Quantitative Research Manual Series

GAGE ETHIOPIA
BASELINE QUANTITATIVE RESEARCH DESIGN AND SAMPLE

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We note that some material included in this manual was drawn from the GAGE Baseline Report Series (Jones et al., 2019).

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1 Introduction

1.1 Gender and Adolescence: Global Evidence

Adolescence is a time of rapid physical, mental, and social change as individuals transition through puberty and into early adulthood. In scope and speed, these transformations are considered second only to those experienced in infancy and early childhood (Bundy et al., 2017).

Research focused on poverty alleviation and wellbeing improvements to date has largely focused on interventions to improve the outcomes of infants and young children, or the outcomes of adults, while comparatively little work has focused on adolescents (individuals aged 10-19). Yet, as a 'critical period' of development, adolescence is also a key window of opportunity for intervention (Bundy et al., 2017; Sheehan et al., 2017; Steinberg, 2015; UNFPA, 2014). Moreover, at 1.2 billion, the global adolescent population accounts for 16% of the world's population, and much higher proportions in the Global South – especially in sub-Saharan Africa (23%), South Asia (19%), and the Middle East and North Africa (18%) (UNICEF 2016).

Gender and Adolescence: Global Evidence (GAGE) is a nine-year (2015-2024) research programme, funded by UK Aid from the UK Department for International Development (DFID), that seeks to combine longitudinal data collection and a mixed-methods approach to fill this information gap in sub-Saharan Africa, South Asia, and the Middle East and North Africa. In particular, GAGE seeks to understand the lives of adolescents in these particularly marginalized regions of the Global South, and to uncover 'what works' to support the development of their capabilities over the course of the second decade of life, when many of these individuals will go through key transitions such as finishing their education, starting to work, getting married and starting to have children.

GAGE's starting point is that adolescent transitions shape girls' and boys' lives, but often in highly gendered ways, due to the prevailing norms in their socio-cultural environments. These norms – especially around sexuality – start to become more rigidly enforced and more consequential in early adolescence, forcing girls' and boys' trajectories to diverge as they approach adulthood. To fast-track social change, understanding and tailoring programme interventions that are informed by this divergence is key.

GAGE's conceptual framework takes a holistic approach that pays careful attention to the interconnectedness of what we call 'the 3 Cs' – capabilities, change strategies and contexts – in order to understand what works to support adolescent girls' and boys' development and empowerment, now and in the future (see Figure 1). This framing draws on the three components of Pawson and Tilley's (1997) approach to evaluation, which highlight the importance of outcomes, causal mechanisms and contexts – but we tailor it to the specific challenges of understanding what works in improving adolescent girls' and boys' capabilities.

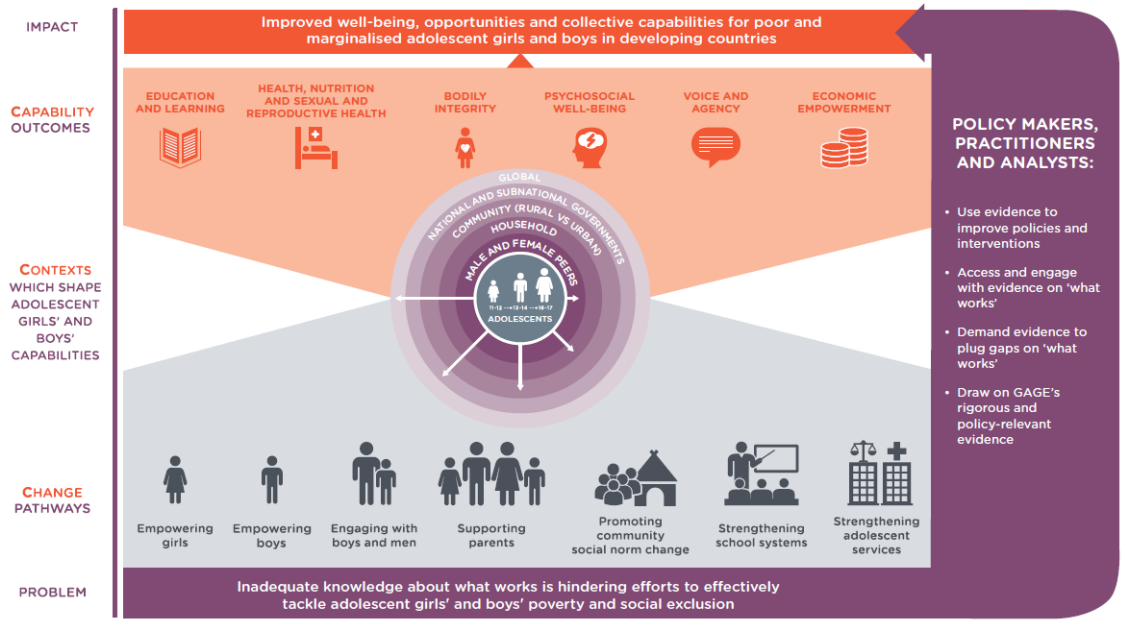
The first building block of GAGE's conceptual framework are capability outcomes. Championed originally by Amartya Sen (1984; 2004), and nuanced to better capture complex gender dynamics at intra-household and societal levels by Martha Nussbaum (2011) and Naila Kabeer (2003), the capabilities approach has evolved as a broad normative framework exploring the kinds of assets (economic, human, political, emotional and social) that expand the capacity of individuals to achieve valued ways of 'doing and being'. Importantly, the approach can encompass relevant investments in girls and boys with diverse trajectories, including the most marginalised and 'hardest to reach' such as those who are disabled or are already mothers.

