



Using Data from Embedded Experiments to Improve Total Survey Quality in HINTS

*David Cantor
Westat and
Joint Program For Survey Methodology, University of MD*

*HINTS Data Users Conference
May 4-5, 2007*



Goals of Presentation

- Illustrate methods to address growing problems with telephone surveys
- Describe research completed on HINTS to date
- Describe research planned for HINTS 2007



Response rates and random digit dial surveys

- Response rates have been on the decline since the early 1990's
- Not exactly clear why. Several hypotheses:
 - Public is generally less tolerant
 - Increases in telemarketing



Why is the response rate important?

- It is an indicator of possible non-response bias
 - It can affect how well the sample represents the target population
 - The extent of bias depends on whether reasons for non-response are related to outcome measure
- Low response rates = higher costs

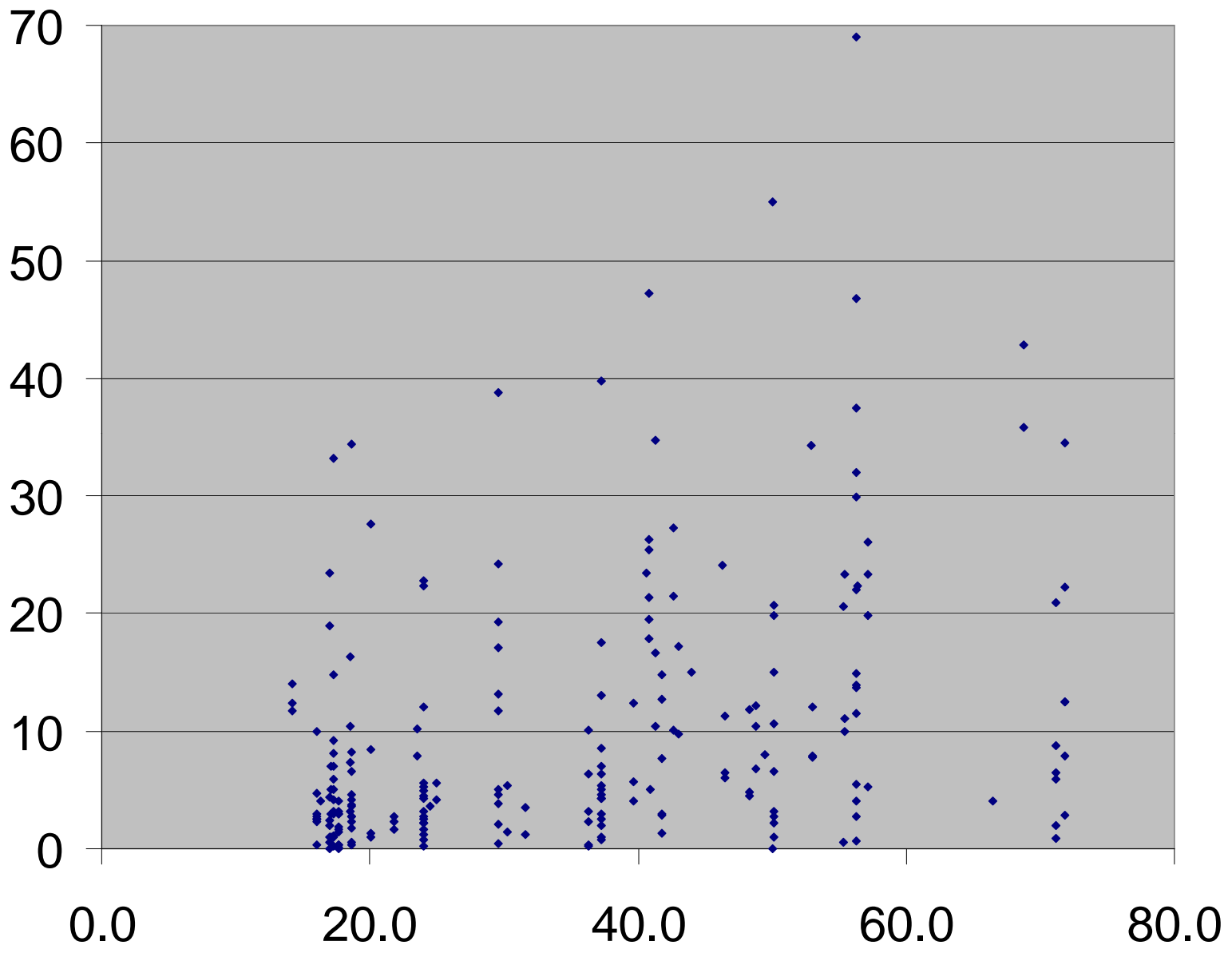


Meta-Analysis of Nonresponse Error Studies

- Approximately 30 studies, some with multiple estimates (Groves, 2006)
- Each has data available to compute a relative bias due to nonresponse. The absolute value of the relative bias is

$$\left| \frac{(\bar{y}_r - \bar{y})}{\bar{y}} \right|$$

**Percentage Absolute Relative Bias of
Respondent Mean**



Nonresponse Rate



Coverage for RDD surveys is decreasing

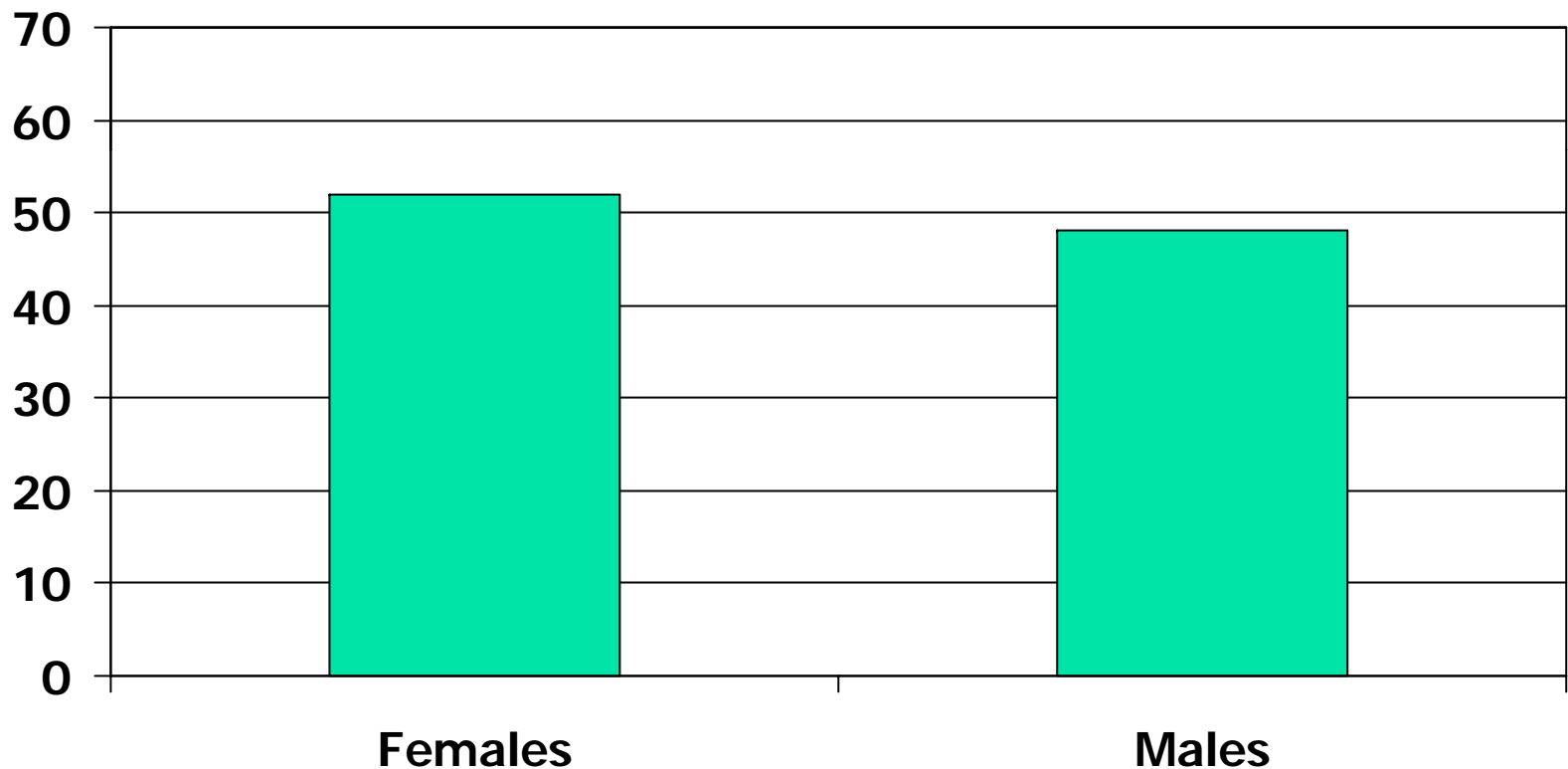
- Cell-only households are growing (9.6% in first half of 2006)
- Most dramatic effects are for:
 - Young people
 - Those living with unrelated individuals
- Effects on estimates do not appear to be large, but coverage issue is growing



