



# Nonresponse Bias: Recent Findings from our Address-based Panel Recruitment

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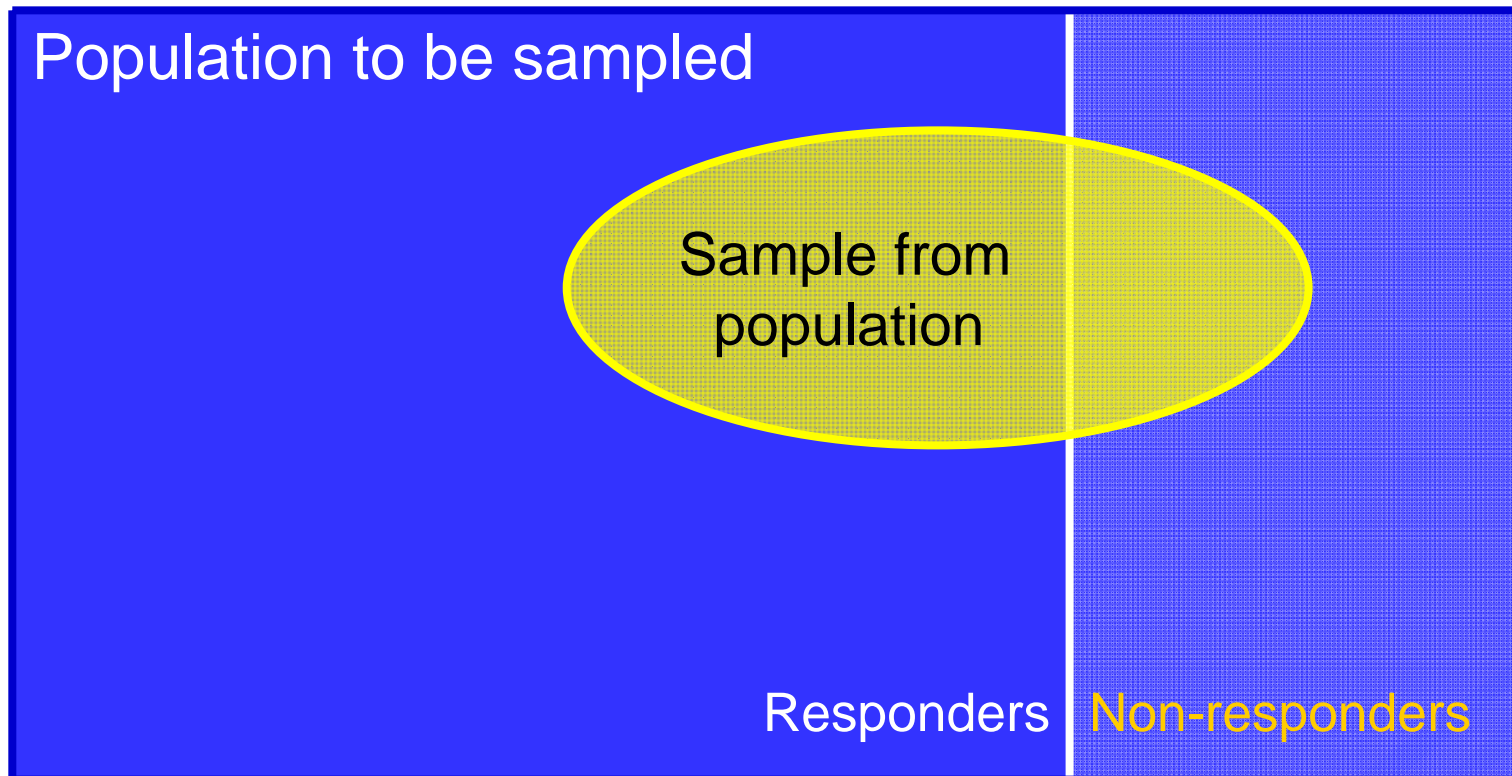
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Mike Dennis, Knowledge Networks  
Charles DiSogra, Knowledge Networks