The second building block of GAGE's conceptual framework is context dependency. The 3 Cs framework situates girls and boys ecologically, and that their capability outcomes are highly dependent on family or household, community, state and global contexts.

The third and final building block of GAGE's conceptual framework acknowledges that girls' and boys' contextual realities can be mediated by a range of change strategies including: empowering individual adolescents, supporting parents, engaging with men and boys,

sensitizing community leader, enhancing adolescent-responsive services and addressing system level deficits.

Figure 1: GAGE conceptual framework



GAGE Consortium (2019).

Stemming from this conceptual framework, there are three sets of questions that are central to GAGE's research. They focus on: (1) adolescent experiences and the ways in which these are gendered and also differ according to adolescents' economic, social and geographical positioning; (2) the ways in which programmes and services address adolescent vulnerabilities and support the development of their full capabilities; and (3) the strengths and weaknesses of programme design and implementation in terms of ensuring programme efficacy, scale and sustainability. GAGE baseline research focuses primarily on the first two questions, while the third question will be explored in more detail in later years of the programme. The extent to and manner in which these questions will be answered across GAGE countries will vary. This document will focus on the GAGE Ethiopia baseline research.

1.2 GAGE Ethiopia

Ethiopia has one of the youngest populations in the world, with over half of its citizens under 20 years of age. Over the past two decades, it has made remarkable progress in increasing school enrolment rates for girls and boys, in expanding young people's access to health and sexual and reproductive health (SRH) services, and in making some inroads into tackling conservative gender norms that perpetuate harmful practices such as child marriage and female genital mutilation/cutting (FGM/C) (Jones et al., 2017; CSA and ICF, 2017). Rapid economic growth has also led to a fall in poverty rates. But despite this, according to recent World Bank data, Ethiopia is one of five countries accounting for the world's largest absolute numbers of people living in poverty, with nearly one-quarter of all citizens living below the poverty line (UNDP Ethiopia, 2018; Katayama, 2019). It also has very high youth un- and underemployment rates (CBMSIN, 2018).

To explore the three core GAGE research questions in Ethiopia, the programme is working in urban and rural areas, employing a mixed-methods research approach with a sample of nearly 7,000 adolescent girls and boys in two separate cohorts (younger adolescents aged 10–12 years and older adolescents age 15–17 years at the time of baseline data collection), as well as their caregivers and communities. The research sample, composed of both randomly sampled and

purposely selected adolescents and their families, was recruited during 2017 and 2018. More details on research site and sample selection can be found in this document.

GAGE research will include both longitudinal analysis to understand the evolution of adolescents' lives and capabilities, as well as an impact evaluation studying programming funded by the Bill & Melinda Gates Foundation and delivered by GAGE consortium implementing partners Pathfinder and Care Ethiopia, to adolescents in rural research sites. More details on the impact evaluation will be provided at the release of the Round 2 data. Research is expected to continue in Ethiopia until at least 2024.

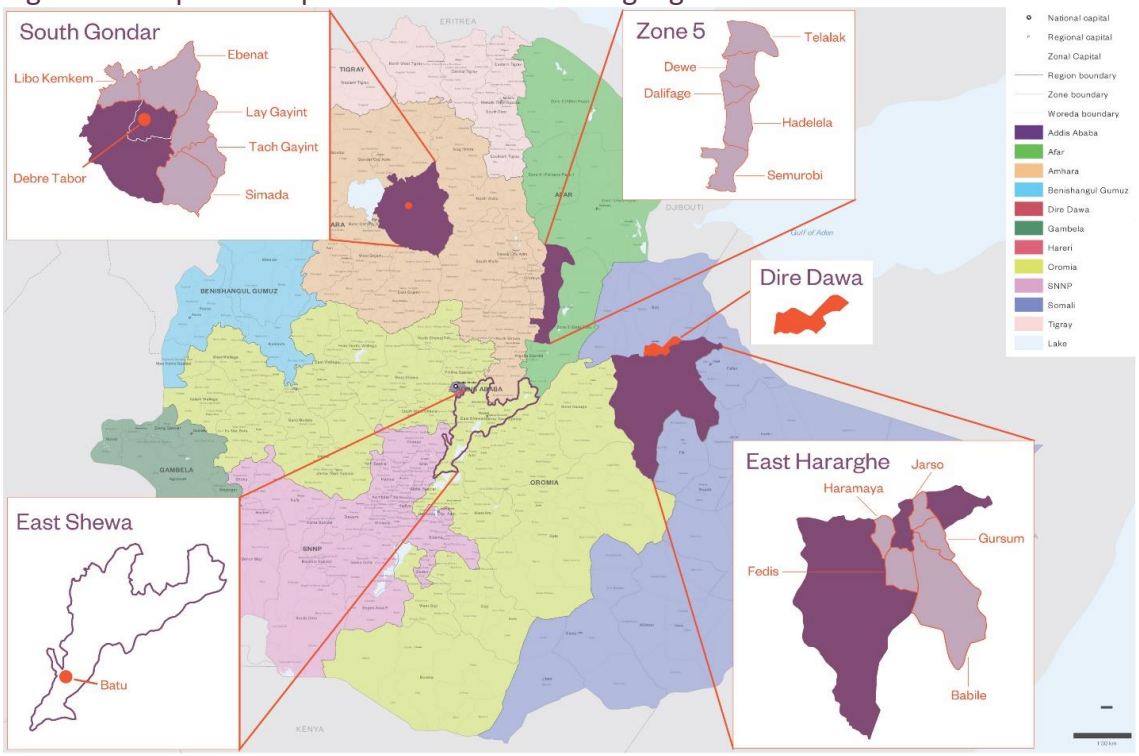
1.3 Background to this document

The GAGE Quantitative Research Manual Series introduces the GAGE quantitative research programme in each GAGE country, provides details on how the GAGE sample was chosen and how data collection proceeded, and describes the quantitative data available for prospective data users. The current document describes the GAGE research programme in Ethiopia, including detailed information on the selection of research sites and the research sample. Companion manuals for Ethiopia will describe each individual data collection round and provide detailed notes for usage of data from each round (see Hicks et al., 2019a and 2019b for the GAGE Ethiopia Baseline data collection round).

