that status has changed. When reactive DI is used in the form of corrective follow ups, respondents, who report a status or value different from a previously reported status, are provided their PRD and probed to see if their current status is valid. Survey designers may program the instruments so that PRD is provided when a change in status is of a specific magnitude or has other characteristics.

The arguments for the use of PRD is decreased respondent and interviewer burden, improved interviewer-respondent interactions, and most importantly, improved data quality (Mathiowetz and McGonagle 2000). Although past research suggests that PRD can live up to these promises, most of it has been conducted on household surveys, and it can be difficult to generalize these results to establishment surveys. In the following section we will discuss the benefits and risks of PRD discussed in the household survey literature. We will then discuss the limited research on the use of PRD in establishment surveys.

### **1.1 DI in Household Surveys**

Research that examines the effect of DI on respondent and interviewer burden is limited and the results are mixed. Although some researchers find support for reduction of burden (Jackle 2008; Sala and Lynn 2009), others do not (Hoogendoorn 2004). One reason for these inconclusive findings is that the effects of proactive DI on respondent burden can vary by the nature of the survey questions and the type of DI used (Jackle 2008).

In her research on the use of DI for measuring labor force questions, Jackle (2008) found that DI strategies such as proactive *remind, still* questions that route respondents around redundant questions by taking advantage of information and explanations provided earlier can decrease respondent burden. However, these reductions were dependent on the nature of the characteristic being measured and the length of the reference period. Other DI strategies, such as reactive DI, add more questions to the survey and therefore increase burden (Jackle 2008; Mathiowetz and McGonagle 2000). However, Jackle (2008) argues

that respondent burden that results from RDI can be limited if these questions are only used on subsets of the sample (e.g., follow up to inconsistent responses using a specific threshold).

Sala and Lynn (2009) found that DI had only a minor effect on reducing interviewer burden. While most interviewers viewed DI positively, the reduction was indirect as it was mediated through respondents and the effect was dependent on the type of DI questions asked and respondent circumstances. Factors that affected the degree to which DI reduced interviewer burden were data quality issues, poorly worded DI questions, and respondents' confidentiality concerns. Sala and Lynn argue that if these factors could be addressed, DI may have a greater impact on the reduction of interviewer burden.

When proactive DI can be used to reduce the amount of redundant questions, rapport between the interviewer and respondent may also be improved through creation of a shared context (e.g. the interviewer acknowledging the respondent's past answers). In contrast, reactive DI can interrupt the flow of data collection, and may have a negative impact on the rapport between interviewers and respondents (e.g. the interviewer questioning the accuracy of a respondent's answer). Therefore, Mathiowetz and McGonagle (2000) argue that survey practitioners must be judicial in how often they use reactive DI and how they word reactive DI probes.

In terms of data quality, both proactive and reactive DI have been effective in reducing response error by reducing misclassification and spurious changes in status (Sala and Lynn 2004; Jackle 2009; Moore et al. 2006). Since panel surveys focus on change over time, it's crucial that respondents define key concepts the same way every time, particularly with ambiguous constructs. By providing respondents with their PRD, it can help remind them of how they interpreted the constructs in the past.

Previous research on population surveys does find that DI has a positive effect on data quality, however, the effect is dependent on the stability, saliency and complexity of the question topics (Sala and Lynn 2004; Jackle 2008; Jackle 2009). For example, Jackle (2009) found the effect of DI on measurement error depends on the stability of the characteristic, which she argues is affected by the length of the reference period and the nature of the characteristic itself (Jackle 2008). Similarly, Sala and Lynn (2004) also found that although proactive DI was effective in reducing spurious changes in status, it was particularly useful in reducing measurement error among complex characteristics. Sala and Lynn (2004) argue that this is due to the fact that complex characteristics can be difficult for respondents to describe, leading to inconsistent reporting across data collection points.

