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Mapping Humanity

The Role of *Self-Perceived* and *Collective* Gender Norms in Shaping Contraceptive Behaviors:

Evidence from Kenya and Nigeria

Varsha Sivaram, Alyssa Staats, **Neetu John**

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Outline

I. Rationale & Conceptual Framework

II. Methodology

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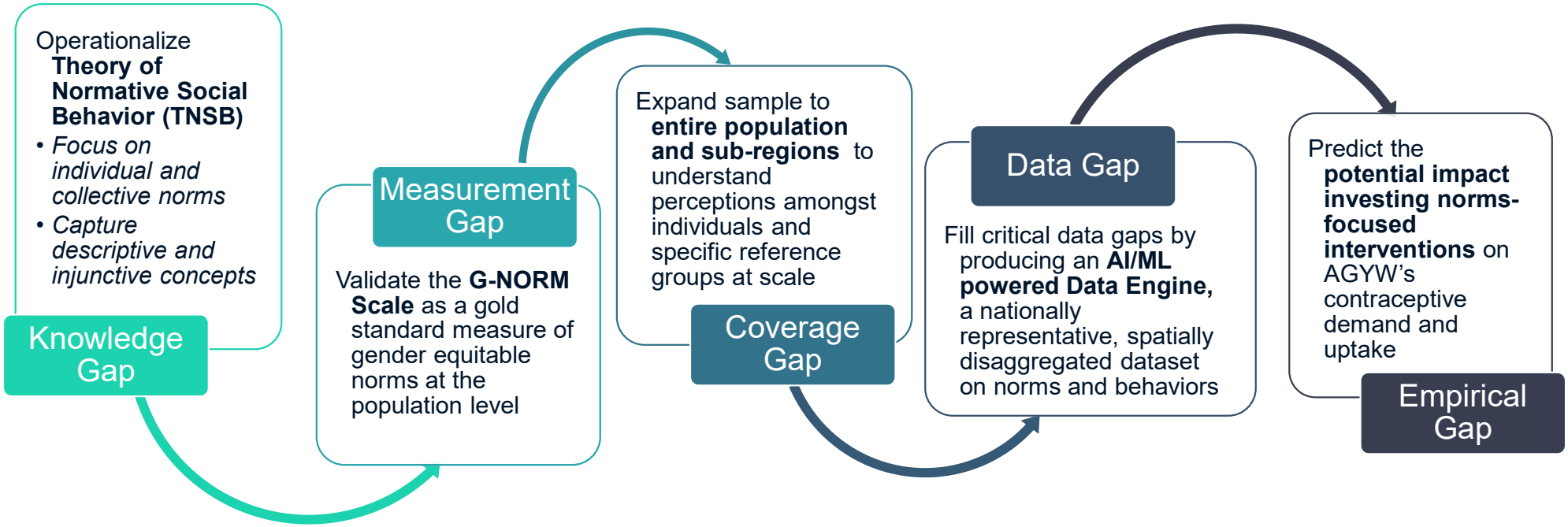
RESEARCH MOTIVATION

While much research has advanced the Theory of Normative Social Behavior, empirical applications using theory-driven measures remain limited by small-scale samples and a lack of community-level data. This analysis integrates nationally representative survey and spatial data to capture both individual and collective norms across geographies, enabling simulation and mapping of where contraceptive demand and uptake are most responsive to normative environments - providing a stronger empirical base for targeted programming and smarter resource allocation.



CONCEPTUAL FRAMEWORK

Building on the Theory of Normative Social Behavior, this framework examines how self-perceived and collective norms influence AGYW's contraceptive agency, demand, and uptake, and identifies where norm-focused interventions targeting the right subgroups have the greatest potential to improve outcomes.

KEY RESEARCH QUESTIONS

Our research examines how gender norms shape AGYW contraceptive outcomes in Kenya and Nigeria, identify which reference groups matter most and where investments yield the highest returns from norms-informed programming.

