

Community Health Data in a Wireless World:

**Inclusion of cell phone sampling in a regional
population health survey**

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Presenter Disclosures

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- (1) The following personal financial relationships with commercial interests relevant to this presentation existed during the past 12 months:

NO RELATIONSHIPS TO DISCLOSE

Overview

- ✓ Who we are: Public Health Management Corporation, Community Health Data Base
Southeastern Pennsylvania Household Health Survey
- ✓ The wireless-only world: The growing imperative for cell phone sampling in health surveys
- ✓ Demographic differences: an examination of cell phone usage-based population subgroups
- ✓ Access to care indicators: Are there differences?
- ✓ Implications

Public Health Management Corporation's Community Health Data Base

Public Health Management Corporation - Nonprofit public health institute

- Direct services
- Health promotion & education
- Research
- Technical assistance

Community Health Data Base

- Data resource for local foundations, health systems, universities, government agencies, and community-based organizations

Southeastern Pennsylvania Household Health Survey

- 25-min random digit dial health survey with sample of 10,000 households
- Topics: health status, access to care, service utilization, health behaviors
- Summer 2008 - partnered with Abt SRBI to include pilot cell phone sampling frame

Background: Cell phone sampling

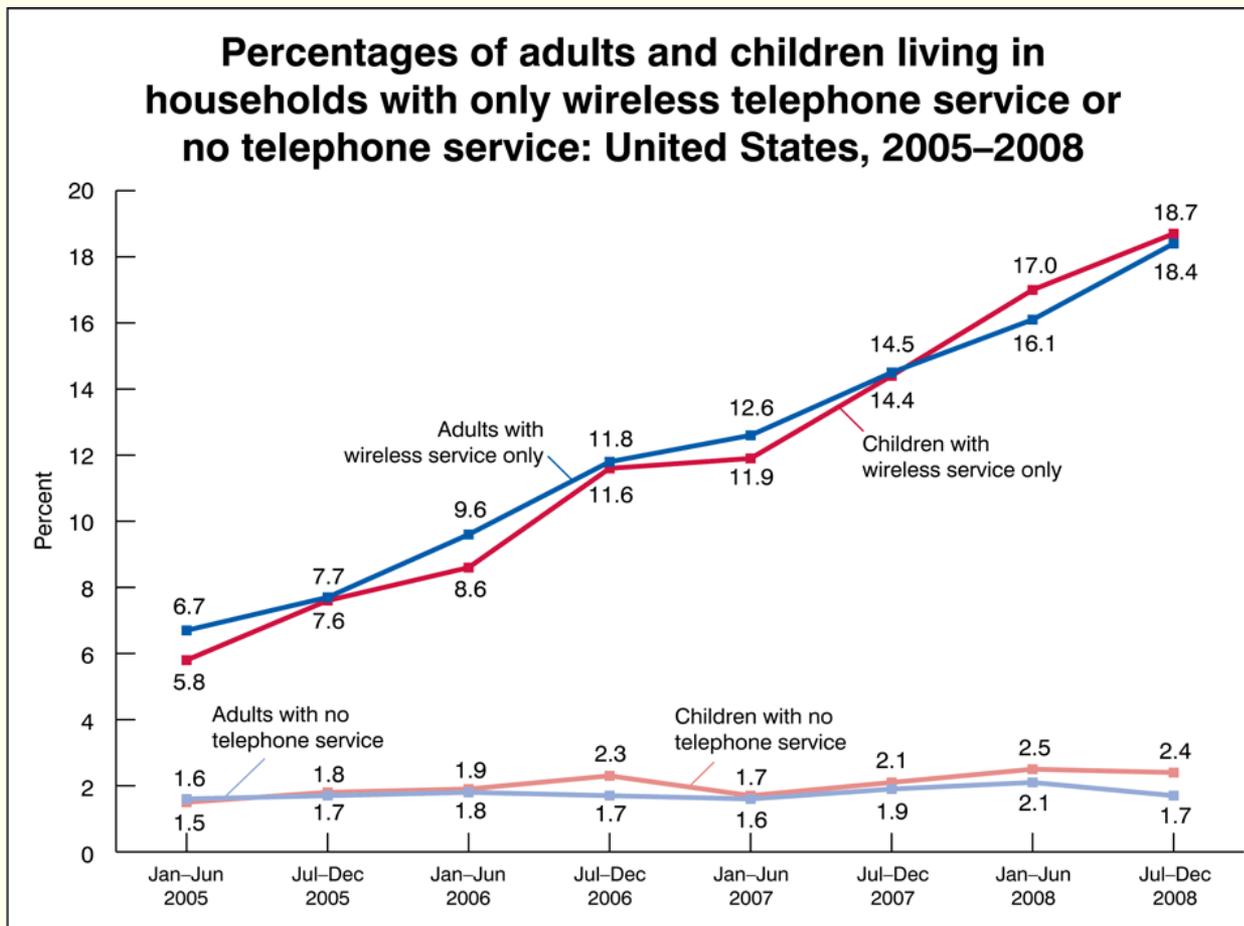
- One of every five households (20.2%) in U.S. are reachable only via wireless phone;
- Approximately 18.4% of all adults--more than 41 million adults--live in households with only wireless telephones;
- 18.7% of all children--nearly 14 million children--live in households with only wireless telephones;
- More than two in five adults aged 25-29 years (41.5%) live in households with only wireless telephones;

Background: Cell phone sampling

- One-third (33.1%) of adults aged 18-24 years live in households with only wireless telephones;
- Adults living in poverty (30.9%) and adults living near poverty (23.8%) are more likely than higher income adults (16.0%) to be living in households with only wireless telephones;
- Hispanic adults (25.0%) and non-Hispanic black adults (21.4%) are more likely to be living in wireless only households than Non-Hispanic white adults (16.6%).

