The lives behind the phylogenetic trees. The place of social science in PANGEA

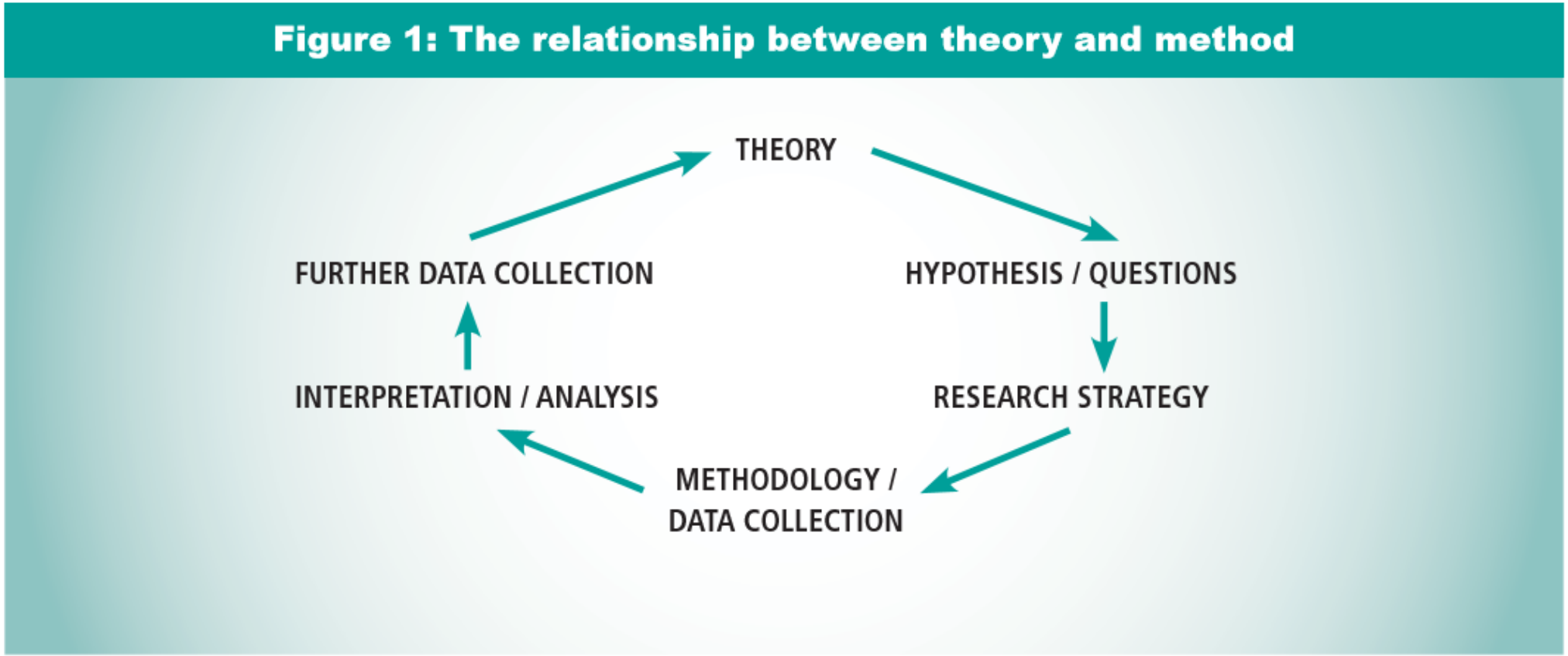
Janet Seeley

Social science is?

The scientific study of human society and social relationships

Theory and method

Figure 1: The relationship between theory and method



Molecular epidemiology studies

1 Determine the distribution and trends of HIV-1 subtypes over time in Uganda, stored samples from rural and urban cohorts and from historic samples.

2 Determine if sources of new infection are from within or without the cohorts being studied.

3 Use molecular, social and epidemiological data to identify transmission linkages/networks within high risk and general population cohorts.

