Results of the week

**Data preparation stage** (resources: big memory,

Prioritize this doc

Get the data inputs ready in single R scripts (find formats needed)

Run model versions in different folders

Think about Skeleton of the project

Do trips dataframe

TMB run example file with successful compilation of movement model

Get docs on statistics from Ewan

Dakar shp

Explore sensibility of sleepplace to bordereffects

* Plot place where people live that show > 70% away from home
  + If cities aggr. the arrs to one there
  + If other check orange paper on “agent based model of mobility” criteria for sleepplace assignment
  + If models don’t fit try other separation for migrants

Finalize division between seasonal and regular travellers

Hist of journeylengths

Incomplete journeys

Take beginning of the year as beginning of next year

And look at people who came home scaled by their fraction of

**Model development/fitting/cross-val movement model**

Data preparation

* distance Matrix,
  + average of city to city travel times in each arr. (computationally effective compared to each to each raster pixel with friction surface) (Ewan might do this part since he is familiar with the friction surface)
* env. cov.,
* pop (aggr.

Understand model he wants to fit (he will write up a summary of today)

Step one without time

Step two with time

**Behavioural indicators, movement on model prediction**

Movement model feeds into here

**Collegerooms website** (Ewan will get back to me with info)

Get clear who grades

Get clear how much collaboration is allowed in master thesis

Pub madhead, visit Christchurch College

Go through papers (incl. big ones)

Go through codes

Questions:

* In first meeting you were talking about biases in malaria models on treatment seeking, background fevers (phd from the group did work there to combine), asymptomatic (up to 6 months, incubated, not completed treatment)
* Get clear the reasons the movement model is superior to more simple add like Tatem (motivate the extra effort)
  + What does he think about a connectivity matrix comparison to Tatem before, this way extra effort can be justified
  + Also for seasonal movement patterns the approach from other paper doesn’t need movement model
  + How clear is the evidence that movement modelling works across countries?
  + If promising, is there a sensible way to smoothe “movement risk that is received by a arr” as an input to MAP maps (so that the maps don’t show strange discontinuities)
* Ross-McDonald model R with DHIS2 Case Data
  + Does he think this will still be in?
  + Catchment model needed?
* Gething Pf to R0, EIR and RossMcdonald, do they merge, if separate which is your vision?
* Options for PhD and after that he recommends

For later in thesis:

* another step of modelling we might also do based on DHS data (related to https://elifesciences.org/articles/29198 ) to provide a second check on the estimated incidences

Feasible depending on time:

* identify indicators from literature research that are associated with higher malaria and find a corresponding mobile phone pattern (outdoor occupation, ..)

For PhD:

* improvement of malaria models in other countries using movement models
* Movement effect in other models
* More covariates produced from raw call data tested as behavioural covariates
* Causal models for PhD
* Tower level movement model into malaria covariate model
* Random forest model for existing and creative behavioural indicators
* Finding asymptomatic populations: regressing case count on imported risk from all arr, intervention coverage, … (if imported risk from different areas is more important than from others it means the risk there is underestimated (could be due to asymptomatic infections) or movement is underestimated)