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# Non-response Bias and Survey Quality

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- **Two types:** unit and item
- The potential **quality concern** with “low response”



# Non-response Bias and Survey Quality

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- Bias due to non-response (very simple case)

$$\text{Bias } (\bar{y}_R) = \underbrace{((N_{NR})/N)} \times \underbrace{(\bar{Y}_R - \bar{Y}_{NR})}$$

- Ramifications of this formula for survey quality:
  - Non-response bias has **two components**, not just one
  - Assessing data quality on just the non-response rate is **risky**
  - To estimate **non-response bias**, look at data on...
    - non-respondents
    - as well as respondents



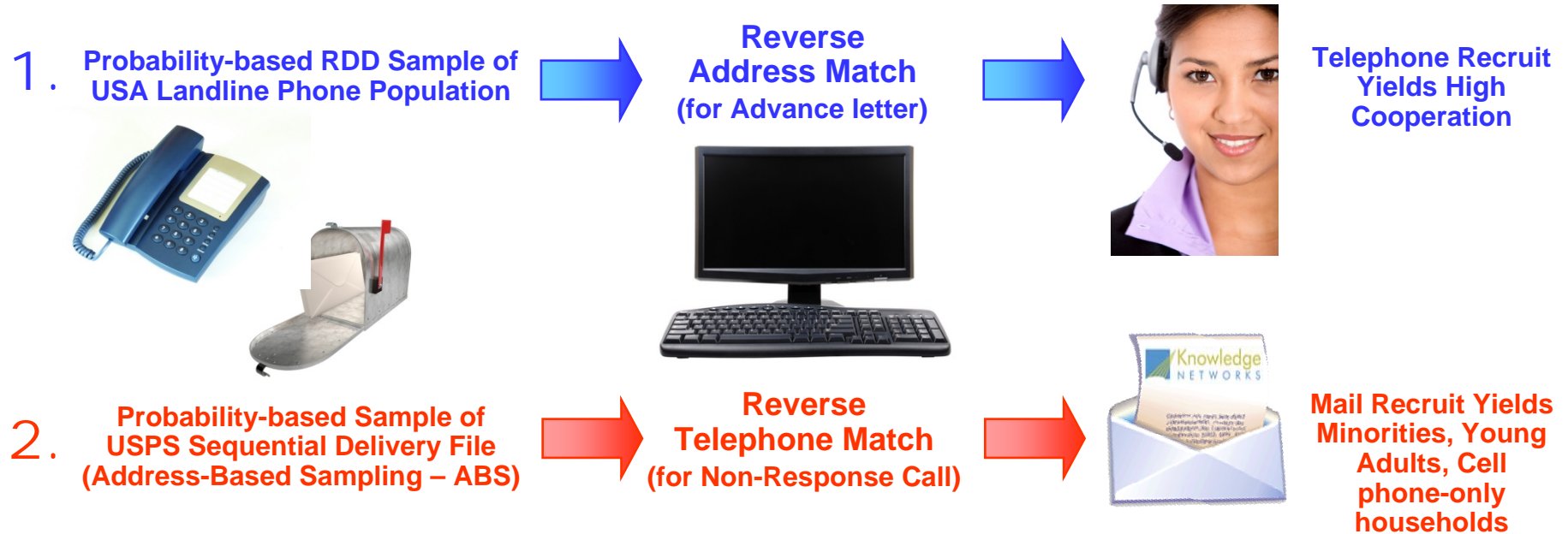
# Non-response Bias Measurement of ABS-Sourced Sample

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- Suggested approaches used by KN
  - **Embed survey questions** in KN web panel survey for which benchmarking data are available for comparison
  - Conduct **full-scale non-response follow-up** (NRFU) studies designed to survey non-responders for comparison to responders
  - **Self-selection bias assessment** by comparing recruited to full invited sample on demographic, socio-economic, and other variables hypothesized to be correlated with survey estimates
- **We will discuss what we learned by assessment of self-selection bias**



