Improving SRH outcomes among girls and women in Tanzania: A behavioral segmentation based on developmental stage and behavioral drivers

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A new SRH segmentation for Tanzania focused specifically on psycho-social development and behavior change pathways

A rich set of insights that can help us:

- Identify which SRH outcomes most need to be addressed for distinct segments of girls/women in Tanzania.
- Design new interventions based on influential behavior-change drivers within a segment.
- Better target existing programs and activities, delivering the right solution to the right group.
- Efficiently target, knowing where to find each segment and how to communicate with them.

What is a "behavioral" segmentation, and how is it different?

Typical segmentations are primarily "descriptive groupings"

- Group people based on similar attitudes, life-stages etc.
- They are easy to understand, but often are not clearly linked to behavior change.

In contrast, this segmentation is also behavioral and predictive

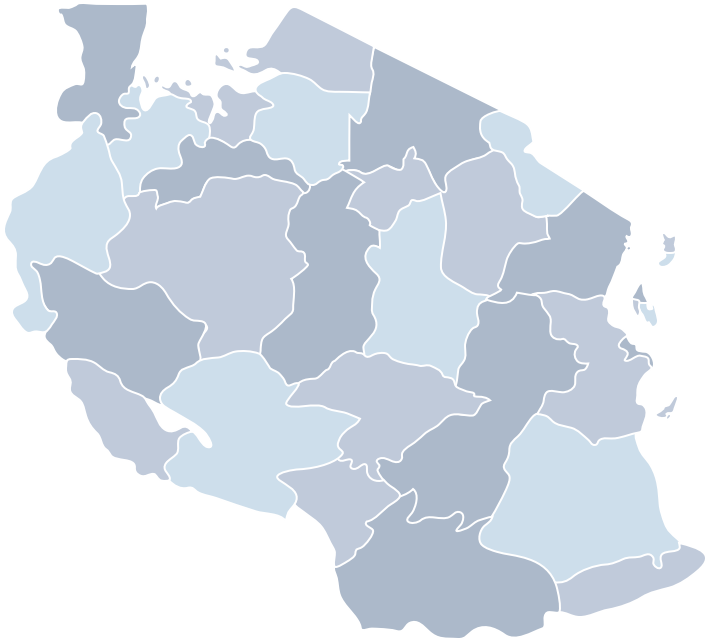
- Incorporates full breadth of behavior change drivers (measured via the CHANGES Framework[1])
  - "System 2 thinking": goals, knowledge, agency/self-efficacy etc
  - "System 1 thinking": e.g., culture and habits, social norms,
  - Enabling environment/supply side: e.g., physical access to enabling products and services

- Uses advanced statistical models that allow us to answer…
  - WHO: Group people based on their psycho-social developmental stage
  - WHAT: Identify specific SRH outcomes that are most important for each segment
  - HOW: Identify the critical behavior change drivers to address within each outcome/segment.

[1] The CHANGES Framework includes 6 behavior change drivers that can be considered universal yet vary in their influence over specific behaviors within specific groups in a population. See slide 6 for framework details.

Survey Methodology

- Survey of girls and young women (15-19) living in both urban and rural poverty settings
- 1134 respondents



Sampling

- Random, representative sample of the regions within which A360 operates via the smallest census units
- Door-to-door canvasing within selected areas
- One interview per house
- Max 20 interviews per unit

Interviews

- Women, girls 15-19 – bias towards recent birth and older girls within the 15-19 age range
- Approximately 60 minute face-to-face by local female interviewer
- No one else present
- Direct data entry on tablets
- Scrubbed for PII

We focused on three SRH outcomes…

- **Note: Outcome 2 and 3 are only relevant to sexually active girls/women.**

1. KNOWLEDGE OF MODERN CONTRACEPTION

– *[ALL RESPONDENTS]* Which ones do you know about, whether you've used it or not?

1. Male condoms
2. Female condoms
3. Implants
4. Injections
5. Coil/Spiral/IUD/IUCD
6. Pill/oral contraceptives
7. Emergency contraception
8. Male sterilization
9. Female sterilization

2. USE OF MODERN CONTRACEPTION

– *[SEXUALLY ACTIVE ONLY]* Which method(s) have you ever used, now or in the past?

3. AGE OF SEXUAL DEBUT

– *[ALL RESPONDENTS]* How old were you when you first had sex if at all?"

- Coded into (a) sexually active or not and (b) age of debut among those who are active.

We used the CHANGES Framework to identify which drivers matter most for each outcome in each segment.

1. Culture/Habit: Entrenched ways of acting that are defined by the large cultural institutions – church, schools, etc. – and determine the accepted status quo in community of practice (culture). Consistently repeated "default" responses that bypass conscious decision making (habit)

2. Agency: The perceived and actual experience of autonomy/self-efficacy over important choices and actions.

3. kNowledge: Accurate awareness and understanding of how to implement healthier actions. Note: kNowledge is not necessarily tied to a woman's education, literacy, etc.

4. Goals: The belief that healthy actions have significant value for the self and/or family.

5. Environment: Ready physical access to enabling products, technologies and services.

6. Social Influence: The perception that an action or goal is valued and approved of by one's immediate social network (i.e., partner, parents, friends).

**Note: Items used to construct CHANGES drivers are in Appendices*

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Key analytics steps in building segments

Analysis 1

- Using finite mixture models, adolescent girls were empirically grouped into segments with similar biological and psychosocial developmental profiles.

Analysis 2

- Differences in the predictive influence and mean level of the CHANGES drivers were then examined for each outcome within each segment. This allows us to identify drivers that predict an outcome but are currently "weak" in a segment, hence can be improved
  - (e.g., Social Influence/norms are a strong predictor of modern contraceptive use in both sexually active segments and those norms are current weak (low means). This makes Social Influence a strong target for intervention).

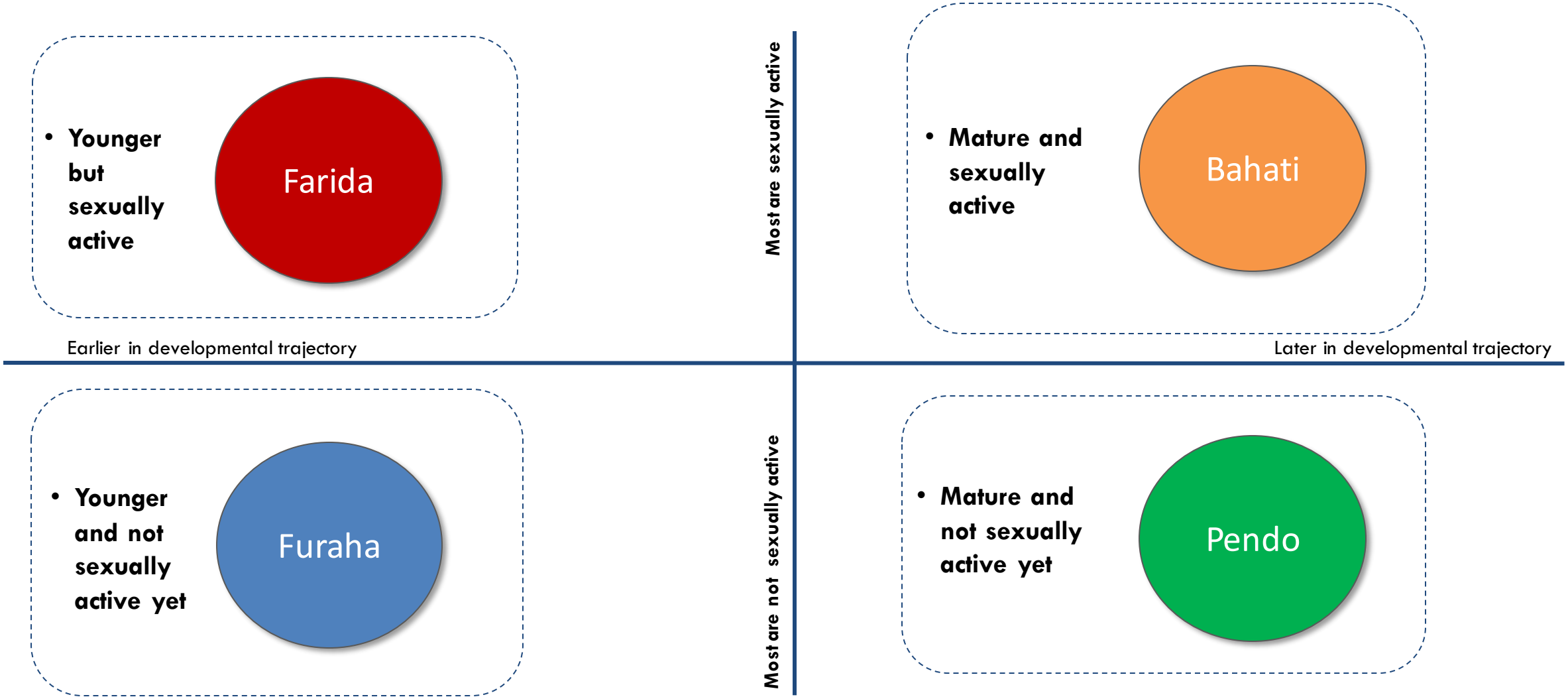
Analysis 3

- Using machine learning and descriptive analysis, a large set of additional variables analyzed to develop rich profile of each segment.

