Audience Segmentation for Nutrition

Social and behavior change (SBC) strategies are critical for addressing social and structural barriers, and encouraging positive behaviors around nutrition. SBC can foster increased utilization of health services, improved client-provider interactions, and improved dietary diversity, among other outcomes.

To increase the effectiveness of SBC strategies, program planners must understand the intended audience(s) and the factors driving their behavior. Audience segmentation is a technique that divides a population into groups with similar characteristics related to a topic or behavior of interest, enabling a deeper understanding of the demographic factors, norms, and attitudes that enable or inhibit positive behavior change among each group. The use of audience segmentation can help SBC practitioners develop interventions tailored to each group's particular characteristics and needs.

This course is intended for use by SBC and service delivery professionals seeking to encourage positive nutrition behavior change by employing segmentation based on needs, attitudes, and behaviors of intended audience(s).

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Breakthrough ACTION FOR SOCIAL & BEHAVIOR CHANGE

Session 1: Introduction

The purpose of this session is to begin to describe how audience segmentation can be used in social and behavior change (SBC) programming for nutrition. This session describes the potential utility of audience segmentation to improve nutrition outcomes.

Learning Objectives

- Define segmentation, demonstrate different types of segmentation, and provide a high-level overview of the steps to create a segmentation.
- Describe how segmentation can be used to inform SBC programming.

Why Segmentation Matters for Nutrition

Malnutrition remains a substantial global concern, and worldwide more than a quarter of children under five suffer from undernutrition. This includes 150 million children who are stunted or have a low height for their age, as well as more than 50 million who are wasted or have a low weight for their height, which can result from illness and undernutrition and are a major cause of child mortality. Undernutrition has a range of consequences that hinder social development, including leaving children vulnerable to disease, impoverishing families, diminishing community resilience, and reducing critical human capacity (USAID, n.d.).

However, nutrition is not only a concern for children. Poor nutrition of women and mothers affects both their health and that of their children, leading to higher rates of disabilities, mortality, stunted growth, disease predispositions, and low educational achievement (Rose et al., 2015).

As a result of these dynamics, USAID programs emphasize the "1,000 day window of opportunity" from pregnancy through a child's second birthday, during which nutrition is critical for optimal physical and cognitive development (USAID, n.d.).

Additional Sources

- FAO, IFAD, UNICEF, WFP, & WHO. (2022). *The state of food security and nutrition in the world 2022: Repurposing food and agricultural policies to make healthy diets more affordable*. https://doi.org/10.4060/cc0639en
- Integrated Food Security Phase Classification [IPC]. (2022). *2022 global report on food crises*. IPC.

An Opportunity: The Role of SBC

While nutrition programming can be strengthened at a systems level, human behavior is also fundamental to improving nutrition outcomes. SBC initiatives are critical in addressing underlying social norms around nutrition and improving nutrition behaviors, using a range of approaches including targeted

communication and social mobilization to ensure successful nutrition intervention outcomes. Several SBC nutrition tools can be found on the USAID Advancing Nutrition website.

To accelerate improvements in nutrition outcomes, segmentation analysis is extremely helpful for understanding the various factors, attitudes, and beliefs that influence nutrition-related behaviors. In doing so, segmentation can support SBC professionals in their strategy and program design efforts to ensure that they are tailoring their approach to reach those in need, and effectively encouraging positive nutrition-related behaviors.

Sources

- FAO, IFAD, UNICEF, WFP, & WHO. (2022). The state of food security and nutrition in the world. Repurposing food and agricultural policies to make healthy diets more affordable. In *FAO eBooks*. https://doi.org/10.4060/cc0639en
- Integrated Food Security Phase Classification [IPC]. (2022). Global report on food crises. In *IPC Analyses*. https://www.ipcinfo.org/ipcinfo-website/featured-stories/news-details/en/c/1155583/

What is Segmentation?

According to the Advanced Audience Segmentation for Social and Behavior Change How-to Guide, "segmentation divides a population or market into subgroups that have, or are perceived to have, meaningfully similar characteristics, and significant differences from other subgroups." Figure 2 is a simple illustration of how segmentation can help us to understand a heterogenous population by organizing them into subgroups based on various factors and commonalities. In this illustrative example, they are grouped by colors; however, a segmentation analysis for nutrition might include segments with meaningful differences regarding dietary diversity, as highlighted in the case study presented in Session 2.

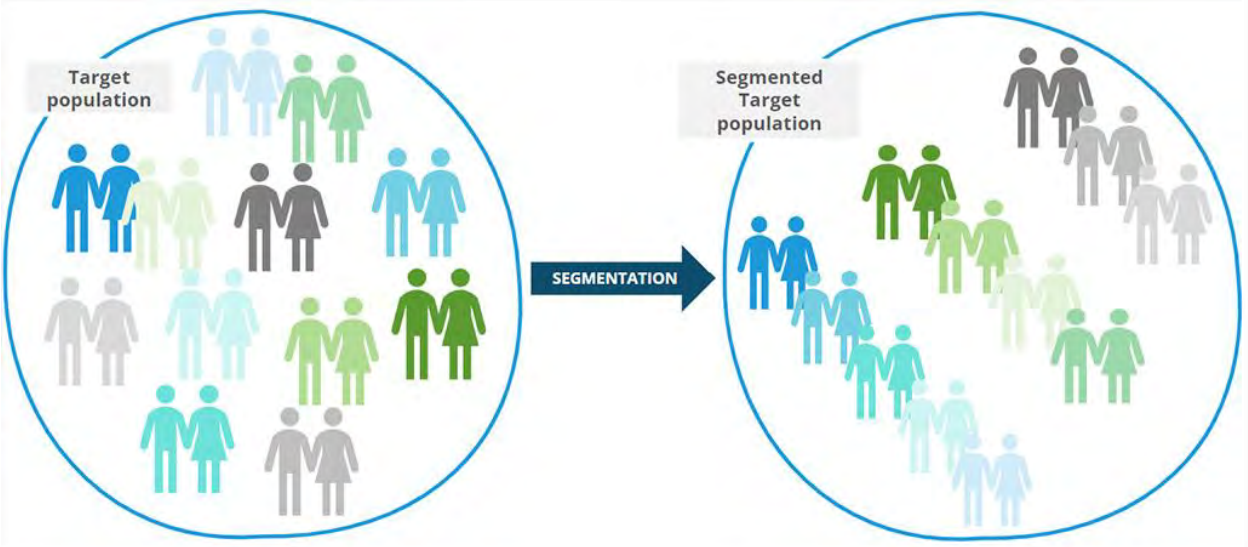

Figure 2. Visual representation of segmentation, sorting icons of blue, green, and grey people into groups by color

Segmentation allows for a nuanced look at a population and a deep understanding of what holds value for each group. This in-depth understanding can help stakeholders, such as national nutrition programs, community-based organizations, faith-based organizations, service delivery partners, private sector partners, and other implementing partners develop targeted SBC interventions and/or improve service delivery and increase the adoption of positive behaviors.

