



Did it Work? ...

**Findings from a Flu Pilot Study
Using Interactive Voice
Response (IVR) and Live
Interviewers**

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Outline of Talk

- I. Background
- II. Research Goals of Pilot Study
- III. Pilot Design
- IV. Operational Challenges
- V. Results & Analysis
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INTRO (VIA IVR):

Please answer our brief national survey about flu vaccinations by NORC at the University of Chicago. This should take about 5 minutes. Your call could not be completed and was routed to this survey.

Let's begin...

Background

- NORC is continually conducting research into options and best practices for telephone survey data collection.
- Reconnect Research (RR) is a company that provides a non-probability sample of intercepted telephone calls from people whose calls could not be connected. <http://www.reconnectresearch.com/>
 - RICS™ : Redirected Inbound Call sampling
 - MIDI Frame: Includes Misdialed, Incomplete, Disconnect, Inbound calls
 - MIDI calls are forwarded by telecom companies to RR for research and marketing purposes.
 - Currently, a large portion of the available MIDI calls are calls to 800 numbers.
 - RR offers Interactive Voice Response (IVR) interviewing for the MIDI sample
- 2016 and 2017 AAPOR presentations of studies using RICS suggested a MIDI sample may produce similar estimates to national benchmarks.

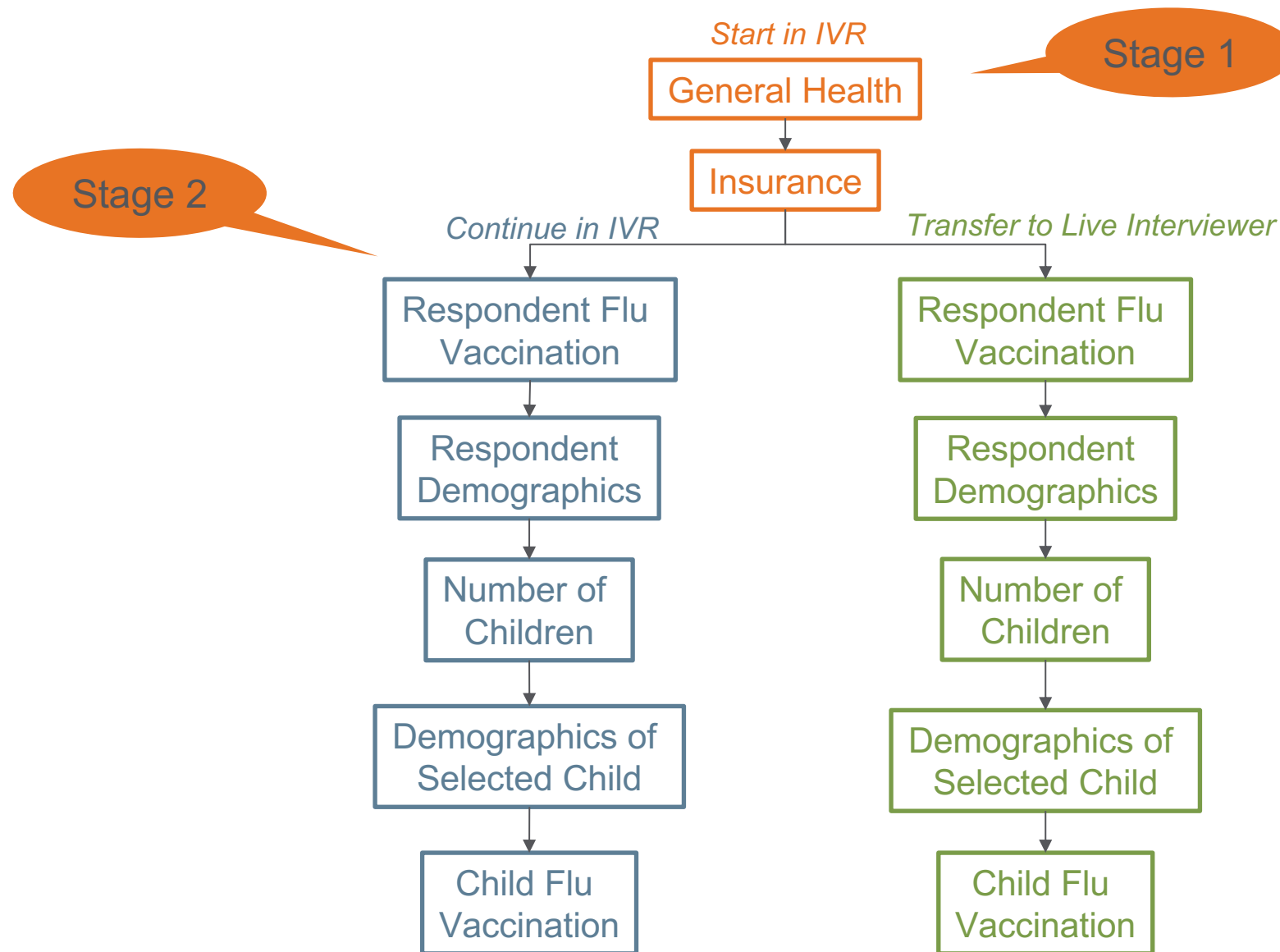
Research Goals

- Research Question ?
 - For rare population surveys, would the RICS telephone sample coupled with the mode of live interviewing provide representative results
- Goals:
 - Compare interviewing under two modes:
 - IVR alone, conducted by RR
 - IVR for a few questions conducted by RR, with a transfer of the call to a NORC live interviewer
 - Evaluate quality of the MIDI sample
 - Evaluate quality of survey data relative to population and subgroup benchmarks

Pilot Design - Overview

- In February 2017 NORC worked with Reconnect Research to design and conduct a small pilot survey.
- Split Sample Design to Evaluate Survey Mode