# KnowledgePanel **Dual-Frame** Recruitment



# ABS Non-response Analysis

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- **Data:** All addresses sampled and fielded an invitation to join KnowledgePanel in April 2009 (n=41,000+)
- **Analysis:** Comparisons to known benchmarks
  - Demographics – recruited cases to Census benchmarks
  - Demographics – invited sample to recruited sample using auxiliary variables
    - Geographic and mail delivery variables
    - Demographic variables (from Experian and InfoUSA, including modeled data)
  - Obama vote of sampled cases to recruited cases (at county level)
- **Expectation:** Insubstantial statistical differences suggesting low levels of non-response and/or self-selection bias

# Demographics of Recruited Cases

(Compared to Census Benchmarks)

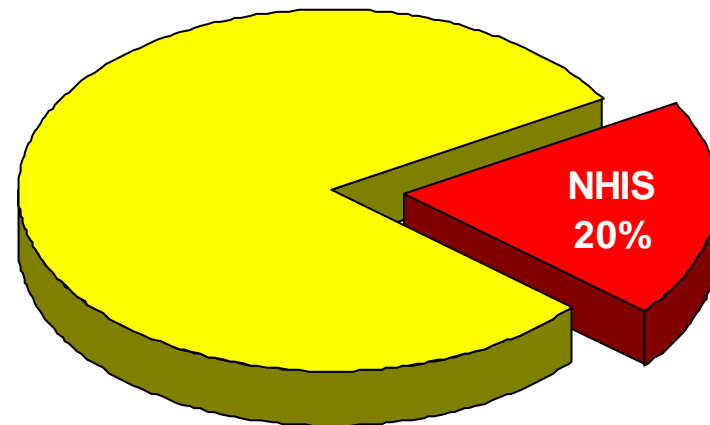
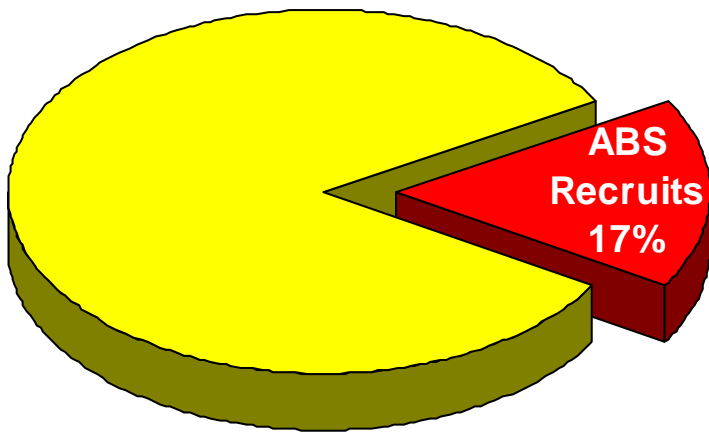
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	ABS Recruits (Unweighted %)	CPS (June 2009)
<b>Gender</b>	<b>Percentage</b>	<b>Percentage</b>
Male	42.8	48.3
Female	57.2	51.7
<b>Age</b>		
18-24	12.7	12.6
25-34	17.9	17.8
35-44	19.4	18.1
45-54	21.1	19.6
55-64	16.7	15.3
65+	12.2	16.7

# Cell Phone-Only Households

(Recruited Sample)

