address-based**samples**

key factors in refining this research methodology

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Address-based Samples: Key Factors in Refining this Research Methodology

At SSRS and other research organizations, the last several years have seen a spike in interest in the use of address-based samples (ABS) to overcome the increasing difficulty of reaching respondents through RDD dual frame designs. ABS provides a number of advantages, including the ability to target small geographic areas and stratify samples based on geography with a high level of precision and the ability to reach cell phone only respondents who do not have a listed number. Unfortunately, a problem persists with the exclusive use of ABS, and it is one for which methodologists have yet to formulate an adequate response.

In their 2011 Public Opinion Quarterly (POQ) article, Link and Lai pointed to the "key limiting factor" of address-based sample (ABS) designs - the fact that households without a listed phone number to match to an address can only be contacted by mail (Link and Lai 2011, 631). Their paper joins several ABS studies finding that the limited toolbox available for reaching the unlisted population leads to underrepresentation of less educated respondents who do not have listed telephone numbers (Link et al., 2008, 6-27, Sherr, et al., 2009). Even oversampling and offering differential incentives do not fully compensate for the inability to call people on the telephone and request their immediate participation in the survey.

Research conducted at SSRS has also shown differential non-response between the matched and unmatched sample (i.e., sample addresses that could not be matched with listed telephone numbers using InfoUSA or Experian databases), particularly among the less educated and Hispanic respondents. The inability to contact respondents by telephone, which requires respondents to call in using a toll-free 800 number or complete the survey either using a hard-copy questionnaire or online instrument, results in a skew toward more educated, often non-Hispanic, respondents in the unmatched sample of completed interviews.

In 2010, SSRS conducted two all-ABS studies using samples stratified by household incidence of race and ethnicity. These two large studies, which together included over 15,000 interviews, provided an excellent opportunity to delve more deeply into the demographic differences between matched and unmatched samples and the potential for addressing the systematic differences that exist in the data collected from these two groups.

Methods

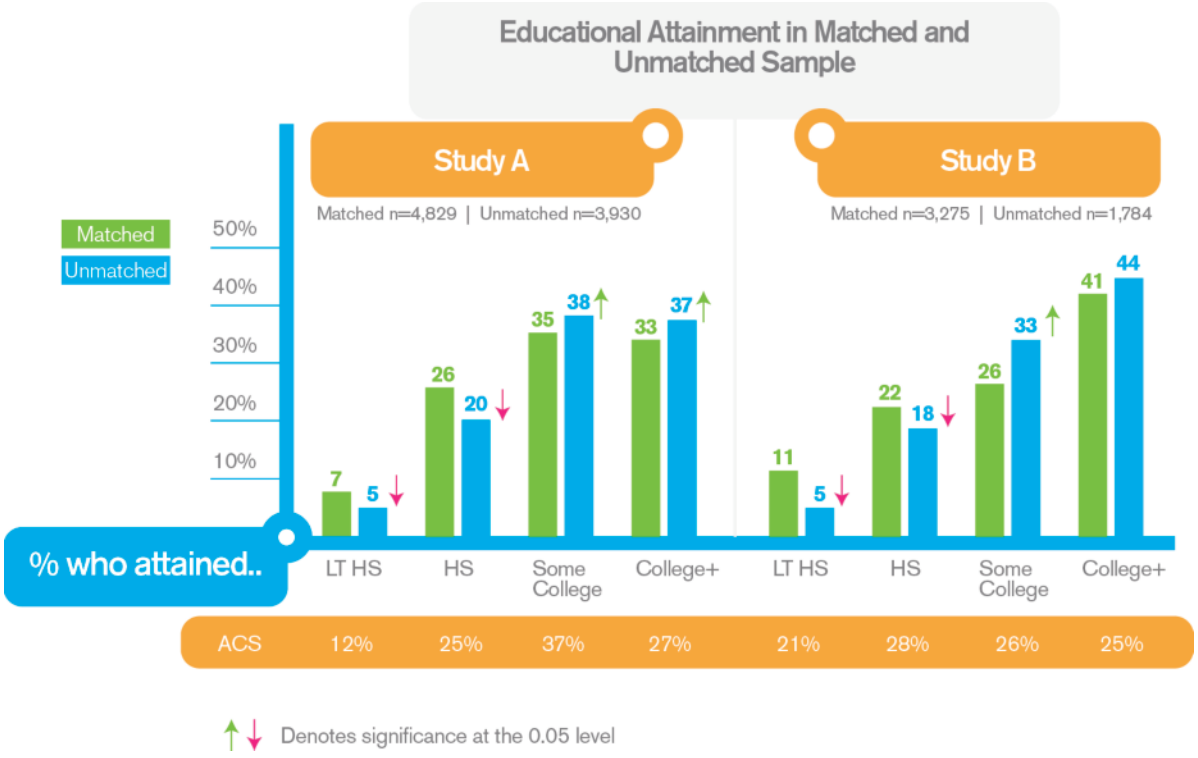
In both studies described above, the samples were stratified by census block group in order to increase the number of ethnic completes and meet geographic targets. We hypothesized that oversampling areas of high Hispanic and African American density might also close the gap between the matched and unmatched sample for education and Hispanicity. While race is not a perfect proxy for education, we would expect the majority of high-density minority areas to have corresponding lower levels of socio-economic status.

