

## **The Accuracy of Retrospective Reports of Residence and Employment**

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### **Introduction**

It is a common survey task to ask respondents to report on events from the past. However, retrospective reports may be subject to error (for reviews, see Tourangeau, Rips, & Rasinski, 2000; Sudman, Bradburn, & Schwartz, 1996). Respondents may forget that an event happened and, for events that are remembered, they may forget when it happened.

For events that have been recalled, respondents may make mistakes in determining when the event happened. Error in the dating of events may result in respondents reporting that the event happened earlier or later than it did. Misdating of events may lead to bias if there is direction to the error. Telescoping errors occur when respondents remember an event as occurring either earlier or later than it did (Neter & Waksberg, 1964; Rubin & Baddeley, 1989; Huttenlocher, Hedges & Bradburn, 1990). Remembering events as having occurred more recently is forward telescoping, whereas remembering events as occurring less recently is backward telescoping.

Several characteristics of an event may affect how it is remembered. Time elapsed since the event occurred is a major factor influencing recall. The longer ago something has happened, the more likely respondents will forget to report it; further, the forgetting curve varies by type of information being recalled (Ebbinghaus ([1894] 1964); Sudman et al., 1996; Bahrick, 1983; Wagenaar, 1986; Bradburn, Rips and Shevell, 1987; Tourangeau et al., 2000). The nature of an event may also play a role in whether it is recalled. Events that are very similar to each other may become more difficult to distinguish in memory (Linton, 1975). However, events that have particular salience or emotional content may become stored as flashbulb memories or landmark events (e.g., Loftus & Marburger, 1983; Gaskell, Wright & O'Muircheartaigh, 2000), that stand out as distinct in memory. Finally, the complexity of people's lives may also affect recall (Dugoni, Lee, & Tourangeau 1997; Auriat, 1993).

### **Current Study**

This research examined characteristics of respondent reports on the places they have lived and jobs they have held. We questioned whether accuracy declines with elapsed time and if accuracy is lower for persons with more complex histories.

Since 2002, NORC has been conducting a longitudinal survey with residents who relocated due to the rebuilding of substandard public housing. In the fourth and most recent wave of the survey (2009), respondents were asked to list all the housing units they lived in since they began the relocation process and their associated dates of residence. They also listed any jobs they held since relocating and dates tied to their employment. We compared the accuracy of these *retrospective reports* of residence and employment to our "gold standard" source of data. The *gold standard* data were derived from the current

residence and employment status data that respondents gave during earlier waves of the survey. Our research examines forgetting (*failing to report residences or jobs*), and errors in dating (*remembering the residence or job but reporting the dates incorrectly*) and the relationship of errors in the retrospective reports to factors such as length of time since move/employment and complexity of residence/employment history.

The current report presents findings from analysis of the survey data, focusing on the effects of time since relocation on the accuracy of reports. Analysis of complexity of move/employment history is also addressed.

### Data and Methods

*Survey Data:* NORC recently completed a fourth wave of data collection for the Resident Relocation Survey (RRS), a study funded by the John D. and Catherine T. MacArthur Foundation. Since 2002, NORC has been conducting this longitudinal survey with leaseholders who currently or in the past decade lived in Chicago Housing Authority (CHA) public housing on how relocation has impacted their lives. NORC has been following two groups of leaseholders; Group 1 began the relocation process in 2002 and Group 2 began the following year. The first two waves of the survey were conducted separately for the two groups. The groups were interviewed in the same data collection effort for Waves 3 and 4 of the survey. The longitudinal design of the survey allowed us the opportunity to examine the accuracy of retrospective reports.

Table 1 shows the surveys' timing, sample sizes and response rates for the two groups of leaseholders. For the preliminary analysis of the data presented in this report, the data across both groups are combined by wave even though the groups completed Wave 1 and Wave 2 at different times. Four hundred respondents were in the Group 1 sample and 400 in Group 2. Although the full population of residents undergoing relocation was included in the first Group 1 survey, only the members of the panel sample were included in the analyses since the non-panel respondents would not have completed the Wave 4 retrospective histories. In Wave 4, new cases were added to replace cases determined to be deceased. Because the exact number of deceased was unknown when the replacement cases were added to the sample, the final sample sizes were 389 for Group 1 and 411 for Group 2. Response rates have generally been high, ranging between 83 and 94 percent across waves.

