

South Africa

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**AHRI:Sesikhona!(we are here):Use of smartphone-
based GPS technology to measure ultra-high resolution
mobility patterns of young adults in rural KwaZulu Natal**

Study Documentation

September 4, 2023

Metadata Production

Metadata Producer(s)	Africa Health Research Institute (AHRI)
Identification	DDI.AHRI.Sesikhona.GPS.2023.v1

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AHRI:Sesikhona!(we are here):Use of smartphone-based GPS technology to measure ultra-high resolution mobility patterns of young adults in rural KwaZulu Natal

Overview	
Identification	AHRI.Sesikhona.GPS.2023.v1
Version	v1.0.0
Abstract	
<p>This is a first of its kind study using smartphone-based GPS technology to record ultra-high resolution mobility patterns of approximately 800 young adults (comprising the Sesikhona! Cohort) aged 20-30 years in rural KwaZulu Natal.</p> <p>The Sesikhona! study aims to:</p> <ol style="list-style-type: none"> Determine typologies of movement in the age-group 20-30 in a HIV hyper-endemic population. Quantify movements in and out of known high HIV risk locations. <p>The long-term aim of the study is to design a location-intelligent smartphone intervention using real-time, precision messaging targeting those at high risk of HIV acquisition, transmission, and treatment failure.</p> <p>This study currently involves young adults aged 20-30 years who participated in the AHRI HIV survey in 2019 and are resident members in Sothorn PIP. Between June 2021 and March 2023, an initial cohort of 208 individuals who agreed to participate in the study were either offered a smartphone with a customized Ethica app or installed the app in their personal smartphone if their device was consistent with the technological requirements of the study protocol. The app attempts to record the smartphone's location at a temporal resolution ranging between 30 minutes and 1 second (depending on whether the participant is moving and has good connectivity) and upload the data to a secure study server every hour. Consenting participants are followed for a minimum period of 6 months. Participants are also requested to completed surveys at enrolment, 1 and 3 months and post study (6 months) to examine changes in attitudes towards the use of GPS technology to study mobility before, during and after the study. If the study does not receive location data from participants for over two days the study staff contact participants by phone or home visit to establish the cause.</p> <p>We use the REDCap software to collect demographic data and consent the participants. The location data and surveys are captured on the Ethica app.</p>	
Kind of Data	Smartphone-based geo-codes
Unit of Analysis	Unique space-time records

Scope & Coverage	
Keywords	Human mobility, HIV, GPS technology
Topics	GPS technology, smartphone-based GPS, human mobility, young adults, HIV
Time Period(s)	2021-2023
Countries	South Africa
Geographic Coverage	
Movement patterns of Sesikhona! Participants anywhere in South Africa.	
Universe	
A random sample of adults aged 20-30 years old who were resident in Southern PIPSA, participated in the 2019 HIV surveillance and consented to participate in the study.	

Producers & Sponsors	
Primary Investigator(s)	Prof. Frank Tanser(Principal Investigator), Africa Health Research Institute Prof Adrian Dobra, University of Washington Prof Till Barnighausen, Africa Health Research Institute
Other Producer(s)	Africa Health Research Institute (AHRI)
Funding Agency/ies	National Institute of Health (NIH) , Funder German Science Foundation (DFG) , Funder Academy of Medical Sciences Newton Fund (NAF) , Funder

Sampling
<p><u>Sampling Procedure</u> Participants were randomly selected from the 2019 AHRI HIV surveillance program if they were aged 20-30 years old and had participated in the HIV survey in 2019 and were resident members in the southern PIP.</p>

Data Collection		
<table border="1"> <tr> <td>Data Collection Dates</td> <td>start 2021-06-01 end 2023-03-30</td> </tr> </table>	Data Collection Dates	start 2021-06-01 end 2023-03-30
Data Collection Dates	start 2021-06-01 end 2023-03-30	

Data Processing & Appraisal
<p><u>Data Editing</u> Raw uncleaned space-time data records obtained from Sesikhona! participants via the Ethica app</p>

Accessibility
<p><u>Access Conditions</u> Access to the data requires accurate completion of the online data access application form accessible on the AHRI Data repository(<https://data.ahri.org/>). Data users are required to abide by the data use conditions stipulated on the application for access to the data. Failure to do so may result in their data access privileges being revoked by the Data Custodian. In order to recognise the effort and intellectual contributions of AHRI investigators in producing and curating the data, users of AHRI data must acknowledge the source of the data and abide by the terms and conditions under which the data is accessed and must cite the dataset in publication using the citation provided as part of this documentation. All analytical datasets published on the AHRI Data Repository are assigned digital object identifier (DOIs) and the DOIs can be found on the Data Repository under Study Description tab - Access policy. AHRI data users are required to always cite the dataset using the relevant DOI.</p>
<p><u>Citation Requirements</u> Tanser, F., Dobra, A., & Barnighausen, T. (2023). AHRI:Sesikhona!(we are here):Use of smartphone-based GPS technology to measure ultra-high resolution mobility patterns of young adults in rural KwaZulu Natal [Data set]. Africa Health Research Institute. https://doi.org/10.23664/AHRI.SESIKHONA.GPS.2023</p>

Files Description

Dataset contains 0 file(s)

Variables List

Dataset contains 0 variable(s)