Note: For a deep dive on the statistical modeling behind the segmentation, please see the separate "Researcher Deck"

Introducing the four segments in Tanzania

4 segments that differ on (a) their psycho-social development and (b) whether they are sexually active



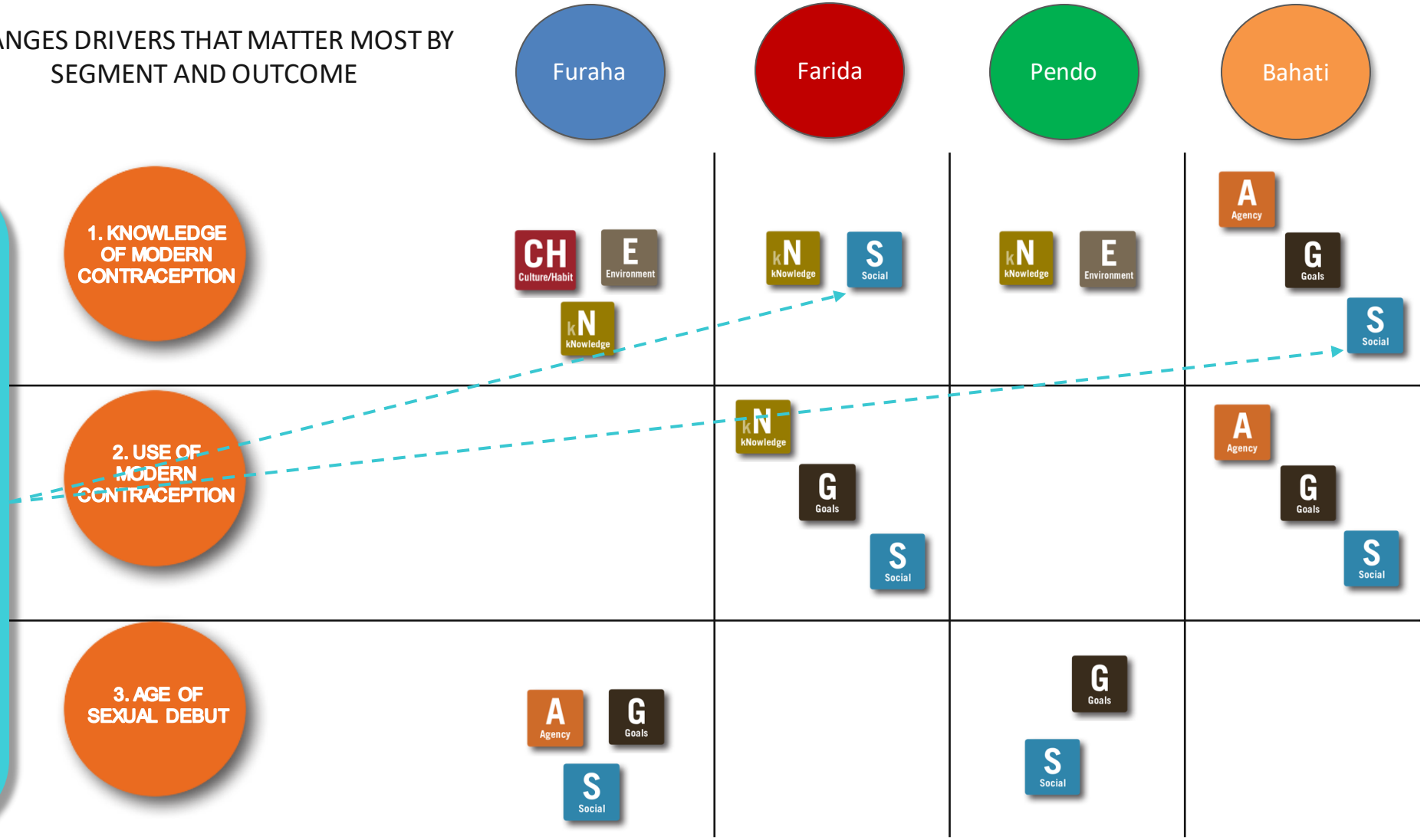
Developmental trajectory jointly defined by: Age, Physical pubertal development, Children, Dating behavior, Financial independence, Autonomy in daily life. Sexually active defined by whether they have had sexual intercourse with someone of the opposite sex and dating status.

Key outcomes to target vary by segment

Rational for targeting this outcome		Furaha	Farida	Pendo	Bahati
1. KNOWLEDGE OF MODERN CONTRACEPTION	Should be targeted for all segments, regardless of whether majority in segment are sexually active or not.	✓	✓	✓	✓
2. USE OF MODERN CONTRACEPTION	Should only be targeted in segments where majority are already sexually active.		✓		✓
3. AGE OF SEXUAL DEBUT	Should only be targeted in segments where majority are not yet sexually active (i.e., sexual debut has not occurred)	✓		✓	

Key drivers for each outcome and segment also vary

CHANGES DRIVERS THAT MATTER MOST BY SEGMENT AND OUTCOME



Analysis: A driver should be (1) predictive of the SRH outcome in that segment and (2) ideally weak/low in that segment.

- Example: Social Influence/norms are a strong predictor of modern contraceptive use in both sexually active segments (Farida and Bahati) and those norms are currently weak (low means). This makes Social Influence a strong target for intervention in these segments.

Segment deep dive

Intro to Furaha

Furaha

WHO? (segment overview)

Furaha is the youngest segment. She thinks of herself as a girl, is very unlikely to be dating or sexually active but her close friends are. Her main sources of information and support regarding SRH are her mother (regarding hygiene and abstinence) and teachers and friends (regarding sex and family planning). Because she's very unlikely to be sexually active, key outcomes to promote are her knowledge of modern contraception and delaying her sexual debut. She needs help to see modern contraception as acceptable within traditional Cultural Habits and customs and she needs more basic kNowledge about how to use modern contraceptives and where to access them in her Environment. Finally, efforts to help her delay sexual debut should focus on building her Agency/self-efficacy, highlighting the personal Goals/benefits she can achieve by delaying, and fostering supportive Social Influence in family and peers.

WHAT? (outcomes to target)

1. Knowledge of modern contraception
3. Delay of sexual debut

HOW? (drivers to target)

- CH Culture/Habit
- E Environment
- kN kNowledge
- A Agency
- G Goals
- S Social

Furaha needs to see modern contraceptives as accepted within traditional cultural values/leaders.

Furaha needs to know where to access modern contraceptives.

Furaha needs more basic knowledge about how and why to use modern contraceptives.

Furaha needs to feel she is allowed to control/determine her age of debut.

Furaha needs to feel she can personally benefit from delaying her sexual debut.

Furaha needs to feel that her peers and family support delaying debut.

Demographics

- Average age: 15.8 years
- Currently in school: 60%
- % Urban vs Rural: 44% vs 56%

SRH status

- Sexually active: 1 %
- Ever dated: 3%
- Begun menstruating: 79%
- Has children: 0%

Targeting

- Personally owns a phone: 15%
- Goes to doctor alone: 32%
- Ever watches TV: 57%

Influencers

- Learned about sex: Teachers (18%)
- Learned about family planning: School/teachers (60%)
- Learned about personal hygiene: Mother (59%)

Intro to Farida

Farida

WHO? (outcomes to target)

Farida is the second youngest segment. A strong majority are already sexually active and almost all have dated (although very few have a child). Farida's main sources of information and support regarding SRH are her mother (regarding hygiene), teachers (regarding family planning) and her boyfriend/partner (regarding sex). Because she's likely to be sexually active, key outcomes to promote are her knowledge and use of modern contraception. Both of these outcomes can be promoted though building her kNowledge about modern contraceptives and shifting and Social influence/norms among people whose opinions she values (friends, family). In addition, her use of modern contraception can be increased by highlighting the personal Goals/benefits she can achieve through using contraceptives.

WHAT? (outcomes to target)

HOW? (drivers to target)

1. Knowledge of modern contraception

- kNowledge: Farida needs more basic knowledge about how and why to use modern contraceptives.
- Social: Farida needs to feel that her peers and family support modern contraceptives.

2. Use of modern contraception

- kNowledge: Farida needs more basic knowledge about how and why to use modern contraceptives.
- Social: Farida needs to feel that her peers and family support modern contraceptives.
- Goals: Farida needs to feel she can personally benefit from using modern contraceptives.

