

# Cell Phone Sampling

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## Why should we care about cell phone surveys?

- Cell phone numbers are not in RDD frames
- Cell-only households are not in RDD frames
- Cell-only households are different
- Potential for biased estimates

## Cell Phones are not Include in RDD samples

- Wireless numbers are excluded from RDD frames
  - Dedicated Cell phone prefixes, 1000-blocks
  - Ported numbers

## Scrubbing Ported Phone Numbers

### NeuStar licenses databases of ported numbers

- May only be used for scrubbing
- Cannot be used to enhance a wireless frame
- Cannot be used to identify ported numbers in samples unless the client also has a NeuStar license
- Daily file should be used by client for scrubbing to be **perfect**

## Why are cell phone numbers not in RDD?



- Telephone Consumer Protection Act
- ANY call made (**without consent**) using an **automatic dialing device** to a **cellular** telephone number, or any number for which the party is **charged** for the call is prohibited
  - *“Automatic telephone dialing system” as equipment that has the capacity to store or produce telephone numbers to be called using a random or sequential number generator and to dial such numbers.*  
**It includes predictive dialers!!**

## Why are cell phone numbers not in RDD?

Reduce the risk to researchers, most of whom use auto-dialers or predictive dialers, of accidentally auto-dialing a cell phone.

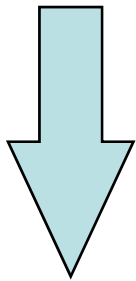
## Still a Few Cell Phones in Landline RDD

- Some cell phone numbers may be in shared 100-blocks that also contain directory listed numbers
- Millions of people Call Forward to their cell phone – considered ‘prior consent’ by FCC
- Timing of ported number scrubbing is not perfect given average field time

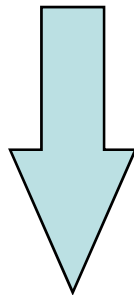
## Anatomy of a Phone Number

- Telephone Number

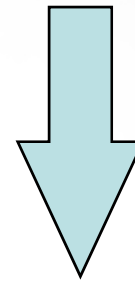
(305) - 230 - 1234



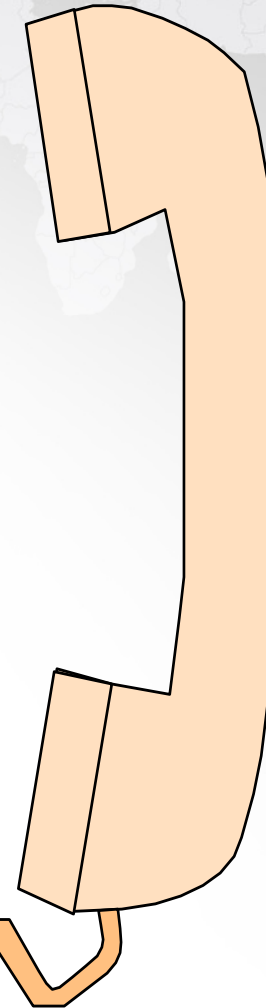
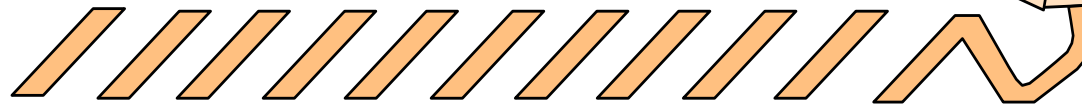
**Area  
Code**



**Exchange  
(Prefix)**



**Suffix**



## New Terminology

- A prefix contains 10,000 possible numbers
- 1000-block is a new term for most of us
  - A prefix is divided into ten 1000-blocks
- 100-block is familiar to most of us
  - Basis for list-assisted RDD frames
  - A 1000-block is divided into ten 100-blocks

## Anatomy of a Phone Number

### Telephone Number

(305) - 230 - 1234

1000-block (1000-1999)

(305) - 230 - 1234

100-block (1200-1299)