2 GAGE Ethiopia research sites

The GAGE Ethiopia research sample involves adolescents from rural and urban communities from three regions: Afar, Amhara and Oromia, as well as adolescents from Dire Dawa city administration (see Figure 2 for a map of the research sites).

Figure 2: Map of Ethiopia with research sites highlighted



Source: Based on the OCHA/ReliefWeb administrative map of Ethiopia (August 2017) and modified to show the GAGE research sites.

Amhara and Oromia were selected as regions of interest in part because they are both heavily populated, and regions where child marriage is common for girls. Oromia is the most populous region in Ethiopia with a population of approximately 38.3 million and, according to the Ethiopian DHS 2016, a median age of first marriage of 17.4 years (among women aged 20-24 years). Amhara is the second most populous region in Ethiopia with a population of approximately 28.8 million (assuming 2018 national population of 107 million), and according to the Ethiopian DHS 2016 a median age of first marriage of 16.2 years (among women aged 20-24 years). Afar was selected as a region of interest because of its marginalized status and the pastoral lifestyle of its inhabitants, which presents unique challenges for adolescents as well as for their support and service access.

2.1 Rural research sites

The rural sites for GAGE research within each of these regions were selected on the basis of two key but complementary considerations: (1) a review of existing data and evidence on adolescents and gender in Ethiopia, which highlighted the importance of understanding both the economic and social drivers that underpin disadvantage (Stavropoulou and Gupta-Archer, 2017a; Jones et al., 2017; Stavropoulou and Gupta-Archer, 2017b); and (2) programming capacity (including operational presence and experience, and an absence of security concerns) on the part of the NGO implementing partners, Pathfinder (in Amhara) and Care Ethiopia (in

Oromia and Afar).[1] In terms of the first consideration around vulnerability criteria, GAGE selected geographical areas with high rates of child marriage (as a proxy for conservative gender norms) and those with the greatest proportion of 'hotspot' child marriage districts (see Jones et al., 2016), as well as those that were economically disadvantaged and/or food insecure.

In particular, three zones were selected for study inclusion (one from each region) on the basis of food insecurity status and high rates of child marriage (especially among the 10-14 age bracket), as a proxy of conservative gender norms and relatively less programming on child marriage. South Gondar Zone (Amhara) has one of the highest rates of child marriage in the region, and has had relatively less child marriage programming compared to other zones in the region (e.g. compared to Gojjam, which was the focus of both Population Council's Berhane Hewan program and DFID and the Ministry of Women, Children and Youth (MOWCY)'s Finote Hiwote End Child Marriage program). East Hararghe Zone (Oromia) was selected because a number of districts in the zone were identified as 'hotspot' *woredas* (districts) with exceptionally high child marriage rates, and the zone itself had the highest rates of child marriage for 10-14 year olds and 15-17 year olds in the Government of Ethiopia Alliance to End Child Marriage Assessment carried out by ODI in conjunction with MOWCY and UNICEF in 2015. Zone 5 (Afar) was selected in order to understand the specific vulnerabilities of adolescents living in sedentary and nomadic pastoralist communities and the fact that in Afar Zone 5 is remote from the regional capital Semara and with limited services and alternative livelihood options.

Five woredas were purposely selected within each zone on this same basis, alongside operational presence of the planned programming implementors; these include Ebenat, Lay Gayint, Libo Kemkem, Simada, and Tach Gayint in South Gondar Zone; Babile, Fedis, Gursum, Haramaya, and Jarso in East Hararghe Zone; and Dalifage, Dewe, Hadelela, Semurobi, and Telalak in Zone 5 (Afar) (Table 1).

Table 1: GAGE Ethiopia research sites by economic and social vulnerability criteria

Regional State	Zone	Urban sites 10-12 year old cohort 15-17 year old cohort	Rural districts (woredas) 10-12 year old cohort	Food security hotspot ranking[4] (July 2016)	Child marriage for girls 10-14[5]	CM for girls 15-17[6]
Afar	Zone 5				4.3%	6.3%
			Dalifage	1	7.9%	7.7%
			Dewe	1	2.3%	4%
			Hadelela	1	3.6%	5.5%
			Semurobi		**6.7%**	**10.4%**
			Telalak	1	1.9%	5.2%
Amhara	South Gondar				9.8%	29.4%
			Ebenat	**1**	**12.7%**	**36.9%**
			Lay Gayint	1	7.1%	25.4%
			Libo Kemkem	n/a	10.3%	32%
			Simada	1	11.6%	33.8%
			Tach Gayint	1	7.1%	25.3%
		Debre Tabor		n/a	8.9%	8.7%
Dire Dawa City Administration		**Dire Dawa**		1	12.6%	14.8%
Oromia	East Hararghe				15.2%	32.3%
			Babile	1	18.7%	41.7%
			Fedis	1	21.9%	53.1%
			Gursum	1	15.1%	28.3%
			Haramaya	1	21.6%	38.3%
			Jarso	1	15.1%	23.3%
	East Shewa	**Batu**	Adami Tulu Jido Kombulcha	1	10.3%	14.7%

Notes: **Bold text** indicates sites where qualitative research was carried out in addition to the quantitative research. [4]In total, 434 woredas were graded across multiple domains and then collapsed into a ranking 1–3 in terms of food (in)security – 1 being highest level of food insecurity (https://data.world/ocha-ethiopia/76029294-3cbc-4bd0-8786-adcdb6475886). [5]As reported by the 2007 census. [6]As reported by the 2007 census.