The surveys were offered in three modes: telephone, online, and hard copy. Advance letters were mailed to the entire sample.

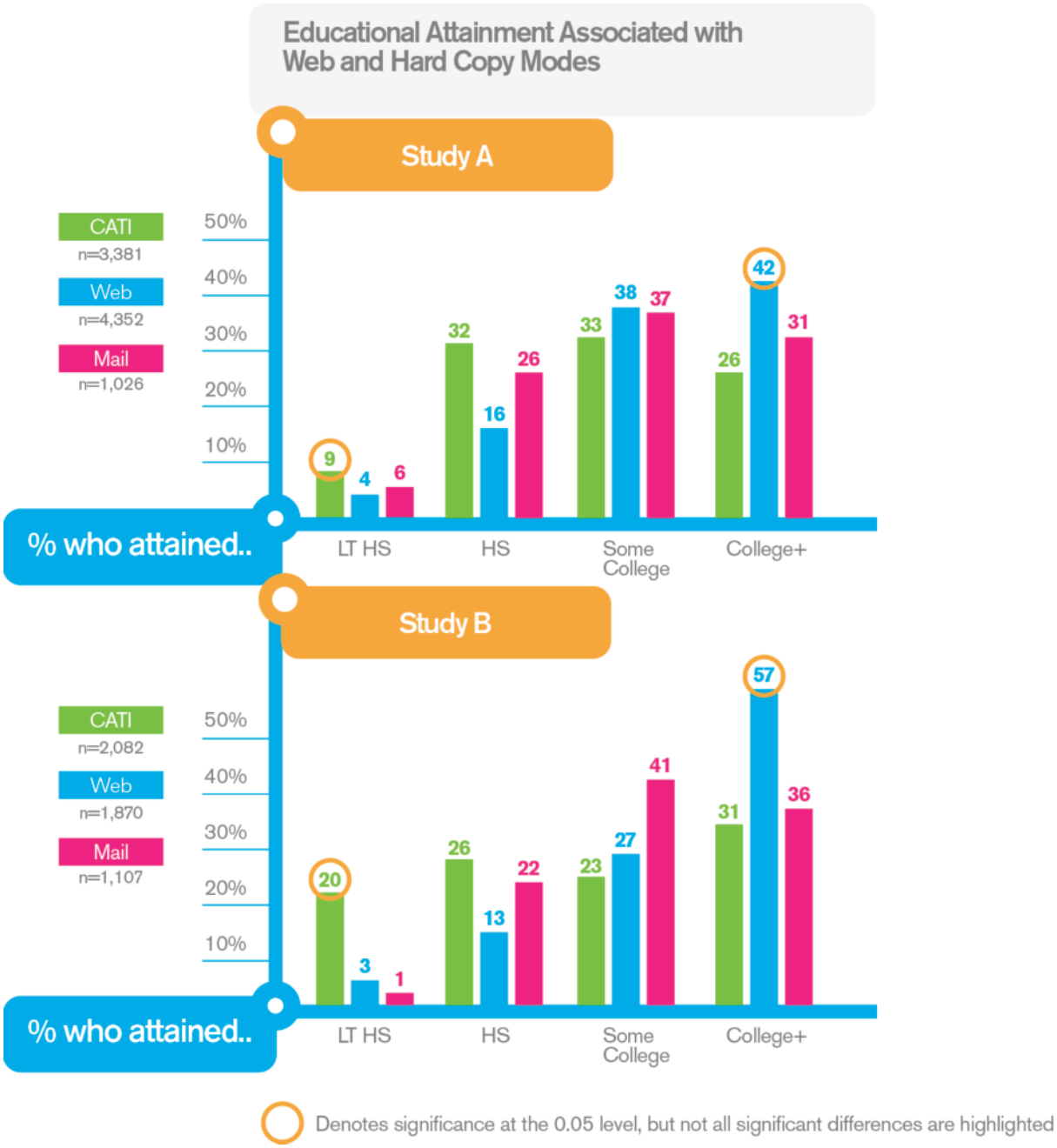
Results

The results of the studies show that the stratification did provide an increase in ethnic completes over what we would have expected with a simple random sample. However, this stratification did not address the problem of disproportionate non-response among unmatched samples with lower education levels compared with matched sample. The data point to an over-representation of those who have completed college and an under-representation of those with a high school education or less, when compared with the ACS proportions shown at the bottom of the figure below for Study A and Study B. Moreover, and key to this research, is the larger proportion of completed surveys from unmatched relative to matched samples for those who have completed at least some college and the smaller proportion that has not completed high school.

The unmatched sample contains cell-phone only households and those without listed numbers. As Link and Lai point out (2011), this segment of the sample contains a disproportionately larger percentage of younger people, blacks and Hispanics; therefore we would not expect the education levels to be higher than the rest of the population.



Again, our assumption is that the requirement that unmatched sample members use modes that presuppose technological and standard literacy, especially with more complicated questionnaires such as the ones used in these studies, suppresses response among less educated populations. It is worth noting that the highest educational levels are among those who completed the survey online. At the same time, the lowest educational levels are among those whom were either called or called in to complete the survey. These findings seem to suggest that, at present, the telephone mode is most accessible for lower-education households. Yet, this mode is not at our disposal for reaching unmatched sample.