4 Use historic stored samples to determine the dynamics and evolution of the HIV epidemic over time.

5 Understand how to improve risk and transmission reduction efforts within the cohorts studied.

AIDS Research and Human Retroviruses, VOL. 28, NO. 4 | Epidemiology

normal

HIV Type 1 Subtype Distribution, Multiple Infections, Sexual Networks, and Partnership Histories in Female Sex Workers in Kampala, Uganda

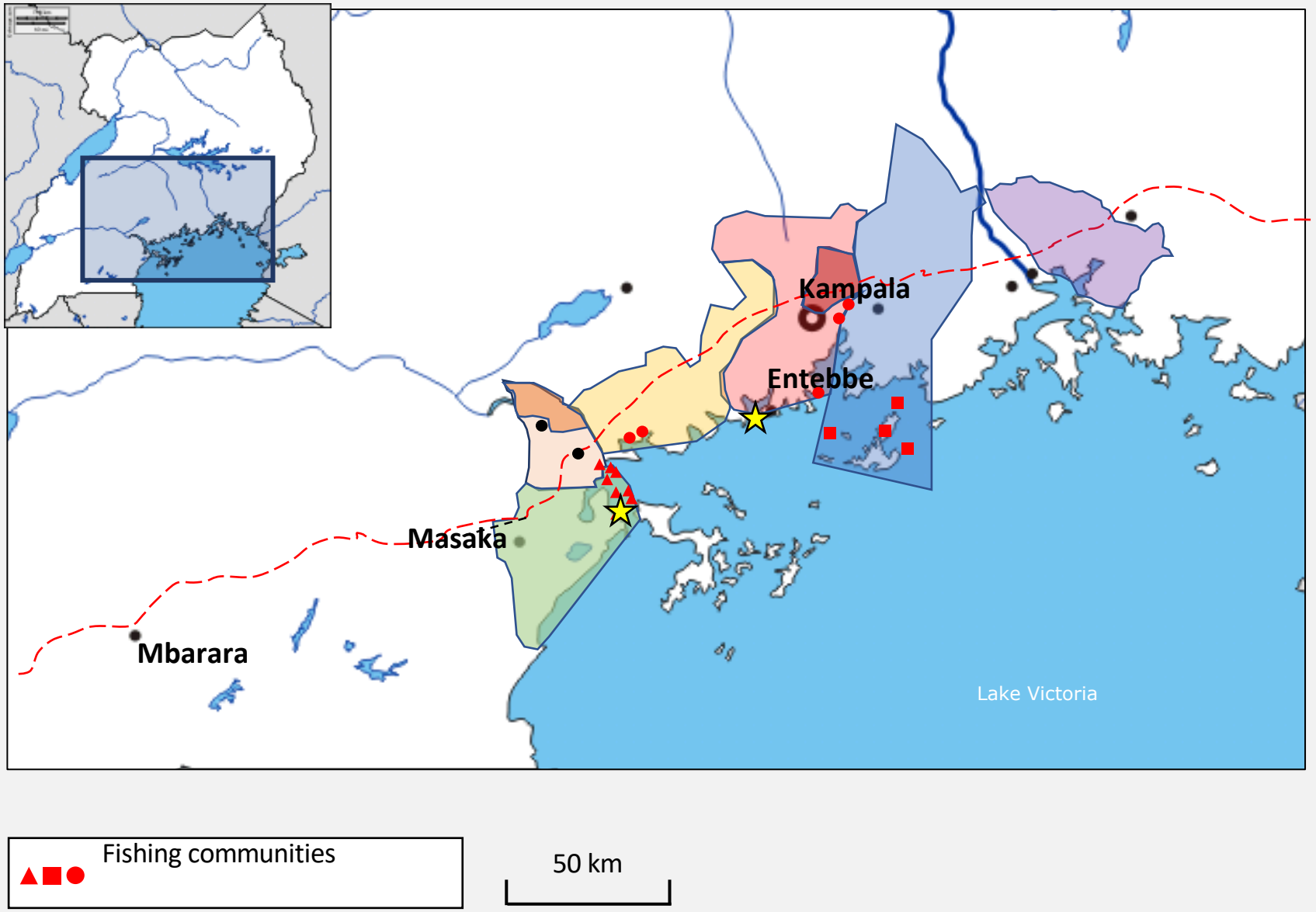
Deogratius Ssemwanga, Nicaise Ndembi, Fred Lyagoba, Justine Bukenya, Janet Seeley, Judith Vandepitte, Heiner Grosskurth, and Pontiano Kaleebu