**Table 1: Sample Sizes and Response Rates for Four Waves of the RRS**

	2002	2003	2004	2006	2009
<b>Group 1</b>	Wave 1	Wave 2		Wave 3	Wave 4
<b>Sample size</b>	400	400	~	400	389
<b>Response rate</b>	89%	94%		83%	87%
<b>Group 2</b>		Wave 1	Wave 2	Wave 3	Wave 4
<b>Sample size</b>	~	400	400	400	411
<b>Response rate</b>		95%	90%	89.9%	89%

### *Concurrent Reports (Gold Standard)*

*Address Data:* In all waves of the survey, respondents provided the address of their current residence. At the end of each survey, respondents were asked for their current contact information with the following question:

*May I please have your full name, address, and phone number? FI INSTRUCTION [ASK FOR MIDDLE NAME AND MAIDEN NAME ALSO, IF NOT GIVEN]*

The data on their (current) address at the time of the interview were used to create the gold standard addresses against which retrospective data were compared.

*Employment Data:* Respondents also provided information on their current employment status (employed vs. not employed, full-time vs. part-time) during the interviews. However, since early research interest focused primarily on relocation experiences, the employment status questions were not asked in the earlier data collections. We collected employment status beginning in Wave 1 for Group 2, but not until Wave 3 for Group 1. Since respondents were reporting on their current employment and residence status, recall error was not a problem with these reports.

In the Wave 4 survey and prior waves in which employment was examined, respondents reported on their current employment status as part of the process of completing a roster of adults living in the household. Respondents were asked:

*Please look at card A. What is NAME's employment status? Is he/she...*

*Working full-time*

*Working part-time*

*Unemployed, looking for work*

*Unemployed, not looking for work<sup>1</sup>*

Thus, the accuracy of the Wave 4 data could be assessed with the survey data by comparing the *retrospective reports* collected in Wave 4 to the *concurrent reports* collected from the respondents in earlier waves.

*Methods for Testing Accuracy of Recall:* We compared the *gold standard* reports that respondents provided in Waves 1 through 3 of the survey to the Wave 4 *retrospective* reports.

*Address Data:* To accurately compare addresses from Waves 1 through 3 to the residence history recalled in Wave 4, we first identified the Wave 1 to Wave 3 addresses that were original units. Only Wave 1 to Wave 3 addresses where respondents lived after leaving the original unit were compared to the residence history, since the question asked, “*I would like to know about all the places that you have lived since relocation began.*” We explored the issue of whether to include comparison of apartment or unit numbers in determining whether the reported address was correct. Apartment number was not always reported by respondents. In order to include as many addresses as possible in the analysis, we decided to include only street address and not apartment/unit number in the examination of addresses. An address reported concurrently as the place of residence in an earlier wave (Waves 1, 2 or 3) was considered to have been retrospectively recalled correctly at Wave 4 if the earlier address was reported in the residence history. The retrospective recall of address would be considered not recalled correctly if the earlier wave address from Waves 1 to 3 did not appear in the residence history.

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<sup>1</sup> In the Wave 1 survey for Group 2, additional unemployment categories were included in this question. These were included in the “not employed” category.

For the Wave 1 through 3 addresses that respondents recalled correctly, we examined the accuracy of recall of dates of residence. The Wave 1 to 3 *gold standard* survey data indicate that the respondent lived at a particular residence on the date of the interview, but it did not tell us when the respondent moved in and moved out of a residence. The unit of analysis was the month and year of residence. The *gold standard* dates were the month and year of the Wave 1 through Wave 3 survey interviews. Dates of residence that respondents provided retrospectively in the Wave 4 residence history corresponded to a range of time, from the month and year of move-in to the month and year of move-out. For each correctly reported Wave 1 to Wave 3 address, if the month/year of the earlier wave interview fell within the range of dates reported by the respondent in Wave 4, then the retrospective recall of dates were considered correct. Otherwise, it was considered incorrect.

Note that some respondents moved more frequently than others, and that they began the relocation process (by leaving their original unit) at different times. As a result, the Wave 1 through Wave 3 addresses recalled may have been the same or different housing units for a given respondent, depending on their residence history. Further, since only respondents who moved out of their original unit were included, and the timeline for moving out of this unit varied by respondent, relatively fewer respondents were included for the Wave 1 analysis than for subsequent analyses. Further, the same respondent may not have participated in all waves of the survey; respondents who did not participate in a particular survey wave were not included in that analysis.