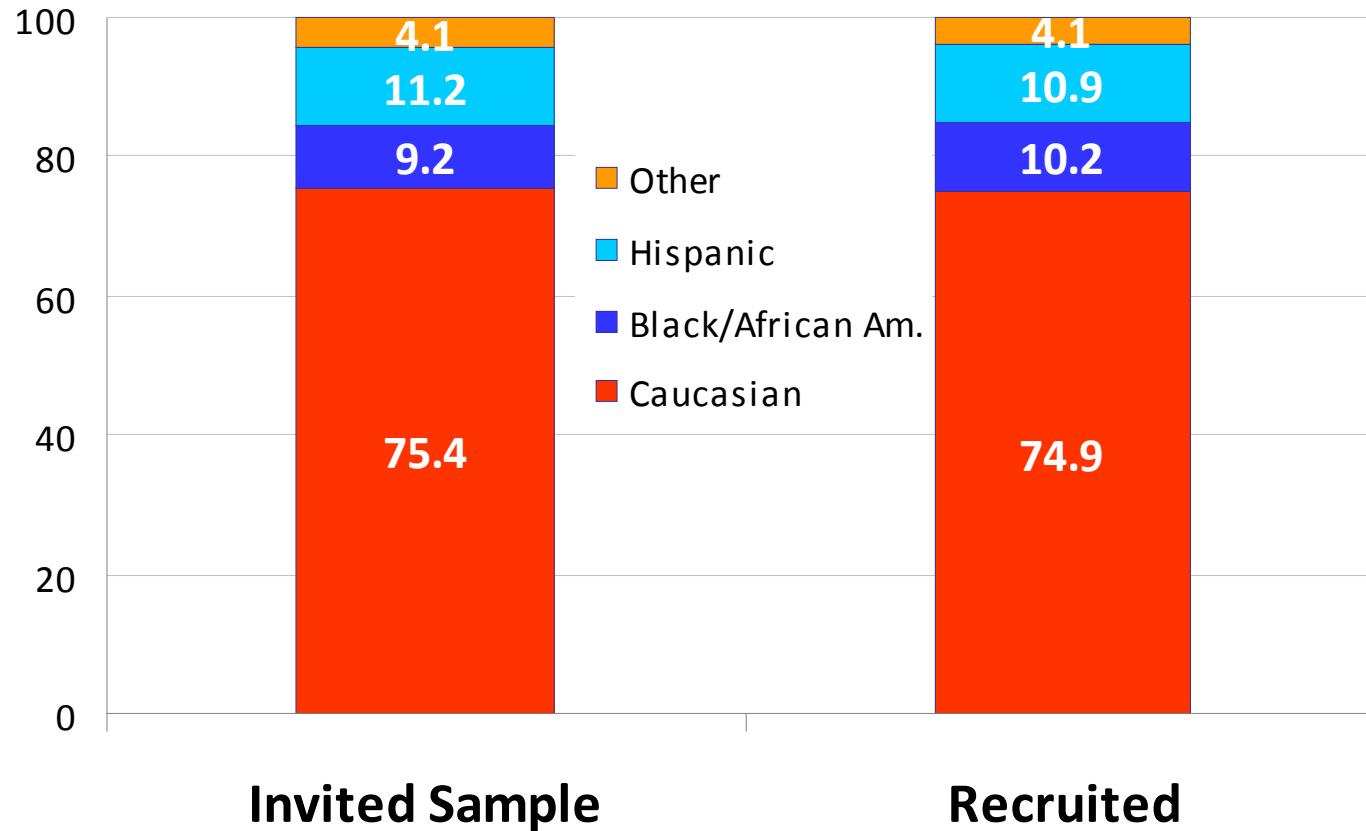
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# Race/Ethnicity

(Invited Sample v. Recruits)