Published Online: 28 Mar 2012 | https://doi.org/10.1089/aid.2011.0024

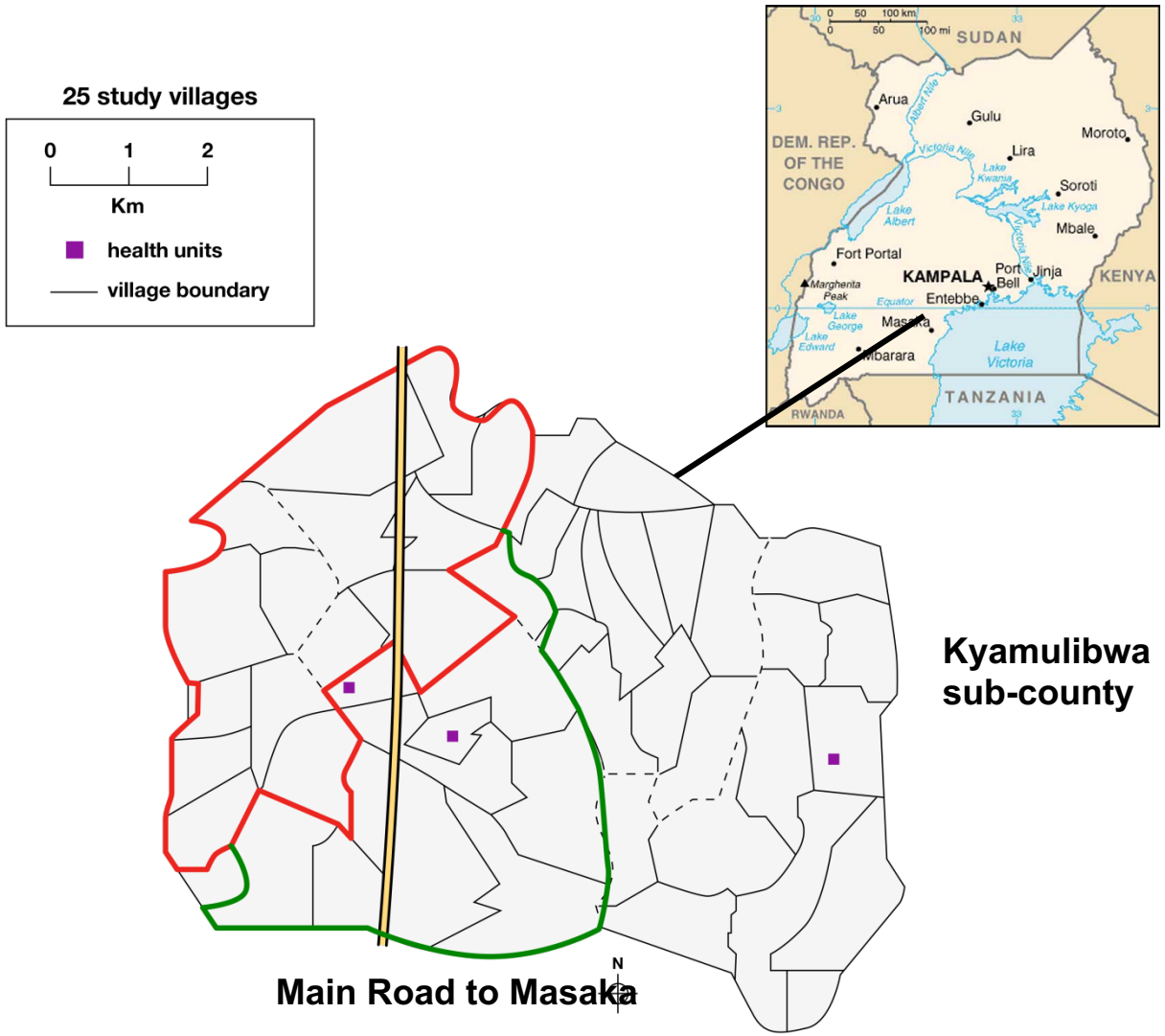
Tools Share

Abstract

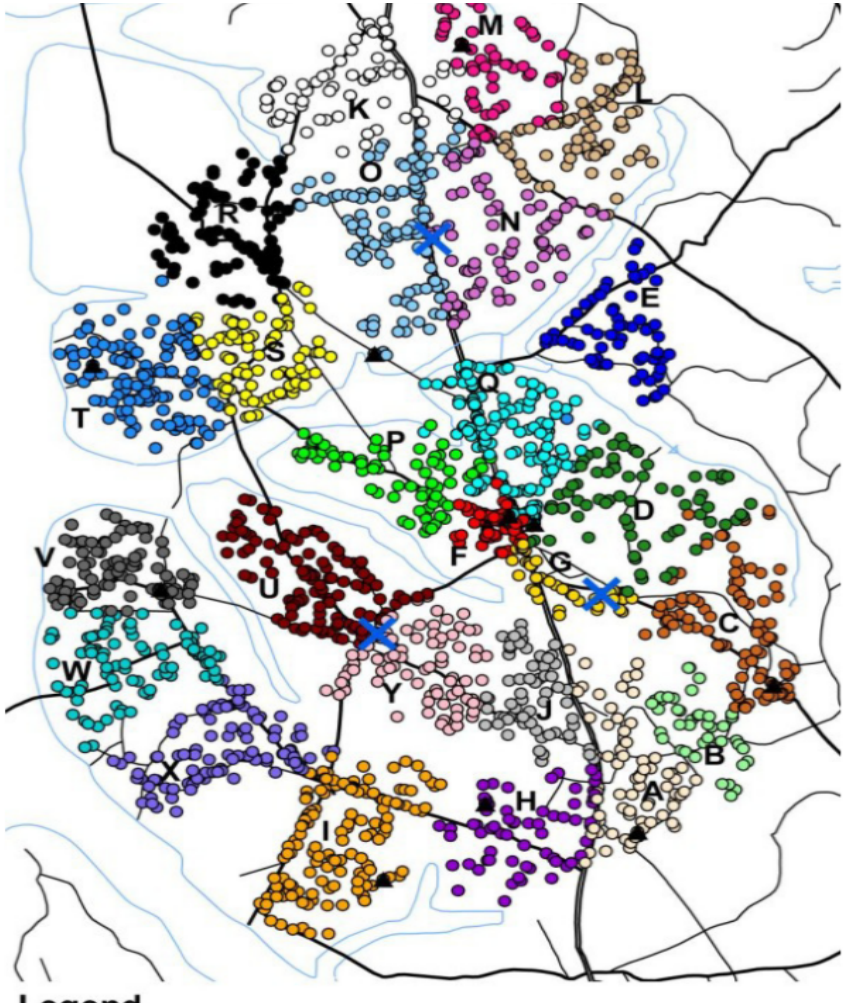
We investigated for the first time the subtype distribution, prevalence of multiple HIV-1 infections, sexual networks, and partnership histories in a cohort of women engaged in high-risk sexual behavior such as female sex workers (FSWs) and women employed in entertainment facilities. Viral RNA was extracted from blood samples collected from 324 HIV-1-positive women; the *gp*-41 and *pol*-IN genes were directly sequenced. Women found to have closely related viruses and those with recombinant viruses were further analyzed in the *pol*-IN gene by clonal sequencing to determine HIV-1 multiple infections. Individual partnership histories were used to provide information on when sex work was undertaken and where. Subtyping in both *gp*-41 and *pol*-IN was successfully done in 210/324 (64.8%) women. Subtype distribution in these two genes was 54.3% (*n*=114) A/A, 2.9% (*n*=6) C/C, 24.3% (*n*=51) D/D, 11.9% (*n*=25) A/D, 4.8% (*n*=10) D/A, 0.5% (*n*=1) C/A, 1.0% (*n*=2) B/A, and 0.5% (*n*=1) B/D. Sexual networks were identified in six pairs and one triplet of women with closely related subtype A viruses. Partnership histories showed that women having phylogenetically similar viruses had worked in the same localities. Five cases of multiple infections were confirmed: four dual infections and one triple infection. In this first molecular epidemiology study among FSWs in Kampala, subtype A was the predominant subtype. About 9% of a subgroup had multiple infections. Partnership histories and multiple infections observed in this population suggest sexual mixing of the FSWs and their clients confirming their high-risk characteristics.