## Why are 1000-blocks important

### Thousand Blocks Pooling (FCC)

- Number conservation measure
- Providers could no longer monopolize all 10,000 numbers in a prefix
- Had to return unused 1000-blocks to a pool administrator for reallocation to **any service provider** requesting numbers in the area
- Telcordia\* file now contains both prefix and 1000-block information

\*Monthly Telcordia Terminating Point Master (TPM) file. Administrative and subject to occasional error by reporting carriers

## Effects of 1000-block Pooling

### Dedicated prefixes: No 1000-block pooling

**205220 A 00009999 00 9419 0 BELLSOUTH SO CNTL BIRMINGHAM AL**

Prefix **205-220**; BlockID = **A** = prefix information

**00009999** = All 1000 blocks

Prefix Type = **00** = POTS (**Plain Old Telephone Service**)

Company **9419** = **Bell South**

Company Type = **0** = BOC Exchange carrier

Rate Center Name = **BIRMINGHAM AL**

**205266 A 00009999 65 6664 8 SPRINT SPECTRUM LP BIRMINGHAM AL**

Prefix Type = **65** = PCS

Company Type = **8** = PCS Service Provider

## Effects of 1000-block Pooling

Mixed service types in prefixes not identified as 'shared'

205225 A 00009999 00 9419 0 BELLSOUTH SO CNTL      CENTREVL AL

205225 0 00000999 00 9419 0 BELLSOUTH SO CNTL      CENTREVL AL

205225 1 10001999 04 6232 5 NEXTEL COMM INC      CENTREVL AL

205225 2 20002999 04 6232 5 NEXTEL COMM INC      CENTREVL AL

205225 3 30003999 04 6232 5 NEXTEL COMM INC      CENTREVL AL

205225 4 40004999 04 6744 5 SOUTHERN COMM SVCS      CENTREVL AL

205225 6 60006999 04 6232 5 NEXTEL COMM INC      CENTREVL AL

205225 7 70007999 04 6232 5 NEXTEL COMM INC      CENTREVL AL

205225 8 80008999 04 6232 5 NEXTEL COMM INC      CENTREVL AL

Prefix Type = **04** = Cellular

Company Type = **5** = Cellular Service Provider

## RDD Sampling Frames

- Telcordia file must be used for constructing and validating both landline and wireless frames
- Prefixes now contain mixed types of service
- Prefix level information no longer accurate for frame construction or validation
  - Specific only to parent exchange carrier
- Using a list of 'wireless' prefixes will not ensure all wireless numbers have been identified and may exclude valid POTS 1000-blocks or 100-blocks

## Cell Phone Sampling Frame

Start with dedicated wireless prefixes and 1000-blocks:

- 04 Dedicated to Cellular
- 55,60 Special/Selective Billing Option – Cellular
- 65 Miscellaneous Service (non-500 PCS)
- 67,68 Special/Selective Billing Options – PCS
- 58,63 Special/Selective Billing Options - Cell, paging, mobile

## Cell Phone Sampling Frame

Include 100-blocks with **'shared'** service and no  
'listed' phone numbers

- 50 Shared 3 or more POTS, Cellular, Paging, etc.
- 54 Shared POTS and Cellular
- 66 Shared POTS and PCS (non-500)

**Option may not be available from all suppliers**

## 100-block Cell Phone Sampling Frame

- Includes all 2-digit numbers in eligible 100-blocks
  - 203-255-42nn
- Corresponds to landline RDD frame
- Two Non-overlapping frames (landline and wireless)
- Maximum coverage (landline and wireless)

## Cell Phone Sampling Frames

No file of 'listed' numbers to construct a list-assisted wireless frame

- No names and/or addresses available
- No Zip Codes
- No demographic information for targeting
- No data to determine 'working' blocks
- Geographic precision is minimal

## Cell Phone Sampling Frames

Just a frame of **possible** cell phone numbers

- Can't identify 'working' numbers or blocks
- Can't screen for disconnects (TCPA)
- Can't identify business numbers
- Can't identify pre-paid phone cards or disposable phones
- Can't identify cell-only