1

NORMATIVE INFLUENCE

Does an AGYW's and ABYM's **self-perceived** gender-equitable norms influence their demand and uptake of modern contraceptive methods?

2

REFERENCE GROUPS

What is the role of collective gender-equitable norms among **key reference groups is shaping AGYW's** contraceptive demand and uptake, and **which group matters** the most?

- Overall community (ages 15-69)
- Older adults (ages 25+)
- Adolescent girls and young women (AGYW: ages 15-24)
- Adolescent boys and young men (ABYM: ages 15-24)

3

INSIGHTS TO ACTION

How can we **identify geographic areas** where improving the **normative environment** would have the **greatest potential impact on their demand and uptake**, thereby informing where programming and investments are most likely to move the needle?*

**Alternatively, where is the normative environment a significant constraint to the effectiveness of supply-side programs?*

METHODOLOGY – DATA AND SAMPLE

Data for this analysis come from the Fraym Data Engine - a high-frequency platform that integrates nationally representative CATI survey data with spatial data inputs to generate granular, one-square-kilometer estimates using machine learning. We draw on both the primary survey data and spatially modeled estimates aggregated to the ward level in Nigeria and Kenya.

SURVEY MODE

Nationally representative CATI surveys to support the Data Engine's high frequency capabilities.

TARGET POPULATION

Samples 15-69, with a focus on AGYW (ages 15-24).

SAMPLE DESIGN

Random digit dialing to ensure equal probability sampling of all phone subscribers. Dialing occurs at different days and times of day to ensure that all population sub-groups are reached.

Additional steps to ensure representativeness: (i) nested ADM1 quotas for age group and gender, and (ii) nested ADM1 quotas for education; (iii) nested ADM1 quotas for socioeconomic status; and (iv) rural targeting.

COLLECTION SAFEGUARDS

Extensive survey scripting and training for all CATI enumerators.

Use of female enumerators to reduce enumerator gender biases.

Phone handoffs to reach young and older women, and other harder-to-reach population groups who do not personally own or control a phone.

SAMPLE SIZE

Nigeria:
Total: ~ 10,000
AGYW: ~ 4,800
Wards: 9,308

Kenya:
Total: ~ 5,800
AGYW: ~ 2,600
Wards: 1,449

SPATIAL DATA MODELING

Fraym's technology transforms this scientifically sampled training data (survey microdata) into community level data outputs.

METHODOLOGY – KEY MEASURES

Key Measures and Analytical Framework for Multivariate Regression Analysis

OUTCOMES OF INTEREST
Dependent Variables

SRH Outcomes

- Modern Contraceptive Use
- Intent to Use Contraception
- Ability to use contraception of choice

NORMATIVE ENVIRONMENT
Independent Variables

Microdata (Individual Level)

Predicted gender-equitable norms score for an individual using the G-NORM scale

- Self-Perceived G-NORM Score

Spatial Estimates (Community Level (ADM3))

Predicted scores for each reference group at ward-level using scores generated in training data

- G-NORM Score (All Community)
- G-NORM Score (Older Adults)
- G-NORM Score (AGYW)
- G-NORM Score (ABYM)

SOCIO-DEMOGRAPHICS
Covariates

- Age
- Socio-Economic Status
- Education
- Urbanicity
- Religion
- Region
- Partnership Status
- Parental Status

NOTE 1: In Nigeria, AGYW analysis used Fraym data from Q1 2024 (n = 4,793) and ABYM analysis used Fraym data from Q3 2024 (n = 4,696). For Modern Contraceptive Use, only sexually active individuals were included, and analysis was run on samples of 1,508 AGYW and 1,552 ABYM.

NOTE 2: Spatial estimates were generated and aggregated at the ward level to map respondents to ward-level predicted scores. Due to variations in ADM3 reported by respondents and official shapefiles in Q1 data, reference group models were run on a sample of 4,577 AGYW and 1,458 sexually active AGYW. No variations were found in Q3 data hence all ABYM spatial analyses were run on the full ABYM sample (n = 4,696).