For dates of residence that respondents retrospectively reported correctly, we created an estimate of the error in recall of dates of residence. If the gold standard month/year fell before the dates of residence the respondent provided, the respondent *forward telescoped* the dates of residence; that is, the respondent recalled having lived at the address more recently than was the case. On the other hand, if the gold standard month/year fell after the dates of residence the respondent provided, the respondent *backward telescoped*, recalling the dates of residence at the address as less recent than was the case. Figure 1 provides an example.

*Employment Data:* The employment item was compared to the employment question asked in prior waves of the survey. As noted earlier, respondents in Group 1 were only asked the employment questions starting in Wave 3. Group 2, which began Wave 1 of the survey a year later than Group 1, were asked the employment questions in all waves of the survey. The employment status reported concurrently at an earlier wave (Waves 1, 2 or 3) was considered to have been retrospectively recalled correctly at Wave 4 if the respondent correctly reported whether she was employed (disregarding full- or part-time status) during the relevant month and year. In doing this comparison, the month/year of the earlier survey wave was matched to the same month/year on the employment history. If the respondent's report of employment status (employed vs. not employed) matched for that month/year, then the retrospective report was considered to be correct; otherwise, the retrospective report was considered incorrect.

The analysis presented in this report focuses only on whether the respondents accurately reported their status as employed or not employed, since this was the information available from the employment question asked in the earlier survey waves. Analysis of recall of specific jobs and start and end dates of those jobs will be carried out as part of our next steps using administrative data. Figure 2 provides an example.

**Figure 1. Example Matching Wave 1 Address**

<b>WAVE 1</b>		<b>RETROSPECTIVE REPORT</b>				<b>DO THEY MATCH?</b>		
<b>Gold Standard Address</b>	<b>Gold Standard Date</b>	<b>Address 1</b>	<b>Address 1 Dates</b>	<b>Address 2</b>	<b>Address 2 Dates</b>	<b>Address</b>	<b>Date</b>	<b>Accuracy</b>
123 Maple St	May 2002	123 Maple St	Jan 2001-Aug 2008	57 Oak Ave	Aug 2008 - present	Yes	Yes	1
123 Maple St	May 2002	123 Maple St	Dec 2003-Aug 2008	57 Oak Ave	Aug 2008 - present	Yes	Forward telescoping	0
123 Maple St	May 2002	7 Elm Dr	Feb 2000-Aug 2008	57 Oak Ave	Aug 2008 - present	No	-	0

**Figure 2. Example Matching Wave 1 Employment**

<b>WAVE 1</b>		<b>RETROSPECTIVE REPORT</b>				<b>DO THEY MATCH?</b>		
<b>Gold Standard Employment</b>	<b>Gold Standard Date</b>	<b>Employment</b>	<b>Job 1 Dates</b>	<b>Employment</b>	<b>Job 2 Dates</b>	<b>Job</b>	<b>Accuracy</b>	
Yes	May 2002	Yes	Jan 2001-Aug 2008	Yes	Aug 2008 - present	Yes	1	
Yes	May 2002	Yes	Dec 2003-Aug 2008			No	0	

*Self-Reported Complexity:*

We also calculated measures of self-reported complexity of residence history and employment history. These measures were based on the number of addresses and the number of jobs that respondents listed in their retrospective Wave 4 reports. For residence, respondents were classified in three groups based on whether they had reported only one, two or three or more addresses. For employment, the groups were based on reporting no jobs, one job or two or more jobs.

*Analytic Sample:* For the section on recall for address and employment data we included respondents who were in the relative gold standard wave as well as Wave 4. Thus the sample size changes at each time point. Important to note, as mentioned earlier, is that some respondents in the earlier waves did not get asked questions on employment.

For the analysis on complexity and effect of time, we only used respondents who participated in all four waves of data collection. For the address accuracy work we analyzed 328 cases. The analysis on job accuracy had a sample size of 269.

*Analytic Method:* Most of the findings present in this research are descriptive. However, for the work using the panel data we employed difference in means and binomial tests to discover statistical differences.

**Results for Recall of Residence**

Table 1 presents data on respondents' accuracy in recalling address of residence and dates of residence. As can be seen in the table, 76% of respondents correctly recalled the address at which they lived at the Wave 1 interview (2002/2003). Recall accuracy was similar for Wave 2, in which 78% of respondents correctly recalled the address at which they lived at the Wave 2 interview (2003/2004). Recall was much higher for Wave 3; 90% of respondents correctly reported the address at which they lived during this interview (2006).

Table 1 also displays the percentage of respondents whose recall of dates of residence at an address matched the gold standard date from the previous surveys. As the table shows, most respondents' reports of dates of residence were in agreement with the gold standard dates.