Demographics

- Average age: 16.9 years
- Currently in school: 30%
- % Urban vs Rural: 47% vs 53%

SRH status

- Sexually active: 73 %
- Ever dated: 97%
- Begun menstruating: 99%
- Has children: 7%

Targeting

- Personally owns a phone: 25%
- Goes to doctor alone: 56%
- Ever watches TV: 59%

Influencers

- Learned about sex: Husband/boyfriend (52%)
- Learned about family planning: Teachers (41%)
- Learned about personal hygiene: Mother (48%)

Intro to Pendo

Pendo

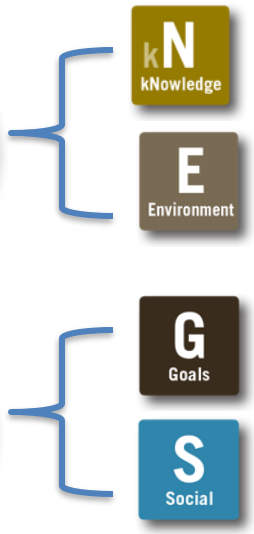
WHO? (outcomes to target)

Pendo is the second oldest segment and the majority have left school. Despite this, the segment is not yet sexually active and few are dating (although their friends are). Pendo's main sources of information and support regarding SRH are her mother (regarding hygiene), teachers (regarding family planning) and her friends (regarding sex). Because she's very unlikely to be sexually active, key outcomes to promote are her knowledge of modern contraception and delaying her sexual debut. Modern contraception can be addressed by giving her kNowledge about how to use modern contraception and where to access it in her local Environment. Efforts to help her delay sexual debut should focus on highlighting the personal Goals/benefits she can achieve by delaying and shifting the prevailing Social norms around delay among people whose opinions she values (friends, family).

WHAT? (outcomes to target)

1. Knowledge of modern contraception
3. Delay of sexual debut

HOW? (drivers to target)



Pendo needs more basic knowledge about how and why to use modern contraceptives.

Pendo needs to know where to access modern contraceptives.

Pendo needs to feel she can personally benefit from delaying her sexual debut.

Pendo needs to feel that her peers and family support delaying debut.

Demographics

- Average age: 17.4 years
- Currently in school: 33%
- % Urban vs Rural: 60% vs 40%

SRH status

- Sexually active: 0%
- Ever dated: 31%
- Begun menstruating: 100%
- Has children: 0%

Targeting

- Personally owns a phone: 26%
- Goes to doctor alone: 65%
- Ever watches TV: 74%

Influencers

- Learned about sex: Friends (22%)
- Learned about family planning: School/Teachers (57%)
- Learned about personal hygiene: Mother (46%)

Intro to Bahati

Bahati

WHO? (outcomes to target)

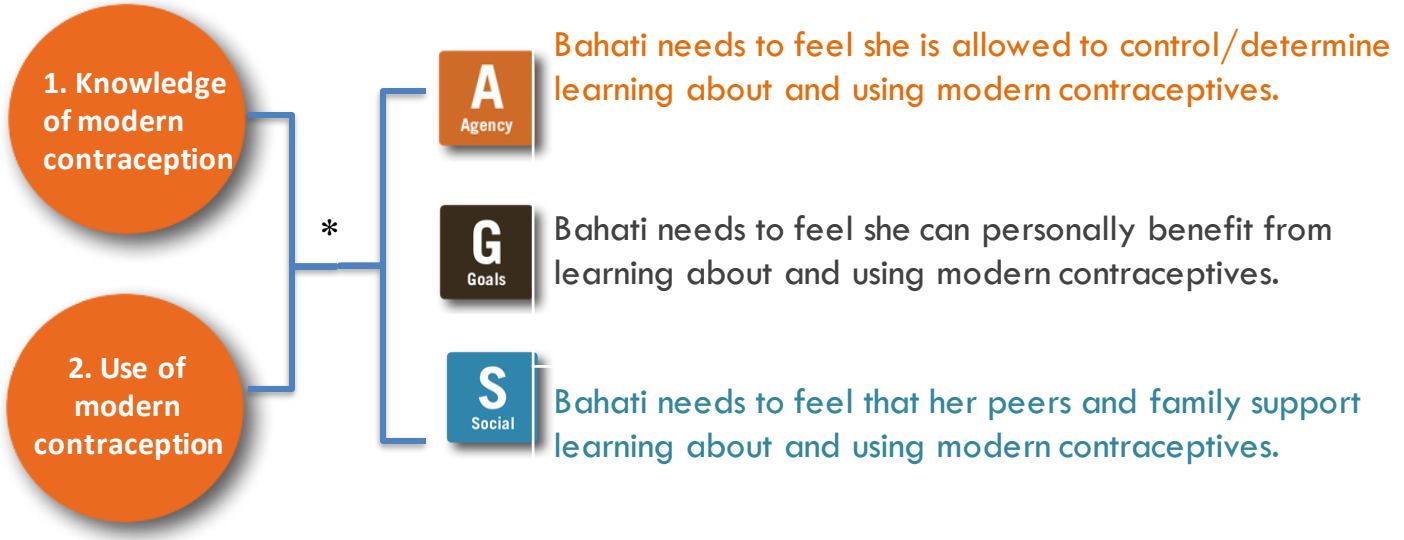
Bahati is the oldest segment and the most likely segment to describe themselves as "women". Essentially all are sexually active and have left school, with almost half having had a child. Bahati's main sources of information and support regarding SRH are her mother (regarding hygiene), teachers (regarding family planning) and her husband or boyfriend (regarding sex). Because she's almost certain to be sexually active, key outcomes to promote are her knowledge and use of modern contraception. Both of these outcomes are best influenced by the same three drivers: building her Agency/self-efficacy, highlighting the personal Goals/benefits she can achieve through modern contraceptives and shifting the prevailing Social norms around contraceptives among people whose opinions she values (friends, family).

WHAT? (outcomes to target)

1. Knowledge of modern contraception
2. Use of modern contraception

HOW? (drivers to target)

* For Bahati, the same three CHANGES drivers predict both knowledge and use of modern contraceptives. Thus, a combined set of recommendations is provided.



Demographics

- Average age: 18.2 years
- Currently in school: 7%
- % Urban vs Rural: 39% vs 61%

SRH status

- Sexually active: 100%
- Ever dated: 97%
- Begun menstruating: 99.%
- Has children: 47%

Targeting

- Personally owns a phone: 41%
- Goes to doctor alone: 79%
- Ever watches TV: 47%

Influencers

- Learned about sex: Husband/boyfriend (63%)
- Learned about family planning: School/teachers (28%)
- Learned about personal hygiene: Mother (44%)

Segmentation Deployment & Activation

1. We can use the segmentation to design better interpersonal communications – e.g., Mjanja Connect App

- IPC agents use segmentation questions to direct bespoke messaging to different segments via Mjanja Connect App
- IPC agents use segmentation to determine which Kuwa Mjanja activities to refer to

Game or Quiz as the segmentation tool

2. We can use the segmentation for high level targeting/media planning

- Determining activity split and dosage based on size of segment in each region
- Shaping mass media strategy through additional media usage information and segment size per region

- See Section “Detailed data tables” at the end of this deck for media/targeting profiles for each segment.