Although proactive DI may improve data quality by reducing respondent burden, the use of PRD may introduce other types of response error. For example, when presented with PRD, respondents may be more likely to acquiesce and satisfice (Krosnick 1991), which may suppress true changes in status. Additionally, respondents may also perpetuate response errors forward, when using previous interpretations of the question again rather than working to understand the question with a fresh perspective. However, researchers have not found this to be much of a problem (see Jackle 2009). In fact, Hoogendorn (2004) found that satisficing with proactive DI can be decreased by not rewarding those who report no change in status.

How interviewers administer PRD can have implications for data quality as well. Pascale and McGee (2008) found interviewers did not always administer PRD questions in a standardized way and often changed the meaning of the question in the way in which

they administered the questions. Similarly, Uhrig and Sala (2011) found that when change in status is reported as a result of proactive DI, respondent elaborations and other resulting discussion leads to less standardization in question administration and subsequent interviewer errors in question administration that can lead to poor data quality in the questions that follow proactive DI.

However, interviewer divergence may be due to the poor wording of DI questions. For example, Sala and Lynn (2009) found that PRD did not always flow linguistically and made it difficult for interviewers to administer the questions as worded. They recommend careful editing of the DI questions prior to their use. However, Pascale and McGee (2008) caution against changing the wording of PRD when designing DI questions. They argue for using respondents own words when administering PRD, since they found some respondents to refute PRD when it was presented to them using words different from their own (e.g., asking a respondent if he still has dementia vs if he still has memory impairment).

Finally, survey designers must also consider respondents' reactions to PRD and what confidentiality concerns may be raised. The use of PRD highlights the fact that the interviewer has access to their data, and that it is being used. Although Sala and Lynn (2009) noted confidentiality concerns as one potential risk of the use of PRD, Pascale and Mayer (2004) found in their research that respondents had no confidentiality concerns surrounding its use.

## **1.2 Use of PRD in Establishment Surveys**

Although the results of PRD use in household surveys is promising, it can be difficult to generalize results from household surveys to establishment surveys. Instead of answering questions about themselves, respondents in establishment surveys are answering questions about the establishment. The type and format of information establishment surveys solicit is also very different from household surveys. Because of this, the question response is slightly different for household and establishment respondents (Willimack and Nichols 2001). In addition to the four core cognitive steps (i.e., comprehension, retrieval, judgment, and response mapping) that household survey respondents must pass through in order to answer a survey question (Tourangeau, Rips and Rasinki 2000), establishment survey respondents also have to contend with whether the information requested is stored in a record, whether they are personally able to retrieve the requested information, and whether the data requested is approved to be released (Willimack and Nichols 2001).

Because the question response process for establishment surveys is more complex, the effects of PRD are likely to differ from household surveys. As found with household surveys, there are characteristics of the respondent (and establishment) and the nature of the data being requested may impact the effectiveness of the PRD. For example, the size of the establishment may affect the utility of PRD. Respondents from smaller establishments are less likely to keep extensive records and therefore data may reside in their memory. Because of this, their response process is probably similar to household survey respondents. For these types of establishments, it's likely that PRD will only be effective when the question is difficult to comprehend or information is difficult to recall. For large establishments, it is likely respondents will have to refer to records to answer most questions. In these cases, PRD may not have any impact as respondents will report what they see in their records. One study, found that large establishments were more influenced by PRD than small establishments (Pafford 1988). It's possible that this finding was the result of large operations satisficing; with respondents using the PRD to

structure their response, rather than taking the necessary steps to access their records. However, this explanation was not examined in the study.

In other studies however, satisficing has been found to be a significant problem when using PRD in establishment surveys (Stanley and Safir 1997; Bailey 1994; Pafford 1986; 1988). Satisficing was an issue when using both proactive and reactive DI in a study on cattle inventories conducted by Stanley and Safir (1997). In this study they found that when inventories from the previous and current quarters did not match, respondents were more likely to want to revise their PRD rather than take the additional cognitive steps to reconcile their current inventories. The authors concluded that the use of PRD made it tempting for respondents to satisfice. Stanley and Safir argue that saying the current report is more accurate is not only cognitively easier than recalculating a response (respondents had to subtract and add to report the current figure), it also makes the respondent appear to be reporting accurately in the moment (and thus being a good respondent).