**Table 1: Recall of Previous Addresses - Comparison of Retrospective and Concurrent Reports.**

Accuracy of Recall of Previous Addresses in Wave 4			Accuracy of Recall in Wave 4 of Dates of Residence at Previous Addresses			
Wave	N	% Correct	N	% Correct	% DK or missing*	% Incorrect
Wave 1	364	76	274	70	5	25
Wave 2	489	78	380	77	6	17
Wave 3	552	90	495	82	3	15

\* Don't know or missing either year or month

Table 2 presents findings about the forward and backward telescoping of dates. We find that among respondents who did not remember the correct dates for their wave address, there is a pattern of forward telescoping for all waves. That is, respondents are

remembering the dates for which they lived at their wave address as being more recent. However, the proportion of forward telescoping diminishes over time, with fewer respondents forward telescoping Wave 3 dates than Wave 1. While most respondents thought their Wave 1 address was more recent than it was (86%), only 55% did the same for their Wave 3 address. Conversely though, the proportion backward telescoping grew over time. For their Wave 1 address, 14% thought they lived at the address before they actually did. However, 45% reported living at their Wave 4 address at an earlier date. So it appears that respondents tend to recall earlier dates as occurring later than they did (forward telescoping), while dates that were more recent are sometimes remembered as being earlier (backward telescoping). However, forward telescoping still tends to be more common for all waves.

**Table 2: Forward and Backward Telescoping for Dates of Previous Addresses.**

Wave	N	Backward telescoping		Forward telescoping	
		%	Mean error	%	Mean error
Wave 1	69	14	10.80	86	12.93
Wave 2	65	32	11.10	68	11.45
Wave 3	73	45	11.36	55	7.35

### Results for Recall of Employment

Table 3 reports findings for employment recall. Note that based on the roster employment question it is not possible to know which job reported in the employment history actually matches with any job reported in an earlier wave. Only status as employed or not employed was collected in the prior waves. Therefore, the current analysis is limited to determining whether status as employed or not employed as reported in the retrospective employment history matches with the gold standard data.

**Table 3: Recall of Employment Status - Comparison of Retrospective (Wave 4) and Concurrent (Waves 1 through 3) Reports.**

		Wave 4 Report Employment Reported on Grid		
		Yes	No	
<b>Wave 1 Report</b>	Employed?	Yes (n=86)	<b>72</b>	28
		No (n=92)	25	<b>75</b>
<b>Wave 2 Report</b>	Employed?	Yes (n=85)	<b>66</b>	34
		No (n=210)	14	<b>86</b>
<b>Wave 3 Report</b>	Employed?	Yes (182)	<b>82</b>	18
		No (392)	13	<b>87</b>

For all three waves, we found that most of those working at that wave correctly recall their employment (72% for Wave 1, 66% for Wave 2, and 82% for Wave 3). Similarly, most respondents who were not working at that time correctly recall their unemployment at the wave date (75% for Wave 1, 86% for Wave 2, and 87% for Wave 3). Interestingly, there seems to be less recall of employment among the employed at Wave 2 than at Wave 1 (66% compared to 72%). That is, slightly more respondents correctly recalled their employment for Wave 1 than Wave 2. Typically one would expect respondents to have better recall of more recent events, which is what we see for the unemployed respondents

with Wave 1. Yet for some reason, more respondents are not correctly recalling their Wave 2 employment.

When asked about their employment history, 282 respondents did not report any job since relocation began. However, when we examined their concurrent wave employment, we found that a number of them had indeed worked during the reference period (Table 4). We found that among respondents who were working at the time of their Wave 1 interview, 15% did not retrospectively report any employment in Wave 4. For Wave 2 employed, 16% did not provide this employment information in Wave 4. Finally, 6% of those employed at Wave 3 did not report this in Wave 4.