3. We can prioritize activities that map to relevant CHANGES drivers for greater impact

2. PRIMARY DRIVER?

3. PRIORITIZE DIFFERENT ACTIONS/INVESTMENTS

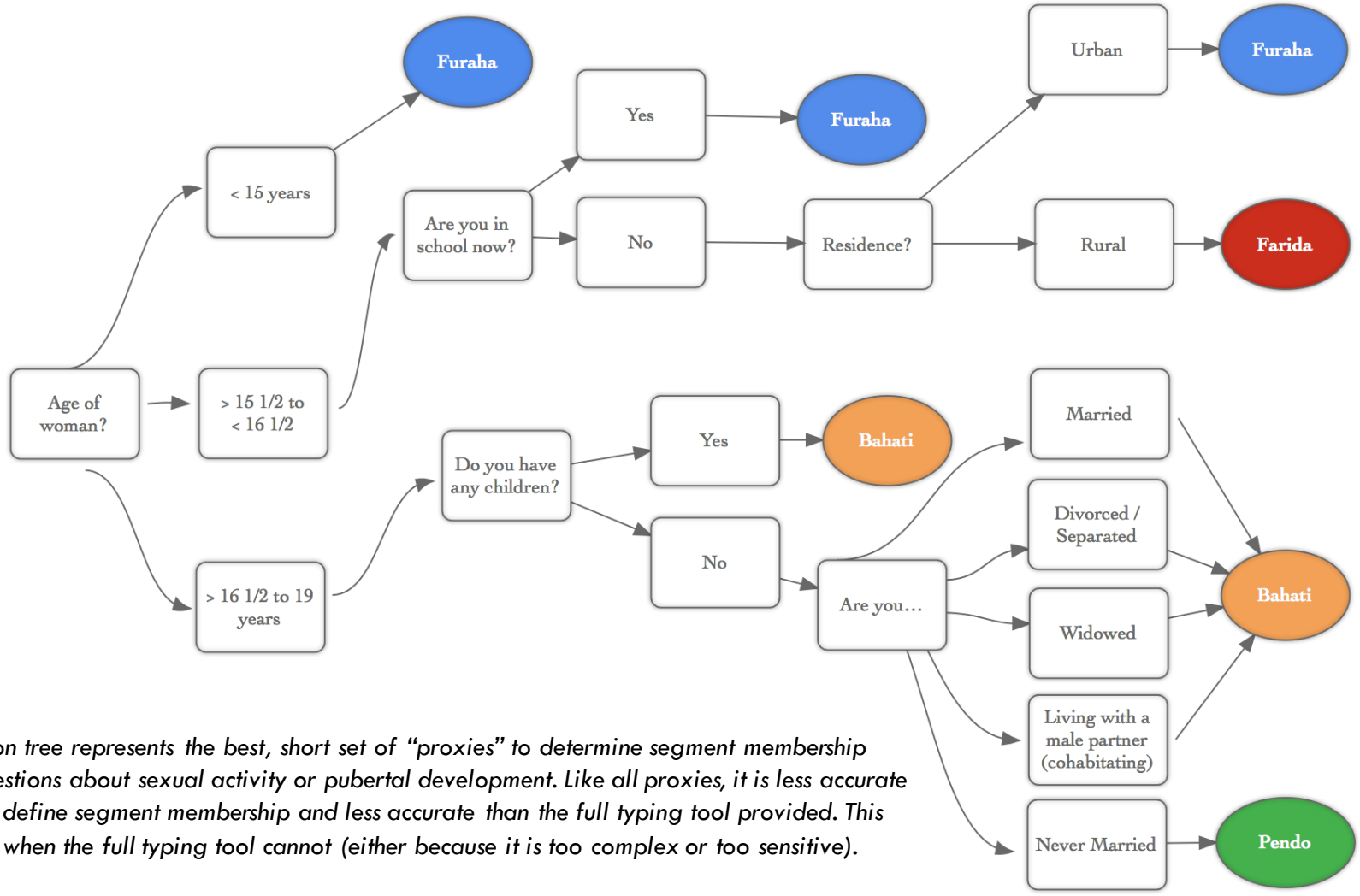
- Engage religious leaders; target women during context change or piggyback on other contact points with MHCF.
- Social marketing to build agency; product innovations that bypass agency (e.g., opt-out testing); policy mandates.
- Information campaigns; mass media strategies.
- Edutainment partnerships (e.g., Bollywood); conditional cash transfers/vouchers/MFIs etc.
- mHealth apps/testing; enhanced distribution systems.
- Peer education programs (e.g. schools, women's groups); edutainment partnerships focused on social influencers.

Discussion, questions and brainstorm

Simplified segment assignment algorithm

Important note: *This section provides the best, short set of "proxies" to determine segment membership without asking sensitive questions about sexual activity or pubertal development. Like all proxies, it is less accurate than the full model used to define segment membership and less accurate than the full typing tool provided. This set of rules should be used when the full typing tool cannot (either because it is too complex or too sensitive).*

Segmentation Decision Tree



Important note: This decision tree represents the best, short set of "proxies" to determine segment membership without asking sensitive questions about sexual activity or pubertal development. Like all proxies, it is less accurate than the full model used to define segment membership and less accurate than the full typing tool provided. This set of rules should be used when the full typing tool cannot (either because it is too complex or too sensitive).

Simple Segment Rules

- If less than 15 ½ years
- If less than 16 ½ years, but more than 15 ½ years and goes to school
- If less than 16 ½ years, but more than 15 ½ years, doesn't go to school and doesn't live in a rural community

- If less than 16 ½ years, but more than 15 ½ years, is not in school and lives in a rural community

- If over 16 ½ years, does not have children and never married

- If over 16 ½ years and has children
- If over 16 ½ years, does not have children, but is cohabitating, or is or has been married

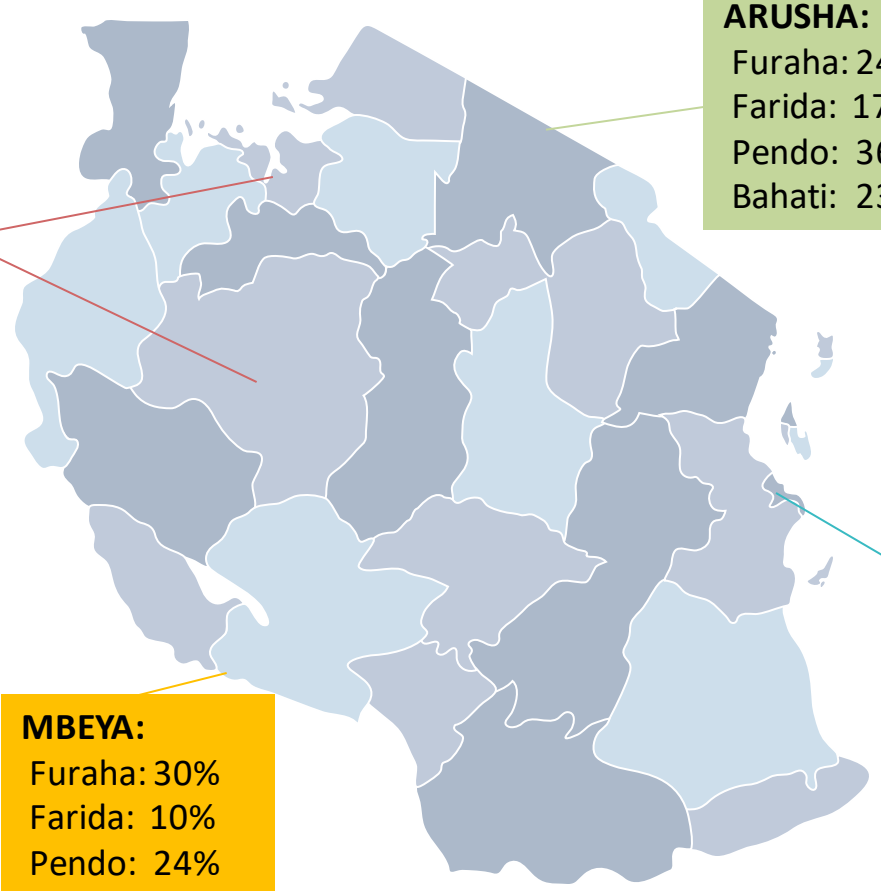
Important note: These rules represents the best, short set of "proxies" to determine segment membership without asking sensitive questions about sexual activity or pubertal development. Like all proxies, it is less accurate than the full model used to define segment membership and less accurate than the full typing tool provided. This set of rules should be used when the full typing tool cannot (either because it is too complex or too sensitive).

Minimum set of questions to ask to determine segment membership

[ALL RESPONDENTS] **How old is the woman selected?**	
Whole number 15-19 years	
[ALL RESPONDENTS] **Do you have children? How many?**	
Whole number	00 = none
Cross Check with Screener	If NO, Skip to A20
[ALL RESPONDENTS] **Are you….? READ OUT SINGLE RESPONSES**	
Married	1
Living together with a male partner (cohabitating)	2
Widowed	3
Divorced/Separated	4
Never married	5
Refused /no response	99
[ALL RESPONDENTS] **Are you in school now?**	
Yes…	1
No…	2
DK / No response…	99
Residence	
Urban	
Rural	

Detailed data tables and descriptive analyses

The segments are roughly equally sized, but vary in their distribution across regions



ARUSHA:
Furaha: 24%
Farida: 17%
Pendo: 36%
Bahati: 23%

How to interpret:
23% of girls and women in Arusha are Bahati.

