

# Wireless Challenges

## What we know and don't know

**Presented by**

Linda Piekarski

**Federal CASIC Workshops**

**March 2, 2005**

**Survey Sampling International**

# Cell Phone Usage

Popularity of wireless phones growing

- 70% of households have 1+ wireless phones

Trend toward primarily wireless\*

- 11% make all calls on Cell Phone
- 16% make 75% of calls on Cell Phone
- 24% make 50% of call on Cell Phone

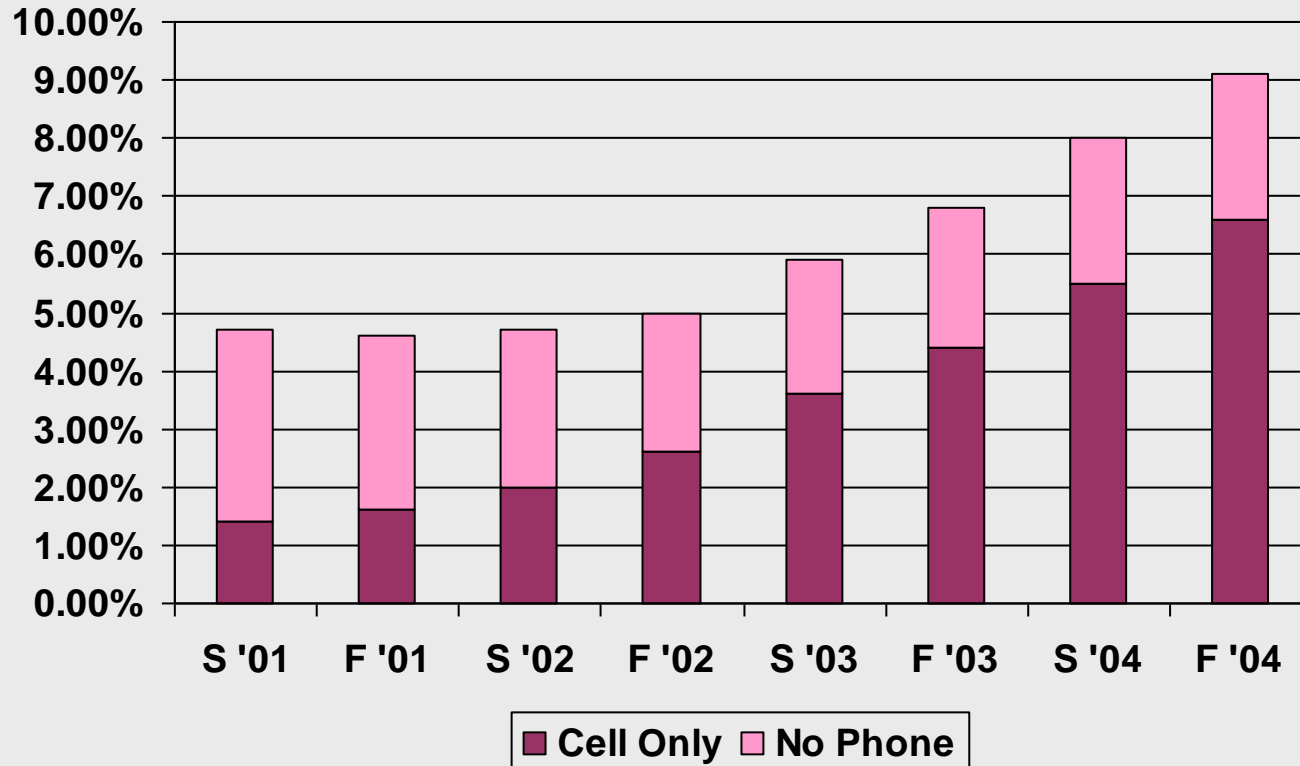
Trend toward wireless-only

- 6% of households have only wireless phone

**\*Roper 2004**



# Wireless-only Coverage Bias



Source: Mediamark Research Inc.