[1] Here we took into account pragmatic considerations from an impact evaluation perspective, whereby final site selection at zonal and district levels factored in where the non-governmental organisation (NGO) implementing partners have operational experience and presence in order to be able to implement an integrated adolescent package known as *Act with Her*, funded by the Bill & Melinda Gates Foundation.

Within these 15 woredas, all *kebeles* (subdistricts) were characterized into three groups: (i) unsafe for data collection and programming, (ii) marginalized (lack of programming, isolated from key services and road/transport infrastructure) and (iii) less-marginalized (in terms of access to services and to the main woreda town). Kebeles identified by local officials as characterized by high security concerns were excluded from consideration for study inclusion. Among the remaining eligible kebeles, sixteen kebeles (6 marginalized, 10 less-marginalized) in each woreda in South Gondar and East Hararghe, and four kebeles (2 marginalized, 2 less-marginalized) in each woreda in Zone 5 (Afar), were randomly selected (using Microsoft Excel) to be included in the study.[2] At the time of baseline data collection, due to security issues in fourteen kebeles that made data collection impossible, replacement kebeles were used.[3]

In summary, the rural portion of the GAGE research programme is operating in five woredas (districts) in each rural region, including 75 kebeles (subdistricts) in South Gondar (Amhara Region), 80 in East Hararghe (Oromia Region) and 20 in Zone 5 (Afar Region). Thus, the study includes a total of 175 rural kebeles (68 marginalized, 107 less-marginalized) in fifteen woredas.

2.2 Urban research sites

The urban sites for quantitative data collection were selected to contribute to ongoing debates about urbanicity (Hannigan and Richards, 2017; Chant et al., 2017). Batu is a district town, Debre Tabor a zonal town, and Dire Dawa its own city administration and one of the largest cities in the country. Consideration was given to urban sites that were in proximity to the rural sites – in the case of Debre Tabor (South Gondar zone) and Dire Dawa (which is geographically close to East Hararghe) – to better allow for urban–rural comparisons. In addition, GAGE wanted to be able to understand adolescent transitions from education into work, and therefore Batu (with its significant floriculture industry and role as a migration hub for young people, particularly from the south of Ethiopia) and Dire Dawa (as a corridor to migration to the Middle East and with its emerging industrial park) both provide windows into new forms of employment. They can also reveal the extent to which young people are able to benefit (or not) from these new economic opportunities.

Due to the different administrative structure and geographies in urban sites, site selection there was done in a similar, but slightly different, way to the rural areas.

In Dire Dawa, the nine kebeles were divided into groups of most-, middling-, and least-marginalized status. Five kebeles were chosen for research inclusion (one highly marginalized, 3 middling, and one less-marginalized). Within each chosen kebele, four *menders* (neighbourhoods) were randomly selected (using Microsoft Excel) to be included in the study – for a total of 20 menders in Dire Dawa.

Similarly, in Debre Tabor, the six kebeles were divided into groups of most-, middling-, and least-marginalized status. Five kebeles were chosen for research inclusion (one highly marginalized, 3 middling, and one less-marginalized). Within each chosen kebele, four *ketenas* (neighbourhoods) were randomly selected (using Microsoft Excel) to be included in the study – for a total of 20 ketena in Debre Tabor.

Finally, in Batu, all four kebeles were included in the research sample (two highly marginalized, one middling, and one less-marginalized). Within each kebele, 6-7 ketenas were randomly selected (using Microsoft Excel) to be included in the study (with the exception of one kebele in Batu, where all 3 ketena were included in the study) – for a total of 22 ketena in Batu.

[2] There are two exceptions to this. In two woredas (Fadis and Ebenat), there were only 5 marginalized kebeles, so 11 less-marginalized kebeles were selected. Tach Gayint woreda (South Gondar), did not have enough eligible kebeles, and so only 11 kebeles were chosen for study inclusion in this woreda (6 marginalized, 5 less-marginalized).
[3] This included two kebeles in Ebenat, four in Libo Kemkem, one in Simada, three in Babile, and four in Gursum.

3 GAGE Ethiopia research sample

The GAGE Ethiopia baseline quantitative research sample includes 6,985 adolescent girls and boys, along with their caregivers and communities, in rural and urban areas. The sample includes two age cohorts: a younger cohort of individuals aged 10–12 years at the time of baseline data collection launch (in urban and rural areas), and an older cohort of individuals aged 15–17 years at the time of baseline launch (in urban areas only).

Sample recruitment, as well as baseline quantitative data collection, was conducted during 2017-2018. Recruitment is described in more detail below, separately for the urban, rural, and rural-pastoralist sites, as well as for the quantitative random sample and other samples of interest.[4] Table 2 provides a summary of the GAGE quantitative research sample as of mid-2019.[5]

Table 2: GAGE Ethiopia quantitative research sample

	Full Sample	Quantitative Random Sample	Qualitative Nodal Adolescents	Adolescents with Disabilities	Early Marriage Adolescents
South Gondar	2,038	1,932	81	105	45
East Hararghe	2,157	2,068	70	92	36
Zone 5 (Afar)	547	518	38	19	11
Debre Tabor	857	825	34	49	7
Adami Tulu	475	471	19	19	6
Dire Dawa	876	833	41	43	11
Totals	**6,985**	**6,647**	**283**	**327**	**116**

Notes: Note that a subset of the qualitative nodal adolescents, the adolescents with disabilities, and the early marriage adolescents are also part of the quantitative random sample. Thus, due to this overlap, the last four columns will not sum to the first column.