Below are definitions for two terms that will arise throughout the rest of this course.

- A **segment** is a group of people with similar needs, values, or characteristics within a population, as identified through a segmentation analysis. Each segment has distinctive characteristics and is typically labeled with a name. Each segment has unique characteristics compared to other segments, meaning members within each segment are as similar to each other as possible, and as different as possible from other segments.
- A **segment persona** is a summary or description of the people who belong to each segment. It includes the key distinguishing factors that differentiate each segment and the most important drivers or barriers related to the desired social and behavior change(s). Segment personas help portray the segment as a real, tangible audience.

Types of Audience Segmentation

There are several types of audience segmentation: psychosocial, behavioral, psychographic, attributional, and demographic. Each type uses a different set of information to group a population into segments.

- **Psychosocial (needs, behaviors, and attitudes)** - Segmentation that identifies sub-groups within a population with **different needs, attitudes, and willingness to change behavior**. (*optimal segmentation for SBC programming*)
- **Behavioral** - Segmentation based on **observable behavior**, such as consumer activity or media use. This segmentation often relies on **self-reported or observed behaviors** related to the outcome variables. This type of segmentation reveals who is doing something, but does not help to understand why they are performing the behavior.
- **Psychographic** - Segmentation based on broad **attitudes or personality traits**, for example being "sporty" or a "foodie".
- **Attributional** - Segmentation based on a **single attribute**, such as life-stage, or property status. Single attribute segmentation can be based on variables beyond demographics, thus providing more interpersonal insights than demographic segmentation.
- **Demographic** - Segmentation based on **demographic factors** such as gender or age.

As illustrated in Figure 2, the simplest and most common method is **demographic** segmentation, which uses demographic data to create segments with different age groups, genders, or geographies. However, while individuals may be of the same demographic group, they likely still have significant differences with regards to their needs, beliefs and behaviors that would not be accounted for.
A more advanced audience segmentation method will be based on **attributional, psychographic** or **behavioral** variables, but will typically require more in-depth research to create the segments, which in turn can provide important insight into those segments' potential for behavior change.

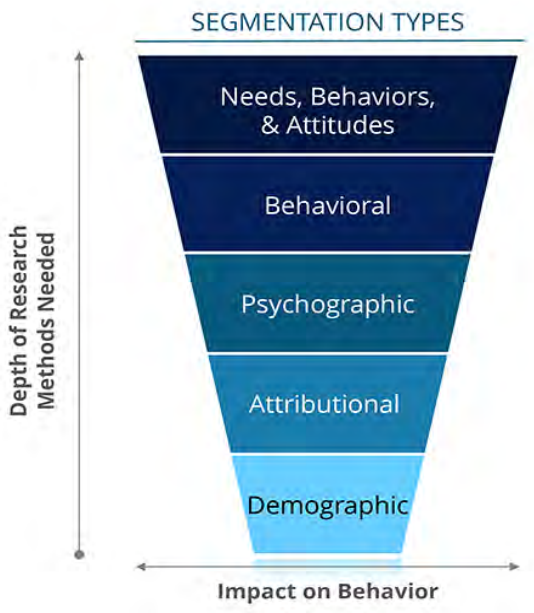

Figure 2. Segmentation types organized by depth of research methods needed and impact on behavior

Finally, a **psychosocial** segmentation (focusing on needs, behaviors, and attitudes) maximizes the opportunity for successful SBC and service delivery interventions. This type of segmentation can be used to understand the unique individual, social, and structural factors that influence the practice of the key behavior by members of the segment. Knowledge of the behavioral drivers that influence each segment can be leveraged to develop more tailored and effective SBC interventions for each segment.

To provide a very simple example of how this type of segmentation might show up in data, consider the following table with hypothetical data. (Note that steps to conducting a segmentation will be covered in more detail in Session 2, this is meant to provide an illustrative example.)

	Performs positive health behavior (N=500)	**Does NOT perform positive health behavior** (N=500)
Women who believe X	85%	5%
Women who believe Y	5%	85%
Women influenced by Z	90%	10%

Table 1. Hypothetical illustrative example of analyzing data for segmentation

Based on the table above, we can see that women who "believe X" are significantly more likely to perform the positive health behavior. Women who "believe Y" are statistically more likely *NOT* to

perform the positive health behavior and are less likely to be "influenced by Z". Given the large sample size (N=500) for each column, these differences are statistically significant (meaning not due to chance).

In the case of nutrition, what this might look like is postpartum women who believe it is socially acceptable to eat certain vegetables (women who believe X) are more likely to eat the recommended number of food groups per day (performing the positive health behavior), whereas women who believe that preparing certain nutritious foods is too time consuming (women who believe Y) are less likely to eat the recommended number of food groups per day. And that women who trust health care providers for health information (women influenced by Z) are more likely to eat the recommended number of food groups per day. This is hypothetical data, but this example starts to lay out how data analysis leads to initial hypotheses regarding segmentation.

Overview of Steps to Create a Segmentation

According to the Social and Behavior Change (SBC) Flow Chart, designed by Breakthrough ACTION, there are three main phases to developing effective SBC interventions while engaging end-users and stakeholders.

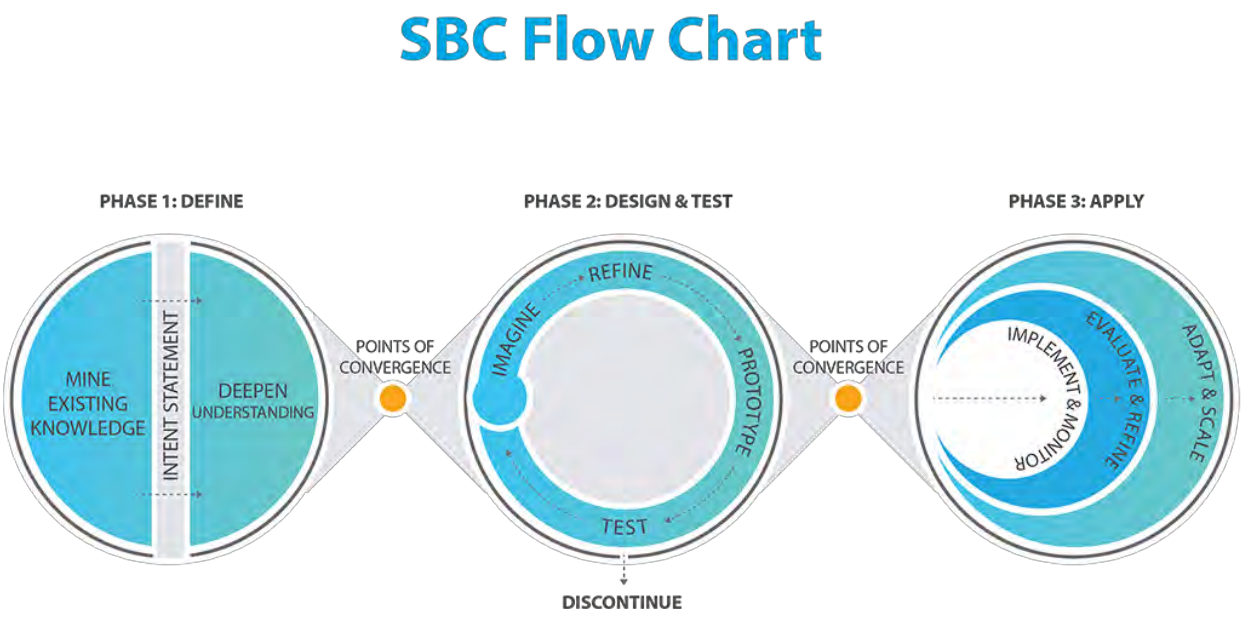

Figure 3. SBC Flow Chart

The steps for conducting a new audience segmentation can follow this phased structure to ensure a meaningful and thorough co-creation process. The following table provides more detail on these phases. The steps for audience segmentation will act as an outline for this session.