MWANZA/TABORA:
Furaha: 24%
Farida: 19%
Pendo: 14%
Bahati: 42%

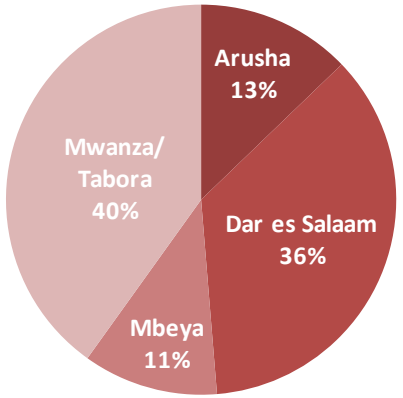
DAR ES SALAAM:
Furaha: 20%
Farida: 21%
Pendo: 35%
Bahati: 24%

MBEYA:
Furaha: 30%
Farida: 10%
Pendo: 24%
Bahati: 37%

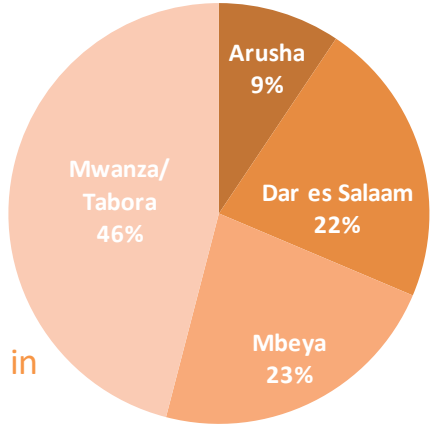
TANZANIA (OVERALL):
Furaha: 25%
Farida: 17%
Pendo: 25%
Bahati: 33%

Geographic breakdown in each segment

Farida



Bahati



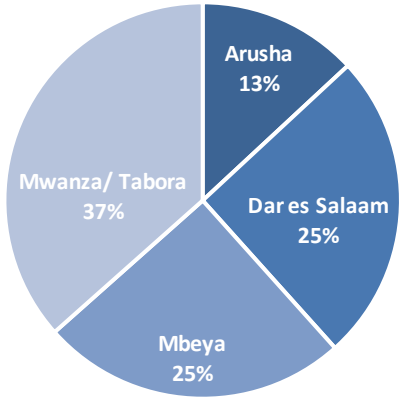
How to interpret:
46% of Bahatis live in Mwanza/Tabora

Most are sexually active

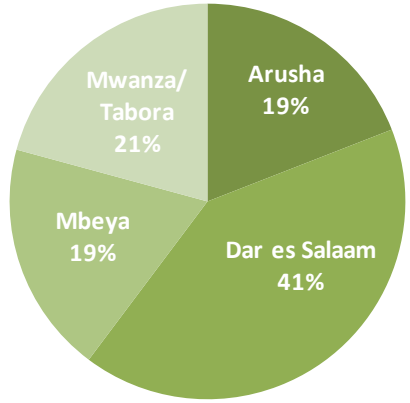
Earlier in developmental trajectory

Later in developmental trajectory

Furaha



Pendo



Most are not sexually active

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Descriptive analysis of segments

Demographics

		Furaha	Farida	Pendo	Bahati
Age		15.9	16.8	17.4	18.1
Region					
	Arusha	13.1%	12.8%	19.1%	9.4%
	Dar es Salaam	25.3%	35.9%	41.2%	22.0%
	Mbeya	25.1%	11.2%	19.0%	22.7%
	Mwanza/Tabora	36.6%	40.1%	20.8%	46.0%
Marital Status					
	Married	0.0%	9.0%	0.4%	27.4%
	Co-habitating	0.0%	1.3%	0.0%	10.7%
	Widowed	0.0%	0.0%	0.0%	4.7%
	Divorced/separated	0.0%	0.0%	0.0%	0.0%
	Never married	98.3%	85.9%	97.8%	55.7%
Dating Involvement					
	Ever had a boyfriend	3.0%	97.0%	31.0%	97.0%
	Current steady boyfriend*	21.7%	69.0%	64.0%	67.1%
	Has close friends who date	70.0%	97.2%	87.6%	97.4%

* Among those who have ever had a boyfriend

weighted means and frequencies

Descriptive analysis of segments

Demographics - education

		Furaha	Farida	Pendo	Bahati
School Status					
	In school	60.6%	30.0%	33.3%	7.1%
	No longer in school	39.1%	70.0%	66.6%	92.9%
Education Level					
	None	2.0%	4.1%	0.6%	5.0%
	Some primary	15.6%	13.2%	5.5%	8.2%
	Primary complete	29.8%	40.1%	32.7%	44.4%
	Some secondary	46.7%	28.9%	30.9%	21.0%
	Secondary complete	5.1%	11.8%	27.2%	19.5%
	Vocational or technical after secondary	0.0%	0.6%	0.8%	0.2%
	Some University	0.8%	0.8%	1.9%	0.9%
	University completed	0.0%	0.3%	0.5%	0.1%

weighted means and frequencies

Descriptive analysis of segments

Demographics - household size/ SES

		Furaha	Farida	Pendo	Bahati
Number of children					
	0	100.0%	93.5%	100.0%	52.8%
	1	0.0%	4.9%	0.0%	38.3%
	2	0.0%	1.7%	0.0%	7.7%
	3+ children	0.0%	0.0%	0.0%	1.3%
Wealth quintile					
	1st	1.9%	3.1%	0.6%	3.4%
	2nd	10.3%	8.7%	3.4%	10.4%
	3rd	8.0%	5.2%	6.9%	7.1%
	4th	19.1%	15.7%	9.8%	27.9%
	5th	60.7%	67.3%	79.2%	51.1%
Number of people living in household					
	1 - 3 people	6.5%	14.1%	11.1%	24.3%
	4 - 6 people	54.8%	45.4%	48.4%	39.2%
	7+ people	38.7%	40.6%	40.5%	36.6%

weighted means and frequencies

Descriptive analysis of segments

Sources of information on sexuality/growing up

		Furaha	Farida	Pendo	Bahati
Where did you learn about menses/puberty?					
	Friends	3.2%	10.5%	4.5%	8.5%
	Husband/partner/boyfriend	0.0%	1.2%	0.0%	0.5%
	Mother-in-law	0.0%	0.0%	0.0%	0.0%
	Father-in-law	0.0%	0.0%	0.0%	0.0%
	Father	0.2%	0.0%	0.0%	0.0%
	Mother	31.4%	33.0%	31.8%	26.8%
	Parents	0.8%	1.2%	1.0%	4.3%
	Nurse/medical provider	0.0%	0.3%	0.0%	0.4%
	Nyakanga or Auntie	3.6%	3.0%	4.2%	6.5%
	Other relatives	13.0%	11.0%	11.2%	9.3%
	School/teachers	38.6%	29.5%	40.7%	36.6%
	CHW	0.3%	0.3%	0.0%	0.2%
	Other	4.7%	9.8%	6.7%	6.8%

weighted means and frequencies

Descriptive analysis of segments

Sources of information on sexuality/growing up

		Furaha	Farida	Pendo	Bahati
Where did you learn about personal hygiene?					
	Friends	1.0%	3.3%	3.2%	4.8%
	Husband/partner/boyfriend	0.0%	0.4%	0.0%	0.0%
	Mother-in-law	0.0%	0.0%	0.0%	0.2%
	Father-in-law	0.0%	0.0%	0.0%	0.0%
	Father	0.0%	0.0%	0.0%	0.0%
	Mother	59.3%	48.4%	46.1%	44.0%
	Parents	2.2%	3.1%	4.4%	6.4%
	Nurse/medical provider	0.5%	0.0%	0.0%	0.0%
	Nyakanga or Auntie	3.0%	3.7%	6.0%	4.4%
	Other relatives	9.2%	9.7%	12.4%	10.6%
	School/teachers	14.5%	15.9%	17.3%	20.2%
	CHW	0.0%	0.0%	0.0%	0.3%
	Other	9.0%	15.4%	10.6%	9.0%

weighted means and frequencies

Descriptive analysis of segments

Sources of information on sexuality/growing up

		Furaha	Farida	Pendo	Bahati
Where did you learn about family planning?					
	Friends	9.6%	12.5%	14.9%	16.7%
	Husband/partner/boyfriend	0.0%	3.0%	0.0%	4.6%
	Mother-in-law	0.0%	0.0%	0.0%	0.0%
	Father-in-law	0.0%	0.0%	0.0%	0.0%
	Father	0.0%	0.0%	0.0%	0.0%
	Mother	4.5%	5.7%	6.1%	9.9%
	Parents	0.0%	0.5%	1.3%	1.6%
	Nurse/medical provider	1.7%	8.8%	3.3%	21.7%
	Nyakanga or Auntie	0.3%	0.3%	0.5%	0.2%
	Other relatives	3.7%	8.0%	4.7%	6.7%
	School/teachers	60.6%	41.0%	56.7%	28.2%
	CHW	0.6%	1.2%	0.8%	2.6%
	Other	2.7%	7.1%	4.0%	4.3%

weighted means and frequencies

Descriptive analysis of segments

Sources of information on sexuality/growing up

		Furaha	Farida	Pendo	Bahati
Where did you learn about abstinence?					
	Friends	1.5%	6.5%	4.3%	4.2%
	Husband/partner/boyfriend	0.0%	0.6%	0.0%	2.5%
	Mother-in-law	0.0%	0.0%	0.0%	0.0%
	Father-in-law	0.0%	0.0%	0.0%	0.0%
	Father	0.0%	0.0%	0.3%	0.4%
	Mother	35.1%	22.9%	31.9%	28.8%
	Parents	6.7%	10.3%	9.4%	10.7%
	Nurse/medical provider	0.8%	0.9%	0.8%	1.9%
	Nyakanga or Auntie	2.1%	2.5%	2.1%	2.1%
	Other relatives	6.5%	5.6%	5.8%	5.8%
	School/teachers	24.8%	15.7%	19.9%	10.0%
	CHW	0.0%	0.3%	1.0%	0.3%
	Other	16.3%	20.9%	22.8%	24.0%

