

# **Guidelines & Considerations: Telephone Surveys of Respondents Reached via Cell Phone**

AAPOR Cell Phone Task Force:

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# Outline

- Coverage & Sampling
- Nonresponse
- Legal & Ethical
- Measurement
- Weighting

**CONSIDERATIONS  
REGARDING COVERAGE  
AND SAMPLING**

# CONSIDERATIONS REGARDING COVERAGE AND SAMPLING

## Subcommittee Members:

- Chair – Linda Piekarski, Survey Sampling Intl.
- Stephen J Blumberg, U.S. Centers for Disease Control and Prevention
- John Boyle, Abt SRBI Inc.
- Michael Brick, Westat
- Scott Keeter, Pew Research Center

# CONSIDERATIONS REGARDING COVERAGE AND SAMPLING

Cell Phone Sample is available from most  
sample suppliers

Frames are constructed from industry  
databases

- Administrative data and subject to some error
- Contain information on the types of service for  
prefixes and 1000-blocks where pooling is in  
effect
- Contain Rate Center and Service Provider  
information

# CONSIDERATIONS REGARDING COVERAGE AND SAMPLING

Just a frame of possible cell phone numbers

- No database of directory listed numbers
- No address information
- No information on where subscriber resides
- Don't know if subscriber also has landline service or is Cell Phone Only
- No demographic information
- No Measure of Size for Cell or Cell-Only population below Census Region

# CONSIDERATIONS REGARDING COVERAGE AND SAMPLING

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

# CONSIDERATIONS REGARDING COVERAGE AND SAMPLING

Types of service that might contain cell phone numbers:

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

# CONSIDERATIONS REGARDING COVERAGE AND SAMPLING

## Frame considerations when purchasing sample

- Is the frame based on prefixes, 1000-blocks or 100-blocks?
  - Prefix restricted frames have more coverage error
- What types of service are included: dedicated, shared, cellular, PCS, special billing?
  - Dedicated service frames have more coverage error
  - Shared service only means multiple services provided by single service provider

# CONSIDERATIONS REGARDING COVERAGE AND SAMPLING

Prefix level information inaccurate – coverage error

205225 A 00009999 00	9419 0	BELLSOUTH SO CNTL	CENTREVL AL
205225 0 00009999 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: 00 = POTS; 04 = Cellular

Company Type: 0=BOC; 5 =Cellular Service Provider

# CONSIDERATIONS REGARDING COVERAGE AND SAMPLING

Prefix level information inaccurate – potential overlap

205225 A 00009999 04 9419 5 NEXTEL COMM INC	CENTREVL AL
205225 0 00001999 04 6232 5 NEXTEL COMM INC	CENTREVL
205225 1 10000999 00 9419 0 BELLSOUTH SO CNTL	CENTREVL
205225 2 20000999 00 9419 0 BELLSOUTH SO CNTL	CENTREVL
205225 3 30000999 00 9419 0 BELLSOUTH SO CNTL	CENTREVL
205225 4 40000999 00 9419 0 BELLSOUTH SO CNTL	CENTREVL
205225 5 50000999 00 9419 0 BELLSOUTH SO CNTL	CENTREVL
205225 6 60000999 00 9419 0 BELLSOUTH SO CNTL	CENTREVL
205225 7 70000999 00 9419 0 BELLSOUTH SO CNTL	CENTREVL
205225 8 80008999 04 6232 5 NEXTEL COMM INC	CENTREVL

Prefix Type: 00 = POTS; **04** = Cellular

Company Type: 0=BOC; **5** =Cellular Service Provider

# CONSIDERATIONS REGARDING COVERAGE AND SAMPLING

## Frame considerations when purchasing sample

- How are shared service numbers handled?
  - May be identified only at prefix or 1000-block
  - Potential for coverage error or overlap with RDD frame
- What levels of geography are available?
  - FIPS State and County is lowest level for which coding can be done - based on location of Rate Center
- How was coding accomplished?
- Estimate of precision of geo-coding?

# CONSIDERATIONS REGARDING COVERAGE AND SAMPLING

## Frame considerations when purchasing sample

- Are there alternatives for including landline numbers ported to wireless service?
- *NeuStar's Intermodal Ported TN Identification Service* license limits use to “scrubbing” or efforts to comply with TCPA regulations prohibiting calls to cell phones using automated telephone equipment. May not be used to construct or enhance a cell phone frame.