The research on PRD in establishment surveys has not examined extensively how the effect of PRD on data quality varies by item characteristics. Stanley and Safir (1997) predicted that items that are not typically stable might be less prone to satisficing; but they did not find evidence to support this. Similar to Jackle (2008; 2009), Bailey (1994) found that PRD was most effective in improving data quality when characteristics were stable, and when questions ask for values that are known rather than estimates or predictions (i.e. agricultural yields). Another study by Homberg (2004) also found PRD to be effective in measuring both categorical and continuous variables.

As with household surveys, PRD can be useful in helping establishment respondents comprehend the survey question. When concepts are ambiguous or complex in nature, PRD should be effective in helping respondents recall how they comprehended the question in the past and assist them in formulating their current response (e.g. include/exclude owners). For concepts that are more discrete, PRD may not be effective in improving data quality.

Returning to the issue of edited/unedited data discussed above, it is critical to retain respondents' verbatim response to previous survey questions; however, not all programs do. Many responses, e.g. job title, are coded to align with an operational definition, with the coded value being the only one stored. Providing a coded responses as PRD may cause the respondent to worry about the quality of the data collection process (e.g. did they mess up my data last time?), representativeness (e.g. I said \$14/hr, they're saying \$12-16/hr, they're not representing me right in their data) or have general sensitivity issues (e.g. I am an office manager, not a secretary!). If the original verbatim responses are not retained, using PRD may not be possible.

Establishment surveys have confidentiality issues, but they differ from those facing the use of PRD in household surveys. For example, when surveying establishments, we may not reach the same respondent every time. Interpretation issues may arise if a new respondent can't figure out how the last respondent answered the question (Pafford 1988). Because different individuals may respond to the survey across data collection points, confidentiality issues may also be a concern. There is also a risk of releasing sensitive data to individuals within the establishment who are not permitted to view it. For example, it may be okay for a CEO to receive PRD but not a lower level employee. Careful case management is also essential to ensure one company is not presented with another's data.

Despite these potential issues, several studies found support for use of reactive DI in improving response quality (Bailey 1993; Mergerson and O'Connor 1992). Similar to the research on household surveys, Bailey cautions that the use of reactive DI increases respondent burden due to the routing through additional questions. However, that burden may be off-set by no longer having to call respondents back for quality assurance.

Overall the research on PRD use in establishment surveys has been limited and mixed. This study seeks to address this gap in the literature and answer the following research questions:

### Research Questions

1. How do establishment respondents integrate previously reported data into the question response process?
2. Do establishment respondents use previously reported data differently when it's presented proactively vs. reactively?

## **2. Methods**

### **2.1 Occupational Employment Survey Cognitive Interviews**

The Occupational Employment Survey (OES) is an establishment survey conducted by the U.S. Bureau of Labor Statistics that collects information about employment, occupation and wages. The OES currently is a one-time survey, with establishments reporting their information using either a paper form, website or on the telephone with an interviewer. Since self-administration is the preferred mode of collection due to cost, telephone interviews are generally used only to contact non-respondents at the end of the data collection period. In general, interviewers use telephone contacts with medium and large companies to prompt them to submit their data, as collecting their data over the phone would be too burdensome. Since data collection is straightforward for smaller firms, interviewers generally aim to collect data directly over the phone upon contact to ensure a response.

In the future, OES is considering a panel design. In this design, telephone interviewers would have access to the data reported in the prior wave when making telephone calls, and could use it to improve the quality of the data and/or reduce respondent burden.

