

# Psychosocial influences on routine childhood immunization in Sokoto, Kebbi and Zamfara States

Breakthrough RESEARCH Nigeria  
Behavioral Sentinel Surveillance (BSS)  
Key Baseline Results

Webinar Series – June 2020  
Routine Childhood Immunization



# Webinar overview

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- About Breakthrough RESEARCH
- What is the Behavioral Sentinel Surveillance (BSS) survey?
- Focus on routine childhood immunization
  - How did formative research inform the BSS survey?
  - New ideational metrics
  - Key BSS findings
  - SBC program implications
- Future work

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# About Breakthrough RESEARCH

# Breakthrough RESEARCH

- USAID's flagship project for social and behavior change (SBC) research and evaluation
- Five-year project: August 2017 to July 2022
- B-R Nigeria activity start: January 2019  
B-R Nigeria office opened: September 2019
- Close collaboration with sister project Breakthrough ACTION and other IPs



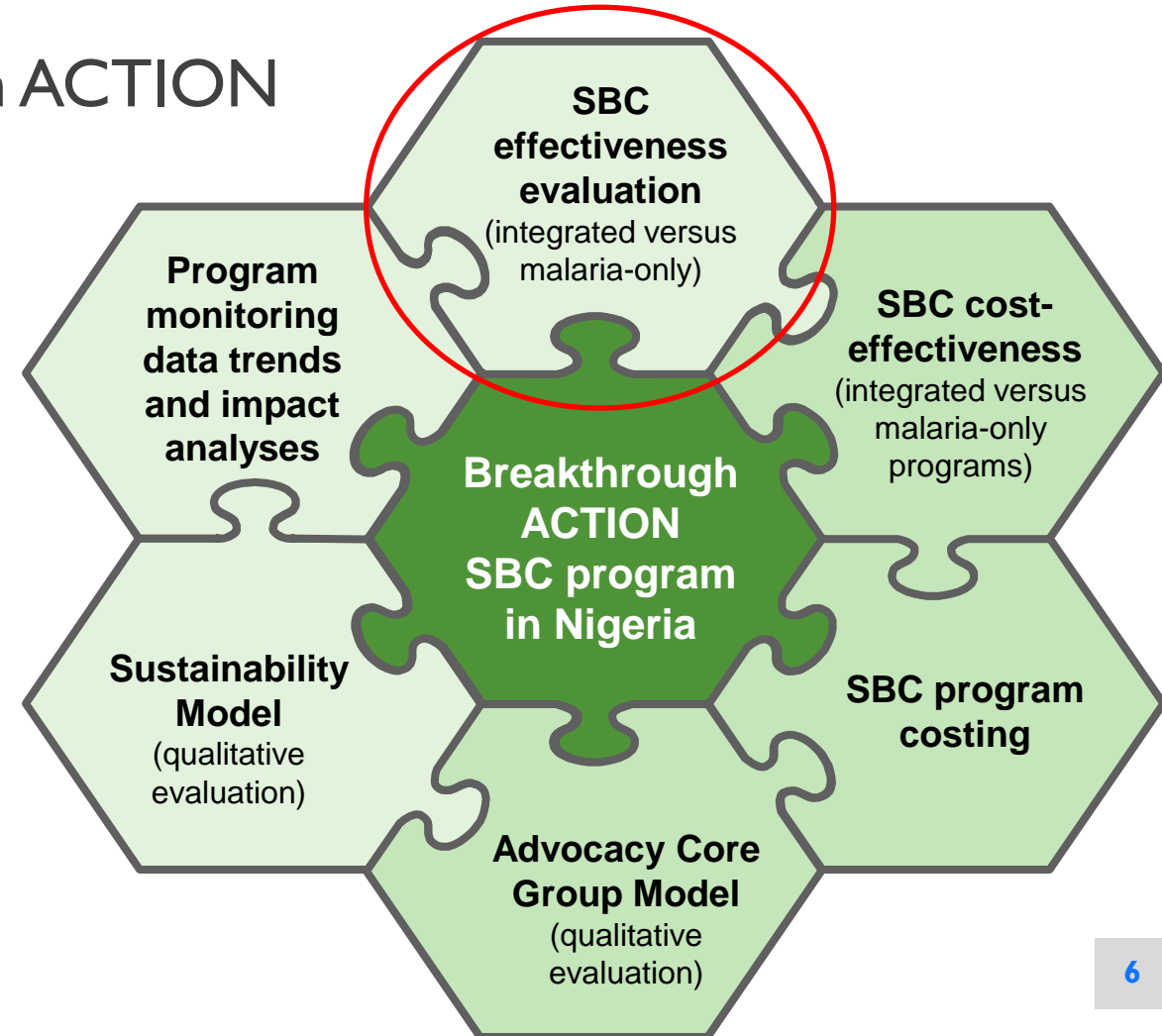
# Consortium



# Breakthrough RESEARCH in Nigeria

Breakthrough RESEARCH will embed rigorous research within a state-of-the-art SBC program in Nigeria led by Breakthrough ACTION

- **Qualitative evaluations** of specific SBC program components, e.g. Sustainability Model
- **Effectiveness evaluation** of integrated versus malaria-only SBC programs, e.g. **Behavioral Sentinel Surveillance (BSS) Survey**
- **Costing study and cost-effectiveness evaluation** of integrated versus malaria-only SBC programs **using BSS results** and program cost data



# Breakthrough ACTION in Nigeria

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## Overall Result

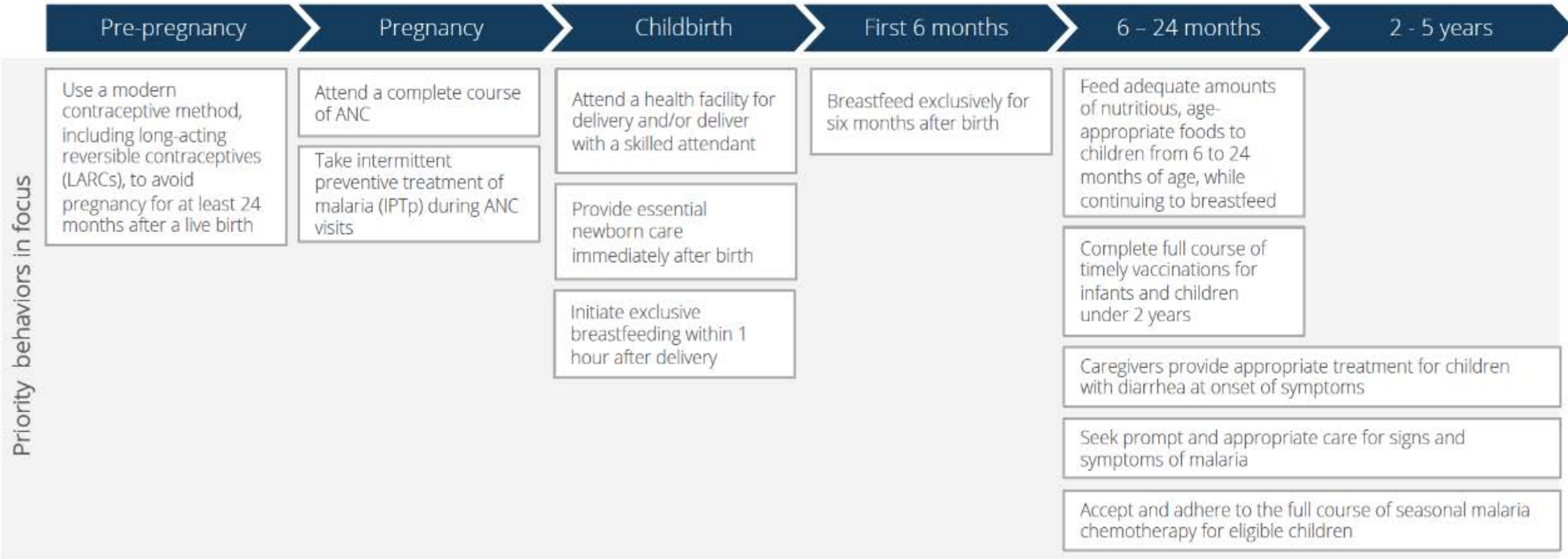
- Increase 17 priority health behaviors in the areas of maternal, newborn, and child health plus nutrition (MNCH+N), family planning and malaria

## Intermediate Results

- Determinants of priority health behaviors increased
- SBC coordination and collaboration among USG partners improved
- SBC capacity of public sector entities improved