3.1 Quantitative random sample

The age composition of the GAGE quantitative random sample varies across research sites. In Dire Dawa and Debre Tabor, adolescents aged 10-12 and 15-17 were included in the research, whereas due to budget and research question interests, the sample in Adami Tulu includes individuals aged 15-17 only. All rural areas (South Gondar in Amhara Region, East Hararghe in Oromia Region, and Zone 5 in Afar) focused on a sample of 10-12 year olds only.

3.1.1 Household census

Across all GAGE research sites, adolescents eligible to be included in the quantitative random sample were identified through a household census (listing). The listing entailed visiting all private dwellings in the selected research site according to a pre-defined protocol, inquiring as to whether there were any adolescents in the GAGE-eligible age group (10-12 or 15-17 years old) living in the home. Where the response was negative, the enumerator simply moved on to the next household after carefully noting which household had been visited. Where the response was affirmative, information on the name, age, gender, and physical disability status of that adolescent were collected, as well as some contact information for the household.

[4] For more information on baseline quantitative data collection, refer the companion research manual Hicks et al. (2019a).

[5] There is interest among GAGE researchers to expand particular elements of the GAGE quantitative research sample, in particular through including more particularly marginalized youth (adolescents with disabilities, those who have been married prior to the age of 18, and others). Thus, the sample will likely expand slightly during Round 2 data collection, slated to be undertaken in late 2019 and early 2020.

Where no household member could be located, information on the household was collected from a nearby neighbour or from another knowledgeable member of the kebele. Once the listing activity was complete within the GAGE research site, the listing information was sent back to the research office for processing and sample selection.

Because of the variations in administrative structures and geographies across the different types of GAGE sites (urban, rural, and rural-pastoralist), the protocol of how to choose which and how many households to list varied slightly across types of sites. In what follows, we provide details on household listing and adolescent random sample selection for each type of site.

3.1.1.1 Urban census

As described in section 2.2 above, several ketenas/menders were selected for inclusion in the GAGE research programme in the urban areas of Batu, Debre Tabor, and Dire Dawa. These areas are densely populated, and it would have been extremely time consuming to perform a complete household census in each selected ketena/mender. In fact, information from an earlier pilot of the household census activity suggested that a listing of only approximately 200 households would allow GAGE to locate more than enough adolescents of both genders in the eligible age range in order to draw the desired sample size.

Thus, a protocol was developed that allowed the listing staff to follow a standardized strategy of listing only a portion of each selected ketena/mender (see Appendix A for the detailed protocol). In particular, the protocol designated that all listing teams should start in the Development Team (akin to a city block) in the far northwest corner of the ketena/mender, and list all private dwellings in that Development Team. If 200 households had been located during the listing of that area, the listing of that research site was considered complete. If fewer than 200 households had been listed, the listing team was to move to the Development Team located just to the north-east of the one they started in, and list that entire block. This was to continue, moving from block to block in a pre-defined pattern, until at least 200 households had been listed.

In Debre Tabor, a household census was conducted in the ketenas selected for GAGE research during October 13-15, 2017. For the most part, 4-6 Development Teams were listed in each selected ketena. A total of 4,389 households were listed during this time (more than 200 households in all but one ketena), locating 1,487 girls and boys aged 10-12 and 15-17.

In Batu, a household census was conducted in the ketenas selected for GAGE research during October 12-14, 2017. Here the number of Development Teams that needed to be listed in each selected ketena to reach the target 200 households ranged much more widely, from one to thirteen Development Teams. A total of 4,829 households were listed during this time (more than 200 households in all but three ketenas), locating 1,249 girls and boys aged 15-17. (Note that, due to research interests and budget constraints, only the older cohort of adolescents was recruited in the Batu research site.)

In Dire Dawa, a household census was conducted in the menders selected for GAGE research during October 13-14, 2017. As in Batu, the number of Development Teams that needed to be listed in each selected ketena to reach the target 200 households ranged widely, from two to fifteen Development Teams. A total of 4,368 households were listed during this time (more than 200 households in all but three ketenas), locating 1,853 girls and boys aged 10-12 and 15-17.

3.1.1.2 Rural census

As described in section 2.1 above, kebeles were selected for inclusion in the GAGE research programme in the rural areas of South Gondar (Amhara) and East Hararghe (Oromia). Although these areas are not densely populated like their urban counterparts, rural kebeles can be quite large in terms of land area, and it would have been extremely time consuming and expensive to perform a complete household census in each selected kebele.

Thus, a protocol was developed that allowed the listing staff to follow a standardized strategy of listing only a portion of each selected rural kebele in South Gondar and East Hararghe (see

Appendix B for the detailed protocol). In particular, the protocol designated that all listing teams should work with the kebele leader to list all subkebeles in the kebele along with their respective populations, and then choose the subkebele with the closest to (but not fewer than) 200 households. That was to be the subkebele to list (and, if that subkebele had many more than 200 households, a neighbourhood listing strategy akin to the one conducted in urban areas was to be followed (see Appendix B for more detail).

In South Gondar, a household census was conducted in the subkebeles selected for GAGE research during November 7-29, 2017.[6] A total of 16,455 households were listed during this time, locating 5,062 girls and boys aged 10-12.

In East Hararghe, a household census was conducted in the subkebeles selected for GAGE research during November 1 through December 15, 2017.[7] A total of 17,237 households were listed during this time, locating 6,387 girls and boys aged 10-12.