NOTE 3: All analyses utilize survey weights to ensure representativeness and account for the complex survey design to provide robust and reliable estimates.

METHODOLOGY – ANALYTICAL PLAN

This analysis used a multi-phase design combining individual- and community-level multivariate regression with microsimulation modeling to quantify how gains in support for gender equitable norms translate into improvements in AGYW contraceptive demand and uptake.

1 Descriptive Statistics

Reviewed distribution and summary statistics of key variables (age, residence, wealth, etc.)

2 Individual Level Analysis

Multivariate regression analysis **using microdata** to examine the relationship between **AGYW's self-perceived norms** and contraceptive behaviours

3 Community Level Analysis

Multi-level regression analysis **using spatial data** combined with microdata to examine the **role of key reference groups'** support for gender equality on AGYW's contraceptive behaviours

4 Simulations

Microsimulation modelling to estimate the impact of improving the norms environment by 10 points on AGYW outcomes, and translating these effects into **probability estimates** down to the ward level

5 Estimating Impact

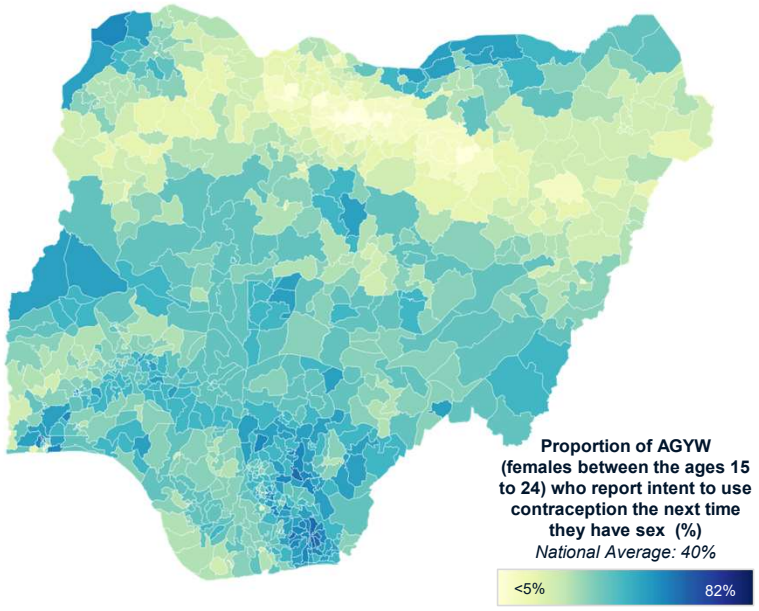
Quantified this impact as the additional **number of AGYW using or intending to use contraception** outcomes through norms-focused programming

RESULTS – MAP THE LANDSCAPE

High-resolution LGA estimates uncover spatial variation in AGYW intent to use contraception and in community gender-equitable norms (G-NORM). This baseline reveals where normative conditions are strongest or weakest, how contraceptive demand is distributed, and which geographies may offer the greatest potential for norms-focused or combined programming before testing which norms matter most and simulating impact.

