How can we best forecast internal displacement and return trends?

Bit(e)-Size Research Question:

Does the inclusion of ethnic and transportation network factors improve an agent-based model's simulation of displacement and return trends?

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Motivation and Background

- Globally, internally displaced people (IDPs) are the most numerous humanitarian population of concern (UNHCR 2018)
- IDP != asylum seeker != refugee != migrant != immigrant
- IDPs need support during displacement and upon return
- Prediction can improve planning, response

Case Study

Republic of Iraq, 2017- Present

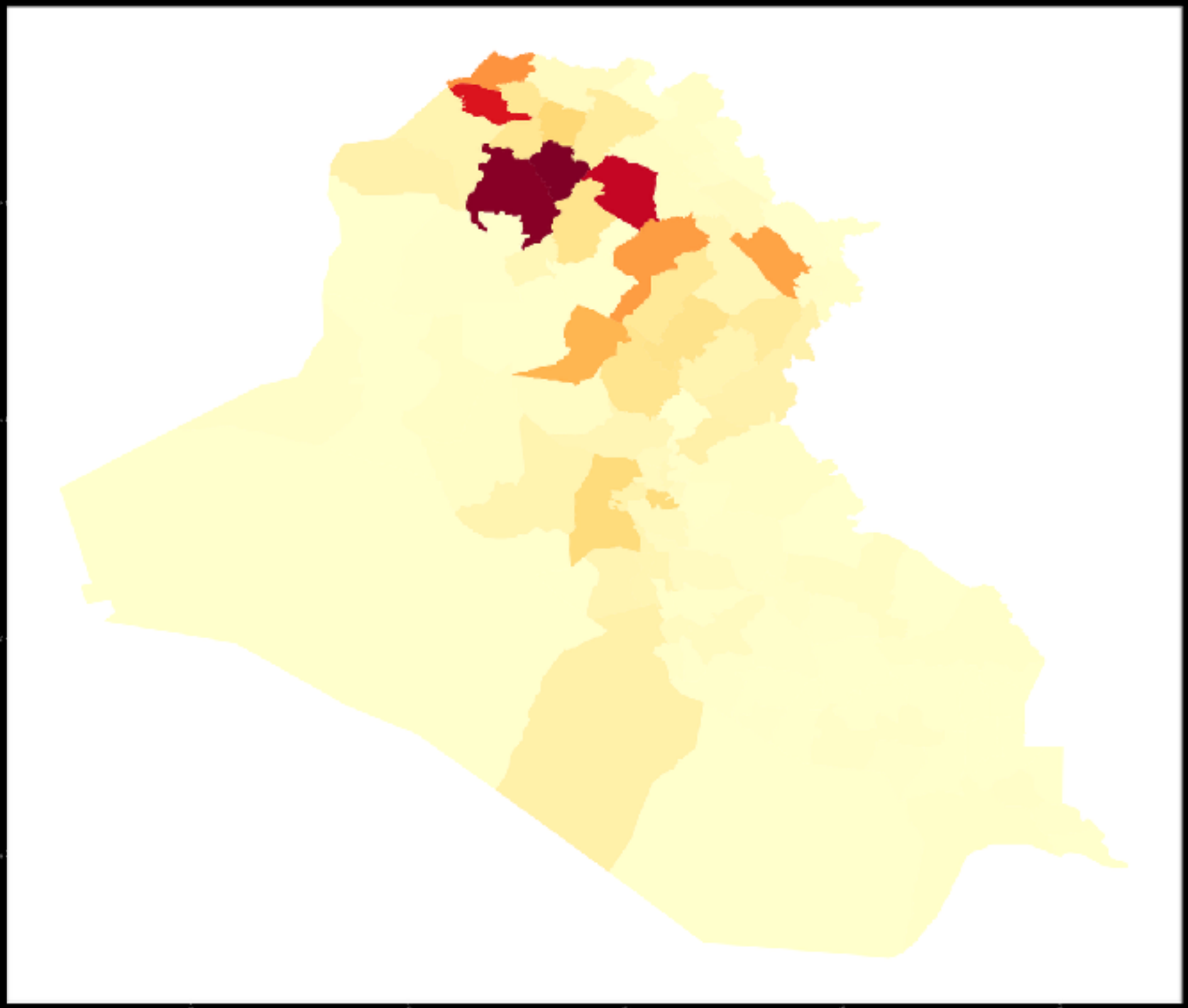
Data

- International Organization for Migration Displacement Tracking Matrix (Iraq)
- Armed Conflict Location and Event Database
- UNOCHA Open Street Map Data dumps