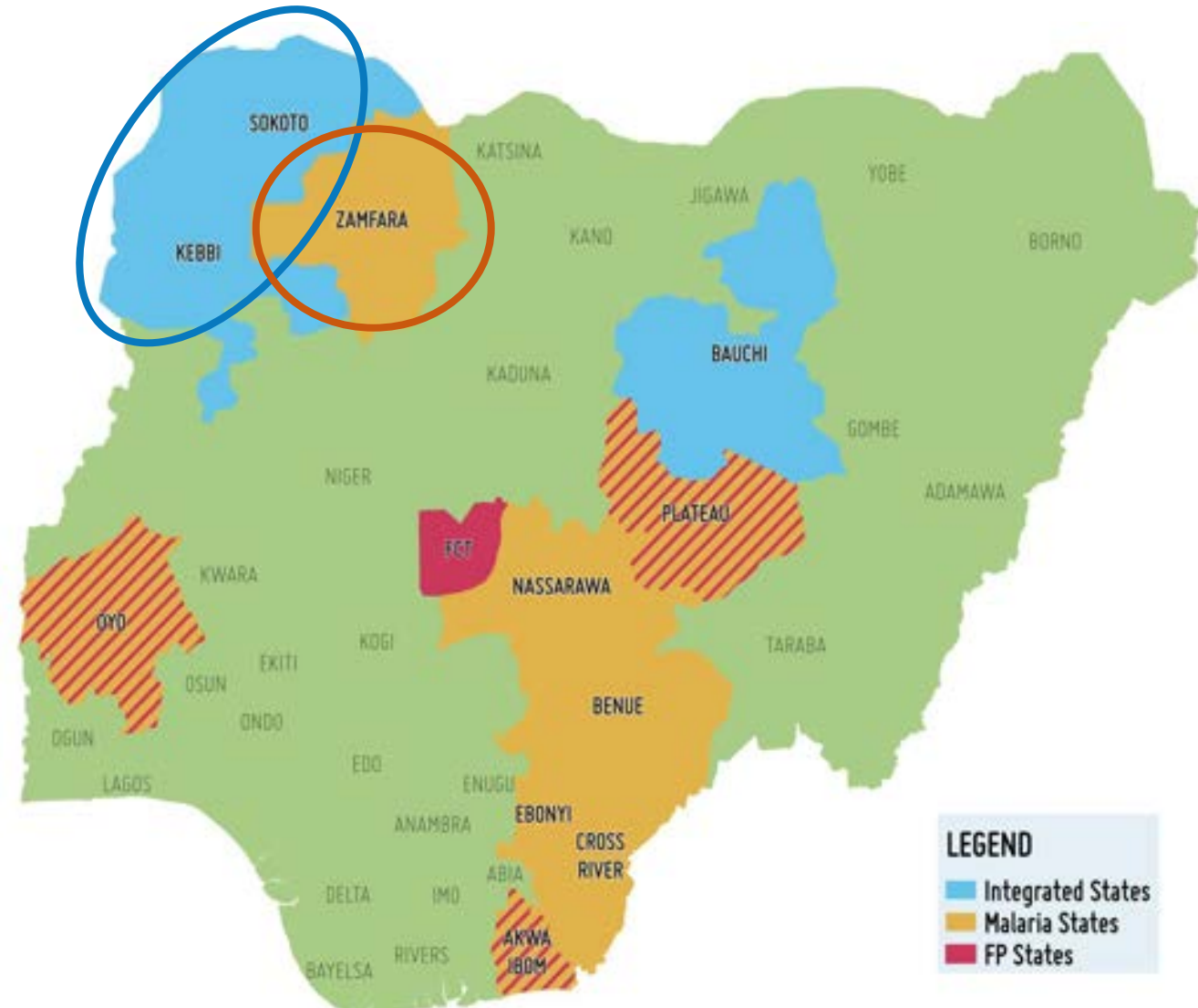
# Priority behaviors targeted by integrated SBC

## Milestones



# Where do we work in Nigeria?

- Breakthrough ACTION implements SBC programs in 11 States and FCT
- Integrated SBC for malaria, family planning and MNCH+N in 3 states; vertical SBC programs in other states
- Breakthrough RESEARCH will implement the effectiveness study in Kebbi and Sokoto (integrated) and Zamfara (malaria-only)



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# What is the Behavioral Sentinel Surveillance (BSS) Survey?

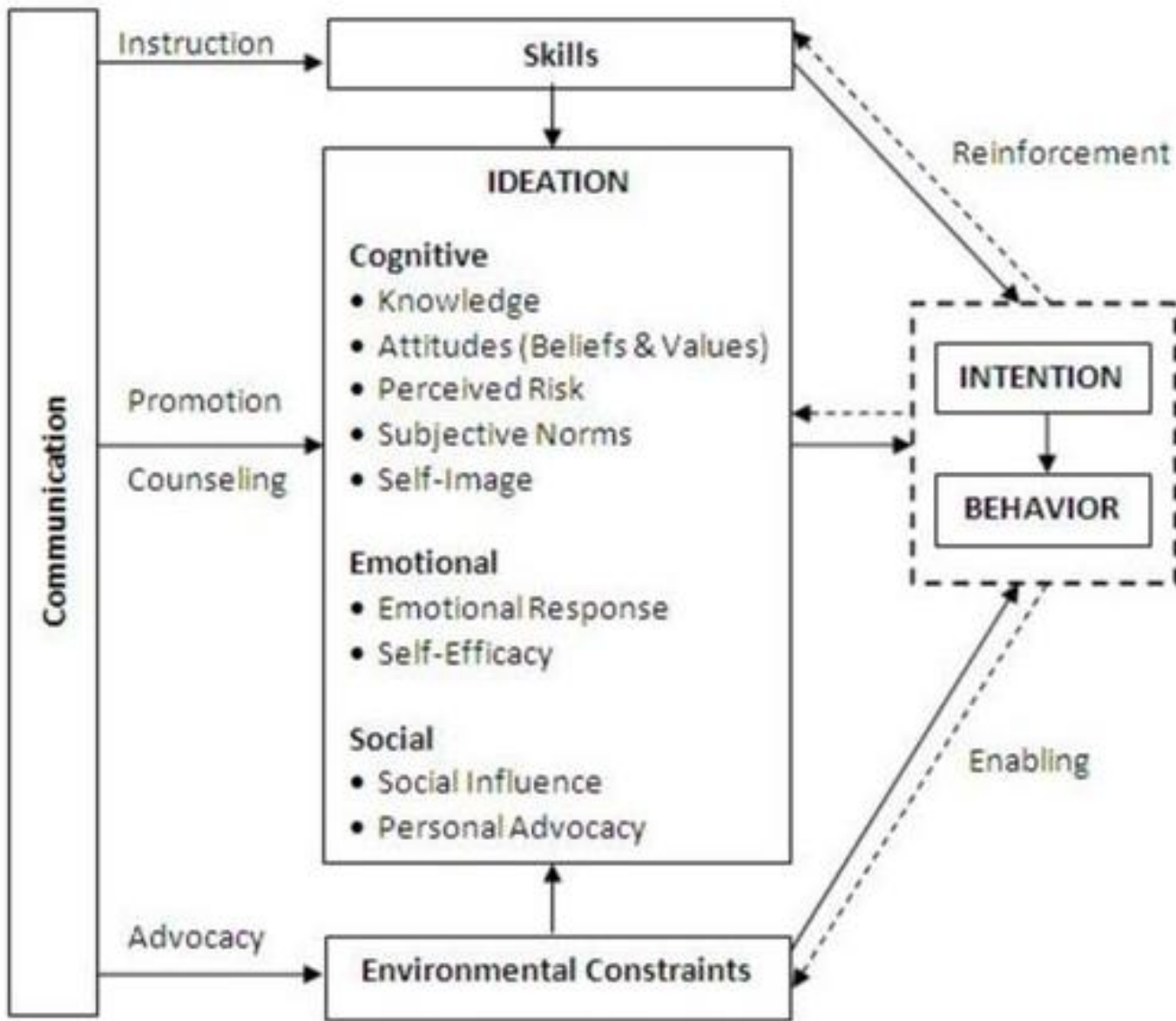
# BSS objectives

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- Assess the effectiveness of integrated versus malaria-only SBC approaches on malaria, family planning and MNCH+N behaviors and ideations
- Measure changes in key behaviors and ideations across malaria, family planning, and MNCH+N at baseline, midline and endline periods
- Contribute to the overall cost-effectiveness analysis of integrated versus malaria-only SBC approaches

# What does the BSS measure?

- BSS tracks a cohort of women and their newborns during their 1,000 day window of opportunity over the course of the SBC program cycle
- BSS measures priority behavioral outcomes including:
  - Malaria** (LLIN use, IPTp, fever treatment/diagnosis); **family planning** (modern contraceptive use, postpartum family planning); **MNCH+N** (ANC, facility-based delivery, newborn and postpartum care, routine immunization, breastfeeding/nutrition, childhood illness care-seeking and treatment)*
- BSS measures psychosocial influences or ideations – cognitive, emotional, social – theorized as intermediate determinants of behavioral outcomes