3.1.1.3 Rural-pastoralist census

As described in section 2.1 above, kebeles were selected for inclusion in the GAGE research programme in the rural-pastoralist areas of Zone 5 (Afar). As with South Gondar and East Hararghe, these areas are not densely populated and can be quite large in terms of land area, and it would have been extremely time consuming and expensive to perform a complete household census in each selected kebele. Moreover, in Afar there is the added complexity that many menders (sub-districts) containing households that are nonpermanent/mobile, where locating individuals to recruit for the study would be especially difficult.

Thus, a protocol was developed that required the listing staff to choose at least two menders to list per kebele. First, they were to choose the mender in each kebele with the largest number of permanent households, and list at least 130 households in that mender (following the same listing strategy as described for South Gondar and East Hararghe in Appendix B). In addition, the listing staff was directed to choose the mender in each kebele with the largest number of mobile residents, and to list at least 70 households in that mender (again, following the strategy laid out in Appendix B).[8] In kebeles with only mobile or only permanent resident menders, the team listed at least 200 households.

In Zone 5 (Afar), a household census was conducted in the menders selected for GAGE research during December 19, 2017 through January 2, 2018. A total of 3,729 households were listed during this time, locating 1,308 girls and boys aged 10-12.

3.1.2 Random sampling from household census data

The GAGE Quantitative Random Sample was drawn from the household census data collected in each of the research sites. Once the listing was complete, the population of households for consideration in the study was restricted to only those households that had at least one eligible adolescent. If the household had more than one eligible adolescent, one adolescent was randomly selected to be the designated eligible.

Across all sites, the GAGE research sample was drawn from the list of eligible adolescents using a random number generator in STATA, after first blocking on age group (young/older cohort) and gender of adolescent. A replacement list was also created at the same time, so that individuals who refused or were otherwise unable to participate in the GAGE study could be replaced with another randomly selected peer from their community. Due to contrasting

[6] Note that the census was intermittent throughout this period. In practice, the enumeration team would perform a census in 2-4 subkebeles, and then return to the first one to begin baseline data collection, before moving on to a new set of subkebeles.

[7] Note that the census was intermittent throughout this period. In practice, the enumeration team would perform a census in 2-4 subkebeles, and then return to the first one to begin baseline data collection, before moving on to a new set of subkebeles. This is the case for all kebeles in South Gondar, East Hararghe, and Afar.

[8] Two kebeles in the Afar sample had only one permanent mender listed, as they had already been completed prior to this mobile mender protocol being finalized.

research interests across the various research sites, the sample size drawn in urban, rural, and rural-pastoralist areas was slightly different.

In South Gondar, East Hararghe, and Afar, a random sample of 15 girls and 11 boys were drawn from the census list in each kebele, and another 25-30 individuals were placed on a replacement list. This sampling procedure yielded a baseline rural study sample of 1,947 individuals in South Gondar, 2,078 individuals in East Hararghe, and 518 individuals in Afar, for a total of 4,543 rural adolescents aged 10-12.

In Debre Tabor and Dire Dawa, a random sample of 11 girls and 11 boys of each age group (10-12 year olds and 15-17 year olds) were drawn from the census list in each kebele, and an additional 4 adolescents per group were placed on the replacement list. Sampling in Batu was identical except that only older cohort adolescents were selected. This sampling procedure yielded a baseline urban study sample of 842 individuals in Debre Tabor, 841 individuals in Dire Dawa, and 478 individuals in Batu, for a total of 2,161 urban adolescents aged 10-12 and 15-17.

The original GAGE quantitative random sample thus included 6,704 adolescents. After accounting for replacements, 6,647 individuals were included in the final sample, and a total of 6,571 completed a baseline interview (98% of the originally selected sample size). Replacements households were used in the following cases: (a) refusal on the part of the adolescent to participate, (b) refusal by a parent/guardian to allow the adolescent to participate, (c) adolescent was found to be out of the 10-12 year old age range at the recruitment visit, (d) adolescent was found to be a gender other than what was noted during the census exercise, (e) adolescent was found to be deceased or severely disabled/ill (in a way that would not permit them to participate in the survey) at the recruitment visit, and (f) adolescent had migrated from the area at the time of the recruitment visit (and was not expected to return during data collection period). The refusal rate was low, at approximately 2% of the original random sample.

3.2 Purposely selected individuals

Given GAGE's strong focus on vulnerable adolescents, in line with the 'leave no one behind' agenda, the GAGE quantitative research sample additionally includes adolescents who are especially disadvantaged, such as those with disabilities, and married, separated and divorced adolescents. While some of these individuals were located through the household census activity and entered the quantitative random sample, others were purposely selected to be part of the overarching GAGE quantitative research sample. Youth with disabilities can be marginalized in their communities, and adolescents who married or had children young may be hidden from outsiders. In an effort to overcome the stigma, discrimination and/or invisibility that such young people often face in their communities, we utilized both a census-style door-to-door listing and the assistance of key community stakeholders who work with marginalized youth in order to locate these individuals (Muz et al, 2019). Table 2 provides numbers adolescents from each of these marginalized groups that are included in the GAGE research sample as of mid-2019.[9]

3.3 Qualitative research nodal adolescents

GAGE is a mixed-methods research programme, and extensive qualitative data collection has also been collected as part of this study. The GAGE qualitative research team purposely selected adolescents from the quantitative random sample for inclusion in their work (on the basis of gender, age, gender of the household head, religious background, disability and marital status), and also purposely selected a number of other adolescents for inclusion in their sample (to ensure an adequate sample of married adolescents, adolescent mothers, adolescents with severe impairments). In total, there are 233 such "nodal adolescents", 164 of which are part of

[9] The GAGE research team intends to recruit additional marginalized youth in the Round 2 data collection during late 2019-early 2020. Additional sample will be described in the Round 2 research manuals.

the quantitative research random sample. All ‘nodal’ adolescents are now included in the CR and AF surveys.

