MARKETING SYSTEMS GROUP INTRODUCES LANDLINE ASSIGNMENT BASED RDD SAMPLING FRAME

Random Digit Dial (RDD) sampling methodology has come a long way since the days when a sample of telephone numbers was created by appending random 7-digit numbers to available area codes. In the late 1970s, the Mitofsky-Waksberg method of RDD sampling was a major breakthrough as it improved the efficiency of telephone sampling while allowing researchers to sample from both listed and unlisted telephone numbers. However, operational complexities led researchers to look for further refinements and examine alternative methods of creating random samples of telephone numbers. In 1993, Casady and Lepkowski studied an alternative design that only included telephone numbers in 100-series banks with at least one listed residential telephone number, popularizing the 1+ list-assisted RDD sampling methodology. As such, a two-stage cluster sampling was replaced by a single-stage epsem sampling method that could produce survey estimates with smaller sampling variances. These impressive gains were realized at the expense of a presumed modest undercoverage of residential telephone numbers that could be easily tolerated when time and cost saving considerations were kept in balance.

Concerned about potential under coverage issues within the list-assisted RDD frame, MSG conducted a series of studies and in 2008 reported that the under coverage rate for this methodology had risen sharply. This deterioration is partially attributed to the emergence of alternative providers of landline telephone service, including cable companies and Voice over Internet Protocol (VoIP) providers. These Competitive Local Exchange Carriers (CLECs) are now major providers of telephone service across the US. They are also responsible for many of the residential telephone numbers that have been appearing outside of the traditional 1+listed frame in 0-listed banks.

Compounding the issue of households switching to alternative providers of landline voice service is the separate segment of households that have dropped landline service altogether. These cell-only households account for a third of all telephone households in the country. These two issues have jointly contributed to the under coverage issues now prevalent in the List-Assisted RDD frame.

Marketing Systems Group – industry's trusted leader for scientific sampling products and services – is pleased to introduce a new landline assignment based RDD sampling frame. This new frame accounts for nearly all landline telephone numbers (published and unpublished), including those offered by

traditional telephone companies (ILEC) as well as cable and VoIP providers (CLEC). The new landline assignment based RDD sampling frame includes virtually all active residential landline telephone numbers and eliminates concerns about the under coverage of residential landline numbers in the US.

Prior to this development, MSG had been utilizing commercially available white-page based listed telephone numbers as the primary source for constructing the list-assisted RDD sampling frame. However, in recent years a significant decline has been observed in the counts of white-page based listed telephone numbers. Specifically, during the past five years the number of listed landline numbers has decreased from nearly 80 million to about 60 million, a rate that has become more pronounced during the past few quarters. While the bulk of this decline is due to the rapid increase in cell-only households, there are also a growing number of households that have switched to alternative landline service providers.

The new landline assignment based RDD sampling frame reduces the under coverage of residential landline households. It also provides an improved set of ancillary data that can be used for stratification and targeting purposes. Most importantly though, the new landline RDD frame provides current estimates of telephone households, landline households, and cell-only households for any geographic sample frame constructed at the county level or larger. These figures now provide researchers the critical information needed to design a dual-frame sample with a proper balance of landline RDD and cellular RDD sample.

Updated quarterly, the new landline RDD frame is the most complete RDD sampling frame available today to the research industry. The following table summarizes the many differences between the old List-Assisted frame and the new Landline Assignment Based frame.

Comparison Between the Legacy and New Landline RDD Frames

List Assisted Frame	Landline Assignment Based Frame
Primary Data Source	
Listed telephone numbers from White Page directories. This source does not include all listings from alternative service providers, such as VoIP and Cable.	Nearly all landline telephone numbers (published and unpublished) including listings from alternative service providers, such as VoIP and Cable.
Level of Construction	
NPANXX (Exchange) level. This may not address issues associated with exchanges that are owned by multiple telephone companies, since in such exchanges 1K blocks owned by different providers may serve different geographies.	Thousand block level. This can effectively address issues associated with exchanges that are owned by multiple telephone companies.
Primary FIPS County Determination	
At the exchange level based on plurality of all listed households that can be geo-coded.	At the thousand block level based on plurality of landline households that can be geo-coded. Some thousand blocks within an exchange may receive different FIPS Codes.
Level of Stratification	
Exchange level, where an entire exchange is either included or excluded from the frame.	Thousand blocks, where individual blocks are either included or excluded from the frame.
Household Counts	
Defined based on total households, including no-telephone and wireless households.	Based on telephone households. Includes current estimates of wireless and landline households.
Household Hit Rates	
Based on total household and potentially inflated.	Based on total landline households and more accurate.
Demographic Profiles	
Geo-coded listed households are used as a proxy to aggregate Census Tract level demographics to the exchange level. County level demographic profile used for exchanges with no geo-coded listed households. The resulting demographic profile is based on all household and not landline households. Demographic estimates are likely inaccurate due to the inclusion of wireless and non-telephone households.	Thousand blocks are overlaid on Census Block Group geography within a larger county based or state level geography. Frame stratification is carried out in two steps: 1. A CBG incidence/coverage report is produced within the larger geography to determine a threshold for retaining the higher incidence CBGs for the target demographic. 2. A Thousand block coverage report is created using the set of CBGs from step 1 to determine a threshold for retaining the higher incidence thousand blocks for inclusion in the frame.

Demographic Variable Append	
Exchange level demographic profile used.	Demographic data is appended in a hierarchical fashion at one of three levels: 1. CBG Level demographic data used if phone number is a geo-coded landline household. 2. Rate Center level demographic profile used if no match in Step 1. 3. County level demographic profile used if no match in Step 1 or Step 2.
Place Name	
Based on the USPS name associated with the primary ZIP Code, or Rate Center name for exchanges with no ZIP Code data.	Rate Center name associated with each thousand block. The predominant city within in a Rate Center is used in instances where the Rate Center name is not a valid city or place name. Individual thousand blocks within an exchange can potentially receive different names.

DEMOGRAPHIC INDICATORS AVAILABLE ON THE NEW FRAME

1. Hispanic/Latino
2. White (non-Hispanic)
3. Black (non-Hispanic)
4. American Indian/Alaskan Native (non-Hisp)
5. Asian (non-Hispanic)
6. Native Hawaiian/Pacific Is (non-Hispanic)
7. Some Other Race (non-Hispanic)
8. Two or More Races (non-Hispanic)
9. HH Income $0<$15K
10. HH Income $15K<$25K
11. HH Income $25K<$35K
12. HH Income $35K<$50K
13. HH Income $50K<$75K
14. HH Income $75K<$100K
15. HH Income $100K<$125K
16. HH Income $125K<$150K
17. HH Income $150K<$200K
18. HH Income $200K<$500K
19. HH Income $500K+
20. Medan HH Income
21. Median Home Value
22. Owner Occupied
23. Rent/Other
24. HHs Below Poverty Line (no children)
25. HHs Below Poverty Line (with children)
26. HHs Above Poverty Line (no children)
27. HHs Above Poverty Line (with children)
28. Education - Less than 9th Grade
29. Education - Some HS no Diploma
30. Education - HS Graduate
31. Education - Some College no Degree
32. Education - Associate's Degree
33. Education - Bachelor's Degree
34. Education - Master's Degree
35. Education - Professional Degree
36. Education - Doctorate Degree