Seventeen cognitive interviews were conducted on the OES. The interviews were conducted over the phone, with procedures designed to mirror production OES data collection to the extent possible. Past OES respondents were contacted and asked to complete an interview. Respondents were randomly assigned to either a proactive (n=8) or reactive condition (n=9), with the number of employees they reported to OES used as PRD.

The OES requires a matrix to be completed, with information about the number of employees in each combination of wage range and job title (e.g. four plumbers making \$10 - \$15 per hour, five plumbers making \$15 – 20 per hour). Interviewers are skilled at getting this information from respondents through a discussion about the company, using the categories as a prompt to begin a discussion and then following the respondent's lead to collect the required information. In order to incorporate PRD however, a more structured interview is required, to ensure that the PRD is systematically presented to respondents before they report their data. As noted above, PRD adds length to the interview. To minimize the length of the interview, and allow time for a debriefing, in this preliminary study, only the number of employees was used as PRD. This allowed for

the PRD to be introduced at the beginning of the interview, and for job titles and wages to be collected in a manner more similar to production. Additional research is being conducted to explore the use of PRD for the other OES data elements.

After the OES elements were collected, several debriefing questions were asked. Questions about the response process, reaction to the PRD and feedback to the survey were asked using a semi-structured approach. Interviews generally lasted less than 15 minutes, regardless of condition. Results are based on a qualitative analysis of the interview and debriefing data.

### 2.1.1 Participants

OES respondents from the most recent quarter were included in the study, generally providing data 12 to 14 months earlier. Only small establishments, those with fewer than 20 employees, were recruited for the study (Table 1). Almost all respondents had provided the data themselves, with only two exceptions.

**Table 1.** OES Cognitive Interview Respondents

Total Employment	Proactive (n=9)	Reactive (n=8)
Average	7.1	6.6
Minimum	1	1
Maximum	20	11

## 2.2 Ag Labor Behavior Coding

The Ag Labor Survey collects information on the types and numbers of farm workers and the hours and wages paid. It is conducted twice a year and during each data collection period respondents are asked to report on their hired workers for the current and previous quarter.

The use of PRD in the Ag Labor Survey differed significantly from the use of PRD in the OES. In Ag Labor, interviewers used PRD reported during the interview. There were generally three different ways PRD was acquired and used. First, when interviewers read the survey introduction the respondents may have told interviewers they had no workers. The interviewers may have used that information as PRD when administering the hired labor questions. Second, respondents may have provided enough information to answer several of the hired labor questions when answering the screener question or a question that appears earlier in the hired labor section (e.g., “yes, I have 10 full-time field workers”). Interviewer then may have used this information as PRD when administering the hired labor questions on number of workers, type of workers and hours worked). Third, interviewers may have used respondents’ answers to the hired labor questions for the first quarter when administering the survey questions on hired labor for the second quarter.

The use of PRD was not scripted and not administered in a standardized way. Some interviewers asked the survey question as worded without PRD, others made a major change to the survey question and then provided the respondent with their PRD. Still other interviewers provided the respondents with PRD as a form of verification and did

not ask any form of the survey question. Because interviewers were using data from the current interview, the time between when the PRD was first reported and when it was used to prompt response was also significantly shorter than it was in the OES interviews (minutes versus a year).

Behavior coding was conducted on the October 2013 Agricultural Labor Survey (Ag Labor). Recordings were captured for 759 CATI contacts and 139 of those recordings contained the questions of interest and had quality audio. Coding was done at the question level not the interview level. Six questions in the hired labor sections for the two quarters were behavior coded (see Table 2). In total, we coded 2,689 observations across the 139 interviews.

**Table 2.** Hired Labor Questions

Screeners	Did this operation have anyone on the payroll to do agricultural work the week of Sunday, October 6 <sup>th</sup> THROUGH Saturday, October 12 <sup>th</sup> ?*	Textual, close-ended
Worker Type	What type of work were they hired to do?	Textual, close-ended, complex
Describe	Describe the work these ___ workers were hired to do?	Textual, open-ended, complex
No. workers	How many field workers were paid during the week?	Numeric, open-ended
Hours	How many <b>TOTAL HOURS</b> did these ___ workers work	Numeric, open-ended
Wages	We would now like to determine how much you paid these ___ workers. What were the wages for these ___ workers that week	Numeric

\*For the second quarter, the date is Sunday, July 7<sup>th</sup> through Saturday, July 13<sup>th</sup>.