	Description	Audience Segmentation Steps
Phase 1: Define and understand the problem	This phase assesses the findings and insights that already exist and establishes mechanisms to deepen understanding of the problem. This is accomplished by establishing relationships with those familiar with the subject of interest with whom to work with and uncover new perspectives and insights to guide solutions.	1. Identify the priority behaviors 2. Define the target population 3. Enlist key stakeholders 4. Develop research questions 5. Select a dataset 6. Define segments 7. Refine your segments
Phase 2: Design and test potential solutions and concepts	Grounded in deeper understanding, this phase informs how social and behavior change will be addressed by involving end users in the solution ideation process.	8. Develop intervention elements
Phase 3: Apply successful prototypes as activities or interventions	Once testing feedback has been synthesized into a prioritized suite of solutions, this phase marks their progressive implementation and evaluation.	9. Pilot solution 10. Evaluate & Refine 11. Adapt & Scale

Table 2. SBC Flowchart phases and corresponding steps for audience segmentation

We will cover these steps in greater detail in Session 2.

Leveraging Audience Segmentation

There are a number of ways that segmentation findings can be incorporated into the design of SBC interventions. Tailoring each aspect of an SBC intervention to the segment of interest can aid strategic resourcing for nutrition initiatives, helping to minimize redundancies and reduce inefficiencies in project design for maximum impact when limited resources are available.

For example, segmentation findings can be used in nutrition programs to:

- Improve women's and children's food consumption behaviors and dietary diversity
- Address specific breastfeeding mothers practices
- Focus resources on groups with specific sanitation-related behaviors

Below are a few examples of SBC initiatives that can be developed with the use of segmentation analysis. Further detail on select nutrition SBC efforts developed with segmentation analysis will be described in Sessions 2 and 3.

CHILDREN Complementary Feeding	PREGNANT WOMEN Pregnancy & Breastfeeding Practices	GENERAL POPULATION Sanitation-related behaviors
• Feed with age-appropriate frequency, amount, and consistency • Feed children 6-23 months old a variety of age appropriate, safe, diverse nutrient-rich foods • Increase dietary diversity, consuming foods rich in micronutrients, energy, and protein • Ensure children continue to eat when ill	• Eat a variety of safe, diverse, nutrient-rich foods for meals and snacks daily while pregnant • Initiate breastfeeding within one hour after delivery • Breastfeed exclusively for six months or 180 days after birth • Continue breastfeeding until children are at least 2 years old	• Ensure optimal handwashing: wash hands with soap at critical moments • Encourage proper storage/treatment of water • Properly dispose of (adult, child, and animal) feces • Manage diarrhea at the onset of symptoms

Figure 4. Examples based on information from SBC technical guidance brief (USAID, 2017) and Infographic on behaviors to improve nutrition (USAID, 2020)

Key Takeaways

- ✓ Malnutrition, particularly undernutrition in children, remains a critical global concern; SBC initiatives help reduce this burden by clarifying the role of human behavior in decision-making that affects nutrition.
- ✓ Segmentation is a way to split a population into groups with similar characteristics. It can be used to develop more informed and tailored SBC programming.
- ✓ A psychosocial (i.e. based on needs, behaviors, and attitudes) segmentation is best for understanding and encouraging behavior change, because it uncovers the root causes and underlying drivers of behavior.
- ✓ Segmentation analysis can be leveraged for a wide variety of nutrition SBC efforts and topics.

Check Your Understanding

Thank you for completing the first session of *Audience Segmentation for Nutrition*. Next is an ungraded quiz to test your understanding of Session 1.

1. What are some of the factors or variables that are used in a psychosocial segmentation approach?

    a. Age and gender only

    b. Psychographic or lifestyle variables only

    c. Psychosocial variables (e.g., needs, attitudes, and beliefs)

    d. Behavioral variables only

    Answer: C

    Feedback: Psychosocial segmentation focused on understanding the needs, attitudes and beliefs which influence a person's behaviors.

2. Which of the following is a step in the segmentation process?

    a. Identify the priority behavior

    b. Define the target population

    c. Enlist key stakeholders

    d. Refine your segments

    e. All of the above

    Answer: E

    Feedback: Identifying the priority behaviors, defining the target population, enlisting key stakeholders, and refining your segments are all steps in the segmentation process.

3. In what ways can segmentation findings be incorporated into the design of an SBC intervention? (Select all that apply)

    a. Determining the religion of the population

    b. Understanding where, and with whom, to administer interventions

    c. Determining influencers in the population of interest

    d. None of the above

    Answer: B & C

    Feedback: Segmentation analysis can be leveraged strategically to determine key people and places to direct resources for social and behavior change.

Session 2: Steps 1-7

The purpose of this session is to describe the steps of conducting audience segmentation in more detail and provide an example, or case study, of a segmentation effort developed to inform nutrition SBC programming. The case study is a nutrition segmentation analysis conducted among pregnant and postpartum women in Mozambique. Session 3 will cover interventions and recommendations for the case study.

Learning Objectives

- List the steps and resources required to conduct an audience segmentation with a quantitative foundation and complementary qualitative research.
- Describe a psychosocial segmentation conducted among pregnant and postpartum women in Mozambique.
- List key distinguishing factors of each segment.
- Describe a tool to segment members of a target population to tailor SBC interventions.

Conducting Audience Segmentation

Steps to Create a Segmentation

Session 1 introduced the concept of audience segmentation, defined types of segmentation, described the role of audience segmentation in nutrition SBC, and outlined the steps required to conduct an audience segmentation. This session will describe the first seven steps required to conduct an audience segmentation in greater detail. (Steps 8-11 are covered in Session 3.)

1. Identify the priority behaviors
2. Define the target population
3. Enlist key stakeholders
4. Develop research questions
5. Select a dataset
6. Define segments
7. Refine your segments
8. Develop intervention elements
9. Pilot solution
10. Evaluate & Refine
11. Adapt & Scale

Step 1. Identify the Priority Behaviors

Audience segmentation provides great insight into how certain behaviors vary across a population and can be used to identify and prioritize groups for social and behavior change. To leverage audience segmentation, start by identifying the priority behaviors. For example, which nutrition-related behavior needs to be addressed in your local context? What is the desired behavior change that will result in improving nutrition outcomes?