Source: Wireless Substitution: Early Release of Estimates From the National Health Interview Survey, July-December 2008

Background: Cell phone sampling



Source: National Center for Health Statistics.

Cell phone sampling

Wireless v/s Landline

According to 2008 National Health Interview Survey data:

- Binge drinking among wireless-only adults (36.7%) nearly twice as high as the prevalence among adults living in landline households (19.7%);
- Wireless-only adults are also more likely to be current smokers (26.5%) than adults living in landline households (18.3%);
- Wireless-only adults are more likely to report that their health status to be excellent or very good (68%) than landline adults (59.8%);

Cell phone sampling

Wireless v/s Landline

- The percentage wireless only nonelderly adults without health insurance coverage (27.5%) is considerably higher than nonelderly adults living in landline households (16.4%).
- Only 19% of wireless only adults report receiving influenza vaccine during the previous year as compared to landline adults (36%);
- Wireless-only adults (47.0%) are more likely than adults living in landline households (37.1%) to have ever been tested for HIV.

Cell phone sampling

Telephone Usage Control Totals for Philadelphia County

- Emerging research points to the need to incorporate telephone usage (cell-only, landline-only, and dual service) control totals in the weighting dual frame samples.
- National Health Interview Survey can only provide reliable national and Census Region telephone usage estimates.
- To determine Philadelphia County telephone usage control totals, we used the NHIS to model telephone usage.

Cell Phone Sampling Modeling Procedure for Philadelphia County

- The NHIS multinomial logistic regression model was applied to the American Community Survey sample of adults in Philadelphia County.
- Weighted ACS estimates of telephone usage for Philadelphia:
 - 14% cell-only
 - 36% landline-only
 - 50% dual service

**Southeastern Pennsylvania
Household Health Survey
Methodology**

Methodology of Philadelphia County Cell Phone Survey

- Household Health Survey: Cross-sectional random digit dial telephone survey in Philadelphia County
 - Topics include: health status, health behaviors, access to care, neighborhood and environment
 - Eligibility: Age 18 or older, reside in Philadelphia
 - Fielded June-Oct 2008
 - Interviews conducted in English & Spanish
- Sample weights were constructed accounting for respondents' age, gender, income, and race/ethnicity, as well as phone type.

Methods: Cell Phone Inclusion

- Household Health Survey (HHS) conducted in Philadelphia since 1983.
- Cellular sampling frame added for the first time for 2008 HHS.
- Total sample population
 - All Philadelphia n = 4,394 {
 - Landline interviews: n=4,094
 - Cell phone interviews: n=300
- Cellular Frame
 - Sample obtained from most recent Telcordia TMP Data file
 - Hand-dialed
 - Respondent who answered phone was selected respondent if met eligibility criteria (age 18+, live in Philadelphia)
 - Incentive: Respondents received \$10 for completing interview

Philadelphia Demographics

Total Population	1,454,382
- Median age	35.3 years
- Female	53.3%
- Male	46.7%
- African American/Black	43.8%
- White	42.7%
- Hispanic/Latino	10.3%
- Individuals below FPL	24.5%

Source: U.S. Census Bureau, 2005-2007 American Community Survey

Methods: Phone Usage Groups for Philadelphia County Analysis

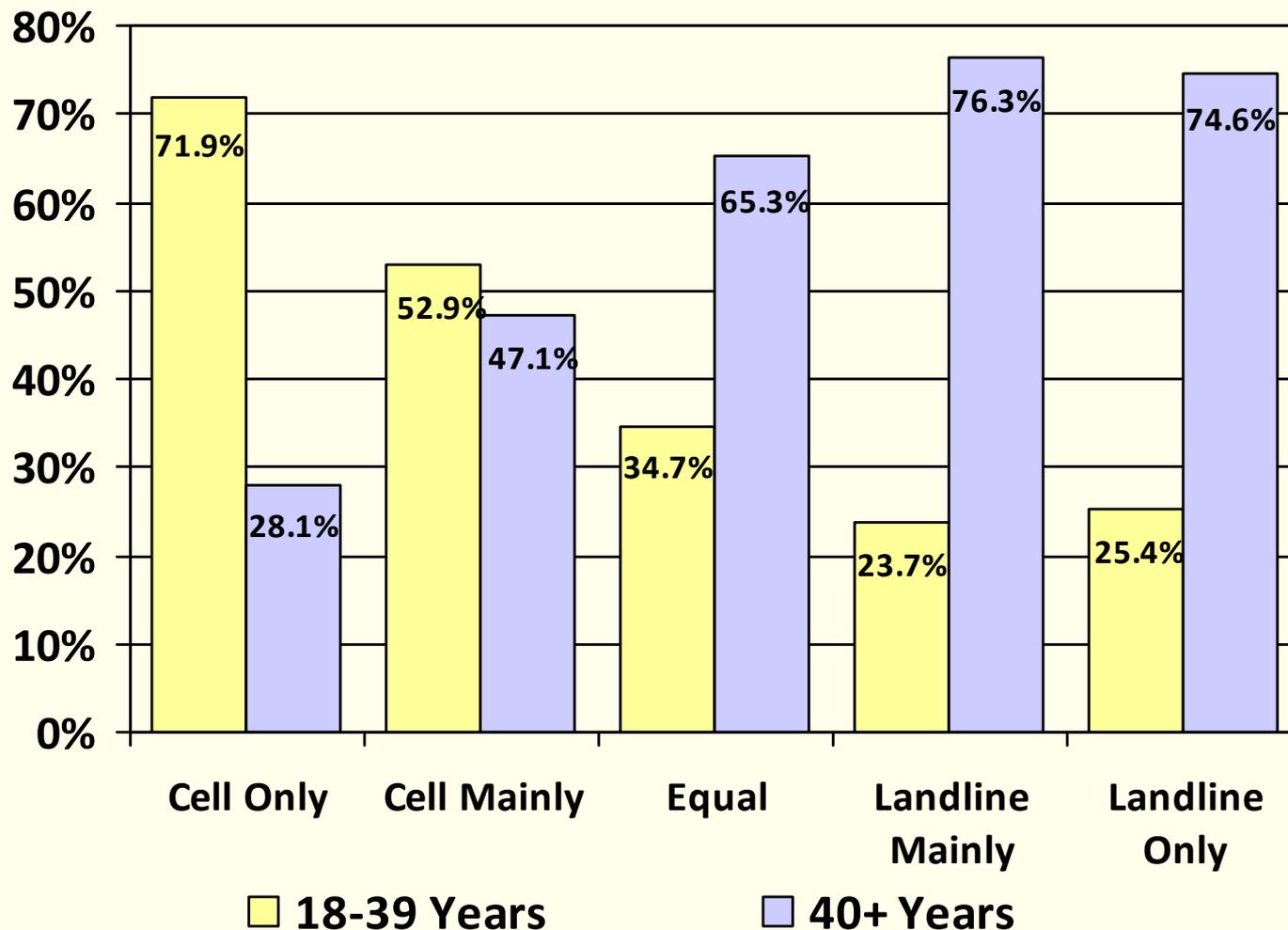
- Sample grouped into five categories of phone user
 - Initial approach: Examined cell phone only (CPO) respondents in comparison to all others (2 groups)
 - Found sufficient demographic difference between landline-only respondents and other non-CPO respondents → segmented phone usage type (5 groups)