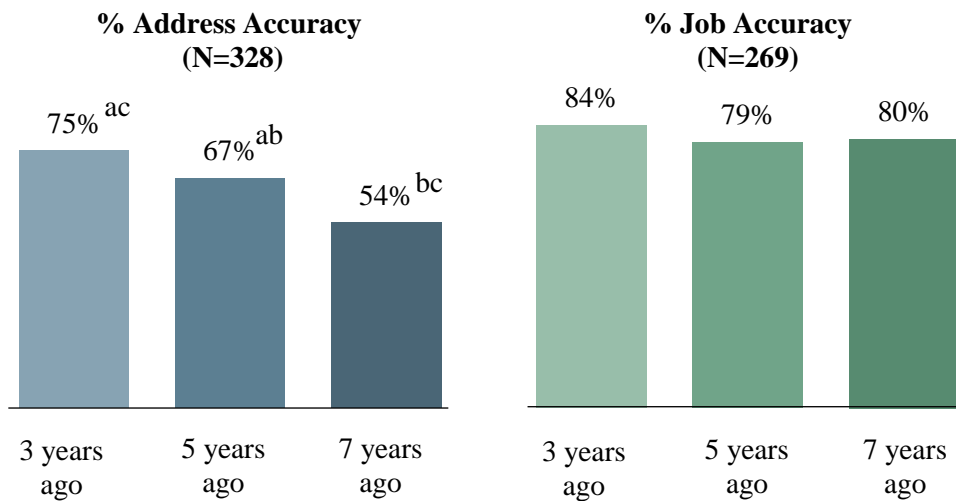
**Table 4. Comparison of concurrent employment reports (Wave 1 through 3) for respondents reporting no job on the retrospective employment grid (Wave 4).**

Wave	Employed at Wave	No Job Reported on Retrospective Grid
	N	%
Wave 1	86	15
Wave 2	85	16
Wave 3	182	6

**Results for Effect of Time**

Using the panel data we examined the effect of time on recall. Figure 3 shows the results for both address and employment recall. Accuracy of reporting addresses decreases significantly with greater elapsed time. However, the accuracy of reporting employment status does not differ with elapsed time as the difference is not significant. One thing worth noting about this population of public housing residents is that many are not employed. For these respondents it may be easy to report that they had no jobs, thus contributing to high levels of accuracy we see here.

**Figure 3. Address and Job Accuracy for three points in time.**



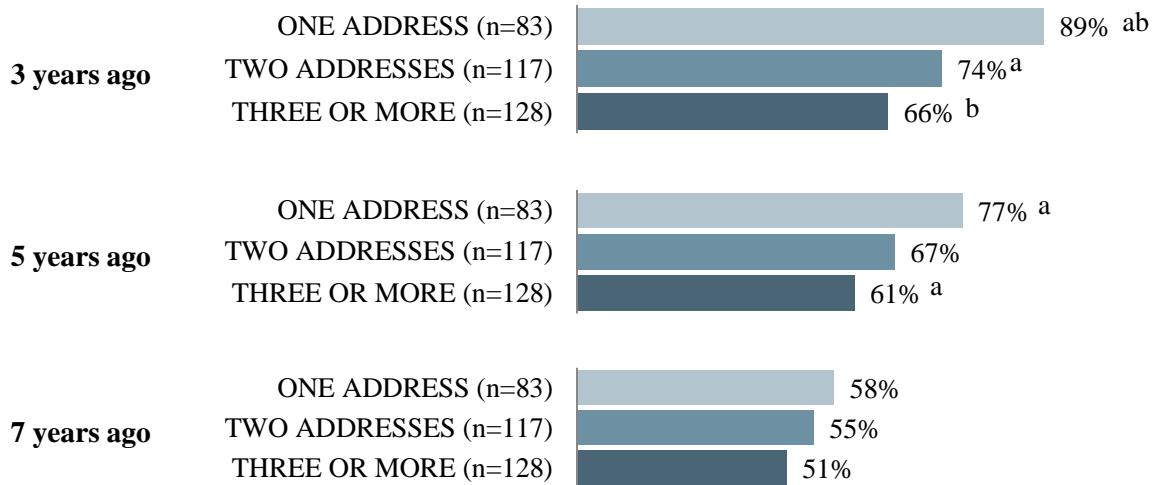
NOTE: a, b, c =  $p < 0.05$



**Results for Complexity**

Figure 4 shows the effects of complexity of residence history on reporting of addresses at all three time points. Those with complex histories reported less accurately at two time points, 3 years ago and 5 years ago (Waves 2 and 3). However, the difference in reporting is not significant for the most distant survey wave, Wave 1, which was 7 years ago.

**Figure 4. Address Accuracy by Complexity**



NOTE: a, b, c =  $p < 0.05$

Figure 5 shows the effect of complexity on job recall. Complexity of employment history affects accuracy of job recall at all three time points. Those with no job reported more accurately than those with one or more jobs at each time point. Although the difference between those with one jobs vs. two or more jobs is in the expected direction, those differences were not significant.