Below are some examples of nutrition priorities. Use these as a starting point for brainstorming the desired social or behavior change for your segmentation.

- Consumption of the recommended number of food groups per day
- Providing recommended number of food groups per day to one's child
- Providing recommended quantity of food to one's child per day
- Seeking nutrition related advice from a health care worker

Step 2. Define the Target Population

Second, determine which population you want to encourage the desired behavior change within. Looking at DHS data, for example, we can determine which populations may be particularly vulnerable to issues related to nutrition. Examples of populations of interest to focus on nutrition behavior change include pregnant women, caregivers of children under 5, health providers, and more.

Step 3. Enlist Key Stakeholders

Next, identify the individuals who should be involved in the segmentation effort, including those who may be required to conduct research and the segmentation analyses. It is important that stakeholders are aligned to the objective of the audience segmentation identified in steps 1 and 2, as they will be closely involved at different points in the process.

It is important to include a mix of stakeholders in the process, ensuring that they have an equal voice in providing feedback and decision-making. Ensuring a diversity of voices in the decision-making process is vital to designing inclusive solutions as they have direct impacts on people's lives. The boxes below list functional groups and their potential roles. Consider the functions that already exist on your own team, then fill in the gaps.

- **Knowledge** – *People with knowledge* of national nutrition trends, data analysis, or primary data collection. Examples may include researchers, statisticians, or nutrition experts
- **Experience** – *People with experience* with in-country nutrition programs or in implementation and evaluation of interventions. Examples may include program implementers, staff from NGOs, or health personnel working directly with the population of interest

- **Influence** – *People with influence* over policy and quality improvement efforts for health facilities or at the health system level. Examples may include policy makers or Ministry of Health officials

Step 4. Develop Research Questions

It is now time to develop the research questions to guide your audience segmentation. With your team, particularly those knowledgeable about national nutrition trends, determine the main factors related to the priority behavior that you want to better understand. It is helpful to conduct a search for peer-reviewed published articles and papers written on behaviors, beliefs, and attitudes towards nutrition in your country to ensure your research questions are not duplicative and are driven by existing data of what is already known. Consider the following:

- Which factors influence the target population's practice of nutrition-related behaviors? (e.g. what beliefs might they have about the behavior? What are the social norms related to the behavior? How are decisions made with respect to this behavior? Who might be influencing the target population? Where and how are they receiving information regarding this behavior?)
- Among members of the target population, what are the characteristics of the individuals who are most likely to practice the priority nutrition-related behavior? What are the characteristics of the individuals who are least likely to practice the priority nutrition-related behavior?
- How can the factors that influence the target population's practice of the priority nutrition-related behavior be addressed through SBC interventions?
- What is the likelihood that a member of the target population will adopt the practice of the priority nutrition-related behavior? What factors influence this likelihood?

Step 5. Select a Dataset

To conduct an audience segmentation using quantitative techniques, a survey dataset is required. At a minimum, this dataset should have the following parameters:

- Come from a fairly recent survey, administered in the last 1-10 years, with a representative sample of the target population.
- Report data for each survey respondent individually, not in aggregate.
- Contain data on individuals in the specific population identified in step 2 (i.e., age, gender, occupation, etc.).
- Contain variables that can be used as proxies for the outcome variables identified in step 4.
- Contain data on the factors that influence the practice of the priority nutrition-related behavior among members of the target population.

Because segmentation is intended to describe segments and identify the drivers or influencers of behavior, your chosen dataset should also contain variables that are related to the outcome variables you identified in step 4. The list below contains examples of variables that your chosen dataset may include. Each type of variable has a different purpose for your audience segmentation dataset.

- **Demographic factors** – Characteristics of a population that would typically be collected in a census survey (e.g. age, gender, location, marital status, number of children, etc.).
- **Behavioral factors** – Observed or self-reported behaviors related to the priority health behavior (e.g. food consumption, or health seeking behaviors).
- **Attitudinal factors** – A way of thinking or feeling about someone or something, that is sometimes reflected in a person's behavior. These can include perception of social norms, beliefs regarding a particular topic, and perception of one's own personal agency over the behavior.

For nutrition, you may consider exploring the Demographic & Health Surveys (DHS) datasets to see if they would work for your audience segmentation.

TYPES OF VARIABLES THAT MAY BE PRESENT IN DATASETS

	USE CASE	EXAMPLE CHARACTERISTICS
Demographic	Best for simple segmentation or when combined with other variables as an additional descriptor.	Age, location, gender, religion, number of children, rural/urban, literacy/numeracy, socio-economic status, household income, level of education, employment status or type, health history/risk factors, marriage status, etc.
Behavioral	Helpful for determining group actions and behaviors. Best when combined with attitudinal variables.	Seeks information through specific channels, uses social media, goes to health center for illness or for preventive treatment, seeks care with traditional practitioners, involved in community activities, etc.
Attitudinal	Use when trying to understand rationale for behaviors. Best when combined with behavioral variables.	Trust in authority (government, health institutions, health care professionals) and perceived: access to resources, perception of social norms (e.g., believes others practice certain health behaviors or not), role of fate/divine will, etc.

Step 6. Define Segments

At this point, it is time to analyze the data and define the segments. Quantitative segmentation analysis occurs in a 4-step process, which is described in greater detail below. It may be helpful to partner with your national statistical institute or a research firm to conduct these analyses.

Step 1. Identify factors that are the main influencers or drivers of the research questions.

Run a Chi-squared correlation analysis to identify which variables show a strong correlation with your priority behavior. This can help to test some of the hypotheses developed in step 4 (for example, women who believe in Y are more likely to do Z) After running these analyses on all of the variables in your dataset, identify the variables which showed the strongest correlation with your priority behavior.

Step 2. Conduct a quantitative segmentation analysis and identify opportunities for positive behavior change.

Analyze the variables identified in the previous step using one of the standard statistical methods for segmentation, which include cluster analysis and latent class analysis. These techniques help identify commonalities and trends among groups based on the variables in the data and selected outcome variables. This analysis will produce different options of segments in your dataset.

Step 3. Review each segmentation model and determine the final model.

Review model results of the segments identified in your dataset. Use the Bayesian information Criterion (BiC) indicator, to determine which models are statistically significant, with a lower BiC indicating a better model. Additionally, try and aim for a model with three to six segments so that it will be practical to implement. Finally, consider other factors to choose the best model:

How do the outcome variables and drivers of the outcome variables differ between various groups? Are the segments different enough from each other with regards to these variables?

Does the model tell a strong story about different groups within the population and their attitudes, behaviors, and beliefs around nutrition?

Are there any datapoints which are confusing and need to be further clarified and better understood? If so, change the active variables in your segmentation and re-run the models until everything is clear and the segmentation is quantitatively robust and easily understood.