# Kincaid's Theory of Strategic Communication and Behavior Change

# Why is the BSS important?

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- Generate robust evidence on behaviors and ideations to inform SBC program adaption and scale-up over the full program period
- Develop and collect new MNCH+N ideational metrics to inform both local programs and the global SBC community
- Quantify new ideational metrics for testing behavioral change theories
- Identify the most important ideations, or behavioral determinants, that SBC programs must address to improve health outcomes

# BSS design

## Study population

Pregnant women and women with a child under 2 years living within Breakthrough ACTION program areas in the 3 states  
*(not representative at state level)*

## Study design

Cross-sectional and cohort components  
Quasi-experimental and dose-response designs

## Sample size

**3,032** pregnant women  
**3,043** women with a child under 2 years

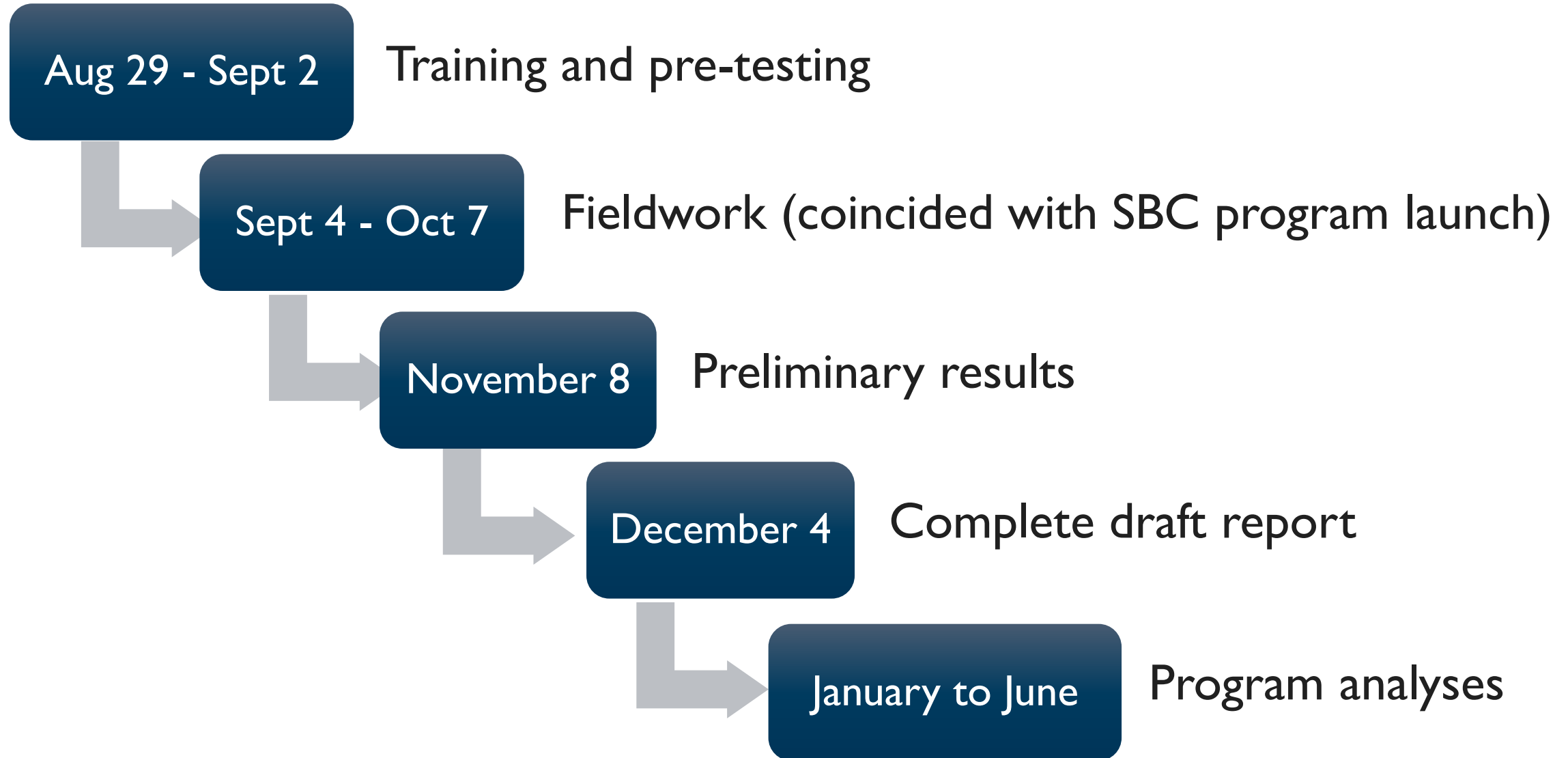
## Sampling method

108 wards across three states; census of pregnant women and random selection of women with children under 2 years

## Data analysis

Predicted probabilities of outcomes were derived using mixed-effects logistic regression models adjusted for ideational and sociodemographic variables: wealth, age, education and employment (respondent and spouse)

# BSS timeline



BASELINE TECHNICAL REPORT

# Behavioral Sentinel Surveillance Survey in Nigeria



JUNE 2020



## Highlights

- Describes theory, rationale and study methods
- Summarizes results for ~500 questions by state (Kebbi, Sokoto and Zamfara)
- Estimates standard DHS indicators by state across malaria, family planning and MNCH+N
- Presents new ideational metrics by state across malaria, family planning and MNCH+N

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**Vaccination:**

Formative work and literature reviews

# How did formative research inform the BSS?

- Breakthrough ACTION conducted formative research and literature reviews to inform SBC programs in Nigeria
- Breakthrough RESEARCH used this work to inform BSS ideational questions:
  - Vaccination coverage in northwestern Nigeria is extremely low
  - Polio eradication campaigns have faced major barriers, e.g. vaccine fears and community boycotts that also impact routine immunization services
  - Factors associated with not vaccinating children include: low vaccine knowledge, fear of side effects, vaccine mistrust, facility distance, cost and stock-outs, maternal education, maternal employment, and household wealth

# Nigeria's childhood immunization schedule

Age of child	Vaccination	Disease protection
At birth	Hepatitis B vaccine (HBV 1) Oral polio vaccine (OPV 0) BCG vaccine	Hepatitis B Polio Tuberculosis
6 weeks	OPV 1 Pentavalent 1 Rotavirus vaccine 1 PCV 1	Polio DPT, Hib and Hepatitis B Rotavirus Pneumonia and Otitis Media
10 weeks	OPV 2 Pentavalent 2 Rotavirus vaccine 2 PCV 2	Polio DPT, Hib and Hepatitis B Rotavirus Pneumonia and Otitis Media
14 weeks	OPV 3 Pentavalent 3 PCV 3	Polio DPT, Hib and Hepatitis B Pneumonia and Otitis Media
9 months	Measles vaccine Yellow fever vaccine	Measles Yellow fever

The Nigerian Federal Ministry of Health considers a child fully immunized if he/she receives by the first birthday:

- BCG vaccine
- 3 doses of DPT vaccine
- 3 doses of polio vaccine
- Measles vaccine

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# Vaccination:

## New ideational metrics

# Innovative MNCH+N ideational metrics

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- Limited ideational research for MNCH+N in contrast to FP and malaria
- Need to develop new MNCH+N ideational questions for BSS using theory-based design and by adapting questions from other settings or health areas
- Adapted WHO vaccine hesitancy metrics for northwestern Nigeria
- BSS ideational questions were reviewed by B-A, USAID and other experts
- BSS asked a limited set of ideational questions within each health area

# Vaccination ideational metrics

## Adapted WHO vaccine hesitancy metrics for northwestern Nigeria

Dimension	Domain	Likert-scale statement or question
Cognitive	Knowledge	At what age should a child go for his/her first routine vaccination?
	Beliefs about vaccine safety and efficacy	In your opinion, how effective are childhood vaccines?
		Many of the illnesses that vaccines are severe
		Vaccines have chemicals that can be dangerous to a child's health
	Beliefs about health services	Immunization services in my community are free
		Most people in my community trust health workers who provide immunization services
Health facilities in my community frequently have the vaccine you need and when you need it		
Emotional	Self-efficacy	I know where and when to get my child vaccinated
Social	Social influence	Besides yourself, who else may influence your decision to get a child vaccinated?
	Norms	Most parents in my community take their children to the facility for routine immunization
Intentions	Intentions	If you had another infant today, how likely is it that you would make sure he/she received all of his/her recommended vaccines?

**Main references:**  
 WHO. Report of the SAGE working group on vaccine hesitancy, 2014, Geneva.

Larsen HJ, et al. Measuring vaccine hesitancy: the development of a survey tool. *Vaccine* 2014;33:4165-4175.

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# Vaccination:

## Key findings

# Key findings by SBC program priorities

## 1. Behavioral patterns

How frequently do respondents practice the promoted health behaviors? What are the key behavioral patterns by geography or sociodemographic characteristics?

