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Respondent Attrition vs Data Attrition and Their Reduction
Challenges and Opportunities: Longitudinal Surveys and Attrition

• For 25 years, longitudinal surveys have been seen as an important part of the future of survey research.
• NSF supports one longitudinal survey (PSID) and two others with significant longitudinal elements – ANES and GSS
• Quintessential cross-sectional surveys aren’t entirely cross-sectional
  – Decennial data emerges in panel form through the IPUMS efforts
  – ACS is suggested as a screener for follow-on surveys, such as the NSF SESTAT effort; in part the ACS may morph to a panel
  – CPS has a rotating structure and periodically researchers link the rotation groups to form a panel
Predictably Prevalent Panel Paradigm

• Persons and organizations are always in motion. It is unusual when a cross-sectional survey does not ask backward-looking questions.

• Because we frequently look at how organizations and people change over time, we either collect time-varying data retrospectively or prospectively. Cross-sectional surveys must rely on the former method, panel studies can pick how they want to collect time-varying data.

• When collecting data over several years, cross-sections must deal with recall error, panels with attrition. Pick your poison.

• Table 1 – Panel aspects in ANES; Table 2 – GSS reinterviews
Educational Longitudinal Survey & Attrition

• At intake, the ELS completed interviews on 88% of selected students. This was a school-based frame with surveys done in schools, so strong results expected. This does not account for non-cooperating schools.

• At wave 2, ELS completed interviews on 91% of wave 1 respondents.

• At wave 3, ELS completed interviews on 87% of wave 1 respondents. Attrition fell from 9% to 4%.

• In wave 3, ELS returned to wave 2 non-respondents and for selected domains recovered data missed in wave 2.
Attrition Problem?

• If one considers data recovered from the wave 2 non-respondents during the wave 3 interview, ELS recovered 96% of the wave 2 data using the wave 2 & 3 interviews.
• The cross-sectional attrition at wave 1 was 12%; the data loss in these domains for wave 2 was only 4%.
PSID and BHPS

• Both are based on tracking households.
• Both use proxy reports from a cooperative informant.
• PSID started in 1968 from SEO frame plus an augmentation frame; BHPS in 1991 using an address frame for mail delivery.
• PSID is cost-reimbursement for interviewers – they are paid for time and expenses incurred in interviewing
• BHPS uses a per case reimbursement model – the norm in a great deal of the world.
Figure 1
Household Panel Retention - PSID & BHPS
Figure 2
Panel Attrition Hazard - PSID & BHPS
What Should We Make of This?

• Like the ELS, but over a longer period, the PSID and BHPS display a large “hit” to the completion rate after the first wave and then attrition slows considerably.
• This same pattern was seen in the ANES high frequency panel component in 2008.
• The BHPS had a lower wave 1 response rate than the ELS, but school frames have captive audiences. The higher attrition in BHPS may reflect either a secular trend to lower cooperation (BHPS started 23 years later) or differences in how interviewers are compensated.
• The pattern of attrition is consistent with population heterogeneity in innate respondent cooperativeness.
• The least cooperative respondents leave first and each round those who leave likely are less cooperative than those who don’t.
• Focusing on attrition is equivalent to single entry bookkeeping.
  – While higher order waves expose us to attrition, the cost of drawing a new sample is substantially higher than returning to an existing sample. However, over time panels de-cluster, raising the cost of face-to-face efforts.
  – A repeated cross-section forces us to collect data that is already present from the first wave of a longitudinal survey.
  – Time-varying data is more accurately collected prospectively than retrospectively.
National Longitudinal Surveys – More Evidence

• These studies focus on individuals rather than households
• Six cohorts started between 1966 and 1997
• Census collected data for the four original cohorts; NRC for the latter two
• We see very similar surveys but by looking at the Young Women (1968), the NLSY79 (1979) and NLSY97 (1997) we have information over two decades and with two different survey organizations.
• These surveys returned to non-respondents and in many domains, sought to collect data missing from missed waves – we will compare respondent attrition and data attrition.
Figure 3
Young Women Completion & Returning to Respondents

Years From First Interview

Ordinary Completion Rate
Event History Completion Rate
Figure 4
NLSY79 Completion & Returning to Respondents

Years From First Interview

Ordinary Completion Rate
Event History Completion Rate
Figure 5
NLSY97 Completion & Returning to Respondents

Years From First Interview

- Dashed line: Ordinary Completion Rate
- Solid line: Event History Completion Rate
Data Attrition Reduction

