Mapping Population Sizes and Hotspot Locations for Female Sex Workers Improved Targeting for HIV Prevention Interventions in Ethiopia

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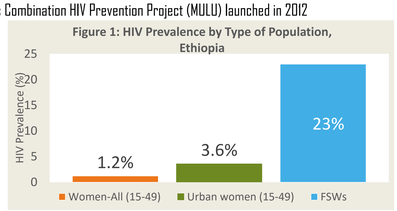
1. BACKGROUND

- HIV prevalence among female sex workers (FSWs) in Ethiopia: 23%
  - 20 times higher than women in the general population (**Fig. 1**)
- To address FSWs' HIV risk, MULU/MARPs Combination HIV Prevention Project (MULU) launched in 2012
  - Targeted FSW
  - 168 Ethiopian towns/cities
- Implementation challenged by:
  - Insufficient data on FSW locations
  - Lack of population size data
- A rapid size estimation approach developed to aid MULU implementation.

Figure 1: HIV Prevalence by Type of Population, Ethiopia



2. DESCRIPCIÓN

- FSW definition:
  - Girls/women who self-identify themselves as sex workers *and/or*
  - Girls/women identified by key informants as being FSWs (even if not self-identifying) *and*
  - Have exchanged penetrative sex for money/in kind payment in last month
- FSWs operating in venues, streets, and homes included in size estimation and hotspot mapping
  - Enumerated from 100 Ethiopian cities/towns through key informant (KI) interviews (**Table 1**)
  - Locations (venues, streets, etc.) mapped using GPS equipment

Key informants (KI) FSWs size estimation:

Table 1: Data collection Methods by FSW Type

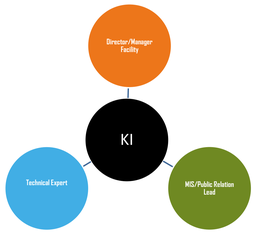
Method by Type of FSWs FSWs	Venue- Based FSWs	Street -Based FSWs FSWs	Home- Based FSWs FSWs
Home- Based FSWs	-	Capture Recapture	-
Indirect Method	Two Key Informant Interviews (per venue)	-	Two Key Informant Interviews (per home)
Location	GPS*	GPS*	GPS*

* *The GPS coordinates was only used to establish hotspot areas using hide map*

Secured National Local IRB Approval
Period 1: Round 1 (June –September 2013)-44 towns Round 2 (January – March 2014)-35 towns Round 3 (March – May 2017) 21 towns

- FSW hotspot areas described using hide-map
  - Helped target programming & community outreach
- Service facilities mapped in 79 towns, including facilities providing:
  - HIV testing
  - Family planning
  - Sexually transmitted infection diagnosis and treatment;
- KIs in facilities provided information on type of services in facility
  - Location also taken using GPS equipment

KIs for service facility mapping were:



- KIs provided informed consent
- Data collected June-October, 2013 (44 cities/towns), February-March 2014 (35 cities/towns), and March-May, 2017 (21 cities/towns).

Population size estimates:

Street FSWs size (SFS): Capture-Recapture

$$*\,SFS = \frac{Numbers\ in\ Capture{-}1\ x\ numbers\ in\ Capture{-}2}{Numbers\ appeared\ in\ both\ Captures};$$

* Guidelines on Estimating the Size of Populations Most at Risk to HIV. UNAIS/WHO. 2010

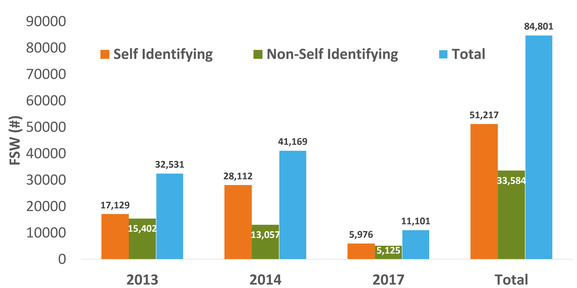
Venue and home based FSWs: Key Informant (KI)

$$FSWs\text{-}Size = \sum\ ((K1 + K2)/2);$$

where KI & K2 are number FSWs reported by key informant I and K2 respectively

3. LESSONS LEARNED

Figure 2: Estimated number of FSWs by type and year



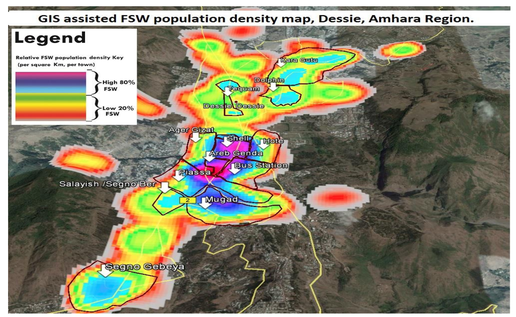
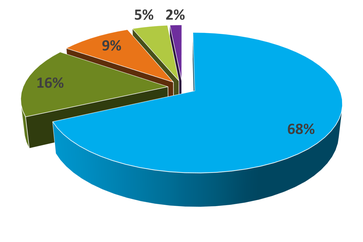
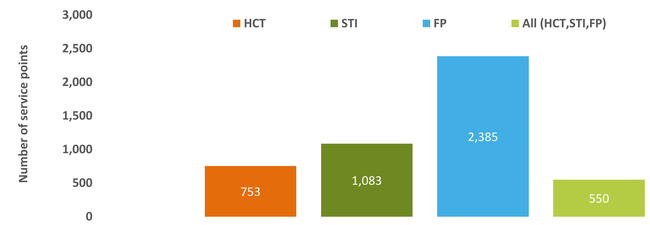


Fig. 3: Proportion of service facilities by type of ownership



- 3,544 private, public, public/private, and NGO service points identified and mapped
- Most health sites mapped that provided comprehensive services were private (68%)
  - Only 16% were public facilities (**Figure 3**)
- 550 (13%) provided comprehensive HIV services including ((**Figure 4).**

Fig. 4: Number of service points with comprehensive health services



4. CONCLUSIONS//NEXT STEPS

- Rapid size estimation approaches less precise than other approaches
  - Can be useful to better target services for hidden populations
  - May be cheaper and faster than more rigorous size estimation studies
- Limitations:
  - Dependence of interviewers on KIs
  - May over/under estimate the size
- Results of rapid size estimation approach used for:
  - Project target-setting
  - Allocation of resources
  - Development of coverage standards specific to each project town
- Service mapping exercise helped to
  - Establish private network service facilities in hotspots
  - Provide standard services through referral network
  - Inform national planning processes