Survey Sampling International

# Wireless-only Demographic Bias

- Young (<35)
- Male
- Minority
- Urban
- 1 person households
- Renters
- Educated
- Employed
- Income < \$40,000
- Smokers/Drinkers
- Uninsured/Underinsured

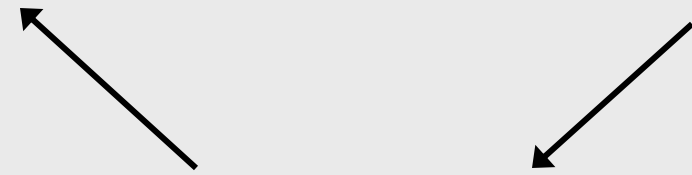
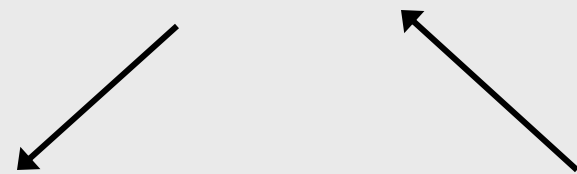
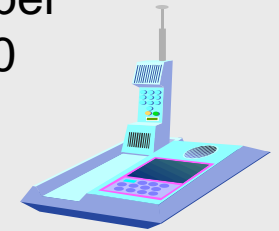


# Wireless Numbers in Phone Samples

NeuStar, Inc.  
Portability Administration Center

Wireless Subscriber  
(203) 260-6599

Wireline Subscriber  
(203) 255-4200



Call Forwarding

# Number Portability

1.2 million land-line numbers ported to a wireless service (NeuStar)

- Only 14% in active residential 100-banks
  - 150,00 to 200,00 wireline numbers

# Wireless Numbers in Phone Samples

## 1000-Block pooling

- Wireline and wireless blocks in same prefix
- Different providers in single prefix
- Prefix level classification may not indicate presence of “shared” services.
- 1000-block classifications may be inaccurate

# Wireless Numbers in Phone Samples

0% - 3% of BRFSS sample were cell phones

- Most in “shared” prefixes
- Non-MSA
- Midwest

**Source:** BRFSS sample Sept-Dec 2004 (n = 678,558) as reported  
By Michael W. Link at Cell Phone Summit II



# Removing Wireless Numbers

## NeuStar Database

- 1.2 million land-line numbers ported to a wireless service
  - Updated daily
  - Only 14% in active residential 100-banks

## Dedicated prefixes and 1000-Blocks

- Issues of accuracy and completeness
- Issues with mixes/shared service prefixes and blocks

Can't pre-identify call forwarding

# Does the Cell-only Bias Hurt?

## 2004 National Election Pool

- 7% Cell Only
- Similar to others within youth cohort
- Minimal bias in 2004
- “Growth in the percentage of cell-only citizens may reduce the bias by rendering the cell-only group more like the rest of the population.”

**Source:** Cell Phone Non-Coverage Bias in the 2004 Presidential Election

presented by Scott Keeter, Pew Research Center at 2005 Cell Phone Summit II

# Is Wireless-only the Future

## How will it affect Coverage bias?

“Students use them for personal and business calls, text messaging, calendars, alarm clocks, address books, birthdays, watches, games, calculators, cameras, and ring tones.. Asking college students to journal their use of cell phones would be like asking an office worker to track her usage of a computer mouse. The activities are integral to their lives.”

**Source:** “Hidden in Plain View: Cell Phones in Students’ Lives”, Scott Shamp, et.al., Mobile Media Consortium University of Georgia, November 2004.

# Where to go from here?

## If and when we sample cell phones

- Frame(s)
- Weighting
- Response / Non-response
- Protocols

# Wireless Frame

## Dedicated 1000-Blocks from Telcordia

- 411,687 dedicated Blocks
  - 411,687,000 possible phone numbers
- 45,678 mixed service blocks
  - 45,678,000 possible numbers
  - May contain 100-blocks with “listed” wireline numbers

# Wireless Frame

No list-assisted option yet

What about “shared” blocks?

What about ported numbers?

Stratification

- County (added based on coordinates)
  - Home base not current residence
- Carrier Name

# Wireline/Wireless Integration

Can we integrate frames?

- Population vs. Household
  - Probabilities of Selection
    - Overlapping frames
  - Question Wording
    - Conundrum - CPS used 16 questions
  - Eligibility more obscure
    - Children
    - Business

# Response & Non-response

- Differential non-response
- Is data comparable?
- New Response codes
- New Response Rate formulas
- Compensation?