 - ~ 50% of completed sample IVR alone
 - ~ 50% of completed sample using IVR with transfer to a live interviewer after a few questions
- Collected respondent and child demographics, and asked a few health questions, including receipt of a flu vaccination.
- Identifying rare populations – Health Care Personnel, Pregnant Women, Children

Pilot Design -- Questionnaire Flow



Operational Challenges

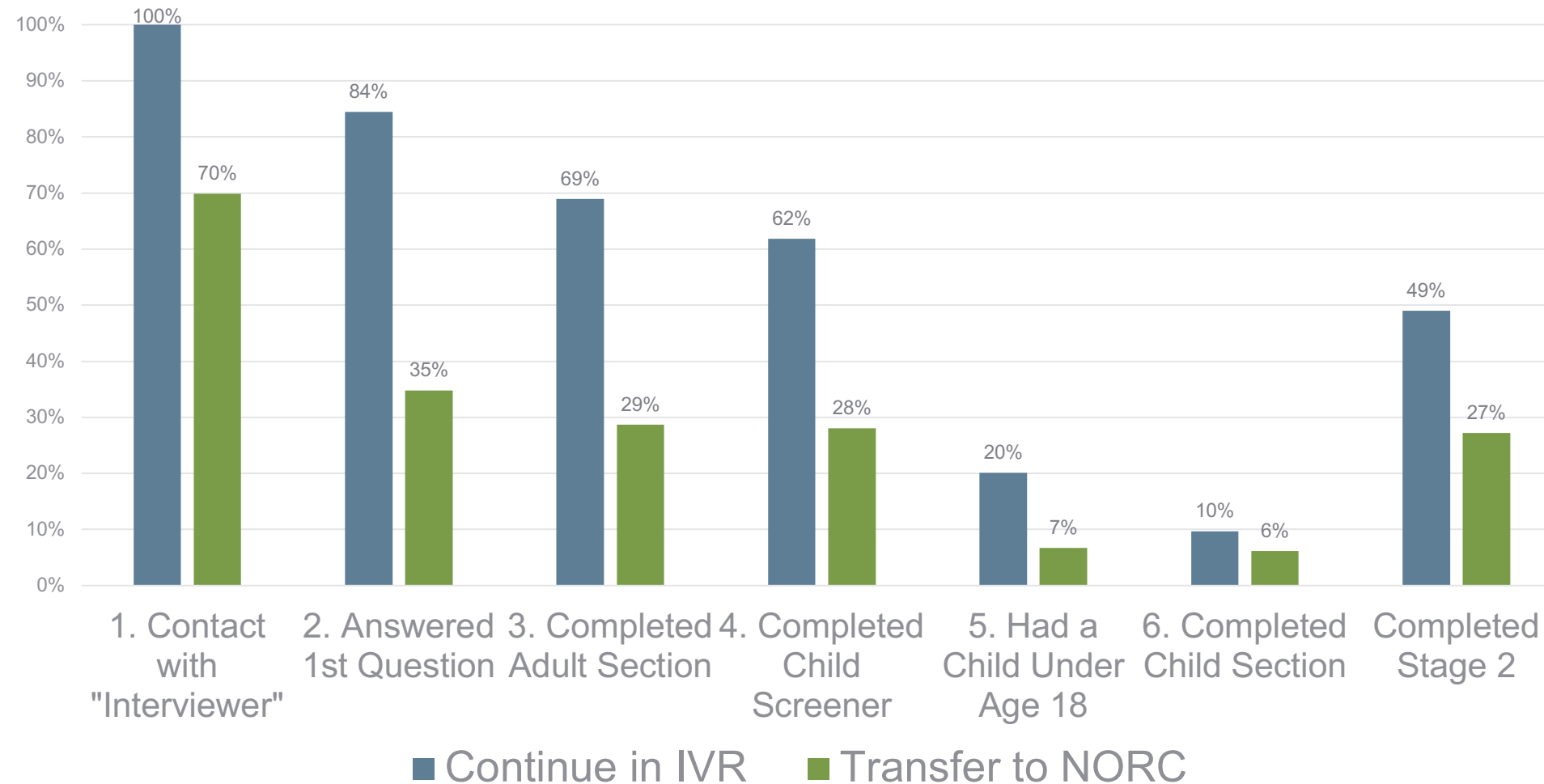
- The production phase of the survey occurred over a 6-day period from Friday February 17th through Wednesday February 22nd, 2017.
- Challenges
 - Control the transfer of a sample of all MIDI calls to live interviewers – like controlling a fire hose
 - Informing respondents who did not reach their desired party they were now being asked to complete a survey
 - We did no Hispanic language live interviewing; available in IVR
 - Inconsistencies in IVR and live interviewer survey responses:
 - In IVR it was easier for a respondent to make a mistake pressing the keypad for responses than with a live interviewer.

