Retrospective case data: 2000 to 2016

Data and analysis tool (GUI)

Gambiense Human African Trypanosomiasis (gHAT or sleeping sickness) disease transmission model - **data and results**

User Guide

Contents

ABOUT

DESCRIPTION	gHAT transmission data
SOURCE	Warwick gHAT model fitted to WHO HAT Atlas case data
DATE ISSUED	June 2020
LAST UPDATED	April 2022
SPATIAL COVERAGE	Democratic Republic of Congo, provinces and health zones
YEARS(S)	2000 to 2016
STATUS	Completed
CREATOR	Crump et al, University of Warwick
USAGE	Open access
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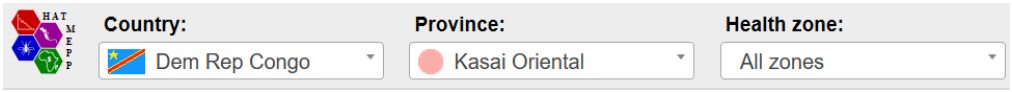
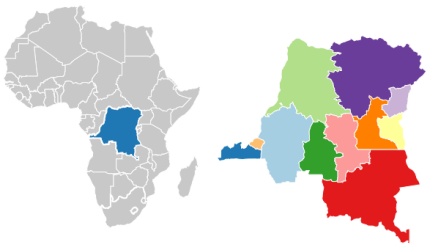
Quick guide to getting started

1) Go to: https://hatmepp.warwick.ac.uk/fitting/v1/ (we recommend you use Google Chrome, Microsoft Edge or Firefox as your browser to get the best experience).

2) Choose your **province** and **health zone** from the drop-down boxes. This version of the GUI is only for DRC, so the country cannot be changed.



3) The summary table immediately below will auto generate for your selected geography:



Dem Rep Congo: Bandundu Province: Bandundu Health zone

Information	
DRC population (2017)	81,339,988
Bandundu population (est 2015)	191,294
Active screening level (mean/max)	39.32%/55.15%
Vector control	None
Number actively screened [2000-2004]	84,460
Cases detected [2000-2004]	2,272

4) A number of results tabs can be found under the maps and table. **Charts** under each results tab will auto generate based on your province or health zone entries.

5) You can **download charts**, by clicking on 'Save Plot' (bottom left of each screen).

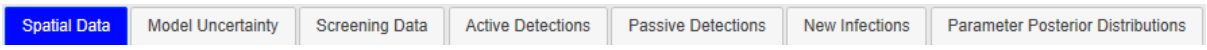
Definitions

Terminology	*Definition*
Diagnostic algorithm	In the context of diagnosing gHAT cases, the algorithm is the combination of tests that are used to diagnose an infected person, from initial detection (e.g. initial blood test) to confirmation of a case (identifying the parasite under a microscope). There are a number of steps involved and different diagnostics have different characteristics and give a higher or lower chance of accurately finding real cases. This is done to avoid treating people who are not infected.
Mean active screening level	The proportion of people screened is equal to the mean number screened during 2012–2016.
Max active screening level	The coverage is the maximum number of people screened during 2000–2016.
Observed	Actual case data from the WHO HAT Atlas
Stage 1	The first stage of the gHAT disease when the trypanosomes multiply in subcutaneous tissues, blood and lymph. This is also called haemo-lymphatic stage, which entails bouts of fever, headaches, enlarged lymph nodes, joint pains and itching (WHO definition).
Stage 2	The second stage of the gHAT disease when the parasites cross the blood-brain barrier to infect the central nervous system. This is known as the neurological or meningo-encephalic stage. In general this is when more obvious signs and symptoms of the disease appear: changes of behaviour, confusion, sensory disturbances and poor coordination. Disturbance of the sleep cycle, which gives the disease its name ('sleeping sickness'), is an important feature.