# Differential Non-Response

## Lower Response Rate for Wireless

- On average 20%

## Refusal conversions less effective

## No CallerID

- Legitimacy of call harder to establish

## Non-response/selection bias

- Heavy users more likely to participate
- Primary-cell and cell-only

**Source:** Work by Charlotte Steeh, Georgia State University, reported at Cell Phone Summit II, February 2005.

# Is Data Comparable?

- Is data comparable?
  - More distractions (driving) than RDD
  - Respondent paying and may provide more cursory responses
  - Cell phone respondents' answers comparable to fixed line respondents'
  - Regression suggests there is value in including cell phones in RDD

**Source:** Work by Charlotte Steeh, Georgia State University, reported at Cell Phone Summit II, February 2005.

# Need New Response Codes

Final disposition codes—Landline Only	Final disposition codes—Cell Only
<b>3. Unknown Eligibility, Non-Interview</b>	<b>3. Unknown Eligibility, Non-Interview</b>
<i>Unknown if housing unit</i>	
Not attempted or worked	Not attempted or worked
<i>Always busy</i>	Busy/ "All Circuits Busy"
	<i>Fast busy</i>
No answer	No answer
	<i>Unclassifiable operator message; message asks for credit card</i>

# Need New Response Codes

Telephone answering device (don't know if housing unit)		<i>Voice mail (can't tell if personal)</i>
Telecommunications, technological barriers (e.g., call-blocking)		Telecommunications, technological barriers (e.g., call-blocking)
Technical phone problems		Technical phone problems
<i>Housing unit, unknown if eligible respondent</i>		
<i>No screener completed</i>		
<i>Other</i>		
		<i>Immediate hang-up</i>
		<i>Temporarily out of service</i>
		<i>Text Message Sent</i>

# Need New Response Codes

Message
We are unable to complete your call at this time.
The person you have called is not answering at this time, please try again later .
Voice messaging service has not been activated.
The subscriber you have called is unavailable or has traveled out-side of the coverage area; please try your call again later.
The cellular phone you have called is turned off or out of the service area; please try your call again.
Customer you have called is not answering at this time.
The subscriber you have called is not receiving calls at this time.
We're sorry, the number you are trying to reach is not in service at this time; please check the number and dial again.
The customer that you have called, does not answer; please try your call again later."

# Other Call Center Issues

## Different Dialing Protocols

- Number of Attempts
- Number of Rings
- Use of Text Messaging or SMS
- Weekends only

## Code of Ethics

- Safety
- Children
- Location

# Need for Compensation

One cell-only individual said he wouldn't mind getting calls from survey researchers 'if those calls aren't costing me anything, but as soon as someone calls me on my cell phone, it's costing me something.'

Not a "token of our appreciation"