Behavior codes were assigned for interviewer behavior and respondent behavior. Interviewers were rated on the quality of their question asking behavior. Possible codes included whether they asked the question as worded or made slight wording changes, asked the question as worded or made a slight change *and* read the optional text, made a major change to the question, verified the response using PRD or engaged in shortcutting (entered data without asking the survey question or verifying response).

Respondents' responses to the PRD were rated on their level of cognitive engagement when responding to the PRD. Codes that indicated cognitive engagement included whether the respondent affirmed the PRD and elaborated further (e.g., yes, we had 20 workers), corrected the verification (e.g., no, we had 20 workers), or asked for clarification. Codes that indicated possible satisficing included providing a simple affirmation of the PRD (e.g., yes, uh-huh) or providing no response. Other codes included answering "don't know" or the response was inaudible. Four independent coders performed the coding and good reliability was achieved as measured by the Kappa statistic (Kappa = .62 - .66) (Cohen, 1960; Landis & Koch, 1977).

### 3. Results

#### 3.1 OES Cognitive Interviews

Despite having answered the OES survey within the past 12 to 18 months, most respondents did not recall having done so. Several agreed with the idea one respondent conveyed: "I fill out so many government forms, I can't keep track of them all." Some



respondents seemed to confuse the OES with other government surveys, such as the Current Employment Survey (CES) or the Quarterly Census of Employment of Wages (QCEW), which also ask about employment counts. The fact that they did not recall having answered the survey in the past did not appear to cause any concerns for respondents. Across both PRD methods, respondents did not voice any concerns that the interviewer had detailed information about their company that they did not recall providing. The general reaction was that employment, job titles and wages are the type of information they give ‘the government’ and they were not surprised that we were calling to ask about it again.

All respondents, across both PRD conditions, were able to answer the OES employment without evidence of any issues. The amount of time it took respondents to provide an answer was consistent with the debriefing finding: an overwhelming majority of respondents knew the information without having to consult records, do mental calculation or make any classification decisions. As one respondent put it “I own the company, I know who works here.” When asked how they arrived at their answer, the few that did not report simply knowing the information, described a process of mentally counting employee names or visualizing walking through the office space.

### *3.1.1 Proactive PRD*

One potential concern about using proactive PRD is that respondents will satisfice, confirming the PRD without considering the current response. Evidence of this was found for three of the nine respondents who answered the initial employment question (“...how many employees do you have now?”) by confirming the PRD with “the same” or “nothing has changed” rather than providing a numerical response. This may be a reflection of the simplicity of the task from a respondent perspective, but may also be evidence of respondent satisficing.

Given the simplicity of the response process, finding that most respondents didn’t use the PRD when determining their answer was not surprising. In fact some respondents struggled with this debriefing question, wondering if they should have found a way to use the PRD. One respondent noted that the PRD could be helpful for large companies, but that for her small company it didn’t have any value: “for 3 [employees]? Not so much.” One respondent did indicate the PRD was helpful “when you said 1, I knew not to include the owners. If you had said 4, I would have included the owners”.

### *3.1.2 Reactive PRD*

Most respondents reported the same employment count as the prior report, so PRD was not presented to them. For respondents with any difference, they were given the PRD and asked to confirm their current report. When offered as a reaction to a change in employment, the PRD had a similar lack of impact on respondents as the proactive condition. In these cases, respondents were generally able to easily explain the difference, indicating that it accurately represented a change in the company rather than an error in reporting. Only in one case did the reactive PRD cause a respondent to revise their answer, leading them to note “Oh, you must be talking about New York.” In this case, the respondent had originally reported for the wrong establishment and the PRD lead them to recognize and correct this error.