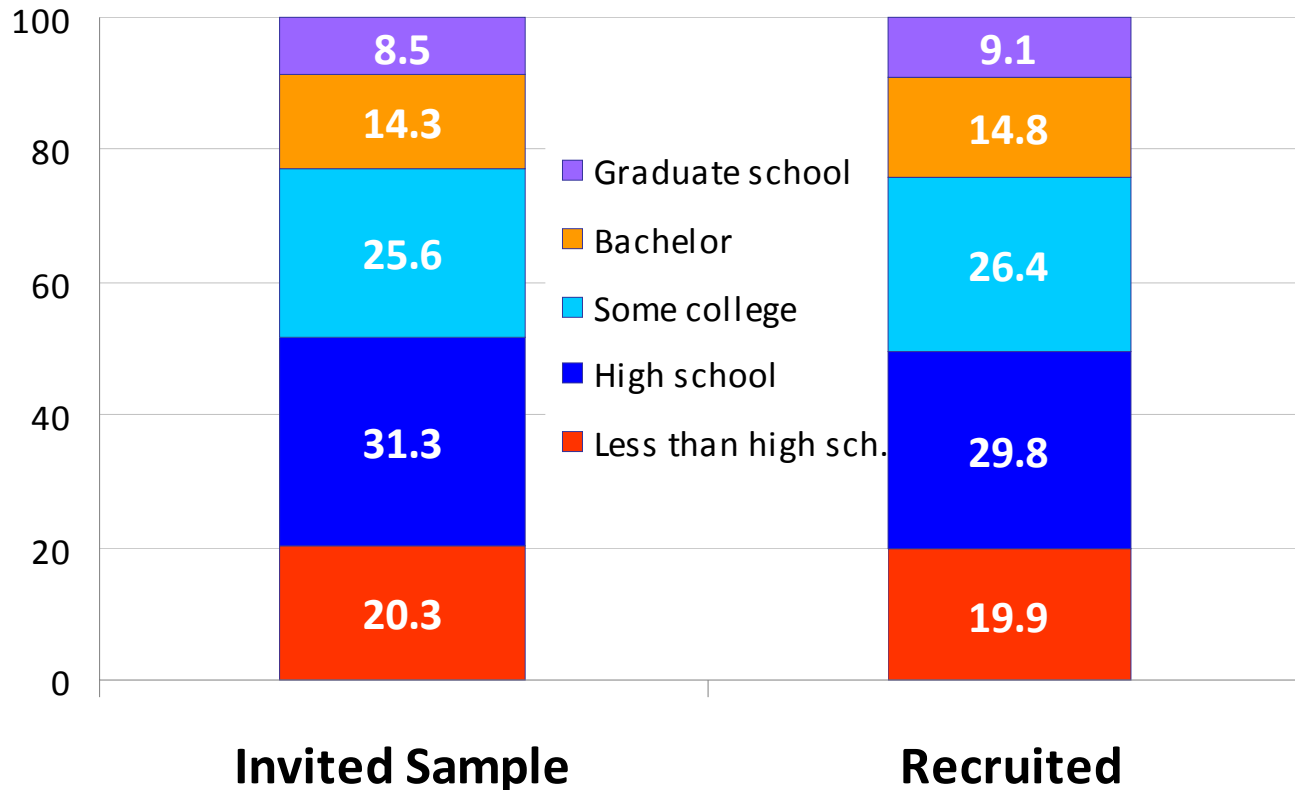
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- Recruited cases similar to invited cases based on **race**