HINTS formative experiments: Within household selection

- Difficulties enumerating households on RDD surveys
 - “Best” way is to enumerate – intrusive
 - Birthday method leaves procedures in R’s hands. Over-representation of females
- In 2003, HINTS developed new procedure (Rizzo, et al., 2004)
- Assessed procedure in pilot tests and during initial stages of the 2003 survey.

Sampled adults by gender for HINTS 2003



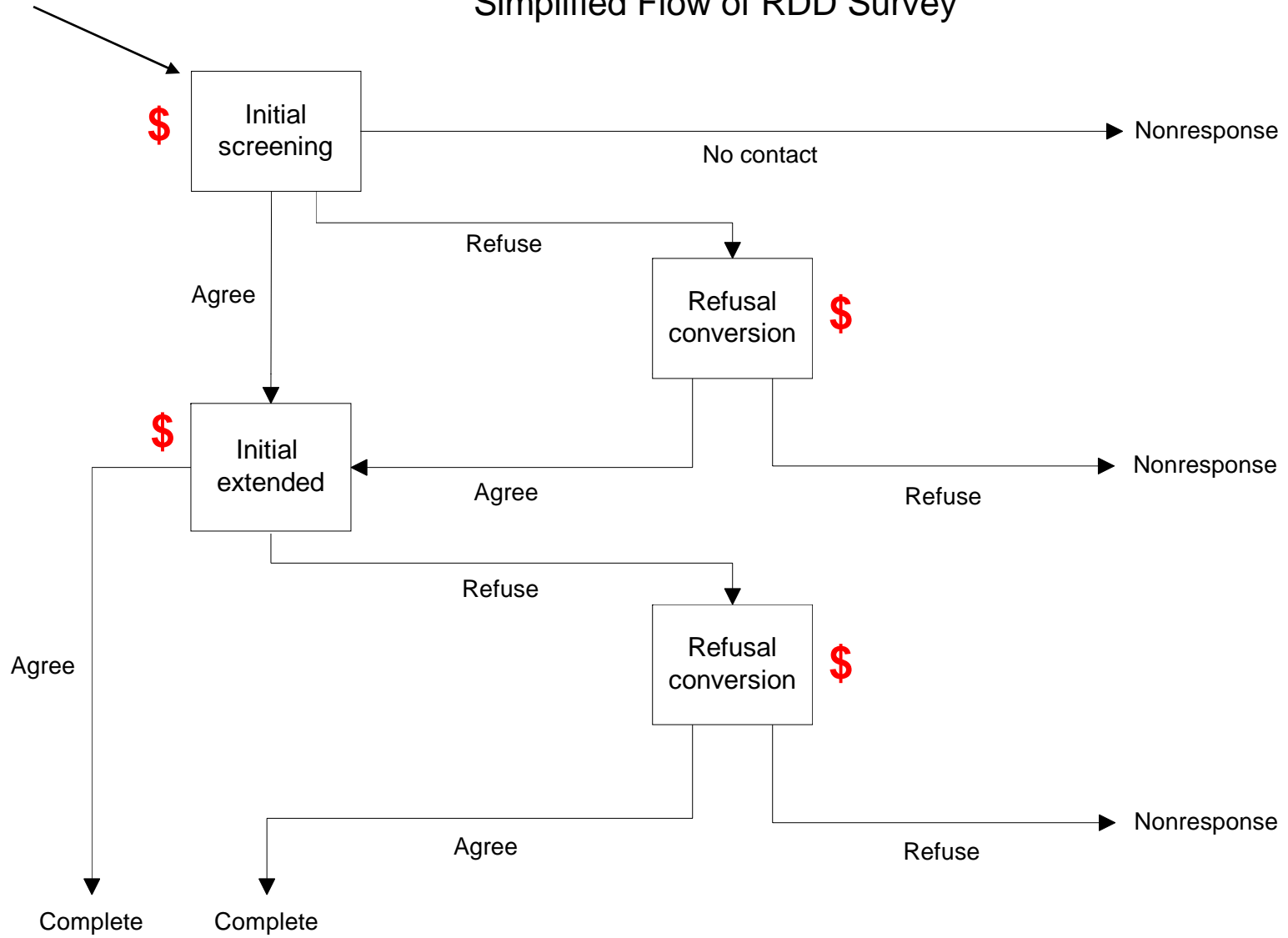
Rizzo, L., Brick, M., Park, I. (2004) "A Minimally Intrusive Method for Sampling Persons on Random Digit Surveys." *Public Opinion Quarterly* 68: 267–274.