SURVEY POPULATION BY PHONE USAGE

- | | |
|-----------------------------|----------------------------|
| ▪ Cell Phone Only | n=121 (40% of cell sample) |
| ▪ Cell Phone Mainly | n=1208 |
| ▪ Cell and Landline Equally | n=170 |
| ▪ Landline Mainly | n=1471 |
| ▪ Landline Only | n=1307 |

Demographic Characteristics by Phone Usage

Figure 1. Age by Phone User Type, Philadelphia, 2008

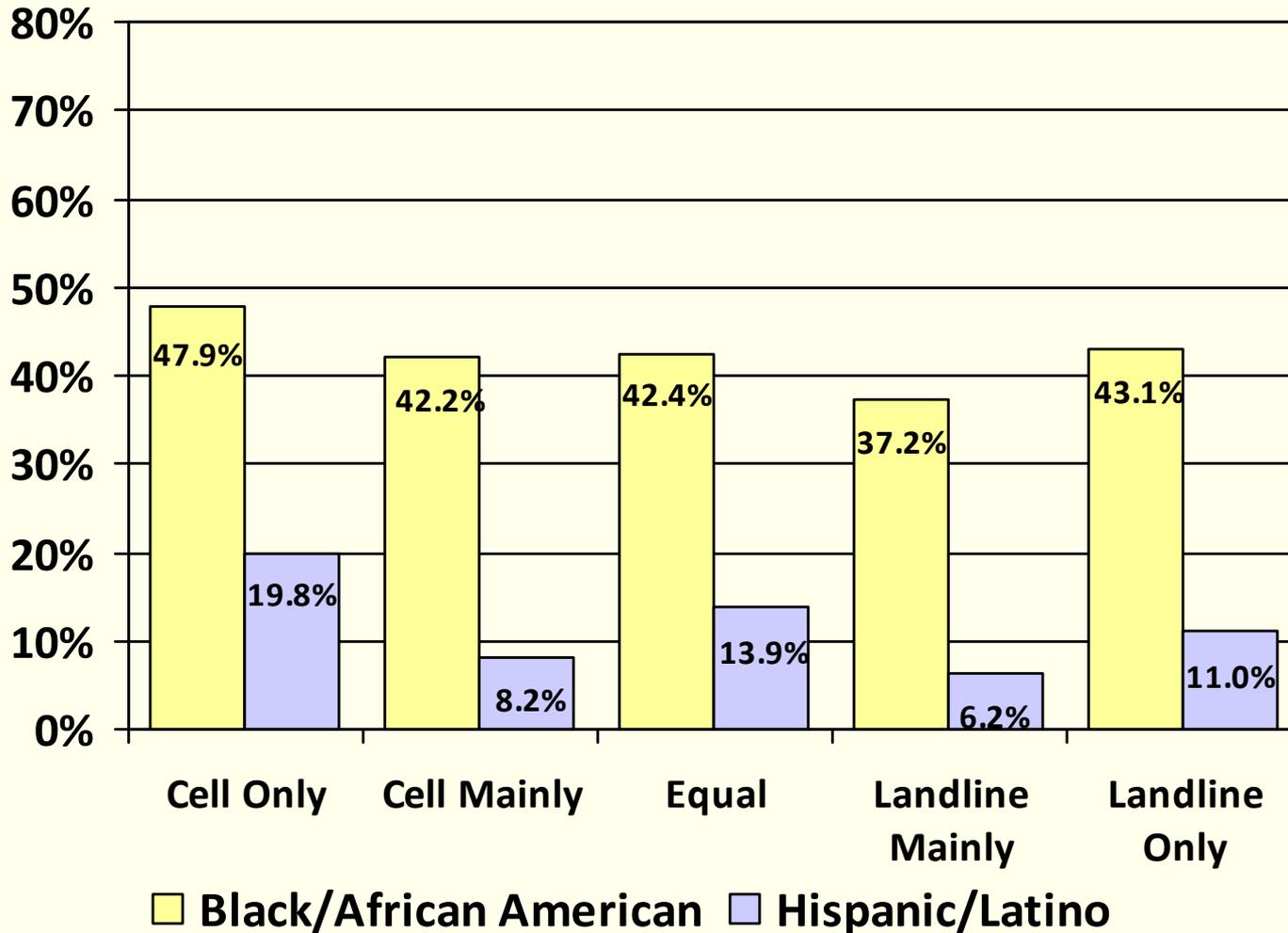


- Cell phone only respondents are younger than other phone user types.