# Educational Attainment

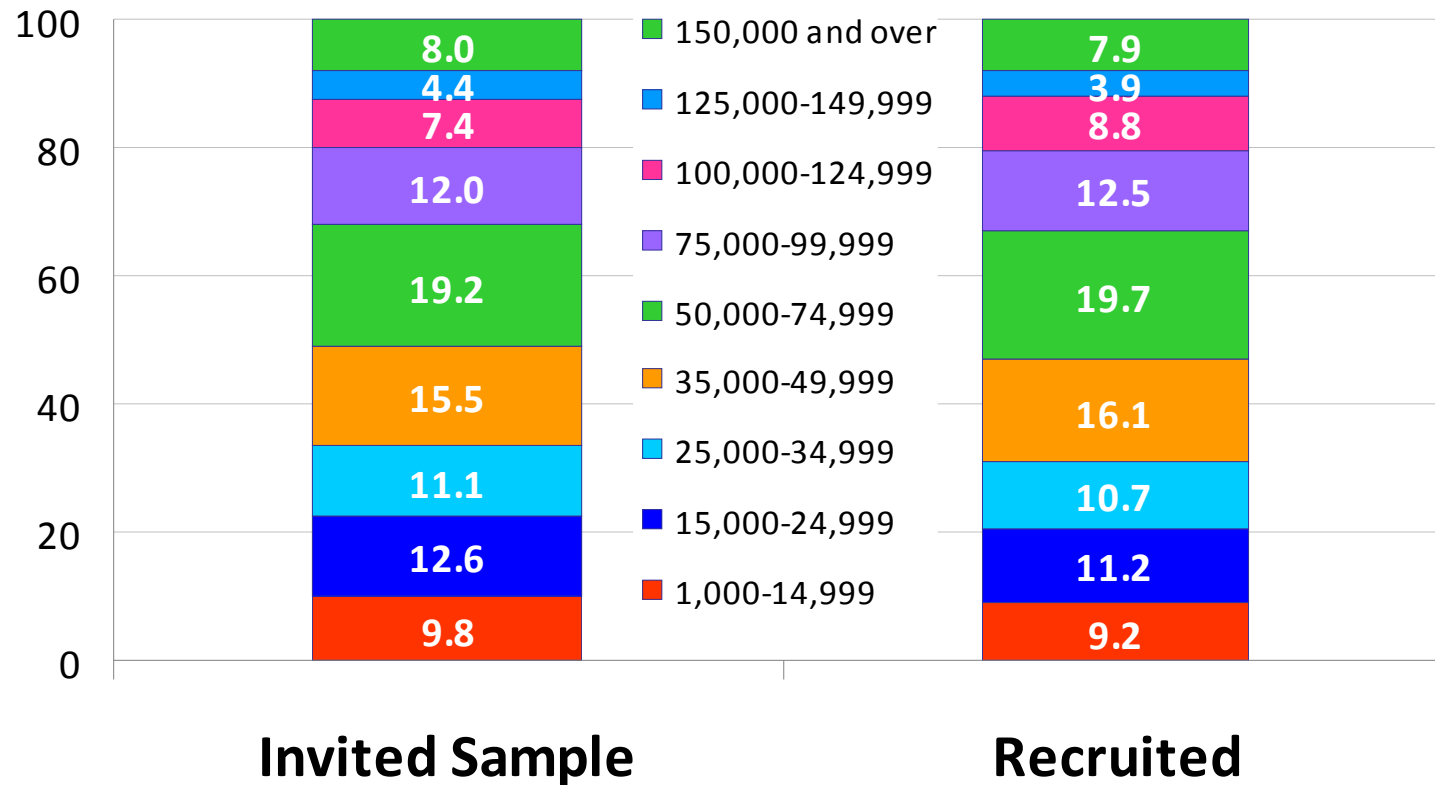
(Invited Sample v. Recruits – data for head of household)