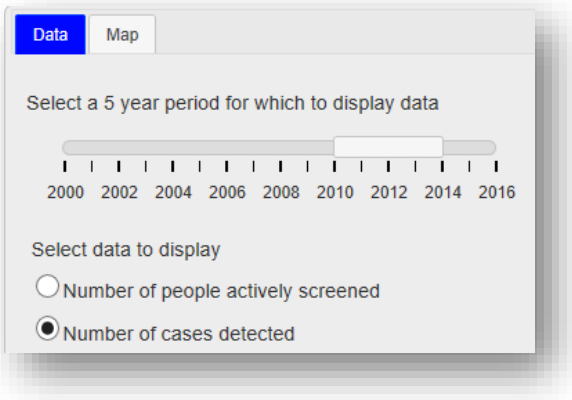
You can also refer to the main Glossary for a description of commonly used terms and acronyms associated with the HAT projects.

Results tabs

Spatial data

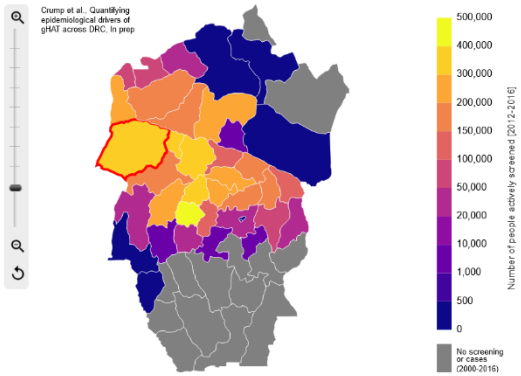


The under the Spatial Data results tab you can see, on a map, the number of people actively screened or number of cases detected for any five year period between 2000 to 2016.

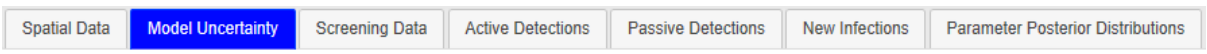


Make your data and time period selections under the Data tab (see opposite).

Under the Map tab, you can chose whether to show the whole country or just your selected province (see example opposite). The map will be defaulted to whole-country view. Hover on a health zone to view an information box with screening and detection data.



Model uncertainty

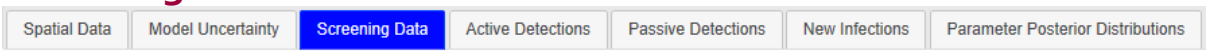


The Model Uncertainty tab gives a visualisation of the uncertainty about health zone level estimates of the parameters.

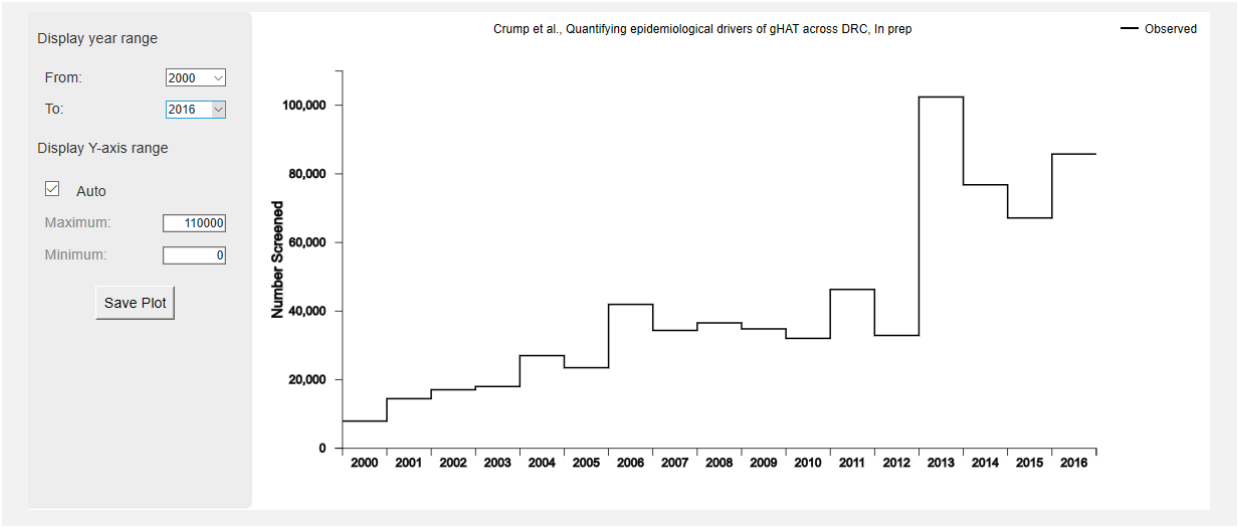
The user can select the parameter to view, whether to plot the map at the national or selected province level, and whether to display province boundaries. These choices are made from the Data and Map tabs within the Model Uncertainty tab.