- Nearly three-quarters of those respondents with only a cell phone are under the age of 40

Chi-square: $p < .001$

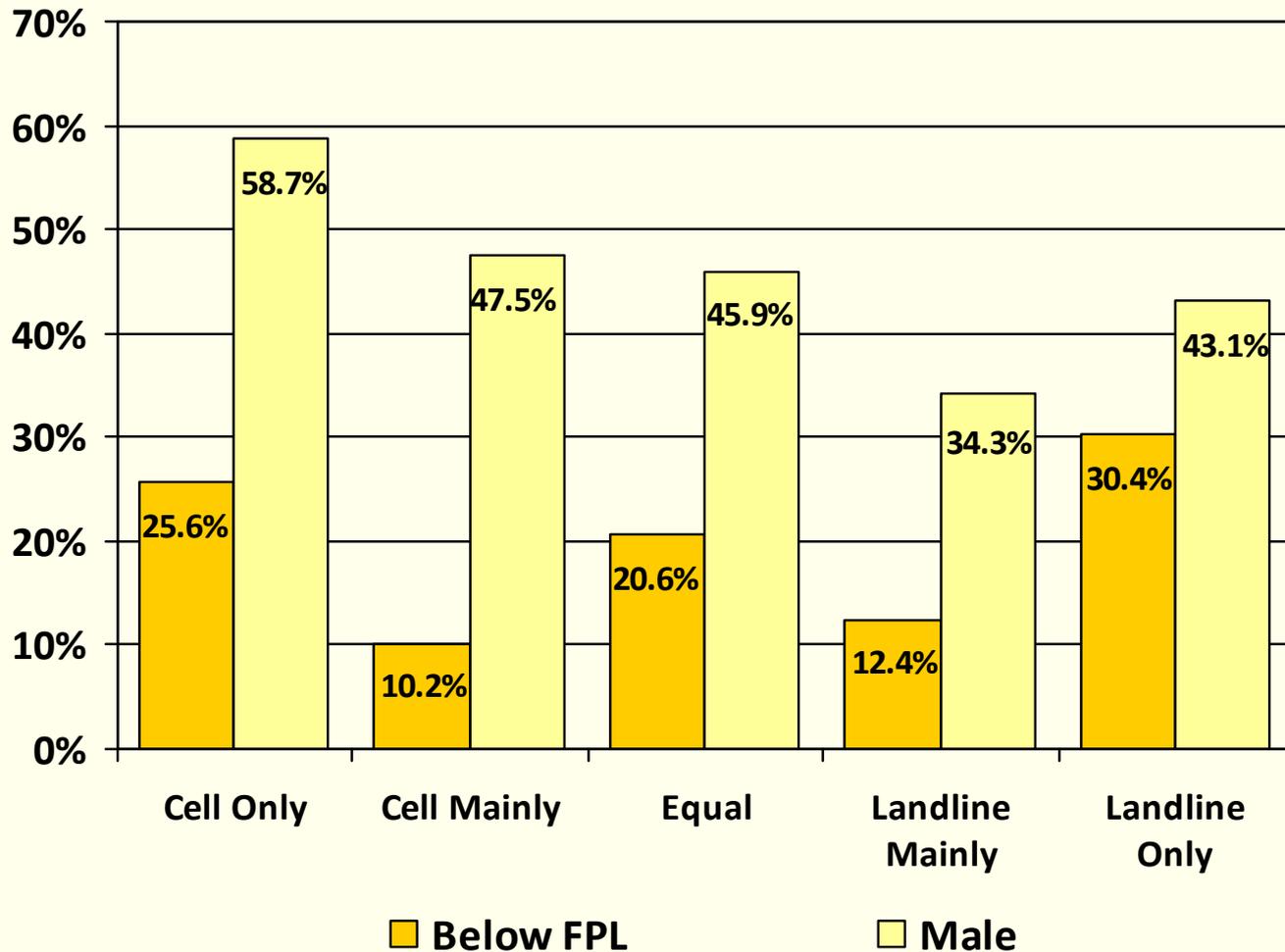
Figure 2. Race/Ethnicity by Phone User Type, Philadelphia, 2008