Step 4. Write a segment "persona" for each segment in the final model.

Once a viable segmentation has been chosen, write a "persona" for each segment that describes the key distinguishing characteristics of the segment identified in analysis. Choose a name for each segment as well. The descriptive personas should be brief and easily digestible for dissemination and feedback. It primarily describes the segment in terms of the outcome variables and/or drivers of outcome variables.

Step 7. Refine Your Segments

The segments identified through quantitative analysis can be further refined using qualitative data collection and by speaking directly with individuals from each segment to gather additional information about the factors that shape the behaviors most characteristic of their segment.

Segment Identification Questionnaire

First, use a segment identification questionnaire to determine how to categorize individuals in the target population into the different segments. This will enable you to recruit individuals to participate in interviews, focus groups, or workshops for their segment.

A segment identification questionnaire can be developed using a Chi-squared automatic interaction detector (CHAID) algorithm in the R Studio or SPSS programs. This algorithm considers each variable used in the segmentation analysis as well as the final determined segments and identifies the variables that were most influential in forming the segments. This set of statistically significant variables may be asked in a brief survey to members of the target population to determine which segment they belong to.

Complementary Qualitative Research

Finally, if possible conduct qualitative research with members of each segment to develop a more comprehensive understanding of their behavioral drivers. Note that this will likely require some level of ethics approval, such as submitting a protocol to a local IRB (International Review Board) if you plan on interviewing vulnerable populations, asking sensitive questions, and / or plan on publishing the findings at a later date. Using the segment identification tool, invite members of the target population to participate in segment-specific focus groups or one-on-one interviews about behaviors and attitudes surrounding the priority behavior. Consider partnering with a local research firm to recruit participants, facilitate the interviews or focus groups, and analyze the findings. Aim to have 5-15 research participants for each segment.

Now, let us put segmentation steps 1-7 into practice with a case study example in the next lesson.

Segmentation of pregnant and postpartum women in Mozambique

Case Study

In Mozambique, low rates of exclusive breastfeeding, limited vitamin intake, high rates of anemia among pregnant women and a predominantly starch-based diet have resulted in an estimated 1 in 2 children being nutritionally deficient (Lusambili, et al., 2020). Nearly a quarter of the population in Mozambique experiences food insecurity with agricultural production often in flux due to seasonality and various natural disasters. Seasonality is a large contributor to food shortages as the country goes through a 'dry season' where limited rainfall makes it difficult to produce crops at a rate that meets demand (World Food Programme, 2023).

Working alongside these systemic factors are various norms, beliefs, and practices that present barriers to achieving a diverse diet that offers the necessary vitamins and nutrients to keep mothers and children healthy.

Factors such as intergenerational food norms (beliefs or expectations on food preparation passed down by grandmothers and mothers-in law), societal taboos that dictate foods that should or should not be eaten during pregnancy or lactation, and gender dynamics that influence food allocation, health seeking, and task sharing all play a role in the dietary diversity of women and their children and affect their ability to obtain, prepare, and eat sufficient nutrient-rich foods in meals and snacks throughout the day (Lusambili et al., 2020). It is critical to understand and address the underlying factors driving decision-making around dietary diversity, both those within and outside of individual control.

This case study reviews a nutrition segmentation analysis that considered the factors driving dietary diversity among pregnant women and mothers to children under 2 in Mozambique. The insights presented in this session serve as the foundation for tailored interventions and recommendations that were developed for each segment presented in Session 3.

Sources

Lusambili, A., Naanyu, V., Manda, G., Mossman, L., Wisofschi, S., Pell, R., Jadavji, S., Obure, J., & Temmerman, M. (2020). Nutritional influences on the health of women and children in Cabo Delgado,

Mozambique: A qualitative study. *International Journal of Environmental Research and Public Health, 17*(17), 6205. https://doi.org/10.3390/ijerph17176205

World Food Programme. (2023, June 20). *Fill the nutrient gap*. https://www.wfp.org/publications/fill-nutrient-gap

Define and Understand the Problem

Step 1: Identify the priority behaviors

Given the above context, the priority nutritional behavior of **dietary diversity** was identified. Building from previous research conducted and USAID recommendations, dietary diversity was defined as the number of food groups eaten per day out of the following categories of food, with the priority outcome of interest being a minimum of 5 food groups per day:

1. Grains, white roots, tubers & plantains
2. Pulses
3. Nuts & seeds
4. Milk products
5. Meat, poultry & fish
6. Eggs
7. Dark green leafy veg.
8. Fruit & veg rich in Vitamin A
9. Other vegetables
10. Other fruits

Step 2: Identify the intended population

Given the context described in the previous section, and consultation with local stakeholders, the intended population for the segmentation analysis was **pregnant women and mothers to children under 2 years of age**.

Step 3: Enlist key stakeholders

For this segmentation effort, it was essential to engage key stakeholders in Mozambique including:

- Members of the USAID Mozambique Mission
- Members of the local Transform Nutrition project
- Members of the USAID Advancing Nutrition project
- Leaders of local NGOs (e.g. Feed the Change)

Step 4: Develop research questions

Based on a literature review and consultation with local stakeholders, several key research questions were developed, including those listed below.

Demographic factors • How many children do you have? • What is your marital status? • What is the highest level of education you have achieved?	**Social norms** • To what extent would you experience social consequences if you did not wait for your husband to eat?
Nutrition habits • What did you eat for breakfast yesterday? • What about after breakfast? • What did you eat for lunch? Anything else?	**Agency and household dynamics** • In your household, who makes the decisions about what food to buy? • What is the main barrier to accessing better food?
Knowledge and beliefs • What foods should a woman eat while pregnant? Why? • What messages have you heard about good nutrition while pregnant?	**Emotions and feelings** • How often do you feel lonely/isolated?

Figure 5. Thematic topics and examples of research questions, grouped into categories such as demographic factors, nutrition habits, knowledge and beliefs, social norms, agency and household dynamics, and emotions and feelings

Step 5: Select a dataset

In this example an existing dataset was not available, so primary research was conducted in Mozambique, first through a rapid test of a questionnaire and then a larger sample. The rapid testing was conducted among 100 pregnant women and mothers to children under two, using purposive sampling in four enumeration areas in Nampula.

Questions were then refined based on analysis of the smaller sample and a larger survey then launched with 300 women (pregnant or mothers of children under two) across 12 enumeration areas in Nampula, employing a randomized sampling approach to ensure the sample is as representative as possible.