weighted means and frequencies

Descriptive analysis of segments

Sources of information on sexuality/growing up

		Furaha	Farida	Pendo	Bahati
Where did you learn about sex?					
	Friends	11.0%	10.0%	22.0%	13.0%
	Husband/partner/boyfriend	0.0%	52.0%	1.0%	63.0%
	Mother-in-law	0.0%	0.0%	0.0%	0.0%
	Father-in-law	0.0%	0.0%	0.0%	0.0%
	Father	0.0%	0.0%	0.0%	0.0%
	Mother	2.0%	1.0%	1.0%	0.0%
	Parents	1.0%	0.0%	1.0%	0.0%
	Nurse/medical provider	0.0%	0.0%	0.0%	0.0%
	Nyakanga or Auntie	0.0%	0.0%	1.0%	1.0%
	Other relatives	1.0%	1.0%	2.0%	2.0%
	School/teachers	18.0%	4.0%	15.0%	3.0%
	CHW	0.0%	0.0%	0.0%	0.0%
	Other	12.0%	16.0%	17.0%	14.0%

weighted means and frequencies

Descriptive analysis of segments

Sources of support

		Furaha	Farida	Pendo	Bahati
Active member of…?					
	A religious group outside worship services	27.7%	19.5%	33.1%	24.1%
	A self-help group	16.2%	17.9%	14.3%	17.9%
	An group formed for income generating purposes	3.2%	3.5%	2.1%	5.2%
	Some other volunteer association	1.0%	1.8%	1.3%	4.5%
Who would they go to seek protection/support when distressed?					
	Family	85.2%	74.7%	86.4%	75.5%
	Friends/peers	10.2%	20.7%	10.9%	17.8%
	School teacher/workmate	0.6%	0.6%	0.2%	1.5%
	Community/neighborhood	0.5%	0.3%	0.9%	0.5%
	Religious leader	0.0%	0.0%	0.3%	0.3%
	Social workers/government officer	0.3%	0.5%	0.0%	1.2%
	Police	1.9%	0.0%	0.6%	0.8%
	Other	0.2%	1.1%	0.5%	1.3%

weighted means and frequencies

Descriptive analysis of segments

Independence/mobility

		Furaha	Farida	Pendo	Bahati
Has travelled...					
	to market, shops, trading centers	91.8%	92.0%	94.2%	96.1%
	to hospital, clinic, or doctor	71.0%	71.3%	82.9%	92.0%
	outside village/neighborhood/ward	87.9%	85.5%	87.9%	94.1%
Needed accompaniment to travel to places described above*		31.1%	15.8%	21.2%	12.7%
Sees self as…					
	Girl	97.0%	88.3%	98.0%	54.1%
	Woman	3.0%	10.9%	2.0%	45.7%

* Among those who have travelled to any of those places

weighted means and frequencies

Descriptive analysis of segments

Mobile phone use

		Furaha	Farida	Pendo	Bahati
Mobile phone ownership and usage					
	Uses a mobile phone she owns	17.1%	24.6%	26.2%	41.2%
	Uses a mobile phone owned by someone in household	41.0%	36.2%	41.1%	29.8%
	Uses a mobile phone owned by someone outside household	16.0%	15.2%	12.8%	8.8%
Who controls when/how mobile phone used*					
	Her	28.0%	39.3%	39.5%	53.8%
	Husband/boyfriend	7.0%	15.3%	7.9%	15.6%
	Parents	49.9%	32.0%	34.2%	21.2%
	Other	15.0%	13.4%	18.4%	9.4%
Can use mobile phone when/how wanted*		60.5%	62.5%	68.0%	68.9%
Mobile phone use frequency*					
	5+ times per day	19.4%	32.3%	29.0%	40.6%
	3-4 times per day	13.9%	11.0%	11.1%	17.7%
	1-2 times per day	33.4%	32.2%	35.7%	22.3%
	Less than one time per day	33.0%	24.5%	24.2%	18.9%
Text messaging frequency*					
	5+ times per day	32.7%	40.5%	37.8%	47.8%
	3-4 times per day	9.1%	7.0%	7.6%	15.4%
	1-2 times per day	22.9%	24.3%	27.3%	13.8%
	Less than one time per day	34.2%	28.2%	27.4%	23.0%

*Among phone users

weighted means and frequencies

Targeting Analysis: Segment by Media Access

Tanzania					
Segment (Weighted Frequency) :	**Furaha (25%)**	**Farida (17%)**	**Pendo (25%)**	**Bahati (33%)**	**Total**
Internet Frequency					
Never or < Monthly	96%	81%	77%	81%	84%
< Daily & > Monthly	2%	14%	15%	11%	10%
Daily	2%	5%	8%	8%	6%
% Read Magazines	16%	13%	18%	11%	14%
Days Read Newspaper					
None	77%	77%	72%	82%	77%
1 day	16%	12%	17%	11%	14%
2+ days	7%	11%	11%	7%	9%
Days Listen to Radio					
None	54%	48%	44%	46%	48%
1 day	10%	7%	5%	6%	7%
2-5 days	21%	22%	22%	18%	20%
6-7 days	16%	24%	28%	30%	25%
Days Watch Television					
None	43%	41%	26%	53%	42%
1 day	9%	3%	5%	7%	6%
2-5 days	22%	17%	17%	15%	18%
6-7 days	26%	39%	51%	25%	34%

Targeting Analysis: Segment Prevalence by Region and Urbanicity

Segment (Weighted Frequency)	Furaha (25%)	Farida (17%)	Pendo (25%)	Bahati (33%)	Total
Dar es Salaam (% of Dar es Salaam in this segment)	20%	21%	35%	24%	
Urban (% of this segment in Dar es Salaam that is urban)	100%	100%	100%	100%	100%
Arusha (% of Arusha in this segment)	24%	17%	36%	23%	
Urban (% of this segment in Arusha that is urban)	35%	39%	41%	4%	31%
Mbeya (% of Mbeya in this segment)	30%	10%	24%	37%	
Urban (% of this segment in Mbeya that is urban)	31%	7%	34%	23%	27%
Mwanza/Tabora (% of Mwanza/Tabora in this segment)	24%	19%	14%	42%	
Urban (% of this segment in Mwanza/Tabora that is urban)	18%	10%	25%	23%	20%

Targeting Analysis: Segment by Media Access and Region

Dar es Salaam					
Segment (Weighted Frequency) *:	**Furaha (20%)**	**Farida (21%)**	**Pendo (35%)**	**Bahati (24%)**	**Total**
Internet Frequency*					
Never or < Monthly	89%	63%	67%	49%	66%
< Daily & > Monthly	6%	27%	21%	27%	20%
Daily	6%	10%	13%	23%	13%
% Read Magazines	10%	15%	16%	21%	15%
Days Read Newspaper					
None	68%	70%	60%	68%	66%
1 day	20%	15%	19%	12%	17%
2+ days	12%	15%	21%	20%	17%
Days Listen to Radio					
None	48%	38%	38%	32%	38%
1 day	6%	9%	7%	8%	7%
2-5 days	21%	20%	21%	20%	20%
6-7 days	25%	34%	34%	40%	34%
Days Watch Television*					
None	20%	19%	12%	14%	16%
1 day	5%	1%	4%	12%	6%
2-5 days	25%	18%	16%	20%	19%
6-7 days	49%	63%	69%	54%	60%
*** Between-group differences are statistically significant**					

Targeting Analysis: Segment by Media Access and Region

Arusha					
Segment (Weighted Frequency) *:	**Furaha (24%)**	**Farida (17%)**	**Pendo (36%)**	**Bahati (23%)**	**Total**
Internet Frequency					
Never or < Monthly	97%	89%	83%	90%	89%
< Daily & > Monthly	3%	7%	11%	5%	7%
Daily	0%	4%	6%	5%	6%
% Read Magazines*	15%	0%	19%	0%	10%
Days Read Newspaper					
None	85%	85%	85%	95%	88%
1 day	15%	7%	13%	3%	10%
2+ days	0%	8%	2%	3%	2%
Days Listen to Radio					
None	45%	63%	51%	55%	53%
1 day	12%	7%	2%	3%	5%
2-5 days	24%	11%	30%	23%	24%
6-7 days	18%	19%	17%	20%	18%
Days Watch Television*					
None	52%	52%	34%	78%	52%
1 day	9%	0%	2%	5%	4%
2-5 days	18%	4%	13%	8%	11%
6-7 days	21%	44%	51%	10%	33%
* Between-group differences are statistically significant					