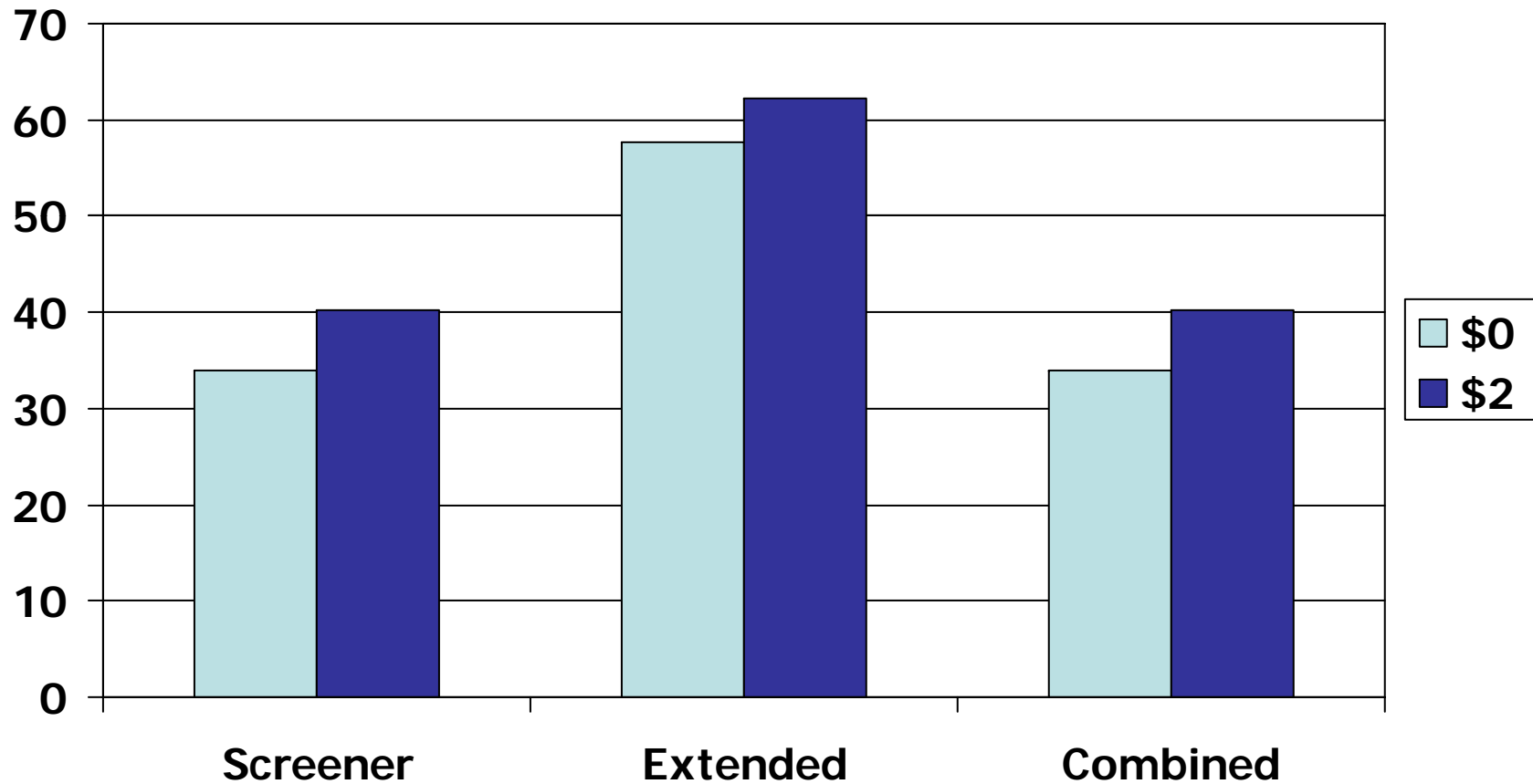
Addressing response rate issues on HINTS: Experiments with incentives