Sample	Phase 1: Rapid test	Phase 2: Data collection
• Nampula • Pregnant women and mothers of children under 2	Initial questionnaire (~100 questions) administered to 100 respondents to identify early patterns and questions that had little variation in response. Following this analysis, the survey was revised • Purposive sampling • 4 enumeration areas • N=100	Updated questionnaire administered to a larger sample of 300 respondents to generate preliminary representative segmentation, identifying different groups of women with discrete dietary behaviors, beliefs, attitudes, and experiences of social norms. • Random sampling • 12 enumeration areas • N=300

Figure 6. Description of quantitative research

Step 6: Define segments

Across the entire sample, there were some commonalities in behaviors and beliefs, notably:

- Most women agreed that the ideal is to have three meals - breakfast, lunch, and dinner - not to feel hungry and to produce enough milk for the baby.
- All women seemed to understand that a diverse diet is preferable.
- Participants were unanimous on a good wife being a respectful woman, a woman who loves and respects her husband, and a woman who cares about family issues and takes proper care of the children.
- Almost all participants agreed they share food with neighbors and friends, and they expect the same when in need.

Distinguishing Factors

The latent cluster segmentation analysis revealed four segments applicable to postpartum and pregnant women across Mozambique. The segments differ significantly with regards to dietary diversity, as well as 5 key factors:

1. Feelings of social connectedness – Does she feel socially connected to members of her community?
2. Household decision-making – Is she an active participant in household decision-making?
3. Level of anxiety around food – How often does she feel anxious about food?
4. Barrier to consuming preferred foods – What is her main barrier to the food she wants?

5. Perceptions of social consequences – Does she perceive her actions in regards to nutrition and food have social consequences?

Meet the Segments

This section summarizes the key characteristics of each of the segment personas identified among postpartum and pregnant women in Mozambique.

LAID-BACK INDEPENDENT 19%	BUSY CONSCIENTIOUS 33%
ILLUSTRATIVE SUMMARY Confident, connected and autonomous women who can make better decisions regarding their dietary diversity	ILLUSTRATIVE SUMMARY Busy women who have some decision-making power about their diet but are juggling many things
SOCIAL CONNECTEDNESS Highly connected	SOCIAL CONNECTEDNESS Can feel isolated, meets people through her activities
HOUSEHOLD DECISION-MAKING Makes the decisions	HOUSEHOLD DECISION-MAKING Decides with husband
LEVEL OF ANXIETY AROUND FOOD Rarely	LEVEL OF ANXIETY AROUND FOOD Sometimes
BARRIER TO CONSUMING PREFERRED FOODS Distance	BARRIER TO CONSUMING PREFERRED FOODS Time
SOCIAL CONSEQUENCES Believes eating certain foods have social consequences, but still eats them	SOCIAL CONSEQUENCES Cares about social perceptions

SATISFIED TRADITIONALIST
14%

ILLUSTRATIVE SUMMARY
Have little decision-making power about what food they grow, buy or eat and do not recognize need for better dietary diversity

SOCIAL CONNECTEDNESS
Connected to her small community

HOUSEHOLD DECISION-MAKING
Low autonomy and would like to be more involved

LEVEL OF ANXIETY AROUND FOOD
Sometimes/Rarely

BARRIER TO CONSUMING PREFERRED FOODS
Agency

SOCIAL CONSEQUENCES
Perceives few social consequences

ISOLATED CRITIC
34%

ILLUSTRATIVE SUMMARY
Somewhat isolated women who lack access to diverse food and decision making about what they grow, buy, or eat

SOCIAL CONNECTEDNESS
Isolated

HOUSEHOLD DECISION-MAKING
Can decide with husband, others are also involved

LEVEL OF ANXIETY AROUND FOOD
Often

BARRIER TO CONSUMING PREFERRED FOODS
Distance

SOCIAL CONSEQUENCES
Doesn't care about social perceptions

Step 7: Refine segments

Additional qualitative research was conducted to further understand the nuances of the segments following the methodology described in the figure below. In total, 8 focus groups were conducted with 64 participants, lasting approximately 100 minutes per focus group discussion.

Topics discussed

- Local context and cultural norms (e.g., attitudes and beliefs over what is a good diet, what a pregnant woman should eat, priorities of a wife/mother).
- Important themes identified in quantitative analysis:
  - Social connectedness and activities undertaken with their community
  - Social norms (sharing food, community judgment)
  - Perceived barriers to dietary diversity
  - Anxiety/food insecurity
- Specific questions about their segment
  - Differentiating characteristics uncovered in the qualitative analysis were explored for each segment

Data analyzed

- 8 focus groups (2 focus groups per segment)
- 64 participants (16 women per segment)
- Participants from 6 communities (103 women identified per segment)
- Women eating a maximum of 5/10 food groups
- 100 minute sessions
- 2 locations (Rapale and Mogovolas districts of Nampula)
- Undertaken in local language Emakwa

Figure 7. Qualitative research methodology

This research helped uncover additional nuance regarding the main themes uncovered in the quantitative research, and how these differ by segment. For example, when examining social connection, the segments who reported more social connection in the quantitative survey (i.e., the Laid Back independents and Busy Conscientious segments) also discussed the importance of social connection during the qualitative focus groups. On the other hand, the Satisfied Traditionalist and Isolated Unaware segments described themselves as less social, and even expressed some judgment of other women who they consider to be overly social.

Representative Quotes

The following are quotes from the qualitative research, across the different segments regarding social connection. For more details on the research, download the final report.

From high decision-making power to Lower decision-making power:

Laid-back Independent

- "When you are not friendly or don't join other people, you get no idea to share with others."

Busy Conscientious

- "I belong to those who play much when I have time."

Satisfied Traditionalist

- "If you don't have family nearby, you must look for a family in the same community you live in, that becomes your family."
- "We consider ourselves less social."

Isolated Critic

- "Sociable women […] leave their houses and go out to chat, drink, stay with others […] or can't stay at home. […] You can easily notice that there is something wrong with them."

After the segments have been refined and finalized, it is important to use a tool to identify segments in a given population. This is accomplished by identifying the most important questions to distinguish each segment (either through a qualitative assessment or advanced statistical analysis) and creating a simple and concise questionnaire to identify the segments with a high level of accuracy. For example, below you will find the segment identification tool that was developed based upon the dataset (N=300) of women in Nampula, which was further refined based upon the qualitative analysis.

Script for researcher or programmer:

"Today, I will ask you a series of questions to help me understand the attitudes, behaviors and beliefs around nutrition of women during pregnancy and after they give birth. After I ask each question, I will state the answer choices. Choose the answer that best matches your experience and perception. I make no assumptions or judgments and want to hear from you on the following matters. There is no right or wrong answer."