Targeting Analysis: Segment by Media Access and Region

Mbeya					
Segment (Weighted Frequency) *:	**Furaha (69%)**	**Farida (22%)**	**Pendo (54%)**	**Bahati (86%)**	**Total**
Internet Frequency*					
Never or < Monthly	97%	91%	77%	90%	90%
< Daily & > Monthly	2%	9%	7%	4%	6%
Daily	2%	0%	16%	4%	4%
% Read Magazines	10%	9%	16%	11%	11%
Days Read Newspaper					
None	87%	77%	84%	90%	87%
1 day	7%	18%	14%	8%	10%
2+ days	7%	5%	2%	1%	4%
Days Listen to Radio*					
None	57%	55%	50%	45%	51%
1 day	13%	0%	7%	4%	7%
2-5 days	15%	36%	18%	12%	17%
6-7 days	15%	9%	25%	38%	25%
Days Watch Television					
None	36%	41%	32%	53%	42%
1 day	15%	5%	7%	10%	10%
2-5 days	26%	36%	27%	12%	23%
6-7 days	23%	18%	34%	25%	26%
*** Between-group differences are statistically significant**					

Targeting Analysis: Segment by Media Access and Region

Mwanza/Tabora					
Segment (Weighted Frequency) * :	**Furaha (24%)**	**Farida (19%)**	**Pendo (14%)**	**Bahati (42%)**	**Total**
Internet Frequency					
Never or < Monthly	100%	96%	94%	91%	95%
< Daily & > Monthly	0%	3%	4%	6%	3%
Daily	0%	1%	2%	2%	1%
% Read Magazines	25%	16%	21%	8%	16%
Days Read Newspaper					
None	75%	81%	75%	82%	79%
1 day	18%	8%	15%	13%	14%
2+ days	7%	11%	10%	5%	7%
Days Listen to Radio					
None	59%	51%	50%	51%	53%
1 day	10%	8%	4%	8%	8%
2-5 days	23%	18%	19%	18%	20%
6-7 days	9%	23%	27%	23%	19%
Days Watch Television					
None	62%	60%	50%	68%	62%
1 day	9%	7%	12%	3%	6%
2-5 days	19%	15%	17%	16%	17%
6-7 days	11%	19%	21%	13%	15%
* Between-group differences are statistically significant					

Appendix 1: Brief summary of analytic models – see separate "Analytics Deck" for full details.

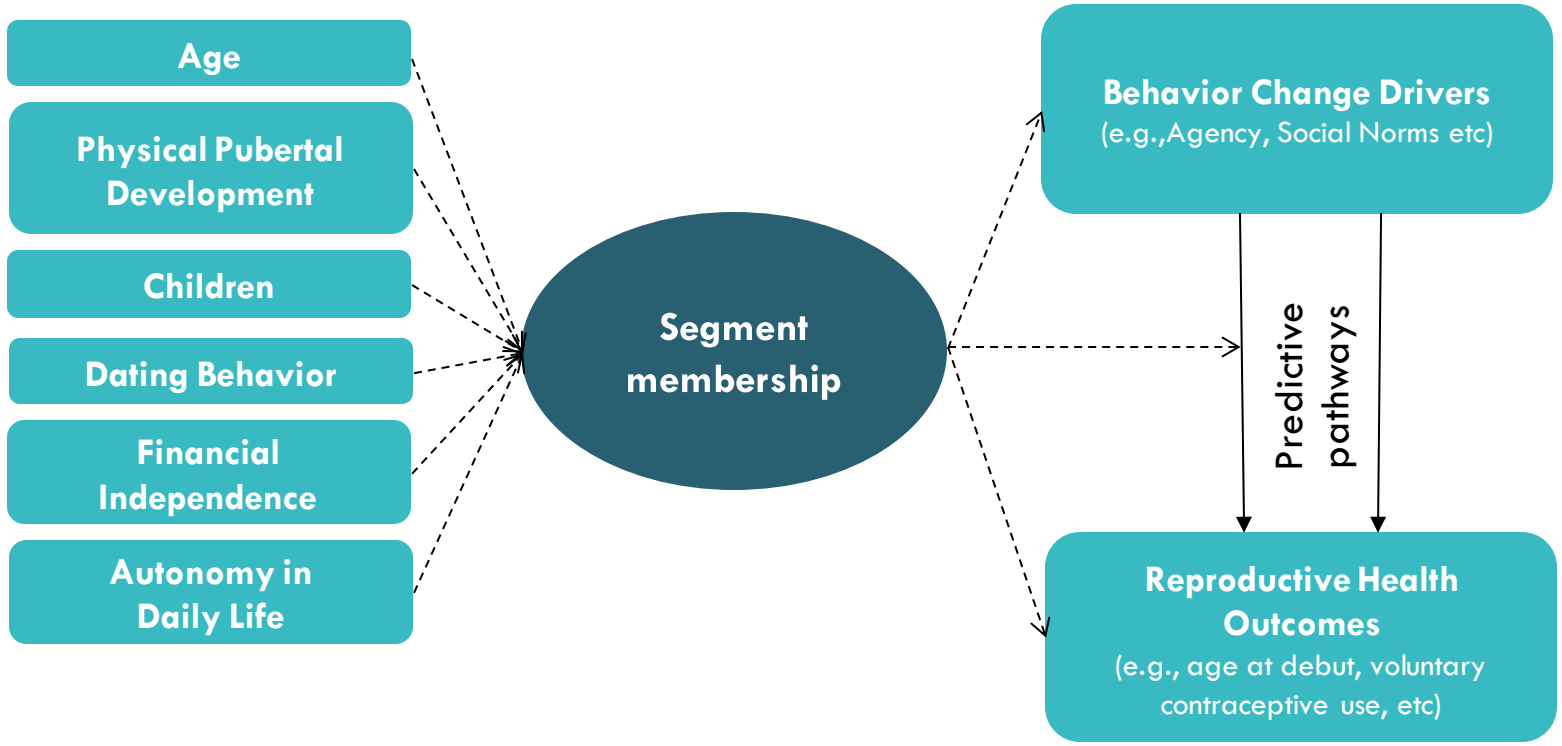
Programmatic Implications

WHY (outcome)		**Increased use (more or better) Improved or changed behavior**				
HOW (constraint)	**CH** **Culture and Habit** (Deeply embedded cultural practices - esp. religious - and automatic behaviors)	**A** **Agency** (Lack of agency)	**N** **kNowledge** (Lack of knowledge)	**G** **Goals/motivations** (Lack of motivation)	**E** **Environment** (Lack of resources & physical access)	**S** **Social Influence** (Descriptive and injunctive norms of valued others at odds with desired, healthy behaviors)
WHAT (broad)	Disrupt, change or bypass status quo	Advocacy and Mobilization	Behavior Change Communication and Social Marketing	Make It Desirable To Maintain Healthy Behaviors	Increase easy, consistent physical access to relevant products and services	Influence immediate social networks esp. family and peers
WHAT (specific interventions)	**Train Religious Leaders** • Teach methods of HIV transmission & methods of preventing HIV **Community led interventions at the village level** • E.g,., Community-led total sanitation model (CLTS) **Target interventions during periods of context change** • Migration • Seasonal changes • Life stage (e.g., birth of child, marriage).	**Social marketing** • Campaigns empowering girls' and women's decision making. **Girls stay in school programs** • Meals at school • Financial support (fees, uniforms, books, school supplies) • Teachers trained to monitor attendance & help with absentee problems **Policy** • Enforceable policies, laws & rights addressing girls education, marriage, pregnancy, property / assets (low income girl focus) • Health-related policy mandates (e.g., opt-out testing, required prevention) **Political engagement** • Female representation in political bodies (national, local) • Social movements (e.g., rights awareness, campaigns) **Community/individual mobilization** • Community-driven devlpmt • SHGs women / SHGs girls • Microfinance/microenterprise • HH problem solving	**Edutainment** • Broadcast over village loudspeakers • Address commercial sex workers, HIV, risk reduction • Meetings with village leaders • Partner with Novellas, Bollywood etc, **Women's Education** • Pregnancy & Childbirth **Mass and traditional media** • TV / radio campaigns • SMS and mobile campaigns • Interactive websites • Paper leaflets • Entertainment education • Local events (e.g., celebration days) **Information for self- management** • mHealth applications **Integration into institutions** • School-based education • Women and youth groups • Religious institutions **Interpersonal communication (IPC)** • Healthcare providers (CHWs, doctors, nurses) • Local leaders • Community champions/peer promoters	**Financial Incentives for healthy behaviors** • Voucher for returning for HIV test results • Conditional cash transfer to encourage birth in MHCF • Vouchers for attending pre-natal care visits or enrolling children in school **Micro-finance interventions** • Financial literacy + matched savings account linked to health interventions	**Capacity Improvements** • Infrastructure improvements • Human resources capacity • Service standards & protocols • Quality improvement • Rights-Based approach to health **mHealth applications** **Enhanced distribution channels** **Policy** • Pro-poor tax policies (VAT, indirect taxes) • Earmarks and entitlements (Medicaid, RSBY, WIC program) • "Free"/subsidized care for particular population groups (women, children, elderly) **Demand-side financing approaches:** • Pre-payment before health event (health savings accts, insurance) • Community-based support systems (ROSCAs, microfinance, district health funds) • Voucher schemes for certain services or goods (i.e. bednets, FP services, safe motherhood packages) • Conditional cash transfers (Oportunidades, Bolsa Familiar) or unconditional transfers (Give Directly) • In-kind and non-financial incentives: food-based support programs, saris for immunization, etc. **Transportation**	**Teacher-Led, Peer Supported Program** • Challenge beliefs about sex • Skills to resist social pressure • Teacher training to increase buy-in **Peer Educator Session** • Promote abstinence and condom use • Demonstrated correct condom use • Use of drama skits **Intimate Partner Violence (IPV) intervention** • Change attitudes, social norms, & behaviors related to IPV **Edutainment** • Partner with Novellas, Bollywood etc, **Influence the influencers** **<u>Additional Hypotheses</u>** • Utilize established social gathering places eg village center, women's entrepreneurial groups, barber shops/beauty salon to create advocates for the new behavior • School Programs which integrate healthy behaviors into curriculum (boys and girls)