Results: Key Data Collection Indicators – Stage 1

Completion Rates for Stage 1	Overall
Stage 1: Initial IVR Questions	
Incoming calls to Reconnect Research	140,847
Landline	56%
Cell Phone	35%
Unknown	9%
Completed Stage 1	14,386
Stage 1 Completion Rate	10.2%

Results -- Key Data Collection Indicators – Stage 2

Completion Rates for Stage 2: IVR/Live Mode by Questionnaire Break Points

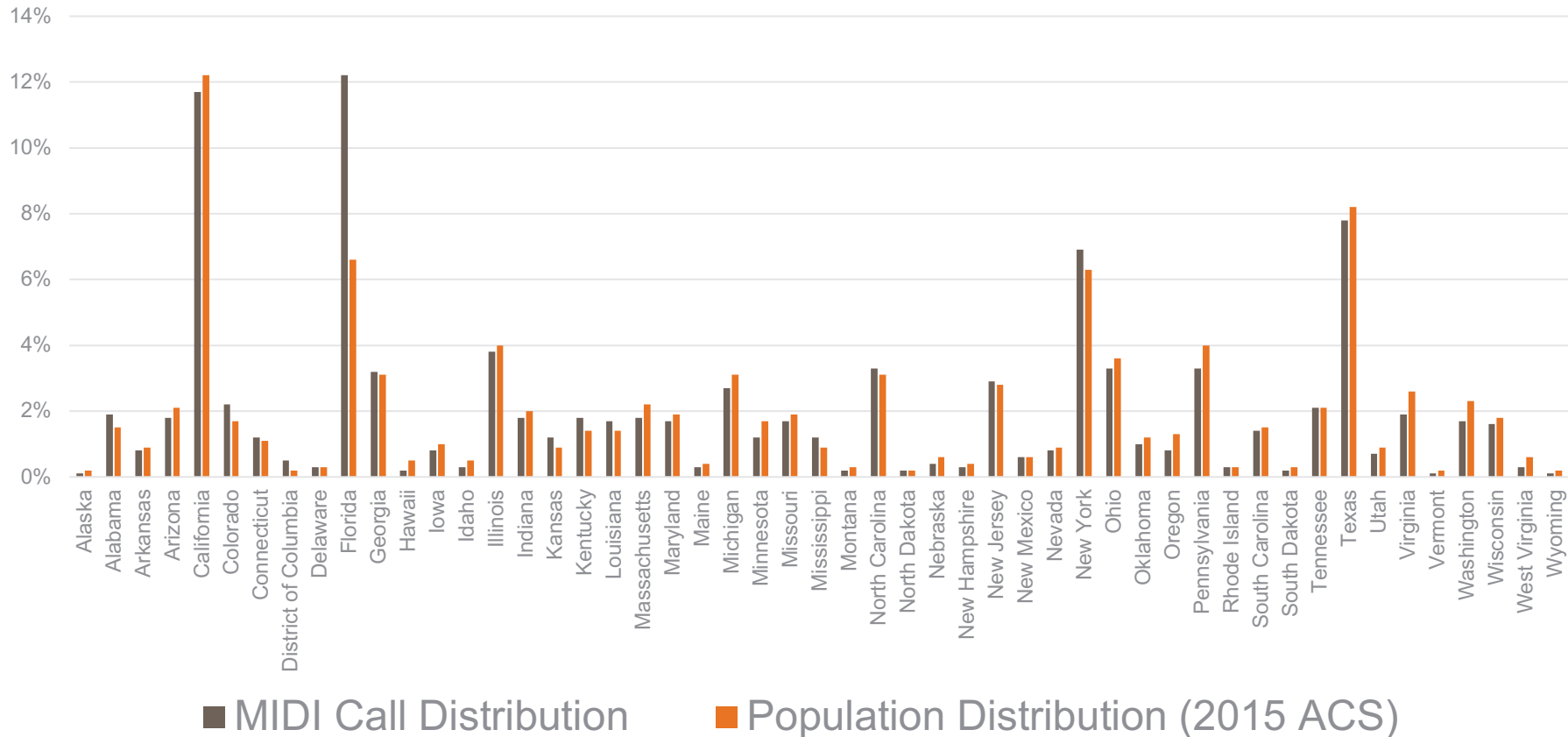


Results - Geography

- The MIDI call distribution* across states is similar to the estimated population distribution across states, except for Florida

* The state assigned to the call is based on the telephone number. The chart shows the distribution across calls, not across completed interviews.

MIDI Call and Population Distribution Across States



Results – Item Nonresponse

- IVR data collection resulted in very high rates of item nonresponse, often 10x as high as item nonresponse rates for corresponding interviewer-administered items.