These maps are created by splitting up the health zones into hexagons (see example opposite). Each of these hexagons was then allocated a colour based on a randomly selected sample from the posterior probability distribution of the selected parameter. In this way, the general shade of the health zone gives an indication of the expected value of the parameter, and the variation in the colours within a health zone reflects the uncertainty in the estimation of that parameter.

Screening data



The screening data results tab provides a chart showing you the number of people actively screened by year from 2000-2016 (i.e. the "observed" level in the data):

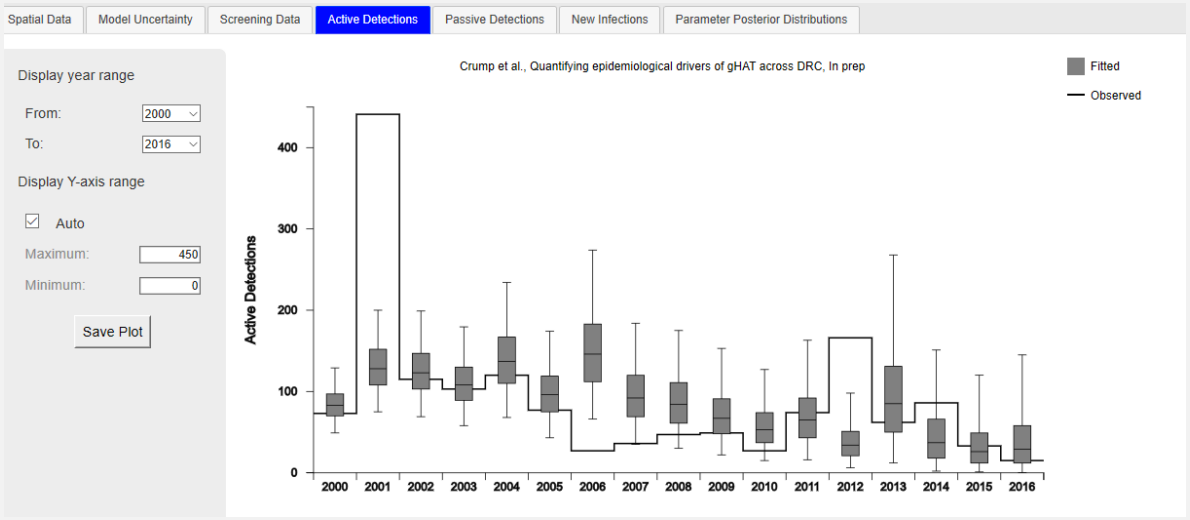


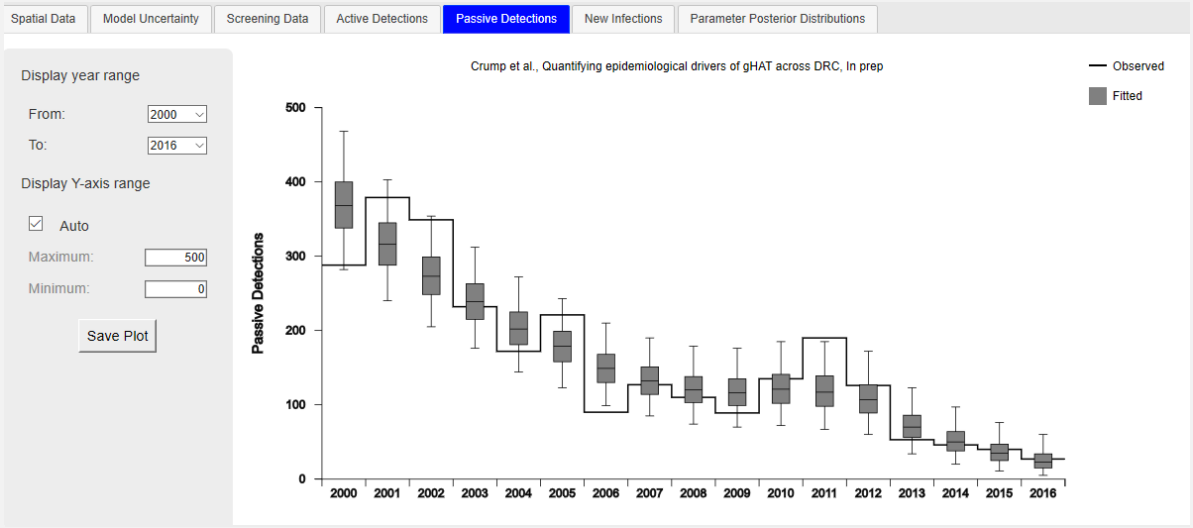
Detections & new infections

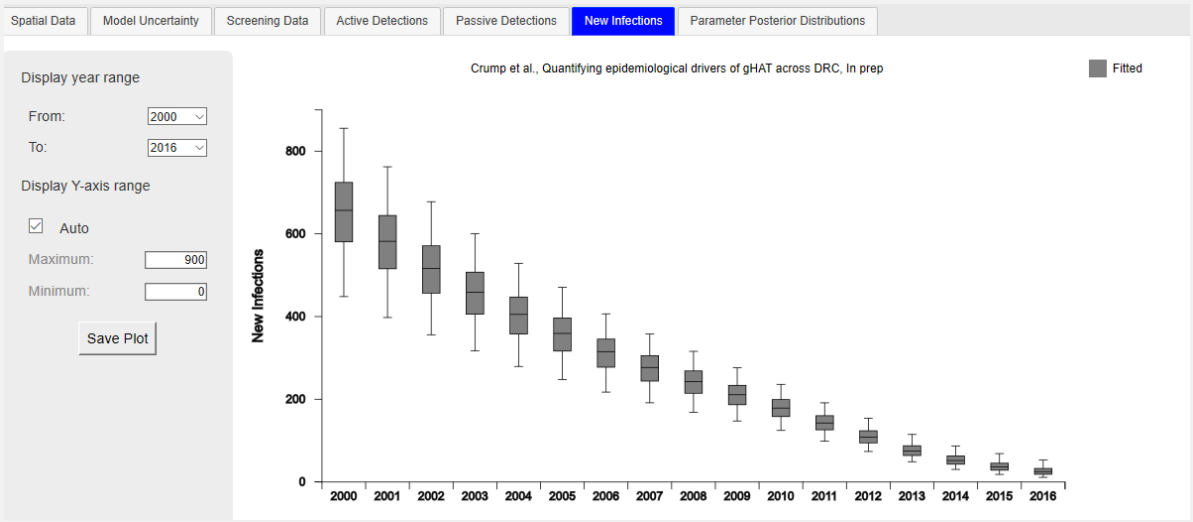
The Active Detections and Passive Detections results tabs provide charts to show you the observed versus fitted case reporting by year, by health zone, viewable for each year from

2000 to 2016. The New Infections results tab provides the fitted new infections data produced by the model, not directly observable from case data and otherwise not available.

Active detections, passive detections and assumed new infections, 2000 to 2016:







Note: if you hover on the results for the year you are interested in, an information box will appear showing the fitted highest, lowest and median number of cases within the range.

Parameter posterior distributions

Spatial Data | Model Uncertainty | Screening Data | Active Detections | Passive Detections | New Infections | **Parameter Posterior Distributions**

The figures on this tab show histograms of the 2,000 samples from the posterior probability distribution of each fitted parameter. The red bars in these figures contain the median of the parameter samples.