### *3.1.3 Impact of PRD on Detecting Change*

The goal of a longitudinal survey is to help detect a true change over time. A risk of using PRD is that true change will be underreported if respondents satisfice and simply confirm the PRD. Across both conditions five respondents indicated that there was no change in employment since the last report. Probing during the debriefing suggested that this was accurate, though without a record check or other validation method, the true value cannot be known for sure.

Across both groups, employment count was relatively consistent to the prior report (Table 3). Given the small sample size, it is not possible to draw conclusions about the impact of the different types of PRD on data quality, or the ability to detect true change, but it is useful to note that the number of respondents that reported a change in employment was equally divided between groups. Respondents in both groups were able to explain the reason for the change, citing circumstances like “we’ve downsized quite a bit” and “one person left and we haven’t replaced him.”

**Table 3.** Reported Change in Employment

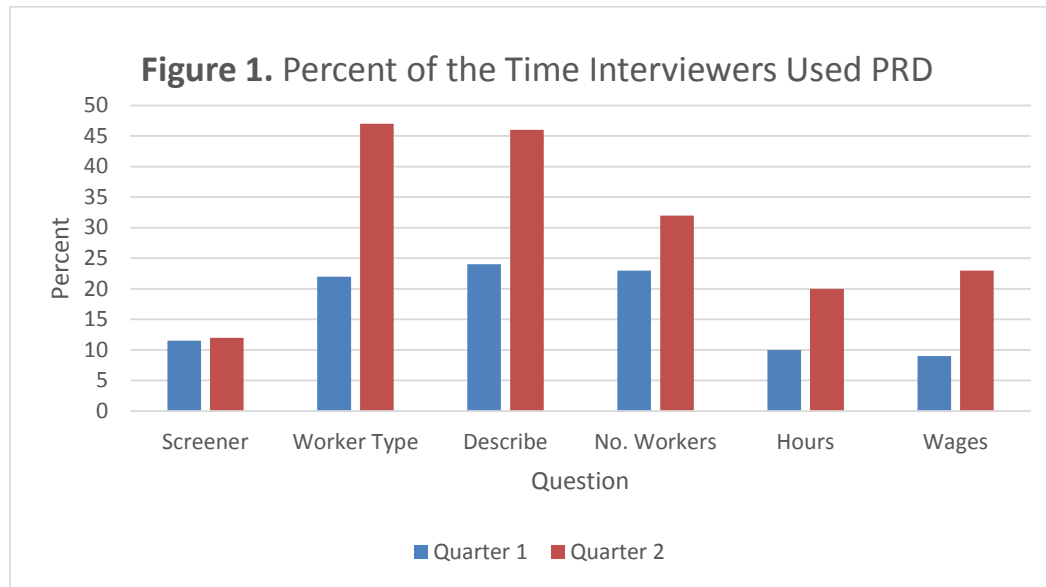
Number of Establishments	Proactive (n=9)	Reactive (n=8)
Reporting Change In Employment	4	3
Able to Confirm Change	3	2
Reporting No Change in Employment	5	5
Able to Confirm Consistency	5	5

In each condition however, there was one respondent who was unable, or unwilling to explain the change. One respondent who was probed about the difference said “I’m not going to try to remember what I said a year ago!” She was unwilling, or perhaps unable, to determine the cause of the change. Her reluctance may indicate a general lack of motivation, or may suggest a larger issue related to PRD – depending on the length of time since the PRD was originally provided, respondents may not be able to recreate their response process or answer, and therefore the PRD is not useful in their current response process.