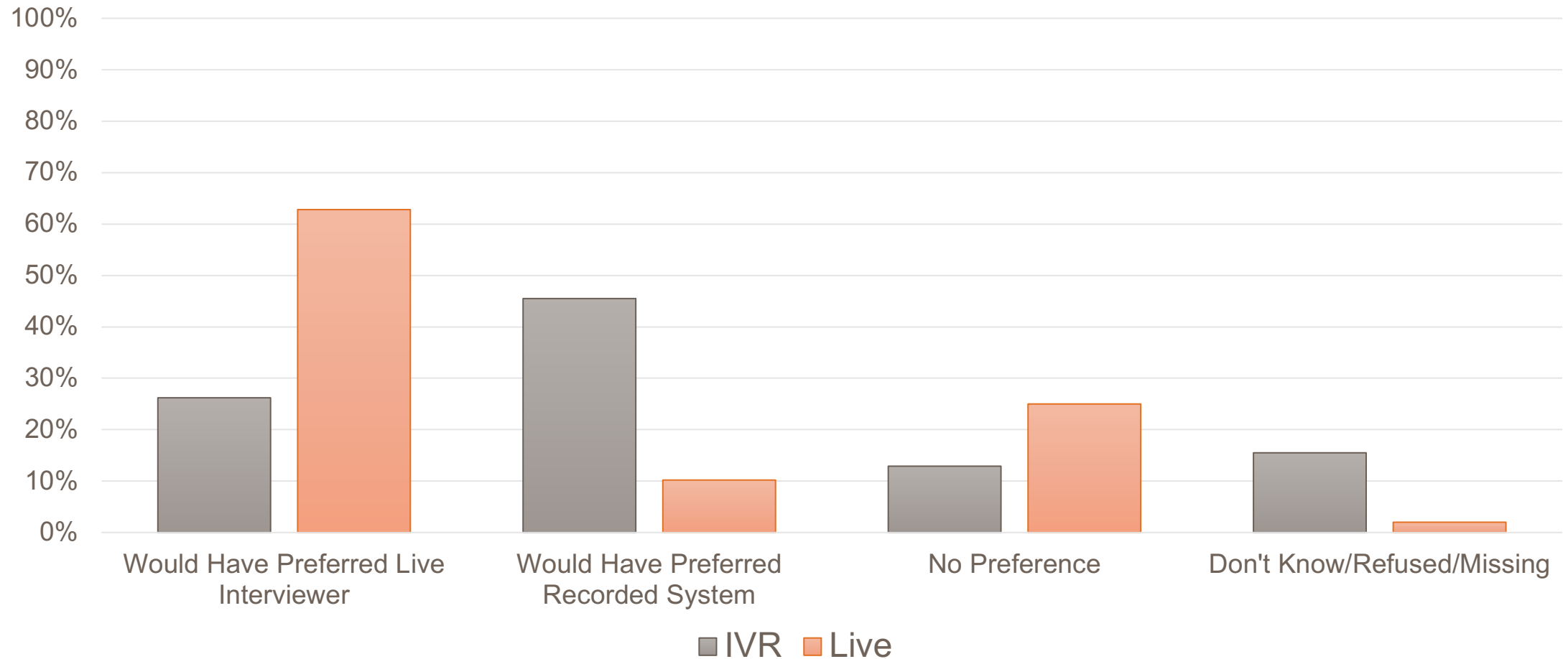
	Item Nonresponse Rates (%)	
	IVR	Live
Adult Questions		
Health Care Worker?	13.7	0.2
Male or Female?	10.4	0.5
Pregnant (among females)?	4.3	0.2
Age?	11.4	1.7
Race/Ethnicity?	18.0	2.9
Child Questions		
Male or Female?	4.6	1.4
Race/Ethnicity?	9.1	1.6

Results – Demographics

- Respondent demographics did not resemble the population
 - More female and older compared to American Community Survey (ACS) – *not too surprising; similar to RDD phone surveys*
 - More non-Hispanic Black – *a little surprising*
 - On par proportion of Hispanics

Characteristic	Unweighted Distribution ((excl. missings))			
	IVR	Live	Overall	ACS 2015
Sex				
Male	38.8%	36.9%	37.9%	48.2%
Female	61.2%	63.1%	62.1%	51.8%
Age				
18-29	15.6%	11.6%	13.7%	20.7%
30-39	14.6%	11.3%	13.1%	17.2%
40-49	15.5%	13.0%	14.4%	16.9%
50-64	27.0%	29.0%	27.9%	26.0%
65+	27.3%	35.2%	30.9%	19.3%
Race/Ethnicity				
Hispanic	16.8%	11.1%	14.1%	15.6%
NH White Alone	54.7%	59.1%	56.7%	64.7%
NH Black Alone	21.8%	21.0%	21.4%	11.7%
NH Other or Multiple Races	6.8%	8.8%	7.7%	8.1%

Results -- Respondent Mode Preference*



* Among respondents completing the full interview and answering Question 31.

Analysis – Adult Flu Vaccination Rates

- Flu vaccination rate estimates for Adults 18+, Health Care Personnel, and Pregnant Women were much lower than CDC published 2016-2017 end-of-season flu estimates for those responding via IVR. The estimate for adults 18+ responding with live interviewers was close to that of BRFSS.

	Flu Vaccination Received Since July 1, 2016 thru February 22, 2017									CDC End-of-Season Benchmark**
	Sample Sizes			Unweighted Estimates			Weighted* Estimates			
	IVR	Live	Overall	IVR	Live	Overall	IVR	Live	Overall	
Adults 18+	3,050	2,644	5,694	21.8%	45.3%	32.8%	21.2%	41.3%	31.0%	43.3%
Health Care Personnel	373	303	676	37.0%	59.1%	46.9%	37.1%	59.5%	47.6%	78.6%
Pregnant Women	96	18	114	34.4%	50.0%	36.8%	34.3%	49.1%	38.4%	53.6%

* The weighting here is a simple post-stratification to age, race, and sex marginal population totals; because this is not a probability sample, probabilities of selection are not known and design weights cannot be computed.