## 2. Knowledge and Beliefs

Are respondents aware of promoted health behaviors, e.g. how to prevent disease? Are certain beliefs held by respondents that could impede progress?

## 3. Barriers

How do respondents view health services in their communities? What are the main reasons for choosing certain treatment locations or for not using services at all?

## 4. Social Influence and Decision-Making

How do health decisions get made in households? Who mainly influences women's healthcare practices?

## 5. Ideational Relationships

How important are the individual components of behavioral change frameworks? What ideations should SBC programs target to maximize impact?

## 6. SBC Program Potential

What is the potential impact of SBC programs to spur behavior change? How does eliminating barriers enhance uptake of behaviors?

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# I. Behavioral patterns

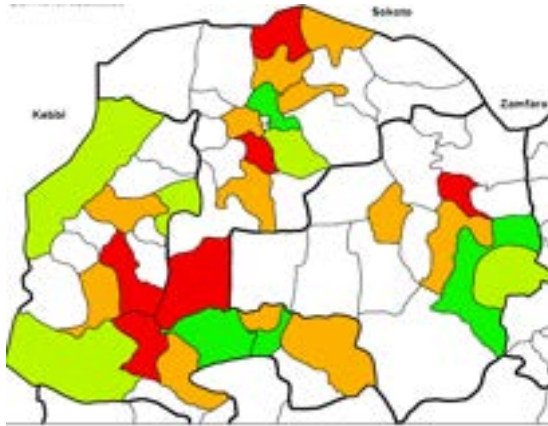
# Fully vaccinated children 12-23 months

Last-born children 12-23 months who received all basic vaccinations (BCG, measles, polio3, DPT3) to be considered fully immunized by the first birthday	Kebbi		Sokoto		Malaria-Only (Zamfara)		Integrated (Kebbi/Sokoto)	
	%	N	%	N	%	N	%	N
<b>Total</b>	3.6	482	4.5	548	7.7	578	4.1	1,030
<b>Household wealth quintile</b>								
Lowest	1.5	149	1.9	172	2.0	65	1.7	321
Highest	4.2	81	13.3	82	18.1	144	8.7	162
<b>Maternal education, highest level attended</b>								
None	3.7	365	3.6	401	5.3	365	3.6	766
Secondary or higher	9.3	58	31.2	35	19.3	88	17.0	93

# MNCH+N behavioral patterns

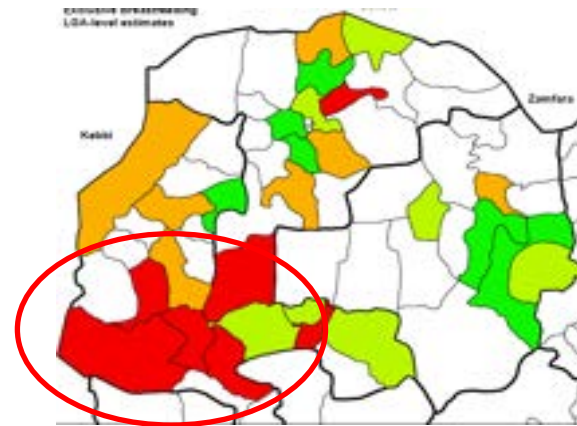
## ANC4+

(High variation: 8.1% poorest vs. 48.9% richest)



## EXCLUSIVE BREASTFEEDING

(clustering in southwest Kebbi)



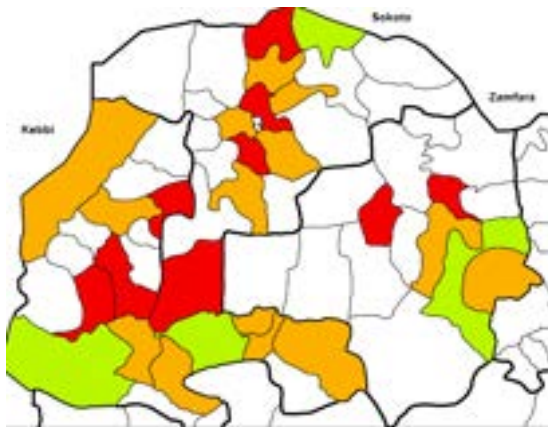
## DIARRHEA FORMAL CARESEEKING

(despite relatively high formal care-seeking...)



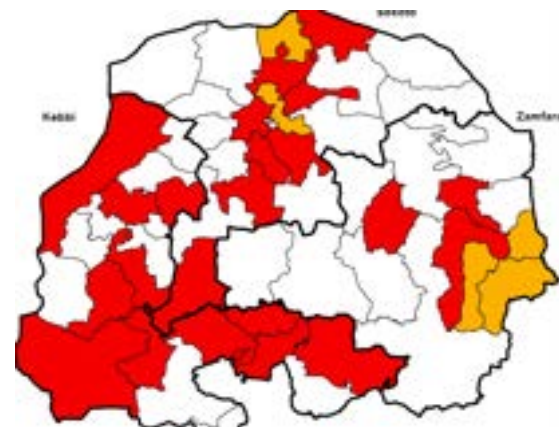
## FACILITY DELIVERY

(High variation: 5.1% poorest vs. 39.0% richest)



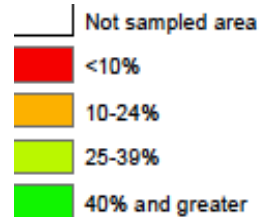
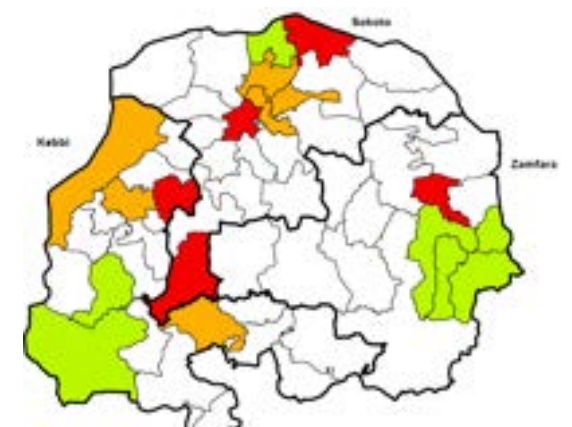
## FULLY VACCINATED RATES

(very low rates across the 3 states)