SEGMENT IDENTIFICATION TOOL QUESTIONNAIRE				
QUESTION	**SCORECARD**			
Q1. When a woman is pregnant, what foods should she try to eat if she wants to stay healthy? **(Record first answer they give)** ● Corn, wheat or starch [Proceed to Q2] ● Fruits (not rich in Vitamin A) [Proceed to Q2] ● Fruits rich in Vitamin A [Circle LI and proceed to Q3] ● Meat (including organ meat) [Circle LI and proceed to Q3] ● Local insects/animals [Circle BC and proceed to Q5] ● Eggs [Circle BC and proceed to Q5] ● Vegetables, dark green leaves or white roots [Ask "What else?", and record new answer] ● Other [Circle BC and proceed to Q5]	LI	BC	ST	IC
Q2. Most of the time, who decides what to eat every day? (if "Other", choose who would be likely to make the decision between these 4) ● My husband/partner [Circle ST and proceed to Q6] ● Me [Circle IC and proceed to Q7] ● Me and my husband/partner [Circle IC and proceed to Q7] ● My mother/my mother-in-law [Circle IC and proceed to Q7]	LI	BC	ST	IC
Q3. Would you regularly eat more while pregnant? ● I already regularly eat more when I am pregnant [Circle LI and proceed to Q5] ● I would do it more if there were no social consequences [End interview] ● No, I would not do that [End interview]	LI	BC	ST	IC
Q4. Do you regularly (at least once a week) participate in activities with people outside your household for entertainment or fun (watching soap operas together, playing, chatting where they sell alcohol, dancing)?	LI	BC	ST	IC

• Yes [Circle LI and proceed to Q5] • No (I spend most of my time with my husband/children) [Proceed to Q5]				
Q5. Besides cost, what prevents you from eating the foods you want to eat? • I am too busy/do not have time [Circle BC and end interview] • Other reason (for example: not available close to me) [End interview]	LI	BC	ST	IC
Q6. Most of the time, who in your household makes decisions on what you should eat while you're pregnant or nursing? • My husband/partner [Circle LI and end interview] • Me [End interview] • Me and my husband/partner [End interview] • My mother/my mother-in-law [Circle ST and end interview] • Someone else [Circle ST and end interview]	LI	BC	ST	IC
Q7. In the past two weeks, how many times did you feel isolated or alone (lonely)? • Never [End interview] • Sometimes (1-7 days) [End interview] • Often (8-11 days) [Circle IC and end interview] • Every of almost every day [Circle IC and end interview] •	LI	BC	ST	IC
Tally up the number of times each letter was circled. The letter with the highest number is the client's segment.	LI	BC	ST	IC
Segment Codes: • LI: Laid-back Independents • BC: Busy Conscientious • ST: Satisfied Traditionalists • IC: Isolated Critics				

Using this tool allows SBC programmers, providers, or other stakeholders to identify client segments by asking a limited set of questions, with a high level of accuracy. Download the technical brief, *Segmenting Nutritional Behaviors*, for a printable version of the segment identification tool questionnaire

In the next and final session, we will continue with this case example and discuss programmatic implications.

Key Takeaways

- ✓ It is vital to start any segmentation process by identifying the nutrition-related priority behavior and clarifying the population of interest.
- ✓ A segmentation process is best conducted by a team with diverse skills, experiences, and connections to the target population.
- ✓ Review existing research on the intended population to gain a better understanding of what patterns and trends exist in the group, and what reasonable segments may look like. This background research will help inform the rest of the segmentation process, including developing research questions, determining the most viable segmentation model, and even brainstorming potential solutions.
- ✓ While quantitative analysis helps uncover precise insights from existing data, qualitative research is beneficial for supplementing segment personas with a nuanced understanding of social and behavioral drivers.
- ✓ A segment identification tool is created based on the key factors that differentiate the segments, to allow for a simple and effective way to identify which segment a person belongs to.

Check Your Understanding

Thank you for completing the second session of *Audience Segmentation for Nutrition*. Next is an ungraded quiz to test your understanding of Session 2.

1. What is the purpose of a segment identification tool?
    a. To have a good conversation with a member of the intended population
    b. To collect data for a completely new segmentation analysis
    c. To determine which segment an individual belongs to, in order to tailor the approaches and messages that most meet their needs
    d. It doesn't matter whether or not the segment identification questionnaire is used

    Answer: C

    Feedback: Without the segment identification questionnaire, it is difficult to deliver the right intervention to the right group of people. Interventions based on a segmentation analysis should have a method for identifying the different segments.

2. Once a quantitative dataset is available, what first step should be conducted to identify factors influencing the research outcome variables?
    a. A latent-class analysis
    b. A Chi2 correlation analysis
    c. A qualitative focus groups discussion
    d. None of the above

    Answer: B

    Feedback: Running a Chi2 correlation analysis helps to identify which factors showed a strong correlation with the priority behavior.

Session 3: Steps 8-11

The purpose of this session is to discuss the development of tailored interventions, using the example of the segments introduced in Session 2. This session highlights opportunities to adapt these interventions for local country contexts.

Learning Objectives

- Understand when and how to adapt existing interventions and segmentation analyses for local contexts.
- Describe SBC interventions developed from the audience segmentation of pregnant and post-partum women in Mozambique discussed in Session 2.

Developing Tailored Interventions

Guidance on Using Segmentation

In Session 2, we went over steps 1-7 in creating a segmentation:

1. Identify the priority behaviors
2. Define the target population
3. Enlist key stakeholders
4. Develop research questions
5. Select a dataset
6. Define segments
7. Refine your segments

Now we will cover the remaining steps 8-11.

Step 8. Develop Intervention Elements

With the research completed, it is time to brainstorm ideas and approaches which can inform the design of SBC programmatic solutions or interventions. It is vital to collaborate with a variety of stakeholders during solution development. Those stakeholders might include:

- Members of each segment or individuals that interact closely with them who are experts in their local contexts and are best placed to design approaches that are relevant and engaging. Utilizing principles of human-centered design when developing solutions increases the likelihood that interventions are effective, because the interventions are generated by the audience themselves.

- In-country leadership from any national nutrition program who are aware of existing programs and policies that may help facilitate uptake of proposed interventions or that must be considered when developing interventions. Their leadership in the process helps identify areas to pilot, and if promising, to scale the solution(s).

Using insights gained from quantitative and/or qualitative research as a starting point, invite representatives from the following groups to come together for a workshop and generate a broad array of ideas for possible solutions and intervention opportunities for each segment. Importantly, don't forget that there may be existing programming which could benefit from integrating a segmented approach. During the workshop, make sure to refine the expansive set of ideas generated into a smaller subset of promising ideas for further development. To refine the ideas, prioritize impact, feasibility, and scalability.

Step 8 in Action – Mozambique Case Study

A workshop was held in Maputo, Mozambique with key nutrition stakeholders. During the workshop, extensive feedback was discussed related to the segments and programmatic implications were brainstormed.

Importantly, the segments of women were recognized as relevant for the local context. Specifically, stakeholders recognized each segment with regards to how they might interact with them in nutrition SBC programming:

- **Laid-back Independents** are believed to be active in their communities with lots of friends, and may already be leading nutrition and savings groups
- **Busy-Conscientious** women are likely mothers with a full, organized schedule
- **Satisfied Traditionalists** were recognized as women who come to health centres for other services, but their husband speaks for them
- **Isolated Critics** were considered more difficult to reach, and perceived as following the lead of their elder family members

Many potential SBC programmatic implications and ideas were brainstormed, summarized in the table below. For example, the segment with the highest level of dietary diversity (the Laid-Back Independents) could be engaged to encourage their peers to improve their dietary diversity. For the Busy Conscientious segment, messages regarding possible dietary options could highlight the convenience and limited time investment to help them overcome their main barrier to eating more diverse foods. For the Satisfied Traditionalists, their partners should be engaged as well to help address issues of limited agency, and for the Isolated Critic it will likely be necessary to address access issues first as this may be driving their higher levels of anxiety around food, before moving on to addressing other perceived barriers.