** CDC benchmark for adults 18+ is from BRFSS (Source: FluVaxView), estimating vaccination since July 2016 with a data collection period from September 2016 – June 2017. CDC benchmarks for Health Care Personnel and Pregnant Women are based on non-probability Internet panel survey samples (Source: FluVaxView), estimating vaccination since July 2016 with a data collection period from March 28 – April 19, 2017 for Health Care Personnel and from March 28 – April 7, 2017 for Pregnant Women

Analysis – Child Flu Vaccination Rates

- Child flu vaccination rate estimates were much lower than corresponding NIS-Flu estimates from February 2017, even after post-stratification weighting* by age x race/ethnicity x sex.
 - This finding held both overall and within all age, sex, and race/ethnicity sub-populations examined.
 - Flu vaccination rates were even lower for IVR alone interviews

	Flu Vaccination Received Since July 1, 2016 thru February 22, 2017									NIS-Flu
	Sample Sizes			Unweighted Estimates			Weighted* Estimates			
	IVR	Live	Overall	IVR	Live	Overall	IVR	Live	Overall	
Children < 18	434	533	967	37.6%	43.9%	41.1%	34.5%	46.5%	41.7%	55.6±3.2

* The weighting here is a simple post-stratification to age, race, and sex marginal population totals; because this is not a probability sample, probabilities of selection are not known and design weights cannot be computed.

Findings

- A. Possible to transfer MIDI sample from IVR to a live interviewer
- B. Possible to identify rare populations such as pregnant women and health care workers in the MIDI sample. Incidences in the completed MIDI sample were within five percentage points of benchmark.
 - IVR to Live mode incidences were closer to the benchmarks; within 3 percentage points of benchmark
- C. We found substantive differences between the key flu vaccination outcomes (between 12 and 32 percentage points across all groups examined)
 - Do not recommend using MIDI calls to produce population estimates for flu vaccination.
- D. MIDI calls may provide a fast, cost-effective way of piloting new questions or conducting questionnaire experiments.

Thoughts for Continued Research

1. Methods for reducing item nonresponse in IVR
2. IVR alone has limitations for survey content such as survey length and question complexity
3. IVR transfer to Live Interviewer needs improvement
 - Improving completion rates for IVR to live interviewer transfer
 - Set up for multi-language
 - Develop efficient/secure method to pass key information from IVR to CATI
4. For rare populations, combine a MIDI sample with a probability based sample and apply estimation methods for combined probability/non-probability samples

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Thank You!



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Results -- Key Data Collection Indicators (continued)

Row	Measure	Continue in IVR	Transfer to NORC	Overall	Formula
Stage 2: Continue in IVR or Transfer to NORC					
C	Continue in IVR vs. Transfer	5,126	9,260	14,386	
D	Contact with "Interviewer"	5,126	6,468	10,583	
	Contact Rate	100.0%	69.8%	73.6%	D/C
E	Answered 1st Question in Stage 2	4,329	3,219	7,548	
	1st Question Answer Rate	84.5%	49.8%	71.3%	E/D
F	Completed Adult Section	3,533	2,655	6,188	
	Adult Section Completion Rate	81.6%	82.5%	82.0%	F/E
G	Completed Child Screener	3,172	2,600	5,772	
	Child Screener Completion Rate	89.8%	97.9%	93.3%	G/F
H	Had a Child Under Age 18	1,032	620	1,652	
	Child Eligibility Rate	32.5%	23.8%	28.6%	H/G
I	Completed Child Section	496	574	1,070	
	Child Section Completion Rate	48.1%	92.6%	64.8%	I/H
J	Completed Stage 2	2,510	2,516	5,026	
	Stage 2 Completion Rate	49.0%	27.2%	34.9%	J/C
Overall					
	Yield Rate of Adult Completes	6.8%	3.0%	4.4%	F/A
	Yield Rate of Child Completes	0.9%	0.6%	0.8%	I/A