# Impact of Tracing on LTFU HIV Patients

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# Group Introduction

- David Chen
  - Masters of Biostatistics interested in approaches to optimal dynamic treatment and applications in mental health
- Max Murphy
  - PhD. Biostatistics working on malaria transmission dynamics jointly with Dr. Rasmus Nielsen at UCB and Dr. Bryan Greenhouse at UCSF

# Study Background

- A 2015-2017 study was conducted in Zambia to improve estimates of baseline mortality due to HIV
- A subset of individuals who were lost to follow up were randomized to receive extra care through follow up outreach by community health workers
- What are the impacts of this type of intervention
  - Returning people to care
  - Maintaining care over time.

# Target Population

## Pop 1

Zambian, HIV positive adult patients on ART who are lost to follow-up ($\geq$ 90 days late for their last appointment or $\geq$ 180 days without clinic visit for patients with no future appointment scheduled at their last visit).

## Pop 2

Patients satisfying the above criteria who have also already returned to care.

# Data 1

$O = (W, A, \tilde{T}, \Delta)$, where $\tilde{T} = \min(T, C)$ and $\Delta = \mathbb{I}(T \leq C)$

- $W =$ province, facility type, facility size, gender, marital status, education, income, age, WHO HIV stage at enrollment, medication possession ratio, enrollment CD4, initiation CD4, last CD4, HIV status disclosed, time enrolled, time on ART, time lost, number of prior lost events
- $A =$ Assignment to tracing as defined as in-depth review of paper and EMRs, phone calls, in-person tracing in community (using bicycles, public transport, study vehicles, or motorcycles) by peer health workers at least 3 times.
- $T =$ Time to return (first post-LTFU clinic visit - lost date)
- $C =$ Time to end of study (study end - lost date)

# Data 2

Data $O = (W, A, \tilde{T}, \Delta)$, where $\tilde{T} = \min(T, C)$ and $\Delta = \mathbb{I}(T \leq C)$

- $W$ = same as above
- $A$ = same as above
- $T$ = Time from return to 2nd LTFU (as defined on Slide 4)
- $C$ = Time from return to end of study

*Contingent on having sufficient support in data*

# Target Parameter

The survival curves of the treatment and control groups $S_0(t) \mid A = 1$ and $S_0(t) \mid A = 0$ where

$$\begin{aligned} S_0(t) \mid A = a &= \prod_{s \in [0,t]} \{1 - d\lambda_0(s) \mid A = a\} \\ &= \prod_{i=1}^{n} \{1 - \lambda_0(s_i) \mid A = a\} \end{aligned}$$

We're interested in comparing the impact of tracing assignment on (1) time to return to care and (2) duration of retention in care.

# Challenges

- We plan to lean on simulation because of concerns regarding the available data.
  - Delivery of actual treatment occurs inconsistently and over an unknown period of time. To move forward we will unrealistically assume that treatment is delivered immediately upon a patient becoming LTFU.
  - Loss to follow-up (censoring) caused by death. Previously reported estimated 2 year mortality rate is ~7%. For simplicity we may simply ignore this (as depicted in the above descriptions of $O$) or make the dubitable claim of CAR conditional on baseline covariates.
  - The full data set is very large and may result in computational challenges

# Contributions

We anticipate all work will be conducted jointly with equal contribution from each party