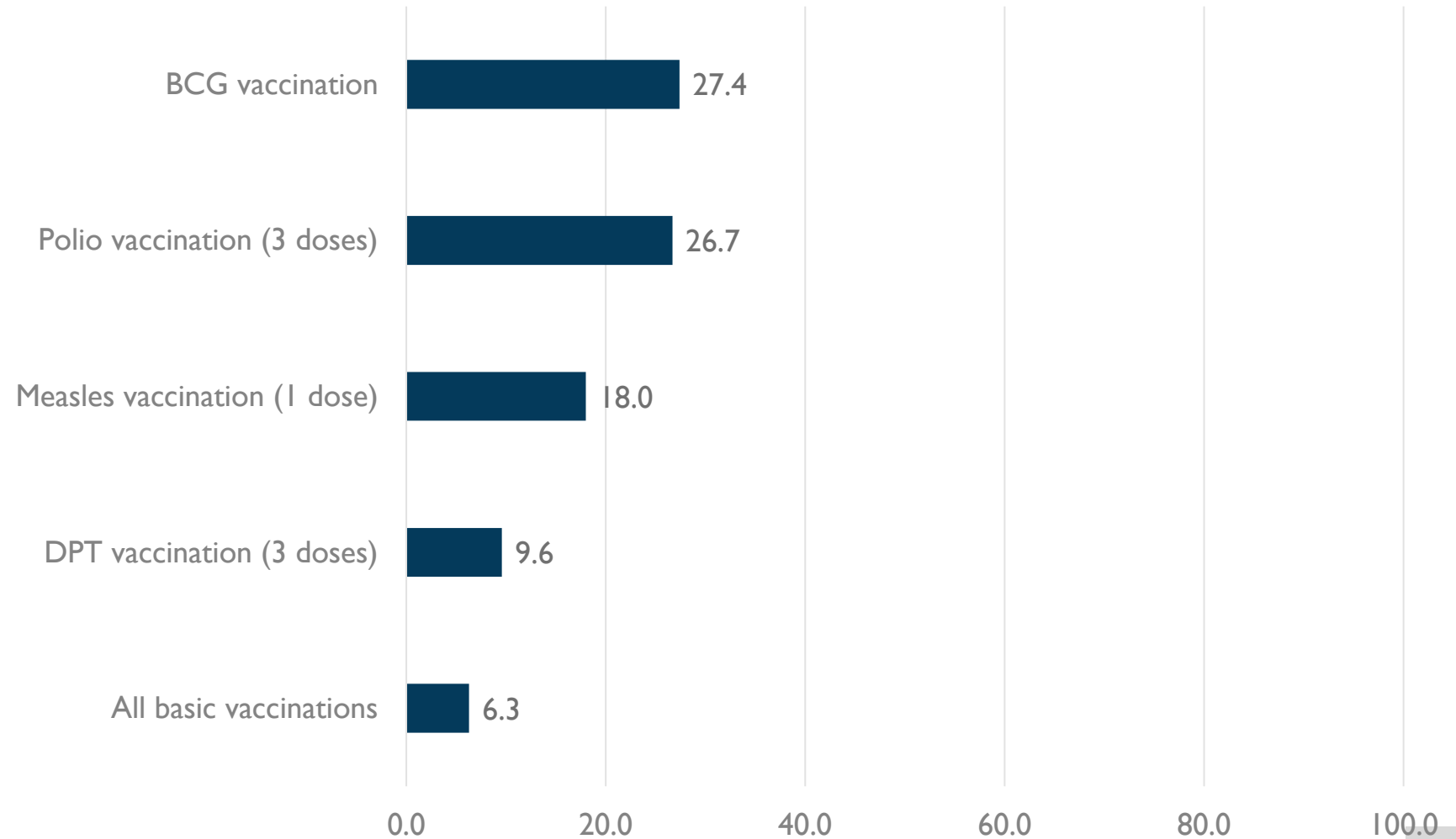
## DIARRHEA ORS/ZINC USE

(...lower and more variable ORS/zinc use)



# Low routine vaccination coverage, by type

Percent of children aged 12-23 months who received each vaccine type by his/her first birthday



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# 2. Knowledge and Beliefs

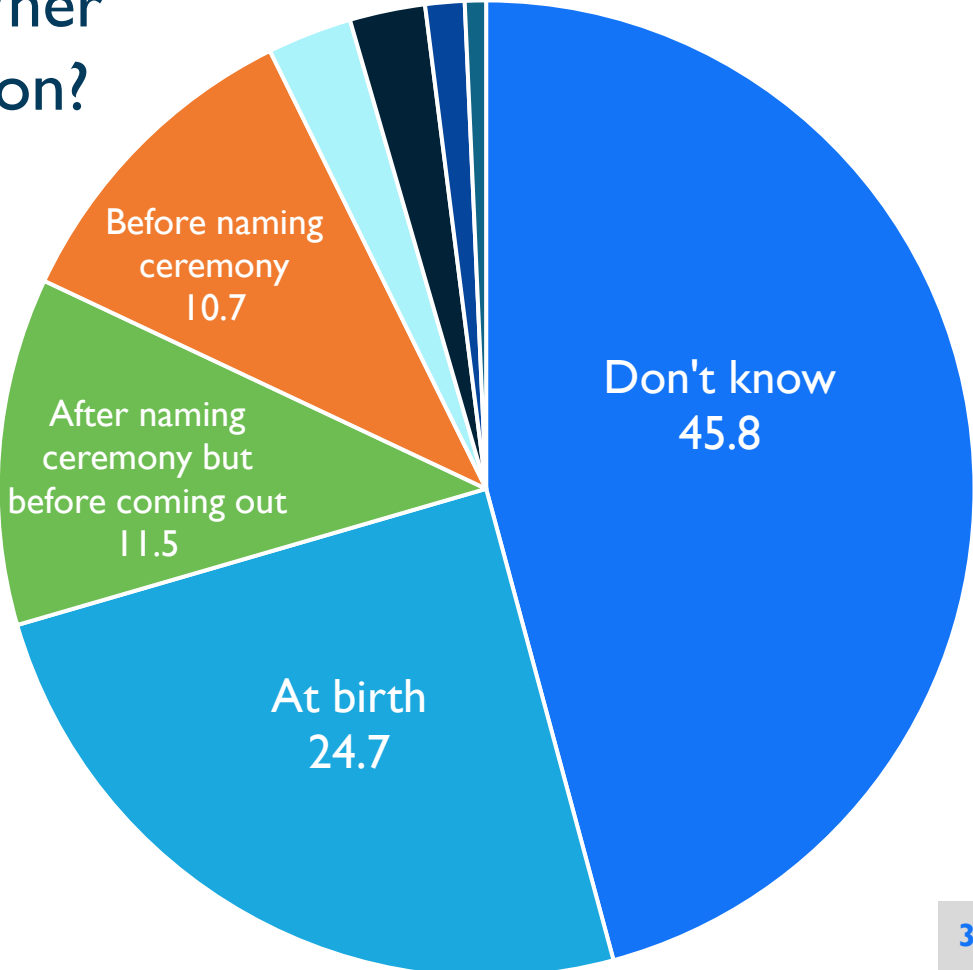
# Most women don't know immunization timing

Only one-quarter (25%) knew that a child should get their first routine vaccination at birth

Half explicitly stated they don't know when a child should get their first routine vaccination, while many others gave a wrong response

### At what age should a child be taken for his/her first routine vaccination?

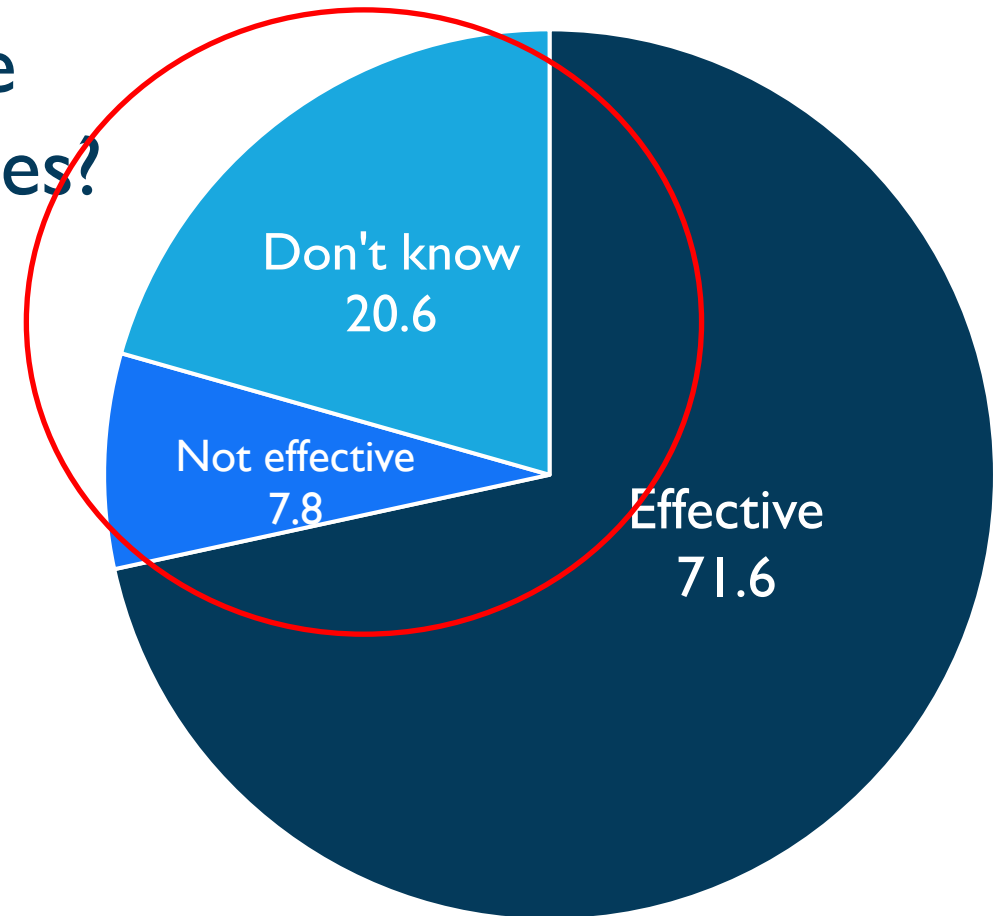
- Don't know
- At birth
- After naming ceremony but before coming out
- Before naming ceremony
- At coming out / six weeks
- Three months
- Other
- After one year



# Some doubts about vaccine efficacy persist ...

More than one-quarter (28%) of respondents believed vaccines are not effective or were unsure about their effectiveness