- Recruited cases similar to invited cases on **education level**

# Household Income

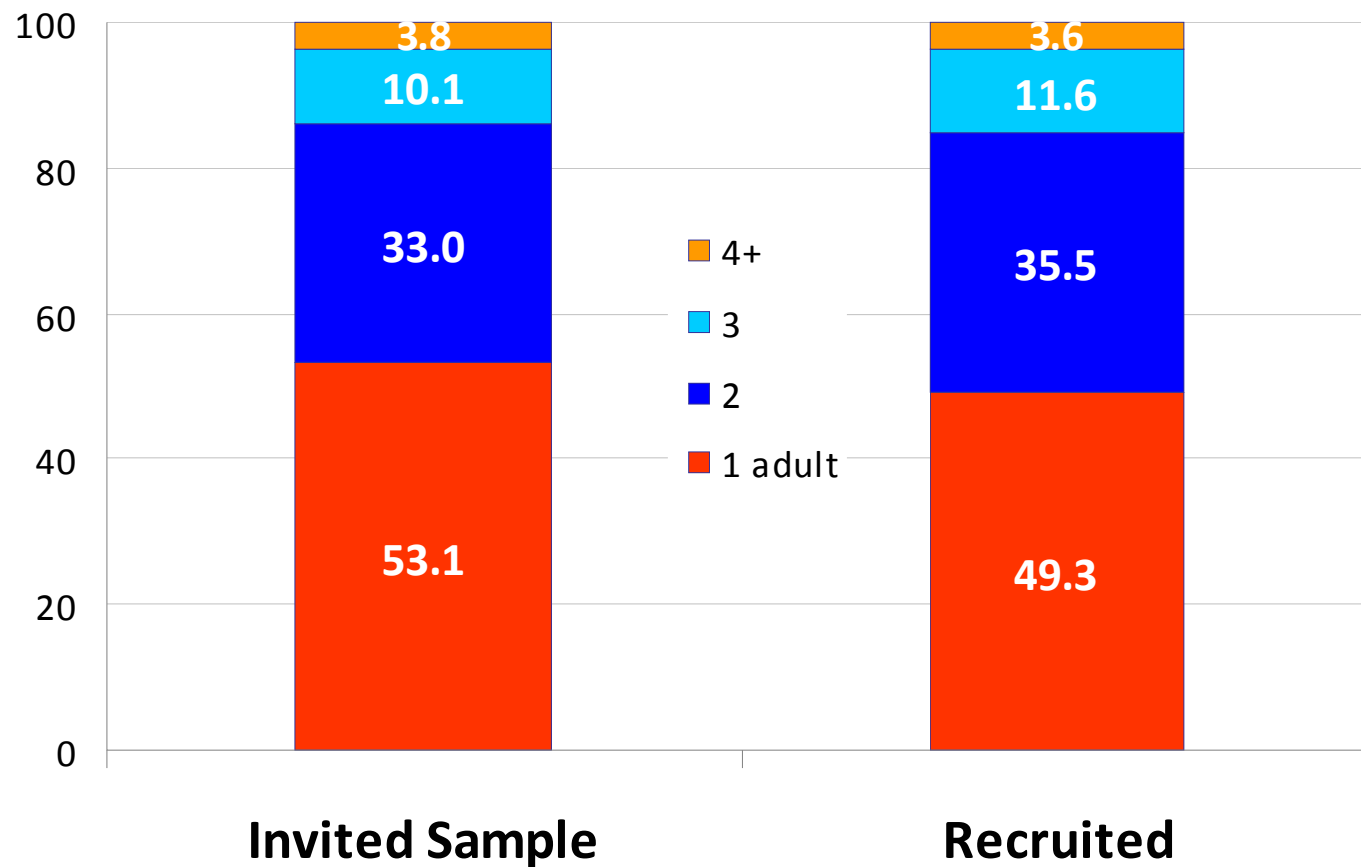
(Invited Sample v. Recruited Sample)



- Recruited cases similar to invited cases on **household income**

# Number of Adults in Household

(Invited Sample v. Recruited Sample)