Similar to the proactive condition, there was one respondent in the reactive condition who was unwilling or unable to explain the difference between the current report and the PRD. Despite several probing questions, he simply said “maybe I made a mistake back then.” This may indicate a true inability to recreate the original response process or align it with the current number, or may be evidence of satisficing. As the respondent was not able or willing to explain their thought process further, conclusions about the impact of the PRD on their response cannot be drawn. The respondent did not appear to have any concerns about the discrepancy in their data, so we can assume that the potential error in their prior report did not raise any concerns about the OES or data collection process for him.

### 3.2 Ag Labor Behavior Coding

On average, interviewers used PRD 19 percent of the time (166 question administrations) when administering the hired labor questions. PRD use was higher in the questions that asked about hired labor in the second quarter than the first quarter (first quarter = 14%, second quarter = 24%). This is not surprising given that interviewers often used respondents' answers to the first quarter questions to verify their responses to the second quarter questions. PRD use also varied across questions (see Figure 1) with PRD being used most often when asking about the type and number of workers respondents had on payroll (i.e., worker type, describe and number of workers).



This pattern makes sense given the nature of the survey questions (i.e., complexity, response type). Questions 2 and 3 are both difficult to administer and difficult for respondents to answer. It was also not uncommon to hear respondents tell the interviewers how many workers they had when describing the type of work they do, as a way of providing explanation of their response. Moreover, it's likely that respondents have the same type of workers across quarters but they may have more or less of these workers due to the seasonality of farm work, and thus we would expect their work hours and wages to be different (making it less likely that the interviewer could easily incorporate the PRD into the survey question).

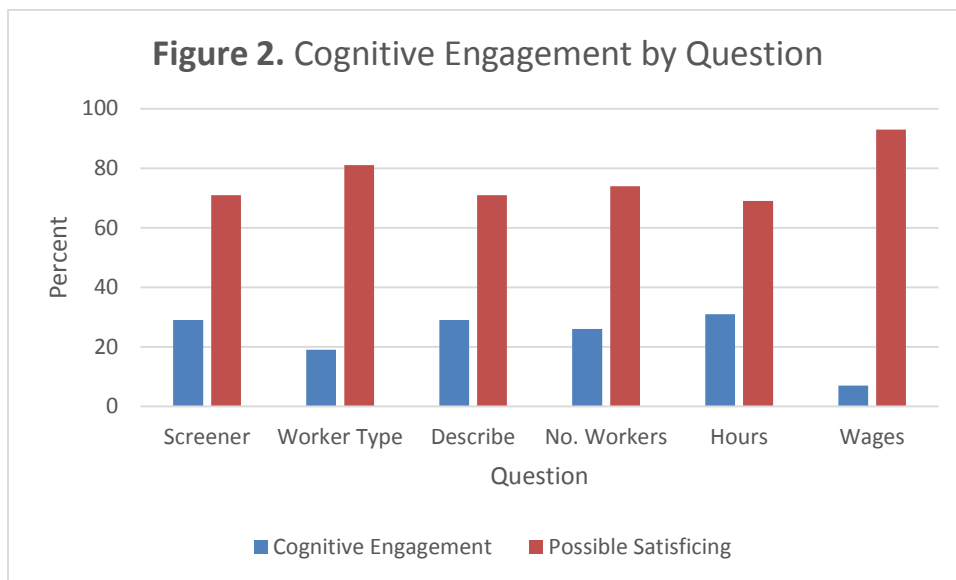
When presented with PRD in questions about the first quarter, respondents exhibited cognitive effort 23 percent of the time. Ten percent of the time, respondents provided an elaborate response (e.g., Yes, I had 20 workers), 11 percent of the time respondents corrected the interviewer, and 2 percent of the time respondents asked for clarification (see Table 4); However, the majority of the time, the respondents behaved in ways that could be classified as satisficing. Forty-nine percent of the time respondents provided a simple confirmation (e.g., yes) and 19 percent of the time the respondents provided no response and the interviewer accepted that silence as a confirmation.