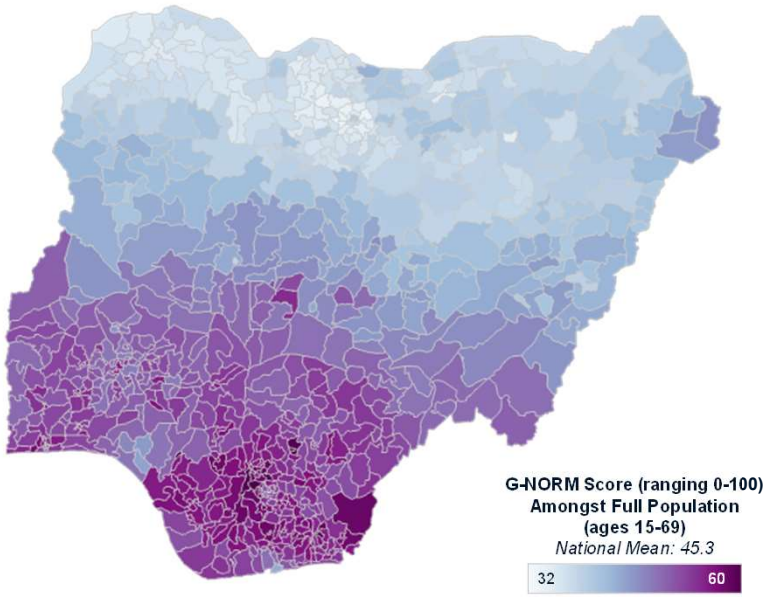
Intent to Use Contraception

LGAs, Nigeria



G-NORM Score

LGAs, Nigeria



SOURCE: Fraym, Q1 2024

RESULTS – WHOSE NORMS MATTER?

Collective community and peer norms exert the greatest influence on AGYW's contraceptive demand, uptake, and ability to use contraception.

Nigeria:

- Both self-perceived and collective community norms are positively associated with contraceptive demand and use but collective norms – especially peer and wider community norms – show the strongest association.
- This highlights the dominant role of shared normative environments in shaping AGYW's reproductive decision-making.

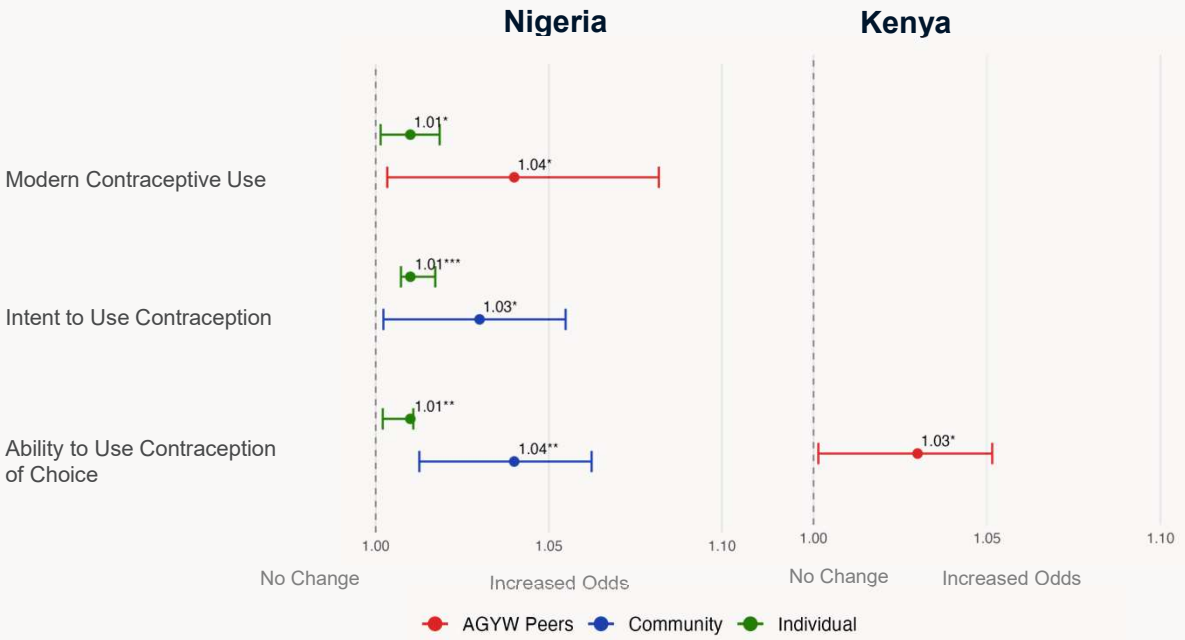
Kenya:

- Peer-level collective norms are the only significant predictors of AGYW's ability to use contraception.
- This points to peer networks as critical channels for shifting SRH agency and behaviors among Kenyan AGYW.