• 20% of Cell Only respondents are Hispanic/Latino

Chi-square: $p < .001$

Figure 3. Gender¹ and Poverty Status² by Phone User Type, Philadelphia, 2008

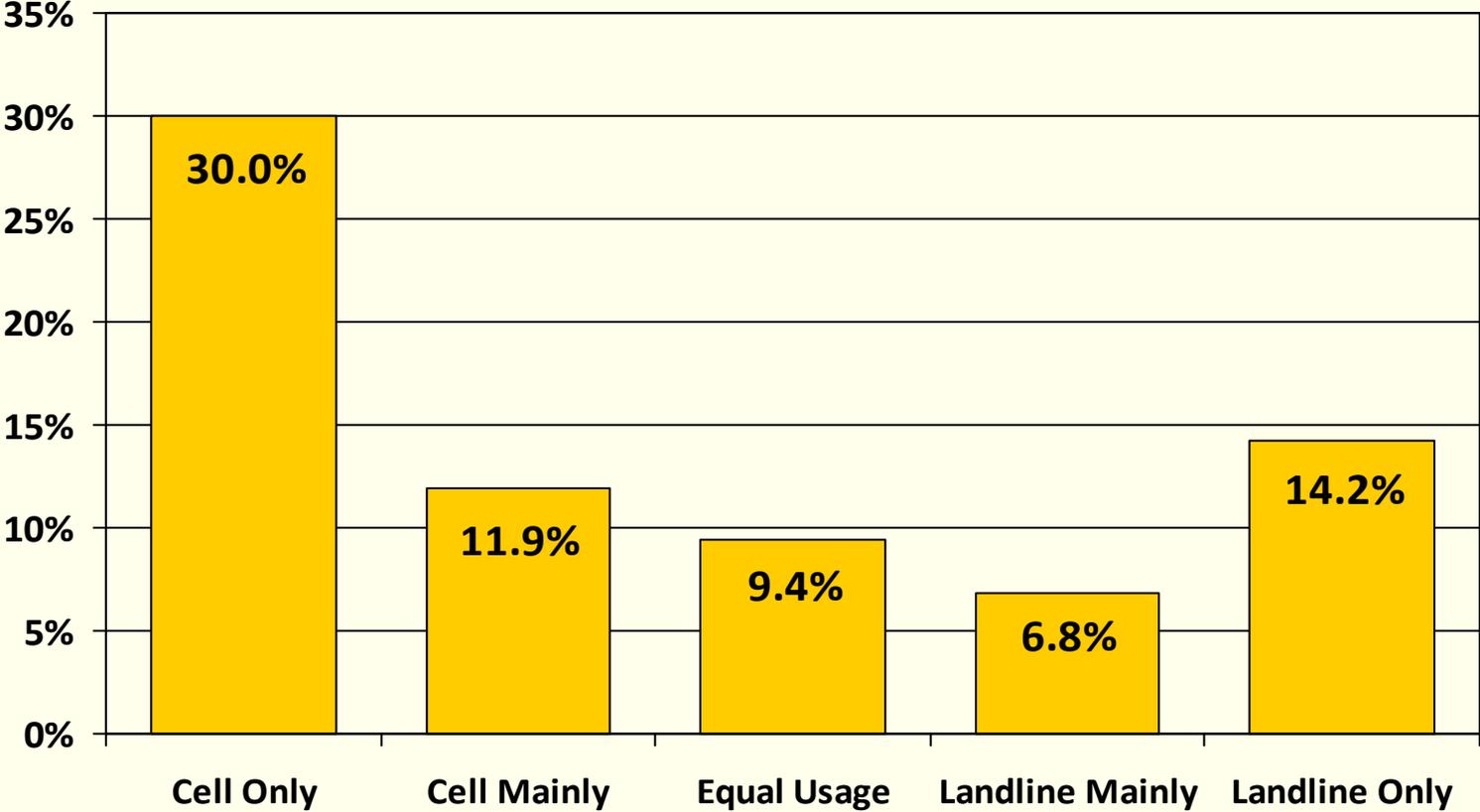


- Cell phone only respondents are more likely to be male than other phone user types.

- Cell phone only respondents and landline only respondents were more likely to live in poverty than those with two types of phones.

1,2 Chi-square: p < .001

Figure 4. Uninsured Adults (18+) by Phone User Type, Philadelphia, 2008



• Cell phone only respondents were more likely to be uninsured than those with cell mainly, equal, and landline mainly usage.