# CONSIDERATIONS REGARDING COVERAGE AND SAMPLING

## Coverage considerations for cell phone samples

- National coverage of cell phone numbers is excellent
- It is much more important than for landline RDD to determine residence of respondent
  - Prefix geography areas are much larger than for landline prefixes
  - Respondent is more likely not to live in the county of the Rate Center
  - Subscribers can move to a different city or state and keep their phone number

# CONSIDERATIONS REGARDING COVERAGE AND SAMPLING

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
- Unknown number of subscribers live in a sampled county but have phone numbers in a rate center in a county not being sampled
- Subscribers can move to a different city or state and keep their phone number

# CONSIDERATIONS REGARDING COVERAGE AND SAMPLING

## Integrating sample from RDD and Cell frames

- No consensus on 'best' approach for combining sample from both frames
- Population frame vs. household frame
- Situation of households that can be reached by both a landline and a cell phone

These topics will be covered in more depth in the weighting section

# CONSIDERATIONS REGARDING COVERAGE AND SAMPLING

Researchers should obtain enough cell phone cases, or cell phone only cases, so that it is not necessary to apply large weights to cell or cell only cases

**CONSIDERATIONS  
REGARDING  
NONRESPONSE**

# CONSIDERATIONS REGARDING NONRESPONSE

## Subcommittee Members:

Chair – Anna Fleeman, Arbitron

– Mario Callegaro, Knowledge Networks

– Michael Link, Nielsen

– Chuck Shuttles, Nielsen

– Charlotte Steeh, CDC

# CONSIDERATIONS REGARDING NONRESPONSE

- Problematic aspect of cell surveys is low response rates
  - At least 10-20 points below landline
- Need to approach problem in three ways:
  - Identify true sources of nonresponse
  - Use strategies that reduce nonresponse
  - Modify the AAPOR RR calculations to address differing features of CP surveys

# CONSIDERATIONS REGARDING NONRESPONSE

- Types of Nonresponse akin to landline
  - Noncontacts
  - Refusals
  - Other noninterviews
  - Undetermined eligibility
- But effect on survey and response are quite different...

# NONCONTACTS

- Most noncontacts perform similarly in landline and cell phone surveys, yet VMs much higher with cell
- As more people make their cell phone the primary contact, the noncontact rates are expected to decrease

# REFUSALS

- Respondent pays for call or uses minutes
- May be engaged in an activity not conducive to answering phone or talking
- Cell phones are private and/or personal
- More difficult to convert refusals in cell phone - not reaching another HH member

# UNDETERMINED ELIGIBILITY

- Cell phones can be used for business and/or personal
- Or, used only for emergencies
- Operator messages often unclear and confusing
  - “Number not accepting calls at this time”
  - “Please enter your mailbox number”

# OPERATIONAL CONSIDERATIONS TO IMPROVE RESPONSE

- Calling Protocols
  - Safety concerns
  - Time zone issues
  - Voicemail messages
  - Caller ID and callbacks
  - Refusal conversions
- Reimbursement & Incentives

# NONRESPONSE SUMMARY

- Nonresponse greater in cell surveys
- Ensure best practices and tested methodologies are used
- Disclose sample types – LL and/or Cell
- Phone surveys targeting high CPO demo should include cell numbers
  - If not, indicate why and how excluding may affect results

# CONCLUSIONS

- Cell phone sampling is a necessity in survey research
  - Coverage bias must be reduced for estimates to remain reliable
- And, the good news...
- Survey research using cell phone samples has been going on since 2002 and has indeed been successful!

# **LEGAL & ETHICAL CONSIDERATIONS**

# LEGAL & ETHICAL CONSIDERATIONS

## Subcommittee Members:

- Chair – Howard Feinberg, CMOR
- Stephen J. Blumberg, CDC
- Chuck Shuttles, Nielsen
- Trevor Thompson, AP

# Ethical & Legal

## DISCLAIMER

- The information provided in this presentation is not a substitute for legal advice. It is provided for informational purposes only. It is advisable to consult with private legal counsel regarding the scope and application of any laws.

# Legal Issues Directly Related to Cell Phone Calls



- Federal Law
- Federal Telephone Consumer Protection Act (TCPA)
  - Applies to **both** intra-state calls (calls made and originating from within the same state), as well as interstate calls (calls from one state to another).
  - Autodialer/Cell Phone Provisions restrict calls for research purposes!