Work with Providers to apply minutes

**Source:** "Polling the 'cell phone only' crowd", AP February 25.2005

# Watch Out!!!!



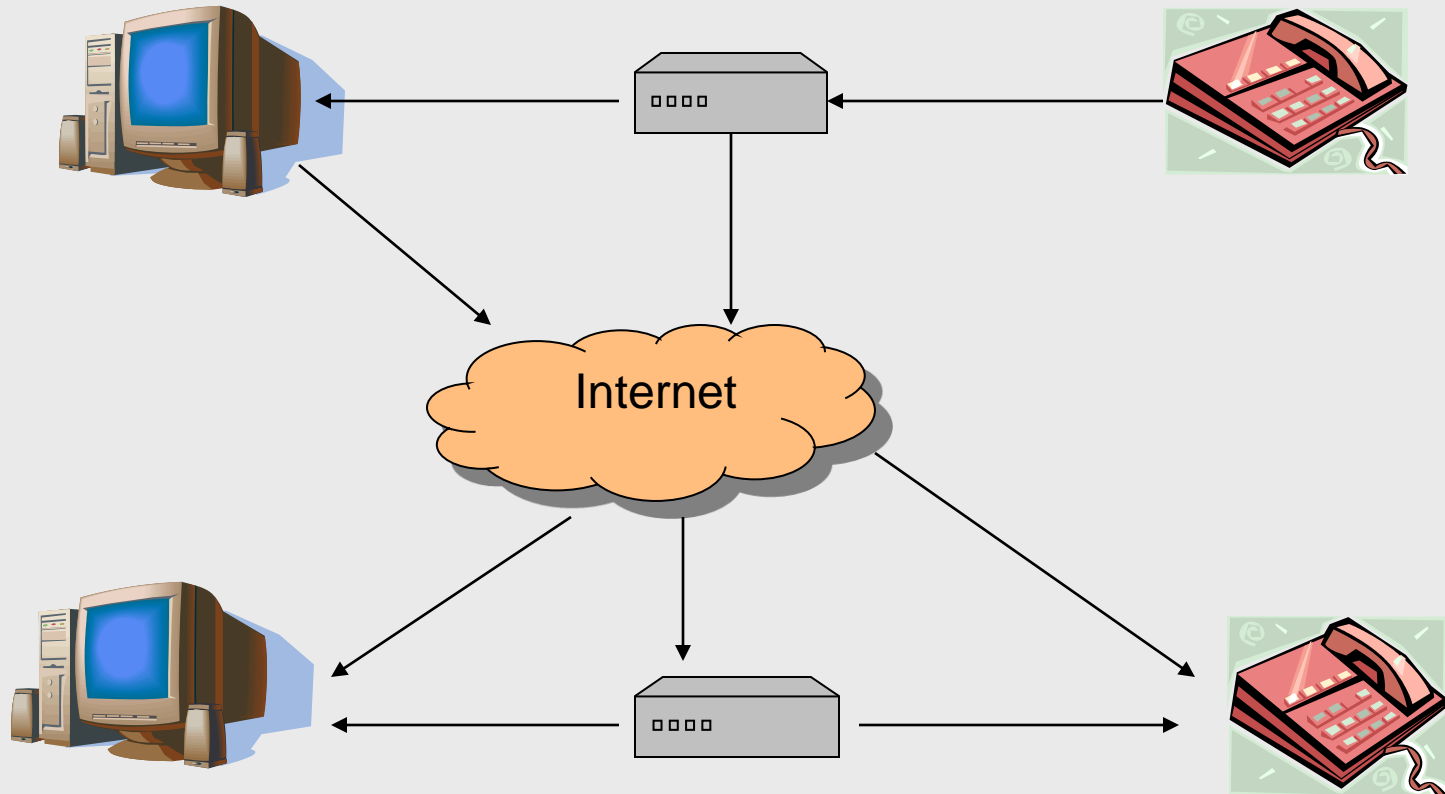
**Survey Sampling International**



# The Future is VoIP

- Voice over Internet Protocol
  - VoWi-Fi – Wireless Broadband
- VoIP traffic is projected to account for approximately 75% of the world's voice traffic by 2007” (AT&T)
- It is not a question of “if” but “when”

# VoIP:



**Survey Sampling International**

# Residential VoIP Advantages

- Unlimited local and national long distance calls for \$20 to \$40 per month
- *Generally* good quality
- Host of no-cost services
  - CallerID, Voice Mail, Call Forwarding to phone or email, send email to voice mail,
- May be able take your service with you while traveling or when you move
- Those you call or call you do not need VoIP

# Residential VoIP Advantages

## Virtual Phone numbers

- Vonage
- Incoming calls only
- You live in area code 202 and Mom lives in Florida 561. You get a virtual (Vonage) phone number in 561 so Mom can call your 202 number for free.

# Business VoIP Advantages

- Combine voice and data networks
- Call someone from email directory
- Virtual phone numbers replace 800 numbers
- Reduce costs
- Not regulated or taxed
- Email to voice mail and vice versa
- Follow me anywhere capability