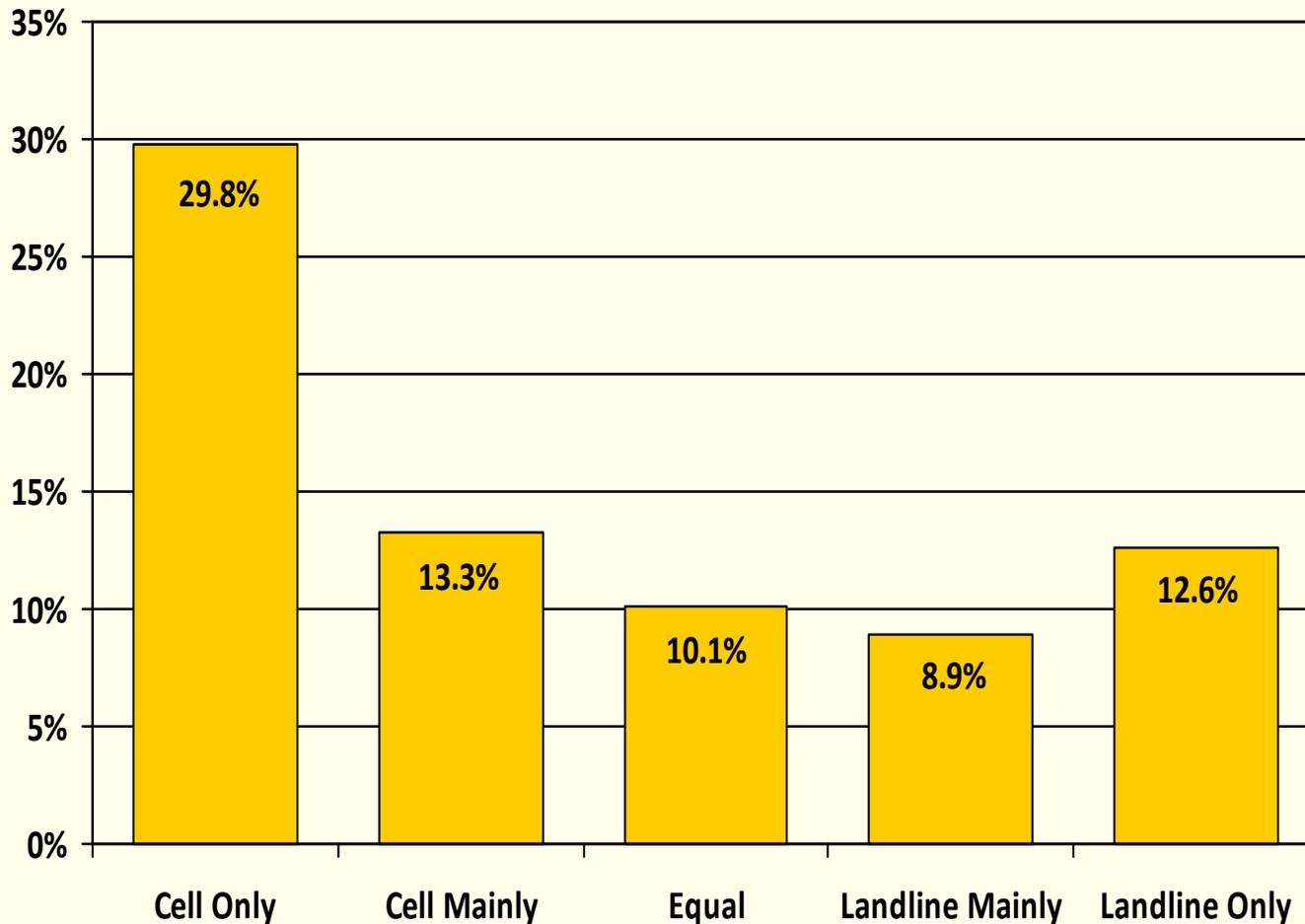
Chi-square: $p < .001$

Access to Care Indicators by Phone Usage

Access to Care Indicators

1. Having a regular source of health care
2. Visit to a doctor or health care provider in the previous year
3. One or more visits to emergency department (ED) in previous year
4. Sick but did not receive needed care due to the cost in previous year

Figure 5. No Regular Source of Healthcare by Phone User Type, Philadelphia, 2008



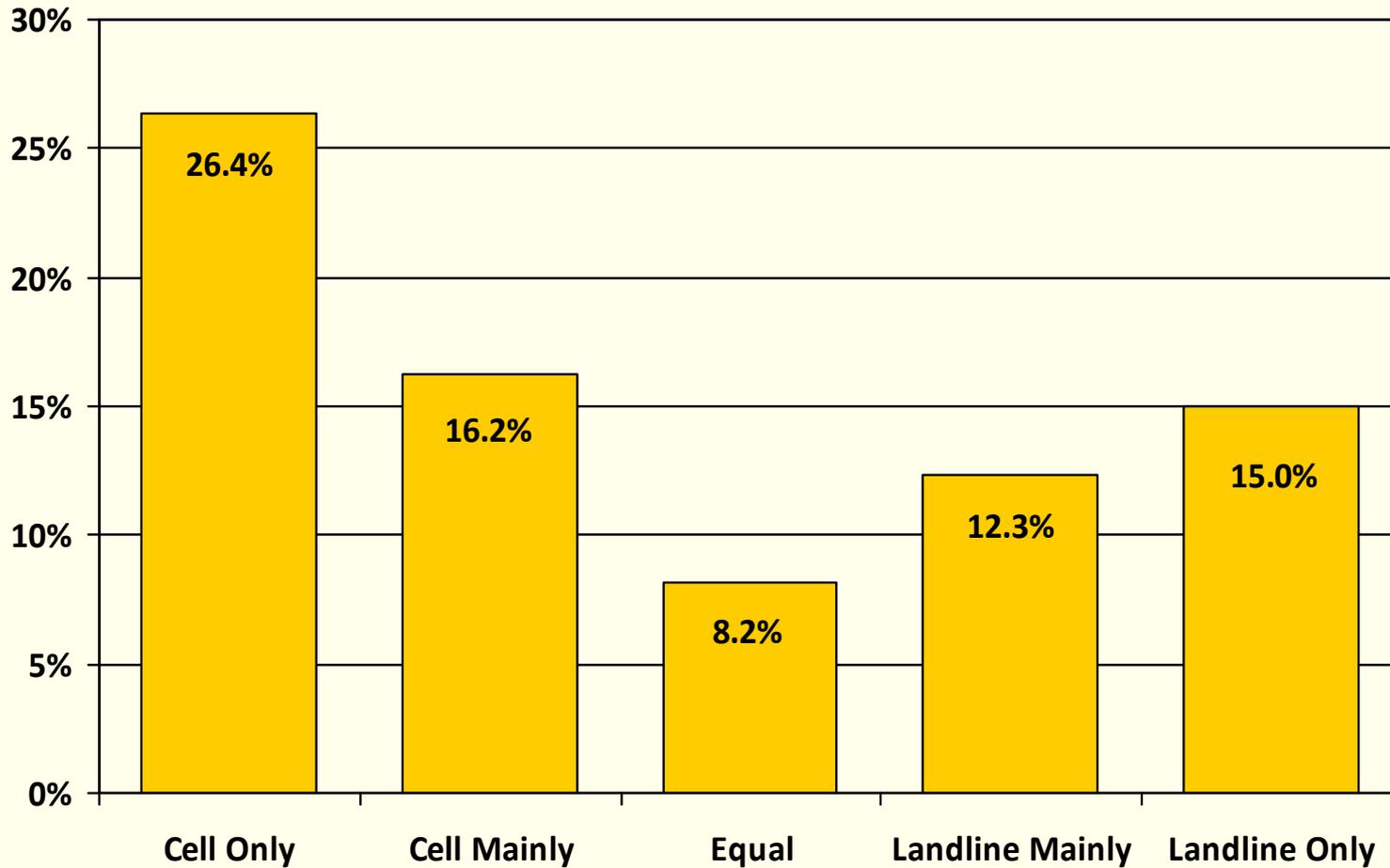
- Nearly three in ten Cell Phone Only respondents indicated they did not have a regular source of care.