# Telephone Consumer Protection Act – *The Concern for Survey Research*

- ANY call made (**without consent**) using an **automatic dialing device** to a **cellular** telephone number, when the party is **charged** for the call



- *“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!!**

# How to Comply With the Current TCPA Rules?

## Permissible Calls:

- If placed **manually** by telephone interviewers (instead of using an automatic telephone dialing system)
- If the called party is **not charged for the call**
- If the call is made with **consent** of the called party
- **Remove** cell phone numbers from the sample

# Other Legal & Ethical Issues

## Call Back Attempts

- State harassment laws
- Caller ID

## Time of Day

- 8 –9pm

# Other Ethical Considerations

Remember the MOBILE in mobile phone!

– Driving a car

**“Are you in a place where you can safely talk on the phone and answer my questions?”**

# Other Ethical Considerations

- Respondent answering a cell phone in a **public place** (protect their **privacy**)
- **Time constraints** for cell phone calls
  - Minutes/cost/**expectations**

# More Information

- CMOR
  - [www.cmor.org](http://www.cmor.org) - Telephone Research Resources
- FCC/FTC Fact Sheets
  - Fact Sheet on Predictive Dialers -  
<http://www.fcc.gov/cgb/consumerfacts/PredictiveAlert.html>
  - FCC Fact Sheet with Information about the Cell Phone Provisions of the TCPA -  
<http://www.fcc.gov/cgb/consumerfacts/tcpa.html>
  - Fact Sheets about Cell Phones and the Do-not-call registry  
<http://www.fcc.gov/cgb/consumerfacts/truthaboutcellphones.html>; <http://www.ftc.gov/opa/2005/04/dnc.htm>

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**CONSIDERATIONS  
REGARDING  
MEASUREMENT**

# CONSIDERATIONS MEASUREMENT

## Subcommittee Members:

- Chair – Scott Keeter, Pew Research Center
- Patrick Glaser, CMOR
- Paul Lavrakas, Independent Consultant
- Charlotte Steeh, CDC

# CONSIDERATIONS MEASUREMENT

## Overview

- Additional survey items
  - Dual frame and weighting purposes
- Data Quality
  - Is data quality lower for cell phone respondents versus landline demographically similar respondents, and if so, under what circumstances ?

# CONSIDERATIONS MEASUREMENT

## Additional Survey Items

- What (if any) additional items are needed?
  - Merging with landline frame survey
  - Weighting
  - Key analyses
  
- This is a measurement issue, but will be addressed in weighting section (next)

# CONSIDERATIONS MEASUREMENT

## Data Quality – Overview

- Unique nature of a cell phone call
- Interviewer and respondent interaction
- Data quality impacts?

# CONSIDERATIONS MEASUREMENT

## Data Quality – Initial Findings\*

- No evidence to show significant quality differences to landline
  - Steeh (2005) – item nonresponse, correlations, demographic distribution
  - Brick et al. (2007) – missing data, length of open-ended, or response to sensitive items
  - Also see Kuusela, Callegaro, & Vehovar (2007) and Kennedy (2007)

\* What we know currently

# CONSIDERATIONS MEASUREMENT

- Consider that the quality of respondents' answers may be affected by:
  - Respondents' location – work, bus, with spouse, etc.
  - ★ Research opportunity – data quality indicators by dichotomous home vs. out of home survey call
  - Interviewer training (e.g., determining location, refusal conversion, etc.)
  - Sensitive Survey Topics – sexually transmitted disease, race-related attitudes, income, etc.

# CONSIDERATIONS MEASUREMENT

- Consider that the quality of respondent's answers may be affected by:
  - Connection – bad connection, ambient noise
  - Phone Equipment – lower volume

# CONSIDERATIONS MEASUREMENT

## Measurement Overall Summary

- Additional items may be needed for dual frame and other analyses
- Data Quality
  - No significant differences to landline surveys detected yet
  - Stay vigilant – more research is needed
  - Interviewer training specific to cell phone surveys could help

# **CONSIDERATIONS REGARDING WEIGHTING**

# CONSIDERATIONS REGARDING WEIGHTING

## Subcommittee Members:

- Chair – John Hall, Mathematica Policy Research
- John Boyle, Abt SRBI Inc.
- Mike Brick, Westat
- Mario Callegaro, Knowledge Networks
- Courtney Kennedy, University of Michigan
- Linda Pierkarski, Survey Sampling Intl.