When comparing the reaction to PRD in first quarter questions to second quarter questions, cognitive engagement decreased and possible satisficing increased slightly. Simple confirmations and silence are hard to interpret as they could be a passive confirmation of no change in status, or evidence that respondents are satisficing. If the latter was true, it could mean true changes in status are not being captured.

**Table 4.** Respondents' Reactions to Previously Reported Data (percentages)

	<b>Total</b> (n=166)	<b>Quarter 1</b> (n=53)	<b>Quarter 2</b> (n=113)
<i>Cognitive Engagement</i>			
Elaborated	14	10	12
Corrected	8	11	7
Requested Clarification	1	2	0
<i>Possible Satisficing</i>			
Yes	50	49	50
Gave No Response	23	19	25
<i>Other</i>			
Answered Don't Know	1	0	1
Inaudible	5	0	4

Next, we examined respondents' reactions to PRD by question (see Figure 2). There appears to be no difference in cognitive engagement across questions. These findings are somewhat positive in that they show that some respondents are remaining cognitively engaged across the hired labor questions when responding to PRD; however possible satisficing is a problem across all questions.



#### 4. Conclusions

In the OES cognitive testing, we found little impact of PRD on the response quality for the small business respondents interviewed. The respondents mostly ignored the PRD in the question as the question itself took very little effort for them to answer. However, we still feel that PRD may be useful for mid-sized establishments or for questions which ask about more complex concepts. The PRD did help two respondents provide a valid response. In one case, the respondent indicated that the proactive PRD was helpful because it primed her to report certain types of workers. In another case, the reactive PRD also improved the quality of the reported data, as the respondent had originally reported for the wrong establishment and the reactive PRD led them to recognize and correct this error.

In both studies, we found evidence of satisficing. In the cognitive interviews, respondents' agreed with the proactive PRD rather than providing a numerical response. This may be a reflection of the simplicity of the task from a respondent perspective, but it may also indicate satisficing. In the behavior coding, we found some evidence of cognitive effort, but most of the time respondents behaved in ways that could be classified as satisficing.

Respondents' potential satisficing behavior when using DI in establishment surveys should be explored in more detail. Respondents' reluctance to reconcile differences in current reports and PRD may indicate a general lack of motivation, but as Stanley and Safir (1997) suggest, it could be an action on the part of the respondent to present themselves as providing the most accurate responses in the moment. Respondents' inability to reconcile their responses may suggest a larger issue related to PRD – depending on the length of time since the PRD was originally provided, respondents may not be able to recreate their answer, and therefore the PRD is not useful in their current response process. More research is needed to explore how these obstacles can be overcome so that DI can be used effectively in establishment surveys.

Additionally, interviewers need more training on how to administer DI questions. As Pascale and McGee (2008) and Uhrig and Sala (2011) found, how interviewers administer DI and the discussion that follows DI questions can have a significant impact on data quality. We certainly found evidence to support this in the behavior coding study. Twenty-three percent of the time that interviewers used PRD the interviewers accepted the respondents' silence as a confirmation. This behavior could lead to measurement error.

We were not able to adequately look for a differential impact of proactive and reactive DI on the response process due to the small sample sizes in the cognitive interviews. Given that most respondents reported no change in status, we were often not able to implement reactive DI. As a result we may have missed opportunities to identify an issue or help a respondent interpret the question consistently. However, most respondents in the proactive DI condition indicated that the PRD was not needed to answer the question. These findings indicate that DI may not be useful for cognitively simple questions. Additionally, the proactive DI condition took longer to administer than it does to administer the survey questions without PRD. Therefore, the benefits may not outweigh the costs for these types of questions.

A final limitation of this research is that in both studies we did not have a gold standard to which we could compare respondents' answers. Therefore we do not truly know if respondents' reactions to the PRD were valid or not; if PRD did serve to improve data quality.

More research is needed on the effectiveness of DI on establishment respondents' response process. Experimental designs, with carefully controlled administration of PRD, using a large sample would provide better insight into how DI impacts data quality and in which situations proactive DI or reactive DI is more effective.

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