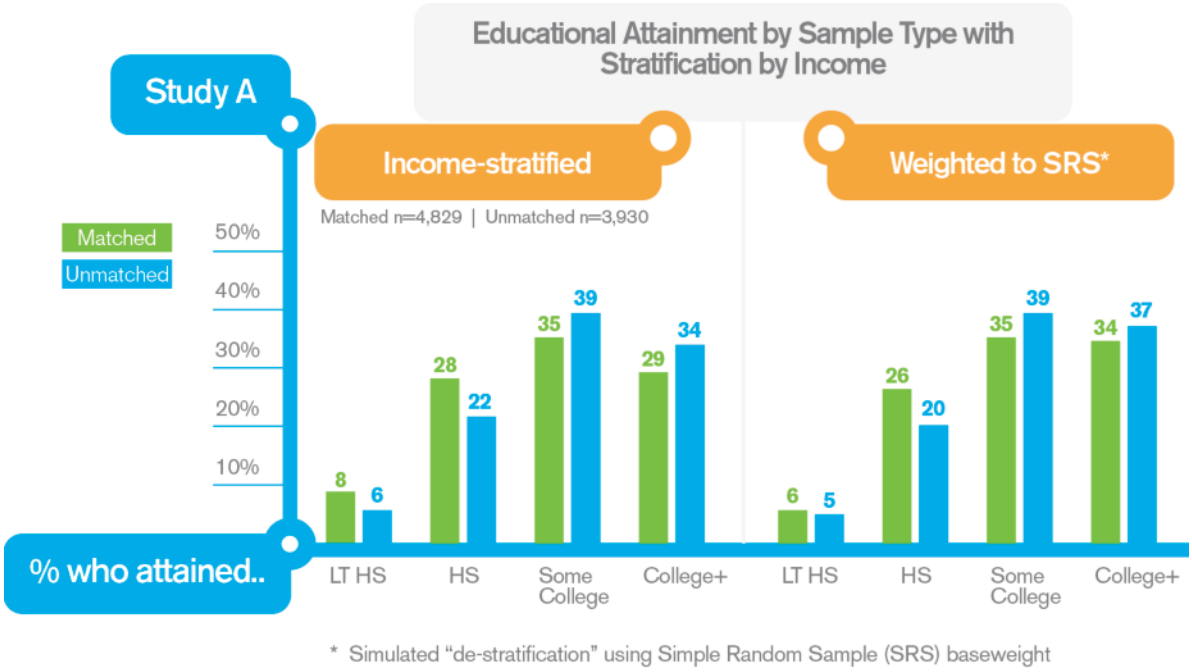


Alternative Stratification Plan

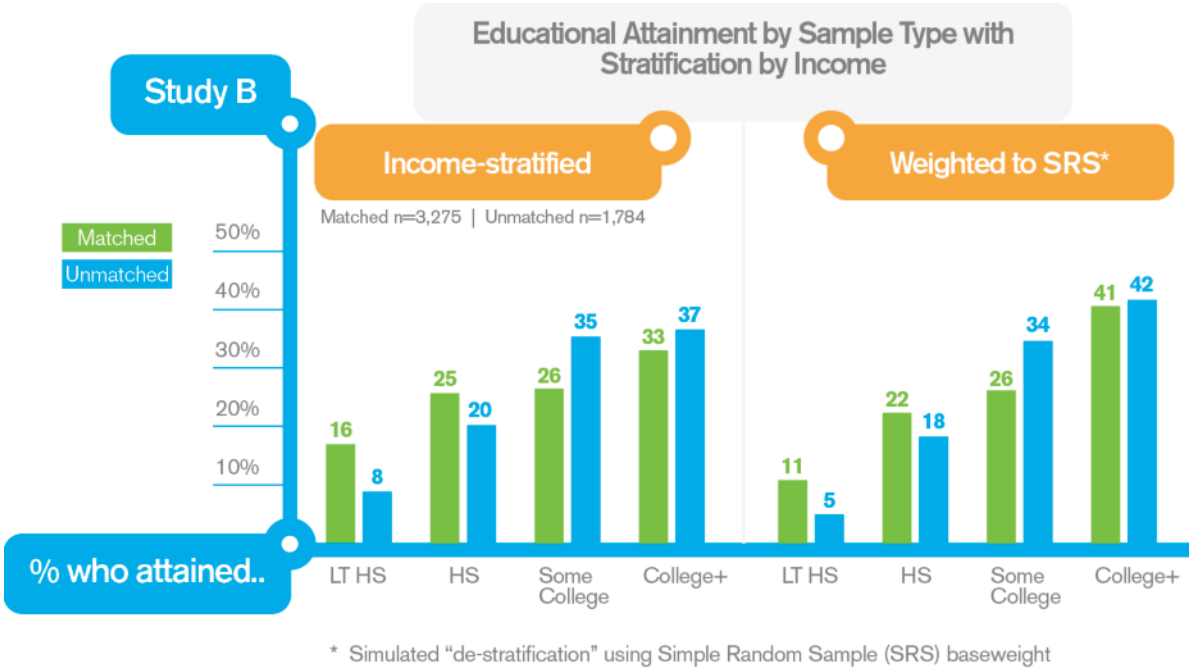
Considering that our ability to stratify samples was constrained by our required ethnic targets, we used the data to simulate a stratification plan by income level, which both takes advantage of the level of geographical specificity that can be achieved using ABS sample and hones in on the specific nature of the problem we were trying to address.

In order to do this, several steps were necessary. First, we asked our sister company Market Systems Group (MSG) to provide income level by census block group so that we would be able to divide the block groups into three strata: high, medium and low income. Then we created a variable in each data set representing these strata and weighted the data so that 50% of completes would fall into the low income stratum, 30% into the middle income stratum, and 20% into high income. Finally, we compared these data with a simulated simple random sample (SRS) by reallocating completes to remove the effect of the ethnic stratification as we would in a weighting procedure used to rebalance the sample back to the total population.

The chart below illustrates the results. Compared with the simulated SRS, an income-stratified sample may offer a modest improvement. There is some indication that more lower-education completes would be collected if samples were stratified by income. However, the difference between the two sample types persists and is of a similar magnitude. So, there are still people reachable only in unmatched samples who are being underrepresented in the final sample.



* Simulated "de-stratification" using Simple Random Sample (SRS) baseweight



Conclusions and Implications

It is clear that ABS offers potential for the best sample coverage of small geographic areas and excellent ability to target small areas with distinct socioeconomic characteristics.

Stratification by ethnic group can increase the proportion of ethnic completes vs. what would have been attained otherwise; however, reaching unmatched households with lower SES remains problematic. This population is harder to reach and less likely to complete either the hard copy or online versions of the survey.