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Appendix A: GAGE Urban Site Listing Protocol

We have selected several ketenas in Debre Tabor, Batu, and Dire Dawa for the urban portion of the GAGE study. In order to select the households we will seek to interview for our main data collection activity in each of these ketenas, we will need to do a listing in each of them. Your group of 4 enumerators and 1 supervisor will be assigned to 1-3 ketenas for this activity by the Field Coordinator.

You will not list the entire ketena, as it is too big. Instead, your group will list all households within one or more Development Teams (blocks) within each ketena that has been assigned to you. (The number of Development Teams you will need to list per ketena will vary, as described below.)

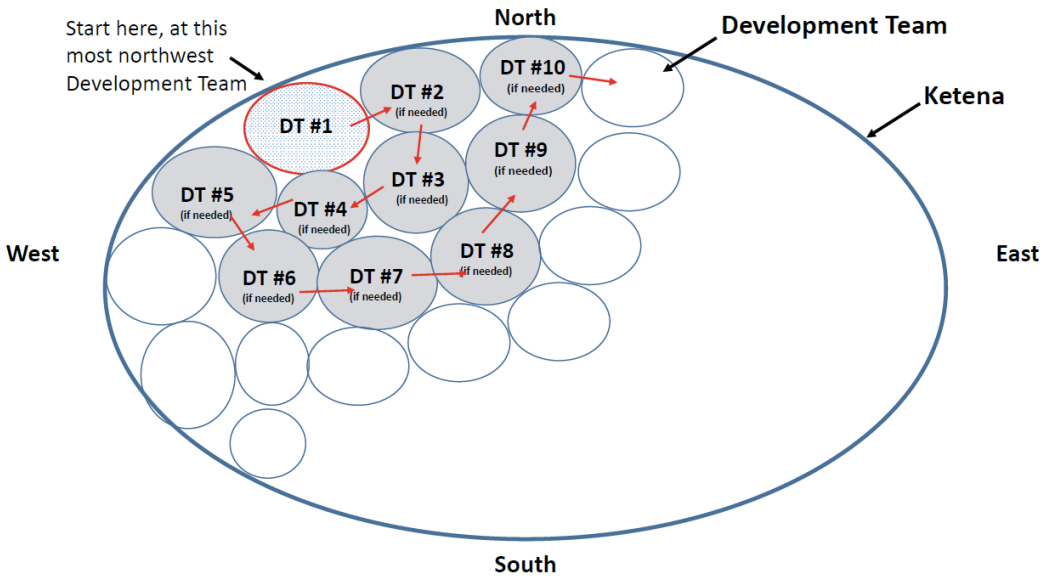
Here is the protocol for how we will do the listing within each ketena:

- When you arrive at the ketana that has been assigned to your group, you will obtain 5 local guides, one per member of your group.
- Discuss with the guides to locate the Development Team that is in the far northwest corner of the ketana. This is the Development Team that you will list first. List all households in this Development Team, working with your guides to ensure you do not miss any households.
    - If this Development Team has at least 200 households, you will only list this first Development Team, and then stop.
    - If this first Development Team has fewer than 200 households, you will continue to the next Development Team, just to the north-east of the one you started in (as in the picture below).
- Once you list the second Development Team, again check to see whether your group has listed a total of at least 200 households. If yes, you may stop. If no, proceed to the next development team, according to the picture below, snaking back to the south and west.
- Once you list the third Development Team, again check to see whether your group has listed a total of at least 200 households. If yes, you may stop. If no, proceed to the next development team, according to the picture below.
    - [The movement in the picture is as follows: Continue in this manner, stopping at each Development Team to list, until you have reached the western border again. Then, move east and north again, stopping at each Development Team along the way. Continue to list each Development Team you reach by snaking back and forth in this manner.]
    - Continue to list one Development Team at a time, in full, until your group has listed a total of at least 200 households. If you reach 200 households in the middle of a Development Team, you must complete the listing of all remaining households within that Development Team before stopping.

Points to remember:

- It is imperative that you always move in this way in each ketena, so that the listing is done the same way across all groups in the entire city.
- Remember, you should list all households within each Development Team, and then get additional information for the households that have eligible children.
- If you reach 200 households in the middle of a Development Team, you must complete the listing of all remaining households within that Development Team before stopping.
- If you are working in a ketena with fewer than 200 households, you will simply list the entire ketena.

Figure A1: How to choose Development Teams to list within a ketena



Appendix B: GAGE Rural Site Listing Protocol

We have selected several kebeles in Amhara, Oromia, and Afar for the rural portion of the GAGE study. In order to select the households we will seek to interview for our main data collection activity in these kebeles, we will need to do a listing in each of them. Your group of 4 enumerators and 1 supervisor will be assigned to particular kebeles for this activity by the Field Coordinator.

You will not list the entire kebele, as it is too big. Instead, your group will select a sub-kebele to work in according to the rule outlined below, and list all households in within one or more gots of this sub-kebele according to the process described below.

Here is the protocol for how we will do the listing within each kebele:

When you arrive at the kebele that has been assigned to your group, discuss with the kebele leader (or other knowledgeable person) to make a list of all sub-kebeles in the kebele, along with the number of households living in each of these sub-kebeles. [Supervisor: You should include this list in the "Listing Information Document" and send to your field coordinator by the end of that day.]

From this list, choose the sub-kebele that has at least 200 households, and is closest to 200 households. This is the sub-kebele that you will be working in.