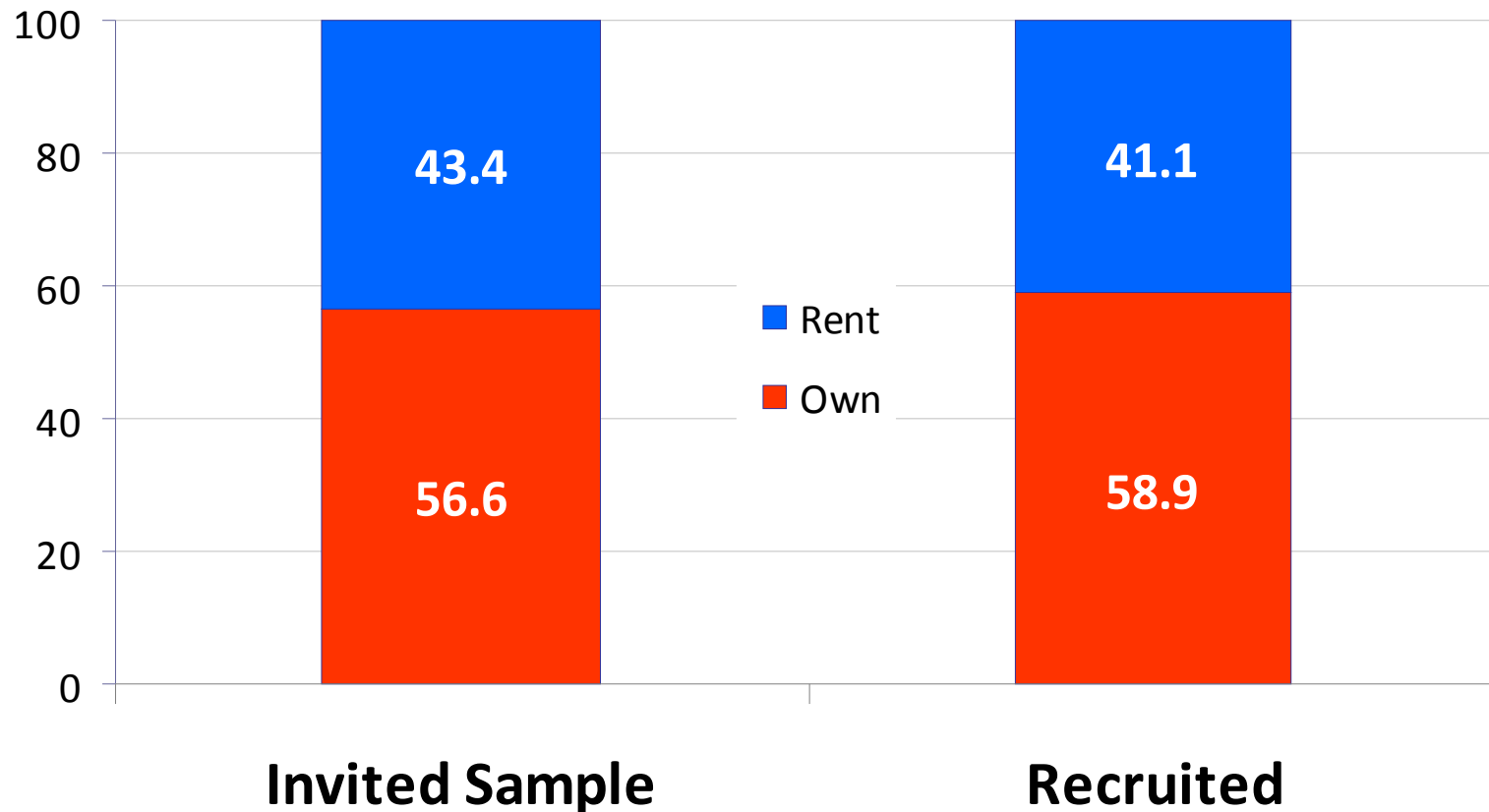


- Recruited cases similar to invited cases on **adult household size**

# Home Ownership/Rent

(Invited Sample v. Recruited Sample)

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- Non-owners and renters excluded from the analysis
- **No evident self-selection bias**

# Region of Residence

(Invited Sample v. Recruited Sample)



- No evident self-selection bias by **Census region**

# 2008 Presidential Vote

(Non-responders v. Recruited)

- **Method:** Data aggregated at county level by **actual vote share** for Obama
- **Non-responders slightly more likely** to live in counties that voted heavily for Obama (chi-square < .01)
- Average country support for Obama: Non-responders **52.6%**; Recruits **51.8%**

## ABS Sample Across Obama Vote Share in Counties

County Vote for Obama	Non-Responders	Recruited
Less than 35%	11.8%	12.0%
35% to less than 50%	29.3%	31.2%
50% to less than 65%	39.3%	39.7%
65% or more	19.6%	17.2%
Total	100.0%	100.0%

# Conclusions

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- ABS recruitment data provides **non-response bias assessment** using available data linked to home address
- ABS-sourced recruitment supports **KN panel representativeness**
  - Age, Gender, Race/Ethnicity and other core demographics
  - Secondary demographics such as HH income, adult HH size, education level for head of HH, and home ownership
  - Cell phone-only households
- **Nearly identical Obama share** of the vote comparing ABS responders with non-responders (less than 1% difference)
- Additional research to continue with **more supplemental variables**



# Thank You for Attending For More Information

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