Table 1. No Regular Source of Healthcare: Odds Ratios with Cell Only as the Comparison Group

	Odds Ratio		Adjusted Odds Ratio*	
Cell Mainly	.365	p<.001	.564	p<.05
Equal	.273	p<.001	.469	p<.05
Landline Mainly	.234	p<.001	.560	p<.05
Landline Only	.341	p<.001	NS	

*Odds ratios were adjusted for age, gender, race/ethnicity, insurance status and poverty status

Figure 6. No visit to a healthcare professional in the Past Year by Phone User Type, Philadelphia, 2008



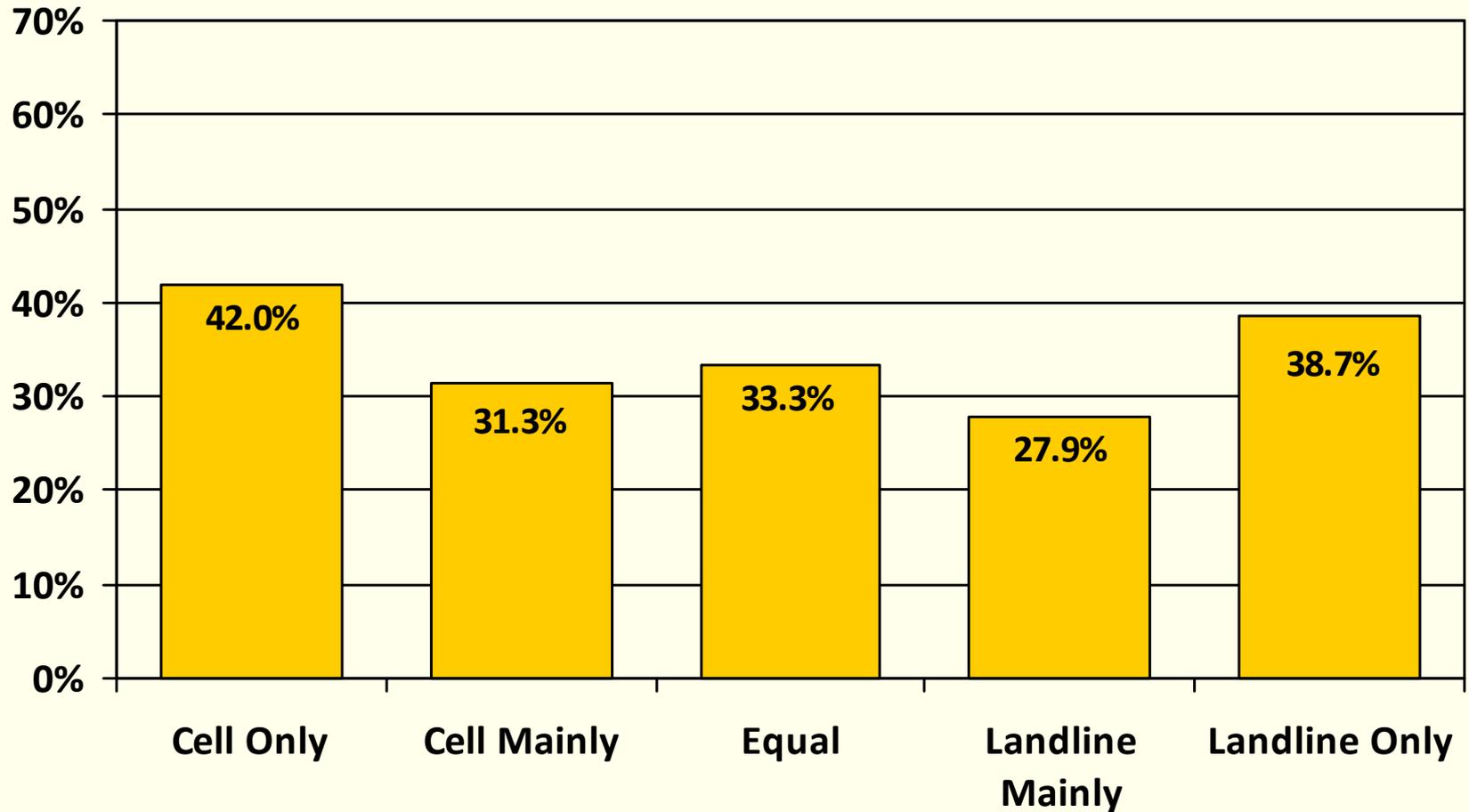
- More than a quarter of Cell Phone Only respondents have not seen a healthcare professional in the past year.

Table 2. No Healthcare Visit in Past Year: Odds Ratios with Cell Only as the Comparison Group

	Odds Ratio		Adjusted Odds Ratio*	
Cell Mainly	.546	p<.05	NS	
Equal	.259	p<.001	.461	p<.05
Landline Mainly	.388	p<.001	NS	
Landline Only	.493	p<.001	NS	

*Odds ratios were adjusted for age, gender, race/ethnicity, insurance status and poverty status

Figure 7. One or more visits to ED in Past Year, by Phone User Type, Philadelphia, 2008