- Figures 3, 4 and 5 all illustrate why respondent attrition may be a flawed metric.
- The smaller gains from data recovery for the Young Women reflects the policy of Census to abandon respondents after two waves of non-response.
- For the NLSY79 and NLSY97 we see data attrition is minor – focusing on the traditional completion rate substantially distorts the situation regarding the impact of attrition.
- Table 3 (paper only) shows easily observed factors reveal who is at risk to attrition
- The hazard rates for attrition exhibit the same pattern we see with the PSID and BHPS. [Blank spots indicate years when the completion rate actually went up.]
Unconvinced?
How About Just Reducing Respondent Attrition?
Are We Willing to Walk the Walk?
<table>
<thead>
<tr>
<th>Replicate</th>
<th>Round 19 Interview</th>
<th>Round 19 Non-Interview</th>
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</thead>
<tbody>
<tr>
<td>Replicate 1 (n=299)</td>
<td>Average Cash Fee: 24 (8%)  $34.67</td>
<td>Average In-Kind Incentive: 275 (92%)  $35.42</td>
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<tr>
<td>Replicate 2 (n=597)</td>
<td>Average Cash Fee: 85 (14%)  $77.07</td>
<td>Average In-Kind Incentive: 512 (86%)  $34.65</td>
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<td>Replicate 3 (n=599)</td>
<td>Average Cash Fee: 260 (43%)  $46.19</td>
<td>Average In-Kind Incentive: 339 (57%)  $37.60</td>
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<td>Replicate 4 (n=591)</td>
<td>Average Cash Fee: 296 (50%)  $77.81</td>
<td>Average In-Kind Incentive: 295 (50%)  $31.25</td>
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</table>

**Table 4**

**Differential Respondent Fee Experiment in 2000 NLSY79**

Replicate 1 = Round 18 Non-Interview, $40 fee  
Replicate 2 = Round 18 Non-Interview, $80 fee  
Replicate 3 = Round 18 Interview, $40 fee  
Replicate 4 = Round 18 Interview, $80 fee
Differential Incentive Payments
R19 of NLSY79 (2000)

• In Round 19 (2000) the fee cost per incremental case for Round 18 non-respondents was $133; for Round 18 respondents the incremental fee cost was $272.

• The experiment was undertaken at the end of the field period when costs are at their highest. Unexpectedly, field costs fell after we started the experiment.

• For the non-respondents the higher incentive payments very nearly paid for themselves.

• Higher fees for difficult cases who had been interviewed in 1998 were a close call on cost-effectiveness.
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<th>$40 Fee</th>
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**Table 5**
Differential Respondent Fee Experiment in 2003 Women’s Survey
2001 Non-respondents Only
2003 Women’s Survey
Census Tries Differential Incentives

• These respondents (pooled fielding of the Young Women and Mature Women’s cohorts) had never received an incentive payment.
• The $20 incentive versus no incentive had an incremental fee cost of $52 per case. For the $40 incentive vs no incentive the incremental fee cost per case was $82.
• If, after 35 years of following a panel, you are offered a complete case for $82, take that deal.
NLSY97 Round 10 Experiment

• See Table 6 in paper
• Experiment in Round 10 stratified on Round 9 response status
• $10 incentive was control; $30 cash or in-kind was the treatment
• Among Round 9 non-respondents the incremental fee cost per complete was about $50 (cash or in-kind); among the R9 respondents the incremental cost was about $230
Questions & Issues

• When collecting time-varying information, we must deal with either recall problems in cross-sectional surveys or attrition in longitudinal surveys. Which is the more serious threat to data integrity?

• Can we test the heterogeneity theory by administering the Big Five in the first wave and focus on “Agreeableness”, “Openness”, “Conscientiousness” and possibly “Neuroticism” as predictors of attrition.

• Recast the discussion of attrition in terms of data attrition not respondent attrition; use data recovery methods in panel surveys.
• The rap panel studies get for attrition is misplaced
  – Several waves of a panel study almost surely will cost less than an equal number of similarly-sized and equally-lengthy cross-sectional surveys
  – Data collected will have more depth by not having to repeat questions
  – Temporally distributed data over a person’s life course will almost surely be accurately collected with prospective vs. retrospective data collection.

• Panel studies are an excellent value for money. The attrition problem should be viewed with this in mind.
• Having initial data on attriters in panels leaves us better off in understanding who attrites and why than in cross-sections
• Perhaps an equally important problem is lack of accretion, that is, flows of migrants into the country. Their characteristics are likely less well represented by existing panel member and in times of heavy in-migration, lack-of-accretion bias may rival attrition bias.