- HINTS has completed several experiments on the use of incentives
- Incentive experiments generally require large experiments
 - Used first half of data collection to test different incentives
 - Adapted results for second half of collection

Simplified Flow of RDD Survey



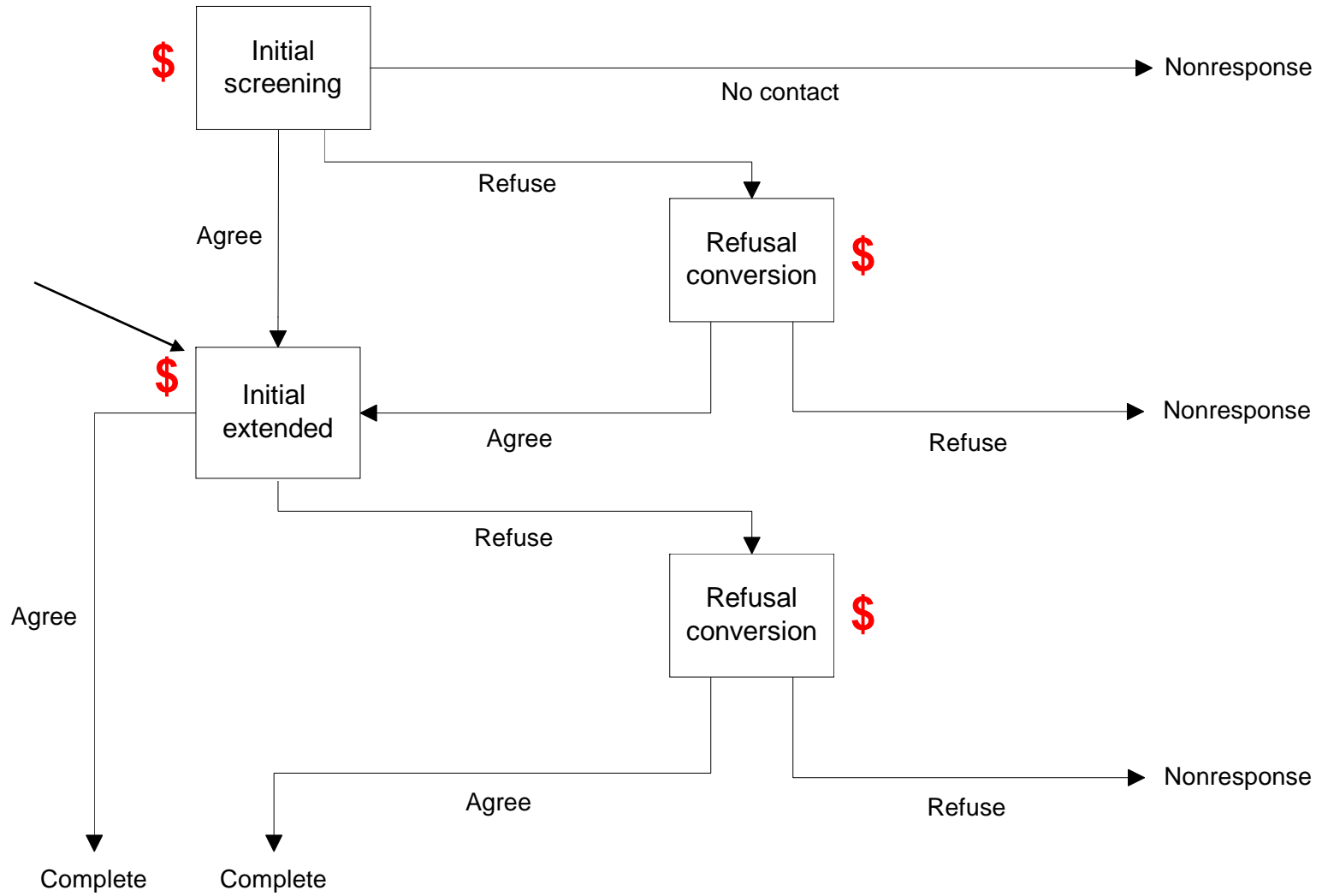
HINTS 2003: Response Rates by Application of Pre-Paid Screener Incentive*