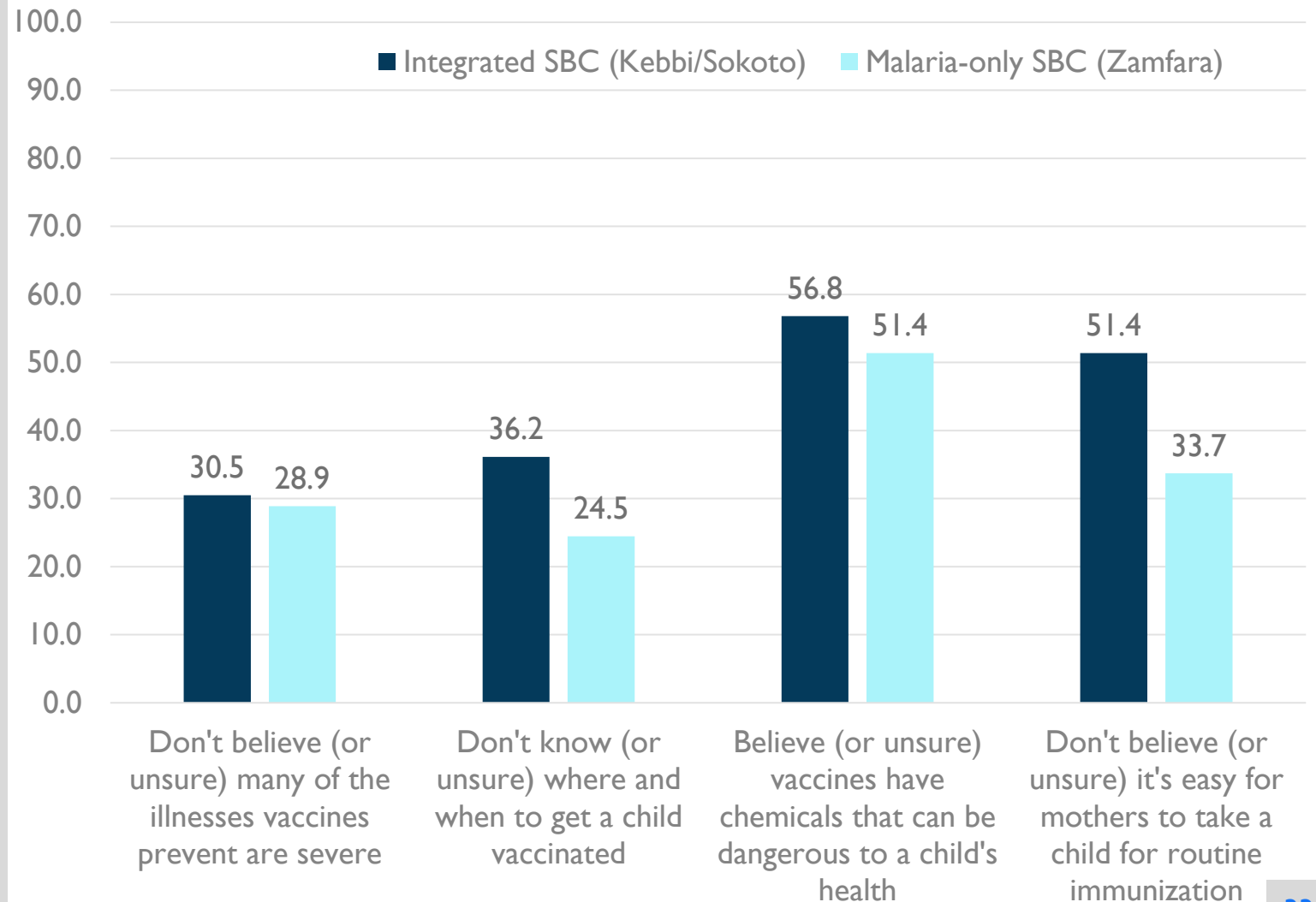
In your opinion, how effective are childhood vaccines?



# Vaccine beliefs hold back progress...

More than half (54%) believed or were unsure if vaccines have chemicals that are dangerous to children's health

43% don't think (or unsure) that it's easy for mothers in my community to take children for routine immunizations



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# 3. Barriers

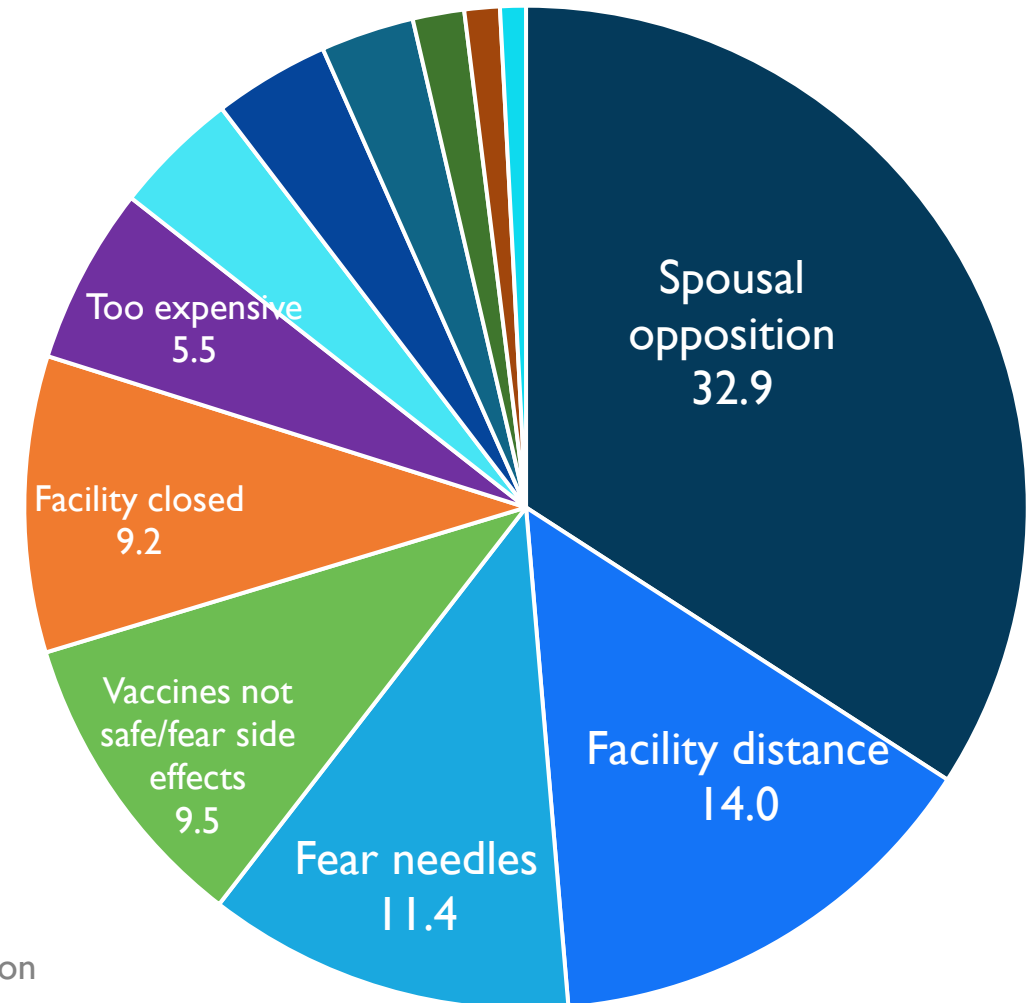
# Spousal opposition to routine immunization

Among women who did not vaccinate their child .....

One-third (33%) cited **spousal opposition** as the reason for not doing so

Facility problems (distance, closure and cost), vaccine concerns and fear of needles were also barriers

- Spousal opposition
- Facility distance
- Fear needles
- Vaccines not safe/fear side effects
- Facility closed
- Too expensive
- No female provider
- Poor quality service
- Don't know where to go
- Vaccines not effective
- Disrespectful provider
- Religious/Community leader opposition



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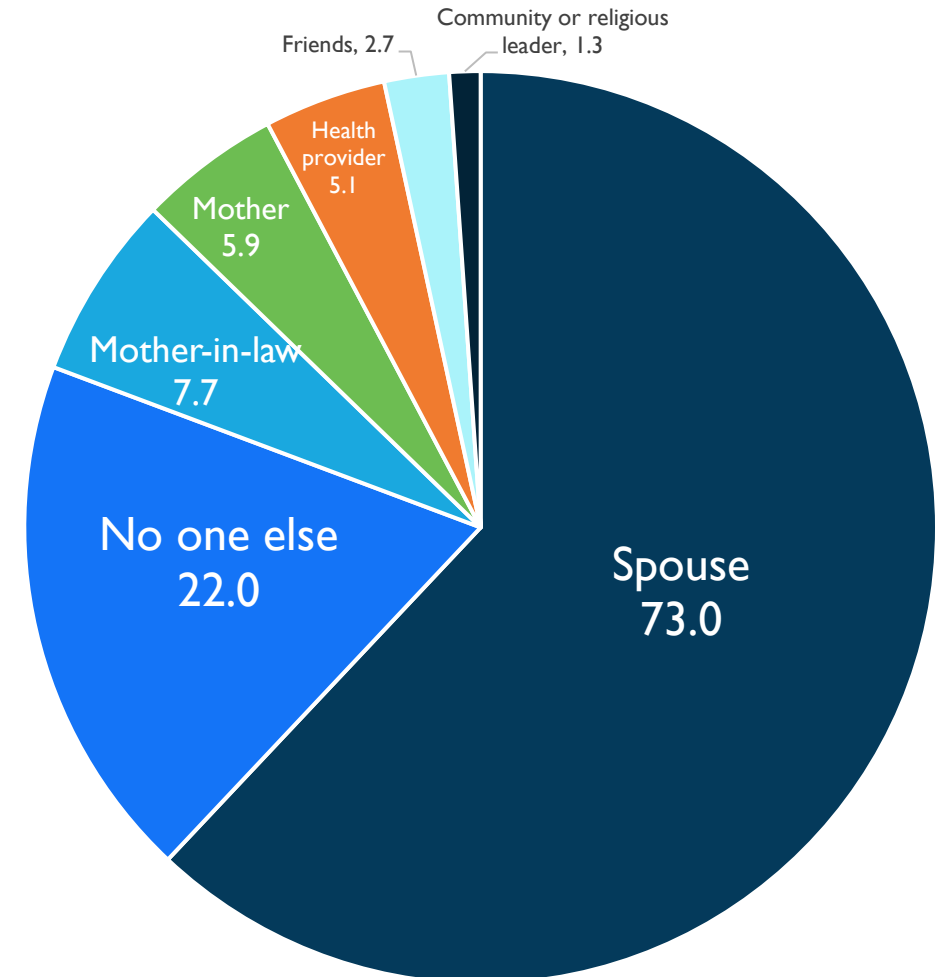
# 4. Social influence and decision-making