## Cell Phone Sampling Frames

Just a frame of **possible** cell phone numbers

- **Can** identify 'best-guess' County
- **Can** identify Service provider
- **Can** identify Billing or Rate Center

## Geographic Precision

County assigned based on location of the rate center

- Can use the county of assignment for RDD prefixes in same rate center
  - Useful for prefixes that service multiple counties
- Represents residence of subscriber when service was purchased

## Geographic Precision

### Exchange coverage is different than landline

- Wireless prefix service areas are usually much larger than landline prefixes
  - CT has 95 unique landline rate centers
  - CT has 34 unique wireless rate centers
- Not all counties represented due to larger coverage area of wireless prefixes
- Some counties significantly over-represented or under-represented in the frame

## Geographic Precision

- Arbitron presentation at AAPOR 2006
- Cell phone only households:
  - 43% of respondents lived within landline exchange area
  - 68% of respondents lived in the county of the rate center
  - 89.4% of respondents lived in Arbitron Metropolitan Area

## Geographic Precision

- The finest association is to a county level
  - Not as accurate as landline assignment
  - No Zip code information
- The point of residence at time of purchase (cell rate center)
  - Not where the person lives or is currently located
  - Need to screen for location and/or residence

## Geographic Precision

Defining sample geography by county can result in coverage error when:

- No rate center is located in one or more of the sampled counties
- Unknown number of subscribers live in a county not in the sampled geography

## Geographic Precision

Defining sample geography by county can result in coverage error when:

- Unknown number of subscribers live in a sampled county but have phone numbers in a rate center in a county not being sampled
- Subscriber moves to a different city or state and keeps his/her phone number

## Stratification

- Frame can be sorted or stratified by FIPS State or FIPS State and County to control geographic distribution of the sample
- No external Measure of Size – penetration rates not available for states or counties
  - Can't tell you what the cell-only penetration is for states, counties or cities (yet)
- Equal probability sample selection across all possible cell phone numbers in sample geography

## Stratification (Continued)

- Frame can be sorted or stratified within geography by the Operating Company
  - OCN Names and codes do not always represent current carrier (acquisitions, mergers, porting)
  - Connecticut exchanges are still classified as belonging to Southern New England Telephone
  - It can **help** stratify large carriers from small carriers which may improve efficiency
    - Verizon vs. Cricket

## Stratification (Continued)

- Frame can be sorted or stratified within geography by the Operating Company
- Not accurate for wireless-to-wireless ported numbers
  - Represents the original cell service provider when subscriber obtained the number
  - Not subscriber's current cell service provider

## Sample Design Issues Reviewed

- Cannot identify business numbers
- Cannot identify numbers ported to wireless
  - Can be included/flagged in landline sample with NeuStar license
- No Measure of Size for wireless
  - No frame options (Listed, Telephone Households, etc)
  - 100-block frame (not Active Block frame)
- No names or addresses
- No demographics
- Imprecise geo-coding (FIPS of Billing Center)

## Frame Differences

### Different probabilities of selection for a household

- Landline Frame – household frame
  - One person usually represents the household
  - One number = multiple adults
- Cell Phone Frame – population frame
  - One number = one adult
  - One number = one non-adult
  - One number = multiple people (sharing)
- Can cell respondent be considered as representing the household?

## Operational Issues –Sample Size

### Sample Size factors

- Working Phone Rate – 50% to 60%
- Contact/Cooperation – 20%
- **Cell Phone Only – 25%**
- Outside survey geography - ?%
  - Will vary based on scope of survey geography

Set quota for completes or define a sampling rate

Merge with landline completes

Post-stratify/Rake to Census demographics

## Summary of issues in calling mobile phones

Most suppliers require those clients that purchase wireless samples to execute an end-user agreement acknowledging that they will comply with any and all applicable laws, rules, and regulations related to the calling of cell phones

SSi will be requiring execution of a one-time end-user agreement soon

Thank You

Questions?

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