- For example, if sub-kebele A has 199 households, sub-kebele B has 205 households, and sub-kebele C has 210 households, you would select sub-kebele B. Note that sub-kebele A is not eligible for listing as it has fewer than 200 households.
- If sub-kebele A has 199 households, and sub-kebele B has 500 households, you would select sub-kebele B. Again, sub-kebele A is not eligible for listing as it has fewer than 200 households. We describe a procedure below for listing within sub-kebele B such that you are not listing the entire sub-kebele.

Within the sub-kebele you have selected, listing will proceed as follows:

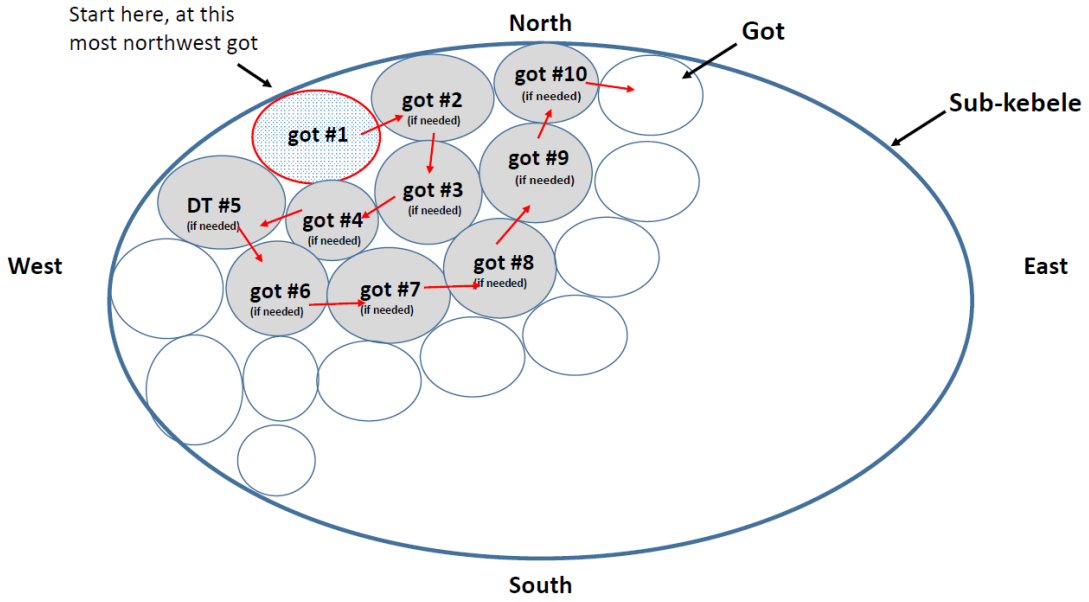
- If you encounter a kebele in which all sub-kebele have fewer than 200 households, proceed by listing the sub-kebele with the most households. List that entire sub-kebele. Inform the field coordinator of this issue immediately, and ensure that this message is quickly relayed to ODI/Quant HUB so that we can monitor. Our assumption is that this will not happen.
- If you have selected a sub-kebele that has more than two hundred households, listing will proceed as follows:
    - Obtain local guides to assist your group.
    - Discuss with the guides to locate the got that is in the far northwest corner of the selected sub-kebele. This is the got that you will list first. List all households in this got, working with your guides to ensure you do not miss any households.
        - If this got has at least 200 households, you will only list this first got, and then stop.
        - If this first got has fewer than 200 households, you will continue to the next got, just to the north-east of the one you started in (as in the picture below).
    - Once you list the second got, again check to see whether your group has listed a total of at least 200 households. If yes, you may stop. If no, proceed to the next got, according to the picture below, snaking back to the south and west.
    - Once you list the third got, again check to see whether your group has listed a total of at least 200 households. If yes, you may stop. If no, proceed to the next got, according to the picture below.
        - [The movement in the picture is as follows: Continue in this manner, stopping at each got to list, until you have reached the western border again. Then, move east and north again, stopping at each got along the way. Continue to list each got you reach by snaking back and forth in this manner.]

- Continue to list one got at a time, in full and according to the movement in the picture below, until your group has listed a total of at least 200 households. If you reach 200 households in the middle of a got, you must complete the listing of all remaining households within that got before stopping.

Points to remember:

- It is imperative that you always use the method outline above to select the sub-kebele and got(s) that you will list.
- You should list all households within the selected got (or small sub-kebele), and then get additional information for the households that have eligible children.
- If you are working in a sub-kebele with fewer than 200 households, you will simply list the entire sub-kebelle.
- If you reach 200 households in the middle of a got, you must complete the listing of all remaining households within that got before stopping.
- Age verification process:
  - Recall that in the rural areas of Amahara, Oromia, and Afar, we will only be interested in adolescents aged 10-12. The eligible birth years for these individuals is 1997-2000.
  - When verifying age during the listing, we prefer that you use a birth certificate to verify age. If this is not available, request school report card to verify age. If also not available, check with the father or with an educated older sibling, as mothers are often not numerate.
- If we are unable to locate enough disabled children through the proposed listing strategy, we will need to speak to health extension workers, inclusive education teachers, and religious leaders in the sub-kebele in order to identify them. Any children found through this process should NOT be included in the listing data, but added in a supplementary document shared with the field coordinators. GAGE Quant Hub will let you know if we need to do this, depending on how the listing goes.
- Supervisors: please additionally collect the information contained in the "Listing Information Document" circulated separately, and pass along to the field coordinators

Figure A2: How to choose gots to list within a subkebele



Gender and Adolescence: Global Evidence (GAGE) is a nine-year longitudinal research programme building knowledge on good-practice programmes and policies that support adolescent girls in the Global South to reach their full potential.

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