# Spouses are common influencers of decisions...

Most respondents (73%) cite **spouse/partner** as influencers of vaccination decisions

Few (5%) respondents cited **health providers** as influencers of vaccine decisions, but their support is critical according to regression analyses

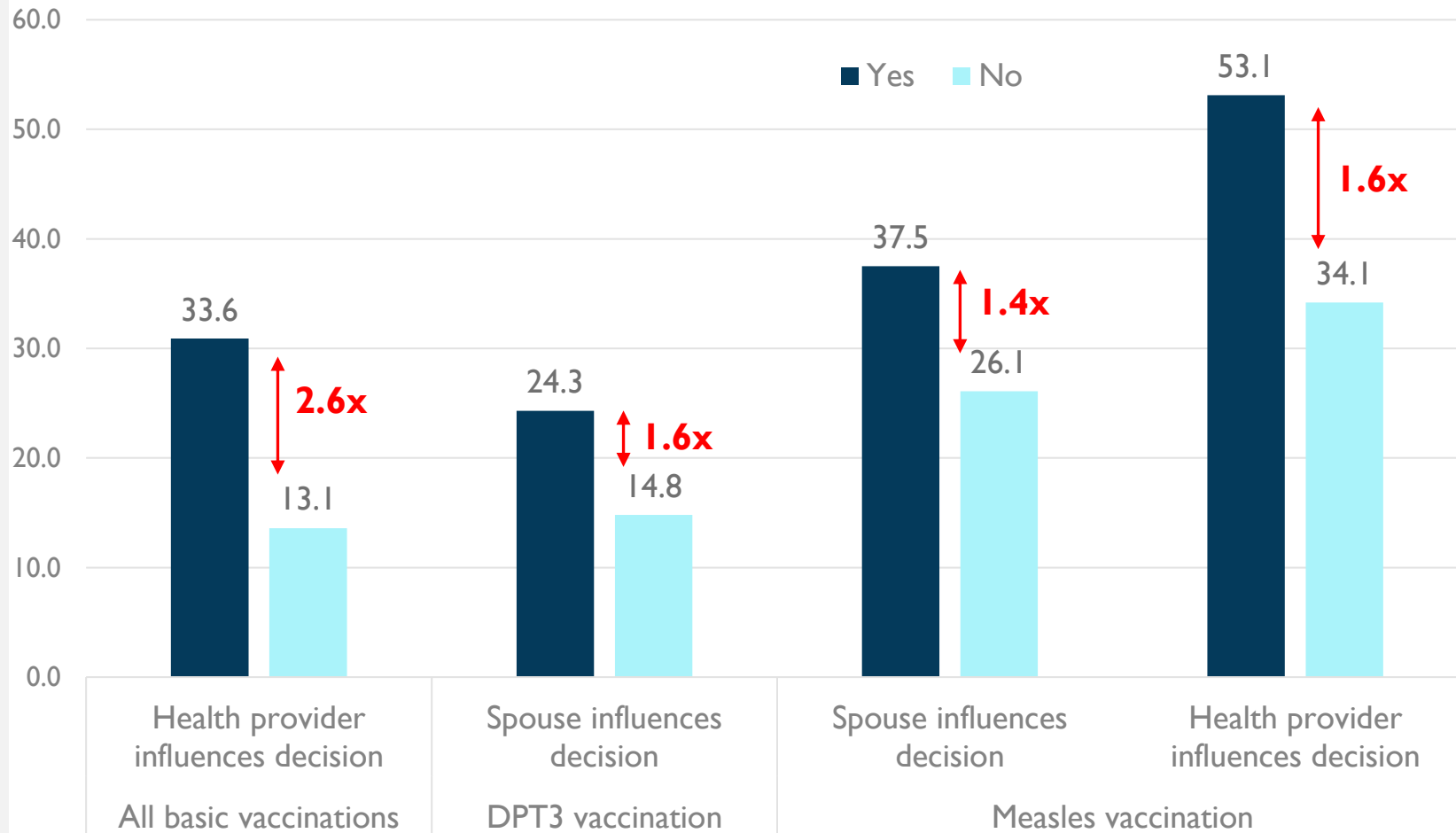
Besides yourself, who else may influence your decision to vaccinate your child?



# Spousal and health provider support is critical

Women who cited **health providers** as supporting vaccine decisions were **2.6x** and **1.6x** as likely to have a child get all basic vaccinations and measles vaccine

Women whose **spouses** influenced vaccine decisions were **1.6x** and **1.4x** as likely to have a child get 3 doses of DPT and measles vaccine



Differences in likelihood are statistically significant at <0.05 level in mixed-effects logistic regression analysis adjusted for ideational and sociodemographic variables, e.g. wealth, age, employment and education (respondent and spouse)

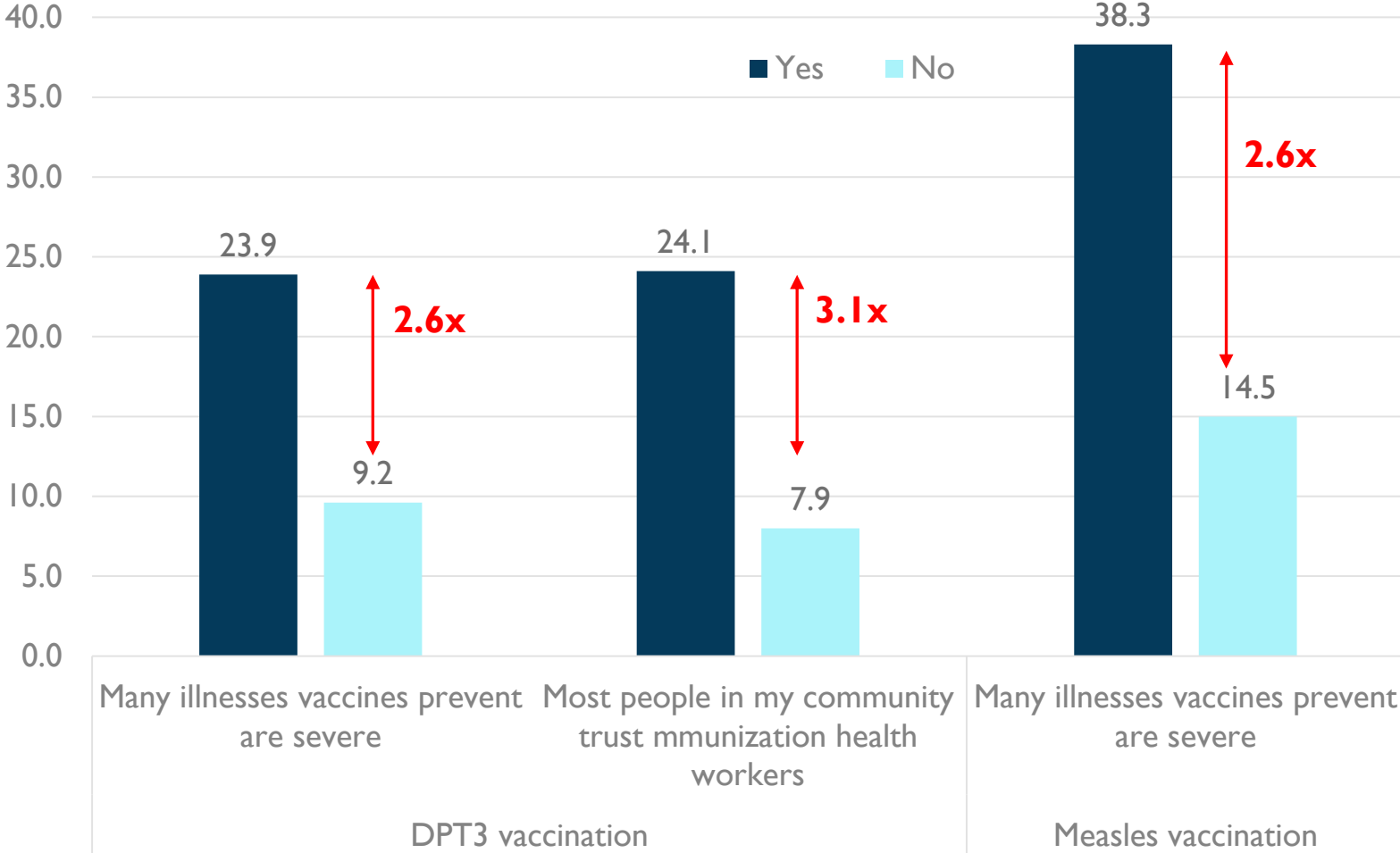
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# 5. Ideational Relationships