# OVERVIEW OF WEIGHTING CONSIDERATIONS

- Types of studies “considered”
- Question researchers should ask
- When are weights needed (in general)
- Factors affecting weighting choices

# TYPES OF STUDIES THESE CONSIDERATIONS ADDRESS

- Samples selected from RDD frames
  - landline
  - cell, or
  - both
- Study population comprises
  - Households and/or
  - Residents of households

# INITIAL QUESTIONS ABOUT WEIGHTING

- Are weights needed?
- How does the study design affect the weighting approach?
- What variables should be used for post-stratification?
- What other issues must be considered in weighting?
- What data will the survey need to collect?

# WHEN ARE WEIGHTS REQUIRED

- Generally weights are used to compensate for:
  - differential probabilities of selection (oversampling)
  - differential propensities to respond
  - sampling frame coverage problems
- Would almost always be required in dual frame (landline and cell) design
  - Especially if those with both services interviewed from both frames

# WHEN ARE WEIGHTS REQUIRED (CONT.)

- Examination of unweighted frequencies is advisable even if weights are to be used
- Researchers should report
  - Whether weights were used
  - Why weights were or were not used
  - Weighting procedures used (if any were used)

# FACTORS AFFECTING WEIGHTING DECISION

- Population being studied (as defined by telephone service)
  - No phone service
  - Cell only
  - Landline only
  - Landline and cell service

# FACTORS AFFECTING WEIGHTING DECISION (CONT.)

- Design approaches
  - Landline and cell frames used, but screening on type of service eliminates multiplicity
  - Landline and cell frames are used and there is no screening

# FACTORS AFFECTING WEIGHTING DECISION (CONT.)

- Design approaches (continued)
  - Only a landline frame is used but cell only group is part of study population
- Only one frame is used and inference is only to those on that frame

# DIFFERENT WEIGHTING ADJUSTMENTS

		Adjustments for Differences In					
Study Population	Sampling Frame(s)	Probabilities of Selection Within Frame	Within Frame Multiplicity	Multiplicity Across Frames	Service Interruption	Response Rates	Post Stratification
Cell only	Cell	At phone level; at person level depending on approach to "sharing"	Number of cell phones	Not Applicable	Possibly	Among strata or other groups	Demographic and geography if data are available
All phone (plus non phone)	Landline	Within household selection if any	Number of landlines	Not Applicable	"Keeter," modified to cover periods of cell only	Among strata or other groups	By whether had interruption if data available; by age and other factors correlated with phone usage
All phone (plus non phone)	Landline and cell	See above for frame specific	Number of cell phones; number of landlines	Depends on Screening Rule See next "slide" on Multiplicity	May use Keeter or modified Keeter	Within frame; among strata or other groups	By phone usage if data available; by age and other factors correlated with phone usage

# APPROACHES TO DEALING WITH MULTIPLICITY IN DUAL FRAME SURVEYS

- Linear combinations (composite or “Hartley” weights)
- Computing probabilities of selection to account for overlap
- Raking or post-stratification
  - to totals for usage groups (cell only, etc.)
  - to totals for age and other factors associated with phone usage

# OTHER ISSUES AFFECTING WEIGHTING CELL PHONE SURVEYS

- If sample is from cell phone frame only
  - weighting fairly straightforward
  - post-stratification problematic especially for sub-national studies
  - frame information (geography and exchange level demographic estimates) used by many in landline surveys is missing or not as accurate for cell phone frames

# OTHER ISSUES AFFECTING WEIGHTING CELL PHONE SURVEYS (CONT.)

- Issues in dual frame surveys
  - accounting for multiplicity has caused difficulties
  - data for post-stratification is sparse
  - Cell frame usually has lower response rate
  - differential response between frames among households with both cell and landline

# COLLECTING DATA FOR WEIGHTING

- Has respondent been reached on cell or landline?
- What phone service does respondent have—cell, landline, both?
- Does anyone besides respondent use cell phone that was called?
- Other cell phones? Other landlines?

# COLLECTING DATA FOR WEIGHTING (CONT.)

- Usage patterns for cell and landline
- Demographic data associated with telephone usage
  - age
  - sex
  - others

# RECOMMENDATIONS

- All telephone surveys should disclose whether the sample includes landline and/or cell numbers and how the numbers were selected from the frames
- Surveys containing cell phone numbers should fully disclose if any weights were used and what population estimates have been used to post-stratify

# RECOMMENDATIONS

- Surveys targeting subgroups with substantial percentages of cell phone only households should sample cell phone numbers
  - For example, 18-24 year olds, renters, etc.
  - If not feasible, discuss how excluding cell phone numbers affected the results

**Thank You**