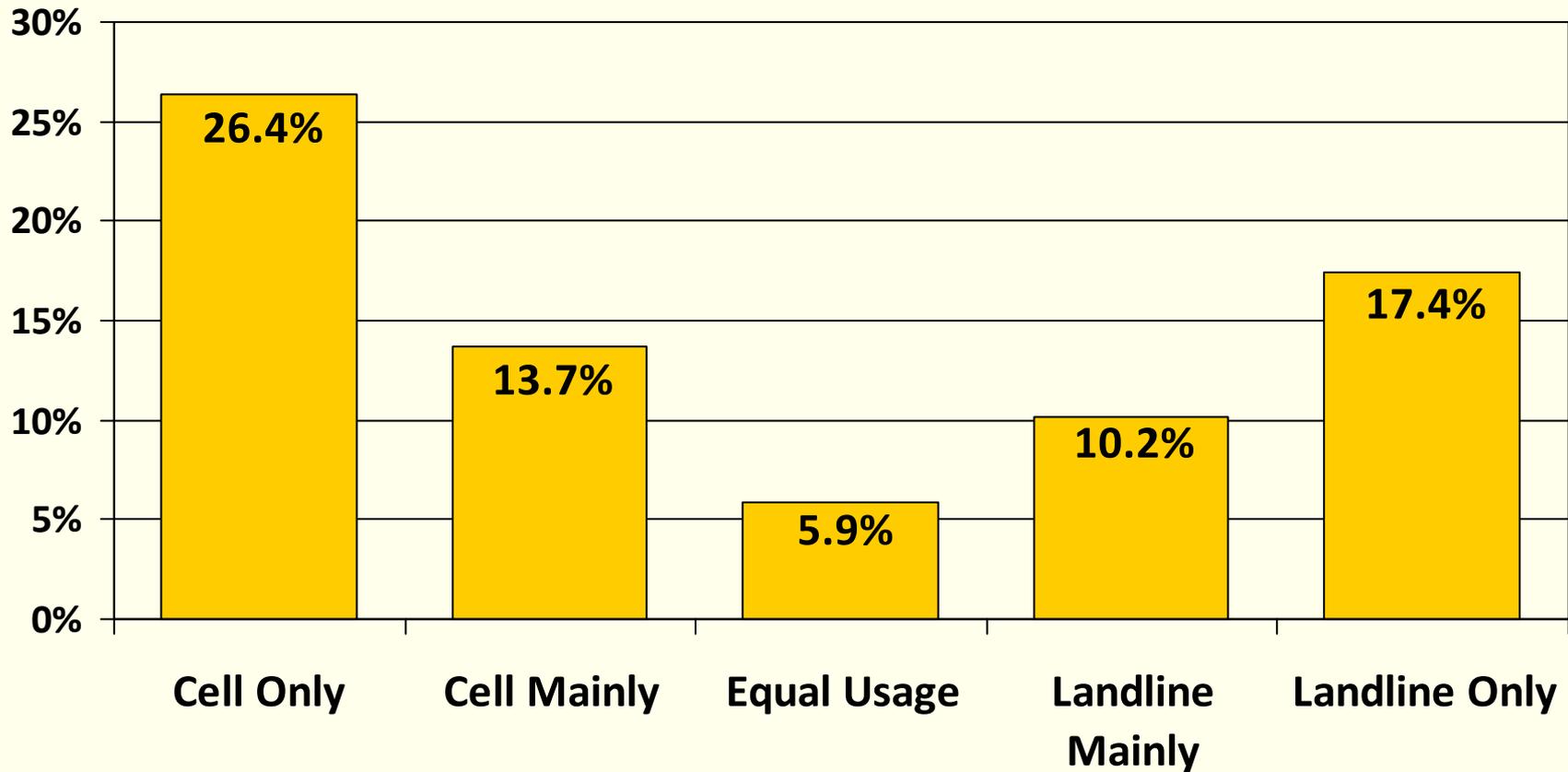
Chi-square: $p < .001$

Table 3. One or More ED Visit in Past Year: Odds Ratios with Cell Only as the Comparison Group

	Odds Ratio		Adjusted Odds Ratio*
Cell Mainly	.638	p<.05	NS
Equal	NS		NS
Landline Mainly	.546	p<.05	NS
Landline Only	.890	NS	NS

*Odds ratios were adjusted for age, gender, race/ethnicity, insurance status and poverty status

Figure 8. Did Not Receive Needed Care Due to Cost by Phone User Type, Philadelphia, 2008



Chi-square: $p < .001$

Table 4. No Care Due to Cost: Odds Ratios with Cell Only as the Comparison Group

	Odds Ratio		Adjusted Odds Ratio*	
Cell Mainly	.444	p<.001	NS	
Equal	.182	p<.001	.267	p<.001
Landline Mainly	.317	p<.001	.552	p<.05
Landline Only	.590	p<.05	NS	

*Odds ratios were adjusted for age, gender, race/ethnicity, insurance status and poverty status

Implications of Philadelphia County Cell Phone Survey

- **As anticipated, there are important demographic differences between cell phone only (CPO) survey respondents and others.**
 - **One quarter (25.6%) of CPO respondents lives below the FPL, and nearly six in ten (58.7%) CPO respondents is male.**
- **Cell phone only respondents represent populations that are at greater risk for experiencing a range of healthcare barriers, as compared to respondents in households that include a landline.**
 - **These differences are weakened considerably when adjusted for key demographic factors.**
 - **However, in some instances, demographic differences did not explain the difference in access to care between CPO respondents and landline-using respondents.**

Implications of Philadelphia County Cell Phone Survey

- **Controlling for demographic differences, we still see some access to care issues faced disproportionately by CPO respondents**
 - **CPO respondents are less likely to have a regular source of care than are other groups with both cell phones and landlines.**
 - **CPO respondents are significantly more likely to have not received needed care due to the cost than are respondents who use cell phones and landlines equally, or respondents who use landlines mostly, but also have cell phones**

Future Considerations for Cell Phone Surveys

Landline only health surveys overestimate access to care.

Health surveys should continue to include cell phone sampling to ensure that all residents are included

While most of the difference between cell only respondents and other phone user types was explained by demographics, we should continue to monitor these differences as technology changes.

Based on findings of this study, inclusion of cellular sample is likely to improve the representativeness of RDD samples.

Acknowledgments

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Contact Information

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