# Vaccine beliefs are critical for uptake...

Women who believed the illnesses vaccines prevent are severe were **2.6x** as likely to have a child get measles vaccine or 3 doses of DPT vaccine

Women who believed that most people in her community trust immunization health workers were **3.1x** as likely to have a child get 3 doses of DPT vaccine

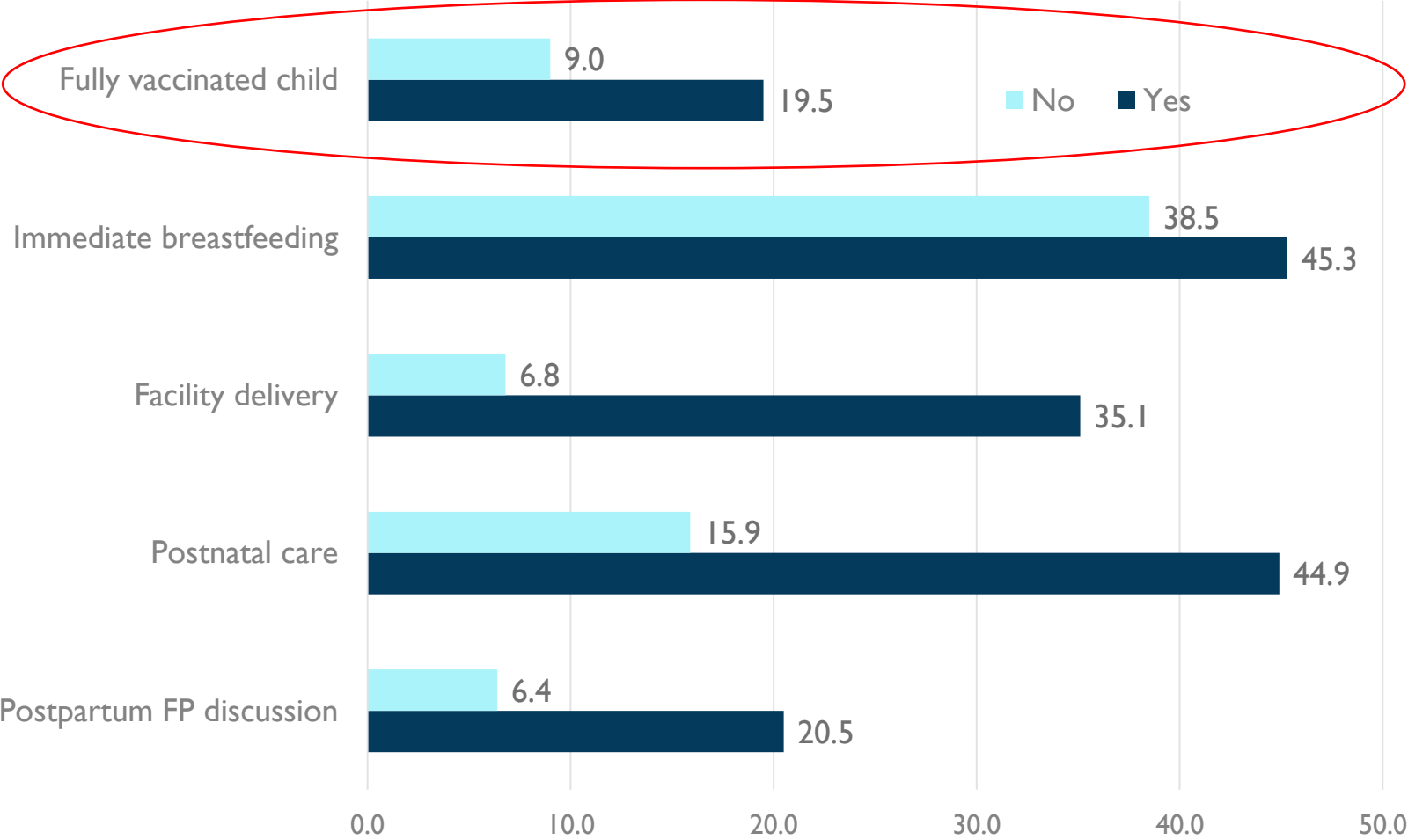


Differences in likelihood are statistically significant at <0.05 level in mixed-effects logistic regression analysis adjusted for ideational and sociodemographic variables, e.g. wealth, age, employment and education (respondent and spouse)

# Is ANC a gateway for downstream MNCH+N?

Women who attended ANC4+ are more than 2x as likely to have a fully vaccinated child than ANC4+ non-users

Is ANC a “gateway moment” for downstream MNCH+N behaviors? – How to enhance the ANC multiplier effect?



Differences in likelihood are statistically significant at <0.05 level in mixed-effects logistic regression analysis adjusted for ideational and sociodemographic variables, e.g. wealth, age, employment and education (respondent and spouse)

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# Program Implications

# Program implications

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## **Very low and inequitable routine immunization rates**

- Nearly all study areas had <10% children 12-23 months who were fully vaccinated
- Despite low rates, wealthiest quintile were 8x more likely to have a fully vaccinated child
- SBC programs must work at multiple societal levels and use different channels to shift societal norms and entrenched behaviors

## **Focus on the role of men in vaccination decisions**

- Spousal opposition was the most commonly cited reason for not vaccinating a child, and women with spousal support were more likely to have vaccinated children
- SBC programs must specifically target men in their messaging and activities
- More research is needed to understand male ideations and behaviors around vaccination

# Program implications

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## **Importance of health services quality and trusted providers**

- Women with health worker support were more likely to have a fully vaccinated child
- Trust in immunization health workers was significantly associated with DPT3 uptake
- Facility problems (distance, closure and costs) were commonly cited barriers to vaccination
- Programs must address perceived (and actual) health services for immunizations

## **Tailor SBC messaging to improve vaccine knowledge and dispel myths**

- Emphasize vaccine efficacy and awareness of the severity of vaccine-preventable diseases
- Ensure women know when, where and how many times a child should get vaccinated
- Dispel misperceptions that vaccines are dangerous to children's health and have side effects
- Engage religious and community leaders to shift norms and beliefs about vaccination

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# What's next?

# Next steps

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- Present BSS results for different health areas in a webinar series
  - Pregnancy and childbirth
  - Breastfeeding
  - Vaccination
  - Malaria
  - Family planning
  - Childhood illnesses, e.g. diarrhea, fever and cough with rapid breathing
- Conduct further BSS analyses to inform SBC programming
- Prepare manuscripts and research briefs to disseminate results
- Plan for the BSS midline survey in September-October 2020

# Future work and significance

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- BSS baseline results are a first step for assessing the effectiveness and cost-benefit of integrated versus malaria-only SBC programs in Nigeria
- Highlight ideations and behaviors during this baseline period to inform SBC program scale-up and adaptation
- Present new ideational metrics across MNCH+N areas and quantify their relationship with behavioral outcomes to test behavioral change theories
- Link BSS results with routine program data or health facility records to examine impact of supply- and demand-side factors on service use

# Project Team

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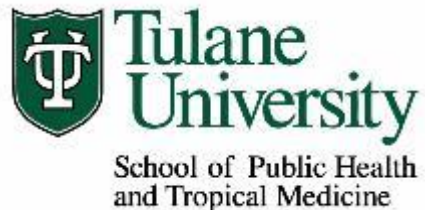
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# THANK YOU



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<https://breakthroughactionandresearch.org/>

Breakthrough RESEARCH catalyzes social and behavior change (SBC) by conducting state-of-the-art research and evaluation and promoting evidence-based solutions to improve health and development programs around the world. Breakthrough RESEARCH is a consortium led by the Population Council in partnership with Avenir Health, ideas42, Institute for Reproductive Health at Georgetown University, Population Reference Bureau, and Tulane University.

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