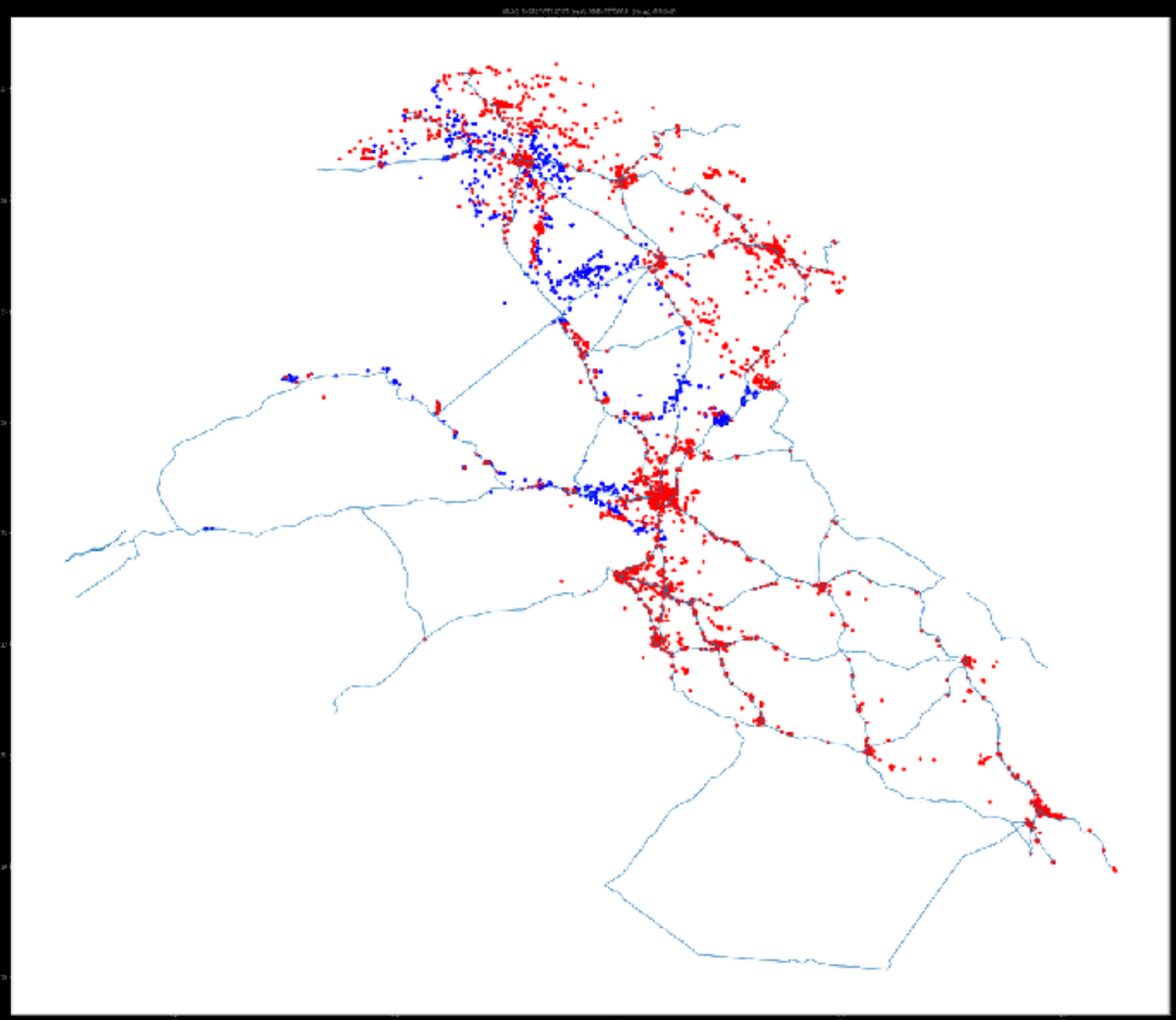
Validation

- Data from 01-2018 - 05-2018

IDP Volume By District



Iraq Main Road Network



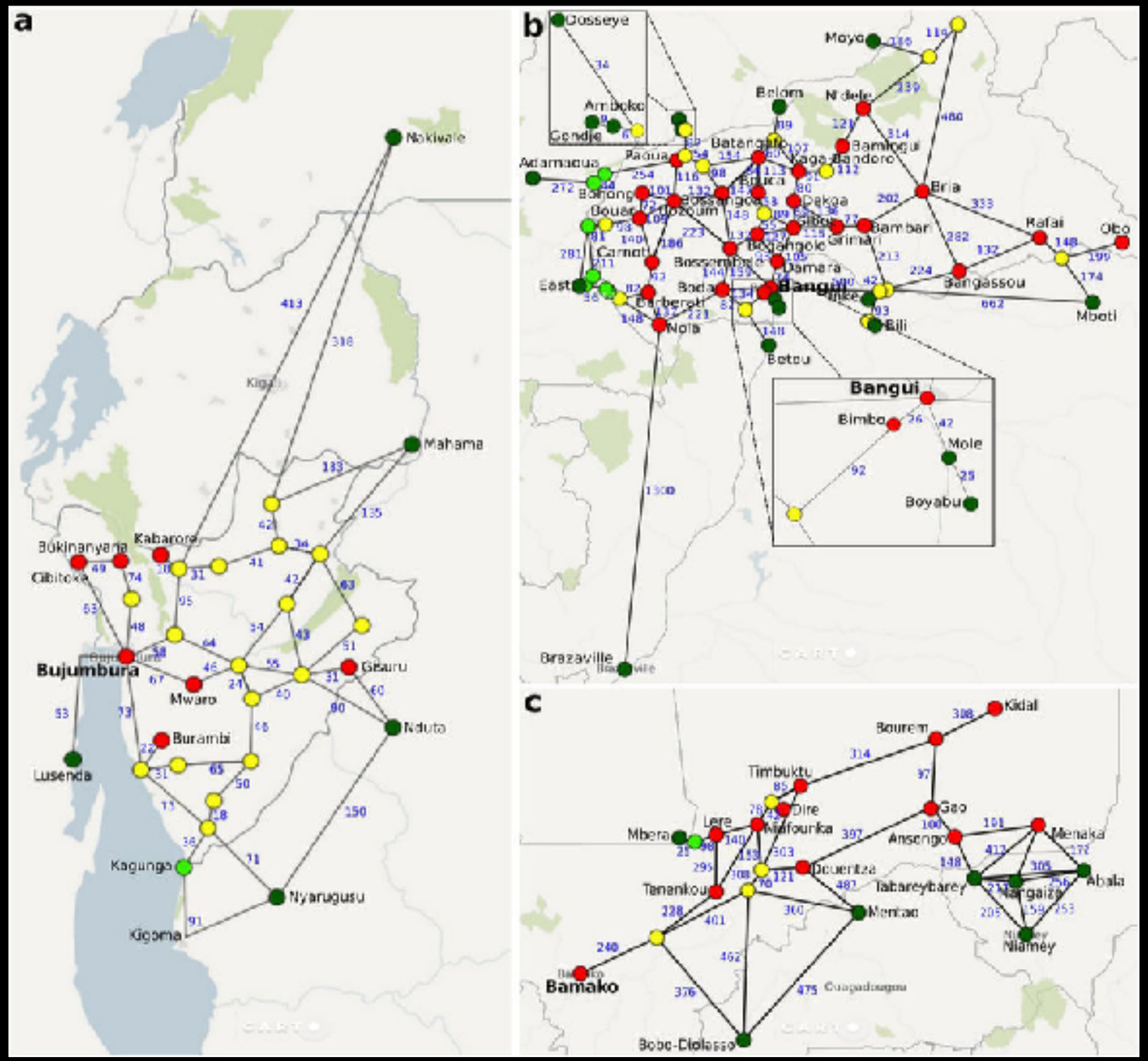
Encouraging Progress

Most recently:
Suleimanova, Bell, Groen (11-2017)

- Cases: CAR, Burundi, Mali

- Claim > 75% prediction after a few “days”

    - Builds on Groen (2016)



Graphic from Suleimanova et al. 2017

Room for Improvement

- Unclear ties to current displacement theory

  Explicitly link results to wider literature

- Comparison to (very) naive alternatives

  Validate against more sophisticated alternatives

- Simple model (e.g., one direction, no returnees, camp-only “sinks”)

  Include returns, city “sinks”, information asymmetry

This Contribution is Valuable because…

- There is already a rich qualitative literature on displacement
- Costs of poor prediction are high
- Displacement and return happen together

Approach

A. Enrich Suleimanova et al's simulation with additional factors (e.g., co-ethnicity, transportation network density, checkpoints, returns, information asymmetry)

B. Validate the simulation against more sophisticated alternatives (e.g., random walks)

C. Establish stronger links to theory and practice in forced migration

D. Use statistical learning methods to fit coefficients to the model.

Preliminary Hypotheses

1. The original model as developed by Suleimanova et al (2017) will not out-predict more robust alternatives.

2. Transportation network density will be more predictive than estimated travel times between locations.

3. “Group” (e.g., ethnic) characteristics will impact agents’ decisions to travel through zones where they are a minority.