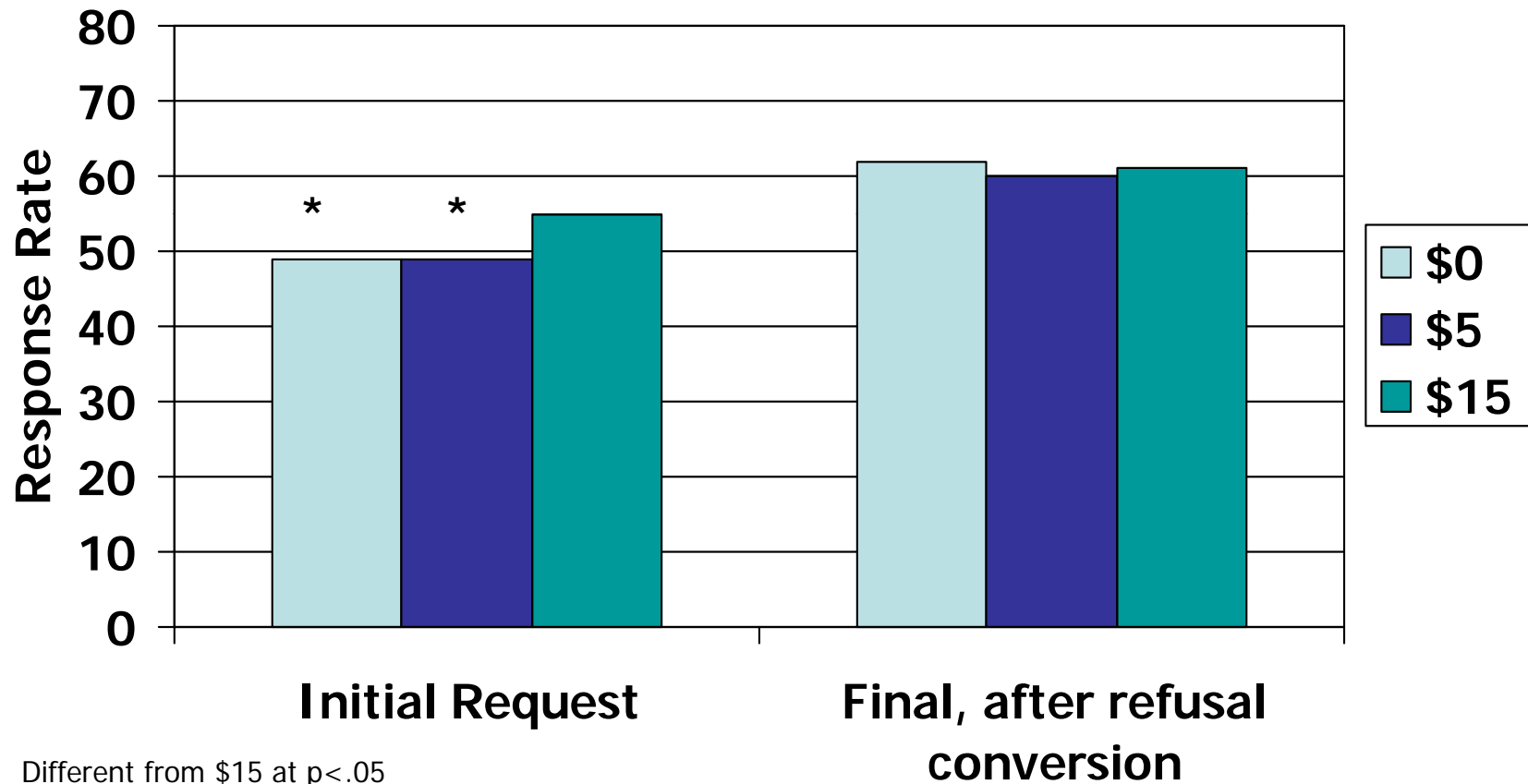
* Differences between \$0 and \$2 are significant at $p < .05$