**Figure 5. Job Accuracy by Complexity**

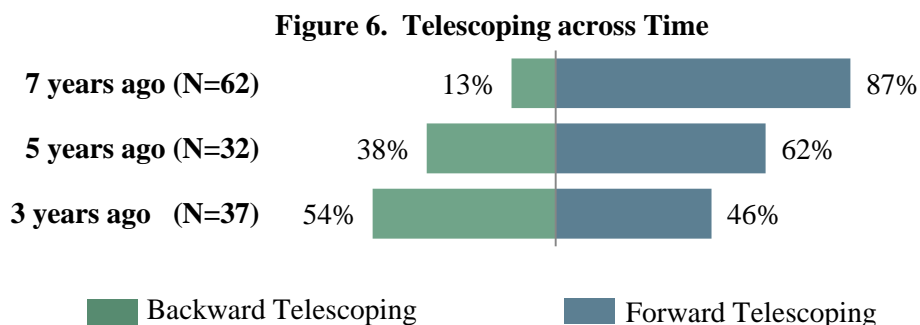


NOTE: a, b, c =  $p < 0.05$

### Results for Telescoping across Time

Finally, we looked at errors in dating for the panel cases. Figure 6 includes respondents who accurately remembered an address in their retrospective reports but got the dates wrong. At the most distant wave, 7 years ago, we see that most respondents' errors in dating were in the direction of forward telescoping. The majority of respondents retrospectively reported dates were more recent than was the case.

As we move toward the present, the data from 5 years ago and 3 years ago shows that fewer respondents were forward telescoping and more were backward telescoping. Backward telescoping is when events were placed further in the past than was the case. These data show that the direction of bias in reporting of dates of residence shifts over the course of the reference period in respondents' retrospective reports. Because of small sample size we did not test for statistical differences.



### Discussion

The results provide some interesting findings. Respondents were more accurate at remembering past addresses for the most recent wave being recalled (Wave 3) as opposed to earlier waves (Waves 1 and 2). That is, *time affected recall*. However, recall was similar in Waves 1 and 2. Therefore Wave 1 accuracy may be expected to decline relative to later waves, given that it was longer ago. A possible explanation for the similarity in accuracy of recall for Waves 1 and 2 is that the beginning of the relocation process served as a *landmark event*. Moving out of their original public housing unit was a major event in the lives of the respondents and thus the address where they moved may have been more salient than a residential move might typically be.

Second, based on the metric of dating accuracy we used, the majority of respondents across waves were accurate in dating their moves. Also, accuracy increased for the most recent wave. Errors in dating were biased toward forward telescoping for the earlier waves but backward telescoping begins to become more prominent by Wave 3, with 45% backward telescoping and 55% forward telescoping in that wave.

Respondents who had worked at least one job since relocation began were accurate the majority of the time (66% to 87%) in recalling whether they had worked at the time of

the earlier survey waves. As expected, recall was most accurate for the most recent wave (Wave 3).

Respondents who recalled that they had not worked at all since relocation began appeared to be generally accurate in this recall. Comparison of the employment history with the gold standard dates from the earlier surveys indicates that only between 6% and 16% of leaseholders had failed to recall employment at an earlier wave.

Interestingly, respondents with more complex residence and employment histories reported less accurately than those with simpler histories.

In the next steps of the analysis we plan on examining several aspects of the data in greater detail. These next steps will make use of both survey data and detailed residence and employment information in the administrative records we have obtained. Administrative databases provide an additional source of information for assessing the accuracy of retrospective reports. With the permission of survey respondents, we obtained and linked data provided through the CHA on residence and employment. The residence data lists the leaseholder's addresses from approximately 2004 through the time of the Wave 4 survey. The employment data lists (employer, earnings, and other data by quarter). With these data we can compare whether places and dates of residence reported in Wave 4 match the administrative record. Further we can compare whether the jobs reported and dates of employment match the administrative record.

Next we will examine whether respondent characteristics may be related to accuracy of recall. First, recall may be poorer for older respondents as compared to younger respondents. We will examine accuracy for younger vs. older respondents. Second, moving to a private apartment with a Housing Choice Voucher may be more of a landmark event compared to a move to other public housing, which may be reflected in recall accuracy. We will examine accuracy of reporting address and dates of residence by housing type. In addition, we will examine how respondent accuracy of recall across the domains of residence and employment may be tied. If memory for different types of events are linked, errors in forgetting or bias in misdating of events may be related. For example, forward telescoping of the date of move-in at a residence may be associated with forward telescoping of the date of a change in employment that occurred at about the same time. The relationship in recall error across domains is not well examined in the literature; the data may provide an opportunity to make a contribution in this area.

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