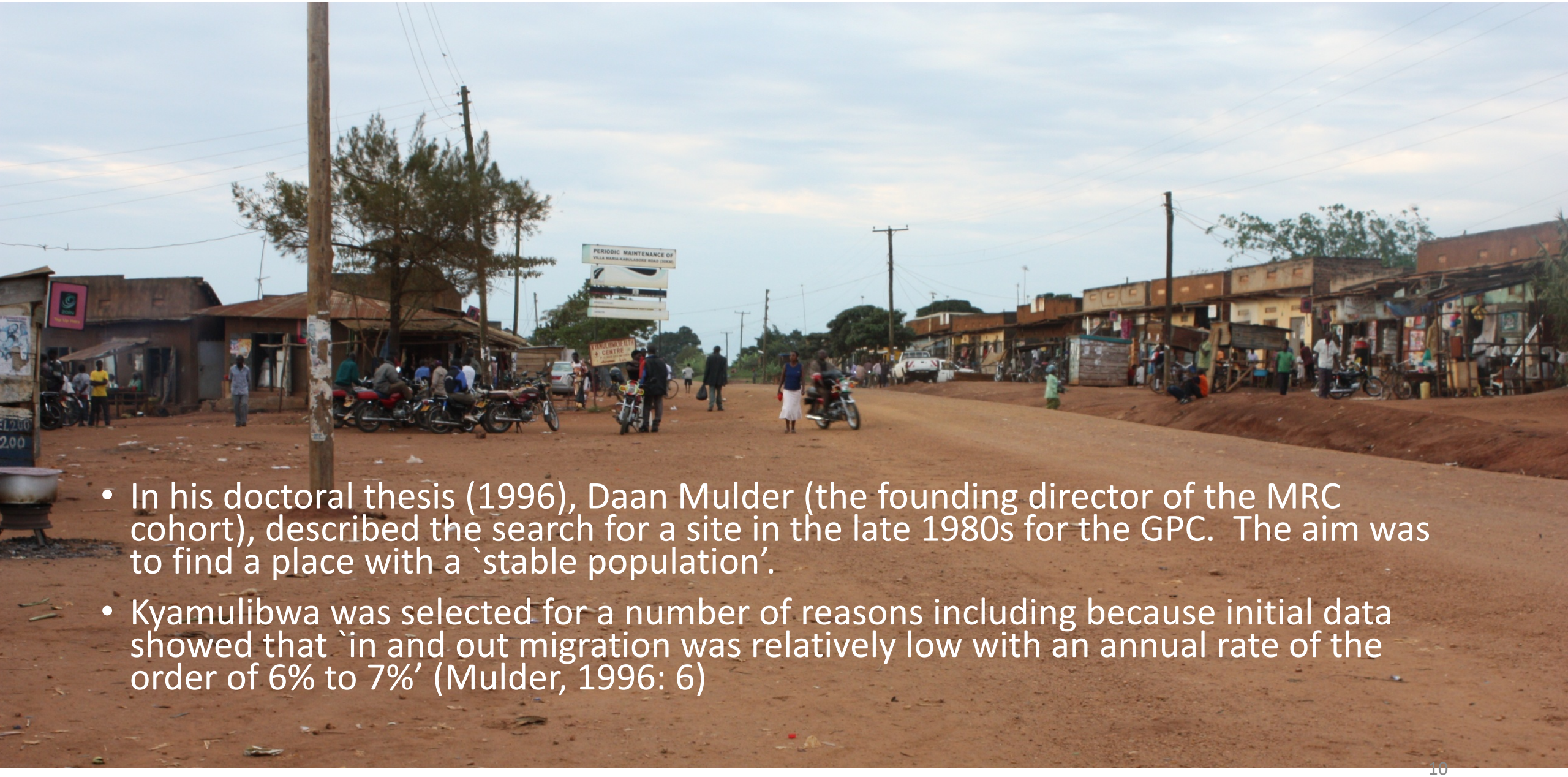

Kampala
Entebbe
Masaka
Mbarara
Lake Victoria
Fishing communities
50 km

General Population Cohort (Kyamulibwa)



