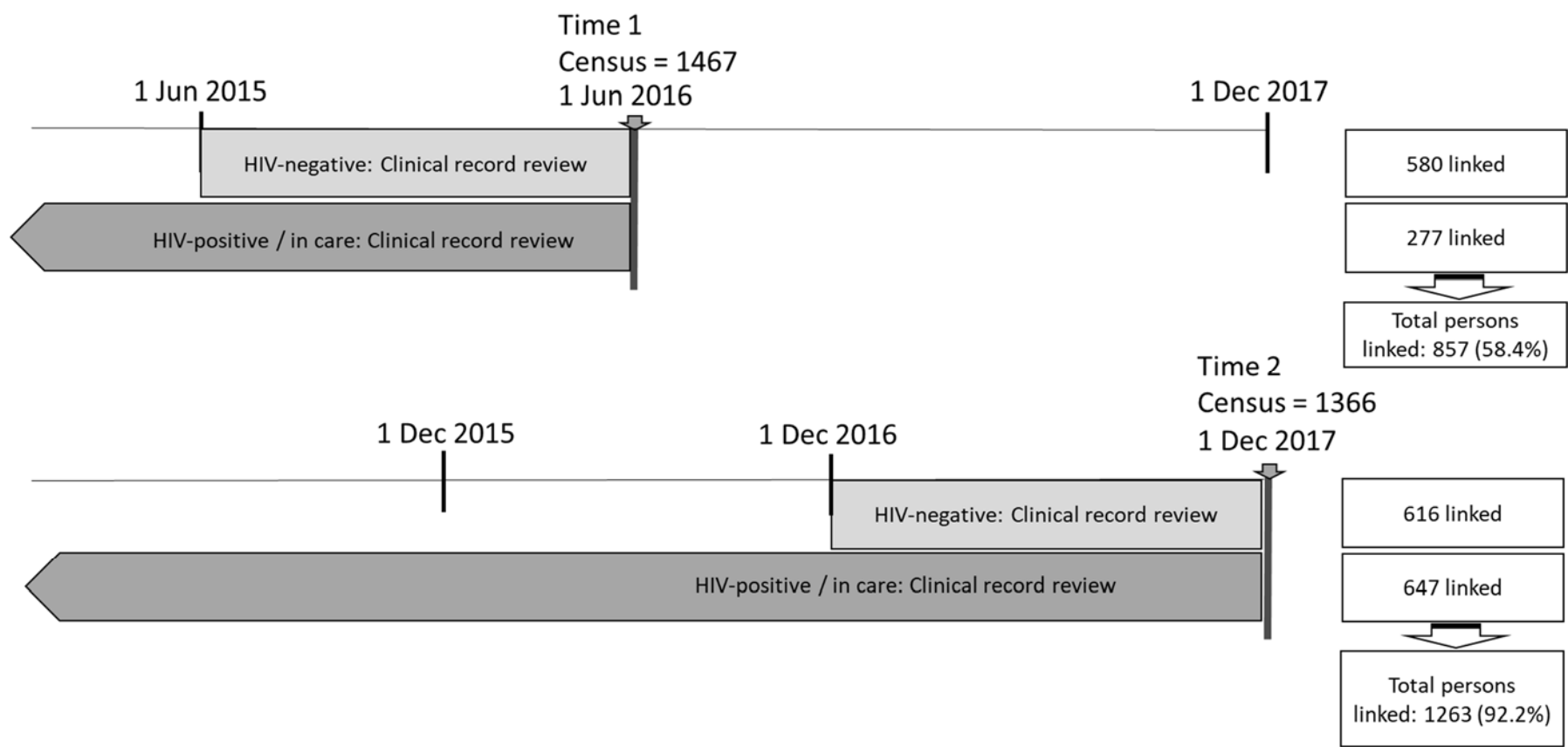


**Figure 1S:** South Africa virtual cross-section time points data linking.

A. Time 1, 1 January 2017; B. Time 2, 31 December 2017

The electronic HIV care abstraction included the latest date for each field requiring use of multiple 6-monthly time points for record linkage to attempt to describe all persons in the facility at Time 1 who were receiving HIV care at Time 1. Any visit was used for HIV-positive status; a visit within 9 months of the virtual cross-section data was used to define ART initiation and in care.



**Figure 2S:** Zambia virtual cross-section time points and clinical file review

Electronic and paper-based clinical records were reviewed for all persons on the census at each time point.