Rizzo, L., Park, I., Hesse, B., Willis, G. (2004) "Effect of Incentives on Survey Response and Survey Quality: A Designed Experiment Within the HINTS I RDD Sample" Paper presented at the 2004 Annual Meeting of the American Association for Public Opinion Research, May 13-16, Pheonix, AZ.

Simplified Flow of RDD Survey



HINTS 2005: Response Rates by Application of Promised Incentive at Extended Interview



Different from \$15 at $p < .05$

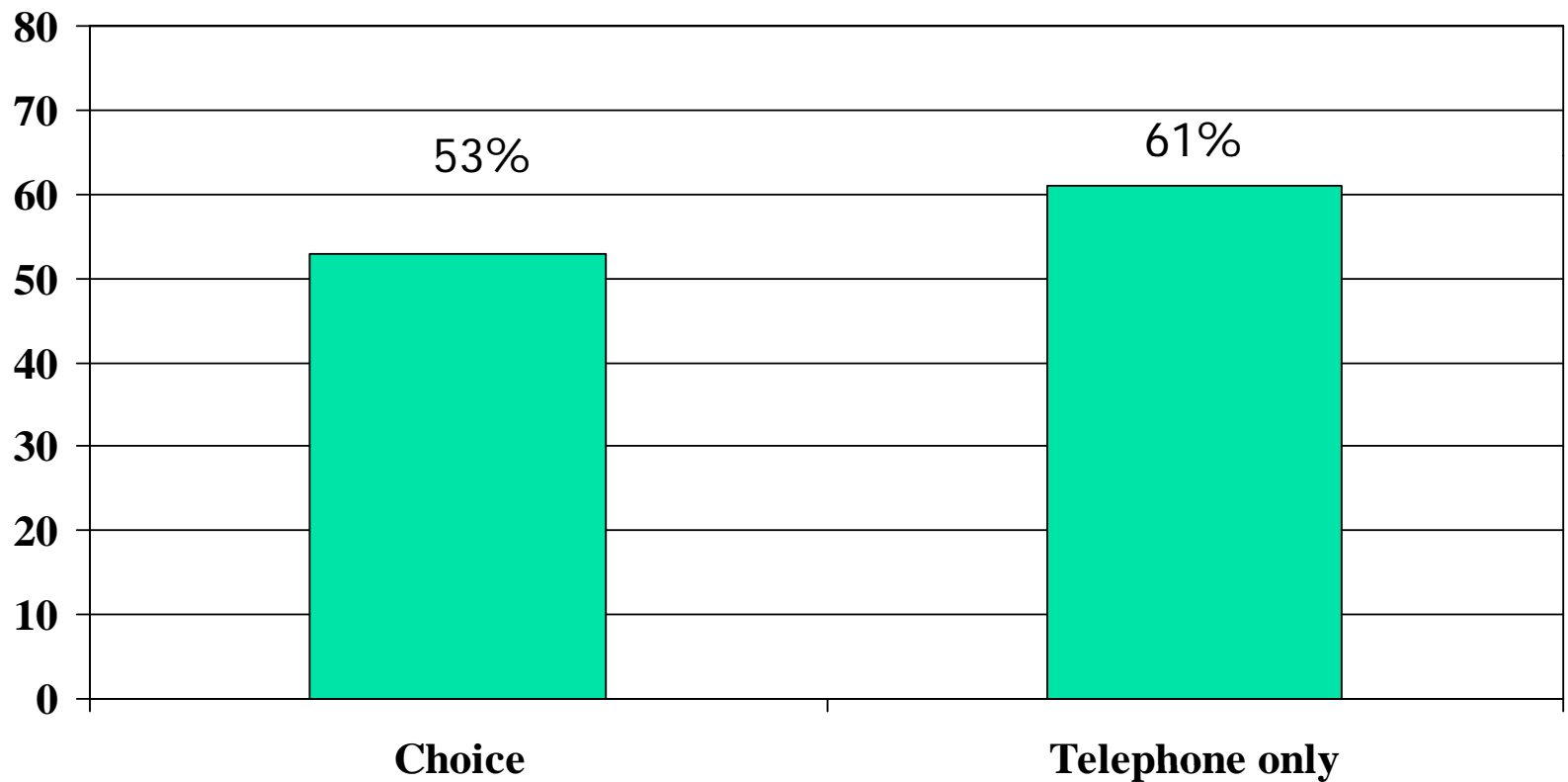
Cantor, D., Schiffrin, H., Park, I., and Hesse, B. (2006) "An Experiment Testing a Promised Incentive for a Random Digit Dial Survey." Paper presented at the 2006 annual meeting of the American Association for Public Opinion Research, May - 18-21, Montréal, Québec, Canada.

HINTS 2005:

Experiment with the Web

- Respondents were given the option to use the Web (of those with access)
 - More convenient
 - Cheaper (if enough use it)
 - Improved measures for selected outcomes

Response rates by whether respondent was given the choice to use the Web



N for Choice = 858; N for Telephone-only = 1042



HINTS 2007: Addressing changes in the survey environment

- Response rate
 - Review the introductory material and messages that are given to the respondent
 - Test out new material based on this review
- Response rate, coverage and cost
 - Use of a mail questionnaire



Research on HINTS messages

- Exploratory research suggests introductory material puts too much emphasis on “cancer”
 - Qualitative research
 - Non-response bias analysis
- HINTS 2007 pre-test will compare different introductory material and messages



Planned Experiments for HINTS 2007

- Use of a mail survey
- Work is based on Link and colleagues with the BRFSS
- Response rates are comparable to RDD
 - Introduce incentives for non-respondents
 - Use of telephone follow-up
- Design would mix RDD and mail to optimize total survey quality



Dual frame design: Pros and cons

Pros

- Less expensive
- Covers cell-only
- Flexibility for Web in the future

Cons

- Non-response bias
- Potential mode effects



Summary

- Experiments are key to adapting design to changing environment
- Prior experiments have addressed response rate and sampling issues
 - Incentives at different stages
 - Within household selection methods



Summary (continued)

- HINTS 2007 seeks to balance several different emerging issues
 - Declining response rates
 - Increase in cell-only population
 - Increase in costs to do surveys
- HINTS 2007 will be evaluating dual frame design
 - Use a “Total Survey Error” approach
 - Assess tradeoffs of variance and bias for selected measures