#### Use of Online Panels to Conduct Surveys

# **Ron D. Hays (UCLA)** Arie Kapteyn (USC) and Honghu Liu (UCLA)



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# **Internet Panels**

- PROs
  - Relatively inexpensive and faster
  - Able to get to low incidence subgroups
- CONs
  - Respondents may differ from intended target on measured (more educated) and on unmeasured characteristics
  - Data integrity (e.g., false answers, duplicates)

# **Probability Panels**

- Selection probabilities known.
  Need sampling frame (denominator)
- Get internet access for those without it.

# Telepanel (1980's)

- Started by Willem Saris, Professor of sociology at the University of Amsterdam
  - Recruited a sample of 1000 Dutch and gave them computers and modems.
  - Panel asked to download a survey every weekend, answer and upload it to the central modem pool.

• Sold panel to a market research agency.

http://en.wikipedia.org/wiki/Willem Saris

# CentERpanel (1990s)

- Saris started another (larger) panel
  Panel size = 3k
- Sold to Tilburg Univ. Center for Economic Research

• *CentERpanel* still exists and is the oldest internet probability panel in the world.

# Subsequent probability panels

- 1999: Knowledge Networks (now GFK), U.S.
  - Address-based sampling
  - Approximate recruiting response rate = 15%
  - Panel size = 55k
- 2006: Longitudinal Internet Studies for the Social Sciences, Netherlands
  - Population registry-based sampling
  - Recruited face-to-face and telephone
  - Approximate recruiting response rate = 45%
  - Panel size = 7.5k

# Subsequent probability panels (2)

• 2006: American Life Panel, U.S.



- Recruited by RDD, face-to-face, and addressbased
- Approximate recruiting response rate = 15%
- Panel size = 6k
- 2014: Understanding America Study, U.S. – Address-based sampling
  - Approximate recruiting response rate = 20%
  - Panel size = 2k

## Non-Probability (Convenience) Internet Panels

- NIH Toolbox
  - Multidimensional set of brief measures assessing cognitive, emotional, motor and sensory function from ages 3 to 85.



 Delve, Inc databases assembled using online self-enrollment, enrollment through events hosted by the company, and telephone calls from market research representatives

### Patient-Reported Outcomes Measurement Information System (PROMIS<sup>®</sup>)

• *Polimetrix* (now YouGov)

- Non-probability based recruitment of panel
- > 1 million members who regularly participate in online surveys

Liu et al. (2010)

# Sample-matching Methodology

- Target subset with selected characteristics
  - n = 11,796 overall
  - Subgroups with lower response rates oversampled
- PROMIS targets ("Quota sampling")
  - 50% female
  - 20% 18-29, 30-44, 45-59, 60-74 and 75+
  - 12.5% black, 12.5% Hispanic
  - 10% < high school graduate

# **PROMIS Internet Sample versus Census**

|                   | PROMIS Sample | 2000 Census |
|-------------------|---------------|-------------|
| % Female          | 55%           | 52%         |
| % Hispanic        | 13%           | 11%         |
| % Black           | 10%           | 11%         |
| % < High school   | 3%            | 20%         |
| % High school/GED | 19%           | 29%         |
| % > High school   | 78%           | 51%         |
|                   |               |             |
| Mean age          | 50            | 45          |

# Analytic Weights (Post-Stratification Adjustment)

- Compensate for nonresponse and non-coverage
- Weight sample to have same distribution on demographic variables
  - gender x age x race/ethnicity, education, marital status, and income
- Iterative proportional fitting or raking

# PROMIS Internet Sample (Weighted) versus Census

|                   | PROMIS Sample | 2000 Census |
|-------------------|---------------|-------------|
| % Female          | 52%           | 52%         |
| % Hispanic        | 11%           | 11%         |
| % Black           | 11%           | 11%         |
| % < High school   | 20%           | 20%         |
| % High school/GED | 29%           | 29%         |
| % > High school   | 51%           | 51%         |
|                   |               |             |
| Mean age          | 45            | 45          |

In general, how would you rate your health? (5 = excellent; 4 = very good; 3 = good; 2 = fair; 1 = poor)

| Sample   | Mean (1-5 possible score) |
|--|---------------------------|
| PROMIS   | 3.53                      |
| 2004 Medical Expenditure Panel Survey                      | 3.56                      |
| 2001-2002 National Health and Nutrition Examination Survey | 3.50                      |
| 2005 Behavioral Research Factor<br>Surveillance System     | 3.52                      |

# But weighting doesn't always work

 Propensity score weighting of internet sample helped but didn't eliminate differences (Schonlau et al., 2009) Comparing probability and non-probability panels (Chang & Krosnick, 2009)

- Same questionnaire (on politics) administered to a telephone sample, an internet probability sample, and a convenience internet sample.
- Convenience sample had the most selfselection bias
- Probability sample yielded most accurate results

Why are probability internet panels with low response rates superior to convenience panels?

- Coverage of non-internet population
- Selectivity of respondents who sign up for convenience panels.
  - 30% of online surveys completed by 0.25% of the U.S. population (Miller, 2006)
  - 15-25% of vendor samples from a common pool of respondents (Craig et al., 2013)
  - Panel participants belong to 7 online panels (Tourangeau, Conrad, and Couper, 2013)



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Ron Hays <dr.ronhays@gmail.com>

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