Figure 8. Ideas for programmatic implications brainstormed during the local workshop in Maputo

For more detailed information, please refer to the project's final report. The next step in this case study example is to pilot some of the solutions that were brainstormed during the workshop.

Step 9. Pilot Solution

Determine how the intervention will be tested. If needed, translate the intervention into local language(s) to ensure accessibility to all members of the population. Additionally, collaborate with stakeholders to agree on which parties will support each aspect of implementation.

Then, proceed with the following:

- Define a training and supervision process to introduce the intervention. During the pilot phase, training and supervision is needed to ensure that the segmentation and intervention is well-explained and smoothly integrated by implementing parties.
- Pilot the intervention for 3-6 months. This will enable users of the intervention to become accustomed to it and provide useful feedback that may eventually be used for scaling up.

Step 10. Evaluate & Refine

It is critical to assess whether the intervention is contributing to the intermediate and long-term nutrition-related outcomes. Construct an evaluation framework to describe whether results are being achieved, and for which individuals or segments within the population of interest. Utilize insights from the evaluation to improve aspects of the intervention.

Step 11. Adapt & Scale

Finally, if evaluation data of the pilot suggest that the intervention has been effective, consider scaling the intervention for use in additional geographic areas, or with new audiences within the same geographic area. When scaling, consider ways to adapt the intervention so that it remains effective and sustainable.

Now, in the next lesson let us learn how to adapt the tools for your local context.

Guidance for Adaptation of Tools

The case study that we have described is based upon data and discussions from Mozambique, but there are ways to adapt segmentations to be used more widely across different geographies. Before implementing either of these sets of interventions and tools, consider how well they might apply to your local context.

First, there must be interest in implementing interventions on the part of the Ministry of Health counterparts working in nutrition. Then, the existing segmentation should be reviewed in detail with local nutrition stakeholders to determine if the segmentation seems relevant for the local context. This step assesses if the factors influencing segment behaviors resonate with nutrition stakeholders. If many or all of the characteristics of the segmentation are applicable and there is a desire to see if additional country-specific factors arise, then qualitative research may be helpful. For example, conducting focus

groups or individual interviews, utilizing the segment identification tool as a screener. After the segmentation has been sufficiently adapted, locally relevant recommendations can be developed and implemented.

Note that if very few of the segments resonate with local stakeholders, it might be necessary to conduct an entirely new segmentation (following the steps outlined in session 2 and 3 of this course).

Please see the description below for more detailed instructions.

Step 1. Bring together nutrition stakeholders

Identify and bring together nutrition stakeholders to discuss how this segmentation applies to the local context and determine interest in piloting an intervention.

Description

To assess the relevance of these segments in your country, share the chosen segmentation with the following entities to gather their inputs based on their experience in the country.

- Ministry of health officials
- Nutrition professionals and health care providers
- Local Implementing partners

This step assesses if the factors influencing segment behaviors resonate with teams working on nutrition in the country.

Step 2. Explore country-specific nuances through qualitative research

If possible, explore country-specific nuances through qualitative research.

- Use the segment identification tool as a screener to identify individuals from the population for focus groups and in-depth interviews across each segment.
- Analyze the outputs of the focus groups and identify common themes between the segmentation and any country-specific factors.
- Adjust the segment personas and intervention recommendations to better reflect the local research findings.

Description

Conducting qualitative research is an important step before using the segmentation to confirm the factors influencing each segment behavior and uncover any country-specific factors.

- Check if obtaining ethics approval for the research will be required.
- Develop discussion guides for the research, including the topics that may be different in the local context.

- Recruit individuals across each segment using the segment identification tool as a screener.
- Conduct dedicated focus groups or individual interviews and use the discussion guides to test if the factors driving the segment's behavior are similar in the local context and explore if other factors exist.
- Update each segment persona and reflect these nuanced factors in the segment recommendations.

Step 3. Roll out

Once a locally relevant intervention has been designed based on the discussions and qualitative research, it should be rolled out within Health Facilities, Communities, or Training Centers, depending on the intervention selected.

Description

Once the segmentation and intervention design has been updated to reflect the local context, the intervention can be rolled out using the following steps:

- If needed, translate the tools into the local language(s) for each geography to ensure it is accessible.
- From there, pretest the intervention with 6-10 individuals of the community of interest (e.g., clients or providers) to collect feedback and identify gaps.
- Following the pretest, pilot the intervention for 3-6 months.
- Before launching the pilot, it is critical to define a monitoring and evaluation framework and a training process to introduce the tools. The intervention should ideally be embedded in existing processes. During the pilot phase, supervision is needed to assess the intervention through frequent feedback and discussion.
- If successful, consider scaling the tool for use in additional locations in the larger geographic zone based on the results of the pilot.

Key Takeaways

✓ It is important to collaborate with a diverse team of stakeholders to develop SBC solutions that are engaging, relevant, and impactful.

✓ When piloting the intervention, make sure to assign roles and responsibilities for the intervention to the appropriate parties. It is critical to include training, monitoring, and evaluation strategies that ensure a smooth implementation of the pilot, enable an understanding of how to refine and improve the tool, and assess the effectiveness of the intervention for potential scale-up.

✓ It is vital to adapt the interventions for use in local contexts. To do so, review the segmentation analyses and tools with local stakeholders and involve the target population in determining what additional contextual findings can be added to the segmentation analyses and interventions presented here.

Check Your Understanding

Thank you for completing the third and final session of *Audience Segmentation for Nutrition*. Next is an ungraded quiz to test your understanding of Session 3.

1. What are some methods or approaches that can be used to generate ideas for SBC programming based on segmentation? (Select all that apply)

a. Workshop with local stakeholders, including experts and policy makers
b. Additional quantitative research conducted in another country
c. Considering existing programming and the extent to which a segmented approach could be incorporated
d. A human centered design approach involving members of the target audience

e. Answer: A, C & D

Feedback: Workshops, human centered design, and building from existing programming are great approaches for developing ideas to use segmentation results.

2. Why is it important to ensure the segments and corresponding interventions are relevant to or adapted for the local context? (Select all that apply)

a. Each local context has unique factors that can add a more nuanced understanding to the segment profile.
b. This is not necessary. These segments and interventions can be used for any population of pregnant women or health providers without further adaptation.
c. The segments may have been developed based upon data from a different country and context.
d. Prior to investing time and resources into implementing the intervention, it is important to check that the approach is relevant for the local context.

Answer: A, C & D

Feedback: It is highly beneficial to ensure the chosen segmentation works well for the local context. Taking the time to do this upfront will aid in a smooth, effective, and well-informed application of the intervention.