Approach to Segmenting Population

Developmental Inputs

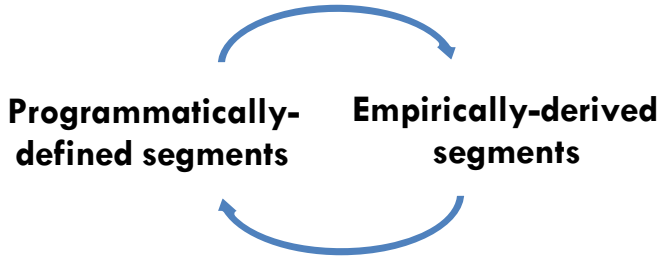
Change Pathway Outputs



Guiding Principles:

1. Segments should be **developmentally meaningful** and **targetable** in population.
2. Segments should reflect groups who tend to share **outcomes, behavior change pathways** to (better) outcomes, and are (at least somewhat) **demographically homogenous.**
3. Highest priority is to define groups based on **malleable** behavior change drivers that are **currently weak** in that segment (i.e., predictive + malleable + weak = highest value for intervention).

Details on Segmentation Analytic Approach



- Measures included in this segmentation analysis were refined through discussions about programmatically defined (qualitative) segments
  - **Programmatically-defined segment 1**: Younger, naïve, and curious. Experiencing bodily changes due to puberty and have less knowledge about puberty, sex, and contraception. These girls are sometimes sexually active, but not always.
  - **Programmatically-defined segment 2**: Older, experienced, and have greater social and financial responsibility than other adolescent girls. These girls may be married or unmarried, with or without children but have responsibility for themselves and/or others.

- Empirical segments were obtained using latent profile analysis
  - A model-based approach to segmentation; a subtype of finite mixture models
  - Highly flexible (accommodates missing data, different response distributions, and allows incorporation of antecedents and sequelae of segment membership in the same model)

Four developmentally distinct segments were identified:

	Segment 1	Segment 2	Segment 3	Segment 4
	24.13%	16.34%	25.69%	33.84%
Age M (SD)	15.8 (0.98)	16.9 (1.2)	17.4 (1.2)	18.16 (0.9)
Change in hair growth complete	9%	11%	66%	81%
Change in skin complete	4%	5%	64%	60%
Change in body shape complete	35%	45%	94%	98%
Begun menstruating	79%	99%	100%	99%
Has children	0%	8%	0%	46%
Had sexual intercourse	1%	73%	0%	100%
Has ever dated	3%	97%	31%	97%
Goes to doctor alone	32%	56%	65%	79%
Has final say on how to spend money on food/necessities				
Herself or jointly with someone else	19%	29%	31%	33%
Partner/Boyfriend	4%	9%	3%	23%
Parents	**70%**	**55%**	**57%**	39%
Has final say on how to spend her own money				
Herself or jointly with someone else	**67%**	**78%**	**86%**	**85%**
Partner/Boyfriend	1%	3%	0%	10%
Parents	28%	15%	11%	4%

Additional Descriptives for Each Segment

	Segment 1	Segment 2	Segment 3	Segment 4
N (%)	24.13%	16.34%	25.69%	33.84%
Currently in School	60.6%	30.0%	33.3%	7.1%
Urban (versus Rural)	44.40%	46.57%	60.07%	39.47%
Region				
Dar es Salaam	13.1%	12.8%	19.1%	9.4%
Arusha	25.3%	35.9%	41.2%	22.0%
Mbeya	25.1%	11.2%	19.0%	22.7%
Mwanza	36.6%	40.1%	20.8%	46.0%
Tabora	13.1%	12.8%	19.1%	9.4%

Differences between segment significant at .05 level

Appendix 2: Survey items making up CHANGES drivers

Drivers: Culture & Habits

Measure Items
• In your community how much do people take direction on decisions about health and family from religious leaders? • In your community how much do people take direction on decisions about health and family from community leaders? • And what about you personally. How much do you take direction on decisions on health and family from religious leaders? • And what about you personally. How much do you take direction on decisions on health and family from community leaders? • Thinking about religious leaders, would they approve or disapprove of you using condoms? • Thinking about religious leaders, would they approve or disapprove of you using medical contraceptives? • Thinking about religious leaders, would they approve or disapprove of you delaying or avoiding having sex until at least 18?

Drivers: Agency

Measure Items
• To what extent, if at all, will you /or did you decide what age to get married? • To what extent, if at all, will you /or did you decide who to marry? • To what extent, if at all, will you /or did you decide how many children you should have? • To what extent, if at all, will you /or did you decide when to have children? • To what extent, if at all, will you /or did you decide who your daughters should marry? • To what extent, if at all, will you /or did you decide at what ages your daughters get married? • To what extent, if at all, will you /or did you decide whether you and your husband/partner/boyfriend use contraception? • To what extent, if at all, will you /or did you decide when to have sex? • Would the decision to delay or avoid having sex until at least 18 be one that you would make, or would someone else decide for you? • Is the decision to use condoms one that you would make, or would someone else decide for you? • Would the decision to use a medical contraceptive be one that you would make, or would someone else decide for you? • Do you feel you could openly speak out about what is important to you at home?

Drivers: Knowledge

Measure Items
• If you decided to get condoms tomorrow, would you know where to get them? • If you decided to get a medical contraceptive tomorrow, would you know where to get it? • In the past three months, have you talked one-to-one with a peer educator or health worker about HIV or AIDS? • In the past three months, have you attended any talk or meeting on HIV or AIDS? • In the past three months, have you seen a condom demonstration? • In the past three months, have you talked one-to-one with a peer educator or health worker about family planning?

Drivers: Goals & Motivations

Measure Items
• Thinking about your life, does delaying or avoiding having sex until at least 18 feel like it would be valuable and important? • Thinking about your life, does using condoms feel like it is valuable and important to you? • Thinking about your life, does using a medical contraceptive feel like it would be valuable and important?

Drivers: Environment (Physical/Structural)

Measure Items
• How easy or difficult would it be for you to travel to a health care facility to give birth? • How easy or difficult would it be for you to travel to a place where you could get condoms? • How easy or difficult would it be for you to use a form of medical contraceptive? • How far is the nearest healthcare facility from your home? • And would you be able to afford any costs from being treated? • And do you think you would receive very good medical care? • Overall, would you say you feel good and positive about health care facilities or do you feel bad and negative?

Drivers: Social Influence

Measure Items
• Thinking about your husband or partner, would they approve or disapprove of you delaying or avoiding having sex until at least 18 • Thinking about your parents, would they approve or disapprove of you delaying or avoiding having sex until at least 18? • Thinking about females who are similar to you, would most of them delaying or avoiding having sex until at least 18? • Thinking about your husband or partner, would they approve or disapprove of you using condoms? • Thinking about your parents, would they approve or disapprove of you using condoms? • Thinking about females who are similar to you, do most of them use condoms? • Thinking about your husband or partner, would they approve or disapprove of you using medical contraceptives? • Thinking about your parents, would they approve or disapprove of you using medical contraceptives? • Thinking about females who are similar to you would most of them use a medical contraceptive? • Do you agree/disagree with the following: I have someone I trust that I can ask about condoms. • Do you agree/disagree with the following: I have someone I trust that I can talk to about personal issues