Associations Between AGYW's Contraceptive Outcomes and Norms (Self-Perceived & Collective Norms amongst Key Reference Groups)

Multivariate Logistic Regression Results (OR (SE)) on the impact of Gender Norms [1] [2] on Outcomes

SRH Outcomes – Associations with G-NORM Scores
(Norms measured on continuous 0–100 scales)

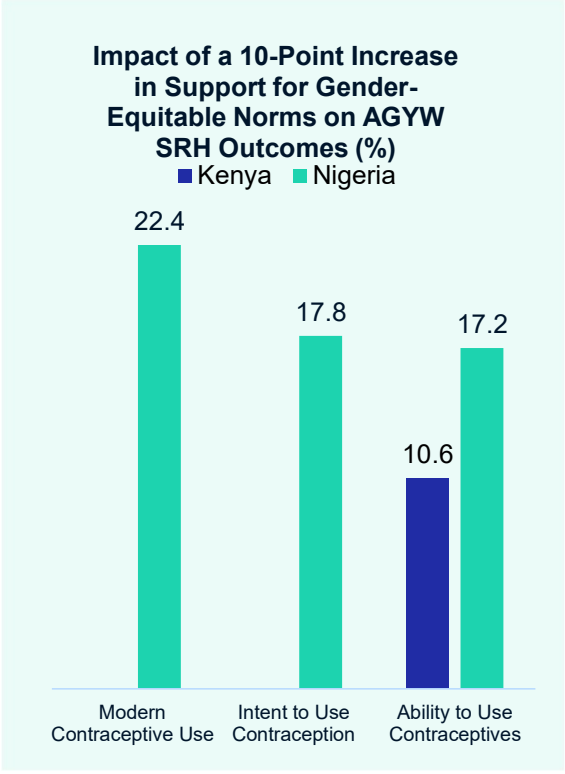


SOURCE: Fraym, Q1 2024

1. Only significant results are reported, with the level of significance indicated by: *** for p < 0.001, ** for 0.001 <= p < 0.01 **, and * for 0.01 <= p < 0.05.
2. For collective norms models, results are reported only for the reference groups with the highest impact on AGYW's contraceptive behaviors.

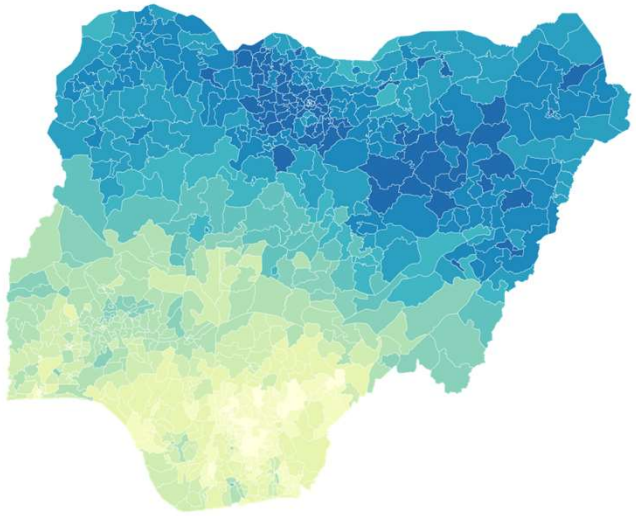
RESULTS – MICROSIMULA POTENTIAL GAINS AND IDENTIFY WHERE TO PRIORITIZE INVESTMENTS

Microsimulation estimates highlight where improvements in gender-equitable norms could yield the greatest behavioral gains. On average, a modest 10-point increase in community gender-equitable norms is associated with roughly an 18% rise in contraceptive intent among AGYW in Nigeria—equivalent to over half a million additional young women expressing demand for contraception. These estimates help identify geographies where norm change may be a particularly high-return investment, and where complementary structural or service delivery approaches may be needed to expand use effectively.