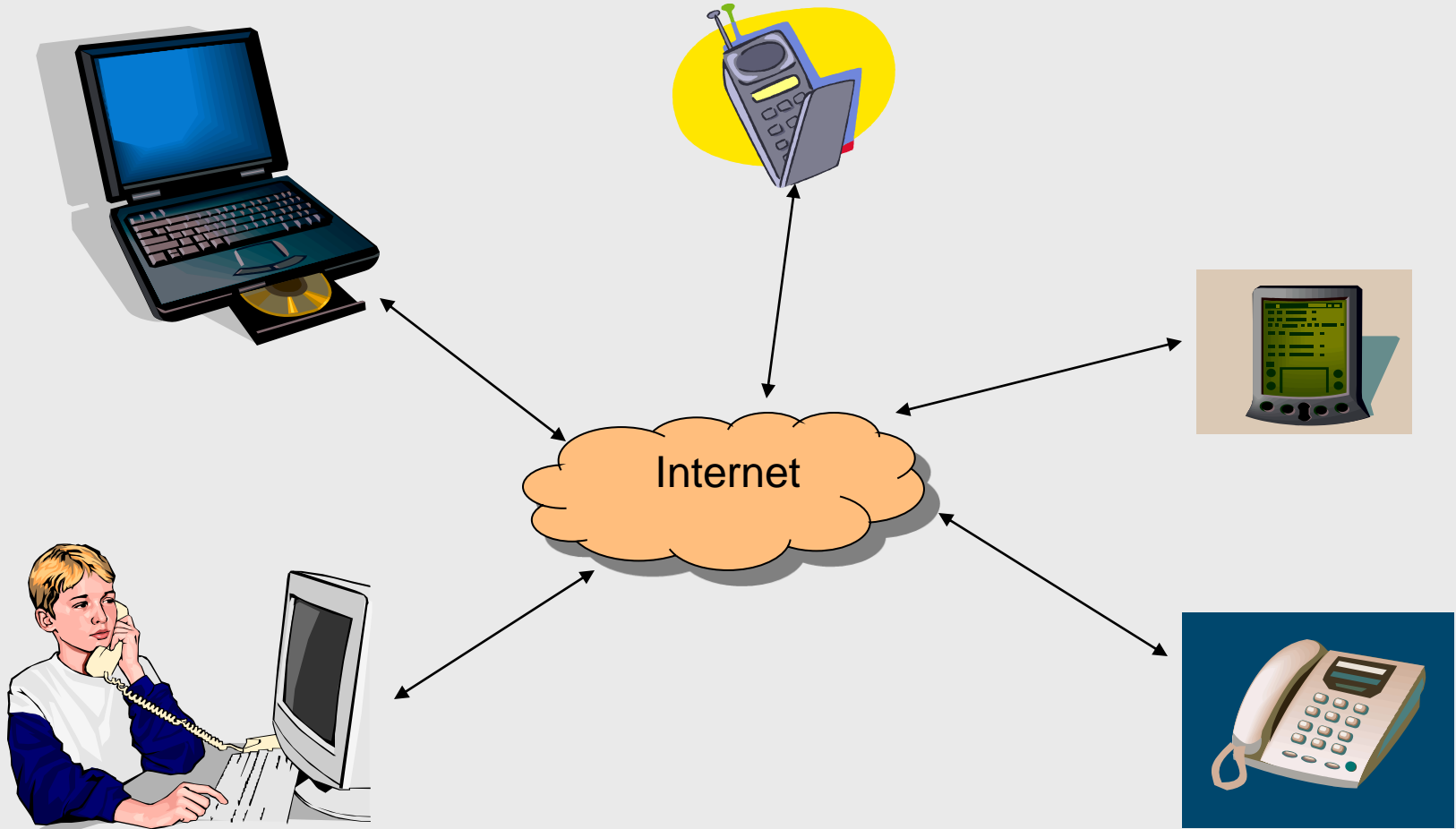
# VoIP Disadvantages

- Requires Broadband (cable or DSL)
- Need battery backup for power outages
- Can't call if ISP is down
- Still some security issues especially for companies
- Quality/reliability still not like Ma Bell due to inevitable packet loss over IP.
- 911 location is Billing Address

# VoIP Disadvantages

- Loss in geographic precision of phone numbers
- Further complicate questions needed for calculating probabilities of selection
- Further complicate disposition code possibilities and response rate calculations

# FUTURE



**Survey Sampling International**



# The Future

## New Phones

- VoWi-Fi hand sets that can be used at public access sites or wireless networks at home or office.
- Hybrids:
  - Combining cellular and WiFi
  - Combining cellular, WiFi and wireline

# The Future

## Phone for Life Concept

- ENMU supported by US government
  - Global Electronic Numbering system
  - One identifier for Phone, Cell, e-mail, IM, fax
  - Converging of telephone networks and Internet

# Plan for the future now!

It will be challenging but may offer  
us an unprecedented host of  
**opportunities**