The General Population Cohort

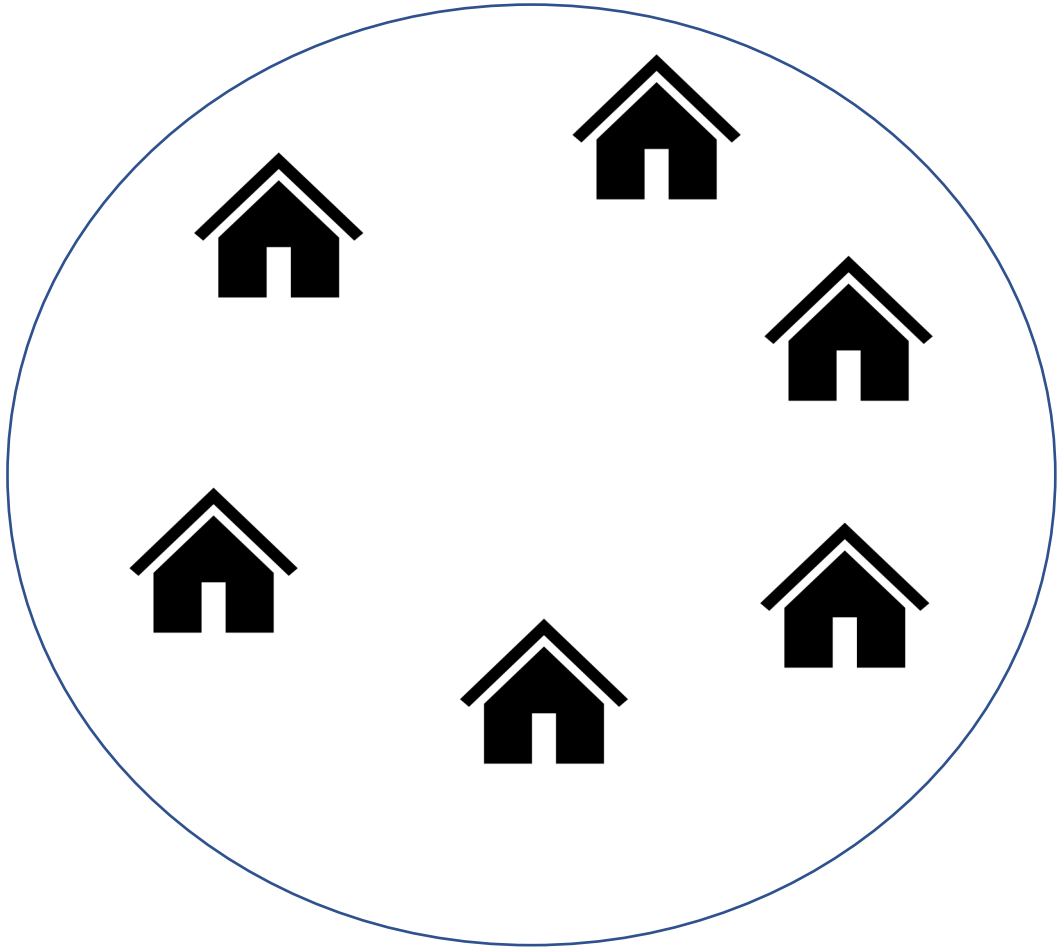




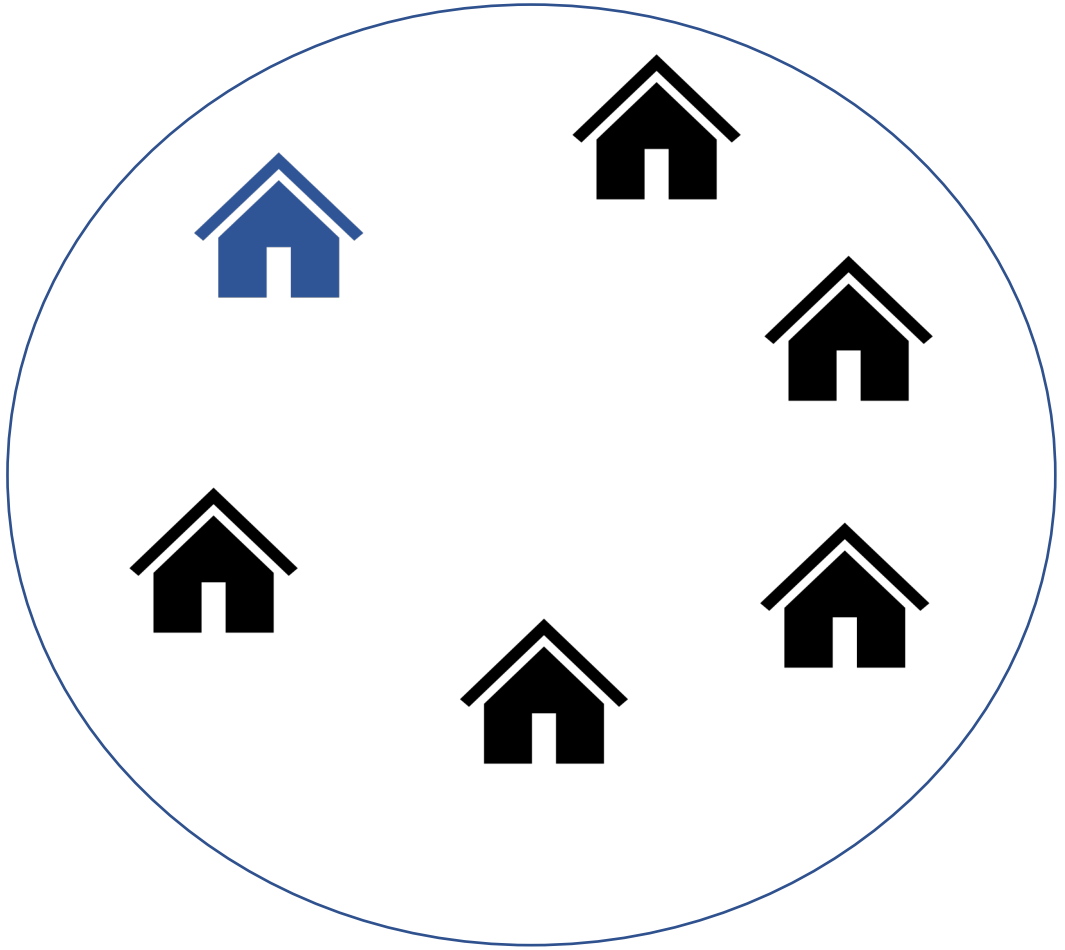
- In his doctoral thesis (1996), Daan Mulder (the founding director of the MRC cohort), described the search for a site in the late 1980s for the GPC. The aim was to find a place with a `stable population'.
- Kyamulibwa was selected for a number of reasons including because initial data showed that `in and out migration was relatively low with an annual rate of the order of 6% to 7%' (Mulder, 1996: 6)


62
204
483
602
60/612
482
255
254
59
75
985
313
601
405
79
258/760
904
659
507
54
18

Sampling



Sampling



Sample and method

- The wider molecular epidemiology study sampled prevalent cases (approximately 500) as well as incident cases that have consented for their archived samples to be used for future studies

- Social science component -- we collected data from 102 participants
  - Sampled all adults in a cluster of ~10 houses which included someone who had recently (2012/2013 when we did this study) become HIV-positive
- In-depth life history interviews
  - Focusing particularly on mobility and relationships

Mobility

- We found no differences in the mobility or relationship profiles according to HIV-status
- Most people had been mobile at some point in their lives
  - Usually in their late teens or 20s
  - Often for work (to fishing sites, towns and cities)
  - Women moved because of marriage but also for work