SOURCE: Fraym, Q1 2024

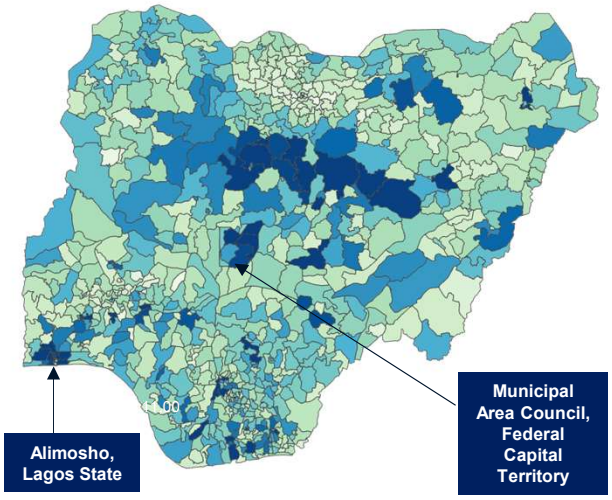
Estimated Increase in AGYW Intent to Use Contraceptives with a 10-Point Rise in Support for Gender-Equitable Norms (%)
LGAs, Nigeria



Estimated Percentage Change in AGYW (15-24) Intent to Use Contraception
National Average: 17.8%

11% — 23%

Estimated Increase in Number of AGYW with Intent to Use Contraceptives with a 10-Point Rise in Support for Gender-Equitable Norms
LGAs, Nigeria



Estimated Change in Number of AGYW (15-24) with Contraceptive Intent
LGA Average: 805; National Total: 622,825

<30 — 11,000

KNOWLEDGE CONTRIBUTIONS

Our findings suggest that integrating norm programming into contraceptive delivery can strengthen the enabling environment for AGYW's intention, ability and actual uptake of modern contraception. Mapping microsimulation-based estimates can help identify sub-geographies where a move towards more equitable gender norms are likely to align with improvements in SRH outcomes.

1 **Evidence points to a comprehensive roadmap for change:** Population-level analyses demonstrate that both individual and collective gender-equitable norms are associated with stronger contraceptive demand and uptake among AGYW.

2 **Community norms emerge as critical correlates of AGYW SRH outcomes:** Programs may benefit from engaging peer networks, adults, and broader community, as collective gender-equitable norms show stronger associations with contraceptive behaviors than individual self-perceptions.

3 **Microsimulation provides a planning tool for investment prioritization:** Simulation models estimating the potential gains from normative improvements help identify areas where norms-focused programming may have higher returns, and where complementary approaches could be more appropriate.

4 **Methodological advances enable more precise, actionable insights:** Integrating geospatial modeling with nationally representative survey data enables more granular, community-level measurement of norms and systematic exploration of how normative environments relate to SRH behaviors and outcomes.

CAVEATS AND NEXT STEPS

This research draws on a novel, spatially disaggregated dataset covering over 700 indicators on demographics, norms, and SRH behaviors among AGYW in Kenya and Nigeria. Despite methodological limitations, this publicly available, population-level resource provides a foundation for advancing research on pathways to improving contraceptive outcomes.

Limitations

- This analysis is based on **cross-sectional data**, and the results should be interpreted as evidence of strong associations rather than causal relationships.
- Our analysis focuses on the direct link between gender norms and AGYW outcomes, however **indirect effects through other factors were not explored,** potentially leading to an underestimation of the true impact of gender norms on AGYW outcomes.
- Fraym used RDD, quota sampling, and spatial data in CATI surveys to improve representativeness and account for socio-demographic and environmental factors. However, **non-phone users—often the poorest and hardest-to-reach AGYW—are underrepresented**, potentially leading to an underestimation of gender norms' impact on this group.
- While we used validated tools like the G-NORM scale and followed rigorous validation, we **lacked supplementary qualitative research** that could have enhanced measure contextualization.

Way Forward

- Upcoming longitudinal data from the Data Engine will enable testing of **additional pathways linking norms to behavioral outcomes.**
- **New longitudinal mediation models** will assess how gender norms mediate media exposure—through television, radio, and social media—and inform mass communication strategies to promote equitable contraceptive uptake.

CONTACT

Dr. Neetu John || n.john@fraym.io