Stratification by income may be a somewhat more effective way of increasing the proportion of completes with lower socioeconomic households, but disproportionate non-response is likely to be an issue with alternate stratification plans also.

We are left with finding new and better ways of encouraging the lower education populations within the unmatched sample to complete surveys through the available modes.

Our sense is that we need to figure out how we can either find ways of encouraging lower SES respondents to call in or provide a telephone number as well as decreasing the complexity of hard copy instruments, making them more inviting for use by lower SES households.

Other areas worthy of experimentation would be offering larger incentives to households that are likely to be of lower SES based on average household income levels in mail invitations, again taking advantage of the specificity of ABS samples to target the population of concern.

In addition, incenting unmatched households to provide telephone numbers so that outgoing calls can be made since, as we have seen, lower SES households seem to be most inclined to complete the survey on the telephone, is a promising area for future research.

SSRS leads the industry in developing sample plans aimed at overcoming the challenges of ABS designs. While a single 'fix' eludes the industry, SSRS frequently partners with clients to conduct experimental research aimed at finding ways to maximize the benefits offered by ABS designs in terms of population coverage while minimizing non-response among lower SES households.

About the Authors:
Robyn Rapoport

Robyn Rapoport designs and oversees health & public policy survey research projects that inform the public and guide policy decisions. For more than seven years, Robyn has directed survey research in the areas of health, public policy, and religion. She manages all aspects of survey research, from sample and questionnaire design to data analysis. Robyn directs research projects on behalf of policy institutes and foundations, academic institutions, and state departments of public health. Robyn writes and presents conference papers and collaborates with clients to report on data findings in the media and peer-reviewed journals.

Over the past three years, Robyn has managed several large-scale, international studies of health care and health policy; data from these studies have been published in The Lancet and Health Affairs journals.

Robyn has developed expertise in conducting studies using telephone, web, and hard copy modes of data collection, as well as those involving multimodal formats.

Currently, Robyn is Vice President of PANJAAPOR, the Pennsylvania-New Jersey chapter of AAPOR. In 2013, Robyn partnered with others on the PANJAAPOR Executive Council to expand and revitalize the New Jersey chapter of AAPOR.

Next › Susan Sherr, David Dutwin

About the Authors:
Susan Sherr

Susan Sherr has been managing survey projects for SSRS for more than six years. The majority of this work has involved oversight of large, complex studies aimed at determining health insurance status in various states and localities and people's perceptions of their health status and the quality of their care. The studies that Susan has worked on have used various survey modes and sampling methodologies.

Her responsibilities include questionnaire design and review, sample management, and data analysis. She has co-authored conference papers and publications with both colleagues and clients. Susan also serves an administrative role at SSRS focused on staff professional development.

Susan earned her Ph.D. in Communication from the University of Pennsylvania, and her bachelor's degree in English and American Literature from Brandeis University. Prior to coming to SSRS, Susan spent two years as a Senior Project Manager in the health group at National Analysts and five years as a Research Professor at Rutgers University, where she conducted research to find ways of engaging young people in the political process. She is currently President of the Pennsylvania-New Jersey chapter of AAPOR (PANJAAPOR).

Next › David Dutwin

About the Authors:
David Dutwin

David Dutwin is Executive Vice President and Chief Methodologist at SSRS, where his primary responsibilities include sampling designs, project management, executive oversight, weighting and statistical estimation. David is an active member of the survey research community, having served in the American Association for Public Opinion Research as a member and a chair of special task forces, a member of the Standards, Communications, and Heritage Committees, teaching multiple short courses and webinars, and as the Student Paper winner of 2002. He was elected to the AAPOR Executive Council in 2013 and serves as the 2016 Conference Chair.

He attained his Bachelors in Political Science and Communication from the University of Pittsburgh, a Masters of Communication from the University of Washington and his doctorate in Communication and Public Opinion from the Annenberg School for Communication at the University of Pennsylvania. For over a decade he has taught Research Methods, Rhetorical Theory, Media Effects and other courses as an Adjunct Professor at West Chester University.

David is also a Research Scholar at the Institute for Jewish and Community Research and Principal Methodologist for JPAR/Jewish Policy and Action Research. His publications are wide-ranging, including a 2008 book on media effects and parenting; methodology articles for Survey Practice, the MRA magazine Alert!, and other publications; and a range of client reports, most recently on Hispanic acceptance of LGBT, which he presented to a Congressional briefing in 2012.